UNIT INFORMATION

LCM SERIES
3 to 6 Ton

100127
01/2025

Service Literature

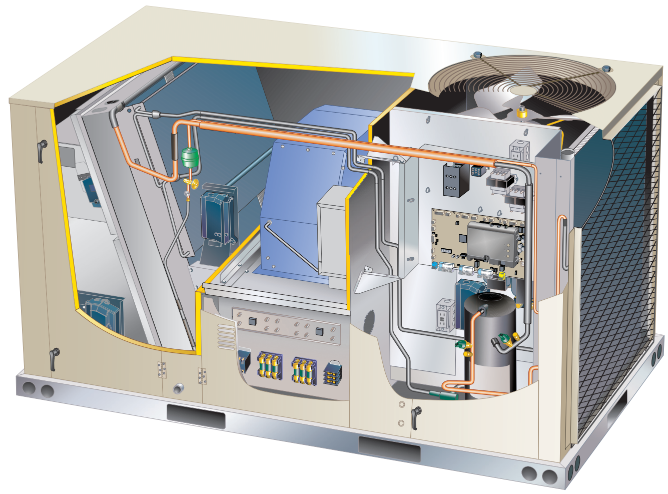
Ultra High Efficiency LCM036U through 074U with R-454B

LCM036U, 048U, 060U, and 074U are ultra high efficiency packaged units equipped with variable speed direct drive blowers, an inverter-driven variable 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. 7.5kW through 30 kW heat sections are available for the LCM 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.



ELECTROSTATIC DISCHARGE (ESD)
Precautions and Procedures

⚠ 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.

⚠ 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.

⚠ 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.

⚠ 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.

⚠ 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.

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⚠ WARNING

Only manufacturer approved auxiliary devices are permitted to be installed in this unit.

⚠ WARNING

If this appliance is conditioning a space with an area smaller than TAmin or stored in a space with an area smaller than Amin as defined by this instruction, then that space must be without continuously operating open flames (e.g. an operating gas appliance) or other potential ignition sources (e.g. an operating electric heater or similar hot surface). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest system.

⚠ WARNING

•Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

•The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).

•Do not pierce or burn.

•Be aware that refrigerants may not contain an odor.

⚠ CAUTION

Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700°C and electric switching devices.

⚠ CAUTION

Any personnel installing, decommissioning, or performaing maintenance on the unit must be properly trained with A2L refrigerants.

⚠ CAUTION

Leak Detection System installed. Unit must be powered except for service.

⚠ CAUTION

Servicing shall be performed only as recommended by the manufacturer.

⚠ WARNING

•This appliance must be installed in accordance with local and national wiring regulations.

•If the appliance is not fitted with an option for full disconnection from power, a means of disconnection must be incorporated in the fixed wiring in accordance with national and local wiring regulations.

⚠ WARNING

Ducts connected to an appliance shall not contain a potential ignition source.

⚠ CAUTION

The appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction

⚠ CAUTION

Children should be supervised not to play with the appliance.

⚠ IMPORTANT

Pipe work, including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

⚠ IMPORTANT

Refrigerant sensors for refrigerant detection systems shall only be replaced with sensors specified by the appliance manufacture.

⚠ CAUTION

This unit is equipped with electrically powered safety measures. To be effective, the unit must be electrically powered at all times after installation, other than when servicing.

A2L Refrigerant Considerations

Ensure that the work area is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects, taking into account the effects of aging or continual vibration from sources such as compressors or fans.

Under no circumstances shall potential sources of ignition be used when searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practices be followed since flammability is a consideration. The following procedure shall be adhered to:

-Safely remove refrigerant following local and national regulations.

-Evacuate the circuit.

-Purge the circuit with inert gas.

-Evacuate.

-Purge the circuit with inert gas.

-Open the circuit

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems. Refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be vented down to atmospheric pressure to enable work to take place. Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

OPTIONS / ACCESSORIES

Item		Order Number	Size 036	048	060	074
COOLING SYSTEM						
Condensate Drain Trap	PVC	**22H54**	OX	OX	OX	OX
	Copper	**76W27**	X	X	X	X
Drain Pan Overflow Switch		**21Z07**	OX	OX	OX	OX
BLOWER - SUPPLY AIR						
Motors	DirectPlus™ Direct Drive ECM Blower System with SZVAV	Factory	O	O	O	O
	DirectPlus™ Direct Drive ECM Blower System with VAV	Factory	O	O	O	O
CABINET						
Combination Coil/Hail Guards		**13T03**	OX	OX	OX	OX
Corrosion Protection (indoor coil / outdoor coil)		Factory	O	O	O	O
CONTROLS						
Commercial Controls	Lennox® CORE Control System - LonTalk® Module	**54W27**	OX	OX	OX	OX
	CPC Einstein Integration	Factory	O	O	O	O
	Novar® LSE	Factory	O	O	O	O
Dirty Filter Switch		**53W66**	OX	OX	OX	OX
Fresh Air Tempering		**21Z08**	OX	OX	OX	OX
Smoke Detector - Supply or Return (Power board and one sensor)		**21Z11**	OX	OX	OX	OX
Smoke Detector - Supply and Return (Power board and two sensors)		**21Z12**	OX	OX	OX	OX
ELECTRICAL						
Voltage 60 Hz	208/230V-3ph	Factory	O	O	O	O
	460V-3ph	Factory	O	O	O	O
	575V-3ph	Factory	O	O	O	O
HACR Circuit Breakers		Factory	O	O	O	O
Disconnect Switch (See Electrical / Electric Heat Tables for selection)	80 amp	**22A23**	OX	OX	OX	OX
	150 amp	**22A24**			OX	OX
[1] 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)	**74M70**	OX	OX	OX	OX
	[2] 20 amp non-powered, field-wired (208/230V, 460V, 575V)	**67E01**	X	X	X	X
	[2] 20 amp non-powered, field-wired (575V only)	Factory	O	O	O	O
Weatherproof Cover for GFI		**10C89**	X	X	X	X
Phase/Voltage Detection - 3 Phase Models Only		Factory	O	O	O	O
ELECTRIC HEAT						
7.5 kW	208/240V-3ph	**24U11**	OX	OX	OX	OX
	460V-3ph	**24U12**	OX	OX	OX	OX
	575V-3ph	**24U13**	OX	OX	OX	OX
15 kW	208/240V-3ph	**24U16**	OX	OX	OX	OX
	460V-3ph	**24U17**	OX	OX	OX	OX
	575V-3ph	**24U18**	OX	OX	OX	OX
22.5 kW	208/240V-3ph	**24U20**			OX	OX
	460V-3ph	**24U21**			OX	OX
	575V-3ph	**24U22**			OX	OX
30 kW	208/240V-3ph	**24U23**				OX
	460V-3ph	**24U24**				OX
	575V-3ph	**24U25**				OX

[1] Disconnect Switch not available with higher SCCR option. Short-Circuit Current Rating option not available on field installed electric heat.
[2] Canada requires a minimum 20 amp circuit. Select 20 amp, non-powered, field wired GFI.

NOTE - Order 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		Order Number	Size 036	048	060	074
ECONOMIZER						
High Performance Economizer With Outdoor Air Hood (Sensible Control) (Approved for California Title 24 Building Standards / AMCA Class 1A Certified)						
High Performance Economizer - Includes Barometric Relief Dampers and Combination Hood		**20H48**	OX	OX	OX	OX
Economizer Accessories						
Horizontal Economizer Conversion Kit		**17W45**	X	X	X	X
Economizer Controls						
Differential Enthalpy (Not for Title 24)	Order 2	**21Z09**	OX	OX	OX	OX
Sensible Control	Sensor is Furnished	Factory	O	O	O	O
Single Enthalpy (Not for Title 24)		**21Z09**	OX	OX	OX	OX
Outdoor Air CFM Control		**13J76**	X	X	X	X
Global Control	Sensor Field Provided	Factory	O	O	O	O
Building Pressure Control		**13J77**	X	X	X	X
POWER EXHAUST FAN (DOWNFLOW ONLY)						
Standard Static	208/230V-3ph	**21Z13**	OX	OX	OX	OX
NOTE - Factory installed Power Exhaust Fan requires “Barometric Relief Dampers for Power Exhaust Kit” for field installation. See below.	460V-3ph	**21Z14**	OX	OX	OX	OX
	575V-3ph	**21Z15**	OX	OX	OX	OX
BAROMETRIC RELIEF						
[3] Barometric Relief Dampers for Power Exhaust Kit		**21Z21**	X	X	X	X
[4] Horizontal Barometric Relief Dampers With Outdoor Air and Exhaust Hood		**19F01**	X	X	X	X
OUTDOOR AIR						
Outdoor Air Dampers With Outdoor Air Hood						
Motorized		**15D17**	OX	OX	OX	OX
Manual		**15D18**	X	X	X	X
HUMIDITROL™+ HOT GAS REHEAT OPTION						
Humiditrol®+ Dehumidification Option		Factory	O	O	O	O

[3] Required when Economizer is factory installed with factory installed Power Exhaust Fan option.
[4] Required when Economizer is configured for horizontal airflow.

NOTE - Order 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		Order Number	Size 036	048	060	074
INDOOR AIR QUALITY						
Air Filters						
Healthy Climate® High Efficiency Air Filters 20 x 20 x 2 in.	MERV 8 (Order 4)	**54W21**	OX	OX	OX	OX
	MERV 13 (Order 4)	**52W39**	OX	OX	OX	OX
	MERV 16 (Order 4)	**21U40**	OX	OX	OX	OX
Replaceable Media Filter With Metal Mesh Frame 20 x 20 x 2 in. (includes non-pleated filter media)	(Order 4)	**44N60**	X	X	X	X
Needlepoint Bipolar Ionization (NPBI)						
Needlepoint Bipolar Ionization Kit		**21U35**	X	X	X	X
Indoor Air Quality (CO_2) Sensors						
Sensor - Wall-mount, off-white plastic cover with LCD display		**24C58**	X	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display		**23V86**	X	X	X	X
Sensor - Black plastic case, LCD display, rated for plenum mounting		**87N52**	X	X	X	X
Sensor - Black plastic case, no display, rated for plenum mounting		**23V87**	X	X	X	X
CO_2 Sensor Duct Mounting Kit - for downflow applications		**23Y47**	X	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensors (**24C58**)		**90N43**	X	X	X	X
UVC Germicidal Lamps						
[5] Healthy Climate® UVC Light Kit (110/230V-1ph)		**21A92**	X	X	X	X
Step-Down Transformer	460V primary, 230V secondary	**10H20**	X	X	X	X
	575V primary, 230V secondary	**10H21**	X	X	X	X
ROOF CURBS						
Hybrid Roof Curbs, Downflow						
8 in. height		**11F50**	X	X	X	X
14 in. height		**11F51**	X	X	X	X
18 in. height		**11F52**	X	X	X	X
24 in. height		**11F53**	X	X	X	X
Transition Curb						
Matches Model L™ 036-074 Units to existing L Series® Curbs		**31B05**	X	X	X	X
CEILING DIFFUSERS						
Step-Down - Order one	RTD11-95S	**13K61**	X	X	X	X
Flush - Order one	FD11-95S	**13K56**	X	X	X	X
Transitions (Supply and Return) - Order one	T1TRAN20N-1	**17W54**	X	X	X	X

[5] 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 - Order 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

Model		LCM036U5E	LCM048U5E	LCM060U5E	LCM074U5E
Blower Type		DirectPlus™ ECM Direct Drive with SZVAV	DirectPlus™ ECM Direct Drive with SZVAV	DirectPlus™ ECM Direct Drive with SZVAV	DirectPlus™ ECM Direct Drive with SZVAV
Model Number		LCM036U5P	LCM048U5P	LCM060U5P	LCM074U5P
Blower Type		DirectPlus™ ECM Direct Drive with VAV	DirectPlus™ ECM Direct Drive with VAV	DirectPlus™ ECM Direct Drive with VAV	DirectPlus™ ECM Direct Drive with VAV
Efficiency Type		Ultra-High	Ultra-High	Ultra-High	Ultra-High
Nominal Tonnage		3 Ton	4 Ton	5 Ton	6 Ton
Cooling Performance	Gross Cooling Capacity (Btuh)	36,000	48,500	60,000	71,000
	[1] Net Cooling Capacity (Btuh)	35,000	48,000	58,000	69,000
	AHRI Rated Air Flow (cfm)	1320	1600	1850	2150
	SEER2 (Btuh/Watt)	21.2	19.9	19.5	- - -
	EER2 (Btuh/Watt)	14.3	13.2	12.5	- - -
	IEER (Btuh/Watt)	- - -	- - -	- - -	23.1
	EER (Btuh/Watt)	- - -	- - -	- - -	12.2
	Total Unit Power - kW	2.5	3.6	4.6	5.5
Sound Rating Number	dBA	73	76	78	80
Refrigerant Charge	Refrigerant Type	R-454B	R-454B	R-454B	R-454B
	Without Reheat Option	4 lbs. 8 oz.	5 lbs. 1 oz.	5 lbs. 1 oz.	5 lbs. 1 oz.
	With Reheat Option	5 lbs. 11 oz.	5 lbs. 9 oz.	5 lbs. 9 oz.	5 lbs. 9 oz.
Electric Heat Available		7.5 and 15 kW	7.5 and 15 kW	7.5, 15 and 22.5 kW	7.5, 15, 22.5 and 30 kW
Compressor Type (Number)		Variable Capacity Scroll (1)			
Outdoor Coil	Net face area - ft.^{2}	17.8	17.8	17.8	17.8
	Rows	1	1	1	1
	Fins - in.	23	23	23	23
Outdoor Coil Fans	Motor HP (number and type)	1/3 (1 ECM)	1/3 (1 ECM)	1/3 (1 ECM)	1/3 (1 ECM)
	Rpm	550 - 850	600 - 900	700 - 950	700 - 1050
	Watts	50 - 200	80 - 236	120 - 272	120 - 360
	Diameter (Number) - in.	(1) 24	(1) 24	(1) 24	(1) 24
	Blades	3	3	3	3
	Total air volume - cfm	2500 - 3850	2750 - 4100	3200 - 4300	3200 - 4700
Indoor Coil	Net face area - ft.^{2}	8.65	8.65	8.65	8.65
	Rows	1	1	1	1
	Fins - in.	20	20	20	20
	Condensate drain size (NPT) - in.	(1) 1			
	Expansion device type	Balanced Port Thermostatic Expansion Valve,removable power head			
Indoor Blower	Motor HP (number and type)	1.5 HP (1 ECM)	1.5 HP (1 ECM)	1.5 HP (1 ECM)	1.5 HP (1 ECM)
	Wheel (Number) diameter x width - in.	(1) 14 x 5	(1) 14 x 5	(1) 14 x 5	(1) 14 x 5
Filters	Type of filter	MERV 4, Disposable			
	Number and size - in.	(4) 20 x 20 x 2			
Line voltage data (Volts-Phase-Hz)		208/230-3-60, 460-3-60, 575-3-60			

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

[1] AHRI Certified to AHRI Standard 210/240 (3-5 ton) or 340/360 (6 ton): 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

BLOWER DATA 1.5 HP

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 10 for wet coil and options/accessory air resistance data and 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	- - -	- - -	734	19	823	40	910	60	985	78	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
600	766	28	856	51	944	73	1029	93	1108	111	1180	127	1248	139	1315	149	1383	158	1451	169	- - -	- - -	- - -	- - -	- - -	- - -
800	899	57	989	81	1079	104	1163	125	1242	145	1317	161	1386	174	1454	185	1519	198	1582	214	1643	234	1701	255	1755	281
1000	1084	95	1163	117	1244	139	1323	160	1398	180	1470	196	1538	211	1603	227	1663	245	1721	267	1776	292	1828	320	1876	350
1200	1319	113	1385	138	1451	162	1517	186	1581	209	1644	231	1703	254	1759	278	1812	306	1863	337	1912	367	1960	397	2003	427
1400	1542	146	1596	177	1649	208	1703	239	1757	269	1809	300	1860	331	1909	362	1956	393	2003	425	2050	456	2095	483	2139	508
1600	1721	225	1772	258	1823	291	1873	324	1923	356	1972	388	2019	419	2065	450	2110	480	2156	510	2200	539	2244	565	2287	590
1800	1909	309	1957	341	2006	373	2054	404	2101	435	2146	465	2190	495	2234	526	2277	557	2320	588	2362	620	2404	651	2444	685
2000	2103	385	2148	417	2193	450	2239	483	2283	516	2325	550	2367	584	2408	620	2449	658	2490	696	2529	735	2568	777	2605	822
2200	2299	478	2342	514	2384	552	2426	590	2467	630	2507	671	2547	714	2586	757	2625	800	2663	844	2700	889	2735	935	2770	982
2400	2500	606	2540	647	2580	690	2618	734	2656	779	2694	824	2731	870	2768	915	2804	961	2839	1006	2874	1051	2907	1096	2941	1141
2600	2704	768	2741	810	2778	855	2813	901	2849	947	2884	993	2918	1039	2952	1085	2986	1129	3019	1173	3051	1217	3083	1259	3115	1300
2800	2908	941	2943	985	2976	1030	3010	1076	3042	1121	3075	1166	3107	1210	3139	1253	3170	1296	3200	1338	3231	1379	3261	1419	3290	1456
3000	3110	1111	3142	1156	3173	1201	3205	1245	3236	1289	3267	1332	3296	1373	3325	1414	3354	1455	3382	1496	3412	1536	3439	1573	3465	1609

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	1805	309	1850	337	1895	366	1940	392	- - -	- - -	- - -	- - -	- - -	- - -
1000	1920	380	1962	410	2005	439	2050	466	2094	492	2138	517	2181	541
1200	2045	456	2087	484	2130	510	2174	537	2217	563	2260	589	2302	615
1400	2182	531	2225	555	2268	581	2310	610	2352	640	2393	671	2433	703
1600	2330	616	2371	645	2412	678	2452	713	2491	750	2530	787	2568	824
1800	2484	723	2523	765	2561	808	2598	849	2636	890	2672	931	2708	971
2000	2641	868	2677	915	2713	961	2749	1003	2784	1044	2819	1084	2853	1124
2200	2804	1028	2839	1072	2873	1114	2907	1155	2940	1194	2973	1234	3006	1272
2400	2974	1184	3006	1225	3039	1266	3071	1305	3103	1344	3134	1382	3166	1420
2600	3146	1340	3177	1379	3207	1417	3238	1456	3269	1494	3299	1532	3329	1569
2800	3319	1493	3347	1530	3376	1567	3406	1605	3435	1643	3465	1681	3495	1718
3000	3491	1644	3517	1680	3543	1716	3572	1754	3602	1792	3631	1830	3661	1867

BLOWER DATA — 1.5 HP

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

HORIZONTAL

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	708	16	793	37	872	53	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
600	835	46	918	65	1000	82	1077	95	1149	107	1221	109	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
800	981	75	1064	92	1144	109	1221	124	1294	139	1365	148	1434	154	1497	163	1555	179	1607	200	1656	226	1704	254	- - -	- - -
1000	1166	105	1241	124	1315	141	1387	159	1454	176	1520	191	1582	207	1638	227	1689	252	1737	279	1783	308	1829	335	1873	362
1200	1374	142	1440	162	1506	182	1569	203	1630	224	1687	246	1739	271	1787	299	1832	330	1876	361	1920	391	1964	419	2007	444
1400	1591	183	1647	209	1701	235	1755	263	1806	291	1854	320	1899	351	1942	382	1984	412	2026	442	2068	469	2110	496	2153	520
1600	1778	258	1827	290	1876	323	1923	355	1970	386	2015	416	2059	444	2102	470	2144	494	2185	519	2227	545	2268	572	2309	600
1800	1973	352	2018	383	2063	415	2107	445	2151	476	2194	504	2237	531	2279	557	2319	584	2359	613	2397	645	2435	679	2471	713
2000	2182	437	2224	468	2265	499	2306	531	2346	563	2385	596	2424	630	2461	666	2496	705	2530	745	2564	786	2598	826	2631	866
2200	2388	540	2426	576	2464	613	2500	651	2536	691	2571	731	2605	774	2637	819	2668	863	2700	907	2732	949	2764	990	2795	1029
2400	2589	679	2624	719	2658	761	2691	803	2724	846	2756	890	2786	935	2816	980	2846	1025	2876	1068	2907	1109	2937	1149	2967	1188
2600	2787	845	2819	887	2850	930	2881	973	2911	1017	2941	1060	2970	1104	2999	1147	3028	1189	3057	1230	3087	1270	- - -	- - -	- - -	- - -
2800	2983	1021	3013	1063	3042	1106	3070	1149	3099	1191	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

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	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1000	1916	386	1957	408	1998	428	2037	447	2077	465	- - -	- - -	- - -	- - -
1200	2049	468	2089	490	2128	510	2168	529	2207	549	2246	569	2285	591
1400	2194	543	2235	565	2274	588	2313	611	2350	637	2387	664	2423	694
1600	2349	627	2387	657	2423	688	2457	722	2490	757	2522	793	2554	830
1800	2506	749	2539	787	2571	825	2602	864	2632	903	2662	942	2692	981
2000	2663	906	2694	945	2725	985	2755	1024	2785	1063	2815	1101	2845	1138
2200	2826	1068	2857	1107	2887	1146	2916	1184	2946	1221	2975	1259	3005	1296
2400	2997	1227	3027	1266	3056	1304	3085	1342	- - -	- - -	- - -	- - -	- - -	- - -
2600	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
2800	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

BLOWER DATA

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

Air Volume cfm	Wet Indoor Coil	Humiditrol® Condenser Reheat Coil	Electric Heat	Economizer	Filters		
					MERV 8	MERV 13	MERV 16
800	0.01	- - -	0.01	0.04	0.04	0.05	0.04
1000	0.02	0.00	0.03	0.04	0.04	0.07	0.05
1200	0.04	0.00	0.06	0.04	0.04	0.07	0.05
1400	0.05	0.01	0.09	0.04	0.04	0.07	0.06
1600	0.07	0.02	0.12	0.04	0.04	0.07	0.08
1800	0.08	0.02	0.15	0.05	0.04	0.07	0.09
2000	0.10	0.02	0.18	0.05	0.05	0.08	0.10
2200	0.11	0.04	0.18	0.05	0.05	0.08	0.11
2400	0.13	0.04	0.20	0.05	0.05	0.08	0.12

MINIMUM AIR VOLUME REQUIRED FOR ELECTRIC HEAT

kW Size	Minimum CFM
	DirectPlus™ Direct Drive ECM
7.5	1200
15	1350
22.5	1800
30	2000

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure in. w.g.	Air Volume Exhausted cfm
0.00	2000
0.05	1990
0.10	1924
0.15	1810
0.20	1664
0.25	1507
0.30	1350
0.35	1210

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 — 3 TON

Model		**LCM036U5E / LCM036U5P**		
[1] Voltage - 60Hz		**208/230V-3ph**	**460V-3ph**	**575V-3ph**
Compressor (Inverter)	Rated Load Amps	9.1	5.1	4.1
	Locked Rotor Amps	11	6	12
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8	1.4	1.1
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	1.5	1.5	1.5
	Full Load Amps	4.4	2.3	2.3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	25	15	15
	With (1) 0.33 HP Power Exhaust	30	15	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	19	11	9
	With (1) 0.33 HP Power Exhaust	21	12	10

ELECTRIC HEAT DATA

Electric Heat Voltage			**208V**	**240V**	**480V**	**600V**
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	7.5 kW	30	30	15	15
		15 kW	**[4] 45**	60	30	25
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	7.5 kW	26	29	15	12
		15 kW	45	51	26	21
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	30	35	20	15
		15 kW	**[4] 50**	60	30	25
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	29	32	16	14
		15 kW	48	54	28	23

ELECTRICAL ACCESSORIES

Disconnect	7.5 kW	**22A23**	**22A23**	**22A23**	**22A23**
	15 kW	**22A23**	**22A23**	**22A23**	**22A23**

Disconnects - 22A23 - 80A

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

[1] Extremes of operating range are plus and minus 10% of line voltage.

[2] HACR type breaker or fuse.

[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

[4] Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA — 4 TON

Model		LCM048U5E / LCM048U5P		
[1] Voltage - 60Hz		208/230V-3ph	460V-3ph	575V-3ph
Compressor (Inverter)	Rated Load Amps	13.8	6.5	5.5
	Locked Rotor Amps	17	10	12
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8	1.4	1.1
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	1.5	1.5	1.5
	Full Load Amps	4.4	2.3	2.3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	35	15	15
	With (1) 0.33 HP Power Exhaust	40	15	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	25	12	11
	With (1) 0.33 HP Power Exhaust	27	14	12

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	480V	600V
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	7.5 kW	35	35	15	15
		15 kW	**[4] 45**	60	30	25
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	7.5 kW	26	29	15	12
		15 kW	45	51	26	22
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	40	40	20	15
		15 kW	**[4] 50**	60	30	25
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	29	32	16	14
		15 kW	48	54	28	23

ELECTRICAL ACCESSORIES

Disconnect		208V	240V	480V	600V
	7.5 kW	**22A23**	**22A23**	**22A23**	**22A23**
	15 kW	**22A23**	**22A23**	**22A23**	**22A23**

Disconnects - 22A23 - 80A

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

[1] Extremes of operating range are plus and minus 10% of line voltage.

[2] HACR type breaker or fuse.

[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

[4] Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA — 5 TON

Model		LCM060U5E / LCM060U5P		
[1] Voltage - 60Hz		208/230V-3ph	460V-3ph	575V-3ph
Compressor (Inverter)	Rated Load Amps	14.6	7	5.8
	Locked Rotor Amps	21	11	12
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8	1.4	1.1
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	1.5	1.5	1.5
	Full Load Amps	4.4	2.3	2.3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	40	15	15
	With (1) 0.33 HP Power Exhaust	40	20	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	26	13	11
	With (1) 0.33 HP Power Exhaust	28	14	12

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	480V	600V
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	7.5 kW	40	40	15	15
		15 kW	[4] **45**	60	30	25
		22.5 kW	[4] **70**	80	40	30
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	7.5 kW	26	29	15	12
		15 kW	45	51	26	21
		22.5 kW	65	74	37	30
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	40	40	20	15
		15 kW	[4] **50**	60	30	25
		22.5 kW	70	80	40	35
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	29	32	16	14
		15 kW	48	54	28	23
		22.5 kW	68	77	39	32

ELECTRICAL ACCESSORIES

		208V	240V	480V	600V
Disconnect	7.5 kW	**22A23**	**22A23**	**22A23**	**22A23**
	15 kW	**22A23**	**22A23**	**22A23**	**22A23**
	22.5 kW	**22A24**	**22A24**	**22A23**	**22A23**

Disconnects - 22A23 - 80A
22A24 - 150A

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.
[1] Extremes of operating range are plus and minus 10% of line voltage.
[2] HACR type breaker or fuse.
[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.
[4] Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA — 6 TON

Model		LCM074U5E / LCM074U5P		
[1] Voltage - 60Hz		208/230V-3ph	460V-3ph	575V-3ph
Compressor (Inverter)	Rated Load Amps	16.9	8.3	6.8
	Locked Rotor Amps	21	11	12
Outdoor Fan Motor	Full Load Amps (1 ECM)	2.8	1.4	1.1
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	1.5	1.5	1.5
	Full Load Amps	4.4	2.3	2.3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	45	20	15
	With (1) 0.33 HP Power Exhaust	45	20	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	29	15	12
	With (1) 0.33 HP Power Exhaust	31	16	13

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	480V	600V
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	7.5 kW	45	45	20	15
		15 kW	[4] **45**	60	30	25
		22.5 kW	[4] **70**	80	40	30
		30 kW	[4] **90**	100	50	40
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	7.5 kW	29	29	15	12
		15 kW	45	51	26	21
		22.5 kW	65	74	37	30
		30 kW	84	96	48	39
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	45	45	20	15
		15 kW	[4] **50**	60	30	25
		22.5 kW	[4] **70**	80	40	35
		30 kW	[4] **90**	100	50	45
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	31	32	16	14
		15 kW	48	54	28	23
		22.5 kW	68	77	39	32
		30 kW	87	99	50	41

ELECTRICAL ACCESSORIES

		208V	240V	480V	600V
Disconnect	7.5 kW	**22A23**	**22A23**	**22A23**	**22A23**
	15 kW	**22A23**	**22A23**	**22A23**	**22A23**
	22.5 kW	**22A24**	**22A24**	**22A23**	**22A23**
	30 kW	**22A24**	**22A24**	**22A23**	**22A23**

Disconnects - 22A23 - 80A
22A24 - 150A

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.
[1] Extremes of operating range are plus and minus 10% of line voltage.
[2] HACR type breaker or fuse.
[3] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.
[4] Factory installed circuit breaker not available.

ELECTRIC HEAT CAPACITIES

Volts Input	7.5 kW			15 kW			22.5 kW			30 kW		
	kW Input	Btuh Output	Stages	kW Input	Btuh Output	Stages	kW Input	Btuh Output	Stages	kW Input	Btuh Output	Stages
208	5.6	19,100	1	11.3	38,600	1	16.9	57,700	2	22.5	76,800	2
220	6.3	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2
230	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2
240	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2
440	6.9	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2
460	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2
480	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2
550	6.3	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2
575	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2
600	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2

FIELD WIRING NOTES
- For use with copper wiring only
- Field wiring not furnished
- All wiring must conform to NEC or CEC and local electrical codes
- For specific wiring information, please refer to the installation instructions

Minimum R454B Space and CFM Requirements

Minimum Airflow[1]		
Unit	Q_{min}(CFM)	Q_{min}(m^3h)
LCM036	500	850
LCM048	500	850
LCM060	500	850
LCM074	500	850
LCM036 W/ Humidtrol	500	850
LCM048 W/ Humidtrol	500	850
LCM060 W/ Humidtrol	500	850
LCM074 W/ Humidtrol	500	850

[1] ***NOTE -** The minimum airflow is the lowest CFM allowed during venting operation (leak mitigation).*

Refrigerant Charge R-454B		
Unit	M_c(lbs)	M_c(kg)
LCM036	4.50	2.0412
LCM048	5.0625	2.2963
LCM060	5.0625	2.2963
LCM074	5.0625	2.2963
LCM036 W/ Humidtrol	5.6875	2.5798
LCM048 W/ Humidtrol	5.5625	2.5231
LCM060 W/ Humidtrol	5.5625	2.5231
LCM074 W/ Humidtrol	5.5625	2.5231

Minimum Room Area of Conditioned Space[2]		
Unit	TA_{min}(ft^2)	TA_{min}(m^2)
LCM036	46.73	4.34
LCM048	75.44	7.01
LCM060	71.19	6.61
LCM074	70.31	6.53
LCM036 W/ Humidtrol	78.52	7.29
LCM048 W/ Humidtrol	76.17	7.08
LCM060 W/ Humidtrol	70.02	6.51
LCM074 W/ Humidtrol	66.07	6.14

[2] ***NOTE -** The minimum room area of conditioned space is the smallest area the unit can service.*

Altitude Adjustment Factor[3]									
Halt	0	200	400	600	800	1000	1200	1400	1600
AF	1	1	1	1	1.02	1.05	1.07	1.1	1.12
Halt	1600	1800	2000	2200	2400	2600	2800	3000	3200
AF	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.4

[3] ***NOTE -** Use the Altitude Adjustment Factor to adjust the values in the tables above to different altitudes. Find the relevant altitude above sea level in the two "Halt" rows and then multiply the value needed from the tables above by the altitude factor number. Example: For the minimum airflow in CFM for an LCM036 at 1000 ft. above see level, multiply 500 by 1.05 to get 525 CFM as the new Q_{min}.*

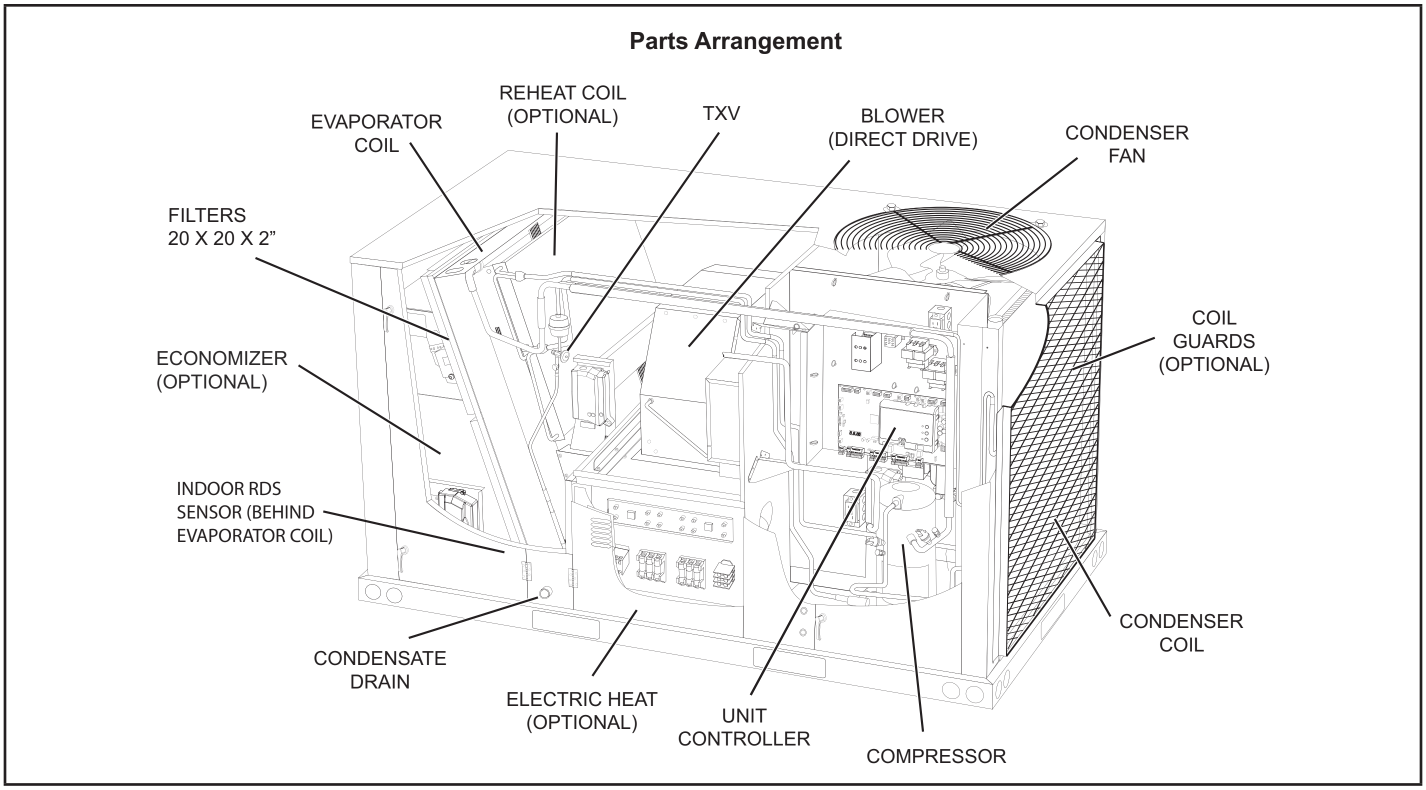


FIGURE 1

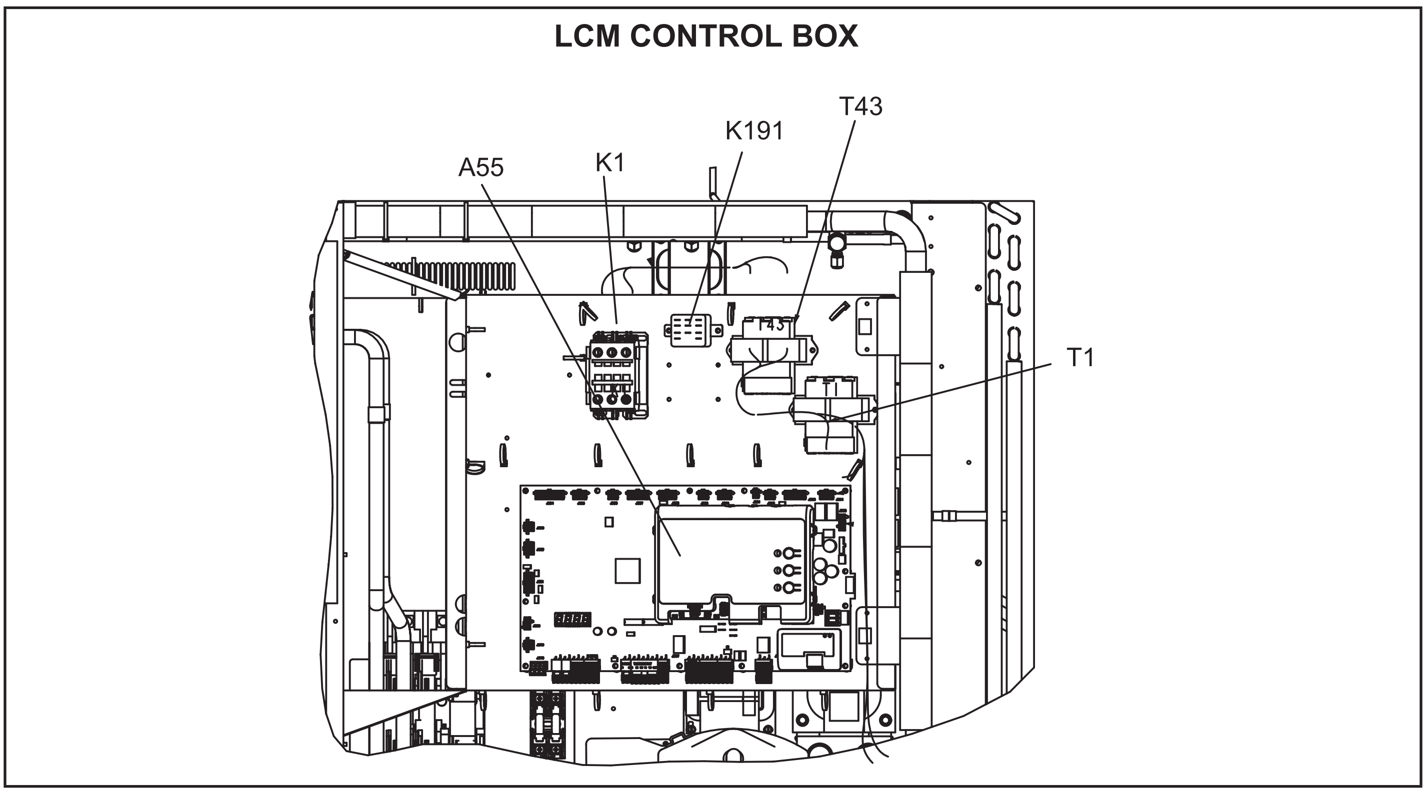


FIGURE 2

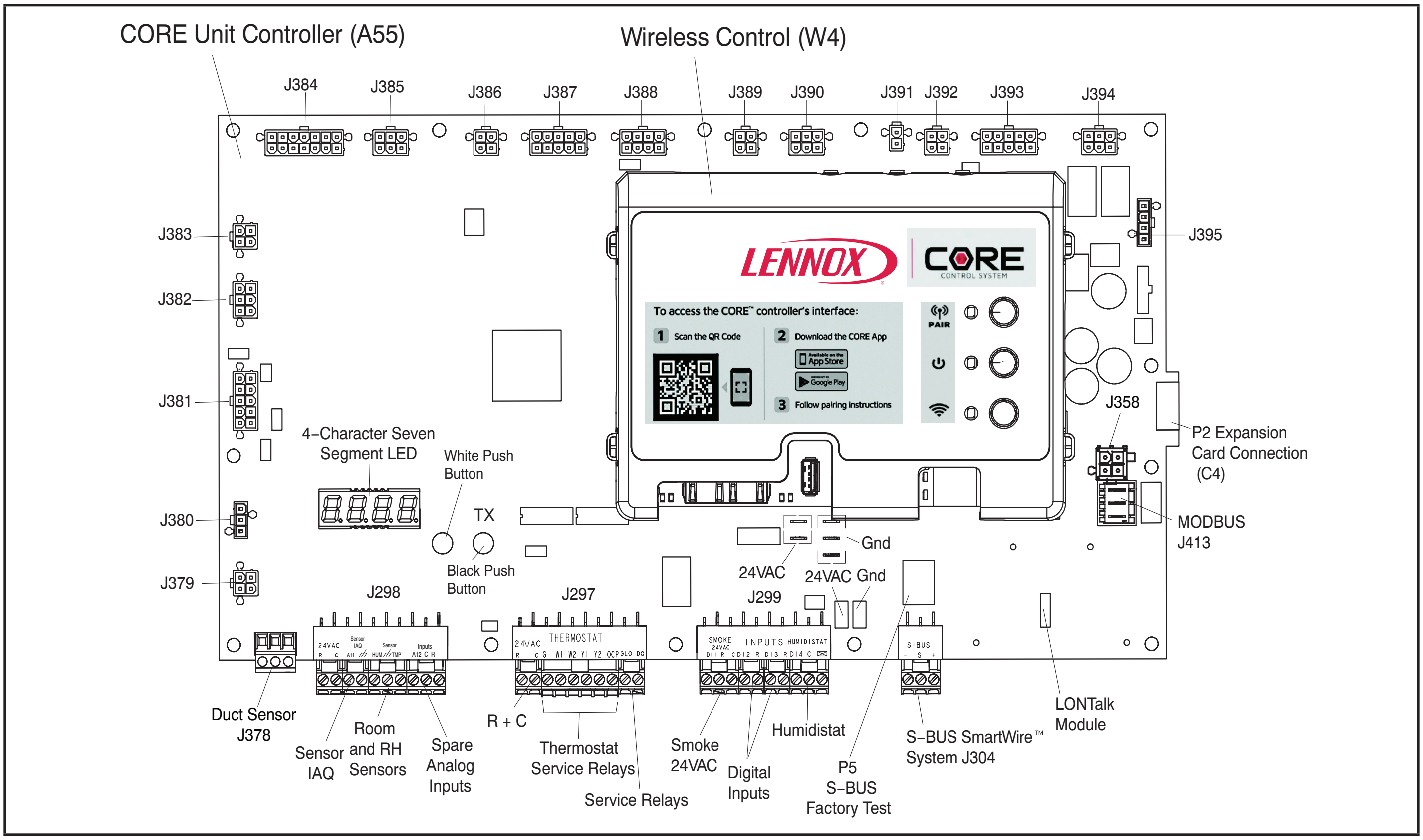


FIGURE 3

I-UNIT COMPONENTS

All 3 through 6 ton (7.5 through 30 kW) units are configure to order units (CTO). The LCM 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

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

1-Control Transformers T1/T43

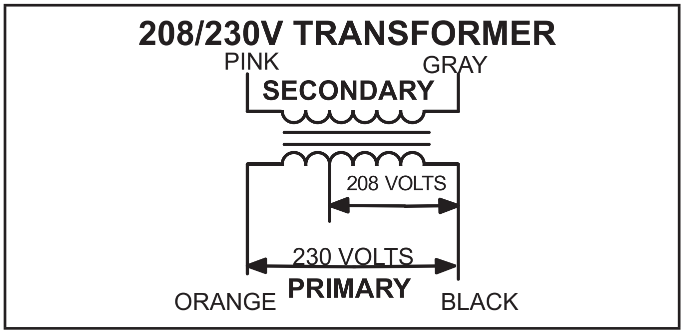


FIGURE 4

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 (Y) 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 icon.

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 LCM 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 are energized.

B-Cooling Components

All units use a single cooling circuit consisting of a variable speed compressor, fin/tube 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 evaporator is also equipped with enhanced fins and rifled tubing. 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 ± 10 psig (4412 ± 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 ± 5 psig (276 ± 34 kPa) and automatically resets at 90 psig ± 5 psig (621 kPa ± 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°F to shut-off compressor operation. The auto-reset switch closes when the compressor casing temperature falls to 151-187°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.

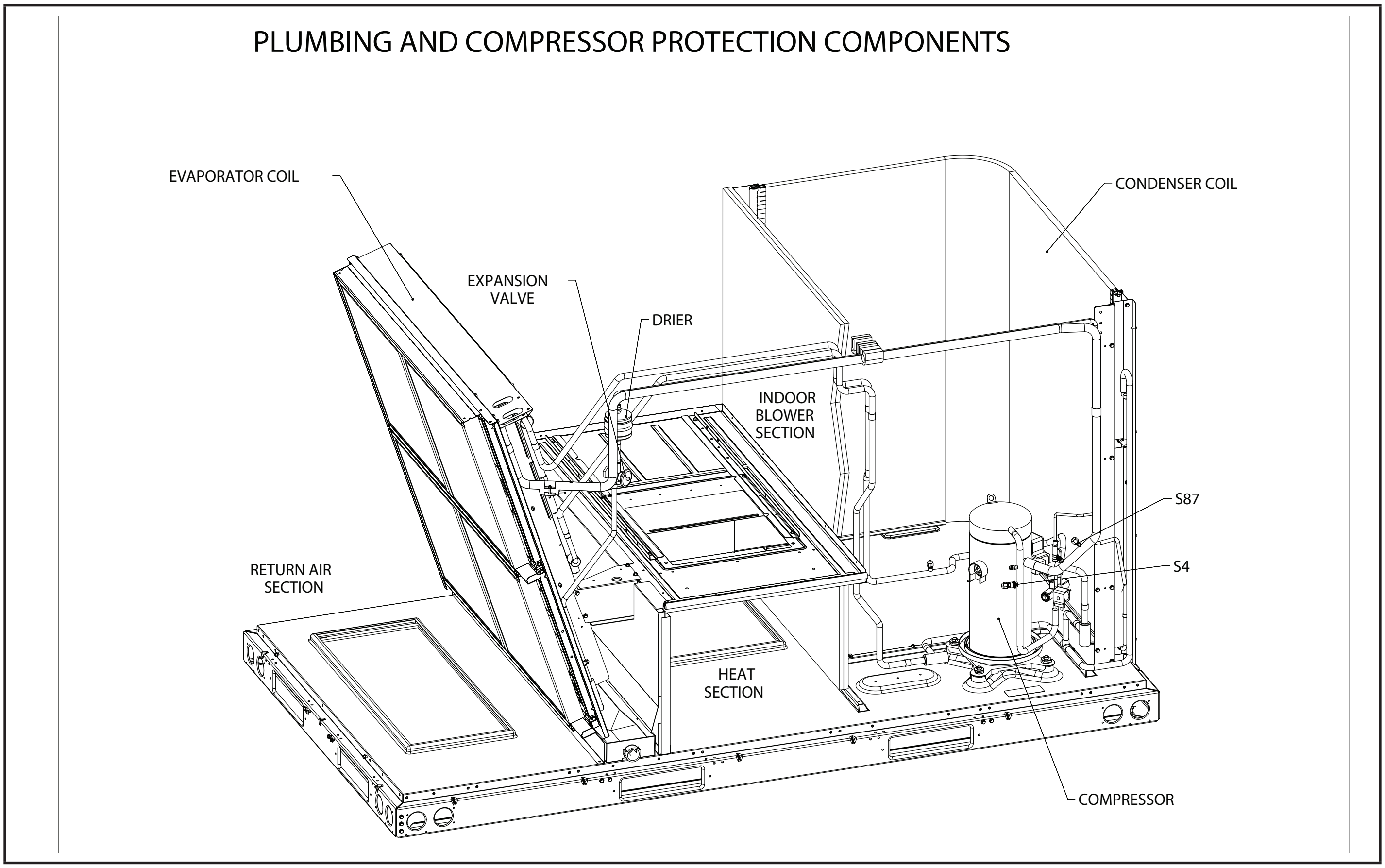


FIGURE 5

4-Thermistors

Units are equipped with four factory-installed thermistors (RT42, RT44, RT46, and RT48) located on different points on the refrigerant circuit.

The thermistors provide the Unit Controller with constant temperature readings of four 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.

TABLE 1
THERMISTOR LOCATION

Sensor	Figure
RT42, RT46	FIGURE 6
RT44	FIGURE 7
RT48	FIGURE 8

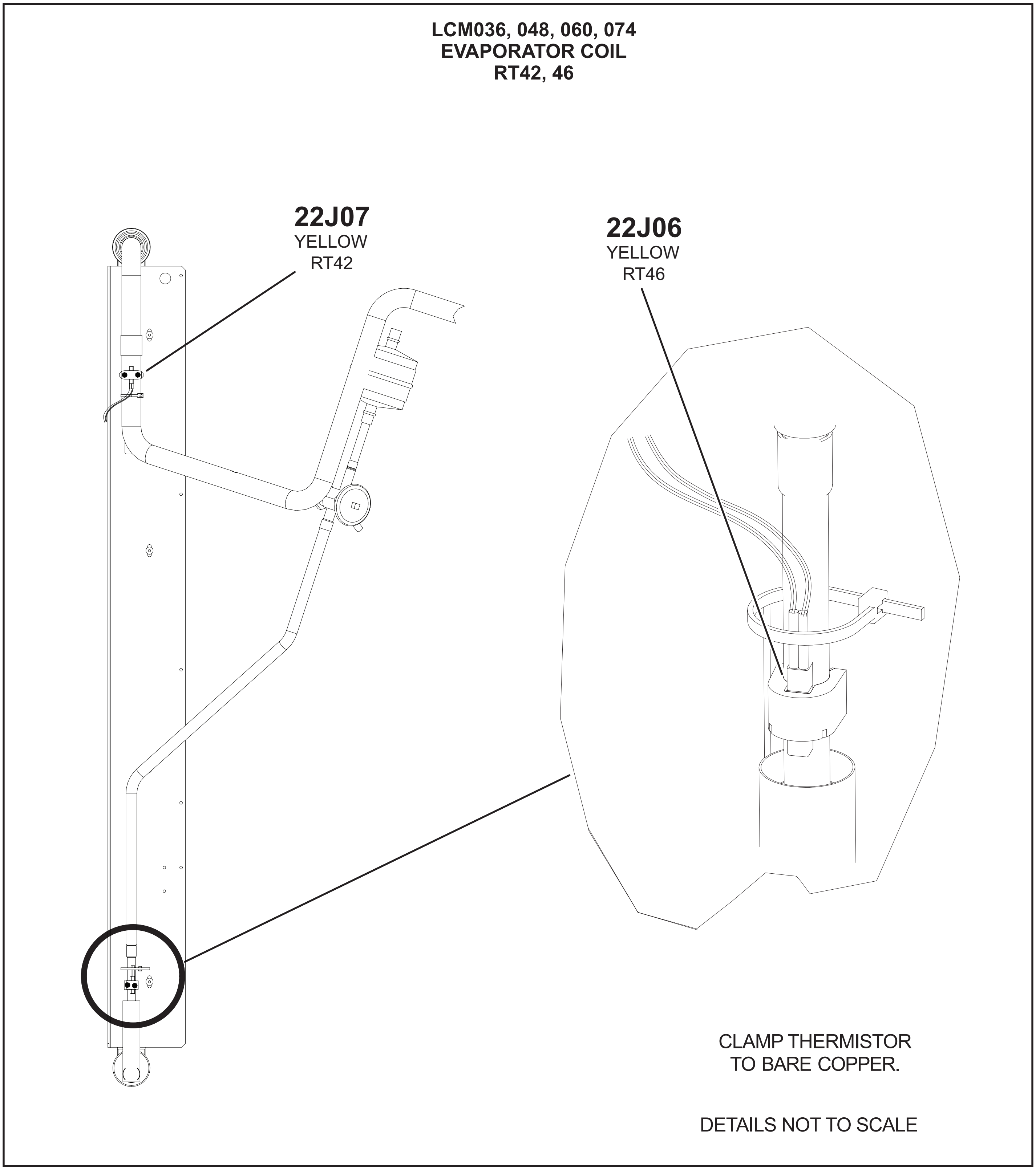

LCM036, 048, 060, 074
EVAPORATOR COIL
RT42, 46
22J07
YELLOW
RT42
22J06
YELLOW
RT46
CLAMP THERMISTOR
TO BARE COPPER.
DETAILS NOT TO SCALE

FIGURE 6

LCM036, 048, 060, 074
CONDENSER COIL
(RT44)

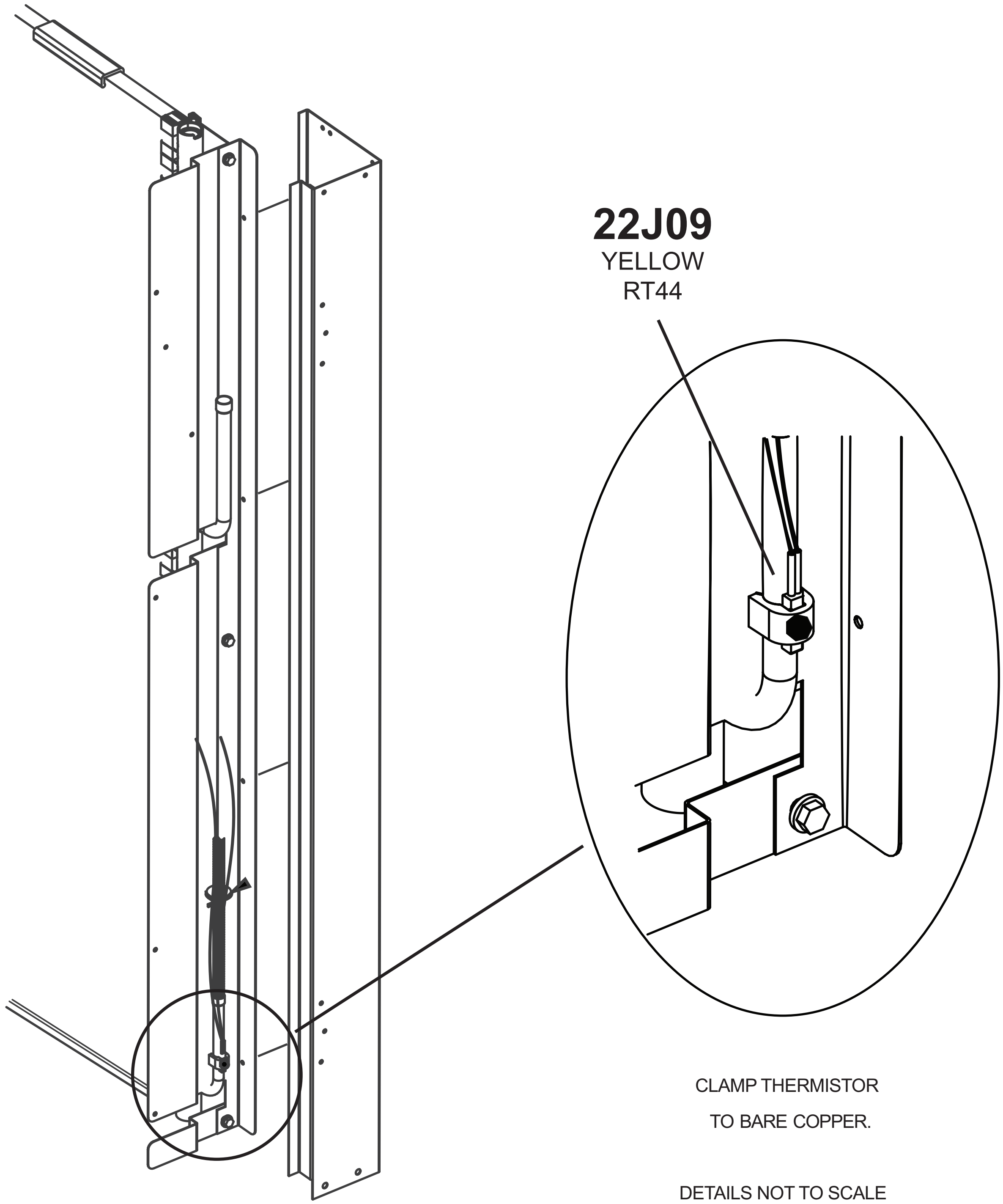


FIGURE 7

LCM036, 048, 060, 074
CONDENSER COIL
RT48

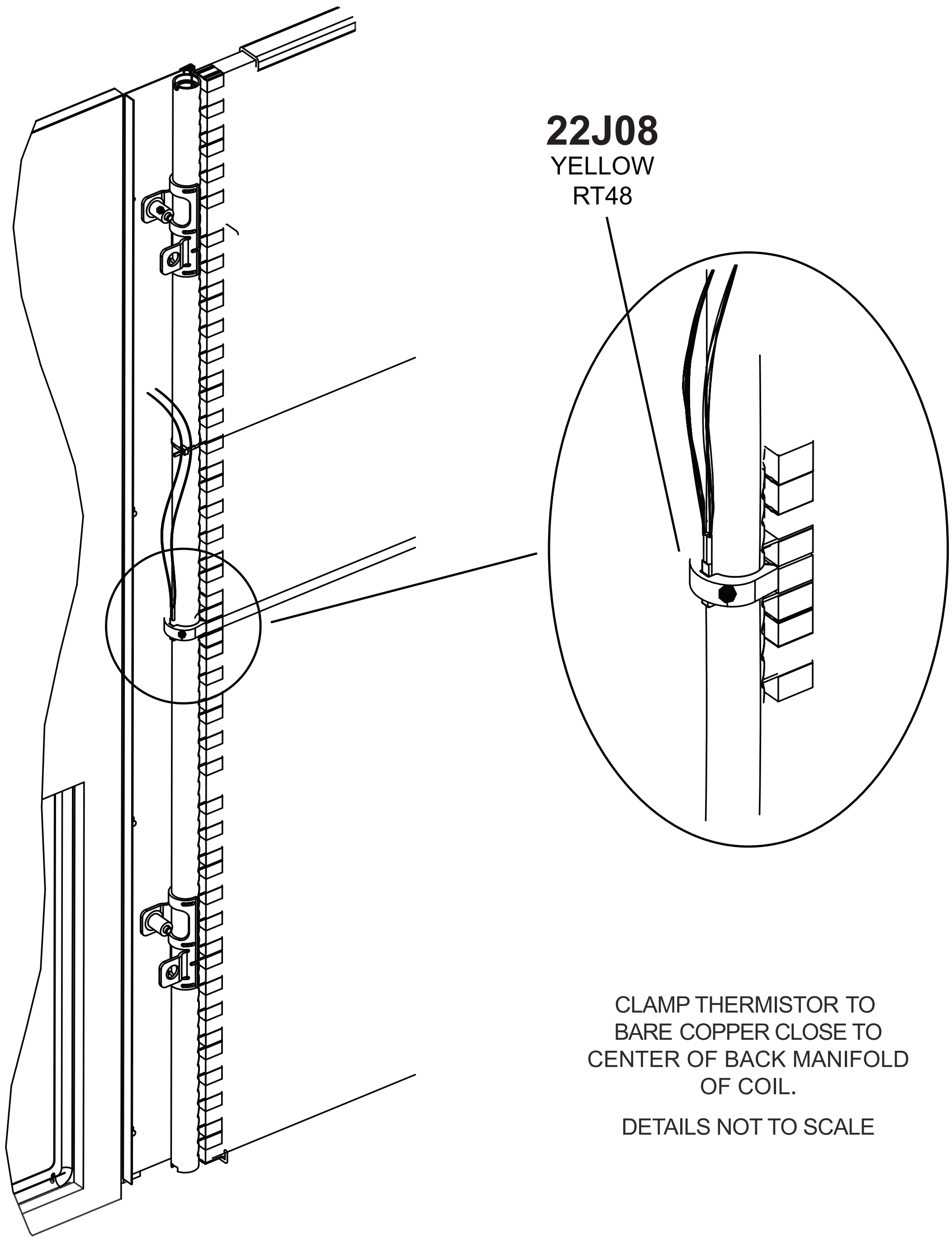


FIGURE 8

5-RDS Sensors

Units are equipped with factory-installed RDS Sensors located on different points on the unit. The RDS sensors provide the Unit Controller with continuous readings for leaked refrigerant concentration levels and sensor health status (Good or Fault). These readings are used to modify unit operation to disperse the leaked refrigerant and to remove possible ignition sources. In addition, the Unit Controller uses these readings to initiate alarms to alert the operator of a refrigerant leak or faulty sensor(s).

Each sensor must be specifically placed for proper unit operation and to initiate valid alarms. To identify sensor locations see TABLE 2.

TABLE 2

RDS Sensor Figures

Model	Qty.	Type	Figure
LCM036-074	1 sensor	INDOOR SENSOR	FIGURE 9

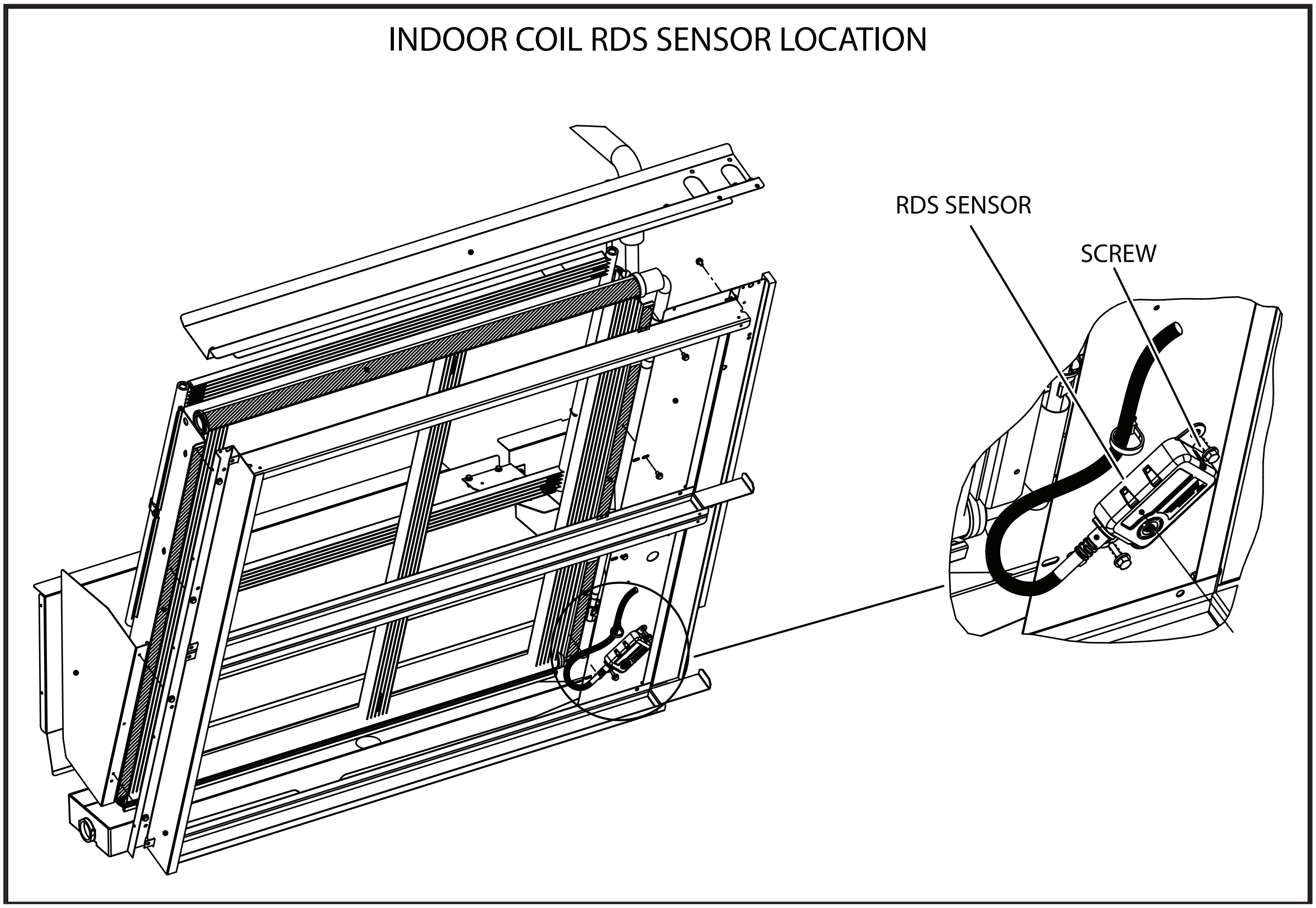


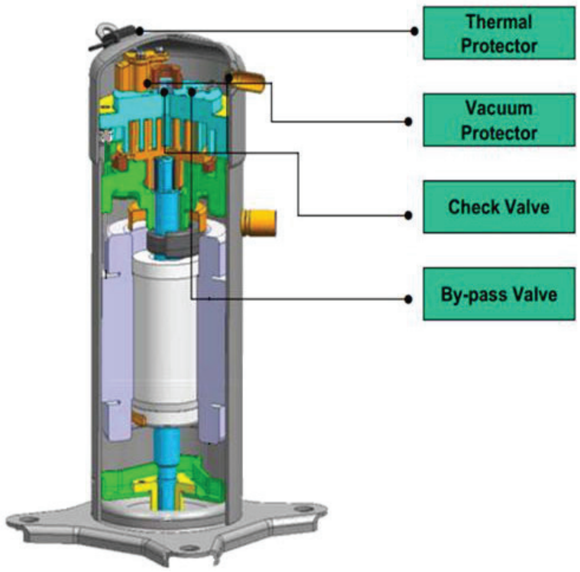
FIGURE 9

> **⚠ 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-Variable Speed Compressor B1

All units use one variable speed scroll compressor. See “SPECIFICATIONS” and “ELECTRICAL DATA” (table of contents) or compressor nameplate for compressor specifications. Refer to FIGURE 10 for compressor safety devices and FIGURE 11 for compressor diagnostics.

COMPRESSOR SAFETY DEVICES



Thermal Protector — Temperature protection: Opens 248±9°F; Closes 168.8 ±18°F

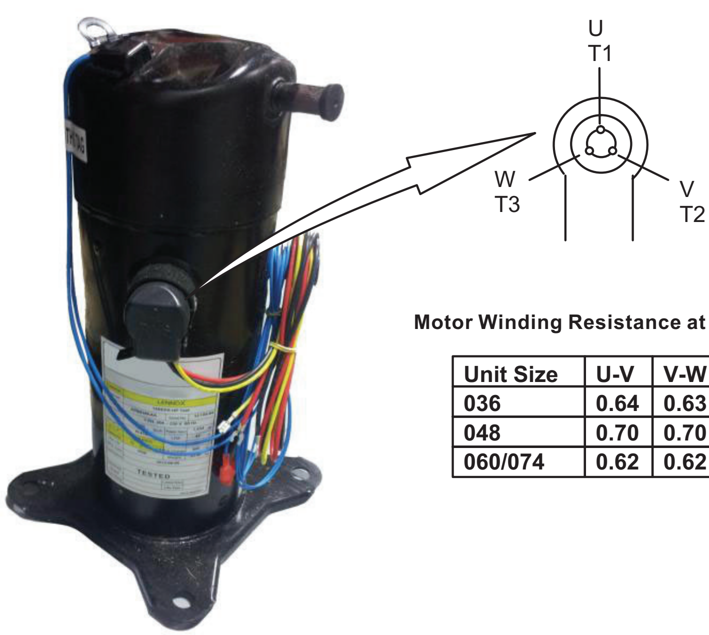
Vacuum Protector — Low suction pressure protection: Opens below 20 psig

Check Valve — Prevents reverse rotation after stop and increased Cd value

By-pass Valve — By-passes liquids during compression.

FIGURE 10

COMPRESSOR DIAGNOSTICS



Motor Winding Resistance at 77°F (+/-7%)

Unit Size	U-V	V-W	W-U
036	0.64	0.63	0.63
048	0.70	0.70	0.70
060/074	0.62	0.62	0.62

FIGURE 11

7-Compressor Inverter A192

⚠ WARNING

Electrical Hazard

High Voltage

Wait 7 Minutes

Electrical components may hold charge. Do not remove this panel or service this area for 7 minutes after the power has been removed.

See FIGURE 12 for compressor inverter controls located behind the hinged control panel.

The inverter varies the compressor speed (capacity) by converting an AC input signal to a pulse high voltage DC output. To initiate cooling operation, the Unit Controller (A55) supplies a control signal to the inverter (A192) via a MODBUS protocol. Inverter status and diagnostics are continuously monitored and reported to the Unit Controller such as:

-Improper Unit Controller input voltage compared to unit model number

-High input voltage

-Low input voltage

-Imbalanced input voltage

-A communication issue - check MODBUS communication wire for good connections between the Unit Controller and the inverter board. See TABLE 3 for inverter-related alarms. Inverter component wire routing is shown in FIGURE 13.

⚠ WARNING

Electrical shock hazard. Variable speed compressor components must be grounded. Failure to follow these precautions could cause electrical shock resulting in injury or death.

INVERTER CONTROLS BEHIND THE HINGED CONTROL PANEL

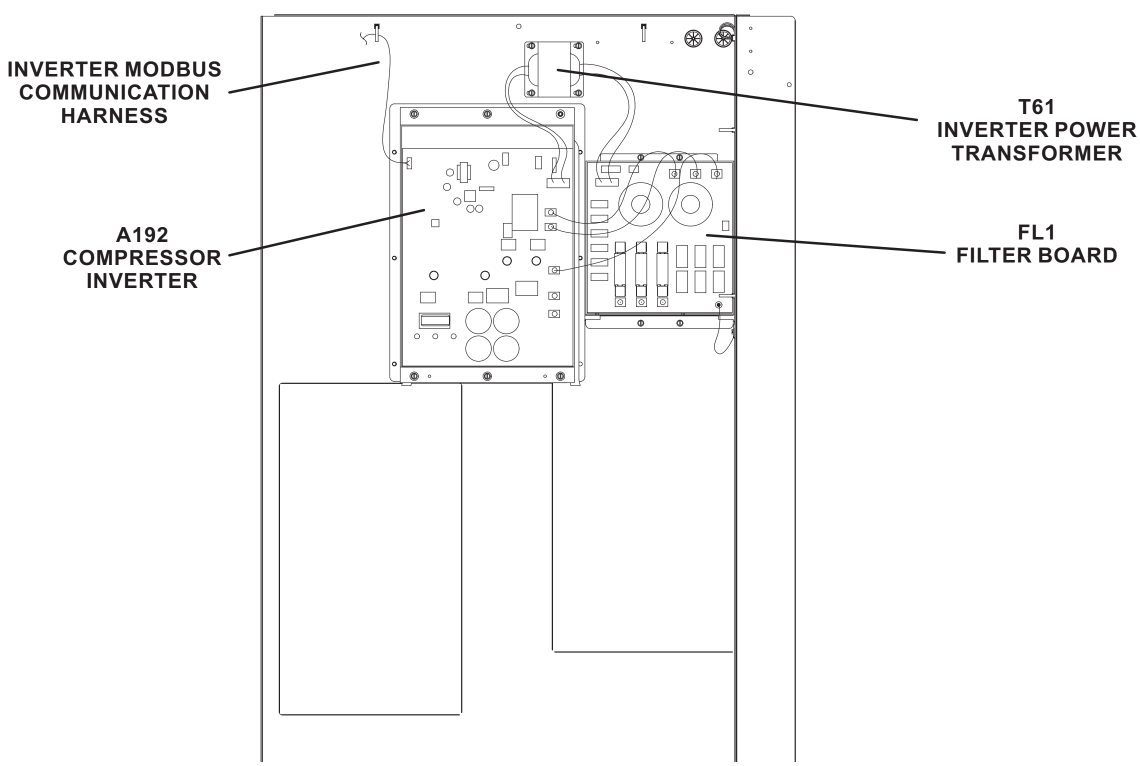


FIGURE 12

TABLE 3

INVERTER-RELATED ALARMS		
ALARM CODE	**DISPLAY MESSAGE**	**EVENT ACTION**
187	INVERTER LOW LEVEL ALARM	Possible alarming values for Prodigy Alarm 187 are: 12 - High compressor input current 13 - High heat sink temperature 14 - High PFC input current Alarm might be caused by outdoor fan abnormal operation, high ambient conditions, dirty outdoor coil, refrigerant overcharge, or a blocked heat sink. The compressor speed will slow down until the temperature or current lowers, then the compressor will speed up again. If the alarm continues after outdoor conditions have moderated, check the fan, charge and coil. Alarm 187 will automatically clear when minimum off time expires. **REFER TO TROUBLE SHOOTING GUIDE IN SERVICE MANUAL FOR MORE INFORMATION.**
188	INVERTER HIGH LEVEL ALARM	Possible alarming values for Prodigy Alarm 188 are: 21 - Peak DC current - Intelligent Power Module (IPM) fault condition (follow 12) 22 - Maximum current reached lockout 23 - DC link low voltage 26 - Locked rotor 28 - DC link high voltage 29 - Compressor over-current 61 - Low outdoor ambient inverter lockout 62 - High heat sink temperature lockout 75 - Low input voltage No action required. Compressor stops for the duration of the minimum run time (anti-short-cycle delay of 180 seconds). Unit shuts down after ten occurrences in one hour and Alarm 189 is initiated. Alarm 188 will automatically clear when inverter error clears. **REFER TO TROUBLE SHOOTING GUIDE IN SERVICE MANUAL FOR MORE INFORMATION.**
189	INVERTER FATAL ALARM	Possible alarming values for Prodigy Alarm 189 are the same as alarm 188. Alarm 189 will clear upon manual reset. **REFER TO TROUBLE SHOOTING GUIDE IN SERVICE MANUAL FOR MORE INFORMATION.**
190	INVERTER COMMUNICATION ERROR	Unable to communicate with inverter. Unit Controller will disable compressor operation. Replace communication cable between inverter and M3 unit controller. If alarm continues, replace M3 unit controller or inverter.
191	INVERTER VOLTAGE MISMATCH	Unit Controller will disable compressor operation. Replace with correct inverter part.

8-Filter Board FL1

The filter, also called a line or noise filter, is used to prevent static interference from outside sources. In addition, the filter prevents electrical interference from transferring to other appliances. The input voltage should read the same value as the output voltage. The same filter is used on all unit sizes and voltages.

9-Inverter Transformer T61

This transformer is used to supply power to the inverter's low voltage logic circuit. It also provides electrical isolation to protect sensitive components from electrical surges.

10-Inverter Heat Sink

An inverter heat sink is located on the back side of the wall between the compressor and outdoor fan sections. The outdoor fan draws air across the heat sink to cool inverter control board components. See FIGURE 14.

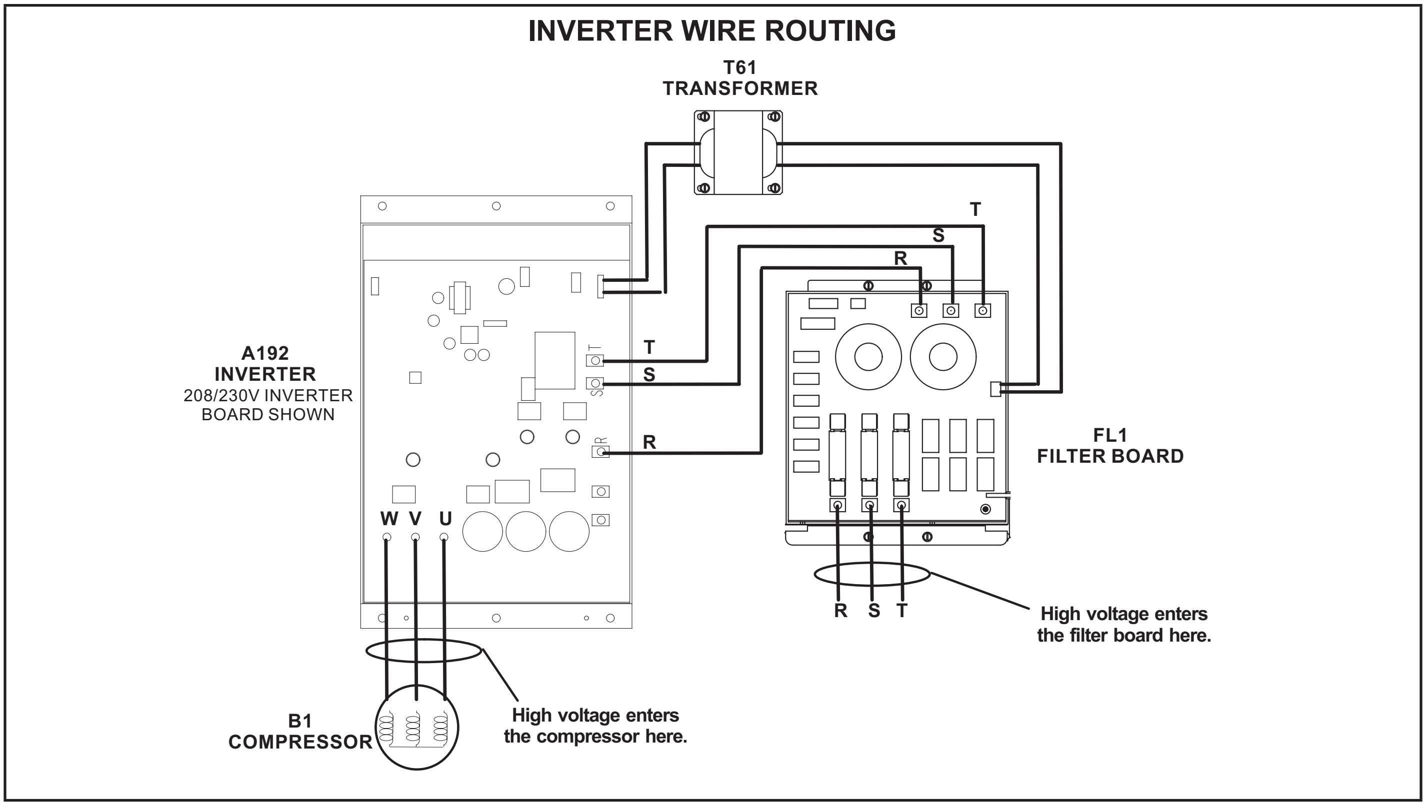


FIGURE 13

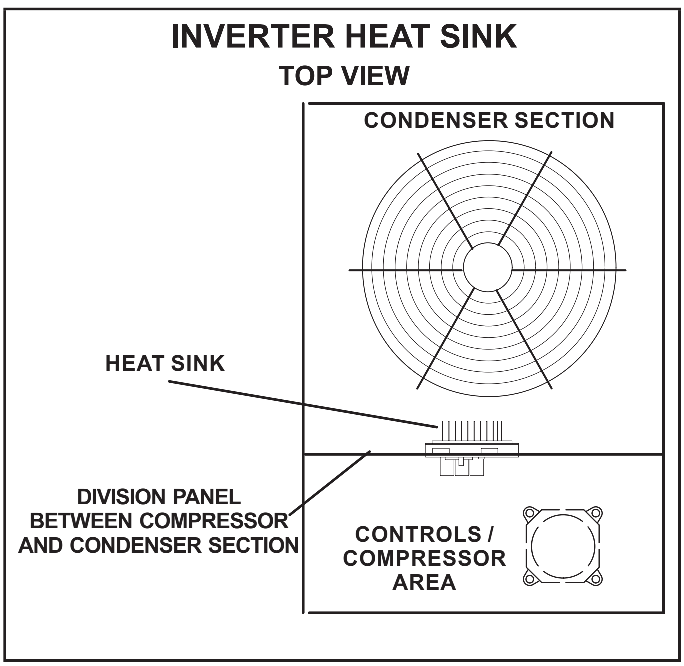


FIGURE 14

C-Blower Compartment

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.

1-Indoor Blower Motor B3

All direct drive blower motors are electronically commutated, brushless, DC motors. The motors are powered with high voltage 3-phase AC power. 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 pre-mounted aluminum impellers.

⚠ 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.

A-Blower Operation

Refer to the Unit Controller Setup Guide to energize blower. Use the mobile service app menu; see SERVICE > TEST.

⚠ 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 factoryinstalled, 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 startup.

B-Determining Unit CFM

CFM is calculated using a supplied pressure transducer and can be viewed in the mobile service app. CFM can also be manually checked as follows:

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

IMPORTANT - *A low speed adjustment less than 2/3 of high speed will improve humidity removal; refer to product data for more information.*

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 15.

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

3 - Measure the indoor blower wheel RPM.

4 - Referring to the blower tables in the front of this manual, use static pressure and RPM readings to determine unit CFM. Apply the optional accessory air resistance.

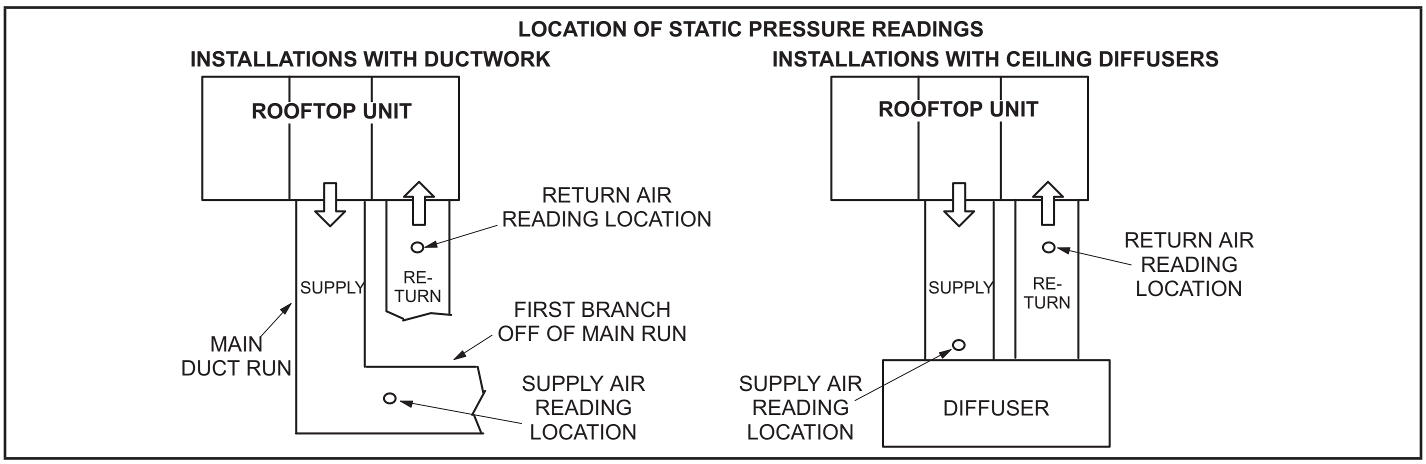


FIGURE 15

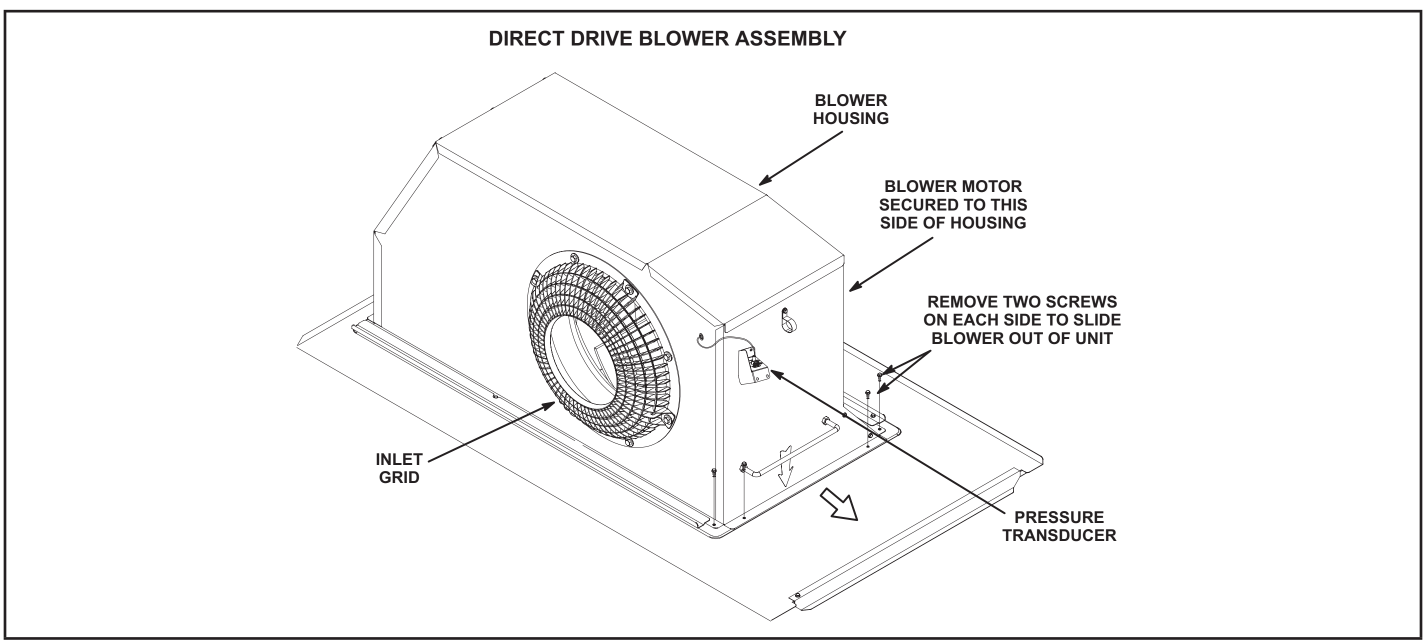


FIGURE 16

C-Adjusting Unit CFM

The supply CFM can be adjusted by changing Unit Controller settings. Refer to TABLE 4 for menu paths and default settings. Record any CFM changes on the parameter settings label located on the inside of the compressor access panel.

⚠ CAUTION

The BLOWER CALIBRATION process starts the indoor blower at operational speeds and moves the economizer damper blades. Before starting this process, replace any access panels and close all unit doors except compressor compartment door.

Blower calibration is required only on units that are newly installed or if there is a change in the duct work or air filters after installation. Use the mobile service app to navigate to the SETUP>TEST & BALANCE>BLOWER menu. After the new CFM values are entered, select START CALIBRATION. The blower calibration status is displayed as a % complete. Upon successful completion, the mobile service app will display CALIBRATION SUCCESS and go back to the blower calibration screen.

IMPORTANT - *The default value for Cooling Low CFM is lower than a traditional singe- 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)*

TABLE 4
DIRECT DRIVE PARAMETER SETTINGS

Parameter	Factory Setting				Field Setting	Description
	036	048	060	074		
NOTE - *Any changes to Smoke CFM setting must be adjusted before the other CFM settings. Use SETTINGS > RTU OPTIONS > EDIT PARAMETERS = 12*						
BLOWER SMOKE CFM	1200	1600	2000	2400	CFM	Smoke blower speed
SETUP > TEST & BALANCE > BLOWER						
BLOWER HEATING HIGH CFM	1350	1600	2000	2000	CFM	High heat blower speed
BLOWER COOLING HIGH CFM	1100	1450	1825	2200	CFM	High cooling blower speed
BLOWER COOLING LOW CFM	575	750	950	950	CFM	Low cooling blower speed
BLOWER VENTILATION CFM	575	750	950	1150	CFM	Ventilaton blower speed
SETUP > TEST & BALANCE > DAMPER						
BLOWER HIGH CFM DAMPER POS %	0%	0%	0%	0%	%	Minimum damper position for high speed blower operation.
BLOWER LOW CFM DAMPER POS%	0%	0%	0%	0%	%	Minimum damper position for low speed blower operation.
BLOWER EXHAUST DAMPER POS%	50%	50%	50%	50%	%	Minimum damper position for power exhaust operation.
SETTINGS > RTU OPTIONS > EDIT PARAMETERS = 216						
POWER EXHAUST DEADBAND %	10%	10%	10%	10%	%	Deadband % for power exhaust operation.
SETTINGS > RTU OPTIONS > EDIT PARAMETER = 10 (Applies to Thermostat Mode ONLY)						
FREE COOLING STAGE-UP DELAY	300 sec.	300 sec.	300 sec.	300 sec.	sec	Number of seconds to hold indoor blower at low speed before switching to indoor blower at high speed.

Installer - Circle applicable unit model number and 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 17. See FIGURE 18 for vestibule parts arrangement.

ELECTRIC HEAT ELEMENTS

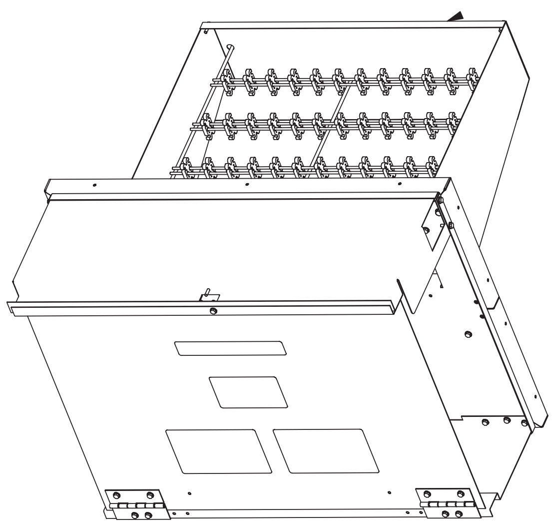


FIGURE 17

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

ack panel of the electric heat section above the heatingelements. 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 5 for S15 set points. Set points are factory set and not adjustable.

TABLE 5

Unit kW (Voltage)	S15 Opens ° F	S15 Closes ° F
7.5 (Y, G, J)	160	120
15 (Y)	170	130
15 (G, J)	160	120
22.5 (Y, G, J)	160	120
30 (Y)	140	100
30 (G, J)	150	110

ELECTRIC HEAT COMPONENTS

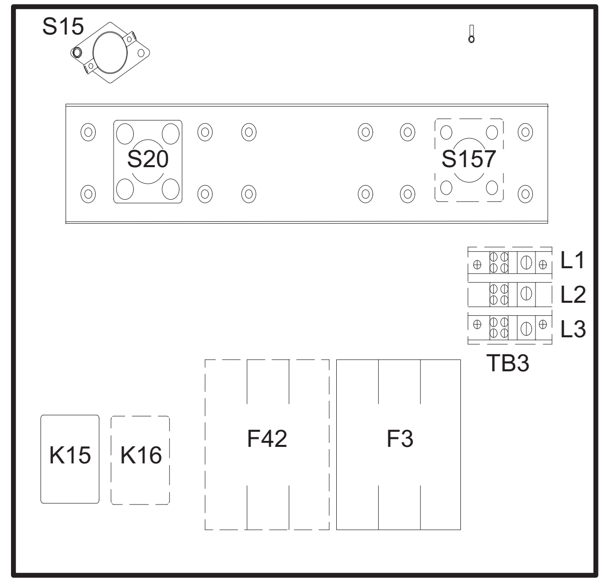


FIGURE 18

3-High Temperature Limit S20 and S157 (Secondary)

S20 and S157 are SPST N.C. manual-reset thermostat s. S20 and S157 are wired in series with the heating elements. See E1EH wiring diagrams. When S20 or S157open, 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 220F + 6F (104C + 3.3C) on a temperature rise and can be manually reset when temperature falls below 160F (71.0C). See FIGURE 18 for location.

4-Terminal Strip TB2

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

5-Terminal Strip TB3

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 18.

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 F3

Fuse F3 is housed in a fuse block which holds two or three fuses. Each F3 fuse is connected in series with each leg of electric heat. FIGURE 18 and TABLE 6 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 LCM 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 curb (T1CURB-AN or C1CURBAN).

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, consul t 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 6

Unit	Voltage / Phase	Fuse	F42 Quantity	F3 Quantity
E1EH0075	208/230V-3P	25 A-250V	-	3
	460V-3P	15 A-600V	-	3
	575V-3P	15 A-600V	-	3
E1EH0150	208/230V-3P	50 A-250V	-	3
	460V	25 A-600V	-	3
	575V	20 A-600V	-	3
E1EH0225	208/230V-3P	45 A-250V	3	3
	460V-3P	35 A-600V	-	3
	575V-3P	30 A-600V	-	3
E1EH0300	208/230V-3P	60 A-250V	3	3
	460V-3P	50 A-600V	-	3
	575V-3P	40 A-600V	-	3

B-Refrigerant Leak Detection System

System Test

1 - Initiate Refrigerant Leak Detection System Test by using the following mobile service app menu path:

RTU MENU > COMPONENT TEST > LEAK DETECTION > START TEST

2 - Ensure that indoor blower and outdoor fan are energized.

C-Cooling Start up

1 - Initiate full load cooling operation using the following mobile service app menu path:

SERVICE > TEST > COOL > COOL 3 (COOL 4 on 074U units)

***NOTE -** Refer to Cooling Operation section for ultra high efficiency unit operation in zone sensor mode.*

2 - Units contain one refrigerant circuit or stage.

3 - Unit is charged with R-454**B** refrigerant. See unit rating plate for correct amount of charge.

4 - Refer to charging section method to check refrigerant charge.

D-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.

E-Safety or Emergency Shutdown

Turn off power to unit. Close manual and main gas valves.

IV-CHARGING

A-Refrigerant Charge and Check - All-Aluminum Coil

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.

Refrigerant Charge R-454B		
Unit	M_c(lbs)	M_c(kg)
LCM036	4.50	2.0412
LCM048	5.0625	2.2963
LCM060	5.0625	2.2963
LCM074	5.0625	2.2963
LCM036 W/ Humidtrol	5.6875	2.5798
LCM048 W/ Humidtrol	5.5625	2.5231
LCM060 W/ Humidtrol	5.5625	2.5231
LCM074 W/ Humidtrol	5.5625	2.5231

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the unit is earth grounded prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the unit.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-of f valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

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

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

1 - Make sure outdoor coil is clean. Attach gauge manifolds and operate unit at full CFM in cooling mode with economizer disabled until system stabilizes (approximately five minutes). Make sure all outdoor air dampers are closed.

2 - Compare the normal operating pressures to the pressures obtained from the gauges. Check unit components if there are significant differences.

3 - Measure the outdoor ambient temperature and the suction pressure. Refer to the charging curve to determine a target liquid temperature.

***NOTE -** Pressures are listed for sea level applications.*

4 - Use the same thermometer to accurately measure the liquid temperature (in the outdoor section).

- If measured liquid temperature is higher than the target liquid temperature, add refrigerant to the system.
- If measured liquid temperature is lower than the target liquid temperature, recover some refrigerant from the system..

5 - Add or remove charge in increments. Allow the system to stabilize each time refrigerant is added or removed.

6 - Continue the process until measured liquid temperature agrees with the target liquid temperature. Do not go below the target liquid temperature when adjusting charge. Note that suction pressure can change as charge is adjusted.

7 - Example: At 95°F outdoor ambient and a measured suction pressure of 130psig, the target liquid temperature is 97°F. For a measured liquid temperature of 106°F, add charge in increments until measured liquid temperature agrees with the target liquid temperature.

V- SYSTEMS SERVICE CHECKS

A-Cooling System Service Checks

LCM 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 7 through TABLE 14.*

TABLE 7

036 Normal Operating Pressures - No Reheat - All-Aluminum Coil - 581223-01											
Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**
114	214	116	251	118	292	119	340	119	392	120	449
122	216	124	253	126	294	128	341	129	393	131	450
138	222	141	257	144	298	147	344	150	395	152	452
154	228	158	263	162	303	166	348	170	399	173	454

036 Charging Curve - No Reheat - All-Aluminum Coil - 581223-01

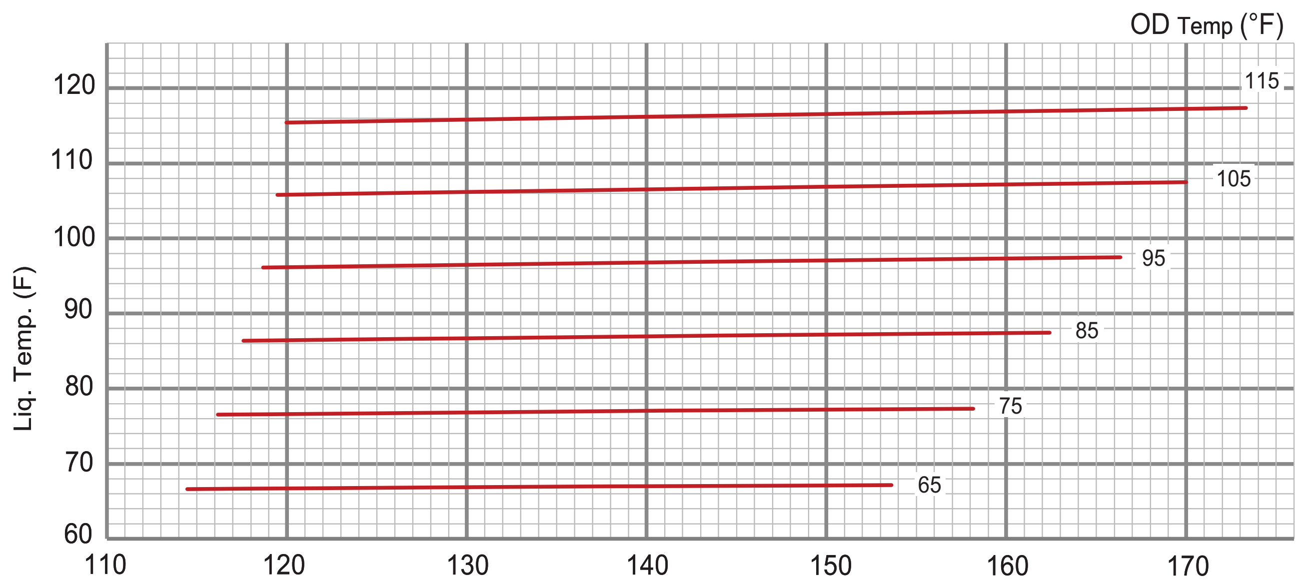


TABLE 8

048 Normal Operating Pressures - No Reheat - All-Aluminum Coil - 581224-01											
Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**
106	224	108	259	110	300	111	347	113	400	114	459
115	227	117	261	119	302	121	349	123	401	124	460
133	235	136	269	138	309	141	354	143	406	145	463
152	247	155	280	158	318	161	363	164	413	166	470

048 Charging Curve - No Reheat - All-Aluminum Coil - 581224-01

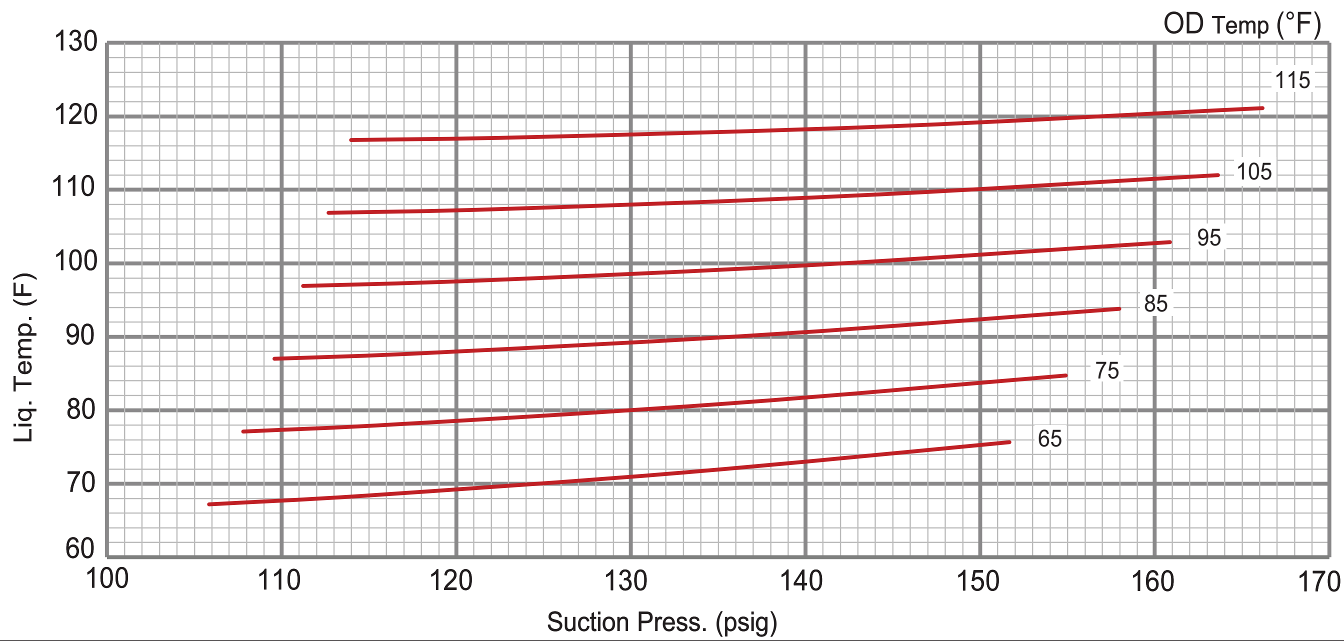


TABLE 9											
060 Normal Operating Pressures - No Reheat - All-Aluminum Coil - 581225-01											
Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
101	231	103	269	105	313	107	360	108	413	110	471
111	236	112	274	114	317	116	364	118	417	120	475
130	243	132	281	134	324	137	372	139	424	141	482
150	250	153	288	155	331	158	378	160	431	163	488

060 Charging Curve - No Reheat - All-Aluminum Coil - 581225-01

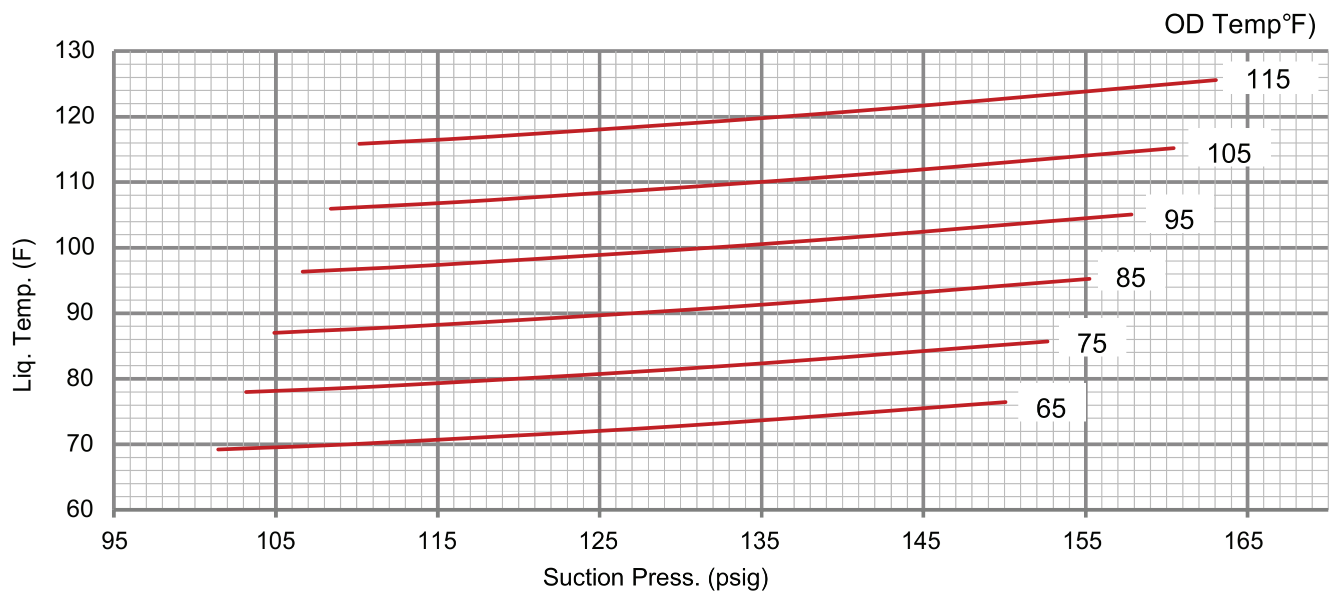


TABLE 10

074 Normal Operating Pressures - No Reheat - All-Aluminum Coil - 581226-01

Outdoor Coil Entering Air Temperature

65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**
101	237	102	279	104	324	106	370	109	419	113	470
108	242	110	284	112	329	115	375	118	424	122	475
126	252	128	294	131	338	134	384	138	433	142	484
146	260	149	302	152	346	156	393	161	441	166	492

074 Charging Curve - No Reheat - All-Aluminum Coil - 581226-01

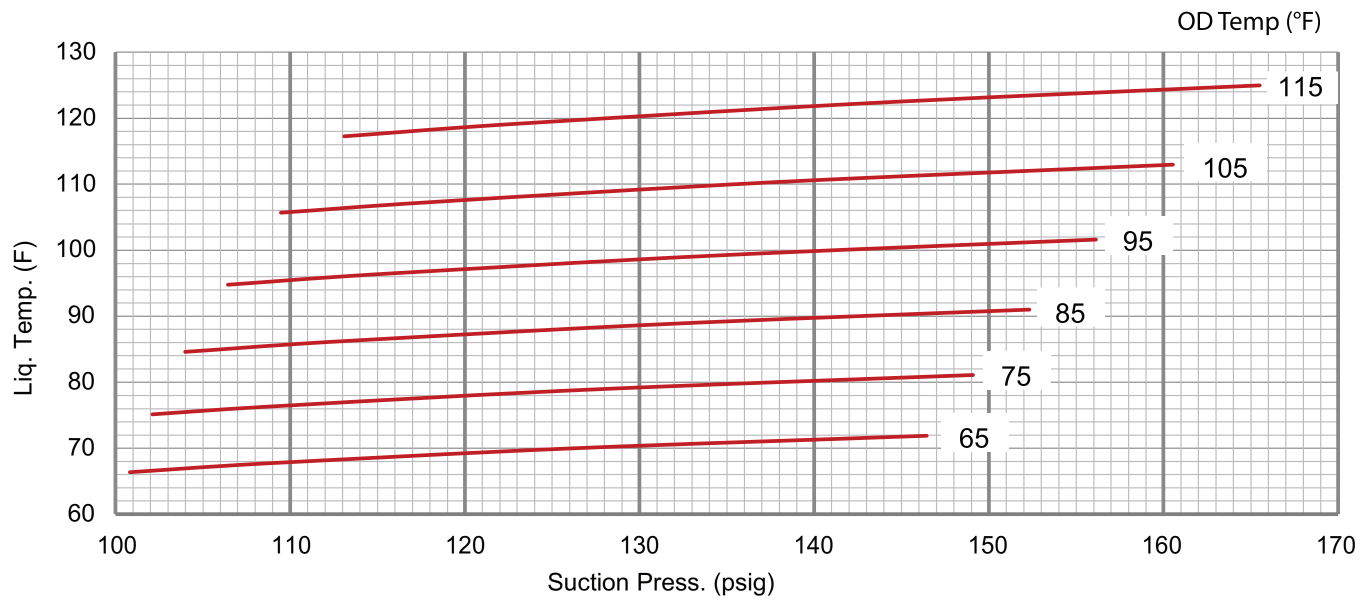


TABLE 11

036 Normal Operating Pressures - Reheat - All-Aluminum Coil - 581267-01											
Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**
113	217	115	252	117	291	119	335	120	384	122	437
120	219	123	254	125	293	127	338	129	386	131	440
136	224	140	259	143	299	146	343	148	392	151	445
154	229	158	264	162	304	166	348	169	397	173	451

036 Charging Curve - Reheat - All-Aluminum Coil - 581267-01

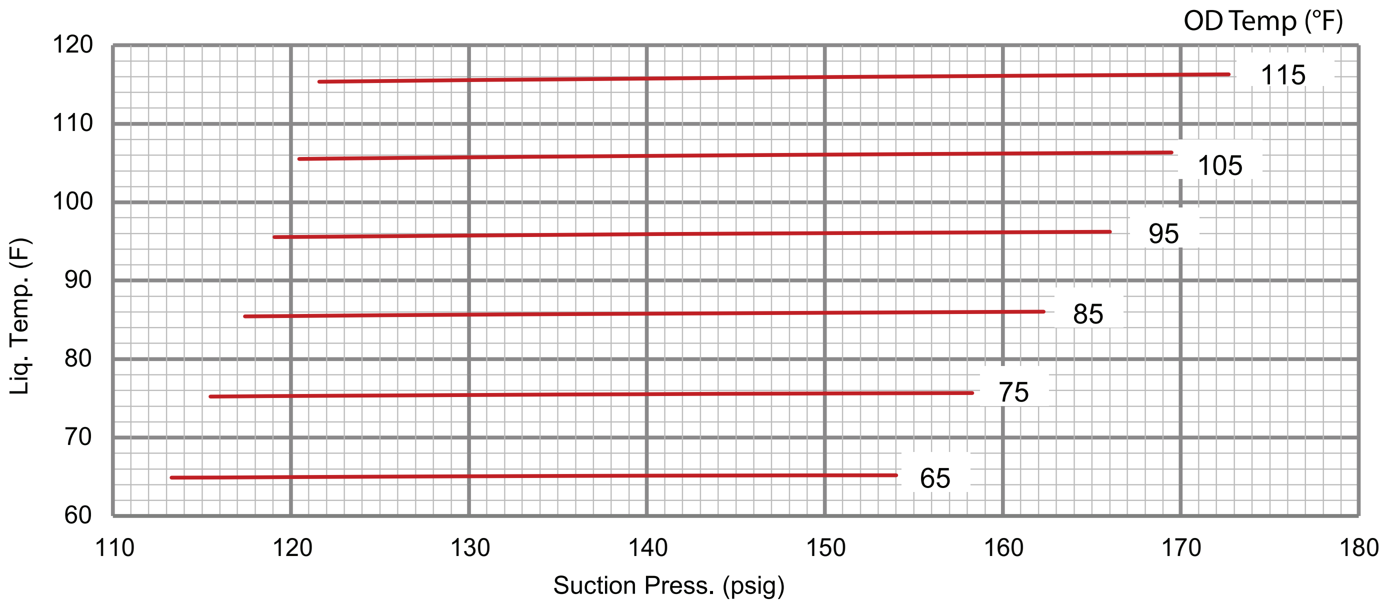


TABLE 12											
048 Normal Operating Pressures - Reheat - All-Aluminum Coil - 581268-01											
Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**
110	228	112	264	114	304	116	348	117	396	118	448
118	232	120	268	122	309	124	353	126	401	127	454
135	239	137	276	140	317	143	362	145	411	147	464
154	245	157	283	160	324	163	370	166	420	169	473

048 Charging Curve - Reheat - All-Aluminum Coil - 581268-01

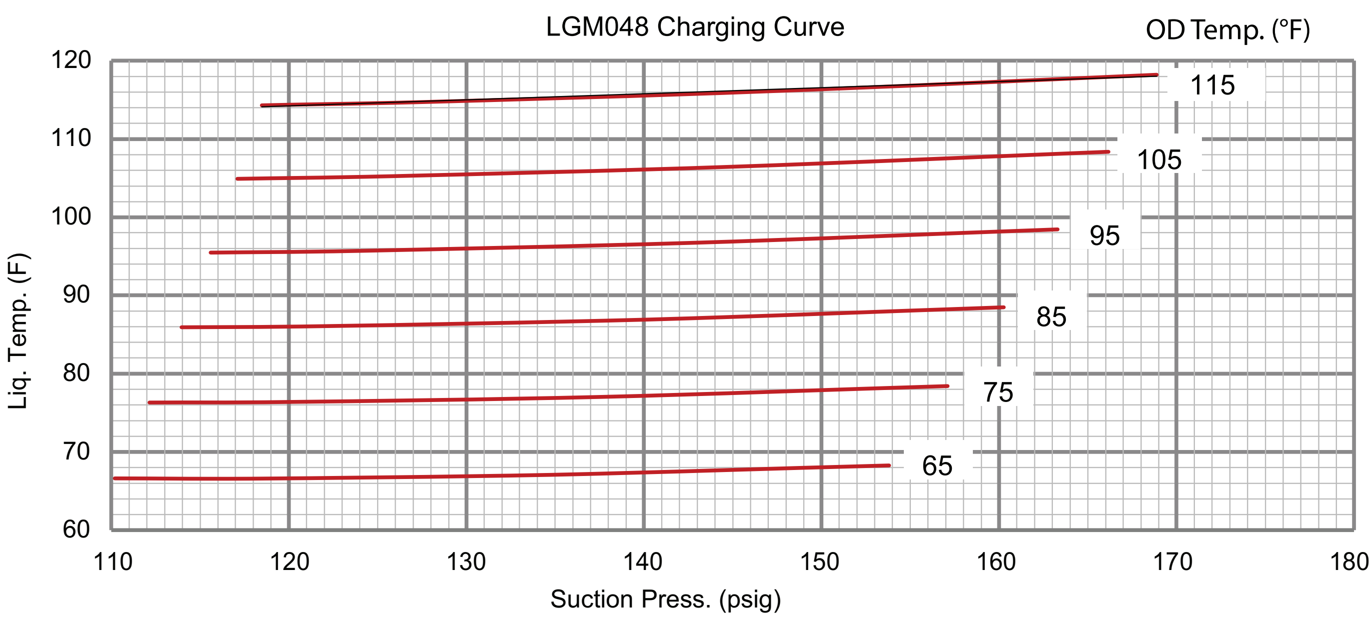


TABLE 13

060 Normal Operating Pressures - Reheat - All-Aluminum Coil - 581269-01											
Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**
109	233	110	269	112	308	114	352	116	400	119	453
117	241	118	277	120	318	122	363	124	412	127	465
133	253	135	291	137	333	139	380	142	431	145	486
153	259	155	299	157	344	159	392	162	445	165	502

060 Charging Curve - Reheat - All-Aluminum Coil - 581269-01

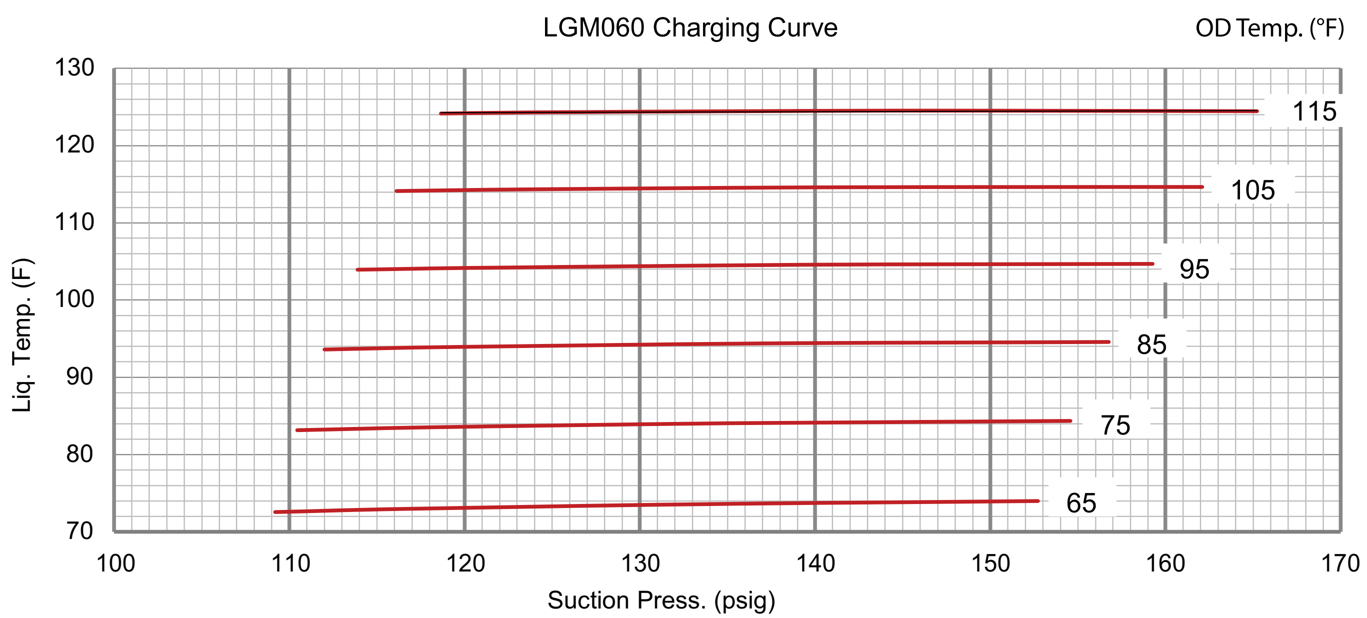
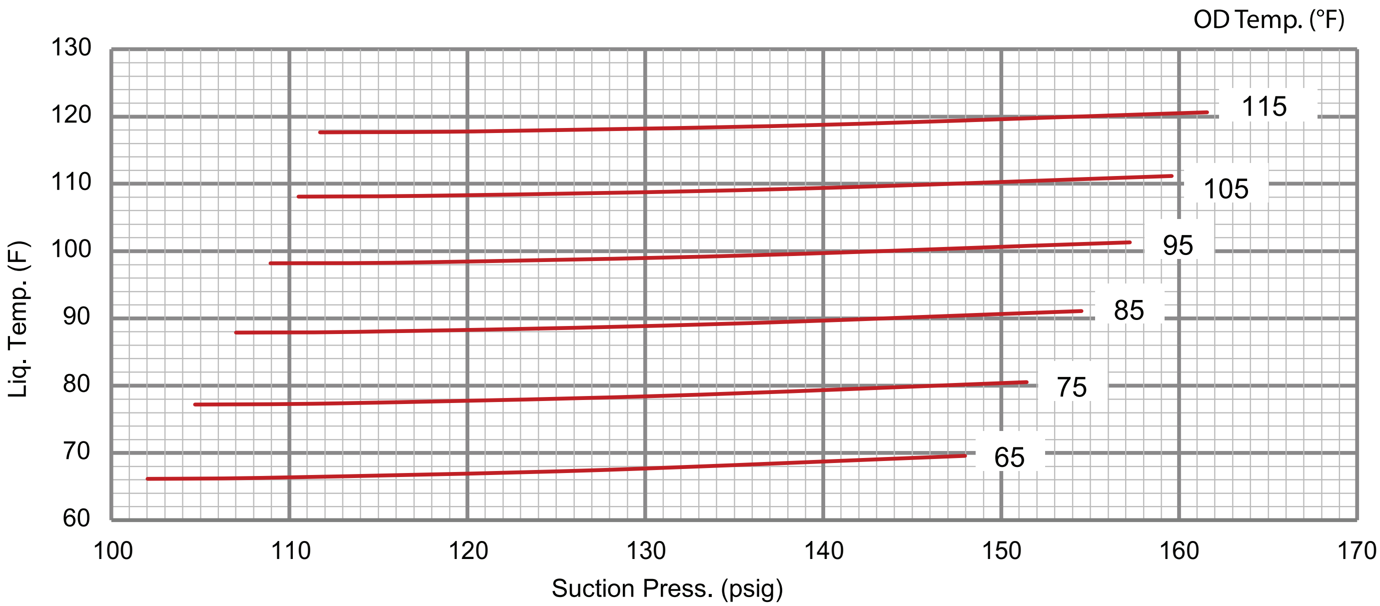


TABLE 14

074 Normal Operating Pressures - Reheat - All-Aluminum Coil - 581270-01											
Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**	**Suct (psig)**	**Disc (psig)**
102	244	105	280	107	321	109	366	111	417	112	472
110	251	113	288	115	329	117	375	119	426	120	482
128	262	131	300	133	343	136	391	138	443	140	500
148	270	151	309	155	353	157	402	160	456	162	514

074 Charging Curve - Reheat - All-Aluminum Coil - 581270-01



VI-MAINTENANCE

IMPORTANT MAINTENANCE / REPAIR SAFETY INSTRUCTIONS

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.

Work shall be undertaken under a controlled procedure to minimize the risk of a flammable gas or vapor being present while the work is being performed.

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times, the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

– that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking

– that no live electrical components and wiring are exposed while charging, recovering or purging the system

– that there is continuity of earth bonding

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

– the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant

containing parts are installed;

– the ventilation machinery and outlets are operating adequately and are not obstructed;

– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

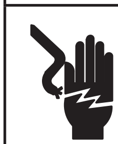
– refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

During repairs to sealed electrical components, the components shall be replaced. Replacement parts shall be in accordance with the manufacturer’s specifications.

During repairs to intrinsically safe components, the components must be replaced. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

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

⚠ 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.

⚠ 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 19. 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.*

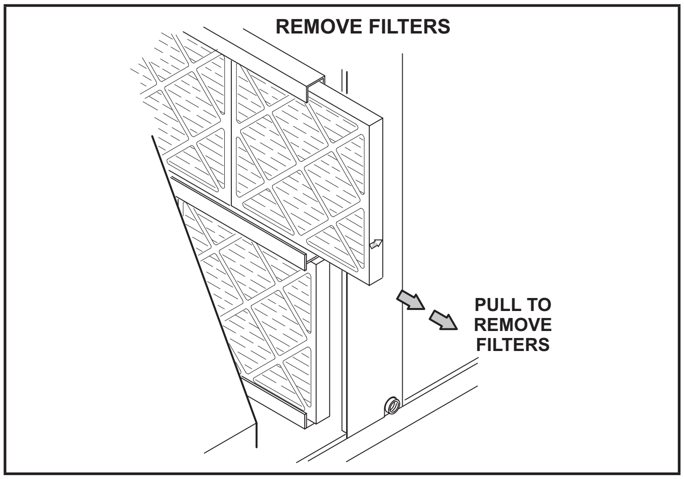
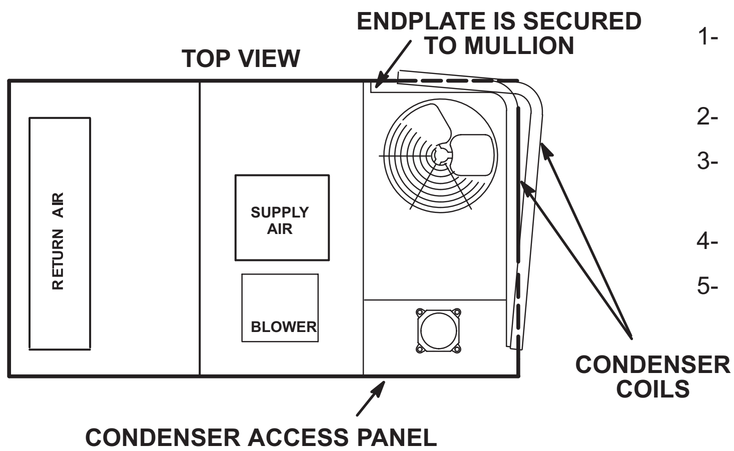


FIGURE 19

B-Lubrication

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

CLEAN CONDENSER COIL



1- Remove unit top panel and condenser section access panel.
2- Remove screws securing coil end plate to mullion.
3- Remove wire ties connecting coils slabs and separate slabs 3-4” (76-102mm).
4- Clean coils with detergent or commercial coil cleaner.
5- Rinse thoroughly with water and reassemble. Use field-provided wire ties to connect coil slabs.

FIGURE 20

C-Evaporator Coil

Inspect and clean coil at beginning of each cooling season. Clean the all-aluminum coil by spraying the coil steadily and uniformly from top to bottom. Do not exceed 900 psi or a 45° angle; nozzle must be at least 12 inches from the coil face. Take care not to fracture the braze between fins and refrigerant tubes. Reduce pressure and work cautiously to prevent damage. Flush condensate drain with water, taking care not to get insulation, filters, and return air ducts wet through entire cleaning process.

D-Condenser Coil

Clean condenser coil annually with water and inspect monthly during the cooling season. Clean the all-aluminum coil by spraying the coil steadily and uniformly from top to bottom. Do not exceed 900 psi or a 45° angle; nozzle must be at least 12 inches from the coil face. Take care not to fracture the braze between the fins and refrigerant tubes. Reduce pressure and work cautiously to prevent damage

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

E-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 LCM units.

A-C1/T1CURB

When installing the LCM 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 LCM 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 21. 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 22. 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 LCM 3, 4, 5, and 6 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 LCM 3, 4, 5, and 6 ton units in both manually operated and motorized 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

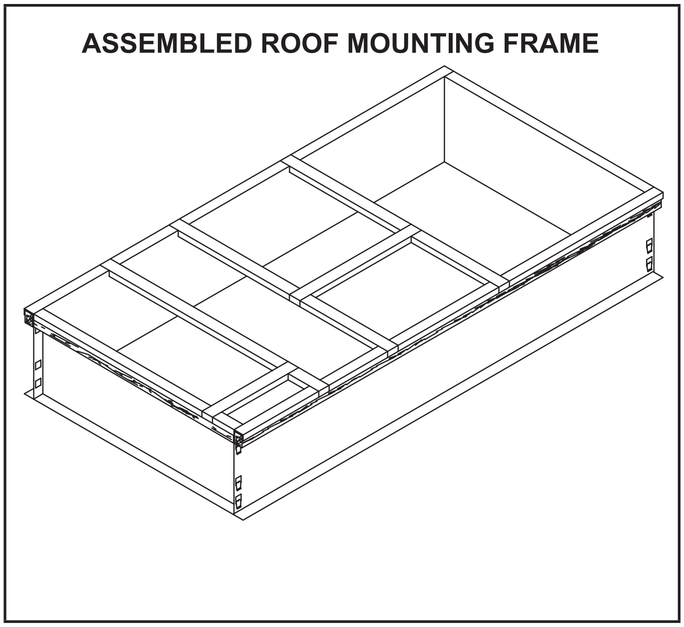


FIGURE 21

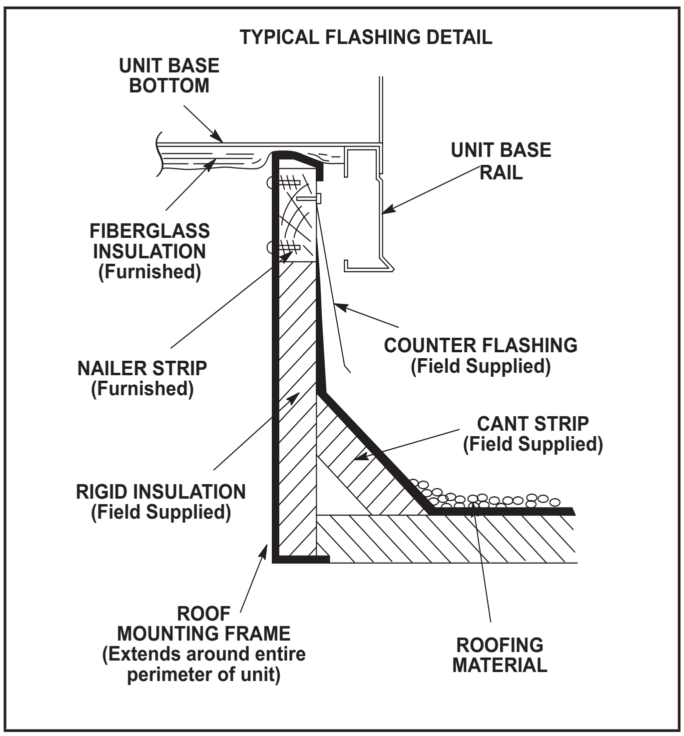


FIGURE 22

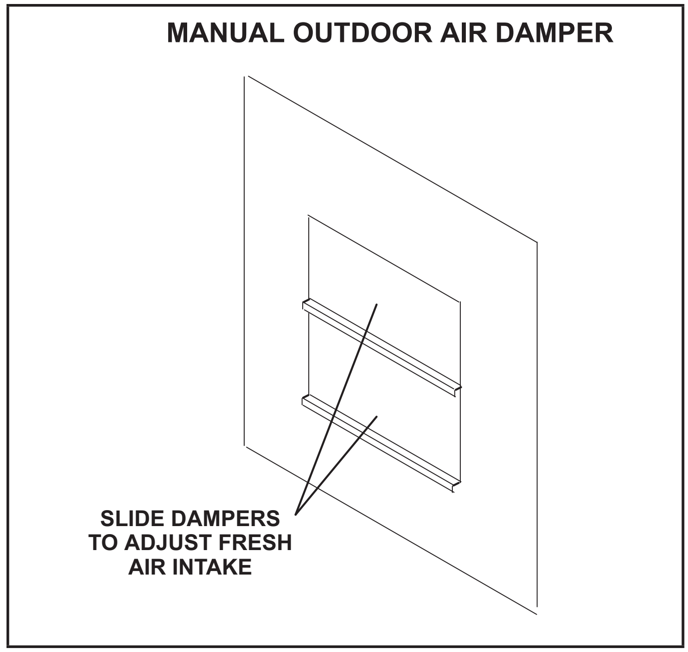


FIGURE 23

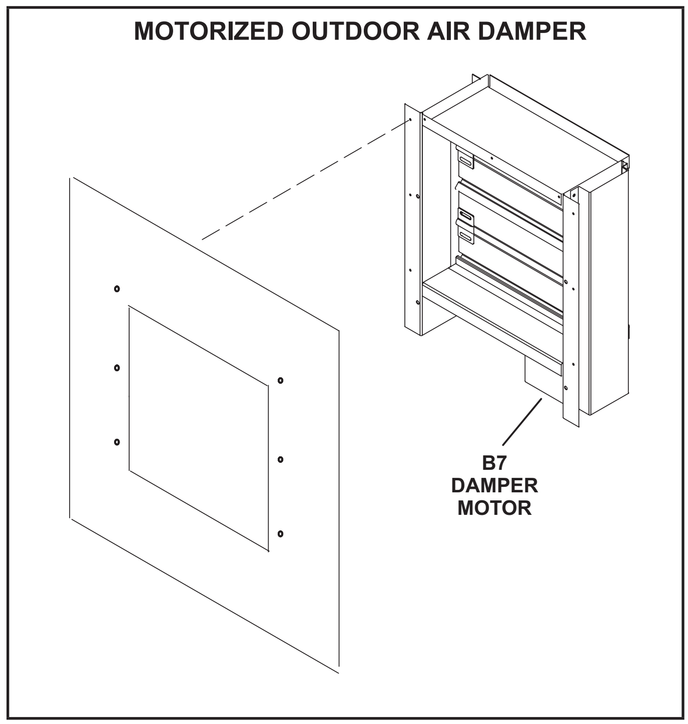


FIGURE 24

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 LCM 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 25.

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, EC Title 24 approved sensors:

RT17 - Outside Air Temperature

RT16 - Return Air Temperature

RT6 - Discharge Air Temperature

See FIGURE 26 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 15. 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 27.

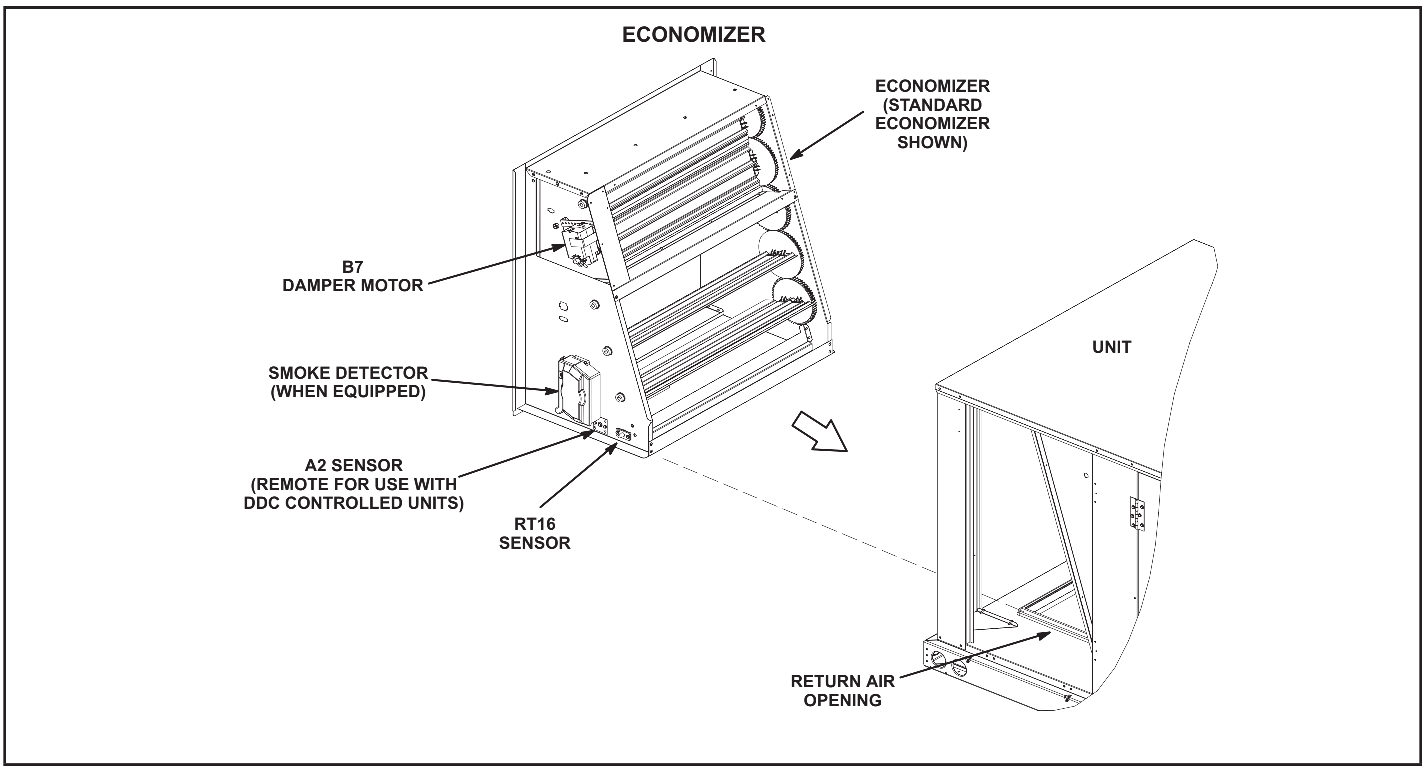


FIGURE 25

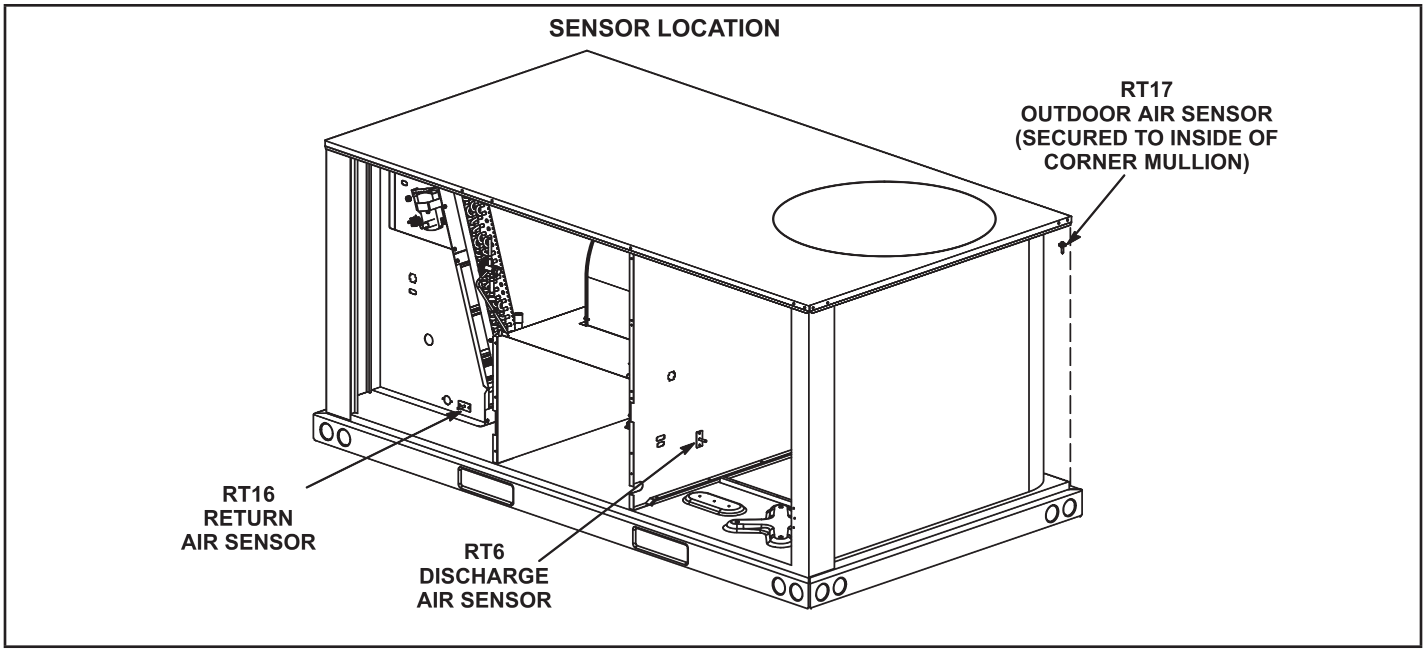


FIGURE 26

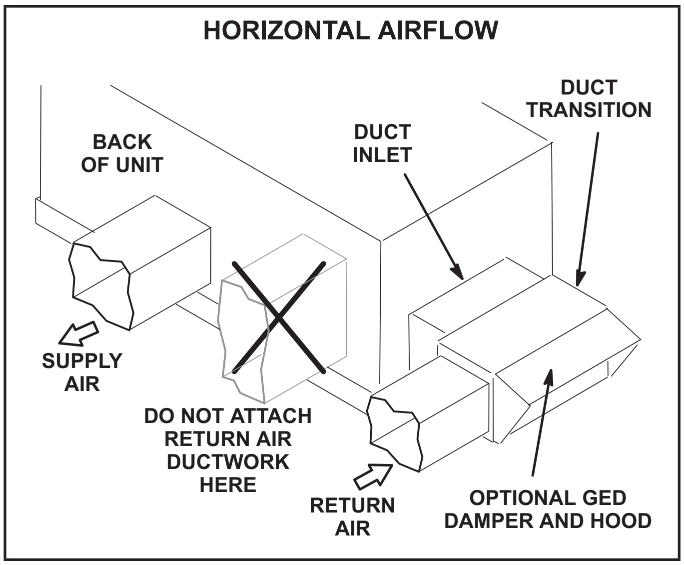


FIGURE 27

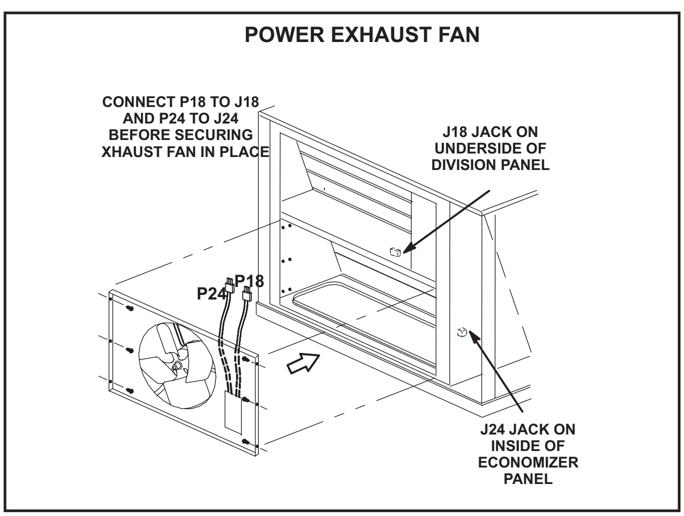


FIGURE 28

F-Power Exhaust Relay K65 (power exhaust units)

Power exhaust relay K65 is a DPDT relay with a 24VAC coil. K65 is used in all LCM 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 LCM 3, 4, 5, and 6 ton units to provide exhaust air pressure relief (refer to EHB for appropriate transition model). See FIGURE 28 and installation instructions for more detail.

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 fowr 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 15

ECONOMIZER MODES AND SETPOINT

Free| Cooling Mode	Free Cooling Setpoint	Field-Provide Sensors	**Dampers will modulate to 55°F discharge air (RT6) when outdoor air is suitable:**	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	Eneergy 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. The condenser fans speed linearly follows the compressor speed.*

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

[1]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 Variable

Dampers Modulate

High Cooling Demand -

Compressor Variable

Blower Variable

Dampers Full Open

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

Note - *Free cooling is locked out when a dehumidification demand is received. The unit operates in dehumidification mode as if the outdoor air is not suitable.*

2-No Economizer or Outdoor Air Not Suitable

Any Demand -

Compressor Variable

Blower Variable

Damper Minimum Position

I-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 30.

1 - On the back side of the unit, remove the screw securing the back of the ionizer bracket. See FIGURE 29. 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 remove

REMOVE IONIZER

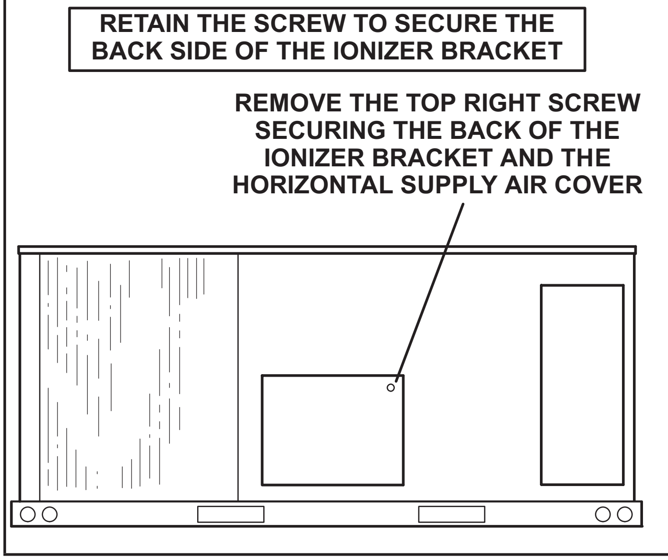


FIGURE 29

REMOVE IONIZER

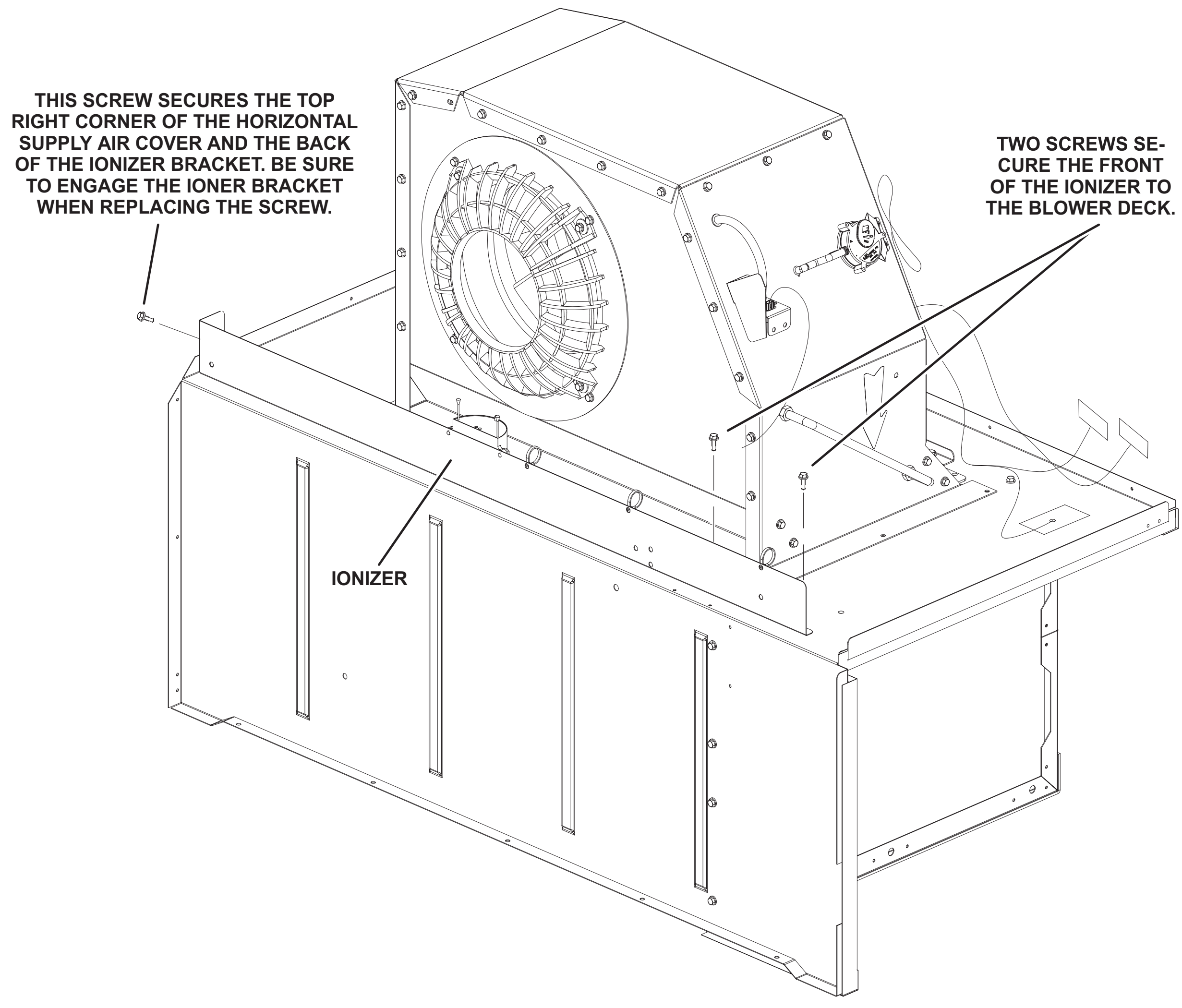


FIGURE 30

J-Hot Gas Reheat

Hot gas reheat units provide a dehumidifying mode of operation. These units contain a reheat coil adjacent to and downstream of the evaporator coil. Reheat coil solenoid valve, L14, routes hot discharge gas from the compressor to the reheat coil. Return air pulled across the evaporator coil is cooled and dehumidified; the reheat coil adds heat to supply air. See FIGURE 31 for reheat refrigerant routing and FIGURE 32 for standard cooling refrigerant routing.

L14 Reheat Coil Solenoid Valve

When Unit Controller input (Unit Controller J298-5 or J299-8) indicates room conditions require dehumidification, L14 reheat valve is energized (Unit Controller P269-3) and refrigerant is routed to the reheat coil.

Reheat Setpoint

Reheat is factory-set to energize when indoor relative humidity rises above 60% (default). The reheat setpoint can be adjusted by changing mobile service app *Settings - Control* menu. A setting of 100% will operate reheat from an energy management system digital output. The reheat setpoint can also be adjusted using an optional Network Control Panel (NCP).

Reheat will terminate when the indoor relative humidity falls 3% (57% default) or the digital output de-energizes. The reheat deadband can be adjusted at *Settings - Control* menu.

Check-Out

Test reheat operation using the following procedure.

1 - Make sure reheat is wired as shown in wiring section.

2 - Make sure unit is in local thermostat mode.

3 - Use mobile service app menu path to select

RTU MENU > COMPONENT > TEST > DEHUMIDIFICATION

The blower, compressor, and reheat valve should be energized. Pressure can be checked on the reheat line pressure tap. Pressure on the reheat line should match discharge pressure closely in reheat mode.

Default Reheat Operation

During reheat mode free cooling is locked out.

A-Thermostat Mode With 24V Humidistat

No Y1 demand but a call for dehumidification:

Compressor operates at 100%, blower and outdoor fan modulate to maintain indoor coil and discharge air temperatures, reheat valve is energized.

Y1 demand:

Compressor is modulating, blower is on low, and the reheat valve is de-energized.

Y2 demand:

Compressor is modulating, blower is on high, reheat valve is de-energized.

B-Thermostat Mode With Zone RH Sensor

No Y1 demand but a call for dehumidification.

Compressor modulates based on zone relative humidity, blower and outdoor fan modulate to maintain indoor coil and discharge air temperatures, reheat valve is energized.

Y1 and dehumidification demand:

Compressor is modulating, blower is on low, and the reheat valve is de-energized.

Y2 and dehumidification demand:

Compressor is modulating, blower is on high, reheat valve is de-energized.

C-Zone Sensor Mode With Humidistat

No cooling demand but a call for dehumidification:

Compressor operates at 100%, blower and outdoor fan modulate to maintain indoor coil and discharge air temperatures, reheat valve is energized.

Cooling and dehumidification demand:

Compressor is modulating, blower is modulating, reheat valve is de-energized.

D-Zone Sensor Mode With Zone RH Sensor

No cooling demand but a call for dehumidification:

Compressor modulates based on zone relative humidity, blower and outdoor fan modulate to maintain indoor coil and discharge air temperatures, reheat valve is energized.

Cooling and dehumidification demand:

Compressor is modulating, blower is modulating, and the reheat valve is de-energized.

REHEAT MODE REFRIGERANT ROUTING

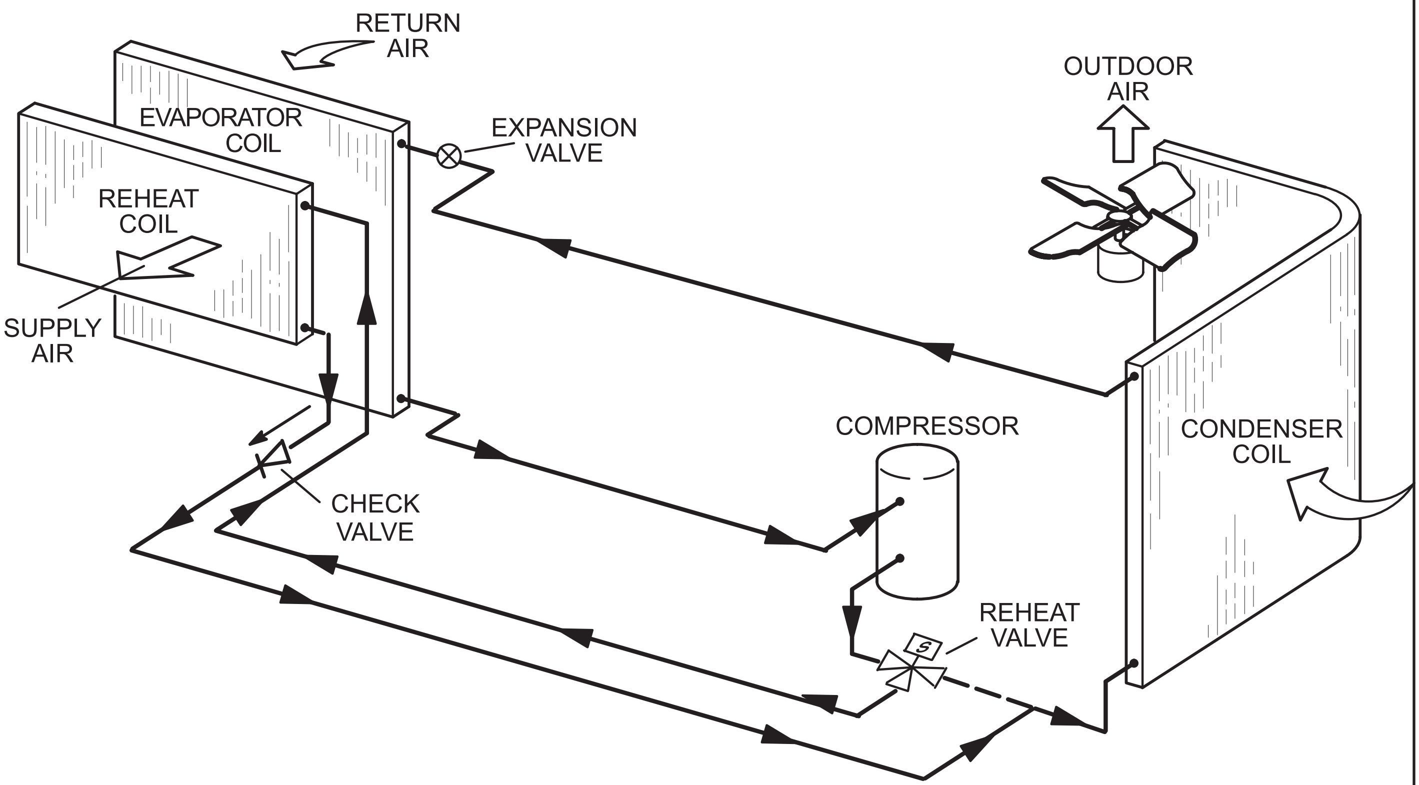


FIGURE 31

COOLING MODE REFRIGERANT ROUTING

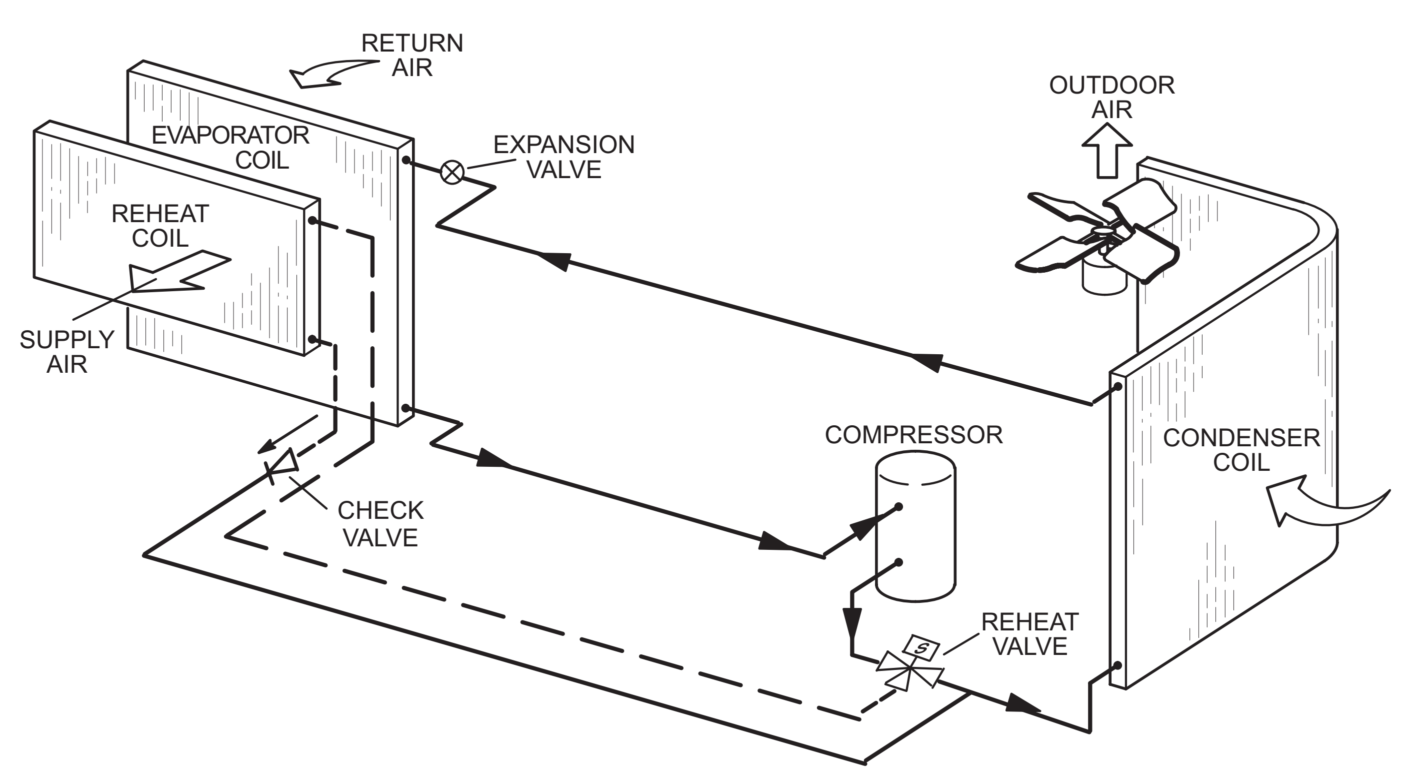


FIGURE 32

VIII-Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available befor the task is commenced.

Steps to ensure this are:

- Become familiar with the equipment and its operation,
- Isolate the system electrically,
- Ensure that before attempting the procedure that mechanical handling equipment is available, if required, for handling refrigerant cylinders, and that all personal protective equipment is available and being used correctly while the recovery process is supervised at all times by a competent person and that the recovery equipment and cylinders conform to the appropriate standards.

Additionally, pump down refrigerant system, if possible, and if a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system. Make sure that cylinders are situated on the scales before recovery takes place. Start the recovery machine and operate in accordance with instructions. Do not overfill cylinders (no more than 80 % volume liquid charge). Do not exceed the maximum working pressure of the cylinder, even temporarily. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area).

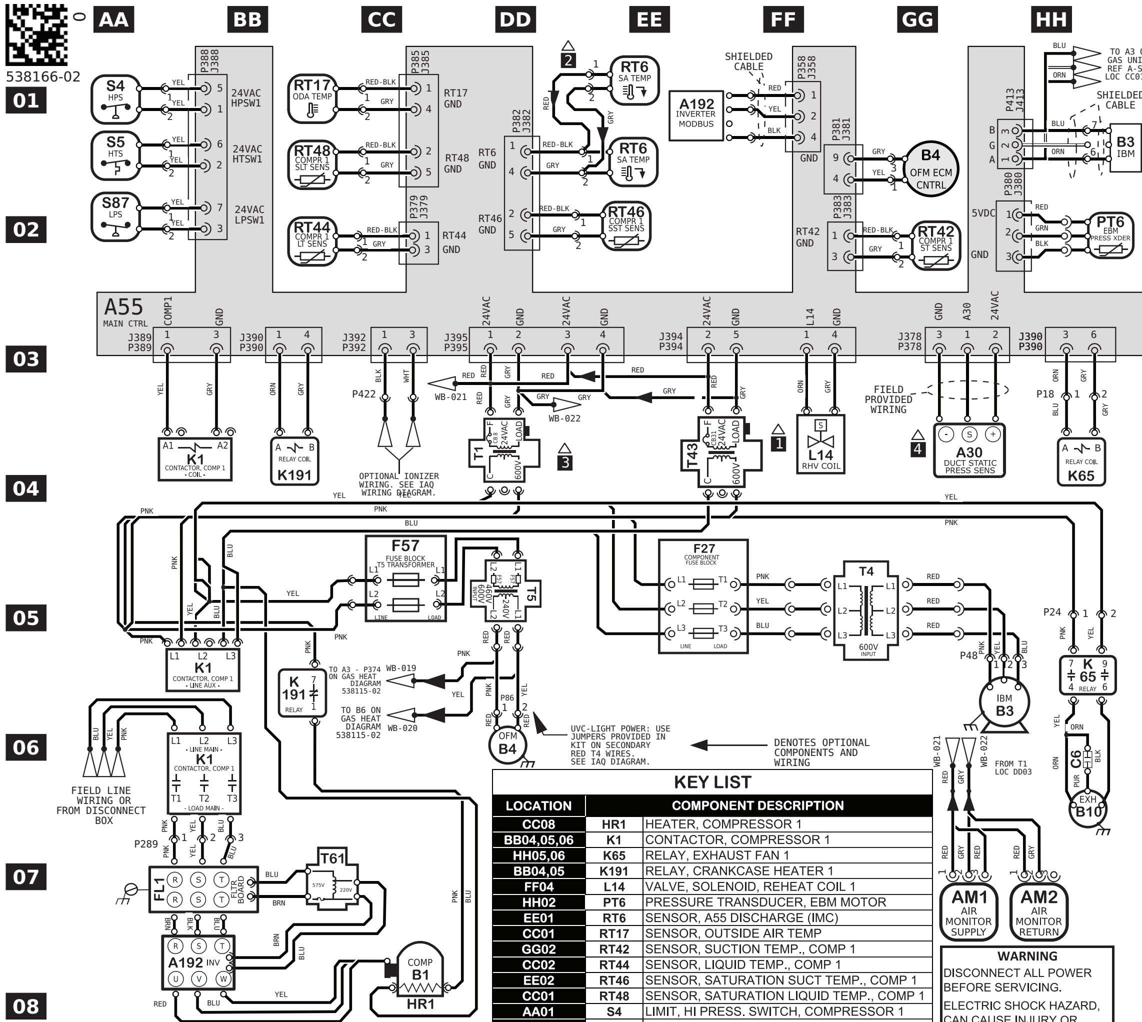
Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

- Safely remove refrigerant following local and national regulations,
- Evacuate the circuit,
- Purge the circuit with inert gas,
- Evacuate,
- Purge with inert gas,
- Open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems. Refrigerant purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

LGM/LCM036/074 J Voltage



KEY LIST

LOCATION		COMPONENT DESCRIPTION
AA02	A55	CONTROL BOARD, MAIN
GG07	AM1,AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
GG04	A30	SENSOR, DUCT STATIC PRESS.
EE01, BB08	A192	INVERTER, COMPRESSOR 1
CC08	B1	COMPRESSOR 1
EE06	B3	MOTOR, BLOWER
DD06, GG01	B4	MOTOR, OUTDOOR FAN 1
HH06	B10	MOTOR, EXHAUST FAN 1
HH05	C6	CAPACITOR, EXHAUST FAN 1
EE05	F27	FUSE, T4 TRANSFORMER PRIMARY
CC05	F57	FUSE, T5 TRANSFORMER PRIMARY
AA07	FL1	FILTER BOARD

KEY LIST

LOCATION		COMPONENT DESCRIPTION
CC08	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
HH05,06	K65	RELAY, EXHAUST FAN 1
BB04,05	K191	RELAY, CRANKCASE HEATER 1
FF04	L14	VALVE, SOLENOID, REHEAT COIL 1
HH02	PT6	PRESSURE TRANSDUCER, EBM MOTOR
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
GG02	RT42	SENSOR, SUCTION TEMP., COMP 1
CC02	RT44	SENSOR, LIQUID TEMP., COMP 1
EE02	RT46	SENSOR, SATURATION SUCT TEMP., COMP 1
CC01	RT48	SENSOR, SATURATION LIQUID TEMP., COMP 1
AA01	S4	LIMIT, HI PRESS. SWITCH, COMPRESSOR 1
AA01	S5	LIMIT, HI TEMP. SWITCH, COMPRESSOR 1
AA02	S87	SWITCH, LOW PRESS., COMP. 1
DD04	T1	TRANSFORMER, CONTROL
GG05	T4	TRANSFORMER, BLOWER MOTOR
DD05	T5	TRANSFORMER, OUTDOOR FAN MOTOR
EE04	T43	TRANSFORMER, REHEAT
CC07	T61	TRANSFORMER, INV INTERNAL POWER

NOTES

1	ONLY ON UNITS WITH HUMIDITROL OPTION
2	RT6 REMOTE MOUNT WIRING
3	T1 CONNECTED TO J/P395-1,2 ONLY WITH HUMIDITROL
4	USED ON VAV UNITS ONLY

HEATING	COOLING	COOLING	ACCS	ACCS
SECTION A	SECTION B	SECTION B3	SECTION C	SECTION D

WIRING DIAGRAM FLOW

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.

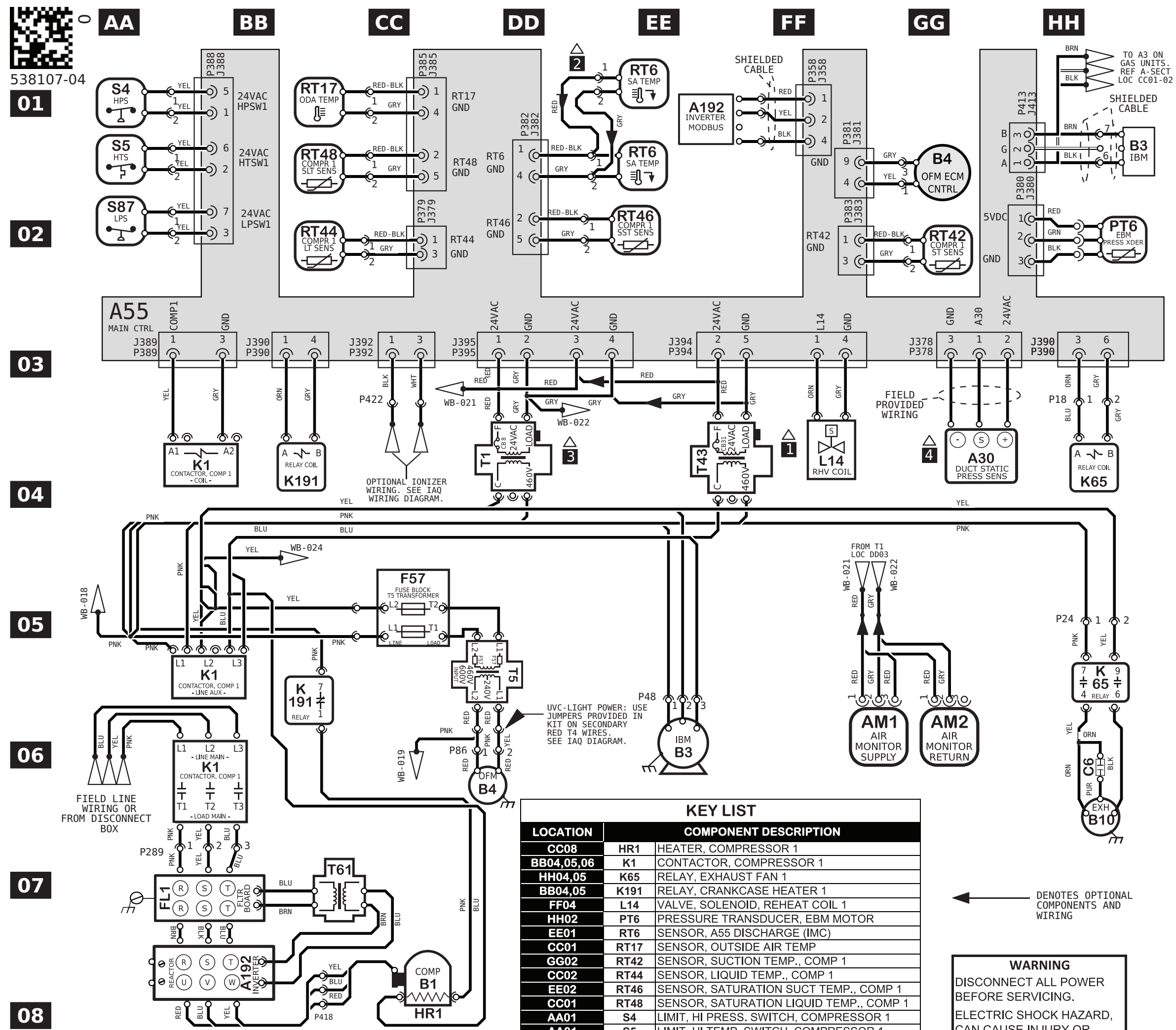
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

Model: LCM, LGM 036U - 074U J VOLT
Cooling Diagram without Higher SCCR
Voltage: 600/3/60 (J)
Supersedes: N/A Form No: 538166-02 Rev: 0

8.5 x 10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
--	CN-008852AS	01/10/2023	AXL	AAH	ORIGINATED AT PD&R CARROLLTON, TX

LGM/LCM036/074 G Voltage



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC08	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
HH04,05	K65	RELAY, EXHAUST FAN 1
BB04,05	K191	RELAY, CRANKCASE HEATER 1
FF04	L14	VALVE, SOLENOID, REHEAT COIL 1
HH02	PT6	PRESSURE TRANSDUCER, EBM MOTOR
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
GG02	RT42	SENSOR, SUCTION TEMP., COMP 1
CC02	RT44	SENSOR, LIQUID TEMP., COMP 1
EE02	RT46	SENSOR, SATURATION SUCT TEMP., COMP 1
CC01	RT48	SENSOR, SATURATION LIQUID TEMP., COMP 1
AA01	S4	LIMIT, HI PRESS. SWITCH, COMPRESSOR 1
AA01	S5	LIMIT, HI TEMP. SWITCH, COMPRESSOR 1
AA02	S87	SWITCH, LOW PRESS., COMP. 1
DD04	T1	TRANSFORMER, CONTROL
DD05	T5	TRANSFORMER, OUTDOOR FAN MOTOR
EE04	T43	TRANSFORMER, REHEAT
CC07	T61	TRANSFORMER, INV INTERNAL POWER

◄ DENOTES OPTIONAL COMPONENTS AND WIRING

KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
AA02	A55	CONTROL BOARD, MAIN
GG06	AM1,AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
GG04	A30	SENSOR, DUCT STATIC PRESS.
EE01, BB08	A192	INVERTER, COMPRESSOR 1
CC08	B1	COMPRESSOR 1
EE06	B3	MOTOR, BLOWER
DD06, GG01	B4	MOTOR, OUTDOOR FAN 1
HH06	B10	MOTOR, EXHAUST FAN 1
HH05	C6	CAPACITOR, EXHAUST FAN 1
CC05	F57	FUSE, T5 TRANSFORMER PRIMARY
AA07	FL1	FILTER BOARD

△	NOTES
1	ONLY ON UNITS WITH HUMIDITROL OPTION
2	RT6 REMOTE MOUNT WIRING
3	T1 CONNECTED TO J/P395-1,2 ONLY WITH HUMIDITROL
4	USED ON VAV UNITS ONLY

HEATING	COOLING	COOLING	ACCS	ACCS
SECTION A	SECTION B	SECTION B3	SECTION C	SECTION D

WIRING DIAGRAM FLOW

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.

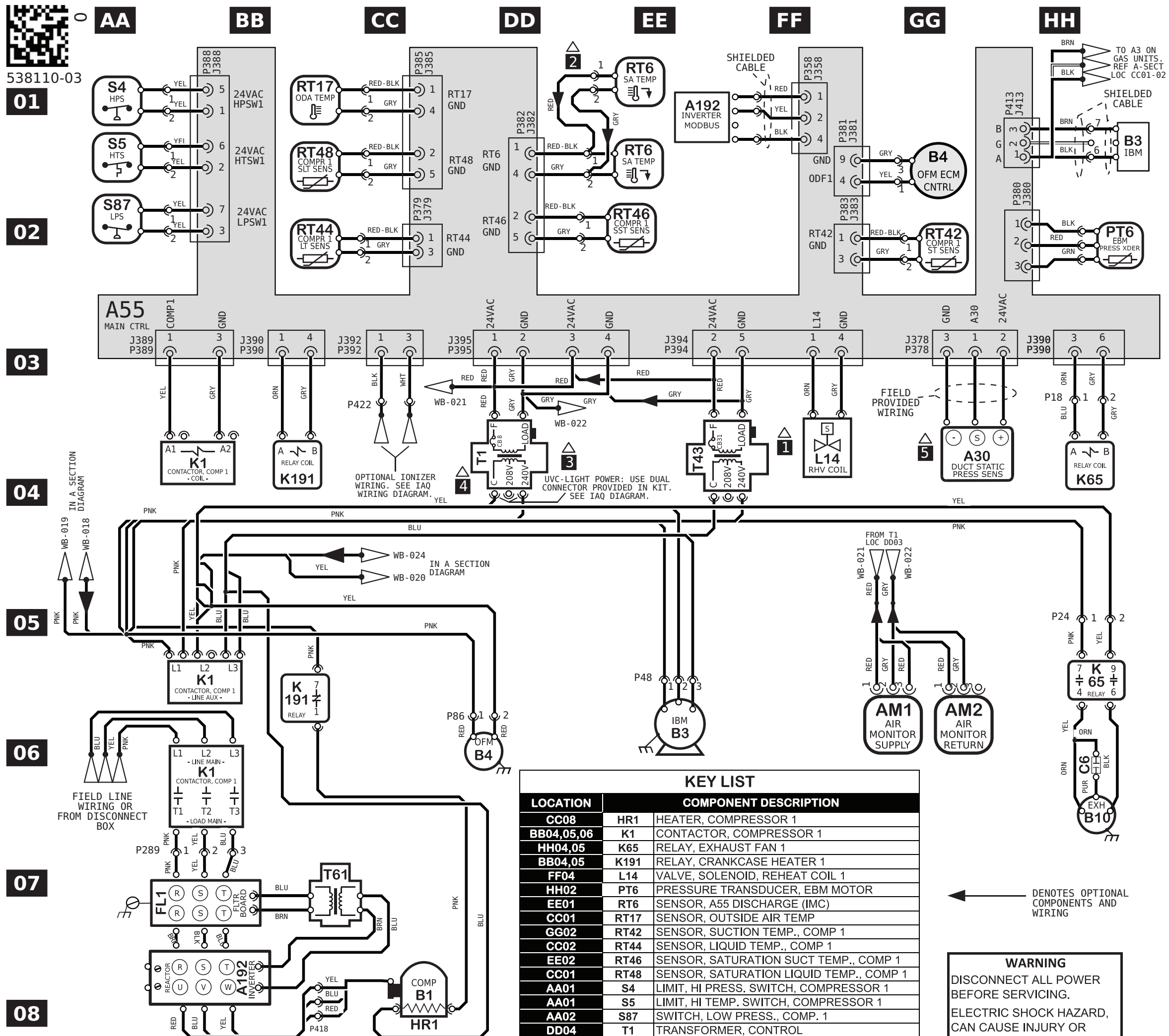
10
Model: LCM, LGM 036U - 074U G VOLT
Cooling Diagram without Higher SCCR
Voltage: 460/3/60 (G)
Supersedes: N/A Form No: 538107-04 Rev: 0

8.5 x 10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
--	CN-011764C	07/24/2024	AXL	AAH	ORIGINATED AT PD&R CARROLLTON, TX

LGM/LCM036/074 Y Voltage

538110-03



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC08	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
HH04,05	K65	RELAY, EXHAUST FAN 1
BB04,05	K191	RELAY, CRANKCASE HEATER 1
FF04	L14	VALVE, SOLENOID, REHEAT COIL 1
HH02	PT6	PRESSURE TRANSDUCER, EBM MOTOR
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
GG02	RT42	SENSOR, SUCTION TEMP., COMP 1
CC02	RT44	SENSOR, LIQUID TEMP., COMP 1
EE02	RT46	SENSOR, SATURATION SUCT TEMP., COMP 1
CC01	RT48	SENSOR, SATURATION LIQUID TEMP., COMP 1
AA01	S4	LIMIT, HI PRESS, SWITCH, COMPRESSOR 1
AA01	S5	LIMIT, HI TEMP, SWITCH, COMPRESSOR 1
AA02	S87	SWITCH, LOW PRESS., COMP. 1
DD04	T1	TRANSFORMER, CONTROL
DD05	T5	TRANSFORMER, OUTDOOR FAN MOTOR
EE04	T43	TRANSFORMER, REHEAT
CC07	T61	TRANSFORMER, INV INTERNAL POWER

KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
AA02	A55	CONTROL BOARD, MAIN
GG06	AM1,AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
GG04	A30	SENSOR, DUCT STATIC PRESS.
EE01, BB08	A192	INVERTER, COMPRESSOR 1
CC08	B1	COMPRESSOR 1
EE06	B3	MOTOR, BLOWER
DD06, GG01	B4	MOTOR, OUTDOOR FAN 1
HH06	B10	MOTOR, EXHAUST FAN 1
HH05	C6	CAPACITOR, EXHAUST FAN 1
AA07	FL1	FILTER BOARD

△	NOTES
1	ONLY ON UNITS WITH HUMIDITROL OPTION
2	RT6 REMOTE MOUNT WIRING
3	T1 CONNECTED TO J/P395-1,2 ONLY WITH HUMIDITROL
4	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
5	USED ON VAV UNITS ONLY

HEATING	COOLING	COOLING	ACCS	ACCS
SECTION A	SECTION B	SECTION B3	SECTION C	SECTION D

WIRING DIAGRAM FLOW

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: LCM, LGM 036U - 074U Y VOLT
Cooling Diagram without Higher SCCR
Voltage: 208-230/3/60 (Y)
Supersedes: N/A Form No: 538110-03 Rev: 0

8.5 X 10
CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
--	CN-011764C	07/24/2024	AXL	AAH	ORIGINATED AT PD&R CARROLLTON, TX

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 - A55 Unit Controller receives a cooling demand from the room/zone sensor. Unit Controller A55 energizes the blower motor B3 by sending a PWM signal. The blower motor modulates between High Cool CFM and Low Cool CFM (based on the difference between the zone/room temperature A2 and setpoint).

Cooling

4 - A55 proves high temperature switch S5, N.C. low pressure switch S87, N.C. high pressure switch S4, and compressor contactor K1 is energized. A55 makes sure unit voltage and variable speed compressor inverter A192 voltage are equal. A55 also communicates the unit refrigeration tonnage to A192.

5 - N.O. contacts K1-1 close providing voltage to A192 through FL1 filter board, T61 transformer, and L43 reactor. A192 varies B1 compressor speed based on a compressor demand from A55 P358 via MODBUS. The A55 compressor demand varies based on the difference between discharge air temperature (RT6) and discharge air temperature setting (default 55°F).

Note - *The A55 will start to reduce the three- through five-ton compressor speed at a heat sink temperature of 125°F. Typical competitor equipment reduces compressor speed at 115°F.*

6 - A55 modulates outdoor fan B4 speed by sending a PWM signal from P259 (based on the compressor speed).

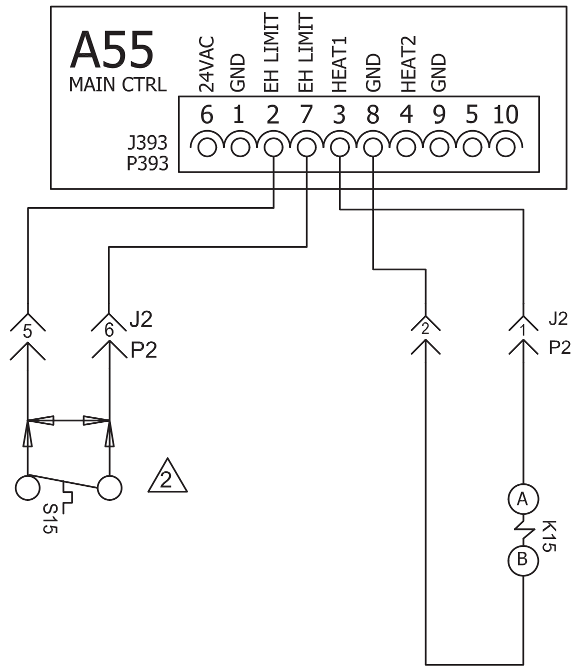
7 - During cooling operation, A55 energizes crankcase heater relay K191. K191-1 N.C. Contacts open to de-energize HR1 crankcase heater.

Power Exhaust Fan Operation

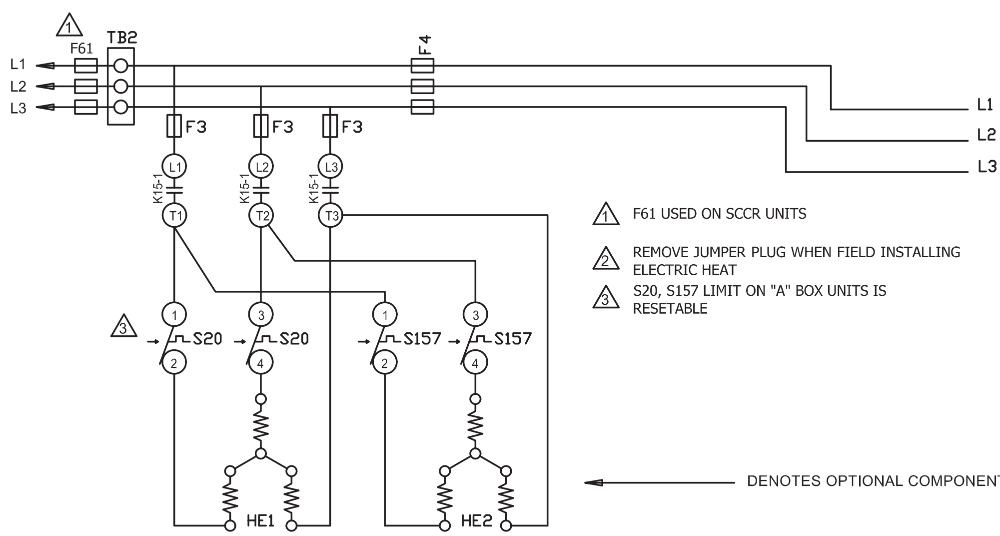
8 - A55 receives a position feedback signal from the economizer damper motor and energizes exhaust fan relay K65 with 24VAC at 50% outside air damper open (adjustable).

9 - 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



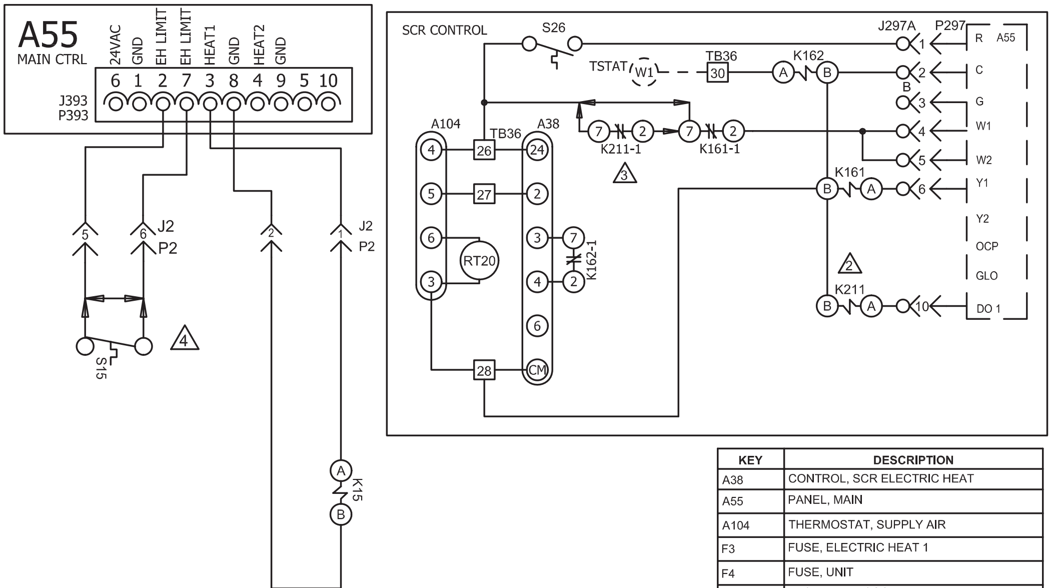
1. F61 USED ON SCCR UNITS
2. REMOVE JUMPER PLUG WHEN FIELD INSTALLING ELECTRIC HEAT
3. S20, S157 LIMIT ON "A" BOX UNITS IS RESETABLE

← DENOTES OPTIONAL COMPONENTS

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

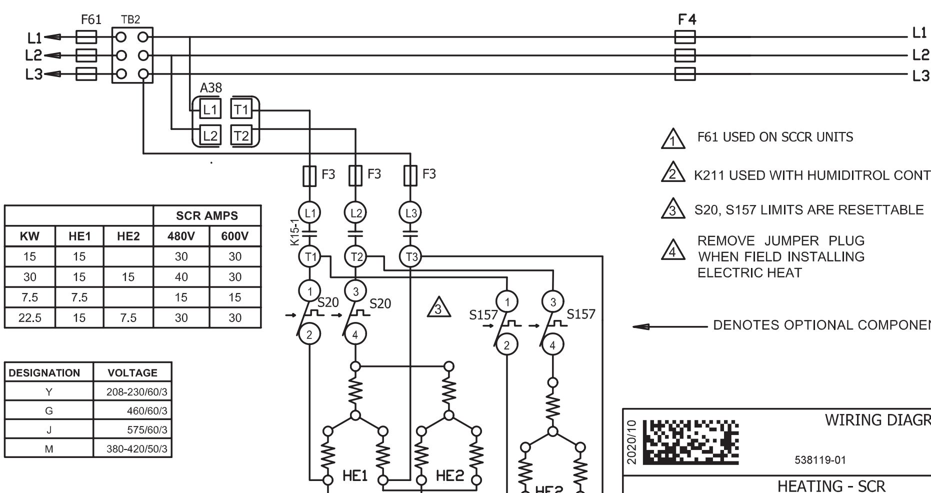
2020/10 538117-01	WIRING DIAGRAM	10/20
HEATING		
ELECTRIC HEAT E1EH - 7.5, 15, 22.5, 30 - G, J		
SECTION A		REV 0
Supersedes	New Form No. 538117-01	

E1EH 7.5, 15, 22.5, 30 - G, J VOLT
WITH SCR



KEY	DESCRIPTION
A38	CONTROL, SCR ELECTRIC HEAT
A55	PANEL, MAIN
A104	THERMOSTAT, SUPPLY AIR
F3	FUSE, ELECTRIC HEAT 1
F4	FUSE, UNIT
F61	FUSE, UNIT - SCCR
HE1	ELEMENT, ELECTRIC HEAT 1
HE2	ELEMENT, ELECTRIC HEAT 2
K15,-1	CONTACTOR, ELECTRIC HEAT 1
K161,-1	RELAY, SCR INTERRUPT
K162,-1	RELAY, SCR HIGH OUTPUT
K211-1	RELAY, LOCKOUT
RT20	SENSOR, DISCHARGE SCR
S15	SWITCH, LIMIT PRIMARY ELECTRIC HEAT
S20	SWITCH, LIMIT SECONDARY ELEC. HEAT 1
S26	THERMOSTAT, AMBIENT
S157	SWITCH, LIMIT SECONDARY ELEC. HEAT 2
TB2	TERMINAL STRIP, UNIT
TB36	TERMINAL STRIP, SCR

J/P	DESCRIPTION
2	ELECTRIC HEAT
297	PLUG, THERMOSTAT INTERFACE
393	PLUG, ELECTRIC HEAT CONTROL



			SCR AMPS	
KW	HE1	HE2	480V	600V
15	15		30	30
30	15	15	40	30
7.5	7.5		15	15
22.5	15	7.5	30	30

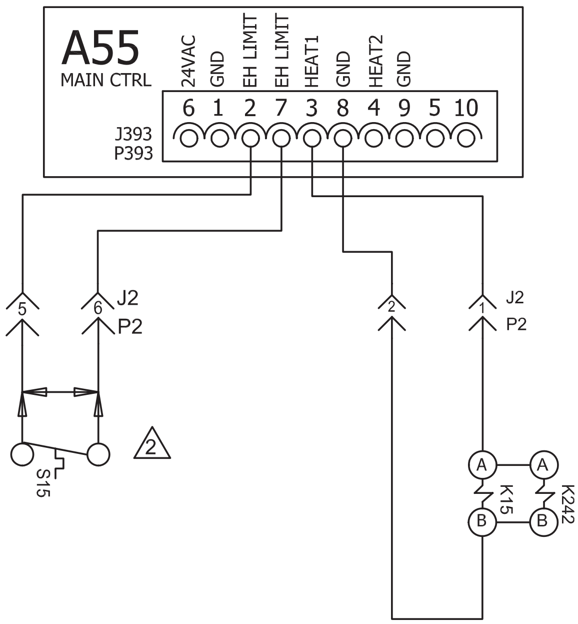
DESIGNATION	VOLTAGE
Y	208-230/60/3
G	460/60/3
J	575/60/3
M	380-420/50/3

1. F61 USED ON SCCR UNITS
2. K211 USED WITH HUMIDITROL CONTROL
3. S20, S157 LIMITS ARE RESETTABLE
4. REMOVE JUMPER PLUG WHEN FIELD INSTALLING ELECTRIC HEAT

DENOTES OPTIONAL COMPONENTS

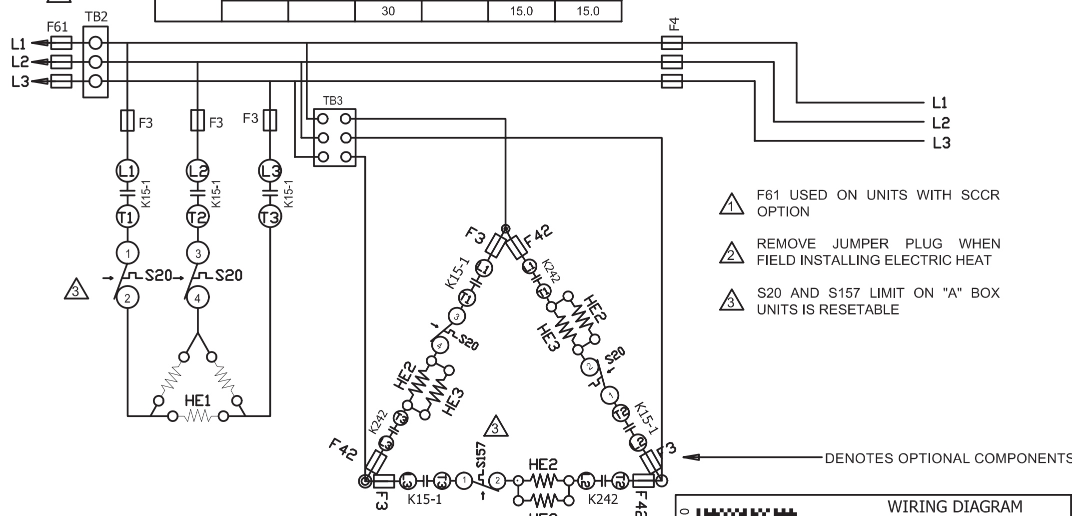
2020/10 WIRING DIAGRAM 538119-01		10/20
HEATING - SCR		
ELECTRIC HEAT SCR CONTROL E1EH - 7.5, 15, 22.5, 30 - G, J		
SECTION A		REV. 0
Supersedes	New Form No. 538119-01	

E1EH 7.5, 15, 22.5, 30 - Y VOLTAGE



DESCRIPTION	
KEY	DESCRIPTION
A55	PANEL, MAIN
F3	FUSE, ELECTRIC HEAT
F4	FUSE, UNIT
F61	FUSE, SCCR OPTION UNIT
HE -1	ELEMENT, ELECTRIC HEAT 1
HE -2	ELEMENT, ELECTRIC HEAT 2
HE -3	ELEMENT, ELECTRIC HEAT 3
K15,-1	CONTACTOR, ELECTRIC HEAT 1
K242	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

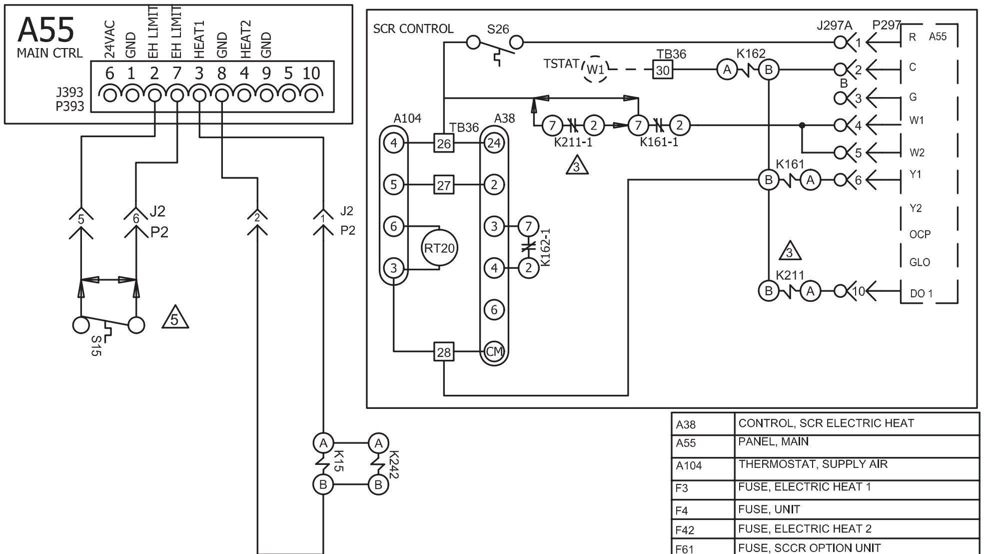
			KW	HE1	HE2	HE3
072	060	036 - 048	7.5	7.5		
			15	15.0		
			22.5		15.0	7.5
			30		15.0	15.0



1. F61 USED ON UNITS WITH SCCR OPTION
2. REMOVE JUMPER PLUG WHEN FIELD INSTALLING ELECTRIC HEAT
3. S20 AND S157 LIMIT ON "A" BOX UNITS IS RESETABLE

WIRING DIAGRAM 538116-01 (2020/10)	10/20
HEATING	
ELECTRIC HEAT E1EH - 7.5, 15, 22.5, 30 - Y	
SECTION A	REV 0
Supersedes	New Form No. 538116-01

E1EH 7.5, 15, 22.5, 30 - Y VOLTAGE WITH SCR

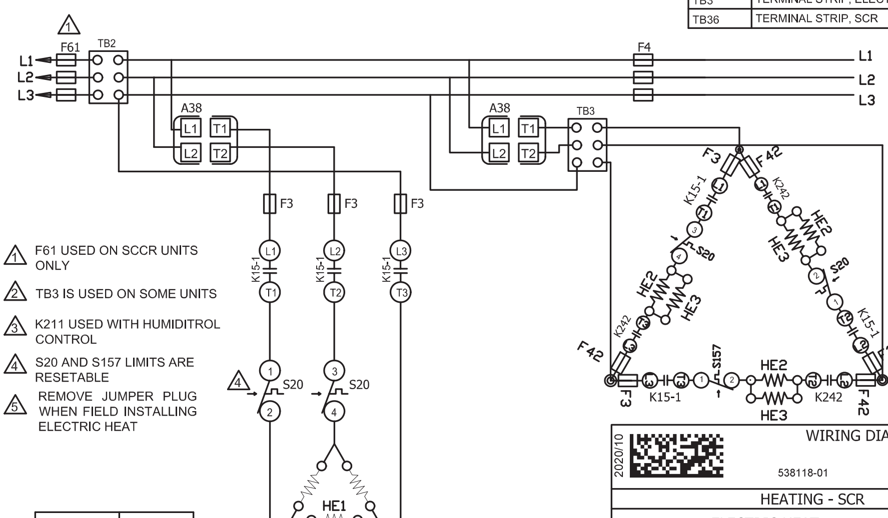


A38	CONTROL, SCR ELECTRIC HEAT
A55	PANEL, MAIN
A104	THERMOSTAT, SUPPLY AIR
F3	FUSE, ELECTRIC HEAT 1
F4	FUSE, UNIT
F42	FUSE, ELECTRIC HEAT 2
F61	FUSE, SCCR OPTION UNIT
HE1	ELEMENT, ELECTRIC HEAT 1
HE2	ELEMENT, ELECTRIC HEAT 2
HE3	ELEMENT, ELECTRIC HEAT 3
K15,-1	CONTACTOR, ELECTRIC HEAT 1
K161,-1	RELAY, SCR INTERRUPT
K162,-1	RELAY, SCR HIGH OUTPUT
K211-1	RELAY, LOCKOUT
K242	CONTACTOR, ELECTRIC HEAT 1
RT20	SENSOR, DISCHARGE SCR
S15	SWITCH, LIMIT PRIMARY ELECTRIC HEAT
S20	SWITCH, LIMIT SECONDARY ELEC. HEAT 1
S26	THERMOSTAT, AMBIENT
S157	SWITCH, LIMIT SECONDARY ELEC. HEAT 2
TB2	TERMINAL STRIP, UNIT
TB3	TERMINAL STRIP, ELECTRIC HEAT
TB36	TERMINAL STRIP, SCR

A AND B UNITS

				SCR AMPS	
KW	HE1	HE2	HE3	208V	240V
7.5	7.5			30	30
15	15			40	40
22.5		15	7.5	50	75
30		15	15	75	75

J/P	DESCRIPTION
2	ELECTRIC HEAT
297	PLUG, THERMOSTAT INTERFACE
393	PLUG, ELECTRIC HEAT CONTROL



1. F61 USED ON SCCR UNITS ONLY
2. TB3 IS USED ON SOME UNITS
3. K211 USED WITH HUMIDITROL CONTROL
4. S20 AND S157 LIMITS ARE RESETABLE
5. REMOVE JUMPER PLUG WHEN FIELD INSTALLING ELECTRIC HEAT

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

◄—— DENOTES OPTIONAL COMPONENTS

2020/10 538118-01	WIRING DIAGRAM	10/20
HEATING - SCR		
ELECTRIC HEAT E1EH - 7.5, 15, 22.5, 30 - Y		
SECTION A	REV. 0	
Supersedes	New Form No. 538118-01	

Sequence of Operation -E1EH 7.5, 15, 22.5, 30 - 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.

FIRST STAGE HEAT:

2 - Heating demand initiates at W1 in thermostat.

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 - *7.5kW, 15kW units* - N.O. contacts K15-1 close energizing HE1.

22.5kW, 30kW units - N.O. contacts K15-1 close energizing HE1 and HE2.

END OF FIRST STAGE HEAT:

5 - Heating demand is satisfied. Terminal W1 in the thermostat is de-energized.

6 - Electric heat contactor K15 is de-energized.

7 - *7.5kW, 15kW* units - N.O. contacts K15-1 open de-energizing HE1.

22.5kW, 30kW units - N.O. contacts K15-1 open de-energizing HE1 and HE2.

Sequence of Operation -E1EH 7.5, 15, 22.5, 30 - 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 TB3. TB3 supplies line voltage to HE2 and HE3. Elements are protected by fuses F3 and or F42.

FIRST STAGE HEAT:

2 - Heating demand initiates at W1 in thermostat.

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 - *7.5kW and 15kW units* - N.O. contacts K15-1 close energizing HE1.

22.5kW, 30kW units - N.O. contacts K242-1 close energizing HE2 and HE3.

END OF FIRST STAGE HEAT:

5 - Heating demand is satisfied. Terminal W1 in the thermostat is de-energized.

6 - Electric heat contactor K15 is de-energized.

7.5kW, 15kW units - N.O. contacts K15-1 open de-energizing HE1.

22.5kW, 30kW units - N.O. contacts K242-1 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:

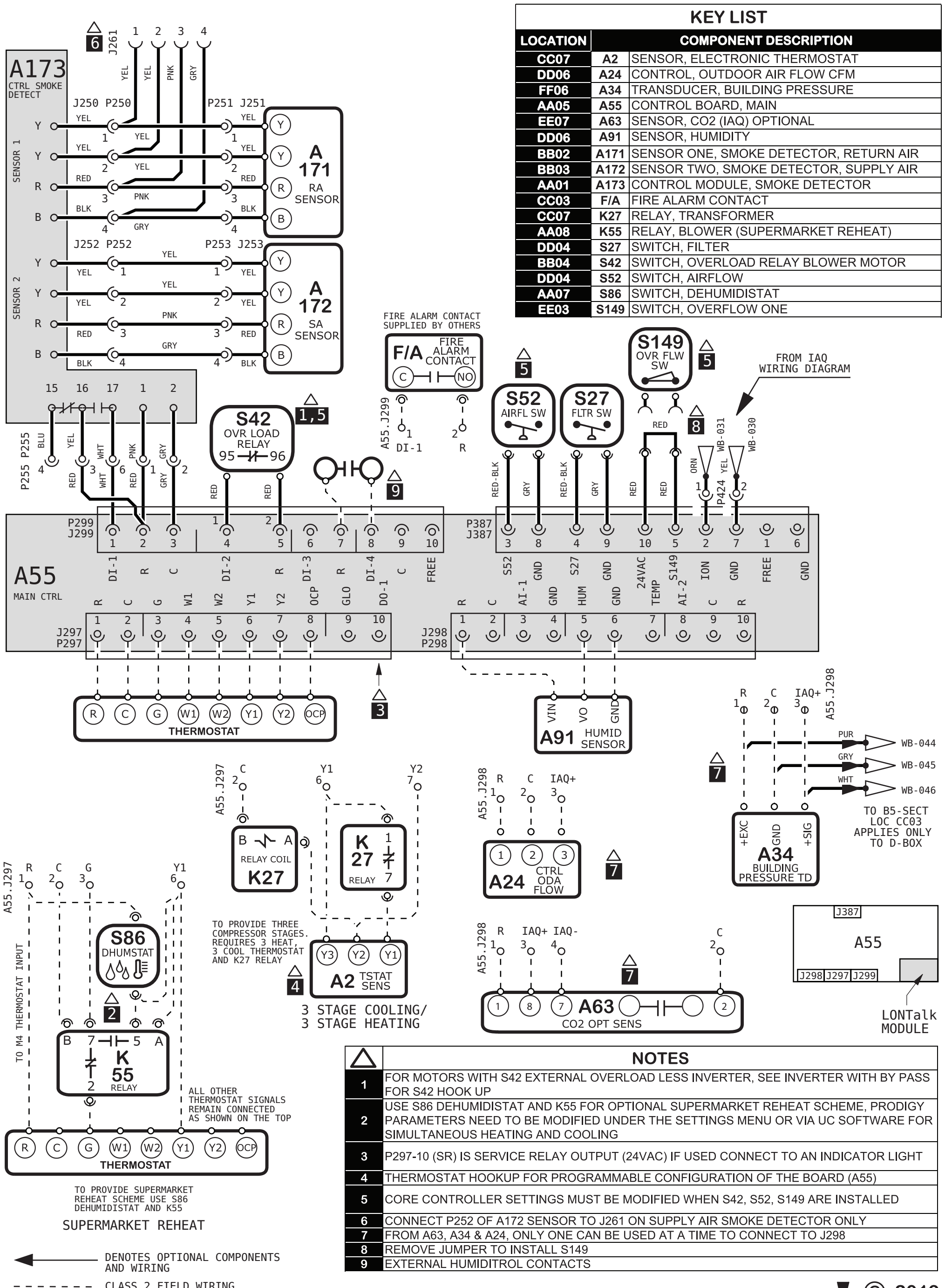
1 - Adjust thermostat (A104) to minimum position.

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

KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC07	A2	SENSOR, ELECTRONIC THERMOSTAT
DD06	A24	CONTROL, OUTDOOR AIR FLOW CFM
FF06	A34	TRANSDUCER, BUILDING PRESSURE
AA05	A55	CONTROL BOARD, MAIN
EE07	A63	SENSOR, CO2 (IAQ) OPTIONAL
DD06	A91	SENSOR, HUMIDITY
BB02	A171	SENSOR ONE, SMOKE DETECTOR, RETURN AIR
BB03	A172	SENSOR TWO, SMOKE DETECTOR, SUPPLY AIR
AA01	A173	CONTROL MODULE, SMOKE DETECTOR
CC03	F/A	FIRE ALARM CONTACT
CC07	K27	RELAY, TRANSFORMER
AA08	K55	RELAY, BLOWER (SUPERMARKET REHEAT)
DD04	S27	SWITCH, FILTER
BB04	S42	SWITCH, OVERLOAD RELAY BLOWER MOTOR
DD04	S52	SWITCH, AIRFLOW
AA07	S86	SWITCH, DEHUMIDISTAT
EE03	S149	SWITCH, OVERFLOW ONE



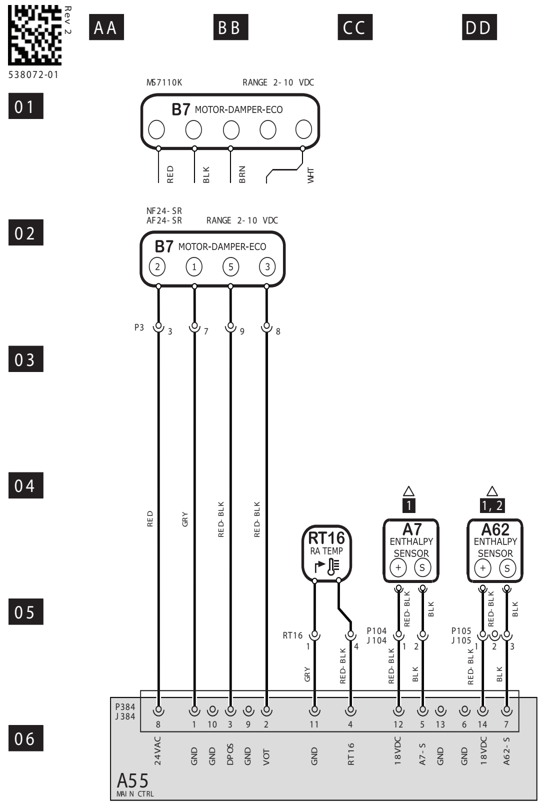
△	NOTES
1	FOR MOTORS WITH S42 EXTERNAL OVERLOAD LESS INVERTER, SEE INVERTER WITH BY PASS FOR S42 HOOK UP
2	USE S86 DEHUMIDISTAT AND K55 FOR OPTIONAL SUPERMARKET REHEAT SCHEME, PRODIGY PARAMETERS NEED TO BE MODIFIED UNDER THE SETTINGS MENU OR VIA UC SOFTWARE FOR SIMULTANEOUS HEATING AND COOLING
3	P297-10 (SR) IS SERVICE RELAY OUTPUT (24VAC) IF USED CONNECT TO AN INDICATOR LIGHT
4	THERMOSTAT HOOKUP FOR PROGRAMMABLE CONFIGURATION OF THE BOARD (A55)
5	CORE CONTROLLER SETTINGS MUST BE MODIFIED WHEN S42, S52, S149 ARE INSTALLED
6	CONNECT P252 OF A172 SENSOR TO J261 ON SUPPLY AIR SMOKE DETECTOR ONLY
7	FROM A63, A34 & A24, ONLY ONE CAN BE USED AT A TIME TO CONNECT TO J298
8	REMOVE JUMPER TO INSTALL S149
9	EXTERNAL HUMIDITROL CONTACTS

HEATING	COOLING	COOLING	ACCS	ACCS
SECTION A	SECTION B	SECTION B3/5	SECTION C	SECTION D

WIRING DIAGRAM FLOW

Model: LC, LG, LH, LD Series RTU Thermostat
Voltage: All Voltages
Supersedes: 538078-01 Form No: 538078-02 Rev: 0

ECONOMIZER



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

08

KEY LIST

LOCATION		COMPONENT DESCRIPTION
CC05	A7	SENSOR, SOLID STATE ENTHALPY
AA06	A55	CONTROL BOARD, MAIN
DD05	A62	SENSOR, ENTHALPY INDOOR
BB02	B7	MOTOR, DAMPER ECONOMIZER
CC05	RT16	SENSOR, RETURN AIR TEMP

09

10

Model: LC,LG,LH,LD,SC,SG Series
Economizer & Motorized OAD

Voltage: All Voltages

Supersedes: N/A Form No: 538072-01 Rev: 2

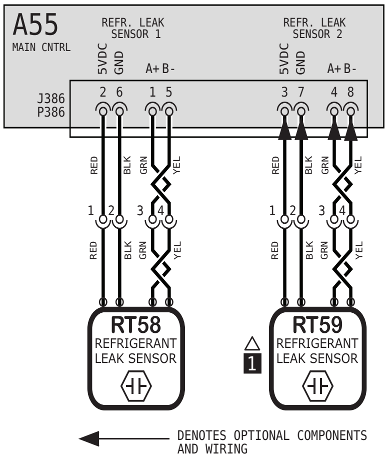
HTG SEC A	CLG SEC B	CLG SEC B3	ACCS SEC C	ACCS SEC D

WIRING DIAGRAM FLOW

5x10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-008594	10/15/2020	RV	MXR6	ORIGINATED AT PD&R CARROLLTON, TX
001	CN-010356B	03/24/2022	MXR6	JAL21	UPDATED APPLICABLE MODEL NUMBERS.
002	CN-012457P	03/06/2024	AXL	AAH	A) ADDED SC, SG TO MODELS

RDS SENSORS



KEY LIST	
COMPONENT DESCRIPTION	
A55	CONTROL BOARD, MAIN
RT58	SENSOR 1, REFR. LEAK DETECTION
RT59	SENSOR 2, REFR. LEAK DETECTION

△	NOTES
1	REFRIGERANT LEAK SENSOR 2 (RT59), MAY NOT BE PRESENT IN ALL UNITS.

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: Units w/CORE Contr.
Refr. Leak Detection
VOLT: All
SUPSDS: N/A
NO: 538440-01

Rev 0

3 x 7
CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012295C	04-03-2024	MXR6	MXT5	ORIGINATED AT PD&R CARROLLTON, TX