UNIT INFORMATION

LGM SERIES
3 to 6 ton

100038
03/2024

Service Literature

Ultra High Efficiency LGM036U through 074U

LGM036U, 048U, 060U, and 074U are ultra high efficiency gas packaged units equipped with variable speed direct drive blowers, an inverter-driven variable speed compressor, and a variable speed outdoor fan.

LGM036 units are available in 65,000 to 108,000 Btuh (19 to 31 kW) heating inputs. LGM048, 060 and 074 units are available in 65,000 to 150,000 Btuh (19 to 43.9 kW) heating inputs. Gas heat sections are designed with aluminized (stainless optional) steel tube heat exchangers. Cooling capacities range from 3 to 6 tons (7 to 21kW).

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.

⚠ CAUTION

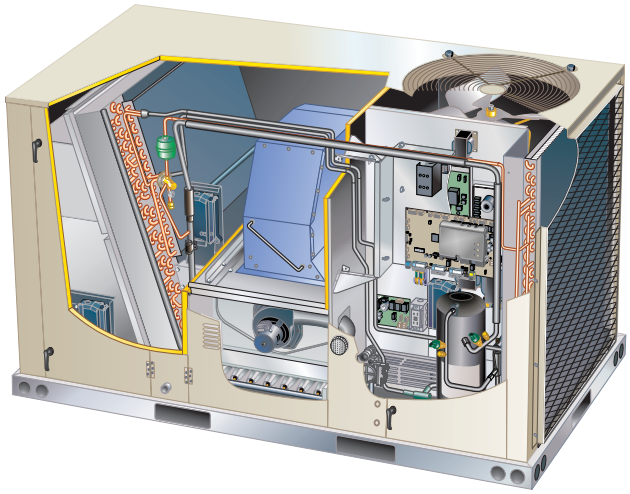
As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

⚠ 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.



ELECTROSTATIC DISCHARGE (ESD)
Precautions and Procedures

⚠ CAUTION

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

Table of Contents

OPTIONS / ACCESSORIES

Item		Catalog Number	Unit Model Number 036	048	060	074
COOLING SYSTEM						
Condensate Drain Trap	PVC	**22H54**	OX	OX	OX	OX
	Copper	**76W27**	OX	OX	OX	OX
Drain Pan Overflow Switch		**21Z07**	OX	OX	OX	OX
Service Valves (not for Humiditrol™+ equipped units)		Factory	O	O	O	O
HEATING SYSTEM						
Bottom Gas Piping Kit		**19W50**	OX	OX	OX	OX
Combustion Air Intake Extensions		**19W51**	X	X	X	X
Gas Heat Input	Standard Two-Stage - 53/65 kBtuh input	Factory	O	O	O	O
	Medium Two Stage - 81/108 kBtuh input	Factory	O	O	O	O
	High Two-Stage - 113/150 kBtuh input	Factory		O	O	O
Low Temperature Vestibule Heater	208/230V-3ph	**21Z17**	OX	OX	OX	OX
	460V-3ph	**21Z18**	OX	OX	OX	OX
	575V-3ph	**21Z19**	OX	OX	OX	OX
LPG/Propane Conversion Kits	For two-stage standard models	**21Z24**	X	X	X	X
	For two-stage medium and high models	**21Z23**	X	X	X	X
Stainless Steel Heat Exchanger		Factory	O	O	O	O
Vertical Vent Extension		**31W62**	X	X	X	X
BLOWER - SUPPLY AIR						
Motors	DirectPlus™ Direct Drive ECM Blower System with MSAV®	Factory	O	O	O	O
	DirectPlus™ Direct Drive ECM Blower System with VAV	Factory	O	O	O	O
CABINET						
Combination Coil/Hail Guards		**13T03**	X	X	X	X
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	OX
	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
[1] Short-Circuit Current Rating (SCCR) of 100kA (includes Phase/Voltage Detection)		Factory	O	O	O	O
Disconnect Switch	80 amp	**22A25**	OX	OX	OX	OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only)	**74M70**	OX	OX	OX	OX
	20 amp non-powered, field-wired (575V only)	**67E01**	OX	OX	OX	OX
Weatherproof Cover for GFI		**10C89**	X	X	X	X
Phase/Voltage Detection		Factory	O	O	O	O

[1] Disconnect Switch is furnished and factory installed with High SCCR option.

[1] 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).

OPTIONS / ACCESSORIES

Item		Catalog Number	Unit Model Number 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
High Performance Economizer - No Exhaust Option		Factory	O	O	O	O
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						
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						
[1] Barometric Relief Dampers for Power Exhaust Kit		**21Z21**	X	X	X	X
[2] Horizontal Barometric Relief Dampers With Exhaust Hood		**19F01**	X	X	X	X
OUTDOOR AIR						
Outdoor Air Dampers With Outdoor Air Hood						
Motorized		**15D17**	OX	OX	OX	OX
Manual		**15D18**	OX	OX	OX	OX
HUMIDITROL™+ HOT GAS REHEAT OPTION						
Humiditrol™+ Dehumidification Option		Factory	O	O	O	O

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

[1] 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).

OPTIONS / ACCESSORIES

Item		Catalog Number	Unit Model Number 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**	OX	OX	OX	OX
Indoor Air Quality (CO_2) Sensors						
Sensor - Wall-mount, off-white plastic cover with LCD display		**77N39**	X	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display		**87N53**	X	X	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting		**87N52**	X	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting		**87N54**	X	X	X	X
CO_2 Sensor Duct Mounting Kit - for downflow applications		**85L43**	X	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensors (**87N53** or **77N39**)		**90N43**	X	X	X	X
UVC Germicidal Lamps						
[1] Healthy Climate® UVC Light Kit (110/230V-1ph)		**21A92**	OX	OX	OX	OX
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
Adjustable Pitched Curb						
14 in. height		**43W27**	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

[1] 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).

SPECIFICATIONS — UNIT

General Data		3 Ton	4 Ton	5 Ton	6 Ton
	Efficiency Type	**Ultra-High**	**Ultra-High**	**Ultra-High**	**Ultra-High**
	Model Number	**LGM036U4E**	**LGM048U4E**	**LGM060U4E**	**LGM074U4E**
	Blower Type	DirectPlus™ ECM Direct Drive with MSAV®	DirectPlus™ ECM Direct Drive with MSAV®	DirectPlus™ ECM Direct Drive with MSAV®	DirectPlus™ ECM Direct Drive with MSAV®
	Model Number	**LGM036U4P**	**LGM048U4P**	**LGM060U4P**	**LGM074U4P**
	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
Cooling Performance	Gross Cooling Capacity - Btuh	34,600	47,000	58,500	71,000
	Net Cooling Capacity - Btuh	34,000	46,000	57,000	69,000
	AHRI Rated Air Flow - cfm	1200	1550	1800	2150
	Total Unit Power - kW	2.3	3.3	4.4	5.8
	SEER (Btuh/Watt) - 208/230V-3ph	[1] 22.5	[1] 21.0	[1] 20.0	- - -
	SEER (Btuh/Watt) - 460V-3ph	[1] 22.0	[1] 20.2	[1] 19.5	- - -
	SEER (Btuh/Watt) - 575V-3ph	[1] 22.0	[1] 20.2	[1] 19.5	- - -
	IEER (Btuh/Watt) - 208/230V-3ph	- - -	- - -	- - -	[2] 23.3
	IEER (Btuh/Watt) - 460V-3ph	- - -	- - -	- - -	[2] 23.3
	IEER (Btuh/Watt) - 575V-3ph	- - -	- - -	- - -	[2] 23.3
	EER (Btuh/Watt) - 208/230V-3ph	[1] 15.0	[1] 14.0	[1] 13.0	[2] 12.0
	EER (Btuh/Watt) - 460V-3ph	[1] 14.5	[1] 13.7	[1] 12.5	[2] 12.0
	EER (Btuh/Watt) - 575V-3ph	[1] 14.5	[1] 13.7	[1] 12.5	[2] 12.0
Refrigerant Charge	Refrigerant Type	R-410A	R-410A	R-410A	R-410A
	Without Reheat Option	17 lbs. 0 oz.	17 lbs. 0 oz.	16 lbs. 8 oz.	16 lbs. 8 oz.
	With Reheat Option	17 lbs. 2 oz.	17 lbs. 2 oz.	16 lbs. 13 oz.	16 lbs. 13 oz.
Gas Heating Options		Standard (2 stage) Medium (2 stage)	Standard (2 stage) Medium (2 stage) High (2 Stage)		
Compressor Type (Number)		Variable Capacity Scroll (1)			
Outdoor Coil	Net face area (total) - sq. ft.	19.3	19.3	19.3	19.3
	Tube diameter - in.	3/8	3/8	3/8	3/8
	Number of rows	2	2	2	2
	Fins per inch	20	20	20	20
Outdoor Coil Fans	Motor - (No.) HP	(1) 1/3 (ECM)	(1) 1/3 (ECM)	(1) 1/3 (ECM)	(1) 1/3 (ECM)
	Motor rpm	550 - 850	600 - 900	700 - 950	700 - 1050
	Total Motor watts	50 - 200	80 - 236	120 - 272	120 - 360
	Diameter - (No.) in.	(1) 24	(1) 24	(1) 24	(1) 24
	Number of blades	3	3	3	3
	Total air volume - cfm	2500 - 3850	2750 - 4100	3200 - 4300	3200 - 4700
Indoor Coil	Net face area (total) - sq. ft.	9.72	9.72	9.72	9.72
	Tube diameter - in.	3/8	3/8	3/8	3/8
	Number of rows	3	3	4	4
	Fins per inch	14	14	14	14
	Drain connection - Number and size	1 in. NPT coupling			
	Expansion device type	Balance port TXV			
Indoor Blower	Nominal motor output	1.5 HP (ECM)	1.5 HP (ECM)	1.5 HP (ECM)	1.5 HP (ECM)
	Blower wheel nominal diameter x width - in.	(1) 14 x 5	(1) 14 x 5	(1) 14 x 5	(1) 14 x 5
Filters	Type of filter	Disposable			
	Number and size - in.	(4) 20 x 20 x 2			
Electrical characteristics		208/230V, 460V, or 575V - 60 hz -3 phase			

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

[1, 2] AHRI Certified to AHRI Standard [1] 210/240 or [2] 340/360: 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

SPECIFICATIONS — GAS HEAT

	Model No.	036, 048 060, 074	036, 048 060, 074	048 060, 074
	Heat Input Type	**Standard (2 Stage)**	**Medium (2 Stage)**	**High (2 Stage)**
Input Btuh	1st Stage	53,000	81,000	113,000
	2nd Stage	65,000	108,000	150,000
Output Btuh	1st Stage	43,000	66,000	92,000
	2nd Stage	52,000	87,000	121,000
Temperature Rise Range - °F	1st stage	5 - 35	25 - 55	30 - 60
	2nd Stage	15 - 45	30 - 70	45 - 75
[1] Thermal Efficiency		81%	81%	81%
Gas Supply Connections		1/2 in. NPT		
Recommended Gas Supply Pressure - Nat. / LPG		7 in. w.g. / 11 in. w.g.		
Gas Supply Pressure Range	Min./Max. (Natural)	4.5 - 10.5 in. w.g.		
	Min./Max. (LPG)	10.8 - 13.5 in. w.g.		

[1] Thermal Efficiency at full input.

HIGH ALTITUDE DERATE

NOTE - Units may be installed at altitudes up to 2000 ft. above sea level without any modifications. At altitudes above 2000 ft. units must be derated to match information in the table shown. At altitudes above 4500 ft. unit must be derated 2% for each 1000 ft. above sea level.
NOTE - This is the only permissible derate for these units.

Heat Input Type	Altitude Feet	Gas Manifold Pressure in. w.g.		Input Rate (Btuh)
		Natural Gas	LPG/Propane	
Standard (2 stage)	2001 - 4500	3.0/1.7	9.0/5.1	60,000 / 49,000
Medium (2 stage)	2001 - 4500	3.0/1.7	9.0/5.1	100,000 / 75,000
High (2 stage)	2001 - 4500	3.0/1.7	9.0/5.1	139,000 / 104,000

BLOWER DATA

3 | 4 TON

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.).

MINIMUM AIR VOLUME REQUIRED FOR DIFFERENT GAS HEAT SIZES:
Standard Heat (S) - 1075 cfm; Medium Heat (M) - 1150 cfm; High Heat (H) - 1500 cfm

See Page 11 for wet coil and options/accessory air resistance data.

DOWNFLOW

Total Air Volume 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	686	18	789	39	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
500	761	33	860	52	957	68	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
600	840	46	937	64	1031	80	1112	91	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
700	926	60	1020	77	1110	92	1190	105	1258	117	1319	131	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
800	1022	73	1110	90	1195	105	1272	119	1338	133	1399	148	1460	166	1523	184	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
900	1126	88	1207	104	1286	119	1358	135	1421	150	1480	168	1539	187	1599	207	1660	227	1719	250	- - -	- - -	- - -	- - -	- - -	- - -
1000	1237	103	1310	120	1381	136	1447	153	1507	171	1564	190	1619	211	1676	232	1733	255	1788	280	1836	306	1879	332	- - -	- - -
1100	1352	120	1417	138	1481	156	1541	174	1597	194	1650	216	1703	238	1757	262	1810	287	1860	312	1905	339	1946	365	1986	391
1200	1468	141	1527	159	1583	179	1637	200	1688	222	1739	246	1789	271	1839	296	1888	321	1935	348	1977	375	2016	401	2055	426
1300	1584	164	1636	185	1687	206	1736	230	1783	255	1829	281	1877	306	1924	332	1969	359	2011	386	2051	412	2088	438	2126	462
1400	1697	191	1744	215	1790	240	1834	266	1877	293	1920	320	1964	346	2007	371	2048	398	2088	424	2126	449	2163	474	2201	498
1500	1802	227	1846	253	1888	280	1930	308	1970	336	2010	361	2049	386	2089	410	2128	436	2166	461	2204	486	2241	511	2279	536
1600	1903	271	1944	298	1984	326	2024	354	2062	380	2100	403	2137	426	2174	448	2211	474	2248	499	2285	525	2322	553	2359	582
1700	2007	319	2045	346	2083	373	2120	399	2157	423	2193	445	2229	466	2264	489	2300	516	2336	544	2372	573	2407	604	2442	637
1800	2115	363	2151	390	2186	416	2221	442	2256	466	2291	488	2325	512	2359	538	2393	567	2428	599	2462	631	2496	666	2530	701
1900	2234	394	2265	422	2296	450	2328	478	2359	505	2391	533	2423	563	2455	595	2487	629	2520	664	2553	699	2587	735	2621	771
2000	2345	434	2371	466	2399	498	2426	530	2455	562	2484	595	2515	630	2545	667	2577	703	2609	739	2643	775	2678	810	2713	845
2100	2435	502	2459	537	2484	572	2511	606	2539	641	2569	676	2599	712	2631	748	2664	783	2697	818	2732	853	2768	887	2804	920
2200	2511	587	2535	623	2561	658	2588	694	2618	728	2650	762	2683	796	2716	830	2750	863	2785	897	2821	930	2857	963	2894	995
2300	2586	672	2612	707	2640	741	2669	776	2700	809	2734	842	2768	875	2802	908	2837	941	2873	974	2909	1007	2945	1039	2981	1071

Total Air Volume 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
1100	2028	415	2072	438	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1200	2095	449	2138	473	2183	497	2229	522	2274	550	- - -	- - -	- - -	- - -
1300	2165	486	2206	510	2249	535	2293	562	2337	591	2381	620	2425	651
1400	2239	523	2279	549	2320	576	2361	605	2402	636	2443	668	2485	701
1500	2317	563	2355	592	2393	623	2432	656	2471	689	2509	723	2548	758
1600	2396	612	2432	645	2468	679	2505	714	2542	748	2579	783	2615	818
1700	2477	672	2512	707	2547	742	2583	777	2619	812	2655	846	2691	881
1800	2565	737	2599	772	2634	808	2670	842	2705	877	2741	911	2777	946
1900	2656	806	2691	841	2727	876	2762	911	2798	945	2833	979	2868	1013
2000	2749	879	2785	913	2820	947	2855	981	2890	1015	2925	1049	2959	1082
2100	2840	953	2876	987	2911	1020	2946	1053	2981	1087	3015	1121	3049	1154
2200	2930	1028	2965	1061	3000	1094	3035	1128	3069	1161	- - -	- - -	- - -	- - -
2300	3017	1104	3052	1137	3087	1170	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

BLOWER DATA

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

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

MINIMUM AIR VOLUME REQUIRED FOR DIFFERENT GAS HEAT SIZES:
Standard Heat (S) - 1075 cfm; Medium Heat (M) - 1150 cfm; High Heat (H) - 1500 cfm

See Page 11 for wet coil and options/accessory air resistance data.

HORIZONTAL

Total Air Volume 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	673	18	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
500	754	33	861	53	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
600	838	48	942	66	1037	80	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
700	928	61	1027	78	1118	92	1192	104	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
800	1023	75	1117	91	1204	106	1276	119	1339	134	1401	150	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
900	1125	89	1212	105	1293	121	1362	136	1424	152	1485	171	1547	190	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1000	1232	104	1311	121	1386	138	1452	155	1512	174	1571	195	1631	216	1689	239	1744	264	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1100	1341	121	1413	139	1481	158	1544	178	1602	200	1660	223	1717	246	1772	271	1823	298	1868	326	1910	352	- - -	- - -	- - -	- - -
1200	1452	141	1518	161	1580	182	1638	205	1694	230	1750	255	1804	281	1856	308	1903	335	1946	363	1988	389	2029	412	2072	434
1300	1564	164	1623	187	1680	211	1735	237	1788	265	1841	292	1893	319	1941	347	1985	375	2026	403	2067	428	2108	451	2150	474
1400	1673	192	1728	219	1781	247	1832	276	1882	305	1931	334	1979	362	2024	391	2066	418	2107	445	2147	469	2188	493	2230	516
1500	1778	229	1829	259	1879	289	1928	320	1974	350	2020	379	2064	408	2107	436	2149	463	2190	488	2231	512	2272	537	2312	563
1600	1881	274	1930	304	1978	336	2024	367	2067	396	2109	425	2151	453	2193	481	2235	507	2277	532	2318	558	2358	585	2397	614
1700	1987	321	2033	352	2078	382	2122	412	2163	441	2204	469	2244	498	2286	525	2327	551	2368	578	2408	606	2446	638	2484	673
1800	2096	367	2139	397	2182	426	2224	456	2264	484	2303	512	2344	540	2384	568	2424	596	2463	626	2501	660	2537	698	2571	738
1900	2208	396	2248	429	2288	461	2328	493	2367	524	2406	556	2445	587	2484	618	2522	650	2558	686	2593	726	2626	770	2657	814
2000	2318	437	2356	474	2394	511	2431	549	2469	585	2505	622	2542	659	2579	695	2614	733	2648	773	2681	814	2712	857	2743	900
2100	2424	505	2461	546	2497	587	2533	628	2568	668	2603	708	2637	748	2672	788	2706	828	2738	867	2770	906	2802	945	2833	983
2200	2530	582	2566	623	2602	664	2636	705	2670	745	2703	786	2737	826	2770	866	2803	905	2835	944	2866	983	2897	1021	2929	1060
2300	2638	659	2672	700	2707	741	2740	781	2773	822	2805	862	2838	902	2870	942	2902	982	2934	1021	2965	1059	2996	1098	3027	1136

Total Air Volume 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
1100	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1200	2192	497	2234	522	2275	549	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1300	2271	542	2312	569	2353	597	2393	626	2431	658	- - -	- - -	- - -	- - -
1400	2353	591	2392	621	2431	652	2470	683	2507	717	2543	752	2577	788
1500	2436	646	2474	679	2512	712	2549	746	2585	781	2620	816	2653	852
1600	2520	709	2557	744	2593	779	2628	815	2663	851	2696	887	2730	923
1700	2605	778	2640	815	2675	852	2709	889	2742	926	2775	963	2807	999
1800	2690	857	2723	895	2757	933	2790	970	2822	1008	2854	1044	2886	1081
1900	2775	941	2808	979	2841	1016	2873	1053	2905	1090	2937	1126	2969	1162
2000	2865	1021	2898	1058	2930	1096	2963	1132	2995	1168	3027	1204	3059	1240
2100	2961	1097	2993	1135	3025	1172	3057	1208	3089	1245	- - -	- - -	- - -	- - -
2200	3059	1173	3091	1211	3122	1248	3154	1284	- - -	- - -	- - -	- - -	- - -	- - -
2300	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

BLOWER DATA

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

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

MINIMUM AIR VOLUME REQUIRED FOR DIFFERENT GAS HEAT SIZES:
Standard Heat (S) - 1075 cfm; Medium Heat (M) - 1150 cfm; High Heat (H) - 1500 cfm

See Page 11 for wet coil and options/accessory air resistance data.

DOWNFLOW

Total Air Volume 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	655	12	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
500	727	26	822	46	918	63	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
600	802	40	896	58	990	74	1072	86	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
700	883	53	975	70	1065	85	1148	99	1218	111	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
800	970	66	1059	82	1146	97	1226	111	1296	125	1359	139	1420	156	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
900	1065	79	1150	95	1233	110	1309	125	1377	140	1438	156	1499	174	1560	193	1621	213	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1000	1167	93	1246	109	1323	125	1395	141	1460	157	1521	175	1579	195	1638	215	1696	237	1752	260	1801	285	1844	311	- - -	- - -
1100	1274	108	1347	125	1418	142	1485	159	1547	177	1605	197	1662	219	1718	242	1773	265	1825	290	1872	316	1914	343	1953	368
1200	1383	126	1450	144	1516	162	1577	181	1635	201	1691	223	1746	247	1800	272	1852	297	1900	323	1944	350	1985	377	2022	402
1300	1493	146	1555	164	1615	184	1672	205	1726	229	1779	254	1831	280	1882	306	1931	332	1977	359	2019	386	2057	413	2094	438
1400	1602	167	1659	188	1714	211	1766	235	1816	261	1866	289	1915	316	1964	343	2010	370	2053	397	2093	424	2132	449	2169	474
1500	1707	194	1758	219	1808	244	1857	271	1904	300	1950	328	1996	355	2041	381	2085	408	2127	434	2168	459	2207	484	2245	509
1600	1803	231	1851	258	1898	286	1945	314	1990	342	2034	369	2077	395	2120	419	2162	445	2204	471	2245	496	2285	522	2324	549
1700	1898	275	1944	303	1989	331	2034	359	2078	386	2120	410	2162	434	2204	458	2245	484	2286	511	2327	538	2366	567	2403	598
1800	1998	318	2041	347	2085	375	2128	402	2171	427	2213	451	2254	475	2294	500	2334	528	2374	557	2412	588	2449	621	2484	655
1900	2102	341	2143	371	2185	401	2226	431	2267	459	2308	487	2348	515	2387	546	2425	578	2463	611	2499	646	2534	682	2567	719
2000	2206	361	2245	396	2285	431	2325	465	2365	499	2404	534	2442	568	2479	604	2515	641	2551	677	2586	715	2619	752	2652	790
2100	2308	407	2347	446	2386	485	2424	524	2462	562	2499	600	2535	638	2570	676	2605	714	2640	752	2674	789	2707	826	2738	863
2200	2410	477	2449	517	2487	557	2524	597	2561	636	2596	674	2630	712	2664	750	2698	787	2732	825	2765	862	2797	898	2828	934
2300	2514	552	2552	591	2589	631	2625	670	2660	709	2694	747	2727	784	2760	822	2793	859	2826	896	2858	933	2889	969	2920	1004
2400	2621	627	2657	666	2693	706	2728	744	2762	782	2794	820	2826	857	2858	894	2890	931	2922	968	2953	1004	2984	1040	3014	1076
2500	2729	703	2764	742	2798	781	2831	819	2864	856	2895	893	2927	930	2958	967	2989	1004	3020	1040	3050	1076	3080	1112	3111	1147

Total Air Volume 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
1100	1990	392	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1200	2060	426	2098	449	2136	470	2176	493	- - -	- - -	- - -	- - -	- - -	- - -
1300	2131	462	2169	485	2208	507	2247	531	2286	555	2325	582	2363	609
1400	2206	498	2244	522	2282	546	2320	572	2358	599	2396	627	2433	657
1500	2283	534	2321	560	2359	588	2395	617	2432	648	2467	680	2503	713
1600	2362	577	2398	608	2434	640	2469	673	2503	707	2537	741	2571	775
1700	2439	631	2474	665	2507	700	2540	736	2573	772	2606	807	2639	842
1800	2518	691	2551	728	2583	765	2615	802	2647	838	2680	873	2713	908
1900	2600	757	2631	794	2663	832	2694	868	2726	904	2759	940	2791	975
2000	2683	827	2715	864	2746	901	2777	937	2809	972	2841	1008	2873	1043
2100	2770	899	2800	935	2831	971	2863	1006	2894	1041	2926	1077	2958	1112
2200	2859	970	2889	1005	2920	1040	2951	1076	2983	1111	3014	1146	3046	1181
2300	2950	1040	2981	1076	3012	1111	3043	1146	3074	1182	- - -	- - -	- - -	- - -
2400	3045	1111	3075	1147	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
2500	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

BLOWER DATA

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

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

MINIMUM AIR VOLUME REQUIRED FOR DIFFERENT GAS HEAT SIZES:
Standard Heat (S) - 1075 cfm; Medium Heat (M) - 1150 cfm; High Heat (H) - 1500 cfm

See Page 11 for wet coil and options/accessory air resistance data.

HORIZONTAL

Total Air Volume 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	685	20	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
500	776	37	880	57	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
600	867	53	968	71	1054	83	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
700	959	67	1058	85	1143	97	1209	107	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
800	1056	81	1151	98	1233	112	1299	123	1358	137	1416	153	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
900	1159	95	1248	113	1326	128	1390	142	1448	158	1506	176	1564	194	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1000	1266	111	1348	129	1421	146	1483	163	1541	182	1598	202	1653	223	1706	244	1756	268	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1100	1377	129	1451	149	1518	168	1578	188	1635	210	1690	232	1744	256	1794	280	1840	306	1882	333	1922	358	- - -	- - -	- - -	- - -
1200	1489	151	1556	172	1618	194	1676	218	1731	243	1784	268	1835	293	1883	320	1926	347	1967	374	2006	398	2046	420	2086	441
1300	1602	175	1663	200	1720	226	1774	253	1827	281	1878	308	1927	335	1972	363	2013	391	2052	417	2091	441	2131	463	2170	484
1400	1712	207	1768	235	1822	265	1873	296	1923	325	1971	354	2017	382	2059	410	2100	437	2139	462	2177	485	2217	508	2256	531
1500	1817	248	1871	279	1922	311	1971	343	2017	373	2062	402	2106	431	2148	459	2188	484	2227	508	2267	532	2306	556	2344	581
1600	1922	295	1973	328	2023	360	2069	392	2113	422	2155	451	2198	479	2239	506	2280	531	2320	556	2359	581	2397	609	2434	638
1700	2030	345	2078	377	2126	409	2170	439	2212	469	2253	498	2294	526	2336	553	2376	579	2415	606	2453	635	2490	668	2525	703
1800	2141	391	2187	423	2231	454	2274	484	2315	514	2356	543	2396	571	2436	598	2475	627	2513	659	2549	695	2583	734	2616	774
1900	2255	423	2297	458	2339	492	2380	526	2420	559	2460	591	2499	623	2537	655	2574	689	2609	727	2642	769	2674	813	2704	856
2000	2365	470	2405	511	2445	550	2484	589	2522	628	2560	666	2597	703	2634	740	2668	779	2701	819	2732	861	2763	903	2793	944
2100	2472	545	2511	588	2550	631	2587	674	2624	716	2659	757	2695	798	2730	838	2763	877	2795	915	2826	953	2857	991	2888	1028
2200	2580	624	2618	668	2656	711	2692	754	2727	795	2762	837	2796	877	2830	917	2863	957	2894	995	2925	1033	2956	1071	2987	1108
2300	2689	704	2726	748	2762	791	2798	833	2832	875	2866	916	2899	957	2932	997	2964	1036	2996	1074	3027	1112	3057	1150	3088	1187
2400	2798	784	2834	827	2870	870	2904	913	2937	954	2970	995	3003	1036	3035	1076	3067	1115	3098	1153	- - -	- - -	- - -	- - -	- - -	- - -
2500	2908	864	2943	907	2977	950	3011	992	3043	1034	3076	1075	3108	1115	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Total Air Volume 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
1100	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1200	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1300	2210	507	2248	531	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
1400	2295	555	2332	581	2369	607	2405	634	2439	661	- - -	- - -	- - -	- - -
1500	2382	609	2418	637	2454	666	2489	695	2522	726	2554	758	2585	792
1600	2470	669	2506	700	2540	731	2573	763	2606	796	2637	829	2667	863
1700	2559	737	2593	770	2626	804	2658	838	2689	872	2719	906	2748	940
1800	2649	811	2681	847	2713	882	2744	917	2774	952	2803	987	2832	1021
1900	2736	895	2767	932	2798	968	2828	1003	2858	1039	2886	1073	2914	1108
2000	2825	982	2856	1019	2886	1054	2916	1090	2945	1125	2974	1159	3003	1193
2100	2919	1065	2950	1101	2980	1137	3010	1172	3039	1206	3069	1240	3098	1274
2200	3018	1144	3048	1180	3078	1216	3108	1251	- - -	- - -	- - -	- - -	- - -	- - -
2300	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
2400	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
2500	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

BLOWER DATA

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

Air Volume cfm	Wet Indoor Coil		Humiditrol™+ Reheat Coil	Gas Heating		Economizer	Filters		
	036, 048	060, 074		Medium Heat	High Heat		MERV 8	MERV 13	MERV 16
800	0.01	- - -	- - -	0.02	0.02	0.04	0.04	0.05	0.04
1000	0.02	0.02	0.00	0.02	0.02	0.04	0.04	0.07	0.05
1200	0.03	0.04	0.00	0.02	0.02	0.04	0.04	0.07	0.05
1400	0.04	0.05	0.01	0.02	0.03	0.04	0.04	0.07	0.06
1600	0.05	0.07	0.02	0.03	0.04	0.04	0.04	0.07	0.08
1800	0.06	0.08	0.02	0.04	0.05	0.05	0.04	0.07	0.09
2000	0.08	0.10	0.02	0.04	0.06	0.05	0.05	0.08	0.10
2200	- - -	0.11	0.04	0.04	0.07	0.05	0.05	0.08	0.11
2400	- - -	0.13	0.04	0.05	0.08	0.05	0.05	0.08	0.12

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 DATA — 3 TON

		Model No.	LGM036U4E / LGM036U4P		
[1] Voltage - 60Hz			208/230V-3ph	460V-3ph	575V-3ph
Compressor		Rated Load Amps	9.1	5.1	4.1
Outdoor Fan Motor		Full Load Amps	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		Horsepower	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

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.

ELECTRICAL DATA — 4 TON

		Model No.	LGM048U4E / LGM048U4P		
[1] Voltage - 60Hz			208/230V-3ph	460V-3ph	575V-3ph
Compressor		Rated Load Amps	13.8	6.5	5.5
Outdoor Fan Motor		Full Load Amps	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		Horsepower	1.5	1.5	1.5
		Full Load Amps	4.4	2.3	2.4
[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

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.

ELECTRICAL DATA — 5 TON

		Model No.	LGM060U4E / LGM060U4P		
[1] Voltage - 60Hz			208/230V-3ph	460V-3ph	575V-3ph
Compressor		Rated Load Amps	14.6	7	5.8
Outdoor Fan Motor		Full Load Amps	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		Horsepower	1.5	1.5	1.5
		Full Load Amps	4.4	2.3	2.4
[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

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.

ELECTRICAL DATA — 6 TON

		Model No.	LGM074U4E / LGM074U4P		
[1] Voltage - 60Hz			208/230V-3ph	460V-3ph	575V-3ph
Compressor		Rated Load Amps	16.9	8.3	6.8
Outdoor Fan Motor		Full Load Amps	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		Horsepower	1.5	1.5	1.5
		Full Load Amps	4.4	2.3	2.4
[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

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.

LGM PARTS ARRANGEMENT

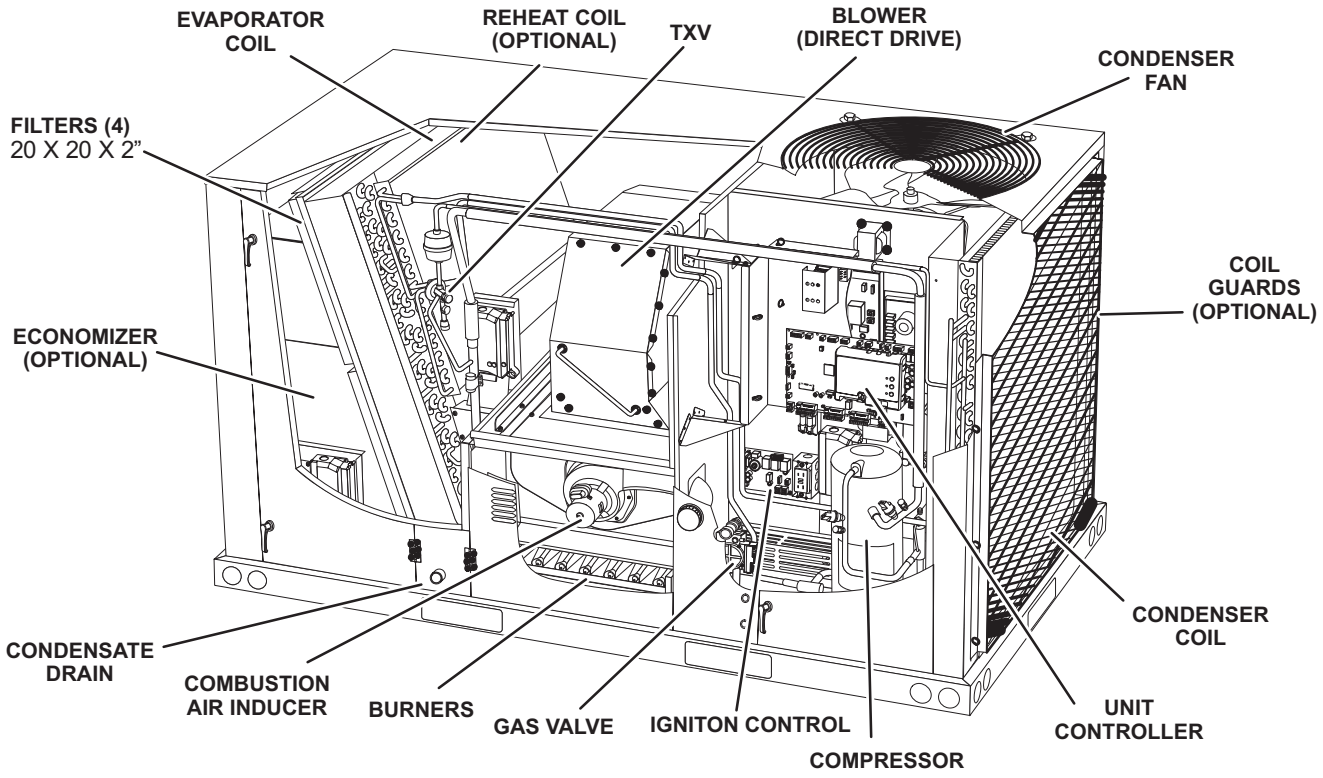


FIGURE 1

LGM HINGED CONTROL PANEL

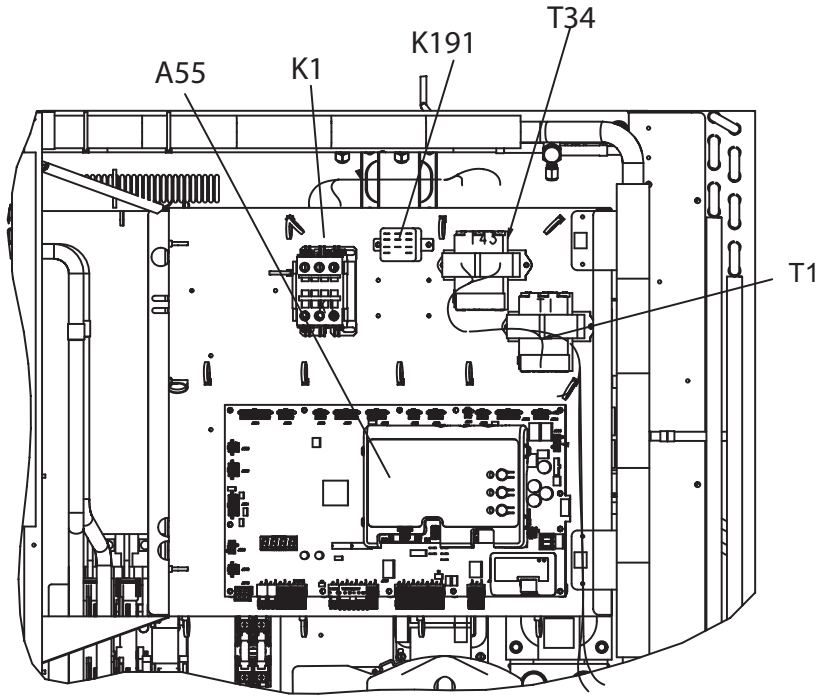


FIGURE 2

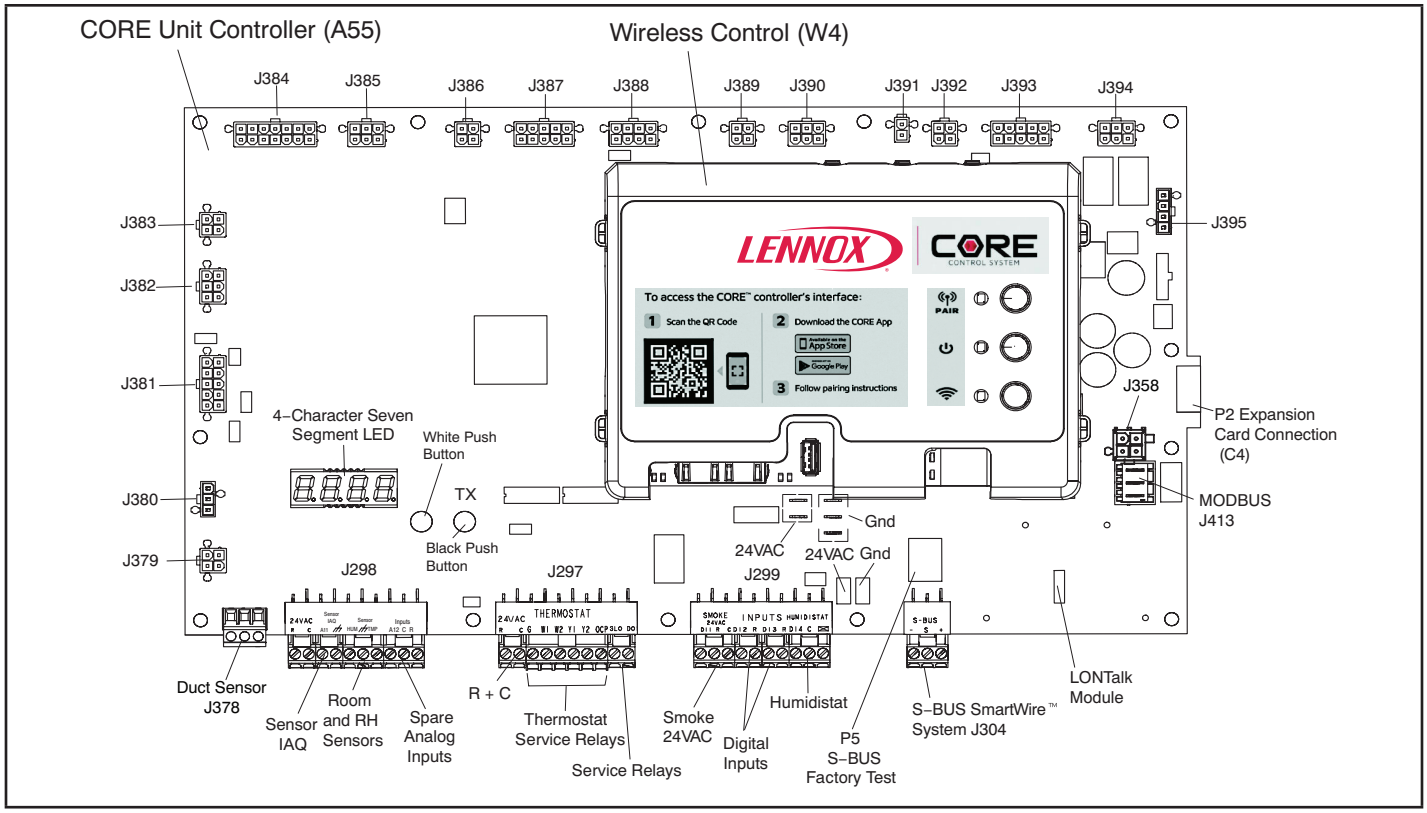


FIGURE 3

I-UNIT COMPONENTS

All 3 through 6 ton (7 through 21 kW) units are configure to order units (CTO). The LGM 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

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

1-Control Transformers T1/T43

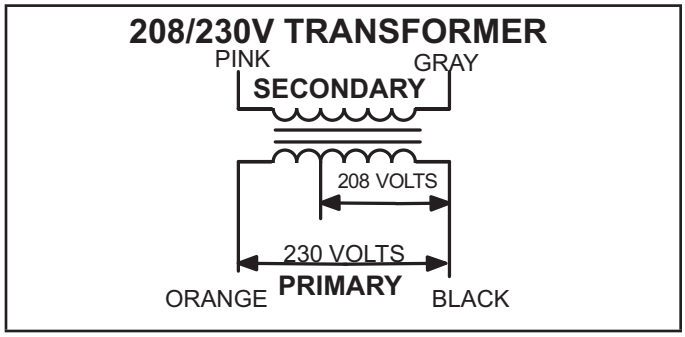


FIGURE 4

All use a single line voltage to 24VAC transformer mounted on the hinged control panel. Transformer supplies power to control circuits in the unit. The transformer is rated at 70VA and is protected by a 3.5 amp circuit (CB8).

The 208/230 (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 LGM 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.

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.

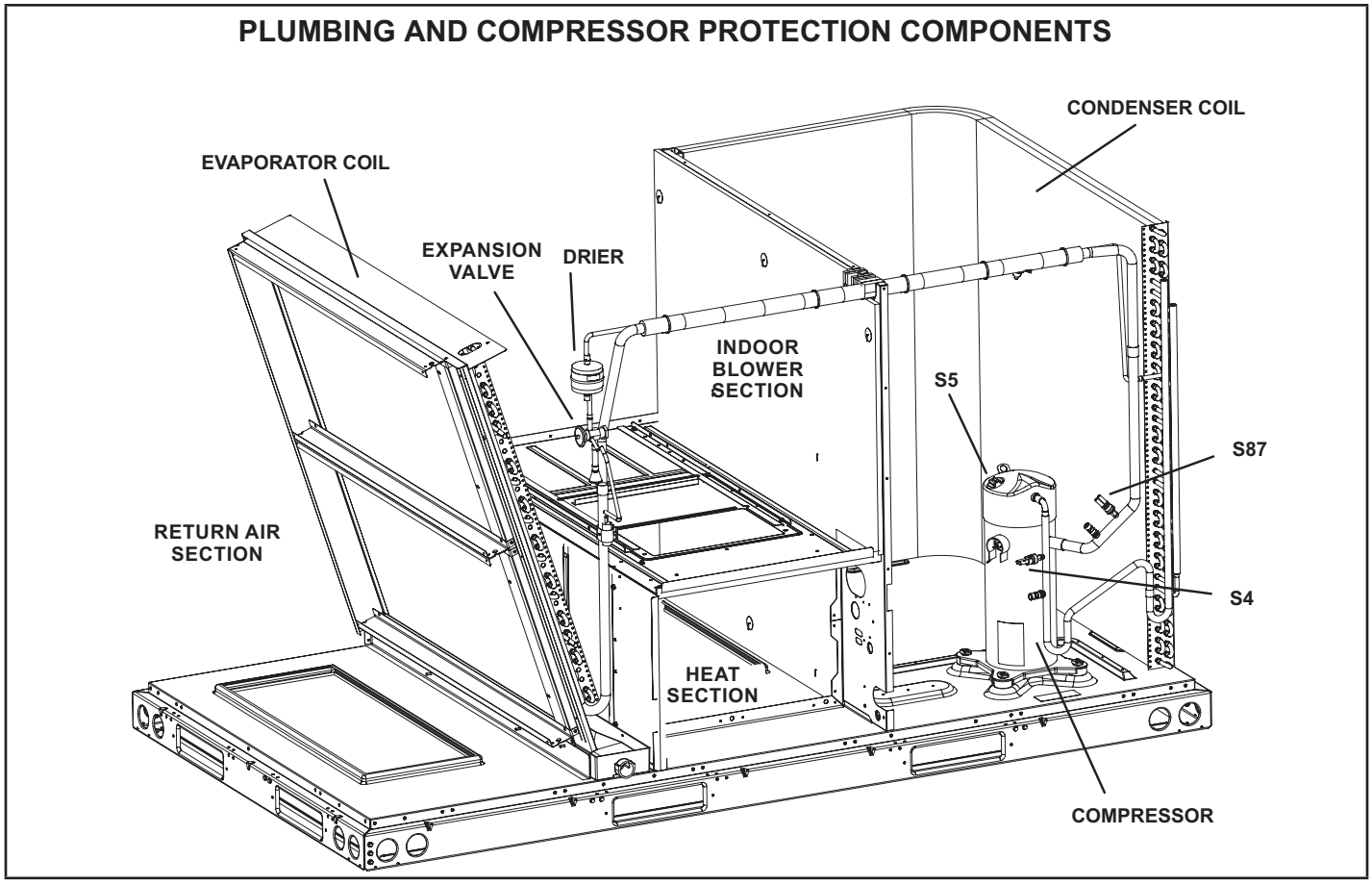


FIGURE 5

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

Unit	RT42 & RT46	RT44 & RT48
036U, 048U	Figure 6	Figure 8
060U, 074U	Figure 7	

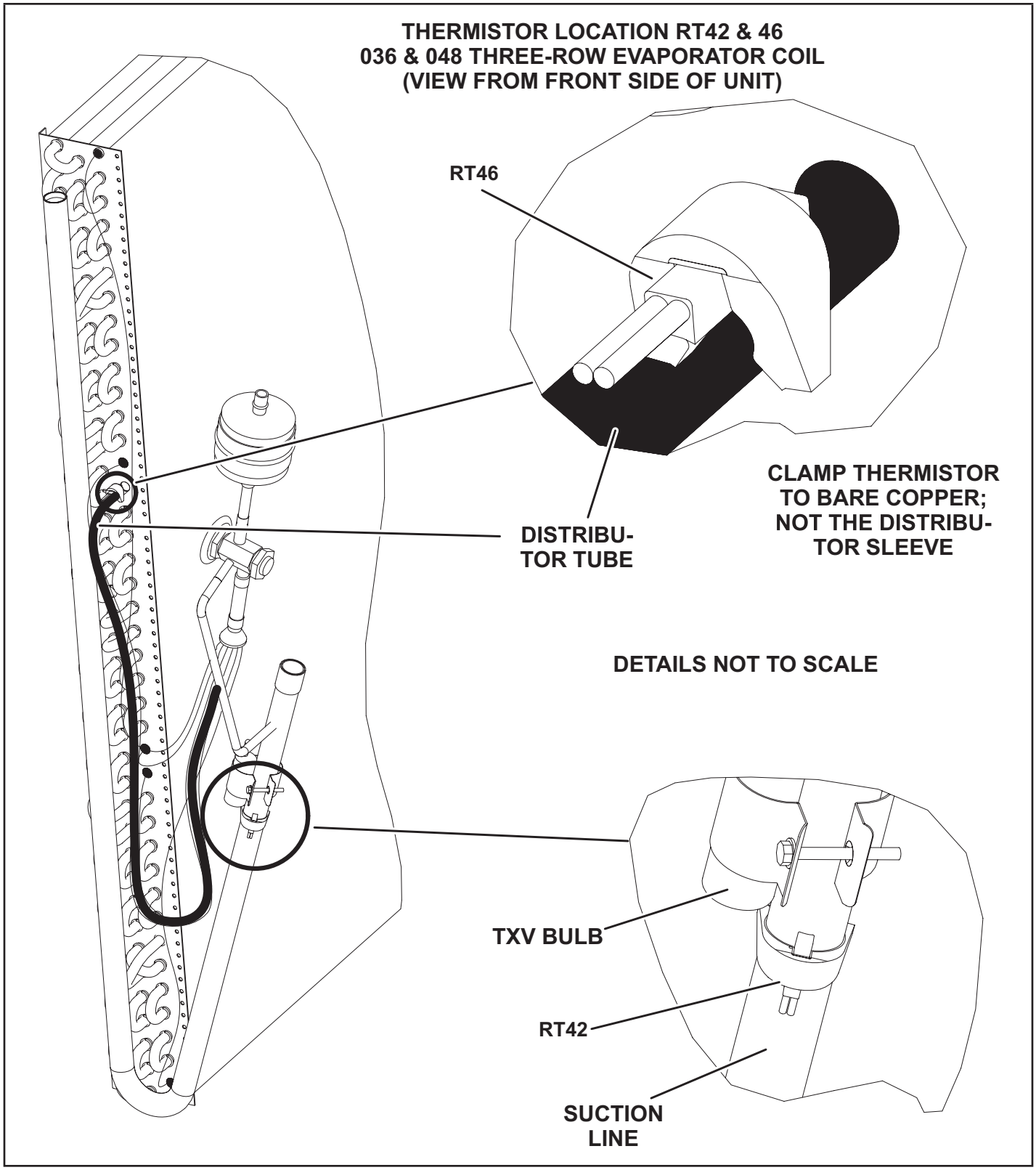

THERMISTOR LOCATION RT42 & 46
036 & 048 THREE-ROW EVAPORATOR COIL
(VIEW FROM FRONT SIDE OF UNIT)
RT46
CLAMP THERMISTOR TO BARE COPPER; NOT THE DISTRIBU-TOR SLEEVE
DISTRIBU-TOR TUBE
DETAILS NOT TO SCALE
TXV BULB
RT42
SUCTION LINE

FIGURE 6

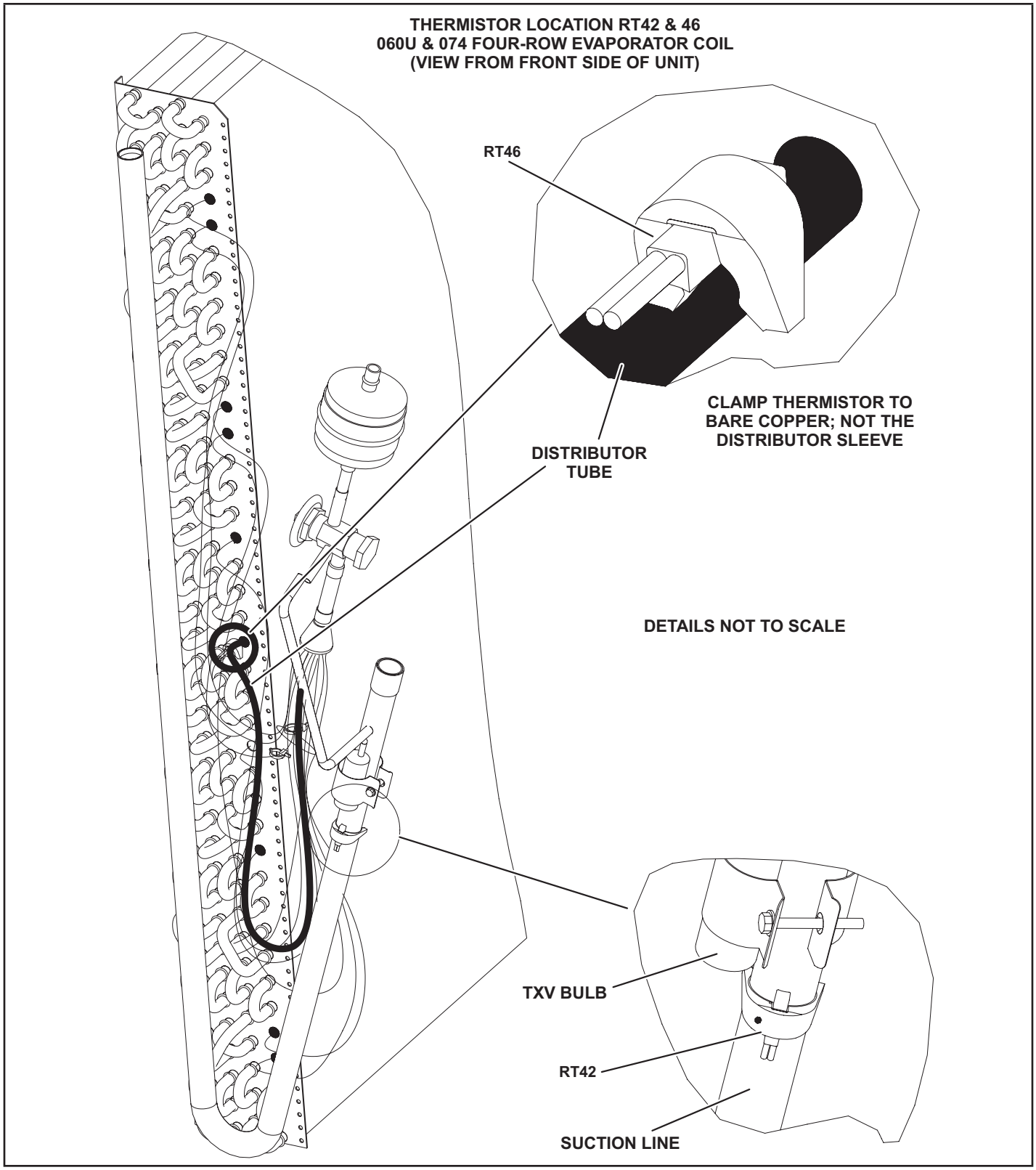

THERMISTOR LOCATION RT42 & 46
060U & 074 FOUR-ROW EVAPORATOR COIL
(VIEW FROM FRONT SIDE OF UNIT)
RT46
CLAMP THERMISTOR TO BARE COPPER; NOT THE DISTRIBUTOR SLEEVE
DISTRIBUTOR TUBE
DETAILS NOT TO SCALE
TXV BULB
RT42
SUCTION LINE

FIGURE 7

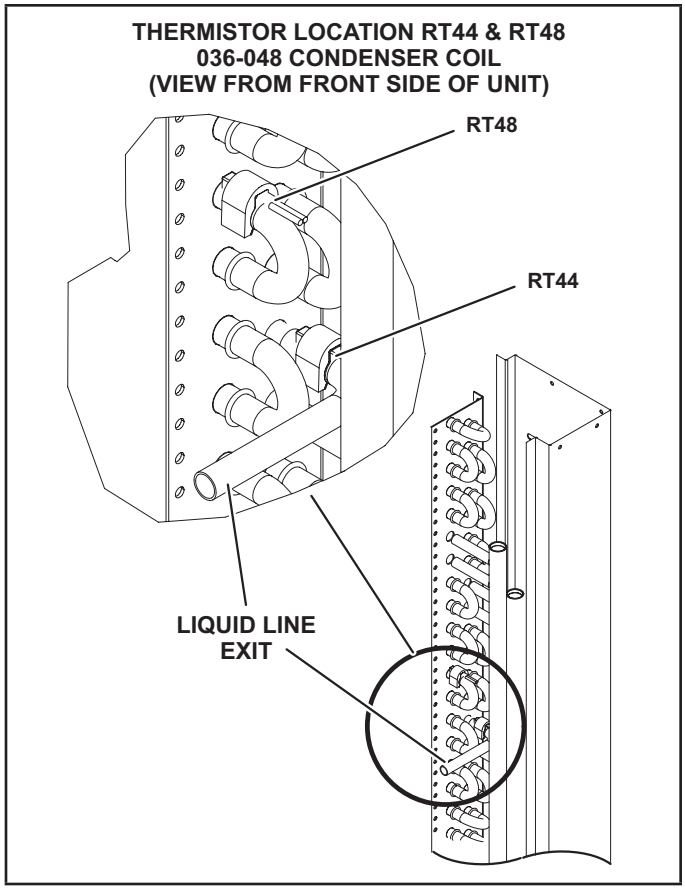


FIGURE 8

⚠ 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.

5-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 9 for compressor safety devices and FIGURE 10 for compressor diagnostics.

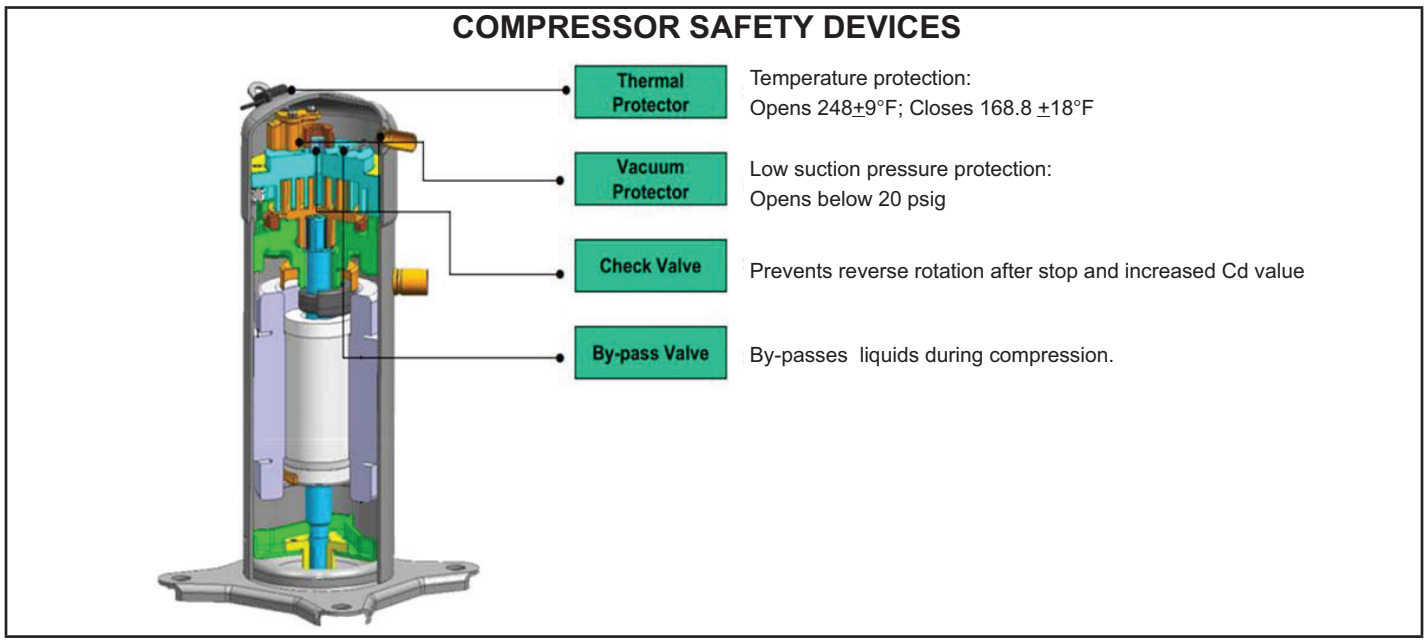
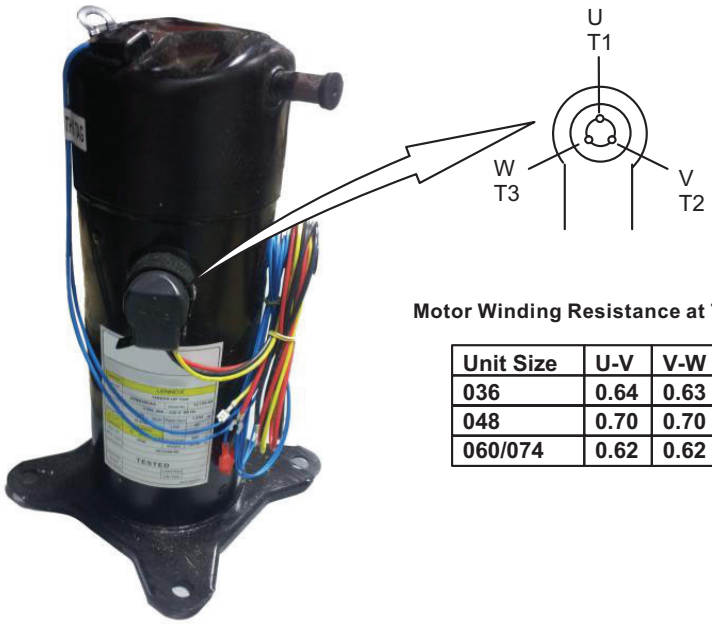


FIGURE 9

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 10

6-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 11 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 2 for inverter-related alarms. Inverter component wire routing is shown in FIGURE 12.

⚠ 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

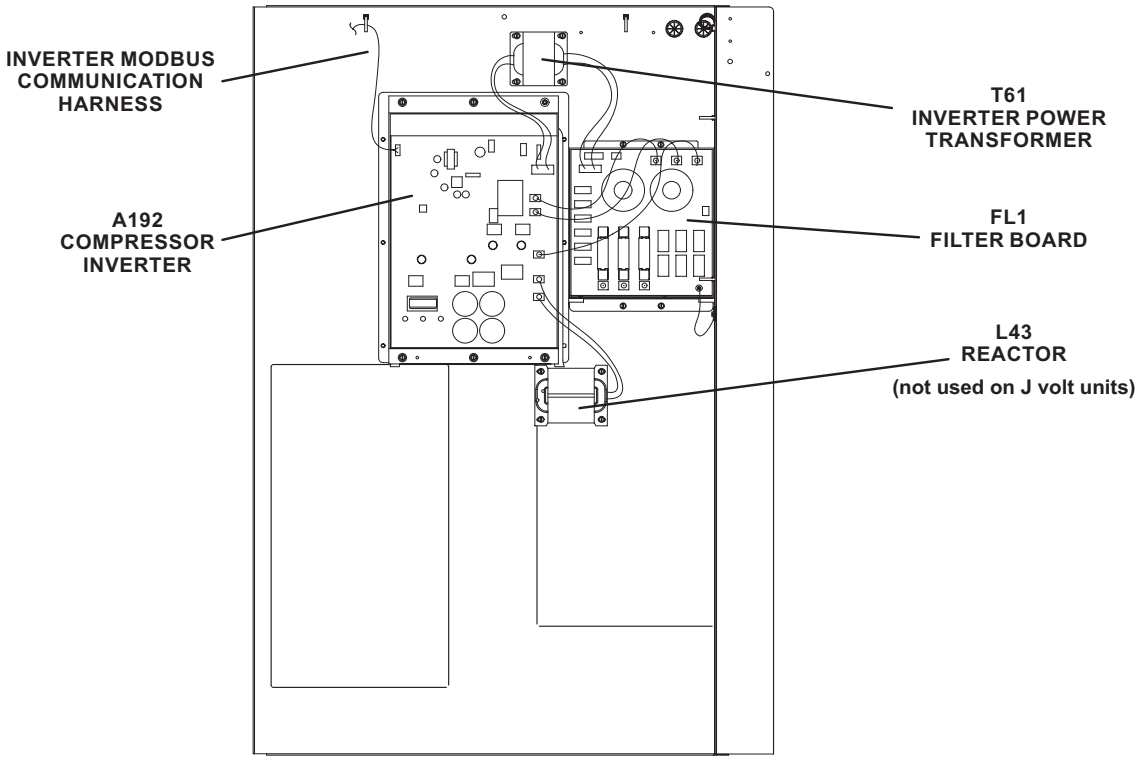


FIGURE 11

TABLE 2

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.

7-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.

8-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.

9-Reactor L43

The reactor (inductor or choke) is used to improve the power factor. This passive, two-terminal electrical component has a magnetic field that stores energy. Reactors are one of the basic components used in electronics where current and voltage change with time (due to the ability of inductors to delay and reshape alternating currents). This component is connected to the compressor inverter A192. A 2mH reactor is used on 208/230V units and a 13mH reactor is used on 460V units.

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 13.

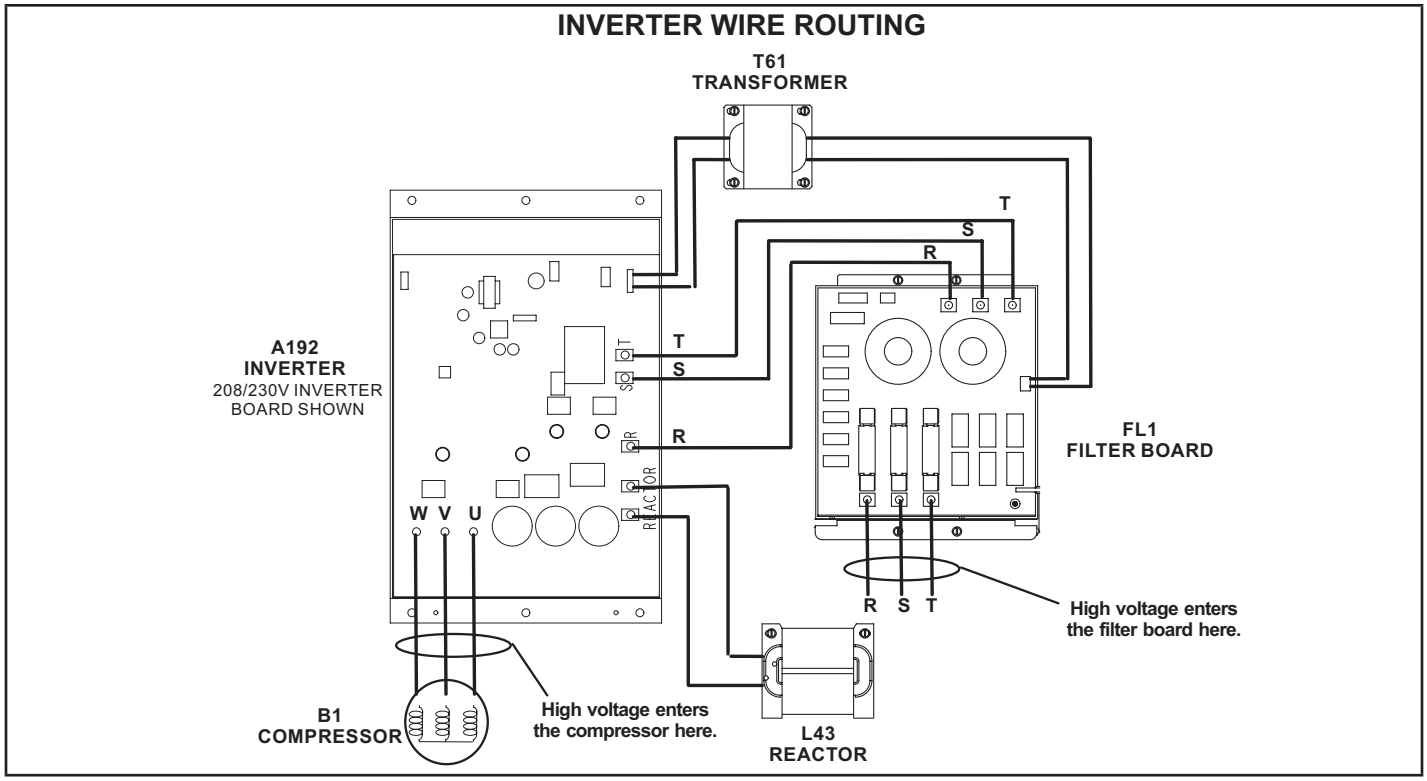


FIGURE 12

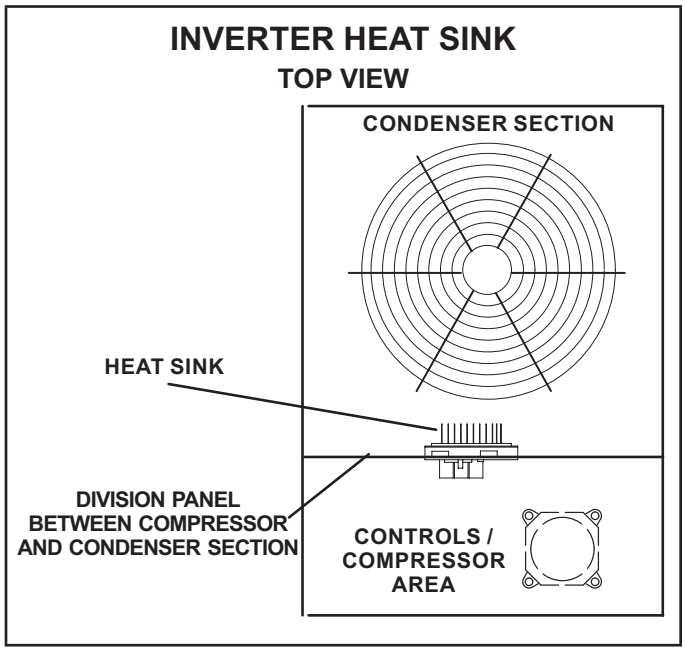


FIGURE 13

C-GAS HEAT COMPONENTS

LGM048U, 060U, and 074U are available with two stages of gas heat. See SPECIFICATION - GAS HEAT

1-Ignition Control A3

The ignition control provides three main functions: gas valve control, ignition, and flame sensing. The control has a red LED to show control status (TABLE 3).

TABLE 3

UTEC	
LED Flashes	**Indicates**
Steady Off	No power or control hardware fault.
Steady On	Power applied. Control OK.
3 Flashes	Ignition lockout from too many trials.
4 Flashes	Ignition lockout from too many flame losses within single call for heat.
5 Flashes	Control hardware fault detected.

Flame rectification sensing is used on all LGM units. Loss of flame during a heating cycle is indicated by an absence of flame signal (0 microamps). If this happens, the control will immediately restart the ignition sequence and then lock out if ignition is not gained after the third trial. See System Service Checks section for flame current measurement.

The control shuts off gas flow immediately in the event of a power failure. Upon restoration of gas and power, the control will restart the ignition sequence and continue until flame is established or system locks out.

⚠ WARNING

Shock hazard. Spark related components contain high voltage which can cause personal injury or death. Disconnect power before servicing. Control is not field repairable. Unsafe operation will result. If control is inoperable, simply replace the entire control.

Operation

On a heating demand, the ignition control checks for a closed limit switch. Once this check is complete and conditions are correct, the ignition control then allows 30 seconds for the combustion air inducer to vent exhaust gases from the burners. When the combustion air inducer is purging the exhaust gases, the combustion air prove switch closes proving that the combustion air inducer is operating before allowing the ignition control to energize. When the combustion air prove switch is closed and the delay is over, the ignition control activates the gas valve(s), the spark electrode and the flame sensing electrode.

At the start of the ignition sequence, the adjustable 40 second (default) indoor blower delay period begins. Sparking stops immediately after flame is sensed or at the end of the 8 second trial for ignition. If flame is not sensed, A3 or A12 will wait 5 minutes before attempting ignition again. If the third trial fails, A3 or A12 will lock-out for one hour. The A55 counts this as a first strike. After the first lock-out hour elapses, A3 or A12 will attempt ignition three more times. If flame is still not sensed, A3 or A12 will lock-out for the second hour. A55 counts this as the second strike. After the second lockout hour, A3 or A12 will attempt ignition three more times. If ignition fails, A55 considers this the third strike and will lock-out unit operation. Service relay contacts close and alarm 59 or 69 is displayed. The unit will remain in lock-out until:

1-A55 is reset

or

2-The alarm condition is cleared AND the alarm status is read through the SBUS command.

Once the flame is sensed, the ignition control then proceeds to “steady state” mode where all inputs are monitored to ensure the limit switch, roll-out switch and prove switch are closed as well as flame is present. When the heat call is satisfied the gas valve and combustion air inducer are de-energized. An adjustable 120-second (default) blower off delay begins.

2-Primary High Temperature Limits S10

S10 is a SPST N.C. high temperature primary limit for gas heat. Limits are located in the control box next to the discharge air sensor. See FIGURE 15.

Limits are wired to the A3 ignition control. N.C. contacts open to de-energize the ignition control when excessive temperature is reached in the blower compartment.

IGNITION CONTROL A3

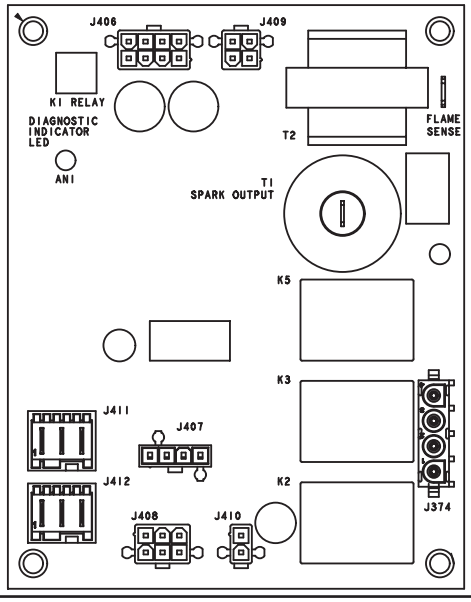


FIGURE 14

3-Heat Exchanger FIGURE 15

The LGM units use aluminized steel inshot burners with tubular aluminized (stainless is optional) steel heat exchangers and redundant gas valve. Burners in all units use a burner venturi to mix gas and air for proper combustion. Combustion takes place at each tube entrance. As hot combustion gases are drawn upward through each tube by the combustion air inducer, exhaust gases are drawn out the top and fresh air/gas mixture is drawn in at the bottom. Heat is transferred to the air stream from all surfaces of the heat exchanger tubes. The supply air blower forces air across the tubes to extract the heat of combustion. The shape of the tubes ensures maximum heat exchange.

The gas valves on two stage units accomplish staging by allowing more or less gas to the burners as called for by heating demand.

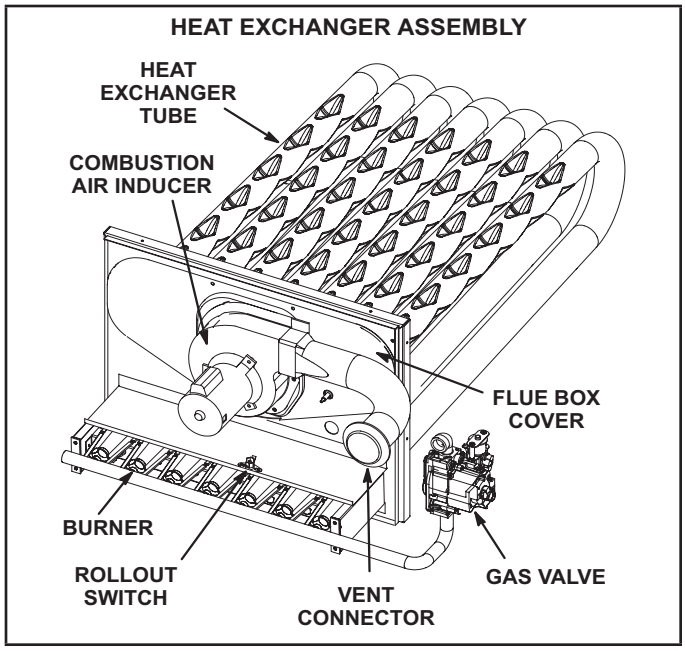


FIGURE 15

4-Burner Box Assembly FIGURE 16

The burner assembly consists of a spark electrode, flame sensing electrode and gas valve. Ignition board A3 and A12 control all functions of the assembly.

Burners

All units use inshot burners. Burners are factory set and do not require adjustment. A peep hole with cover is furnished in the heating access panel for flame viewing. Always operate the unit with the access panel in place.

Burners can be removed individually for service on older units. On newer units, burners are connected and the entire assembly can be removed. Burner maintenance and service is detailed in the SERVICE CHECKS section of this manual. See FIGURE 17 for number of burners.

Orifice

Each burner uses an orifice which is matched to the burner input. The orifice is threaded into the burner manifold. The burner is supported by the orifice and will easily slide off for service once the mounting screws are removed from the burners.

NOTE - *Do not use thread sealing compound on the orifices. Using thread sealing compound may plug the orifices.*

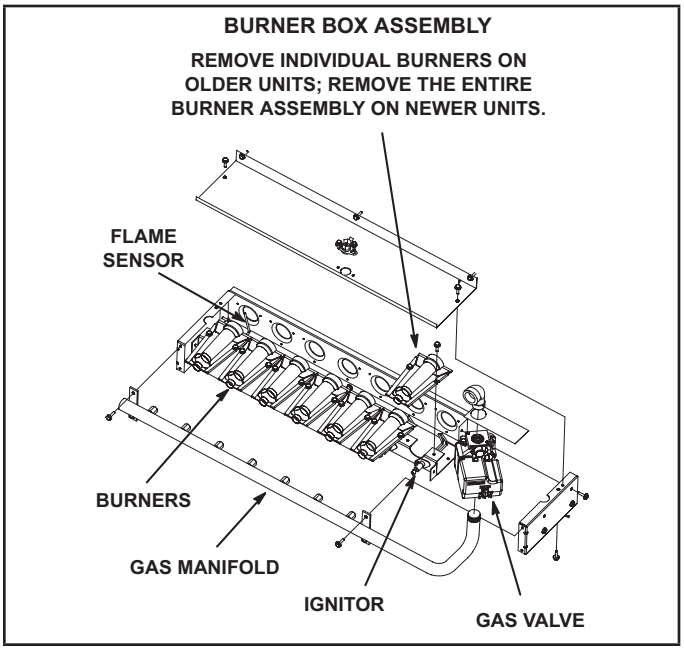


FIGURE 16

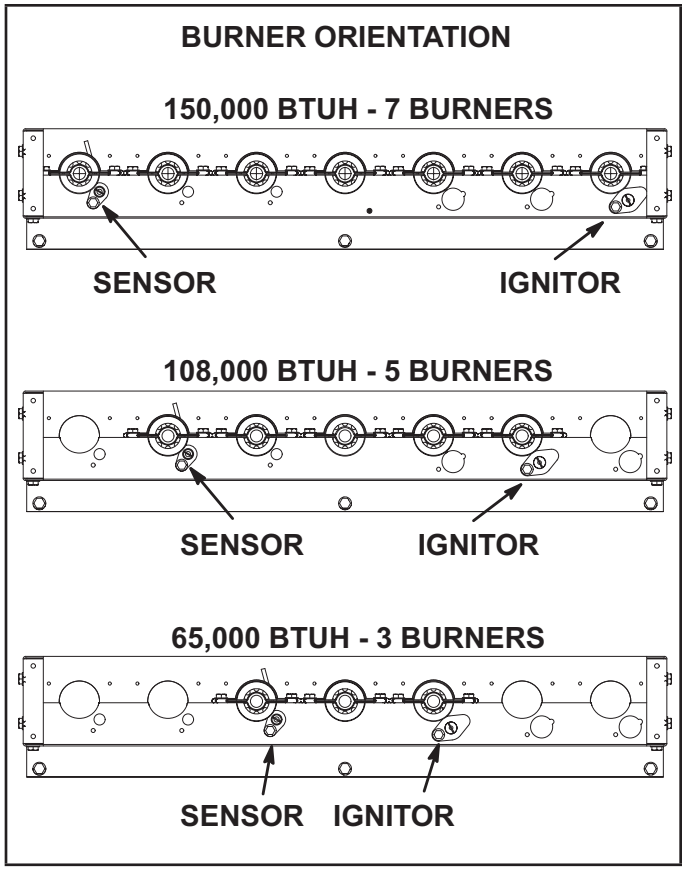


FIGURE 17

5-Flame Roll-out Limit Switch S47

The flame roll-out limit switch is a SPST N.C. high temperature limit located just above the burner air intake opening in the burner enclosures. The switch is wired to the A3 ignition controller. When the limit switch senses flame roll-out (indicating a blockage in the combustion air passages), the flame roll-out limit trips, and the Unit Controller immediately closes the gas valve. Limit is factory preset to open at 340F ± 16F on a temperature rise on all units. All flame roll-out limits are manual reset.

6-Combustion Air Prove Switch S18

Prove switch S18 is a SPST N.O. switch located to the right of the induced draft assembly. See FIGURE 18. S18 monitors combustion air inducer operation. Switch S18 is wired to A3 ignition controller which checks its status upon a call for heating. The switch closes at negative 0.10"W.C. ± 0.05" (24.8 Pa ± 12.4 Pa) on pressure fall. This negative pressure fall and switch actuation allows the ignition sequence to continue (proves, by closing, that the combustion air inducer is operating before allowing the gas valve to open.) The combustion air prove switch is factory set and not adjustable.

7-Combustion Air Motor Capacitor C3

The combustion air inducer motors in all LGM units require run capacitors. Capacitor C3 is connected to combustion air inducer B6. Ratings will be on side of capacitor or combustion air motor nameplate.

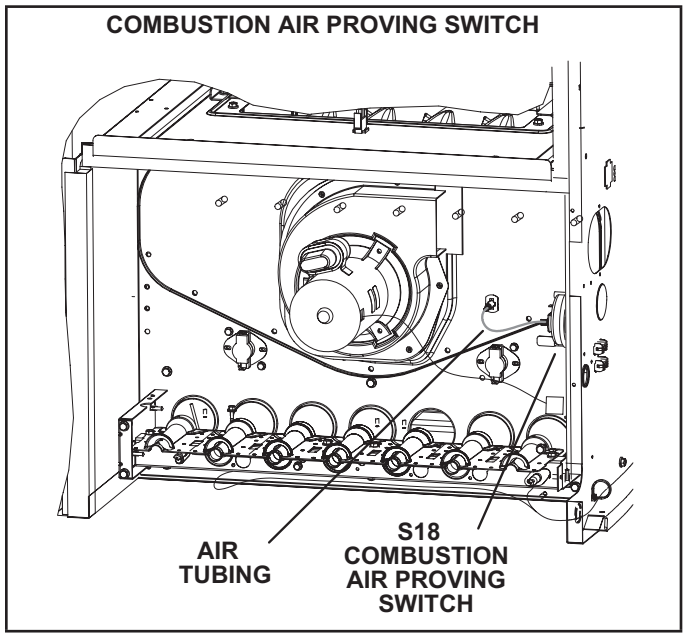


FIGURE 18

8-Combustion Air Inducer B6

Combustion air inducers provide air to the corresponding burners while clearing the combustion chamber of exhaust gases. The inducer begins operating immediately upon receiving a thermostat demand and is de-energized when thermostat demand is satisfied.

The inducer uses a 208/230V single-phase PSC motor and a 5.24 in. x .96in. blower wheel. All motors operate at 3300RPM and are equipped with auto-reset overload protection. Two-speed units have reduced RPM for low speed. Inducers are supplied by various manufacturers. Ratings may vary by manufacturer. Specific inducer electrical ratings can be found on the unit rating plate.

The ignition control board energizes an internal relay to route power to the combustion air blower motor. A3 then allows 30 to seconds for the combustion air inducer to vent exhaust gases from the burners. When the combustion air inducer is purging the exhaust gases, the combustion air prove switch closes, proving that the combustion air inducer is operating before allowing the ignition sequence to continue. When the combustion air prove switch is closed and the delay is over, the A3 ignition control activates the appropriate stage operator of the gas valve, the spark and the flame sensing electrode. Sparking stops immediately after flame is sensed or at the end of the eight second trial for ignition.

On two-stage natural gas units, the inducer will operate on low speed for first stage heat (W1) and ramp up to high speed for second stage heat (W2).

All combustion air inducer motors are sealed and cannot be oiled. The inducer cannot be adjusted but can be removed from the heat section for cleaning.

9-Gas Valves GV1

Units are equipped with a two-stage gas valve. When a heating demand is present, the valve is energized in low fire by the ignition control at the same time as the spark electrode.

If the heating demand increases, the high fire signal is provided by the ignition controller. Both the low fire and high fire signals are required for the gas valve to operate in high fire.

A shut-off knob/switch is provided on the valve for manual shut-off. The shut-off knob/switch will immediately close both stages without delay.

Both low fire and high fire (if applicable) valve outputs are adjustable. FIGURE 23 shows gas valve components. TABLE 4 shows factory gas valve operating manifold pressures.

TABLE 4

Operating Pressure (outlet) Factory Setting "W.C

Natural		LP	
Low	High	Low	High
2.0 ± 0.3"	3.5 ± 0.3	5.9" ± 0.3	10.5" ± 0.5

The gas manifold pressure should be adjusted when the unit is installed at altitudes higher than 2000 feet. See HIGH ALTITUDE table in SPECIFICATIONS - GAS HEAT

10-Spark Electrode (Ignitor) FIGURE 19

An electrode assembly is used for ignition spark. The electrode is inserted through holes in the burner support. See FIGURE 17. The electrode tip protrudes into the flame envelope of the adjacent burner. The electrode assembly is fastened to burner supports and can be removed for service without removing any part of the burners.

During ignition, spark travels through the spark electrode (FIGURE 19) and ignites the appropriate burner depending on the heating stage. Flame travels from burner to burner until all are lit.

The spark electrode is connected to the ignition control by a 8 mm silicone-insulated stranded high voltage wire. The wire uses 1/4" (6.35 mm)female quick connect on both ends of the wire.

NOTE - *If electrode wire must be replaced, wire and suppression must be same type cable.*

The spark electrode assembly can be removed for inspection by removing the screw securing the electrode assembly and sliding it out of unit.

For proper unit operation, electrodes must be positioned and gapped correctly.

Spark gap may be checked with appropriately sized twist drills or feeler gauges. Disconnect power to the unit and remove electrode assembly. The gap should be between 0.125" ± 0.015" (3.2 mm ± .4 mm). See FIGURE 19.

⚠ IMPORTANT

In order to maximize spark energy to electrode, high voltage wire should touch unit cabinet as little as possible.

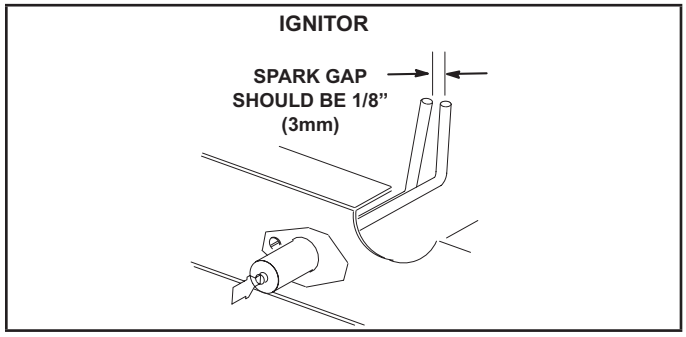


FIGURE 19

11-Flame Sensor

The flame sensor (FIGURE 20) is mounted through a hole in the burner support and the tip protrudes into the flame envelope of the appropriate burner. See FIGURE 17 for location. The sensor assembly is fastened to burner supports and can be removed for service without removing any part of the burners.

When flame is sensed by the flame sensor (indicated by microamp signal through the flame) sparking stops immediately or after the eight second trial for ignition. During operation, flame is sensed by current passed along the ground electrode (located on the spark electrode), through the flame and into the sensing electrode. The ignition control allows the gas valve to stay open as long as a flame signal (current passed through the flame) is sensed.

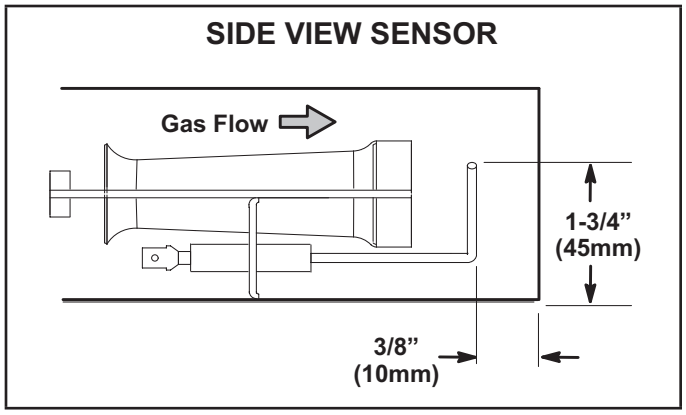


FIGURE 20

D-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 21.

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.

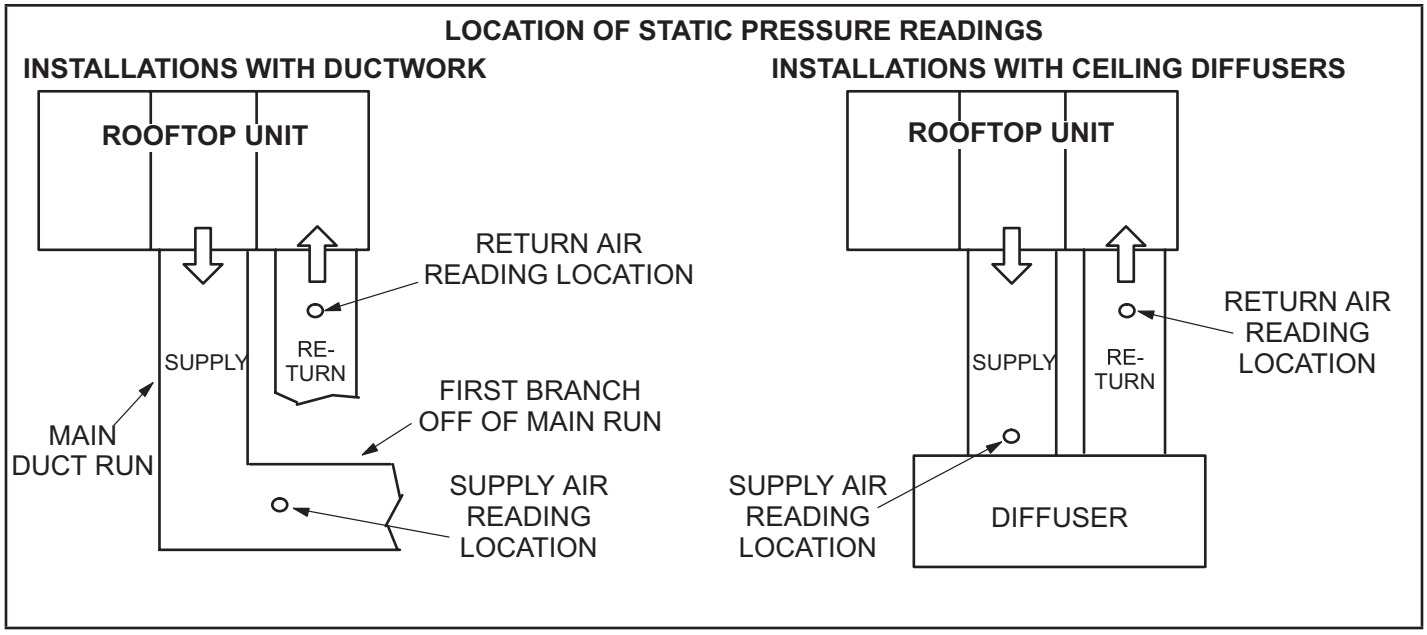


FIGURE 21

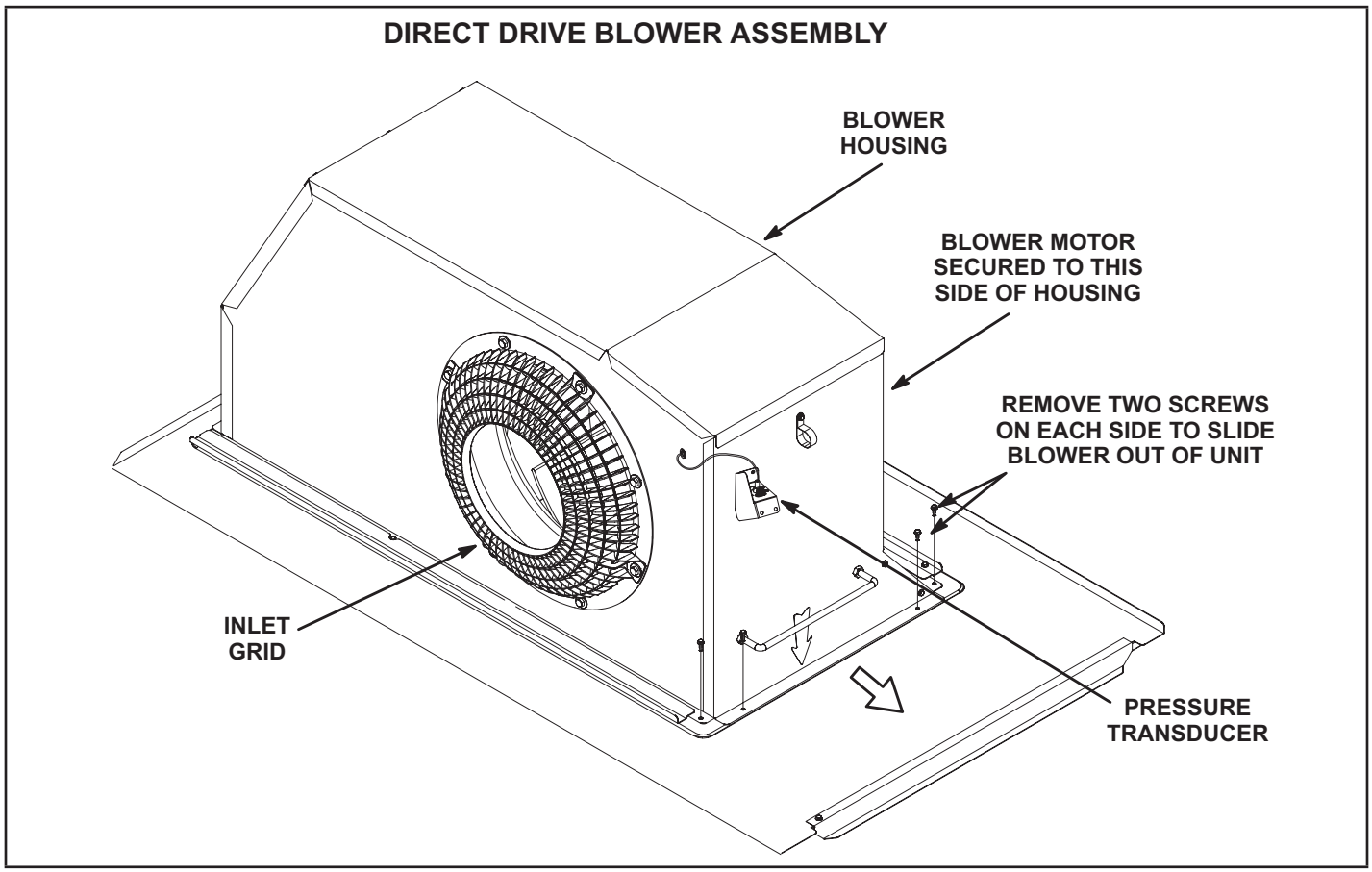


FIGURE 22

C-Adjusting Unit CFM

The supply CFM can be adjusted by changing Unit Controller settings. Refer to TABLE 5 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 5

036, 048, 060, 074U DIRECT DRIVE PARAMETER SETTINGS

LGM/LCH036-074U4E Default 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	1200	1600	2000	2000	CFM	High heat blower speed
BLOWER HEATING LOW CFM	N/A	1250	1250	1250	CFM	Low heat blower speed (applies to 150kBtuh 4-stg. gas heat only)
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	Ventilation 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.
POWER 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.

II-PLACEMENT AND INSTALLATION

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

III-START UP - OPERATION

A-Preliminary and Seasonal Checks

1 - Make sure the unit is installed in accordance with the installation instructions and applicable codes.

2 - Inspect all electrical wiring, both field and factory installed for loose connections. Tighten as required. Refer to unit diagram located on inside of unit compressor access panel.

3 - Check to ensure that refrigerant lines are in good condition and do not rub against the cabinet or other refrigerant lines.

4 - Check voltage at the disconnect switch. Voltage must be within the range listed on the nameplate. If not, consult the power company and have the voltage corrected before starting the unit.

5 - Recheck voltage and amp draw with unit running. If voltage is not within range listed on unit nameplate, stop unit and consult power company. Refer to unit nameplate for maximum rated load amps.

B-Heating Start up

FOR YOUR SAFETY READ BEFORE LIGHTING

BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

⚠ WARNING

Electric shock hazard. Can cause injury or death. Do not use this unit if any part has been under water. Immediately call a qualified service technician to inspect the unit and to replace any part of the control system and any gas control which has been under water.

⚠ WARNING

Danger of explosion. Can cause injury or product or property damage. If overheating occurs or if gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off electrical supply.

⚠ CAUTION

SMOKE POTENTIAL

The heat exchanger in this unit could be a source of smoke on initial firing. Take precautions with respect to building occupants and property. Vent initial supply air outside when possible.

The gas valve may be equipped with either a gas control lever or gas control knob. Use only your hand to push the lever or turn the gas control knob. Never use tools. If the the lever will not move or the knob will not push in or turn by hand, do not try to repair it. Call a qualified service technician. Force or attempted repair may result in a fire or explosion.

This unit is equipped with an automatic spark ignition system. There is no pilot. In case of a safety shutdown, move thermostat switch to **OFF** and return the thermostat switch to **HEAT** to reset ignition control.

⚠ WARNING

Danger of explosion. Can cause injury or death. Do not attempt to light manually. Unit has a direct spark ignition system.

Gas Valve Operation (FIGURE 23)

1 - Set thermostat to lowest setting.

2 - Turn off all electrical power to appliance.

3 - This appliance is equipped with an ignition device(s) which automatically lights the burner. Do not try to light the burner by hand.

4 - Open or remove the heat section access panel.

5 - Move gas valve switch(es) to **OFF**. See FIGURE 23.

6 - Wait five (5) minutes to clear out any gas. If you then smell gas, **STOP!** Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas, go to the next step.

7 - Move gas valve switch(es) to **ON**. See FIGURE 23.

8 - Close or replace the control access panel.

9 - Turn on all electrical power to appliance.

10 - Set thermostat to desired setting.

NOTE - *When unit is initially started, steps 1 through 9 may need to be repeated to purge air from gas line.*

11 - The ignition sequence will start.

12 - If the furnace does not light the first time (gas line not fully purged), it will attempt up to two more ignitions before locking out.

13 - If lockout occurs, repeat steps 1 through 10.

14 - If the appliance will not operate, follow the instructions "Turning Off Gas to Appliance" and call your service technician or gas supplier.

Turning Off Gas to Unit

1 - If using an electromechanical thermostat, set to the lowest setting.
2 - Before performing any service, turn off all electrical power to the appliance.
3 - Open or remove the control access panel.
4 - Move gas valve switch(es) to OFF.
5 - Close or replace the control access panel.

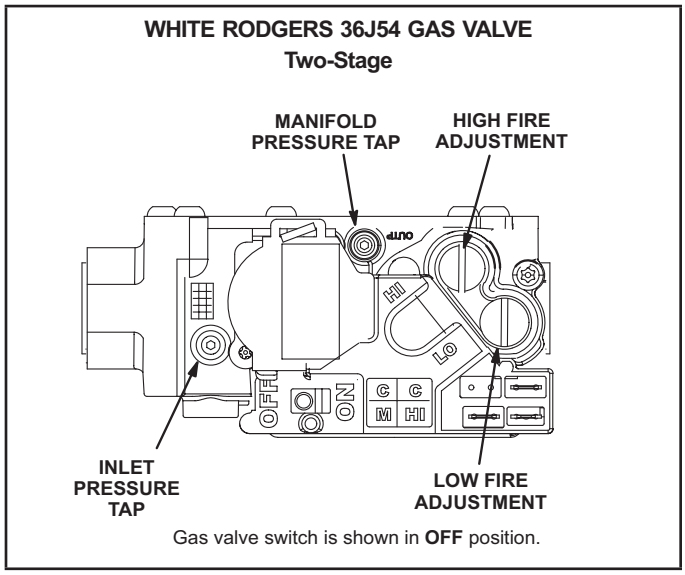


FIGURE 23

C-Cooling Start up

A-Operation

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

SERVICE > TEST > COOL > COOL 3

(COOL 4 on 074U units)

2 - Units contain one refrigerant circuit or stage.
3 - Unit is charged with R-410A refrigerant. See unit rating plate for correct amount of charge.
4 - Refer to charging section method to check refrigerant charge.

D-Safety or Emergency Shutdown

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

IV-CHARGING

A-Refrigerant Charge and Check - Fin/Tube 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.

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

Note - *Use mobile service app menu path SERVICE > TEST > COOL > COOL 3 for 036, 048 and 060U units. Use COOL 4 for 074U units.*

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

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

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

B-Subcooling Method - Ultra High Efficiency Units

1 - Attach gauge manifold to the liquid line. With the economizer disabled, operate the unit in cooling mode at high speed using the following mobile service app menu path:

SERVICE > TEST > COOL > COOL 3

(COOL 4 on 074U units)

2 - Use the liquid line pressure and a PT chart to determin the saturated liquid temperature.
3 - Measure the liquid line temperature at the condenser outlet.

Subcooling Temperature = Liquid Saturated Temperature Minus Liquid Temperature.

4 - The subcooling temperature should be as shown in TABLE 10. A subcooling temperature greater than this value indicates an overcharge. A subcooling temperature less than this value indicates an undercharge.

TABLE 6
581009-01
LG/LC 036SU NORMAL OPERATING PRESSURES

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65°	232	146
75°	267	149
85°	307	150
95°	351	151
100°	400	151
115°	454	154

TABLE 7
581010-01
LG/LC 048U NORMAL OPERATING PRESSURES

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65°	252	142
75°	289	145
85°	332	147
95°	379	149
100°	428	151
115°	484	153

TABLE 8
581011-01
LG/LC 060U NORMAL OPERATING PRESSURES

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65°	261	135
75°	299	138
85°	341	140
95°	388	142
100°	441	144
115°	499	146

TABLE 9
581012-01
LG/LC 060U NORMAL OPERATING PRESSURES

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65°	268	128
75°	307	134
85°	351	137
95°	399	140
100°	450	142
115°	505	144

TABLE 10
SUBCOOLING TEMPERATURE

Unit	Liquid Saturated Temp. Minus Liquid Temperature
036U	11°F ± 1 (6.0°C + 0.5)
048U	11.5°F ± 1 (6.4°C + 0.5)
060U	13.5°F ± 1 (7.5°C + 0.5)
074U	15°F ± 1 (8.3°C + 0.5)

V- SYSTEMS SERVICE CHECKS

A-Heating System Service Checks

All LGM units are C.S.A. design certified without modification.

Before checking piping, check with gas company or authorities having jurisdiction for local code requirements. Refer to the LGM Installation instruction for more information.

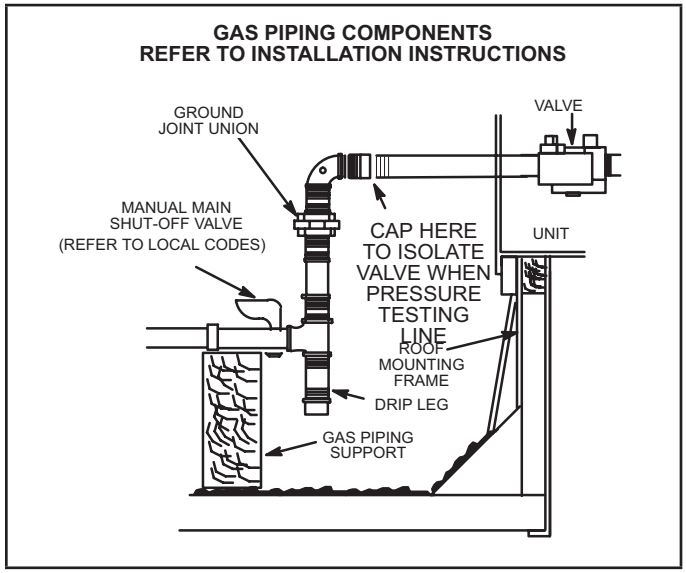


FIGURE 24

1-Gas Piping

Gas supply piping must not allow more than 0.5”W.C. (124.3 Pa) drop in pressure between the gas meter and the unit. Supply gas pipe must not be smaller than the unit gas connection. Refer to installation instructions for details.

2-Testing Gas Piping

NOTE- *In case shutdown is required, turn off the main manual shut-off valve and disconnect the main power to the unit. These controls should be properly labeled by the installer.*

When pressure testing gas lines, the gas valve must be disconnected and isolated. Gas valves can be damaged if subjected to more than 0.5 psig [14”W.C. (3481 Pa)]. See FIGURE 25.

When checking piping connection for gas leaks, use the preferred means. Common kitchen detergents can cause harmful corrosion on various metals used in gas piping. The use of specialty Gas Leak Detector is strongly recommended.

Do not use matches, candles, flame or any other source of ignition to check for gas leaks.

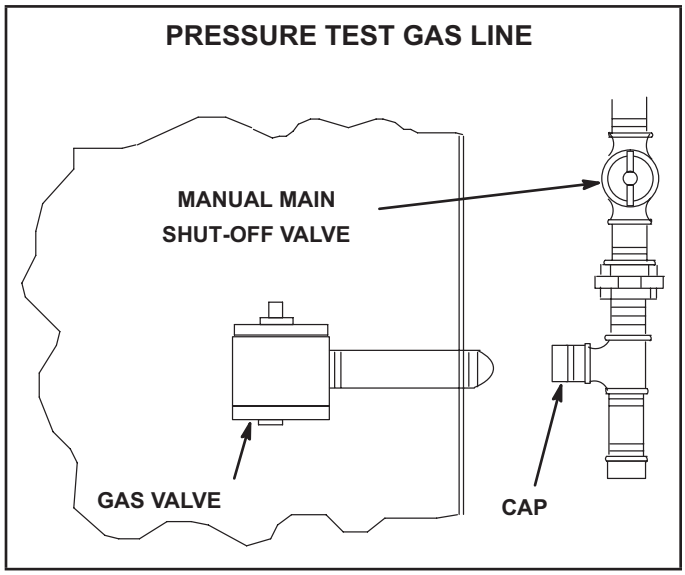


FIGURE 25

3-Testing Gas Supply Pressure

When testing gas supply pressure, connect test gauge to the inlet pressure tap located on unit gas valve GV1. Test supply gas pressure with unit firing at maximum rate (both stages energized). Make sure the reading falls within the range of the following values. Low pressure may result in erratic operation or “under fire.” High pressure can result in permanent damage to the gas valve or “over fire.” For natural gas units, operating pressure at the unit gas connection must be between 4.5”W.C. and 10.5”W.C. For L.P. gas units, operating pressure at the unit gas connection must be between 10.5”W.C. and 13.0”W.C.

On multiple unit installations, each unit should be checked separately while operating at maximum rate, beginning with the one closest to the supply gas main and progressing to the one furthest from the main. Multiple units should also be tested with and without the other units operating. Supply pressure must fall within the range listed in the previous paragraph.

4-Check and Adjust Manifold Pressure

After line pressure has been checked and adjusted, check manifold pressure. Move test gauge to the outlet pressure tap located on unit gas valve GV1. See FIGURE 23 for location of pressure tap on the gas valve.

The manifold pressure is factory set and should not require adjustment. See TABLE 4. If manifold pressure is incorrect and no other source of improper manifold pressure can be found, the valve must be replaced. See FIGURE 23 for location of gas valve (manifold pressure) adjustment screw.

All gas valves are factory regulated. The gas valve should completely and immediately cycle off in the event of gas or power failure. The manual shut-off knob/switch can be used to immediately shut off gas supply.

⚠ CAUTION

For safety, connect a shut-off valve between the manometer and the gas tap to permit shut off of gas pressure to the manometer.

Manifold Adjustment Procedure

1 - Connect test gauge to the outlet pressure tap on the gas valve. Start the unit (call for second stage heat) and allow five minutes for the unit to reach steady state.

2 - While waiting for the unit to stabilize, notice the flame. The flame should be stable without flashback and should not lift from the burner heads. Natural gas should burn basically blue with some clear streaks. L.P. gas should burn mostly blue with some clear yellow streaks.

3 - After allowing the unit to stabilize for five minutes, record the manifold pressure and compare to the values given in TABLE 4. On two-stage units, check low fire, make adjustments, and recheck high fire before recording values.

Combustion gases

Flue products must be analyzed and compared to the unit specifications. Problems detected during the inspection may make it necessary to temporarily shut down the furnace until the items can be repaired or replaced.

5-Proper Gas Flow

Furnace should operate at least 5 minutes before checking gas flow. Determine time in seconds for two revolutions of gas through the meter. (Two revolutions assures a more accurate time.) Divide by two and compare to time in TABLE 11. Seconds in TABLE 11 are based on a 1 ft.3. dial and gas value of 1000 Btu/ft3 for natural and 2500 Btu/ft3’ for LP. Adjust manifold pressure on gas valve to match time needed.

NOTE - *To obtain accurate reading, shut off all other gas appliances connected to meter.*

TABLE 11

Input Rate	Seconds Natuarl	Seconds LP/Propane
65,000	55	138
105,000	34	86
150,000	24	60

6-Heat Exchanger

To Access or Remove Heat Exchanger From Unit:

1 - Turn off gas and electric power.

2 - Remove access panel(s) and unit center mullion.

3 - Remove gas valve, manifold assembly and burners.

4 - Remove combustion air inducer. Pay careful attention to the order in which gaskets and orifice are removed.

5 - Support heat exchanger (to prevent it from falling when final screws are removed.)

6 - Remove screws supporting heat exchanger.

7 - To install heat exchanger, reverse procedure. Be sure to secure all wires and check plumbing and burner plate for airtight seal. Screws must be torqued to 35 in.-lbs. to ensure proper operation.

7-Flame Sensing

Flame current is an electrical current which passes from the ignition control through the sensor electrode during unit operation. The current passes from the sensor through the flame to the ground electrode (located on the flame electrode) to complete a safety circuit. The electrodes should be located so the tips are at least 1/2" (12.7 mm) inside the flame envelope.Do not bend electrodes. To measure flame current, follow the procedure below:

NOTE-*Electrodes are not field adjustable. Any alterations to the electrode may create a hazardous condition that can cause property or personal injury.*

1 - Disconnect power to unit.

2 - Remove lead from sensing electrode and install a 0-50DC microamp meter in series between the sensing electrode and the sensing lead.

3 - Reconnect power and adjust thermostat for heating demand.

4 - When flame is established, microamp reading should be 0.5 to 1.0. Do not bend electrodes.

Drop out signal is .09 or less.

5 - Disconnect power to unit before disconnecting meter. Make sure sensor wire is securely reconnected before reconnecting power to unit.

NOTE-If the meter scale reads 0, the leads are reversed. Disconnect power and reconnect leads for proper polarity.

B-Cooling System Service Checks

LGM units are factory charged and require no further adjustment;

however, charge should be checked periodically using the approach method. The approach method compares actual liquid temperature with the outdoor ambient temperature. See section IV- CHARGING.

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

VI-MAINTENANCE

⚠ 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 26. 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.*

B-Lubrication

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

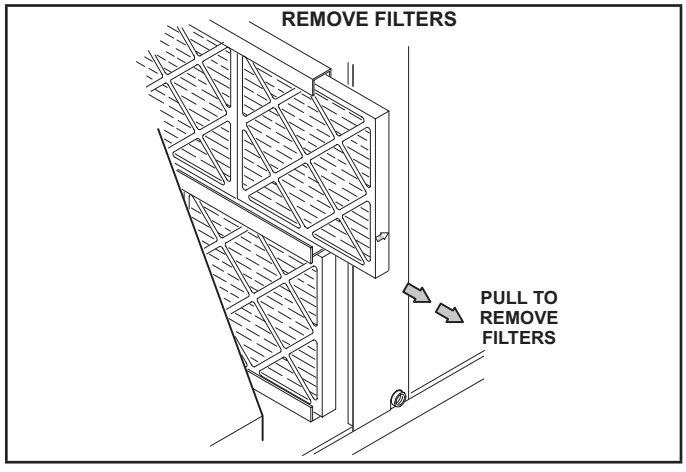


FIGURE 26

C-Burners

Periodically examine burner flames for proper appearance during the heating season. Before each heating season examine the burners for any deposits or blockage which may have occurred.

Clean burners as follows:

1 - Turn off both electrical power and gas supply to unit.

2 - Remove burner compartment access panel.

3 - Remove top burner box panel.

4 - Remove two screws securing burners to burner support and lift the burners from the orifices. See FIGURE 16. Clean as necessary.

⚠ WARNING

Danger of explosion. Can cause injury or death. Do not overtighten main burner mounting screws. Snug tighten only.

D-Combustion Air Inducer

A combustion air proving switch checks combustion air inducer operation before allowing power to the gas controller. Gas controller will not operate if inducer is obstructed.

Under normal operating conditions, the combustion air inducer wheel should be checked and cleaned prior to the heating season. However, it should be examined periodically during the heating season to establish an ideal cleaning schedule.

Clean combustion air inducer as follows:

1 - Shut off power supply and gas to unit.

2 - Remove the mullion on the right side of the heat section.

3 - Disconnect pressure switch air tubing from combustion air inducer port.

4 - Remove and retain screws securing combustion air inducer to flue box. Remove vent connector. See FIGURE 15.

5 - Clean inducer wheel blades with a small brush and wipe off any dust from housing. Take care not to damage exposed fan blades. Clean accumulated dust from front of flue box cover.

6 - Return combustion air inducer motor and vent connector to original location and secure with retained screws. It is recommended that gaskets be replaced during reassembly.

7 - Replace mullion.

8 - Clean combustion air inlet louvers on heat access pane lusing a small brush.

E-Flue Passageway and Flue Box

Remove flue box cover only when necessary for equipment repair. Clean inside of flue box cover and heat exchanger tubes with a wire brush when flue box cover has to be removed. Install a new flue box cover gasket and replace cover. Make sure edges around flue box cover are tightly sealed.

F-Evaporator Coil

Inspect and clean coil at beginning of each cooling season. Clean using mild detergent or commercial coil cleanser. Flush coil and condensate drain with water taking care not to get insulation, filters and return air ducts wet.

G-Condenser Coil

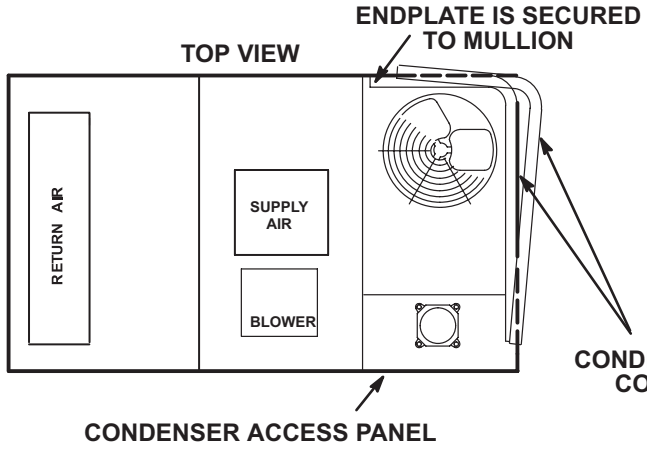
Clean condenser coil annually with detergent or commercial coil cleaner and inspect monthly during the cooling season. Condenser coils are made of single and two formed slabs. On units with two slabs, dirt and debris may become trapped between the slabs. To clean between slabs, carefully separate coil slabs and wash them thoroughly. See FIGURE 27. Flush coils with water following cleaning.

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

H-Supply Blower Wheel

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

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 27

VII-ACCESSORIES

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

A-C1/T1CURB

When installing the LGM 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 LGM 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 28. 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 29. Refer to the roof mounting frame installation instructions for proper plenum construction and attachment.

B-Transitions

Optional supply/return transitions T1TRAN10AN1 is available for use with the LGM 3, 4 and 5 ton units and the T1TRAN20N-1 is available for the 6 ton units utilizing optional T1CURB roof mounting frames. 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

E1DAMP11A-1 manually operated outdoor air damper and E1DAMP21A-1 motorized outdoor air damper is available for LGM 3 and 4 ton units (see FIGURE 30 and FIGURE 31). E1DAMP11AT-1 manually operated outdoor air damper and E1DAMP21AT-1 motorized outdoor air damper is available for LGM 5 and 6 ton units. 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.

ASSEMBLED ROOF MOUNTING FRAME

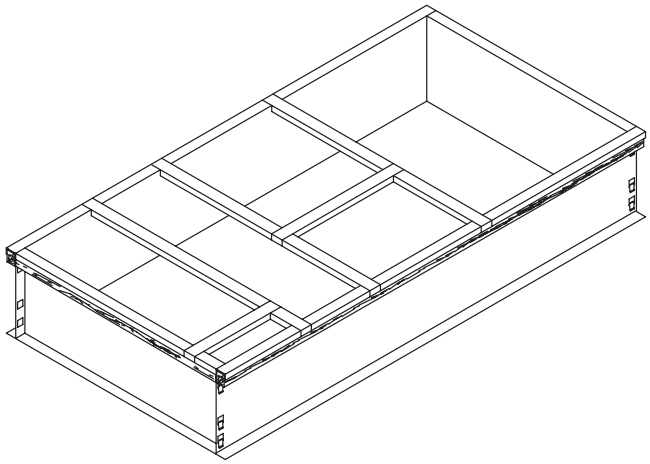


FIGURE 28

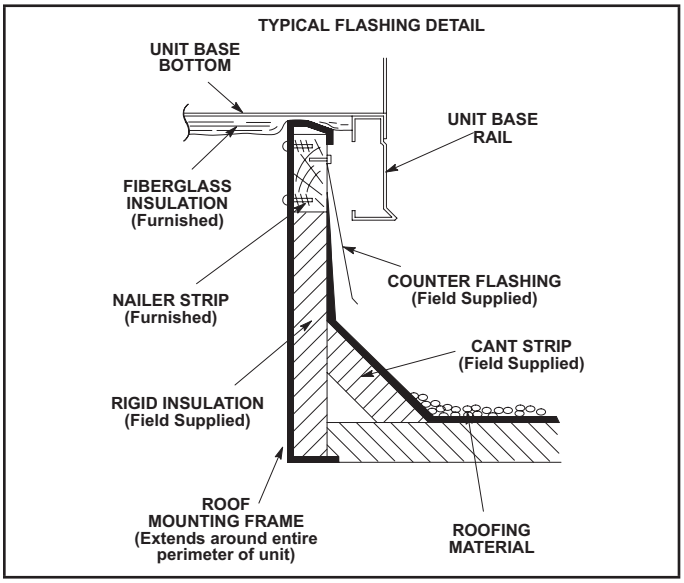


FIGURE 29

MANUAL OUTDOOR AIR DAMPER

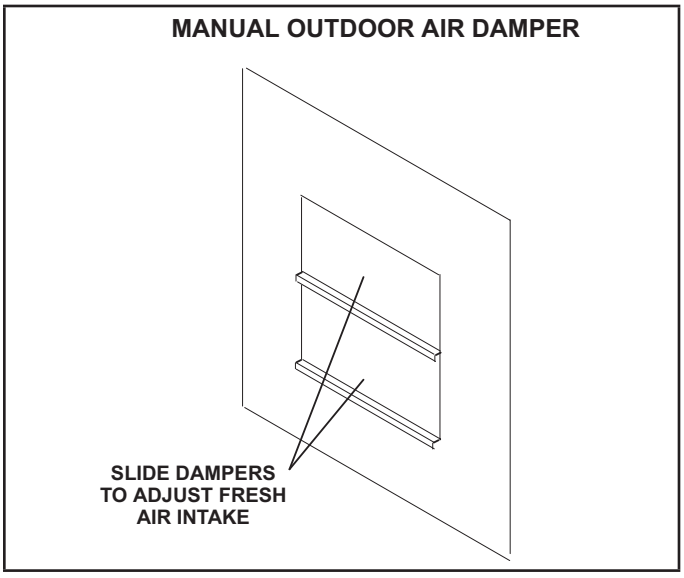


FIGURE 30

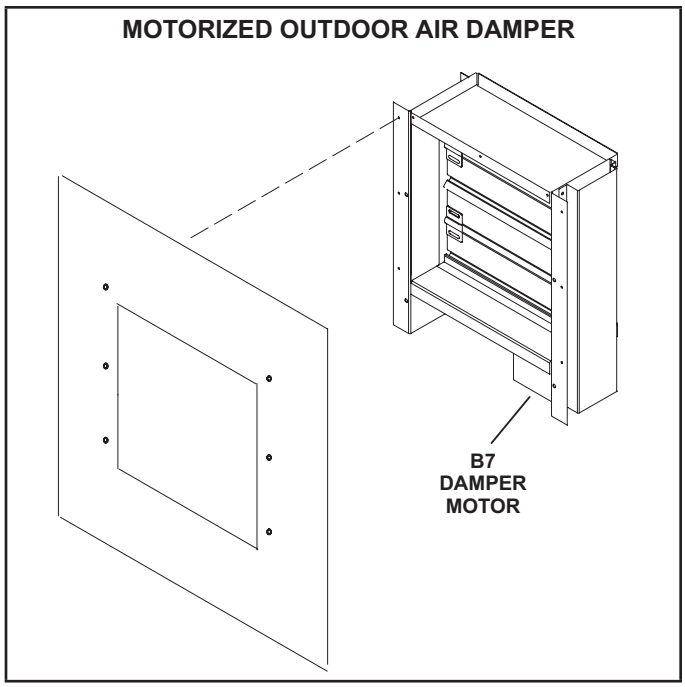


FIGURE 31

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 LGM 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 32.

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 33 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 12 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 34.

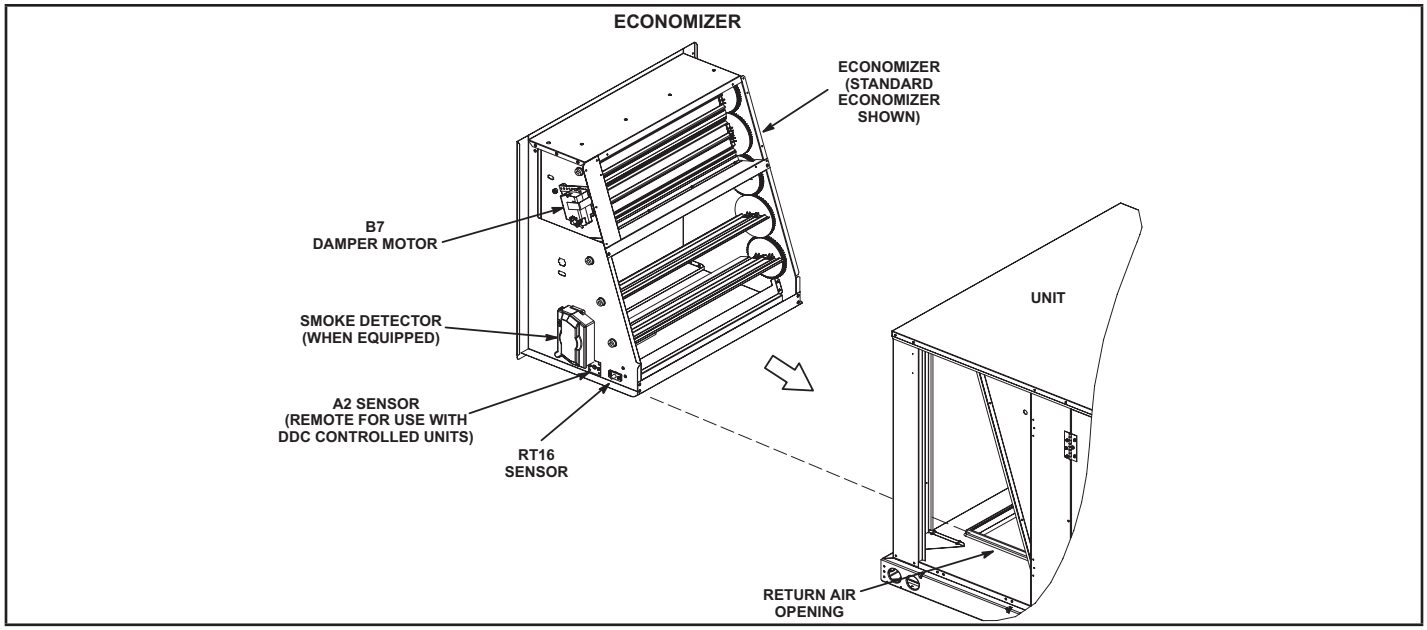


FIGURE 32

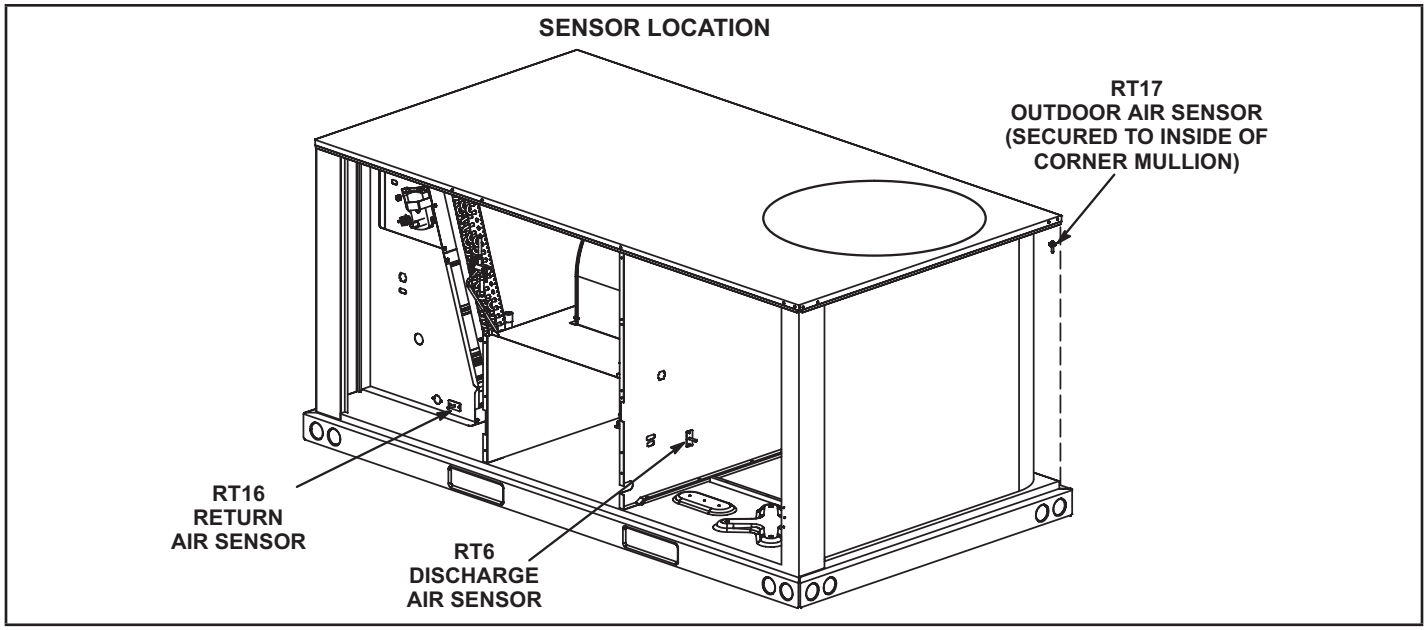


FIGURE 33

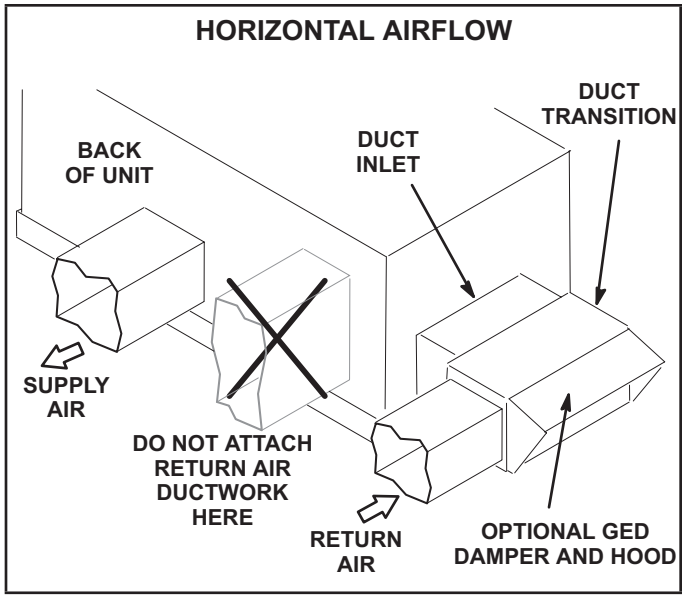


FIGURE 34

TABLE 12

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

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

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 LGM 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

E1PWRE10A available for LGM 3 and 4 ton units and ET-1PWRE10N available for 5 and 6 ton units, provide exhaust air pressure relief. See FIGURE 35 and installation instructions for more detail.

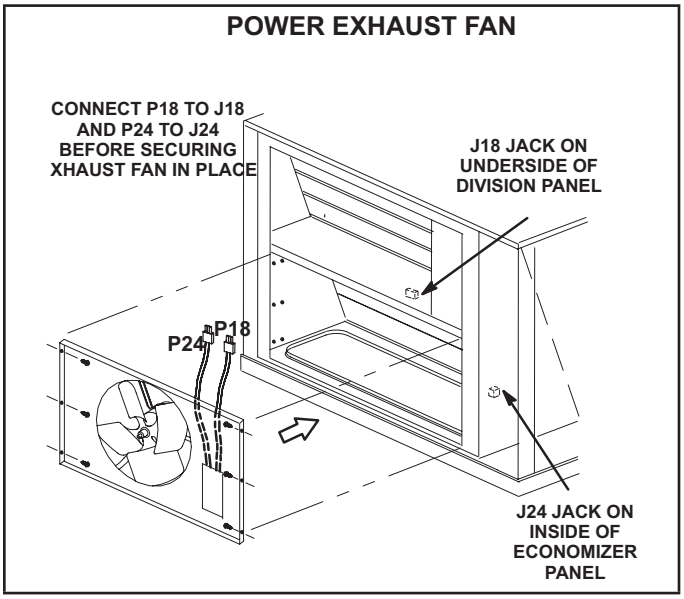


FIGURE 35

H-Optional UVC Lights

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

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

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

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

J-Needlepoint Bipolar Ionizer (Optional)

The optional, brush-type ionizer produces positive and negative ions to clean air and reduce airborne contaminants. The ionizer was designed to be low maintenance. The device should be checked semi-annually to confirm the brushes are clean for maximum output. The ionizer is located behind on the blower deck to the left of the blower. See FIGURE 37.

1 - On the back side of the unit, remove the screw securing the back of the ionizer bracket. See FIGURE 36. Retain the screw to secure the back side of the ionizer bracket.

2 - Remove two screws securing the front side of the ionizer bracket and pull out of unit and clean brushes.

3 - Replace ionizer in the reverse order it was removed

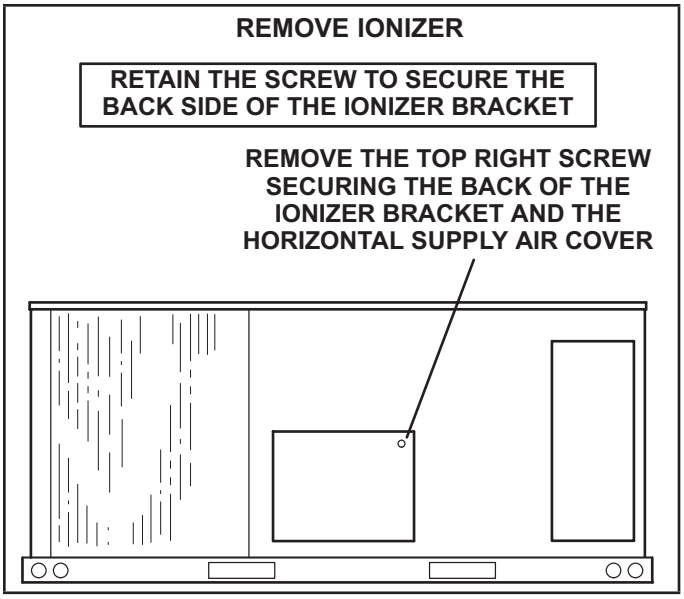


FIGURE 36

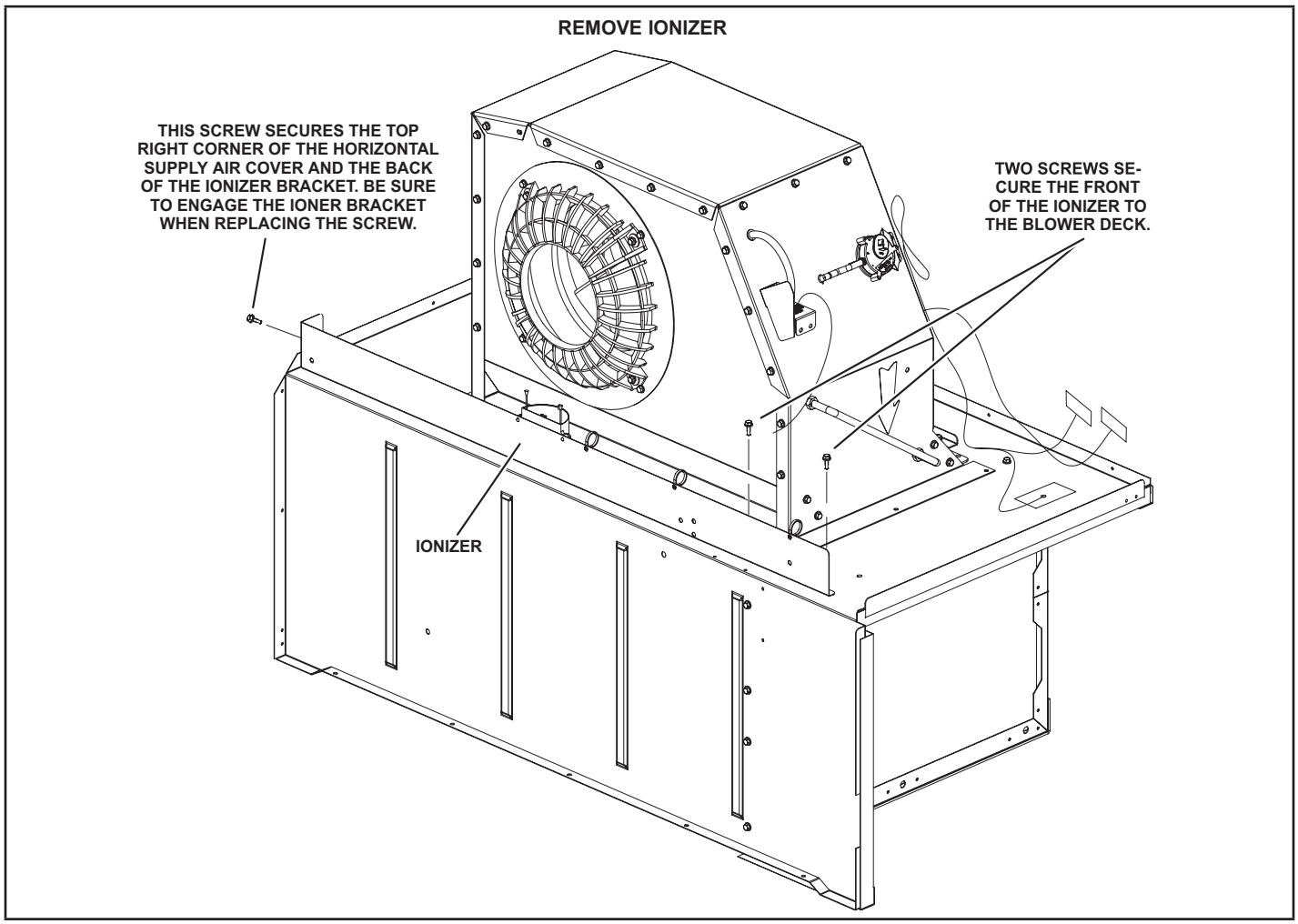


FIGURE 37

I-Optional Cold Weather Kit

An electric heater is available to automatically control the minimum temperature in the gas burner compartment. Heater is C.S.A. certified to allow cold weather operation of unit down to -60° F (-50° C). The kit includes the following parts:

1 - The strip heater (HR6) is located as close as possible to the gas valve. The strip heater is rated at 500 Watts

2 - A thermostat mounting box is installed on the wall of the compressor compartment. Included in the box are the following thermostat switches:

a. Thermostat switch (S59) is an auto-reset SPST N.C. switch which opens on a temperature drop. The switch is wired in series with 24v power and the combustion air blower switch. When the temperature drops below -30° F (-35° C) the switch opens and the gas heat section is de-energized. The switch automatically resets when the heating compartment temperature reaches -10° F (-12° C).

b. Thermostat switch (S60) is an auto-reset SPST N.C. switch which opens on a temperature rise. The switch is wired in series with HR6. When the temperature rises above 20° F (-7° C) the switch opens and the electric heater is de-energized. The switch automatically resets when the heating compartment temperature reaches -10° F (23.3° C).

c. Thermostat switch (S61) is an auto-reset SPST N.O. switch which closes on a temperature drop. The switch is wired in series with HR6. When temperature drops below 20° F (-7° C) the switch closes and electric heater is energized. The switch automatically opens when heating compartment temperature reaches 70° F (21° C).

J-Smoke Detectors A171 and A172

Photoelectric smoke detectors are a factory- or field-installed option. The smoke detectors can be installed in the supply air duct (A172), return air section (A171), or in both the supply duct and return air section.

K-Indoor Air Quality (CO2) Sensor A63

The indoor air quality sensor monitors CO2 levels and reports the levels to the Unit Controller. The Unit Controller adjusts the economizer dampers according to the CO2 levels. The sensor is mounted next to the indoor thermostat or in the return air duct. Refer to the indoor air quality sensor installation instructions for proper adjustment.

L-LP / Propane Kit

All units operated on LP/Propane require a natural to LP / propane kit. The kit for single-stage units include one LP spring, seven burner orifices, and three stickers. Two-stage kits include the same but has a prove switch used to lock out first stage on the combustion air inducer. Four-stage units require (2) two-stage kits. For more detail refer to the natural to LP gas changeover kit installation instructions.

M-Drain Pan Overflow Switch S149 (optional)

The overflow switch is used to interrupt cooling operation when excessive condensate collects in the drain pan. The N.O. overflow switch is controlled by K220 and DL46 relays, located in the unit control panel. When the overflow switch closes, 24VAC power is interrupted and after a five-second delay unit compressors are de-energized. Once the condensate level drops below the set level, the switch will open. After a five-minute delay the compressor will be energized.

N-Dirty Filter Switch S27

The dirty filter switch senses static pressure increase indicating a dirty filter condition. The switch is N.O. and closes at 1” W.C. (248.6 Pa) The switch is mounted in the supply air section on the evaporator coil seal.

O-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 38 for reheat refrigerant routing and FIGURE 39 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 SERVICE > TEST > DEHUMIDIFIER.

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.

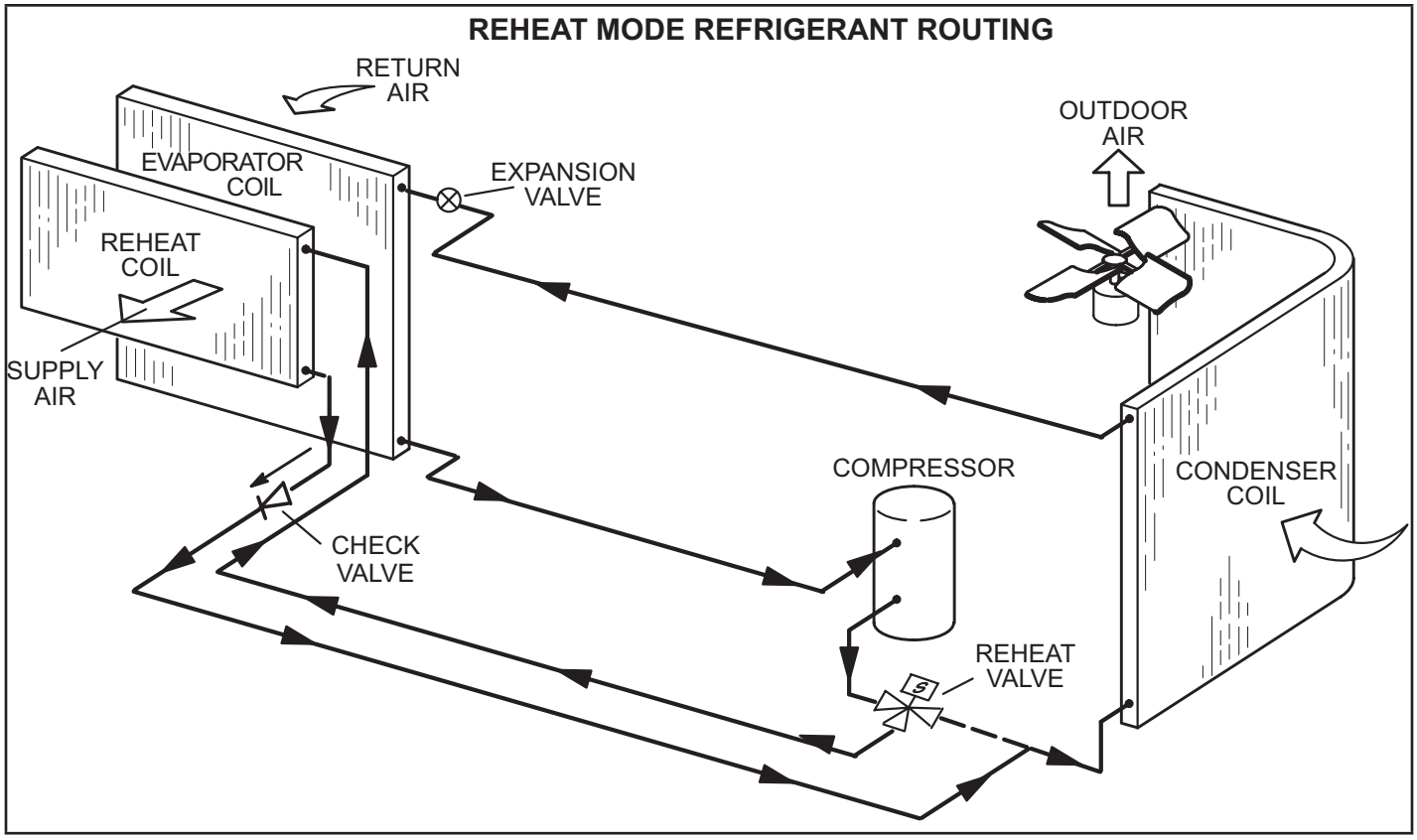


FIGURE 38

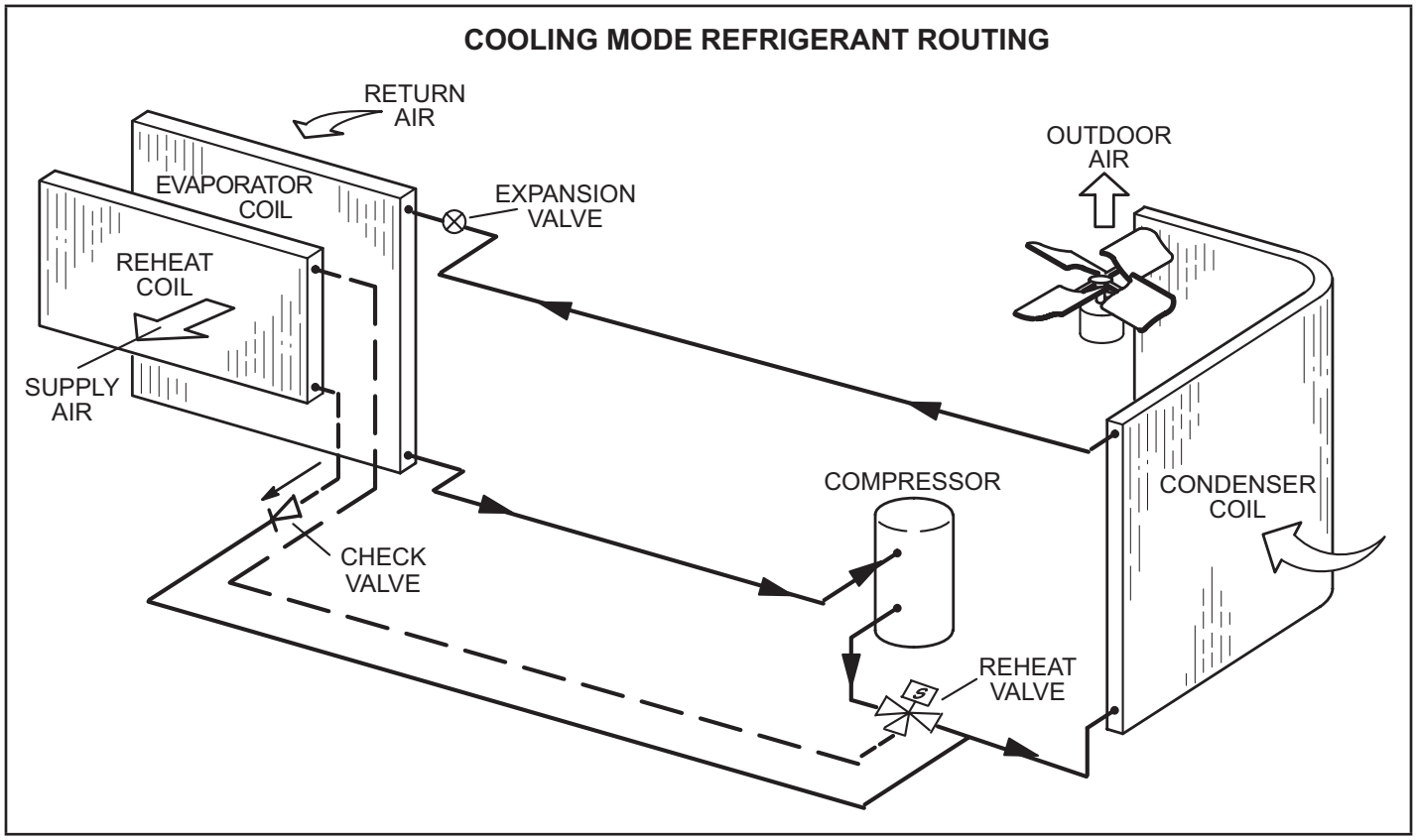
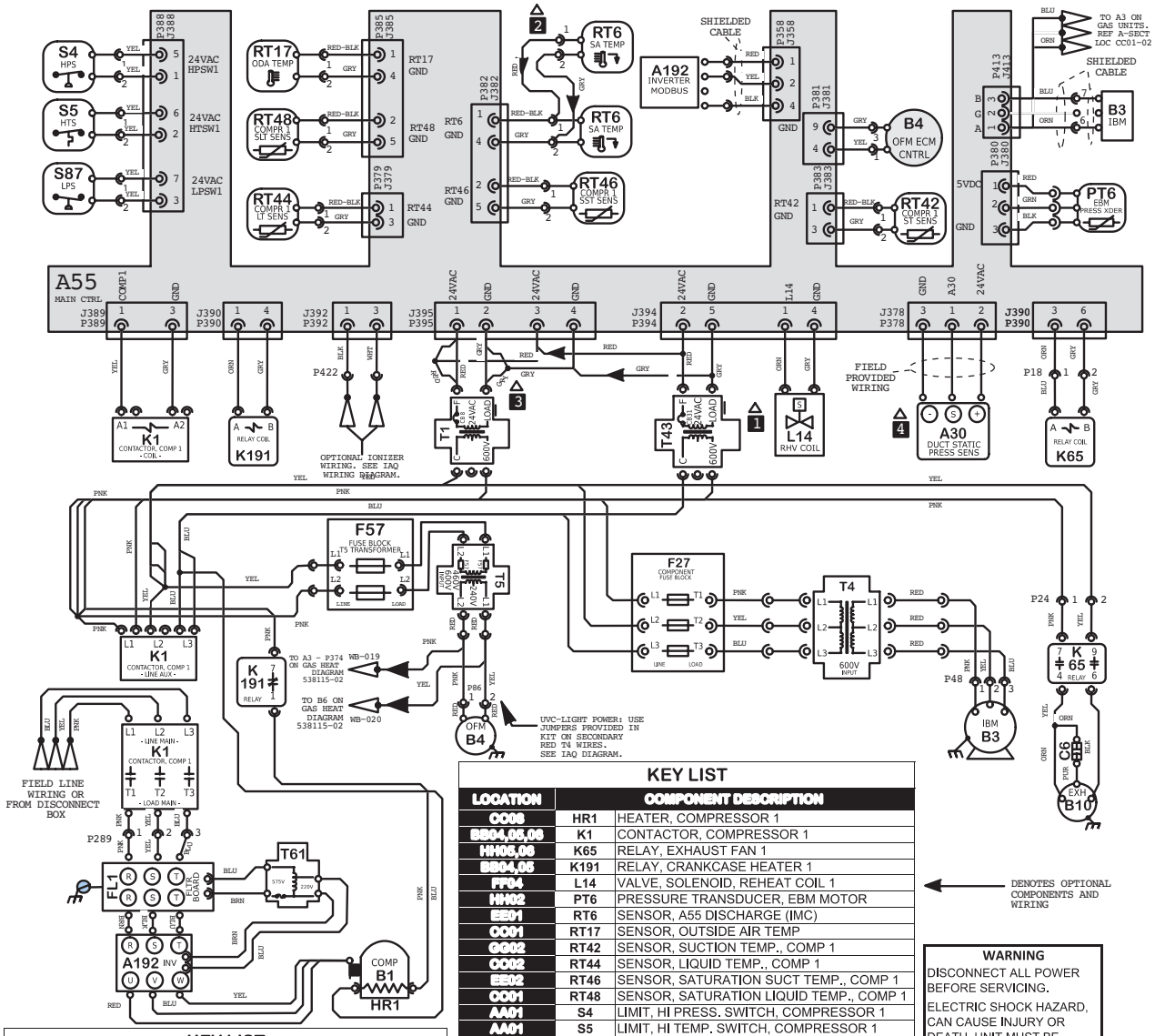


FIGURE 39

VIII-Wiring Diagrams and Sequence of Operation

LGM/LCM036/074 J Voltage



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC08	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
HH03,04	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
BE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
CC02	RT42	SENSOR, SUCTION TEMP., COMP 1
CC03	RT44	SENSOR, LIQUID TEMP., COMP 1
BE02	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
CC05	T4	TRANSFORMER, BLOWER MOTOR
DD03	T5	TRANSFORMER, OUTDOOR FAN MOTOR
BE04	T43	TRANSFORMER, REHEAT
CC07	T61	TRANSFORMER, INV INTERNAL POWER

DENOTES OPTIONAL COMPONENTS AND WIRING

KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
AA02	A55	CONTROL BOARD, MAIN
BE01, BB06	A192	INVERTER, COMPRESSOR 1
CC09	B1	COMPRESSOR 1
HH06	B3	MOTOR, BLOWER
DD06, CC01	B4	MOTOR, OUTDOOR FAN 1
HH05	B10	MOTOR, EXHAUST FAN 1
HH06	C6	CAPACITOR, EXHAUST FAN 1
BE10	F27	FUSE, T4 TRANSFORMER PRIMARY
CC05	F57	FUSE, TRANSFORMER T5
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

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.

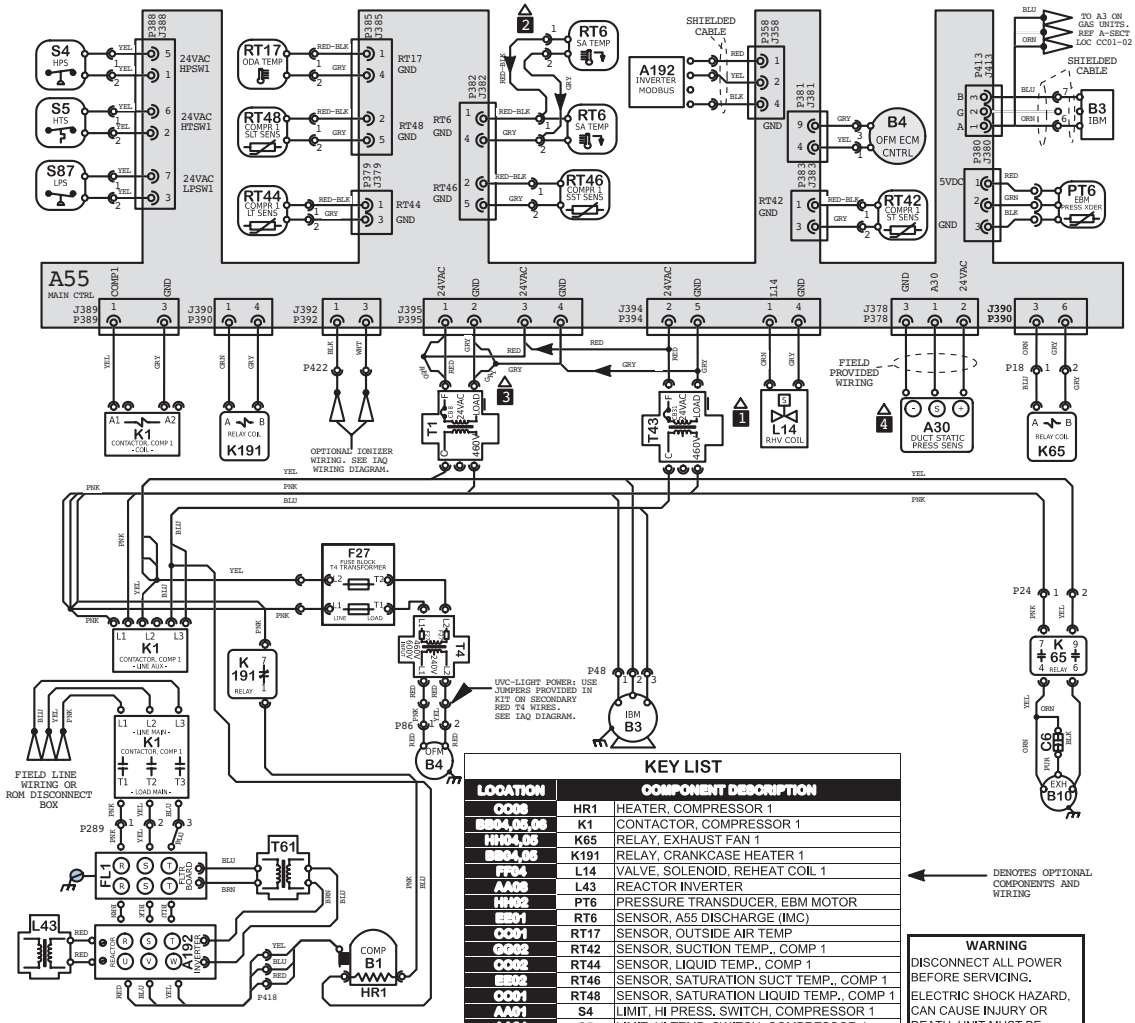
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

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

WIRING DIAGRAM FLOW

Model: LCM, LGM 036U - 074U J VOLT
Cooling Diagram without Higher SCCR
Voltage: 600/3/60 (J)
Supersedes: N/A Form No: 538166-01 Rev: 0

LGM/LCM036/074 G Voltage



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
AA02	A55	CONTROL BOARD, MAIN
CC01	A30	SENSOR, DUCT STATIC PRESS.
EE01, EE02	A192	INVERTER, COMPRESSOR 1
CC03	B1	COMPRESSOR 1
EE06	B3	MOTOR, BLOWER
DD06, CC01	B4	MOTOR, OUTDOOR FAN 1
HH06	B10	MOTOR, EXHAUST FAN 1
HH06	C6	CAPACITOR, EXHAUST FAN 1
CC03	F27	FUSE, T4 TRANSFORMER PRIMARY
AA07	FL1	FILTER BOARD

KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC06	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
HH01,05	K65	RELAY, EXHAUST FAN 1
BB04,05	K191	RELAY, CRANKCASE HEATER 1
FF04	L14	VALVE, SOLENOID, REHEAT COIL 1
AA03	L43	REACTOR INVERTER
HH02	PT6	PRESSURE TRANSDUCER, EBM MOTOR
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
CC02	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	T4	TRANSFORMER, OUTDOOR FAN MOTOR
EE04	T43	TRANSFORMER, REHEAT
CC07	T61	TRANSFORMER, INV INTERNAL POWER

DENOTES OPTIONAL COMPONENTS AND WIRING

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

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.

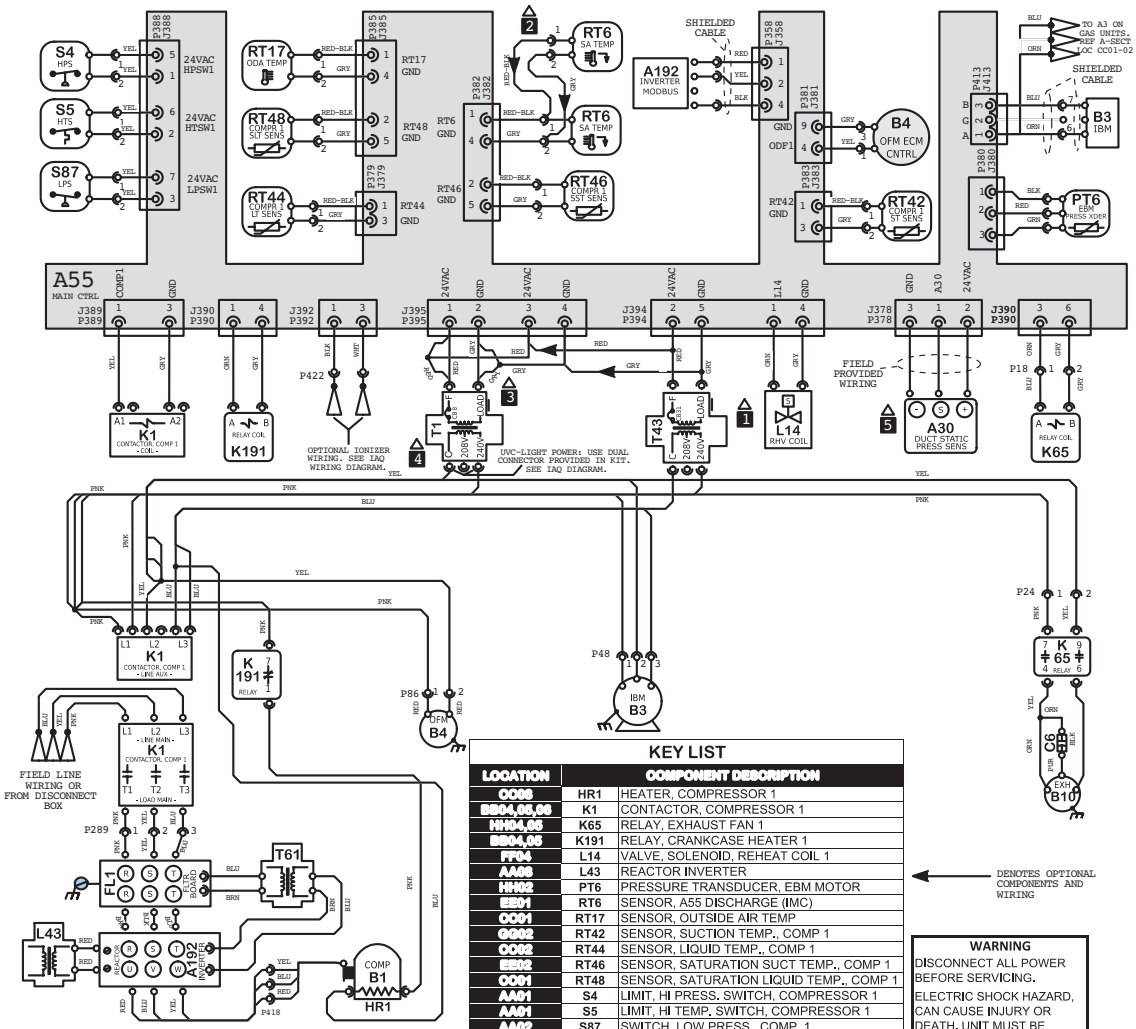
IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING AND INSULATION THICKNESS.

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

WIRING DIAGRAM FLOW

Model: LCM, LGM 036U - 074U G VOLT
Cooling Diagram without Higher SCCR
Voltage: 460/3/60 (G)
Supersedes: N/A Form No: 538107-01 Rev: 0

LGM/LCM036/074 Y Voltage



KEY LIST

LOCATION	COMPONENT DESCRIPTION	
AA02	A55	CONTROL BOARD, MAIN
CC04	A30	SENSOR, DUCT STATIC PRESS.
BB01, BB06	A192	INVERTER, COMPRESSOR 1
CC05	B1	COMPRESSOR 1
BB03	B3	MOTOR, BLOWER
DD03, CC01	B4	MOTOR, OUTDOOR FAN 1
HH03	B10	MOTOR, EXHAUST FAN 1
HH08	C6	CAPACITOR, EXHAUST FAN 1
AA07	FL1	FILTER BOARD

KEY LIST

LOCATION	COMPONENT DESCRIPTION	
CC06	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
FC04	L14	VALVE, SOLENOID, REHEAT COIL 1
AA08	L43	REACTOR INVERTER
HH02	PT6	PRESSURE TRANSDUCER, EBM MOTOR
EB01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
CC02	RT42	SENSOR, SUCTION TEMP., COMP 1
CC03	RT44	SENSOR, LIQUID TEMP., COMP 1
EB02	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
EB04	T43	TRANSFORMER, REHEAT
CC07	T61	TRANSFORMER, INV INTERNAL POWER

DENOTES OPTIONAL COMPONENTS AND WIRING

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

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.

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

WIRING DIAGRAM FLOW

Model: LCM, LGM 036U - 074U Y VOLT
Cooling Diagram without Higher SCCR
Voltage: 208-230/3/60 (Y)
Supersedes: N/A Form No: 538110-01 Rev: 0

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).

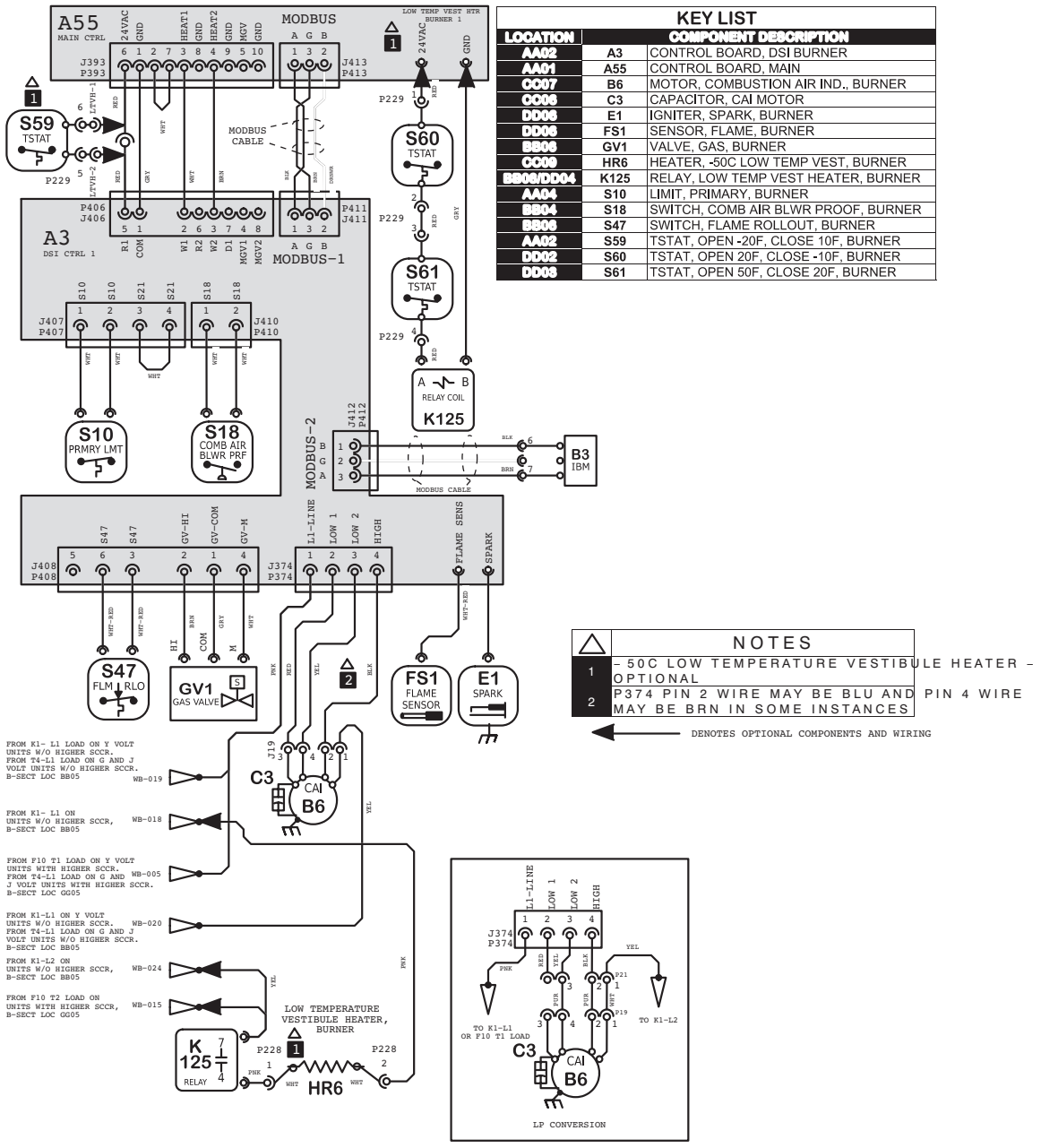
7 - During cooling operation, A55 energizes crankcase heater relay K191. K191-1 N.C. Contacts open to de-energize HR1 crankcase heater.

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.

2-STAGE GAS HEAT FOR UNITS



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
AA02	A3	CONTROL BOARD, DSI BURNER
AA01	A55	CONTROL BOARD, MAIN
CC07	B6	MOTOR, COMBUSTION AIR IND., BURNER
CC06	C3	CAPACITOR, CAI MOTOR
DD06	E1	IGNITER, SPARK, BURNER
DD05	FS1	SENSOR, FLAME, BURNER
BB09	GV1	VALVE, GAS, BURNER
CC09	HR6	HEATER, -50C LOW TEMP VEST, BURNER
BB08/DD04	K125	RELAY, LOW TEMP VEST HEATER, BURNER
AA04	S10	LIMIT, PRIMARY, BURNER
BB04	S18	SWITCH, COMB AIR BLWR PROOF, BURNER
BB05	S47	SWITCH, FLAME ROLLOUT, BURNER
AA02	S59	TSTAT, OPEN -20F, CLOSE 10F, BURNER
DD02	S60	TSTAT, OPEN 20F, CLOSE -10F, BURNER
DD03	S61	TSTAT, OPEN 50F, CLOSE 20F, BURNER

NOTES	
1	- 50C LOW TEMPERATURE VESTIBULE HEATER - OPTIONAL
2	P374 PIN 2 WIRE MAY BE BLU AND PIN 4 WIRE MAY BE BRN IN SOME INSTANCES

DENOTES OPTIONAL COMPONENTS AND WIRING

Model: LGM Series RTU - Gas Heat
Input Heat Capacity 70k - 150k Btuh
Voltage: 208-240/3/60 (Y),460/3/60 (G)
Supersedes: N/A Form No: 538115-02 Rev: 1.0

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

WIRING DIAGRAM FLOW

TWO-STAGE GAS HEAT SEQUENCE OF OPERATION

First Stage Heat:

1 - The thermostat initiates W1 heating demand.

2 - 24VAC is routed to controller A3. A3 proves N.C. primary limit S10..

3 - Control board A3 energizes combustion air inducer B6. After B6 has reached full speed, the combustion air blower proving switch S18 contacts close.

4 - After a 30 second delay A3 energizes the ignitor and gas valve GV1 on first stage.

Second Stage Heat:

5 - With first stage heat operating, an additional heating demand from the thermostat initiates W2.

6 - A second stage heating demand is received by A55.

7 - A3 energizes HI terminal (high fire) of gas valve.

8 - A3 energizes combustion air inducer B6 on high speed.

End of Second Stage Heat:

9 - Heating demand is satisfied. Terminal HI (second stage) is de-energized.

10 - Second stage heat is de-energized on GV1..

11 - Combustion air inducer B6 is now on low speed.

End of First Stage Heat:

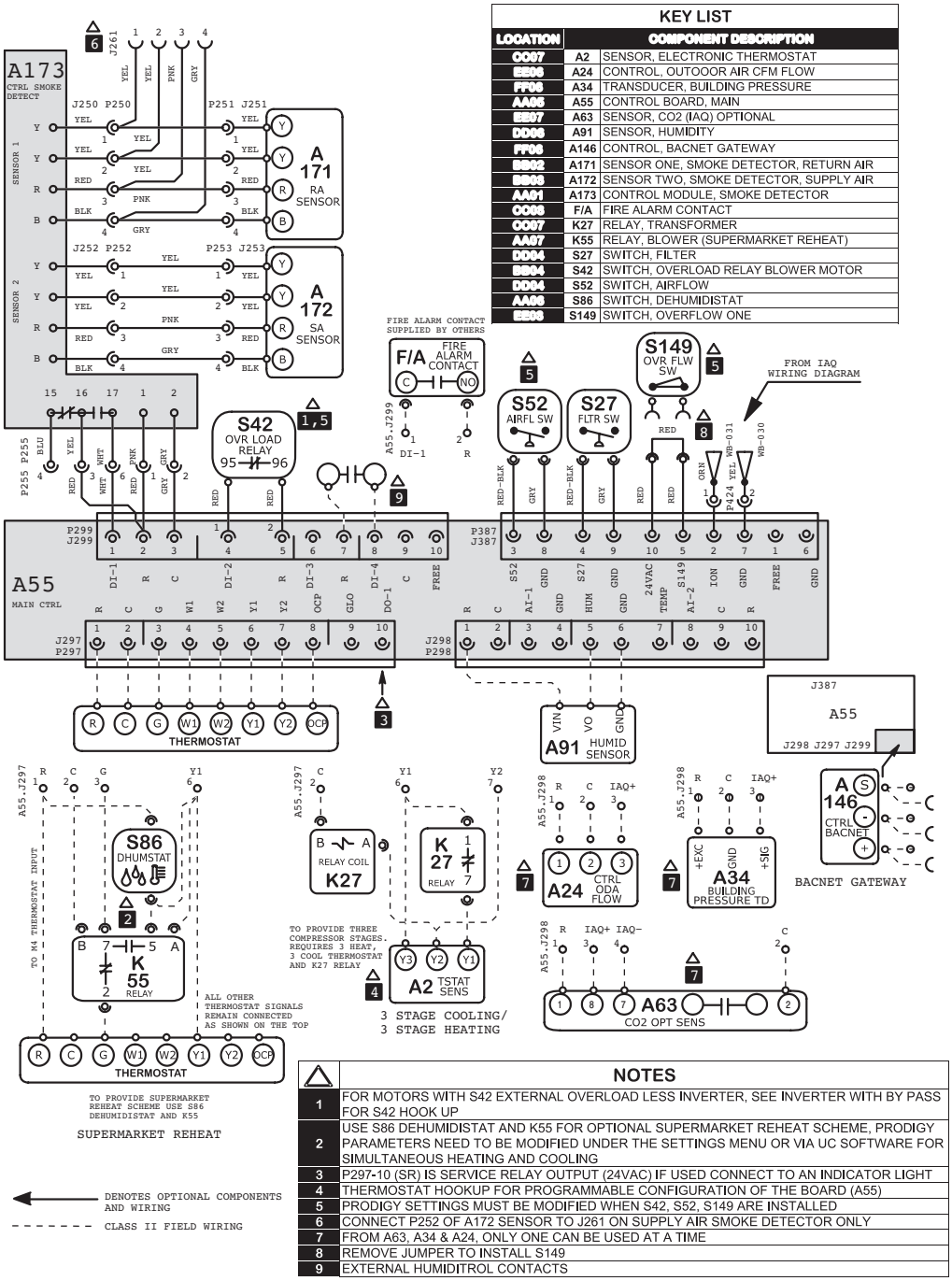
12 - Heating demand is satisfied. Terminal W1 (first stage) is de-energized.

13 - Ignition A3 is de-energized in turn de-energizing gas valve GV1 and combustion air inducer B6.

Optional Low Ambient Kit: (C.S.A. -50° C Low Ambient Kit)

14 - Line voltage is routed through the N.C. low ambient kit thermostats S60 and S61, to energize low ambient kit heater HR6.

ELECTRONIC OR ELECTROMECHANICAL THERMOSTAT



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC07	A2	SENSOR, ELECTRONIC THERMOSTAT
BB06	A24	CONTROL, OUTOOOR AIR CFM FLOW
FF08	A34	TRANSDUCER, BUILDING PRESSURE
AA06	A55	CONTROL BOARD, MAIN
BB07	A63	SENSOR, CO2 (IAQ) OPTIONAL
DD06	A91	SENSOR, HUMIDITY
FF06	A146	CONTROL, BACNET GATEWAY
BB02	A171	SENSOR ONE, SMOKE DETECTOR, RETURN AIR
BB03	A172	SENSOR TWO, SMOKE DETECTOR, SUPPLY AIR
AA01	A173	CONTROL MODULE, SMOKE DETECTOR
CC09	F/A	FIRE ALARM CONTACT
CC07	K27	RELAY, TRANSFORMER
AA07	K55	RELAY, BLOWER (SUPERMARKET REHEAT)
DD04	S27	SWITCH, FILTER
BB04	S42	SWITCH, OVERLOAD RELAY BLOWER MOTOR
DD04	S52	SWITCH, AIRFLOW
AA08	S86	SWITCH, DEHUMIDISTAT
BB08	S149	SWITCH, OVERFLOW ONE

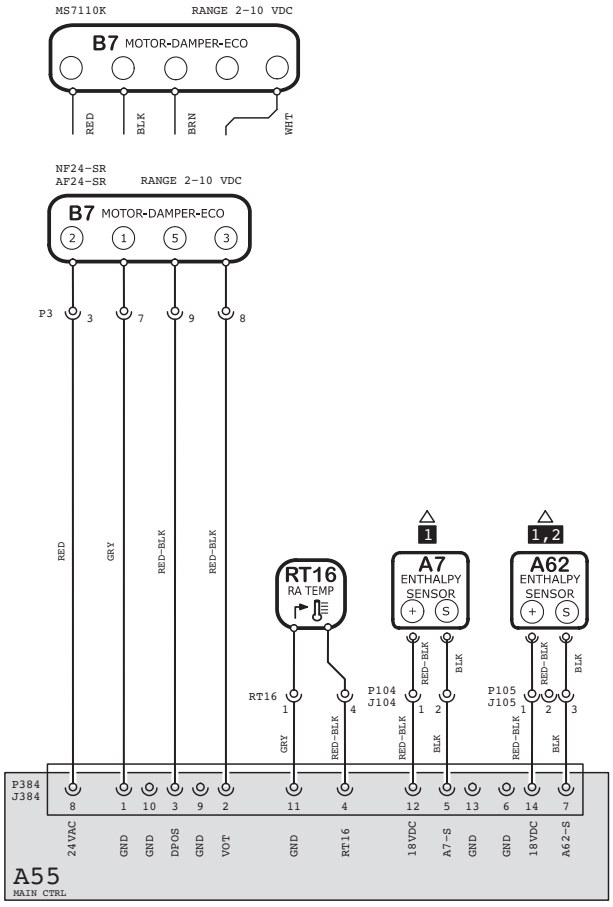
△	NOTES
1	FOR MOTORS WITH S42 EXTERNAL OVERLOAD LESS INVERTER, SEE INVERTER WITH BY PASS FOR S42 HOOK UP
2	USE S86 DEHUMIDISTAT AND K55 FOR OPTIONAL SUPERMARKET REHEAT SCHEME, PRODIGY PARAMETERS NEED TO BE MODIFIED UNDER THE SETTINGS MENU OR VIA UC SOFTWARE FOR SIMULTANEOUS HEATING AND COOLING
3	P297-10 (SR) IS SERVICE RELAY OUTPUT (24VAC) IF USED CONNECT TO AN INDICATOR LIGHT
4	THERMOSTAT HOOKUP FOR PROGRAMMABLE CONFIGURATION OF THE BOARD (A55)
5	PRODIGY 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
8	REMOVE JUMPER TO INSTALL S149
9	EXTERNAL HUMIDITROL CONTACTS

Model: LCM, LGM Series RTU
Thermostat
Voltage: All Voltages
Supersedes: N/A Form No: 538078-01 Rev: 0

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

WIRING DIAGRAM FLOW

ECONOMIZER



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

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

Model: LCM, LGM Series RTU
Economizer & Motorized OAD
Voltage: All Voltages
Supersedes: N/A Form No: 538072-01 Rev:0

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

WIRING DIAGRAM FLOW