UNIT INFORMATION

LGM SERIES
13 to 25 ton

100133

Service Literature

LGM156 through 300 With R-454B

The LGM156H, 180, 210, 240 and 300 units are configure to order units (CTO) with a wide selection of factory installed options.

The LGM156 \ 300 is available in 169,000 to 480.000 Btuh. See SPECIFICATIONS-GAS HEAT for more detail per model.

Gas heat sections are designed with aluminized steel tube heat exchangers with stainless steel as an option.

Cooling capacities range from 13 to 25 tons (45.7 to 88 kW).

Multi-Stage Air Volume MSAV® and Variable speed VAV system are both an option.

The CORE Control System is designed to accelerate equipment install and service. Standard with all Model L™ rooftop units, control system integrates key technologies that lower installation costs, drive system efficiency, and protect your investments.

⚠ WARNING

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

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

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.

⚠ WARNING

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

⚠ WARNING

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

False ceilings or drop ceiling may be used as a return air plenum only if the unit being installed has a Refrigerant Detection System installed.

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

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

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⚠ CAUTION

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

⚠ WARNING

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

⚠ CAUTION

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

⚠ CAUTION

Children should be supervised not to play with the appliance.

⚠ CAUTION

Servicing shall be performed only as recommended by the manufacturer.

⚠ CAUTION

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

⚠ WARNING

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

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

⚠ CAUTION

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

⚠ WARNING

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

⚠ IMPORTANT

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

⚠ IMPORTANT

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

⚠ CAUTION

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

A2L Refrigerant Considerations

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

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

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

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

-Safely remove refrigerant following local and national regulations.

-Evacuate the circuit.

-Purge the circuit with inert gas.

-Evacuate.

-Purge the circuit with inert gas.

-Open the circuit

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

OPTIONS / ACCESSORIES

Item Description		Order Number	Size				
			156	180	210	240	300
COOLING SYSTEM							
Condensate Drain Trap	PVC	**22H54**	X	X	X	X	X
	Copper	**76W27**	X	X	X	X	X
Corrosion Protection		Factory	O	O	O	O	O
Drain Pan Overflow Switch		**21Z07**	OX	OX	OX	OX	OX
HEATING SYSTEM							
Bottom Gas Piping Kit		**85M31**	X	X	X	X	X
Combustion Air Intake Extensions (order two)		**89L97**	X	X	X	X	X
Gas Heat Input	Low - 169,000 Btuh	Factory	O	O	O		
	Standard - 260,000 Btuh	Factory	O	O	O	O	O
	Medium - 360,000 Btuh	Factory	O	O	O	O	O
	High - 480,000 Btuh	Factory		O	O	O	O
Low Temperature Vestibule Heater	208/230V-3ph	**22H58**	X	X	X	X	X
	460V-3ph	**22H59**	X	X	X	X	X
	575V-3ph	**22V43**	X	X	X	X	X
LPG/Propane Conversion Kits (Order 2 kits)	Low Heat	**14N28**	X	X	X		
	Standard Heat	**14N28**	X	X	X	X	X
	Medium Heat	**14N29**	X	X	X	X	X
	High Heat	**14N30**		X	X	X	X
Stainless Steel Heat Exchanger		Factory	O	O	O	O	O
Vertical Vent Extension Kit (Order two kits)		**42W16**	X	X	X	X	X
BLOWER - SUPPLY AIR							
Blower Option							
	SZVAV (Single Zone Variable Air Volume) - With VFD Bypass Control	Factory	O	O	O	O	O
	SZVAV (Single Zone Variable Air Volume) - Without VFD Bypass Control	Factory	O	O	O	O	O
	VAV (Variable Air Volume) - Without VFD Bypass Control	Factory	O	O	O	O	O
Motors	Belt Drive (standard efficiency) - 3 HP	Factory	O	O	O		
	Belt Drive (standard efficiency) - 5 HP	Factory	O	O	O	O	O
	Belt Drive (standard efficiency) - 7.5 HP	Factory		O	O	O	O
	Belt Drive (standard efficiency) - 10 HP	Factory				O	O
Drive Kits See Blower Data Tables for usage and selection	Kit #1 535-725 rpm	Factory	O	O	O		
	Kit #2 710-965 rpm	Factory	O	O	O		
	Kit #3 685-856 rpm	Factory	O	O	O	O	O
	Kit #4 850-1045 rpm	Factory	O	O	O	O	O
	Kit #5 945-1185 rpm	Factory	O	O	O	O	O
	Kit #6 850-1045 rpm	Factory		O	O	O	O
	Kit #7 945-1185 rpm	Factory		O	O	O	O
	Kit #8 1045-1285 rpm	Factory		O	O	O	O
	Kit #10 1045-1285 rpm	Factory				O	O
	Kit #11 1135-1330 rpm	Factory				O	O
	Blower Belt Auto-Tensioner	**24B80**	X	X	X	X	X

NOTE - Order numbers shown are for ordering optional accessories if a field installed option is available.

OX - Configure To Order (Factory Installed) or Field Installed

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OPTIONS / ACCESSORIES

Item Description		Order Number	Size 156	180	210	240	300
CONTROLS							
Commercial Controls	LonTalk® Module - For Lennox® CORE Control System	**54W27**	OX	OX	OX	OX	OX
	Novar® LSE	Factory	O	O	O	O	O
Dirty Filter Switch		**53W68**	OX	OX	OX	OX	OX
Fresh Air Tempering		**21Z08**	OX	OX	OX	OX	OX
Smoke Detector - Supply or Return (Power board and one sensor)		**22H56**	OX	OX	OX	OX	OX
Smoke Detector - Supply and Return (Power board and two sensors)		**22H57**	OX	OX	OX	OX	OX
INDOOR AIR QUALITY							
Air Filters							
Healthy Climate® High Efficiency Air Filters 24 x 24 x 2 in.	MERV 8 (Order 6)	**54W67**	OX	OX	OX	OX	OX
	MERV 13 (Order 6)	**52W40**	OX	OX	OX	OX	OX
	MERV 16 (Order 6)	**21U52**	OX	OX	OX	OX	OX
Replacement Media Filter With Metal Mesh Frame 24 x 24 x 2 in. (includes non-pleated filter media)	(Order 6)	**44N61**	X	X	X	X	X
Indoor Air Quality (CO_2) Sensors							
Sensor - Wall-mount, off-white plastic cover with LCD display		**77N39**	X	X	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display		**23V86**	X	X	X	X	X
Sensor - Black plastic case, LCD display, rated for plenum mounting		**87N52**	X	X	X	X	X
Sensor - Black plastic case, no display, rated for plenum mounting		**87N54**	X	X	X	X	X
CO_2 Sensor Duct Mounting Kit - for downflow applications		**85L43**	X	X	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensors (**77N39**)		**90N43**	X	X	X	X	X
Needlepoint Bipolar Ionization (NPBI)							
Needlepoint Bipolar Ionization (NPBI) Kit		**21U37**	X	X	X		
		21U38				X	
		21U39					X
UVC Germicidal Light Kit							
[1] Healthy Climate® UVC Light Kit (110/230v-1ph)		**21A94**	X	X	X	X	X
Step-Down Transformer	460V primary, 230V secondary	**10H20**	X	X	X	X	X
	575V primary, 230V secondary	**10H21**	X	X	X	X	X
ELECTRICAL							
Voltage 60 Hz	208/230V - 3 phase	Factory	O	O	O	O	O
	460V - 3 phase	Factory	O	O	O	O	O
	575V - 3 phase	Factory	O	O	O	O	O
HACR Circuit Breakers		Factory	O	O	O	O	O
[2] Short-Circuit Current Rating (SCCR) of 100kA (includes Phase/Voltage Detection)		Factory	O	O	O	O	O
[3] Disconnect Switch		80 amp	OX	OX	OX	OX	OX
		150 amp	OX	OX	OX	OX	OX
		250 amp					OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only)	**74M70**	OX	OX	OX	OX	OX
	15 amp factory-wired and powered (208/230V, 460V only)	Factory	O	O	O	O	O
	[4] 20 amp non-powered, field-wired (208/230V, 460V, 575V)	**67E01**	X	X	X	X	X
	[4] 20 amp non-powered, field-wired (575V only)	Factory	O	O	O	O	O
Weatherproof Cover for GFI		**10C89**	X	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.
[2] Alternately, 110V power supply may be used to directly power the UVC ballast(s).
[3] Disconnect Switch is furnished and factory installed with High SCCR option.
[4] Canada requires a minimum 20 amp circuit. Select 20 amp, non-powered, field wired GFI.

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OPTIONS / ACCESSORIES

Item Description		Order Number	Size 156	180	210	240	300
ECONOMIZER							
High Performance Economizer (Approved for California Title 24 Building Standards AMCA Class 1A Certified)							
High Performance Economizer (Downflow or Horizontal) Includes Economizer Dampers with Outdoor Air Hood Downflow Applications - Use furnished Outdoor Air Hood - Order Downflow Barometric Relief Dampers with Exhaust Hood separately Horizontal Applications - Use furnished Outdoor Air Hood - Order Horizontal Barometric Relief Dampers with Exhaust Hood separately		**22J18**	OX	OX	OX	OX	OX
Economizer Controls							
Differential Enthalpy (Not for Title 24)	Order 2	**21Z09**	OX	OX	OX	OX	OX
Sensible Control	Sensor is Furnished	Factory	O	O	O	O	O
Single Enthalpy (Not for Title 24)		**21Z09**	OX	OX	OX	OX	OX
Global Control	Sensor Field Provided	Factory	O	O	O	O	O
Building Pressure Control		**13J77**	X	X	X	X	X
Outdoor Air CFM Control		**13J76**	X	X	X	X	X
Barometric Relief Dampers With Exhaust Hood (required with economizer)							
Downflow Barometric Relief Dampers		**54W78**	OX	OX	OX	OX	OX
Horizontal Barometric Relief Dampers		**16K99**	X	X	X	X	X
OUTDOOR AIR							
Outdoor Air Dampers With Outdoor Air Hood							
Motorized		**22J27**	OX	OX	OX	OX	OX
Manual		**13U05**	X	X	X	X	X
[4] POWER EXHAUST (DOWNFLOW APPLICATIONS ONLY)							
Standard Static, SCCR Rated	208/230V	**22H90**	OX	OX	OX	OX	OX
	460V	**22H91**	OX	OX	OX	OX	OX
	575V	**22V34**	OX	OX	OX	OX	OX
HUMIDITROL™+ HOT GAS REHEAT OPTION - SZVAV MODELS ONLY							
Humiditrol+ Dehumidification Option		Factory	OX	OX	OX	OX	OX
CABINET							
Combination Coil/Hail Guards		**23U71**	OX	OX	OX	OX	OX

[1] Field installed Power Exhaust requires Economizer with Outdoor Air Hood and Downflow Barometric Relief Dampers with Exhaust Hood. Must be ordered separately.

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OPTIONS / ACCESSORIES

Item Description		Order Number	Size				
			156	180	210	240	300
ROOF CURBS							
Hybrid Roof Curbs, Downflow							
8 in. height		**11F58**	X	X	X	X	X
14 in. height		**11F59**	X	X	X	X	X
18 in. height		**11F60**	X	X	X	X	X
24 in. height		**11F61**	X	X	X	X	X
Adjustable Pitch Curb							
14 in. height		**43W26**	X	X	X	X	X
Standard Roof Curbs, Horizontal - Requires Horizontal Return Air Panel Kit							
26 in. height - slab applications		**11T89**	X	X	X	X	
30 in. height - slab applications		**11T90**					X
37 in. height - rooftop applications		**11T96**	X	X	X	X	
41 in. height - rooftop applications		**11T97**					X
Insulation Kit For Standard Horizontal Roof Curbs							
for 26 in. height curb		**73K32**	X	X	X	X	
for 30 in. height curb		**73K33**					X
for 37 in. height curb		**73K34**	X	X	X	X	
for 41 in. height curb		**73K35**					X
Horizontal Return Air Panel Kit							
Required for Horizontal Applications with Roof Curb		**87M00**	X	X	X	X	X
CEILING DIFFUSERS							
Step-Down - Order one	RTD11-185S	**13K63**	X	X			
	RTD11-275S	**13K64**			X	X	X
Flush - Order one	FD11-185S	**13K58**	X	X			
	FD11-275S	**13K59**			X	X	X
Transitions (Supply and Return) - Order one	C1DIFF33C-1	**12X68**	X	X			
	C1DIFF34C-1	**12X70**			X	X	X

NOTE - Order numbers shown are for ordering optional accessories if a field installed option is available.

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SPECIFICATIONS — 13 TON

Model			LGM156U5M	LGM156U5V
Nominal Tonnage			13 Ton	13 Ton
Efficiency Type			Ultra-High	Ultra-High
Blower Type			SZVAV (Single Zone Variable Air Volume)	VAV (Variable Air Volume)
Cooling Performance	Gross Cooling Capacity (Btuh)		154,000	154,000
	[1] Net Cooling Capacity (Btuh)		150,000	150,000
	[1] AHRI Rated Air Flow (cfm)		4100	4100
	[1] IEER (Btuh/Watt)		19.0	18.5
	[1] EER (Btuh/Watt)		12.0	12.0
	Total Unit Power (kW)		12.5	12.5
Sound Rating Number	dBA		86	86
Refrigerant Charge	Refrigerant Type		R-454B	R-454B
	Without Reheat Option	Circuit 1	6 lbs. 3 oz.	6 lbs. 3 oz.
		Circuit 2	5 lbs. 5 oz.	5 lbs. 5 oz.
		Circuit 3	5 lbs. 11 oz.	5 lbs. 11 oz.
	With Reheat Option	Circuit 1	6 lbs. 10 oz.	- - -
		Circuit 2	6 lbs. 8 oz.	- - -
		Circuit 3	5 lbs. 10 oz.	- - -
Gas Heating Options Available			See page 11	
Compressor Type (number)			Variable Capacity Scroll (1) Fixed Capacity Scroll (2)	
Outdoor Coils	Net face area - ft.^{2}		55.2	55.2
	Rows		1	1
	Fins - in.		20	20
Outdoor Coil Fans	Motor HP (number and type)		1/3 (4 ECM)	1/3 (4 ECM)
	Rpm		450-1075	450-1075
	Watts		155 - 1150	155 - 1150
	Diameter (Number) - in.		(4) 24	(4) 24
	Blades		3	3
	Total Air volume - cfm		16,000	16,000
Indoor Coils	Net face area - ft.^{2}		21.40	21.40
	Tube diameter - in.		3/8	3/8
	Rows		3	3
	Fins - in.		14	14
	Condensate drain size (NPT) - in.		(1) 1	(1) 1
	Expansion device type		Balanced Port Thermostatic Expansion Valve,removable power head	
[2] **Indoor Blower and Drive Selection**	Nominal motor HP		3, 5	
	Maximum usable motor HP (US)		3.45, 5.75	
	Motor - Drive kit number		3 HP Kit 1 535-725 rpm Kit 2 710-965 rpm 5 HP Kit 3 685-856 rpm Kit 4 850-1045 rpm Kit 5 945-1185 rpm	
	Blower wheel nominal diameter x width - in.		(2) 15 x 15 in.	(2) 15 x 15 in.
Filters	Type of filter		MERV 4, Disposable	
	Number and size - in.		(6) 24 x 24 x 2	
Line voltage data (Volts-Phase-Hz)			208/230-3-60, 460-3-60, 575-3-60	

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

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

[2] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE – Blower motor service factor = 1.0.

SPECIFICATIONS — 15 TON | 17.5 TON

Model			LGM180U5M	LGM180U5V	LGM210U5M	LGM210U5V
Nominal Tonnage			15 Ton	15 Ton	17.5 Ton	17.5 Ton
Efficiency Type			Ultra-High	Ultra-High	Ultra-High	Ultra-High
Blower Type			SZVAV (Single Zone Variable Air Volume)	VAV (Variable Air Volume)	SZVAV (Single Zone Variable Air Volume)	VAV (Variable Air Volume)
Cooling Performance	Gross Cooling Capacity (Btuh)		176,000	176,000	206,000	206,000
	[1] Net Cooling Capacity (Btuh)		172,000	172,000	200,000	200,000
	[1] AHRI Rated Air Flow (cfm)		5250	5250	6100	6100
	[1] IEER (Btuh/Watt)		19.0	17.5	18.8	18.0
	[1] EER (Btuh/Watt)		12.0	12.0	12.0	12.0
	Total Unit Power (kW)		14.3	14.3	16.7	16.7
Sound Rating Number	dBA		86	86	90	90
Refrigerant Charge	Refrigerant Type		R-454B	R-454B	R-454B	R-454B
	Without Reheat Option	Circuit 1	6 lbs. 4 oz.	6 lbs. 4 oz.	5 lbs. 14 oz.	5 lbs. 14 oz.
		Circuit 2	6 lbs. 2 oz.	6 lbs. 2 oz.	5 lbs. 12 oz.	5 lbs. 12 oz.
		Circuit 3	5 lbs. 8 oz.	5 lbs. 8 oz.	5 lbs. 0 oz.	5 lbs. 0 oz.
		Circuit 4	- - -	- - -	5 lbs. 4 oz.	5 lbs. 4 oz.
	With Reheat Option	Circuit 1	6 lbs. 4 oz.	- - -	6 lbs. 13 oz.	- - -
		Circuit 2	6 lbs. 3 oz.	- - -	7 lbs. 2 oz.	- - -
		Circuit 3	5 lbs. 10 oz.	- - -	5 lbs. 0 oz.	- - -
		Circuit 4	- - -	- - -	5 lbs. 6 oz.	- - -
Gas Heating Options Available			See page 11			
Compressor Type (number)			Variable Capacity Scroll (1) Fixed Capacity Scroll (2)		Variable Capacity Scroll (1) Fixed Capacity Scroll (3)	
Outdoor Coils	Net face area - ft.^{2}		55.2	55.2	55.2	55.2
	Rows		1	1	1	1
	Fins - in.		20	20	20	20
Outdoor Coil Fans	Motor HP (number and type)		1/3 (4 ECM)	1/3 (4 ECM)	1/3 (6 ECM)	1/3 (6 ECM)
	Rpm		280-1075	280-1075	640-950	640-950
	Watts		150 -1350	150 -1350	290 -1250	290 -1250
	Diameter (Number) - in.		(4) 24	(4) 24	(6) 24	(6) 24
	Blades		3	3	3	3
	Total Air volume - cfm		16,000	16,000	18,600	18,600
Indoor Coils	Net face area - ft.^{2}		21.40	21.40	21.40	21.40
	Tube diameter - in.		3/8	3/8	3/8	3/8
	Rows		3	3	3	3
	Fins - in.		14	14	14	14
	Condensate drain size (NPT) - in.		(1) 1	(1) 1	(1) 1	(1) 1
	Expansion device type		Balanced Port Thermostatic Expansion Valve,removable power head			
[2] **Indoor Blower and Drive Selection**	Nominal motor HP		3, 5, 7.5			
	Maximum usable motor HP (US)		3.45, 5.75, 8.62			
	Motor - Drive kit number		3 HP Kit 1 535-725 rpm Kit 2 710-965 rpm 5 HP Kit 3 685-856 rpm Kit 4 850-1045 rpm Kit 5 945-1185 rpm 7.5 HP Kit 6 850-1045 rpm Kit 7 945-1185 rpm Kit 8 1045-1285 rpm			
	Blower wheel nominal diameter x width - in.		(2) 15 x 15			
Filters	Type of filter		MERV 4, Disposable			
	Number and size - in.		(6) 24 x 24 x 2			
Line voltage data (Volts-Phase-Hz)			208/230-3-60, 460-3-60, 575-3-60			

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

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

[2] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE – Blower motor service factor = 1.0.

SPECIFICATIONS — 20 TON | 25 TON

Model			LGM240U5M	LGM240U5V	LGM300U5M	LGM300U5V
Nominal Tonnage			20 Ton	20 Ton	25 Ton	25 Ton
Efficiency Type			Ultra-High	Ultra-High	Ultra-High	Ultra-High
Blower Type			SZVAV (Single Zone Variable Air Volume)	VAV (Variable Air Volume)	SZVAV (Single Zone Variable Air Volume)	VAV (Variable Air Volume)
Cooling Performance	Gross Cooling Capacity (Btuh)		235,000	235,000	277,000	277,000
	[1] Net Cooling Capacity (Btuh)		228,000	228000	270,000	270,000
	[1] AHRI Rated Air Flow (cfm)		6450	6450	7400	7400
	[1] IEER (Btuh/Watt)		18.4	17.5	17.5	16.5
	[1] EER (Btuh/Watt)		12	12	10.6	10.6
	Total Unit Power (kW)		19	19	25.5	25.5
Sound Rating Number	dBA		90	90	90	90
Refrigerant Charge	Refrigerant Type		R-454B	R-454B	R-454B	R-454B
	Without Reheat Option	Circuit 1	6 lbs. 1 oz.	6 lbs. 1 oz.	6 lbs. 12 oz.	6 lbs. 12 oz.
		Circuit 2	5 lbs. 11 oz.	5 lbs. 11 oz.	6 lbs. 12 oz.	6 lbs. 12 oz.
		Circuit 3	5 lbs. 2 oz.	5 lbs. 2 oz.	6 lbs. 3 oz.	6 lbs. 3 oz.
		Circuit 4	5 lbs. 8 oz.	5 lbs. 8 oz.	5 lbs. 15 oz.	5 lbs. 15 oz.
	With Reheat Option	Circuit 1	6 lbs. 14 oz.	- - -	6 lbs. 8 oz.	- - -
		Circuit 2	6 lbs. 14 oz.	- - -	6 lbs. 14 oz.	- - -
		Circuit 3	4 lbs. 11 oz.	- - -	5 lbs. 7 oz.	- - -
		Circuit 4	4 lbs. 13 oz.	- - -	5 lbs. 8 oz.	- - -
Gas Heating Options Available			See page 11			
Compressor Type (number)			Variable Capacity Scroll (1) Fixed Capacity Scroll (3)			
Outdoor Coils	Net face area - ft.[2]		55.2	55.2	55.2	55.2
	Number of rows		1	1	1	1
	Fins - in.		20	20	20	20
Outdoor Coil Fans	Motor HP (number and type)		1/3 (6 ECM)	1/3 (6 ECM)	1/3 (6 ECM)	1/3 (6 ECM)
	Rpm		450 - 950	450 - 950	515 - 1000	515 - 1000
	Watts		130 -1530	130 -1530	180 - 1730	180 - 1730
	Diameter (Number) - in.		(6) 24	(6) 24	(6) 24	(6) 24
	Blades		3	3	3	3
	Total Air volume - cfm		18,000	18,000	18,300	18,300
Indoor Coils	Net face area - ft.[2]		21.40	21.40	21.40	21.40
	Tube diameter - in.		3/8	3/8	3/8	3/8
	Rows		4	4	4	4
	Fins - in.		14	14	14	14
	Condensate drain size (NPT) - in.		(1) 1	(1) 1	(1) 1	(1) 1
	Expansion device type		Balanced Port Thermostatic Expansion Valve,removable power head			
[2] **Indoor Blower and Drive Selection**	Nominal motor HP		5, 7.5, 10			
	Maximum usable motor HP (US)		5.75, 8.62, 11.5			
	Motor - Drive kit number		5 HP Kit 3 685-856 rpm Kit 4 850-1045 rpm Kit 5 945-1185 rpm 7.5 HP Kit 6 850-1045 rpm Kit 7 945-1185 rpm Kit 8 1045-1285 rpm 10 HP Kit 7 945-1185 rpm Kit 10 1045-1285 rpm Kit 11 1135-1330 rpm			
	Blower wheel nominal diameter x width - in.		(2) 15 x 15			
Filters	Type of filter		MERV 4, Disposable			
	Number and size - in.		(6) 24 x 24 x 2			
Line voltage data (Volts-Phase-Hz)			208/230-3-60, 460-3-60, 575-3-60			

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

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

[2] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE – Blower motor service factor = 1.0.

SPECIFICATIONS — GAS HEAT

Model			LGM156 LGM180 LGM210	LGM156 LGM180 LGM210 LGM240 LGM300		LGM180 LGM210 LGM240 LGM300
Heat Input Type			**Low (L)**	**Standard (S)**	**Medium (M)**	**High (H)**
Number of Gas Heat Stages			1	2	2	2
Gas Heating Performance	Input - Btuh	First Stage	169,000	85,000	117,000	156,000
		Second Stage	- - -	169,000	234,000	312,000
		Third Stage	- - -	214,000	297,000	396,000
		Fourth Stage	- - -	260,000	360,000	480,000
	Output - Btuh	First Stage	135,000	- - -	- - -	- - -
		Second Stage	- - -	- - -	- - -	- - -
		Third Stage	- - -	- - -	- - -	- - -
		Fourth Stage	- - -	211,000	292,000	389,000
Temperature Rise Range - °F		First Stage	15-45	15-45	30-60	40-70
		Second Stage	- - -	- - -	- - -	- - -
Minimum Air Volume - cfm			3000	4500	4500	5125
Thermal Efficiency			80%	81%	81%	81%
Gas Supply Connections			1 in. NPT	1 in. NPT	1 in. NPT	1 in. NPT
Recommended Gas Supply Pressure - in. w.g.		Natural	7	7	7	7
		LPG/Propane	11	11	11	11
Gas Supply Pressure Range		Min./Max. (Natural)	4.7 - 10.5 in. w.g.			
		Min./Max. (LPG)	10.8 - 13.5 in.w.g.			

HIGH ALTITUDE DERATE

NOTE - Units may be installed at altitudes up to 2000 feet above sea level without any modification.
At altitudes above 2000 feet, units must be derated to match gas manifold pressures shown in table below.
At altitudes above 4500 feet units must be derated 4% for each 1000 feet above sea level.

NOTE – This is the only permissible derate for these units.

Refer to the Installation Instructions for more detailed information.

ONE STAGE HEAT

No Adjustment Required

TWO STAGE HEAT

Heat Input Type	Altitude Feet	Gas Manifold Pressure - in. w.g.		Input Rate (Btuh)	
		Natural Gas	LPG/Propane Gas	First Stage	Second Stage
Standard (2 stage)	2001 - 4500	1.6 / 3.1	4.4 / 8.9	169,000	239,000
Medium (2 stage)	2001 - 4500	1.6 / 3.1	4.4 / 8.9	234,000	331,000
High (2 stage)	2001 - 4500	1.6 / 3.1	4.4 / 8.9	312,000	442,000

FOUR STAGE HEAT

[1] Heat Input Type	Altitude Feet	Gas Manifold Pressure - in. w.g.		Input Rate (Btuh)			
		Natural Gas	LPG/Propane Gas	First Stage	Second Stage	Third Stage	Fourth Stage
Standard (4 stage)	2001 - 4500	1.6 / 3.1	4.4 / 8.9	85,000	169,000	204,000	239,000
Medium (4 stage)	2001 - 4500	1.6 / 3.1	4.4 / 8.9	117,000	234,000	283,000	331,000
High (4 stage)	2001 - 4500	1.6 / 3.1	4.4 / 8.9	156,000	312,000	377,000	442,000

[1] Four-Stage Gas Heating is field configured.

BLOWER DATA

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL & AIR FILTERS IN PLACE
FOR ALL UNITS ADD:

1 - Wet indoor coil air resistance of selected unit.
2 - Any factory installed options air resistance (heat section, Economizer, etc.)
3 - Any field installed accessories air resistance (heat section, duct resistance, diffuser, etc.)

Then determine from blower table blower motor output and drive required.
See page 13 for wet coil and option/accessory air resistance data.
See page 13 for factory installed drive kit specifications.

MINIMUM AIR VOLUME REQUIRED FOR DIFFERENT GAS HEAT SIZES

Low Heat - 3000 cfm | Standard and Medium Heat - 4500 cfm | High Heat - 5125 cfm

Air Volume cfm	TOTAL STATIC PRESSURE - Inches Water Gauge (Pa)																									
	0.20		0.40		0.60		0.80		1.00		1.20		1.40		1.60		1.80		2.00		2.20		2.40		2.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2750	385	0.30	505	0.50	600	0.70	680	0.90	755	1.10	820	1.30	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3000	395	0.35	515	0.55	610	0.75	685	1.00	760	1.20	825	1.45	885	1.70	---	---	---	---	---	---	---	---	---	---	---	---
3250	405	0.40	520	0.60	615	0.85	695	1.10	765	1.30	830	1.60	890	1.85	950	2.10	---	---	---	---	---	---	---	---	---	---
3500	415	0.45	530	0.70	620	0.95	700	1.20	775	1.45	840	1.70	900	2.00	955	2.25	1005	2.55	---	---	---	---	---	---	---	---
3750	425	0.50	540	0.75	630	1.05	710	1.30	780	1.60	845	1.85	905	2.15	960	2.45	1010	2.70	1060	3.00	1110	3.30	---	---	---	---
4000	435	0.55	545	0.85	635	1.10	715	1.40	785	1.70	850	2.00	910	2.30	965	2.60	1020	2.90	1070	3.25	1115	3.55	1160	3.85	1205	4.15
4250	445	0.60	555	0.90	645	1.25	725	1.55	795	1.85	855	2.15	915	2.45	970	2.80	1025	3.10	1075	3.45	1120	3.75	1165	4.10	1210	4.45
4500	455	0.70	565	1.00	655	1.35	730	1.65	800	2.00	865	2.35	925	2.65	980	3.00	1030	3.30	1080	3.65	1130	4.05	1175	4.35	1215	4.70
4750	470	0.75	575	1.10	660	1.45	740	1.80	810	2.15	870	2.50	930	2.85	985	3.20	1040	3.55	1085	3.90	1135	4.25	1180	4.65	1225	5.00
5000	480	0.85	585	1.25	670	1.60	750	1.95	815	2.30	880	2.70	940	3.05	995	3.40	1045	3.80	1095	4.15	1140	4.50	1185	4.90	1230	5.30
5250	495	0.95	595	1.35	680	1.70	755	2.10	825	2.50	890	2.90	945	3.25	1000	3.65	1050	4.00	1100	4.40	1150	4.80	1195	5.20	1235	5.60
5500	505	1.05	605	1.45	690	1.85	765	2.25	835	2.65	895	3.05	955	3.45	1010	3.85	1060	4.25	1110	4.70	1155	5.10	1200	5.50	1240	5.90
5750	520	1.15	615	1.60	700	2.00	775	2.45	840	2.85	905	3.25	960	3.65	1015	4.10	1065	4.50	1115	4.95	1160	5.35	1205	5.80	1250	6.25
6000	530	1.30	630	1.75	710	2.15	785	2.60	850	3.05	910	3.45	970	3.90	1025	4.35	1075	4.80	1120	5.20	1170	5.65	1215	6.10	1255	6.55
6250	545	1.40	640	1.90	720	2.35	795	2.80	860	3.25	920	3.70	975	4.15	1030	4.60	1080	5.05	1130	5.50	1175	5.95	1220	6.45	1265	6.90
6500	560	1.55	650	2.05	730	2.50	805	3.00	870	3.45	930	3.95	985	4.40	1040	4.85	1090	5.35	1140	5.85	1185	6.30	1225	6.75	1270	7.25
6750	570	1.70	665	2.20	745	2.70	815	3.20	880	3.70	940	4.20	995	4.65	1045	5.10	1095	5.60	1145	6.10	1190	6.60	1235	7.10	1275	7.60
7000	585	1.85	675	2.35	755	2.90	825	3.40	890	3.95	950	4.45	1005	4.95	1055	5.40	1105	5.95	1155	6.45	1200	6.95	1240	7.45	1285	8.00
7250	600	2.00	690	2.60	765	3.10	835	3.65	900	4.15	955	4.65	1015	5.25	1065	5.75	1115	6.25	1160	6.75	1205	7.30	1250	7.85	1290	8.35
7500	615	2.20	700	2.75	775	3.30	845	3.85	910	4.45	965	4.95	1020	5.50	1075	6.05	1125	6.60	1170	7.15	1215	7.65	1260	8.25	1300	8.75
7750	630	2.40	715	3.00	790	3.55	855	4.10	920	4.70	975	5.25	1030	5.80	1080	6.35	1130	6.90	1180	7.50	1225	8.05	1265	8.60	1305	9.15
8000	640	2.55	725	3.20	800	3.80	865	4.35	930	4.95	985	5.50	1040	6.10	1090	6.70	1140	7.25	1185	7.85	1230	8.40	1275	9.00	1315	9.60
8250	655	2.80	740	3.40	810	4.00	880	4.65	940	5.25	995	5.85	1050	6.45	1100	7.05	1150	7.65	1195	8.25	1240	8.85	1280	9.40	1325	10.05
8500	670	3.00	750	3.65	825	4.30	890	4.90	950	5.55	1005	6.15	1060	6.80	1110	7.40	1160	8.05	1205	8.65	1250	9.25	1290	9.85	1330	10.45
8750	685	3.25	765	3.90	835	4.55	900	5.20	960	5.85	1015	6.45	1070	7.15	1120	7.75	1165	8.35	1215	9.05	1255	9.65	1300	10.30	---	---
9000	700	3.50	780	4.20	850	4.85	910	5.50	970	6.15	1025	6.80	1080	7.50	1130	8.15	1175	8.75	1220	9.40	1265	10.10	1310	10.80	---	---
9250	715	3.75	790	4.45	860	5.15	925	5.85	985	6.55	1040	7.20	1090	7.85	1140	8.55	1185	9.20	1230	9.85	1275	10.55	---	---	---	---
9500	730	4.00	805	4.75	875	5.45	935	6.15	995	6.90	1050	7.60	1100	8.25	1150	8.95	1195	9.60	1240	10.30	---	---	---	---	---	---
9750	745	4.30	820	5.05	885	5.75	950	6.55	1005	7.20	1060	7.95	1110	8.65	1160	9.40	1205	10.05	1250	10.80	---	---	---	---	---	---
10,000	760	4.60	835	5.40	900	6.15	960	6.85	1015	7.60	1070	8.35	1120	9.05	1170	9.80	1215	10.50	---	---	---	---	---	---	---	---
10,250	775	4.90	845	5.65	910	6.45	970	7.20	1030	8.00	1080	8.75	1135	9.55	1180	10.25	---	---	---	---	---	---	---	---	---	---
10,500	790	5.20	860	6.00	925	6.85	985	7.65	1040	8.40	1095	9.20	1145	10.00	1190	10.70	---	---	---	---	---	---	---	---	---	---
10,750	805	5.55	875	6.40	940	7.25	1000	8.05	1055	8.85	1105	9.65	1155	10.45	---	---	---	---	---	---	---	---	---	---	---	---
11,000	820	5.90	890	6.80	950	7.60	1010	8.45	1065	9.30	1115	10.05	1165	10.90	---	---	---	---	---	---	---	---	---	---	---	---

BLOWER DATA

FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

Nominal HP	Maximum HP	Drive Kit Number	RPM Range
3	3.45	1	535 - 725
3	3.45	2	710 - 965
5	5.75	3	685 - 856
5	5.75	4	850 - 1045
5	5.75	5	945 - 1185
7.5	8.63	6	850 - 1045
7.5	8.63	7	945 - 1185
7.5	8.63	8	1045 - 1285
10	11.50	7	945 - 1185
10	11.50	10	1045 - 1285
10	11.50	11	1135 - 1330

NOTE - Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE – Blower motor service factor = 1.0.

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE

Air Volume cfm	Wet Indoor Coil		Humiditrol™+ Reheat Coil	Gas Heat Exchanger			Economizer	Filters			Horizontal Roof Curb	
	156, 180	210, 240, 300		Low/ Standard Heat	Medium Heat	High Heat					156 thru 240	300
	in. w.g.	in. w.g.	in. w.g.	in. w.g.	in. w.g.	in. w.g.	in. w.g.	MERV 8	MERV 13	MERV 16	in. w.g.	in. w.g.
2750	.01	.02	.01	.02	.04	.05	- - -	.01	.03	0.06	.03	-
3000	.01	.02	.01	.03	.04	.05	- - -	.01	.03	0.06	.04	-
3250	.01	.03	.01	.03	.05	.06	- - -	.01	.04	0.07	.04	.01
3500	.01	.03	.02	.03	.05	.06	- - -	.01	.04	0.08	.05	.01
3750	.01	.03	.02	.04	.06	.07	- - -	.01	.04	0.08	.05	.01
4000	.02	.04	.02	.04	.06	.07	- - -	.01	.04	0.09	.06	.02
4250	.02	.04	.02	.04	.06	.08	- - -	.01	.05	0.10	.07	.02
4500	.02	.05	.02	.05	.07	.09	- - -	.01	.05	0.10	.07	.02
4750	.02	.05	.02	.05	.08	.10	- - -	.02	.05	0.11	.08	.03
5000	.02	.05	.02	.05	.09	.11	- - -	.02	.06	0.12	.08	.03
5250	.02	.06	.03	.06	.10	.12	- - -	.02	.06	0.12	.09	.04
5500	.02	.07	.03	.06	.10	.13	- - -	.02	.06	0.13	.10	.04
5750	.03	.07	.03	.06	.11	.14	- - -	.02	.07	0.14	.11	.05
6000	.03	.08	.03	.07	.12	.15	- - -	.03	.07	0.14	.11	.06
6250	.03	.08	.03	.07	.12	.16	.01	.03	.07	0.15	.12	.07
6500	.03	.09	.04	.08	.13	.17	.02	.03	.08	0.16	.13	.08
6750	.04	.10	.04	.08	.14	.18	.03	.03	.08	0.17	.14	.08
7000	.04	.10	.04	.09	.15	.19	.04	.04	.08	0.17	.15	.09
7250	.04	.11	.04	.09	.16	.20	.05	.04	.09	0.18	.16	.10
7500	.05	.12	.05	.10	.17	.21	.06	.04	.09	0.19	.17	.11
8000	.05	.13	.05	.11	.19	.24	.09	.05	.10	0.21	.19	.13
8500	.06	.15	.05	.12	.20	.26	.11	.05	.10	0.22	.21	.15
9000	.07	.16	.06	.13	.23	.29	.14	.06	.11	0.24	.24	.17
9500	.08	.18	.07	.14	.25	.32	.16	.07	.12	0.25	.26	.19
10,000	.08	.20	.07	.16	.27	.35	.19	.07	.12	0.27	.29	.21
10,500	.09	.22	.08	.17	.30	.38	.22	.08	.13	0.29	.31	.24
11,000	.11	.24	.08	.18	.31	.40	.25	.09	.14	0.30	.34	.27

BLOWER DATA

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure	Air Volume Exhausted
in. w.g.	cfm
0.00	8630
0.05	8210
0.10	7725
0.15	7110
0.20	6470
0.25	5790
0.30	5060
0.35	4300
0.40	3510
0.45	2690
0.50	1840

CEILING DIFFUSER AIR RESISTANCE - in. w.g.

Air Volume cfm	Step-Down Diffuser						Flush Diffuser	
	RTD11-185S			RTD11-275S			FD11-185S	FD11-275S
	2 Ends Open	1 Side/2 Ends Open	All Ends & Sides Open	2 Ends Open	1 Side/2 Ends Open	All Ends & Sides Open		
5000	0.51	0.44	0.39	- - -	- - -	- - -	0.27	- - -
5200	0.56	0.48	0.42	- - -	- - -	- - -	0.30	- - -
5400	0.61	0.52	0.45	- - -	- - -	- - -	0.33	- - -
5600	0.66	0.56	0.48	- - -	- - -	- - -	0.36	- - -
5800	0.71	0.59	0.51	- - -	- - -	- - -	0.39	- - -
6000	0.76	0.63	0.55	0.36	0.31	0.27	0.42	0.29
6200	0.80	0.68	0.59	- - -	- - -	- - -	0.46	- - -
6400	0.86	0.72	0.63	- - -	- - -	- - -	0.50	- - -
6500	- - -	- - -	- - -	0.42	0.36	0.31	- - -	0.34
6600	0.92	0.77	0.67	- - -	- - -	- - -	0.54	- - -
6800	0.99	0.83	0.72	- - -	- - -	- - -	0.58	- - -
7000	1.03	0.87	0.76	0.49	0.41	0.36	0.62	0.40
7200	1.09	0.92	0.80	- - -	- - -	- - -	0.66	- - -
7400	1.15	0.97	0.84	- - -	- - -	- - -	0.70	- - -
7500	- - -	- - -	- - -	0.51	0.46	0.41	- - -	0.45
7600	1.20	1.02	0.88	- - -	- - -	- - -	0.74	- - -
8000	- - -	- - -	- - -	0.59	0.49	0.43	- - -	0.50
8500	- - -	- - -	- - -	0.69	0.58	0.50	- - -	0.57
9000	- - -	- - -	- - -	0.79	0.67	0.58	- - -	0.66
9500	- - -	- - -	- - -	0.89	0.75	0.65	- - -	0.74
10,000	- - -	- - -	- - -	1.00	0.84	0.73	- - -	0.81
10,500	- - -	- - -	- - -	1.10	0.92	0.80	- - -	0.89
11,000	- - -	- - -	- - -	1.21	1.01	0.88	- - -	0.96

CEILING DIFFUSER AIR THROW DATA - ft.

Size	Air Volume cfm	[1] Effective Throw Range - ft.	
		RTD11-185S Step-Down	FD11-185S Flush
156 180	5600	39 - 49	28 - 37
	5800	42 - 51	29 - 38
	6000	44 - 54	40 - 50
	6200	45 - 55	42 - 51
	6400	46 - 55	43 - 52
	6600	47 - 56	45 - 56

[1] Throw is the horizontal or vertical distance an airstream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 50 ft. per minute. Four sides open.

Size	Air Volume cfm	[1] Effective Throw Range - ft.	
		RTD11-275S Step-Down	FD11-275S Flush
210 240 300	7200	33 - 38	26 - 35
	7400	35 - 40	28 - 37
	7600	36 - 41	29 - 38
	7800	38 - 43	40 - 50
	8000	39 - 44	42 - 51
	8200	41 - 46	43 - 52
	8400	43 - 49	44 - 54
	8600	44 - 50	46 - 57
	8800	47 - 55	48 - 59

ELECTRICAL DATA — 13 TON

Model		LGM156U5					
[1] Voltage - 60Hz		208/230V-3ph		460V-3ph		575V-3ph	
Compressor 1 (Inverter)	Rated Load Amps	10.2		6.2		5.6	
	Locked Rotor Amps	21		12		12	
Compressor 2 (Non-Inverter)	Rated Load Amps	13.5		6.4		5.1	
	Locked Rotor Amps	120.4		50		41	
Compressor 3 (Non-Inverter)	Rated Load Amps	13.5		6.4		5.1	
	Locked Rotor Amps	120.4		50		41	
Outdoor Fan Motors (4)	Full Load Amps (4 ECM)	2.8		1.4		1.1	
	Total	11.2		5.6		4.4	
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4		1.3		1	
	Total	4.8		2.6		2	
Service Outlet 115V GFI (amps)		15		15		20	
Indoor Blower Motor	Horsepower	3	5	3	5	3	5
	Full Load Amps	10.6	16.7	4.8	7.6	3.9	6.1
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	70	80	35	40	30	30
	With (2) 0.33 HP Power Exhaust	80	90	40	40	30	35
[3] Minimum Circuit Ampacity (MCA)	Unit Only	63	70	31	35	26	28
	With (2) 0.33 HP Power Exhaust	68	75	34	37	28	30

ELECTRICAL DATA — 15 TON

Model		LGM180U5								
[1] Voltage - 60Hz		208/230V-3ph			460V-3ph			575V-3ph		
Compressor 1 (Inverter)	Rated Load Amps	14.1			7.8			7		
	Locked Rotor Amps	21			12			12		
Compressor 2 (Non-Inverter)	Rated Load Amps	13.5			6.4			5.1		
	Locked Rotor Amps	120.4			50			41		
Compressor 3 (Non-Inverter)	Rated Load Amps	16			7.1			6.4		
	Locked Rotor Amps	156.4			69			47.8		
Outdoor Fan Motors	Full Load Amps (4 ECM)	2.8			1.4			1.1		
	Total	11.2			5.6			4.4		
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4			1.3			1		
	Total	4.8			2.6			2		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	Horsepower	3	5	7.5	3	5	7.5	3	5	7.5
	Full Load Amps	10.6	16.7	24.2	4.8	7.6	11	3.9	6.1	9
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	80	90	100	40	40	50	35	35	40
	With (2) 0.33 HP Power Exhaust	90	90	110	40	45	50	35	35	45
[3] Minimum Circuit Ampacity (MCA)	Unit Only	70	76	86	34	37	41	29	31	35
	With (2) 0.33 HP Power Exhaust	75	81	90	37	40	44	31	33	37

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 — 17.5 TON

Model		LGM210U5								
[1] Voltage - 60Hz		208/230V-3ph			460V-3ph			575V-3ph		
Compressor 1 (Inverter)	Rated Load Amps	10.3			6.2			5.6		
	Locked Rotor Amps	21			12			12		
Compressor 2 (Non-Inverter)	Rated Load Amps	13.5			6.4			5.1		
	Locked Rotor Amps	120.4			50			41		
Compressor 3 (Non-Inverter)	Rated Load Amps	13.5			6.4			5.1		
	Locked Rotor Amps	120.4			50			41		
Compressor 4 (Non-Inverter)	Rated Load Amps	13.5			6.4			5.1		
	Locked Rotor Amps	120.4			50			41		
Outdoor Fan Motors (6)	Full Load Amps (6 ECM)	2.8			1.4			1.1		
	Total	16.8			8.4			6.6		
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4			1.3			1		
	Total	4.8			2.6			2		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	Horsepower	3	5	7.5	3	5	7.5	3	5	7.5
	Full Load Amps	10.6	16.7	24.2	4.8	7.6	11	3.9	6.1	9
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	90	100	110	45	50	50	35	40	45
	With (2) 0.33 HP Power Exhaust	90	100	125	45	50	60	40	40	45
[3] Minimum Circuit Ampacity (MCA)	Unit Only	82	89	98	41	44	48	33	36	39
	With (2) 0.33 HP Power Exhaust	87	94	103	43	46	51	35	38	41

ELECTRICAL DATA — 20 TON

Model		LGM240U5								
[1] Voltage - 60Hz		208/230V-3ph			460V-3ph			575V-3ph		
Compressor 1 (Inverter)	Rated Load Amps	13.3			7.4			6.9		
	Locked Rotor Amps	21			12			12		
Compressor 2 (Non-Inverter)	Rated Load Amps	13.1			6.6			4.8		
	Locked Rotor Amps	93			60			41		
Compressor 3 (Non-Inverter)	Rated Load Amps	13.1			6.6			4.8		
	Locked Rotor Amps	93			60			41		
Compressor 4 (Non-Inverter)	Rated Load Amps	13.1			6.6			4.8		
	Locked Rotor Amps	93			60			41		
Outdoor Fan Motors (6)	Full Load Amps (6 ECM)	2.8			1.4			1.1		
	Total	16.8			8.4			6.6		
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4			1.3			1		
	Total	4.8			2.6			2		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	Horsepower	5	7.5	10	5	7.5	10	5	7.5	10
	Full Load Amps	16.7	24.2	30.8	7.6	11	14	6.1	9	11
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	100	110	125	50	60	60	40	45	50
	With (2) 0.33 HP Power Exhaust	110	125	125	50	60	60	40	50	50
[3] Minimum Circuit Ampacity (MCA)	Unit Only	91	100	108	46	50	54	36	40	42
	With (2) 0.33 HP Power Exhaust	96	105	113	48	52	56	38	42	44

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 — 25 TON

Model		LGM300U5								
[1] Voltage - 60Hz		208/230V-3ph			460V-3ph			575V-3ph		
Compressor 1 (Inverter)	Rated Load Amps	12.9			7.3			6.7		
	Locked Rotor Amps	21			12			12		
Compressor 2 (Non-Inverter)	Rated Load Amps	21.2			9.1			7.7		
	Locked Rotor Amps	156.5			74.8			47.8		
Compressor 3 (Non-Inverter)	Rated Load Amps	22.4			9.1			7.2		
	Locked Rotor Amps	166.2			74.6			54		
Compressor 4 (Non-Inverter)	Rated Load Amps	22.4			9.1			7.2		
	Locked Rotor Amps	166.2			74.6			54		
Outdoor Fan Motors (6)	Full Load Amps (6 ECM)	2.8			1.4			1.1		
	Total	16.8			8.4			6.6		
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4			1.3			1		
	Total	4.8			2.6			2		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	Horsepower	5	7.5	10	5	7.5	10	5	7.5	10
	Full Load Amps	16.7	24.2	30.8	7.6	11	14	6.1	9	11
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	125	150	150	60	60	70	50	50	60
	With (2) 0.33 HP Power Exhaust	125	150	150	60	70	70	50	50	60
[3] Minimum Circuit Ampacity (MCA)	Unit Only	118	126	135	53	57	61	44	47	50
	With (2) 0.33 HP Power Exhaust	123	131	139	56	60	64	46	49	52

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 ACCESSORIES

DISCONNECTS

Voltage	208V	240V	208V	240V	208V	240V	460V	460V	460V	575V	575V	575V
Model No.	**LGM156U5**											
Blower Motor HP	3		5		- - -		3	5	- - -	3	5	- - -
Unit Only	**54W88**	**54W88**	**54W88**	**54W88**	**- - -**	**- - -**	**54W88**	**54W88**	**- - -**	**54W88**	**54W88**	**- - -**
Unit w/ Power Exhaust	**54W88**	**54W88**	**54W89**	**54W89**	**- - -**	**- - -**	**54W88**	**54W88**	**- - -**	**54W88**	**54W88**	**- - -**
Model No.	**LGM180U5**											
Blower Motor HP	3		5		7.5		3	5	7.5	3	5	7.5
Unit Only	**54W88**	**54W88**	**54W89**	**54W89**	**54W89**	**54W89**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**
Unit w/ Power Exhaust	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**
Model No.	**LGM210U5**											
Blower Motor HP	3		5		7.5		3	5	7.5	3	5	7.5
Unit Only	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**
Unit w/ Power Exhaust	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**
Model No.	**LGM240U5**											
Blower Motor HP	5		7.5		10		5	7.5	10	5	7.5	10
Unit Only	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**
Unit w/ Power Exhaust	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**
Model No.	**LGM300U5**											
Blower Motor HP	5		7.5		10		5	7.5	10	5	7.5	10
Unit Only	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W89**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**
Unit w/ Power Exhaust	**54W89**	**54W89**	**54W89**	**54W89**	**90W82**	**90W82**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**	**54W88**

Disconnects - 54W88 - 80A
54W89 - 150A
90W82 - 250A

FIELD WIRING NOTES

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

Minimum R454B Space and CFM Requirements

Minimum Airflow[1]		
Unit	Q_{min}(CFM)	Q_{min}(m^3h)
LGM/LCM156	164	278
LGM/LCM180	165	281
LGM/LCM210	155	264
LGM/LCM240	160	272
LGM/LCM300	178	303

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

Minimum Room Area of Conditioned Space[2]		
Unit	TA_{min}(ft^2)	TA_{min}(m^2)
LGM/LCM156	91	8.4
LGM/LCM180	92	8.5
LGM/LCM210	87	8.0
LGM/LCM240	89	8.2
LGM/LCM300	99	9.2

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

Refrigerant Charge R-454B		
Unit	M_c(lbs)	M_c(kg)
LCM/LGM156 Stg 1	6.19	2.81
LCM/LGM156 Stg 2	5.31	2.41
LCM/LGM156 Stg 3	5.69	2.58
LCM/LGM180 Stg 1	6.25	2.83
LCM/LGM180 Stg 2	6.13	2.78
LCM/LGM180 Stg 3	5.50	2.49
LCM/LGM210 Stg 1	5.88	2.66
LCM/LGM210 Stg 2	5.75	2.61
LCM/LGM210 Stg 3	5.00	2.27
LCM/LGM210 Stg 4	5.25	2.38
LCM/LGM240 Stg 1	6.06	2.75
LCM/LGM240 Stg 2	5.68	2.58
LCM/LGM240 Stg 3	5.12	2.32
LCM/LGM240 Stg 4	5.50	2.49
LCM/LGM300 Stg 1	6.75	3.06
LCM/LGM300 Stg 2	6.75	3.06
LCM/LGM300 Stg 3	6.19	2.81
LCM/LGM300 Stg 4	5.94	2.69

Altitude Adjustment Factor[3]									
Halt	0	200	400	600	800	1000	1200	1400	1600
AF	1	1	1	1	1.02	1.05	1.04	1.1	1.12
Halt	1600	1800	2000	2200	2400	2600	2800	3000	3200
AF	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.4

*[3] **NOTE -** Use the Altitude Adjustment Factor to adjust the values in the tables above to different altitudes. Find the relevant altitude above sea level in the two "Halt" rows and then multiply the value needed from the tables above by the altitude factor number. Example: For the minimum airflow in CFM for an LCM/LGM156 at 1000 ft. above see level, multiply 164 by 1.05 to get 172.2 CFM as the new Q_{min}.*

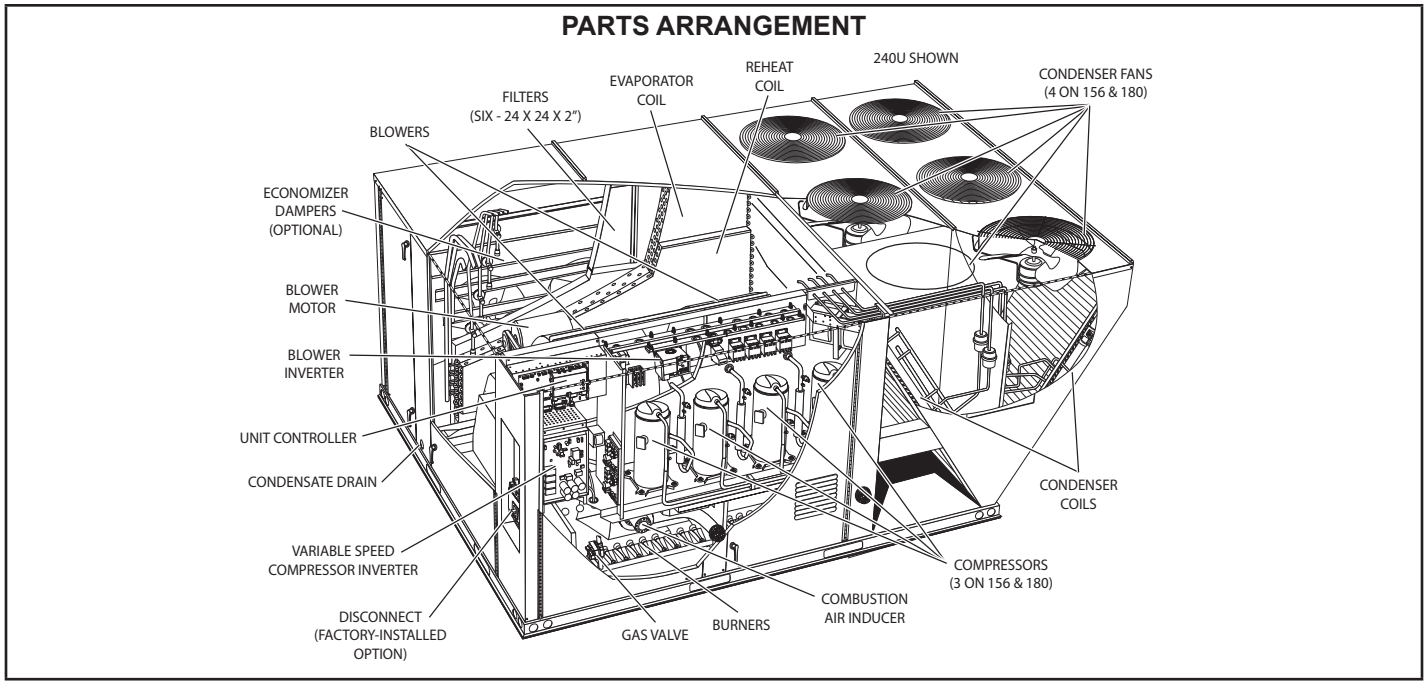


FIGURE 1

I-UNIT COMPONENTS

⚠ 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.

wear gloves and protective clothing. All 13 through 25 ton (45.7 through 88 kW) units are configure to order units (CTO). Unit components are shown in figures 1. All units come standard with hinged unit panels. The unit panels may be held open with the door rod located inside the unit. All L1, L2 and L3 wiring is color coded; L1 is red, L2 is yellow and L3 is blue.

A-Control Box Components

ELECTROSTATIC DISCHARGE (ESD) Precautions and Procedures

⚠ CAUTION

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

Control box components are shown in FIGURE 3. The control box is located in the upper portion of the compressor compartment.

1-Disconnect Switch S48

Units with higher SCCR rating may be equipped with an disconnect switch S48. Other factory or field installed optional circuit breakers may be used, such as CB10. S48 and CB10 are toggle or twist-style switches, which can be used by the service technician to disconnect power to the unit.

2-Control Transformer T1

All use a single line voltage to 24VAC transformer mounted in the control box. Transformer supplies power to control circuits in the unit. The transformer is rated at 70VA and is protected by a 3.5 amp circuit breaker (CB8). The 208/230 (Y) voltage transformers use two primary voltage taps as shown in FIGURE 2, while 460 (G) and 575 (J) voltage transformers use a single primary voltage tap.

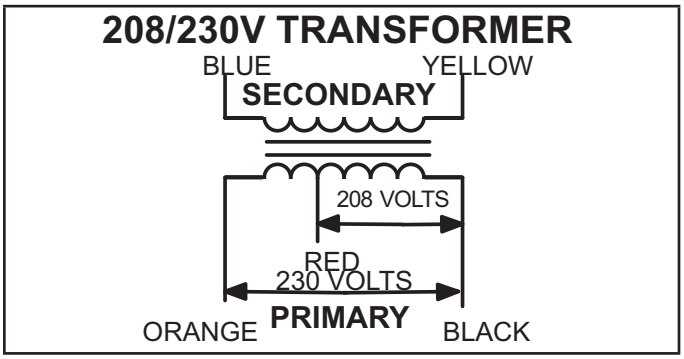


FIGURE 2

3-Contactor Transformer T18

T18 is a single line voltage to 24VAC transformer used in all LGM 13 to 25 ton units. Transformer T18 is protected by a 3.5 amp circuit breaker (CB18). T18 is identical to transformer T1. The transformer supplies 24VAC power to the contactors.

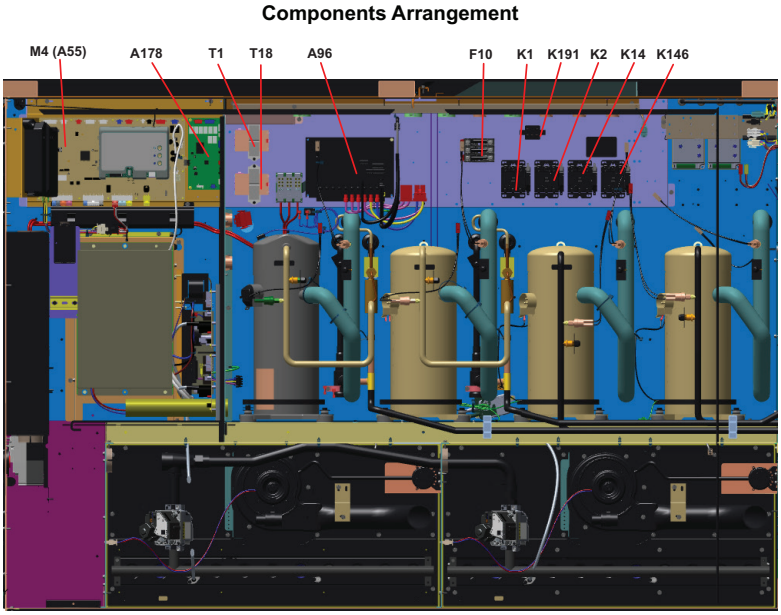


FIGURE 3

4-Terminal Block TB13

TB13 terminal block distributes line voltage power to the line voltage items in the unit.

5-Outdoor Fan Motor Fuse Block & Fuses F10 Power Exhaust Fan Motor Fuse Block and Fuses F6.

STD SCCR 240V, 300V and higher rated SCCR units have three line voltage fuses F10 provide overcurrent protection to all condenser fans. Two line voltage fuses F6 provide overcurrent protection to the two optional power exhaust fans. The fuses are rated at 30A in all 208/230V units but 10A in the 208/230V 240U and 300U models.

6-Compressor Contactor K1, K2, K14, K146

K1, K2, K14: All units

K146: 210, 240, 300

All compressor contactors are three-pole-double-break contactors with 24VAC coils. K1 and K2 (energized by A55) energizes compressors B1 and B2 in response to first stage cool demand. In 180 units K14 (energized by A178) energizes B13 in response to second stage cool demand. In 210, 240 and 300 units K14 and K146 (energized by A178) energize compressors B13 and B20 in response to second stage cool demand.

7-Blower Contactor K3

Blower contactor K3, used in all units, is a three-pole-doublebreak contactor with a 24VAC coil used to energize the indoor blower motor B3 in response to blower demand. K3 is energized by Unit Controller (A55). Optional Staged-Blower units which are not equipped with a bypass option will not have a K3.

8-Ultraviolet Germicidal Lamp (UVC) Transformer T49

UVC transformer T49 is used by units of all voltages except 208/230V and 575V which are equipped with a UVC. The auto voltage to 230VAC transformer is installed in the control box. The transformer has an output rating of 0.5 amps. T49 transformer supplies 230VAC power to the UVC lamp.

9-Burner Controls A3 & A12

Units have two burner controls. A3 controls gas heat section one and A12 controls gas heat section two. The first gas heat section and the second gas heat section burner controls are identical. Both burner controls are factory set and are not adjustable. The control makes three attempts at ignition and then locks out the system if ignition is not obtained after the third trial. Reset after lockout requires only breaking and remaking thermostat demand. The control shuts off gas flow immediately in the event of a gas or power failure. Upon restoration of gas and power, the control will restart the ignition sequence and continue until lame is established or system locks out. For a more detailed description see the Gas Heat Components section.

10-Power Exhaust Relay K65 & K231 (PED units)

Power exhaust relays K65 and K231 are N.O. DPDT relays with a 24VAC coil. The relay are used in units equipped with the optional power exhaust dampers. K65 and K231 are energized by the A55 Unit Controller, after the economizer dampers reach 50% open (adjustable in ECTO). When K65 closes, exhaust fan B10 is energized and when K231 closes B11 is energized.

11-Variable Frequency Drive A96 (optional)

Staged-Blower units are equipped with a VFD which alters the supply power frequency and voltage to the blower motor. Blower speed is staged depending on the compressor stages, heating demand, ventilation demand, or smoke alarm. The amount of airflow for each stage is preset from the factory. Airflow can be adjusted by changing ECTO parameters in the A55 Unit Controller. The VFD is located below the Unit Controller.

12-VFD Power To Motor Contactor K202 (optional)

Contactor is used in Staged-Blower units equipped with a VFD bypass option. The three-pole 40 amp contactor with a 24VAC coil is energized by the A55 Unit Controller. K202 allows power from the VFD to the B3 blower motor in response to blower demand.

13-Inverter Start Forward Rotation Relay K203 (optional)

Relay is used in optional Staged-Blower units and is a three-pole double-throw relay with a 24VAC coil. K203 is energized by the A55 Unit Controller and provides input to the A96 VFD to start blower forward rotation. K203 also deenergizes K3 allowing A96 to control B3 blower.

14-Unit Controller A55

The Unit Controller provides all unit control functions, unit status information, unit diagnostics, programmable parameters and USB verification and profile sharing. Refer to the Unit Controller guide provided with the unit. Thermostat wires are connected to J297 on the Unit Controller.

15-Compressor 3 & 4 Controller A59 & A178

The compressor 3 & 4 control module A59 controls two additional compressor stages. A59 includes all inputs and outputs required for compressor and fan control, compressor stage diagnostics and low ambient control. The M4 unit controller is only compatible with L-Connection sensors provided with the unit or purchased separately as specified in the Product Specification. Tables 1 through 4 show thermistor and pressure transducer readings.

Temperature Sensors

The return air (RT16) and discharge air (RT6) duct probes and the outdoor air (RT17) are all two wire thermistors. The resistance vs. temperature table is shown below:

TABLE 1

Resistance vs. Temperature

Temp. °F (°C)	Resistance +/-2%	Temperature °F (°C)	Resistance +/-2%	Temp. °F (°C)	Resistance +/-2%
-40 (-40)	335,671	40 (4.4)	26,106	90 (32.2)	7,332
-20 (-28.9)	164,959	50 (10)	19,904	100 (37.8)	5,826
0 (-17.8)	85,323	60 (15.6)	15,313	120 (48.9)	3,756
20 (-6.7)	46,218	70 (21.1)	11,884	130 (54.4)	3,047
30 (-1.1)	34,566	80 (26.7)	9,298		

Room Sensors

Room sensor (A2) is a two-wire thermistor with 1k series resistor.

TABLE 2

Two-Wire Thermistor

Temp. °F (°C)	Resistance +/-2%	Temperature °F (°C)	Resistance +/-2%	Temp. °F (°C)	Resistance +/-2%
40 (4.4)	27,102	60 (15.6)	16,313	80 (26.7)	10,299
45 (7.2)	23,764	65 (18.3)	14,474	85 (29.4)	9,249
50 (10)	20,898	70 (21.1)	12,882	90 (32.2)	8,529
55 (12.8)	18,433	75 (23.9)	11,498		

Carbon Dioxide Sensor

The indoor carbondioxide sensor (A63) is an analog sensor with a 0-10VDC output over a carbon dioxide range of 0-2000 ppm as shown in the following table. The sensor is powered with 24VAC

TABLE 3

Carbon Dioxide Range

Carbon Dioxide PPM	DCV	Carbon Dioxide PPM	DC Voltage	Carbon Dioxide PPM	DC Voltage	Carbon Dioxide PPM	DCV
0	0	600	3	1200	6	1800	9
200	1	800	4	1400	7	2000	10
400	2	1000	5	1600	8		

VAV Supply Static Sensor

The supply duct differential static pressure sensor (A30) is an analog sensor with a 0-10VDC output over a range of 0-5”w.c as shown in the following table. The sensor is powered with 24VAC.

TABLE 4

Static Pressure

Pressure “w.c.	DCV	Pressure “w.c.	DC Voltage	Pressure “w.c.	DC Voltage	Pressure “w.c.	DCV
0	0	1.5	3	3	6	4.5	9
0.5	1	2	4	3.5	7	5	10
1	2	2.5	5	4	8		

Relative Humidity Sensor - Optional

The indoor relative humidity sensor (A91) is an analog sensor with a 0-10VDC output over a relative humidity range of 0-100% relative humidity. The sensor is powered with 24VAC.

Enthalpy Sensor - Optional

The optional enthalpy sensors (A7 and A63) used with the economizer have an output of 4-20mA. The sensor is powered with 18VAC provided by M4 unit control.

Economizer Differential Pressure Sensor - Optional

Rooftop units installed with Smart Airflow™ will have a Pressure Transducer (PT5) present in the economizer. PT5 requires 5VDC power supply (P266-5 and {P266-6) and gives 0.25 VDC to 4 VDC output (P266-4) corresponding to 0” water column and 2” water column respectively. For all practical purposes the output should be less than 1.2” water column if not an error code is stored and service alarm output is turned on.

16-Second-Stage Power Exhaust Relay K231 (Staged-Blower units equipped with power exhaust)

The second power exhaust fan is controlled by K231. A133 will enable K231 only when the blower reaches 70% of full speed (adjustable ECTO). This prevents a negative building pressure when the blower is operating in low speed. Refer to the Unit Controller manual and ECTO labels on the unit.

17-Outdoor Fan Transformers T5, T59 (460V units)

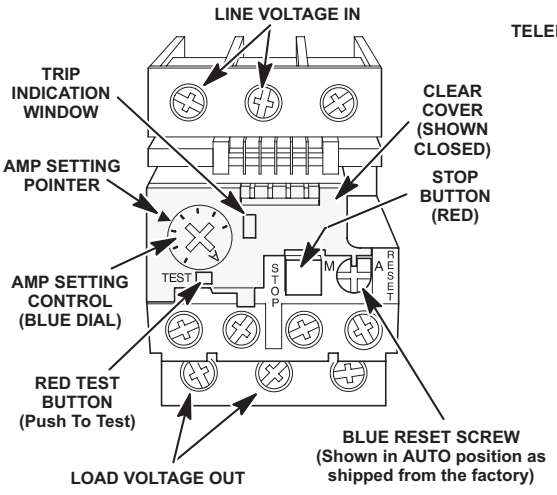
All 460 (G) voltage units use transformer T5 and T59. The auto voltage to 230VAC transformers are mounted in the control box. The transformers have an output rating of 0.5A. T5 transformer supplies 230 VAC power to outdoor fans B4, B5 and B21. T59 transformer supplies 230V to outdoor fans B22, B23 and B24.

18-Fuse F61 (Higher SCCR units only)

Fuse F61 is used on units with higher SCCR rating. F61 provides overcurrent protection to compressor and other cooling components. F61 and S48 are located inside a sheet metal enclosure in the unit left front corner mullion.

19-Blower Motor Overload Relay S42

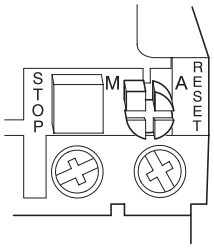
The relay (S42) is connected in line with the blower motor to monitor the current flow to the motor. When the relay senses an overload condition, a set of normally closed contacts open to de-energize pin #1 in plug P299 of the A55 Unit Controller. A55 de-energizes all outputs. Units will be equipped with a relay manufactured by Telemecanique FIGURE 4 or Siemens FIGURE 5.



TELEMECANIQUE OVERLOAD RELAY

DETAIL SHOWING RESET BUTTON ADJUSTED TO MANUAL POSITION

Lift clear cover and turn adjustment screw counterclockwise. Reset screw will pop out when pointer is in M (manual position). Close cover to lock reset screw into position.



Lift clear cover to adjust relay amp setting according to value given on the blower motor nameplate. Proper relay amp setting equals motor nameplate FLA X service factor of 1.15 X .95.

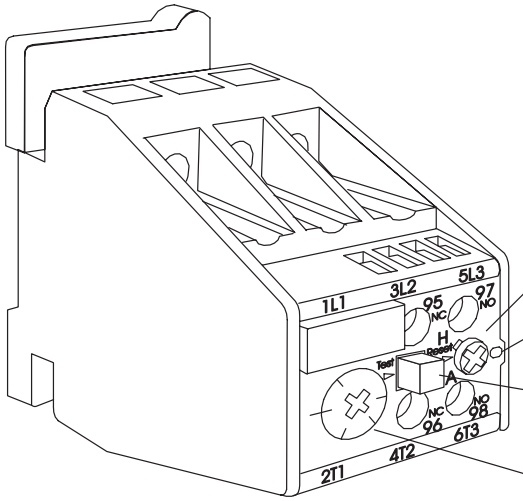
Cover must also be lifted to adjust control mode from automatic reset to manual reset (see detail above) and to test the control.

Control must be in the manual reset mode to perform a test. Use a pointed object to press the small red test button. A yellow marker should appear in the trip indication window to the right of the amp setting control. Press the blue reset screw to reset the relay.

The red STOP button opens the normally closed contacts which power the blower motor. This button stops blower motor operation as long as it is pressed in.

FIGURE 4

SIEMENS OVERLOAD RELAY



BLUE RESET BUTTON IN FACTORY-SET AUTO MODE (Turn clockwise to H for manual reset)

GREEN TRIP INDICATOR (Flush with surface -- not tripped; Above surface -- tripped)

RED TEST BUTTON

AMP ADJUSTMENT DIAL

Adjust relay amp setting according to value given on the blower motor nameplate. Proper relay amp setting equals motor nameplate FLA X service factor of 1.15 X .95.

Use small slotted screwdriver to adjust control mode from automatic reset (A) to manual reset (H).

Control must be in the manual reset mode (H) to perform a test. Press the red test button. Green trip indicator should pop out. Press the blue reset screw to reset the relay.

FIGURE 5

Compressor Detail
LGM156/300 B1, B2, B13
LGM210/300 B20

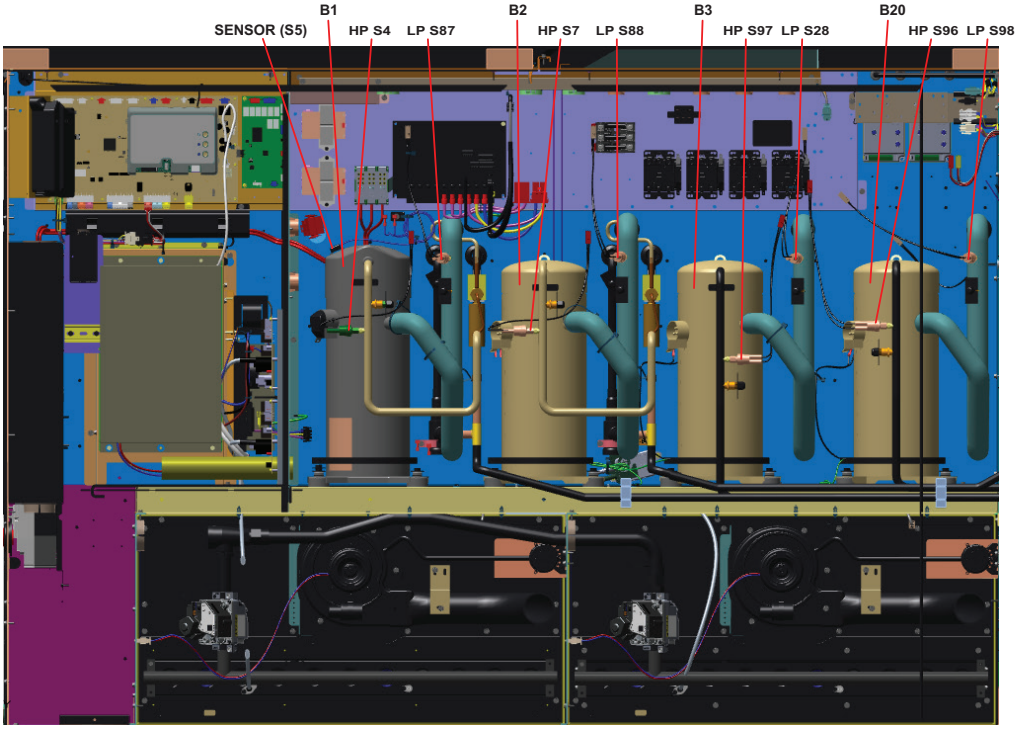


FIGURE 6

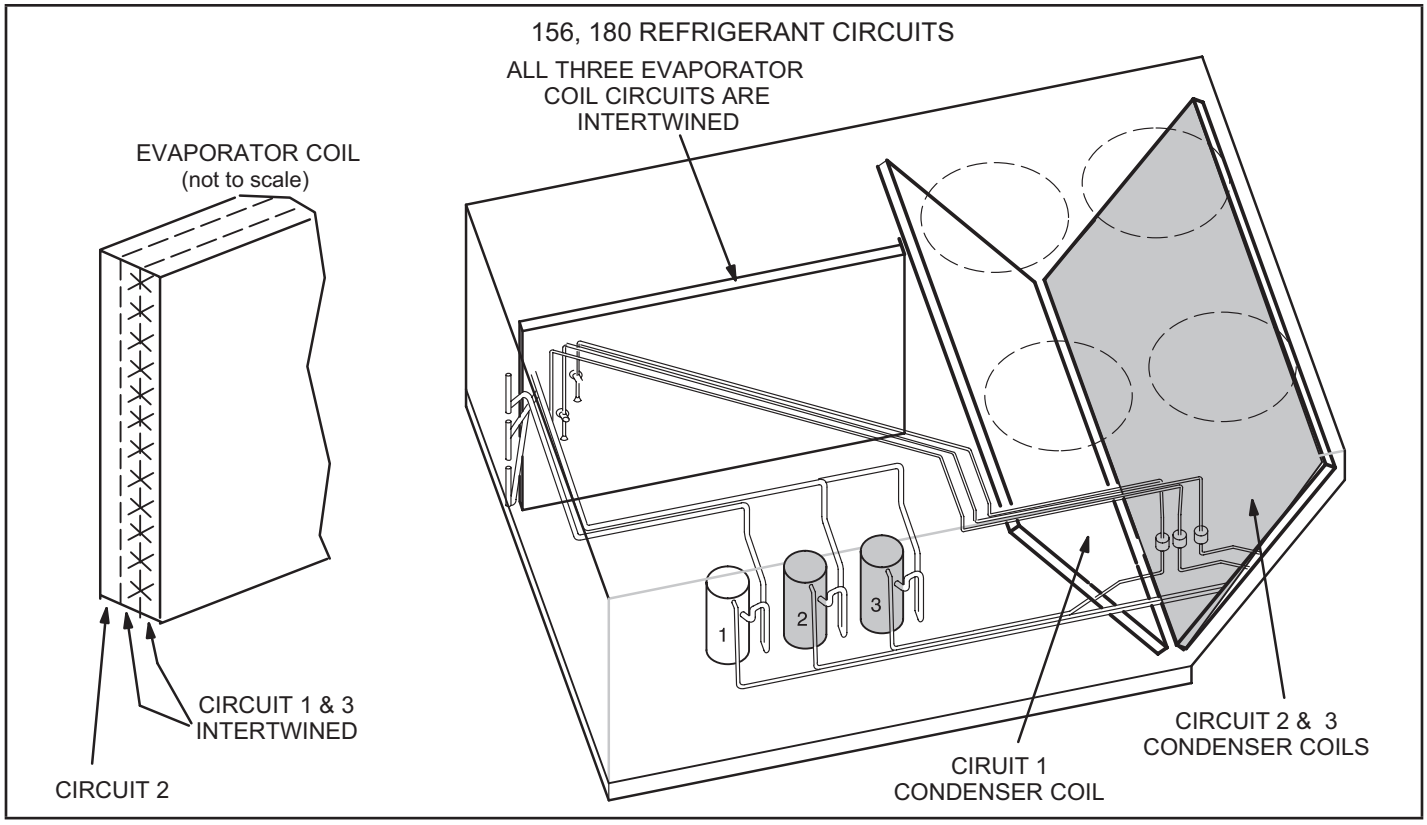


FIGURE 7

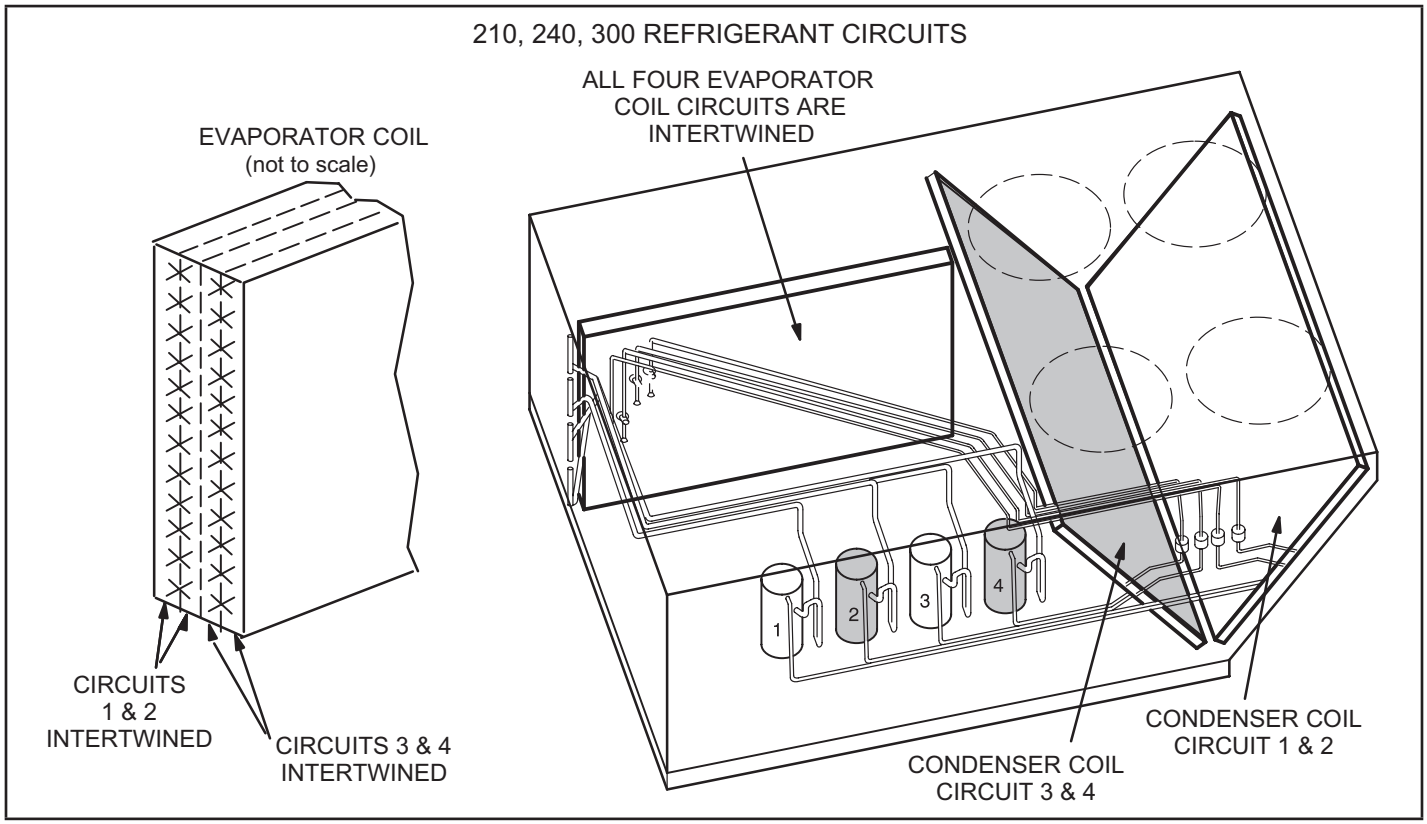


FIGURE 8

B-Cooling Components

Model L ultra high efficiency units use independent cooling circuits consisting of one compressor, one condenser coil, and one evaporator coil per circuit. See FIGURE 7.

Four draw-through type condenser fans are used in LGM156, 180 units and six draw-through type condenser fans are used in LGM210, 240 and 300 units.

Cooling may be supplemented by a factory- or field-installed economizer. All units use an intertwined eveaporator. Each evaporator uses a thermostatic expansion valve as the primary expansion device. Each evaporator is also equipped with enhanced fins and rifled tubing. In all units each compressor is protected by a crankcase heater, high pressure switch and low pressure switch.

1-Compressors B1, B2, B13, B20

All units use scroll compressors. LGM156 and 180 use 3 compressors and LGM210, 240 and 300 use four compressors. Compressor capacity may vary from stage to stage. In all cases, the capacity of each compressor is added to reach the total capacity of the unit. See “SPECIFICATIONS” and “ELECTRICAL DATA” (table of contents) or compressor nameplate for compressor specifications.

⚠ 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.

Each compressor is energized by a corresponding compressor contactor.

NOTE-*Refer to the wiring diagram section for specific unit operation.*

If a compressor replacement is necessary, call 1-800-453-6669.

⚠ IMPORTANT

Some scroll compressors have an internal vacuum protector that will unload scrolls when suction pressure goes below 20 psig. A hissing sound will be heard when the compressor is running unloaded. Protector will reset when low pressure in system rises above 40 psig. DO NOT REPLACE COMPRESSOR.

2-Crankcase Heaters HR1, HR2, HR5 & HR11

All LGM units use insertion type heaters. Heater HR1 is installed around compressor B1, heater HR2 compressor B2, HR5 compressor B13 and HR11 compressor B20.

3-High Pressure Switches S4, S7, S28, S96

S4 all units

S7 all units

S28 all units

S96 210, 240, 300

The high pressure switches is an auto-reset SPST N.C. switch which opens on a pressure rise. All units are equipped with this switch. The switch is located in the compressor discharge line and is wired in series with the compressor contactor coil through A55 unit controller or A178 compressor 3 and 4 controller. See FIGURE 6.

S4 and S7 are is wired in series with B1 and B2 compressor contactors and S28 and S96 are wired in series with B13 and B20 compressor contactors.

When discharge pressure rises to 640 ± 10 psig (4413 ± 69 kPa) (indicating a problem in the system) the switch opens and the respective compressor(s) is de-energized (the economizer can continue to operate). When discharge pressure drops to 475 ± 20 psig (3275 ± 138 kPa) the pressure switch will close re-energizing the compressor(s).

Main control A55 has a three-strike counter before locking out. This means the control allows three high pressure trips per one thermostat demand. The control can be reset by breaking and remaking the thermostat demand or manually resetting the control.

4-Low Pressure Switches S87, S88, S97, S98

S87 all units

S88 all units

S97 210, 240, 300

S98 all units

The low pressure switch is an auto-reset SPST N.O. switch (held N.C. by refrigerant pressure) which opens on a pressure drop. All units are equipped with this switch. The switch is located in the compressor suction line. See FIGURE 6.

S87 and S88 (compressor one and two) and S98 (compressor three) and S98 (compressor 4) are wired in series with the contactor coils through the A55 Unit Controller

The Unit Controller A55 governs the low pressure switches by shunting the switches during start up until pressure is stabilized. After the shunt period, the control has a three-strike counter, during a single thermostat demand, before the compressor(s) is locked out. The control is reset by breaking and remaking the thermostat demand or manually resetting the control.

When suction pressure drops to 40 $\pm$ 5 psig (276 ± 34 kPa), (indicating low pressure), the switch opens and the compressor(s) is de-energized. The switch automatically resets when pressure in the suction line rises to 90 $\pm$ 5 psig (620 ± 34 kPa).

5-Service Valve (optional)

Units may be equipped with service valves located in the discharge and liquid lines. The service valves are manually operated valves used for service operation.

6-Filter Drier (all units)

Units have a filter drier located in the liquid line of each refrigerant circuit at the exit of each condenser coil. The drier removes contaminants and moisture from the system.

7-Condenser Fans B4, B5, B21, B22 (all units) B23, B24 (210, 240, 300)

See SPECIFICATIONS tables at the front of this manual for specifications of condenser fans used in all units. All condenser fans used have single-phase motors. The fan assembly may be removed for servicing and cleaning.

8-High Temperature Sensor S5

S5 is a high temperature sensor installed in variable speed compressor B1 only. The sensor is wired in series with high pressure switch S4. When opened due to high temperature the compressor is de-energized.

9-Temperature Thermistor RT42/57

Each thermistor must be specifically placed for proper unit operation and to initiate valid alarms. See TABLE 5 for proper locations.

TABLE 5

Unit	Sensor	Figure
156, 180	RT42, 43, 46, 47, 50, 54	FIGURE 9
210, 240, 300	RT42, 43, 46, 47, 50, 51, 54, 55	FIGURE 10
156, 180	RT44, 45, 48, 49, 52, 56	FIGURE 11
210, 240, 300	RT44, 45, 48, 49, 52, 53, 56, 57	FIGURE 12

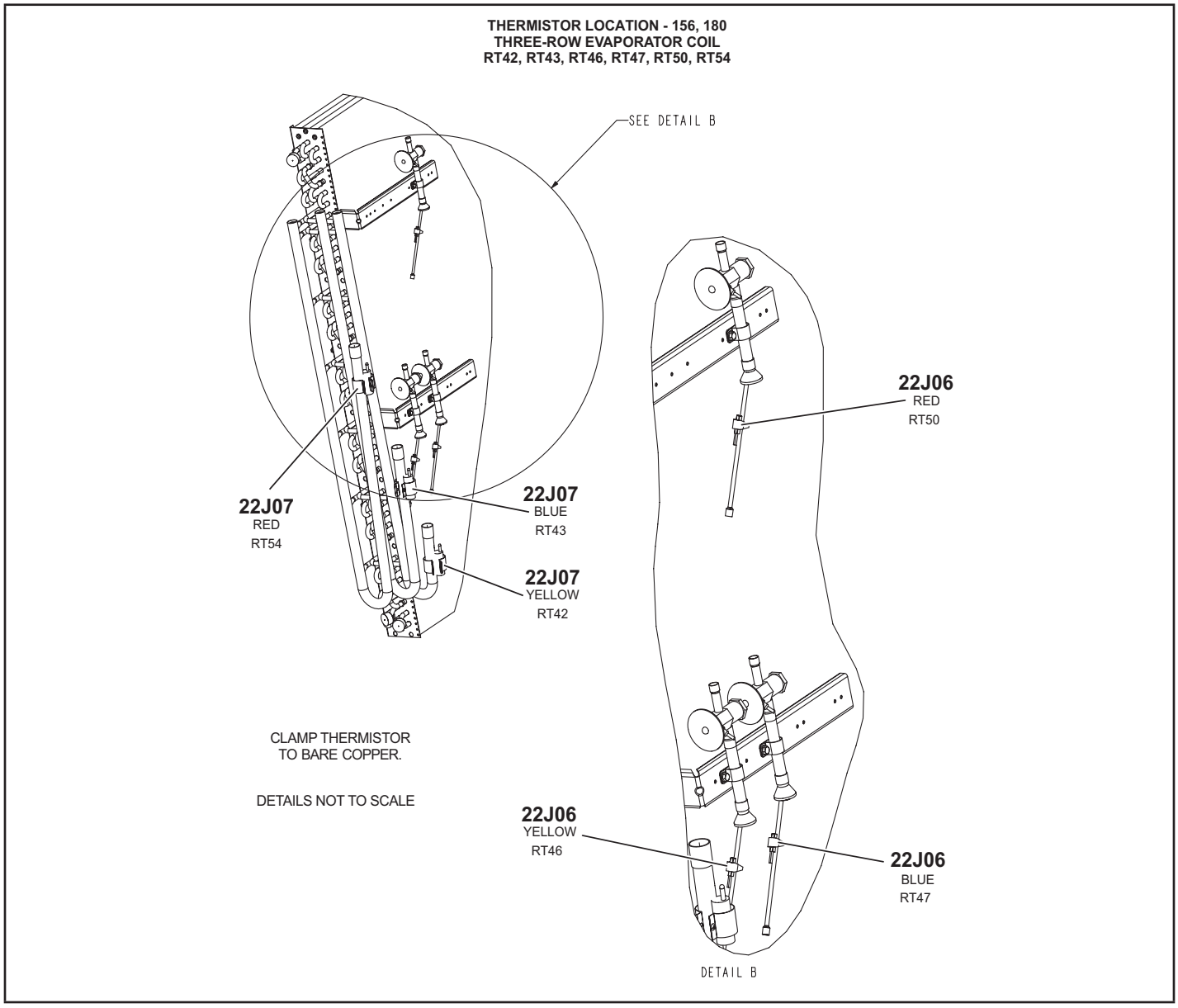


FIGURE 9

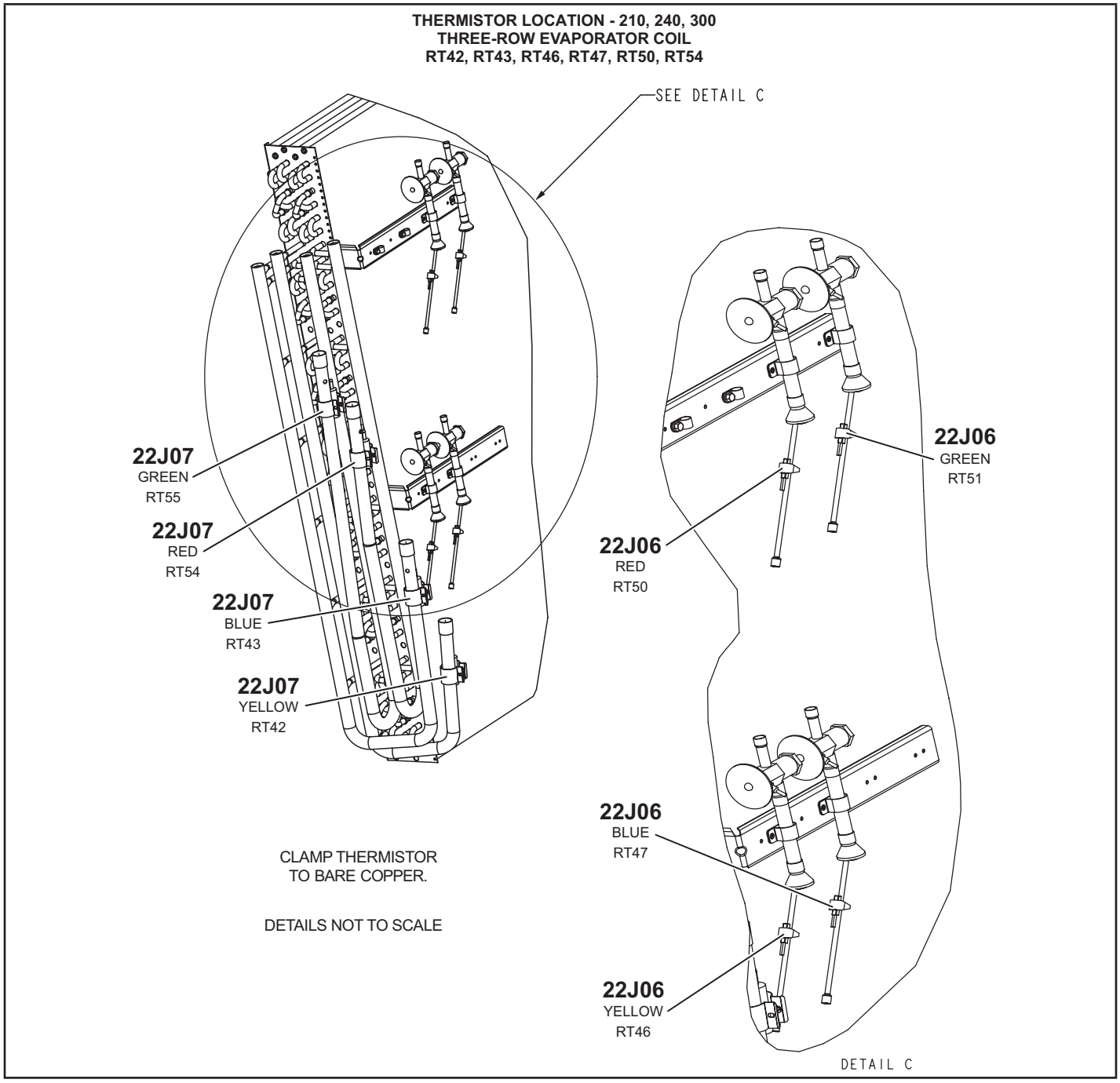

THERMISTOR LOCATION - 210, 240, 300
THREE-ROW EVAPORATOR COIL
RT42, RT43, RT46, RT47, RT50, RT54
SEE DETAIL C
22J07
GREEN
RT55
22J07
RED
RT54
22J07
BLUE
RT43
22J07
YELLOW
RT42
CLAMP THERMISTOR
TO BARE COPPER.
DETAILS NOT TO SCALE
22J06
GREEN
RT51
22J06
RED
RT50
22J06
BLUE
RT47
22J06
YELLOW
RT46
DETAIL C

FIGURE 10

THERMISTOR LOCATION - 156, 180
CONDENSOR COIL
RT44, RT45, RT48, RT49, RT52, RT56

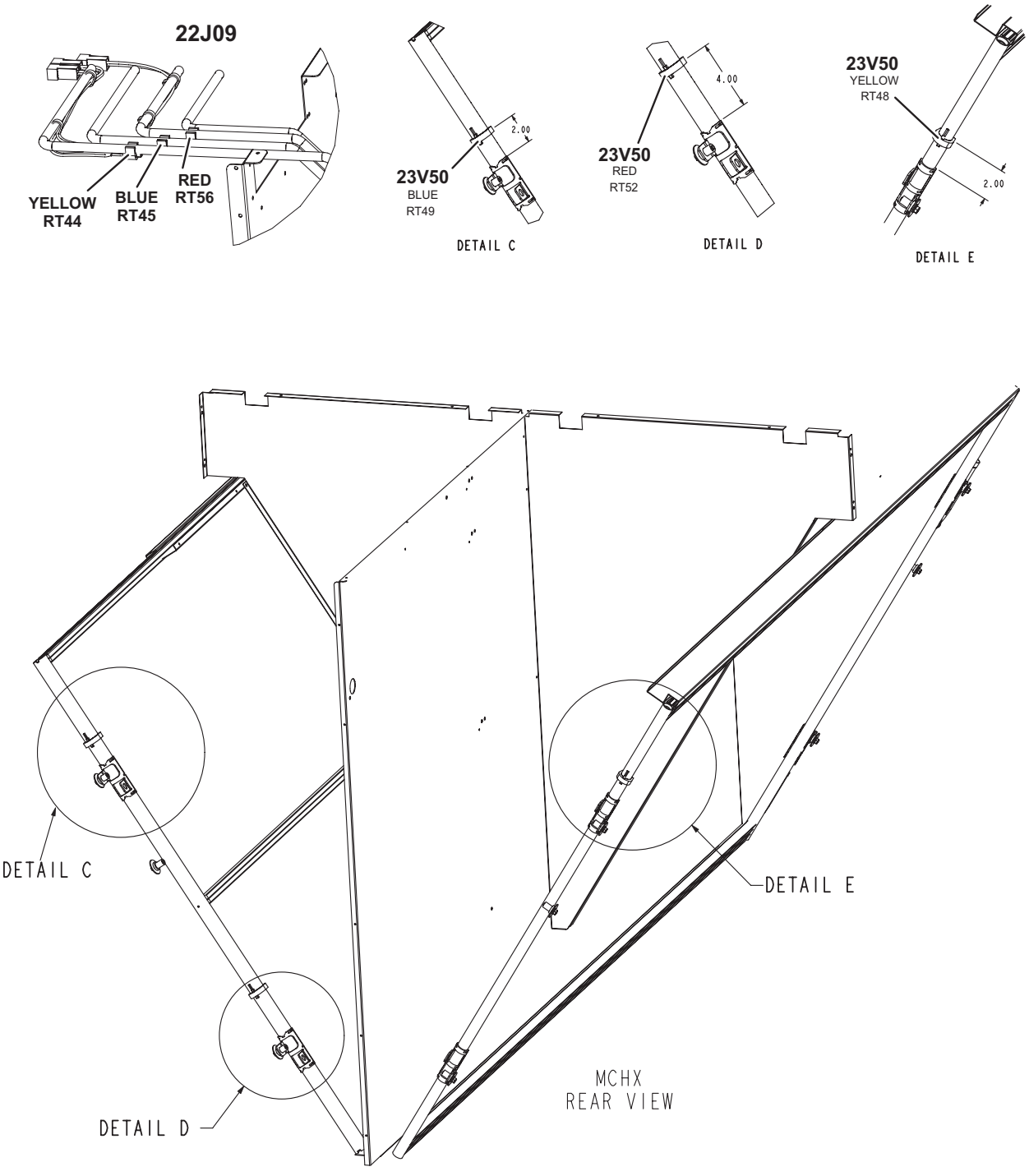


FIGURE 11

THERMISTOR LOCATION - 210, 240, 300
CONDENSOR COIL
RT44, RT45, RT48, RT49, RT52, RT53, RT56, RT57

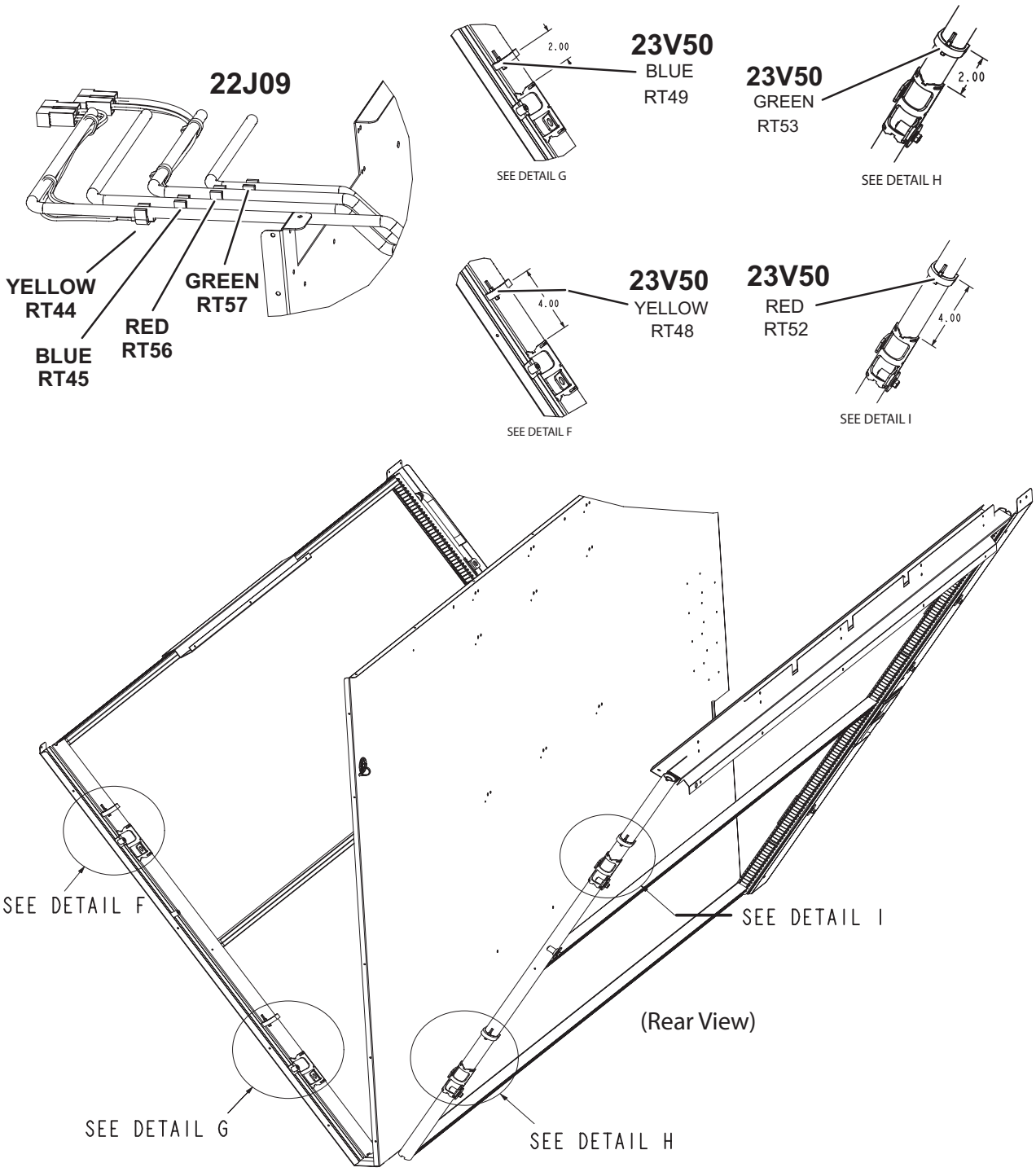


FIGURE 12

10-RDS Sensors

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

Each sensor must be specifically placed for proper unit operation and to initiate valid alarms. To identify sensor locations see TABLE 6

TABLE 6

RDS Sensor Figures

Model	Qty.	Type	Figure
LGM/LCM156-180	2 sensors	INDOOR SENSOR	FIGURE 13
		COMPRESSOR SENSOR	FIGURE 14
LGM/LCM210-300	2 sensors	INDOOR SENSOR	FIGURE 13
		COMPRESSOR SENSOR	FIGURE 15

The RDS Sensors and Controller shall only be replaced with parts specified by the appliance manufacturer.

TABLE 7

RDS Alarms

Alarm	Alarm description	RDS Sensor Location
257	Refrigerant leak sensor fault in the Indoor section (sensor #1)	Indoor compartment
258	Refrigerant leak sensor fault in the control panel/compressor section (sensor #2)	"Control/Compressor or Compressor compartment"

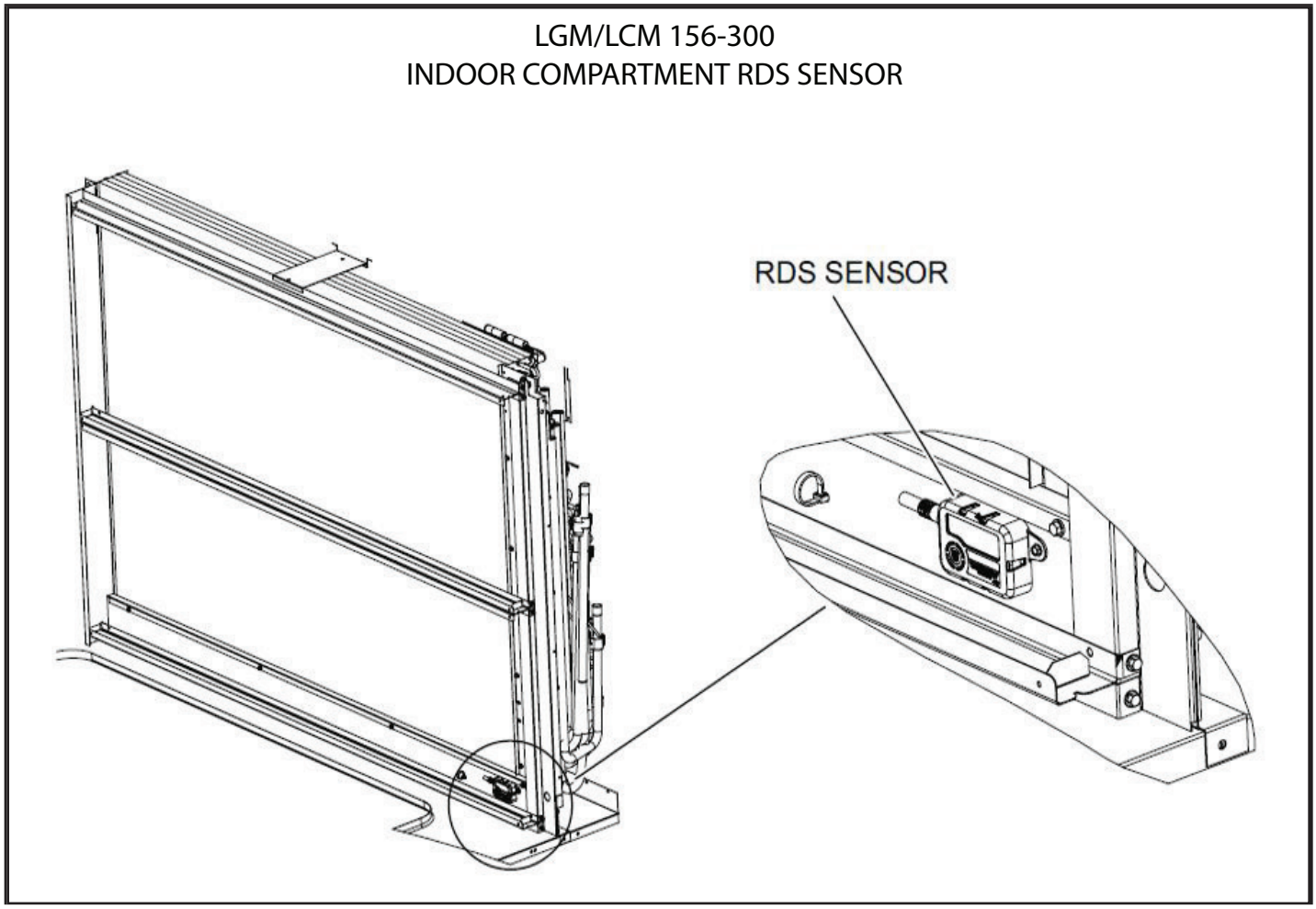


FIGURE 13

LGM/LCM 156-180
COMPRESSOR RDS SENSOR

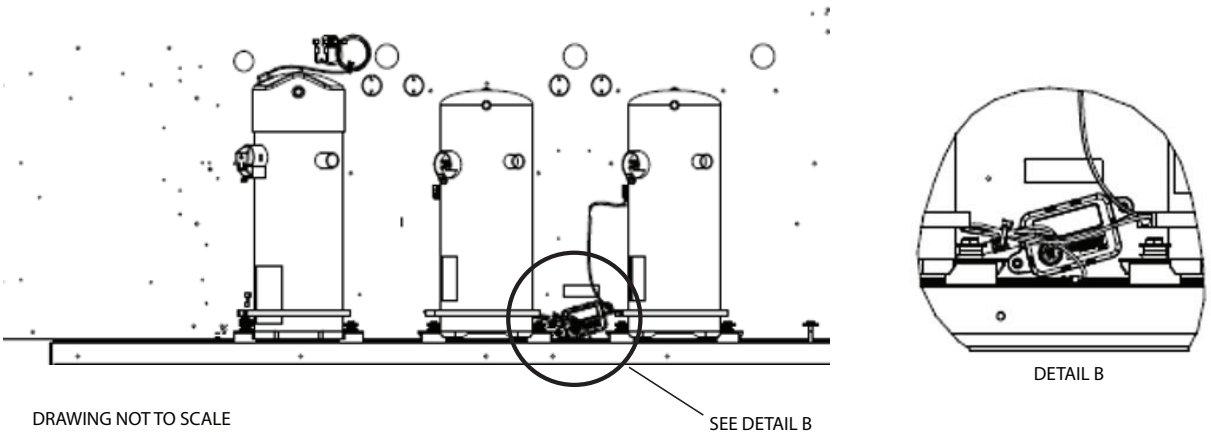


FIGURE 14

LGM/LCM 210-300
COMPRESSOR RDS SENSOR

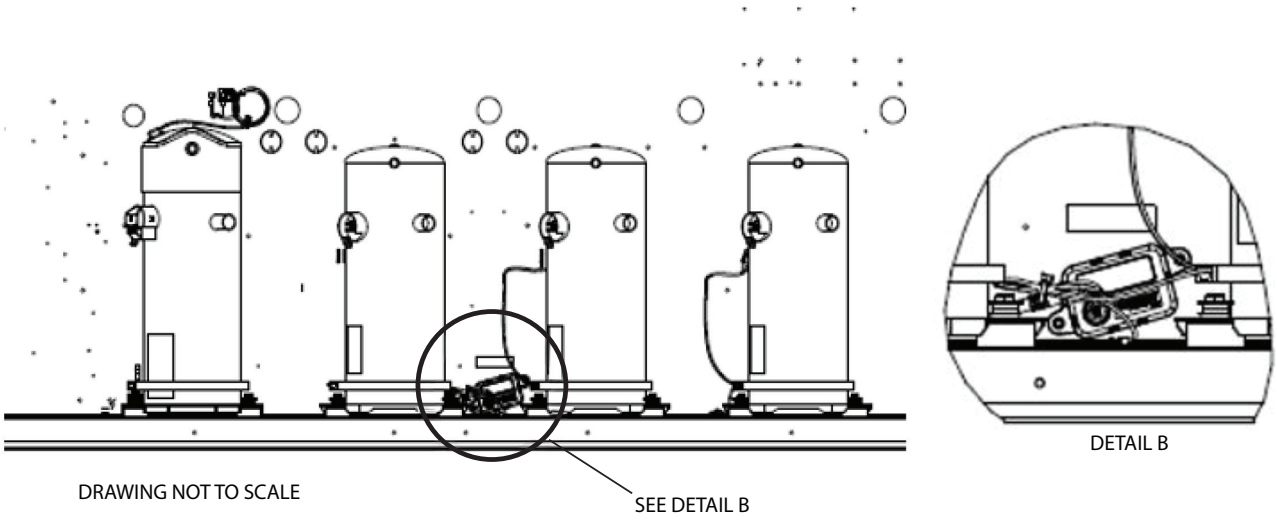
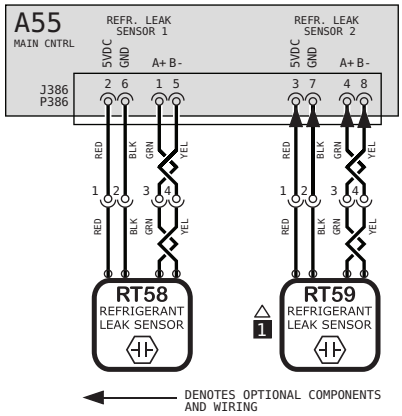


FIGURE 15

RDS SENSOR WIRING DIAGRAM



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

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

WARNING

DISCONNECT ALL POWER BEFORE SERVICING.

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

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

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

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

Rev 0

3 x 7
CUT SIZE

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

FIGURE 16

C-Blower Compartment

The blower compartment is located between the evaporator coil and the compressor / control section on the opposite side of the condenser coil. The blower assembly is accessed by disconnecting the blower motor wiring (and all other plugs) and removing the screws on either side of the sliding base. The base pulls out as shown in figure 9.

1-Blower Wheels

All units have two 15 in. x 15 in. (381 mm x 381 mm) blower wheels. Both wheels are driven by one motor.

2-Indoor Blower Motor B3

All units use three-phase single-speed blower motors. CFM adjustments are made by adjusting the motor pulley (sheave). Motors are equipped with sealed ball bearings. All motor specifications are listed in the SPECIFICATIONS (table of contents) in the front of this manual. Units may be equipped with motors manufactured by various manufacturers, therefore electrical FLA and LRA specifications will vary. See unit rating plate for information specific to your unit.

OPERATION / ADJUSTMENT

Supply Air Staged Units - The blower rotation will always be correct on units equipped with an inverter. Checking blower rotation is not a valid method of determining voltage phasing for incoming power.

Supply Air Staged Units and Units Equipped With Optional Voltage or Phase Detection - The Unit Controller checks the incoming power during start-up. If the voltage or phase is incorrect, the Unit Controller will display an alarm and the unit will not start.

Blower Operation

Refer to the Unit Controller Setup Guide to energize blower. Use this mobile service app (the QR is located in the control area) menu:

SERVICE > TEST > BLOWER

Instructions provided with the thermostat may also be used to initiate blower only (G) demand. Unit will cycle on thermostat demand. The following steps apply to applications using a typical electro-mechanical thermostat.

1 - Blower operation is manually set at the thermostat subbase fan switch. With fan switch in ON position, blowers will operate continuously.

2 - With fan switch in **AUTO** position, the blowers will cycle with demand. Blowers and entire unit will be off when system switch is in **OFF** position.

⚠ IMPORTANT

Three Phase Scroll Compressor Voltage Phasing

Three phase scroll compressors must be phased sequentially to ensure correct compressor and blower* rotation and operation. Compressor and blower are wired in phase at the factory. Power wires are color-coded as follows: line 1-red, line 2-yellow, line 3-blue.

1-Observe suction and discharge pressures and blower* rotation on unit start-up.

2-Suction pressure must drop, discharge pressure must rise and blower* rotation must match rotation marking.

If pressure differential is not observed or blower* rotation is not correct:

3-Disconnect all remote electrical power supplies.

4-Reverse any two field-installed wires connected to the line side of S48 disconnect or TB13 terminal strip. Do not reverse wires at blower contactor.

5-Make sure the connections are tight.

Discharge and suction pressures should operate at their normal start-up ranges.

***Supply air inverter blower motors should rotate in the correct direction; verify scroll compressor rotation separately. Contact technical support if the blower is rotating incorrectly.**

⚠ IMPORTANT

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 start-up.

Blower Access

1 - Disconnect jack/plug connector to blower motor. Also disconnect jack/plug connector heating limit switches on gas units.

2 - Remove screws on either side of blower assembly sliding base. See FIGURE 18.

3 - Pull base toward outside of unit.

Determining Unit CFM

IMPORTANT - *Multi-staged supply air units are factory-set to run the blower at full speed when there is a blower (G) demand without a heating or cooling demand. Refer to the field-provided, design specified CFM for all modes of operation. Use the following procedure to adjust motor pulley to deliver the highest CFM called for in the design spec. See Inverter Start-Up section to set blower CFM for all modes once the motor pulley is set.*

1 - The following measurements must be made with a dry indoor coil. Run blower (G demand) without a cooling demand. Measure the indoor blower shaft RPM. Air filters must be in place when measurements are taken.

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

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 17.

3 - Accessories. Use static pressure and RPM readings to determine unit CFM.

4 - The blower RPM can be adjusted at the motor pulley. Loosen Allen screw and turn adjustable pulley clockwise to increase CFM. Turn counterclockwise to decrease CFM. See FIGURE 18. Do not exceed minimum and maximum number of pulley turns as shown in TABLE 8.

TABLE 8

MINIMUM AND MAXIMUM PULLEY ADJUSTMENT

Belt	Min Turns Open	Max Turns Open
A Section	No Min	5
B Section	1*	6

*No minimum number of turns open when B belt is used on pulleys 6” O.D. or larger.

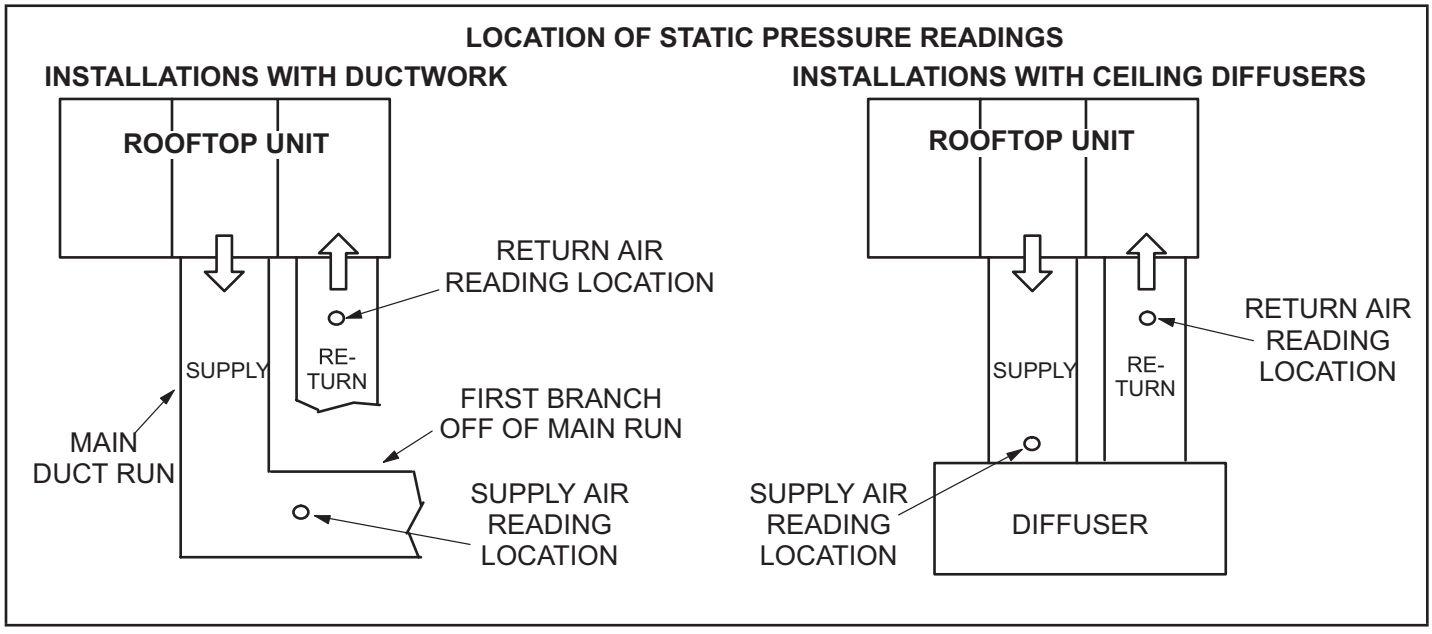


FIGURE 17

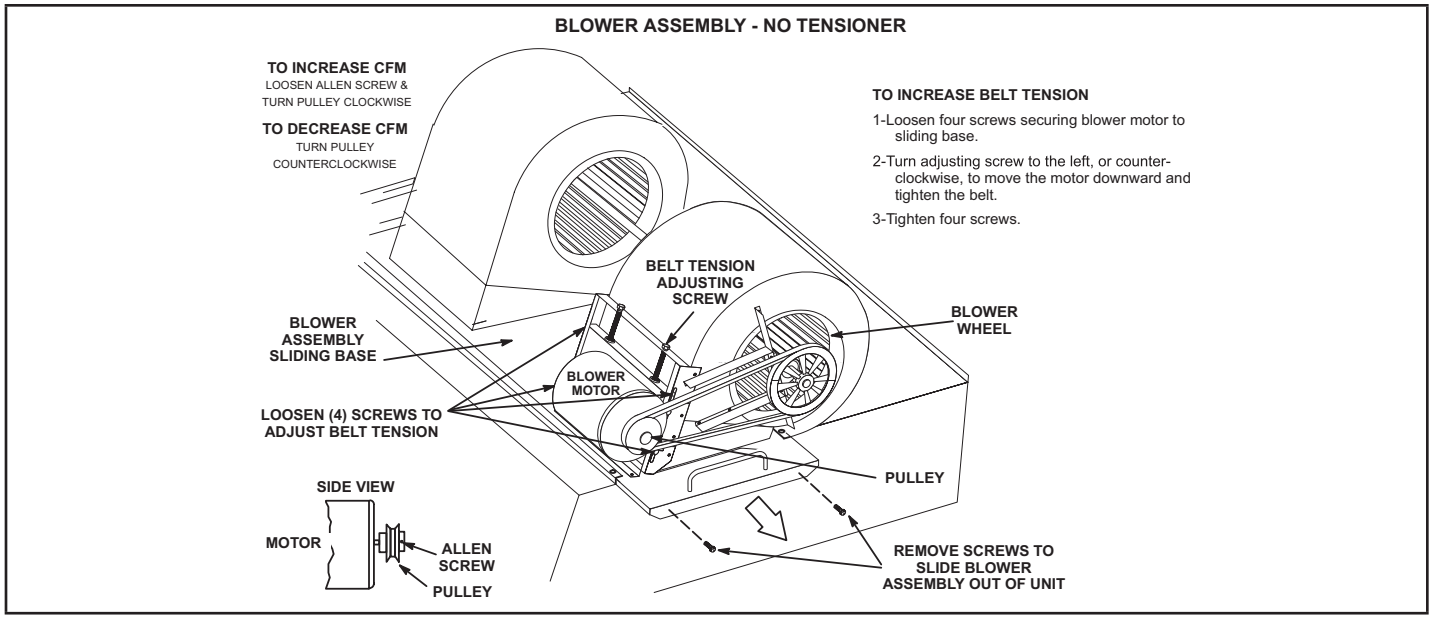


FIGURE 18

D-Blower Belt Adjustment

Maximum life and wear can be obtained from belts only if proper pulley alignment and belt tension are maintained. Tension new belts after a 24-48 hour period of operation. This will allow belt to stretch and seat into pulley grooves. Make sure blower and motor pulley are aligned. See FIGURE 19 for blowers not equipped with a tensioner and FIGURE 20 for units equipped with an optional belt tensioner.

Blowers Without Belt Tensioner

1 - Loosen four screws securing blower motor to sliding base. See FIGURE 18.

2 - *To increase belt tension -*

Turn belt tension adjusting screw to the left, or counterclockwise, to tighten the belt. This increases the distance between the blower motor and the blower housing.

To loosen belt tension -

Turn the adjusting screw to the right, or clockwise to loosen belt tension.

3 - Tighten four screws securing blower motor to sliding base once adjustments have been made.

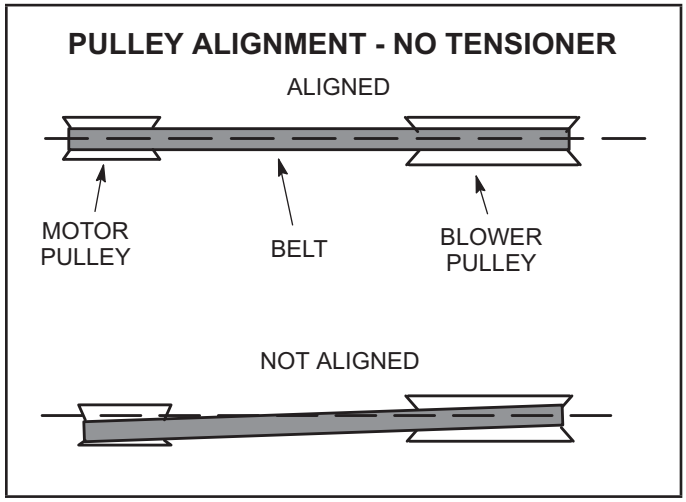


FIGURE 19

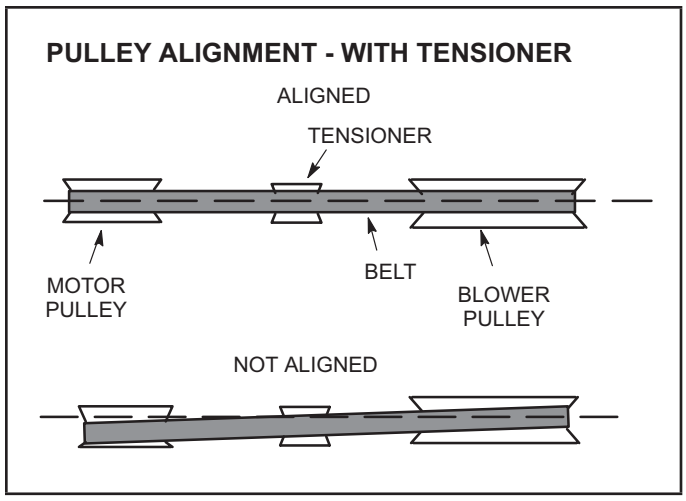


FIGURE 20

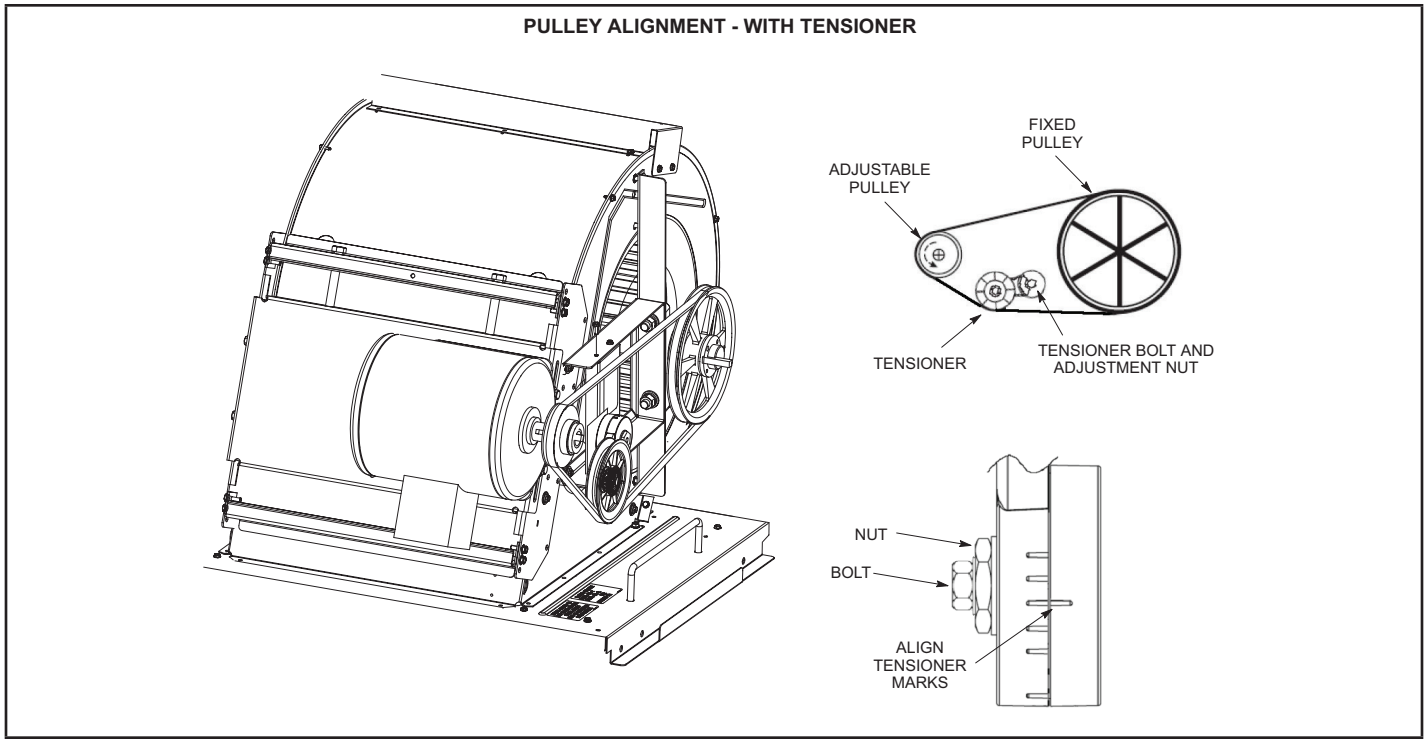


FIGURE 21

Blowers Equipped With Belt Tensioner

1 - Loosen the bolt in the center of the tensioner. See FIGURE 21.

2 - Place belt over all three pulleys.

3 - Using a 15/16” wrench, turn the tensioner nut until marks align as shown in FIGURE 21.

4 - Hold the tensioner with marks aligned and tighten the bolt to 23 ft.lbs. using the 9/16” wrench.

E-Check Belt Tension

Overtensioning belts shortens belt and bearing life. Check belt tension as follows:

1 - Measure span length X. See FIGURE 22

2 - Apply perpendicular force to center of span (X) with enough pressure to deflect belt 1/64” for every inch of span length or 1.5mm per 100mm of span length.

Example: Deflection distance of a 40” span would be 40/64” or 5/8”.

Example: Deflection distance of a 400mm span would be 6mm.

3 - Measure belt deflection force. For a used belt, the deflection force should be 5 lbs. (35kPa) . A new belt deflection force should be 7 lbs. (48kPa)

A force below these values indicates and undertensioned belt. A force above these values indicates an overtensioned belt..

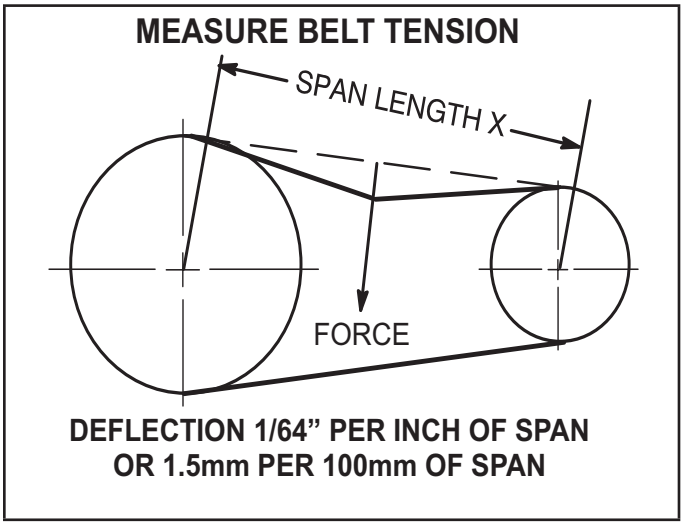


FIGURE 22

F-Field-Furnished Blower Drives

See BLOWER DATA tables for blower drives

D-GAS HEAT COMPONENTS

See SPECIFICATIONS tables or unit nameplate for Btuh capacities. Units are equipped with two identical gas heat sections (gas heat section one and gas heat section two) see FIGURE 23. Flexible pipe will feed supply gas to both sections. If for service the flexible connection must broken, hand tighten then turn additional 1/4" with a wrench for metal to metal seal (do not overtighten).

NOTE - *Do not use thread sealing compound on flex pipe flare connections.*

1-Control Box Components A3, A12, A55

⚠ WARNING

Shock hazard. Disconnect power before servicing. Integrated control is not field repairable. If control is inoperable, simply replace entire control. Can cause injury or death. Unsafe operation will resul if repair is attempted.

Burner Ignition Control A3, A12

The ignition controls are located in compressor compartment (FIGURE 23). The controls are manufactured by UTEC. See TABLE 9 for LED codes. The ignition control provides three main functions: gas valve control, ignition, and flame sensing. There are three trials for ignition. Each trial is 10 second long with 30 seconds in between trials. After the third attempt for ignition the unit will lockout for 60 minutes. After lockout, the ignition control automatically resets and provides three more attempts at ignition. Manual reset after lockout requires breaking and remaking power to the ignition control. See FIGURE 24 for a normal ignition sequence and FIGURE 25 for the ignition attempt sequence with retrials (nominal timings given for simplicity). Specific timings for the ignition controls are shown in FIGURE 26.

TABLE 9

UTEC	
LED Flashes	**Indicates**
Slow Flash	Control ok, no call for heat
Fast Flash	Control ok, call for heat present.
Steady Off	Internal control fault or no power
Steady On Failure	Control internal failure
1 Flash	Rollout switch open
2 Flashes	Limit open or lockout from to many tries during a single heat demand
3 Flashes	Pressure switch open with inducer on/ open during 5 minute inducer off time.
4 Flashes	Ignition lockout from no flame detected or from too many flame losses.
5 Flashes	Flame sensed out of sequence
6 Flashes	Pressure switch closed with inducer off
7Flashes	Gas valve relay failure
8 Flashes	Lockout due to too many pressure switch openings during one heat demand

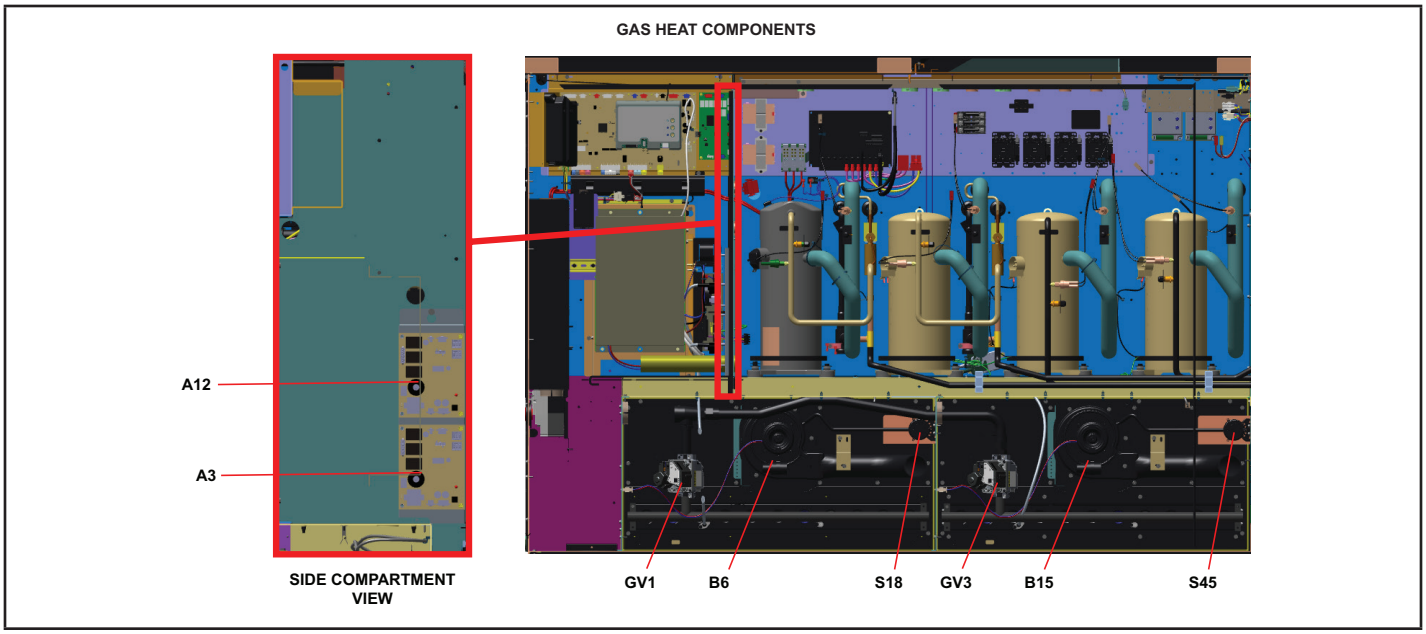


FIGURE 23

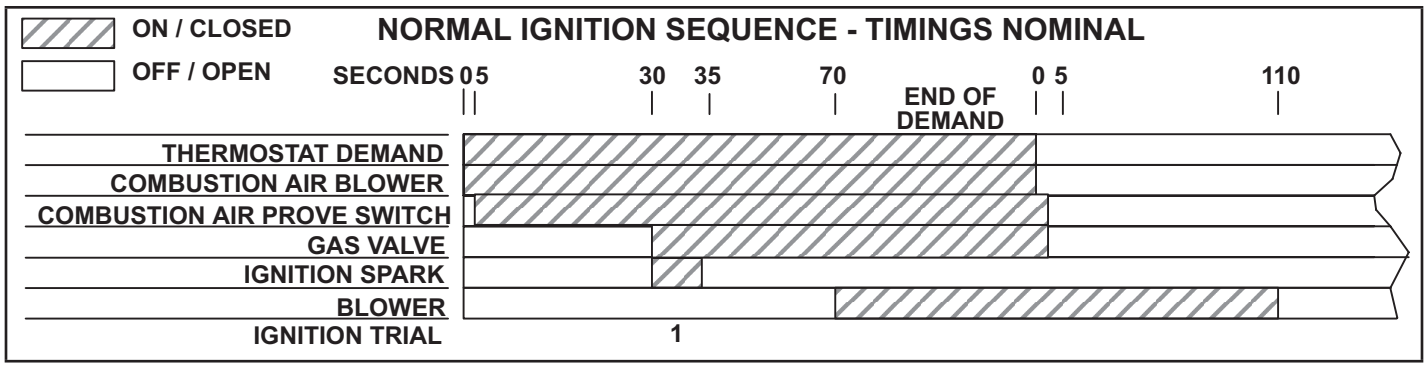


FIGURE 24

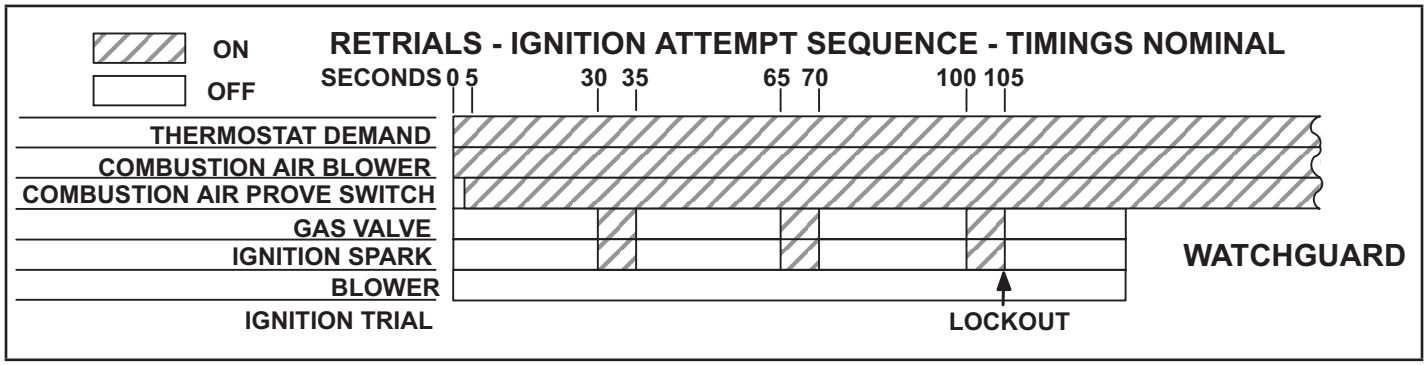


FIGURE 25

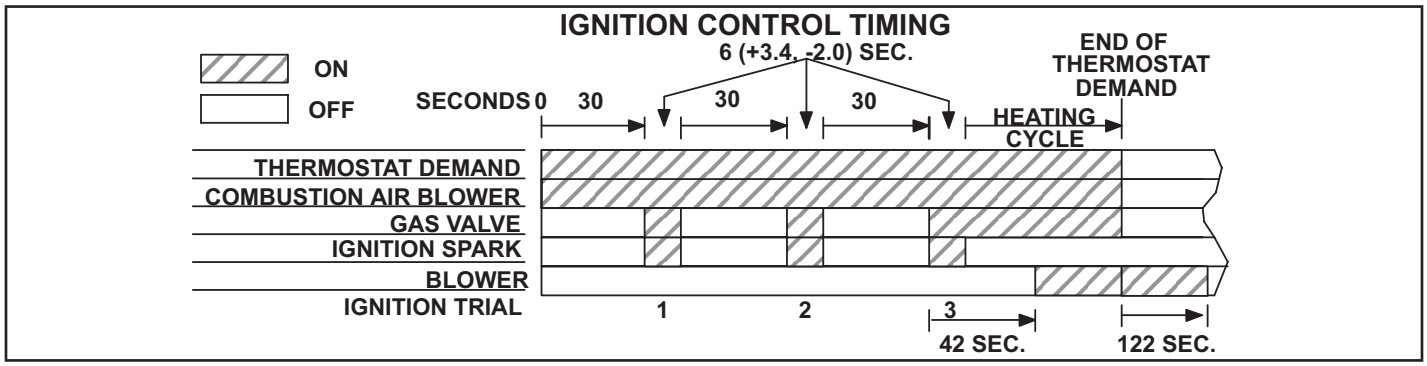


FIGURE 26

Flame rectification sensing is used on all 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.

On a heating demand, the ignition control is energized by the A55 Unit Controller. The ignition control then allows 30 to 40 seconds for the combustion air blower to vent exhaust gases from the burners.

When the combustion air blower is purging the exhaust gases, the combustion air prove switch is closing proving that the combustion air blower 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 gas valve, the spark electrode and the flame sensing electrode. Sparking stops immediately after flame is sensed. The combustion air blower continues to operate throughout the heating demand. If the flame fails or if the burners do not ignite, the ignition control will attempt to ignite the burners up to two more times. If ignition cannot be obtained after the third attempt, the control will lock out. The ignition control is not adjustable.

2-Heat Exchanger (Figure 25)

Units use aluminized steel inshot burners with matching tubular aluminized (stainless steel is an option) steel heat exchangers and two-stage redundant gas valves. LGM156/300 uses two eleven-tube/burners for high heat, two six-tube/burners for standard or low heat and two ninetube/ burners for medium heat. 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 blower, 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 blowers, controlled by the Unit Controller A55, force air across all surfaces of the tubes to extract the heat of combustion. The shape of the tubes ensures maximum heat exchange. The gas valves accomplish staging by allowing more or less gas to the burners as called for by heating demand.

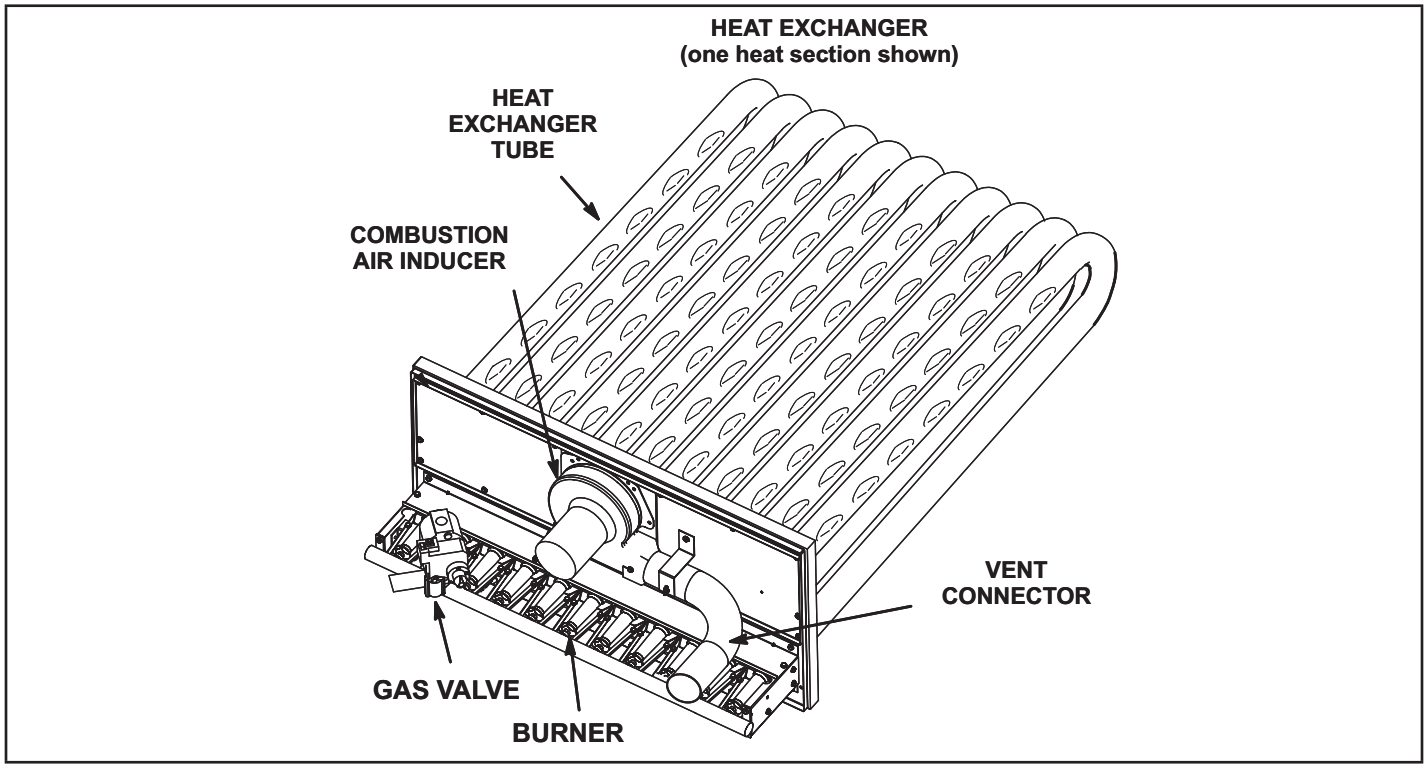


FIGURE 27

3-Burner Assembly (Figure 19)

The burners are controlled by the spark electrode, flame sensing electrode, gas valve and combustion air blower. The spark electrode, flame sensing electrode and gas valve are directly controlled by ignition control. Ignition control and combustion air blower is controlled by Unit Controller A55.

Burners

All units use inshot burners (FIGURE 28). 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. Burner maintenance and service is detailed in the SERVICE CHECKS section of this manual.

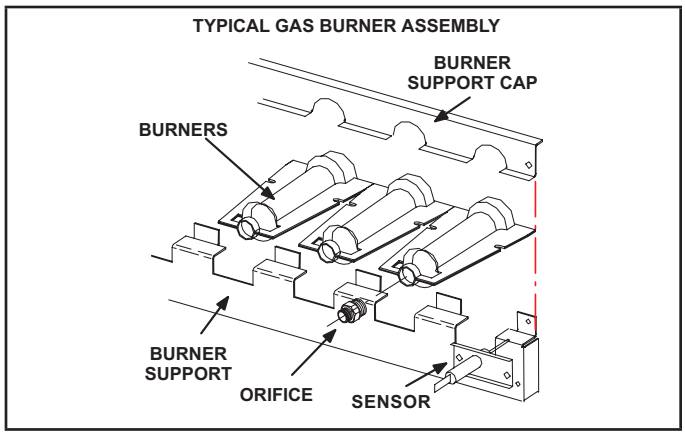


FIGURE 28

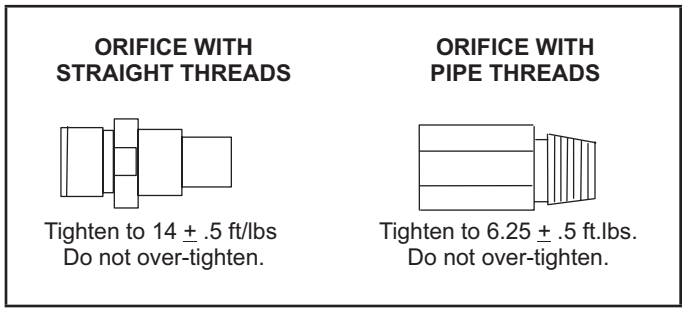


FIGURE 29

Orifice

Each burner uses an orifice (FIGURE 29) which is precisely matched to the burner input. Install only the orifices with the same threads. The orifice is threaded into the burner manifold. The burner is supported by the orifice and will easily slide off for service.

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

Each orifice and burner are sized specifically to the unit. Refer to Repair Parts Listing for correct sizing information.

NOTE- *In primary and secondary high temperature limits S10 and S99 the ignition circuits in both gas heat sections one and two are immediately de-energized when terminals 1-3 open and the indoor blower motor is immediately energized when terminals 1-2 close. This is the primary and secondary safety shut-down function of the unit.*

4-Primary High Temperature Limits S10 & S99

S10 is the primary high temperature limit for gas heat section one and S99 is the primary high temperature limit for gas heat section two.

In LGM156/300 units, S10 and S99 are located on the drip shield behind the blower housing. In this location S10 and S99 also serve as secondary limits. See FIGURE 30

Primary limit S10 is wired to the Unit Controller A55 which energizes burner 1 control (A3), while primary limit S99 is wired to the A55 Unit Controller which energizes burner 2 control (A12). Its N.C. contacts open to de-energize the ignition control when excessive temperature is reached in the blower compartment. At the same time, the N.O. contacts of S10 and S99 close energizing the blower relay coil K3 through control A55. If either limit trips the blower will be energized. Limits settings are factory set and cannot be adjusted. If limit must be replaced same type and set point must be used. See Repair Parts Handbook.

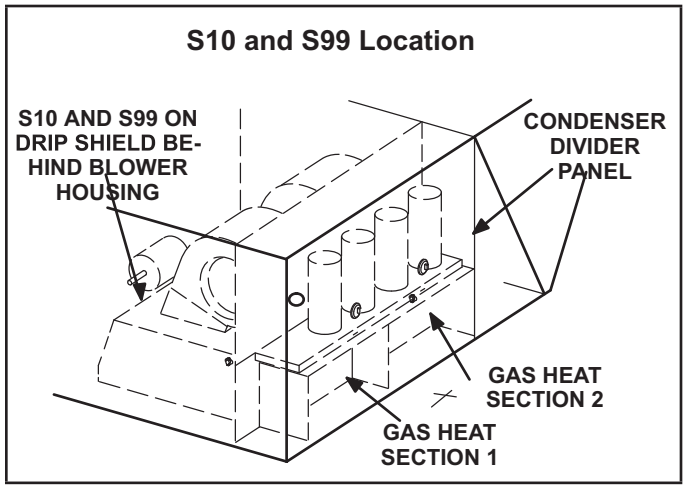


FIGURE 30

5-Flame Rollout Limits S47, S69

Flame rollout limits S47 on first heat section and S69 on second heat section are SPST N.C. high temperature limits located just above the burner air intake opening in the burner enclosures (see figure18). Both switches are wired to the A55 Unit Controller. When S47 or S69 senses flame rollout (indicating a blockage in the combustion air passages), the corresponding flame rollout limit trips and the ignition control immediately closes the gas valve. Limit S47 and S69 in standard heat units are factory preset to open at 250^{0}F $\pm$ 12^{0}F (121.^{0}C $\pm$ 6.7^{0}C) on a temperature rise, while on high heat units both limits open at 270^{0}F $\pm$ 12^{0}F (132.2^{0}C $\pm$ 6.7^{0}C) on a temperature rise. All flame rollout limits are manual reset.

6-Combustion Air Prove Switches S18, S45

Prove switches S18 (first heat section) and S45 (second heat section) are located below the compressors. Each has its own control box. Both are identical SPST N.O. switches and monitor combustion air inducer operation. Switch S18 and S45 are wired to the A55 Unit Controller.

The switch closes on a negative 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. The switch will automatically open on a pressure rise (less negative pressure). TABLE 10 shows prove switch settings.

TABLE 10

S18 & S45 Prove Switch Settings

Close“ w.c. (Pa)	Open “ w.c. (Pa)
0.25 + 5 (62.3+12.4)	0.10+5 (24.8+12.4)

7-Combustion Air Inducers B6 & B15

Combustion air blowers B6 on the first heat section and B15 on the second heat section, are identical blowers which provide fresh air to the corresponding burners while clearing the combustion chamber of exhaust gases. The blowers begin operating immediately upon receiving a thermostat demand and are de-energized immediately when thermostat demand is satisfied.

Both combustion air blowers use a 208/230 or 460V singlephase PSC motor and a 4.81in. x 1.25in. (122mm x 32mm) blower wheel. All motors operate at 3200 or 3450 RPM and are equipped with auto-reset overload protection. Blowers are supplied by various manufacturers. Ratings may vary by manufacturer. Specific blower electrical ratings can be found on the unit rating plate.

All combustion air blower motors are sealed and cannot be oiled. The blower cannot be adjusted but can be disassembled for cleaning.

8-Combustion Air Motor Capacitors C3 & C11

The combustion air blower motors in all LGM units require run capacitors. Capacitor C3 is connected to combustion air blower B6 and C11 is connected to combustion air blower B15. Both capacitors are rated at 3 or 4 MFD for 208/230 CAB and 4 MFD for 460V CAB.

9-Gas Valves GV1 & GV3

Gas valves GV1 and GV3 are identical. The gas valves are two-stage redundant valves. Units are equipped with valves manufactured by Honeywell. On both valves first stage (low fire) is quick opening (on and off in less than 3 seconds). On the Honeywell second stage is quick opening.

On a call for first stage heat (low fire), the valve is energized by the ignition control simultaneously with the spark electrode. On a call for second stage heat (high fire), the second stage operator is energized directly from A55 (GV1, GV3). The Honeywell valve is adjustable for both low fire and high fire. A manual shut-off knob is provided on the valve for shut-off. Manual shut-off knob immediately closes both stages without delay. FIGURE 31 shows gas valve components.

TABLE 11 shows factory gas valve regulation for LGM series units. Optional factory installed gas valves for single stage heat only, are available for the LGM156, 180 and 210. Gas valves are wired without W2 eliminating two stage heat.

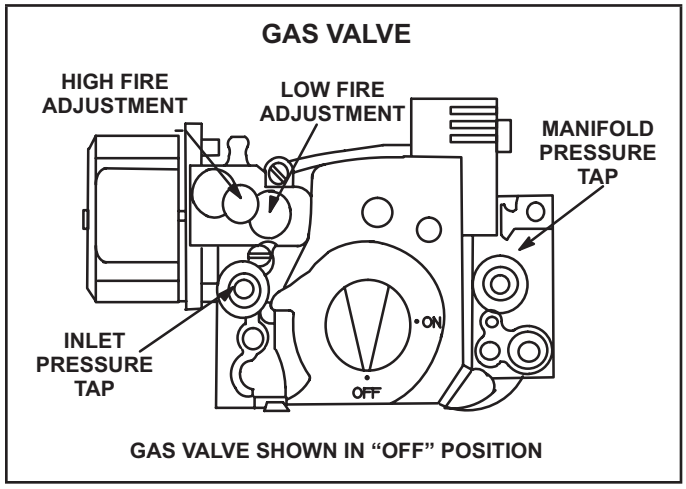


FIGURE 31

TABLE 11

GAS VALVE REGULATION FOR LGM UNITS

Operating Pressure (outlet) Factory Setting			
Natural		LP	
Low	High	Low	High
1.6+0.2”WC 398+50Pa	3.7+0.3”WC 920+75Pa	5.5+0.3”WC 1368+75Pa	10.5+0.5”WC 2611+7124Pa

The maximum inlet pressure is 13.0” WC (3232PA)

10-Spark Electrodes

An electrode assembly is used for ignition spark. Two identical electrodes are used (one for each gas heat section). The electrode is mounted through holes on the left-most end of the burner support. 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 32) and ignites the left burner. 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 the electrode end and female spark plug-type terminal on the ignition control end.

NOTE- *IN ORDER TO MAXIMIZE SPARK ENERGY TO ELECTRODE, HIGH VOLTAGE WIRE SHOULD TOUCH UNIT CABINET AS LITTLE AS POSSIBLE.*

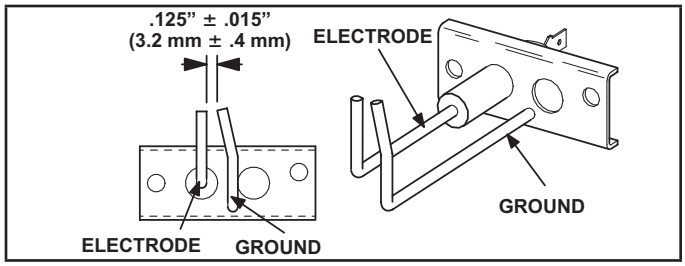


FIGURE 32

11-Flame Sensors

A flame sensor is located on the right side of each burner support. The sensor is mounted through a hole in the burner support and the tip protrudes into the flame envelope of the right most burner. 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. 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.

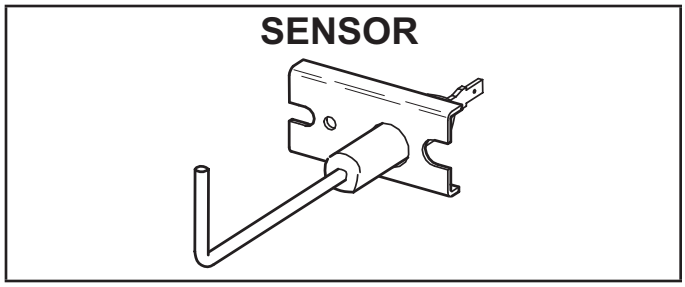


FIGURE 33

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.

III-CHARGING

A-Refrigerant Charge and Check - All-Aluminum Coil

IMPORTANT - Charge unit in standard cooling mode.

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

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

Refrigerant Charge R-454B		
Unit	M_c(lbs)	M_c(kg)
LGM156 Stg 1	6.19	2.81
LGM156 Stg 2	5.31	2.41
LGM156 Stg 3	5.69	2.58
LGM180 Stg 1	6.25	2.83
LGM180 Stg 2	6.13	2.78
LGM180 Stg 3	5.50	2.49
LGM210 Stg 1	5.88	2.66
LGM210 Stg 2	5.75	2.61
LGM210 Stg 3	5.00	2.27
LGM210 Stg 4	5.25	2.38
LGM240 Stg 1	6.06	2.75
LGM240 Stg 2	5.68	2.58
LGM240 Stg 3	5.12	2.32
LGM240 Stg 4	5.50	2.49
LGM300 Stg 1	6.75	3.06
LGM300 Stg 2	6.75	3.06
LGM300 Stg 3	6.19	2.81
LGM300 Stg 4	5.94	2.69

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

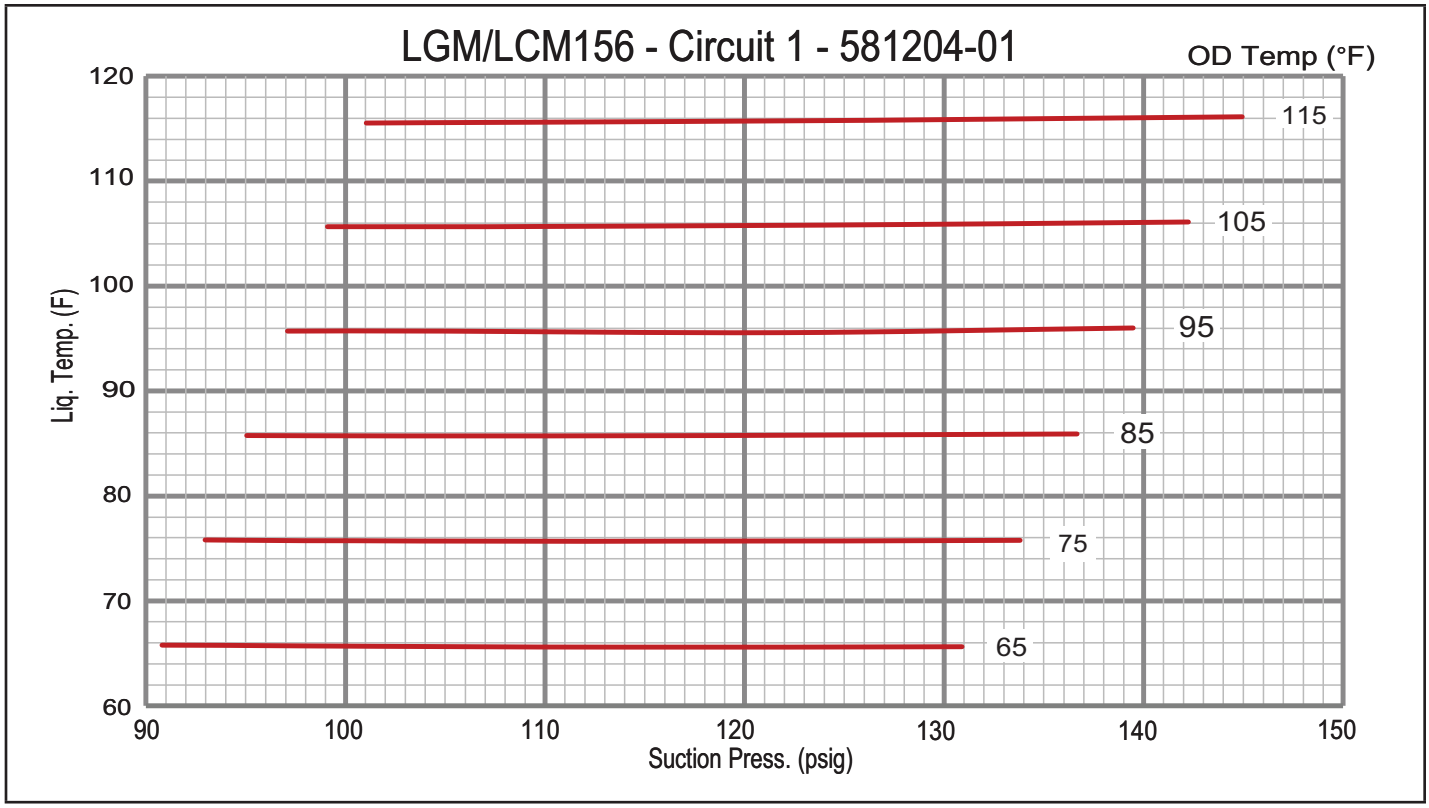
6 - Continue the process until measured liquid temperature agrees with the target liquid temperature. Do not go below the target liquid temperature when adjusting charge. Note that suction pressure can change as charge is adjusted.

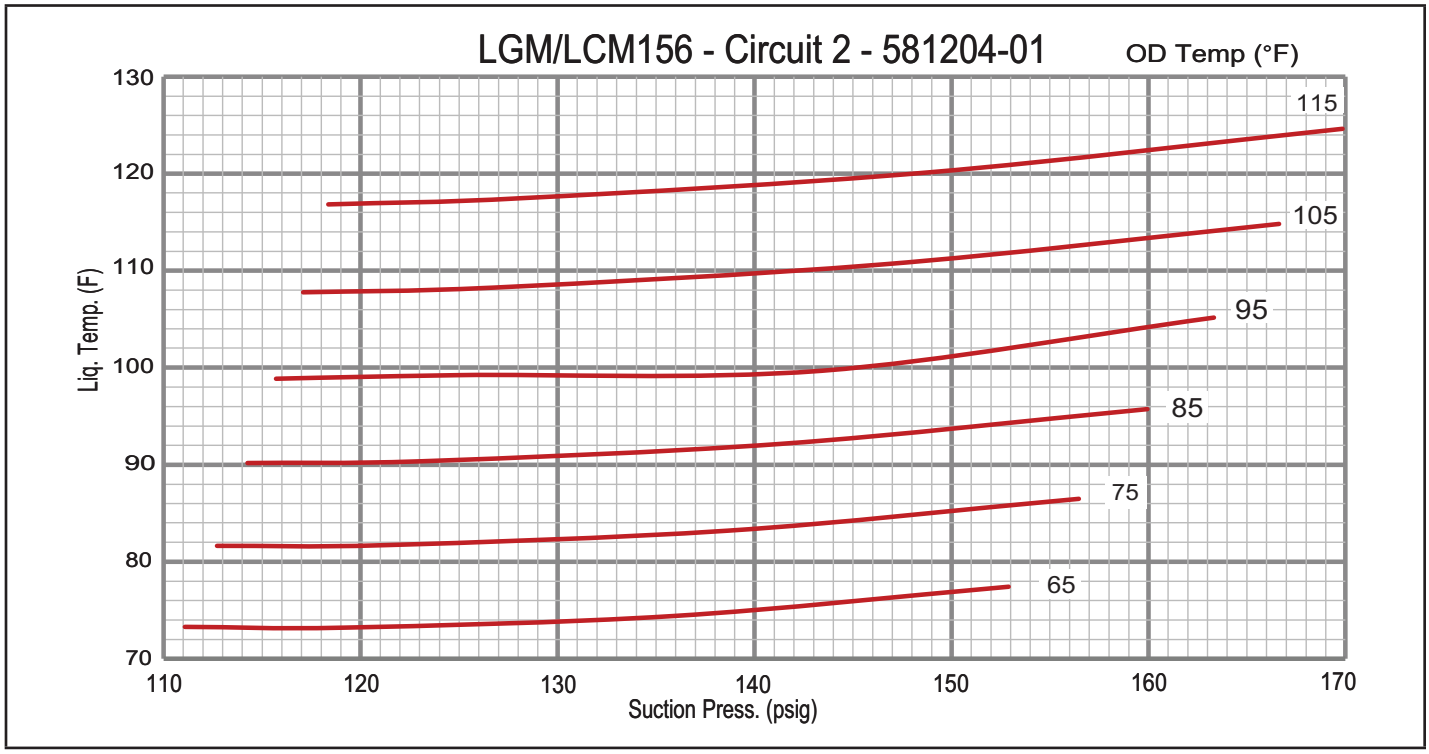
7 - Example: At 95°F outdoor ambient and a measured suction pressure of 130psig, the target liquid temperature is 97°F. For a measured liquid temperature of 106°F, add charge in increments until measured liquidtemperature agrees with the target liquid temperature.

TABLE 12

LGM/LCM156 All-Aluminum OD Coil, No Reheat, Normal Operating Pressures - 581203-01

	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	91	211	93	244	95	282	97	324	99	371	101	422
	98	211	100	244	103	282	105	325	107	372	109	423
	114	213	116	247	119	286	122	328	124	376	126	428
	131	218	134	252	137	291	139	335	142	383	145	435
Circuit 2	111	216	113	252	114	293	116	338	117	388	118	441
	119	218	121	255	123	296	125	341	127	390	128	444
	136	223	139	259	141	300	143	346	146	395	149	449
	153	227	156	264	160	305	163	350	167	400	170	453
Circuit 3	96	217	97	253	99	293	101	336	104	384	108	435
	103	220	105	256	107	296	109	340	112	388	115	439
	120	225	122	261	124	302	125	346	129	395	132	447
	140	230	142	267	144	308	146	353	149	402	152	455


LGM/LCM156 - Circuit 1 - 581204-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
120
110
100
90
80
70
60
90
100
110
120
130
140
150
Suction Press. (psig)


LGM/LCM156 - Circuit 2 - 581204-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
130
120
110
100
90
80
70
110
120
130
140
150
160
170
Suction Press. (psig)

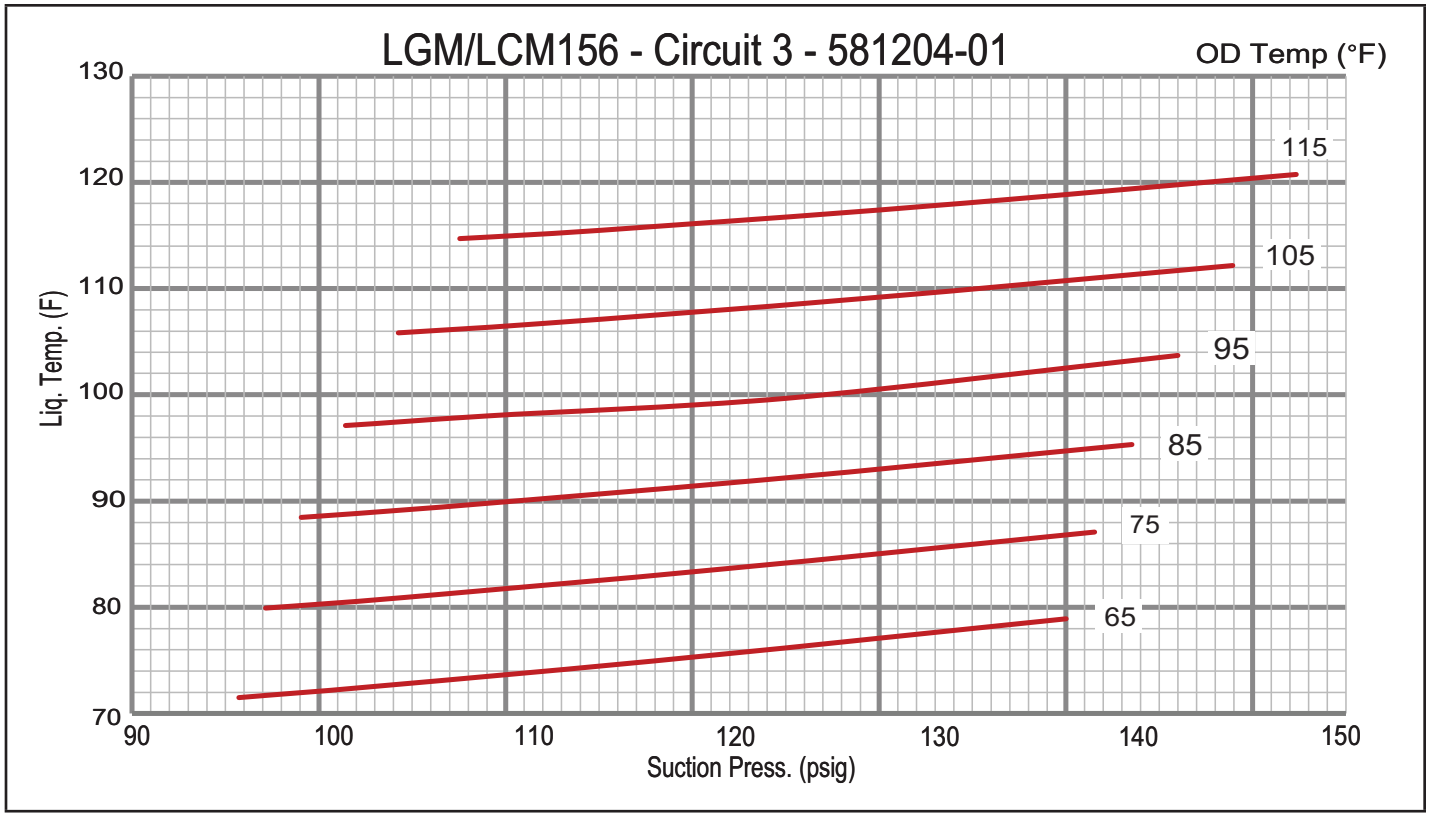
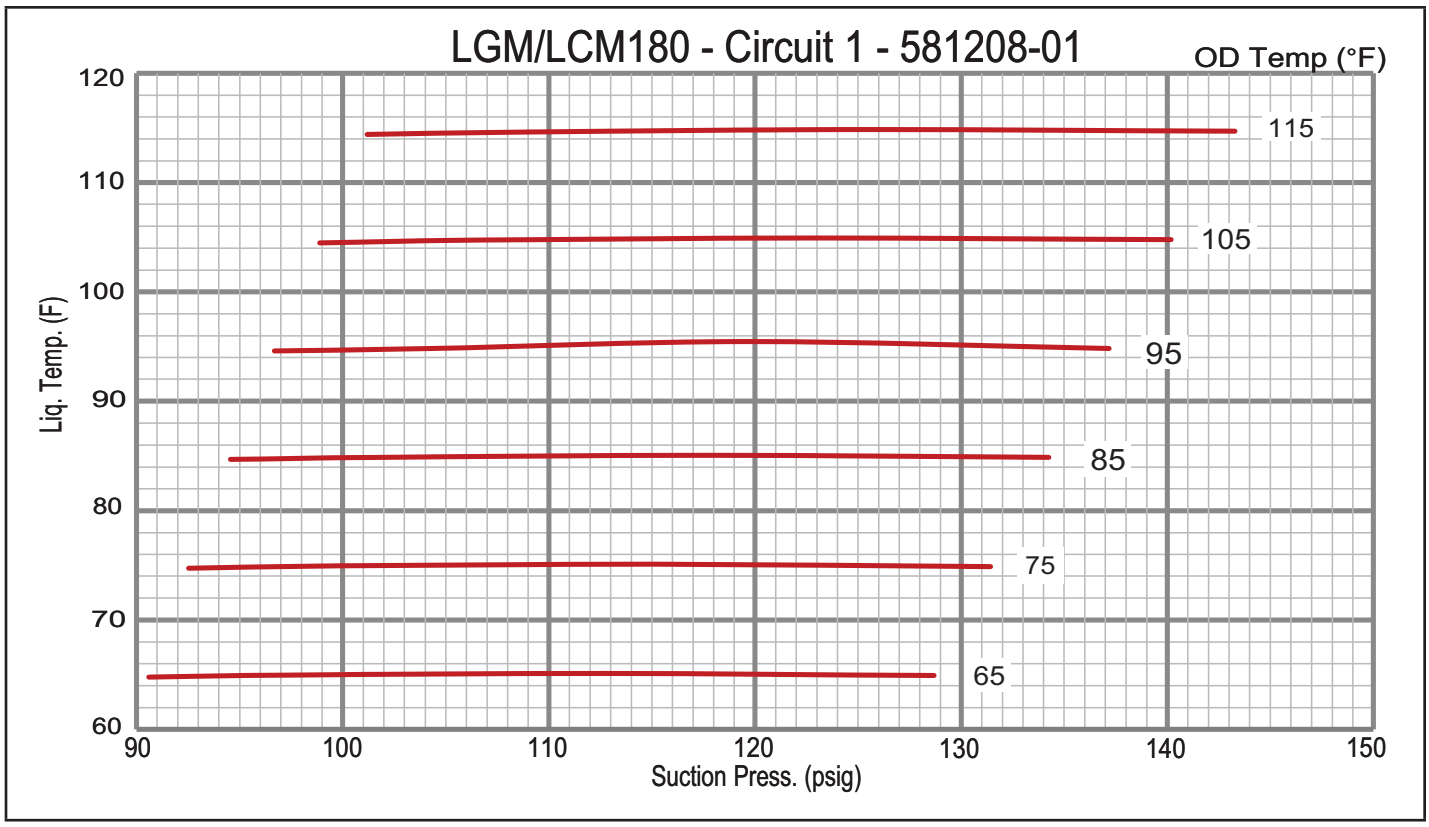
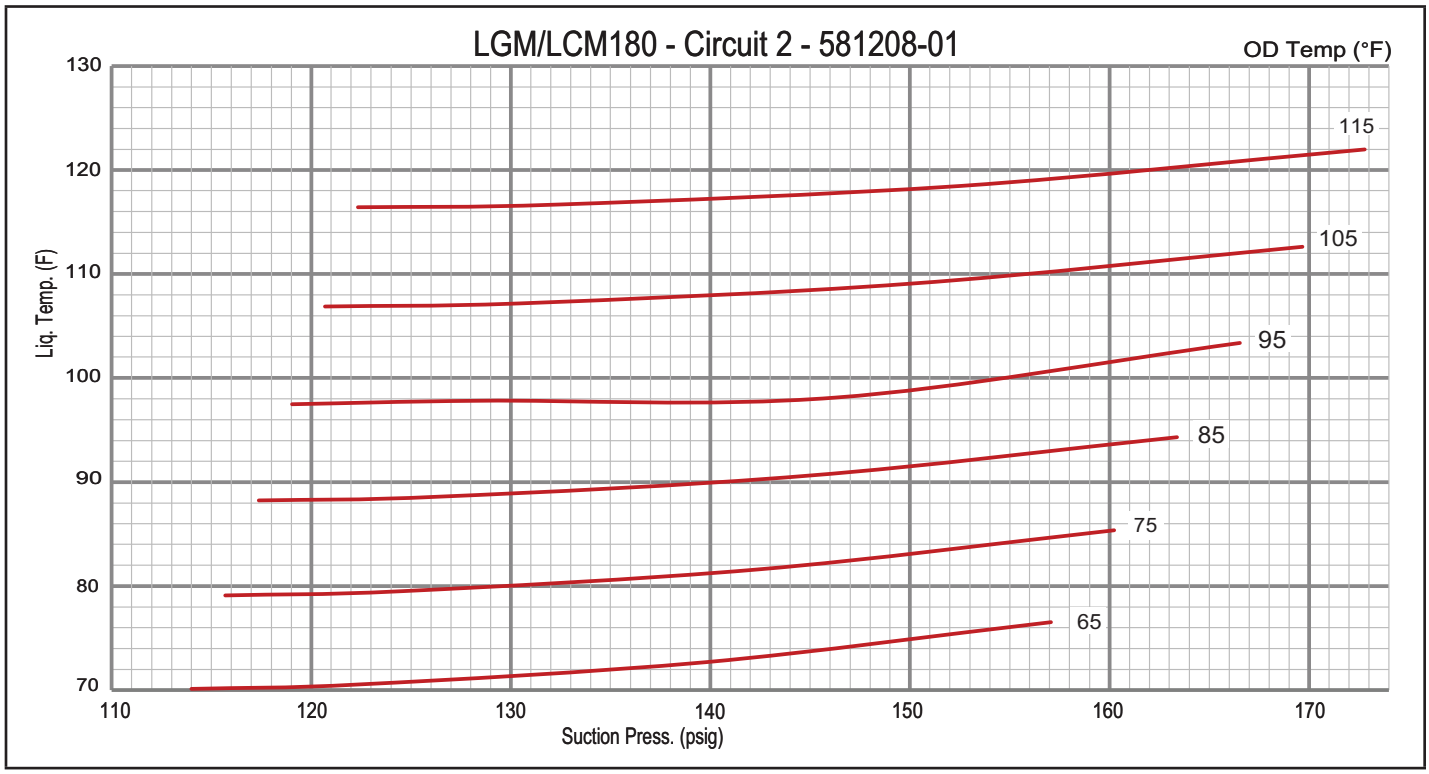


TABLE 13

LGM/LCM180 All-Aluminum OD Coil, No Reheat, Normal Operating Pressures- 581207-01

	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	91	222	93	246	95	290	97	354	99	439	101	543
	98	227	100	249	102	292	104	354	107	437	109	540
	113	236	115	255	118	295	120	346	123	434	126	533
	129	245	131	261	134	297	137	353	140	429	143	526
Circuit 2	114	216	116	251	117	292	119	337	121	388	122	445
	123	219	125	254	127	294	129	340	130	391	132	447
	140	224	142	259	145	299	146	346	150	395	153	451
	157	228	160	263	163	303	167	348	170	398	173	454
Circuit 3	98	222	99	258	101	299	102	345	103	394	105	448
	105	226	107	262	108	303	110	348	112	398	114	452
	121	232	123	269	126	310	128	357	131	405	133	459
	139	238	142	275	145	315	148	361	151	410	154	465


LGM/LCM180 - Circuit 1 - 581208-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
120
110
100
90
80
70
60
90
100
110
120
130
140
150
Suction Press. (psig)


LGM/LCM180 - Circuit 2 - 581208-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
130
120
110
100
90
80
70
110
120
130
140
150
160
170
Suction Press. (psig)

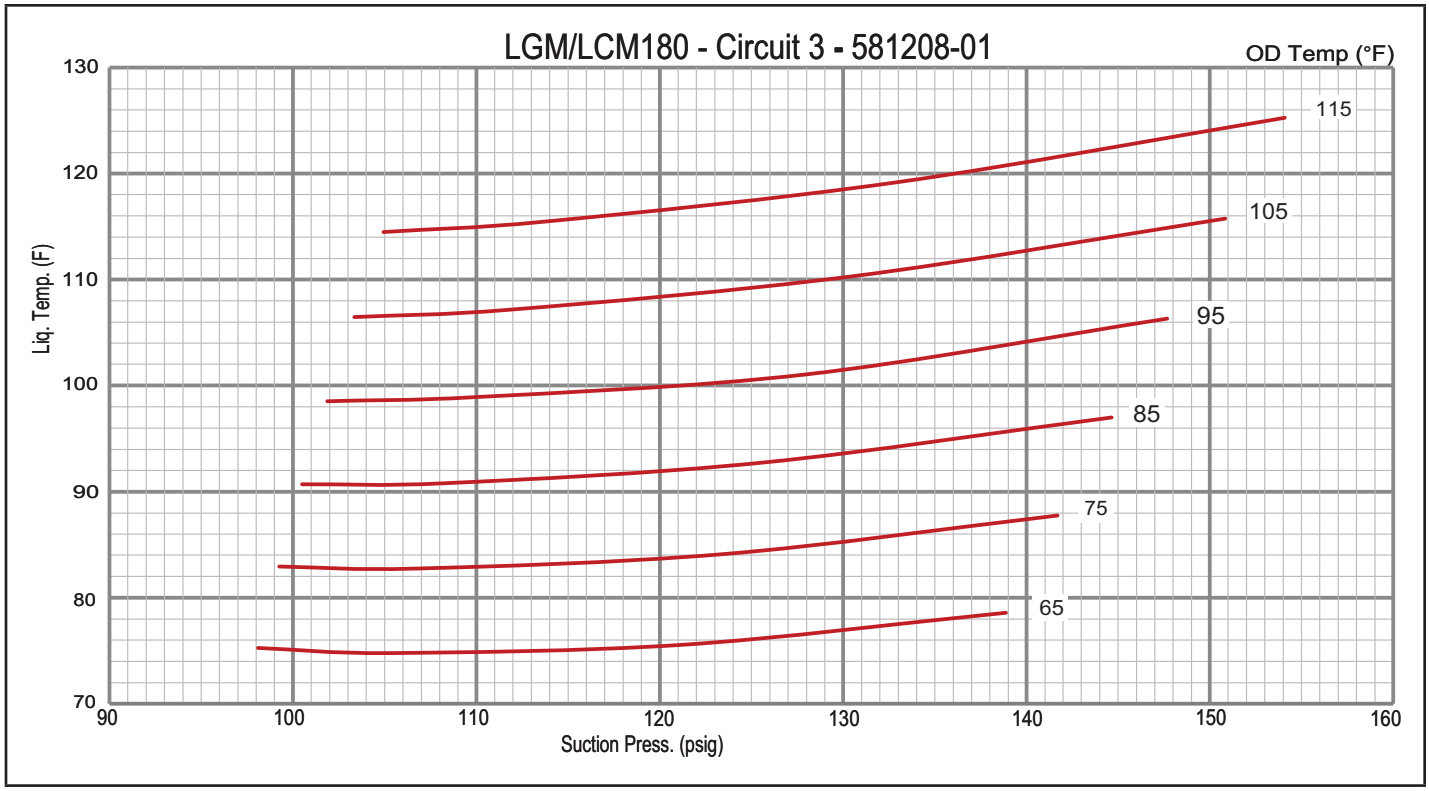
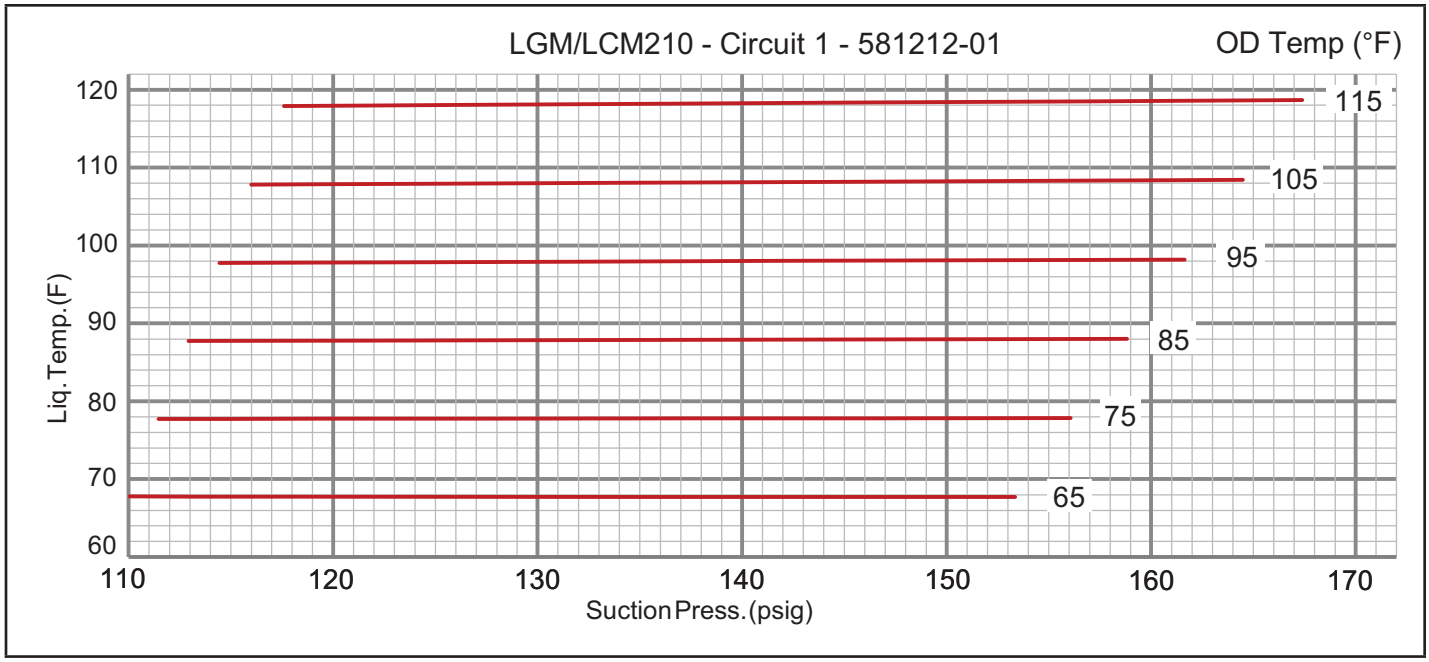
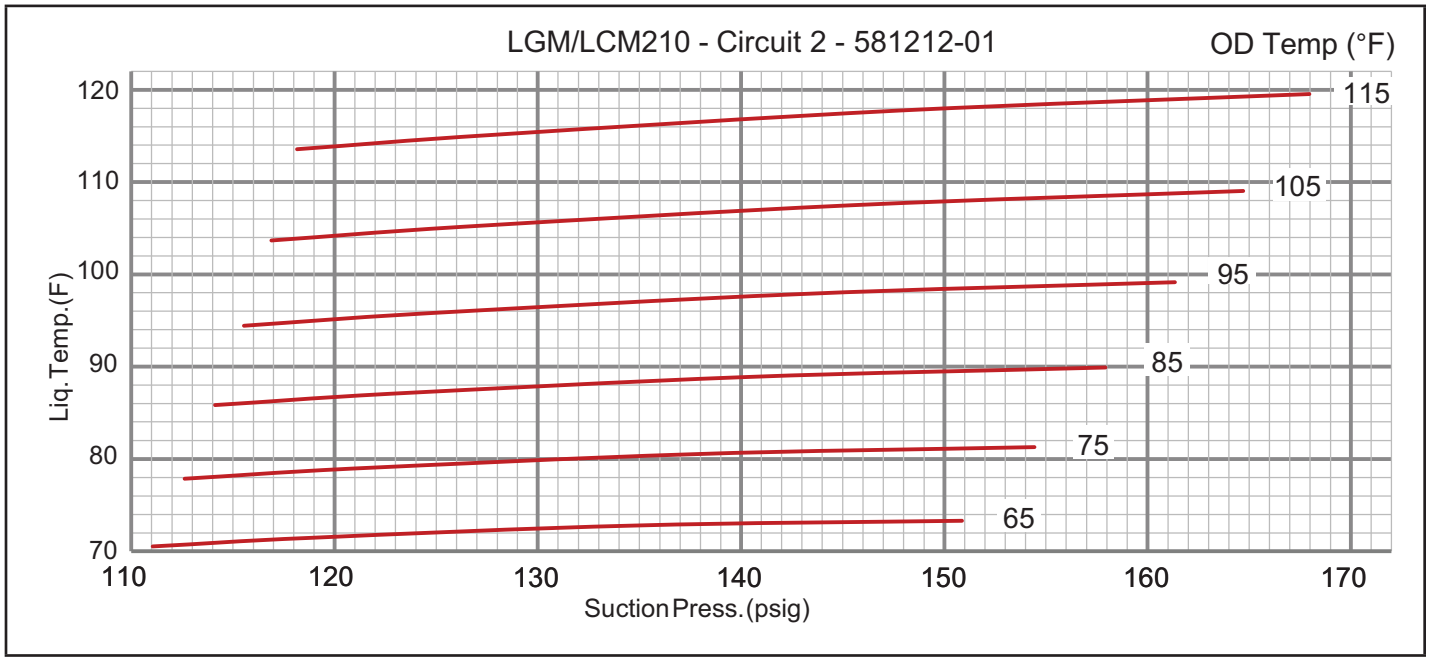
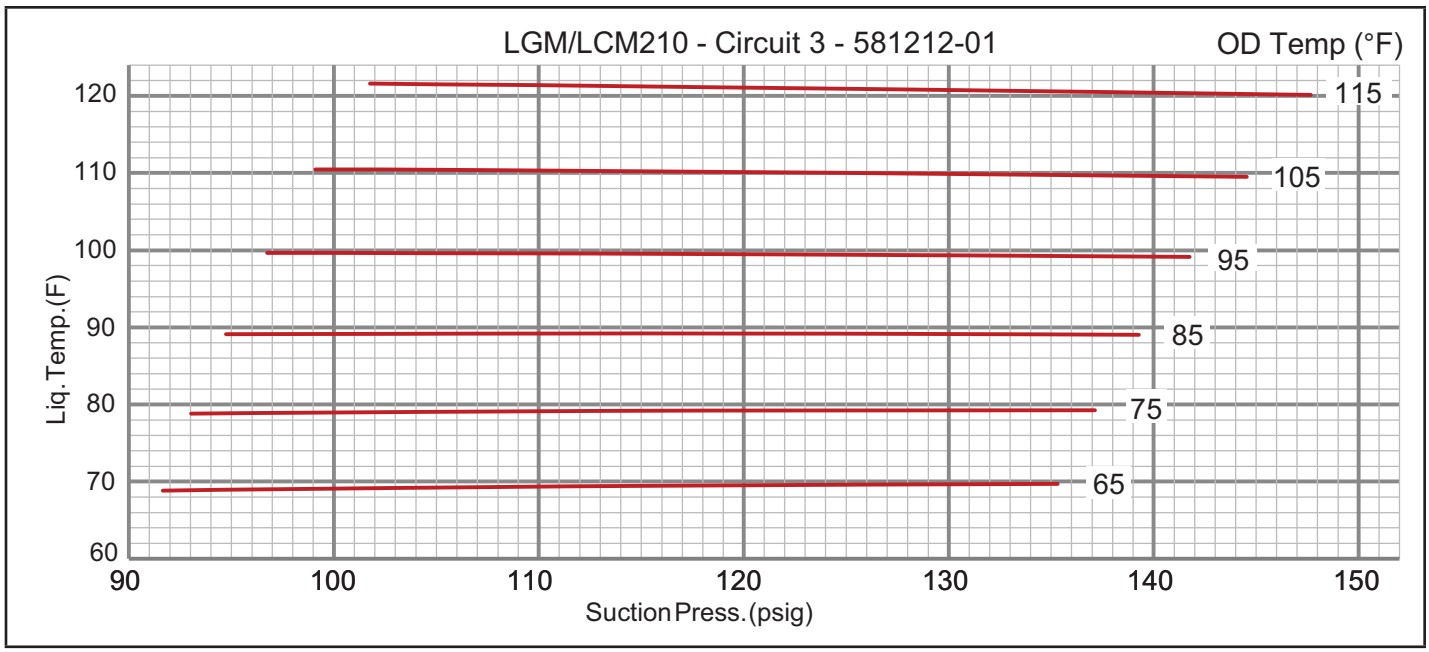


TABLE 14

LGM/LCM210 All-Aluminum OD Coil, No Reheat, Normal Operating Pressures- 581211-01												
	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	110	219	111	258	113	304	114	355	116	412	118	476
	118	218	120	255	121	299	123	349	125	405	127	467
	135	221	137	256	139	296	142	344	144	397	146	456
	153	232	156	264	159	302	162	346	164	397	167	453
Circuit 2	111	216	113	253	114	292	116	334	117	377	118	421
	119	218	121	256	123	296	125	337	126	380	128	426
	135	223	138	262	140	302	143	344	145	388	148	433
	151	228	154	267	158	307	161	350	165	394	168	441
Circuit 3	92	219	93	257	95	308	97	370	99	444	102	530
	99	221	101	258	103	306	105	366	107	437	110	520
	116	228	118	260	120	303	122	358	125	425	128	503
	135	237	137	264	139	302	142	352	145	414	148	488
Circuit 4	92	222	94	257	96	304	98	364	100	435	102	519
	100	224	102	258	104	304	106	362	108	432	111	514
	117	231	119	261	121	304	123	359	126	427	128	506
	135	239	137	267	139	307	142	359	144	423	147	500


LGM/LCM210 - Circuit 1 - 581212-01
OD Temp (°F)
120
110
100
90
80
70
60
Liq. Temp.(F)
115
105
95
85
75
65
110
120
130
140
150
160
170
Suction Press.(psig)


LGM/LCM210 - Circuit 2 - 581212-01
OD Temp (°F)
120
110
100
90
80
70
Liq. Temp.(F)
115
105
95
85
75
65
110
120
130
140
150
160
170
Suction Press.(psig)


LGM/LCM210 - Circuit 3 - 581212-01
OD Temp (°F)
115
105
95
85
75
65
120
110
100
90
80
70
60
Liq. Temp.(F)
90
100
110
120
130
140
150
Suction Press.(psig)

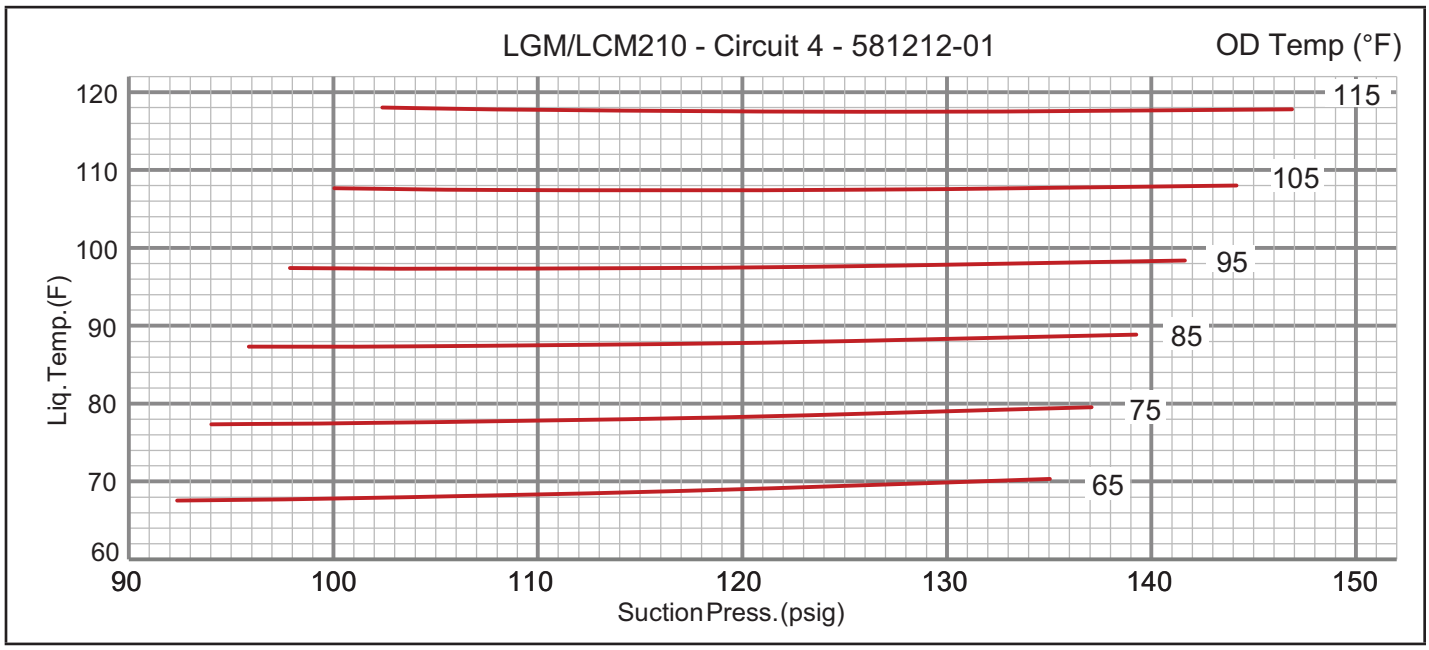
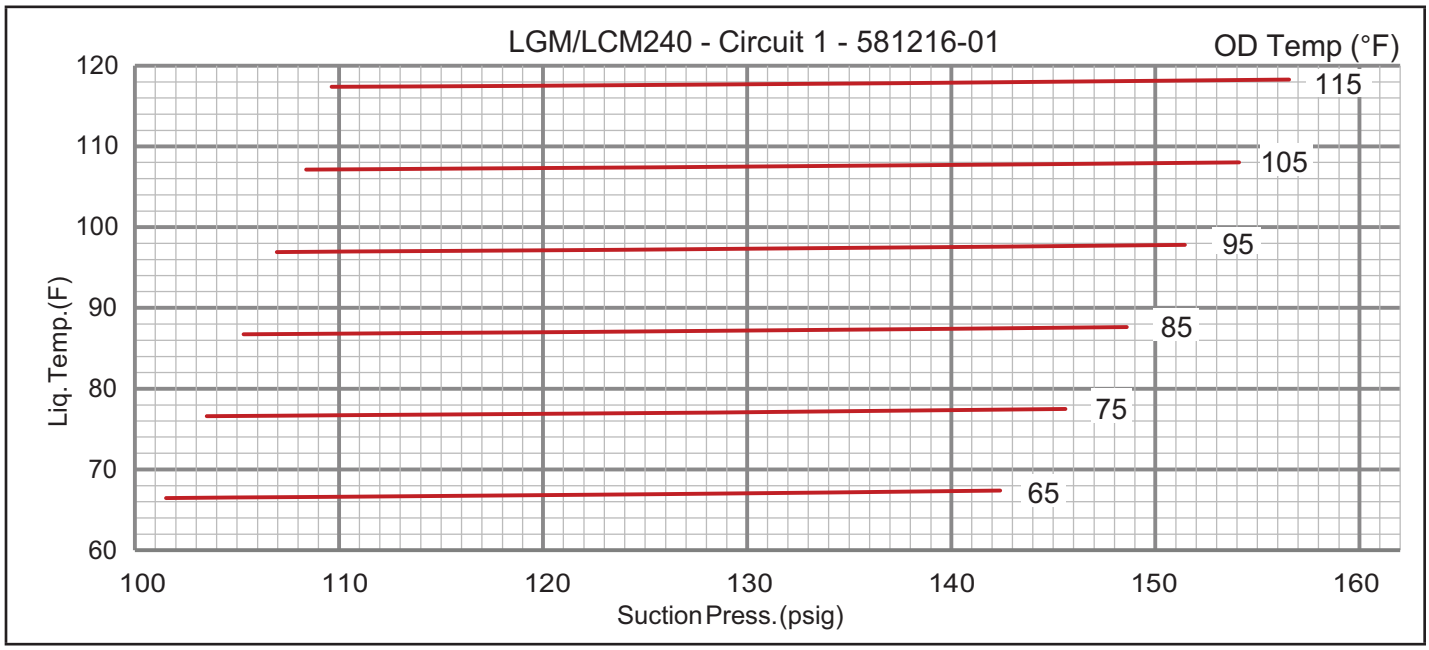
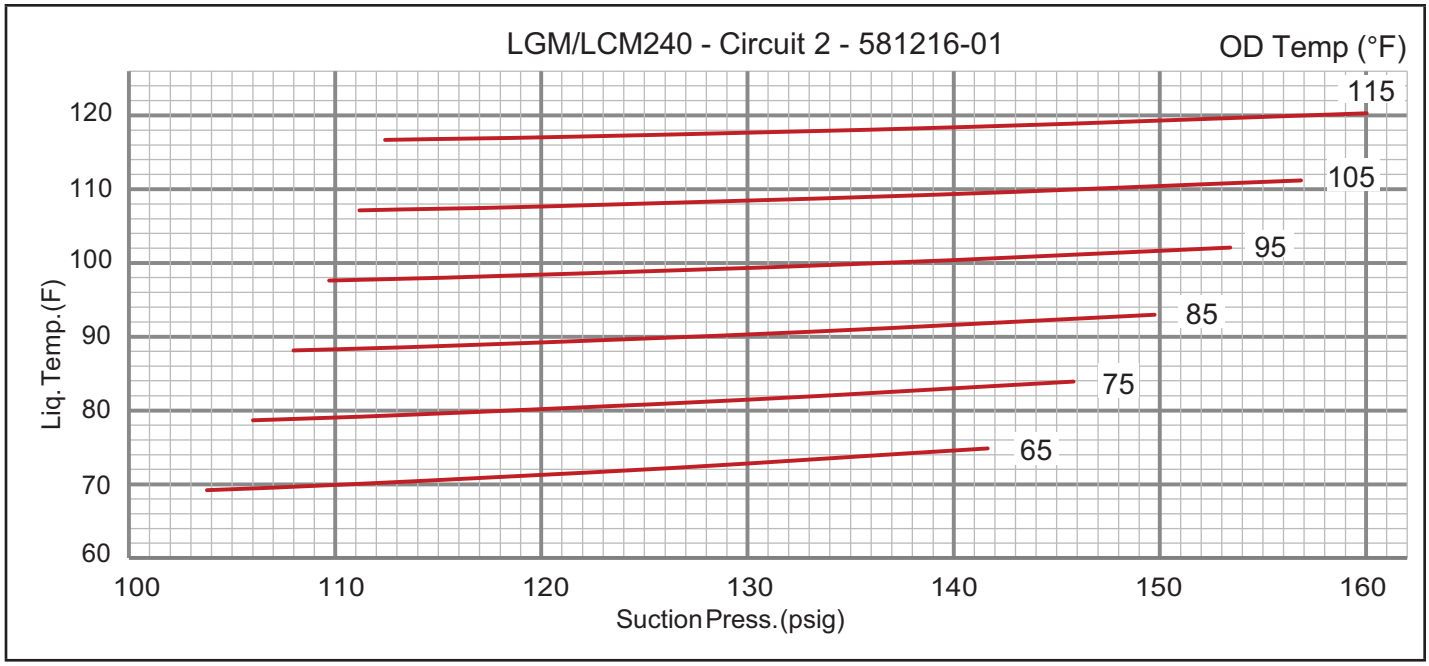
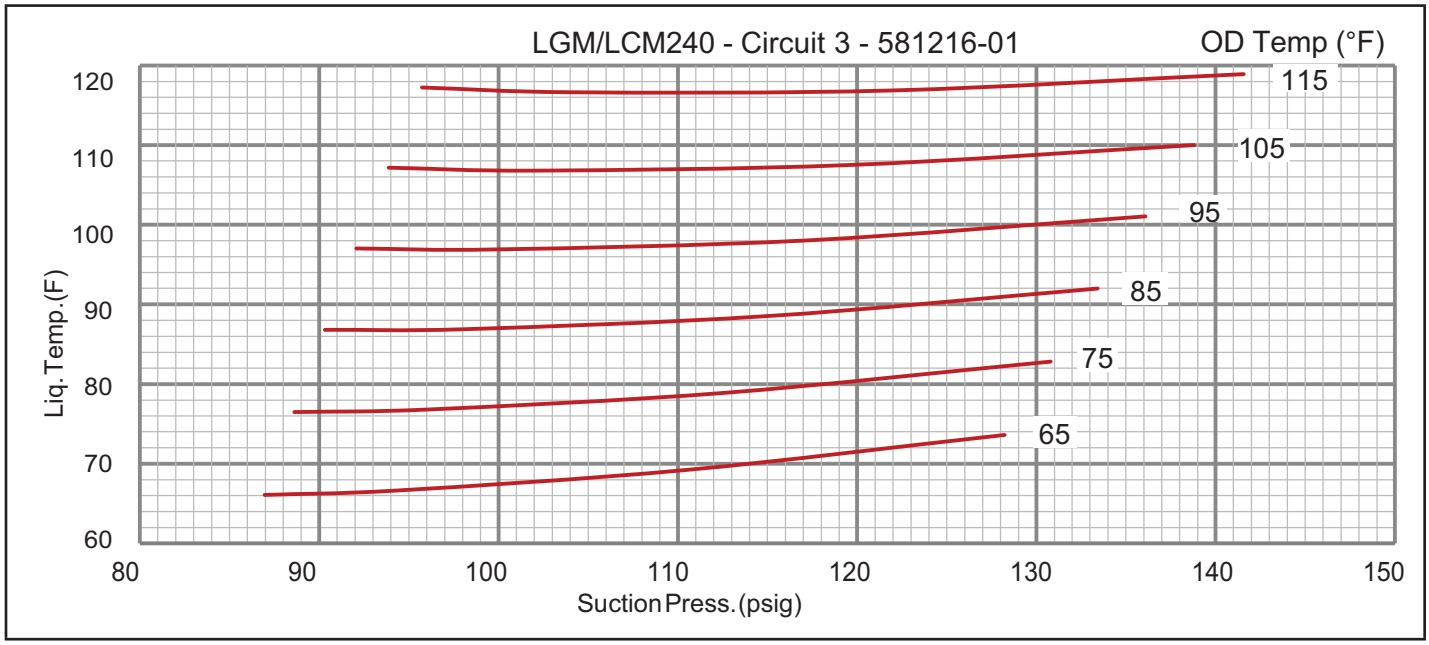

LGM/LCM210 - Circuit 4 - 581212-01
OD Temp (°F)
115
105
95
85
75
65
120
110
100
90
80
70
60
Liq. Temp.(F)
90
100
110
120
130
140
150
Suction Press.(psig)

TABLE 15												
LGM/LCM240 All-Aluminum OD Coil, No Reheat, Normal Operating Pressures- 581215-01												
	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	102	227	104	264	105	306	107	355	108	410	110	471
	109	228	112	264	114	306	116	354	117	409	119	469
	126	233	128	268	131	310	133	357	135	410	137	469
	142	244	146	278	149	318	151	364	154	416	157	475
Circuit 2	104	225	106	260	108	301	110	346	111	396	112	451
	111	227	114	263	116	304	118	349	120	400	122	455
	126	233	130	269	133	310	136	356	138	407	141	462
	142	239	146	275	150	317	153	363	157	414	160	470
Circuit 3	87	216	89	252	90	293	92	338	94	387	96	441
	94	218	96	254	98	295	100	340	102	389	104	444
	110	222	113	258	115	299	117	345	120	395	122	450
	128	228	131	264	133	306	136	352	139	402	142	457
Circuit 4	89	220	91	256	92	298	94	344	96	396	98	453
	97	221	99	258	100	300	102	346	104	398	106	455
	113	226	115	262	117	305	120	352	122	404	125	461
	131	231	133	268	136	311	138	358	141	411	144	468




LGM/LCM240 - Circuit 2 - 581216-01
OD Temp (°F)
115
105
95
85
75
65
120
110
100
90
80
70
60
Liq. Temp.(F)
100
110
120
130
140
150
160
Suction Press.(psig)


LGM/LCM240 - Circuit 3 - 581216-01
OD Temp (°F)
115
105
95
85
75
65
120
110
100
90
80
70
60
Liq. Temp.(F)
80
90
100
110
120
130
140
150
Suction Press.(psig)

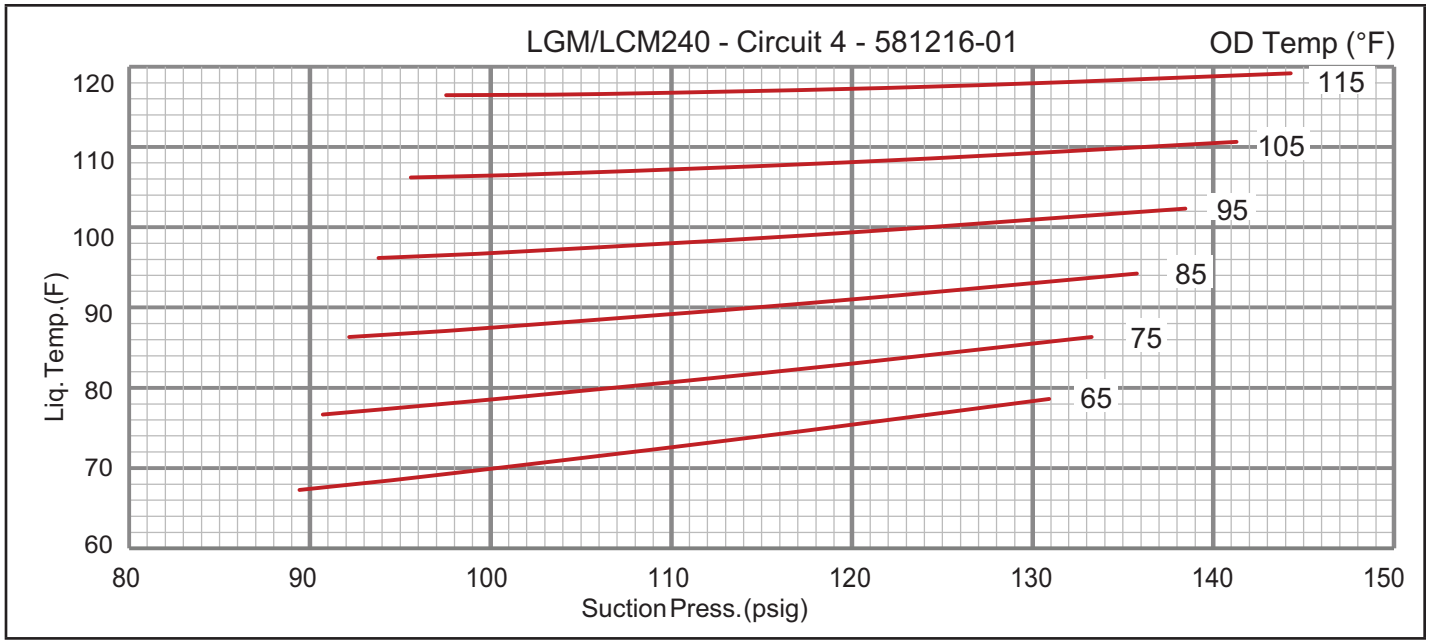
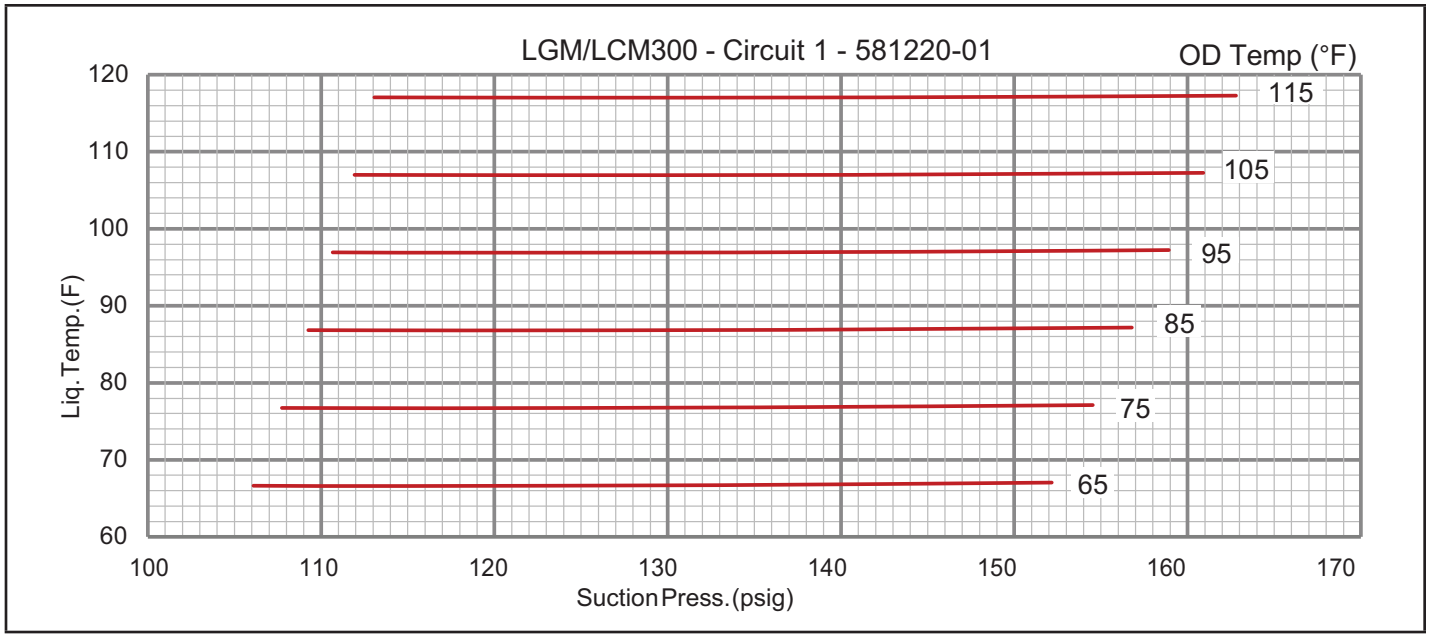
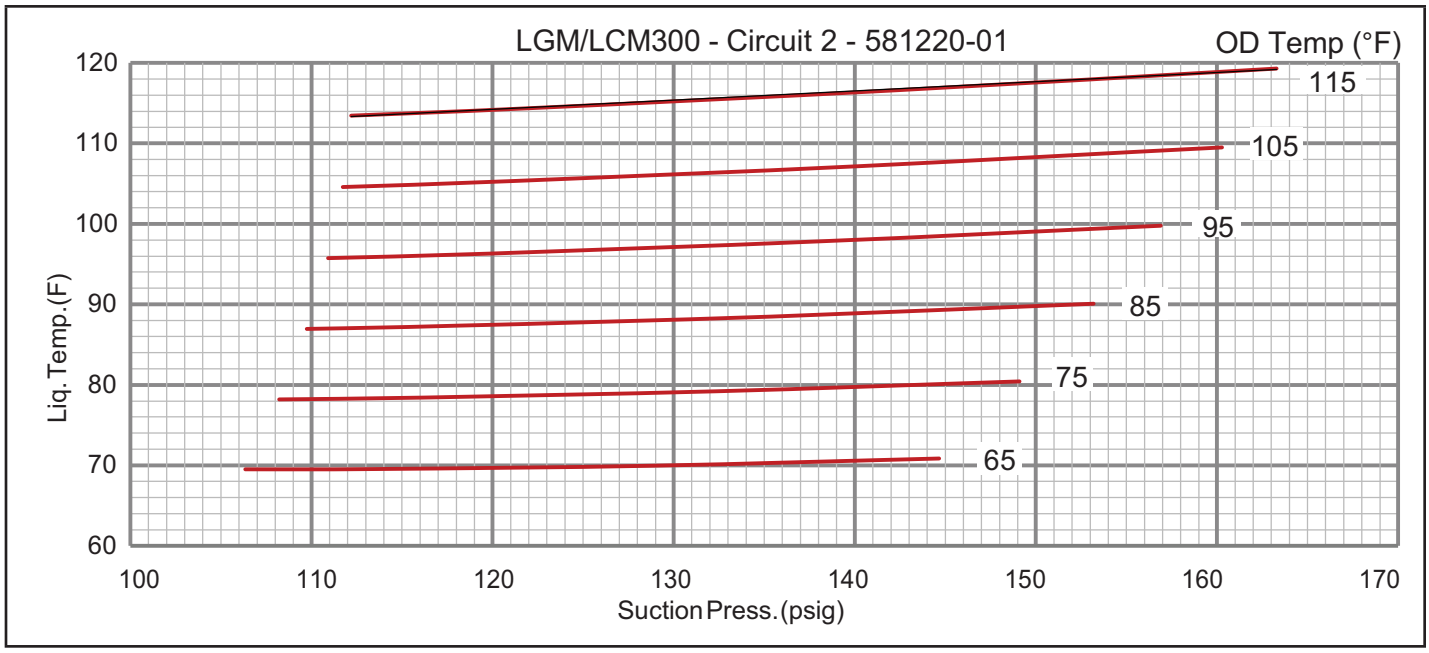


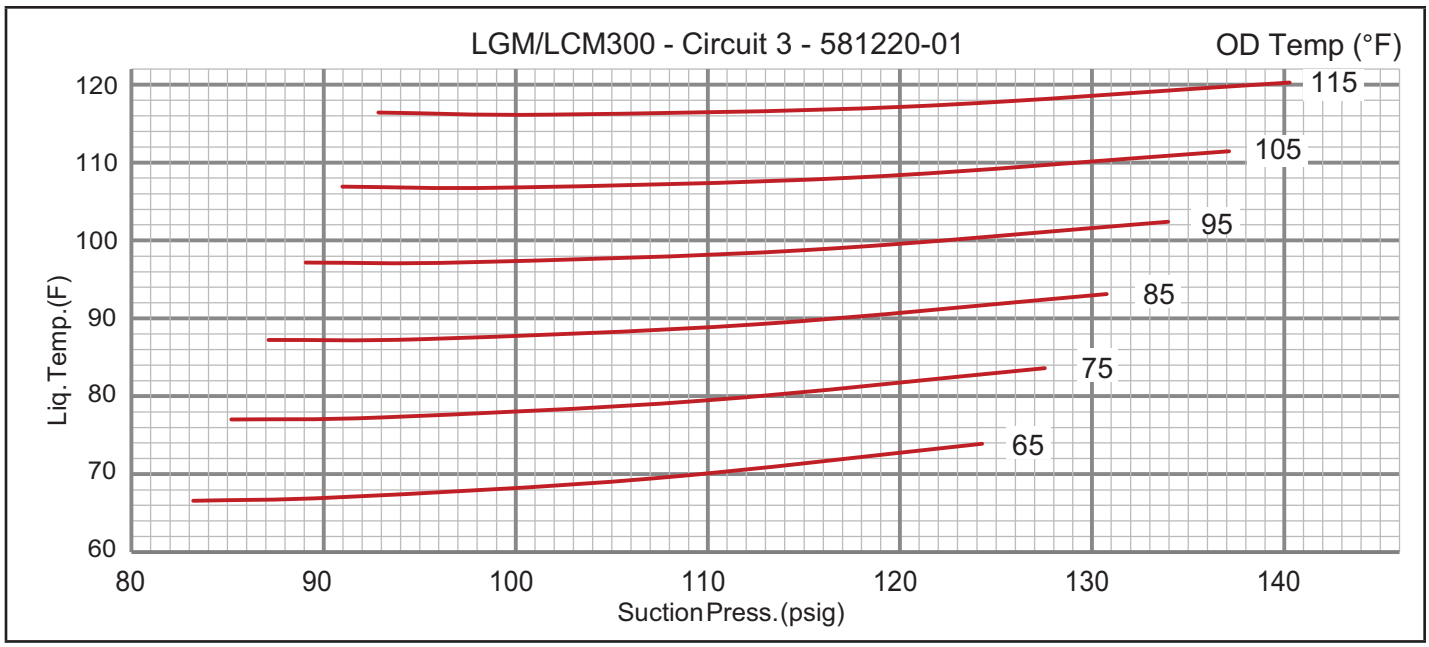
TABLE 16

LGM/LCM300 All-Aluminum OD Coil, No Reheat, Normal Operating Pressures- 581219-01

	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	106	230	108	274	109	327	111	390	112	462	113	544
	115	228	117	269	118	319	120	379	121	448	123	527
	133	233	135	267	137	312	139	366	141	429	142	502
	152	248	155	277	157	316	159	364	161	421	163	488
Circuit 2	106	236	108	276	110	319	111	367	112	418	112	474
	114	242	116	281	118	324	120	371	121	423	122	478
	129	251	132	290	135	333	138	383	140	431	142	486
	145	259	149	298	153	341	157	387	160	438	163	493
Circuit 3	83	228	85	271	87	317	89	367	91	422	93	480
	91	232	93	274	95	320	98	370	100	424	102	482
	107	240	110	281	112	326	115	372	118	428	120	485
	124	249	128	289	131	333	134	381	137	433	140	489
Circuit 4	84	234	86	276	88	321	90	370	92	422	94	477
	91	237	94	279	96	324	99	373	101	425	104	480
	107	243	110	285	113	331	116	378	120	432	123	488
	122	251	126	294	130	340	135	389	139	441	143	497


LGM/LCM300 - Circuit 1 - 581220-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp.(F)
120
110
100
90
80
70
60
100
110
120
130
140
150
160
170
Suction Press.(psig)


LGM/LCM300 - Circuit 2 - 581220-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp.(F)
120
110
100
90
80
70
60
100
110
120
130
140
150
160
170
Suction Press.(psig)


LGM/LCM300 - Circuit 3 - 581220-01
OD Temp (°F)
115
105
95
85
75
65
120
110
100
90
80
70
60
Liq. Temp.(F)
80
90
100
110
120
130
140
Suction Press.(psig)

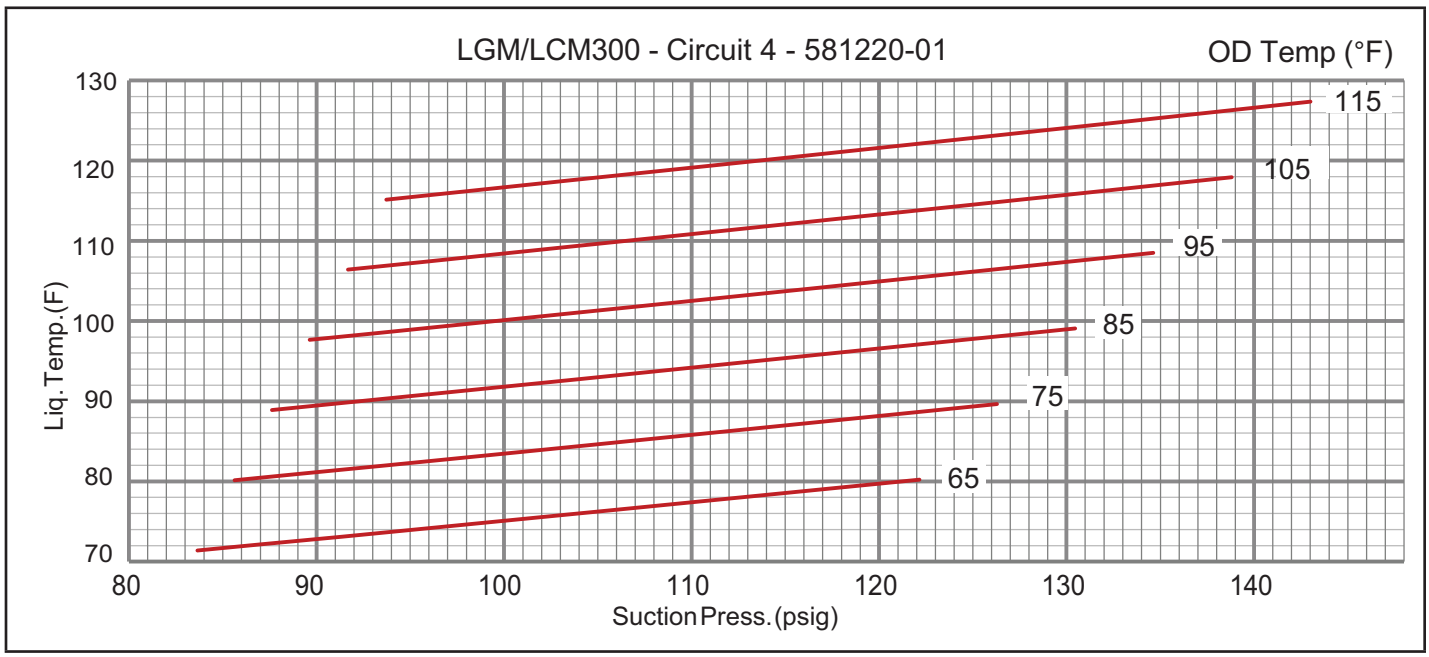
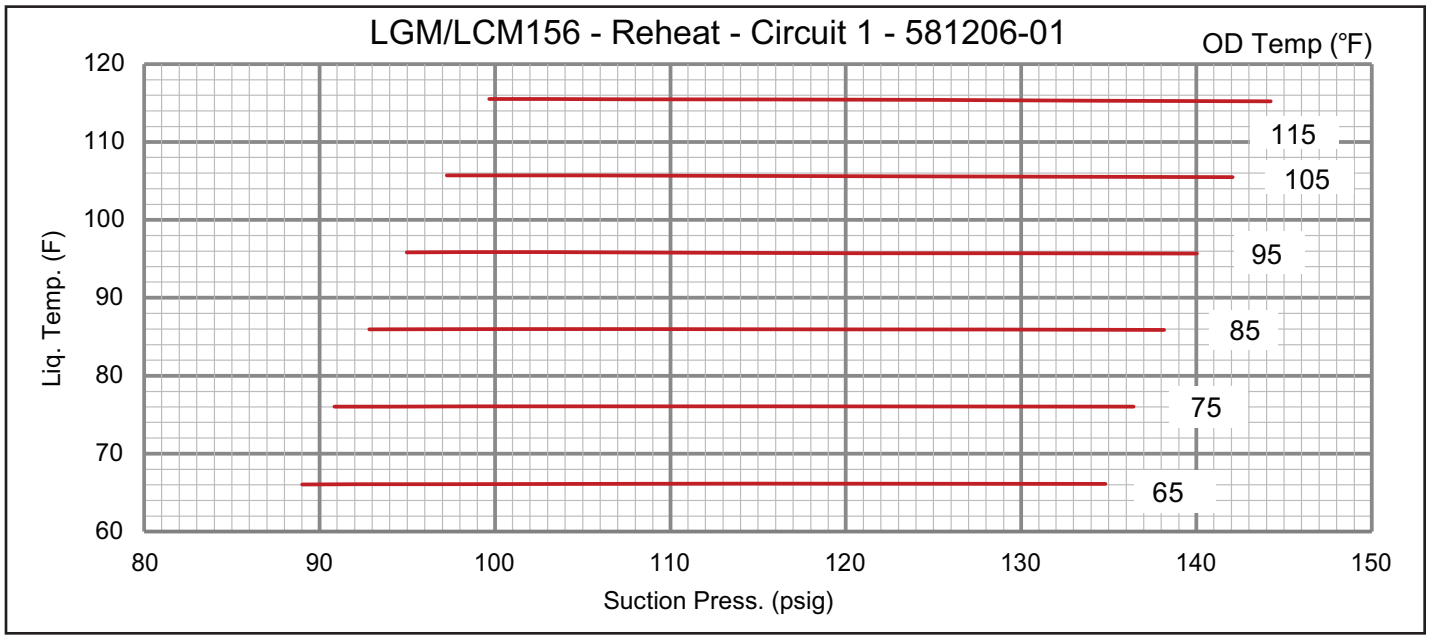
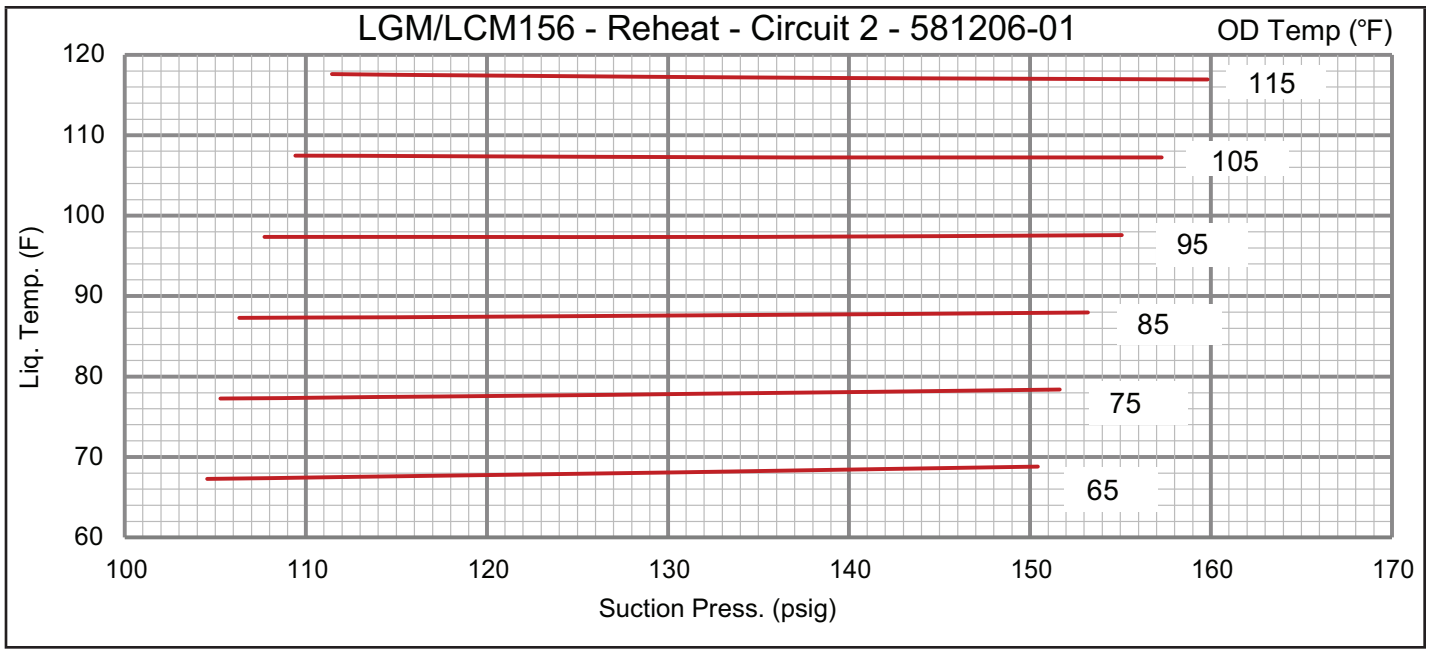

LGM/LCM300 - Circuit 4 - 581220-01
OD Temp (°F)
115
105
95
85
75
65
130
120
110
100
90
80
70
Liq. Temp.(F)
80
90
100
110
120
130
140
Suction Press.(psig)

TABLE 17												
LGM/LCM156 All-Aluminum OD Coil, Reheat, Normal Operating Pressures- 581205-01												
	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	89	215	91	249	93	290	95	338	97	392	100	452
	97	214	99	247	101	286	103	333	105	386	107	445
	115	215	116	246	118	284	121	331	122	378	125	435
	135	223	136	252	138	287	140	329	142	377	144	432
Circuit 2	105	220	105	257	106	299	108	346	109	398	111	455
	113	222	114	259	115	301	116	348	118	399	120	456
	131	228	132	265	133	306	135	354	137	403	139	459
	150	235	152	271	153	312	155	357	157	408	160	463
Circuit 3	94	218	96	253	98	293	100	336	102	384	104	437
	101	221	104	256	106	296	108	340	110	388	112	440
	118	226	120	262	123	301	125	345	127	393	129	446
	137	231	140	266	142	306	144	350	147	398	149	451




LGM/LCM156 - Reheat - Circuit 2 - 581206-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
120
110
100
90
80
70
60
100
110
120
130
140
150
160
170
Suction Press. (psig)

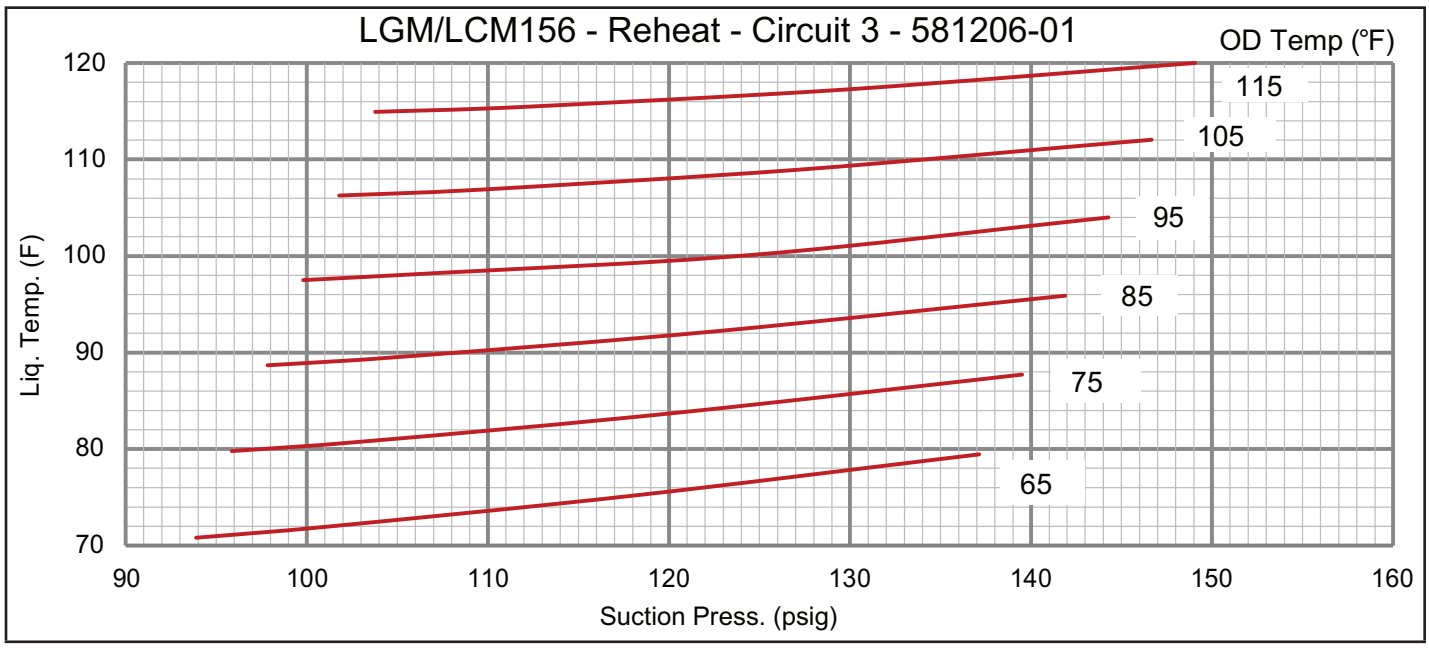
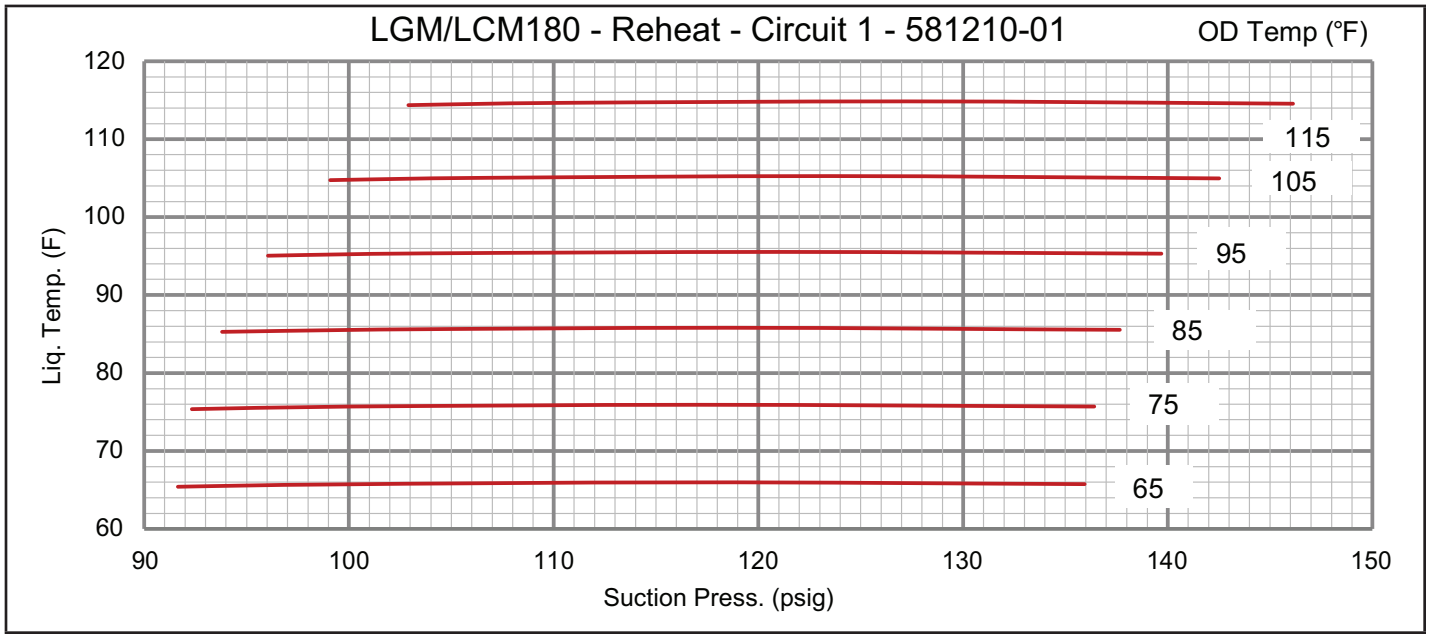
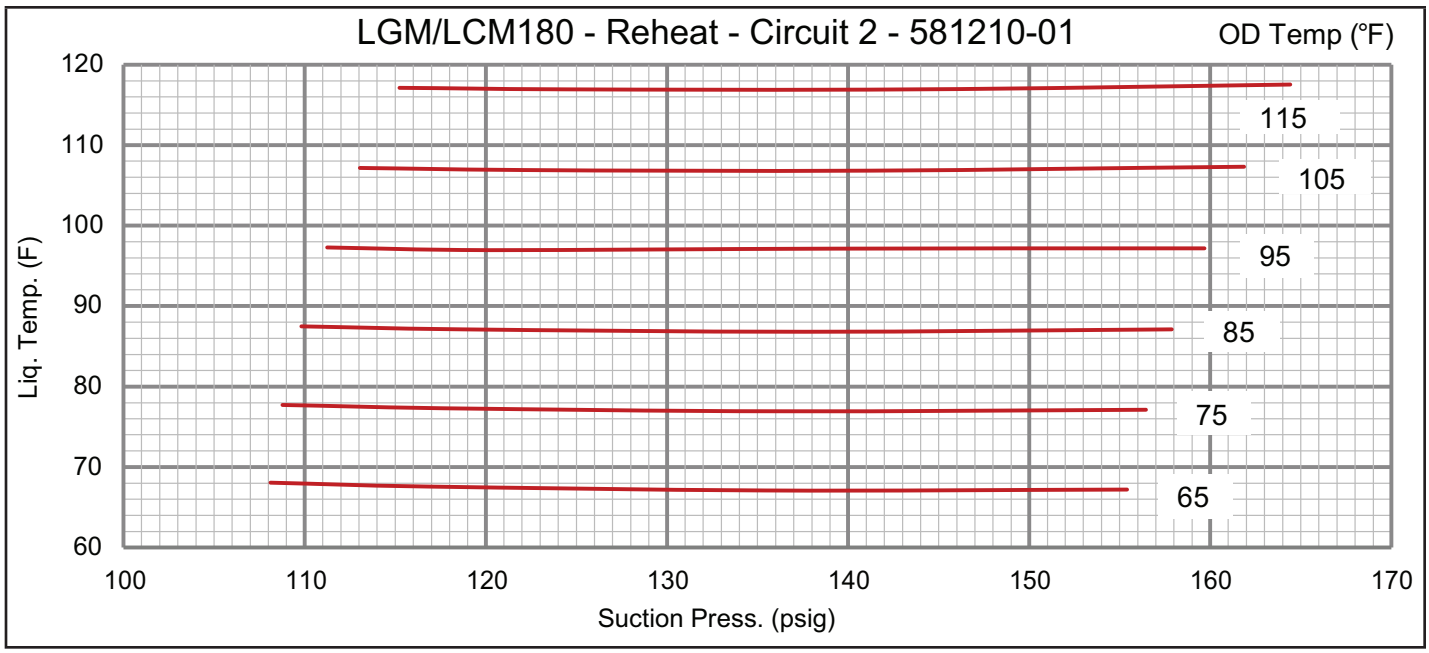

LGM/LCM156 - Reheat - Circuit 3 - 581206-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
120
110
100
90
80
70
90
100
110
120
130
140
150
160
Suction Press. (psig)

TABLE 18												
LGM/LCM180 All-Aluminum OD Coil, Reheat, Normal Operating Pressures- 581209-01												
	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	92	215	92	264	94	321	96	385	99	457	103	537
	99	220	100	264	101	317	104	377	107	445	110	521
	117	230	117	267	118	312	121	363	124	424	127	492
	136	243	136	272	138	308	140	353	143	405	146	465
Circuit 2	108	212	109	253	110	300	111	353	113	412	115	478
	117	218	118	257	119	302	120	354	122	411	124	475
	135	230	136	266	138	308	139	357	141	410	144	471
	155	244	156	277	158	315	160	360	162	410	164	467
Circuit 3	97	228	98	264	99	304	101	350	102	400	104	455
	105	231	106	267	108	308	109	354	111	404	113	459
	122	237	123	274	125	315	127	361	129	412	132	467
	140	244	142	281	144	322	146	369	149	420	152	476




LGM/LCM180 - Reheat - Circuit 2 - 581210-01
OD Temp (°F)
Liq. Temp. (F)
Suction Press. (psig)
120
110
100
90
80
70
60
100
110
120
130
140
150
160
170
115
105
95
85
75
65

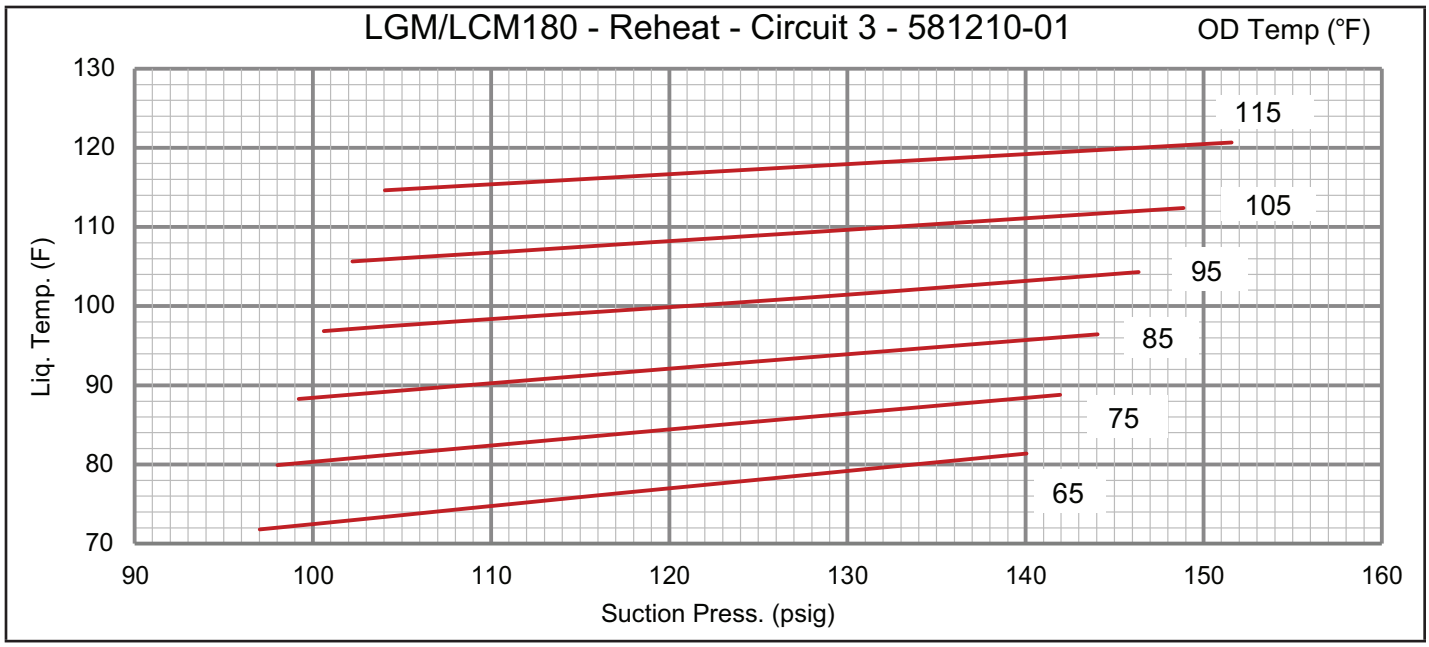
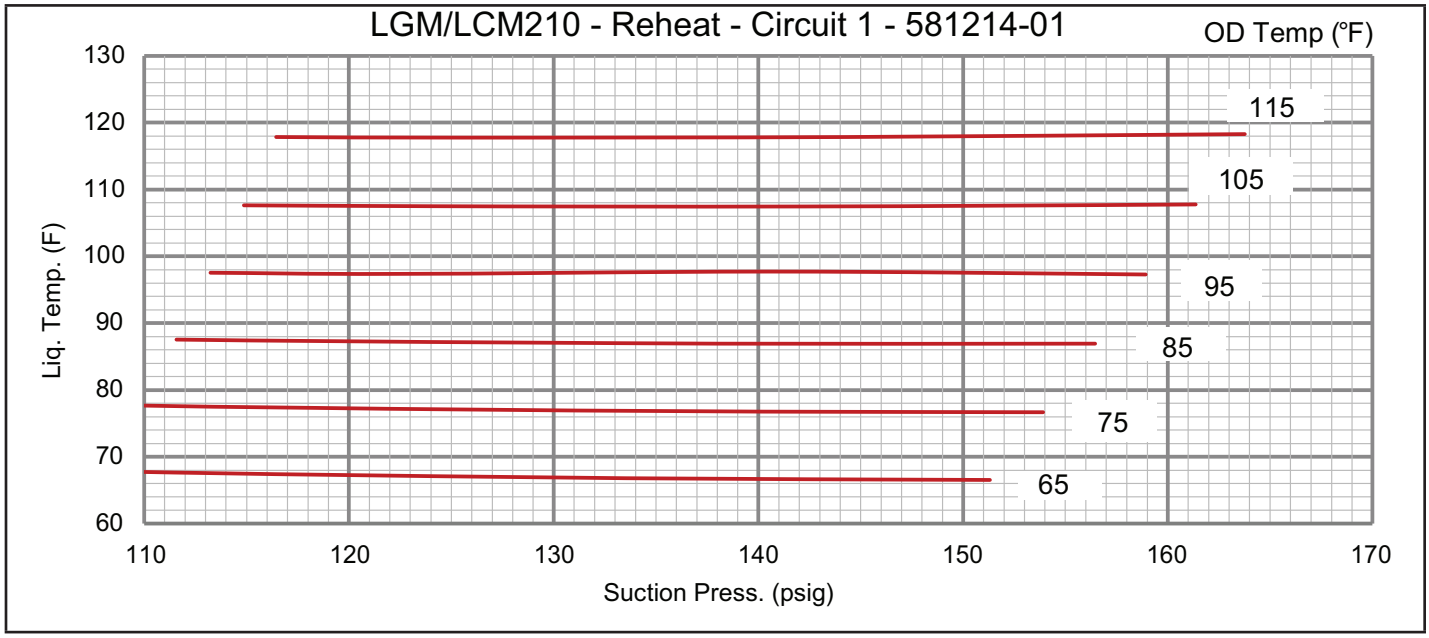
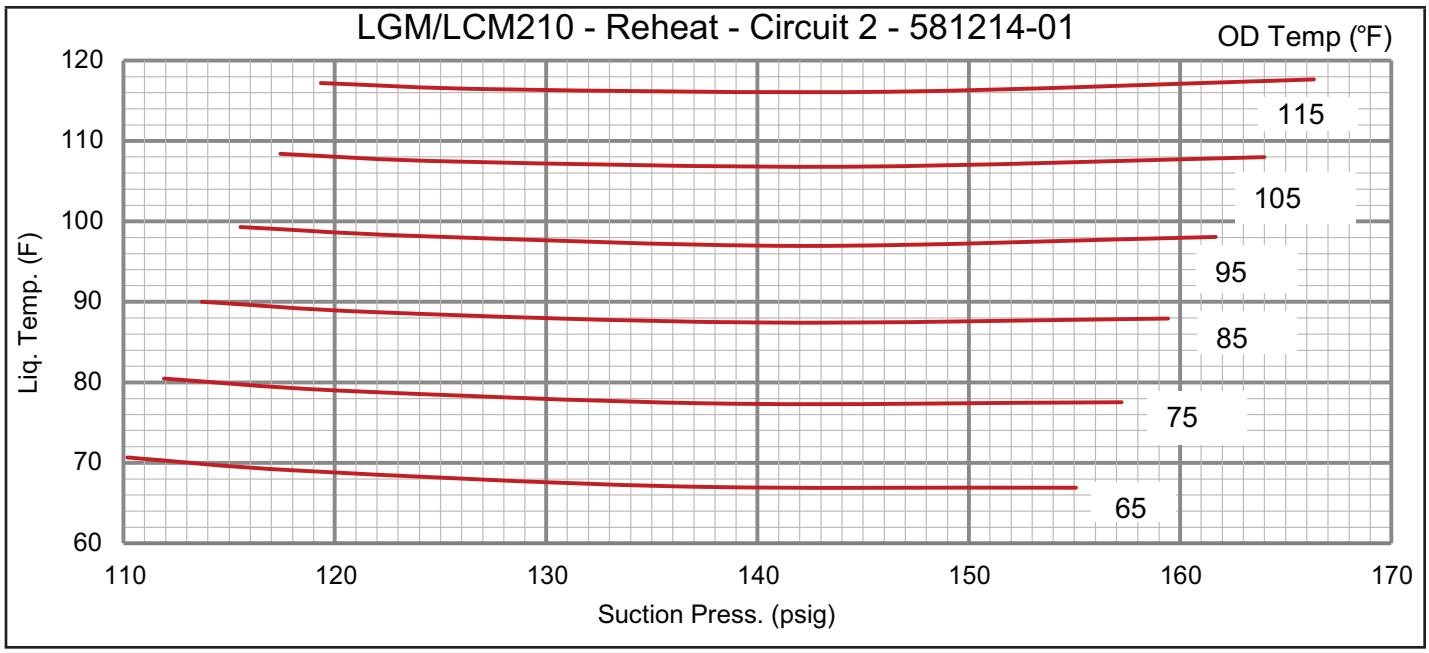
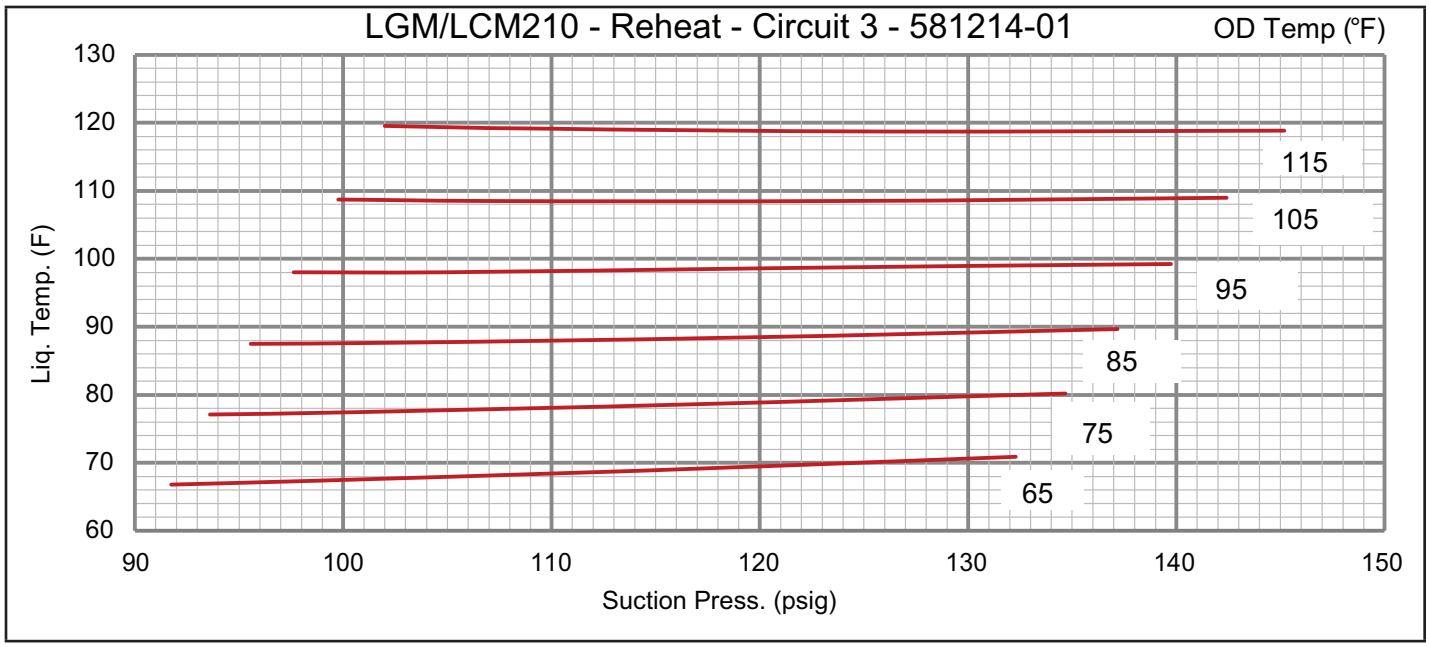

LGM/LCM180 - Reheat - Circuit 3 - 581210-01
OD Temp (°F)
Liq. Temp. (F)
Suction Press. (psig)
130
120
110
100
90
80
70
90
100
110
120
130
140
150
160
115
105
95
85
75
65

TABLE 19												
LGM/LCM210 All-Aluminum OD Coil, Reheat, Normal Operating Pressures- 581213-01												
	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	108	207	110	242	112	281	113	325	115	373	116	426
	116	211	118	246	120	285	122	329	124	377	126	430
	134	218	136	253	138	292	141	336	142	385	144	438
	151	225	154	260	156	299	159	343	161	391	164	444
Circuit 2	110	221	112	243	114	277	116	322	117	379	119	447
	118	227	120	253	122	290	124	338	126	399	128	471
	136	235	138	268	140	312	142	368	144	435	146	514
	155	238	157	278	159	329	162	392	164	467	166	553
Circuit 3	92	213	94	248	96	289	98	334	100	383	102	438
	99	216	101	251	103	292	105	337	107	387	109	442
	114	222	116	257	119	297	121	345	124	393	126	448
	132	226	135	262	137	302	140	348	142	398	145	454
Circuit 4	93	216	95	252	96	293	98	338	100	389	102	443
	100	220	102	256	104	297	106	342	108	393	111	448
	116	225	118	262	121	303	122	351	125	400	128	455
	134	229	137	267	139	308	142	355	145	406	147	462




LGM/LCM210 - Reheat - Circuit 2 - 581214-01
OD Temp (°F)
Liq. Temp. (F)
120
110
100
90
80
70
60
115
105
95
85
75
65
110
120
130
140
150
160
170
Suction Press. (psig)


LGM/LCM210 - Reheat - Circuit 3 - 581214-01
OD Temp (°F)
Liq. Temp. (F)
130
120
110
100
90
80
70
60
115
105
95
85
75
65
90
100
110
120
130
140
150
Suction Press. (psig)

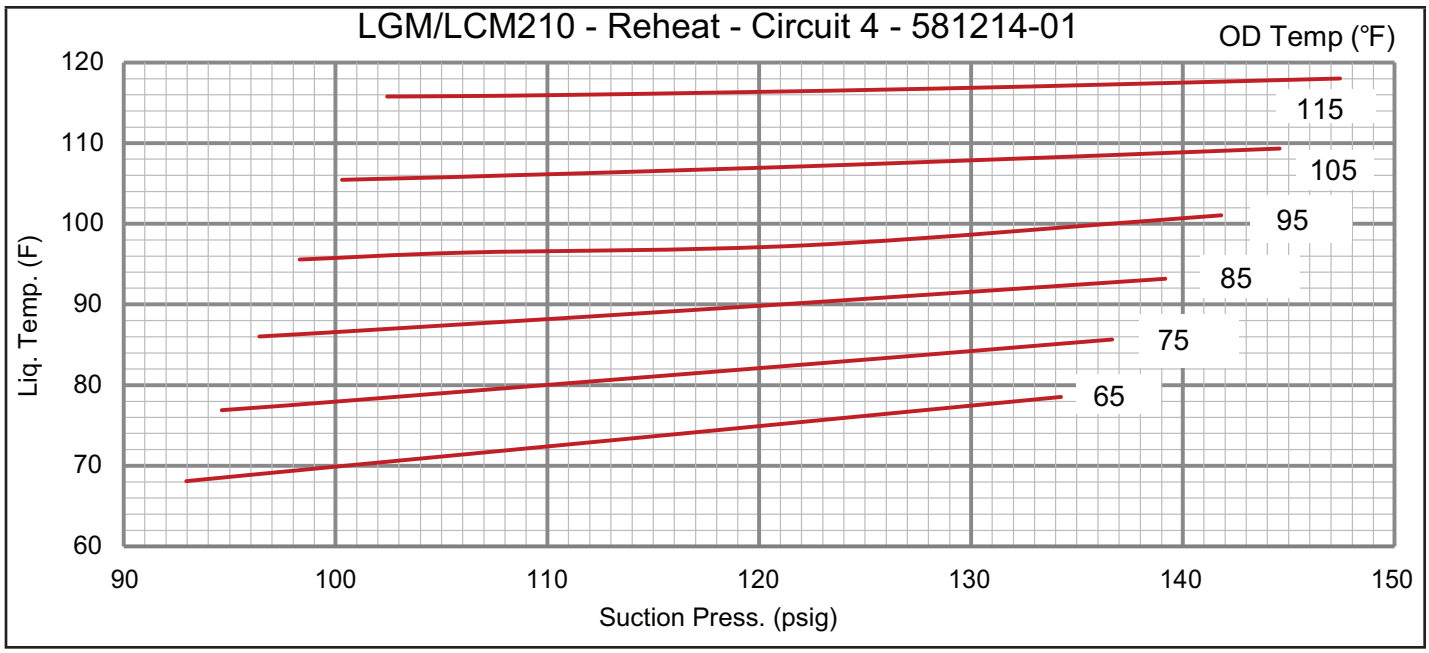
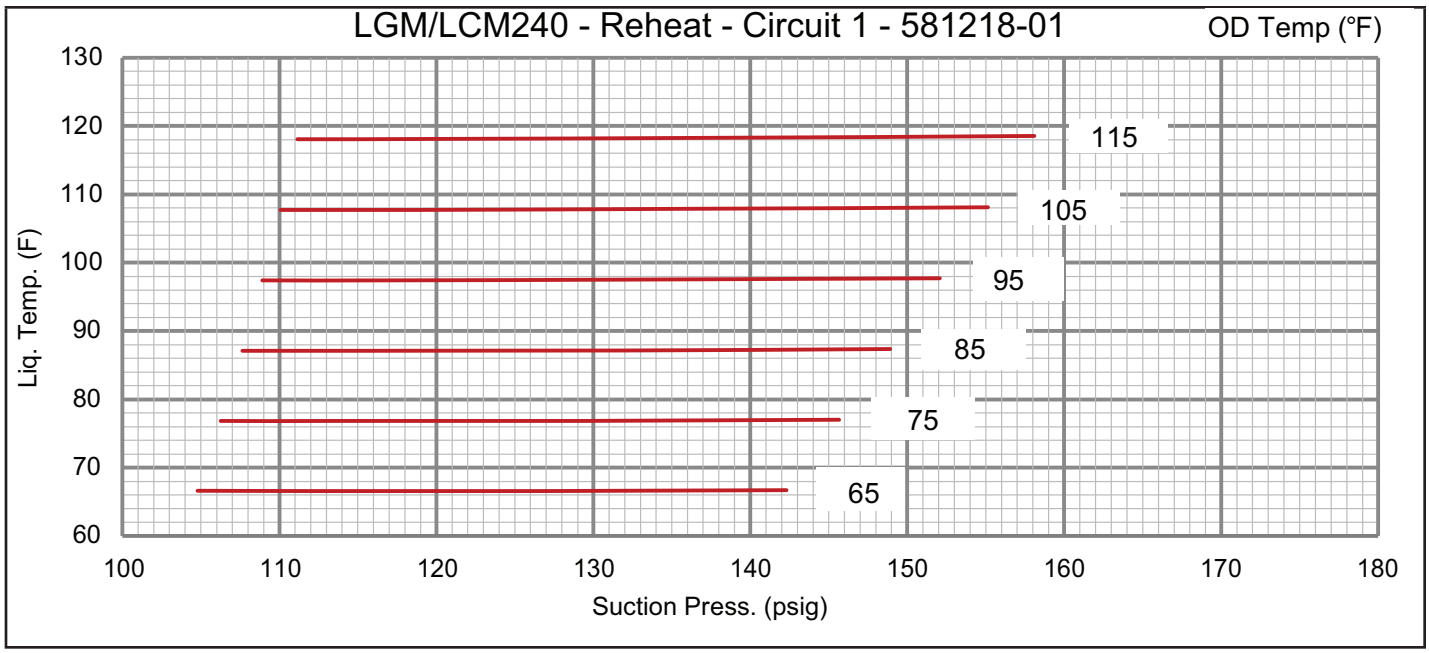
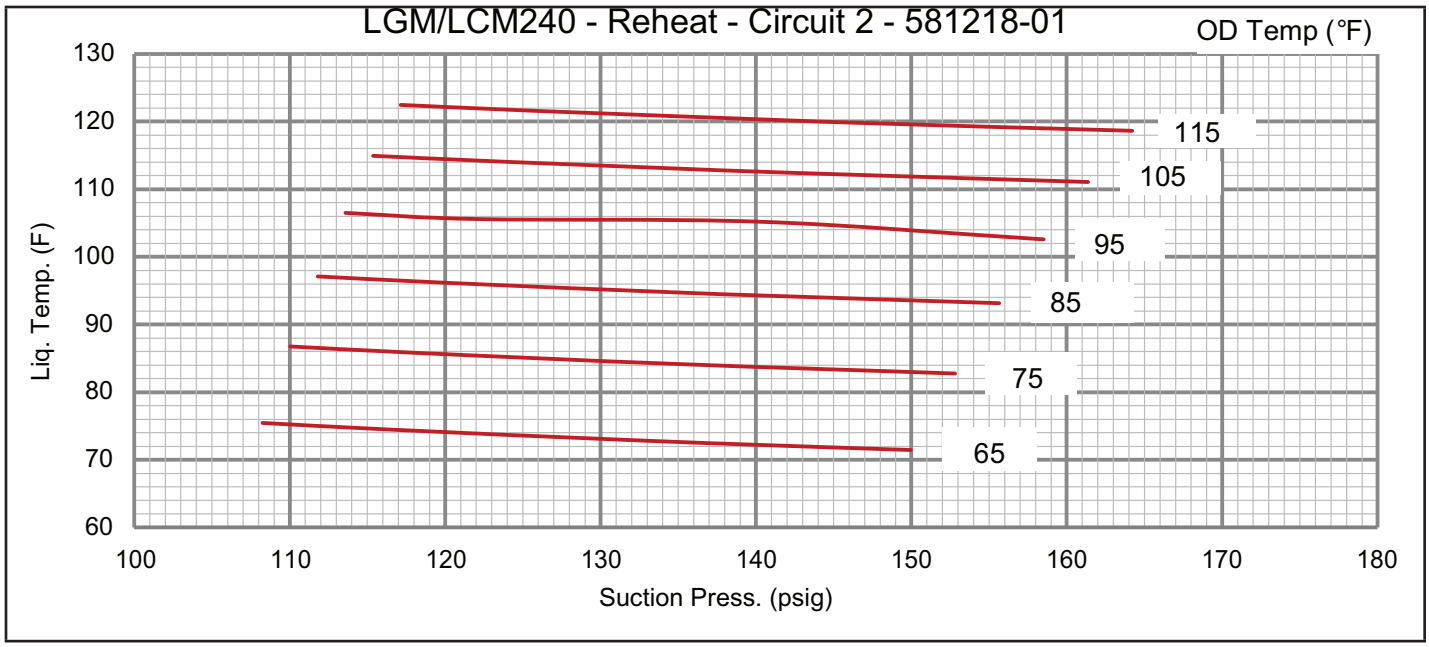


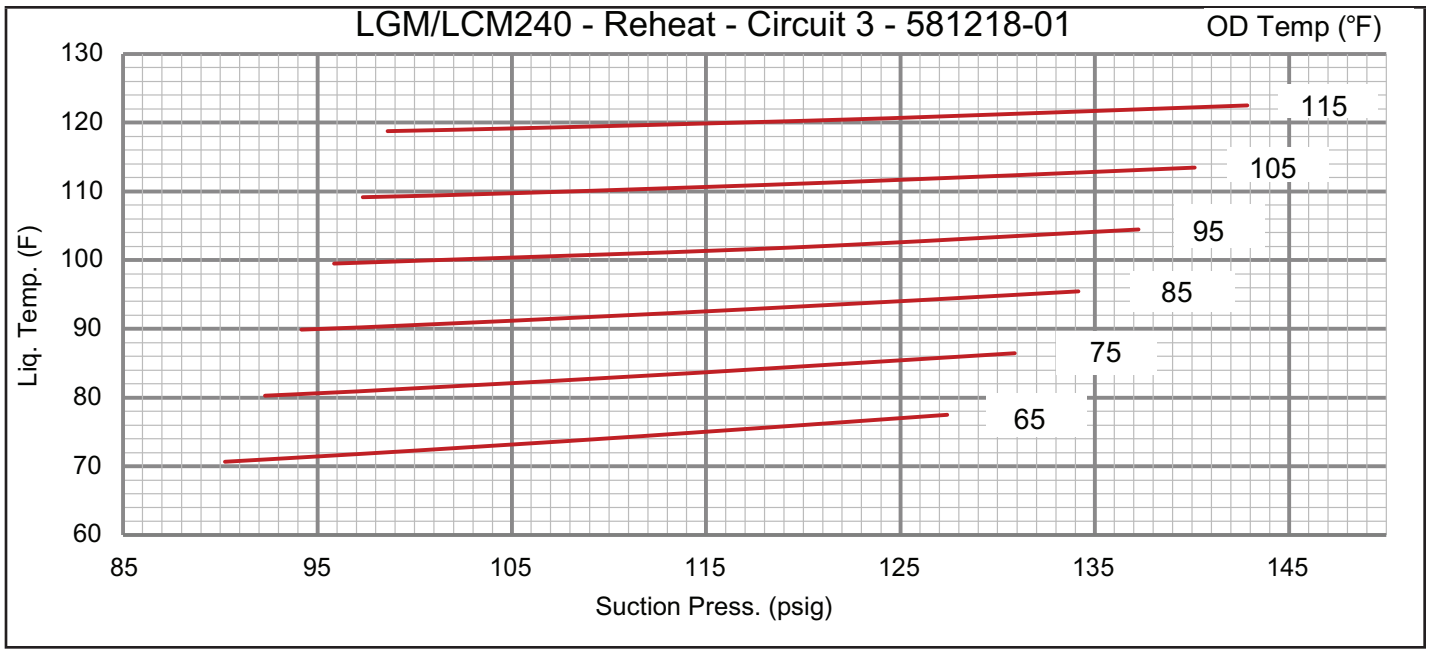
TABLE 20

LGM/LCM240 All-Aluminum OD Coil, Reheat, Normal Operating Pressures- 581217-01

	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	105	223	106	259	108	300	109	348	110	401	111	461
	112	227	114	262	116	303	117	350	119	403	120	463
	127	234	129	269	132	310	134	357	137	409	139	468
	142	243	146	278	149	318	152	364	155	417	158	475
Circuit 2	108	227	110	258	112	295	114	338	115	387	117	442
	116	231	118	262	120	300	122	344	124	394	126	451
	133	239	135	273	138	313	140	359	142	411	145	469
	150	250	153	285	156	327	159	375	161	430	164	490
Circuit 3	90	216	92	252	94	292	96	336	97	385	99	438
	97	219	100	255	102	295	104	339	105	388	107	441
	112	224	115	260	117	300	120	345	122	395	124	449
	127	229	131	265	134	306	137	352	140	401	143	456
Circuit 4	88	221	89	257	91	298	92	343	93	393	95	448
	95	223	97	260	98	301	100	347	102	397	103	452
	110	229	112	266	115	308	117	353	119	404	121	459
	126	234	129	272	132	314	135	360	137	411	140	467


LGM/LCM240 - Reheat - Circuit 1 - 581218-01
OD Temp (°F)
Liq. Temp. (F)
130
120
110
100
90
80
70
60
115
105
95
85
75
65
100
110
120
130
140
150
160
170
180
Suction Press. (psig)


LGM/LCM240 - Reheat - Circuit 2 - 581218-01
OD Temp (°F)
Liq. Temp. (F)
130
120
110
100
90
80
70
60
115
105
95
85
75
65
100
110
120
130
140
150
160
170
180
Suction Press. (psig)


LGM/LCM240 - Reheat - Circuit 3 - 581218-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
130
120
110
100
90
80
70
60
85
95
105
115
125
135
145
Suction Press. (psig)

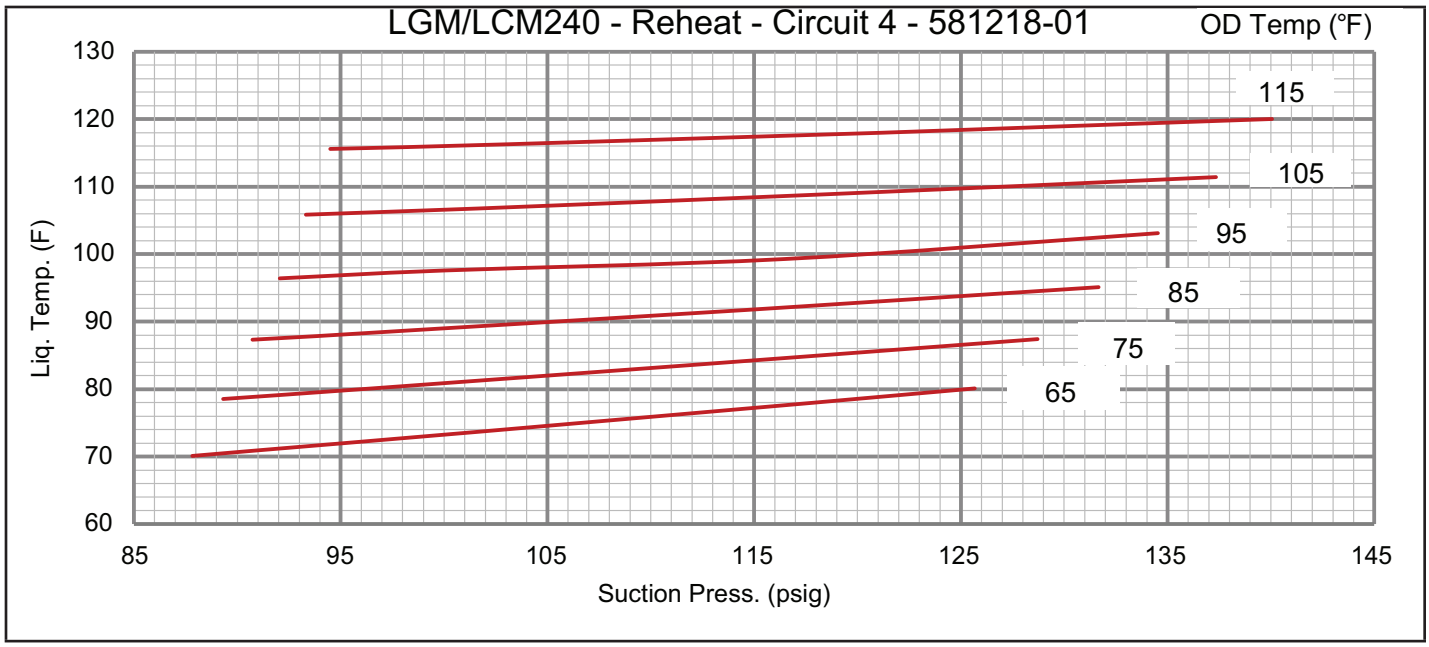
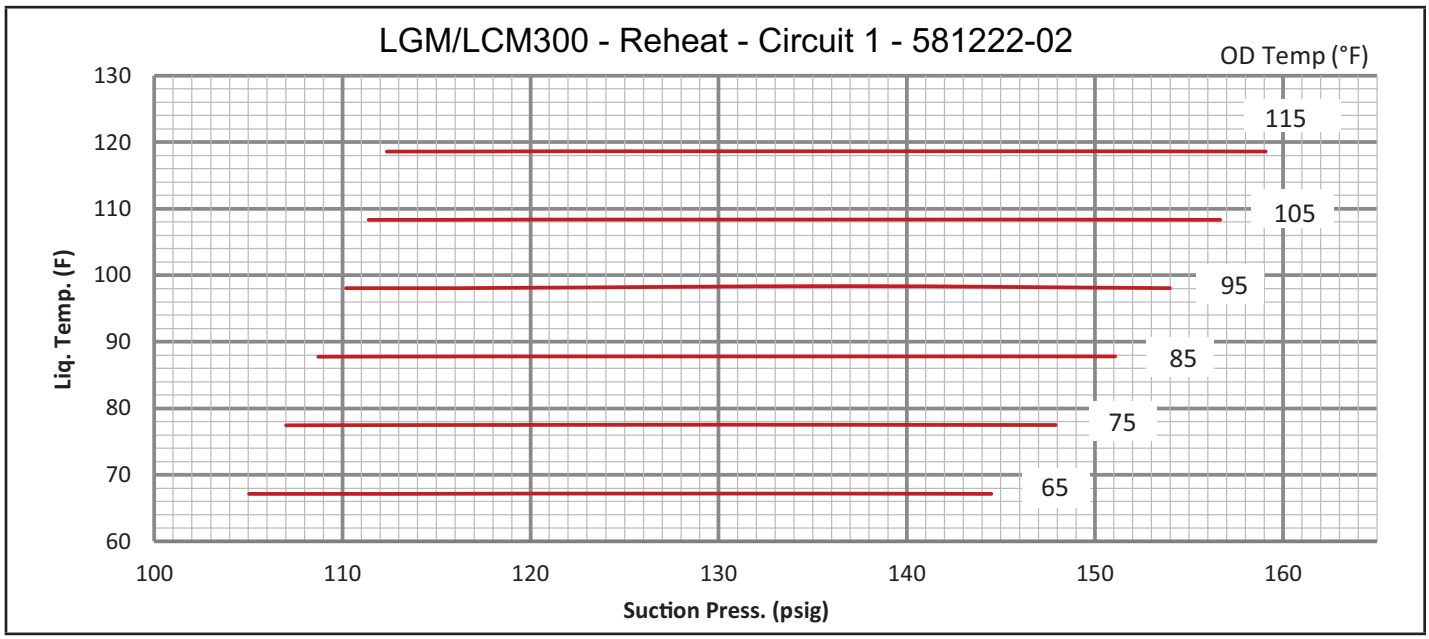
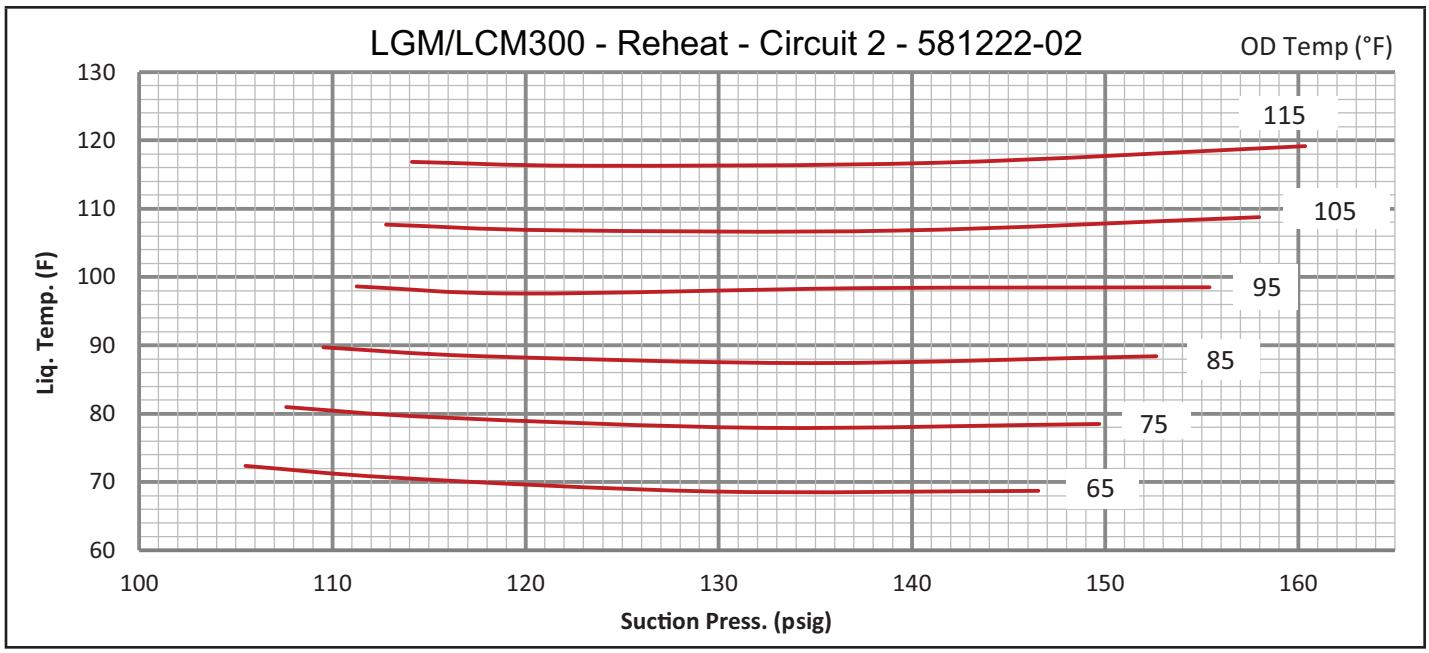
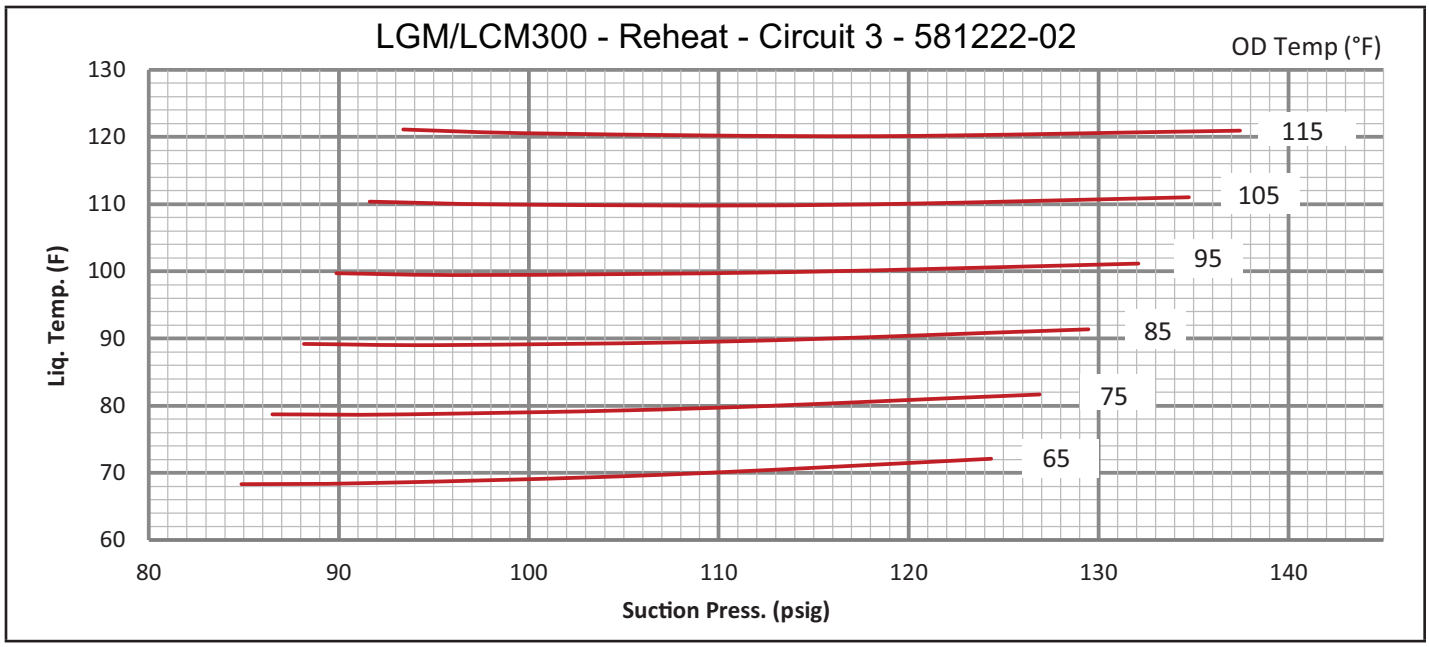
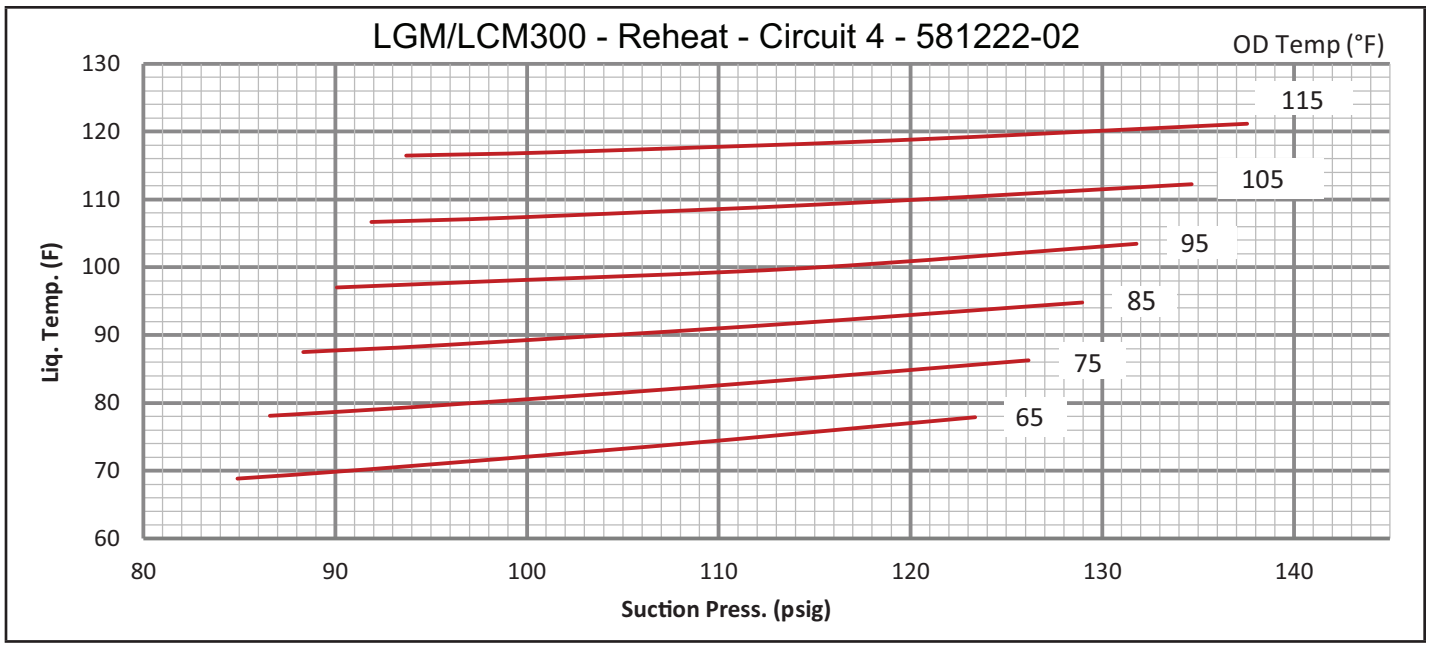

LGM/LCM240 - Reheat - Circuit 4 - 581218-01
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
130
120
110
100
90
80
70
60
85
95
105
115
125
135
145
Suction Press. (psig)

TABLE 21												
LGM/LCM300 All-Aluminum OD Coil, Reheat, Normal Operating Pressures- 581221-02												
	Outdoor Coil Entering Air Temperature											
	65°F		75°F		85°F		95°F		105°F		115°F	
	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
Circuit 1	105	219	107	252	109	291	110	336	111	386	112	442
	113	222	115	255	117	295	119	340	120	390	122	447
	128	229	131	264	134	304	137	347	138	401	140	459
	145	240	148	276	151	317	154	363	157	416	159	474
Circuit 2	106	237	108	270	110	309	111	356	113	411	114	473
	113	245	116	278	118	319	120	368	121	424	123	488
	130	258	132	294	135	338	137	383	139	448	141	514
	147	267	150	306	153	353	155	407	158	469	160	538
Circuit 3	85	239	87	280	88	332	90	395	92	468	93	552
	92	240	94	279	95	329	97	389	99	459	101	540
	107	249	109	283	111	327	114	388	116	447	118	523
	124	267	127	296	129	335	132	385	135	445	137	515
Circuit 4	85	240	87	280	88	328	90	381	92	442	94	509
	92	243	94	283	96	329	98	382	100	442	102	509
	107	253	109	291	112	336	115	391	116	445	119	510
	123	266	126	303	129	346	132	396	135	453	138	516




LGM/LCM300 - Reheat - Circuit 2 - 581222-02
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
130
120
110
100
90
80
70
60
100
110
120
130
140
150
160
Suction Press. (psig)


LGM/LCM300 - Reheat - Circuit 3 - 581222-02
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
130
120
110
100
90
80
70
60
80
90
100
110
120
130
140
Suction Press. (psig)


LGM/LCM300 - Reheat - Circuit 4 - 581222-02
OD Temp (°F)
115
105
95
85
75
65
Liq. Temp. (F)
130
120
110
100
90
80
70
60
80
90
100
110
120
130
140
Suction Press. (psig)

IV-STARTUP - OPERATION

Refer to startup directions and to the unit wiring diagram when servicing. See unit nameplate for minimum circuit ampacity and maximum fuse size.

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 control box cover.

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. Voltage must be within the range listed on the nameplate. If not, consult 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.

6 - Inspect and adjust blower belt (see section on Blower Compartment - Blower Belt Adjustment).

B-Cooling Startup See FIGURE 7 for unit refrigerant circuits

NOTE-*Crankcase heaters must be energized 24 hours before attempting to start compressor. Set thermostat so that there is no demand to prevent compressor from cycling.*

Apply power to unit.

1 - Initiate first and second stage cooling demands according to instructions provided with thermostat.

2 - First-stage thermostat demand will energize indoor blower in Low Cooling CFM. Second-stage thermostat demand will energize indoor blower in High Cooling CFM. Both demands energize compressor 1 (variable speed compressor). The remaining compressors will be energized to modulate the discharge air temperature.

3 - *156, 180-*

Units contain three refrigerant circuits or systems.

210, 240, 300 -

Units contain four refrigerant circuits or systems.

4 - Each refrigerant circuit is separately charged with R454B refrigerant. See unit rating plate for correct amount of charge.

5 - Refer to the Refrigerant Check and Charge section to check refrigerant charge.

C-Heating Startup

FOR YOUR SAFETY READ BEFORE LIGHTING

⚠ WARNING

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

⚠ WARNING

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.

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.

Use only your hand to push in or turn the gas control knob. Never use tools. If 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.

⚠ WARNING

This unit is equipped with an automatic spark ignition system. Do not attempt to light manually.

In case of a safety shutdown, move thermostat switch to **OFF** and return the thermostat switch to **HEAT** to reset ignition control.

Placing Furnace In Operation

Gas Valve Operation for Honeywell VR8205Q/VR8305Q (FIGURE 34)

1 - Set thermostat to lowest setting.

2 - Turn off all electrical power to appliance.

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

4 - Open or remove the heat section access panel

5 - Turn the knob on the gas valve clockwise to **“OFF”**. Do not force.

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.

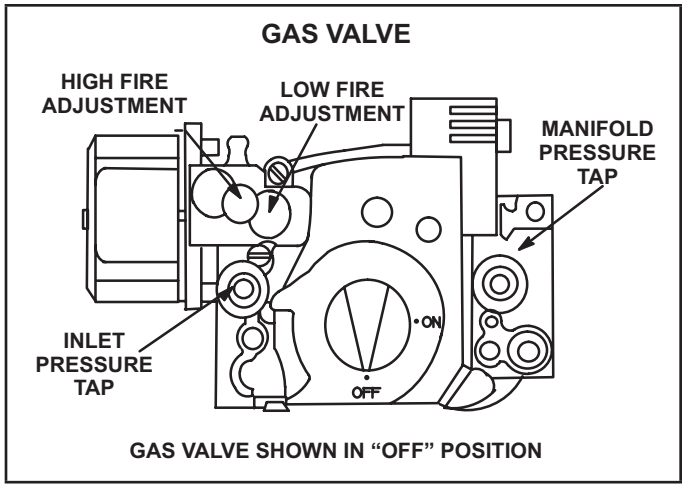


FIGURE 34

7 - Turn the knob on the gas valve counterclockwise to **"ON"**. Do not force.

8 - Close or replace the heat section access panel.

9 - Turn on all electrical power to appliance.

10 - Set thermostat to desired setting.

11 - The combustion air inducer will start. The burners will light within 40 seconds.

12 - If the appliance 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 Appliance

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 heat section access panel.

4 - Turn the knob on the gas valve clockwise to **"OFF"**. Do not force.

D-Safety or Emergency Shutdown

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

V- SYSTEMS SERVICE CHECKS

A-Heating System Service Checks

All LGM units are ETL/CSA design certified without modification.

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

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 emergency 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 35.

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. It is available through under part number 31B2001. See CORP 8411-L10, for further details.

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

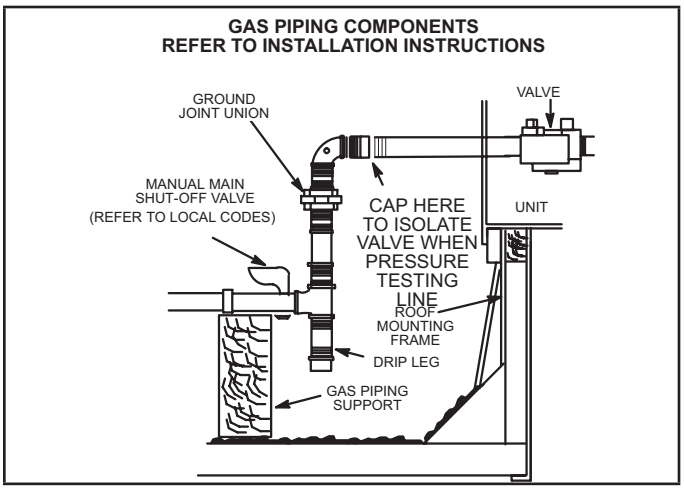


FIGURE 35

3-Testing Gas Supply Pressure

When testing gas supply pressure, connect test gauge to the inlet pressure tap located on unit gas valve GV1 and or GV3. 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 "underfire." High pressure can result in permanent damage to the gas valve or "overfire." See TABLE 22 for supply pressures.

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 and or GV3. See FIGURE 34 for location of pressure tap on the gas valve.

The manifold pressure is factory set and should not require adjustment. If manifold pressure is incorrect and no other source of improper manifold pressure can be found, the valve must be replaced. See FIGURE 34 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 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 22.

⚠ CAUTION

Disconnect heating demand as soon as an accurate reading has been obtained.

TABLE 22

Manifold Pressure "W.C.				Supply Pressure "W.C.	
Natural		LP/Propane		Natural	Propane
Low	High	Low	High	4.7-10.5	10.8-13.5
1.6± 0.2	3.7±0.3	5.5± 0.3	10.5± 0.5		

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

To check for proper gas flow to burners, determine Btuh input from unit rating plate or the gas heating capacity in the SPECIFICATIONS tables. Divide this input rating by the Btuh per cubic foot of available gas. Result is the number of cubic feet per hour required. Determine the flow of gas through gas meter for two minutes and multiply by 30 to get hourly flow of gas to the burners.

5-Proper Gas Flow

To check for proper gas flow to burners, determine Btuh input from unit rating plate or the gas heating capacity in the SPECIFICATIONS tables. Divide this input rating by the Btuh per cubic foot of available gas. Result is the number of cubic feet per hour required. Determine the flow of gas through gas meter for two minutes and multiply by 30 to get hourly flow of gas to the burners.

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

6-Inshot Burner

Burners are factory set for maximum air and cannot be adjusted. Always operate unit with access panel in place. A peep hole is furnished in the heating access panel for flame viewing. Natural gas should burn basically blue with some clear streaks. L.P. gas should burn mostly blue with some clear yellow streaks.

FIGURE 36 shows how to remove burner assembly.

1 - Turn off power to unit and shut off gas supply.

2 - Remove screws holding the burner support cap.

3 - Slide each burner off its orifice.

4 - Clean and reassemble (reverse steps 1-3).

5 - Be sure to secure all wires and check plumbing.

6 - Turn on power to unit. Follow lighting instructions attached to unit and operate unit in heating mode. Check burner flames. They should be blue with yellow streaks.

7-Spark Electrode Gap

The spark electrode assembly can be removed for inspection by removing two screws 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 36.

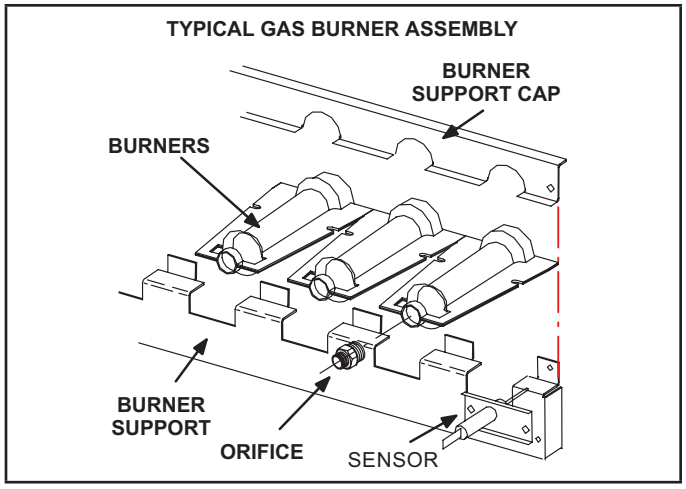


FIGURE 36

8-Heat Exchanger

To Access or Remove Heat Exchanger From Unit:

1 - 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 and flue box. 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.

9-Flame Sensing

Flame current is an electrical current which pas es 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 on the following page:

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, compare reading to TABLE 23. Do not bend electrodes.
5 - Disconnect power to unit before disconnecting meter.Make sure sensor wire is securely reconnected before reconnecting power to unit

TABLE 23

Manufacturer	Nominal Signal Microamps	Drop Out
UTEC	0.5 - 1.0	0.09

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

10-Combustion Air Inducer

The combustion air inducer is factory set and is not field adjustable. However, operation should be monitored to ensure proper operation. The combustion air inducer is used to draw fresh air into the combustion chamber while simultaneously expelling exhaust gases. The inducer operates throughout the heating cycle.

On a heating demand, the ignition control is energized by the A55 Unit Controller. The ignition control then allows 30 to 40 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 is closing 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 first stage operator of the gas valve (low fire), the spark and the flame sensing electrode. Sparking stops immediately after flame is sensed.

B-Cooling System Service Checks

LGM units are factory charged and require no further adjustment, however, charge should be checked periodically. See section III.

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.

⚠ WARNING

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

Prior to beginning work on systems containing refigerant to ensure the risk of ignition is minimized:

- All work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i. e. non-sparking, adequately sealed or intrinsically safe.
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, the appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
- No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.

A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

- Where electrical components are being changed, service technicians shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance. The following checks shall be applied to installations using flameable refrigerants as applicable:

1 - The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.

2 - The ventilation machinery and outlets are operating adequately and are not obstructed.

3 - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.

4 - Markings on the equipment should be visible and legible. Markings and signs that are illegible shall be corrected.

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

- For systems containing refigerant all repair and maintenance to electrical components shall include initial safety checks and component inspection procedures such as that capacitors are discharged in a safe manner to avoid possibility of sparking, that no live electrical components and wiring are exposed while charging, recovering, or purging the system, and that there is continuity of earth bonding. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used that is reported to the owner of the equipment, so all parties are advised.

  NOTE - *Sealed electrical components shall be replaced, not repaired.*

  NOTE - *Intrinsically safe components must be replaced, not repaired.*

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

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

  a. Safely remove refrigerant following local and national regulations,

  b. Evacuate the circuit,

  c. Purge the circuit with inert gas,

  d. Evacuate,

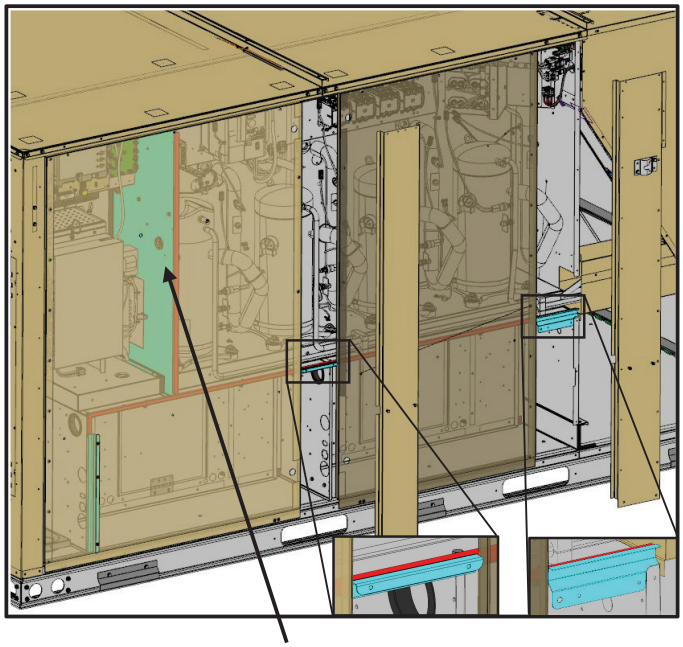
  e. Purge with inert gas,

  f. Open the circuit.

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

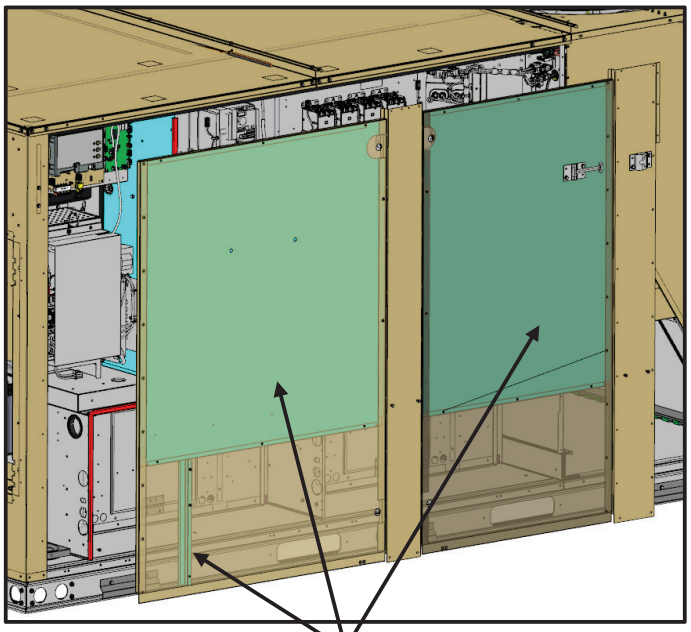
Critical Components for Refrigerant Leak Containment

All Units



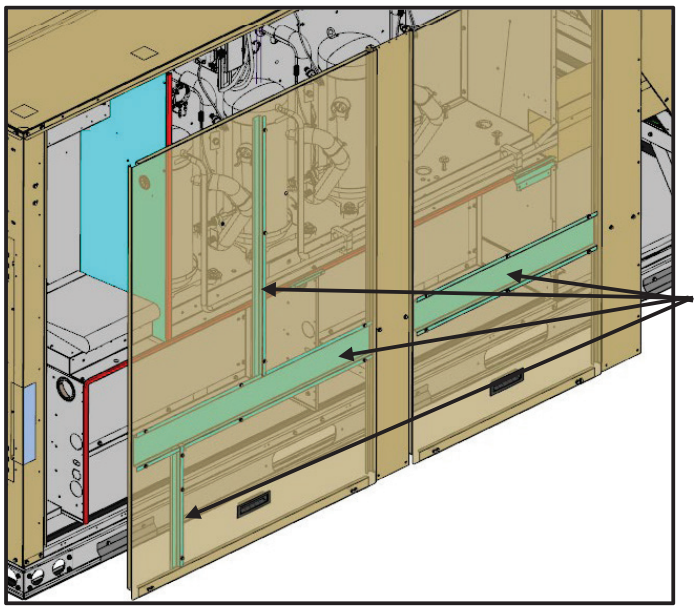
If the door panels, barrier, mullions and rubber seals (highlighted in red) must be removed for service, ensure they are returned to their proper places before starting the unit. Verify that the rubber seals on the barrier and the compressor base panel are properly aligned and tightly secured. Verify that the brackets behind the mullions are secured.

Hinged Door Panels



Verify that the door panel liners and bracket are tightly secured. These steps are critical to containing flammable refrigerant and preventing it from migrating to sources of ignition in the event of a leak.

Non-hinged Door Panels



Verify that the door panel brackets are tightly secured. This is critical to containing flammable refrigerant and preventing it from migrating to sources of ignition in the event of a leak.

A-Filters

LGM units use six 24 X 24 X 2” fiberglass throw-away type filters. Filters may be accessed through the economizer / filter access door. Filters should be checked monthly (or more frequently in severe use) and cleaned or replaced regularly. Take note of the “AIR FLOW DIRECTION” marking on the filter frame when re-installing.

B-Lubrication

All motors and blower wheels used in LGM units are lubricated; no further lubrication is required.

C-Supply Air 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.

D-Evaporator Coil

Inspect and clean coil at beginning of each season. Clean using mild detergent or commercial coil cleanser. Check condensate drain pan and line, if necessary. Flush coil and condensate drain with water taking care not to get insulation, filters and return air ducts wet. Check connecting lines and coil for evidence of oil and refrigerant leaks.

E-Condenser Coil

Clean condenser coil annually with detergent or commercial coil cleaner and inspect monthly during the cooling season. Check connecting lines and coil for evidence of oil and refrigerant leaks.

F-Electrical

1 - Check all wiring for loose connections.

2 - Check for correct voltage at unit (unit operating).

3 - Check amp-draw on both condenser fan motor and blower motor.

Fan Motor Rating Plate ____ Actual _____

Indoor Blower Motor Rating Plate____ Actual____

Clean condenser coil annually with detergent or commercial coil cleaner and inspect monthly during the cooling season. Check connecting lines and coil for evidence of oil and refrigerant leaks.

NOTE-If owner complains of insufficient cooling, the units refrigerant charge should be checked. See section III.

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-Roof Curbs

When installing the LGM units on a combustible surface for downflow discharge applications, the hybrid C1CURB70C-1 8-in height, C1CURB71C-1 14-in height, C1CURB72C-01 18-in height and C1CURB73C-1 24-in roof mounting frame is used. The assembled hybribd mounting frame is shown in FIGURE 37. 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 38. Refer to the roof mounting frame installation instructions for proper plenum construction and attachment. For horizontal discharge applications, use the standard C1URB14C-1 26-in or C1CURB16C-1 37-in height roof mounting frame. This frame converts unit from down-flow to horizontal air flow. The 37 inch horizontal frame meets National Roofing Code requirements. 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.

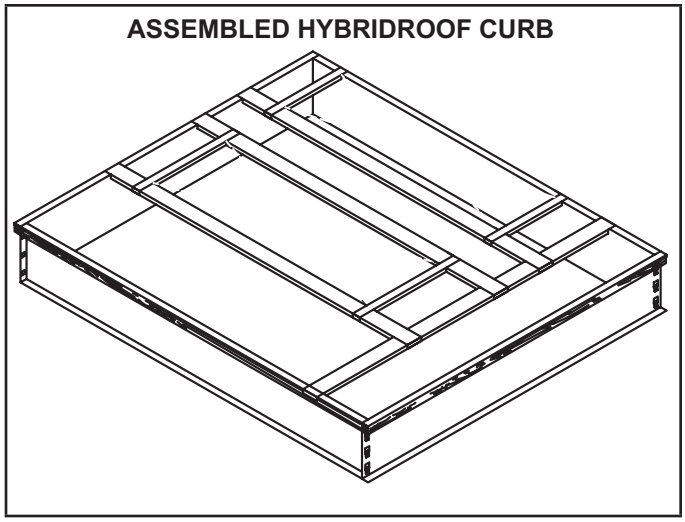


FIGURE 37

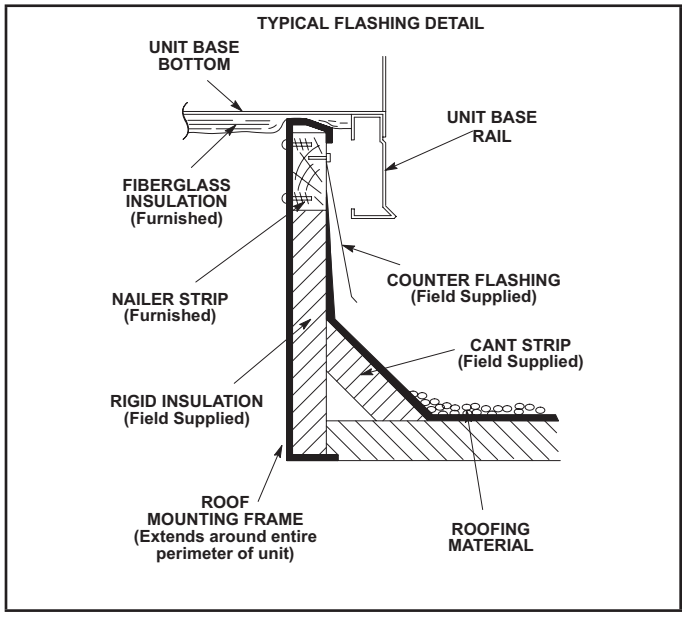


FIGURE 38

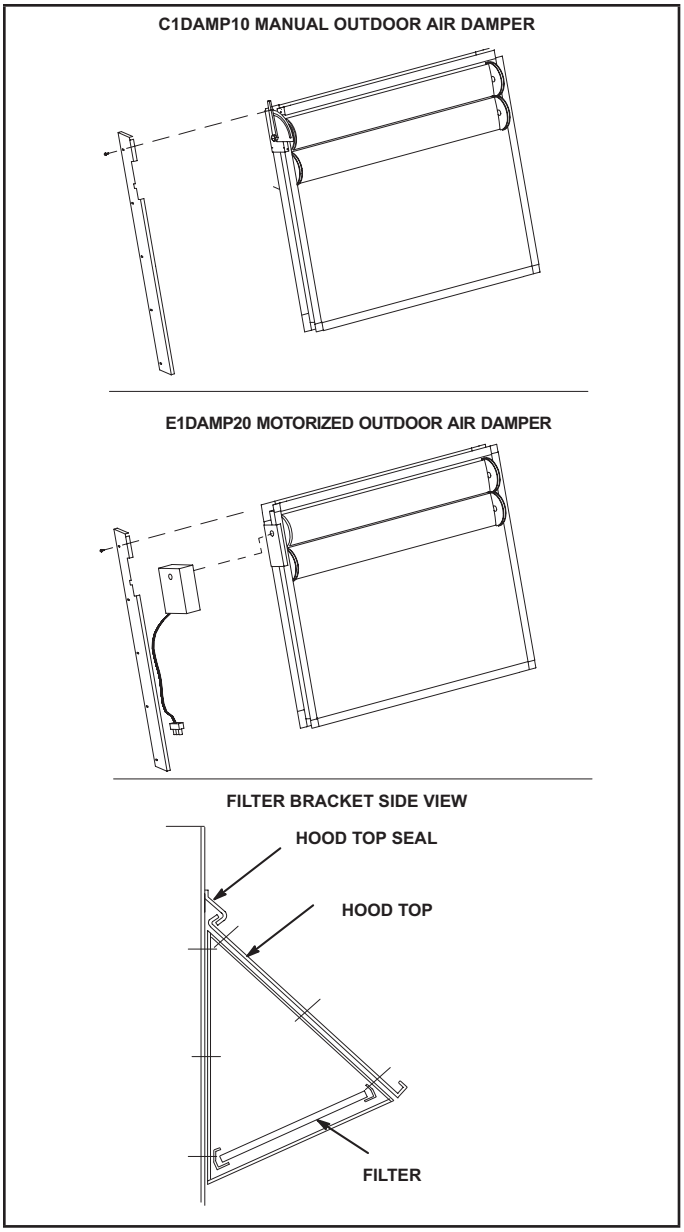


FIGURE 39

B-Transitions

Optional supply/return transitions C1DIFF33C-1 and C1DIFF34C-1 are available for use with LGM series units utilizing optional C1CURB roof curbs. Transition must be installed in the roof curb before mounting the unit to the frame. Refer to the manufacturer's instructions included with the transition for detailed installation procedures.

C-C1DAMP10 & E1DAMP20 Outdoor Air Dampers

C1DAMP10C and E1DAMP20C (FIGURE 39) consist of a set of dampers which may be manually or motor operated to allow up to 25 percent outside air into the system at all times. Either air damper can be installed in LGM units. 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 reinstallation. Filter Handicoater is R.P. Products coating no. 418 and is available as Part No. P-8-5069.

D-Supply and Return Diffusers

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

E-E1ECON15C-2 Standard and E1ECON17C-1

High Performance Economizer (Field or Factory nstalled)

The optional economizer can be used with downflow and horizontal air discharge applications. The economizer uses outdoor air for free cooling when temperature and/or humidity is suitable. An economizer hood is furnished with the economizer.

The economizer is controlled by the A55 Unit Controller. The economizer will operate in one of four modes. Each mode requires a different A55 Unit Controller DIP switch setting. Each mode also requires different sensors.

The following is a brief description. See economizer installation instruction for more detail.

1-"TMP" MODE (SENSIBLE TEMPERATURE)

In the "TMP" mode, the IMC uses input from the factory installed RT6 Supply Air Sensor, RT16 Return Air Sensor and RT17 Outdoor Air Sensor to determine suitability of outside air and economizer damper operation. When outdoor sensible temperature is less than return air sensible temperature, outdoor air is used for cooling. This may be supplemented by mechanical cooling to meet comfort demands. This application does not require additional optional sensors.

2-"ODE" MODE (OUTDOOR ENTHALPY)

The "ODE" or outdoor enthalpy mode requires a field-provided and -installed Honeywell C7400 enthalpy sensor (16K96). The sensor monitors outdoor air temperature and humidity (enthalpy). When outdoor air enthalpy is below the enthalpy control setpoint, the economizer modulates to allow outdoor air for free cooling.

3-"DIF" MODE (DIFFERENTIAL ENTHALPY)

The "DIF" or differential enthalpy mode requires two field-provided and -installed Honeywell C7400 enthalpy sensors (16K97). One sensor is installed in the outside air opening and the other sensor is installed in the return air opening. When the outdoor air enthalpy is below the return air enthalpy, the economizer opens to bring in outdoor air for free cooling.

4-"GLO" MODE (GLOBAL)

Global Mode - The "GLO" or global mode is used with an energy management system which includes a global control feature. Global control is used when multiple units (in one location) respond to a single outdoor air sensor. Each energy management system uses a specific type of outdoor sensor which is installed and wired by the controls contractor. Motorized Outdoor Air Damper - The "GLO" mode is also used when a motorized outdoor air damper is installed in the system.

Motorized Outdoor Air Damper - The "GLO" mode is also used when a motorized outdoor air damper is installed in the system.

NOTE - *All economizer modes of operation will modulate dampers to 55F (13C) supply air.*

F-Gravity Exhaust Dampers

C1DAMP50C dampers (FIGURE 40) are used in downflow and LAGEDH are used in horizontal air discharge applications. LAGEDH gravity exhaust dampers are installed in the return air plenum . The dampers must be used any time an economizer or power exhaust fans are applied to LGM series units. An exhaust hood is furnished with the gravity exhaust damper.

Gravity exhaust dampers allow exhaust air to be discharged from the system when an economizer and/or power exhaust is operating. Gravity exhaust dampers also prevent outdoor air infiltration during unit off cycle. See installation instructions for more detail.

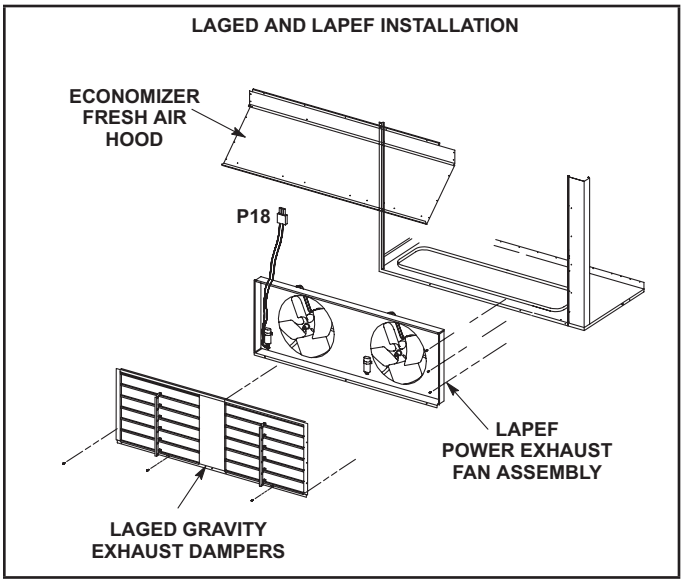


FIGURE 40

G-C1PWRE10 Power Exhaust Fans

C1PWRE10 power exhaust fans are used in downflow applications only. C1PWRE10 fans require optional downflow gravity exhaust dampers and E1ECON15 economizers. Power exhaust fans provide exhaust air pressure relief and also run when return air dampers are closed and supply air blowers are operating. FIGURE 40 shows the location of the power exhaust fans. See installation instructions for more detail.

NOTE - *Gravity exhaust dampers are required with power exhaust.*

H-Optional Cold Weather Kit (Canada only)

Electric heater is available to automatically control the minimum temperature in the gas burner compartment. Heater is C.G.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 (line voltage).

2 - A thermostat mounting box is installed on the vestibule of the heating 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 K125 coil. When the temperature rises above 20° F (-7° C) the switch opens and the electric heater is de-energized through K125. 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 K125 coil. When temperature drops below 20° F (-7° C) the switch closes and electric heater is energized through K125. The switch automatically opens when heating compartment temperature reaches 76° F (24° C).

N-Indoor Air Quality (CO2) Sensor A63

The indoor air quality sensor monitors CO2 levels and reports the levels to the A55 Unit Controller. The board 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. Wiring for the indoor air quality switch is shown on the temperature control section (C) wiring diagram in back of this manual.

O-Optional UVC Lights

The Healthy Climate® 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.

P-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.C. overflow switch is connected to the M2 Unit Controller (A55) through DI-3. When the switch opens, the Unit Controller will shut off the unit. After a five-minute time out, the Unit Controller will verify the overflow switch position and restart the unit (if the switch has closed). The Unit Controller has a three-strike counter before the unit locks out. This means the Unit Controller will allow the overflow switch to open three times per thermostat demand. If the unit locks out, a reset of the Unit Controller is required after the switch has closed to restore unit operation.

VIII-Factory-Installed Hot Gas Re-Heat

General

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 valves, L14 and L30, route 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 41 and FIGURE 42 for reheat and normal cooling refrigerant routing.

L14 and L30 Reheat Coil Solenoid Valves

When Unit Controller (P298-5 or J299-8) indicates room conditions require dehumidification, reheat valves L14 and L30 are energized (Unit Controller J394-1 or J394-3) 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.

A91 Humidity Sensor

Relative humidity should correspond to the sensor (A91) output voltage listed in TABLE 24. For example: if indoor air relative humidity is 80% + 3%, the humidity sensor output should read 8.00VDC. Check the sensor output annually for accuracy. Keep the air intake openings on the sensor clean and free of obstructions and debris.

Check-Out

Test hot gas 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 (the QR is located in the control area) menu path to select:

TABLE 24

Relative Humidity (%RH ± 3%)	Sensor Output (VDC)
20	2.00
30	3.00
40	4.00
50	5.00
60	6.00
70	7.00
80	8.00
90	9.00

SERVICE > TEST > DEHUMIDIFIER

The blower, compressor 1 and compressor 2 (reheat) should be operating. Reheat mode will appear on the mobile service app display.

4 - Deselect:

SERVICE > TEST > DEHUMIDIFIER

Compressor 1 and 2 (reheat) should de-energize, blower should still be energized.

Default Reheat Operation

Reheat will operate as shown in TABLE 25 once this condition is met:

1 - System must NOT be operating in heating mode.

IMPORTANT - Free cooling does not operate during reheat.

For other reheat control options, refer to the Unit Controller manual.

Additional Cooling Stages

Units are shipped from the factory to provide two stages of cooling. Compressors are not de-energized when unit operation changes from cooling to reheat or from reheat to cooling. Instead, L14 and L30 reheat valves are energized (reheat) or de-energized (cooling).

NOTE - *Another thermostat staging option is available which allows both compressors to be energized during free cooling. See Unit Controller manual for details.*

REFRIGERANT SCHEMATIC (156 AND 180 MODELS)

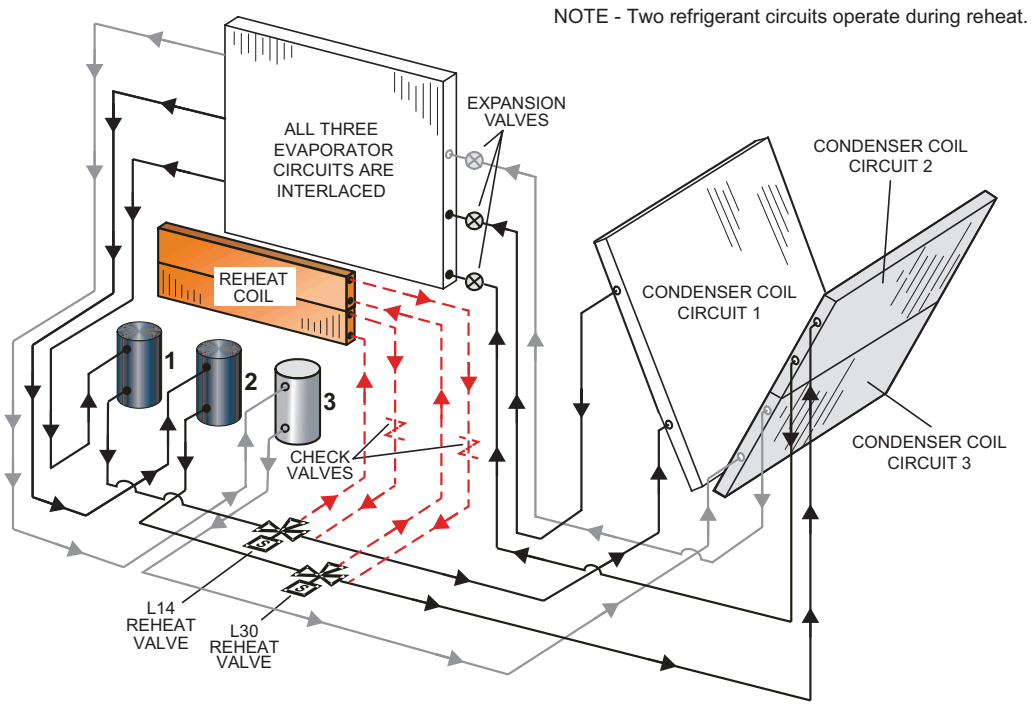


FIGURE 41

REFRIGERANT SCHEMATIC (210, 240 and 300 MODELS ONLY)

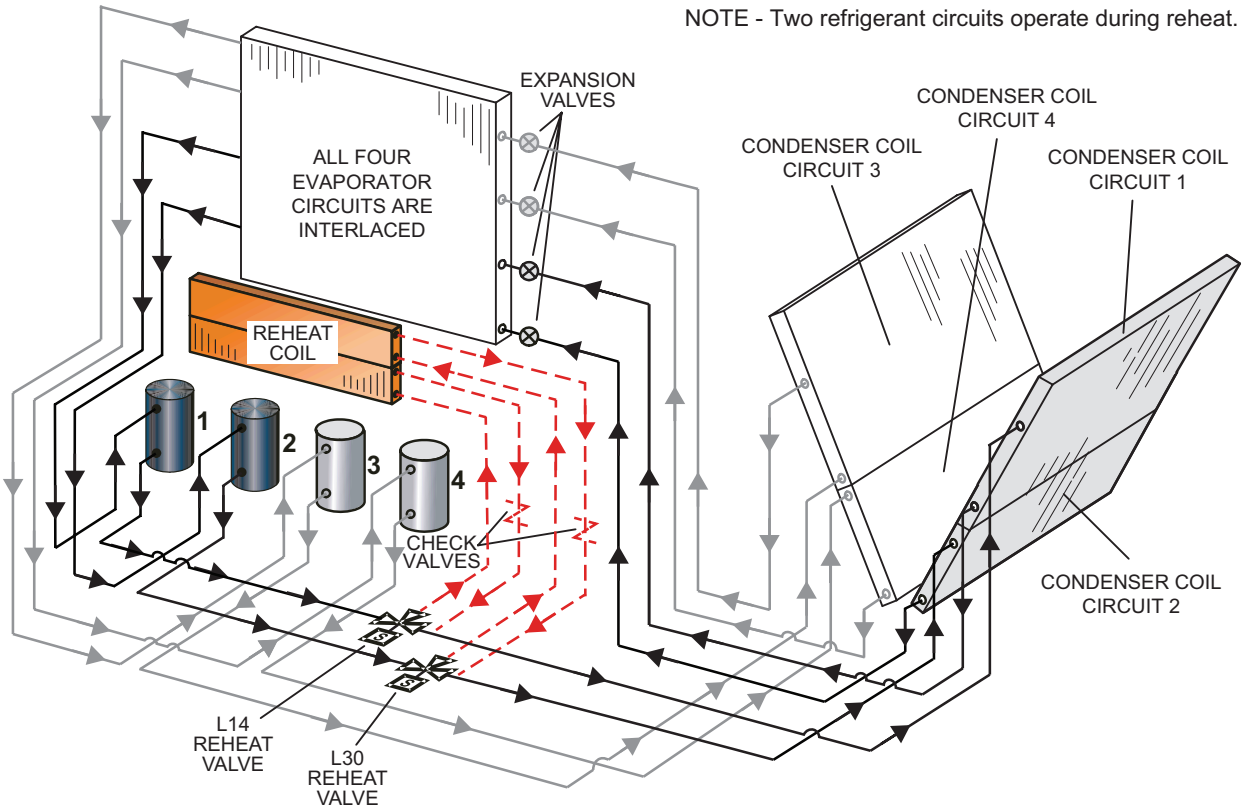


FIGURE 42

TABLE 25

REHEAT OPERATION

Thermostat Mode With 24V Humidistat	
Humidity Demands	Operation
24V Demand for Dehumidification only	• Compressor 1 reheat on • Compressor 1 operates at 100% • Reheat valve is energized • Remaining compressors are off • Blower and outdoor fans modulate to maintain indoor coil and discharge air temperatures
24V Demand for Dehumidification only is still present after Five Minutes	• Compressor 1 & 2 reheat on • Compressor 1 operates at 100% • Reheat valves are energized • Remaining compressor(s) is/are off • Blower and outdoor fans modulate to maintain indoor coil and discharge air temperatures
Thermostat Mode with Zone Relative Humidity (RH) Sensor	
Zone humidity is greater than Setpoint +2%	• Compressor 1 reheat on • Compressor 1 modulates to maintain zone RH • Reheat valve is energized • Remaining compressors are off • Blower and outdoor fans modulate to maintain indoor coil and discharge air temperatures
Zone humidity is greater than Setpoint +2% OR Zone humidity is greater than Setpoint for 5 minutes	• Compressor 1 & 2 reheat on • Compressor 1 modulates to maintain zone RH • Reheat valves are energized • Remaining compressor(s) is/are off • Blower and outdoor fans modulate to maintain indoor coil and discharge air temperatures

IX--Multi-Staged Blower

TABLE 26
Blower CFM Design Specifications

Unit	T'Stat or Zone Control Stages	Blower Speed	Design Specified CFM
156	2	Htg.	
		Clg. High	
		Clg. Low	
		Ventilation	
180	2	Htg.	
		Clg. High	
		Clg. Low	
		Ventilation	
210	2	Htg.	
		Clg. High	
		Clg. Low	
		Ventilation	
240	2	Htg.	
		Clg. High	
		Clg. Low	
		Ventilation	
300	2	Htg.	
		Clg. High	
		Clg. Low	
		Ventilation	

*Available blower speeds vary by unit and thermostat stages.

A-Design Specifications

Use TABLE 26 to fill in test and balance values when setting up the unit. If only high and low cooling design specifications are provided, set the medium cooling CFM at the high or low cooling design spec or any CFM between.

B-Set Maximum CFM

Use attached table to determine highest blower CFM for appropriate unit. Adjust the blower pulley to deliver that amount of CFM with only the blower operating. See D termining Unit CFM in the Blower Operation and Adjustment section.

C-Set Blower Speeds

1 - 1. Use the following mobile service app menu to enter the blower design specified CFM into the Unit Controller. Make sure blower CFM is within limitations shown in TABLE 27 or TABLE 28. Refer to the Unit Controller manual provided with unit.

RTU MENU > RTU OPTIONS > BLOWER > SPEED

2 - Enter the following design specifications as shown in TABLE 26.

Blower / Heat CFM

Cooling High CFM

Cooling Low CFM

Vent CFM

3 - Adjust the blower RPM to deliver the target CFM based on the measured static pressure using the blower table.

4 - Measure the static pressure again and apply the static pressure and RPM to the blower tables to determine adjusted CFM.

5 - Repeat adjustments until design CFM is reached.

D-Set Damper Minimum Position

To maintain required minimum ventilation air volumes when the unit is in the occupied mode, two minimum damper positions must be set.

The Unit Controller will open the damper to "Min OCP Blwr High" when blower CFM is at or ABOVE the "midpoint" CFM.

The Unit Controller will open the dampers to "Min OCP Blwr Low" when blower CFM is BELOW a "midpoint" CFM.

The Unit Controller will calculate the "midpoint" CFM.

*Available blower speeds vary by unit and thermostat stages.

Set Minimum Position 1

Use the following mobile service app menu to set "Min OCP Blwr High" for the blower CFM above the "midpoint" CFM. When navigating into this menu, the Unit Controller will run damper calibration and allow damper position adjustment.*RTU MENU > SETTINGS > RTU OPTIONS > DAMPER*

Tap "Next" to skip tabs and complete damper position calibration until "Damper Calibration Blower Speed High" tab appears.

Measure the intake air CFM. If the CFM is lower than the design specified CFM for ventilation air, use the Unit Controller to increase the damper percent open. If the CFM is higher than specified, decrease the damper percent open.

NOTE - *Intake air CFM can also be determined using the outdoor air temperature, return air temperature and mixed air temperature. Refer to the economizer or outdoor air damper installation instructions.*

Set Minimum Position 2

Use the following mobile service app menu in the Unit Controller to set "Min OCP Blwr Low" for the blower CFM below the "midpoint" CFM. When navigating into this menu, the Unit Controller will run damper calibration and allow damper position adjustment.

RTU MENU > SETTINGS > RTU OPTIONS > DAMPER

Tap "Next" to skip tabs and complete damper position calibration until "Damper Calibration Blower Speed High" tab appears.Measure the intake air CFM. If the CFM is lower than the design specified CFM for ventilation air, use the Unit Controller to increase the damper percent open. If the CFM is higher than specified, decrease the damper percent open.

Note - *Intake air CFM can also be determined using the outdoor air temperature, return air temperature and mixed air temperature. Refer to the economizer or outdoor air damper installation instructions.*

E-Inverter Bypass Option

The supply air inverter is factory-set to by-pass the inverter manually. To by-pass the inverter and operate the blower in the constant air volume mode, use the following Unit Controller menu and set to “engaged”:

SETTINGS > RTU OPTIONS > BLOWER > VFD BYPASS

To configure the unit to by-pass the inverter automatically, use the following Unit Controller menu.

SETUP > INSTALL

Press SAVE until the menu reads:

CONFIGURATION ID 1

Change the 6th character position to A for automatic by-pass option.

Press SAVE

Caution - *Units not equipped with an inverter will have the 6th character set to N, indicating the inverter is not by-passed. The blower motor could be damaged and/or result in product or property damage if the setting is changed to automatic or manual.*

TABLE 27

HEATING, VENTILATION & SMOKE MINIMUM AND MAXIMUM CFM

Unit			Heating CFM			Vent CFM			Smoke CFM		
Model	Speed	Heat Code	Min	Default	Max	Min	Default	Max	Min	Default	Max
LGM156U	Low, Std, Med	L, S, M	4500	5200	6250	800	1150	*	1950	5200	6250
LGM180U	Low, Std, Med	L, S, M	4500	6000	7200	800	1325	*	2250	6000	7200
LGM180U	High	H	5125								
LGM210U	Low, Std, Med	L, S, M	4500	7000	8400	800	1550	*	2625	7000	8400
LGM210U	High	H	5125								
LGM240U	Low, Std, Med	L, S, M	4500	8000	9600	800	1750	*	3000	8000	9600
LGM240U	High	H	5125								
LGM300U	Low, Std, Med	L, S, M	4500	10000	12000	800	2200	*	3750	10000	12000
LGM300U	High	H	5125								
LCM156U	All	N, E, J, K, L, P	5200	5200	6250	800	1150	*	1950	5200	6250
LCM180U	All	N, E, J, K, L, P	6000	6000	7200	800	1325	*	2250	6000	7200
LCM210U	All	N, E, J, K, L, P	6000	7000	8400	800	1550	*	2625	7000	8400
LCM240U	All	N, E, J, K, L, P	6000	8000	9600	800	1750	*	3000	8000	9600
LCM300U	All	N, E, J, K, L, P	6000	10000	12000	800	2200	*	3750	10000	12000

*Use highest value between Heating and Cooling High CFM Max.

TABLE 28

COOLING MINIMUM AND MAXIMUM CFM

Model	Cooling Low CFM			Cooling High CFM		
	Default	Min	Max	Default	Min	Max
156U	1150	800	*	4550	3250	6240
180U	1325	800	*	5250	3750	7200
210U	1550	800	*	6125	4375	8400
240U	1750	800	*	7000	5000	9600
300U	2200	800	*	8750	6250	12000

*Use Cooling High CFM Max.

X-VAV System

Units contain a supply air blower equipped with a variable frequency drive A96 (VFD) which varies supply air CFM. The supply air VFD (A96) is located in the control area. See FIGURE 44.

A-Start-Up

1 - A pressure transducer (A30) is shipped in a box in the blower compartment. Install the transducer according to manufacturer's instructions.

Note - Make sure the transducer is installed in the main duct at least 2/3 of the distance away from the unit.

2 - Two twisted pairs of shielded cable must be used to connect the pressure transducer. See FIGURE 43. J/P378 connector is hanging in the control box.

3 - Open all zone dampers and/or boxes.

4 - Locate the A55 Unit Controller. Refer to FIGURE 44.

5 - Use the mobile service app to calibrate the blower CFM. Select this menu to start the blower:

SETUP > TEST & BALANCE > BLOWER

The mobile app will display the percent of blower speed. Adjust blower speed percentage to meet design airflow specifications. Allow blower speed to stabilize.

6 - Press NEXT and follow the instructions to calibrate static pressure. If the static pressure meets the design specification, press NEXT again to set the setpoint. If the static pressure does not meet the design specification, adjust the pressure and press NEXT to set the setpoint.

7 - Record new setpoints in TABLE 29.

8 - If the desired CFM cannot be met with current pulley setup, refer to the Blower Operation and Adjustments section to adjust CF.

TABLE 29

RECORD ADJUSTED SETPOINTS

Parameter	Setpoint Description	Setpoint "w.c.	Display Setting
386	Smoke		
387	Ventilation		
388	Heating		
389	Cooling		

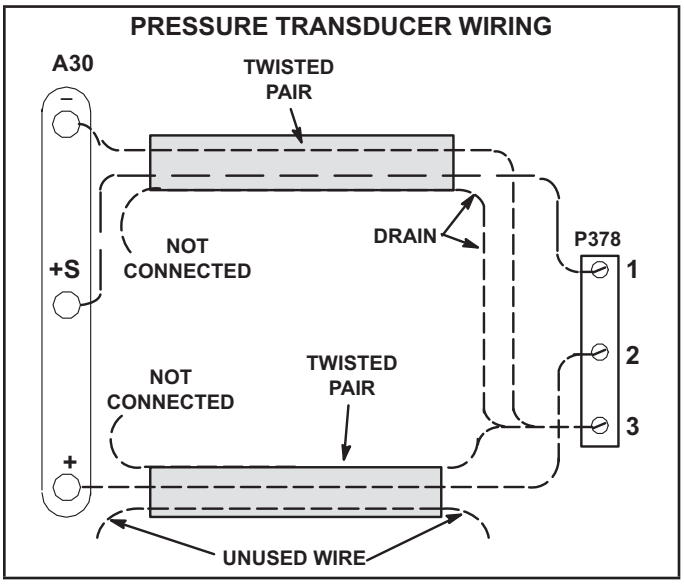


FIGURE 43

Note - *The Unit Controller will lock-out the unit for 5 minutes if static pressure exceeds 2.0"w.c. for 20 seconds. The Unit Controller will permanently shut down the unit after three occurrences. See mobile service app parameters 110, 42, and 43 to adjust default values.*

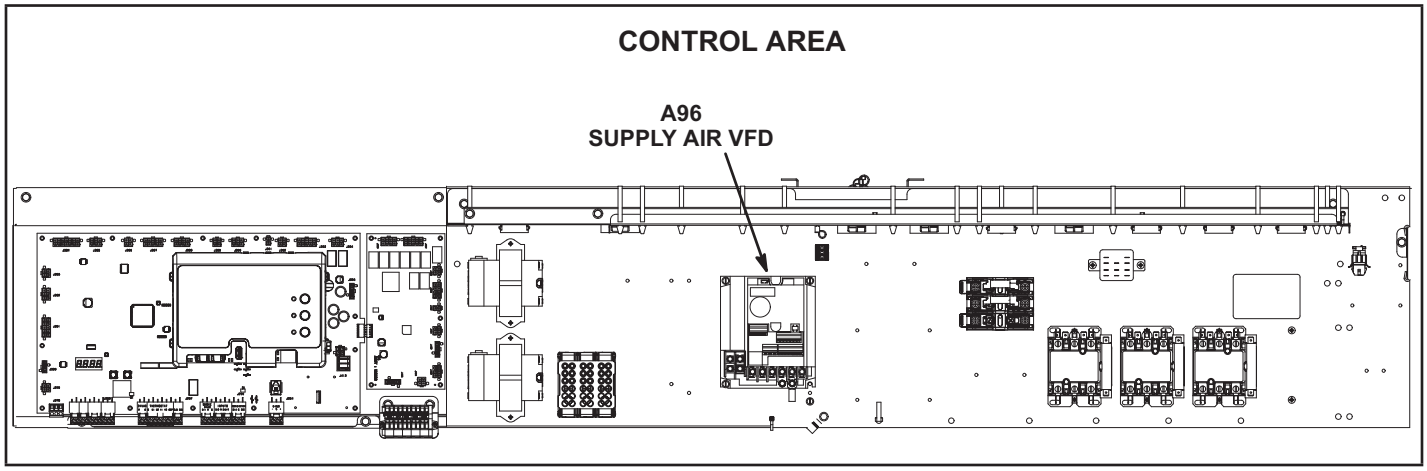


FIGURE 44

B-Unit Operation

Use the mobile app to check unit mechanical operation. See the Service - Test section of the Unit Controller manual.

C-Manual Supply Air VFD Bypass

IMPORTANT - All dampers must be open to prevent damage to duct work and dampers.

Note - *This section does not apply to units equipped with optional automatic VFD bypass. That option will automatically change from multi-stage air volume to constant air volume operation in the event of VFD failure.*

Manually change blower operation to constant air volume as follows:

1 - Disconnect all power to unit and **WAIT AT LEAST 10 MINUTES** before opening the VFD cover.

⚠ WARNING

ELECTRICAL SHOCK HAZARD.

STOP! Before you continue, make sure that power to the VFD has been off for at least 10 minutes. The capacitor in the VFD holds high voltage power for up to 10 minutes after power has been disconnected.

2 - Locate P246 and P247 connectors near the VFD. See FIGURE 45.

3 - Disconnect P246 from P246 (power in to VFD) and P247 from P247 (power out to blower). See FIGURE 46.

4 - Connect P246 to P247. See FIGURE 47.

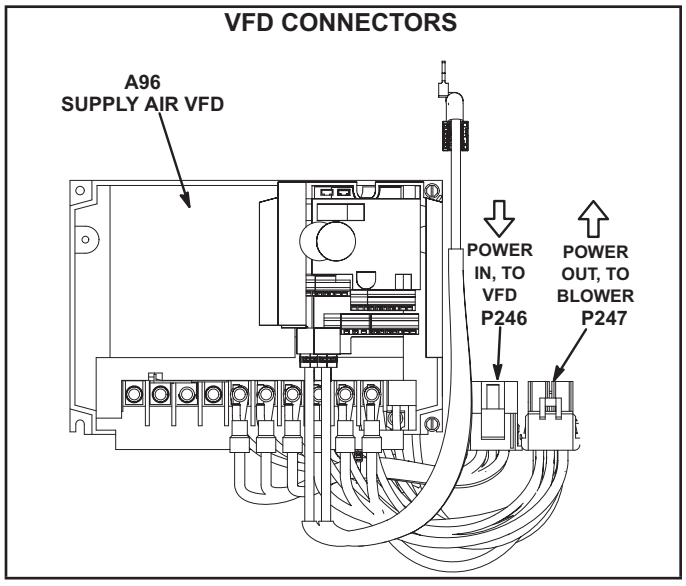


FIGURE 45

5 - Restore power to unit. Blower will operate in constant air volume (CAV) mode.

Note - *The indoor blower motor will start as soon as the main unit power is restored. In manual bypass, the blower will run regardless of thermostat signals until main unit power is turned off. Manual bypass is meant for emergency operation only and not long-term usage.*

6 - Check the indoor blower motor nameplate for full load amperage (FLA) value. Measure the amp readings from the indoor blower motor operating in bypass mode. If measured amps are higher than nameplate FLA value, decrease the CFM by opening (turning counterclockwise) the motor pulley. See FIGURE 18. Do not exceed minimum and maximum number of pulley turns as shown in TABLE 8.

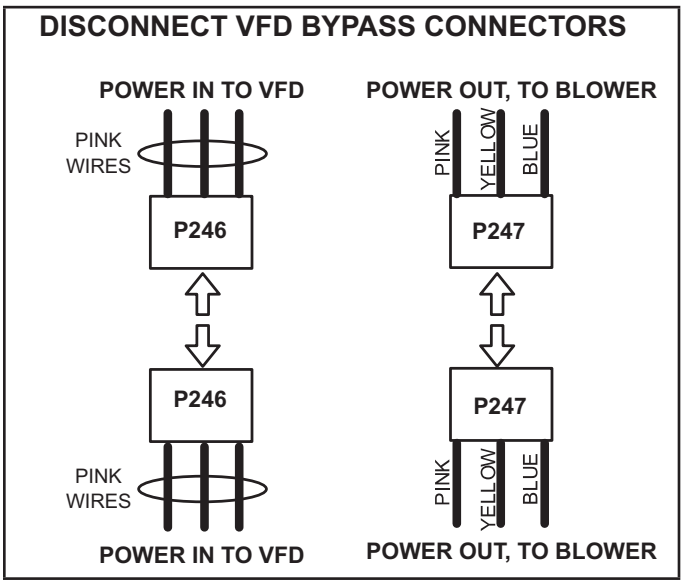


FIGURE 46

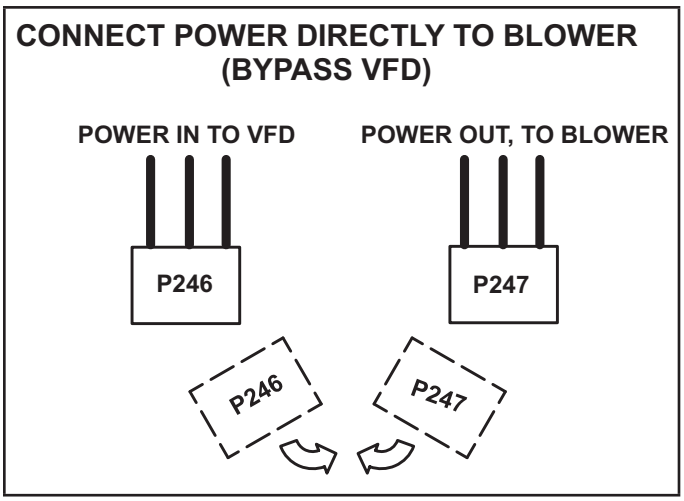
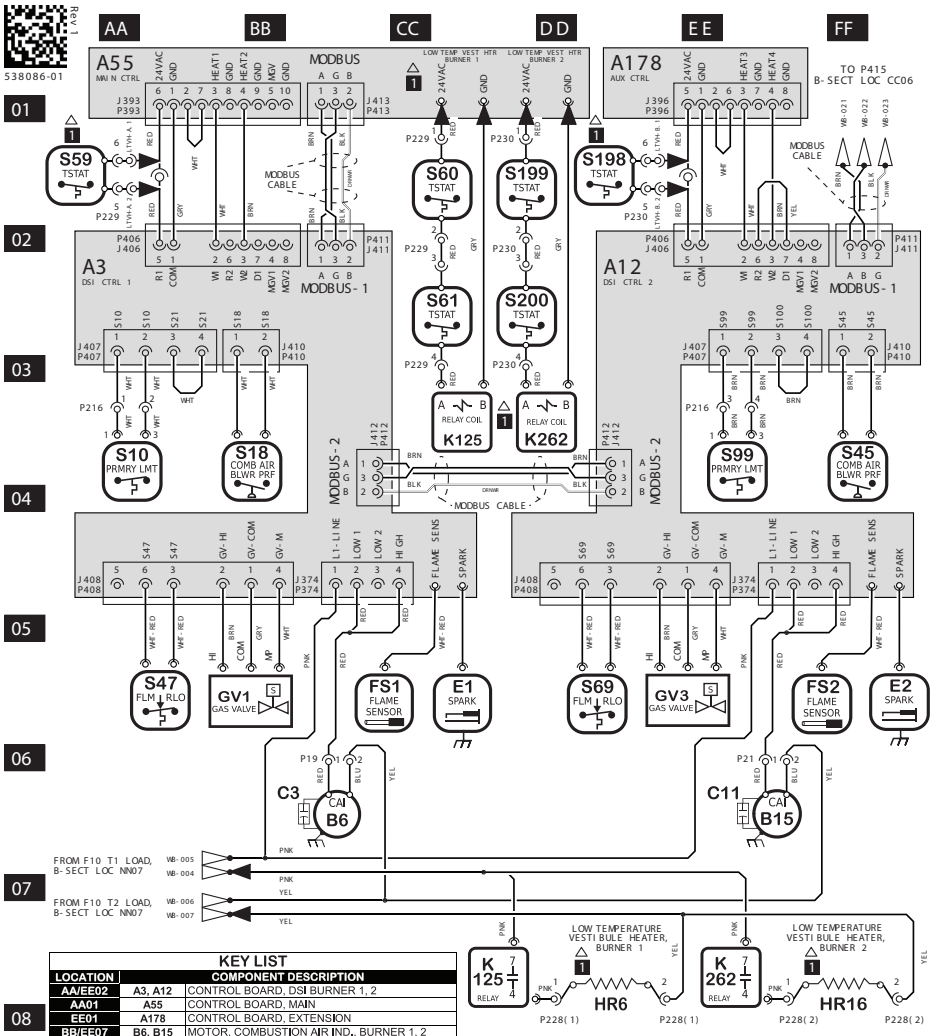


FIGURE 47

GAS HEAT DIAGRAM



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
AA/EE02	A3, A12	CONTROL BOARD, DSI BURNER 1, 2
AA01	A55	CONTROL BOARD, MAIN
EE01	A178	CONTROL BOARD, EXTENSION
BB/EE07	B6, B15	MOTOR, COMBUSTION AIR IND., BURNER 1, 2
BB/EE06	C3, C11	CAPACITOR, CAI MOTOR 1, 2
CC/FF06	E1, E2	IGNITER, SPARK, BURNER 1, 2
CC/FF06	FS1, FS2	SENSOR, FLAME, BURNER 1, 2
BB/EE06	GV1, GV2	VALVE, GAS, BURNER 1, 2
DD/FF08	HR6, HR16	HEATER, -50C LOW TEMP VEST, BURNER 1, 2
CC/DD03	K125, K262	RELAY, LOW TEMP VEST HEATER, BURNER 1, 2
DD/EE08	K125, K262	
AA/EE04	S10, S99	LIMIT, PRIMARY, BURNER 1, 2
BB/FF04	S18, S45	SWITCH, COMB AIR BLWR PROOF, BURNER 1, 2
AA/DD06	S47, S69	SWITCH, FLAME ROLLOUT, BURNER 1, 2
AA/DD02	S59, S198	TSTAT, OPEN -20F, CLOSE 10F, BURNER 1, 2
CC/DD02	S60, S199	TSTAT, OPEN 20F, CLOSE -10F, BURNER 1, 2
CC/DD03	S61, S200	TSTAT, OPEN 50F, CLOSE 20F, BURNER 1, 2

NOTES
1 - 50C LOW TEMPERATURE VESTIBULE HEATER - OPTIONAL

DENOTES OPTIONAL COMPONENTS AND WIRING

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

WIRING DIAGRAM FLOW

Model: LGM Series RTU - Gas Heat
Input Heat Capacity 169k - 480k Btuh
Voltage: 208-240/3/60 (Y), 460/3/60 (G)
Supersedes: N/A Form No: 538086-01 Rev: 1

7x10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-008993P	01-26-2021	MXR6	JAL21	ORIGINATED AT PD&R CARROLLTON, TX
001	CN-008993AE	04-30-2021	MXR6	JAL21	A) MODBUS CABLE COLOR BRN WAS BLU, BLK WAS ORN.

Sequence of Operation Gas Heat LGM156/300

First Stage Heat:

1 - Heating demand initiates at W1 in thermostat.

2 - 24VAC is routed to the A55 Unit Controller. After A55 proves N.C. primary limit S10, the combustion air blower B6 is energized.

3 - After the combustion air blower B6 has reached full speed, the combustion air proving switch (S18) contacts close. The A55 routes 24VAC through N.C. burner 1 flame rollout switch S47 and the closed contacts of the combustion air proving switch (S18) to energize the ignition module A3. After a 30 second delay A3 energizes the gas valve GV1 on low fire.

4 - As steps 2, 3 and 4 occur, A55 proves N.C. primary gas heat limit S99 and the combustion air blower B15 is energized.

5 - After the combustion air blower B15 has reached full speed, the combustion air proving switch (S45) contacts close. The A55 routes 24VAC through N.C. burner 2 flame rollout switch S69 and the closed contacts of the combustion air proving switch (S45) to energize the ignition module A12. After a 30 second delay A12 energizes gas valve GV3 on low fire.

Second Stage Heat:

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

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

8 - A55 will energize the corresponding gas valves GV1 and GV3 on high fire.

Optional Low Ambient Kit

(C.G.A. -50°C Low Ambient Kit):

9 - When heat section temperature drops below -20°F, S59 opens and de-energized A3 and A12 ignition controls. At the same temperature, S60 closes and energizes K125. K125-1 contacts close energizing HR6 Cold Weather Kit electric heat.

10 - When heat section temperature rises to 10°F, S59 closes allowing power to A3 and A12 ignition controls. At the same temperature, S60 opens and deenergizes K125. K125-1 contacts open de-energizing HR6 Cold Weather Kit electric heat.

11 - If heat section temperature rises above 50°F, S61 will open and de-energize K125. K125-1 contacts will open and de-energize HR6 Cold Weather Kit electric heat. If heat section temperature drops to 20°F, S61 will close and allow power to K125.

End of Second Stage Heat:

12 - Heating demand is satisfied. Terminal W2 is deenergized.

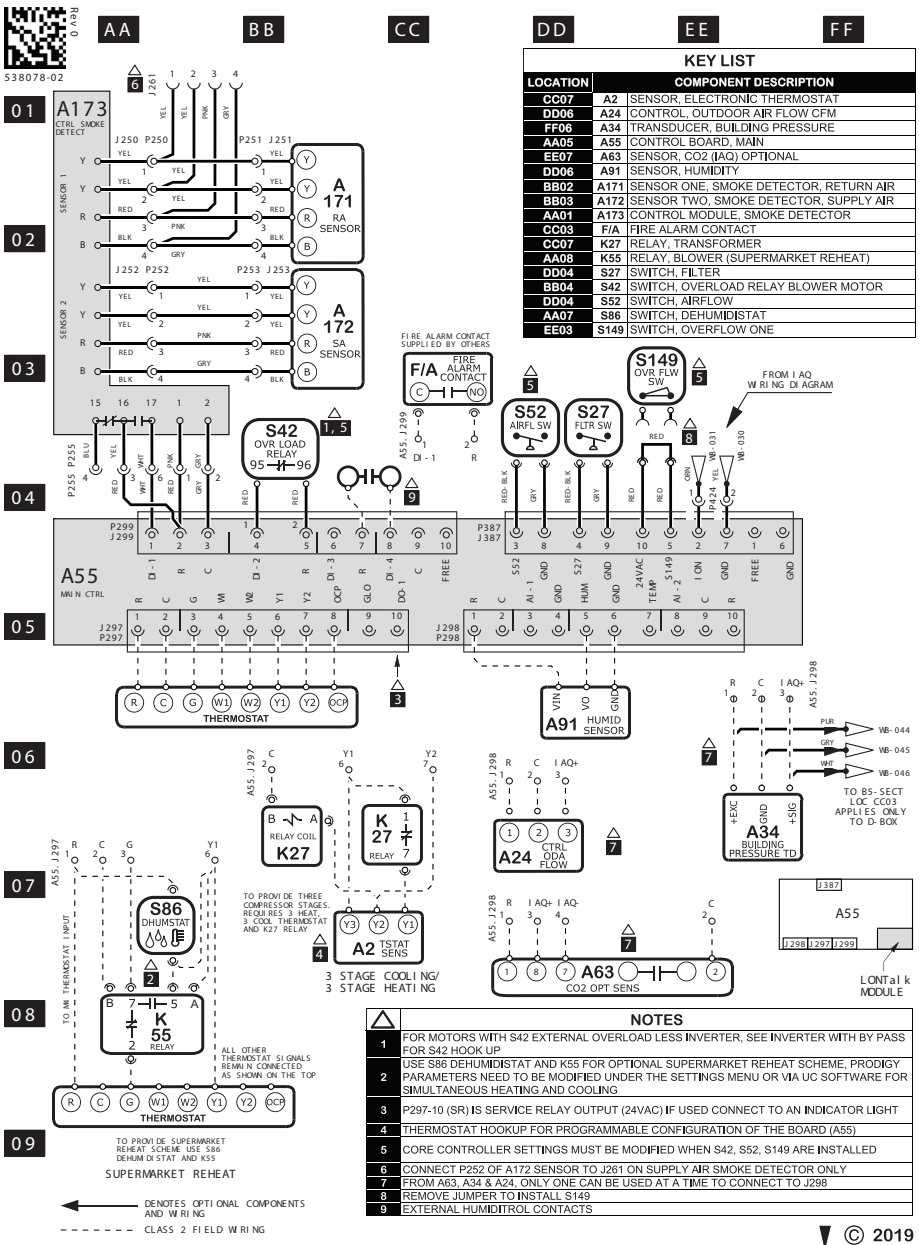
13 - High fire on GV1 and GV3 are de-energized by the A55.

End of First Stage Heat:

14 - Heating demand is satisfied. Terminal W1 is deenergized.

15 - Ignition module A3 is de-energized by A55 in turn de-energizing GV1. Combustion blower air blower B6 is also de-energized. At the same instant, ignition module A12 is de-energized by A55 in turn de-energizing GV3. B6 combustion air blower is also de-energized.

THERMOSTAT



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

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

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

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

WIRING DIAGRAM FLOW

7x10 CUT SIZE

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

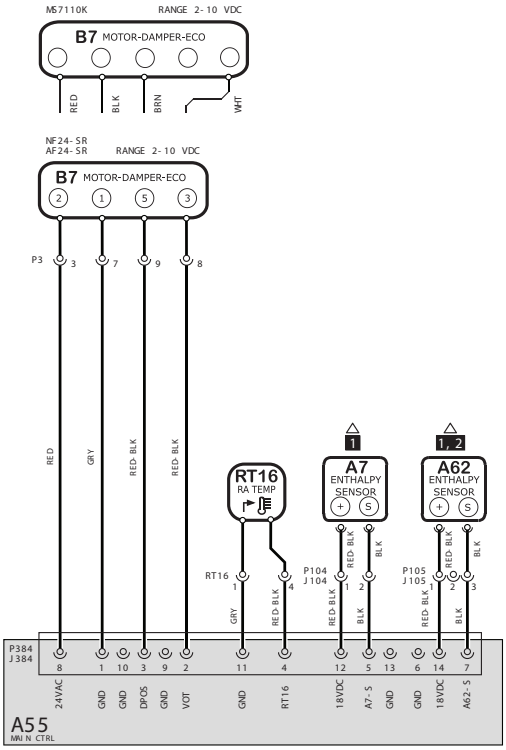
ECONOMIZER

Rev 2

538072-01

AA BB CC DD

01 02 03 04 05 06 07 08 09



△	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

10

Model: LC,LG,LH,LD,SC,SG Series
Economizer & Motorized OAD
Voltage: All Voltages
Supersedes: N/A Form No: 538072-01 Rev: 2

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

WIRING DIAGRAM FLOW

5x10 CUT SIZE

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

Sequence of Operation LGM/LCM156 & 180U

1 - Line voltage from TB13 energizes transformer T1 and T18. Transformer T1 and T18 provides 24VACpower to the main controller A55. The transformers also provide 24VAC power to the unit cooling, heating and blower controls and thermostat

ECONOMIZER OPERATION

2 - The A55 Unit Controller receives a demand and energizes exhaust fan relay K65 and K231 with 24VAC at 50% (travel) outside air damper open (adjustable).

3 - N.O. K65-1, K65-2, K231-01 and K231-02 close, energizing exhaust fan motors B10 and B11.

1ST STAGE COOLING

4 - First stage cooling demand energizes Y1 and G in the thermostat. G energizes blower, if blower is not already running (see step 3).

5 - 24VAC is routed to the A55 Unit Controller. After A55 proves N.C. low pressure switch S87 , high pressure switch S4 and high temperature limits S5 compressor contactor K1 is energized.

6 - N.O. contacts K1-1 close energizing compressor B1.

7 - A55 energizes outdoor fans B4 and B5.

8 - Relay K191 opens de-energizing compressor 1 crankcase heater HR1.

2ND STAGE COOLING

9 - Second stage cooling demand energizes Y2.

10 - After A55 proves N.C. low pressure switch S88 and S98, and N.C. high pressure switch S7 and 228, contacotors K1 and K14 are energized.

11 - N.O. K2 closes energizing compressor B2 and de-energizing crankcase heater HR2.

12 - N.O. K14 closes energizing compressor B13, de-energizing HR5.

13 - A178 energizes outdoor fans B21 and B22.

BLOWER OPERATION

With By Pass Installed - Active

1 - Main control A55 de-energizes relays K202 and K203

2 - K202 contacts open to interrupt power to B3 blower motor from A96 blower inverter.

3 - Main control A55 energizes relay K203-7.

4 - K203-1 N.C. contacts close allowing power to K3.

5 - K3 contacts close to allow power to B3 blower motor.

With By Pass Installed - Inactive

1 - Main control A55 energizes relays K202 and K203.

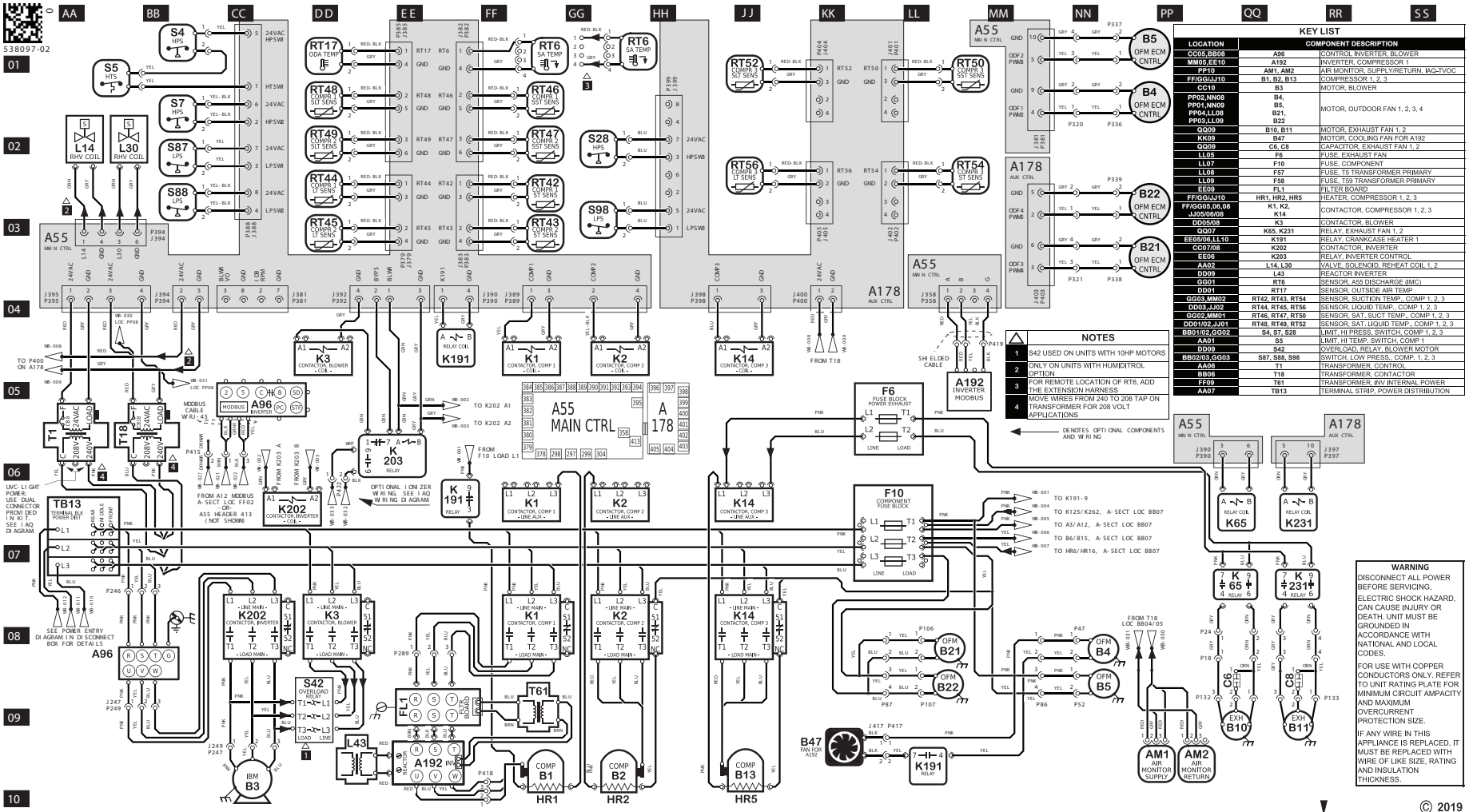
2 - K203-1 N.C. contacts open to de-energize K3 relay coil. K3 contacts open to interrupt power to B3 blower motor through K3 N.O. contacts.

3 - K202 contacts close to allow power to B3 blower motor from A96 blower inverter.

By-Pass Not Installed

1 - Control inverter A96 energizes B3.

LGM/LCM156U/180U Y VOLTAGE WITH BY-PASS



KEY LIST	
LOCATION	COMPONENT DESCRIPTION
CC05,BB09	A96, CONTROL INVERTER, BLOWER
MM05,EE10	A192 INVERTER, COMPRESSOR 1
PP10	AM1, AM2 AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
FF/GG/JJ10	B1, B2, B13 COMPRESSOR 1, 2, 3
CC10	B3 MOTOR, BLOWER
PP02,NN08 PP01,NN09 PP04,LL08 PP03,LL09	B4, B5, B21, B22 MOTOR, OUTDOOR FAN 1, 2, 3, 4
QQ09	B10, B11 MOTOR, EXHAUST FAN 1, 2
KK09	B47 MOTOR, COOLING FAN FOR A192
QQ09	C6, C8 CAPACITOR, EXHAUST FAN 1, 2
LL05	F6 FUSE, EXHAUST FAN
LL07	F10 FUSE, COMPONENT
LL08	F57 FUSE, T5 TRANSFORMER PRIMARY
LL09	F58 FUSE, T59 TRANSFORMER PRIMARY
EE09	FL1 FILTER BOARD
FF/GG/JJ10	HR1, HR2, HR5 HEATER, COMPRESSOR 1, 2, 3
FF/GG05,06,08 JJ05/06/08	K1, K2, K14 CONTACTOR, COMPRESSOR 1, 2, 3
DD05/08	K3 CONTACTOR, BLOWER
QQ07	K65, K231 RELAY, EXHAUST FAN 1, 2
EE05/06,LL10	K191 RELAY, CRANKCASE HEATER 1
CC07/08	K202 CONTACTOR, INVERTER
EE06	K203 RELAY, INVERTER CONTROL
AA02	L14, L30 VALVE, SOLENOID, REHEAT COIL 1, 2
DD09	L43 REACTOR INVERTER
GG01	RT6 SENSOR, A55 DISCHARGE (IMC)
DD01	RT17 SENSOR, OUTSIDE AIR TEMP
GG03, MM02	RT42, RT43, RT54 SENSOR, SUCT TEMP., COMP 1, 2, 3
DD03, JJ02	RT44, RT45, RT56 SENSOR, LIQUID TEMP., COMP 1, 2, 3
GG02, MM01	RT46, RT47, RT50 SENSOR, SAT. SUCT TEMP., COMP 1, 2, 3
DD01/02, JJ01	RT48, RT49, RT52 SENSOR, SAT. LIQUID TEMP., COMP 1, 2, 3
BB01/02,GG02	S4, S7, S28 LIMIT, HI PRESS, SWITCH, COMP 1, 2, 3
AA01	S5 LIMIT, HI TEMP, SWITCH, COMP 1
DD09	S42 OVERLOAD, RELAY, BLOWER MOTOR
BB02/03,GG03	S87, S88, S98 SWITCH, LOW PRESS., COMP. 1, 2, 3
AA06	T1 TRANSFORMER, CONTROL
BB06	T18 TRANSFORMER, CONTACTOR
FF09	T61 TRANSFORMER, INV INTERNAL POWER
AA07	TB13 TERMINAL STRIP, POWER DISTRIBUTION

NOTES	
1	S42 USED ON UNITS WITH 10HP MOTORS
2	ONLY ON UNITS WITH HUMIDITROL OPTION
3	FOR REMOTE LOCATION OF RT6, ADD THE EXTENSION HARNESS
4	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

WARNING

DISCONNECT ALL POWER BEFORE SERVICING.

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

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

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

Model: LCM, LGM 156U, 180U - Y-VOLT
COOLING - MSAV WITH BYPASS - 3 COMPRESSORS, 4 CONDENSER FANS

Voltage: 208-240/3/60 (Y)
Supersedes: 538097-01 Form No: 538097-02 Rev: 0

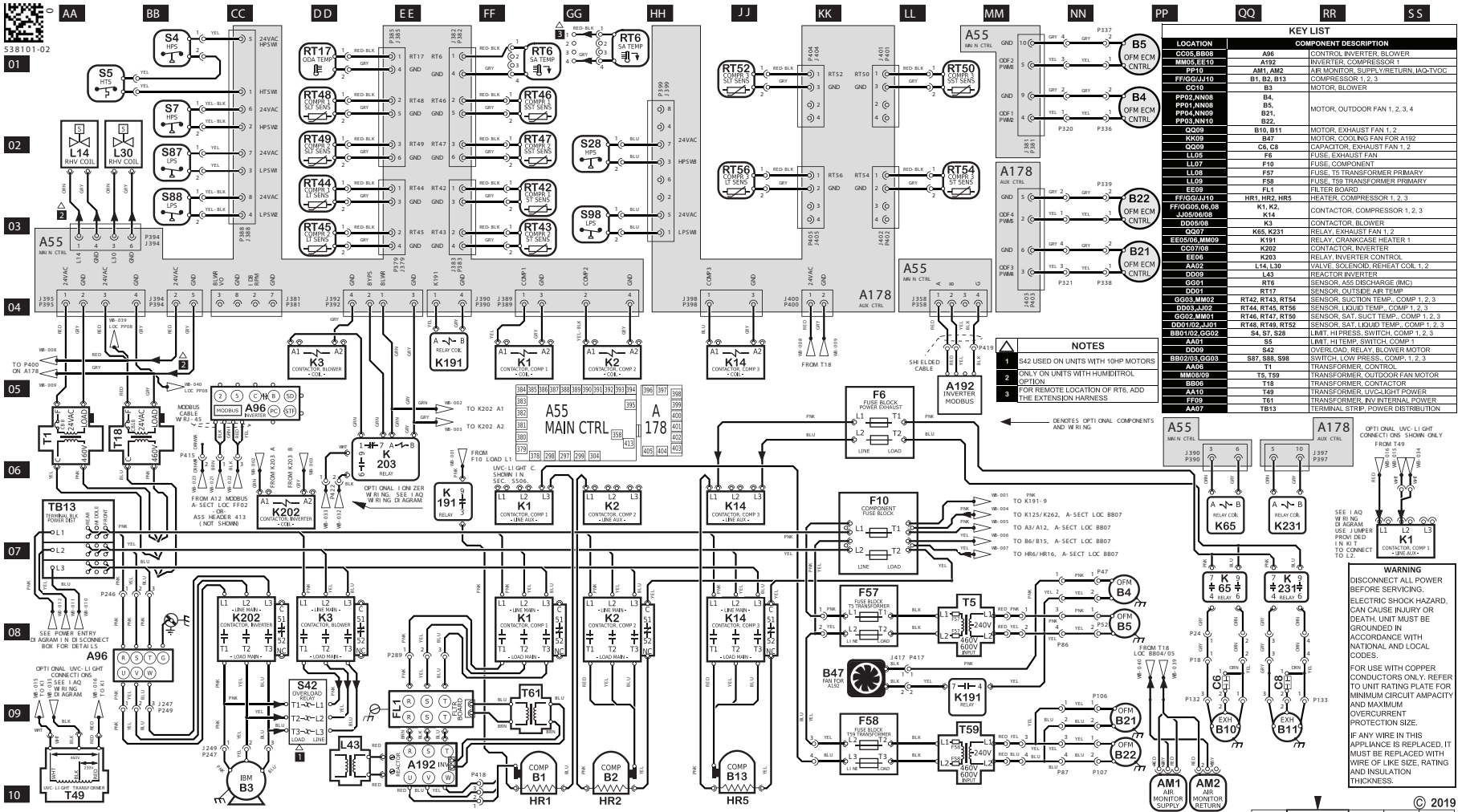
WIRING DIAGRAM FLOW

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

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-010356E	08-02-2022	MXR6	JAL21	ORIGINATED AT PD&R CARROLLTON, TX

LGM/LCM156U/180U G VOLTAGE WITH BY-PASS



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC05,BB08	A96	CONTROL INVERTER, BLOWER
MM05,EE10	A192	INVERTER, COMPRESSOR 1
PP10	AM1, AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
FF/GG/JJ10	B1, B2, B13	COMPRESSOR 1, 2, 3
CC10	B3	MOTOR, BLOWER
PP02,NN08 PP01,NN08 PP04,NN09 PP05,NN10	B4, B5, B21, B22,	MOTOR, OUTDOOR FAN 1, 2, 3, 4
QQ09	B10, B11	MOTOR, EXHAUST FAN 1, 2
KK09	B47	MOTOR, COOLING FAN FOR A192
QQ09	C6, C8	CAPACITOR, EXHAUST FAN 1, 2
LL05	F6	FUSE, EXHAUST FAN
LL07	F10	FUSE, COMPONENT
LL08	F57	FUSE, T5 TRANSFORMER PRIMARY
LL09	F58	FUSE, T59 TRANSFORMER PRIMARY
EE09	FL1	FILTER BOARD
FF/GG/JJ10	HR1, HR2, HR5	HEATER, COMPRESSOR 1, 2, 3
FF/GG05,06,08 JJ05/06/08	K1, K2, K14	CONTACTOR, COMPRESSOR 1, 2, 3
DD05/08	K3	CONTACTOR, BLOWER
QQ07	K65, K231	RELAY, EXHAUST FAN 1, 2
EE05/06,MM09	K191	RELAY, CRANKCASE HEATER 1
CC07/08	K202	CONTACTOR, INVERTER
EE06	K203	RELAY, INVERTER CONTROL
AA02	L14, L30	VALVE, SOLENOID, REHEAT COIL 1, 2
DD09	L43	REACTOR INVERTER
GG01	RT6	SENSOR, A55 DISCHARGE (IMC)
DD01	RT17	SENSOR, OUTSIDE AIR TEMP
GG03,MM02	RT42, RT43, RT54	SENSOR, SUCTION TEMP., COMP 1, 2, 3
DD03,JJ02	RT44, RT45, RT56	SENSOR, LIQUID TEMP., COMP 1, 2, 3
GG02,MM01	RT46, RT47, RT50	SENSOR, SAT, SUCT TEMP., COMP 1, 2, 3
DD01/02,JJ01	RT48, RT49, RT52	SENSOR, SAT, LIQUID TEMP., COMP 1, 2, 3
BB01/02,GG02	S4, S7, S28	LIMIT, HI PRESS. SWITCH, COMP 1, 2, 3
AA01	S5	LIMIT, HI TEMP. SWITCH, COMP 1
DD09	S42	OVERLOAD, RELAY, BLOWER MOTOR
BB02/03,GG03	S87, S88, S98	SWITCH, LOW PRESS., COMP. 1, 2, 3
AA06	T1	TRANSFORMER, CONTROL
MM08/09	T5, T59	TRANSFORMER, OUTDOOR FAN MOTOR
BB06	T18	TRANSFORMER, CONTACTOR
AA10	T49	TRANSFORMER, UVC-LIGHT POWER
FF09	T61	TRANSFORMER, INV INTERNAL POWER
AA07	TB13	TERMINAL STRIP, POWER DISTRIBUTION

NOTES

1. S42 USED ON UNITS WITH 10HP MOTORS
2. ONLY ON UNITS WITH HUMIDITROL OPTION
3. FOR REMOTE LOCATION OF RT6, ADD THE EXTENSION HARNESS

DENOTES OPTIONAL COMPONENTS AND WIRING

Model: LCM, LGM 156U, 180U - G-VOLT
COOLING - MSAV WITH BYPASS - 3 COMPRESSORS, 4 CONDENSER FANS

Voltage: 460/3/60 (G)
Supersedes: 538101-01 Form No: 538101-02 Rev: 0

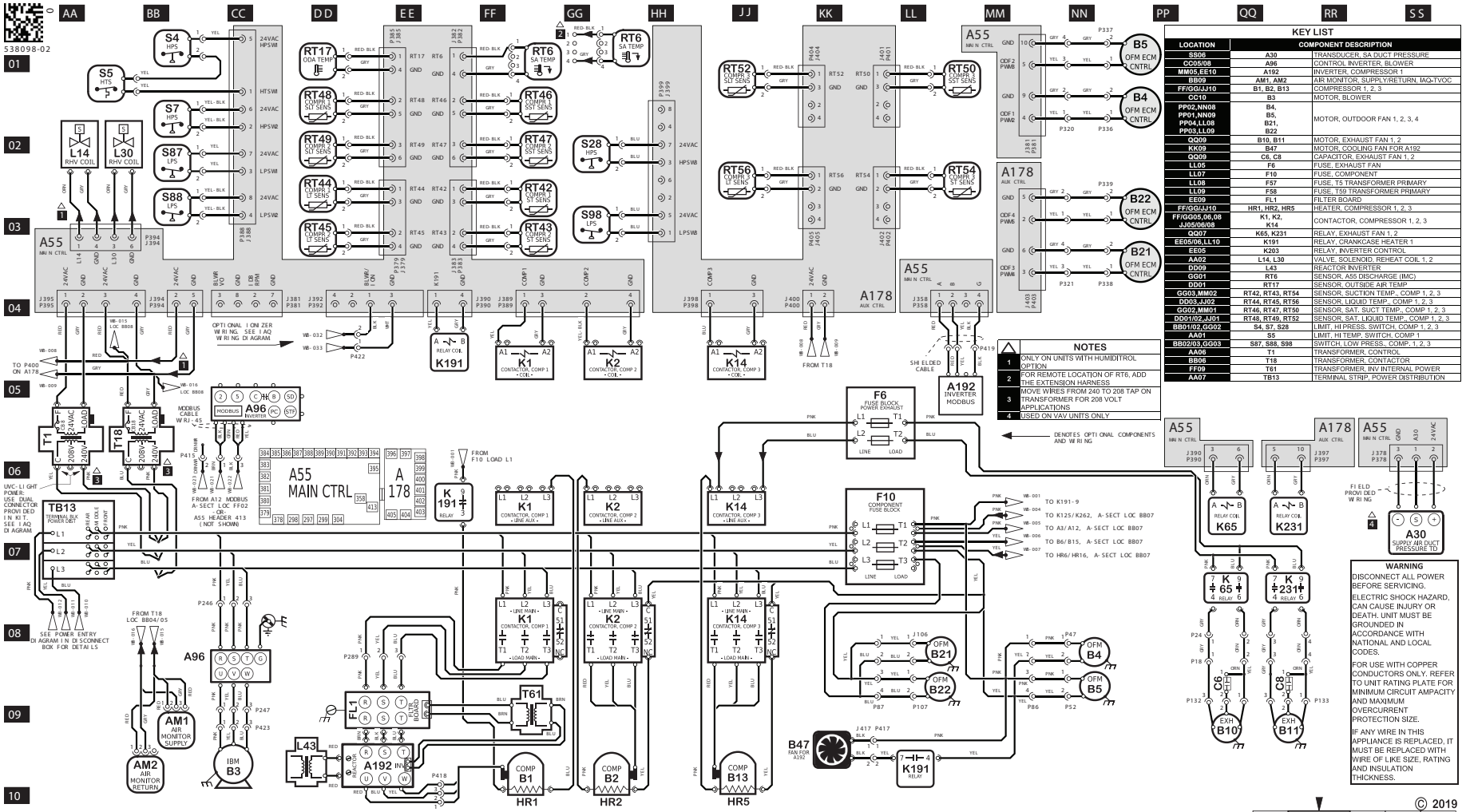
WIRING DIAGRAM FLOW

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

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-010356E	08-02-2022	MXR6	JAL21	ORIGINATED AT PD&R CARROLLTON, TX

LGM/LCM156U/180U Y VOLTAGE NO BY-PASS



NOTES	
1	ONLY ON UNITS WITH HUMIDITROL OPTION
2	FOR REMOTE LOCATION OF RT6, ADD THE EXTENSION HARNESS
3	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
4	USED ON VAV UNITS ONLY

DENOTES OPTIONAL COMPONENTS AND WIRING

KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
SS06	A30	TRANSDUCER, SA DUCT PRESSURE
CC05/08	A96	CONTROL INVERTER, BLOWER
MM05,EE10	A192	INVERTER, COMPRESSOR 1
BB09	AM1, AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
FF/GG/JJ10	B1, B2, B13	COMPRESSOR 1, 2, 3
CC10	B3	MOTOR, BLOWER
PP02,NN08 PP01,NN09 PP04,LL08 PP03,LL09	B4, B5, B21, B22	MOTOR, OUTDOOR FAN 1, 2, 3, 4
QQ09	B10, B11	MOTOR, EXHAUST FAN 1, 2
KK09	B47	MOTOR, COOLING FAN FOR A192
QQ09	C6, C8	CAPACITOR, EXHAUST FAN 1, 2
LL05	F6	FUSE, EXHAUST FAN
LL07	F10	FUSE, COMPONENT
LL08	F57	FUSE, T5 TRANSFORMER PRIMARY
LL09	F58	FUSE, T50 TRANSFORMER PRIMARY
EE09	FL1	FILTER BOARD
FF/GG/JJ10	HR1, HR2, HR5	HEATER, COMPRESSOR 1, 2, 3
FF/GG05,06,08 JJ05/06/08	K1, K2, K14	CONTACTOR, COMPRESSOR 1, 2, 3
QQ07	K65, K231	RELAY, EXHAUST FAN 1, 2
EE05/06,LL10	K191	RELAY, CRANKCASE HEATER 1
EE05	K203	RELAY, INVERTER CONTROL
AA02	L14, L30	VALVE, SOLENOID, REHEAT COIL 1, 2
DD09	L43	REACTOR INVERTER
GG01	RT6	SENSOR, A55 DISCHARGE (IMC)
DD01	RT17	SENSOR, OUTSIDE AIR TEMP
GG03,MM02	RT42, RT43, RT54	SENSOR, SUCTION TEMP., COMP 1, 2, 3
DD03,JJ02	RT44, RT45, RT56	SENSOR, LIQUID TEMP., COMP 1, 2, 3
GG02,MM01	RT46, RT47, RT50	SENSOR, SAT, SUCT TEMP., COMP 1, 2, 3
DD01/02,JJ01	RT48, RT49, RT52	SENSOR, SAT, LIQUID TEMP., COMP 1, 2, 3
BB01/02,GG02	S4, S7, S28	LIMIT, HI PRESS. SWITCH, COMP 1, 2, 3
AA01	S5	LIMIT, HI TEMP. SWITCH, COMP 1
BB02/03,GG03	S87, S88, S98	SWITCH, LOW PRESS., COMP, 1, 2, 3
AA06	T1	TRANSFORMER, CONTROL
BB06	T18	TRANSFORMER, CONTACTOR
FF09	T61	TRANSFORMER, INV INTERNAL POWER
AA07	TB13	TERMINAL STRIP, POWER DISTRIBUTION

WARNING

DISCONNECT ALL POWER BEFORE SERVICING.

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

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

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

Model: LCM, LGM 156U, 180U - Y-VOLT
COOLING - MSAV NO BYPASS -OR- VAV - 3 COMPRESSORS, 4 CONDENSER FANS

Voltage: 208-240/3/60 (Y)
Supersedes: 538098-01 Form No: 538098-02 Rev: 0

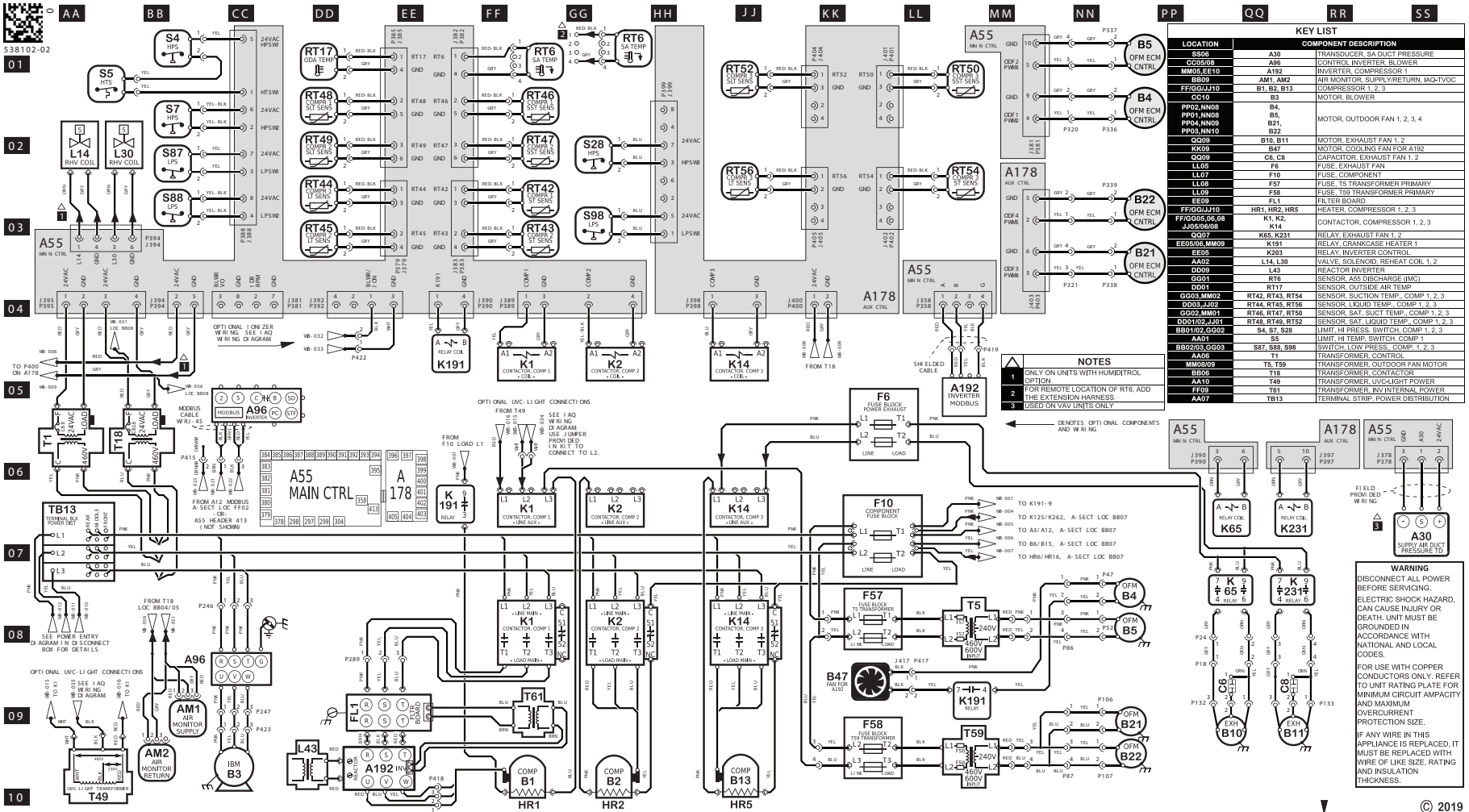
WIRING DIAGRAM FLOW

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

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-010356E	08-02-2022	MXR6	JAL21	ORIGINATED AT PD&R CARROLLTON, TX

LGM/LCM156U/180U G VOLTAGE NO BY-PASS



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
SS06	A30	TRANSDUCER, SA DUCT PRESSURE
CC05/08	A96	CONTROL INVERTER, BLOWER
MM05,EE10	A192	INVERTER, COMPRESSOR 1
BB09	AM1, AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
FF/GG/JJ10	B1, B2, B13	COMPRESSOR 1, 2, 3
CC10	B3	MOTOR, BLOWER
PP02,NN08 PP01,NN08 PP04,NN09 PP03,NN10	B4, B5, B21, B22	MOTOR, OUTDOOR FAN 1, 2, 3, 4
QQ09	B10, B11	MOTOR, EXHAUST FAN 1, 2
KK09	B47	MOTOR, COOLING FAN FOR A192
QQ09	C6, C8	CAPACITOR, EXHAUST FAN 1, 2
LL05	F6	FUSE, EXHAUST FAN
LL07	F10	FUSE, COMPONENT
LL08	F57	FUSE, T5 TRANSFORMER PRIMARY
LL09	F58	FUSE, T59 TRANSFORMER PRIMARY
EE09	FL1	FILTER BOARD
FF/GG/JJ10	HR1, HR2, HR5	HEATER, COMPRESSOR 1, 2, 3
FF/GG05,06,08 JJ05/06/08	K1, K2, K14	CONTACTOR, COMPRESSOR 1, 2, 3
QQ07	K65, K231	RELAY, EXHAUST FAN 1, 2
EE05/06,MM09	K191	RELAY, CRANKCASE HEATER 1
EE05	K203	RELAY, INVERTER CONTROL
AA02	L14, L30	VALVE, SOLENOID, REHEAT COIL 1, 2
DD09	L43	REACTOR INVERTER
GG01	RT6	SENSOR, A55 DISCHARGE (IMC)
DD01	RT17	SENSOR, OUTSIDE AIR TEMP
GG03,MM02	RT42, RT43, RT54	SENSOR, SUCTION TEMP., COMP 1, 2, 3
DD03,JJ02	RT44, RT45, RT56	SENSOR, LIQUID TEMP., COMP 1, 2, 3
GG02,MM01	RT46, RT47, RT50	SENSOR, SAT, SUCT TEMP., COMP 1, 2, 3
DD01/02,JJ01	RT48, RT49, RT52	SENSOR, SAT, LIQUID TEMP., COMP 1, 2, 3
BB01/02,GG02	S4, S7, S28	LIMIT, HI PRESS. SWITCH, COMP 1, 2, 3
AA01	S5	LIMIT, HI TEMP. SWITCH, COMP 1
BB02/03,GG03	S87, S88, S98	SWITCH, LOW PRESS., COMP. 1, 2, 3
AA06	T1	TRANSFORMER, CONTROL
MM08/09	T5, T59	TRANSFORMER, OUTDOOR FAN MOTOR
BB06	T18	TRANSFORMER, CONTACTOR
AA10	T49	TRANSFORMER, UVC-LIGHT POWER
FF09	T61	TRANSFORMER, INV INTERNAL POWER
AA07	TB13	TERMINAL STRIP, POWER DISTRIBUTION

NOTES

1. ONLY ON UNITS WITH HUMIDITROL OPTION
2. FOR REMOTE LOCATION OF RT6, ADD THE EXTENSION HARNESS
3. 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.

Model: LCM, LGM 156U, 180U - G-VOLT
COOLING - MSAV NO BYPASS -OR- VAV - 3 COMPRESSORS, 4 CONDENSER FANS

Voltage: 460/3/60 (G)
Supersedes: 538102-01 Form No: 538102-02 Rev: 0

WIRING DIAGRAM FLOW

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

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
----	CN-010356E	08-02-2022	MXR6	JAL21	ORIGINATED AT PD&R CARROLLTON, TX

Sequence of Operation LGM/LCM210, 240U, 300U

1 - Line voltage from TB13 energizes transformer T1 and T18. Transformer T1 and T18 provides 24VAC power to the main controller A55. The transformers also provide 24VAC power to the unit cooling, heating and blower controls and thermostat.

ECONOMIZER OPERATION

2 - The A55 Unit Controller receives a demand and energizes exhaust fan relay K65 and K231 with 24VAC at 50% (travel) outside air damper open (adjustable).

3 - N.O. K65-1, K65-2, K231-01 and K231-02 close, energizing exhaust fan motors B10 and B11.

1ST STAGE COOLING

4 - First stage cooling demand energizes Y1 and G in the thermostat.

5 - 24VAC is routed to the A55 Unit Controller. After A55 proves N.C. low pressure switch S87, and S88 and N.C. high pressure switch S4 and S7, high temperature limits S5 compressor contactors K1 and K2 are energized.

6 - N.O. contacts K1-1 and K2-1 close energizing compressor B1 and B2. Crankcase heater HR 2 is de-energized.

7 - A55 energizeS outdoor fans B4, B5 and B21. A178 energizes outdoor fan B22, B23 and B24.

8 - Relay K191 opens de-energizing compressor 1 crankcase heater HR1

2ND STAGE COOLING

9 - Second stage cooling demand energizes Y2.

10 - N.O. contacts K14-1 close energizing compressor B13, de-energizing HR5.

11 - N.O. contacts K146-1 close energizing compressor B20, de-energizing HR11.

BLOWER OPERATION

With By Pass Installed - Active

1 - Main control A55 de-energizes relays K202 and K203

2 - K202 contacts open to interrupt power to B3 blower motor from A96 blower inverter.

3 - Main control A55 energizes relay K203-7.

4 - K203-1 N.C. contacts close allowing power to K3.

5 - K3 contacts close to allow power to B3 blower motor.

With By Pass Installed - Inactive

1 - Main control A55 energizes relays K202 and K203.

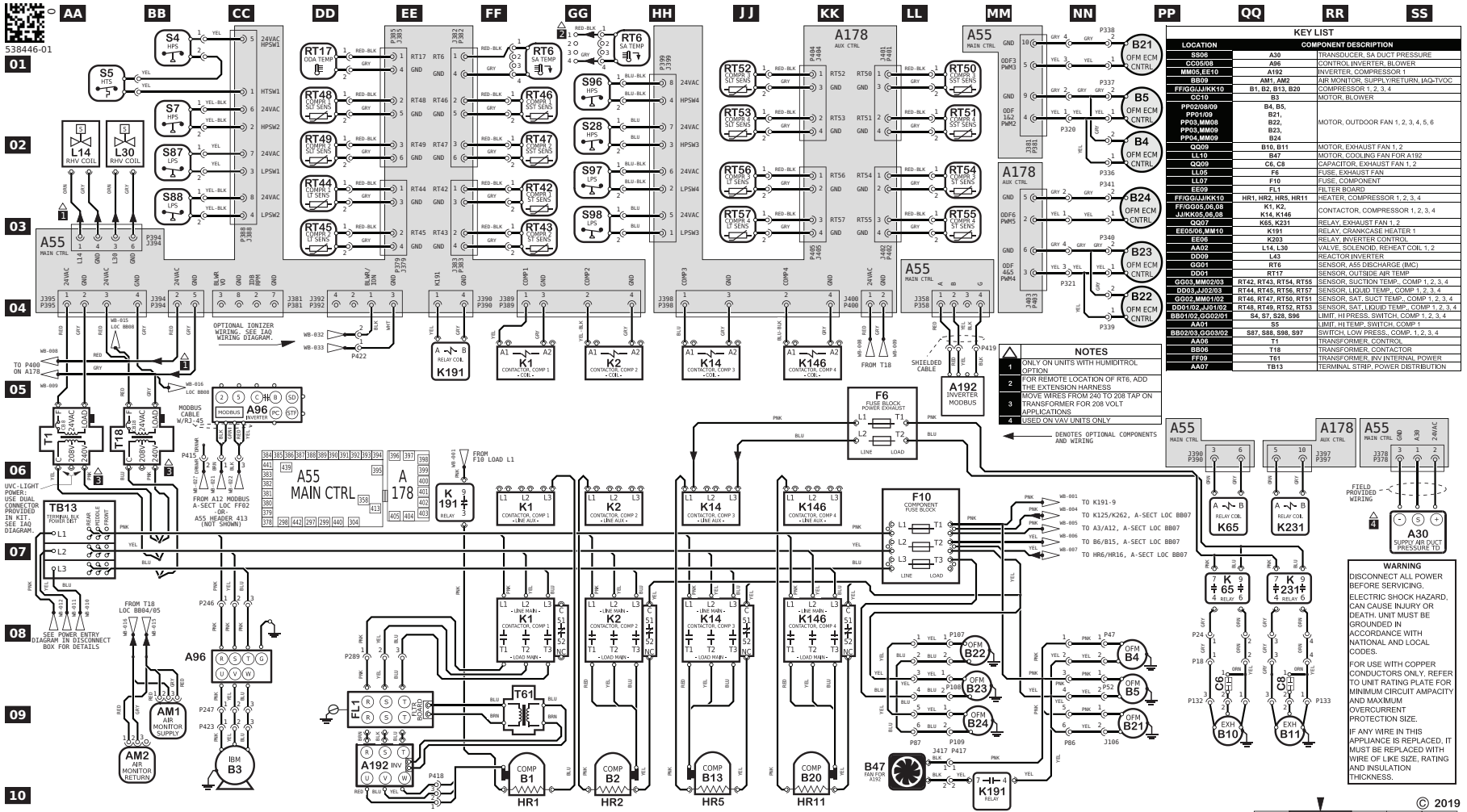
2 - K203-1 N.C. contacts open to de-energize K3 relay coil. K3 contacts open to interrupt power to B3 blower motor through K3 N.O. contacts.

3 - K202 contacts close to allow power to B3 blower motor from A96 blower inverter.

By-Pass Not Installed

1 - Control inverter A96 energizes B3.

LGM210-300 Y VOLT DIAGRAM - NO BYPASS



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
SS06	A30	TRANSDUCER, SA DUCT PRESSURE
CC04/08	A96	CONTROL,INVERTER, BLOWER
MM05, EE10	A192	INVERTER, COMPRESSOR 1
BB09	AM1, AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
FF/GG/JJ/KK10	B1, B2, B13, B20	COMPRESSOR 1, 2, 3, 4
DD10	B3	MOTOR, BLOWER
PP02/08/09 PP01/09 PP03,MM08 PP03,MM09 PP04, MM09	B4, B5, B21, B22, B23, B24	MOTOR, OUTDOOR FAN 1, 2, 3, 4, 5, 6
QQ09	B10, B11	MOTOR, EXHAUST FAN 1, 2
LL10	B47	MOTOR, COOLING FAN FOR A192
QQ09	C6, C8	CAPACITOR, EXHAUST FAN 1, 2
LL05	F6	FUSE, EXHAUST FAN
LL07	F10	FUSE, COMPONENT
EE09	FL1	FILTER BOARD
FF/GG/JJ/KK10	HR1, HR2, HR5, HR11	HEATER, COMPRESSOR 1, 2, 3, 4
FF/GG05,06,08 JJ/KK05,06,08	K1, K2, K14, K146	CONTACTOR, COMPRESSOR 1, 2, 3, 4
QQ07	K65, K231	RELAY, EXHAUST FAN 1, 2
EE05/06,MM10	K191	RELAY, CRANKCASE HEATER 1
EE06	K203	RELAY, INVERTER CONTROL
AA02	L14, L30	VALVE, SOLENOID, REHEAT COIL 1, 2
QQ09	L43	REACTOR INVERTER
GG01	RT6	SENSOR, ASS DISCHARGE (IMC)
DD01	RT17	SENSOR, OUTSIDE AIR TEMP
GG03,MM02/03	RT42, RT43, RT54, RT55	SENSOR, SUCTION TEMP., COMP 1, 2, 3, 4
DD03,JJ02/03	RT44, RT45, RT56, RT57	SENSOR, LIQUID TEMP., COMP 1, 2, 3, 4
GG02, MM01/02	RT46, RT47, RT50, RT51	SENSOR, SAT, DUCT TEMP., COMP 1, 2, 3, 4
DD01/02,JJ01/02	RT48, RT49, RT52, RT53	SENSOR, SAT, LIQUID TEMP., COMP 1, 2, 3, 4
BB01/02,GG02/01	S4, S7, S28, S96	LIMIT, HI PRESS. SWITCH, COMP 1, 2, 3, 4
AA01	S5	LIMIT, HI TEMP, SWITCH, COMP 1
BB02/03,GG03/02	S87, S88, S98, S97	SWITCH, LOW PRESS., COMP. 1, 2, 3, 4
AA06	T1	TRANSFORMER, CONTROL
BB06	T18	TRANSFORMER, CONTACTOR
FF09	T61	TRANSFORMER, INV INTERNAL POWER
AA07	TB13	TERMINAL STRIP, POWER DISTRIBUTION

Model: LCM, LGM 210U, 240U, 300U, A2L - Y-VOLT
COOLING - MSAV NO BYPASS -OR- VAV - 4 COMPRESSORS, 6 CONDENSER FANS

Voltage: 208-240V/3~/60Hz (Y)
Supersedes: N/A Form No: 538446-01 Rev: 0

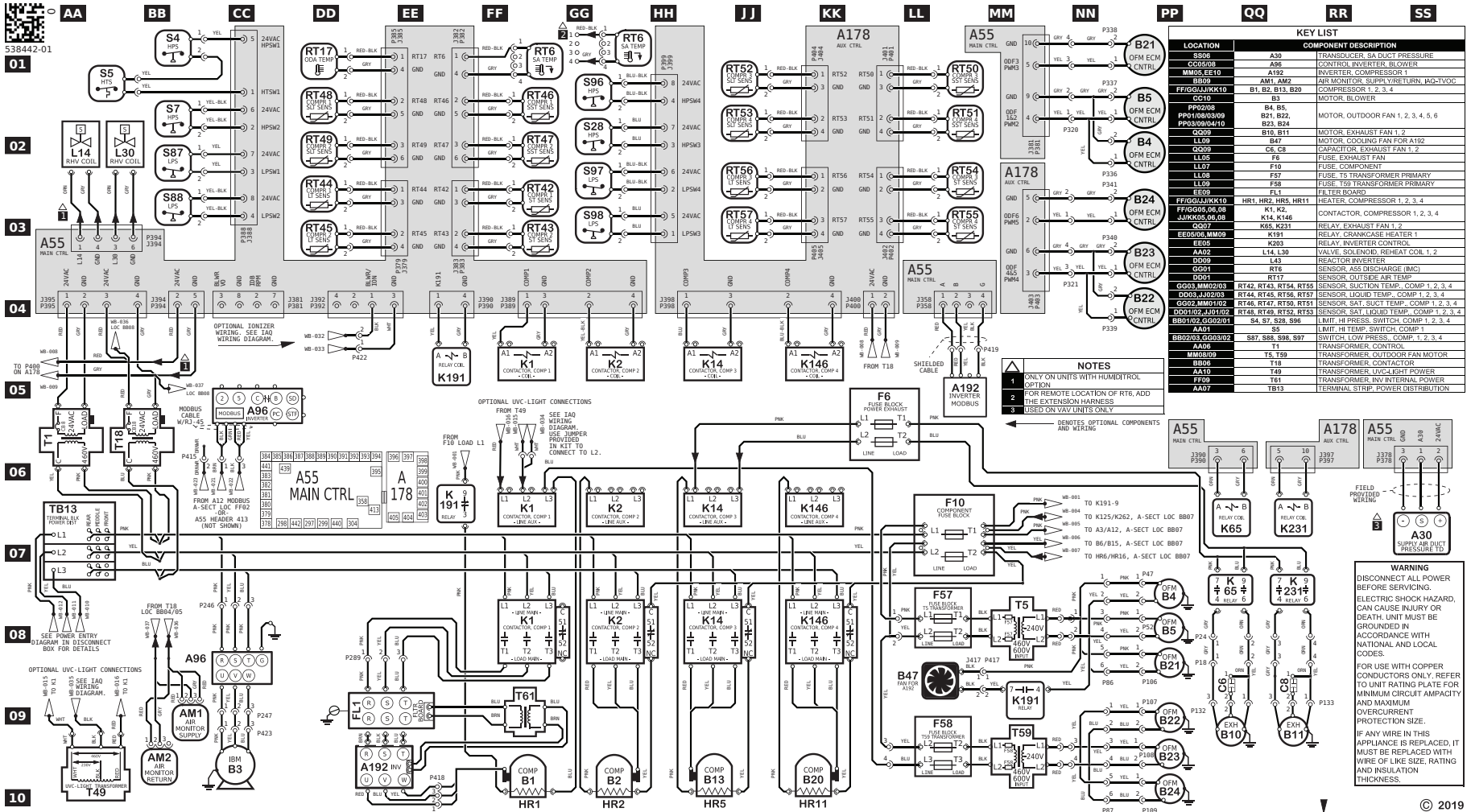
WIRING DIAGRAM FLOW

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

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012015	04-30-2024	DEV	JAL21	ORIGINATED AT PDSR CARROLLTON, TX

LGM210-300 G VOLT DIAGRAM - NO BYPASS



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
SS06	A30	TRANSDUCER, SA DUCT PRESSURE
CC01/08	A96	CONTROL INVERTER, BLOWER
MM05,EE10	A192	INVERTER, COMPRESSOR 1
BB09	AM1, AM2	AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
FF/GG/JJ/KK10	B1, B2, B13, B20	COMPRESSOR 1, 2, 3, 4
QQ10	B3	MOTOR, BLOWER
PP02/08 PP01/08/03/09 PP03/09/04/10	B4, B5, B21, B22, B23, B24	MOTOR, OUTDOOR FAN 1, 2, 3, 4, 5, 6
QQ09	B10, B11	MOTOR, EXHAUST FAN 1, 2
LL09	B47	MOTOR, COOLING FAN FOR A192
QQ09	C6, C8	CAPACITOR, EXHAUST FAN 1, 2
LL05	F6	FUSE, EXHAUST FAN
LL07	F10	FUSE, COMPONENT
LL08	F57	FUSE, T5 TRANSFORMER PRIMARY
LL09	F58	FUSE, T59 TRANSFORMER PRIMARY
EE09	FL1	FILTER BOARD
FF/GG/JJ/KK10	HR1, HR2, HR5, HR11	HEATER, COMPRESSOR 1, 2, 3, 4
FF/GG05,06,08 JJ/KK05,06,08	K1, K2, K14, K146	CONTACTOR, COMPRESSOR 1, 2, 3, 4
QQ07	K65, K231	RELAY, EXHAUST FAN 1, 2
EE05/06,MM09	K191	RELAY, CRANKCASE HEATER 1
EE05	K203	RELAY, INVERTER CONTROL
AA02	L14, L30	VALVE, SOLENOID, REHEAT COIL 1, 2
DD09	L43	REACTOR INVERTER
GG01	RT6	SENSOR, A55 DISCHARGE (IMC)
DD01	RT17	SENSOR, OUTSIDE AIR TEMP
GG03,MM02/03	RT42, RT43, RT54, RT55	SENSOR, SUCTION TEMP., COMP 1, 2, 3, 4
DD03, JJ02/03	RT44, RT45, RT56, RT57	SENSOR, LIQUID TEMP., COMP 1, 2, 3, 4
GG02,MM01/02	RT46, RT47, RT50, RT51	SENSOR, SAT, SUCT TEMP., COMP 1, 2, 3, 4
DD01,JJ01/02	RT48, RT49, RT52, RT53	SENSOR, SAT, LIQUID TEMP., COMP 1, 2, 3, 4
BB01/02,GG02/01	S4, S7, S28, S96	LIMIT, HI PRESS. SWITCH, COMP 1, 2, 3, 4
AA01	S5	LIMIT, HI TEMP. SWITCH, COMP 1
BB02/03,GG03/02	S87, S88, S98, S97	SWITCH, LOW PRESS., COMP. 1, 2, 3, 4
AA06	T1	TRANSFORMER, CONTROL
MM08/09	T5, T59	TRANSFORMER, OUTDOOR FAN MOTOR
BB06	T18	TRANSFORMER, CONTACTOR
AA10	T49	TRANSFORMER, UVC-LIGHT POWER
FF09	T61	TRANSFORMER, INV INTERNAL POWER
AA07	TB13	TERMINAL STRIP, POWER DISTRIBUTION

NOTES	
1	ONLY ON UNITS WITH HUMIDITROL OPTION
2	FOR REMOTE LOCATION OF RT6, ADD THE EXTENSION HARNESS
3	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.

Model: LCM, LGM 210U, 240U, 300U, A2L - G-VOLT
COOLING - MSAV NO BYPASS -OR- VAV - 4 COMPRESSORS, 6 CONDENSER FANS

Voltage: 460V/3~/60Hz (G)
Supersedes: N/A Form No: 538442-01 Rev: 0

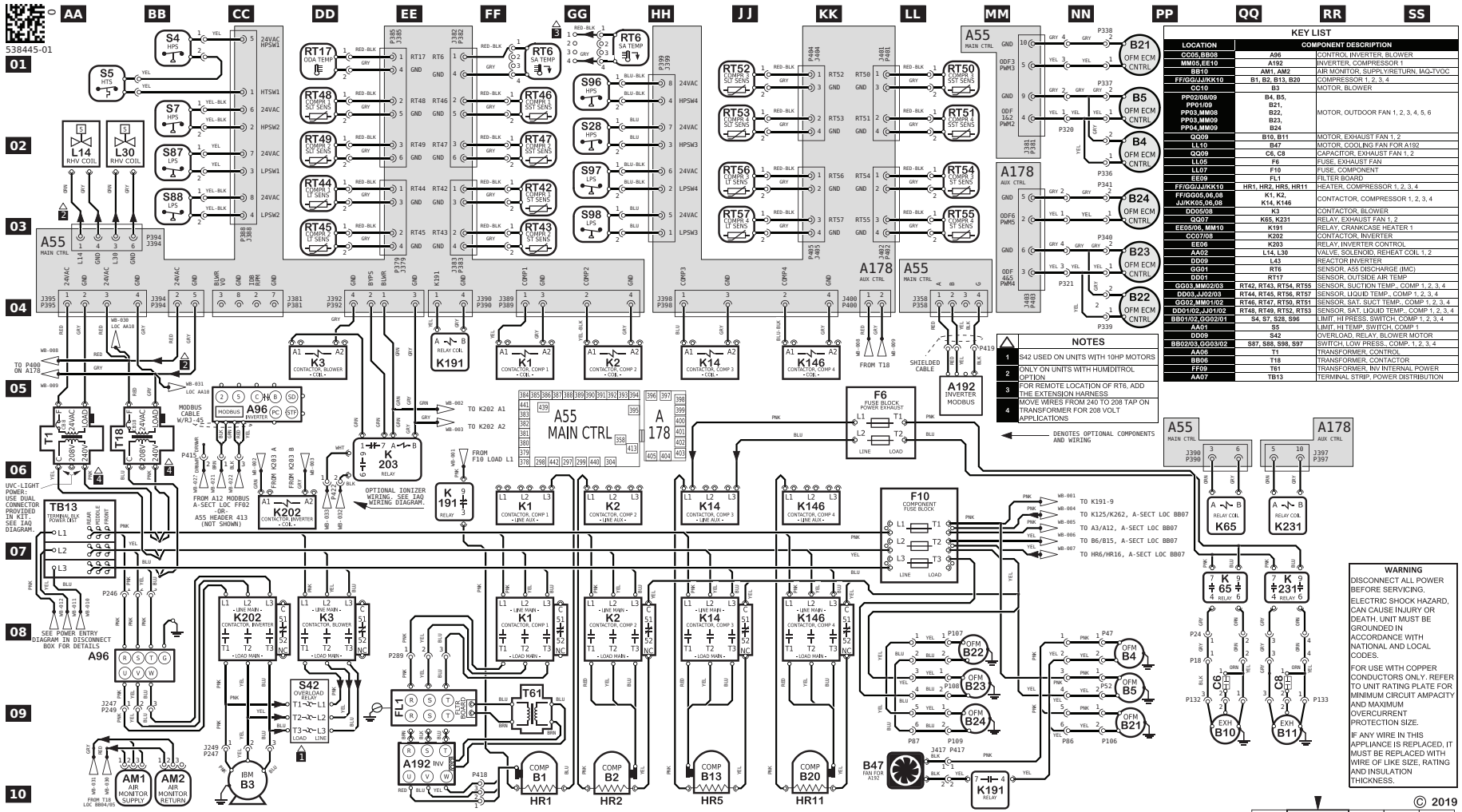
WIRING DIAGRAM FLOW

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

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012015	04-30-2024	DEV	JAL21	ORIGINATED AT PD&R CARROLLTON, TX

LGM210-300 Y VOLT DIAGRAM - WITH BYPASS



KEY LIST	
LOCATION	COMPONENT DESCRIPTION
CC05,BB08	A96, CONTROL INVERTER, BLOWER
MM03,EE10	A192 INVERTER, COMPRESSOR 1
BB10	AM1, AM2 AIR MONITOR, SUPPLY/RETURN, IAQ-TVOC
FF/GG/JJ/KK10	B1, B2, B13, B20 COMPRESSOR 1, 2, 3, 4
CC10	B3 MOTOR, BLOWER
PP02/08/09 PP01/09 PP03,MM08 PP03,MM09 PP04,MM09	B4, B5, B21, B22, B23, B24 MOTOR, OUTDOOR FAN 1, 2, 3, 4, 5, 6
QQ09	B10, B11 MOTOR, EXHAUST FAN 1, 2
LL10	B47 MOTOR, COOLING FAN FOR A192
QQ09	C6, C8 CAPACITOR, EXHAUST FAN 1, 2
LL05	F6 FUSE, EXHAUST FAN
LL07	F10 FUSE, COMPONENT
EE09	FL1 FILTER BOARD
FF/GG/JJ/KK10	HR1, HR2, HR5, HR11 HEATER, COMPRESSOR 1, 2, 3, 4
FF/GG05,06,08 JJ/KK05,06,08	K1, K2, K14, K146 CONTACTOR, COMPRESSOR 1, 2, 3, 4
DD05/08	K3 CONTACTOR, BLOWER
QQ07	K65, K231 RELAY, EXHAUST FAN 1, 2
EE06/06, MM10	K191 RELAY, CRANKCASE HEATER 1
CC07/08	K202 CONTACTOR, INVERTER
EE06	K203 RELAY, INVERTER CONTROL
AA02	L14, L30 VALVE, SOLENOID, REHEAT COIL 1, 2
DD09	L43 REACTOR INVERTER
GG01	RT6 SENSOR, A55 DISCHARGE (IMC)
DD01	RT17 SENSOR, OUTSIDE AIR TEMP
GG03,MM02/03	RT42, RT43, RT54, RT55 SENSOR, SUCTION TEMP., COMP 1, 2, 3, 4
DD03,JJ02/03	RT44, RT45, RT56, RT57 SENSOR; LIQUID TEMP., COMP 1, 2, 3, 4
GG02,MM01/02	RT46, RT47, RT50, RT51 SENSOR, SAT, SUCT TEMP., COMP 1, 2, 3, 4
DD01/02,JJ01/02	RT48, RT49, RT52, RT53 SENSOR, SAT, LIQUID TEMP., COMP 1, 2, 3, 4
BB01/02,GG02/01	S4, S7, S28, S96 LIMIT, HI PRESS, SWITCH, COMP 1, 2, 3, 4
AA01	S5 LIMIT, HI TEMP, SWITCH, COMP 1
DD09	S42 OVERLOAD, RELAY, BLOWER MOTOR
BB02/03,GG03/02	S87, S88, S98, S97 SWITCH, LOW PRESS., COMP, 1, 2, 3, 4
AA06	T1 TRANSFORMER, CONTROL
BB06	T18 TRANSFORMER, CONTACTOR
FF09	T61 TRANSFORMER, INV INTERNAL POWER
AA07	TB13 TERMINAL STRIP, POWER DISTRIBUTION

NOTES	
1	S42 USED ON UNITS WITH 10HP MOTORS
2	ONLY ON UNITS WITH HUMIDITROL OPTION
3	FOR REMOTE LOCATION OF RT6, ADD THE EXTENSION HARNESS
4	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS

WARNING

DISCONNECT ALL POWER BEFORE SERVICING.

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

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

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

Model: LCM, LGM 210U, 240U, 300U, A2L - Y-VOLT
COOLING - MSAV WITH BYPASS - 4 COMPRESSORS, 6 CONDENSER FANS

Voltage: 208-240V/3~/60Hz (Y)
Supersedes: N/A Form No: 538445-01 Rev: 0

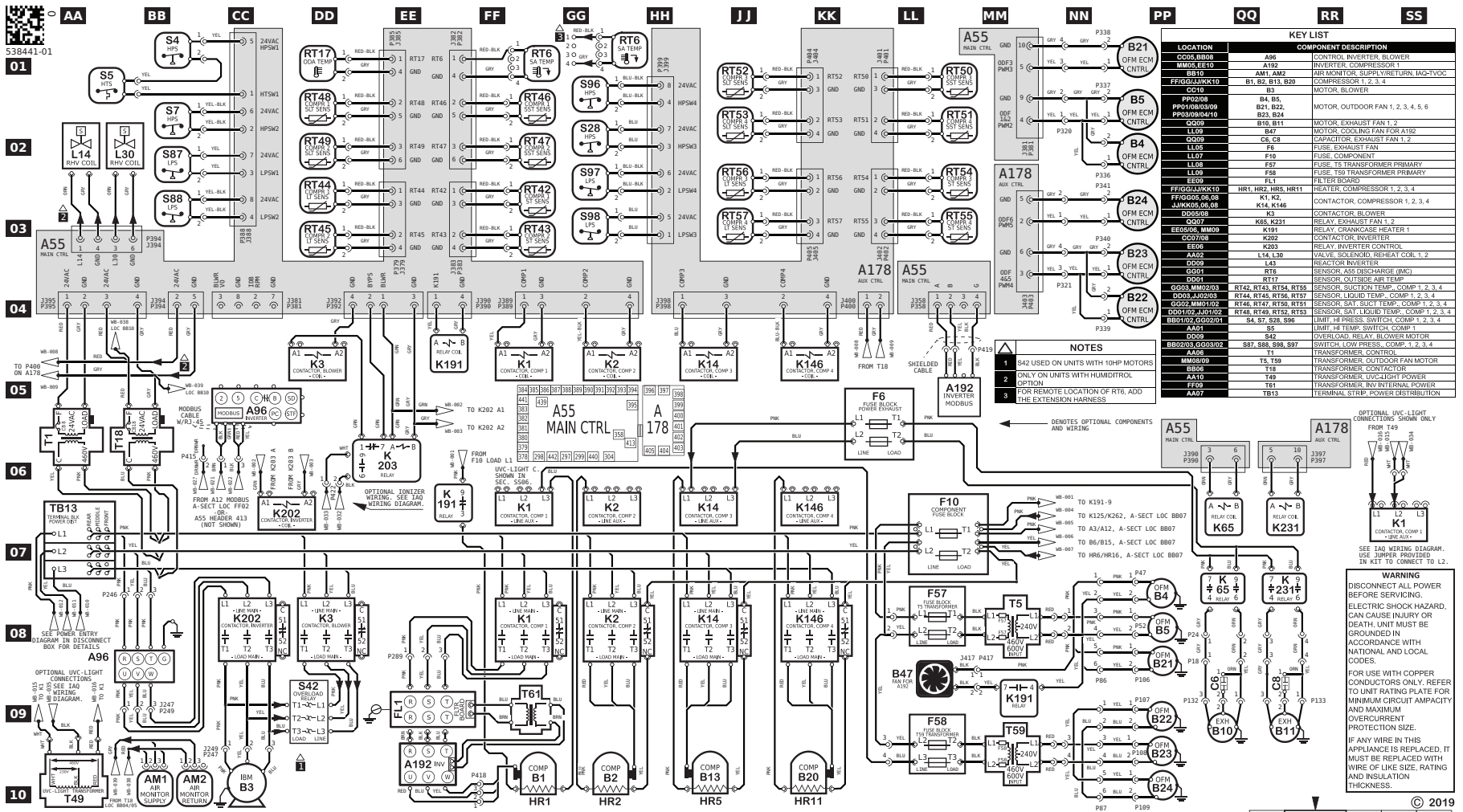
WIRING DIAGRAM FLOW

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

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012015	04-30-2024	DEV	JAL21	ORIGINATED AT PD&R CARROLLTON, TX

LGM210-300 G VOLT DIAGRAM - WITH BYPASS



KEY LIST		
LOCATION	COMPONENT DESCRIPTION	
CC05,BB08	A96	CONTROL INVERTER, BLOWER
MM05,EE10	A192	INVERTER, COMPRESSOR 1
BB10	AM1, AM2	AIR MONITOR, SUPPLY/RETURN; IAQ-TVOC
FF/GG/JJ/KK10	B1, B2, B13, B20	COMPRESSOR 1, 2, 3, 4
CC10	B3	MOTOR, BLOWER
PP02/08 PP01/08/03/09 PP03/09/04/10	B4, B5, B21, B22, B23, B24	MOTOR, OUTDOOR FAN 1, 2, 3, 4, 5, 6
QQ09	B10, B11	MOTOR, EXHAUST FAN 1, 2
LL09	B47	MOTOR, COOLING FAN FOR A192
QQ09	C6, C8	CAPACITOR, EXHAUST FAN 1, 2
LL05	F6	FUSE, EXHAUST FAN
LL07	F10	FUSE, COMPONENT
LL08	F57	FUSE, T5 TRANSFORMER PRIMARY
LL09	F58	FUSE, T59 TRANSFORMER PRIMARY
EE09	FL1	FILTER BOARD
FF/GG/JJ/KK10	HR1, HR2, HR5, HR11	HEATER, COMPRESSOR 1, 2, 3, 4
FF/GG05,06,08 JJ/KK05,06,08	K1, K2, K14, K146	CONTACTOR, COMPRESSOR 1, 2, 3, 4
DD05/08	K3	CONTACTOR, BLOWER
QQ07	K65, K231	RELAY, EXHAUST FAN 1, 2
EE05/06, MM09	K191	RELAY, CRANKCASE HEATER 1
CC07/08	K202	CONTACTOR, INVERTER
EE06	K203	RELAY, INVERTER CONTROL
AA02	L14, L30	VALVE, SOLENOID, REHEAT COIL 1, 2
DD09	L43	REACTOR INVERTER
GG01	RT6	SENSOR, A55 DISCHARGE (IMC)
DD01	RT17	SENSOR, OUTSIDE AIR TEMP
GG03,MM02/03	RT42, RT43, RT54, RT55	SENSOR, SUCTION TEMP., COMP 1, 2, 3, 4
DD03,JJ02/03	RT44, RT45, RT56, RT57	SENSOR, LIQUID TEMP., COMP 1, 2, 3, 4
GG02,MM01/02	RT46, RT47, RT50, RT51	SENSOR, SAT, SUCT TEMP., COMP 1, 2, 3, 4
DD01/02,JJ01/02	RT48, RT49, RT52, RT53	SENSOR, SAT, LIQUID TEMP., COMP 1, 2, 3, 4
BB01/02,GG02/04	S4, S7, S28, S96	LIMIT, HI PRESS, SWITCH, COMP 1, 2, 3, 4
AA01	S5	LIMIT, HI TEMP, SWITCH, COMP 1
DD09	S42	OVERLOAD, RELAY, BLOWER MOTOR
BB02/03,GG03/02	S87, S88, S98, S97	SWITCH, LOW PRESS., COMP, 1, 2, 3, 4
AA06	T1	TRANSFORMER, CONTROL
MM08/09	T5, T59	TRANSFORMER, OUTDOOR FAN MOTOR
BB06	T18	TRANSFORMER, CONTACTOR
AA10	T49	TRANSFORMER, UVC-LIGHT POWER
FF09	T61	TRANSFORMER, INV INTERNAL POWER
AA07	TB13	TERMINAL STRIP, POWER DISTRIBUTION

NOTES	
1	S42 USED ON UNITS WITH 10HP MOTORS
2	ONLY ON UNITS WITH HUMIDITROL OPTION
3	FOR REMOTE LOCATION OF RT6, ADD THE EXTENSION HARNESS

Model: LCM, LGM 210U, 240U, 300U A2L - G-VOLT
COOLING - MSAV WITH BYPASS - 4 COMPRESSORS, 6 CONDENSER FANS

Voltage: 460V/3~/60Hz (G)
Supersedes: N/A Form No: 538441-01 Rev: 0

10x17 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012015	04-30-2024	DEV	JAL21	ORIGINATED AT PD&R CARROLLTON, TX

XII-Decomissioning

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

Steps to ensure this are:

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

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

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

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

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

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

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

⚠ IMPORTANT

Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be signed and dated. Ensure that there are labels on the equipment that state the flammability of the refrigerant used.