UNIT INFORMATION

100153

LGX SERIES
2 to 6 ton
7 to 21 kW

Service Literature

LGX024 through 072 with R454B

The LGX packaged gas units are available in standard cooling efficiency (024, 036, 048, 060, and 072). Cooling capacities range from 2 to 6 tons (7 to 21kW).

LGX024, 036, 048, 060, 072 units are available in 65,000 to 150,000 BTUH heat capacities. Gas heat sections are designed with aluminized steel tube heat exchangers.

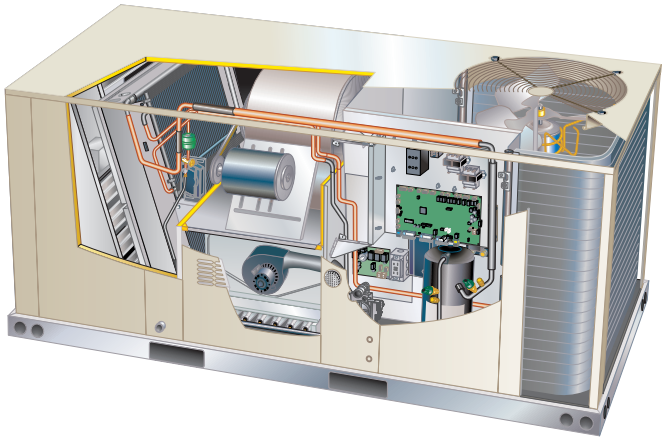
Information contained in this manual is intended for use by qualified service technicians only. All specifications are subject to change. Procedures outlined in this manual are presented as a recommendation only and do not supersede or replace local or state codes.

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

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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⚠ WARNING

To prevent serious injury or death:

1- Lock-out/tag-out before performing maintenance.

2- If system power is required (e.g., smoke detector maintenance), disable power to blower, remove fan belt where applicable, and ensure all controllers and thermostats are set to the "OFF" position before performing maintenance.

3- Always keep hands, hair, clothing, jewelry, tools, etc., away from moving parts.

⚠ WARNING

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

⚠ CAUTION

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

⚠ WARNING

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

⚠ WARNING

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

⚠ CAUTION

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

⚠ WARNING

• 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

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

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 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.

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		Order Number	Size 024	036	048	060	072
COOLING SYSTEM							
Condensate Drain Trap	PVC	**22H54**	X	X	X	X	X
	Copper	**76W27**	X	X	X	X	X
Drain Pan Overflow Switch		**21Z07**	X	X	X	X	X
HEATING SYSTEM							
Bottom Gas Piping Kit		**19W50**	X	X	X	X	X
Combustion Air Intake Extensions		**19W51**	X	X	X	X	X
Gas Heat Input	Standard One-Stage (Low NOx only) - 65 kBtuh input	Factory	O	O	O	O	O
	Medium Two Stage (Low NOx only) - 81/108 kBtuh input	Factory		O	O	O	O
	High Two-Stage (Low NOx only) - 113/150 kBtuh input	Factory			O	O	O
LPG/Propane Conversion Kits	For One-Stage Models	**21Z22**	X	X	X	X	X
	For Two-Stage Models	**21Z23**		X	X	X	X
Gas Heat Type	Low NOx (40 ng/J) Gas Heat	Factory	O	O	O	O	O
Low Temperature Vestibule Heater	208/230V-1 or 3 ph	**21Z17**	X	X	X	X	X
	460V-3ph	**21Z18**		X	X	X	X
	575V-3ph	**21Z19**		X	X	X	X
Stainless Steel Heat Exchanger		Factory	O	O	O	O	O
Vertical Vent Extension		**31W62**	X	X	X	X	X

NOTE - The order numbers that appear here are for ordering field installed accessories only.

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

O - Configure to Order (Factory Installed)

X - Field Installed

OPTIONS / ACCESSORIES

Item		Order Number	Size 024	036	048	060	072
BLOWER - SUPPLY AIR							
Motors	Direct Drive (ECM) - 0.50 HP (208/230V-1ph)	Factory	O	O			
	Direct Drive (ECM) - 1.0 HP (All Voltages)	Factory		O	O	O	
	Direct Drive (PSC) - 0.5 HP (208/230V-3ph, 460V-3ph, 575V-3ph)	Factory		O	O		
	Single-Speed Belt Drive - 2 HP (208/230V, 460V, 575V-3ph)	Factory				O	
	Two-Speed Belt Drive - 2 HP (208/230V, 460V, 575V-3ph)	Factory					O
Drive Kits See Blower Data Tables for selection	Kit A03 - 833-1250 rpm	Factory				O	
	Kit A04 - 968-1340 rpm	Factory					O
	Kit A07 - 1212-1548 rpm	Factory				O	
	Kit A08 - 1193-1591 rpm	Factory					O
CABINET							
Combination Coil/Hail Guards		**13R98**	OX	OX	OX	OX	
		13T03					OX
Hinged Access Panels		Factory	O	O	O	O	O
CONTROLS							
BACnet® Module		**38B35**	X	X	X	X	X
Dirty Filter Switch		**53W66**	X	X	X	X	X
Smoke Detector - Supply or Return (Power board and one sensor)		**21Z11**	X	X	X	X	X
Smoke Detector - Supply and Return (Power board and two sensors)		**21Z12**	X	X	X	X	X
ELECTRICAL							
Voltage 60 hz	208/230V - 1 phase		O	O	O	O	
	208/230V - 3 phase			O	O	O	O
	460V - 3 phase			O	O	O	O
	575V - 3 phase			O	O	O	O
Disconnect	See Electrical Data Tables for selection		OX	OX	OX	OX	OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only)	**74M70**	OX	OX	OX	OX	OX
	[3] 20 amp non-powered, field-wired (208/230V, 460V, 575V)	**67E01**	X	X	X	X	X
	[1] 20 amp non-powered, field-wired (575V)	Factory	O	O	O	O	O
Weatherproof Cover for GFI		**10C89**	X	X	X	X	X

[1] Canada requires a minimum 20 amp circuit. Select 20 amp, non-powered, field wired GFI.

NOTE - The order numbers that appear here are for ordering field installed accessories only.

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OPTIONS / ACCESSORIES

Item		Order Number	Size 024	036	048	060	072
ECONOMIZER							
High Performance Economizer (Approved for California Title 24 Building Standards / AMCA Class 1A Certified)							
Includes Barometric Relief Dampers and Combination Hood		**20H48**	OX	OX	OX	OX	OX
Economizer Accessories							
Horizontal Economizer Conversion Kit		**17W45**	X	X	X	X	X
Economizer Controls							
Single Enthalpy Control		**21Z09**	OX	OX	OX	OX	OX
Differential Enthalpy Control (order 2) (Not for Title 24)		**21Z09**	X	X	X	X	X
POWER EXHAUST FAN							
Standard Static	208/230V-1 or 3ph	**21Z13**	X	X	X	X	X
NOTE - Field installed Power Exhaust Fan requires "Barometric Relief Dampers for Power Exhaust Kit" for field installation. See below.	460V-3ph	**21Z14**		X	X	X	X
	575V-3ph	**21Z15**		X	X	X	X
BAROMETRIC RELIEF							
[4] Barometric Relief Dampers for Power Exhaust Kit		**21Z21**	X	X	X	X	X
[5] Horizontal Barometric Relief Dampers With Outdoor Air and Exhaust Hood		**19F01**	X	X	X	X	X
OUTDOOR AIR							
Outdoor Air Dampers With Outdoor Air Hood							
Motorized		**15D17**	X	X	X	X	X
Manual		**15D18**	X	X	X	X	X
HUMIDITROL® DEHUMIDIFICATION REHEAT OPTION							
Humiditrol Dehumidification Option		Factory	O	O	O	O	O

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

NOTE - The order numbers that appear here are for ordering field installed accessories only.
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OPTIONS / ACCESSORIES

Item		Order Number	Size 024	036	048	060	072
INDOOR AIR QUALITY							
Air Filters							
Healthy Climate® High Efficiency Air Filters	MERV 8 (16 x 20 x 2)	**54W20**	X	X	X	X	
Order 4 per unit	MERV 13 (16 x 20 x 2)	**52W37**	X	X	X	X	
	MERV 16 (16 x 20 x 2)	**22H13**	X	X	X	X	
	MERV 8 (20 x 20 x 2)	**54W21**					X
	MERV 13 (20 x 20 x 2)	**52W39**					X
	MERV 16 (20 x 20 x 2)	**21U40**					X
Replaceable Media Filter With Metal Mesh Frame (includes non-pleated filter media) (Order 4 per unit)	20 x 20 x 2 in.	**44N60**					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 - Wall-mount, black plastic case, no display, rated for plenum mounting		**23V87**	X	X	X	X	X
CO_2 Sensor Duct Mounting Kit - for downflow applications		**23Y47**	X	X	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensor (**77N39**)		**90N43**	X	X	X	X	X
Needlepoint Bipolar Ionization (NPBI)							
Needlepoint Bipolar Ionization Kit		**22U14**	X	X	X	X	X
UVC Germicidal Lamps							
[6] Healthy Climate® UVC Light Kit (110/230V-1ph)		**21A92**	X	X	X	X	X
Step-Down Transformers	460V primary, 230V secondary	**10H20**	X	X	X	X	X
	575V primary, 230V secondary	**10H21**	X	X	X	X	X
ROOF CURBS							
Hybrid Roof Curbs, Downflow							
8 in. height		**11F50**	X	X	X	X	X
14 in. height		**11F51**	X	X	X	X	X
18 in. height		**11F52**	X	X	X	X	X
24 in. height		**11F53**	X	X	X	X	X
Adjustable Pitch Curb							
14 in. height		**43W27**	X	X	X	X	X
CEILING DIFFUSERS							
Step-Down - Order one	RTD9-65S	**13K60**	X	X	X	X	
	RTD11-95S	**13K61**					X
Flush - Order one	FD9-65S	**13K55**	X	X	X	X	
	FD11-95S	**13K56**					X
Transitions (Supply and Return) - Order one	T1TRAN10AN1	**17W53**	X	X	X	X	
	T1TRAN20N-1	**17W54**					X

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

NOTE - The order numbers that appear here are for ordering field installed accessories only.

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

O - Configure to Order (Factory Installed)

X - Field Installed

SPECIFICATIONS - DIRECT DRIVE BLOWER — 2 TON | 3 TON

Model		LGX024S5E	LGX036S5D	LGX036S5E
Nominal Tonnage		2	3	3
Efficiency Type		Standard	Standard	Standard
Blower Type		Multi-Tap Direct Drive	Multi-Tap Direct Drive	Varible-Speed Direct Drive
Cooling Performance	Gross Cooling Capacity (Btuh)	24,600	37,300	37,300
	[1] Net Cooling Capacity (Btuh)	23,600	35,600	35,600
	[1] AHRI Rated Air Flow (cfm)	850	1200	1200
	[1] SEER2 (Btuh/Watt)	14.0	14.0	14.0
	[1] EER2 (Btuh/Watt)	11.5	11.5	11.5
	Total Unit Power (kW)	1.9	3.0	3.0
Sound Rating Number	dBA	74	74	74
Refrigerant Charge	Refrigerant Type	R-454B	R-454B	R-454B
	Without Reheat Option	3 lbs. 15 oz.	3 lbs. 10 oz.	3 lbs. 10 oz.
	With Reheat Option	3 lbs. 15 oz.	3 lbs. 10 oz.	3 lbs. 10 oz.
Gas Heat Available		See page 11		
Compressor Type (Number)		Scroll (1)	Scroll (1)	Scroll (1)
Outdoor Coil	Net face area - ft.^{2}	11.7	11.7	11.7
	Rows	1	1	1
	Fins - in.	23	23	23
Outdoor Coil Fan	Motor HP (number and type)	1/4 (1 PSC)	1/4 (1 PSC)	1/4 (1 PSC)
	Rpm	825	825	825
	Watts	325	325	325
	Diameter (Number) - in.	(1) 24	(1) 24	(1) 24
	Blades	4	4	4
	Total air volume - cfm	3950	3950	3950
Indoor Coil	Net face area - ft.^{2}	7.0	7.0	7.0
	Rows	1	1	1
	Fins - in.	20	20	20
	Condensate drain size (NPT) - in.	(1) 1	(1) 1	(1) 1
	Expansion device type	Balanced Port Thermostatic Expansion Valve removable power head		
Indoor Blower	Blower Type	ECM	PSC	ECM
	Nominal Motor HP	0.5	0.5	0.5 or 1
	Wheel (Number) diameter x width - in.	(1) 10 x 10	(1) 10 x 10	(1) 10 x 10 (0.5 HP) (1) 11 x 10 (1 HP)
Filters	Type	MERV 4, Disposable		
	Number and size - in.	(4) 16 x 20 x 2		
Line voltage data (Volts-Phase-Hz)		208/230V-1-60	208/230-3-60 460-3-60 575-3-60	208/230V-1-60 208/230-3-60 460-3-60 575-3-60

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

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

SPECIFICATIONS - DIRECT DRIVE BLOWER — 4 TON | 5 TON

Model		LGX048S5D	LGX048S5E	LGX060S5E
Nominal Tonnage		4	4	5
Efficiency Type		Standard	Standard	Standard
Blower Type		Multi-Tap Direct Drive	Varible-Speed Direct Drive	Varible-Speed Direct Drive
Cooling Performance	Gross Cooling Capacity (Btuh)	49,700	49,700	60,900
	[1] Net Cooling Capacity (Btuh)	47,000	47,000	58,000
	[1] AHRI Rated Air Flow (cfm)	1700	1700	1900
	[1] SEER2 (Btuh/Watt)	14.0	14.0	14.0
	[1] EER2 (Btuh/Watt)	11.5	11.5	11.5
	Total Unit Power (kW)	4.1	4.1	5.0
Sound Rating Number	dBA	74	74	74
Refrigerant Charge	Refrigerant Type	R-454B	R-454B	R-454B
	Without Reheat Option	3 lbs. 8 oz.	3 lbs. 8 oz.	3 lbs. 12 oz.
	With Reheat Option	3 lbs. 8 oz.	3 lbs. 8 oz.	3 lbs. 12 oz.
Gas Heat Available		See page 11		
Compressor Type (Number)		Scroll (1)	Scroll (1)	Scroll (1)
Outdoor Coil	Net face area - ft.^{2}	14.5	14.5	14.5
	Rows	1	1	1
	Fins - in.	23	23	23
Outdoor Coil Fan	Motor HP (number and type)	1/4 (1 PSC)	1/4 (1 PSC)	1/4 (1 PSC)
	Rpm	825	825	825
	Watts	325	325	325
	Diameter (Number) - in.	(1) 24	(1) 24	(1) 24
	Blades	4	4	4
	Total air volume - cfm	3950	3950	3950
Indoor Coil	Net face area - ft.^{2}	7.0	7.0	7.0
	Rows	1	1	1
	Fins - in.	20	20	20
	Condensate drain size (NPT) - in.	(1) 1	(1) 1	(1) 1
	Expansion device type	Balanced Port Thermostatic Expansion Valve removable power head		
Indoor Blower	Blower Type	PSC	ECM	ECM
	Nominal Motor HP	0.5	1	1
	Wheel (Number) diameter x width - in.	(1) 10 x 10	(1) 11 x 10	(1) 11 x 10
Filters	Type	MERV 4, Disposable		
	Number and size - in.	(4) 16 x 20 x 2		
Line voltage data (Volts-Phase-Hz)		208/230-3-60 460-3-60 575-3-60	208/230V-1-60 208/230-3-60 460-3-60 575-3-60	

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

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

SPECIFICATIONS - BELT DRIVE BLOWER — 5 TON | 6 TON

Model		LGX060S5B	LGX072S5T
Nominal Tonnage		5	6
Efficiency Type		Standard	Standard
Blower Type		Single Speed Belt Drive	Two Speed Belt Drive
Cooling Performance	Gross Cooling Capacity (Btuh)	60,900	72,000
	[1] Net Cooling Capacity (Btuh)	58,000	68,000
	[1] AHRI Rated Air Flow (cfm)	1900	2200
	[1] SEER2 (Btuh/Watt)	14.0	- - -
	[1] EER2 (Btuh/Watt)	11.5	- - -
	[1] IEER (Btuh/Watt)	- - -	15.0
	[1] EER (Btuh/Watt)	- - -	11.0
	Total Unit Power (kW)	5.0	5.6
Sound Rating Number	dBA	74	79
Refrigerant Charge	Refrigerant Type	R-454B	R-454B
	Without Reheat Option	3 lbs. 12 oz.	5 lbs. 6 oz.
	With Reheat Option	3 lbs. 12 oz.	5 lbs. 14 oz.
Gas Heat Available		See page 11	
Compressor Type (Number)		Scroll (1)	Two-Stage Scroll (1)
Outdoor Coil	Net face area - sq. ft.	14.5	17.8
	Rows	1	1
	Fins - in.	23	23
Outdoor Coil Fan	Motor HP (number and type)	1/4 (1 PSC)	1/3 (1 PSC)
	Rpm	825	1075
	Watts	325	375
	Diameter (Number) - in.	(1) 24	(1) 24
	Blades	4	3
	Total air volume - cfm	3950	4700
Indoor Coil	Net face area - sq. ft.	7.0	8.7
	Rows	1	1
	Fins - in.	20	20
	Condensate drain size (NPT) - in.	(1) 1	(1) 1 in.
	Expansion device type	Balanced Port Thermostatic Expansion Valve removable power head	
[3] **Indoor Blower & Drive Selection**	Nominal Motor HP	2	2
	Maximum Usable Motor HP (US)	2.3	2.3
	Available Drive Kits	A03 833 - 1250 rpm A07 1212 - 1548 rpm	A04 968 - 1340 rpm A08 1193-1591 rpm
	Wheel (Number) diameter x width - in.	(1) 10 x 10	(1) 10 x 10
Filters	Type	Disposable	
	Number and size - in.	(4) 16 x 20 x 2	(4) 20 x 20 x 2
Line voltage data (Volts-Phase-Hz)		208/230-3-60 460-3-60 575-3-60	

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

[1] AHRI Certified to AHRI Standard 210/240 (2-5 ton) or 340/360 (6 ton): 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

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

SPECIFICATIONS - GAS HEAT — LOW NOX (ALL MODELS)

Unit Size		024, 036, 048, 060	072	036, 048, 060, 072	048, 060, 072
Heat Input Type		**Standard (1 Stage)**		**Medium (2 Stage)**	**High (2 Stage)**
Input Btuh	1st Stage	65,000		81,000	113,000
	2nd Stage	- - -		108,000	150,000
Output Btuh	1st Stage	53,000		66,000	92,000
	2nd Stage	- - -		87,000	121,000
Temperature Rise Range - °F	1st stage	35 - 65	15 - 45	25 - 55	30 - 60
	2nd Stage	- - -	- - -	30 - 70	45 - 75
Minimum air volume - cfm		750	1075	1150	1500
[1] AFUE (single phase)		81%		81%	81%
[2] Thermal Efficiency (three phase)		81%		81%	81%
Gas Supply Connections		1/2 in. NPT			
Recommended Gas Supply Pressure - Nat. / LPG		7 in. w.g. / 11 in. w.g.			
Gas Supply Pressure Range	Min./Max. (Natural)	4.5 - 10.5 in. w.g.			
	Min./Max. (LPG)	10.8 - 13.5 in. w.g.			

[1] Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations - 1 phase models only.
[2] Thermal Efficiency at full input.

HIGH ALTITUDE DERATE

NOTE - Units may be installed at altitudes up to 2000 feet above sea level without any modifications.
At altitudes above 2000 feet units must be derated to match gas manifold pressures shown in table below.
At altitudes above 4500 feet unit must be derated 2% 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.

Heat Input Type	Altitude Feet	Gas Manifold Pressure in. w.g.		Input Rate (Btuh)
		Natural Gas	LPG/ Propane	
Standard (1 stage)	2001 - 4500	1.7 / 3.0	5.9 / 9.0	62,000
Medium (2 stage)	2001 - 4500	1.7 / 3.0	5.9 / 9.0	81,000 /104,000
High (2 stage)	2001 - 4500	1.7 / 3.0	5.9 / 9.0	113,000 / 144,000

LGX024S5E | LGX036S5E

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

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (larger gas heat section, economizer, wet coil, etc.) See page 18.

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.) See page 18.

DOWNFLOW

External Static Press. in. w.g.	Percentage of Total Motor Torque																										
	20%			30%			40%			50%			60%			70%			80%			90%			100%		
	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM
0	811	50	415	994	82	473	1177	114	531	1319	154	579	1461	194	626	1564	236	663	1667	278	700	1804	349	753	1878	396	783
0.1	716	47	494	906	81	547	1095	115	599	1243	158	642	1391	200	685	1500	243	718	1608	286	751	1753	361	798	1833	409	824
0.2	631	49	570	827	85	618	1023	121	665	1176	165	704	1329	209	742	1442	254	772	1555	299	802	1708	375	843	1794	425	865
0.3	556	54	644	758	92	687	960	130	729	1118	176	764	1275	222	799	1392	268	825	1509	314	851	1668	392	888	1759	443	907
0.4	489	62	715	696	102	753	903	142	791	1065	189	822	1227	236	853	1347	284	877	1467	331	900	1632	410	932	1726	462	949
0.5	- - -	- - -	- - -	- - -	- - -	- - -	851	155	851	1017	204	879	1183	253	906	1306	301	927	1429	349	948	1597	430	976	1693	481	991
0.6	- - -	- - -	- - -	- - -	- - -	- - -	804	170	909	973	220	933	1141	269	957	1267	318	976	1392	367	994	1562	449	1019	1660	501	1032
0.7	- - -	- - -	- - -	- - -	- - -	- - -	759	184	964	930	235	985	1101	286	1006	1228	336	1023	1355	385	1039	1527	467	1062	1624	519	1074
0.8	- - -	- - -	- - -	- - -	- - -	- - -	716	199	1017	889	251	1036	1061	302	1054	1189	352	1069	1317	402	1083	1489	484	1103	1585	535	1115
0.9	- - -	- - -	- - -	- - -	- - -	- - -	671	211	1067	845	264	1083	1019	316	1099	1148	366	1112	1276	416	1125	1447	499	1144	1540	549	1156
1.0	- - -	- - -	- - -	- - -	- - -	- - -	625	222	1114	800	275	1128	974	327	1142	1102	378	1154	1230	428	1165	1400	510	1183	1489	559	1196
1.1	- - -	- - -	- - -	- - -	- - -	- - -	576	230	1158	751	283	1170	925	336	1182	1052	387	1193	1179	437	1203	1345	518	1221	1430	566	1235
1.2	- - -	- - -	- - -	- - -	- - -	- - -	521	234	1199	695	288	1210	869	341	1220	995	391	1230	1121	441	1240	1283	521	1258	1361	567	1273
1.3	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	806	340	1255	930	390	1265	1054	440	1274	1210	519	1293	1281	562	1311
1.4	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	734	335	1288	856	384	1297	977	433	1306	1126	510	1326	1188	552	1347

HORIZONTAL

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

LGX048S5E I LGX060S5E

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

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (larger gas heat section, economizer, wet coil, etc.) See page 18.

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.) See page 18.

DOWNFLOW

External Static Press. in. w.g.	Percentage of Total Motor Torque																										
	20%			30%			40%			50%			60%			70%			80%			90%			100%		
	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM
0	1067	112	488	1325	196	573	1583	279	657	1759	381	726	1934	482	794	2046	579	845	2157	676	896	2285	816	956	2358	925	989
0.1	984	97	537	1249	184	616	1513	270	695	1697	376	760	1881	481	825	2002	584	873	2123	686	921	2273	838	978	2352	947	1008
0.2	912	91	587	1183	180	661	1453	268	735	1644	377	796	1835	486	856	1964	593	902	2093	700	947	2264	863	1001	2349	973	1030
0.3	851	92	636	1126	183	706	1400	273	775	1597	385	832	1794	497	889	1931	607	932	2067	717	974	2256	891	1026	2348	1001	1053
0.4	797	100	687	1075	192	751	1353	283	815	1555	397	869	1757	511	922	1901	625	962	2044	738	1002	2248	919	1051	2347	1031	1077
0.5	752	114	737	1032	206	796	1312	298	855	1518	413	905	1724	528	955	1873	644	993	2021	760	1030	2239	948	1078	2345	1061	1102
0.6	712	132	787	994	224	842	1275	316	896	1484	432	942	1692	548	988	1845	666	1024	1998	783	1059	2228	977	1104	- - -	- - -	- - -
0.7	678	155	836	960	246	886	1242	336	936	1452	452	979	1662	568	1021	1818	687	1055	1974	806	1088	2214	1004	1131	- - -	- - -	- - -
0.8	648	180	885	929	269	931	1210	358	976	1421	474	1016	1632	589	1055	1790	709	1086	1948	828	1117	2195	1028	1158	- - -	- - -	- - -
0.9	621	207	933	900	294	974	1179	381	1015	1390	495	1051	1600	609	1087	1760	728	1117	1919	847	1146	2170	1049	1185	- - -	- - -	- - -
1.0	596	235	981	872	319	1017	1148	403	1053	1357	516	1086	1566	628	1119	1725	746	1147	1884	864	1174	2139	1066	1212	- - -	- - -	- - -
1.1	- - -	- - -	- - -	- - -	- - -	- - -	1115	424	1090	1322	534	1120	1528	643	1150	1686	760	1176	1844	876	1201	2100	1078	1238	- - -	- - -	- - -
1.2	- - -	- - -	- - -	- - -	- - -	- - -	1080	443	1126	1283	549	1153	1485	655	1180	1641	770	1204	1797	884	1228	2052	1083	1264	- - -	- - -	- - -
1.3	- - -	- - -	- - -	- - -	- - -	- - -	1040	458	1161	1238	561	1185	1436	663	1209	1589	775	1231	1742	886	1253	1993	1081	1288	- - -	- - -	- - -
1.4	- - -	- - -	- - -	- - -	- - -	- - -	996	469	1194	1189	567	1215	1381	665	1236	1530	773	1257	1678	881	1277	1923	1071	1311	- - -	- - -	- - -

HORIZONTAL

External Static Press. in. w.g.	Percentage of Total Motor Torque																										
	20%			30%			40%			50%			60%			70%			80%			90%			100%		
	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM	Cfm	Watts	RPM
0	1087	111	493	1304	184	579	1520	257	665	1689	368	738	1857	478	810	1972	588	864	2087	698	918	2196	844	975	2283	925	1000
0.1	1021	104	537	1246	180	618	1470	255	699	1646	368	768	1821	480	837	1941	592	888	2061	704	938	2179	852	992	2255	926	1017
0.2	961	102	582	1193	181	658	1425	259	734	1607	373	799	1789	487	864	1914	601	912	2039	714	960	2163	864	1012	2231	932	1034
0.3	906	106	628	1145	186	699	1384	266	769	1572	382	831	1759	498	892	1889	613	938	2018	728	984	2149	879	1033	2209	941	1053
0.4	855	113	674	1101	196	740	1347	278	806	1540	396	864	1732	513	921	1866	629	965	1999	744	1008	2134	896	1054	- - -	- - -	- - -
0.5	808	125	720	1060	209	781	1312	293	842	1509	412	896	1706	530	950	1843	646	992	1980	762	1033	2119	915	1077	- - -	- - -	- - -
0.6	764	139	766	1022	225	823	1279	310	879	1481	430	930	1682	549	980	1821	666	1019	1960	782	1058	2102	935	1101	- - -	- - -	- - -
0.7	722	155	812	984.5	242	864	1247	328	916	1452	449	964	1657	569	1011	1799	686	1048	1940	803	1084	2084	955	1125	- - -	- - -	- - -
0.8	682	172	858	949	260	906	1216	348	953	1424	469	997	1632	589	1041	1776	706	1076	1919	823	1111	2063	974	1150	- - -	- - -	- - -
0.9	643	191	903	914	279	946	1185	367	989	1396	489	1030	1606	610	1071	1751	727	1104	1895	843	1137	2039	992	1175	- - -	- - -	- - -
1.0	- - -	- - -	- - -	- - -	- - -	- - -	1153	386	1024	1366	508	1062	1579	629	1100	1724	745	1132	1869	861	1163	2011	1008	1201	- - -	- - -	- - -
1.1	- - -	- - -	- - -	- - -	- - -	- - -	1120	404	1059	1334	525	1095	1548	646	1130	1694	761	1160	1839	876	1189	1979	1021	1226	- - -	- - -	- - -
1.2	- - -	- - -	- - -	- - -	- - -	- - -	1085	420	1093	1300	541	1126	1515	661	1158	1660	775	1186	1805	889	1214	1941	1031	1250	- - -	- - -	- - -
1.3	- - -	- - -	- - -	- - -	- - -	- - -	1047	433	1126	1263	553	1156	1478	672	1186	1622	785	1213	1766	898	1239	1897	1037	1275	- - -	- - -	- - -
1.4	- - -	- - -	- - -	- - -	- - -	- - -	1005	442	1158	1221	561	1185	1436	680	1212	1579	792	1238	1721	903	1263	1847	1037	1298	- - -	- - -	- - -

LGX036S5D | LGX048S5D

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

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (larger gas heat section, economizer, wet coil, etc.) See page 18.

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.) See page 18.

Minimum Air Volume Required For Different Gas Heat Sizes:

Standard Heat - 1075 cfm; Medium Heat - 1150 cfm; High Heat - 1500 cfm

External Static Pressure (in. w.g.)	Air Volume (cfm) at Various Blower Speeds								
	208 VOLTS			230 VOLTS			460/575 VOLTS		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
3 and 4 Ton Standard Efficiency (Downflow)									**LGX036S and LGX048S**
0.0	1873	1561	1123	2094	1783	1321	2064	1727	1216
0.1	1993	1601	1148	2168	1797	1338	2105	1744	1229
0.2	1913	1601	1137	2098	1803	1308	2050	1694	1198
0.3	1858	1527	1078	2036	1725	1261	1987	1638	1167
0.4	1801	1496	1046	1973	1679	1219	1905	1598	1148
0.5	1763	1467	987	1910	1647	1177	1862	1559	1108
0.6	1709	1414	897	1830	1560	1080	1781	1509	1057
0.7	1617	1368	806	1727	1519	986	1698	1449	982
0.8	1472	1269	730	1604	1419	918	1614	1389	920
0.9	1359	1162	487	1478	1363	706	1488	1346	792
1.0	961	922	370	1093	1083	590	1167	1099	703
3 and 4 Ton Standard Efficiency (Horizontal)									**LGX036S and LGX048S**
0.0	1799	1530	1073	2012	1747	1263	2015	1756	1251
0.1	1868	1544	1088	2032	1733	1268	2071	1760	1279
0.2	1802	1494	1068	1976	1682	1228	2014	1700	1226
0.3	1735	1432	1014	1900	1618	1185	1937	1634	1187
0.4	1666	1397	980	1825	1568	1142	1878	1597	1174
0.5	1615	1350	904	1750	1516	1078	1801	1558	1124
0.6	1564	1305	842	1675	1440	1014	1743	1479	1060
0.7	1462	1228	758	1562	1364	928	1664	1415	982
0.8	1330	1151	670	1449	1287	842	1512	1335	865
0.9	1194	1011	464	1298	1185	671	1393	1297	733
1.0	878	878	355	998	1032	565	1060	1063	618

LGX060S5B

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

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (larger gas heat section, economizer, wet coil, etc.) See page 18.

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.) See page 18.

See page 18 for blower motors and drives.

Minimum Air Volume Required For Different Gas Heat Sizes:

Standard Heat - 1075 cfm; Medium Heat - 1150 cfm; High Heat - 1500 cfm

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1600	720	0.28	769	0.33	819	0.37	871	0.41	926	0.44	975	0.47	1016	0.51	1054	0.55
1700	779	0.30	822	0.35	864	0.39	908	0.44	953	0.48	995	0.52	1034	0.57	1072	0.61
1800	828	0.34	864	0.39	901	0.43	938	0.48	977	0.53	1015	0.58	1053	0.63	1091	0.67
1900	858	0.41	892	0.45	927	0.50	962	0.55	999	0.60	1036	0.65	1074	0.69	1112	0.73
2000	879	0.47	913	0.52	948	0.56	984	0.61	1020	0.67	1058	0.72	1096	0.76	1134	0.80
2100	900	0.53	935	0.58	970	0.63	1007	0.69	1044	0.74	1081	0.79	1119	0.84	1157	0.88
2200	922	0.60	958	0.65	994	0.71	1031	0.76	1068	0.82	1106	0.87	1143	0.91	1180	0.95
2300	947	0.67	983	0.73	1020	0.79	1057	0.85	1094	0.90	1131	0.95	1168	1.00	1205	1.03
2400	974	0.76	1010	0.82	1047	0.88	1084	0.94	1120	0.99	1157	1.04	1193	1.08	1230	1.12
Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1600	1093	0.60	1133	0.63	1173	0.67	1214	0.70	1253	0.73	1288	0.77	1318	0.81	1351	0.85
1700	1111	0.65	1150	0.69	1190	0.72	1230	0.76	1268	0.79	1301	0.83	1331	0.87	1363	0.92
1800	1130	0.71	1169	0.75	1208	0.78	1247	0.82	1285	0.86	1317	0.90	1345	0.94	1377	0.98
1900	1150	0.77	1188	0.81	1227	0.85	1267	0.88	1303	0.92	1333	0.97	1361	1.02	1392	1.06
2000	1172	0.84	1210	0.88	1248	0.92	1286	0.96	1321	1.00	1350	1.05	1377	1.10	1409	1.14
2100	1195	0.91	1233	0.95	1269	1.00	1306	1.04	1339	1.09	1367	1.14	1395	1.19	1426	1.23
2200	1218	0.99	1255	1.03	1290	1.09	1324	1.14	1356	1.19	1385	1.24	1413	1.28	1444	1.32
2300	1242	1.07	1277	1.13	1310	1.20	1343	1.26	1374	1.30	1403	1.34	1432	1.38	1464	1.42
2400	1267	1.16	1300	1.23	1332	1.31	1364	1.37	1394	1.41	1423	1.45	1453	1.48	1484	1.53

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1600	654	0.28	712	0.32	769	0.36	825	0.39	879	0.43	933	0.47	982	0.50	1024	0.54
1700	703	0.31	756	0.35	807	0.39	858	0.43	906	0.47	955	0.51	999	0.55	1039	0.59
1800	752	0.34	798	0.38	844	0.43	889	0.48	933	0.52	977	0.57	1017	0.61	1056	0.65
1900	796	0.38	837	0.43	878	0.48	918	0.53	958	0.58	997	0.62	1036	0.67	1074	0.71
2000	833	0.43	870	0.48	907	0.54	943	0.59	980	0.64	1018	0.69	1055	0.73	1093	0.77
2100	864	0.50	897	0.55	931	0.60	966	0.65	1002	0.71	1038	0.76	1075	0.80	1113	0.83
2200	887	0.57	920	0.62	953	0.67	988	0.73	1024	0.78	1060	0.83	1097	0.87	1135	0.90
2300	909	0.64	942	0.70	976	0.75	1011	0.81	1046	0.86	1083	0.91	1120	0.95	1157	0.98
2400	931	0.72	965	0.78	999	0.83	1035	0.89	1071	0.94	1108	0.99	1144	1.03	1181	1.07
Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1600	1063	0.58	1101	0.61	1141	0.64	1181	0.67	1222	0.70	1261	0.73	1298	0.77	1333	0.81
1700	1078	0.63	1117	0.66	1156	0.69	1196	0.72	1235	0.75	1273	0.79	1309	0.83	1344	0.87
1800	1094	0.68	1133	0.72	1172	0.75	1211	0.78	1250	0.81	1287	0.85	1322	0.90	1355	0.94
1900	1112	0.74	1151	0.77	1190	0.81	1228	0.84	1265	0.88	1301	0.92	1335	0.97	1367	1.01
2000	1131	0.80	1170	0.83	1208	0.87	1245	0.91	1281	0.96	1316	1.00	1349	1.04	1380	1.09
2100	1151	0.87	1189	0.90	1227	0.94	1263	0.99	1298	1.04	1331	1.08	1363	1.13	1394	1.17
2200	1173	0.94	1210	0.98	1246	1.02	1281	1.07	1315	1.12	1347	1.17	1379	1.22	1409	1.26
2300	1195	1.02	1231	1.06	1266	1.11	1300	1.16	1333	1.22	1364	1.27	1395	1.32	1424	1.36
2400	1217	1.10	1252	1.15	1286	1.20	1319	1.26	1351	1.32	1382	1.38	1411	1.43	1440	1.48

LGX072S5T

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

FOR ALL UNITS ADD:
1 - Any factory installed options air resistance (larger gas heat section, economizer, wet coil, etc.) See page 18.
2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.) See page 18.

See page 18 for blower motors and drives.

Minimum Air Volume Required For Different Gas Heat Sizes:

Standard Heat - 1075 cfm; Medium Heat - 1150 cfm; High Heat - 1500 cfm

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1900	857	0.41	892	0.45	927	0.50	962	0.55	999	0.60	1036	0.65	1074	0.69	1112	0.73
2000	879	0.47	913	0.52	948	0.56	984	0.61	1020	0.67	1058	0.72	1096	0.76	1134	0.80
2100	900	0.53	935	0.58	970	0.63	1007	0.69	1044	0.74	1081	0.79	1119	0.84	1157	0.88
2200	922	0.60	958	0.65	994	0.71	1031	0.76	1068	0.82	1106	0.87	1143	0.91	1180	0.95
2300	947	0.67	983	0.73	1020	0.79	1057	0.85	1094	0.90	1131	0.95	1168	1.00	1205	1.03
2400	974	0.76	1010	0.82	1047	0.88	1084	0.94	1120	0.99	1157	1.04	1193	1.08	1230	1.12
2500	1002	0.85	1039	0.91	1075	0.97	1112	1.03	1148	1.08	1184	1.13	1220	1.17	1257	1.21
2600	1032	0.95	1068	1.01	1105	1.07	1141	1.13	1177	1.17	1213	1.22	1248	1.26	1284	1.31
2700	1062	1.05	1099	1.11	1136	1.17	1172	1.22	1207	1.27	1242	1.32	1277	1.37	1312	1.43
2800	1094	1.16	1131	1.22	1167	1.27	1202	1.32	1237	1.38	1271	1.43	1305	1.49	1339	1.56
2900	1127	1.26	1163	1.32	1198	1.38	1233	1.44	1267	1.50	1300	1.56	1334	1.64	1367	1.71

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1900	1150	0.77	1188	0.81	1227	0.85	1267	0.88	1303	0.92	1333	0.97	1360	1.02	1392	1.06
2000	1172	0.84	1210	0.88	1248	0.92	1286	0.96	1321	1.00	1350	1.05	1377	1.10	1409	1.14
2100	1195	0.91	1233	0.95	1269	1.00	1306	1.04	1339	1.09	1367	1.14	1395	1.19	1426	1.23
2200	1218	0.99	1255	1.03	1290	1.09	1324	1.14	1356	1.19	1385	1.24	1413	1.28	1444	1.32
2300	1242	1.07	1277	1.13	1310	1.20	1343	1.26	1374	1.30	1403	1.34	1432	1.38	1464	1.42
2400	1267	1.16	1300	1.23	1332	1.31	1364	1.37	1394	1.41	1423	1.45	1453	1.48	1484	1.53
2500	1292	1.26	1324	1.34	1355	1.42	1387	1.48	1417	1.52	1445	1.56	1475	1.59	1506	1.64
2600	1318	1.38	1350	1.46	1380	1.55	1411	1.60	1440	1.64	1469	1.68	1498	1.71	1529	1.76
2700	1345	1.51	1376	1.60	1406	1.68	1436	1.73	1465	1.77	1493	1.80	1523	1.84	1553	1.88
2800	1372	1.65	1403	1.74	1433	1.82	1462	1.86	1490	1.90	1519	1.93	1548	1.97	1578	2.01
2900	1399	1.80	1430	1.89	1460	1.96	1489	2.00	1516	2.03	1544	2.06	1573	2.10	1603	2.14

LGX072S5T

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

FOR ALL UNITS ADD:
1 - Any factory installed options air resistance (larger gas heat section, economizer, wet coil, etc.) See page 18.
2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.) See page 18.

See page 18 for blower motors and drives.

Minimum Air Volume Required For Different Gas Heat Sizes:

Standard Heat - 1075 cfm; Medium Heat - 1150 cfm; High Heat - 1500 cfm

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1900	796	0.38	837	0.43	878	0.48	918	0.53	958	0.58	997	0.62	1036	0.67	1074	0.71
2000	833	0.43	870	0.48	907	0.54	943	0.59	980	0.64	1018	0.69	1055	0.73	1093	0.77
2100	864	0.50	897	0.55	931	0.60	966	0.65	1002	0.71	1038	0.76	1075	0.80	1113	0.83
2200	887	0.57	920	0.62	953	0.67	988	0.73	1024	0.78	1060	0.83	1097	0.87	1135	0.90
2300	909	0.64	942	0.70	976	0.75	1011	0.81	1046	0.86	1083	0.91	1120	0.95	1157	0.98
2400	931	0.72	965	0.78	999	0.83	1035	0.89	1071	0.94	1108	0.99	1144	1.03	1181	1.07
2500	955	0.80	989	0.86	1024	0.92	1061	0.98	1097	1.03	1133	1.08	1170	1.11	1205	1.15
2600	981	0.90	1016	0.96	1052	1.01	1088	1.07	1124	1.12	1160	1.16	1195	1.20	1230	1.25
2700	1009	0.99	1044	1.05	1080	1.11	1116	1.16	1152	1.21	1187	1.26	1221	1.30	1254	1.35
2800	1038	1.10	1073	1.16	1109	1.21	1145	1.26	1180	1.31	1214	1.36	1247	1.40	1279	1.46
2900	1068	1.20	1104	1.26	1139	1.31	1174	1.36	1208	1.41	1240	1.47	1273	1.52	1304	1.58

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1900	1112	0.74	1151	0.77	1190	0.81	1228	0.84	1265	0.88	1301	0.92	1335	0.97	1367	1.01
2000	1131	0.80	1170	0.83	1208	0.87	1245	0.91	1281	0.96	1316	1.00	1349	1.04	1380	1.09
2100	1151	0.87	1189	0.90	1227	0.94	1263	0.99	1298	1.04	1331	1.08	1363	1.13	1394	1.17
2200	1173	0.94	1210	0.98	1246	1.02	1281	1.07	1315	1.12	1347	1.17	1379	1.22	1409	1.26
2300	1195	1.02	1231	1.06	1266	1.11	1300	1.16	1333	1.22	1364	1.27	1395	1.32	1424	1.36
2400	1217	1.10	1252	1.15	1286	1.20	1319	1.26	1351	1.32	1382	1.38	1411	1.43	1440	1.48
2500	1240	1.20	1274	1.25	1307	1.31	1339	1.37	1370	1.43	1400	1.49	1428	1.55	1457	1.59
2600	1264	1.30	1297	1.35	1329	1.42	1360	1.49	1389	1.55	1418	1.61	1446	1.67	1475	1.72
2700	1287	1.40	1319	1.47	1350	1.54	1380	1.61	1409	1.68	1437	1.74	1465	1.79	1493	1.84
2800	1311	1.52	1342	1.59	1373	1.66	1402	1.74	1430	1.8	1457	1.87	1485	1.92	1513	1.97
2900	1335	1.65	1366	1.72	1395	1.79	1424	1.87	1451	1.94	1478	2.00	1505	2.05	1533	2.09

BLOWER DATA

BELT DRIVE KIT SPECIFICATIONS

Model No.	Motor HP		No. of Speeds	Drive Kits and RPM Range			
	Nominal	Maximum		A03	A04	A07	A08
060	2	2.3	1	833-1250	- - -	1212-1548	- - -
072	2	2.3	2	- - -	968-1340	- - -	1193-1591

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

OPTIONS / ACCESSORIES AIR RESISTANCE - in. w.g.

Air Volume cfm	Wet Indoor Coil		Reheat Coil		Gas Heat		Economizer	Filters		
	024, 036, 048, 060	072	024, 036, 048, 060	072	Medium Input	High Input		MERV 8	MERV 13	MERV 16
800	0.01	0.01	0.00	0.00	0.02	0.02	0.04	0.04	0.05	0.04
1000	0.02	0.01	0.00	0.00	0.02	0.02	0.04	0.04	0.07	0.05
1200	0.03	0.02	0.01	0.00	0.02	0.02	0.04	0.04	0.07	0.05
1400	0.04	0.03	0.02	0.01	0.02	0.03	0.04	0.04	0.07	0.06
1600	0.05	0.04	0.03	0.02	0.03	0.04	0.04	0.04	0.07	0.08
1800	0.06	0.05	0.04	0.02	0.03	0.05	0.05	0.05	0.07	0.09
2000	0.08	0.06	0.04	0.03	0.04	0.06	0.05	0.05	0.08	0.10
2200	0.09	0.07	- - -	0.04	0.04	0.07	0.05	0.05	0.08	0.11
2400	0.10	0.08	- - -	0.04	0.05	0.08	0.05	0.05	0.08	0.12

BLOWER DATA

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

Air Volume cfm	RTD9-65S Step–Down Diffuser			FD9-65S Flush Diffuser	RTD11-95S Step–Down Diffuser			FD11-95S Flush Diffuser
	2 Ends Open	1 Side & 2 Ends Open	All Ends & Sides Open		2 Ends Open	1 Side & 2 Ends Open	All Ends & Sides Open	
800	0.15	0.13	0.11	0.11	- - -	- - -	- - -	- - -
1000	0.19	0.16	0.14	0.14	- - -	- - -	- - -	- - -
1200	0.25	0.20	0.17	0.17	- - -	- - -	- - -	- - -
1400	0.33	0.26	0.20	0.20	- - -	- - -	- - -	- - -
1600	0.43	0.32	0.20	0.24	- - -	- - -	- - -	- - -
1800	0.56	0.40	0.30	0.30	0.13	0.11	0.09	0.09
2000	0.73	0.50	0.36	0.36	0.15	0.13	0.11	0.10
2200	0.95	0.63	0.44	0.44	0.18	0.15	0.12	0.12
2400	- - -	- - - -	- - -	- - -	0.21	0.18	0.15	0.14
2600	- - -	- - - -	- - -	- - -	0.24	0.21	0.18	0.17
2800	- - -	- - - -	- - -	- - -	0.27	0.24	0.21	0.20
3000	- - -	- - - -	- - -	- - -	0.32	0.29	0.25	0.25

CEILING DIFFUSER AIR THROW DATA

Air Volume - cfm	[1] Effective Throw - ft.	
Model	**RTD9-65S**	**FD9-65S**
800	10 - 17	14 - 18
1000	10 - 17	15 - 20
1200	11 - 18	16 - 22
1400	12 - 19	17 - 24
1600	12 - 20	18 - 25
1800	13 - 21	20 - 28
2000	14 - 23	21 - 29
2200	16 - 25	22 - 30
Model	**RTD11-95S**	**FD11-95S**
2600	24 - 29	19 - 24
2800	25 - 30	20 - 28
3000	27 - 33	21 - 29

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

POWER EXHAUST FAN PERFORMANCE

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

ELECTRICAL DATA — DIRECT DRIVE - 2 TON [ECM]

Model		LGX024S5E
[1] Voltage - 60hz		**208/230V - 1 Ph**
Compressor 1 (Non-Inverter)	Rated Load Amps	10.3
	Locked Rotor Amps	60.2
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	1.7
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4
Service Outlet 115V GFI (amps)		15
Indoor Blower Motor	HP	0.5
	Type	Direct (ECM)
	Full Load Amps	4.3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	25
	with (1) 0.33 HP Power Exhaust	30
[3] Minimum Circuit Ampacity (MCA)	Unit Only	19
	with (1) 0.33 HP Power Exhaust	22
ELECTRICAL ACCESSORIES		
Disconnect		**20W23**

Disconnects - 20W23 - 80A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL DATA — DIRECT DRIVE - 3 TON [ECM]

Model		LGX036S5E				
[1] Voltage - 60hz		**208/230V - 1 Ph**		**208/230V - 3 Ph**	**460V - 3 Ph**	**575V - 3 Ph**
Compressor 1 (Non-Inverter)	Rated Load Amps	14.4		9	4.1	3.3
	Locked Rotor Amps	86		70	39	29
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	1.7		1.7	1.1	0.7
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4		2.4	1.3	1
Service Outlet 115V GFI (amps)		15		15	15	20
Indoor Blower Motor	HP	0.5	1	1	1	1
	Type	Direct (ECM)		Direct (ECM)	Direct (ECM)	Direct (ECM)
	Full Load Amps	4.3	7.4	7.4	3.7	3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	35	40	25	15	15
	with (1) 0.33 HP Power Exhaust	40	40	30	15	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	24	28	21	10	8
	with (1) 0.33 HP Power Exhaust	27	30	23	12	9
ELECTRICAL ACCESSORIES						
Disconnect		**20W23**		**20W23**	**20W23**	**20W23**

Disconnects - 20W23 - 80A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL DATA — DIRECT DRIVE - 4 TON [ECM]

Model		LGX048S5E			
[1] Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Compressor 1 (Non-Inverter)	Rated Load Amps	19.4	12	6.3	4.4
	Locked Rotor Amps	102	123	60	41
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	1.7	1.7	1.1	0.7
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	15	20
Indoor Blower Motor	HP	1	1	1	1
	Type	Direct (ECM)	Direct (ECM)	Direct (ECM)	Direct (ECM)
	Full Load Amps	7.4	7.4	3.7	3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	50	35	15	15
	with (1) 0.33 HP Power Exhaust	50	35	20	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	34	25	13	10
	with (1) 0.33 HP Power Exhaust	36	27	14	11
ELECTRICAL ACCESSORIES					
Disconnect		**20W23**	**20W23**	**20W23**	**20W23**

Disconnects - 20W23 - 80A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL DATA — DIRECT DRIVE - 5 TON [ECM]

Model		LGX060S5E			
[1] Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Compressor 1 (Non-Inverter)	Rated Load Amps	23.7	16	7.1	6.4
	Locked Rotor Amps	157	156.4	69	47.8
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	1.65	1.7	1.1	0.7
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	15	20
Indoor Blower Motor	HP	1	1	1	1
	Type	Direct (ECM)	Direct (ECM)	Direct (ECM)	Direct (ECM)
	Full Load Amps	7.4	7.4	3.7	3
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	60	45	20	15
	with (1) 0.33 HP Power Exhaust	60	45	20	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	39	30	14	12
	with (1) 0.33 HP Power Exhaust	42	32	15	13
ELECTRICAL ACCESSORIES					
Disconnect		**20W23**	**20W23**	**20W23**	**20W23**

Disconnects - 20W23 - 80A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL DATA — DIRECT DRIVE - 3 TON [PSC]

Model		LGX036S5D		
[1] Voltage - 60hz		208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Compressor 1 (Non-Inverter)	Rated Load Amps	9	4.1	3.3
	Locked Rotor Amps	70	39	29
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	1.7	1.1	0.7
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	0.5	0.5	0.5
	Type	Direct (PSC)	Direct (PSC)	Direct (PSC)
	Full Load Amps	3.1	1.5	1.5
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	25	15	15
	with (1) 0.33 HP Power Exhaust	25	15	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	17	8	7
	with (1) 0.33 HP Power Exhaust	19	10	8
ELECTRICAL ACCESSORIES				
Disconnect		**20W23**	**20W23**	**20W23**

Disconnects - 20W23 - 80A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL DATA — DIRECT DRIVE - 4 TON [PSC]

Model		LGX048S5D		
[1] Voltage - 60hz		208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Compressor 1 (Non-Inverter)	Rated Load Amps	12	6.3	4.4
	Locked Rotor Amps	123	60	41
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	1.7	1.1	0.7
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	0.5	0.5	0.5
	Type	Direct (PSC)	Direct (PSC)	Direct (PSC)
	Full Load Amps	3.1	1.5	1.5
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	30	15	15
	with (1) 0.33 HP Power Exhaust	30	15	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	20	11	8
	with (1) 0.33 HP Power Exhaust	23	12	9
ELECTRICAL ACCESSORIES				
Disconnect		**20W23**	**20W23**	**20W23**

Disconnects - 20W23 - 80A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL DATA — BELT DRIVE (SINGLE SPEED) - 5 TON

Model		LGX060S5B		
[1] Voltage - 60hz		**208/230V - 3 Ph**	**460V - 3 Ph**	**575V - 3 Ph**
Compressor 1 (Non-Inverter)	Rated Load Amps	16	7.1	6.4
	Locked Rotor Amps	156.4	69	47.8
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	1.7	1.1	0.7
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	2	2	2
	Type	Belt	Belt	Belt
	Full Load Amps	7.5	3.4	2.7
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	45	20	15
	with (1) 0.33 HP Power Exhaust	45	20	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	30	14	12
	with (1) 0.33 HP Power Exhaust	32	15	13
ELECTRICAL ACCESSORIES				
Disconnect		**20W23**	**20W23**	**20W23**

Disconnects - 20W23 - 80A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL DATA — BELT DRIVE (TWO-SPEED) - 6 TON

Model		LGX072S5T		
[1] Voltage - 60hz		**208/230V - 3 Ph**	**460V - 3 Ph**	**575V - 3 Ph**
Compressor	Rated Load Amps	19.2	9.1	6.2
	Locked Rotor Amps	162.3	70.8	58.2
Outdoor Fan Motor	Full Load Amps (1 Non-ECM)	2.4	1.3	1
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	HP	2	2	2
	Type	Belt	Belt	Belt
	Full Load Amps	7.5	3.4	2.7
[2] Maximum Overcurrent Protection (MOCP)	Unit Only	50	25	15
	with (1) 0.33 HP Power Exhaust	50	25	15
[3] Minimum Circuit Ampacity (MCA)	Unit Only	34	17	12
	with (1) 0.33 HP Power Exhaust	37	18	13
ELECTRICAL ACCESSORIES				
Disconnect		**22A25**	**22A25**	**22A25**

Disconnects - 20W25 - 80A

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

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

[2] HACR type breaker or fuse.

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

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)
LGX024	103	174
LGX036	98	166
LGX048	93	157
LGX060	99	168
LGX072	137	233
LGX024 W/ Humidtrol	113	191
LGX036 W/ Humidtrol	123	208
LGX048 W/ Humidtrol	112	190
LGX060 W/ Humidtrol	126	214
LGX072 W/ Humidtrol	119	202

Refrigerant Charge R-454B		
Unit	M_c(lbs)	M_c(kg)
LGX024	3.88	1.76
LGX036	3.69	1.67
LGX048	3.50	1.59
LGX060	3.75	1.70
LGX072	5.19	2.35
LGX024 W/ Humidtrol	4.26	1.93
LGX036 W/ Humidtrol	4.64	2.10
LGX048 W/ Humidtrol	4.24	1.92
LGX060 W/ Humidtrol	4.76	2.16
LGX072 W/ Humidtrol	4.50	2.04

[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)
LGX024	57	5.3
LGX036	55	5.0
LGX048	52	4.8
LGX060	55	5.1
LGX072	77	7.1
LGX024 W/ Humidtrol	63	5.8
LGX036 W/ Humidtrol	68	6.3
LGX048 W/ Humidtrol	63	5.8
LGX060 W/ Humidtrol	70	6.5
LGX072 W/ Humidtrol	66	6.1

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

Altitude Adjustment Factor[3]									
Halt	0	200	400	600	800	1000	1200	1400	1600
AF	1	1	1	1	1.05	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	1.40

[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 LGX024 at 1000 ft. above see level, multiply 103 by 1.05 to get 108.15 CFM as the new Q_{min}.*

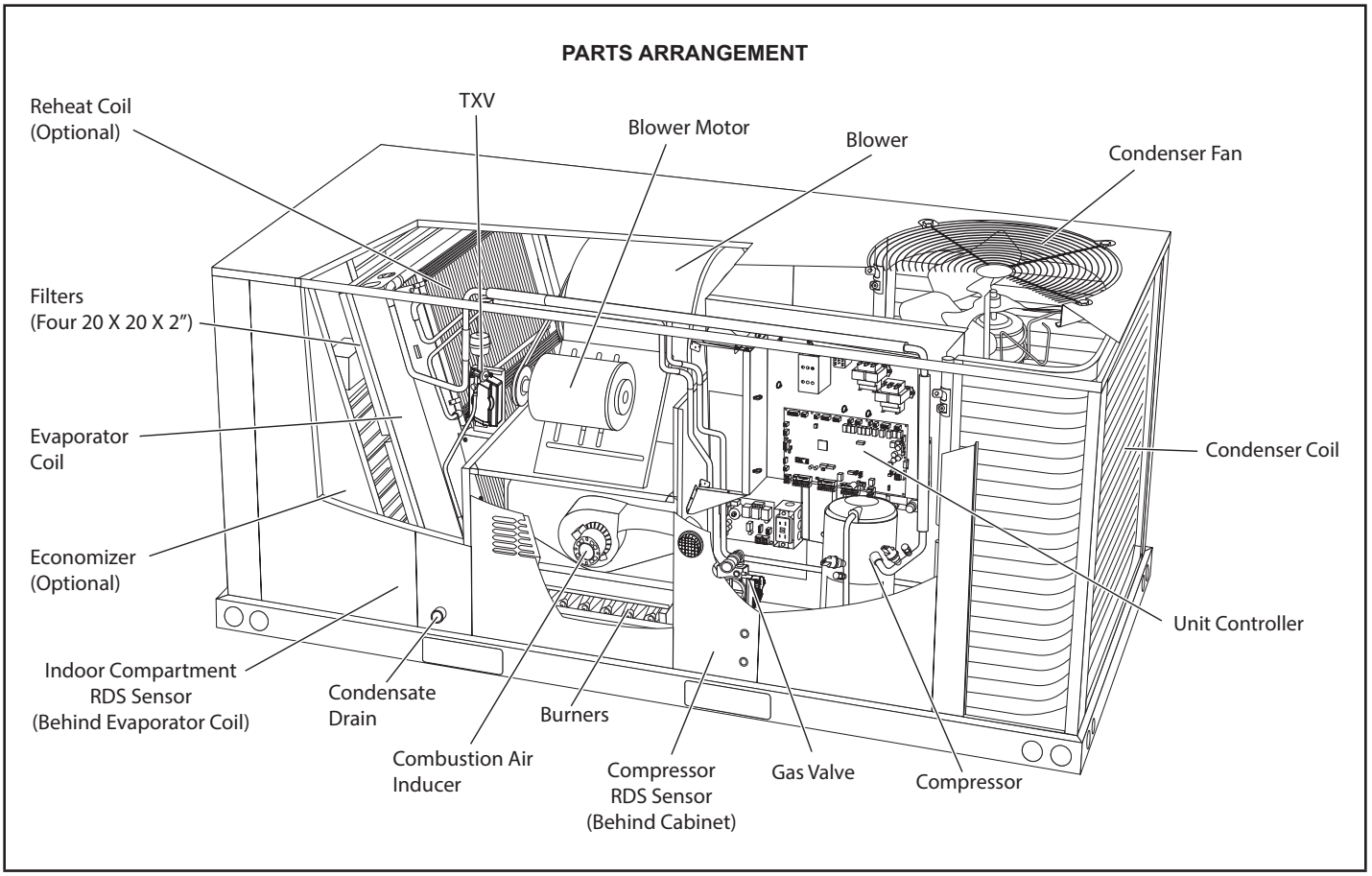


FIGURE 1

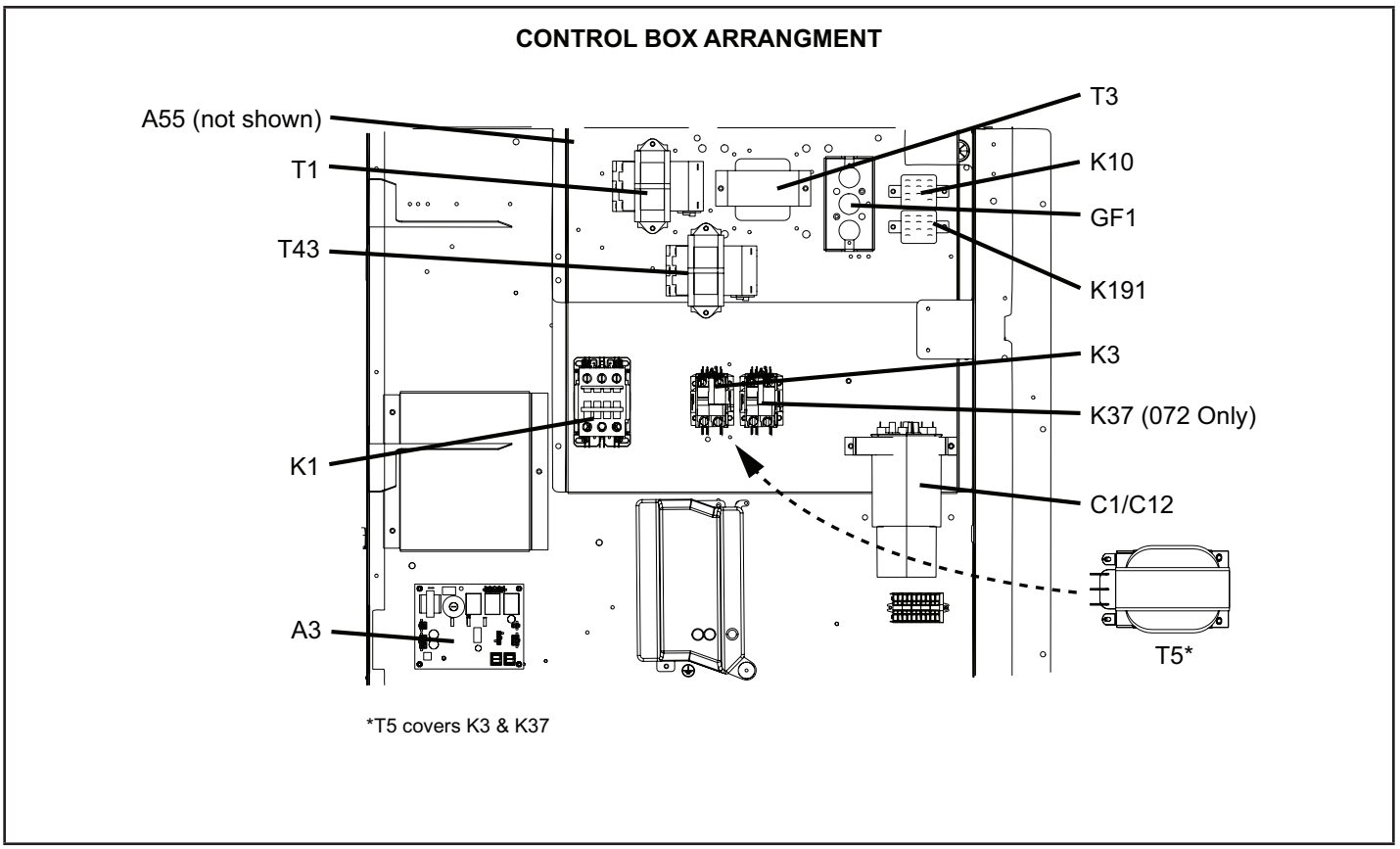


FIGURE 2

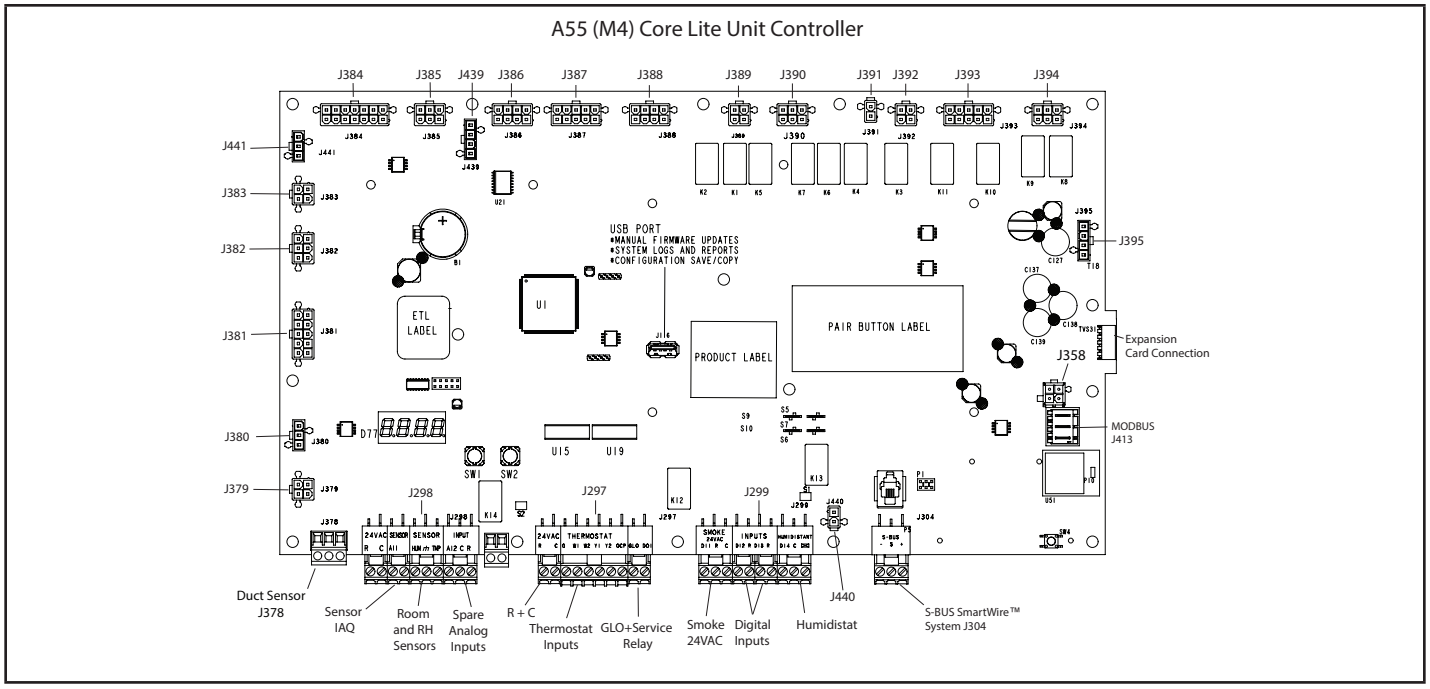


FIGURE 3

I-UNIT COMPONENTS

All 2 through 6 ton (7 through 21 kW) units are built to order units (BTO). The LGX unit components are shown in figure 1. All units come standard with removable unit panels. All L1, L2, and L3 wiring is color coded; L1 is red, L2 is yellow, and L3 is blue.

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.

A-Control Box Components

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

1-Control Transformers T1/T43

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

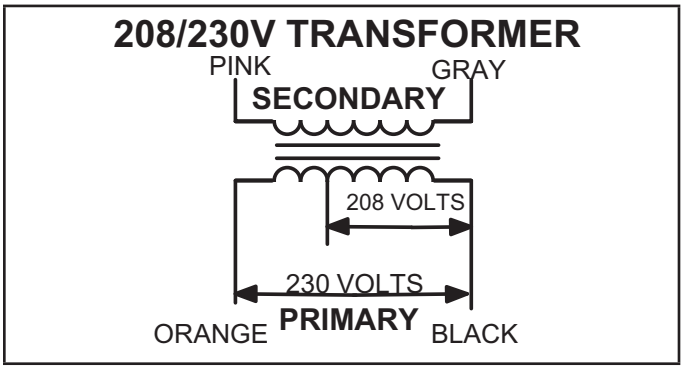


FIGURE 4

2-C. A. I. Transformers T3 (G, J voltage)

All (G) 460 and 575 (J) voltage units use transformer T3 mounted in the control box. The transformers have an output rating of 0.75A. T3 transformer supplies 230 VAC power to the combustion air inducer motor (B6).

3-Transformer T4 (J voltage)

All (J) 575 voltage direct drive units use transformer T4 mounted in the control box. T4 is a line voltage to 460V transformer to power the indoor blower. It is connected to line voltage and is powered at all times.

4-Transformer T5 (G and J voltage)

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

5-Unit Controller A55

The Unit Controller (FIGURE 3) provides all unit control functions, unit status information, unit diagnostics, programmable parameters, and USB verification and profile sharing. The unit controller can only be interfaced with via the CORE Service mobile app. Refer to the Unit controller instructions provided for additional details on pairing and app functions

6-Fan Capacitor C1 (three phase)

Fan capacitors C1 is used to assist in the start up of condenser fan B4. Ratings will be on side of capacitor or outdoor fan motor nameplate.

7-Dual Capacitor C12 (single phase)

A single dual capacitor is used for both the outdoor fan and compressor (see unit diagram). The fan side and the compressor side have different MFD ratings. See side of capacitor for ratings,.

8-Compressor Contactor K1

In all LGX units, K1 energizes compressors B1 in response to thermostat demand. Three phase units use three pole double break contactors with a 24 volt coil. Single phase units use single pole double break contactors with a 24 volt coil.

9-Blower Contactor K37 (072 only)

On two-speed operation K37 acts as the high speed blower contactor and K3 acts as the low speed contactor in response to blower demand.

10-Blower Contactor K3

On three phase units, K3 is a two pole double-break contactor with a 24VAC coil and on single phase units is a single pole double break contactor with a 24 volt coil. K3 energizes the indoor blower motor B3 in response to blower demand.

11-Condenser Fan Relay K10

Outdoor fan relay K10 is a DPDT relay with a 24VAC coil. K10 energizes condenser fan B4.

12-Crankcase Heater Relay K191

Relay K191 keeps the crankcase heater de-energized during and immediately following compressor shut down. It ensures the crankcase heater is off while compressor is energized.

Attention!

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

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

13-Burner Control A3

⚠ WARNING

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

The ignition control provides three main functions: gas valve control, ignition, and flame sensing. The control has a red LED to show control status (TABLE 1).

Flame rectification sensing is used on all LGX 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.

Operation

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

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

1-A55 is reset

or

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

TABLE 1

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

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

IGNITION CONTROL A3

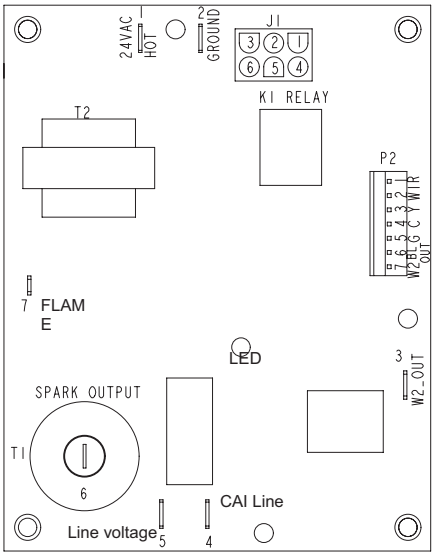


FIGURE 5

B-Cooling Components

All units use independent cooling circuits consisting of separate compressor, all-aluminum condenser coil and evaporator coil. See FIGURE 6. One draw-through type condenser fan is used in LGX024/072 units. Units are equipped with belt-drive or direct drive blowers which draw air across the evaporator during unit operation.

Cooling may be supplemented by a factory- or field-installed economizer. The evaporator coil is slab type and uses a thermostatic expansion valve or fixed orifice assembly as the primary refrigerant metering device. In all units each compressor is protected from freezing by a temperature sensor (RT46) on the evaporator coil and a high pressure switch (S4) on the discharge line. See FIGURE 6. The Low ambient switch (S11) and Low Pressure Switch (S87) are factory installed for additional compressor protection.

1-Compressor B

⚠ IMPORTANT

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

All LGX024/072 units use one scroll compressor. See “SPECIFICATIONS” and “ELECTRICAL DATA” (table of contents) or compressor nameplate for compressor specifications. The LGX072 is equipped with a two-stage compressor.

⚠ WARNING

Electrical shock hazard. Compressor must be grounded. Do not operate without protective coverover 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 Interlink 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.

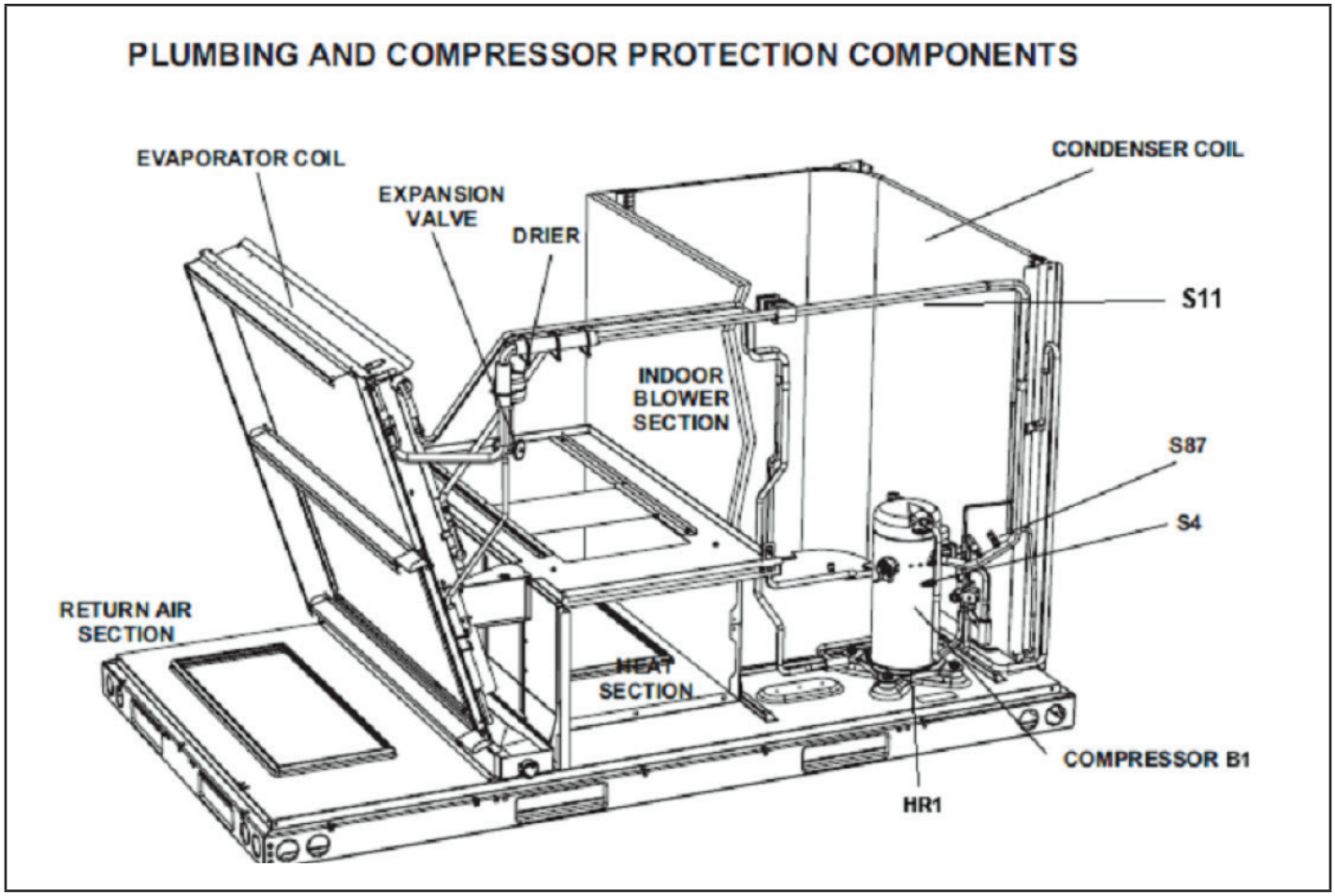

PLUMBING AND COMPRESSOR PROTECTION COMPONENTS
EVAPORATOR COIL
EXPANSION VALVE
DRIER
CONDENSER COIL
S11
INDOOR BLOWER SECTION
S87
S4
RETURN AIR SECTION
HEAT SECTION
COMPRESSOR B1
HR1

FIGURE 6

2-Low Pressure Switch S87

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

3-High Pressure Switch S4

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

S4 is located in the compressor discharge line and wired in series with the compressor contactor coil.

When discharge pressure rises to 640 ± 20 psig (4412 ± 138 kPa) (indicating a problem in the system) the switch opens and the respective compressor is de-energized (the economizer can continue to operate). When discharge pressure drops to 475 ± 30 psig (3275 ± 206 kPa), the switch closes.

4-Low Ambient Switches S11

The low ambient switch is an auto-reset SPST N.O. pressure switch which allows for mechanical cooling operation

at low outdoor temperatures. In all models the switch is located in each liquid line prior to the indoor coil section and is wired in series with outdoor fan B4. When S11 opens B4 is de-energized.

When liquid pressure rises to 450 ± 10 psig (3102 ± 69 kPa), the switch closes and the condenser fan is energized.

When discharge pressure in drops to 240 ± 10 psig (1655 ± 69 kPa), the switch opens and the condenser fan is de-energized.

This intermittent fan operation results in higher evaporating temperature allowing the system to operate without icing the evaporator coil and losing capacity.

6-Diagnostic Sensors

Units are equipped with one factory-installed thermistor (RT46) located on the refrigerant circuit.

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

The thermistor must be specifically placed for proper unit operation and to initiate valid alarms. See TABLE 2 for proper locations.

TABLE 2

THERMISTOR LOCATION

Unit	Sensor Yellow	Figure
LGX024, 036, 048, 060, 072	RT46	FIGURE 7

LGX/LCX024, 036, 048, 060, 072
EVAPORATOR COIL
RT46

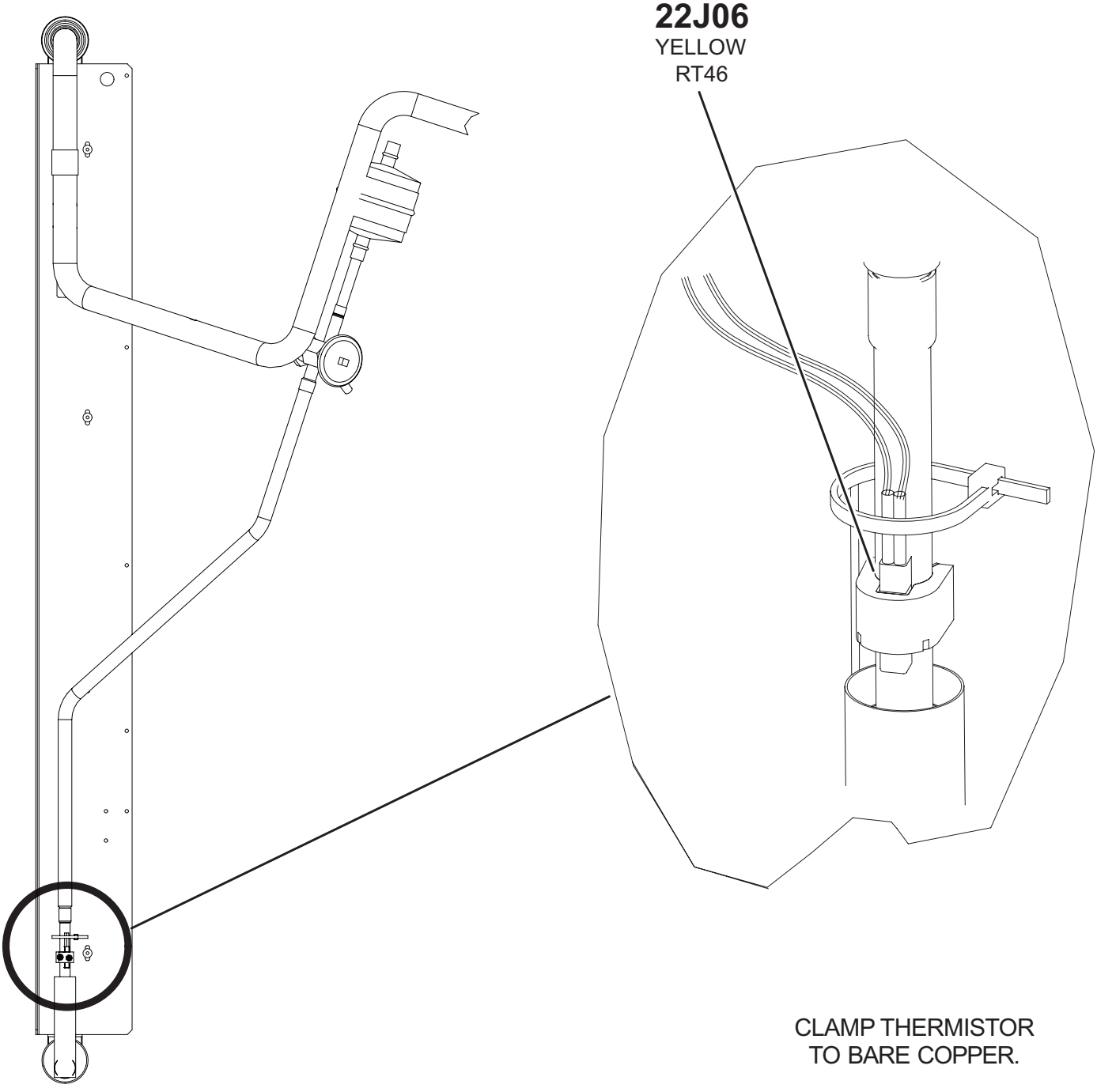


FIGURE 7

7-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 3. See TABLE 4 for sensor alarms

TABLE 3

RDS Sensor Figures

Model	Qty.	Type	Figure
LGX024-072	2 sensors	INDOOR SENSOR	FIGURE 8
		COMPRESSOR SENSOR	FIGURE 9

TABLE 4 - 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"

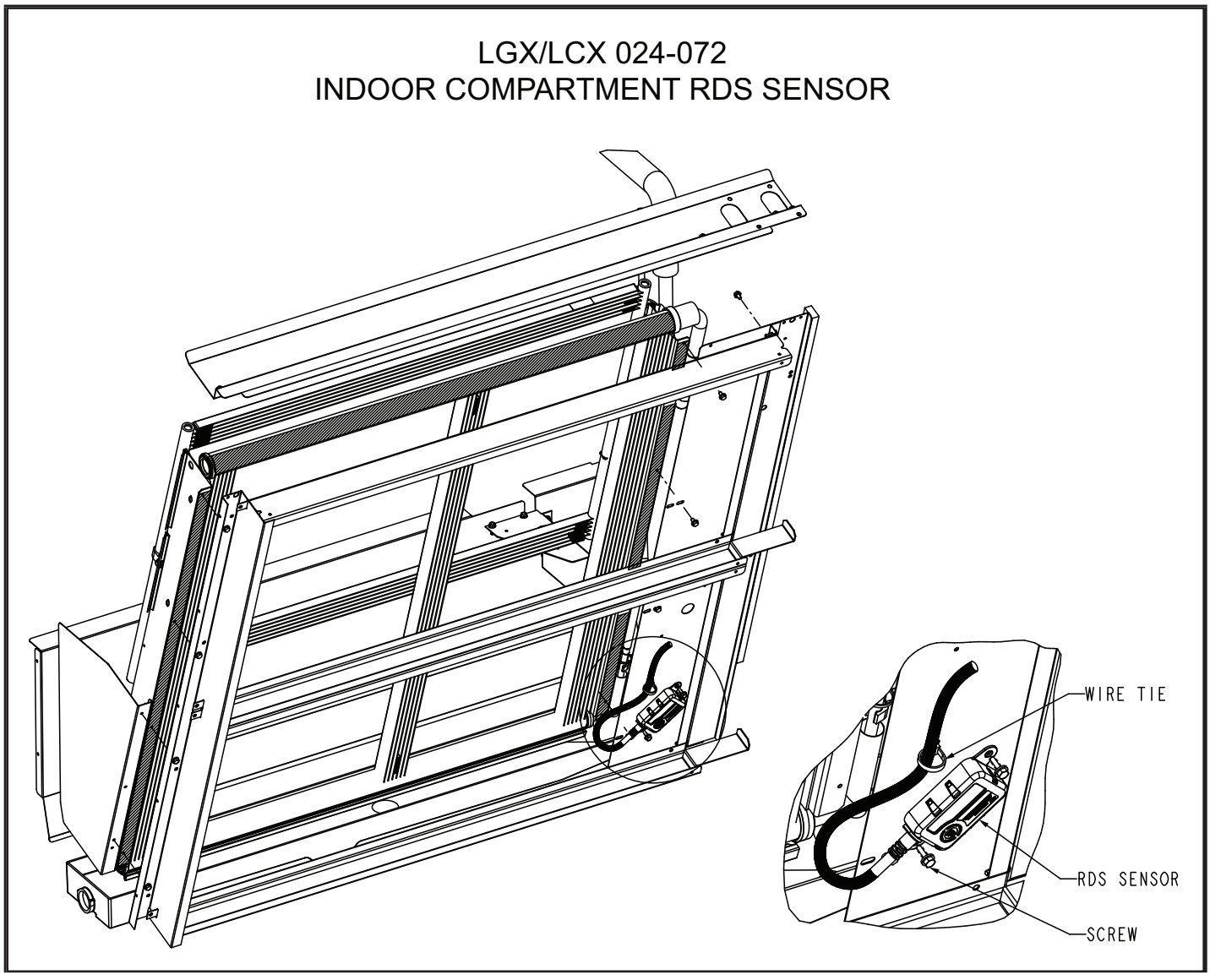


FIGURE 8

LGX 024-072
COMPRESSOR RDS SENSOR

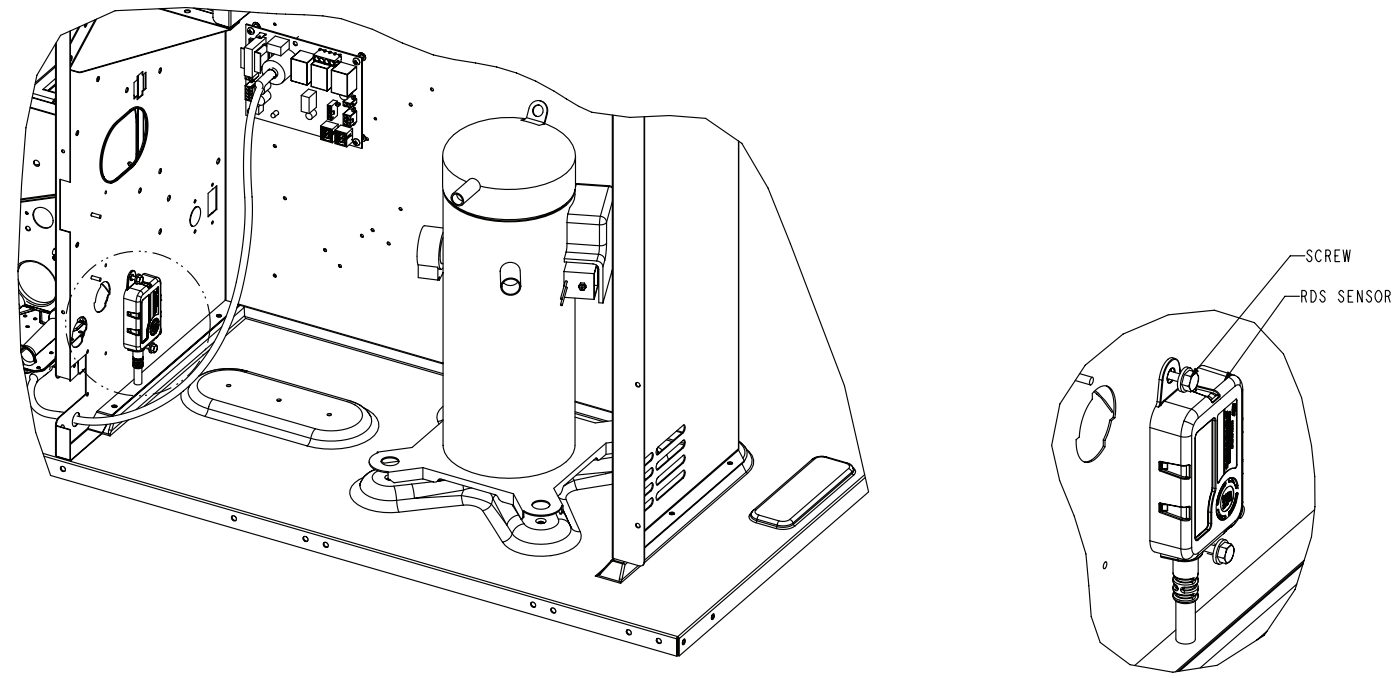


FIGURE 9

8-Compressor Crankcase Heater (HR1)

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

C-Blower Compartment

1-Blower Wheels

All belt drive units use 10” x 10” (254 mm x 254 mm) blow er wheels. The LGX024, 036 and 048 units with PSC direct drive motors use 10” x 10” (254 mm x 254 mm) blower wheels also. The LGX048 and LGX060 units with ECM direct drive motors use 11” x 10” (279 mm x 254 mm) blower wheels.

2-Indoor Blower Motor Capacitor C4

All single phase blower motors are PSC and requires a run capacitor. Ratings may vary from each motor. See motor nameplate for capacitor ratings.

3-Indoor Blower Motor B3

All direct drive units use single phase PSC motors. Belt drive units use single or three phase motors (same as supply voltage). CFM adjustments on belt drive units are made by adjusting the motor pulley (sheave). CFM adjustments on direct drive units are made by changing speed taps. 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.

⚠ IMPORTANT

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

4-Blower Operation

Initiate blower demand at thermostat according to instructions provided with thermostat. 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.

5-Determining Unit CFM - Single-Speed, Direct Drive Blowers

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

2 - With all access panels in place, measure static pressure external to unit (from supply to return). Add any additional air resistance for options and accessories shown in accessory air resistance tables. Blower performance data is based on static pressure readings taken in locations shown in FIGURE 11.

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

3 - Use FIGURE 10 to determine the factory set blower speed.

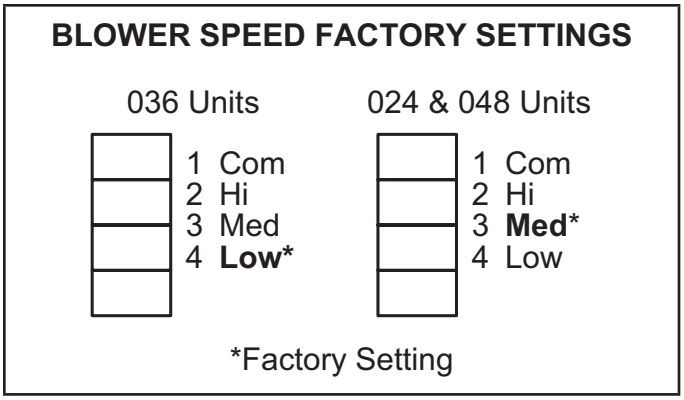


FIGURE 10

4 - Use direct drive blower tables, the measured static pressure and the factory-set blower speed to determine CFM. If CFM is lower or higher than the design specified CFM, move the leads as shown in FIGURE 12 for 208/230 volt units and FIGURE 13 for 460/575 volt units.

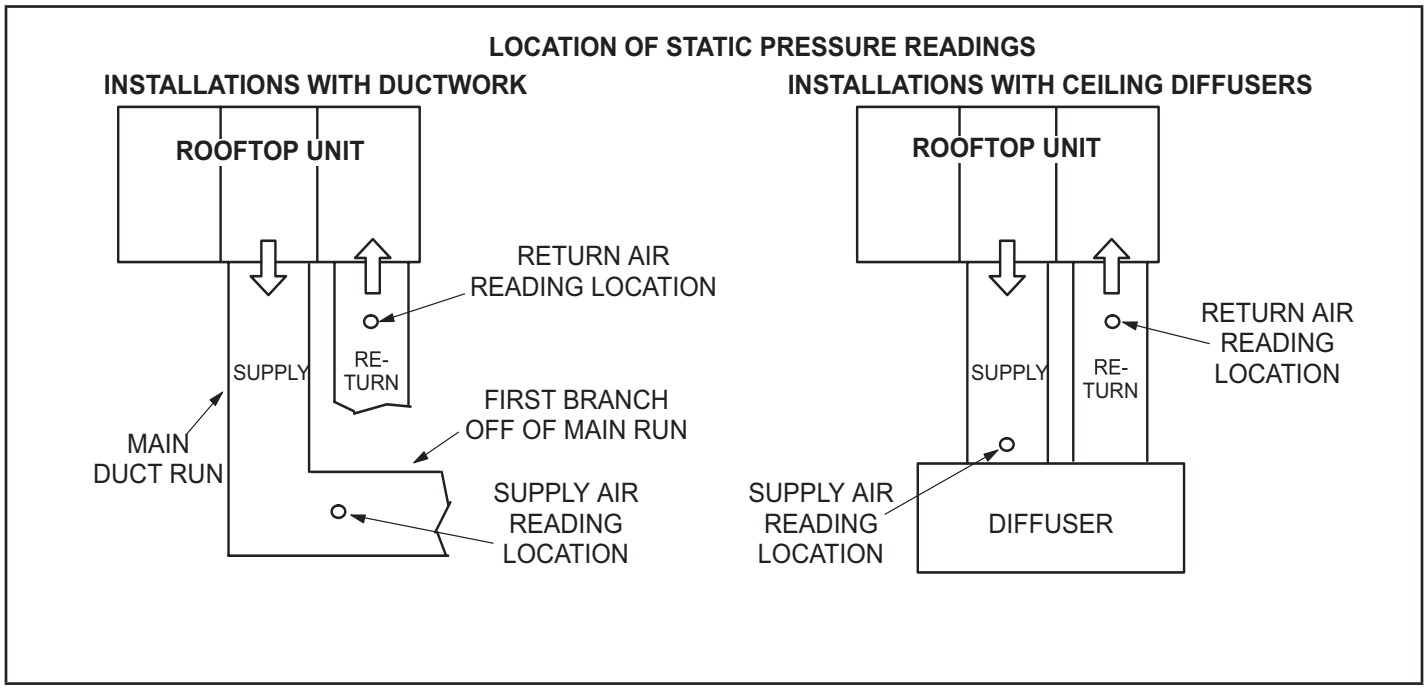


FIGURE 11

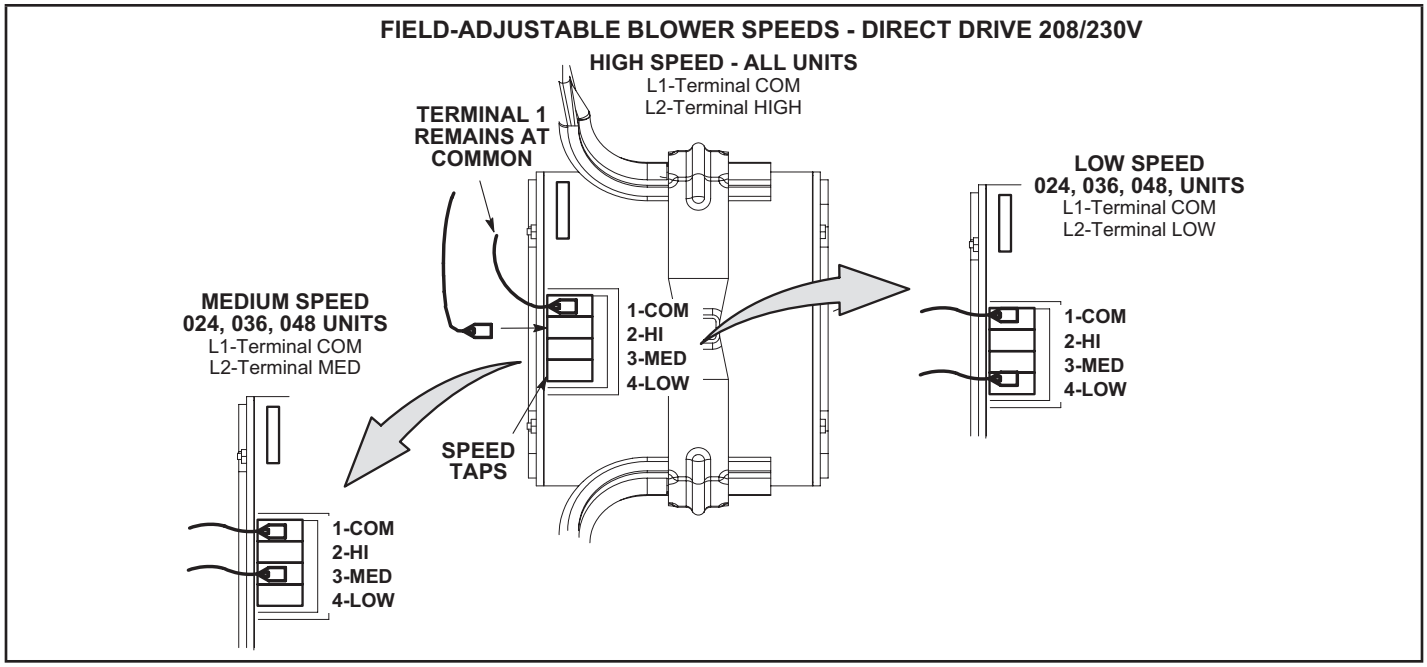


FIGURE 12

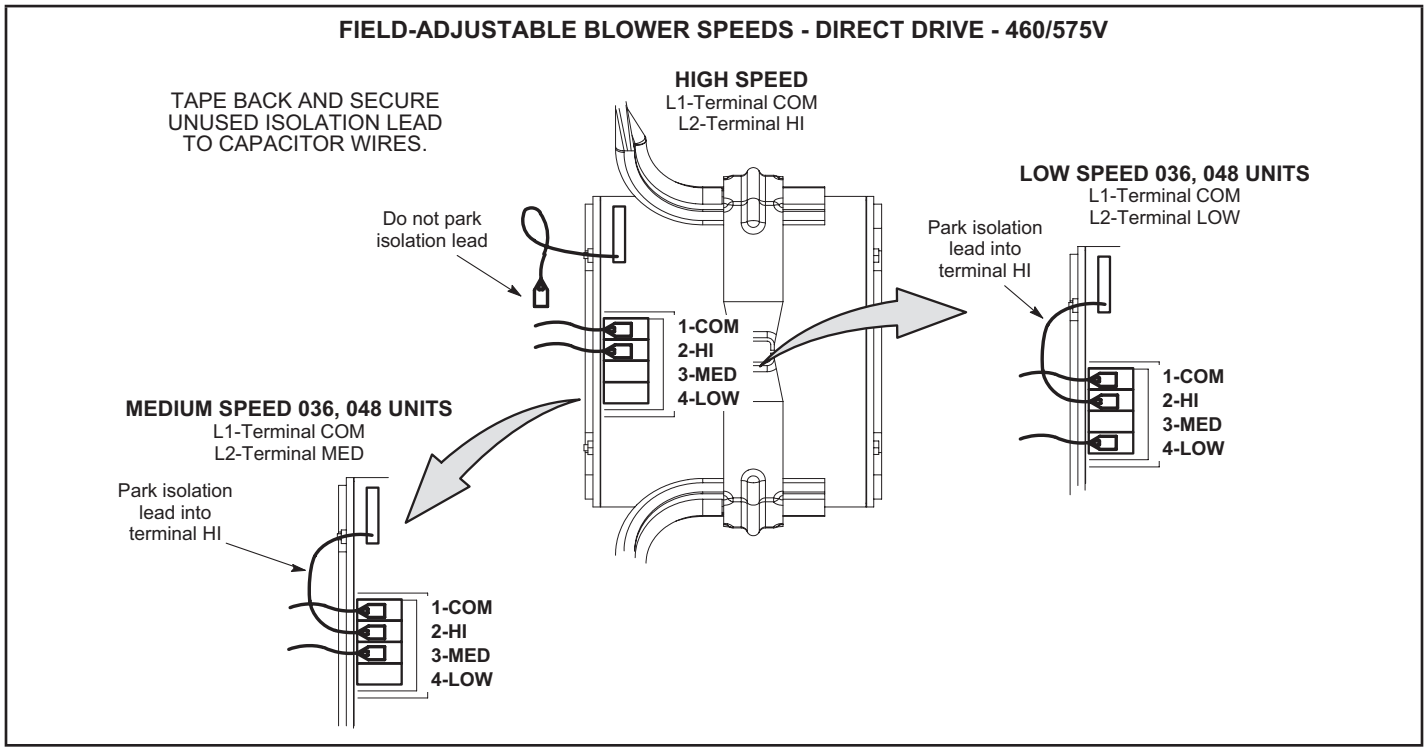


FIGURE 13

6-Determining Unit CFM - Multi-Stage, Direct Drive Blowers

Refer to multi-stage direct drive blower tables, the measured static pressure, and the factory-set blower speed to determine CFM.

7-Adjusting Unit CFM

The supply CFM can be adjusted by changing Unit Controller settings. Refer to TABLE 5 for menu paths and default settings. Record any CFM changes on the parameter settings label located on the inside of the compressor access panel.

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

TABLE 5
BLOWER PERFORMANCE SETTINGS - 581102-01

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

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

TABLE 6
TWO-SPEED BLOWER OPERATION
LGX072 UNITS

Thermostat	Blower Speed
G	Low
W1	High
W2	High
Y1	Low
Y2	High
Dehum	High

5 - Referring to belt drive blower tables, use static pressure and RPM readings to determine unit CFM. Use the air resistance tables when installing units with any of the options or accessories listed.

6 - 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 14. Do not exceed minimum and maximum number of pulley turns as shown in TABLE 7.

TABLE 7
MINIMUM AND MAXIMUM PULLEY ADJUSTMENT

Belt	Min. Turns Open	Max. Turns Open
A Section	No Minimum	5

8-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 grooves. Make sure blower and motor pulley are aligned as shown in FIGURE 15.

1 - Loosen four bolts securing motor base to mounting frame. See FIGURE 14.

2 - To increase belt tension -

Slide blower motor downward to tighten the belt. This increases the distance between the blower motor and the blower housing.

3 - To loosen belt tension -

Slide blower motor upward to loosen the belt. This decreases the distance between the blower motor and the blower housing.

4 - Tighten four bolts securing motor base to the mounting frame.

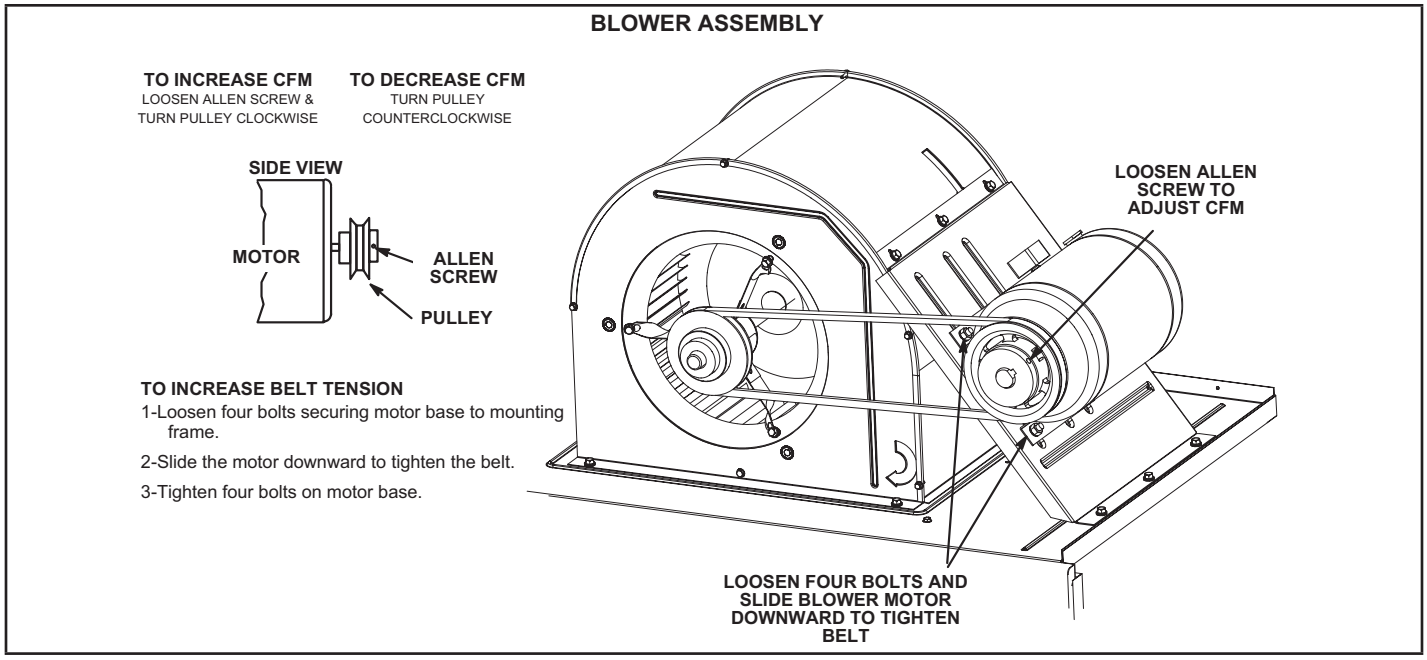


FIGURE 14

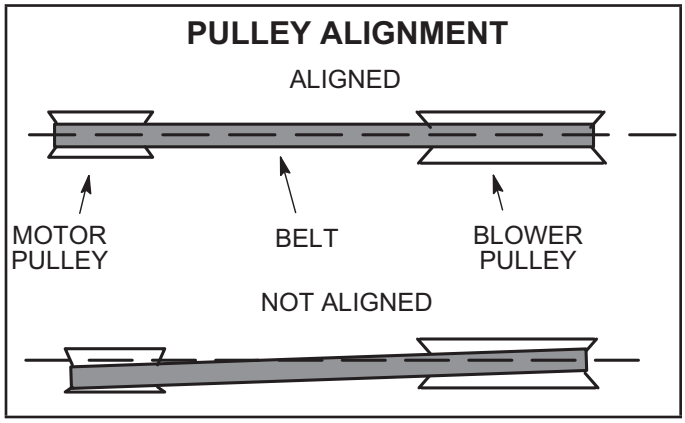


FIGURE 15

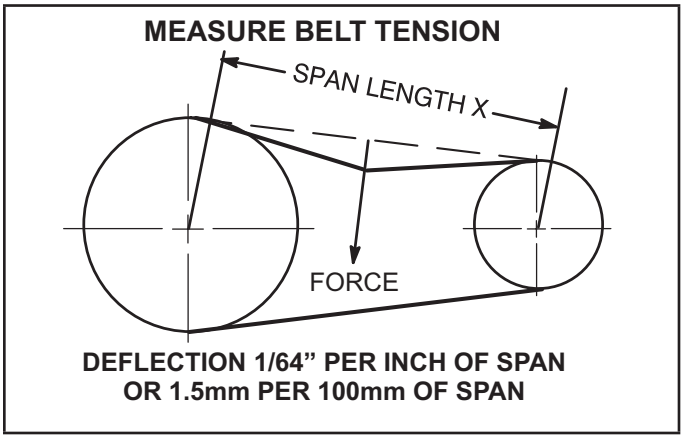


FIGURE 16

9-Check Belt Tension

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

1 - Measure span length X. See FIGURE 16.

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

Initiate blower demand at thermostat according to instructions provided with thermostat. Unit will cycle on thermostat demand. The following steps apply to applications using a typical electro-mechanical thermostat.

10-Field-Furnished Blower Drives

For field-furnished blower drives, use belt drive blower tables to determine BHP and RPM required. Reference the drive kit specification table and manufacturer's drive number table.

TABLE 8

DRIVE COMPONENT MANUFACTURER'S NUMBERS

Drive No.	DRIVE COMPONENTS					
	Motor Pulley		Blower Pulley		Belts	
	Browning No.	OEM Part No.	Browning No.	OEM Part No.	Browning No.	OEM Part No.
A03	1VP34 X 7/8	31K6901	AK44X 1	100244-16	A39	100245-16
A04	1VP40 X 7/8	79J0301	AK49 X 1	100244-18	A41	100245-18
A07	1VP50 X 7/8	53J1501	AK54 X 1	100244-19	AX43	73K8201
A08	1VP44 X 7/8	P-8-1488	AK46 X 1	100244-17	A40	73K8201

D-GAS HEAT COMPONENTS

LGX024, 036, 048, 060, 072 units are available in 65,000 BTUH (19 kW) heat capacity. LGX036, 048, 060, and 072 units are available in 108,000 BTUH, (30.8 kW) heat capacity. LGX048, 060, and 072 units are available in 150,000 BTUH (44 kW) heat sizes.

Two stage heat is available in units with 108,000 and 150,000 BTUH capacities.

See Gas Heat Specifications on for more detail.

1-Heat Exchanger

The LGX units use aluminized steel inshot burners with tubular aluminized steel heat exchangers and redundant gas valve. See FIGURE 17. Burners in all units use a burner venturi to mix gas and air for proper combustion. Combustion takes place at each tube entrance. As hot combustion gases are drawn upward through each tube by the combustion air inducer, exhaust gases are drawn out the top and fresh air/gas mixture is drawn in at the bottom. Heat is transferred to the air stream from all surfaces of the heat exchanger tubes. The supply air blower forces air across the tubes to extract the heat of combustion. The shape of the tubes ensures maximum heat exchange.

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

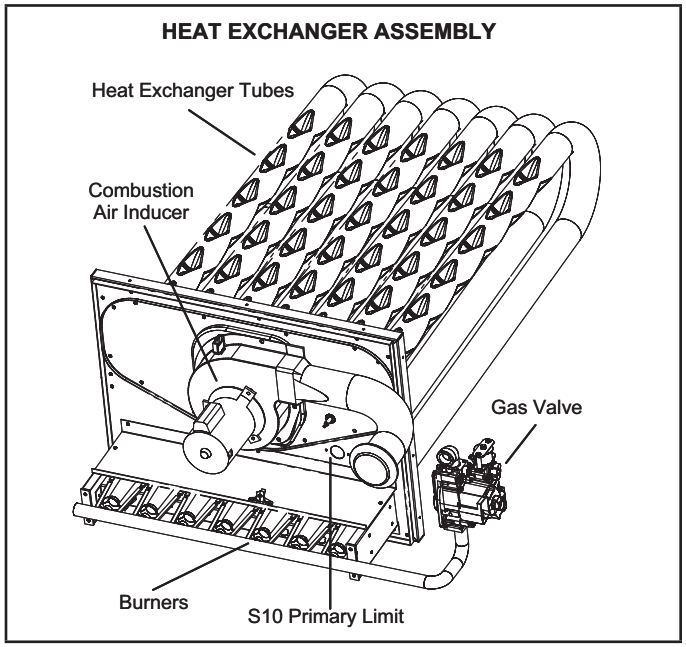


FIGURE 17

2-Burner Box Assembly

The burner assembly consists of a spark electrode, flame sensing electrode and gas valve. Ignition board A3 controls all functions of the assembly. See FIGURE 18.

Burners

All units use inshot burners. Burners are factory set and

do not require adjustment. A peep hole with cover is furnished in the heating access panel for flame viewing.

Always operate the unit with the access panel in place. Burners can be removed individually for service. Burner maintenance and service is detailed in the SERVICE CHECKS section of this manual.

Orifice

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

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

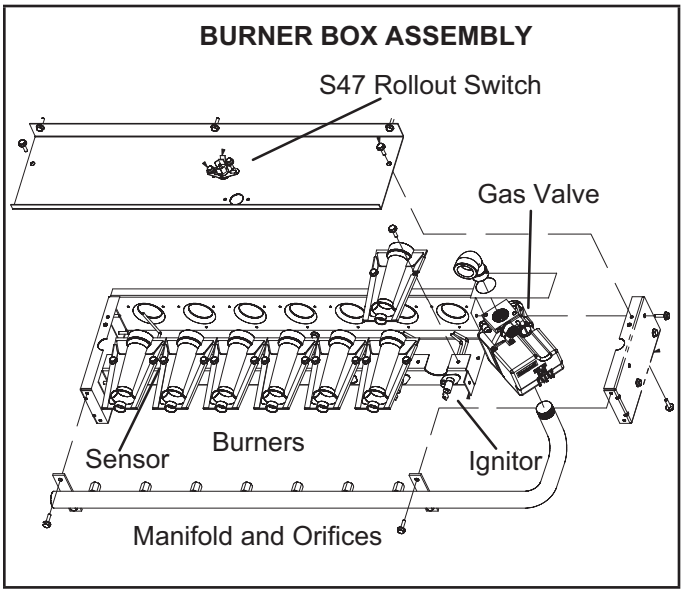


FIGURE 18

3-Primary High Temperature Limit S10

S10 is a SPST N.C. high temperature primary limit for gas heat in LGX024-072 units. S10 is located on the vestibule panel. See FIGURE 17.

Primary limit S10 is wired to the ignition control A3. Its N.C. contacts open to de-energize the ignition control when excessive temperature is reached in the blower compartment.

If the limit trips the blower relay coil K3 will be energized by ignition control A3. Limit set points are factory set and cannot be adjusted.

4-Flame Rollout Limit Switch S47

Flame rollout limit switch S47 is a SPST N.C. high temperature limit located just above the burner air intake opening in the burner enclosures (see FIGURE 18). S47 is wired to the ignition control A3. When S47 senses flame rollout (indicating a blockage in the combustion air passages), the flame rollout limit trips, and the ignition control immediately closes the gas valve.

Limit S47 is factory preset to open at 340F + 16F on a temperature rise on all units. All flame rollout limits are manual reset.

5-Combustion Air Prove Switch S18

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

6-Combustion Air Inducer B6

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

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

On a heating demand (W1), the ignition control A3 initiates the heating cycle. A3 then allows 30 to seconds for the combustion air inducer to vent exhaust gases from the burners. When the combustion air inducer is purging the exhaust gases, the combustion air prove switch closes, proving that the combustion air inducer is operating before allowing the ignition sequence to continue. When the combustion air prove switch is closed and the delay is over, the 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 or at the end of the eight second trial for ignition.

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

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

7-Combustion Air Motor Capacitor C3

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

8-Gas Valves GV1

Units are equipped with a single stage gas valve (figure 20) or two stage gas valve (figure 21). 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 A3. A manual shut-off knob is provided on the valve for shut-off. Manual shut-off knob immediately closes both stages without delay. On both valves first stage (low fire) is quick opening (on and off in less than 3 seconds).

9-Spark Electrode (Ignitor)

An electrode assembly is used for ignition spark. The electrode is mounted through holes under the right most burner location. The electrode tip protrudes into the flame envelope of the adjacent burner. The electrode assembly is fastened to burner supports and can be removed for service without removing any part of the burners.

During ignition, spark travels through the spark electrode (FIGURE 19) and ignites the right 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 both ends of the wire.

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

The spark electrode assembly can be removed for inspection by removing the screw securing the electrode assembly and sliding it out of unit. For proper unit operation, electrodes must be positioned and gapped correctly.

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

⚠ IMPORTANT

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

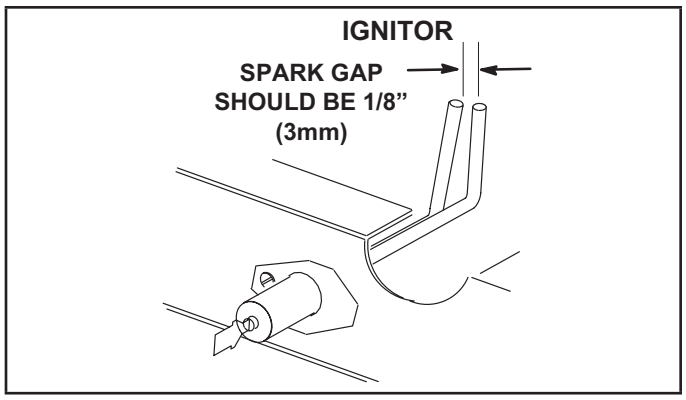


FIGURE 19

10-Flame Sensor

A flame sensor (FIGURE 20) is located under the left most side burner. The sensor is mounted through a hole in the burner support and the tip protrudes into the flame envelope of the left 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 or after the eight second trial for ignition. During operation, flame is sensed by current passed along the ground electrode (located on the spark electrode), through the flame and into the sensing electrode. The ignition control allows the gas valve to stay open as long as a flame signal (current passed through the flame) is sensed.

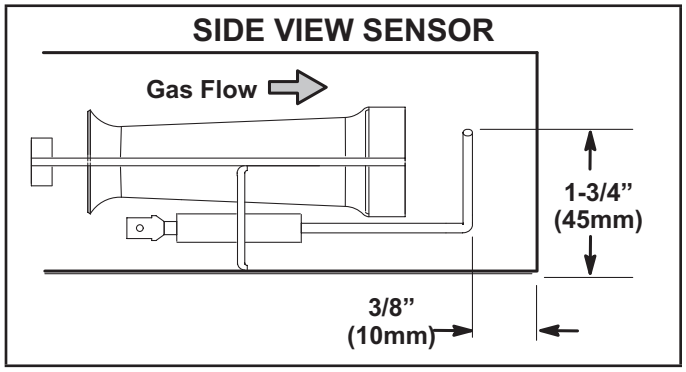


FIGURE 20

II-PLACEMENT AND INSTALLATION

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

III-START UP - OPERATION

A-Preliminary and Seasonal Checks

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

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

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

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

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

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

B-Heating Start up

FOR YOUR SAFETY READ BEFORE LIGHTING

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

SMOKE POTENTIAL

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

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.

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

⚠ WARNING

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

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

Placing Unit In Operation

⚠ WARNING

Danger of explosion and fire. Can cause injury or product or property damage. You must follow these instructions exactly.

Gas Valve Operation (FIGURE 21 and FIGURE 22)

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 - Switch gas valve to OFF. See FIGURE 21 or FIGURE 22.

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

7 - Switch gas valve lever to **ON**. See FIGURE 21 or FIGURE 22.

8 - Turn on all electrical power to appliance. .

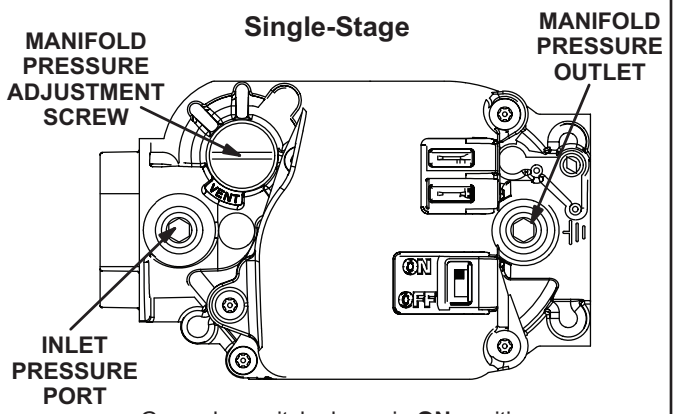


FIGURE 21

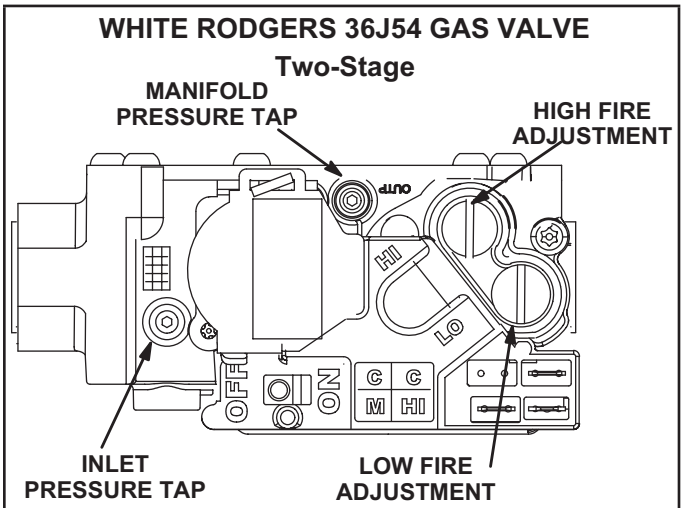


FIGURE 22

9 - Set thermostat to desired setting.

NOTE - *When unit is initially started, steps 1 through 8 may need to be repeated to purge air from gas line.*

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

Turning Off Gas to Unit

1 - If using an electromechanical thermostat, set to the lowest setting.

2 - Before performing any service, turn off all electrical power to the appliance.

3 - Open or remove the heat section access panel.

4 - Switch gas valve to OFF.

5 - Close or replace the heat section access panel.

C-Cooling Start up

Operation

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

2 - ***LGX024/072*** *No Economizer Installed in Unit*

-A cooling demand (Y1) will energize compressor 1 and the condenser fan. An increased cooling demand (Y2) will not change operation.

Units Equipped With Economizer -

When outdoor air is acceptable, a first-stage cooling demand (Y1) will energize the economizer. An increased cooling demand (Y2) will energize compressor 1 and the condenser fan. When outdoor air is not acceptable unit will operate as though no economizer is installed.

3 - Units contain one refrigerant circuit or stage.

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

5 - Refer to Cooling Operation and Adjustment section for proper method to check refrigerant charge.

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.

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 K1 contactor. 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.

D-Safety or Emergency Shutdown

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

IV-CHARGING

Refrigerant Charge and Check - All-Aluminum Coil
WARNING-Do not exceed nameplate charge under any condition.

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)
LGX024	3.88	1.76
LGX036	3.69	1.67
LGX048	3.50	1.59
LGX060	3.75	1.70
LGX072	5.19	2.35
LGX024 W/ Humidtrol	4.26	1.93
LGX036 W/ Humidtrol	4.64	2.10
LGX048 W/ Humidtrol	4.24	1.92
LGX060 W/ Humidtrol	4.76	2.16
LGX072 W/ Humidtrol	4.5	2.04

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

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

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

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in

good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery.

- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially 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.

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

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

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

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

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

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

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

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

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

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

7 - Example: For the 024 model, at 95°F outdoor ambient and a measured suction pressure of 130psig, the target liquid temperature is 89°F. For a measured liquid temperature of 106°F, add charge in increments until measured liquid temperature agrees with the target liquid temperature.

TABLE 9
024 NORMAL OPERATING PRESSURES - NO REHEAT - ALL-ALUMINUM COIL - 581228-01

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)
108	210	110	247	112	288	113	334	115	385	117	441
117	211	119	248	121	289	122	336	124	387	126	443
136	216	138	252	140	294	142	340	144	392	146	448
157	223	159	260	162	301	164	348	167	399	169	455

024 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581228-01

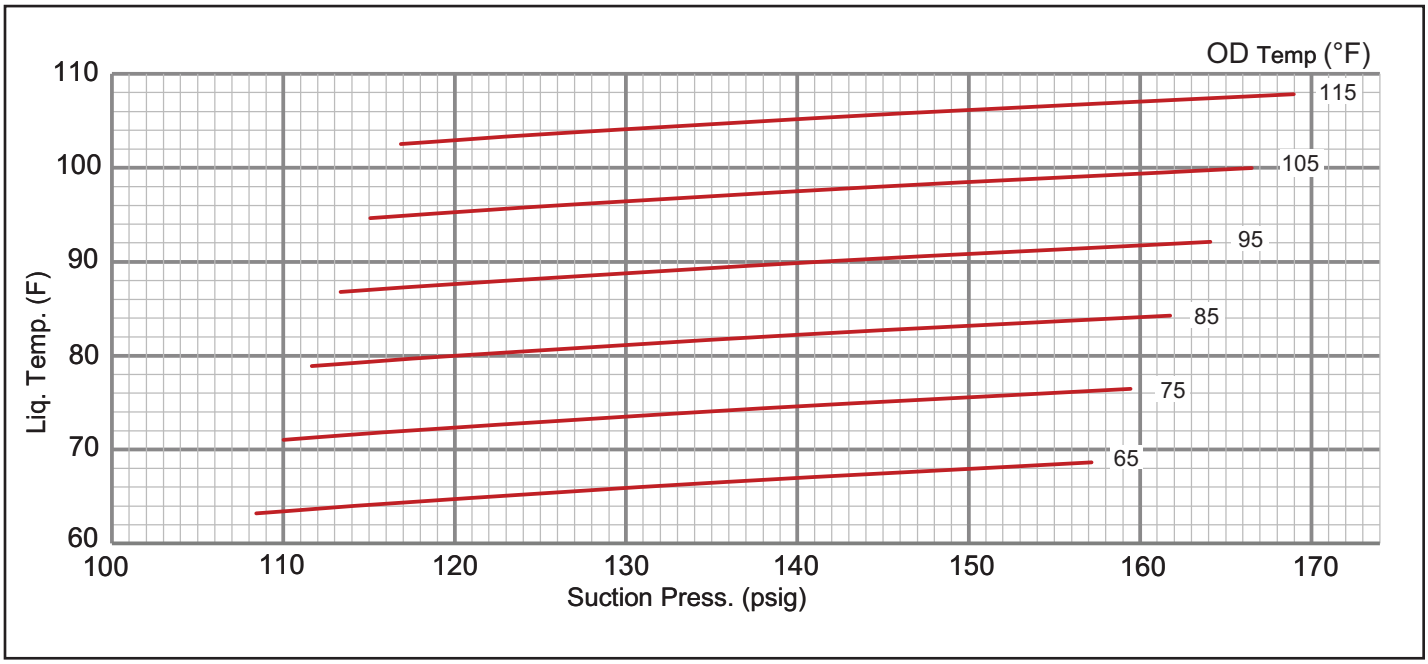


TABLE 10
036 NORMAL OPERATING PRESSURES - NO REHEAT - ALL-ALUMINUM COIL - 581230-01

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)
108	227	110	264	111	306	113	352	114	403	116	457
115	228	117	266	119	308	121	354	122	404	124	459
134	234	136	272	138	314	139	360	141	411	143	466
156	243	158	282	160	324	162	371	164	422	166	478

036 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581230-01

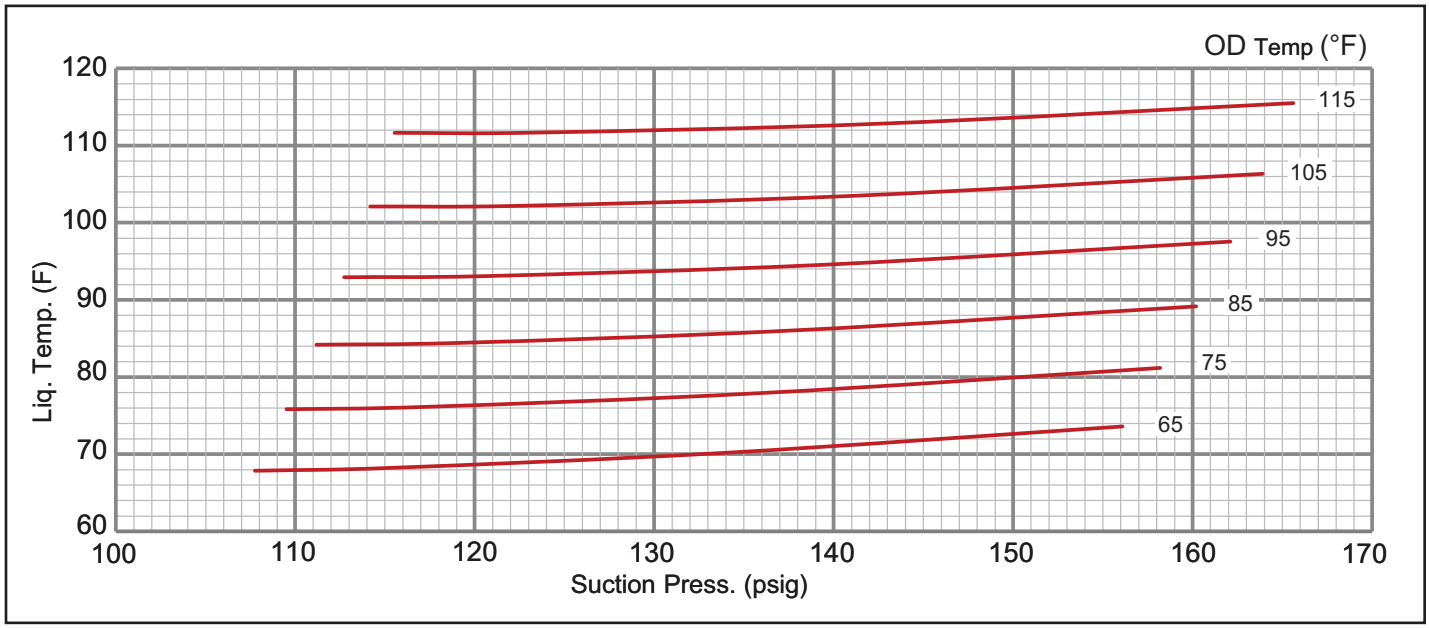


TABLE 11
048 NORMAL OPERATING PRESSURES - NO REHEAT - ALL-ALUMINUM COIL - 581232-01

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)
108	210	110	247	112	288	113	334	115	385	117	441
117	211	119	248	121	289	122	336	124	387	126	443
136	216	138	252	140	294	142	340	144	392	146	448
157	223	159	260	162	301	164	348	167	399	169	455

048 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581232-01

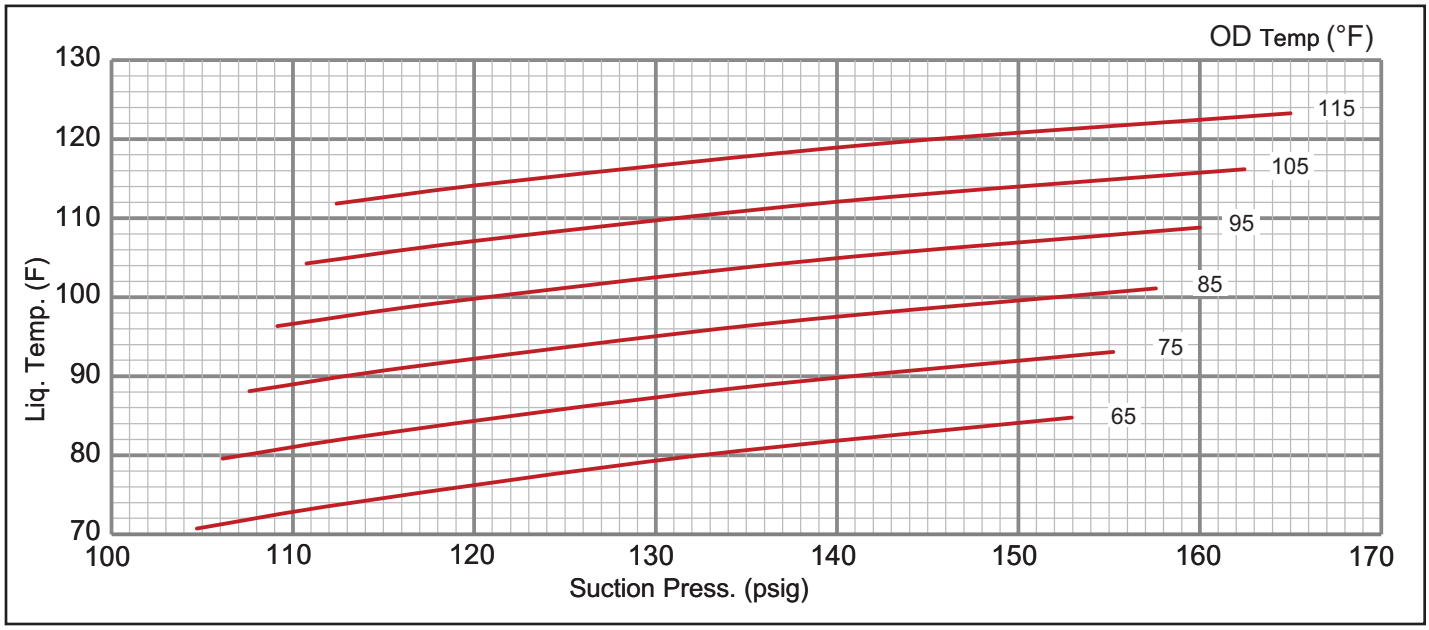


TABLE 12
060 NORMAL OPERATING PRESSURES - NO REHEAT - ALL-ALUMINUM COIL - 581234-01

Outdoor Coil Entering Air Temperature											
65°F		75°F		85°F		95°F		105°F		115°F	
Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)	Suct (psig)	Disc (psig)
106	267	108	299	109	338	111	383	112	436	113	495
114	263	116	296	118	336	119	382	121	435	122	496
131	263	134	297	136	339	139	387	141	442	142	504
151	271	154	308	157	351	160	401	162	458	164	522

060 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581234-01

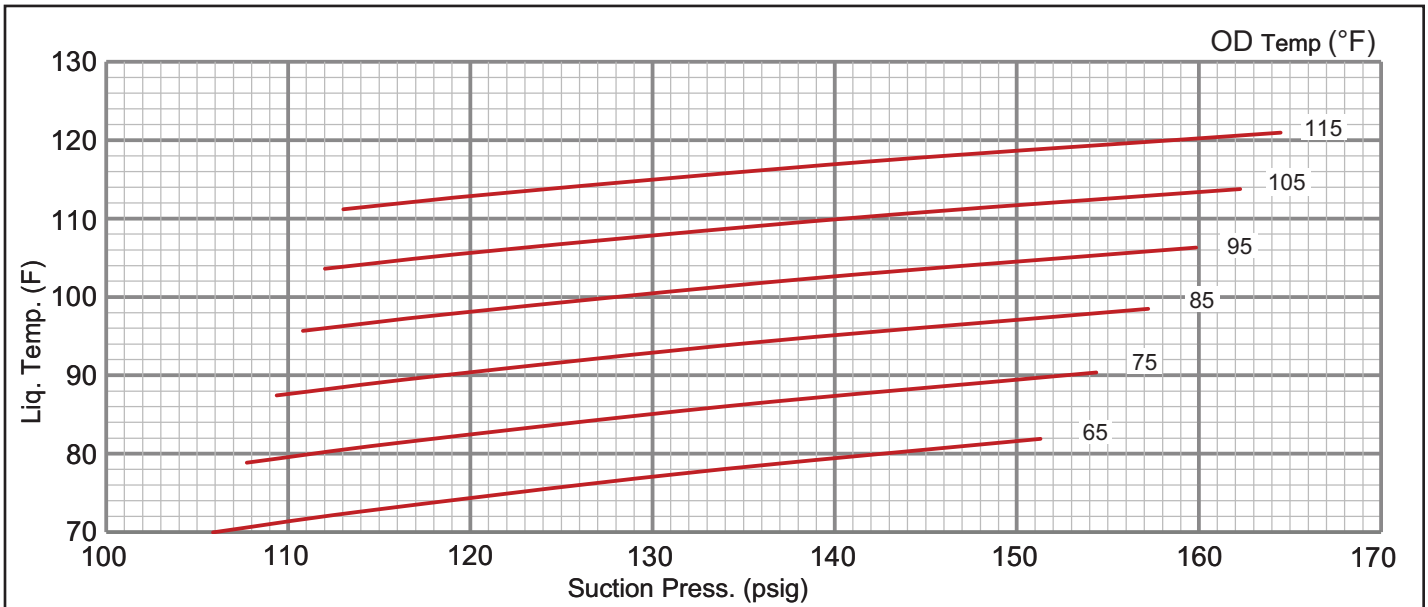


TABLE 13
072 NORMAL OPERATING PRESSURES - NO REHEAT - ALL-ALUMINUM COIL - 581236-01

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)
105	239	107	276	109	318	110	365	111	417	112	473
112	243	115	280	117	323	119	370	121	422	122	479
128	251	132	289	135	332	138	380	141	433	143	491
145	260	150	299	154	342	157	391	161	445	164	503

072 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581236-01

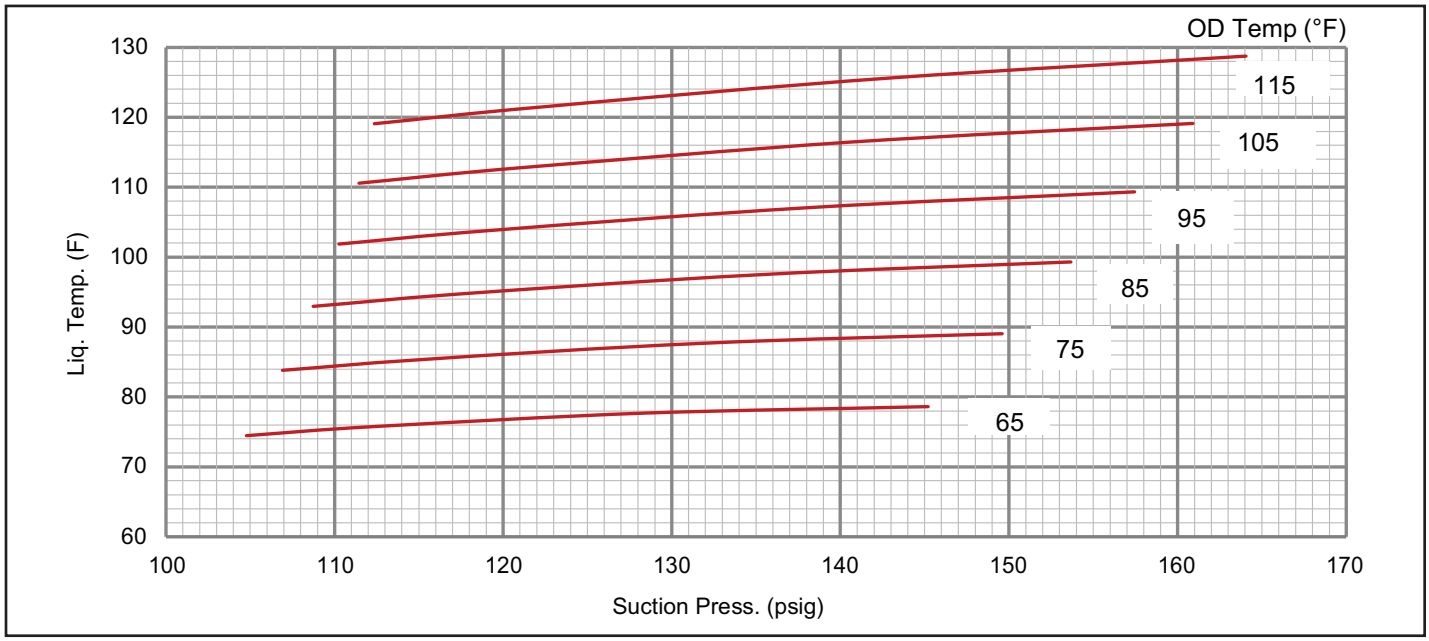


TABLE 14
024 NORMAL OPERATING PRESSURES - REHEAT - ALL-ALUMINUM COIL - 581229-01

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)
112	212	112	245	112	283	114	326	117	375	120	429
121	215	121	247	122	286	125	329	128	378	132	432
139	220	141	253	143	291	147	335	151	384	156	438
159	224	162	257	165	296	170	340	175	389	182	444

024 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581229-01

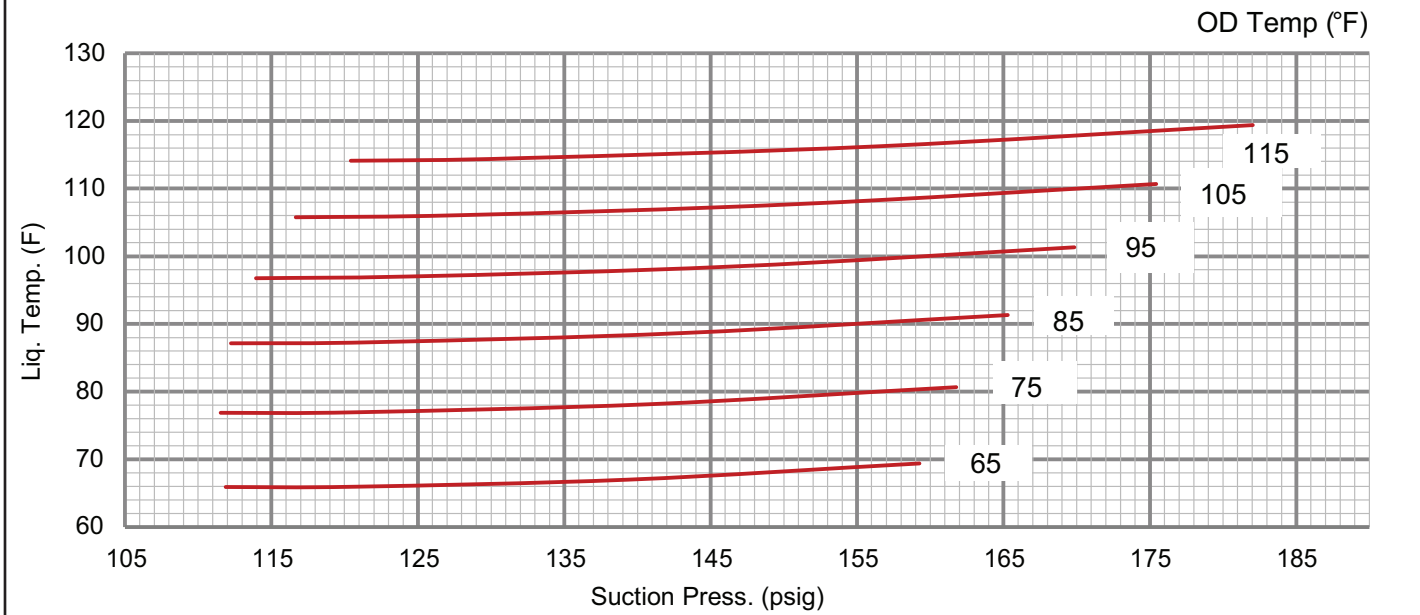


TABLE 15
036 NORMAL OPERATING PRESSURES - REHEAT - ALL-ALUMINUM COIL - 581231-01

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)
108	230	110	265	112	305	113	351	115	401	116	456
117	233	119	268	121	308	122	353	124	404	126	459
135	239	138	275	140	315	142	360	144	411	146	466
156	248	158	283	161	324	163	369	166	420	168	475

036 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581231-01

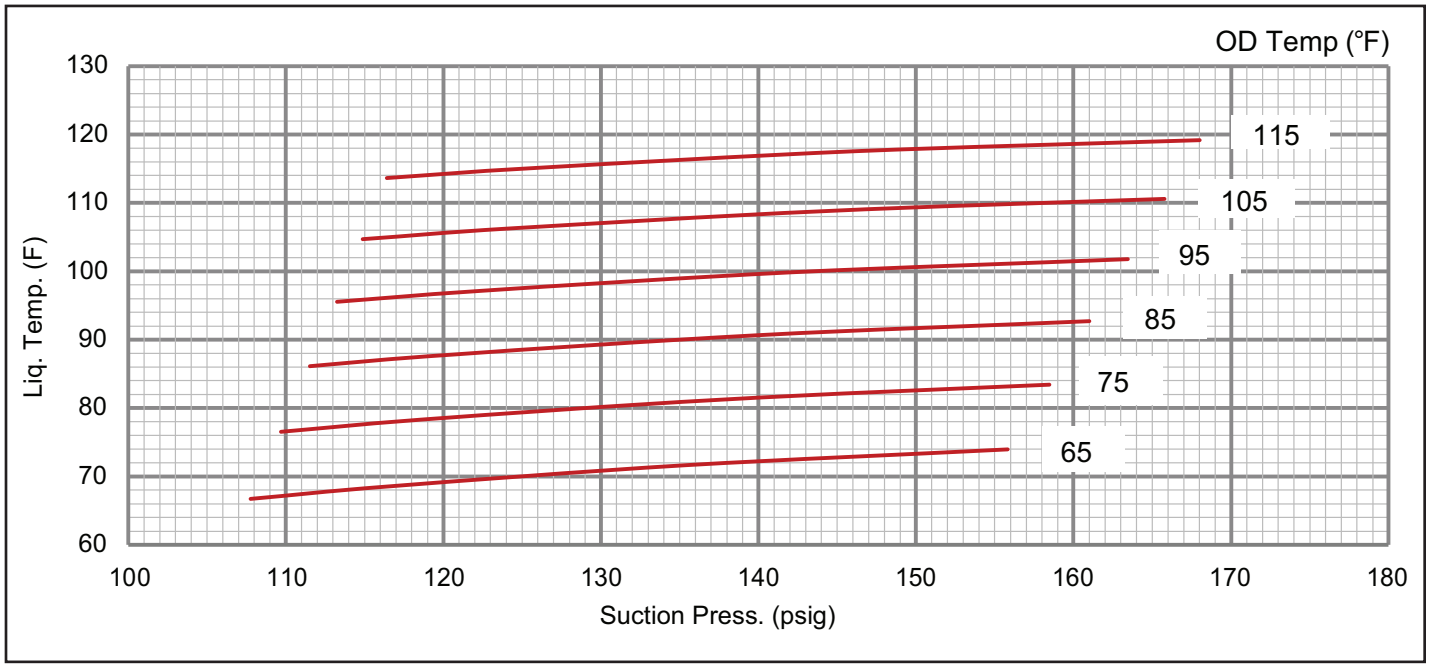


TABLE 16
048 NORMAL OPERATING PRESSURES - REHEAT - ALL-ALUMINUM COIL - 581233-01

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)
107	249	109	288	111	331	113	379	115	431	116	487
115	252	117	291	120	334	122	383	125	435	126	492
131	257	135	297	138	341	142	390	145	443	147	501
149	262	153	303	158	348	162	398	166	452	169	510

048 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581233-01

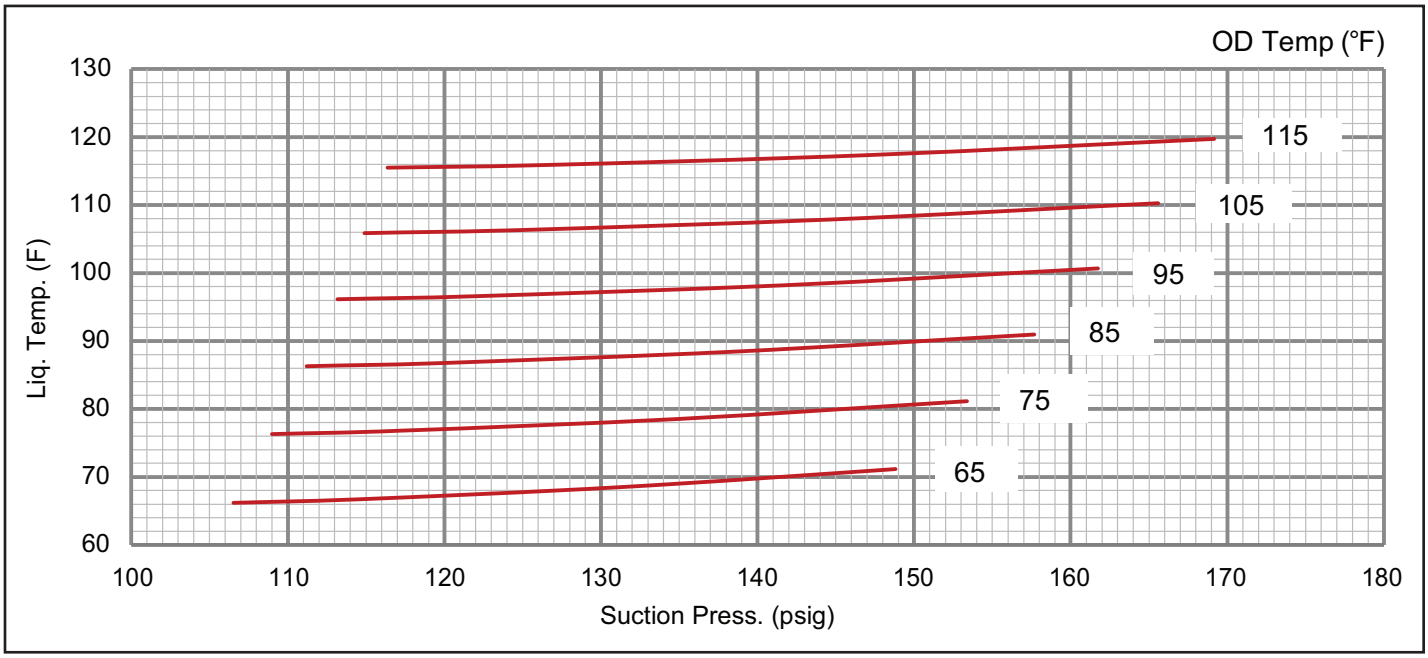


TABLE 17
060 NORMAL OPERATING PRESSURES - REHEAT - ALL-ALUMINUM COIL - 581235-01

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)
105	253	108	291	110	335	112	383	113	437	114	496
114	258	117	297	119	340	121	389	123	443	124	502
132	269	135	308	138	351	141	400	143	455	144	514
151	281	155	320	158	364	161	413	164	467	166	527

060 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581235-01

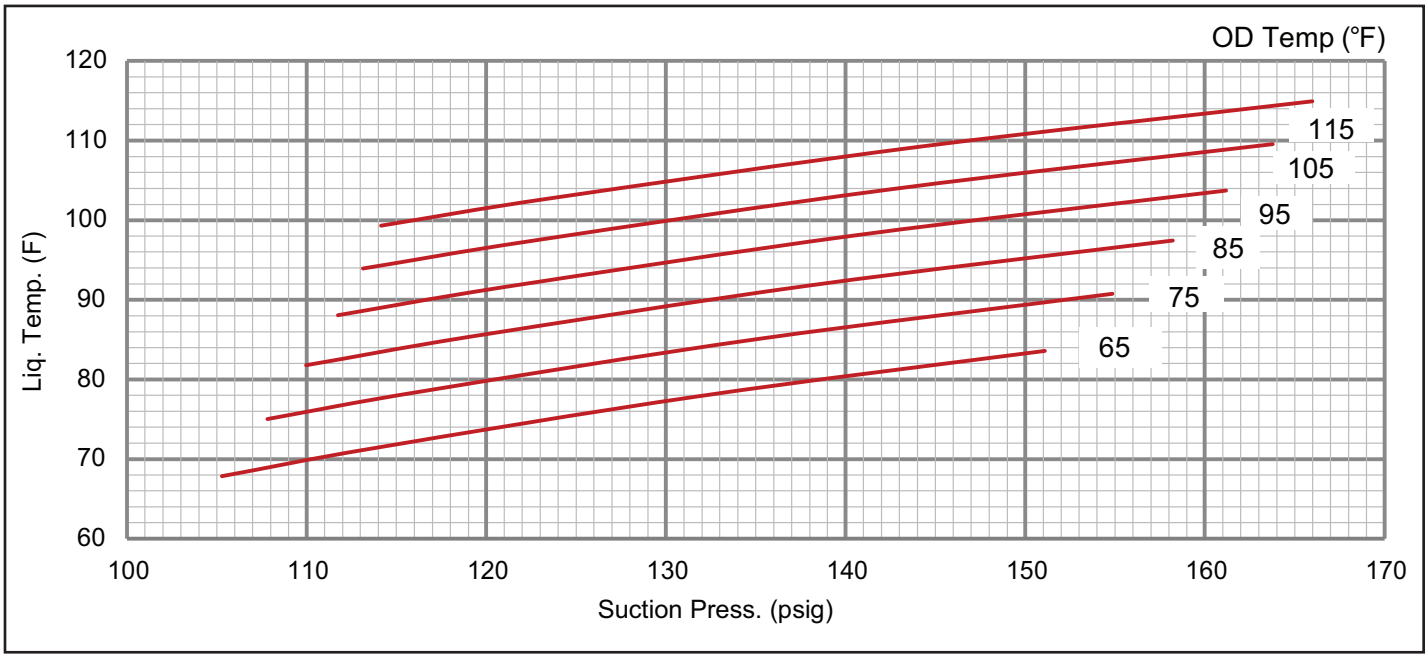
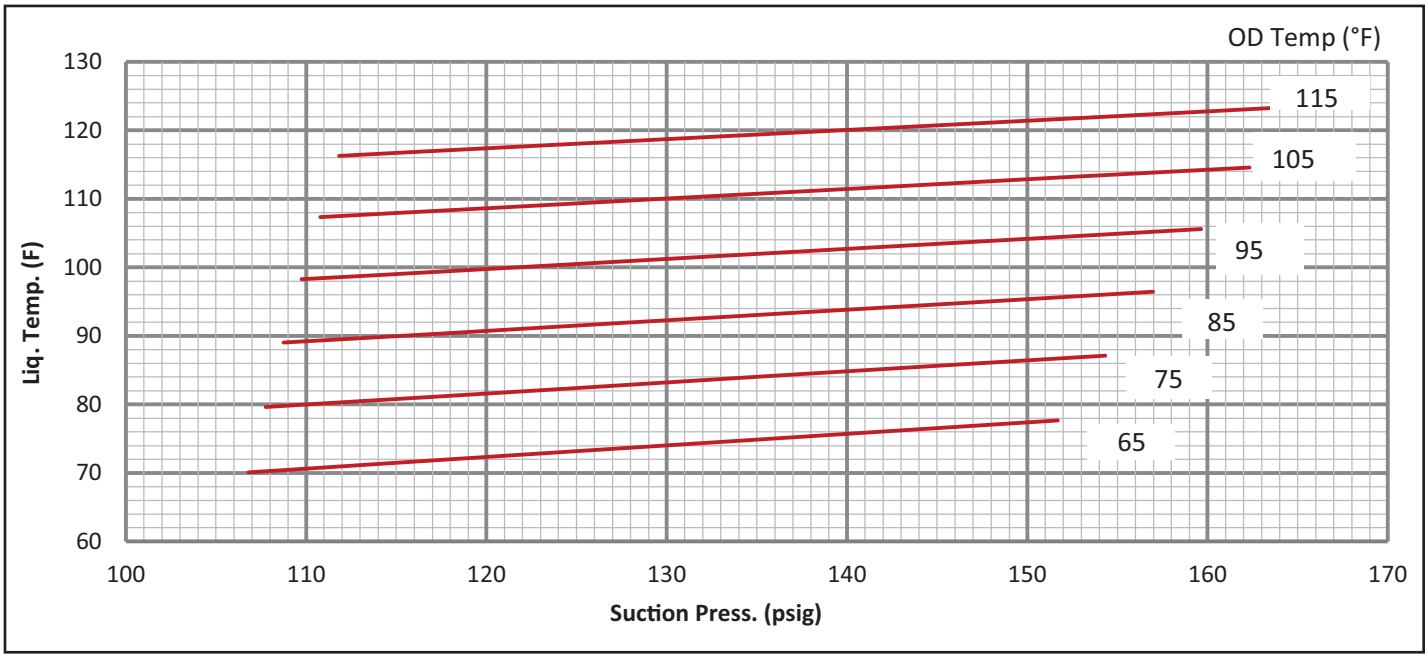


TABLE 18
072 NORMAL OPERATING PRESSURES - REHEAT - ALL-ALUMINUM COIL - 581237-01

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)
107	257	108	294	109	336	110	384	111	436	112	494
115	263	117	300	118	343	119	390	121	443	122	501
133	274	135	312	137	355	139	403	141	456	143	514
152	284	154	323	157	366	160	415	162	468	165	527

072 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581237-01



V- SYSTEM SERVICE CHECKS

A-Heating System Service Checks

All LGX units are C.S.A. design certified without modification. Before checking piping, check with gas company or authorities having jurisdiction for local code requirements. Refer to the LGX Installation 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 23.

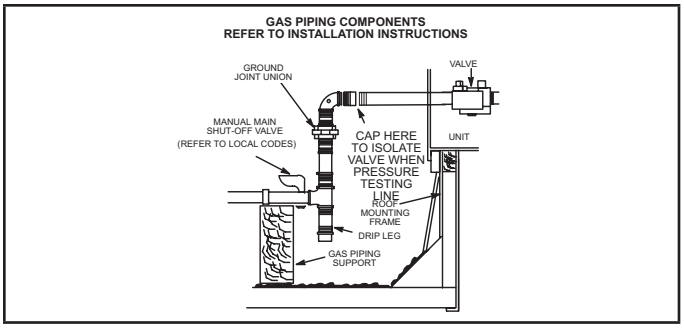


FIGURE 23

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 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.***

3-Testing Gas Supply Pressure

When testing gas supply pressure, connect test gauge to the inlet pressure tap located on unit gas valve GV1. Test supply gas pressure with unit firing at maximum rate (both stages energized). Make sure the reading falls within the

range of the following values. Low pressure may result in erratic operation or “underfire.” High pressure can result in permanent damage to the gas valve or “overfire.” For natural gas units, operating pressure at the unit gas connection must be between 4.5”W.C. and 10.5”W.C. For L.P. gas units, operating pressure at the unit gas connection must be between 10.5”W.C. and 13.0”W.C.

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

4-Check and Adjust Manifold Pressure

After line pressure has been checked and adjusted, check manifold pressure. Move test gauge to the outlet pressure tap located on unit gas valve GV1. See FIGURE 21 and FIGURE 22 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 21 and FIGURE 22 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 below.

Natural Gas Units - Low Fire - 2.0” w.c.

Natural Gas Units - High Fire - 3.5” w.c.

LP Gas Units - Low Fire - 5.9” w.c.

LP Gas Units - High Fire - 10.5” w.c.

5-Proper Gas Flow

Furnace should operate at least 5 minutes before checking gas flow. Determine time in seconds for two revolutions of gas through the meter. (Two revolutions assures a more accurate time.) Divide by two and compare to time in table 24. Seconds in table 24 are based on a 1 cu.ft. dial and gas value of 1000 btu/ft3 for natural and 2500 btu/ft3’ for LP. Adjust manifold pressure on gas valve to match time needed.

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

TABLE 19

Unit Input Rate	Seconds for Natural	Seconds for Propane
65,000	55	138
105,000	34	86
108,000	33	83
150,000	24	60

⚠ IMPORTANT

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

6-Heat Exchanger

To Access or Remove Heat Exchanger From Unit:

1 - Turn off gas and electric power.

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

3 - Remove gas valve, manifold assembly and burners.

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

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

6 - Remove screws supporting heat exchanger.

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

7-Flame Sensing

Flame current is an electrical current which passes from the ignition control through the sensor electrode during unit operation.

The current passes from the sensor through the flame to the ground electrode (located on the flame electrode) to complete a safety circuit.

The electrodes should be located so the tips are at least 1/2” (12.7 mm) inside the flame envelope. Do not bend electrodes. To measure flame current, follow the procedure 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, microamp reading should be 0.5 to 1.0. Do not bend electrodes. Drop out signal is .09 or less.

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

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

B-Cooling System Service Checks

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

VI-MAINTENANCE

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

⚠ WARNING

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

⚠ IMPORTANT

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

⚠ 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.

A-Filters

Units are equipped with temporary filters which must be replaced prior to building occupation. See table 25 for correct filter size. Refer to local codes or appropriate jurisdiction for approved filters. Approved filters should be checked monthly and replaced when necessary. Take note of air flow direction marking on filter frame when re-installing filters

TABLE 20

Unit	Qty.	Filter Size - in. (mm)
LC/LGX 024, 036, 048, 060	4	16 x 20 x 2 (406 x 508 x 51)
LC/LGX 072	4	20 x 20 x 2 (508 x 508 x 51)

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

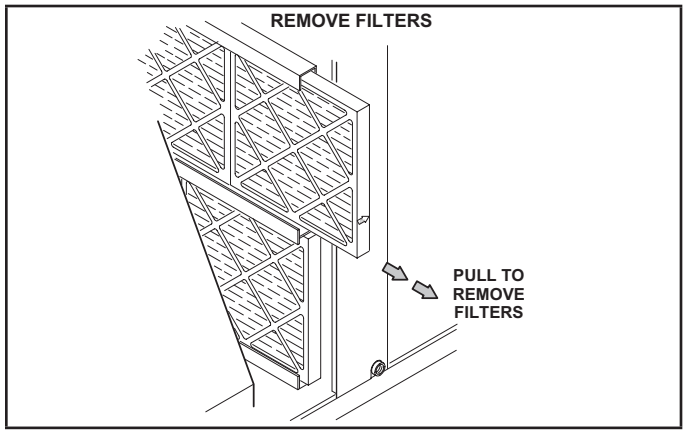


FIGURE 24

B-Lubrication

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

C-Burners

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

Clean burners as follows:

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

2 - Remove burner compartment access panel.

3 - Remove top burner box panel.

4 - Remove two screws securing burners to burner support and lift the burners from the orifices. See FIGURE 18. Clean as necessary.

⚠ WARNING

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

D-Combustion Air Inducer

A combustion air proving switch checks combustion air inducer operation before allowing power to the gas controller.

Gas controller will not operate if inducer is obstructed. Under normal operating conditions, the combustion air inducer wheel should be checked and cleaned prior to the heating season. However, it should be examined periodically during the heating season to establish an ideal cleaning schedule.

Clean combustion air inducer as follows:

1 - Shut off power supply and gas to unit.
2 - Remove the mullion on the right side of the heat section.
3 - Disconnect pressure switch air tubing from combustion air inducer port.
4 - Remove and retain screws securing combustion air inducer to flue box. Remove vent connector.
5 - Clean inducer wheel blades with a small brush and wipe off any dust from housing. Take care not to damage exposed fan blades. Clean accumulated dust from front of flue box cover.
6 - Return combustion air inducer motor and vent connector to original location and secure with retained screws. It is recommended that gaskets be replaced during reassembly.
7 - Replace mullion.
8 - Clean combustion air inlet louvers on heat access panel using a small brush.

E-Flue Passageway and Flue Box

Remove flue box cover only when necessary for equipment repair. Clean inside of flue box cover and heat exchanger tubes with a wire brush when flue box cover has to be removed.

Install a new flue box cover gasket and replace cover. Make sure edges around flue box cover are tightly sealed.

F-Supply Blower Wheel

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

G-Evaporator Coil

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

H-Condenser Coil

All-Aluminum Environ Coils

Clean condenser coil annually with water and inspect monthly during the cooling season.

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

VII-ACCESSORIES

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

A-C1/T1CURB

When installing the LGX units on a combustible surface for downflow discharge applications, the C1/T1CURB8 inch, 14-inch, 18 inch or 24-inch height roof mounting frame is used. The roof mounting frames are recommended in all other applications but not required. If the LGX units are not mounted on a flat (roof) surface, they MUST be supported under all edges and under the middle of the unit to prevent sagging. The units MUST be mounted level within 1/16” per linear foot or 5mm per meter in any direction.

The assembled mounting frame is shown in FIGURE 25. 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 26. Refer to the roof mounting frame installation instructions for proper plenum construction and attachment.

B-Transitions

Optional supply/return transitions are available for use with the LGX 2, 3, 4, 5, and 6 ton units (refer to EHB for appropriate transition model). Transition must be installed in the C1/T1CURB mounting frame before mounting the unit to the frame. Refer to the manufacturer’s instructions included with the transition for detailed installation procedures.

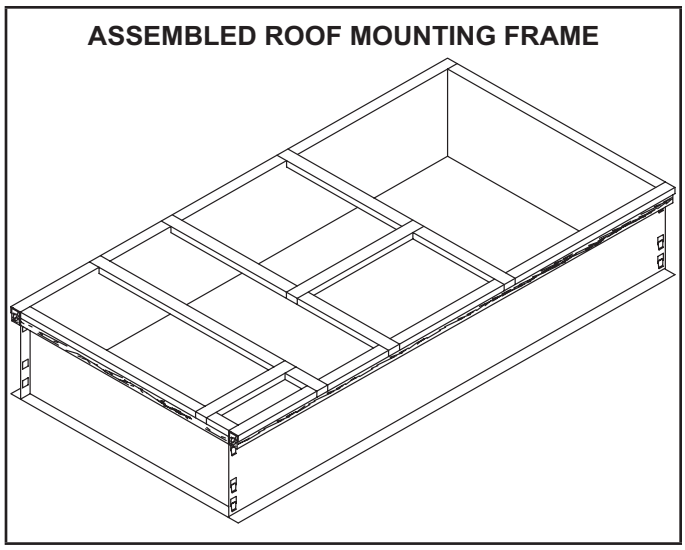


FIGURE 25

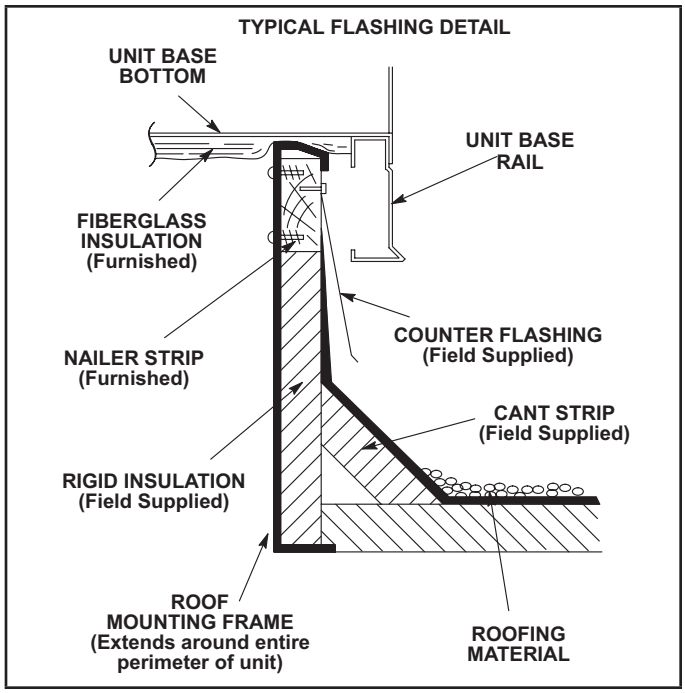


FIGURE 26

C-Outdoor Air Dampers

See Optional Accessories at the front of this manual (Table of Contents) for sizes per LGX units. Outdoor air dampers may be manually or motor (M) operated to allow up to 25 percent outside air into the system at all times. See FIGURE 27. The washable filters 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.

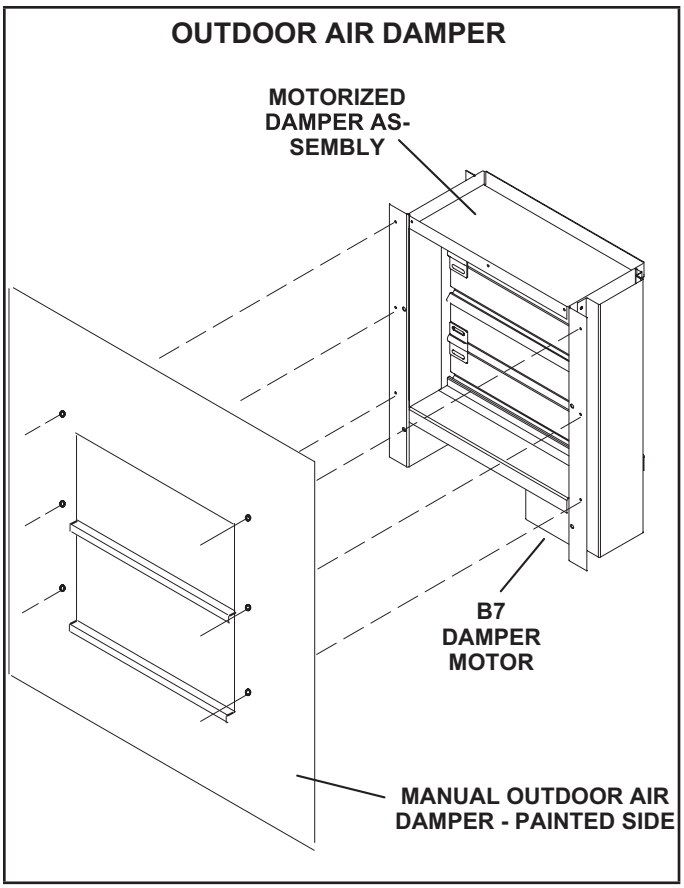


FIGURE 27

D-Supply and Return Diffusers (all units)

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

E-Economizer (Field or Factory Installed)

The economizer uses outdoor air for free cooling when temperature is suitable. See FIGURE 28.

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

Sensors

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

RT17 - Outside Air Temperature

RT16 - Return Air Temperature

RT6 - Discharge Air Temperature

See FIGURE 29 for sensor location.

Optional field-provided sensors may be used instead of unit sensors to determine whether outdoor air is suitable for free cooling. Refer to TABLE 21. TEMP OFFSET is the default mode.

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

Minimum Position

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

Ventilation mode (G demand only)

Outdoor air is NOT suitable for free cooling

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

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

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

Horizontal Air Discharge Economizers

The economizer is located in the unit the same as downflow applications but note the position of the return air duct. The duct attaches to a duct transition and duct inlet on the end of the unit. An optional GED is located in the duct transition. See FIGURE 30.

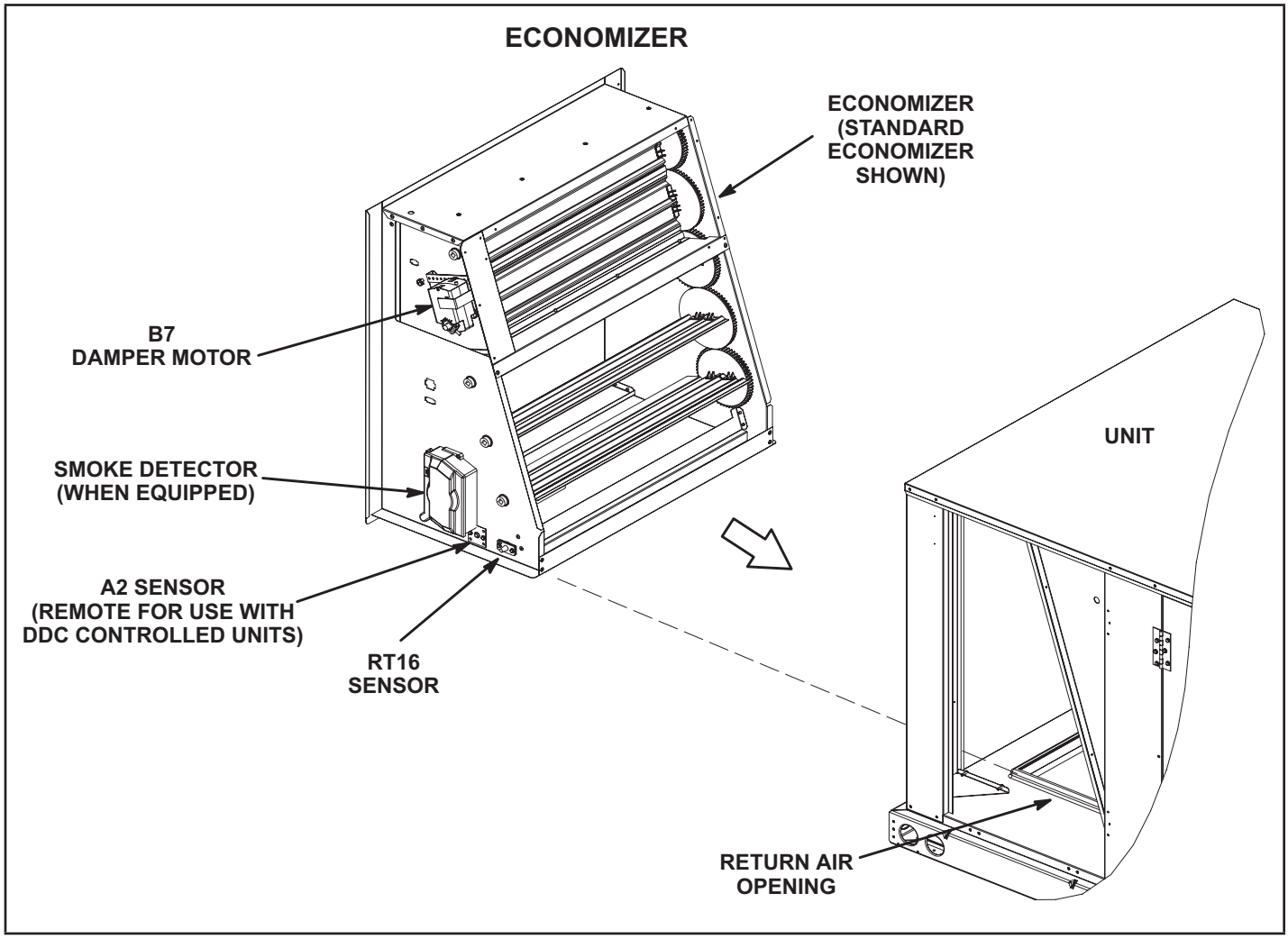


FIGURE 28

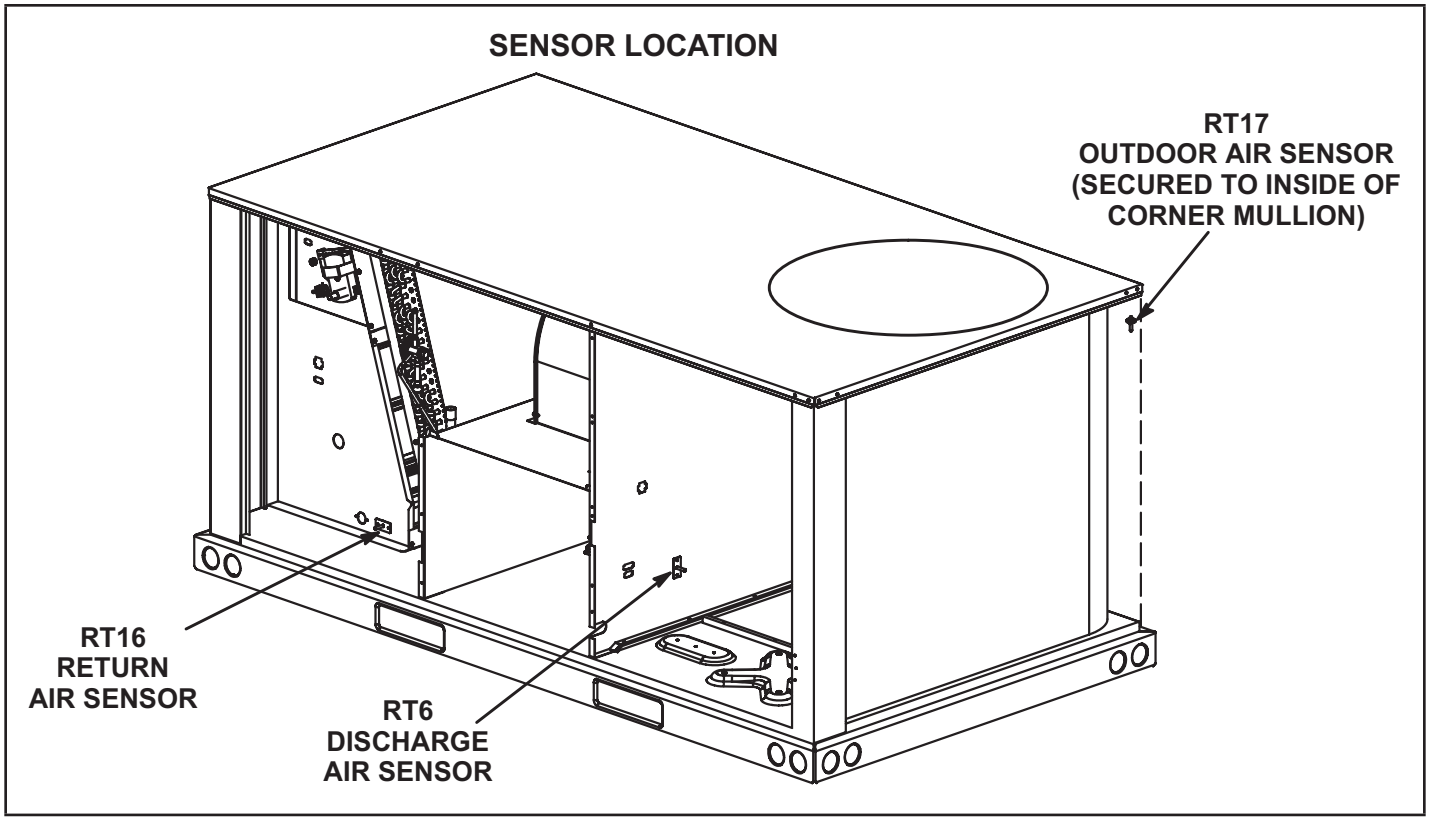


FIGURE 29

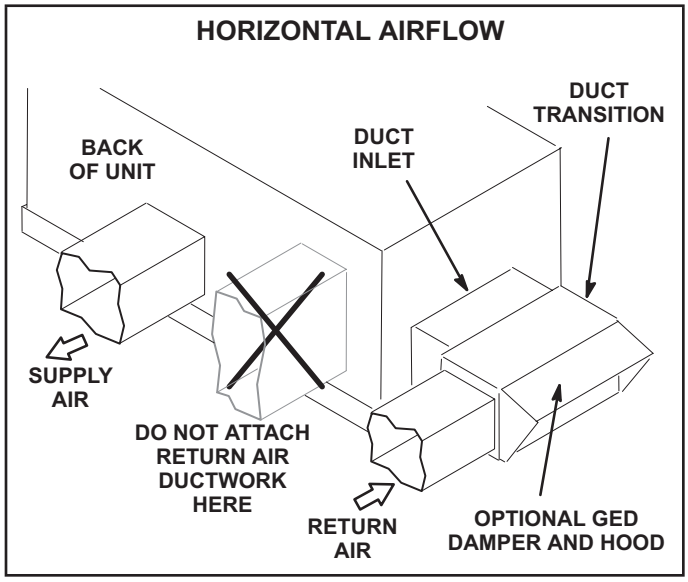


FIGURE 30

TABLE 21

ECONOMIZER MODES AND SETPOINT

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

Outdoor Air Damper and Economizer Operation

Modulating Outdoor Air Damper:

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

-Supply fan is off and the outdoor air damper is closed

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

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

[1]Outdoor Air is Suitable

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

1-Economizer With Outdoor Air Suitable

Low Cooling Demand -

Compressor Off
Blower Low
Dampers Modulate

High Cooling Demand -

Compressor Low
Blower High
Dampers Full Open

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

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

2-No Economizer or Outdoor Air Not Suitable

Low Demand -

Compressor Low
Blower Low
Damper Minimum Position

High Cooling Demand -

Compressor High
Blower High
Damper Minimum Position

Units with Enthalpy Sensor Installed

Unit may contain an optional factory-installed economizer equipped with an A7 outdoor enthalpy sensor. The modulating economizer opens fully to use outdoor air for free cooling when temperature is suitable and opens to minimum position during the occupied time period.

See FIGURE 31. The A7 enthalpy sensor is located on the division panel between horizontal supply and return air sections.

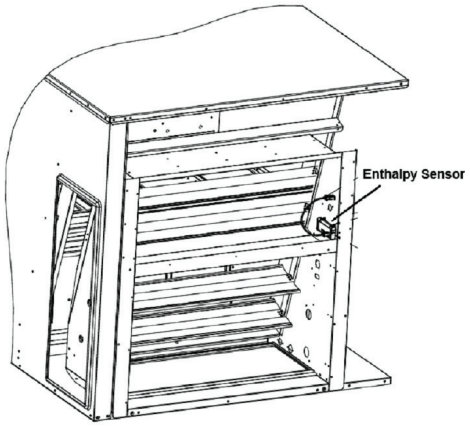


FIGURE 31

TABLE 22
FREE COOLING SETPOINT

Climate Zone	Setpoint (Single Sensible)	Setpoint (Differential Sensible)
1, 3, 5, 11-16	75ºF	0ºF
2, 4, 10	73ºF	2ºF
6, 8, 9	71ºF	4ºF
7	69ºF	6ºF

Setting Free Cooling Setpoint in Enthalpy Mode

Free Cooling Setpoint - ODE STPT

The enthalpy sensor (A7) provides a milliamp signal to the Unit Controller based on outdoor air temperature and humidity. See TABLE 23. To set a free cooling setpoint of 73°F at 50% relative humidity, enter “12” at the ODE STPT menu prompt. The Unit Controller will allow dampers to modulate open at approximately 73°F. If the space temperature is too warm, change the ODE STPT to “13.6” and the Unit Controller will allow dampers to modulate open at approximately 70°F.

TABLE 23
FREE COOLING SETPOINT - ODE STPT MODE

Enthalpy Setpoing ºF (ºC)*	Menu Entry - mA	Counts
73 (23)	12.0	150
70 (21)	13.6	173
67 (19)	15.5	199
63 (17)	17.6	224

*Approximate temperature at 50% relative humidity.

Free Cooling Differential Enthalpy - DIFF OFFSET

The Unit Controller allows damper modulation when outdoor air is lower than return air by a differential or offset temperature and humidity range. To set an offset range of 7°F at a constant relative humidity, enter “4” at the DIFF OFFSET menu prompt. If return air is 76°F, the Unit Controller will allow damper to modulate open at approximately 69°F outdoor air. See TABLE 24. If the space temperature is too cool or dry, change the DIFF OFFSET to “3” and the Unit Controller will allow dampers to modulate open at approximately 71°F outdoor air.

TABLE 24
FREE COOLING SETPOINT - DIFF OFFSET MODE

*Temperature Offset ºF	**Relative Humidity Offset %	Menu Entry mA	Counts
2	6	1	13
3.5	12	2	26
5.3	18	3	39
7	24	4	53

*At a constant relative humidity. **At a constant temperature.

TABLE 25
FREE COOLING OPTIONS

Config. ID1 (POS 2)	Unit Controller Input (Mode)	M4 Display (Free Cooling Options)	Default Setting	Range Setting	Outdoor air is suitable for free cooling when:
T	Differential Sensible Sensor (default mode)	ECONOMIZER TEMP ECON TYPE = TEMPERATURE OFFSET	10ºF	0-40ºF	Outdoor air temperature (RT17) is less than return air temperature (RT16) by at least the offset value.
T	Single Sensible Sensor	ECONOMIZER TEMP ECON TYPE = TEMPERATURE SETPOINT	75ºF	40-75ºF	Outdoor air temperature (RT17) is less than the Outdoor Air Temperature set point value.
T	Network OAS	ECONOMIZER TEMP ECON TYPE = TEMPER ATURE OFFSET or SETPOINT	Not Applicable	Not Applicable	Either of the TEMP modes (set point or offset) can be used when a network OAS signal is provided by an energy management or building control system, via BACnet, LonTalk, or L Connection. The network can command OAS, NOT OAS, or AUTO. AUTO returns to local control of OAS, which is the selected TEMP mode.
S	Single Enthalpy* Sensor	ECONOMIZER ENTHALPY SETPOINT = 12.0 MA	12.0 mA	10 mA - 19 mA	Outdoor air enthalpy (A7) is less than enthalpy set point parameter.
D	Differential Enthalpy* Sensor	ECONOMIZER ENTHALPY OFFSET = 1.0 MA	1.0 mA	1 mA - 5 mA	Outdoor air enthalpy* (A7) is less than return air enthal py (A62) by at least the OFFSET value.
G	Global	Mode and setpoint are not set by Unit Controller. Menu advances to: FREE COOLING SUPPLY AIR SETPOINT = 55°F	Not Applicable	Not Applicable	Global input is energized by (P297-9). This setting is also used for outdoor air damper applications. Global input also brings on the blower. (This mode is NOT used when OAS signal is provided via network connec tion. GLO is only used when a 24VAC signal is used to energize the P297-9 GLO input.)

*Enthalpy includes effects of both temperature and humidity.

Economizer Start-Up - M4 Unit Controller

The economizer is controlled by the Unit Controller which is located on the unit control panel. A detailed menu layout can be found in the Unit Controller manual provided with each unit.

1-Field-Installed Economizer

The Unit Controller must be set to identify an economizer has been installed. The configuration ID will also identify which sensor inputs the Unit Controller will use to determine the free cooling mode. See FIGURE 29 for sensor location. Use the Unit Controller keypad to enter the following menu:

MAIN MENU > SETUP > INSTALL

1 - Press SAVE until CONFIGURATION ID 1 appears. Change the second character in the configuration ID to identify the type of input used to determine economizer free cooling setpoint. See TABLE 25.

2 - Press SAVE. The Unit Controller is now set up to operate the economizer.

3 - Press the MAIN MENU button, then the BACK button, to display the status screen.

2-Adjust Free Cooling Discharge Air Setpoint

When outdoor air is suitable for free cooling, dampers will modulate to maintain a discharge air temperature of 55ºF default (adjustable range 45º-67ºF). Refer to RT6 discharge air sensor location shown in FIGURE 29.

3-Free Cooling Modes

The Unit Controller automatically sets the free cooling mode when the configuration ID is entered. The temperature setpoint mode is the only exception.

1 - Use the following menu path on the Unit Controller to enter the temperature setpoint mode.

MAIN MENU > SETTINGS > RTU OPTIONS > DAMPER > ECONOMIZER TEMP ECON TYPE = TEMPERATURE OFFSET (default)

2 - Use the “Adjust and set values” arrows on the keypad to select TEMPERATURE SETPT.

3 - Press SAVE.

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

4-Adjust Outdoor Air Free Cooling Setpoint

NOTE - *Configuration ID 1 must be set to the appropriate mode before adjusting the free cooling setpoint. See* TABLE 25.

Temperature Offset or Temperature Setpoint Mode

1 - After the free cooling mode is saved, if default setpoint value needs to change, enter the new number and press SAVE.

2 - For California Title 24 compliance, adjust the free cooling setpoint based on:

- The climate zone where the unit is installed. See TABLE 22.
- The setpoint requirement published by the California Energy Commission. See Section 140.4 - Prescriptive Requirements for Space Conditioning Systems of the 2013 Building Energy Efficiency Standards.

NOTE - *Values in the referenced standard will supersede values listed in TABLE 22.*

3 - When a network OAS signal is provided by a building control system, refer to control system literature to adjust free cooling setpoint.

5-Enthalpy Setpoint

The enthalpy sensor (A7) provides a milliamp signal to the Unit Controller based on outdoor air temperature and humidity. Use the following menu to change the setpoint:

MAIN MENU > SETTINGS > RTU OPTIONS > DAMPER > ECONOMIZER ENTHALPY SETPOINT = 12.0 MA

Refer to TABLE 23. At 12.0mA, the Unit Controller will allow dampers to modulate open at approximately 73°F. If the space temperature is too warm or humid, change the ECONOMIZER ENTHALPY SETPOINT to “13.6MA” and the Unit Controller will allow dampers to modulate open at approximately 70°F.

Enthalpy Offset

The Unit Controller allows damper modulation when outdoor air is lower than return air by a differential or offset temperature and humidity range. Use the following menu to change the setpoint:

MAIN MENU > SETTINGS > RTU OPTIONS > DAMPER > ECONOMIZER ENTHALPY OFFSET = 1.0 MA

Refer to TABLE 24. At 1.0mA, the Unit Controller will allow dampers to modulate open when outdoor air is lower than return air by approximately a 2°F offset. If return air is 76°F, the Unit Controller will allow dampers to modulate open at approximately 74°F. If the space temperature is to warm or humid, change the ECONOMIZER ENTHALPY SETPOINT to 2.0mA or an offset of 3.5°F. The Unit Controller will allow dampers to modulate open at approximately 72.5°F.

6-Damper Minimum Position Setting

Use the menu path in TABLE 26 to set the MIN DAMPER POSITION BLOWER ON HIGH when outdoor air is not suitable for free cooling. The minimum setpoint range is 0% open (dampers closed) to 100% (dampers fully open). On units with staged supply air blowers, also set the MIN DAMPER POSITION BLOWER ON LOW.

TABLE 26
DAMPER OPTIONS

Level 2	Level 3	Level 4	Level 5
RTU OPTION	DAMPER	ECONOMIZER ENTHALPY OFFSET = 12.0 MA	
		ECONOMIZER ENTHALPY SETPOINT = 1.0 MA	
		ECONOMIZER TEMP ECON TYPE = TEMPERATURE OFFSET OR TEMPERATURE SETPT	
		ECONOMIZER OAT SETPOINT = XX.X F	
		FREE COOLING SUPPLY AIR SETPOINT = 55°F	
		MIN DAMPER POSITION BLOWER ON HIGH = X.X %	
		MIN DAMPER POSITION BLOWER ON LOW = X.X %	

NOTE - *Menu options vary depending on hardware configuration.*

NOTE - *Use the "Adjust and set values" arrows to scroll up or down for selection options.*

F-Power Exhaust Relay K65 (power exhaust units)

Power exhaust relay K65 is a DPDT relay with a 24VAC coil. K65 is used in all LGX units equipped with the optional power exhaust dampers. K65 is energized by the economizer enthalpy control A6, after the economizer dampers reach 50% open (adjustable) When K65 closes, exhaust fan B10 is energized.

G-Power Exhaust Fans

Optional power exhaust fans are available for use with the LGX 2, 3, 4, 5, and 6 ton units to provide exhaust air pressure relief (refer to EHB for appropriate transition model). See FIGURE 32 and installation instructions for more detail.

TABLE 27

ECONOMIZER OPERATION

OUTDOOR AIR IS SUITABLE FOR FREE COOLING -- FREE COOL LED “ON”

THERMOSTAT DEMAND	DAMPER POSITION		MECHANICAL COOLING
	UNOCCUPIED	OCCUPIED	
OFF	CLOSED	CLOSED	NO
G	CLOSED	MINIMUM	NO
Y1	OPEN*	OPEN*	NO
Y2	OPEN*	OPEN*	STAGE 1

*Dampers will modulate to maintain 55F (13C) supply air when an RT6 mixed air sensor is installed

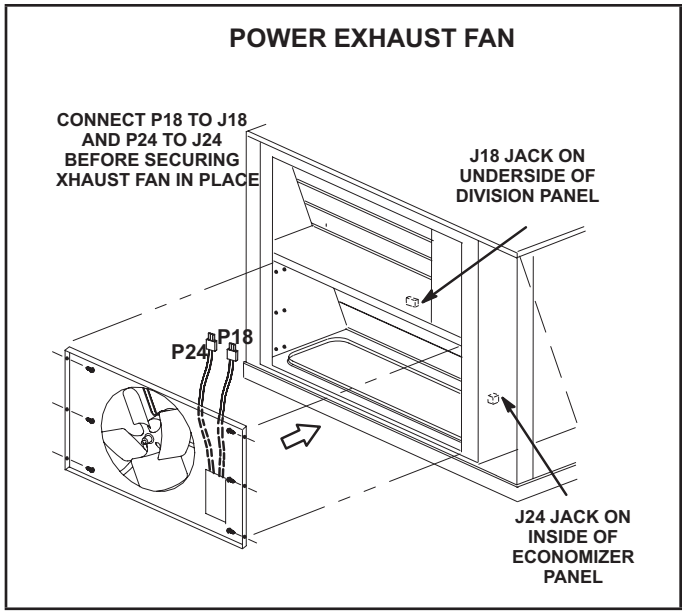


FIGURE 32

H-Optional Cold Weather Kit

Electric heater is available to automatically control the minimum temperature in the gas burner compartment. Heater is C.S.A. certified to allow cold weather operation of unit down to -60° F (-50° C).

The kit includes the following parts:

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

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

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

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

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

I-Smoke Detectors A171 and A172

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

J-Dirty Filter Switch S27

The dirty filter switch senses static pressure increase indicating a dirty filter condition. The switch is N.O. and closes at 1” W.C. (248.6 Pa) The switch is mounted in the filter section on the left unit mullion.

K-Indoor Air Quality (CO2) Sensor A63

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

L-LP / Propane Kit

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

M-Overflow Switches (S149 - Optional)

The N.C. overflow switch or switches are connected to the M4 unit controller (A55) in series (when applicable) through a dedicated input at J387-5. When the switch opens, the unit controller de-energizes the compressor. After a five-minute time-out, the unit controller verifies the overflow switch position and restarts the compressor(s) as long as a cooling demand is present (if the switch has closed).

N-Hot Gas Reheat

Hot gas reheat units provide a dehumidifying mode of operation. These units contain a reheat coil adjacent to and downstream of the evaporator coil. Reheat coil solenoid valve, L14, routes hot discharge gas from the compressor to the reheat coil. Return air pulled across the evaporator coil is cooled and dehumidified; the reheat coil adds heat to supply air. See FIGURE 33 for reheat refrigerant routing and FIGURE 34 for standard cooling refrigerant routing.

L14 Reheat Coil Solenoid Valve

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

Reheat Setpoint

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

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

Check-Out

Test reheat operation using the following procedure.

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

2 - Make sure unit is in local thermostat mode.

3 - Use mobile service app menu path to select RTU Menu > *Component* > *Test* > *Dehumidification*.

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

Default Reheat Operation

During reheat mode free cooling is locked out.

No Y1 demand but a call for dehumidification:

Compressor is operating low, blower is on low, and the reheat valve is energized.

Y1 demand:

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

Y2 demand:

Compressor is operating high, blower is on high, and the reheat valve is de-energized.

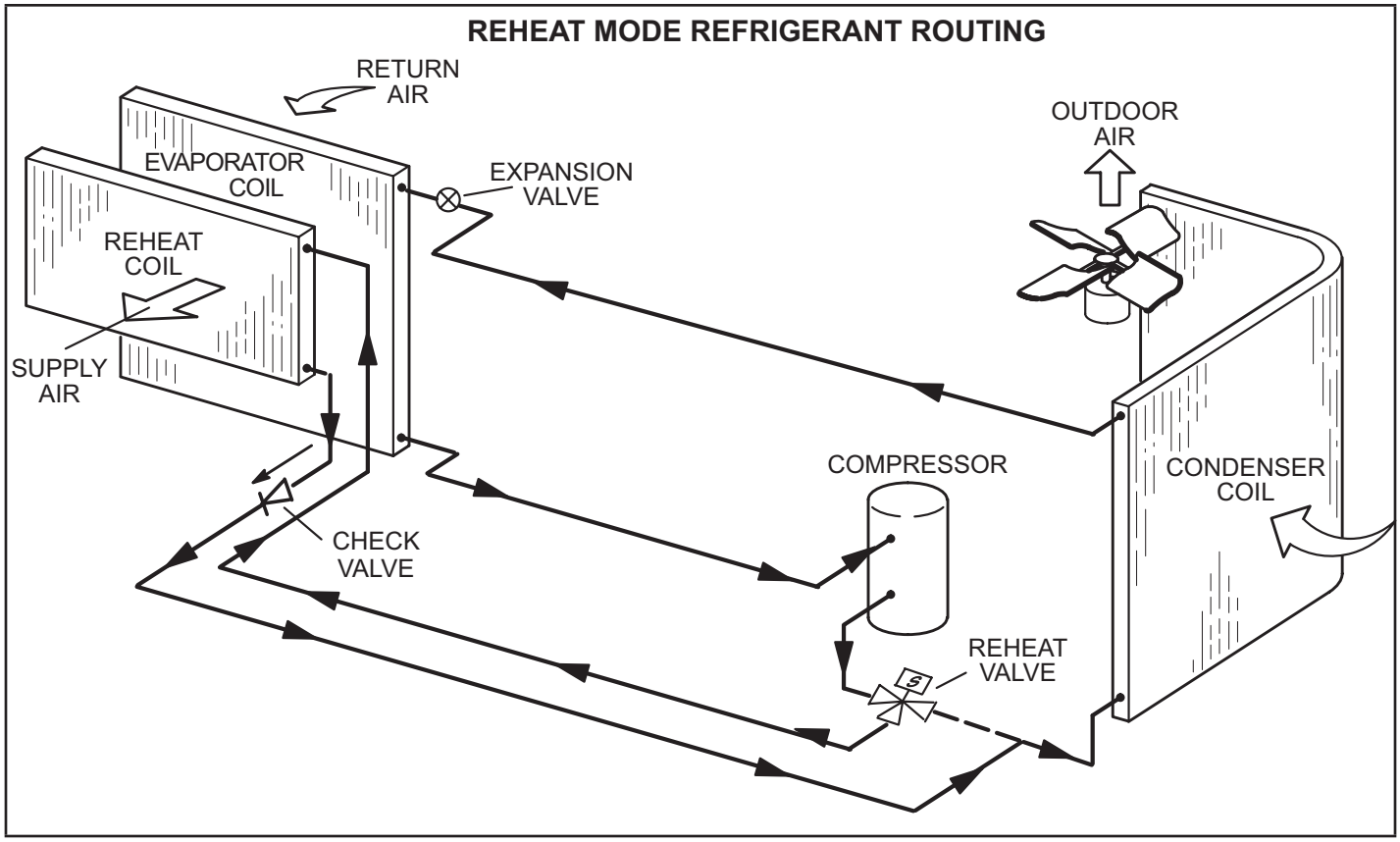


FIGURE 33

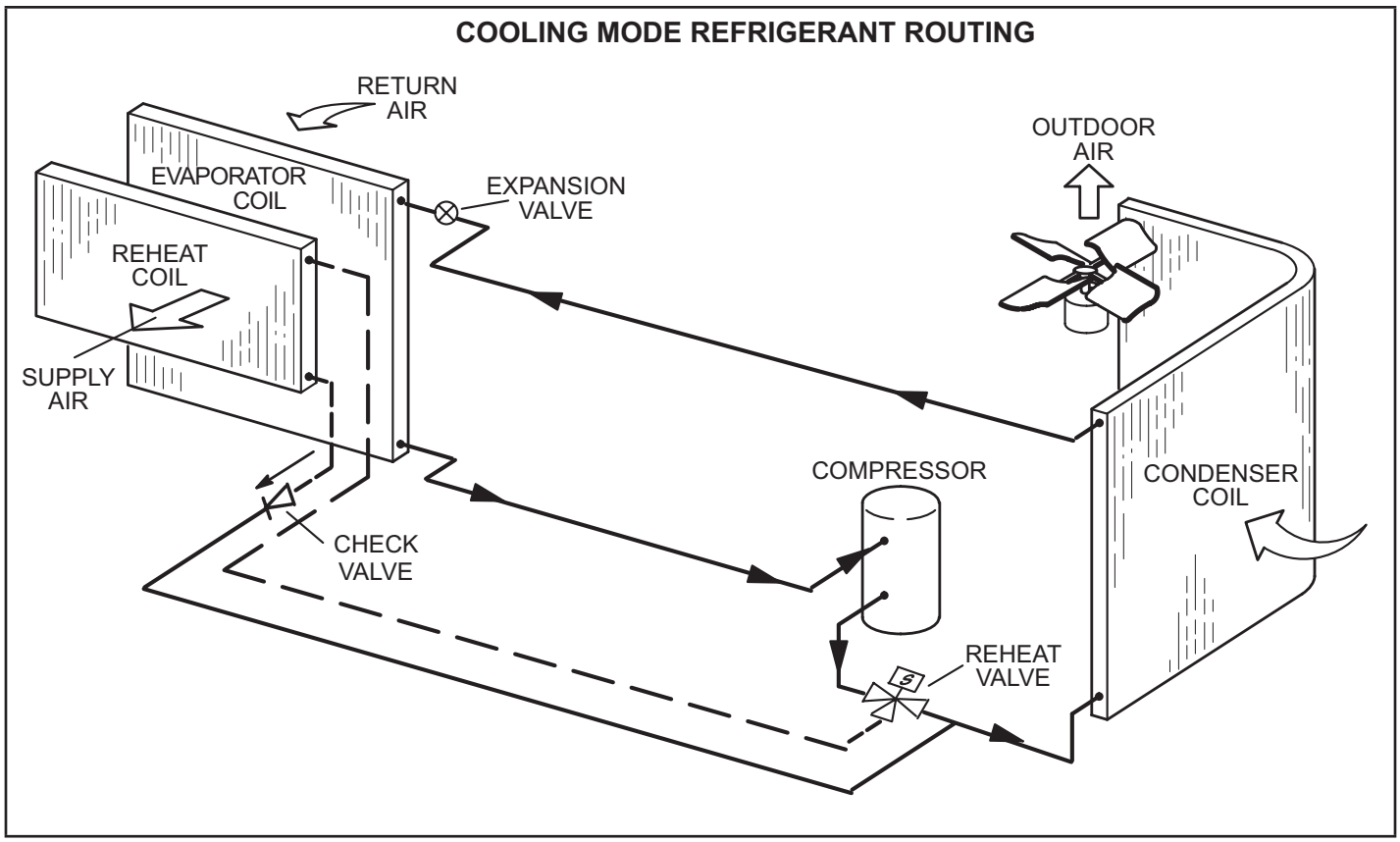
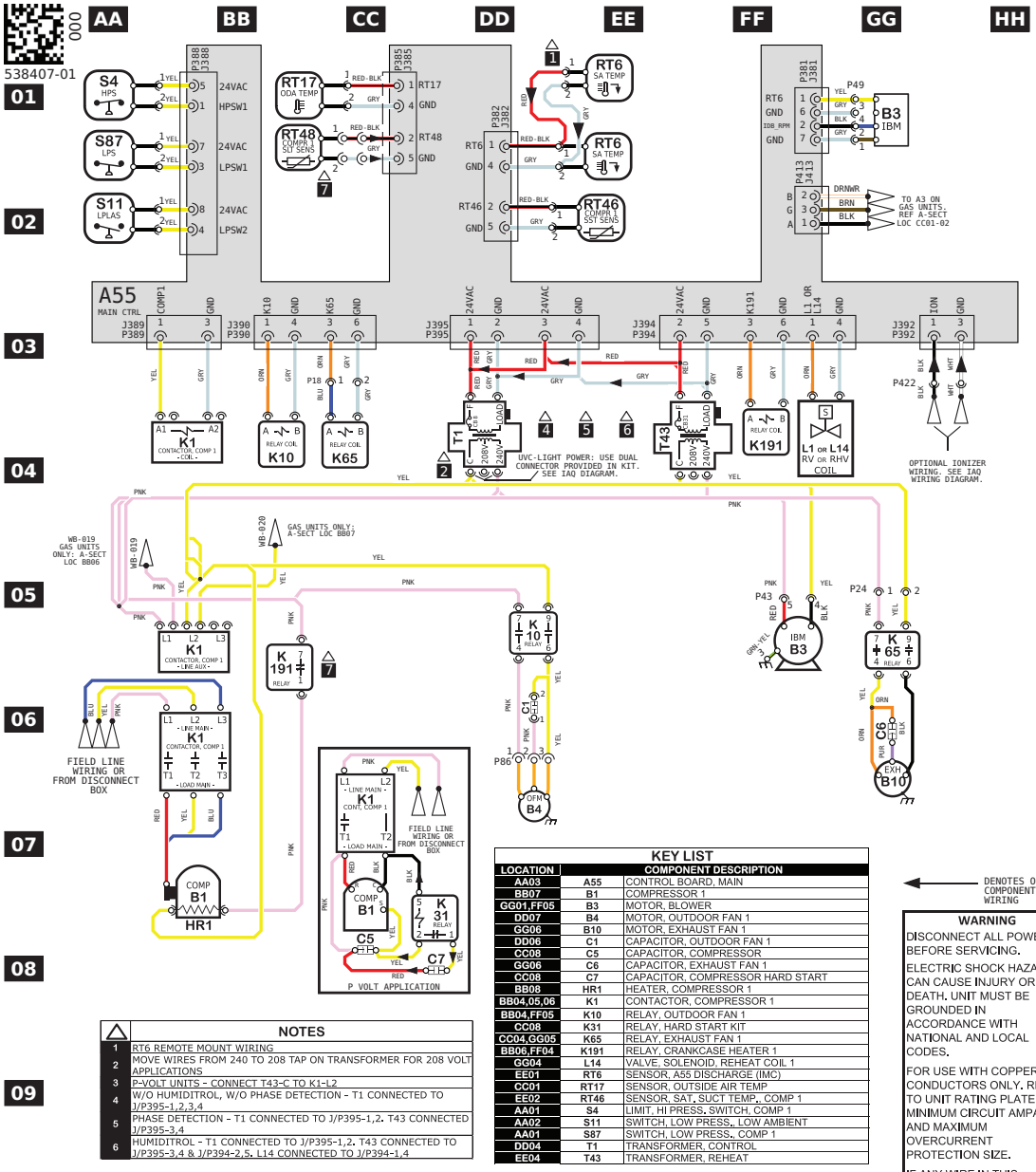


FIGURE 34

LGX024-060 P & Y VOLTAGE UNIT DIAGRAM
ECM BLOWER



NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
3	P-VOLT UNITS - CONNECT T43-C TO K1-L2
4	W/O HUMIDITROL, W/O PHASE DETECTION - T1 CONNECTED TO J/P395-1,2,3,4
5	PHASE DETECTION - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED J/P395-3,4
6	HUMIDITROL - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED TO J/P395-3,4 & J/P394-2,5. L14 CONNECTED TO J/P394-1,4

KEY LIST		
LOCATION	COMPONENT	DESCRIPTION
AA03	A55	CONTROL BOARD, MAIN
BB07	B1	COMPRESSOR 1
GG01,FF05	B3	MOTOR, BLOWER
DD07	B4	MOTOR, OUTDOOR FAN 1
GG06	B10	MOTOR, EXHAUST FAN 1
DD06	C1	CAPACITOR, OUTDOOR FAN 1
CC08	C5	CAPACITOR, COMPRESSOR
GG06	C6	CAPACITOR, EXHAUST FAN 1
CC08	C7	CAPACITOR, COMPRESSOR HARD START
BB08	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
BB04,FF05	K10	RELAY, OUTDOOR FAN 1
CC08	K31	RELAY, HARD START KIT
CC04,GG05	K65	RELAY, EXHAUST FAN 1
BB06,FF04	K191	RELAY, CRANKCASE HEATER 1
GG04	L14	VALVE, SOLENOID, REHEAT COIL 1
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
EE02	RT46	SENSOR, SAT, SUCT TEMP., COMP 1
AA01	S4	LIMIT, HI PRESS. SWITCH, COMP 1
AA02	S11	SWITCH, LOW PRESS., LOW AMBIENT
AA01	S87	SWITCH, LOW PRESS., COMP 1
DD04	T1	TRANSFORMER, CONTROL
EE04	T43	TRANSFORMER, REHEAT

DENOTES OPTIONAL COMPONENTS AND WIRING

WARNING

DISCONNECT ALL POWER BEFORE SERVICING.

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

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

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

10

Model: LCX, LGX, LHX 024S - 060S P AND Y VOLT
COOLING - ECM BLOWER

Voltage: 208-240V/1~/60Hz(P), 208-240V/3~/60Hz(Y)

Supersedes: N/A Form No: 538407-01 Rev: 000

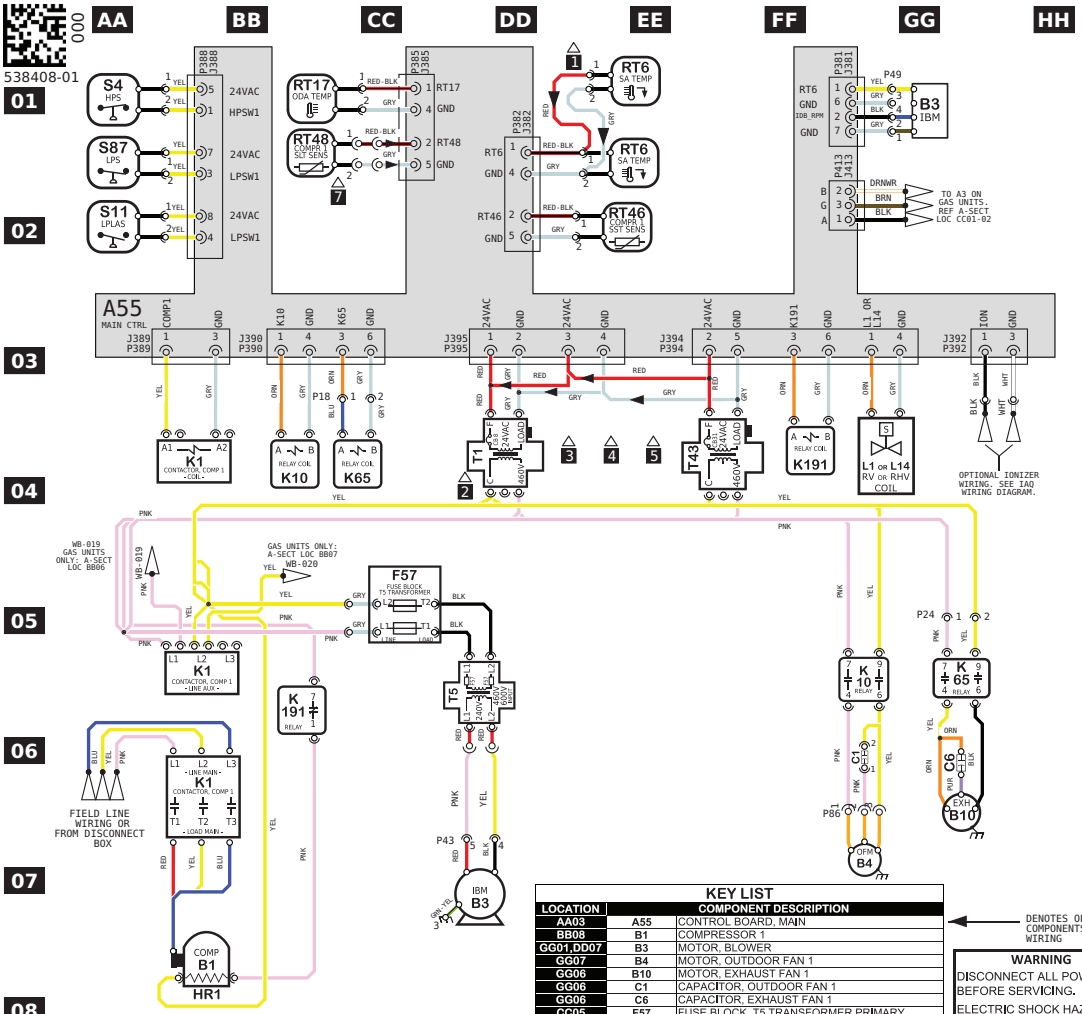
HEATING	COOLING	COOLING	ACCS	ACCS
SECTION A	SECTION B	SECTION B3	SECTION C	SECTION D

WIRING DIAGRAM FLOW

8.5 X 10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012554F	01/22/2024	RXJ	MCF	ORIGINATED AT PD&R CARROLLTON, TX

LGX024-060 G & J VOLT UNIT DIAGRAM
ECM BLOWER



KEY LIST

LOCATION		COMPONENT DESCRIPTION
AA03	A55	CONTROL BOARD, MAIN
BB08	B1	COMPRESSOR 1
GG01,DD07	B3	MOTOR, BLOWER
GG07	B4	MOTOR, OUTDOOR FAN 1
GG06	B10	MOTOR, EXHAUST FAN 1
GG06	C1	CAPACITOR, OUTDOOR FAN 1
GG06	C6	CAPACITOR, EXHAUST FAN 1
CC05	F57	FUSE BLOCK, T5 TRANSFORMER PRIMARY
BB08	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
BB04,FF05	K10	RELAY, OUTDOOR FAN 1
CC04,GG05	K65	RELAY, EXHAUST FAN 1
BB06,FF04	K191	RELAY, CRANKCASE HEATER 1
GG04	L14	VALVE, SOLENOID, REHEAT COIL 1
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
EE02	RT46	SENSOR, SAT, SUCT TEMP, COMP 1
AA01	S4	LIMIT, HI PRESS. SWITCH, COMP 1
AA02	S11	SWITCH, LOW PRESS., LOW AMBIENT
AA01	S87	SWITCH, LOW PRESS., COMP 1
DD04	T1	TRANSFORMER, CONTROL
DD06	T5	TRANSFORMER, OUTDOOR FAN MOTOR
EE04	T43	TRANSFORMER, REHEAT

DENOTES OPTIONAL COMPONENTS AND WIRING

WARNING

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

NOTES

1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
3	W/O HUMIDITROL, W/O PHASE DETECTION - T1 CONNECTED TO J/P395-1,2,3,4
4	PHASE DETECTION - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED J/P395-3,4
5	HUMIDITROL - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED TO J/P395-3,4 & J/P394-2,5. L14 CONNECTED TO J/P394-1,4

Model: LCX, LGX, LHX 024S - 060S G AND J VOLT COOLING - ECM BLOWER

Voltage: 460V/3~/60Hz (G), 575V/3~/60Hz (J)

Supersedes: N/A Form No: 538408-01 Rev: 000

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

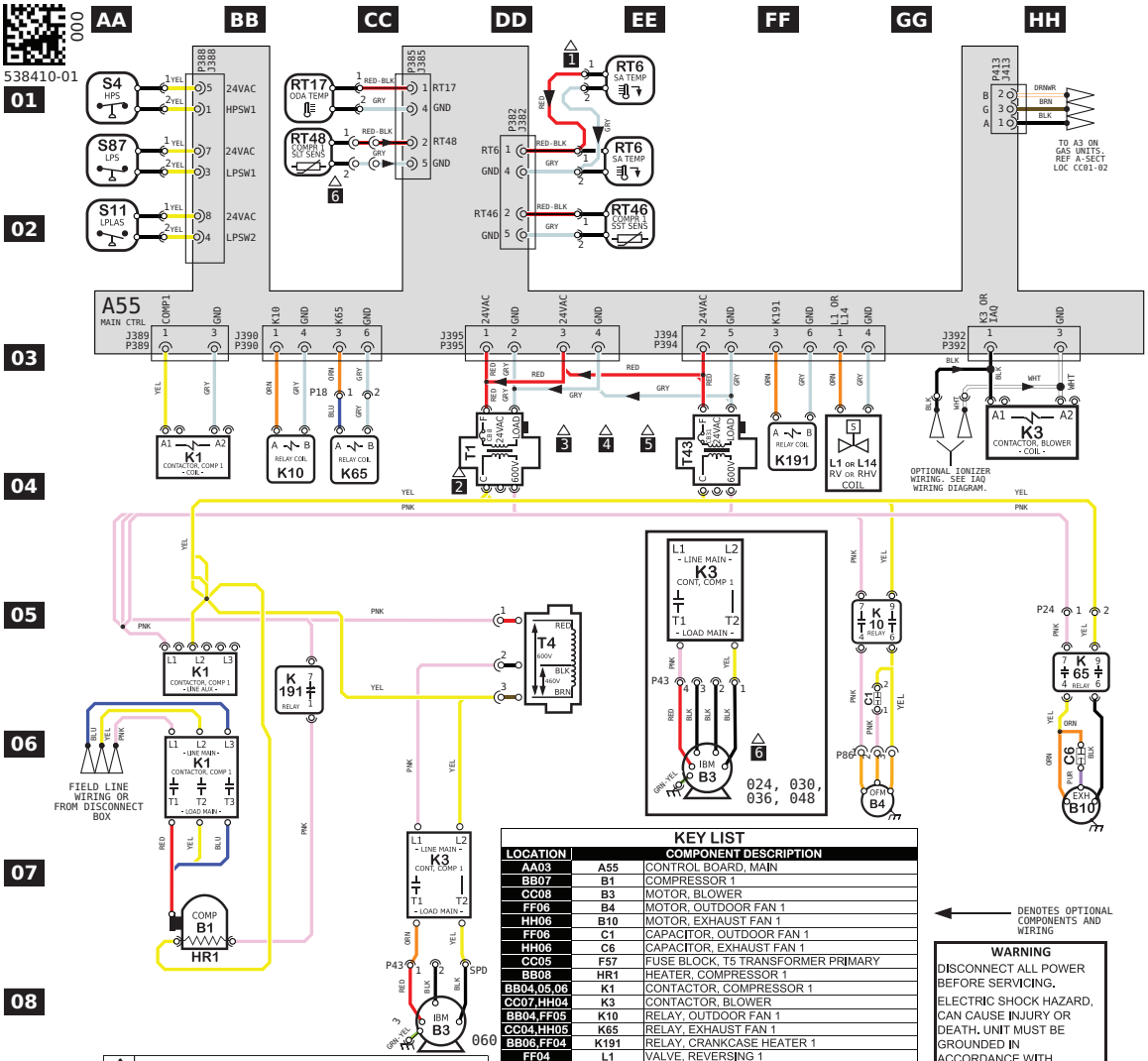
WIRING DIAGRAM FLOW

8.5 x 10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012554F	01/22/2024	RXJ	MCF	ORIGINATED AT PD&R CARROLLTON, TX

LGX024-060 J VOLT UNIT DIAGRAM
DIRECT DRIVE BLOWER

538410-01 000



NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
3	P-VOLT UNITS - CONNECT T43-C TO K1-L2
4	W/O HUMIDITROL, W/O PHASE DETECTION - T1 CONNECTED TO J/P395-1,2,3,4
5	PHASE DETECTION - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED J/P395-3,4
6	HUMIDITROL - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED TO J/P395-3,4 & J/P394-2,5. L14 CONNECTED TO J/P394-1,4

KEY LIST		
LOCATION		COMPONENT DESCRIPTION
AA03	A55	CONTROL BOARD, MAIN
BB07	B1	COMPRESSOR 1
CC08	B3	MOTOR, BLOWER
FF06	B4	MOTOR, OUTDOOR FAN 1
HH06	B10	MOTOR, EXHAUST FAN 1
FF06	C1	CAPACITOR, OUTDOOR FAN 1
HH06	C6	CAPACITOR, EXHAUST FAN 1
CC05	F57	FUSE BLOCK, T5 TRANSFORMER PRIMARY
BB08	HR1	HEATER, COMPRESSOR 1
BB04,05,06	K1	CONTACTOR, COMPRESSOR 1
CC07,HH04	K3	CONTACTOR, BLOWER
BB04,FF05	K10	RELAY, OUTDOOR FAN 1
CC04,HH05	K65	RELAY, EXHAUST FAN 1
BB06,FF04	K191	RELAY, CRANKCASE HEATER 1
FF04	L1	VALVE, REVERSING 1
FF04	L14	VALVE, SOLENOID, REHEAT COIL 1
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
EE02	RT46	SENSOR, SAT. SUCT TEMP., COMP 1
BB01	RT48	SENSOR, SAT. LIQUID TEMP., COMP 1
AA01	S4	LIMIT, HI PRESS. SWITCH, COMP 1
AA02	S11	SWITCH, LOW PRESS., LOW AMBIENT
AA01	S87	SWITCH, LOW PRESS., COMP 1
DD04	T1	TRANSFORMER, CONTROL
CC06	T5	TRANSFORMER, OUTDOOR FAN MOTOR
EE04	T43	TRANSFORMER, REHEAT

DENOTES OPTIONAL COMPONENTS AND WIRING

WARNING

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

WIRING DIAGRAM FLOW

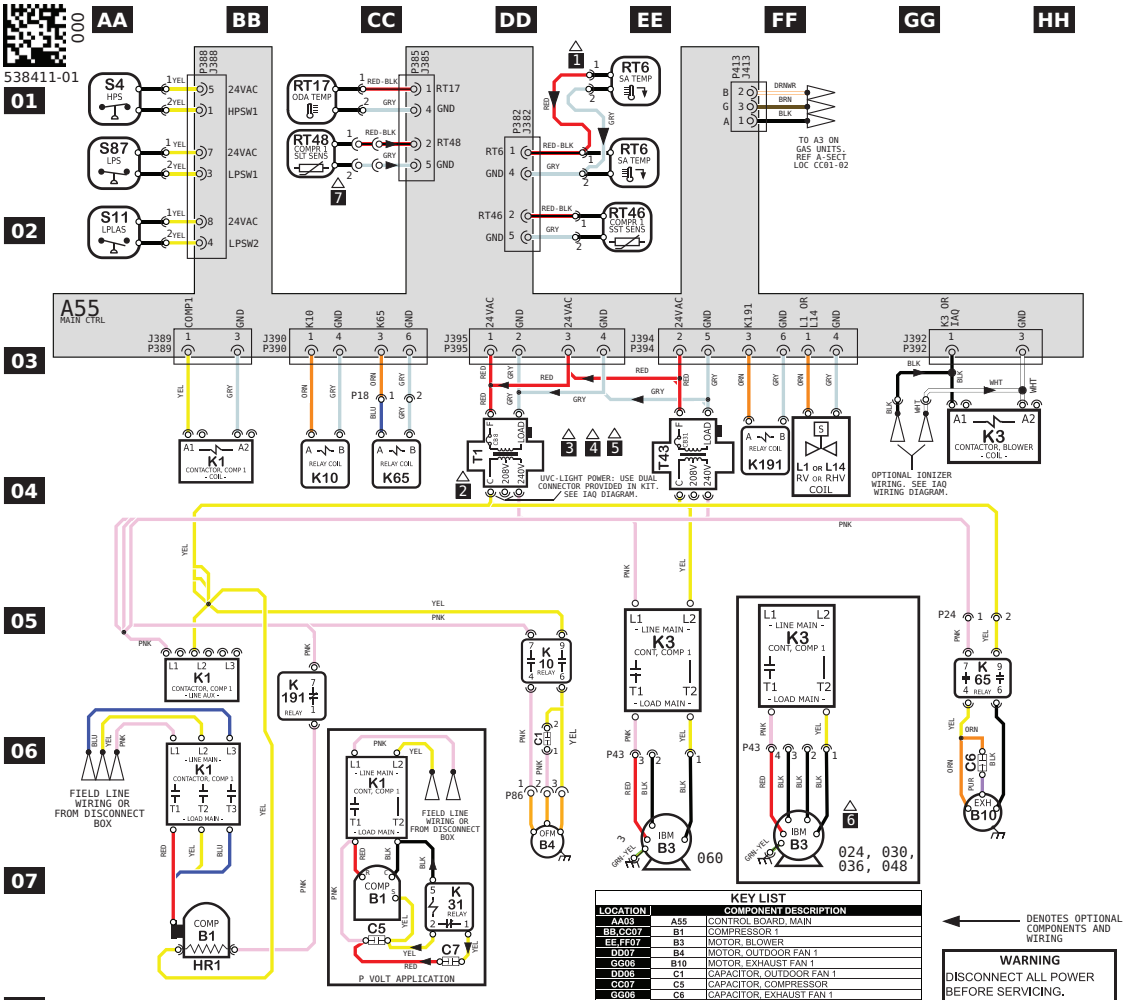
10

Model: LCX, LHX 024S - 060S J VOLT
COOLING - DIRECT DRIVE BLOWER
Voltage: 575V/3~/60Hz(J)
Supersedes: XXXXXX-XX Form No: 538410-01 Rev: 000

8.5 X 10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
---	CN-012554F	01/22/2024	RXJ	MCF	ORIGINATED AT PD&R CARROLLTON, TX

LGX048-072 P, Y, & G VOLT UNIT DIAGRAM
DIRECT DRIVE BLOWER



NOTES	
1	RT6 REMOTE MOUNT WIRING
2	MOVE WIRES FROM 240 TO 208 TAP ON TRANSFORMER FOR 208 VOLT APPLICATIONS
3	P-VOLT UNITS - CONNECT T43-C TO K1-L2
4	W/O HUMIDITROL, W/O PHASE DETECTION - T1 CONNECTED TO J/P395-1,2,3,4
5	PHASE DETECTION - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED J/P395-3,4
6	HUMIDITROL - T1 CONNECTED TO J/P395-1,2. T43 CONNECTED TO J/P395-3,4 & J/P394-2,5. L14 CONNECTED TO J/P394-1,4

KEY LIST		
LOCATION		COMPONENT DESCRIPTION
AA03	A55	CONTROL BOARD, MAIN
BB,CC07	B1	COMPRESSOR 1
EE,FF07	B3	MOTOR, BLOWER
DD07	B4	MOTOR, OUTDOOR FAN 1
GG06	B10	MOTOR, EXHAUST FAN 1
DD06	C1	CAPACITOR, OUTDOOR FAN 1
CC07	C5	CAPACITOR, COMPRESSOR
GG06	C6	CAPACITOR, EXHAUST FAN 1
CC08	C7	CAPACITOR, COMPRESSOR HARD START
BB07	HR1	HEATER, COMPRESSOR 1
AA04, BB05,06	K1	CONTACTOR, COMPRESSOR 1
EE05,HH04	K3	CONTACTOR, BLOWER
CC07	K31	RELAY, HARD START KIT
BB04,FF05	K37	RELAY, BLOWER
BB04,DD05	K10	RELAY, OUTDOOR FAN 1
CC04,GG05	K65	RELAY, EXHAUST FAN 1
BB08,FF04	K191	RELAY, CRANKCASE HEATER 1
FF04	L1	VALVE, REVERSING 1
FF04	L14	VALVE, SOLENOID, REHEAT COIL 1
EE01	RT6	SENSOR, A55 DISCHARGE (IMC)
CC01	RT17	SENSOR, OUTSIDE AIR TEMP
EE02	RT46	SENSOR, SAT, SUCT TEMP., COMP 1
BB01	RT48	SENSOR, SAT, LIQUID TEMP., COMP 1
AA01	S4	LIMIT, HI PRESS. SWITCH, COMP 1
AA02	S11	SWITCH, LOW PRESS., LOW AMBIENT
AA01	S87	SWITCH, LOW PRESS., COMP 1
DD04	T1	TRANSFORMER, CONTROL
EE04	T43	TRANSFORMER, REHEAT

DENOTES OPTIONAL COMPONENTS AND WIRING

WARNING

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

HEATING	COOLING	COOLING	ACCS	ACCS
SECTION A	SECTION B	SECTION B5	SECTION C	SECTION D

WIRING DIAGRAM FLOW

Model: LCX, LHX 048 - 072H P, Y AND G VOLT COOLING - DIRECT DRIVE BLOWER

Voltage: 208-240V/1~/60Hz,208-240V/460V/3~/60Hz

Supersedes: XXXXXX-XX Form No: 538411-01 Rev: 000

8.5 X 10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
000	CN-012554F	01/22/2024	RXJ	MCF	ORIGINATED AT PD&R CARROLLTON, TX

LGX024-060 P, Y, G, & J Voltage Sequence of Operation

Power:

1 - Line voltage energizes transformer T1. T1 provides 24VAC power to the A55 Unit Controller. A55 provides 24VAC to the unit cooling, heating and blower controls.

2 - Line voltage provides voltage to compressor crankcase heater relay K191-1 N.C. contacts, compressor contactor K1, blower motor B3, and outdoor fan motor B4 (on J volt units line voltage is supplied to transformer T4 which will supply voltage to blower contactor K3, blower motor B3. On G and J Volt ECM units, line voltage is supplied to fuses F57, Transformer T5, blower motor B3).

Blower Operation:

3 - The A55 Unit Controller receives a demand from thermostat terminal G. A55 energizes blower motor B3 via programmed motor settings. Motor settings are field-adjustable. Units equipped with PSC or belt-drive blower motors will energize blower contactor K3.

First Stage Cooling

4 - A55 Unit Controller receives Y1 and G cooling demand.

5 - After A55 proves n.c. low pressure switch S87, n.o. low ambient switch S11, n.c. SST, and n.c. high pressure switch S4, compressor contactor K1 and blower B3 are energized.

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

7 - SLT proves below 62°F. A55 energizes outdoor fan motor B4 to modulate. If above 65°F, outdoor fan motor B4 will be set to low speed.

LCX 072 Second Stage Cooling

8 - A55 receives a Y2 and G cooling demand and energizes blower B3 on high speed by energizing high speed blower contactor K37.

9 - A55 energizes compressor solenoid L34, switching compressor to high speed.

Economizer Operation:

10 - The economizer control module receives a demand and energizes exhaust fan relay K65 with 24VAC at 50% outside air damper open (adjustable).

11 - N.O. K65-1 and N.O. K65-2 both close, energizing exhaust fan motor B10.

Power Exhaust Fan Operation

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

13 - N.O. contact K65-1 & 2 close, energizing exhaust fan motor B10.

Dehumidification Mode (economizer free cooling is locked out):

Unit Features the Humiditrol® Dehumidification option.

No Y1, Y2 Demand but a call for dehumidification:

Compressor operates at second stage, supply fan operates at low speed, and the reheat valve is energized

Y1 Demand:

Compressor operates at second stage, supply fan operates at low speed and the reheat valve is de-energized

Y2 Demand:

Compressor operates at second stage, supply fan operates at high speed, and the reheat valve is de-energized

Heating Mode: Thermostat or Zone Sensor (Up to 2 stages W1, W2)

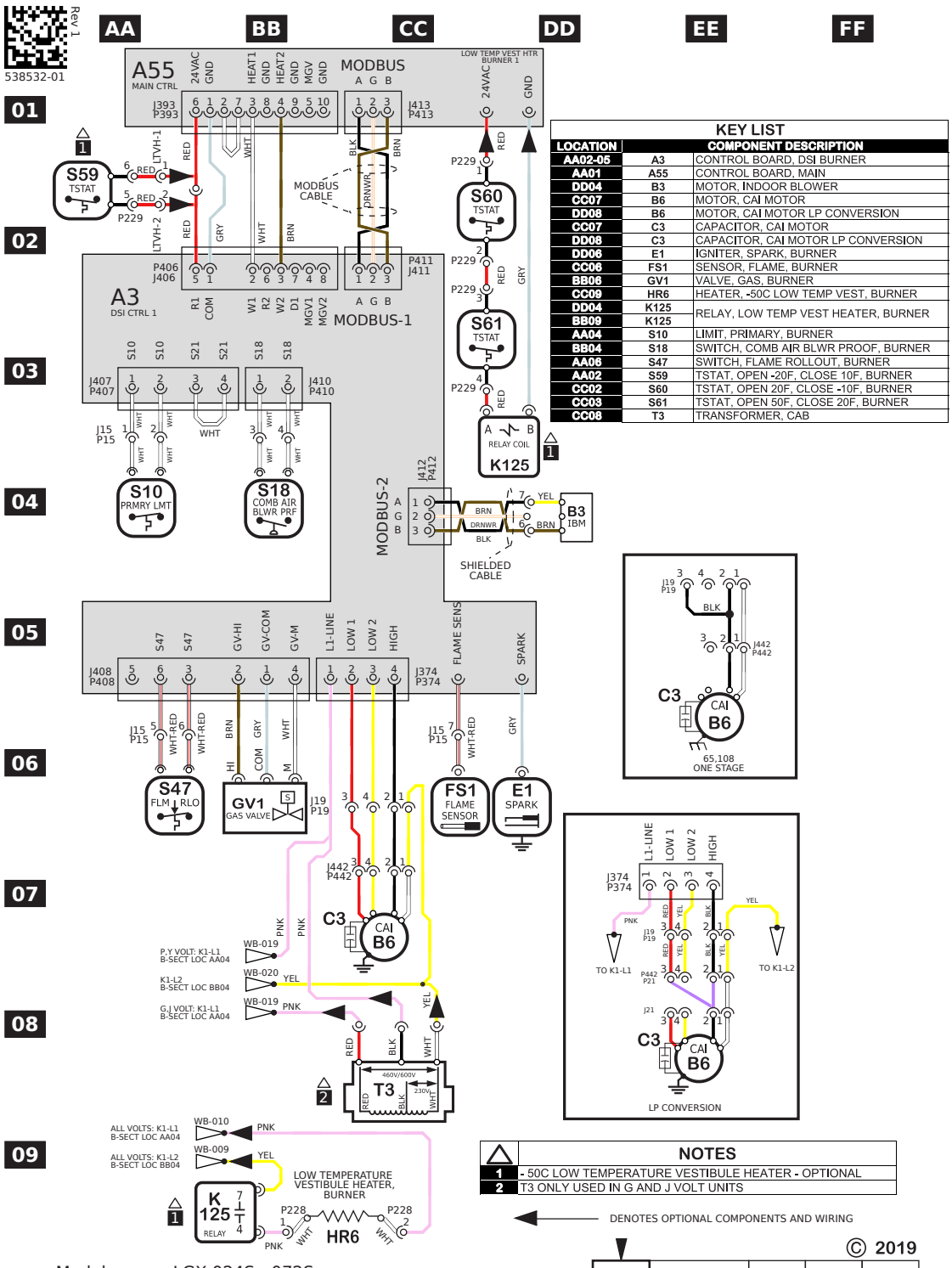
W1 Demand:

Gas valve is open (stage 1 on units with 2 stage gas valve) and the supply fan operates at high speed

W2 Demand:

Gas valve is open (stage 2 on units with 2 stage gas valve) and the supply fan operates at high speed

LGX024S-072S UNIT DIAGRAM



KEY LIST

LOCATION		COMPONENT DESCRIPTION
AA02-05	A3	CONTROL BOARD, DSI BURNER
AA01	A55	CONTROL BOARD, MAIN
DD04	B3	MOTOR, INDOOR BLOWER
CC07	B6	MOTOR, CAI MOTOR
DD08	B6	MOTOR, CAI MOTOR LP CONVERSION
CC07	C3	CAPACITOR, CAI MOTOR
DD08	C3	CAPACITOR, CAI MOTOR LP CONVERSION
DD06	E1	IGNITER, SPARK, BURNER
CC06	FS1	SENSOR, FLAME, BURNER
BB06	GV1	VALVE, GAS, BURNER
CC09	HR6	HEATER, -50C LOW TEMP VEST, BURNER
DD04	K125	RELAY, LOW TEMP VEST HEATER, BURNER
BB09	K125	
AA04	S10	LIMIT, PRIMARY, BURNER
BB04	S18	SWITCH, COMB AIR BLWR PROOF, BURNER
AA06	S47	SWITCH, FLAME ROLLOUT, BURNER
AA02	S59	TSTAT, OPEN -20F, CLOSE 10F, BURNER
CC02	S60	TSTAT, OPEN 20F, CLOSE -10F, BURNER
CC03	S61	TSTAT, OPEN 50F, CLOSE 20F, BURNER
CC08	T3	TRANSFORMER, CAB

NOTES

1	- 50C LOW TEMPERATURE VESTIBULE HEATER - OPTIONAL
2	T3 ONLY USED IN G AND J VOLT UNITS

DENOTES OPTIONAL COMPONENTS AND WIRING

Model: LGX 024S - 072S
Input Heat Capacity 65k - 150k Btuh
Voltage: All Voltages
Supersedes: XXXXXX-XX Form No: 538532-01 Rev: 1

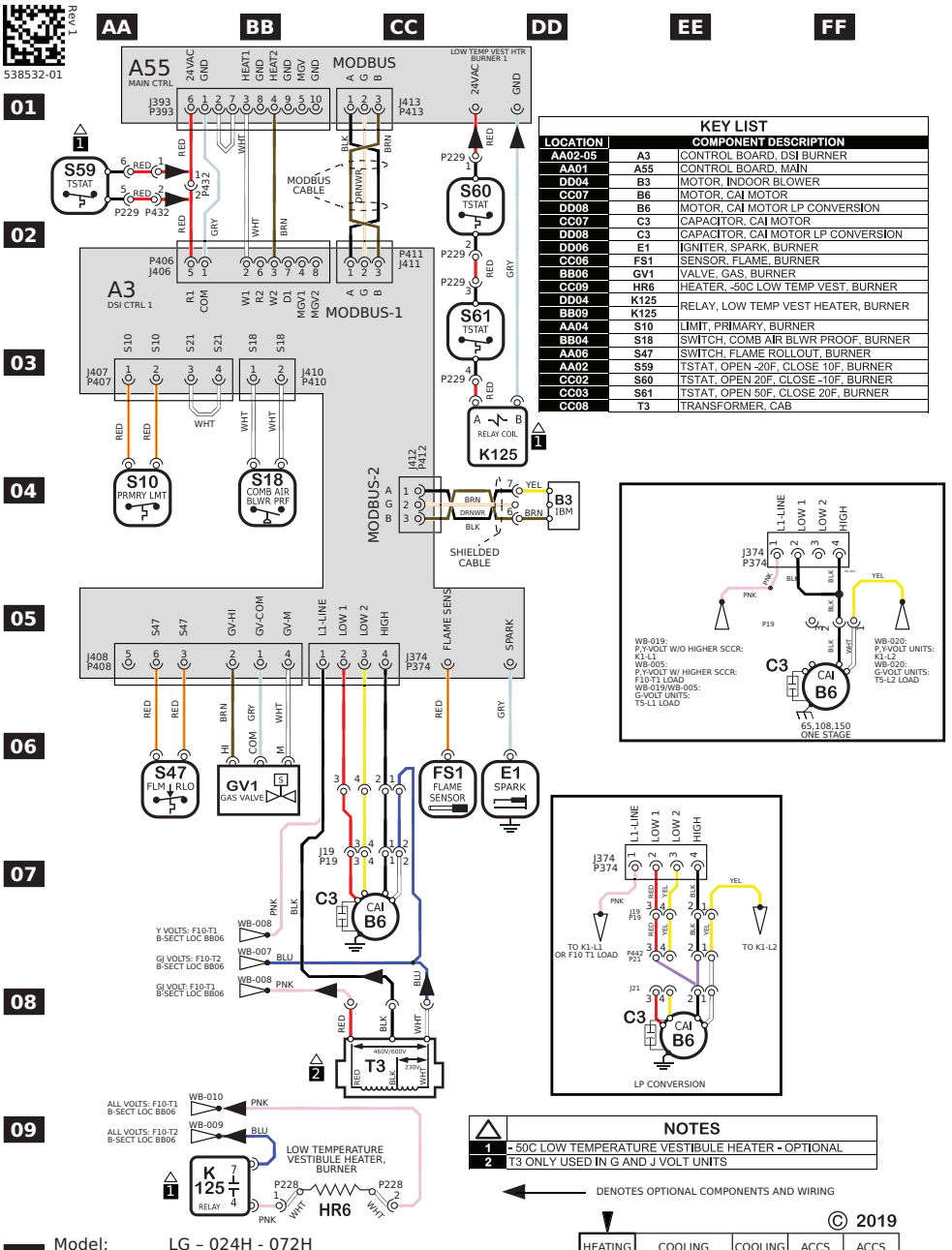
HEATING	COOLING	COOLING	ACCS	ACCS
SECTION A	SECTION B	SECTION B3/5	SECTION C	SECTION D

WIRING DIAGRAM FLOW

7x10 CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
000	CN-012122A	04/25/2024	AXL	AAH	ORIGINATED AT PD&R CARROLLTON, TX
001	CN-012554X	06/05/2025	ZN	STT	A) UPDATED TWIST LOCK CONNECTOR J15/P15
					B) UPDATED NOTE AND WIRING COLORS

LGX024-072 GAS HEAT DIAGRAM



KEY LIST

LOCATION		COMPONENT DESCRIPTION
AA02-05	A3	CONTROL BOARD, DSI BURNER
AA01	A55	CONTROL BOARD, MAIN
DD04	B3	MOTOR, INDOOR BLOWER
CC07	B6	MOTOR, CAI MOTOR
DD08	B6	MOTOR, CAI MOTOR LP CONVERSION
CC07	C3	CAPACITOR, CAI MOTOR
DD08	C3	CAPACITOR, CAI MOTOR LP CONVERSION
DD06	E1	IGNITER, SPARK, BURNER
CC06	FS1	SENSOR, FLAME, BURNER
BB06	GV1	VALVE, GAS, BURNER
CC09	HR6	HEATER, -50C LOW TEMP VEST, BURNER
DD04	K125	RELAY, LOW TEMP VEST HEATER, BURNER
BB09	K125	
AA04	S10	LIMIT, PRIMARY, BURNER
BB04	S18	SWITCH, COMB AIR BLWR PROOF, BURNER
AA06	S47	SWITCH, FLAME ROLLOUT, BURNER
AA02	S59	TSTAT, OPEN -20F, CLOSE 10F, BURNER
CC02	S60	TSTAT, OPEN 20F, CLOSE -10F, BURNER
CC03	S61	TSTAT, OPEN 50F, CLOSE 20F, BURNER
CC08	T3	TRANSFORMER, CAB

NOTES

1. - 50C LOW TEMPERATURE VESTIBULE HEATER - OPTIONAL
2. T3 ONLY USED IN G AND J VOLT UNITS

DENOTES OPTIONAL COMPONENTS AND WIRING

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

WIRING DIAGRAM FLOW

Model: LG – 024H - 072H
Input Heat Capacity 65k - 150k Btuh
Voltage: All Voltages
Supersedes: XXXXXX-XX Form No: 538532-01 Rev: 1

7x10
CUT SIZE

REV	EC NO.	DATE	BY	APVD	REVISION NOTE
000	CN-012122A	04/25/2024	AXL	AAH	ORIGINATED AT PD&R CARROLLTON, TX
001	CN-012554N	01/23/2025	STT	AXL	A) UPDATED MODEL NUMBER WAS 036 NOW 024

TWO-STAGE GAS HEAT SEQUENCE OF OPERATION

First Stage Heat:

1 - The thermostat initiates W1 heating demand.

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

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

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

Second Stage Heat:

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

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

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

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

End of Second Stage Heat:

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

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

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

End of First Stage Heat:

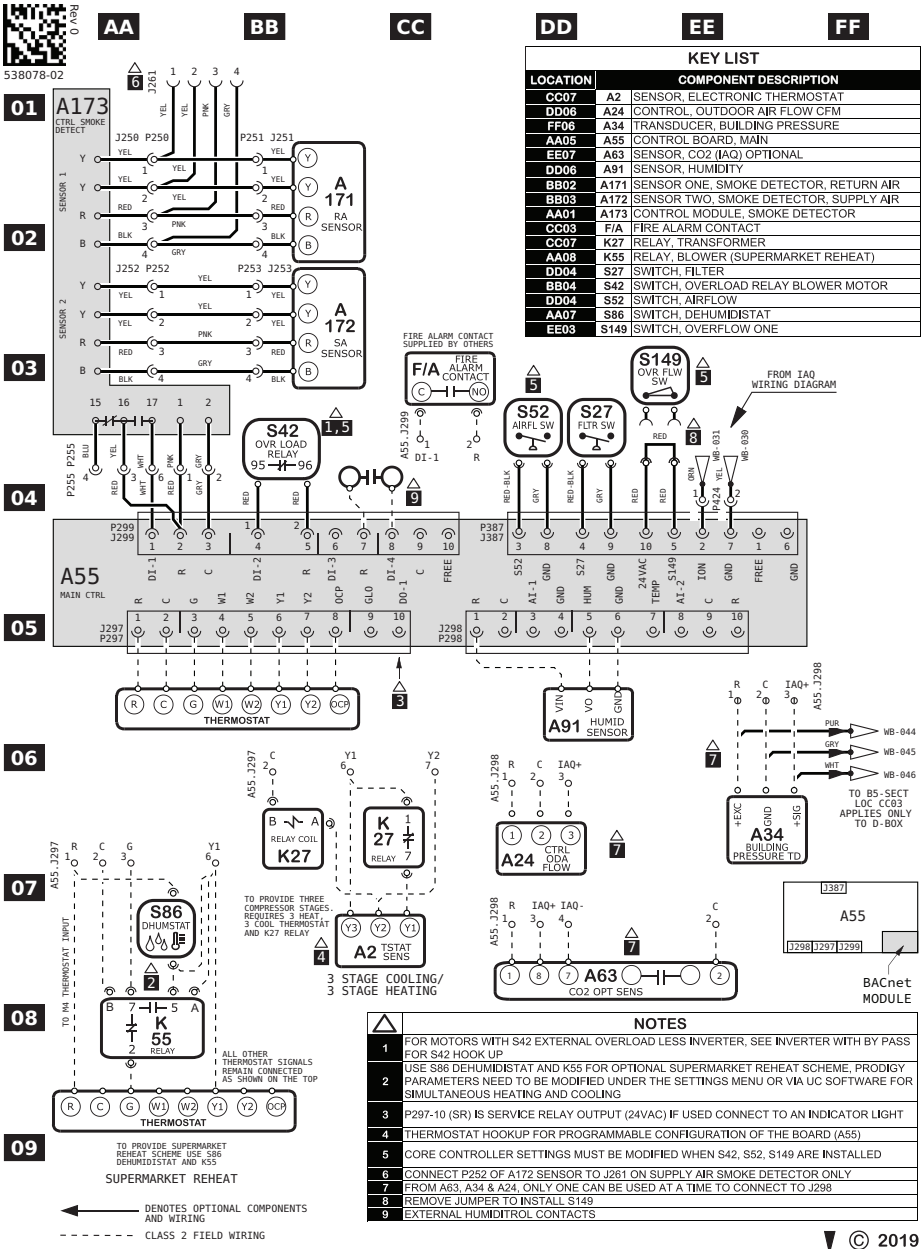
12 - Heating demand is satisfied. Terminal W1 (first stage) is de-energized.

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

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

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

THERMOSTAT UNIT DIAGRAM



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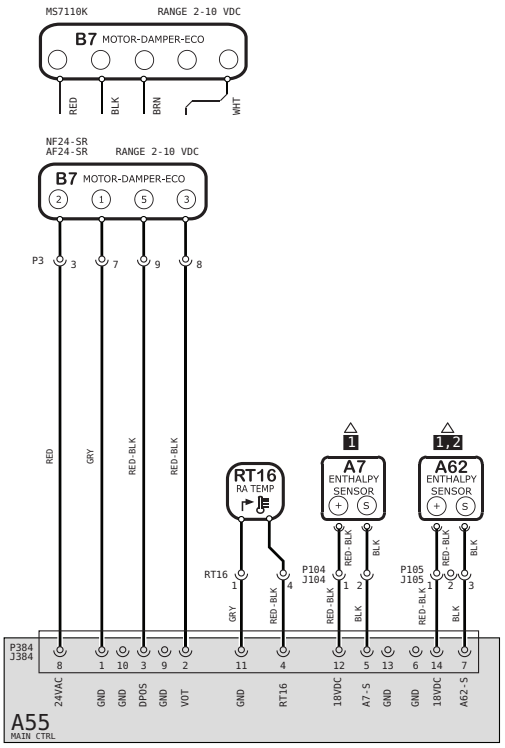

△	NOTES
1	A7 AND A62 NOT USED FOR SENSIBLE TEMPERATURE CONTROL
2	FOR UNIT DIFFERENTIAL ENTHALPY CONTROL, ADD A62 RETURN AIR ENTHALPY SENSOR

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

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

WIRING DIAGRAM FLOW

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

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

IX-Decommissioning

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

Steps to ensure this are:

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

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

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

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

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

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

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

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