# UNIT INFORMATION

100154

**LCX**
**2 to 6 ton**
**7 to 21 kW**

***Service Literature***

## LCX024 through 072 with R454B

The LCX packaged electric cooling units are available in standard cooling efficiency (024S, 036S, 048S, 060S, and 072S). Cooling capacities range from 23,600 to 68,000 Btuh.

Optional electric heat is field installed in LCX units. Electric heat operates in single stage depending on the kW input size. 5 kW through 30 kW heat sections are available for the LCX unit.

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

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

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.

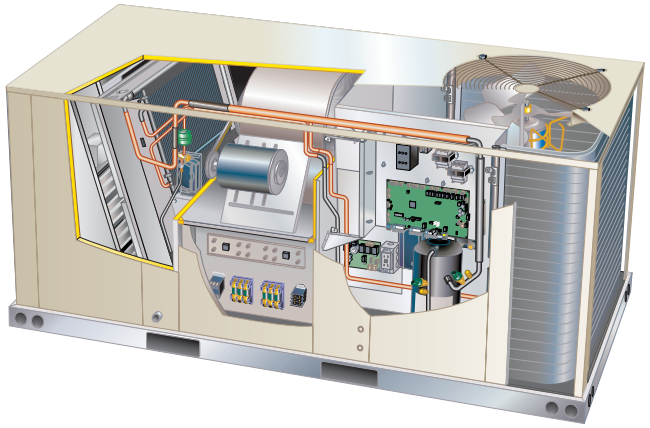
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out with work in confined spaces being avoided.

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.

**ELECTROSTATIC DISCHARGE (ESD)**
**Precautions and Procedures**

**⚠ CAUTION**

**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.**



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

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

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

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

-Safely remove refrigerant following local and national regulations.

-Evacuate the circuit.

-Purge the circuit with inert gas.

-Evacuate.

-Purge the circuit with inert gas.

-Open the circuit

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

## OPTIONS / ACCESSORIES

| Item | | 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 |
| **BLOWER - SUPPLY AIR** | | | | | | | |
| Motors | Direct Drive (PSC) - 0.25 HP (208/230V-1ph) | Factory | O | | | | |
| | Direct Drive (PSC) - 0.50 HP (All Voltages) | Factory | | O | O | | |
| | Direct Drive (ECM) - 1.0 HP (All Voltages) | Factory | | O | 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 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 | | | 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/Electric Heat 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 |
| | [2] 20 amp non-powered, field-wired (208/230V, 460V, 575V) | **67E01** | X | X | X | X | X |
| | [2] 20 amp non-powered, field-wired (575V) | Factory | O | O | O | O | O |
| Weatherproof Cover for GFI | | **10C89** | X | X | X | X | X |

[1] Required if Humiditrol® Dehumidification System is ordered.

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

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

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 |
|---|---|---|---|---|---|---|---|
| **ELECTRIC HEAT** | | | | | | | |
| 5 kW | 208/240V- 1ph | **31B27** | X | | | | |
| 7.5 kW | 208/240V-1ph | **24U10** | X | X | X | X | |
| | 208/240V-3ph | **24U11** | | X | X | X | X |
| | 460V-3ph | **24U12** | | X | X | X | X |
| | 575V-3ph | **24U13** | | X | X | X | X |
| 10 kW | 208/240V-1ph | **24U14** | X | | | | |
| 15 kW | 208/240V-1ph | **24U15** | | X | X | X | |
| | 208/240V-3ph | **24U16** | | X | X | X | X |
| | 460V-3ph | **24U17** | | X | X | X | X |
| | 575V-3ph | **24U18** | | X | X | X | X |
| 22.5 kW | 208/240V-1ph | **24U19** | | | | X | |
| | 208/240V-3ph | **24U20** | | | | X | X |
| | 460V-3ph | **24U21** | | | | X | X |
| | 575V-3ph | **24U22** | | | | X | X |
| 30 kW | 208/240V-3ph | **24U23** | | | | | X |
| | 460V-3ph | **24U24** | | | | | X |
| | 575V-3ph | **24U25** | | | | | X |
| **ECONOMIZER** | | | | | | | |
| **High Performance Economizer With Combination Outdoor Air Hood (Sensible Control) (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** | | | | | | | |
| [3] Barometric Relief Dampers for Power Exhaust Kit | | **21Z21** | X | X | X | X | X |
| [4] Horizontal Barometric Relief Dampers With Exhaust Hood | | **19F01** | X | X | X | X | X |

[3] Required when Economizer is factory installed with field installed Power Exhaust Fan option.

[4] Required when Economizer is configured for horizontal airflow.

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

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 |
|---|---|---|---|---|---|---|---|
| **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 |
| **INDOOR AIR QUALITY** | | | | | | | |
| **Air Filters** | | | | | | | |
| Healthy Climate® High Efficiency Air Filters Order 4 per unit | MERV 8 (16 x 20 x 2) | **54W20** | X | X | X | X | |
| | 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) | **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 - Black plastic case, LCD display, rated for plenum mounting | | **87N52** | X | X | X | X | X |
| Sensor - Black plastic case, no display, rated for plenum mounting | | **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** | | | | | | | |
| [5] 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 |

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

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

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 | | LCX024S5D | LCX036S5D | LCX036S5E |
|---|---|---|---|---|
| **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. |
| **Electric Heat Available** | | See page 18 | | |
| **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 | PSC | PSC | ECM |
| | Nominal Motor HP | 0.25 | 0.5 | 1 |
| | Wheel (Number) diameter x width - in. | (1) 10 x 10 | (1) 10 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)** | | 208/230-1-60 | 208/230-1-60<br>208/230-3-60<br>460-3-60<br>575-3-60 | 208/230-1-60<br>208/230-3-60<br>460-3-60<br>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 | | LCX048S5D | LCX048S5E | LCX060S5E |
|---|---|---|---|---|
| **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. |
| **Electric Heat Available** | | See page 18 | | |
| **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)** | | 208/230-1-60<br>208/230-3-60<br>460-3-60<br>575-3-60 | 208/230-1-60<br>208/230-3-60<br>460-3-60<br>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** | | **LCX060S5B** | **LCX072S5T** |
| **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) | - - - | 15.5 |
| | [1] EER (Btuh/Watt) | - - - | 11.2 |
| | 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. |
| **Electric Heat Available** | | See page 18 | |
| **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) 1/3 (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 | A07 1212 - 1548 rpm | A04 968 - 1340 rpm<br>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<br>460-3-60<br>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.

**LCX024S5D**

**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 (economizer, wet coil, etc.) See page 16.

2 - Any field installed accessories air resistance (electric heat, duct resistance, diffuser, etc.) See page 16.

| External Static Pressure (in. w.g.) | Air Volume (cfm) at Various Blower Speeds | | | | | |
|---|---|---|---|---|---|---|
| | 208 VOLTS | | | 230 VOLTS | | |
| | High | Medium | Low | High | Medium | Low |
| **2 Ton Standard Efficiency (Downflow)** | | | | | | **LCX024S** |
| 0.0 | 1244 | 956 | 859 | 1414 | 1098 | 876 |
| 0.1 | 1226 | 934 | 820 | 1401 | 1092 | 870 |
| 0.2 | 1201 | 906 | 782 | 1379 | 1070 | 848 |
| 0.3 | 1180 | 877 | 727 | 1348 | 1039 | 819 |
| 0.4 | 1152 | 841 | 690 | 1318 | 1008 | 775 |
| 0.5 | 1118 | 812 | 634 | 1288 | 968 | 746 |
| 0.6 | 1090 | 768 | 579 | 1243 | 937 | 702 |
| 0.7 | 1048 | 725 | 505 | 1197 | 890 | 659 |
| 0.8 | 1006 | 667 | 431 | 1152 | 827 | 600 |
| 0.9 | 950 | 609 | 357 | 1076 | 749 | 528 |
| 1.0 | 839 | 493 | 248 | 986 | 623 | 468 |
| **2 Ton Standard Efficiency (Horizontal)** | | | | | | **LCX024S** |
| 0.0 | 1166 | 910 | 801 | 1376 | 1071 | 842 |
| 0.1 | 1156 | 893 | 770 | 1342 | 1054 | 826 |
| 0.2 | 1136 | 866 | 734 | 1307 | 1021 | 808 |
| 0.3 | 1115 | 826 | 697 | 1269 | 982 | 771 |
| 0.4 | 1083 | 800 | 643 | 1232 | 956 | 734 |
| 0.5 | 1051 | 747 | 589 | 1194 | 903 | 698 |
| 0.6 | 1009 | 707 | 534 | 1137 | 850 | 662 |
| 0.7 | 946 | 668 | 467 | 1100 | 797 | 588 |
| 0.8 | 861 | 588 | 396 | 1024 | 744 | 534 |
| 0.9 | 736 | 508 | 319 | 948 | 652 | 466 |
| 1.0 | 560 | 385 | 237 | 845 | 549 | 392 |

**LCX036S5D | LCX048S5D**

**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 (economizer, wet coil, etc.) See page 16.

2 - Any field installed accessories air resistance (electric heat, duct resistance, diffuser, etc.) See page 16.

| 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)** | | | | | | | | | **LCX036S and LCX048S** |
| 0.0 | 1938 | 1552 | 1119 | 2167 | 1772 | 1317 | 2136 | 1716 | 1212 |
| 0.1 | 1992 | 1586 | 1128 | 2167 | 1780 | 1315 | 2104 | 1728 | 1208 |
| 0.2 | 1915 | 1592 | 1137 | 2100 | 1792 | 1307 | 2052 | 1684 | 1197 |
| 0.3 | 1865 | 1536 | 1083 | 2043 | 1735 | 1266 | 1994 | 1647 | 1172 |
| 0.4 | 1813 | 1495 | 1033 | 1986 | 1678 | 1204 | 1918 | 1597 | 1134 |
| 0.5 | 1762 | 1444 | 976 | 1909 | 1621 | 1164 | 1861 | 1534 | 1096 |
| 0.6 | 1694 | 1391 | 899 | 1814 | 1535 | 1082 | 1765 | 1485 | 1059 |
| 0.7 | 1609 | 1331 | 817 | 1718 | 1478 | 1000 | 1689 | 1410 | 996 |
| 0.8 | 1471 | 1220 | 730 | 1603 | 1364 | 918 | 1613 | 1335 | 920 |
| 0.9 | 1368 | 1066 | 522 | 1488 | 1250 | 755 | 1498 | 1235 | 848 |
| 1.0 | 1108 | 869 | 402 | 1259 | 1021 | 640 | 1345 | 1036 | 763 |
| **3 and 4 Ton Standard Efficiency (Horizontal)** | | | | | | | | | **LCX036S and LCX048S** |
| 0.0 | 1862 | 1520 | 1070 | 2082 | 1736 | 1259 | 2085 | 1745 | 1247 |
| 0.1 | 1867 | 1530 | 1069 | 2031 | 1717 | 1246 | 2070 | 1744 | 1257 |
| 0.2 | 1804 | 1485 | 1067 | 1978 | 1672 | 1227 | 2016 | 1690 | 1225 |
| 0.3 | 1741 | 1440 | 1018 | 1907 | 1627 | 1190 | 1944 | 1643 | 1192 |
| 0.4 | 1677 | 1396 | 968 | 1837 | 1567 | 1128 | 1890 | 1596 | 1160 |
| 0.5 | 1614 | 1329 | 894 | 1749 | 1492 | 1066 | 1800 | 1533 | 1111 |
| 0.6 | 1550 | 1284 | 844 | 1660 | 1417 | 1016 | 1727 | 1455 | 1062 |
| 0.7 | 1455 | 1195 | 769 | 1554 | 1327 | 941 | 1655 | 1377 | 996 |
| 0.8 | 1329 | 1106 | 670 | 1448 | 1237 | 842 | 1511 | 1283 | 865 |
| 0.9 | 1202 | 927 | 496 | 1307 | 1087 | 718 | 1403 | 1190 | 784 |
| 1.0 | 1012 | 828 | 385 | 1025 | 973 | 613 | 1222 | 1002 | 670 |

**LCX048S5E I LCX060S5E**

**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 (economizer, wet coil, etc.) See page 16.

2 - Any field installed accessories air resistance (electric heat, duct resistance, diffuser, etc.) See page 16.

See See page 16 for minimum air volume with electric heat.

**DOWNFLOW**

| External Static Press. in. w.g. | Percentage of Total Motor Torque | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20% | | | 30% | | | 40% | | | 50% | | | 60% | | | 70% | | | 80% | | | 90% | | | 100% | | |
| | Cfm | 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 | - - - | - - - | - - - |

**LCX060S5B**

**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 (economizer, wet coil, etc.) See page 16.
2 - Any field installed accessories air resistance (electric heat, duct resistance, diffuser, etc.) See page 16

See page 16 for blower motors and drives.

**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 | 665 | 0.30 | 716 | 0.34 | 768 | 0.38 | 819 | 0.41 | 879 | 0.44 | 937 | 0.46 | 985 | 0.49 | 1022 | 0.52 |
| 1700 | 723 | 0.31 | 768 | 0.35 | 814 | 0.39 | 860 | 0.43 | 910 | 0.47 | 959 | 0.50 | 1001 | 0.54 | 1037 | 0.58 |
| 1800 | 779 | 0.32 | 818 | 0.37 | 857 | 0.41 | 897 | 0.46 | 939 | 0.50 | 980 | 0.55 | 1018 | 0.59 | 1054 | 0.64 |
| 1900 | 826 | 0.36 | 859 | 0.41 | 894 | 0.45 | 928 | 0.50 | 964 | 0.56 | 1000 | 0.61 | 1036 | 0.66 | 1072 | 0.70 |
| 2000 | 857 | 0.42 | 889 | 0.47 | 920 | 0.52 | 952 | 0.57 | 986 | 0.62 | 1020 | 0.68 | 1055 | 0.73 | 1091 | 0.77 |
| 2100 | 878 | 0.49 | 909 | 0.54 | 940 | 0.59 | 973 | 0.64 | 1006 | 0.70 | 1041 | 0.75 | 1076 | 0.80 | 1112 | 0.85 |
| 2200 | 897 | 0.55 | 929 | 0.61 | 961 | 0.66 | 994 | 0.72 | 1028 | 0.78 | 1063 | 0.83 | 1099 | 0.89 | 1134 | 0.93 |
| 2300 | 918 | 0.62 | 950 | 0.68 | 983 | 0.74 | 1017 | 0.80 | 1052 | 0.86 | 1087 | 0.92 | 1122 | 0.97 | 1157 | 1.02 |
| 2400 | 941 | 0.70 | 974 | 0.77 | 1008 | 0.83 | 1042 | 0.90 | 1077 | 0.96 | 1111 | 1.01 | 1146 | 1.06 | 1181 | 1.11 |

| 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 | 1059 | 0.57 | 1098 | 0.61 | 1138 | 0.65 | 1177 | 0.68 | 1218 | 0.71 | 1257 | 0.75 | 1290 | 0.79 | 1319 | 0.83 |
| 1700 | 1074 | 0.62 | 1113 | 0.66 | 1152 | 0.70 | 1190 | 0.74 | 1231 | 0.77 | 1268 | 0.80 | 1299 | 0.84 | 1328 | 0.89 |
| 1800 | 1091 | 0.68 | 1129 | 0.72 | 1167 | 0.76 | 1205 | 0.80 | 1244 | 0.83 | 1280 | 0.87 | 1310 | 0.91 | 1338 | 0.95 |
| 1900 | 1109 | 0.75 | 1146 | 0.79 | 1183 | 0.82 | 1221 | 0.86 | 1260 | 0.90 | 1294 | 0.94 | 1323 | 0.98 | 1349 | 1.02 |
| 2000 | 1128 | 0.82 | 1164 | 0.86 | 1201 | 0.89 | 1239 | 0.93 | 1276 | 0.97 | 1310 | 1.01 | 1336 | 1.06 | 1362 | 1.10 |
| 2100 | 1148 | 0.89 | 1185 | 0.93 | 1221 | 0.97 | 1258 | 1.01 | 1294 | 1.05 | 1325 | 1.09 | 1351 | 1.14 | 1376 | 1.19 |
| 2200 | 1170 | 0.97 | 1206 | 1.01 | 1242 | 1.05 | 1277 | 1.09 | 1311 | 1.14 | 1341 | 1.18 | 1365 | 1.23 | 1390 | 1.28 |
| 2300 | 1193 | 1.06 | 1228 | 1.09 | 1262 | 1.14 | 1295 | 1.19 | 1327 | 1.24 | 1355 | 1.29 | 1380 | 1.33 | 1406 | 1.37 |
| 2400 | 1216 | 1.15 | 1250 | 1.19 | 1282 | 1.24 | 1313 | 1.30 | 1343 | 1.36 | 1371 | 1.40 | 1396 | 1.44 | 1423 | 1.48 |

**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 | 712 | 0.29 | 758 | 0.32 | 807 | 0.36 | 855 | 0.39 | 906 | 0.43 | 955 | 0.46 | 997 | 0.50 | 1035 | 0.54 |
| 1700 | 766 | 0.32 | 808 | 0.36 | 850 | 0.40 | 892 | 0.44 | 936 | 0.47 | 978 | 0.51 | 1016 | 0.56 | 1052 | 0.60 |
| 1800 | 814 | 0.36 | 851 | 0.40 | 888 | 0.44 | 925 | 0.49 | 963 | 0.53 | 1000 | 0.57 | 1035 | 0.62 | 1071 | 0.66 |
| 1900 | 853 | 0.41 | 886 | 0.46 | 919 | 0.50 | 952 | 0.55 | 986 | 0.60 | 1021 | 0.64 | 1056 | 0.69 | 1091 | 0.73 |
| 2000 | 883 | 0.48 | 913 | 0.53 | 944 | 0.57 | 976 | 0.62 | 1009 | 0.67 | 1043 | 0.71 | 1078 | 0.76 | 1112 | 0.80 |
| 2100 | 906 | 0.56 | 936 | 0.60 | 967 | 0.65 | 999 | 0.70 | 1033 | 0.75 | 1067 | 0.79 | 1101 | 0.84 | 1135 | 0.88 |
| 2200 | 930 | 0.64 | 960 | 0.68 | 991 | 0.73 | 1024 | 0.78 | 1058 | 0.83 | 1092 | 0.88 | 1126 | 0.92 | 1160 | 0.96 |
| 2300 | 954 | 0.72 | 985 | 0.77 | 1017 | 0.82 | 1051 | 0.87 | 1085 | 0.92 | 1119 | 0.96 | 1152 | 1.00 | 1186 | 1.04 |
| 2400 | 981 | 0.81 | 1013 | 0.86 | 1046 | 0.91 | 1079 | 0.96 | 1113 | 1.00 | 1146 | 1.05 | 1180 | 1.09 | 1213 | 1.13 |

| 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 | 1071 | 0.58 | 1109 | 0.62 | 1147 | 0.66 | 1186 | 0.69 | 1225 | 0.72 | 1263 | 0.76 | 1299 | 0.80 | 1334 | 0.83 |
| 1700 | 1088 | 0.64 | 1126 | 0.68 | 1164 | 0.72 | 1202 | 0.75 | 1240 | 0.78 | 1276 | 0.82 | 1311 | 0.86 | 1345 | 0.90 |
| 1800 | 1107 | 0.70 | 1143 | 0.74 | 1181 | 0.78 | 1219 | 0.81 | 1256 | 0.85 | 1291 | 0.89 | 1324 | 0.93 | 1357 | 0.97 |
| 1900 | 1126 | 0.77 | 1163 | 0.81 | 1200 | 0.85 | 1237 | 0.88 | 1273 | 0.92 | 1306 | 0.96 | 1339 | 1.00 | 1371 | 1.04 |
| 2000 | 1148 | 0.84 | 1183 | 0.88 | 1220 | 0.92 | 1257 | 0.96 | 1291 | 1.00 | 1323 | 1.04 | 1354 | 1.08 | 1385 | 1.12 |
| 2100 | 1170 | 0.92 | 1206 | 0.96 | 1242 | 1.00 | 1277 | 1.04 | 1310 | 1.08 | 1340 | 1.13 | 1371 | 1.17 | 1401 | 1.21 |
| 2200 | 1195 | 1.00 | 1230 | 1.04 | 1265 | 1.08 | 1299 | 1.13 | 1330 | 1.18 | 1359 | 1.23 | 1388 | 1.27 | 1418 | 1.31 |
| 2300 | 1220 | 1.08 | 1254 | 1.13 | 1288 | 1.17 | 1320 | 1.23 | 1350 | 1.28 | 1378 | 1.34 | 1406 | 1.38 | 1435 | 1.42 |
| 2400 | 1245 | 1.18 | 1278 | 1.22 | 1311 | 1.28 | 1341 | 1.33 | 1370 | 1.40 | 1397 | 1.45 | 1425 | 1.50 | 1454 | 1.54 |

**LCX072S5T**

**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 (economizer, wet coil, etc.) See page 16.
2 - Any field installed accessories air resistance (electric heat, duct resistance, diffuser, etc.) See page 16.

See page 16 for blower motors and drives.

| 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 | 826 | 0.36 | 859 | 0.41 | 894 | 0.45 | 928 | 0.50 | 964 | 0.56 | 1000 | 0.61 | 1036 | 0.66 | 1072 | 0.70 |
| 2000 | 857 | 0.42 | 889 | 0.47 | 920 | 0.52 | 952 | 0.57 | 986 | 0.62 | 1020 | 0.68 | 1055 | 0.73 | 1091 | 0.77 |
| 2100 | 878 | 0.49 | 909 | 0.54 | 940 | 0.59 | 973 | 0.64 | 1006 | 0.70 | 1041 | 0.75 | 1076 | 0.80 | 1112 | 0.85 |
| 2200 | 897 | 0.55 | 929 | 0.61 | 961 | 0.66 | 994 | 0.72 | 1028 | 0.78 | 1063 | 0.83 | 1099 | 0.89 | 1134 | 0.93 |
| 2300 | 918 | 0.62 | 950 | 0.68 | 983 | 0.74 | 1017 | 0.80 | 1052 | 0.86 | 1087 | 0.92 | 1122 | 0.97 | 1157 | 1.02 |
| 2400 | 941 | 0.70 | 974 | 0.77 | 1008 | 0.83 | 1042 | 0.90 | 1077 | 0.96 | 1111 | 1.01 | 1146 | 1.06 | 1181 | 1.11 |
| 2500 | 966 | 0.79 | 1000 | 0.86 | 1034 | 0.93 | 1068 | 1.00 | 1103 | 1.06 | 1137 | 1.11 | 1171 | 1.16 | 1205 | 1.20 |
| 2600 | 994 | 0.90 | 1028 | 0.97 | 1062 | 1.04 | 1096 | 1.10 | 1130 | 1.16 | 1164 | 1.21 | 1197 | 1.26 | 1231 | 1.30 |
| 2700 | 1023 | 1.01 | 1057 | 1.08 | 1091 | 1.15 | 1125 | 1.22 | 1159 | 1.27 | 1192 | 1.32 | 1225 | 1.37 | 1258 | 1.41 |
| 2800 | 1053 | 1.13 | 1088 | 1.21 | 1122 | 1.27 | 1155 | 1.33 | 1188 | 1.39 | 1221 | 1.43 | 1253 | 1.48 | 1286 | 1.53 |
| 2900 | 1085 | 1.26 | 1119 | 1.33 | 1153 | 1.40 | 1186 | 1.45 | 1218 | 1.51 | 1250 | 1.55 | 1281 | 1.61 | 1313 | 1.66 |

| 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 | 1109 | 0.75 | 1146 | 0.79 | 1183 | 0.82 | 1221 | 0.86 | 1260 | 0.90 | 1294 | 0.94 | 1323 | 0.98 | 1349 | 1.02 |
| 2000 | 1128 | 0.82 | 1164 | 0.86 | 1201 | 0.89 | 1239 | 0.93 | 1276 | 0.97 | 1310 | 1.01 | 1336 | 1.06 | 1362 | 1.10 |
| 2100 | 1148 | 0.89 | 1185 | 0.93 | 1221 | 0.97 | 1258 | 1.01 | 1294 | 1.05 | 1325 | 1.09 | 1351 | 1.14 | 1376 | 1.19 |
| 2200 | 1170 | 0.97 | 1206 | 1.01 | 1242 | 1.05 | 1277 | 1.09 | 1311 | 1.14 | 1341 | 1.18 | 1365 | 1.23 | 1390 | 1.28 |
| 2300 | 1193 | 1.06 | 1228 | 1.09 | 1262 | 1.14 | 1295 | 1.19 | 1327 | 1.24 | 1355 | 1.29 | 1380 | 1.33 | 1406 | 1.37 |
| 2400 | 1216 | 1.15 | 1250 | 1.19 | 1282 | 1.24 | 1313 | 1.30 | 1343 | 1.36 | 1371 | 1.40 | 1396 | 1.44 | 1423 | 1.48 |
| 2500 | 1240 | 1.24 | 1273 | 1.29 | 1302 | 1.36 | 1331 | 1.42 | 1360 | 1.48 | 1388 | 1.52 | 1414 | 1.55 | 1441 | 1.58 |
| 2600 | 1265 | 1.34 | 1296 | 1.40 | 1324 | 1.47 | 1352 | 1.54 | 1381 | 1.60 | 1408 | 1.64 | 1434 | 1.67 | 1460 | 1.70 |
| 2700 | 1291 | 1.46 | 1321 | 1.52 | 1347 | 1.60 | 1374 | 1.67 | 1403 | 1.72 | 1429 | 1.76 | 1455 | 1.79 | 1481 | 1.82 |
| 2800 | 1317 | 1.58 | 1346 | 1.66 | 1372 | 1.74 | 1399 | 1.80 | 1426 | 1.85 | 1451 | 1.89 | 1477 | 1.92 | 1503 | 1.95 |
| 2900 | 1343 | 1.72 | 1371 | 1.80 | 1397 | 1.88 | 1424 | 1.95 | 1450 | 1.99 | 1475 | 2.02 | 1500 | 2.05 | 1526 | 2.08 |

**LCX072S5T**

**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 (economizer, wet coil, etc.) See page 16.
2 - Any field installed accessories air resistance (electric heat, duct resistance, diffuser, etc.) See page 16.

See page 16 for blower motors and drives.

| 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 | 853 | 0.41 | 886 | 0.46 | 919 | 0.50 | 952 | 0.55 | 986 | 0.60 | 1021 | 0.64 | 1056 | 0.69 | 1091 | 0.73 |
| 2000 | 883 | 0.48 | 913 | 0.53 | 944 | 0.57 | 976 | 0.62 | 1009 | 0.67 | 1043 | 0.71 | 1078 | 0.76 | 1112 | 0.80 |
| 2100 | 906 | 0.56 | 936 | 0.60 | 967 | 0.65 | 999 | 0.70 | 1033 | 0.75 | 1067 | 0.79 | 1101 | 0.84 | 1135 | 0.88 |
| 2200 | 930 | 0.64 | 960 | 0.68 | 991 | 0.73 | 1024 | 0.78 | 1058 | 0.83 | 1092 | 0.88 | 1126 | 0.92 | 1160 | 0.96 |
| 2300 | 954 | 0.72 | 985 | 0.77 | 1017 | 0.82 | 1051 | 0.87 | 1085 | 0.92 | 1119 | 0.96 | 1152 | 1.00 | 1186 | 1.04 |
| 2400 | 981 | 0.81 | 1013 | 0.86 | 1046 | 0.91 | 1079 | 0.96 | 1113 | 1.00 | 1146 | 1.05 | 1180 | 1.09 | 1213 | 1.13 |
| 2500 | 1010 | 0.91 | 1042 | 0.96 | 1075 | 1.00 | 1109 | 1.05 | 1142 | 1.09 | 1175 | 1.14 | 1207 | 1.18 | 1239 | 1.23 |
| 2600 | 1040 | 1.01 | 1073 | 1.05 | 1106 | 1.10 | 1139 | 1.14 | 1171 | 1.19 | 1203 | 1.23 | 1235 | 1.28 | 1266 | 1.33 |
| 2700 | 1072 | 1.10 | 1104 | 1.15 | 1137 | 1.20 | 1169 | 1.24 | 1201 | 1.29 | 1232 | 1.34 | 1263 | 1.40 | 1293 | 1.46 |
| 2800 | 1105 | 1.21 | 1137 | 1.25 | 1168 | 1.30 | 1200 | 1.35 | 1231 | 1.40 | 1261 | 1.46 | 1291 | 1.52 | 1321 | 1.59 |
| 2900 | 1138 | 1.32 | 1169 | 1.37 | 1200 | 1.42 | 1231 | 1.47 | 1261 | 1.53 | 1291 | 1.60 | 1321 | 1.66 | 1350 | 1.73 |

| 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 | 1126 | 0.77 | 1163 | 0.81 | 1200 | 0.85 | 1237 | 0.88 | 1273 | 0.92 | 1306 | 0.96 | 1339 | 1.00 | 1371 | 1.04 |
| 2000 | 1148 | 0.84 | 1183 | 0.88 | 1220 | 0.92 | 1257 | 0.96 | 1291 | 1.00 | 1323 | 1.04 | 1354 | 1.08 | 1385 | 1.12 |
| 2100 | 1170 | 0.92 | 1206 | 0.96 | 1242 | 1.00 | 1277 | 1.04 | 1310 | 1.08 | 1340 | 1.13 | 1371 | 1.17 | 1401 | 1.21 |
| 2200 | 1195 | 1.00 | 1230 | 1.04 | 1265 | 1.08 | 1299 | 1.13 | 1330 | 1.18 | 1359 | 1.23 | 1388 | 1.27 | 1418 | 1.31 |
| 2300 | 1220 | 1.08 | 1254 | 1.13 | 1288 | 1.17 | 1320 | 1.23 | 1350 | 1.28 | 1378 | 1.34 | 1406 | 1.38 | 1435 | 1.42 |
| 2400 | 1245 | 1.18 | 1278 | 1.22 | 1311 | 1.28 | 1341 | 1.33 | 1370 | 1.40 | 1397 | 1.45 | 1425 | 1.50 | 1454 | 1.54 |
| 2500 | 1271 | 1.28 | 1303 | 1.33 | 1334 | 1.39 | 1363 | 1.45 | 1391 | 1.52 | 1418 | 1.57 | 1446 | 1.62 | 1474 | 1.66 |
| 2600 | 1297 | 1.39 | 1328 | 1.45 | 1357 | 1.52 | 1385 | 1.58 | 1412 | 1.64 | 1439 | 1.70 | 1467 | 1.74 | 1495 | 1.78 |
| 2700 | 1323 | 1.52 | 1353 | 1.58 | 1382 | 1.65 | 1409 | 1.72 | 1435 | 1.77 | 1462 | 1.82 | 1490 | 1.86 | 1517 | 1.90 |
| 2800 | 1351 | 1.65 | 1380 | 1.72 | 1407 | 1.78 | 1434 | 1.85 | 1460 | 1.90 | 1486 | 1.95 | 1513 | 1.99 | 1541 | 2.02 |
| 2900 | 1379 | 1.79 | 1407 | 1.86 | 1434 | 1.92 | 1460 | 1.98 | 1485 | 2.04 | 1511 | 2.08 | 1538 | 2.12 | 1565 | 2.15 |

## BLOWER DATA

### BELT DRIVE KIT SPECIFICATIONS

| Model No. | Motor HP | | No. of Speeds | Drive Kits and RPM Range | | |
|---|---|---|---|---|---|---|
| | Nominal | Maximum | | A04 | A07 | A08 |
| 060 | 2 | 2.3 | 1 | - - - | 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 | | Economizer | Electric Heat | Filters | | |
|---|---|---|---|---|---|---|---|---|---|
| | 024, 036, 048, 060 | 072 | 024, 036, 048, 060 | 072 | | | MERV 8 | MERV 13 | MERV 16 |
| 800 | 0.01 | 0.01 | 0.00 | 0.00 | 0.04 | 0.01 | 0.04 | 0.05 | 0.04 |
| 1000 | 0.02 | 0.01 | 0.00 | 0.00 | 0.04 | 0.03 | 0.04 | 0.07 | 0.05 |
| 1200 | 0.03 | 0.02 | 0.01 | 0.00 | 0.04 | 0.06 | 0.04 | 0.07 | 0.05 |
| 1400 | 0.04 | 0.03 | 0.02 | 0.01 | 0.04 | 0.09 | 0.04 | 0.07 | 0.06 |
| 1600 | 0.05 | 0.04 | 0.03 | 0.02 | 0.04 | 0.12 | 0.04 | 0.07 | 0.08 |
| 1800 | 0.06 | 0.05 | 0.04 | 0.02 | 0.05 | 0.15 | 0.05 | 0.07 | 0.09 |
| 2000 | 0.08 | 0.06 | 0.04 | 0.03 | 0.05 | 0.18 | 0.05 | 0.08 | 0.10 |
| 2200 | 0.09 | 0.07 | - - - | 0.04 | 0.05 | 0.20 | 0.05 | 0.08 | 0.11 |
| 2400 | 0.10 | 0.08 | - - - | 0.04 | 0.05 | 0.22 | 0.05 | 0.08 | 0.12 |

### MINIMUM AIR VOLUME REQUIRED FOR ELECTRIC HEAT

| Size | kW Size | Minimum CFM | | |
|---|---|---|---|---|
| | | Direct Drive | Belt Drive Downflow | Belt Drive Horizontal |
| 024-060 | 5 | 600 | N/A | N/A |
| | 7.5 | 600 | 1,050 | 1,200 |
| | 10 | 600 | N/A | N/A |
| | 15 | 1100 | 1200 | 1300 |
| | 22.5 | 1600 | 1500 | 1600 |
| 072 | 30 | N/A | 1900 | 2000 |

## 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 |

## OUTDOOR SOUND DATA

| Size | Octave Band Sound Power Levels dBA, re $10^{-12}$ Watts - Center Frequency - Hz | | | | | | | [1] Sound Rating Number (dBA) |
|---|---|---|---|---|---|---|---|---|
| | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | |
| 024, 036, 048, 060 | 62 | 66 | 70 | 69 | 66 | 60 | 50 | 74 |
| 072 | 66 | 71 | 74 | 73 | 70 | 65 | 57 | 79 |

Note - The octave sound power data does not include tonal corrections.

[1] Sound Rating Number according to AHRI Standard 270-95 (includes pure tone penalty). Sound Rating Number is the overall A-Weighted Sound Power Level, (LWA), dBA (100 Hz to 10,000 Hz).

| ELECTRICAL/ELECTRIC HEAT DATA | | | DIRECT DRIVE - 2 TON [PSC] | |
|---|---|---|---|---|
| **Model** | | | **LCX024S5D** | |
| [1] **Voltage - 60Hz** | | | **208/230V - 1 Ph** | |
| Compressor 1 (Non-Inverter) | | Rated Load Amps | 10.3 | |
| | | Locked Rotor Amps | 60.2 | |
| Outdoor Fan Motors (1) | | Full Load Amps (1 Non-ECM) | 1.7 | |
| Service Outlet 115V GFI (amps) | | | 15 | |
| Indoor Blower Motor | | HP | 0.25 | |
| | | Type | Direct | |
| | | Full Load Amps | 1.7 | |
| [2] Maximum Overcurrent Protection (MOCP) | | Unit Only | 25 | |
| | | with (1) 0.33 HP Power Exhaust | 25 | |
| [3] Minimum Circuit Ampacity (MCA) | | Unit Only | 17 | |
| | | with (1) 0.33 HP Power Exhaust | 19 | |
| **ELECTRIC HEAT DATA** | | | | |
| **Electric Heat Voltage** | | | **208V** | **240V** |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | **5 kW** | 25 | 30 |
| | | **7.5 kW** | 40 | 45 |
| | | **10 kW** | 50 | 60 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | **5 kW** | 25 | 29 |
| | | **7.5 kW** | 36 | 42 |
| | | **10 kW** | 48 | 55 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | **5 kW** | 30 | 35 |
| | | **7.5 kW** | 40 | 45 |
| | | **10 kW** | 60 | 60 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | **5 kW** | 28 | 32 |
| | | **7.5 kW** | 39 | 45 |
| | | **10 kW** | 51 | 58 |
| **ELECTRICAL ACCESSORIES** | | | | |
| **Disconnect** | | **0-10 kW** | **20W21** | **20W21** |

**Disconnects - 20W21** - 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/ELECTRIC HEAT DATA — DIRECT DRIVE - 3 TON [PSC]

| Model | | | LCX036S5D | | | |
|---|---|---|---|---|---|---|
| [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 | 0.5 | 0.5 | 0.5 |
| | Type | | Direct | Direct | Direct | Direct |
| | Full Load Amps | | 3.1 | 3.1 | 1.5 | 1.5 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit Only | | 35 | 25 | 15 | 15 |
| | with (1) 0.33 HP Power Exhaust | | 35 | 25 | 15 | 15 |
| [3] Minimum Circuit Ampacity (MCA) | Unit Only | | 23 | 17 | 8 | 7 |
| | with (1) 0.33 HP Power Exhaust | | 26 | 19 | 10 | 8 |

### ELECTRIC HEAT DATA

| Electric Heat Voltage | | | 208V | 240V | 208V | 240V | 480V | 600V |
|---|---|---|---|---|---|---|---|---|
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | 7.5 kW | 40 | 45 | 25 | 30 | 15 | 15 |
| | | 15 kW | 80 | 90 | 45 | 50 | 25 | 20 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | 7.5 kW | 38 | 43 | 24 | 27 | 14 | 11 |
| | | 15 kW | 72 | 82 | 43 | 49 | 25 | 20 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 45 | 50 | 30 | 30 | 15 | 15 |
| | | 15 kW | 80 | 90 | 50 | 60 | 30 | 25 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 41 | 46 | 27 | 30 | 15 | 13 |
| | | 15 kW | 75 | 85 | 46 | 52 | 27 | 22 |

### ELECTRICAL ACCESSORIES

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Disconnect** | | **0-7.5 kW** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** |
| | | **15 kW** | **20W21** | **20W22** | **20W21** | **20W21** | **20W21** | **20W21** |

**Disconnects - 20W21** - 80A
**20W22** - 150A

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

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

[3] HACR type breaker or fuse.

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

## ELECTRICAL/ELECTRIC HEAT DATA — DIRECT DRIVE - 4 TON [PSC]

| Model | | | LCX048S5D | | | |
|---|---|---|---|---|---|---|
| [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 | | 0.5 | 0.5 | 0.5 | 0.5 |
| | Type | | Direct | Direct | Direct | Direct |
| | Full Load Amps | | 3.1 | 3.1 | 1.5 | 1.5 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit Only | | 45 | 30 | 15 | 15 |
| | with (1) 0.33 HP Power Exhaust | | 50 | 30 | 15 | 15 |
| [3] Minimum Circuit Ampacity (MCA) | Unit Only | | 30 | 20 | 11 | 8 |
| | with (1) 0.33 HP Power Exhaust | | 32 | 23 | 12 | 9 |

### ELECTRIC HEAT DATA

| Electric Heat Voltage | | | 208V | 240V | 208V | 240V | 480V | 600V |
|---|---|---|---|---|---|---|---|---|
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | 7.5 kW | 45 | 45 | 30 | 30 | 15 | 15 |
| | | 15 kW | 80 | 90 | 45 | 50 | 25 | 20 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | 7.5 kW | 38 | 43 | 24 | 27 | 14 | 11 |
| | | 15 kW | 72 | 82 | 43 | 49 | 25 | 20 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 50 | 50 | 30 | 30 | 15 | 15 |
| | | 15 kW | 80 | 90 | 50 | 60 | 30 | 25 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 41 | 46 | 27 | 30 | 15 | 13 |
| | | 15 kW | 75 | 85 | 46 | 52 | 27 | 22 |

### ELECTRICAL ACCESSORIES

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Disconnect** | | **0-7.5 kW** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** |
| | | **15 kW** | **20W21** | **20W22** | **20W21** | **20W21** | **20W21** | **20W21** |

**Disconnects - 20W21** - 80A
**20W22** - 150A

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

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

[3] HACR type breaker or fuse.

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

## ELECTRICAL/ELECTRIC HEAT DATA — DIRECT DRIVE - 3 TON [ECM]

| Model | | | LCX036S5E | | | |
|---|---|---|---|---|---|---|
| [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 | | 1 | 1 | 1 | 1 |
| | Type | | Direct | Direct | Direct | Direct |
| | Full Load Amps | | 7.4 | 7.4 | 3.7 | 3 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit Only | | 40 | 25 | 15 | 15 |
| | with (1) 0.33 HP Power Exhaust | | 40 | 30 | 15 | 15 |
| [3] Minimum Circuit Ampacity (MCA) | Unit Only | | 28 | 21 | 10 | 8 |
| | with (1) 0.33 HP Power Exhaust | | 30 | 23 | 12 | 9 |

### ELECTRIC HEAT DATA

| Electric Heat Voltage | | | 208V | 240V | 208V | 240V | 480V | 600V |
|---|---|---|---|---|---|---|---|---|
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | 7.5 kW | 45 | 50 | 30 | 35 | 20 | 15 |
| | | 15 kW | 80 | 90 | 50 | 60 | 30 | 25 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | 7.5 kW | 44 | 49 | 29 | 32 | 16 | 13 |
| | | 15 kW | 77 | 88 | 49 | 55 | 28 | 22 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 50 | 60 | 35 | 35 | 20 | 15 |
| | | 15 kW | 80 | 100 | 60 | 60 | 30 | 25 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 47 | 52 | 32 | 35 | 18 | 15 |
| | | 15 kW | 80 | 91 | 52 | 58 | 29 | 24 |

### ELECTRICAL ACCESSORIES

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Disconnect** | | **0-7.5 kW** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** |
| | | **15 kW** | **20W21** | **20W22** | **20W21** | **20W21** | **20W21** | **20W21** |

**Disconnects - 20W21** - 80A
**20W22** - 150A

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

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

[2] HACR type breaker or fuse.

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

## ELECTRICAL/ELECTRIC HEAT DATA — DIRECT DRIVE - 4 TON [ECM]

| Model | | | LCX048S5E | | | |
|---|---|---|---|---|---|---|
| [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 | Direct | Direct | Direct |
| | 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 |

### ELECTRIC HEAT DATA

| Electric Heat Voltage | | | 208V | 240V | 208V | 240V | 480V | 600V |
|---|---|---|---|---|---|---|---|---|
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | 7.5 kW | 50 | 50 | 35 | 35 | 20 | 15 |
| | | 15 kW | 80 | 90 | 50 | 60 | 30 | 25 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | 7.5 kW | 44 | 49 | 29 | 32 | 16 | 13 |
| | | 15 kW | 77 | 88 | 49 | 55 | 28 | 22 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 50 | 60 | 35 | 35 | 20 | 15 |
| | | 15 kW | 80 | 100 | 60 | 60 | 30 | 25 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | 7.5 kW | 47 | 52 | 32 | 35 | 18 | 15 |
| | | 15 kW | 80 | 91 | 52 | 58 | 29 | 24 |

### ELECTRICAL ACCESSORIES

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Disconnect** | | 0-7.5 kW | 20W21 | 20W21 | 20W21 | 20W21 | 20W21 | 20W21 |
| | | 15 kW | 20W21 | 20W22 | 20W21 | 20W21 | 20W21 | 20W21 |

**Disconnects - 20W21** - 80A
**20W22** - 150A

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

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

[2] HACR type breaker or fuse.

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

## ELECTRICAL/ELECTRIC HEAT DATA — DIRECT DRIVE - 5 TON [ECM]

| Model | | | LCX060S5E | | | |
|---|---|---|---|---|---|---|
| [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) | | 1.7 | 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 | Direct | Direct | Direct |
| | 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 |

### ELECTRIC HEAT DATA

| Electric Heat Voltage | | | 208V | 240V | 208V | 240V | 480V | 600V |
|---|---|---|---|---|---|---|---|---|
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | **7.5 kW** | 60 | 60 | 45 | 45 | 20 | 15 |
| | | **15 kW** | 80 | 90 | 50 | 60 | 30 | 25 |
| | | **22.5 kW** | 125 | 150 | 70 | 80 | 40 | 35 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | **7.5 kW** | 44 | 49 | 30 | 32 | 16 | 13 |
| | | **15 kW** | 77 | 88 | 49 | 55 | 28 | 22 |
| | | **22.5 kW** | 111 | 127 | 68 | 77 | 39 | 31 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | **7.5 kW** | 60 | 60 | 45 | 45 | 20 | 15 |
| | | **15 kW** | 80 | 100 | 60 | 60 | 30 | 25 |
| | | **22.5 kW** | 125 | 150 | 80 | 80 | 45 | 35 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | **7.5 kW** | 47 | 52 | 32 | 35 | 18 | 15 |
| | | **15 kW** | 80 | 91 | 52 | 58 | 29 | 24 |
| | | **22.5 kW** | 114 | 130 | 71 | 80 | 41 | 33 |

### ELECTRICAL ACCESSORIES

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Disconnect** | **0-7.5 kW** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** | **20W21** |
| | **15 kW** | **20W21** | **20W22** | **20W21** | **20W21** | **20W21** | **20W21** |
| | **22.5 kW** | **20W22** | **20W22** | **20W21** | **20W21** | **20W21** | **20W21** |

**Disconnects - 20W21** - 80A
**20W22** - 150A

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

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

[2] HACR type breaker or fuse.

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

## ELECTRICAL/ELECTRIC HEAT DATA — BELT DRIVE (SINGLE SPEED) - 5 TON

| Model | | | LCX060S5B | | |
|---|---|---|---|---|---|
| [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 |

### ELECTRIC HEAT DATA

| Electric Heat Voltage | | | 208V | 240V | 480V | 600V |
|---|---|---|---|---|---|---|
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | **7.5 kW** | 45 | 45 | 20 | 15 |
| | | **15 kW** | 50 | 60 | 30 | 25 |
| | | **22.5 kW** | 70 | 80 | 40 | 35 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | **7.5 kW** | 30 | 32 | 16 | 13 |
| | | **15 kW** | 49 | 55 | 27 | 22 |
| | | **22.5 kW** | 69 | 78 | 39 | 31 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | **7.5 kW** | 45 | 45 | 20 | 15 |
| | | **15 kW** | 60 | 60 | 30 | 25 |
| | | **22.5 kW** | 80 | 90 | 40 | 35 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | **7.5 kW** | 32 | 35 | 18 | 14 |
| | | **15 kW** | 52 | 58 | 29 | 23 |
| | | **22.5 kW** | 72 | 81 | 40 | 32 |

### ELECTRICAL ACCESSORIES

| | | | | | | |
|---|---|---|---|---|---|---|
| **Disconnect** | | **0-7.5 kW** | **20W21** | **20W21** | **20W21** | **20W21** |
| | | **15 kW** | **20W21** | **20W21** | **20W21** | **20W21** |
| | | **22.5. kW** | **20W21** | **[4] 20W21/ [5] 20W22** | **20W21** | **20W21** |

**Disconnects - 20W21** - 80A
**20W22** - 150A

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

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

[2] HACR type breaker or fuse.

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

[4] Without Power Exhaust.

[5] With Power Exhaust.

**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

## ELECTRICAL/ELECTRIC HEAT DATA — BELT DRIVE (TWO SPEED) - 6 TON

| Model | | | LCX072S5T | | |
|---|---|---|---|---|---|
| [1] Voltage - 60Hz | | | 208/230V - 3 Ph | 460V - 3 Ph | 575V - 3 Ph |
| Compressor 1 (Non-Inverter) | 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 |

### ELECTRIC HEAT DATA

| Electric Heat Voltage | | | 208V | 240V | 480V | 600V |
|---|---|---|---|---|---|---|
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat | **7.5 kW** | 50 | 50 | 25 | 15 |
| | | **15 kW** | 50 | 60 | 30 | 25 |
| | | **22.5 kW** | 70 | 80 | 40 | 35 |
| | | **30 kW** | 90 | 100 | 50 | 40 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat | **7.5 kW** | 34 | 34 | 17 | 13 |
| | | **15 kW** | 49 | 55 | 27 | 22 |
| | | **22.5 kW** | 69 | 78 | 39 | 31 |
| | | **30 kW** | 88 | 100 | 50 | 40 |
| [2] Maximum Overcurrent Protection (MOCP) | Unit + Electric Heat + Power Exhaust | **7.5 kW** | 50 | 50 | 25 | 15 |
| | | **15 kW** | 60 | 60 | 30 | 25 |
| | | **22.5 kW** | 80 | 90 | 40 | 35 |
| | | **30 kW** | 100 | 110 | 60 | 45 |
| [3] Minimum Circuit Ampacity (MCA) | Unit + Electric Heat + Power Exhaust | **7.5 kW** | 37 | 37 | 18 | 14 |
| | | **15 kW** | 52 | 58 | 29 | 23 |
| | | **22.5 kW** | 72 | 81 | 40 | 32 |
| | | **30 kW** | 91 | 103 | 51 | 41 |

### ELECTRICAL ACCESSORIES

| | | | | | |
|---|---|---|---|---|---|
| **Disconnect** | **0-15 kW** | **22A23** | **22A23** | **22A23** | **22A23** |
| | **22.5 kW** | **22A23** | **[4] 22A23/ [5] 22A24** | **22A23** | **22A23** |
| | **30 kW** | **22A24** | **22A24** | **22A23** | **22A23** |

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

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

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

[2] HACR type breaker or fuse.

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

[4] Without Power Exhaust.

[5] With Power Exhaust.

## ELECTRIC HEAT CAPACITIES

| Input Voltage | 5 kW | | | 7.5 kW | | | 10 kW | | |
|---|---|---|---|---|---|---|---|---|---|
| | Stages | kW input | Btuh Output | Stages | kW input | Btuh Output | Stages | kW input | Btuh Output |
| 208 | 1 | 3.8 | 12,800 | 1 | 5.6 | 19,200 | 1 | 7.5 | 25,600 |
| 220 | 1 | 4.2 | 14,300 | 1 | 6.3 | 21,500 | 1 | 8.4 | 28,700 |
| 230 | 1 | 4.6 | 15,700 | 1 | 6.9 | 23,500 | 1 | 9.2 | 31,400 |
| 240 | 1 | 5.0 | 17,100 | 1 | 7.5 | 25,600 | 1 | 10.0 | 34,200 |
| 440 | - - - | - - - | - - - | 1 | 6.3 | 21,500 | - - - | - - - | - - - |
| 460 | - - - | - - - | - - - | 1 | 6.9 | 23,500 | - - - | - - - | - - - |
| 480 | - - - | - - - | - - - | 1 | 7.5 | 25,600 | - - - | - - - | - - - |
| 550 | - - - | - - - | - - - | 1 | 6.3 | 21,500 | - - - | - - - | - - - |
| 575 | - - - | - - - | - - - | 1 | 6.9 | 23,500 | - - - | - - - | - - - |
| 600 | - - - | - - - | - - - | 1 | 7.5 | 25,600 | - - - | - - - | - - - |

| Input Voltage | 15 kW | | | 22.5 kW | | | 30 kW | | |
|---|---|---|---|---|---|---|---|---|---|
| | Stages | kW input | Btuh Output | Stages | kW input | Btuh Output | Stages | kW input | Btuh Output |
| 208 | 1 | 11.2 | 38,400 | 1 | 16.9 | 57,700 | 1 | 22.5 | 76,800 |
| 220 | 1 | 12.6 | 43,000 | 1 | 18.9 | 64,500 | 1 | 25.2 | 86,000 |
| 230 | 1 | 13.8 | 47,000 | 1 | 20.7 | 70,700 | 1 | 27.5 | 93,900 |
| 240 | 1 | 15.0 | 51,200 | 1 | 22.5 | 76,800 | 1 | 30.0 | 102,400 |
| 440 | 1 | 12.6 | 43,000 | 1 | 18.9 | 64,500 | 1 | 25.2 | 86,000 |
| 460 | 1 | 13.8 | 47,000 | 1 | 20.7 | 70,700 | 1 | 27.5 | 93,900 |
| 480 | 1 | 15.0 | 51,200 | 1 | 22.5 | 76,800 | 1 | 30.0 | 102,400 |
| 550 | 1 | 12.6 | 43,000 | 1 | 18.9 | 64,500 | 1 | 25.2 | 86,000 |
| 575 | 1 | 13.8 | 47,000 | 1 | 20.7 | 70,700 | 1 | 27.5 | 93,900 |
| 600 | 1 | 15.0 | 51,200 | 1 | 22.5 | 76,800 | 1 | 30.0 | 102,400 |

## Minimum R454B Space and CFM Requirements

| Minimum Airflow[1] | | |
|---|---|---|
| Unit | $Q_{min}$(CFM) | $Q_{min}$($m^3h$) |
| LCX024 | 103 | 174 |
| LCX036 | 98 | 166 |
| LCX048 | 93 | 157 |
| LCX060 | 99 | 168 |
| LCX072 | 137 | 233 |
| LCX024 W/ Humidtrol | 113 | 191 |
| LCX036 W/ Humidtrol | 123 | 208 |
| LCX048 W/ Humidtrol | 112 | 190 |
| LCX060 W/ Humidtrol | 126 | 214 |
| LCX072 W/ Humidtrol | 119 | 202 |

| Refrigerant Charge R-454B | | |
|---|---|---|
| Unit | $M_c$(lbs) | $M_c$(kg) |
| LCX024 | 3.88 | 1.76 |
| LCX036 | 3.69 | 1.67 |
| LCX048 | 3.50 | 1.59 |
| LCX060 | 3.75 | 1.70 |
| LCX072 | 5.19 | 2.35 |
| LCX024 W/ Humidtrol | 4.26 | 1.93 |
| LCX036 W/ Humidtrol | 4.64 | 2.10 |
| LCX048 W/ Humidtrol | 4.24 | 1.92 |
| LCX060 W/ Humidtrol | 4.76 | 2.16 |
| LCX072 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 | $TA_{min}$($ft^2$) | $TA_{min}$($m^2$) |
| LCX024 | 57 | 5.3 |
| LCX036 | 55 | 5.0 |
| LCX048 | 52 | 4.8 |
| LCX060 | 55 | 5.1 |
| LCX072 | 77 | 7.1 |
| LCX024 W/ Humidtrol | 63 | 5.8 |
| LCX036 W/ Humidtrol | 68 | 6.3 |
| LCX048 W/ Humidtrol | 63 | 5.8 |
| LCX060 W/ Humidtrol | 70 | 6.5 |
| LCX072 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 LCX024 at 1000 ft. above see level, multiply 103 by 1.05 to get 108.15 CFM as the new $Q_{min}$.*

## PARTS ARRANGEMENTS

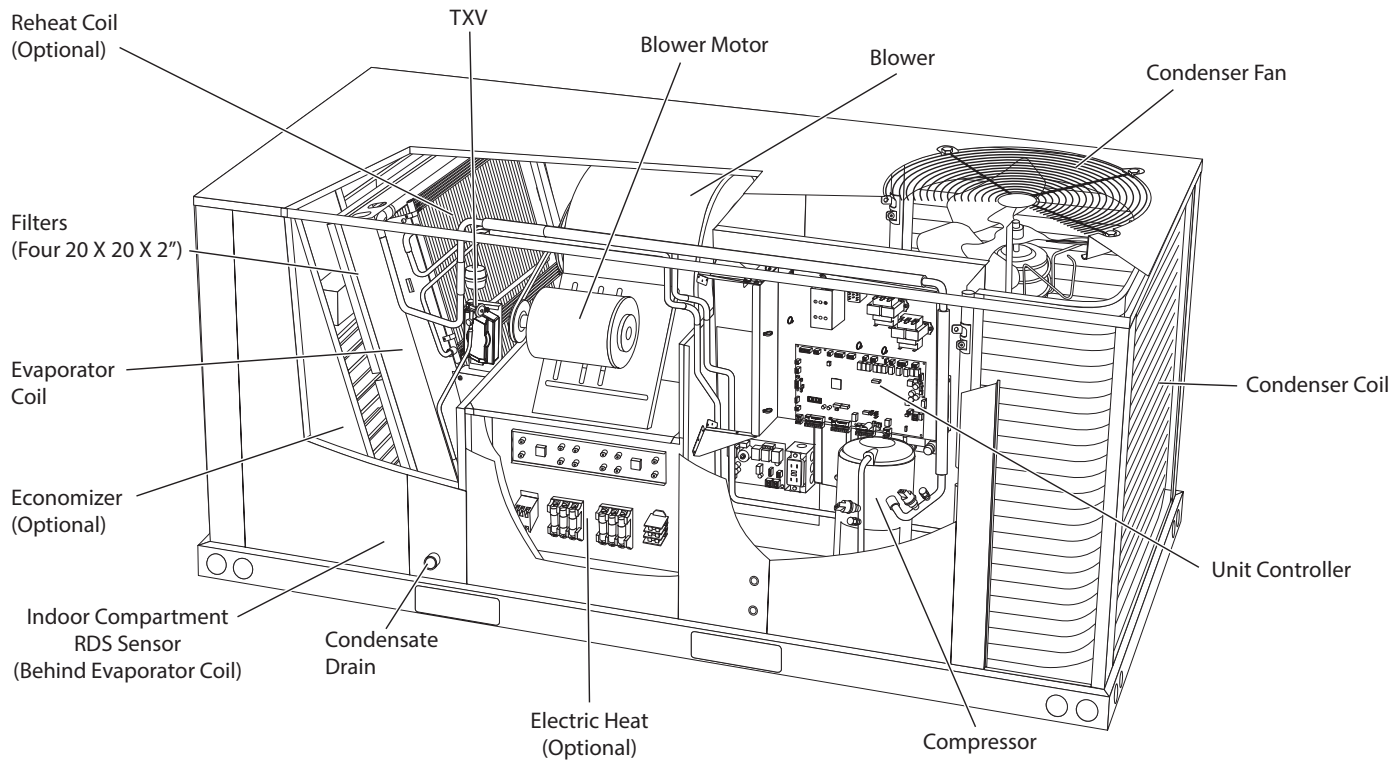
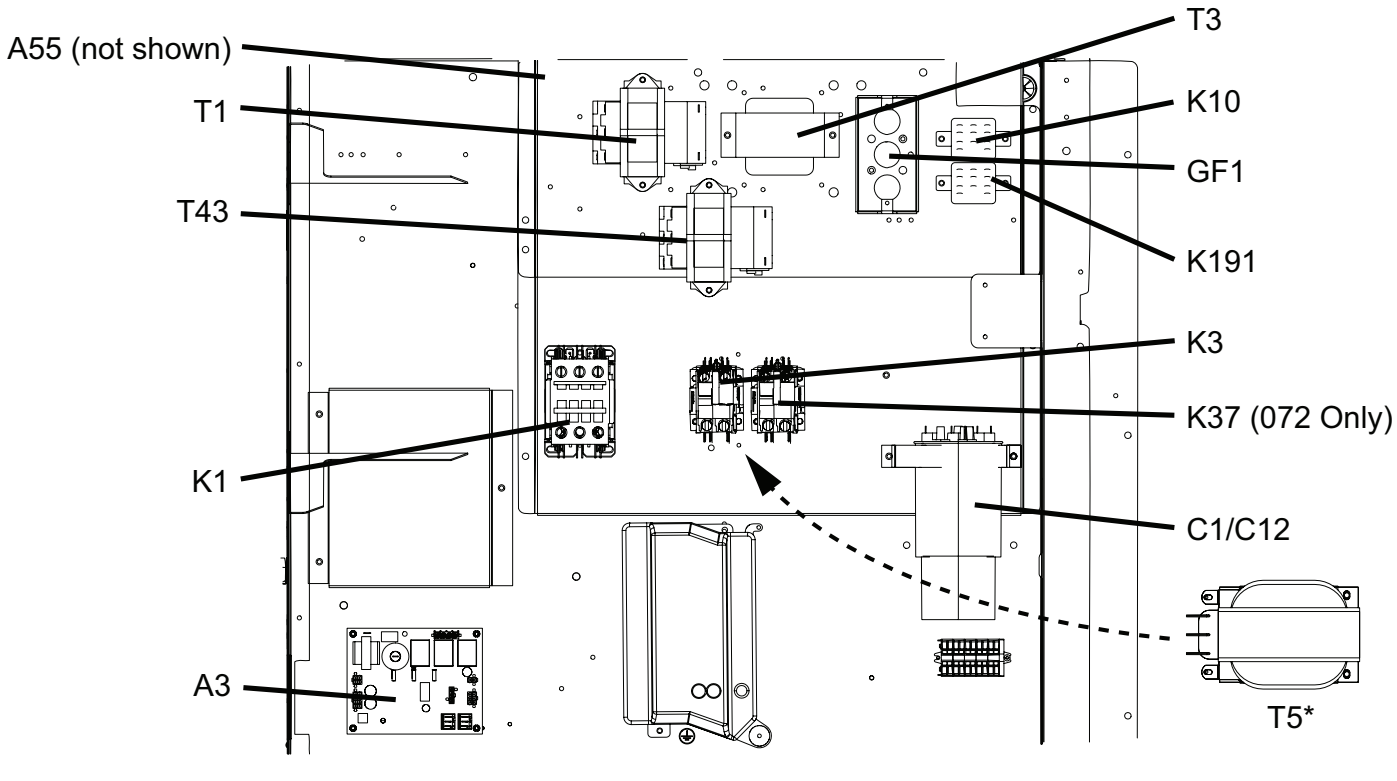



**FIGURE 1**

## CONTROL BOX ARRANGMENT




*T5 covers K3 & K37

**FIGURE 2**

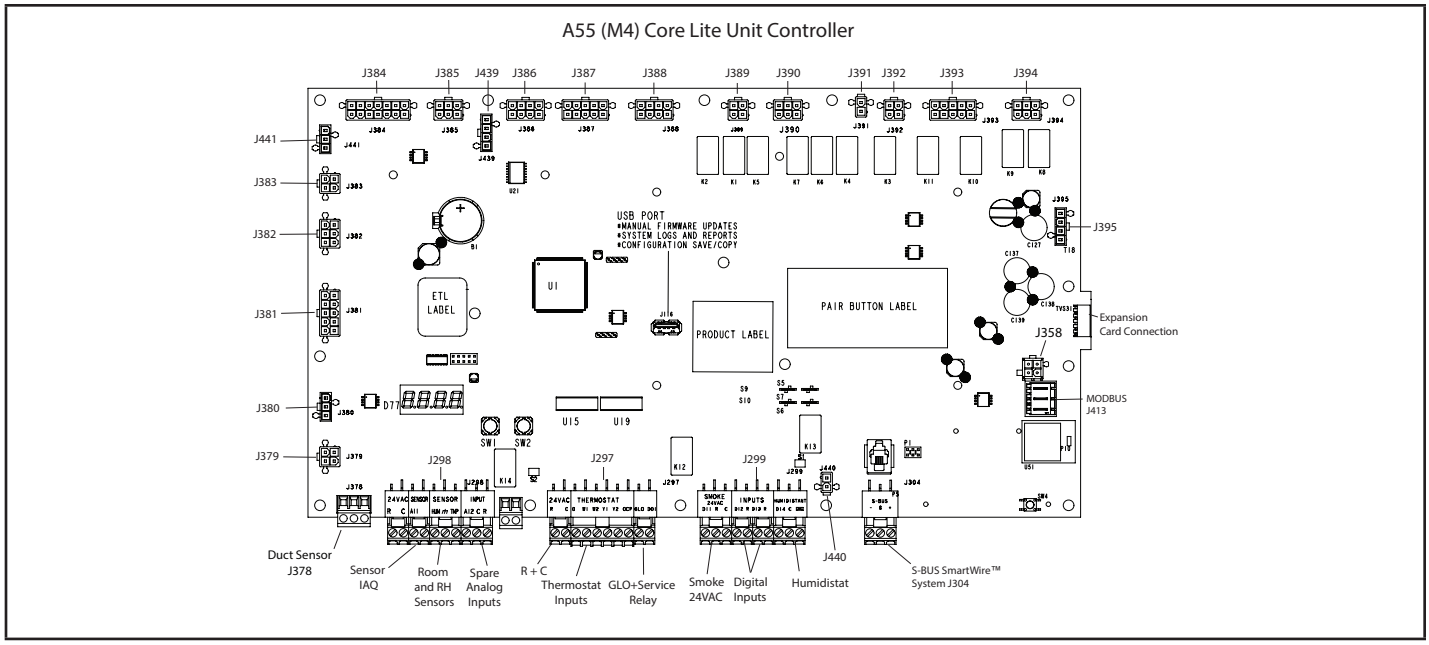



**FIGURE 3**

## I-UNIT COMPONENTS

All 2 through 7-1/2 ton (7.5 through 21 kW) units are build to order units (BTO). The LCX 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.

### A-Control Box Components

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

### 1-Control Transformers T1/T43

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.

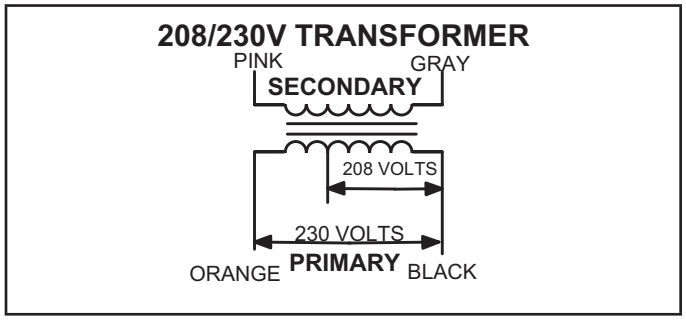



**FIGURE 4**

### 2-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 to power the indoor blower. It is connected to line voltage and is powered at all times.

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

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

### 4-Unit Controller A55

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

### 5-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.

### 6-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 MF ratings. See side of capacitor for ratings.

### 7-Compressor Contactor K1

In all LCX 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.

### 8-Blower Contactor K3

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

**9-Condenser Fan Relay K10**

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

**10-Blower Contactor K37 -072 Units 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.

## 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.

**B-Cooling Components**

LCX units use one cooling circuit consisting of a compressor, all-aluminum condenser coil, and evaporator coil. See FIGURE 5. One draw-through type condenser fan is used in all LCX 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 fieldinstalled economizer. The evaporators are slab type. All LCX use a thermal expansion valve (TXV). Each evaporator is also equipped with Environ™ microchannel aluminum coils. 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 5. The Low Ambient Switch (S11) and Low Pressure Switch (S87) are for additional compressor protection.

**1-Compressor B1**

All LCX024-072 units use one scroll compressor. See “SPECIFICATIONS” and “ELECTRICAL DATA” (table of contents) or compressor nameplate for compressor specifications.

**⚠ WARNING**

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

Each compressor is energized by a corresponding compressor contactor.

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

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

**⚠ WARNING**

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

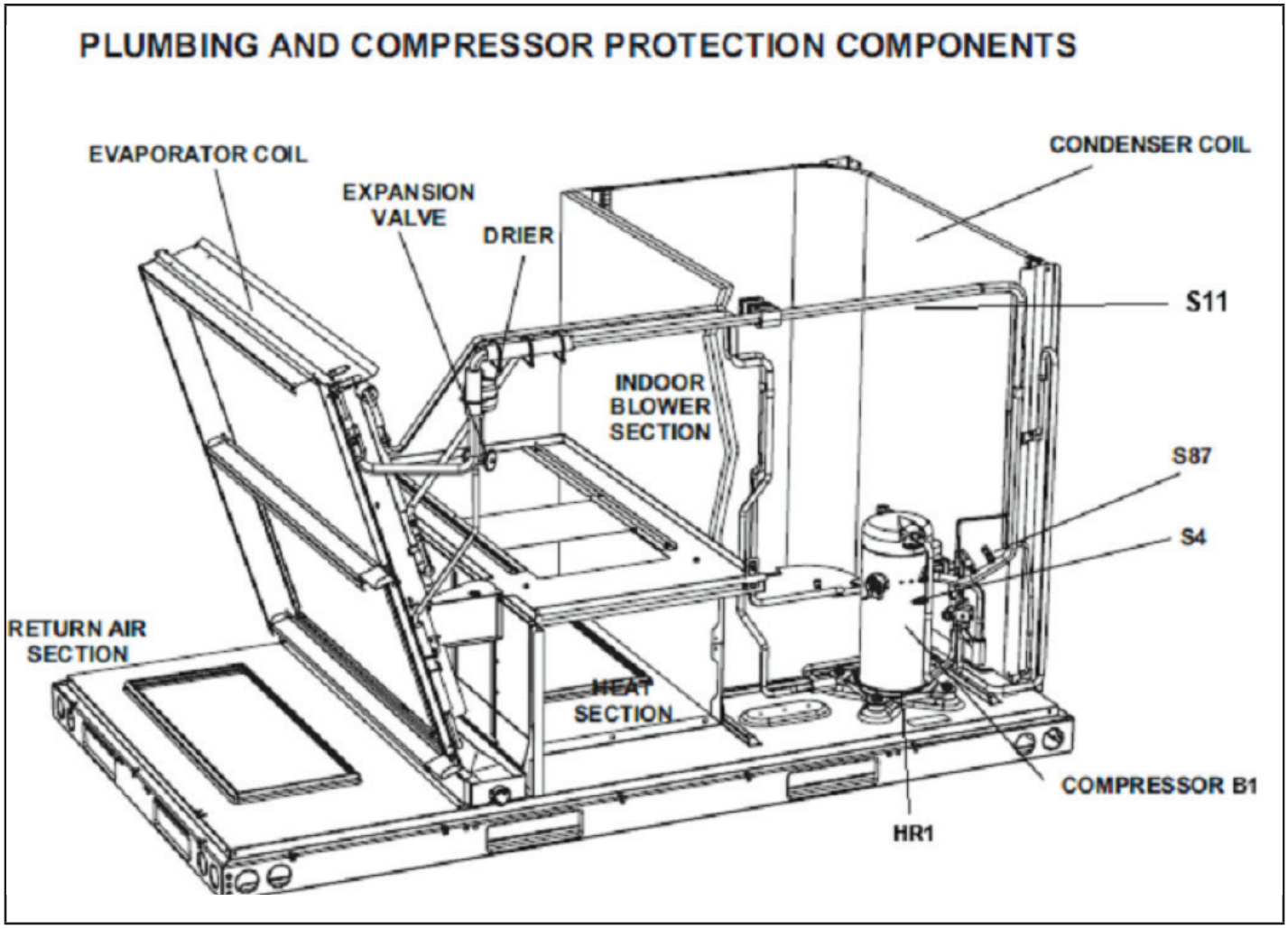

PLUMBING AND COMPRESSOR PROTECTION COMPONENTS
EVAPORATOR COIL
EXPANSION VALVE
DRIER
CONDENSER COIL
S11
INDOOR BLOWER SECTION
S87
S4
RETURN AIR SECTION
HEAT SECTION
COMPRESSOR B1
HR1

**FIGURE 5**

**2-Low Pressure Switch S87**

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

**3-High Pressure Switch S4**

In all LCX units the high pressure switch is an auto-rest SPST N.C. switch which opens on a pressure rise. In all other units, the switch is manual re-set and operates the same as the auto re-set.

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.

**5-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.

**6-Diagnostic Sensors**

Units are equipped with one factory-installed thermistor (RT46) located below the thermal expansion valve.

The thermistor provides the Unit Controller with constant temperature readings from a 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.

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

**TABLE 1**

**THERMISTOR LOCATION**

| Unit | Sensor Yellow | Figure |
|---|---|---|
| LCX024, 036, 048, 060, 072 | RT46 | FIGURE 6 |

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

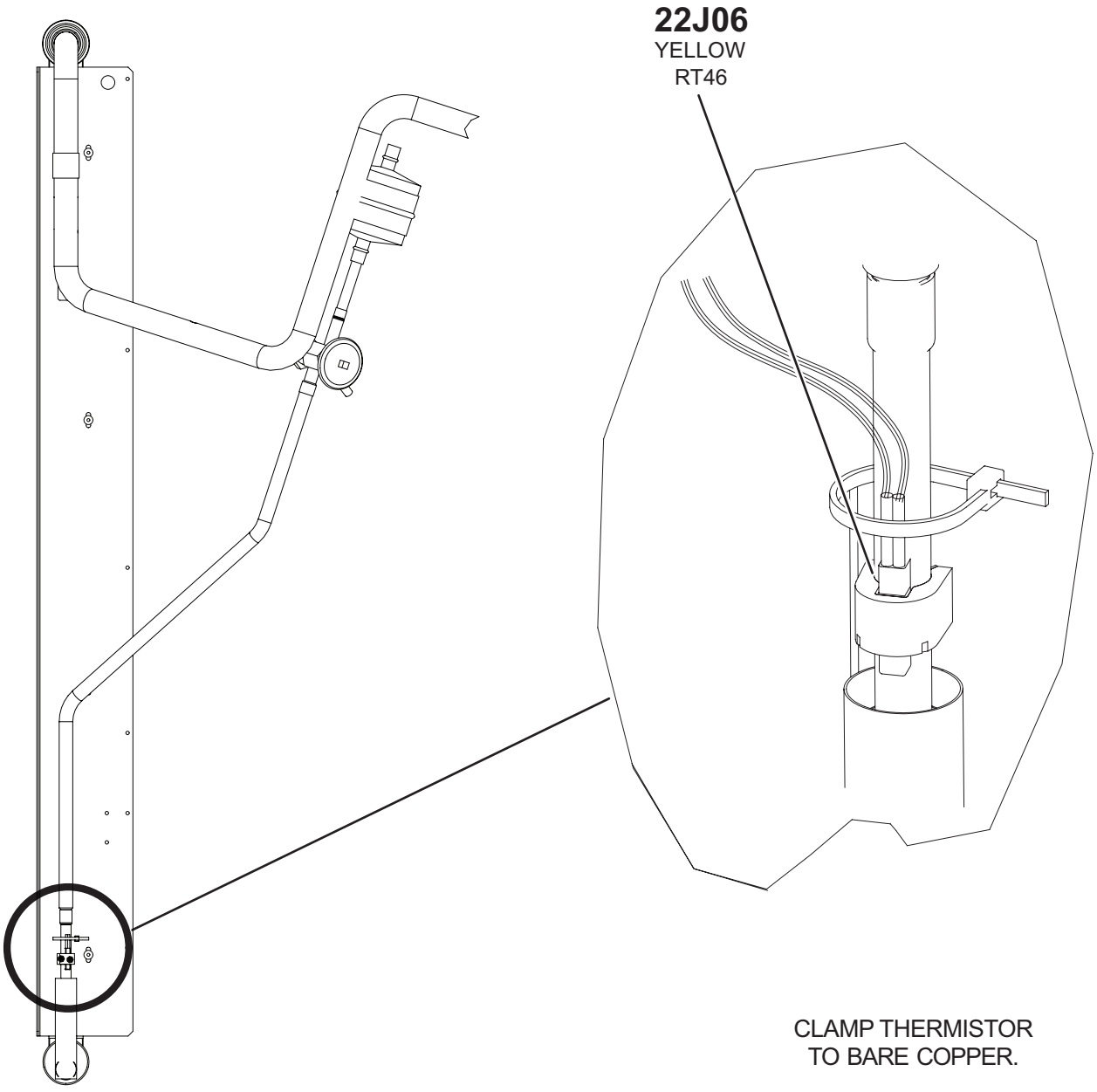



**FIGURE 6**

### 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 2. See TABLE 3 for sensor alarms.

**TABLE 2**

**RDS Sensor Figures**

| Model | Qty. | Type | Figure |
|---|---|---|---|
| LCX024-072 | 1 sensor | INDOOR SENSOR | FIGURE 7 |

**TABLE 3 - 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" |

LGX/LCX 024-072
INDOOR COMPARTMENT RDS SENSOR

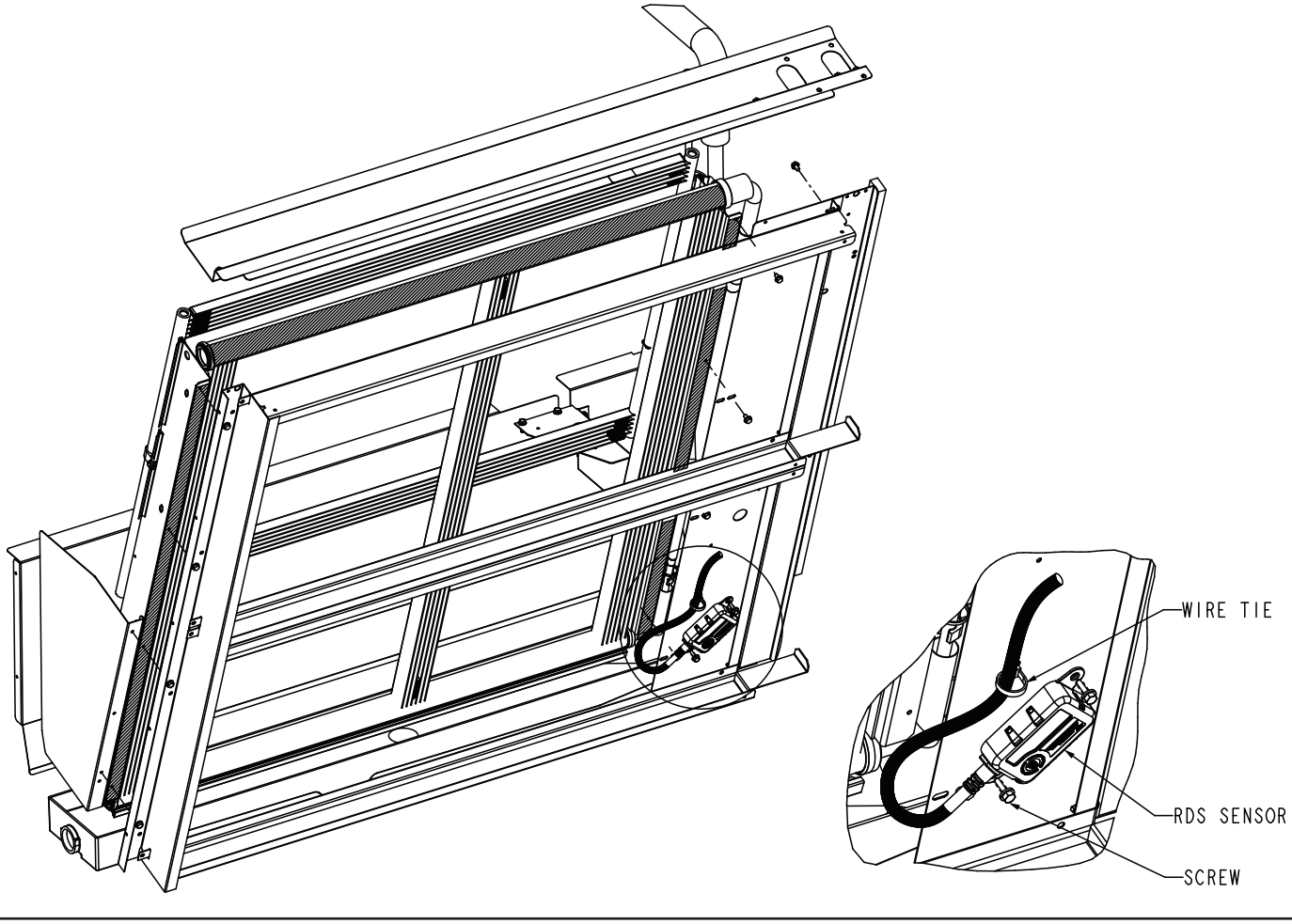



**FIGURE 7**

**C-Blower Compartment**

**1-Blower Wheels**

All belt drive units use 10” x 10” (254 mm x 254 mm) blower wheels. The PSC direct drive units use 10” x 10” (254 mm x 254 mm) blower wheels also. The ECM direct drive units 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.

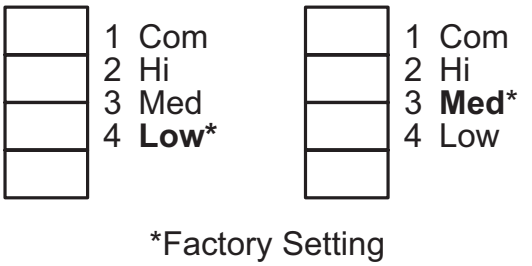
2 - With all access panels in place, measure static pressure external to unit (from supply to return). Add any additional air resistance for options and accessories shown in accessory air resistance tables. Blower performance data is based on static pressure readings taken in locations shown in FIGURE 9.

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

3 - Use FIGURE 8 to determine the factory set blower speed.

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 10 for 208/230 volt units and FIGURE 11 for 460/575 volt units.

**BLOWER SPEED FACTORY SETTINGS**




*Factory Setting

**FIGURE 8**

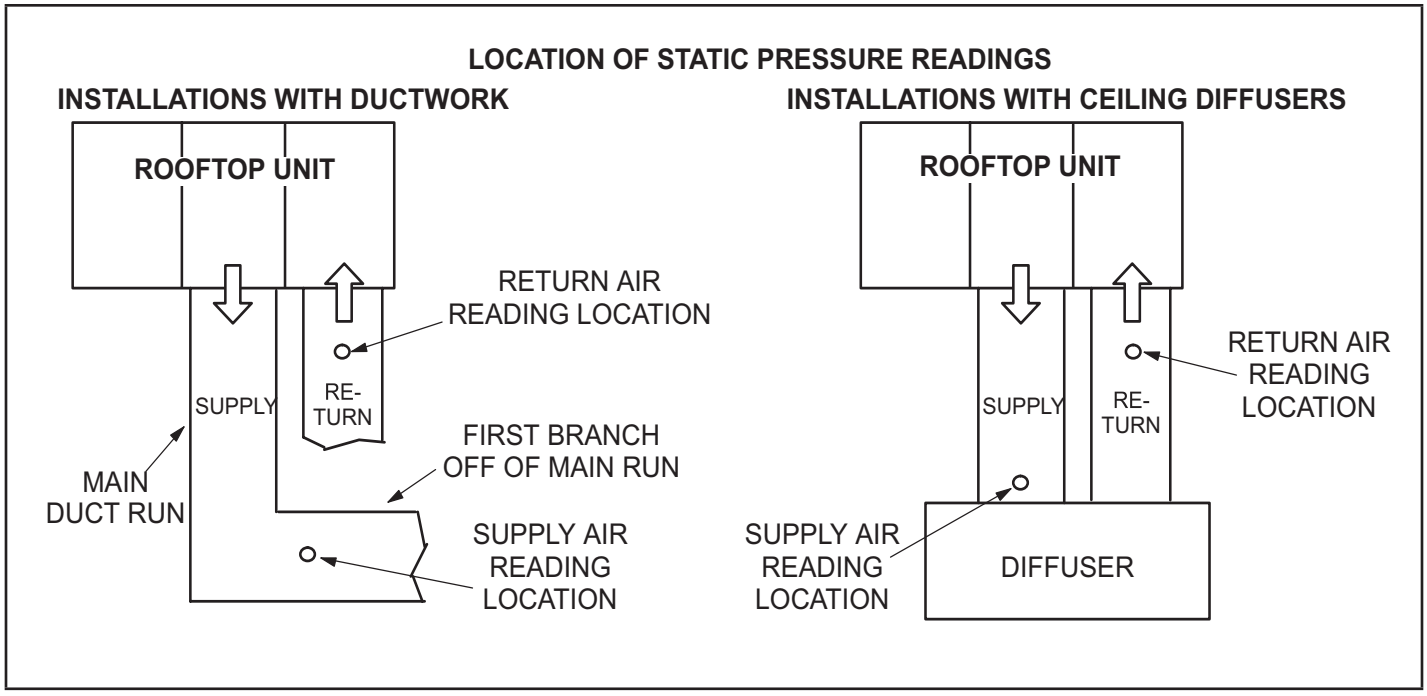

LOCATION OF STATIC PRESSURE READINGS
INSTALLATIONS WITH DUCTWORK
ROOFTOP UNIT
RETURN AIR
READING LOCATION
SUPPLY
RE-
TURN
FIRST BRANCH
OFF OF MAIN RUN
MAIN
DUCT RUN
SUPPLY AIR
READING
LOCATION
INSTALLATIONS WITH CEILING DIFFUSERS
ROOFTOP UNIT
RETURN AIR
READING
LOCATION
SUPPLY
RE-
TURN
SUPPLY AIR
READING
LOCATION
DIFFUSER

**FIGURE 9**

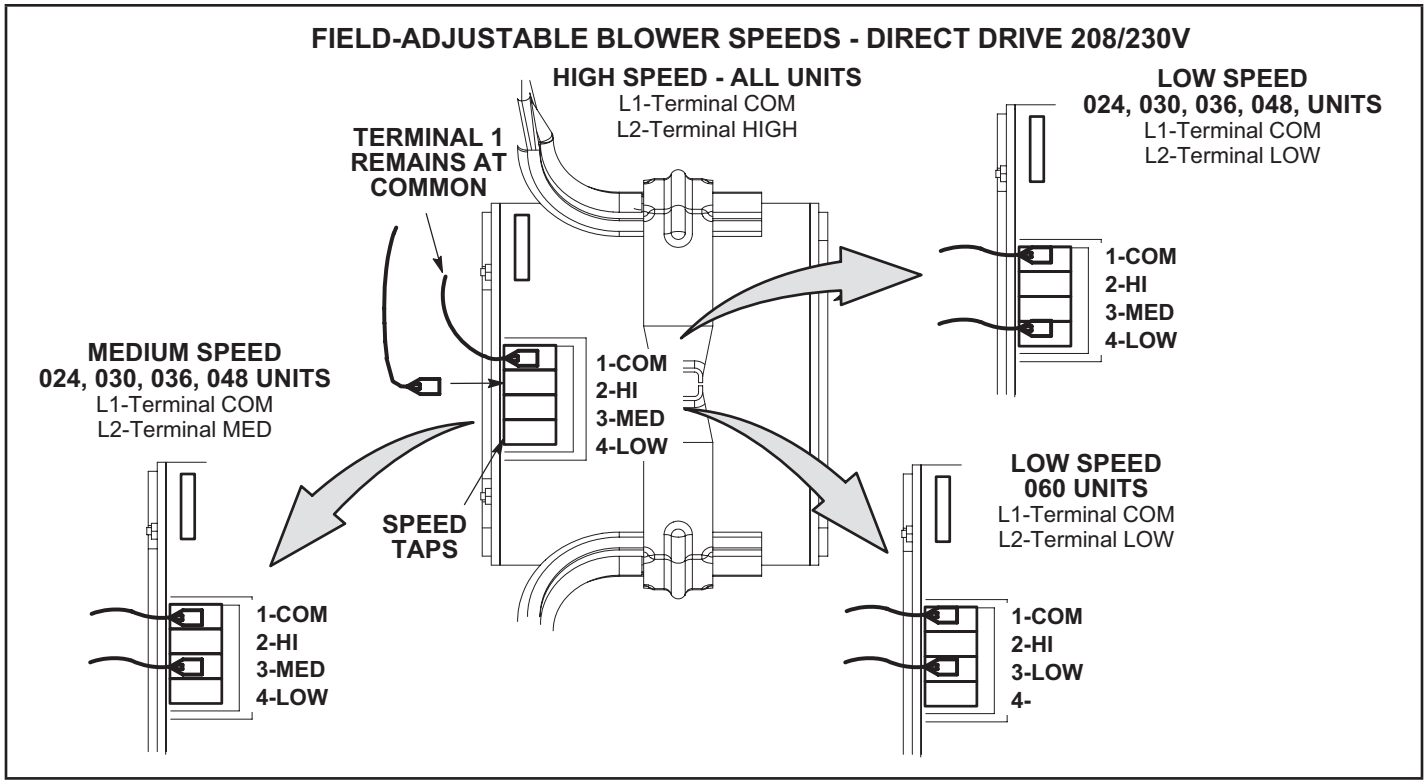



**FIGURE 10**

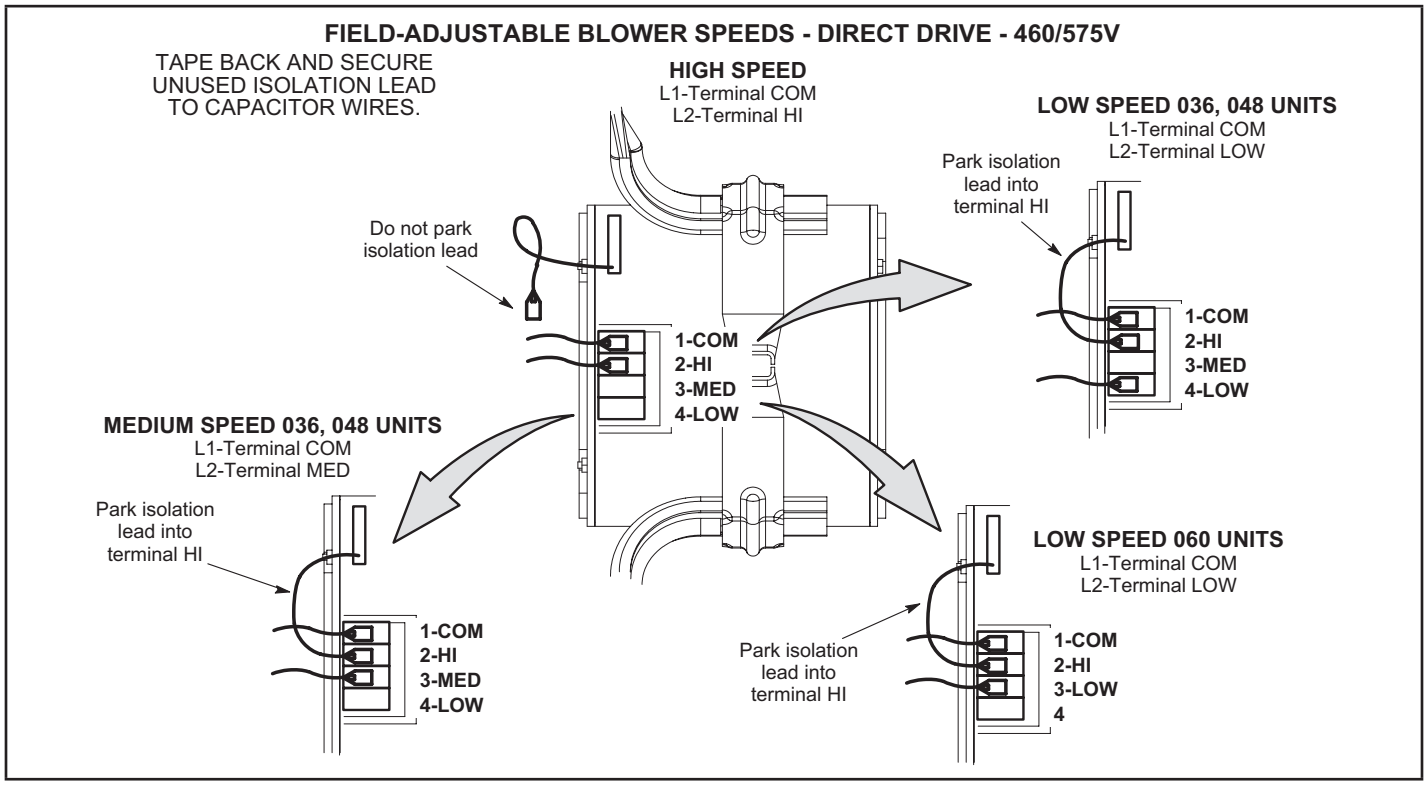



**FIGURE 11**

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

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

2 - If CFM is lower than the design specified CFM, move the leads as shown in FIGURE 12 for 208/230 volt single phase units.

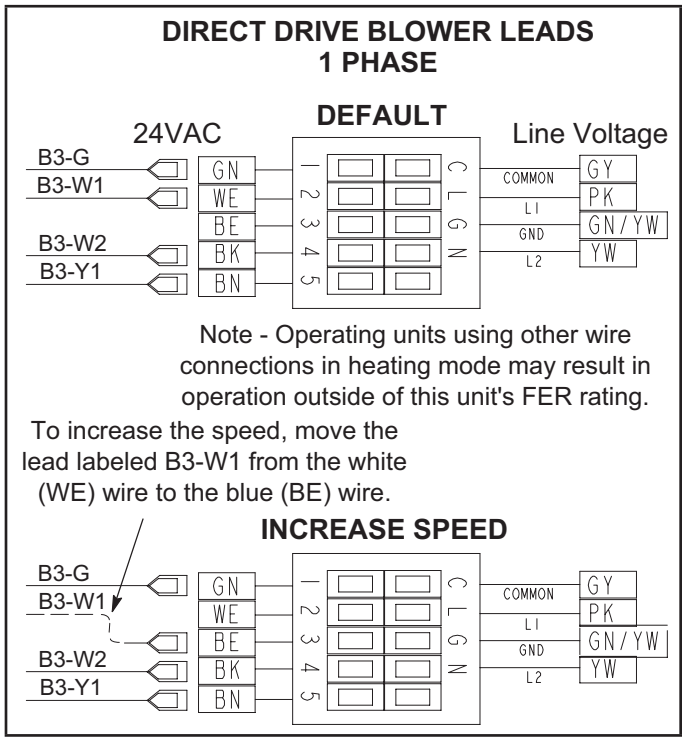



**FIGURE 12**

**7-Adjusting Unit CFM**

The supply CFM can be adjusted by changing Unit Controller settings. Refer to TABLE 6 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 4**

**TWO-SPEED BLOWER OPERATION**

**LCX072S5T UNITS**

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

*Factory-installed jack/plug connection.

3 - Measure the indoor blower wheel RPM.

4 - 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.

5 - 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 13 Do not exceed minimum and maximum number of pulley turns as shown in TABLE 5.

**TABLE 5**

**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 14.

1 - Loosen four bolts securing motor base to mounting frame. See FIGURE 13.

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.

## TABLE 6
## 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 OP TIONS > EDIT PARAMETERS = 12 for EBM, 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.

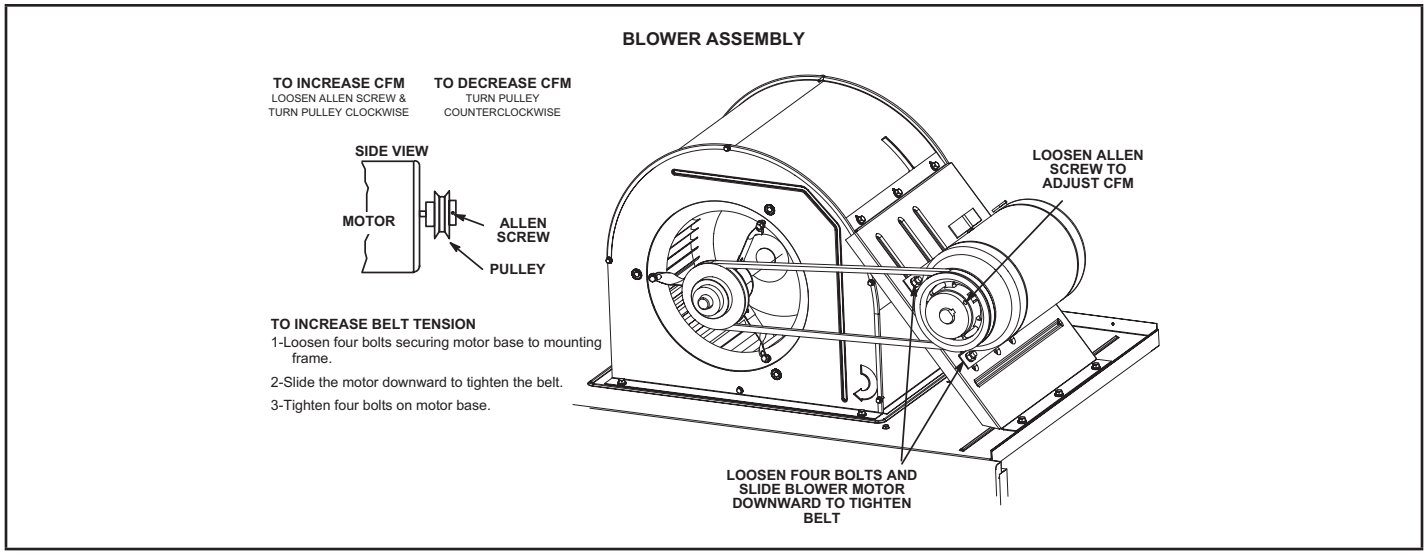



**FIGURE 13**

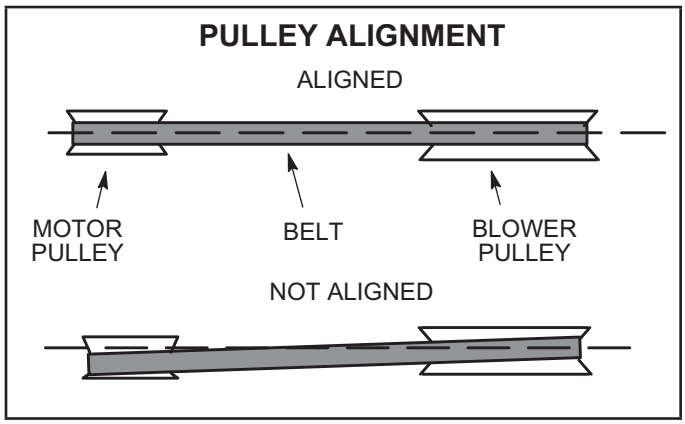



**FIGURE 14**

**9-Check Belt Tension**

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

1 - Measure span length X. See FIGURE 15.

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.

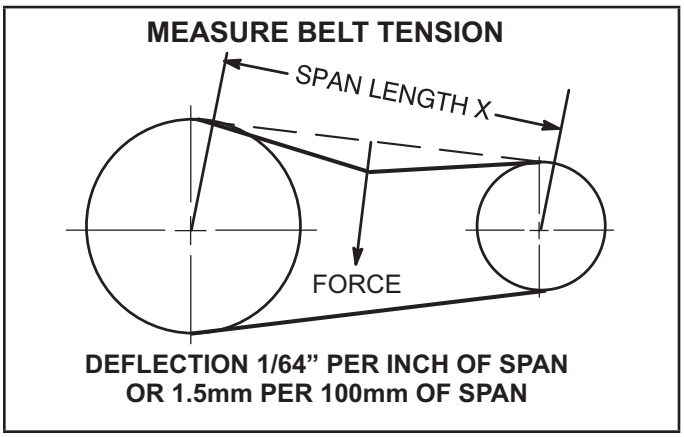



**FIGURE 15**

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.

**TABLE 7**

**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. |
| 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-ELECTRIC HEAT COMPONENTS

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

All electric heat sections consist of electric heating elements exposed directly to the air stream. See FIGURE 16. See FIGURE 17 for vestibule parts arrangement.

### 1-Contactors K15, K16

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

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

S15 is a SPST N.C. auto-reset thermostat located on the back panel of the electric heat section above the heating elements. S15 is the high temperature limit for the electric heat section. When S15 opens, indicating a problem in the system, contactor K15 is de-energized (including K16 in 22.5 kW units). When K15 is de-energized, all stages of heat are de-energized. See TABLE 8 for S15 set points. Set points are factory set and not adjustable.

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

S20 and S157 are SPST N.C. manual-0reset thermostat s. S20 and S157 are wired in series with the heating elements. See T1EH wiring diagrams. When either limit opens K15 and K16 are de-energized. When the contactors are de-energized, all stages of heat are de-energized. The thermostat is factory set to open at 220F ± 6ºF (104ºC ± 3.3ºC) on a temperature rise and can be manually reset when temperature falls below 160ºF (71º.0C). See FIGURE 17 for location.

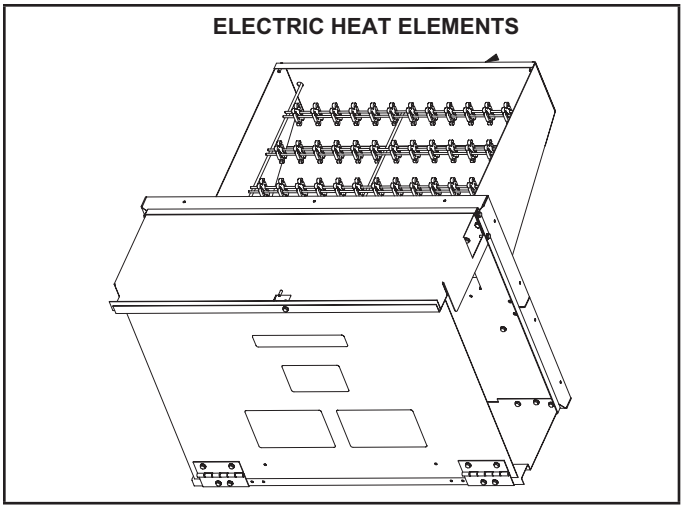



**FIGURE 16**

**TABLE 8**

| Unit kW (Voltage) | S15 Opens ° F | S15 Closes ° F |
|---|---|---|
| 7.5 (Y, G, J, P) | 160 | 120 |
| 10 (P) | 170 | 130 |
| 15 (Y) | 170 | 130 |
| 15 (G, J, P) | 160 | 120 |
| 22.5 (Y, G, J) | 160 | 120 |
| 22.5 (P) | 150 | 110 |
| 30 (Y, G, J) | 150 | 110 |

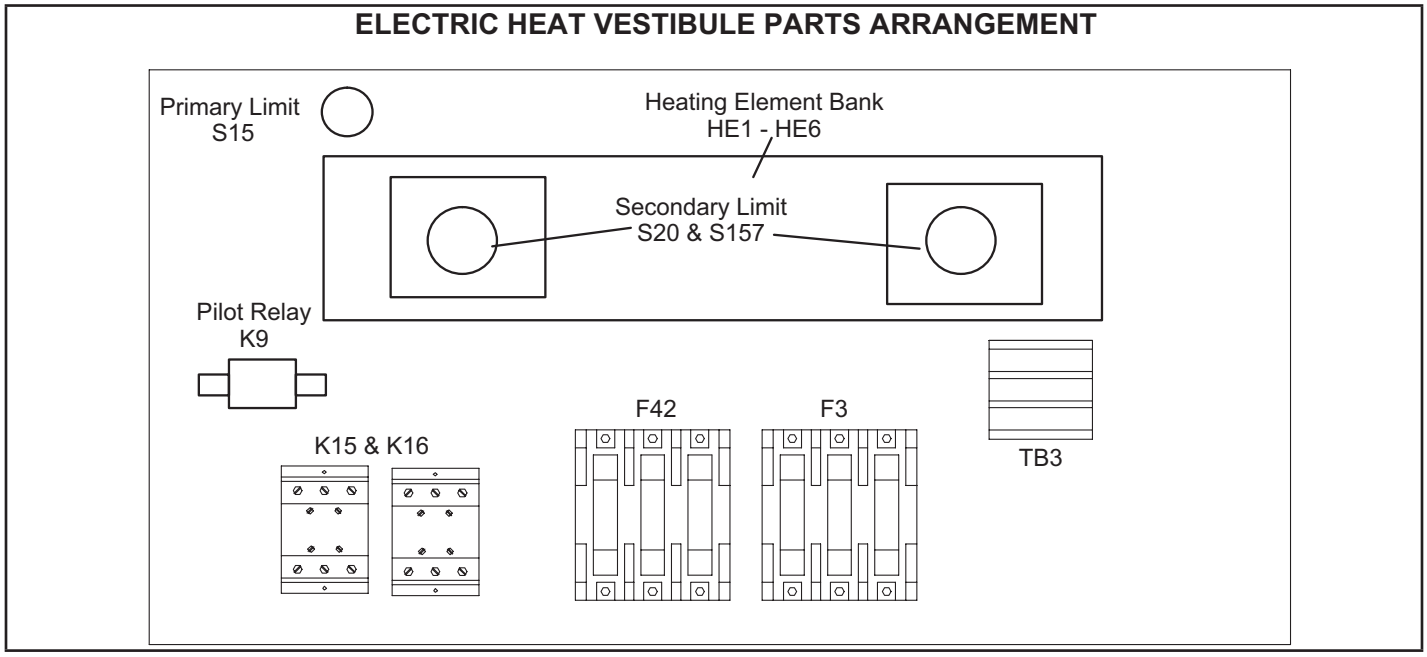



**FIGURE 17**

**4-Terminal Strip TB2**

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

**5-Terminal Strip TB3**

P and Y voltage units are equipped with terminal strip TB3. Electric heat line voltage connections are made to TB3, which distributes power to the electric heat components and is located on the vestibule. See FIGURE 17.

**6-Heating Elements HE1 through HE6**

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

**7-Fuse F3 and F42**

Fuse F3 and F42 are housed in a fuse block which holds two or three fuses. Each F3 fuse is connected in series with each leg of electric heat. FIGURE 17 and TABLE 9 show the fuses used with each electric heat section.

**8-Unit Fuse Block & Fuse F4**

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

**9-Electric Heat Relay K9**

K9 is a N.O. SPDT pilot relay intended to electrically isolate the unit’s 24V circuit from the electric heat 24V circuit. K9 is energized by the indoor thermostat. K9-1 closes, energizing contactor K15.

**TABLE 9**

| Unit | Voltage-Phase | FUSE | | Qty | Qty |
|---|---|---|---|---|---|
| | | F3 | F42 | each | total |
| T1EH0075 | 208/230V-1P | 40 A-250V | ----- | 2 | 2 |
| | 208/230V-3P | 25 A-250V | ----- | 3 | 3 |
| | 460V-3P | 15 A-600V | ----- | 3 | 3 |
| | 575V-3P | 15 A-600V | ----- | 3 | 3 |
| T1EH0010 | 208/230V-1P | 30 A-250V | 30A-250V | 2 | 2 |
| T1EH0015 | 208/230V-1P | 40 A-250V | 40A-250V | 2 | 4 |
| | 208/230V-3P | 50 A-250V | ----- | 3 | 3 |
| | 460V | 25 A-600V | ----- | 3 | 3 |
| | 575V | 20 A-600V | ----- | 3 | 3 |
| T1EH00225 | 208/230V-1P | 40 A-250V | 40A-250V | 3 | 6 |
| | 208/230V-3P | 45 A-250V | 45A-250V | 3 | 6 |
| | 460V-3P | 35 A-600V | ----- | 3 | 3 |
| | 575V-3P | 30 A-600V | ----- | 3 | 3 |
| T1EH0300 | 208/230V-3P | 60 A-250V | 60A-250V | 3 | 6 |
| | 460V-3P | 50 A-600V | ----- | 3 | 3 |
| | 575V-3P | 40 A-600V | ----- | 3 | 3 |

## II-PLACEMENT AND INSTALLATION

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

## III-START UP - OPERATION

### A-Preliminary and Seasonal Checks

1 - 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.

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

3 - 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.

4 - 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.

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

### B-Cooling Start Up

**Operation**

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

2 - *No Economizer Installed in Unit -*

A first-stage 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. Power wires are color-coded as follows: line 1-red, line 2-yellow, line 3-blue.

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

2 - Suction pressure must drop, discharge pressure must rise, and blower rotation must match rotation marking. If pressure differential is not observed or blower rotation is not correct:

3 - Disconnect all remote electrical power supplies.

4 - Reverse any two field-installed wires connected to the line side of 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.

### C-Safety or Emergency Shutdown

Turn off power to unit.

## 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) |
| LCX024 | 3.88 | 1.76 |
| LCX036 | 3.69 | 1.67 |
| LCX048 | 3.50 | 1.59 |
| LCX060 | 3.75 | 1.70 |
| LCX072 | 5.19 | 2.35 |
| LCX024 W/ Humidtrol | 4.26 | 1.93 |
| LCX036 W/ Humidtrol | 4.64 | 2.10 |
| LCX048 W/ Humidtrol | 4.24 | 1.92 |
| LCX060 W/ Humidtrol | 4.76 | 2.16 |
| LCX072 W/ Humidtrol | 4.50 | 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.

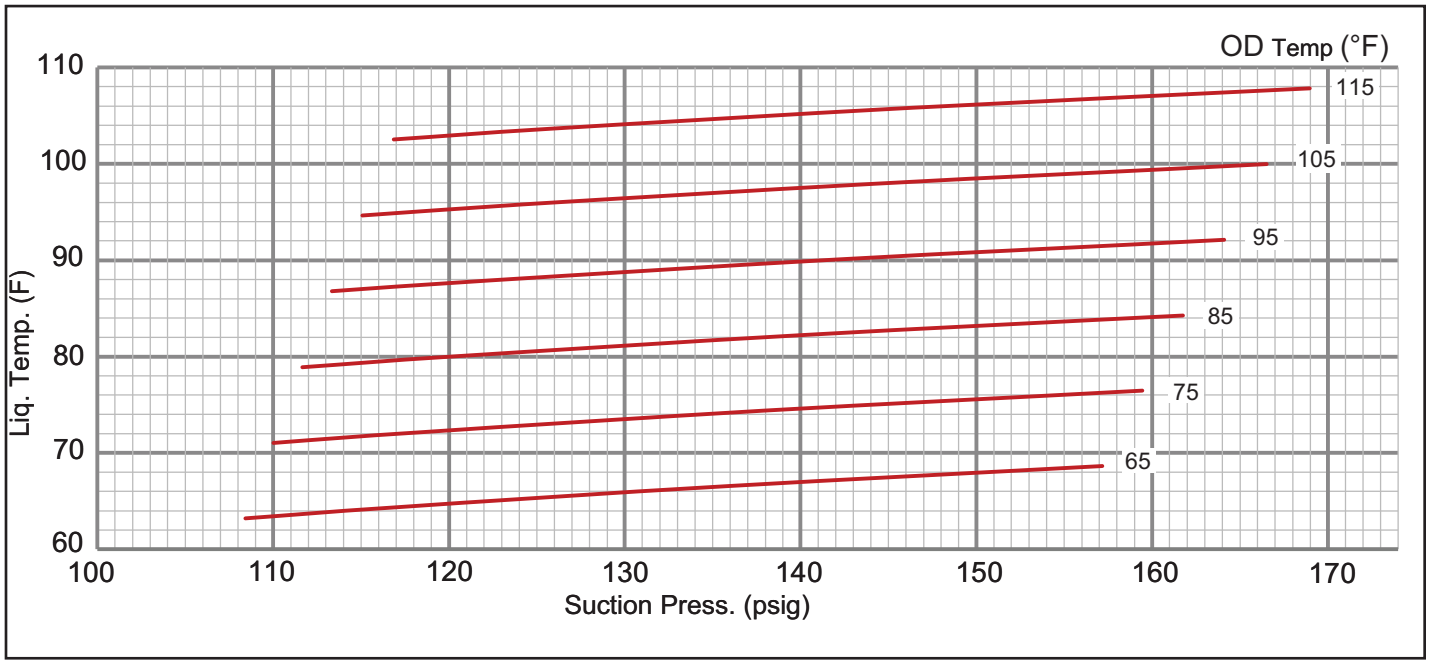
6 - Continue the process until measured liquid temperature agrees with the target liquid temperature. Do not go below the target liquid temperature when adjusting charge. Note that suction pressure can change as charge is adjusted.

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 10
## 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 |

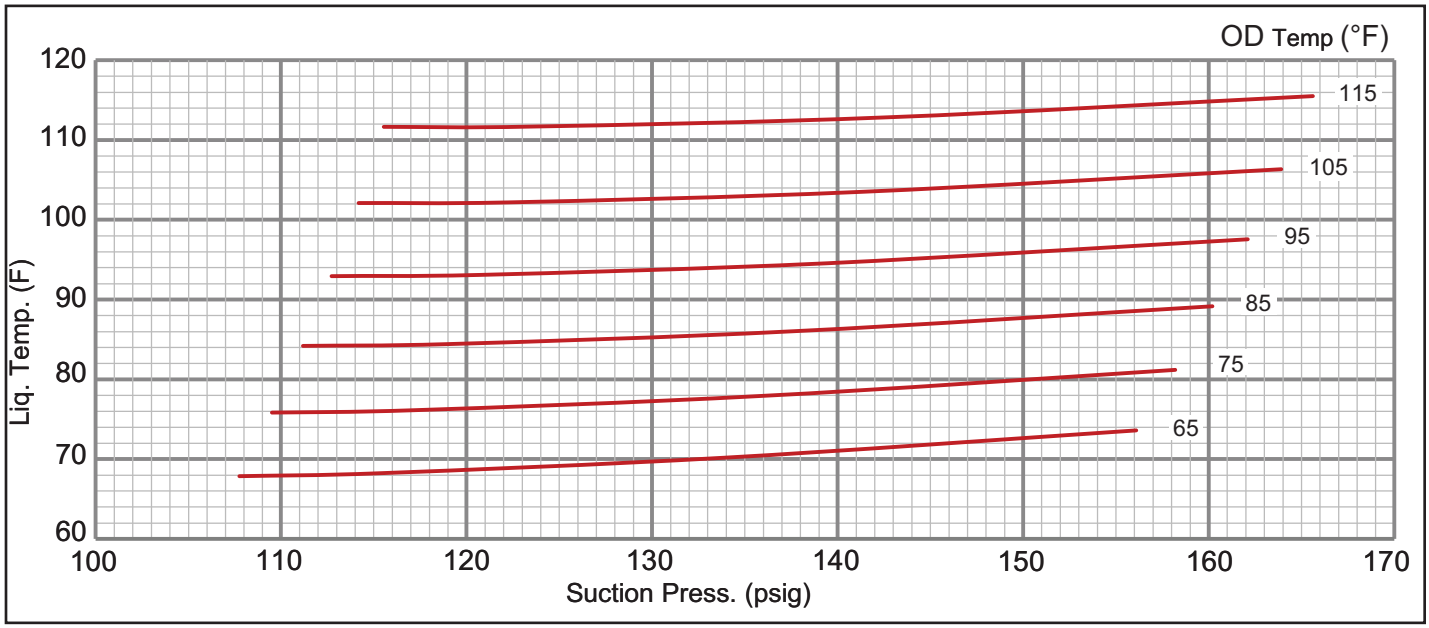
## 024 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581228-01



## TABLE 11
## 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 |

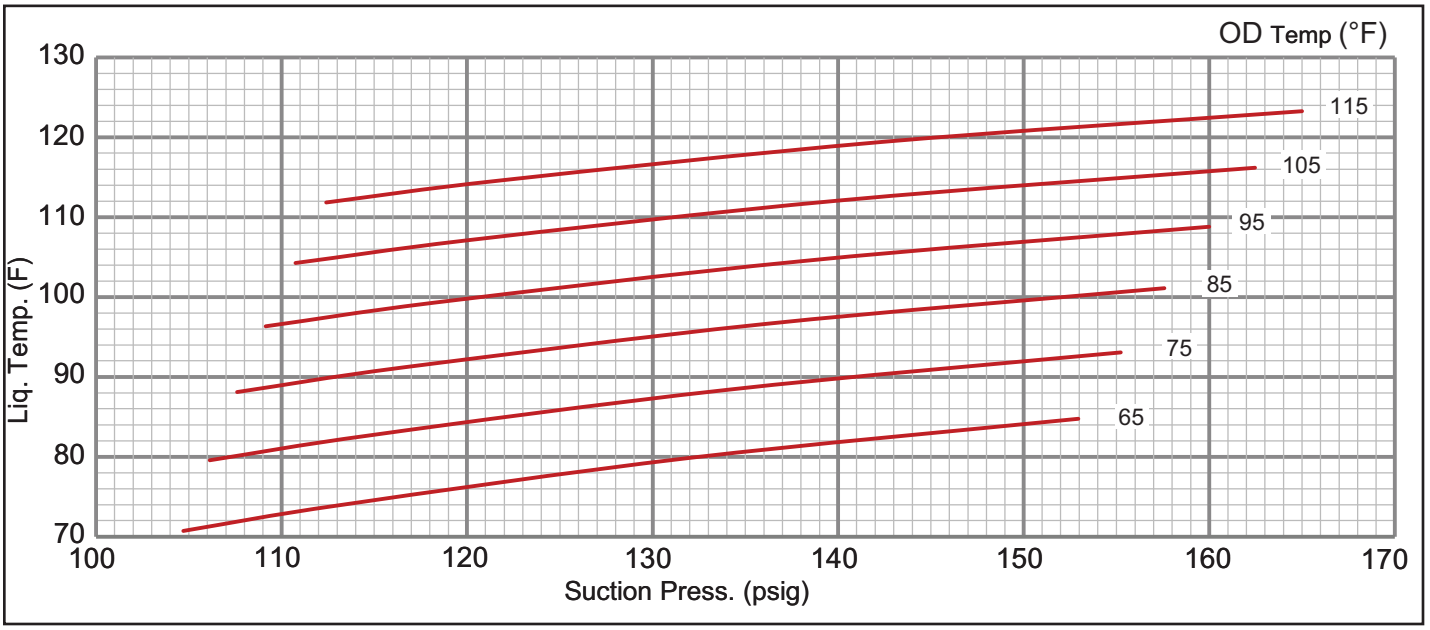
## 036 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581230-01



## TABLE 12
## 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 |

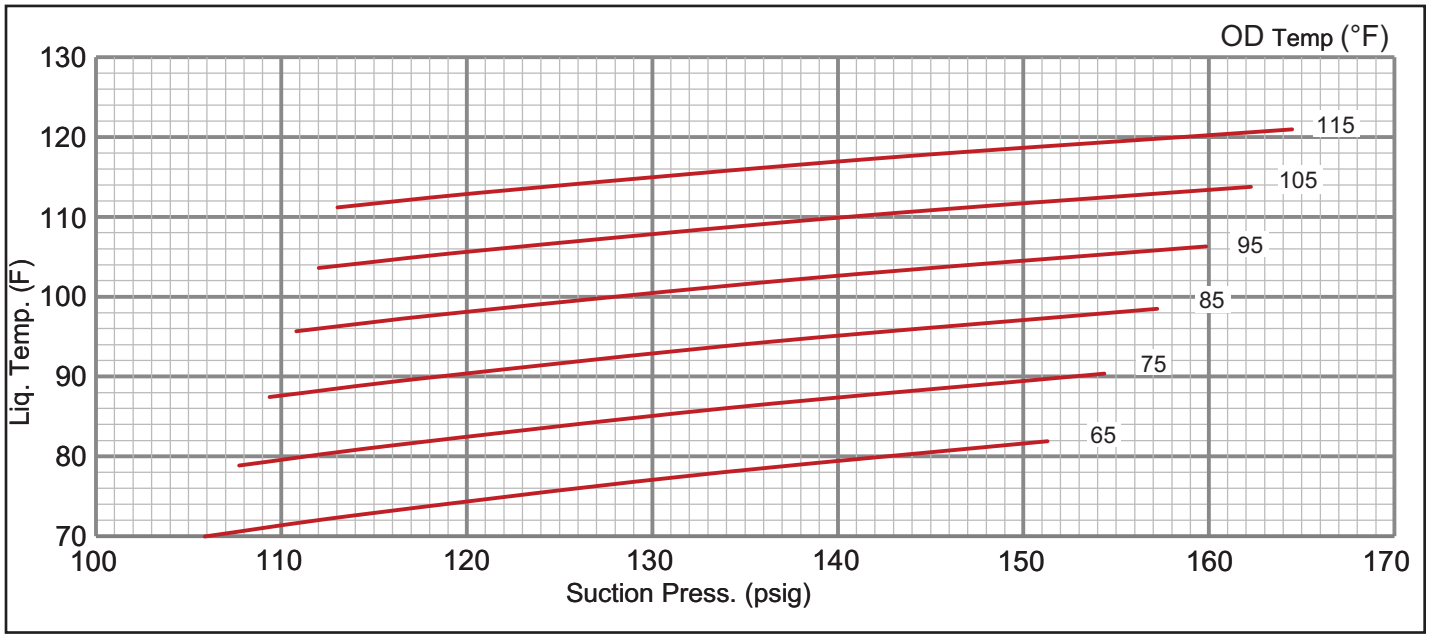
## 048 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581232-01



## TABLE 13
## 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 |

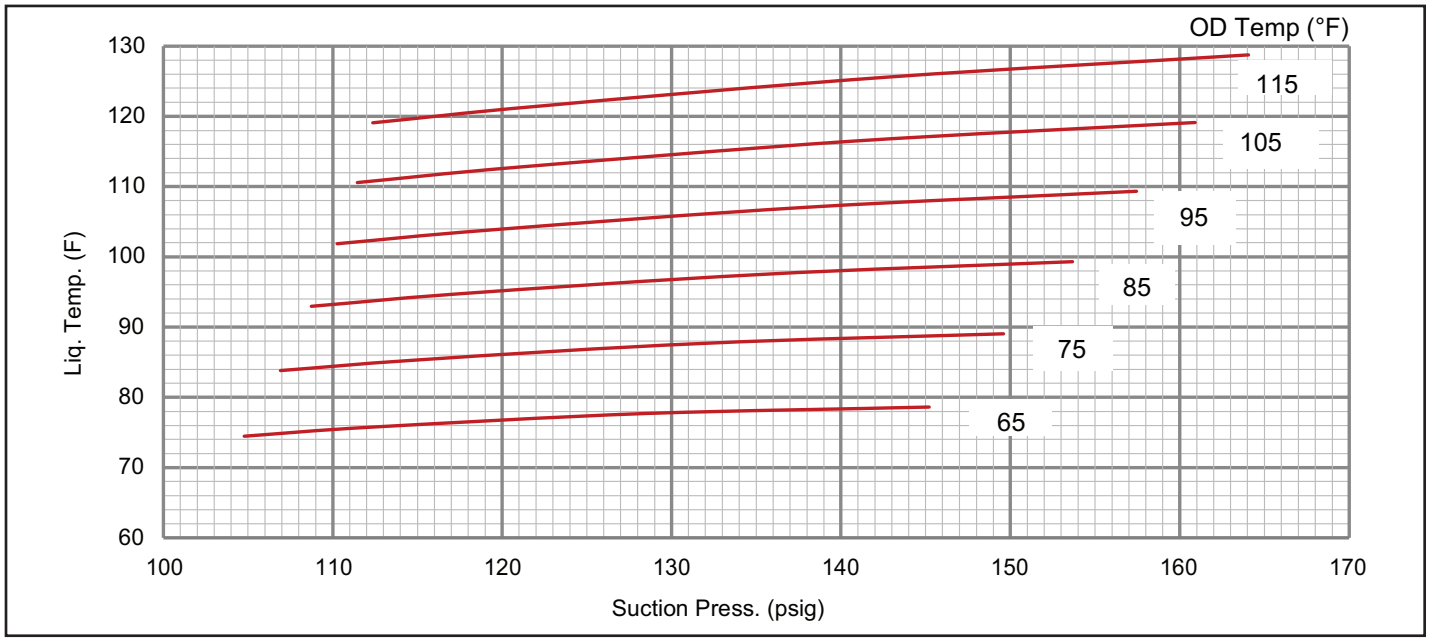
## 060 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581234-01



## TABLE 14
## 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 |

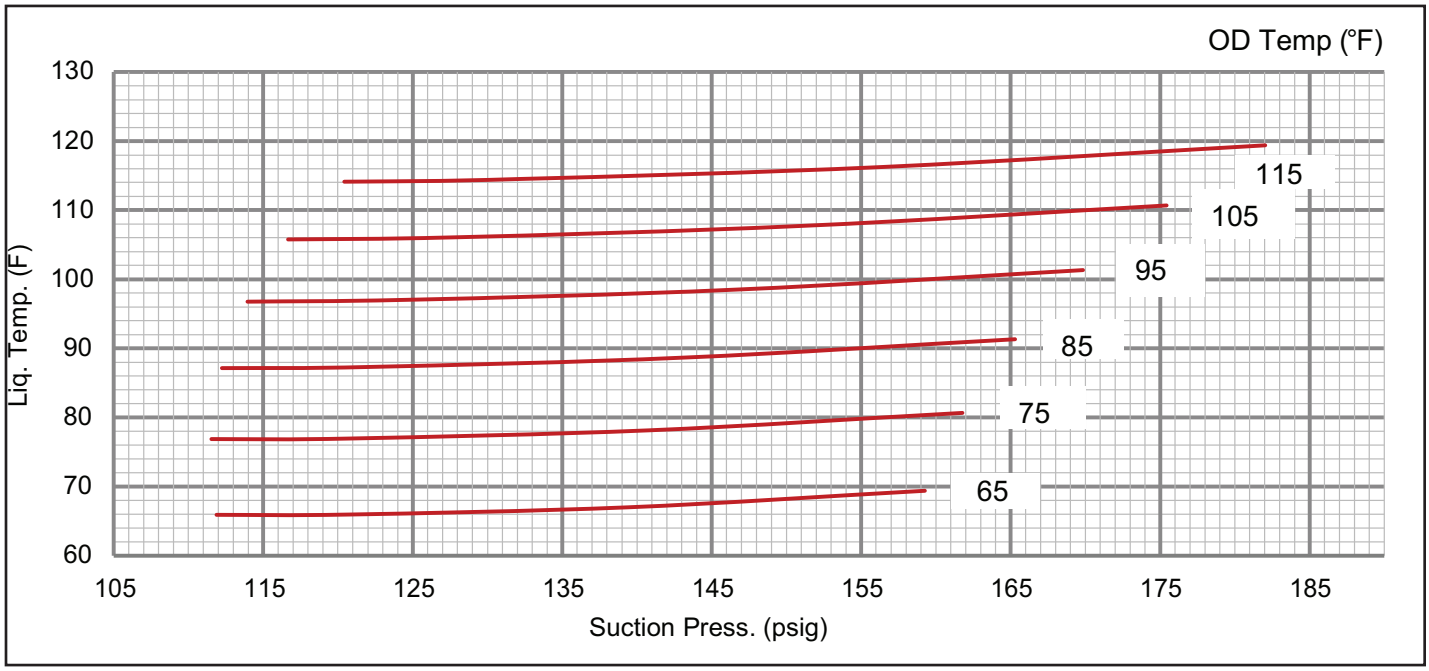
## 072 CHARGING CURVE - NO REHEAT - ALL-ALUMINUM COIL - 581236-01



## TABLE 15
## 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 |

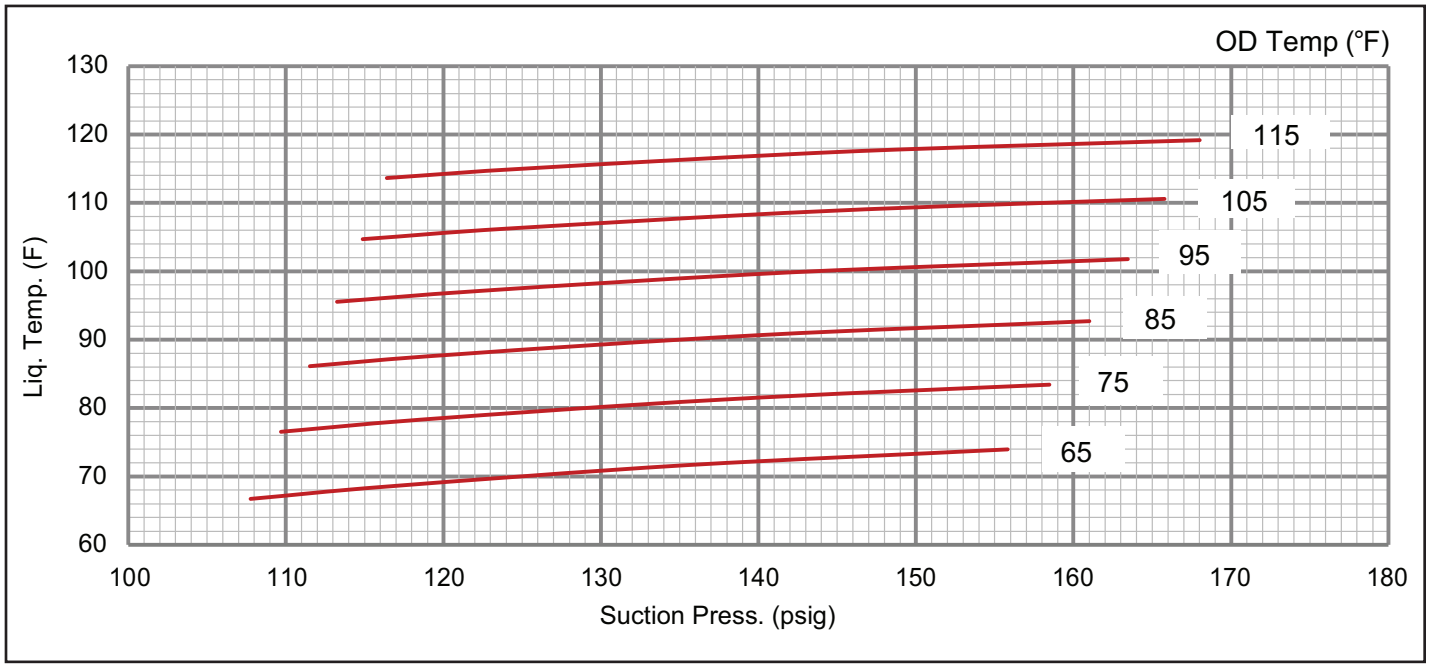
## 024 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581229-01



## TABLE 16
## 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 |

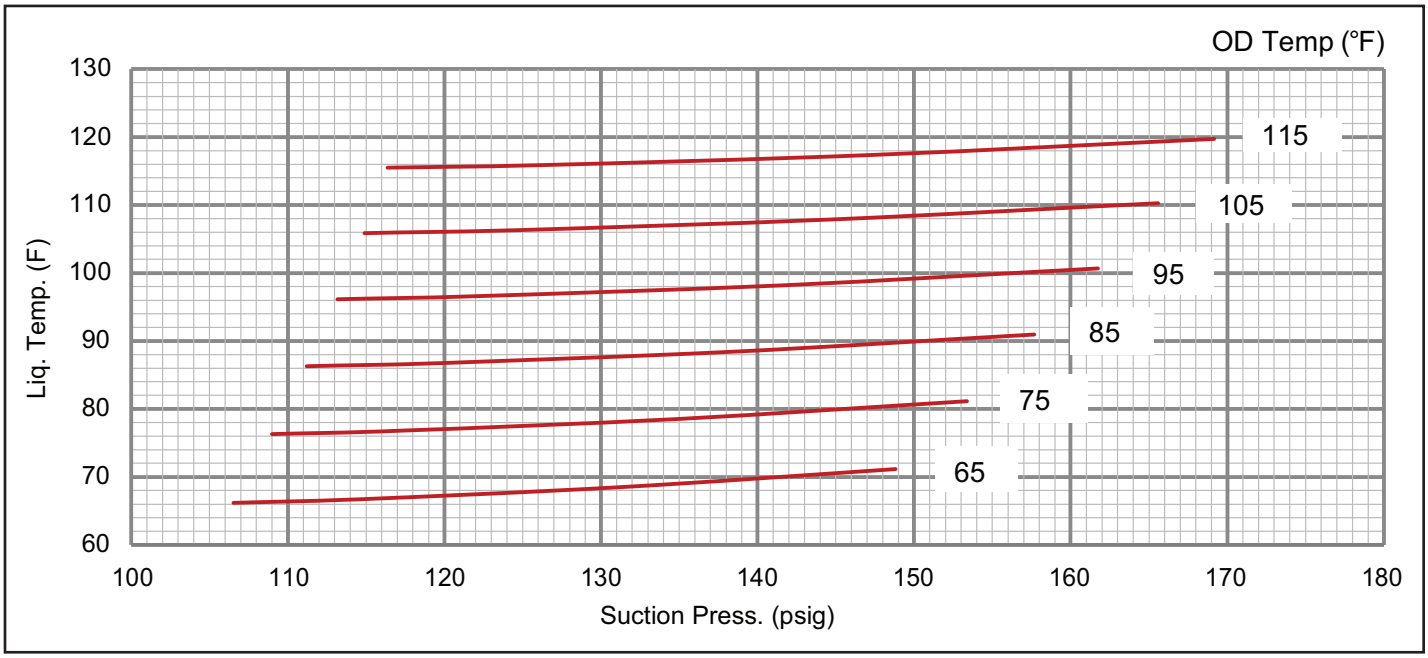
## 036 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581231-01



## TABLE 17
## 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 |

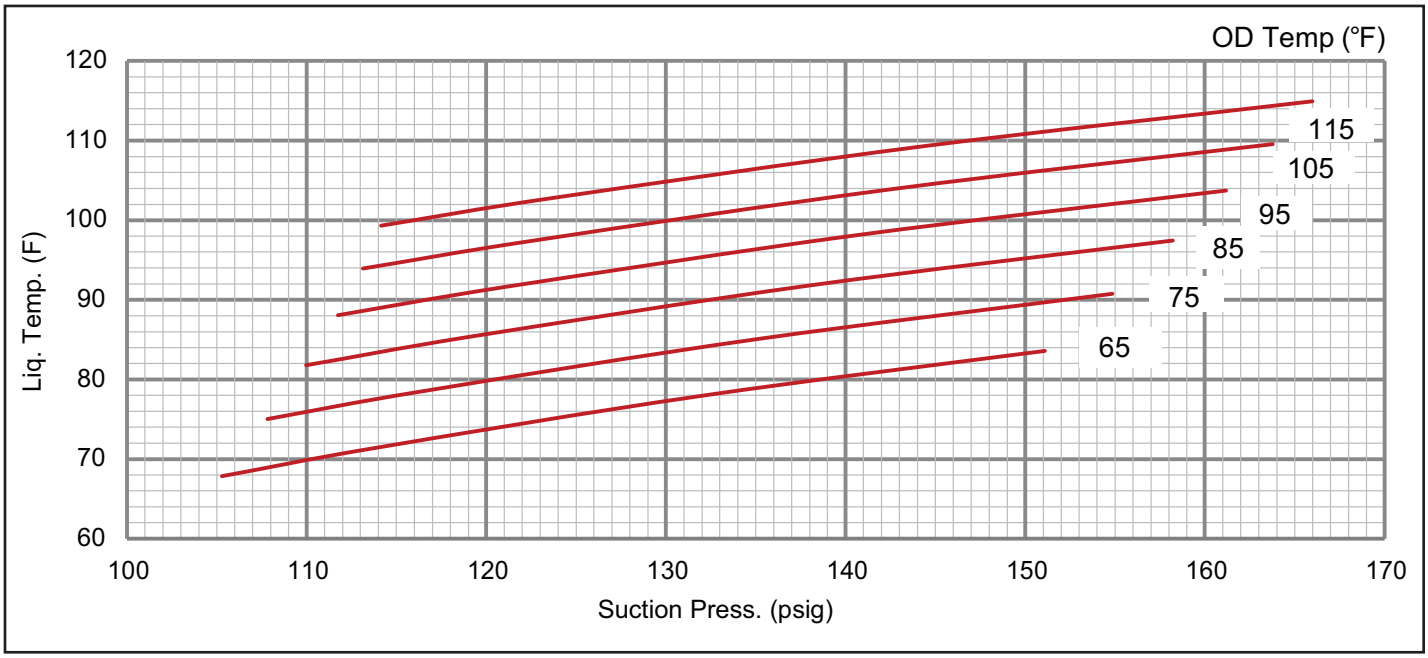
## 048 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581233-01



## TABLE 18
## 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 |

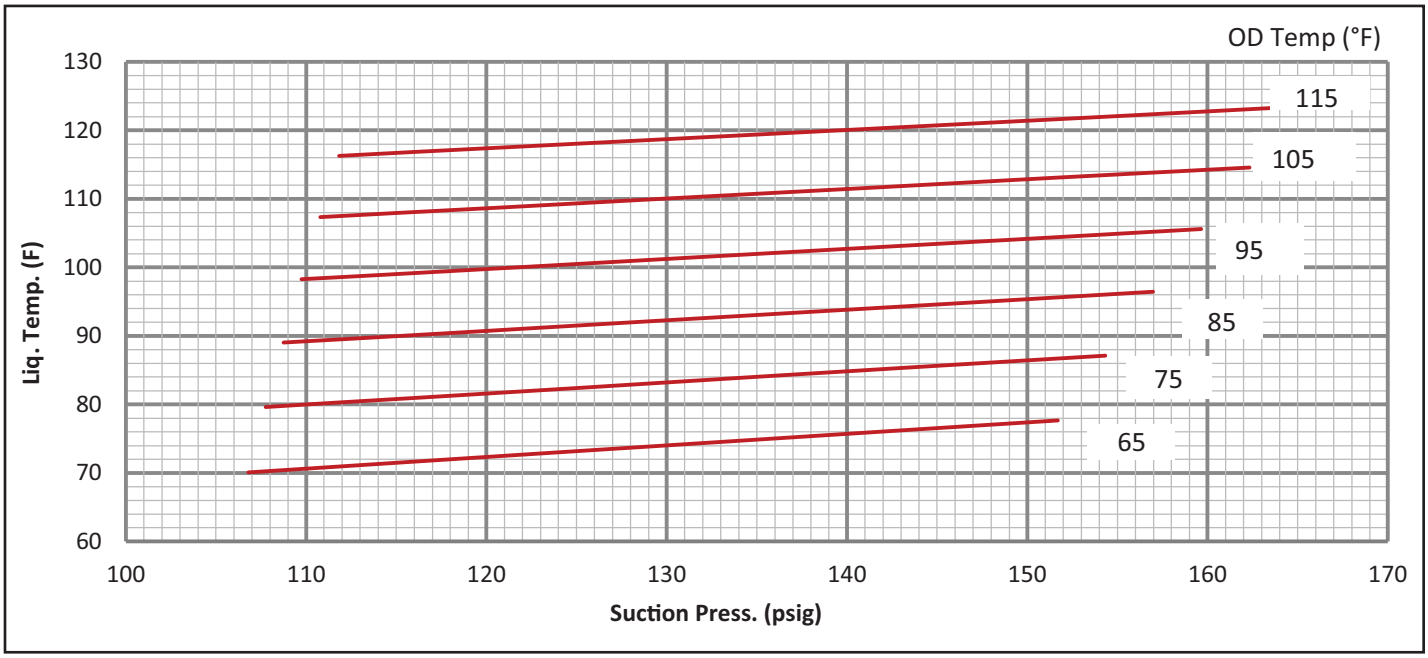
## 060 CHARGING CURVE - REHEAT - ALL-ALUMINUM COIL - 581235-01



## TABLE 19
## 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-Cooling System Service Checks

All 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 20 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.

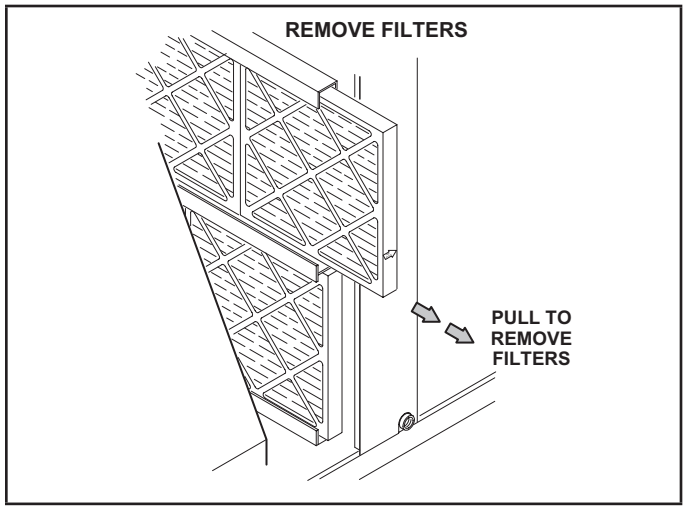



**FIGURE 18**

**TABLE 20**

| Unit | Qty. | Filter Size - in. (mm) |
|---|---|---|
| LCX 024, 036, 048, 060 | 4 | 16 x 20 x 2 (406 x 508 x 51) |
| LCX 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.*

**B-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.

**C-Lubrication**

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

**D-Evaporator Coil**

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

**E-Condenser Coil**

Clean condenser coil annually with water and inspect monthly during the cooling season. Clean the all-aluminum coil by spraying the coil steadily and uniformly from

top to bottom. Do not exceed 900 psi or a 45° angle; nozzle mus 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. See FIGURE 21

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

### VII-ACCESSORIES

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

### A-C1/T1CURB

When installing the LCX units on a combustible surface for downflow discharge applications, the C1/T1CURB 8 inch, 14-inch, 18 inch or 24-inch height roof mounting frame is used. The roof mounting frames are recommended in all other applications but not required. If the LCX 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 19. 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 20. 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 LCX 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.

**ASSEMBLED ROOF MOUNTING FRAME**

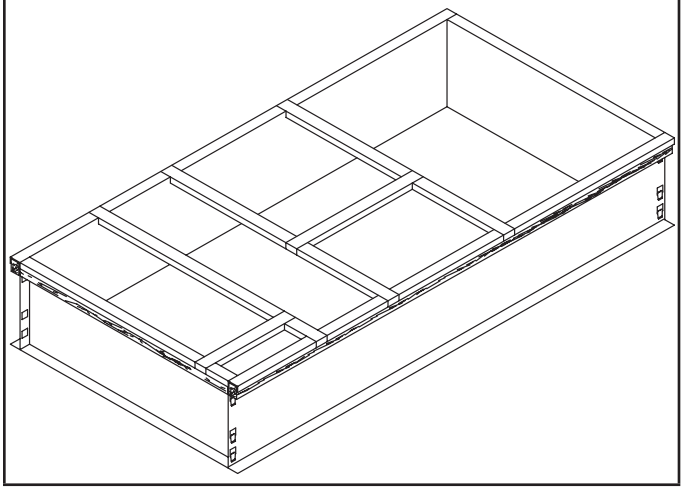


**FIGURE 19**

**TYPICAL FLASHING DETAIL**

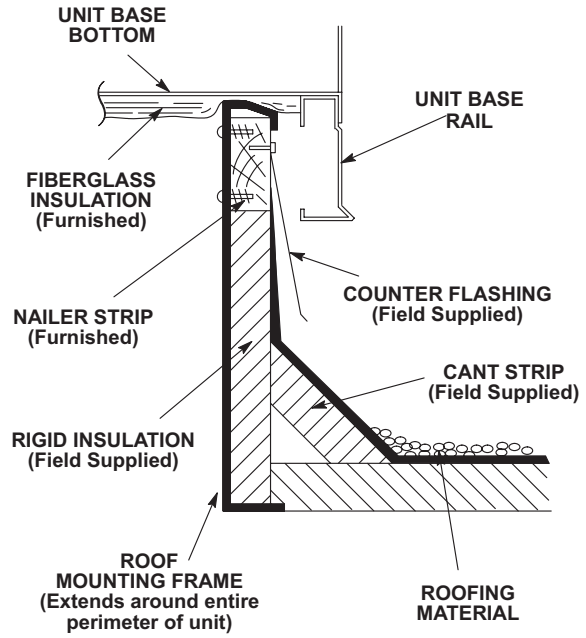
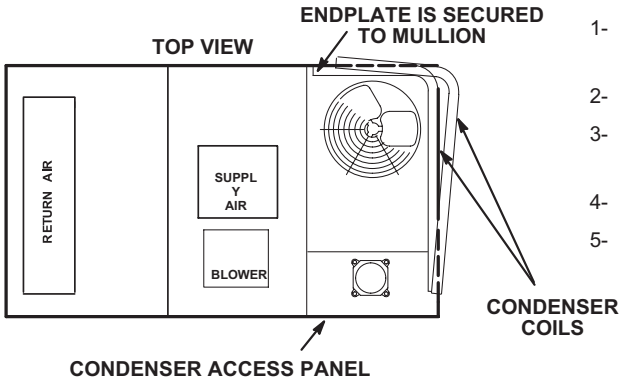



**FIGURE 20**

**CLEAN CONDENSER COIL**




1- Remove unit top panel and condenser section access panel.

2- Remove screws securing coil end plate to mullion.

3- Remove wire ties connecting coils slabs and separate slabs 3-4" (76-102mm).

4- Clean coils with detergent or commercial coil cleaner.

5- Rinse thoroughly with water and reassemble. Use field-provided wire ties to connect coil slabs.

**FIGURE 21**

**C-Outdoor Air Dampers**

See Optional Accessories at the front of this manual (Table of Contents) for sizes per LCX 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 22. 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.

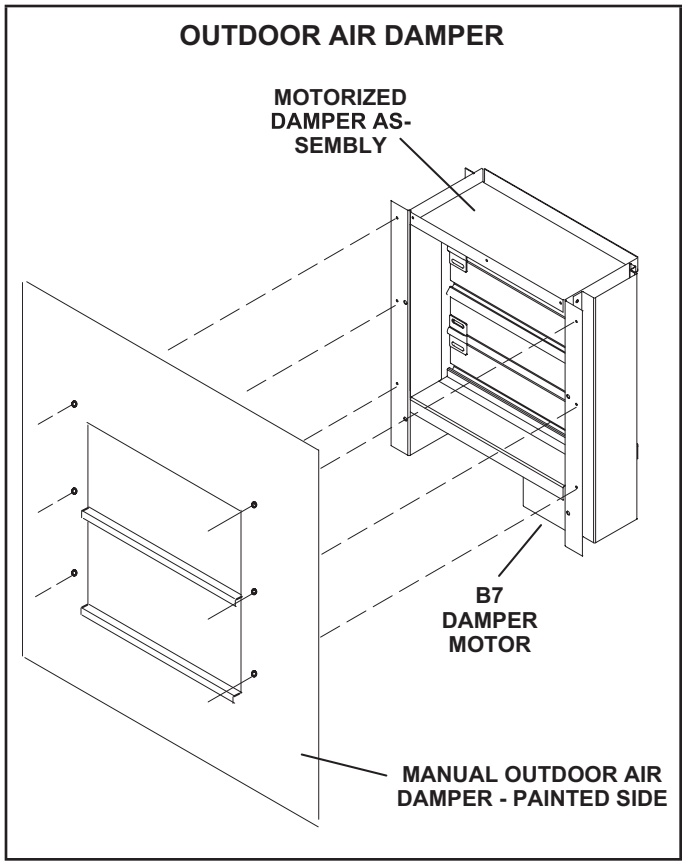



**FIGURE 22**

**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 LCX units. Refer to manufacturer's instructions included with transition for detailed installation procedures.

**E-Economizer (Field- or Factory-Installed Option)**

The economizer uses outdoor air for free cooling when temperature is suitable. See FIGURE 23.

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 24 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 in the same position 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 25.

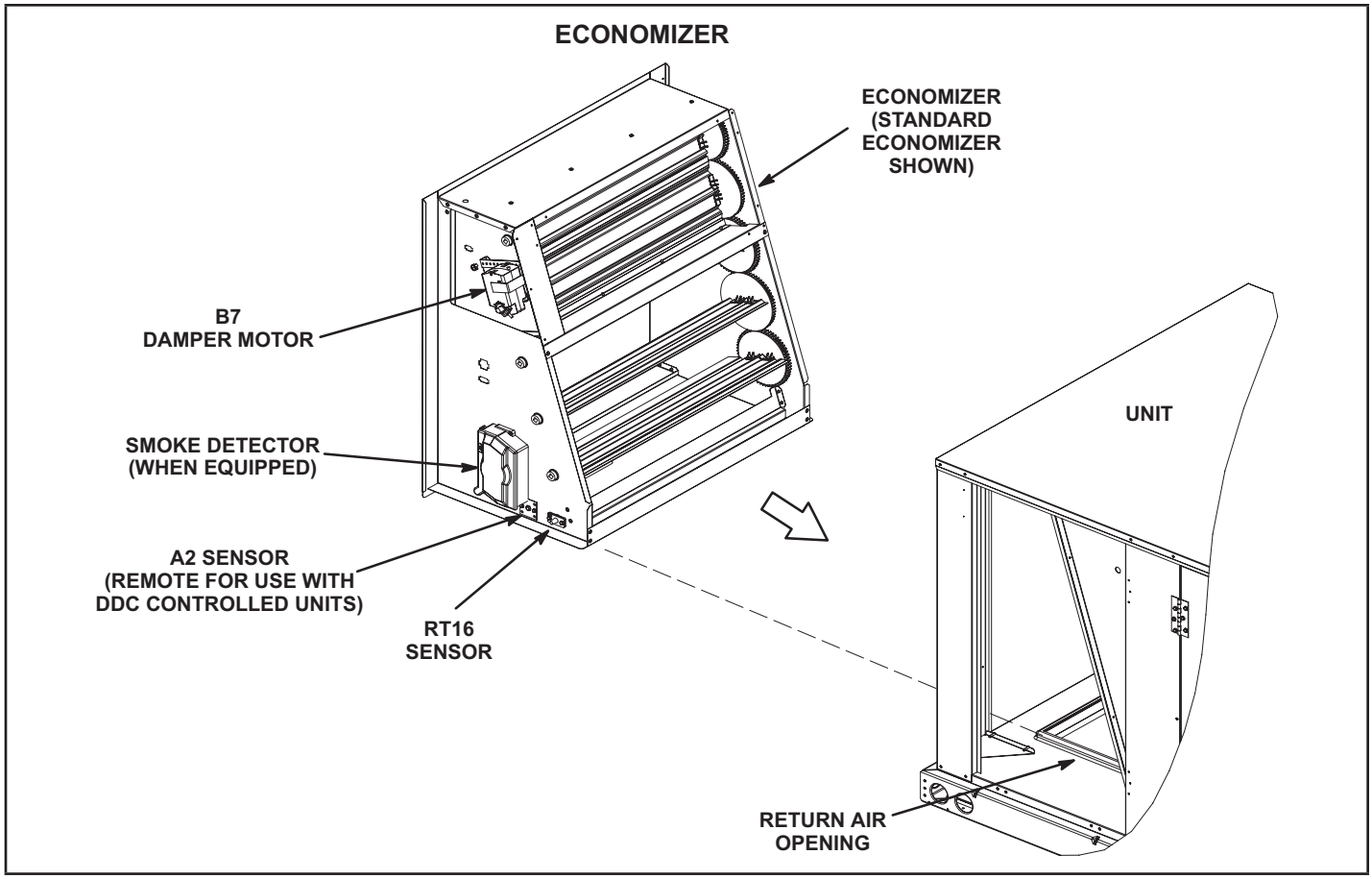



**FIGURE 23**

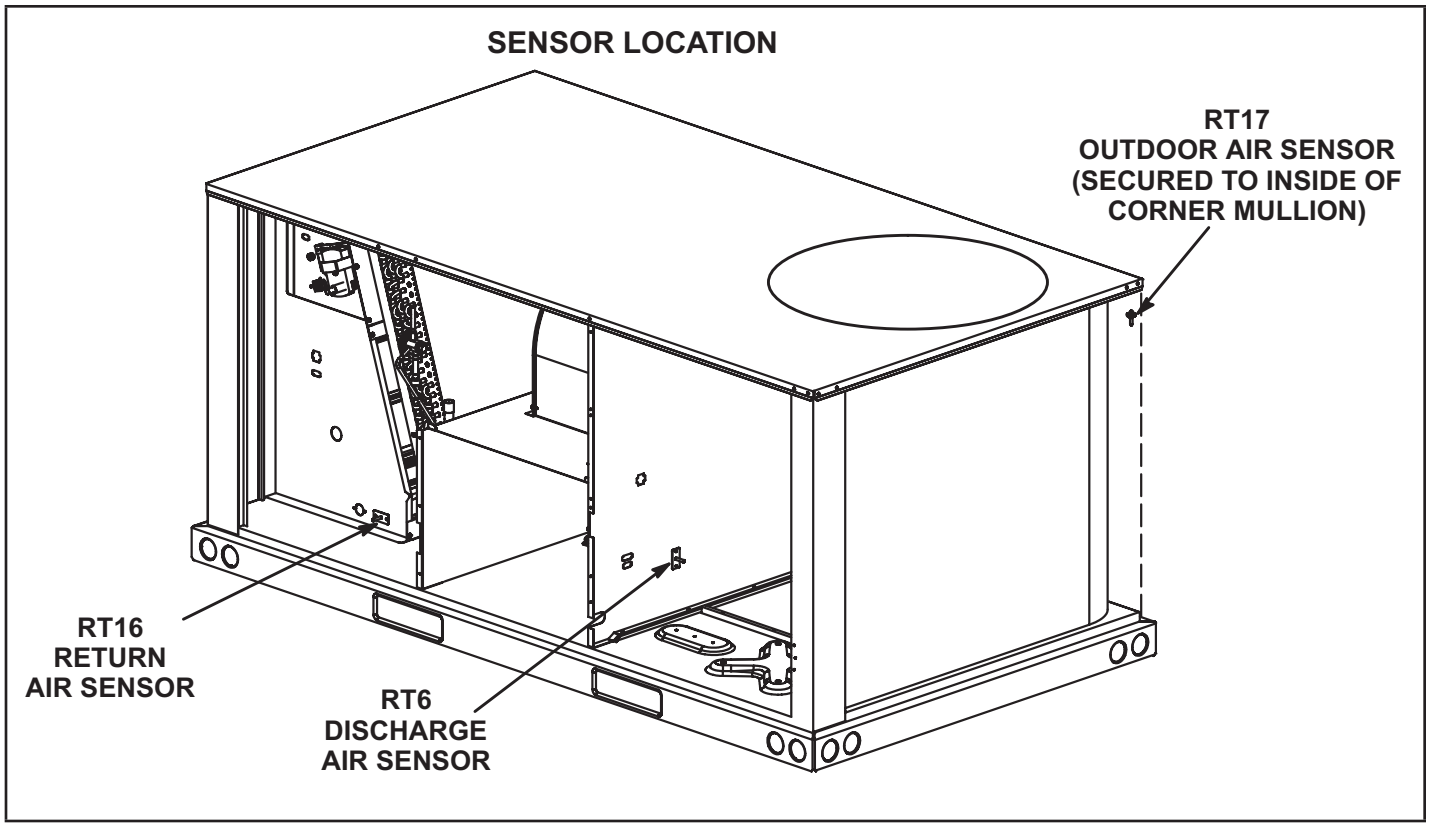



**FIGURE 24**

**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

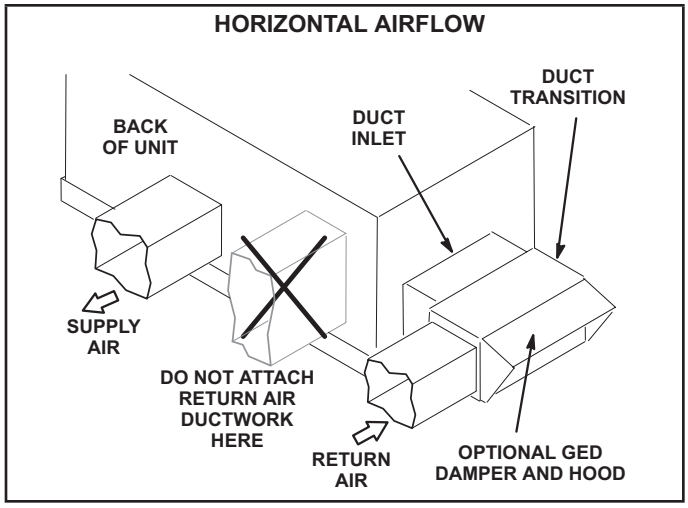



**FIGURE 25**

### 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 26. The A7 enthalpy sensor is located on the division panel between horizontal supply and return air sections.

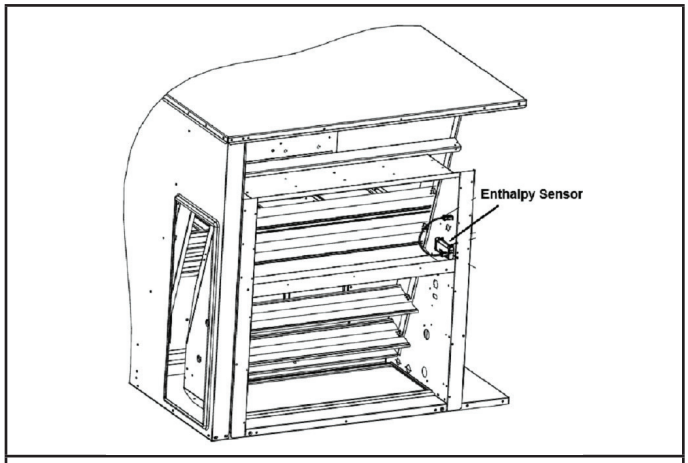



**FIGURE 26**

**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 24 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 24.

### 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 LCX 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 LCX 2, 3, 4, 5, and 6 ton units to provide exhaust air pressure relief (refer to EHB for appropriate transition model). See FIGURE 27 and installation instructions for more detail.

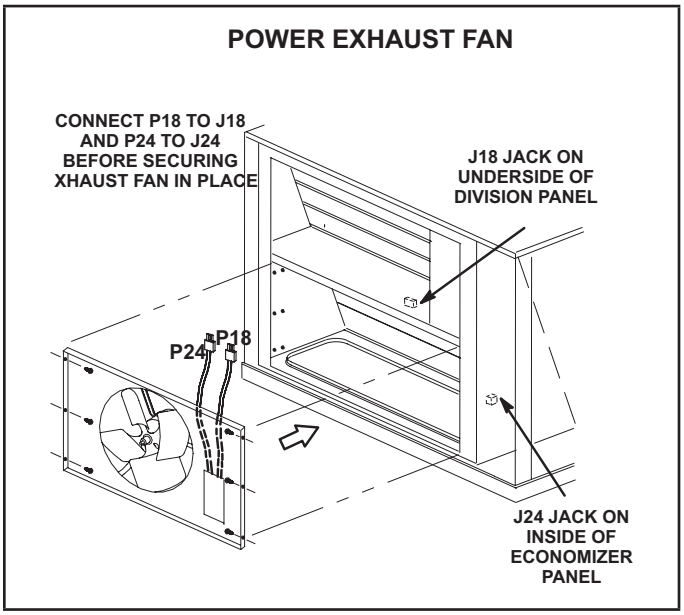



**FIGURE 27**

**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

**H-Power Exhaust Relay K65 (power exhaust units)**

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

**I-Optional UVC Lights**

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

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

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

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

**J-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-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).

**M-Needlepoint Bipolar Ionizer (Optional)**

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

**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 28 for reheat refrigerant routing and FIGURE 29 for standard cooling refrigerant routing.

**L14 Reheat Coil Solenoid Valve**

When Unit Controller input (Unit Controller J298-5 or J299-8) indicates room conditions that 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 the 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.

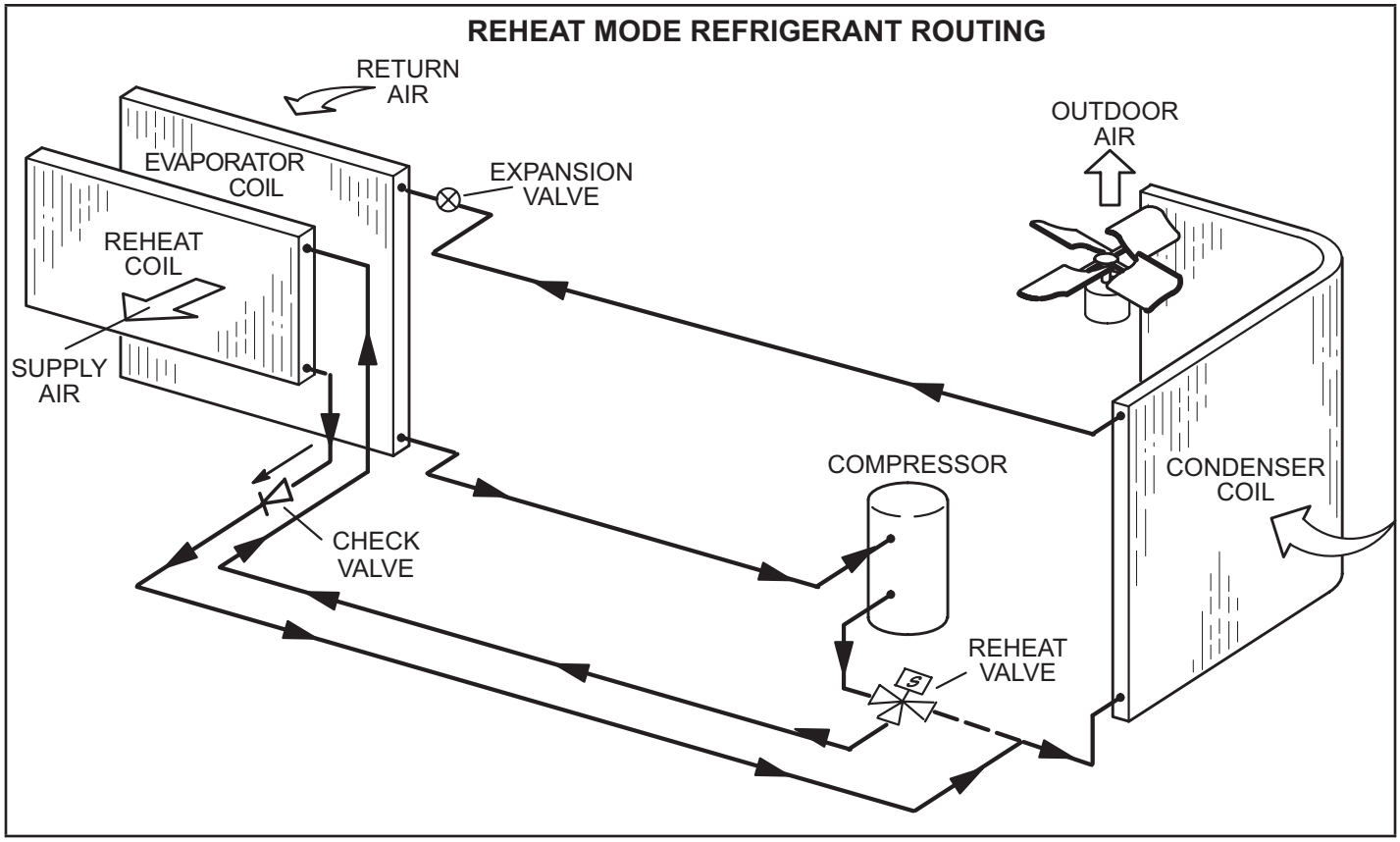



**FIGURE 28**

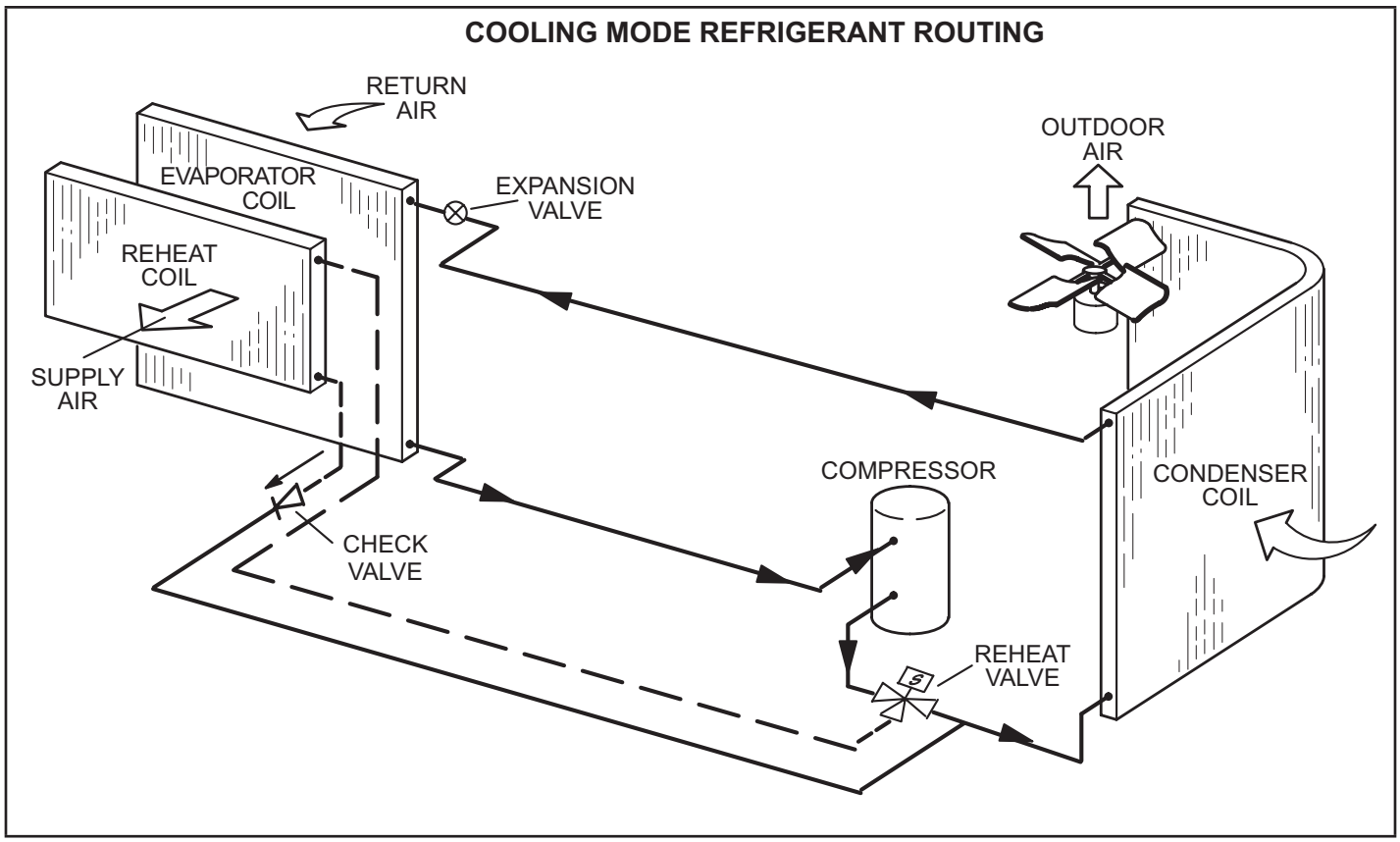
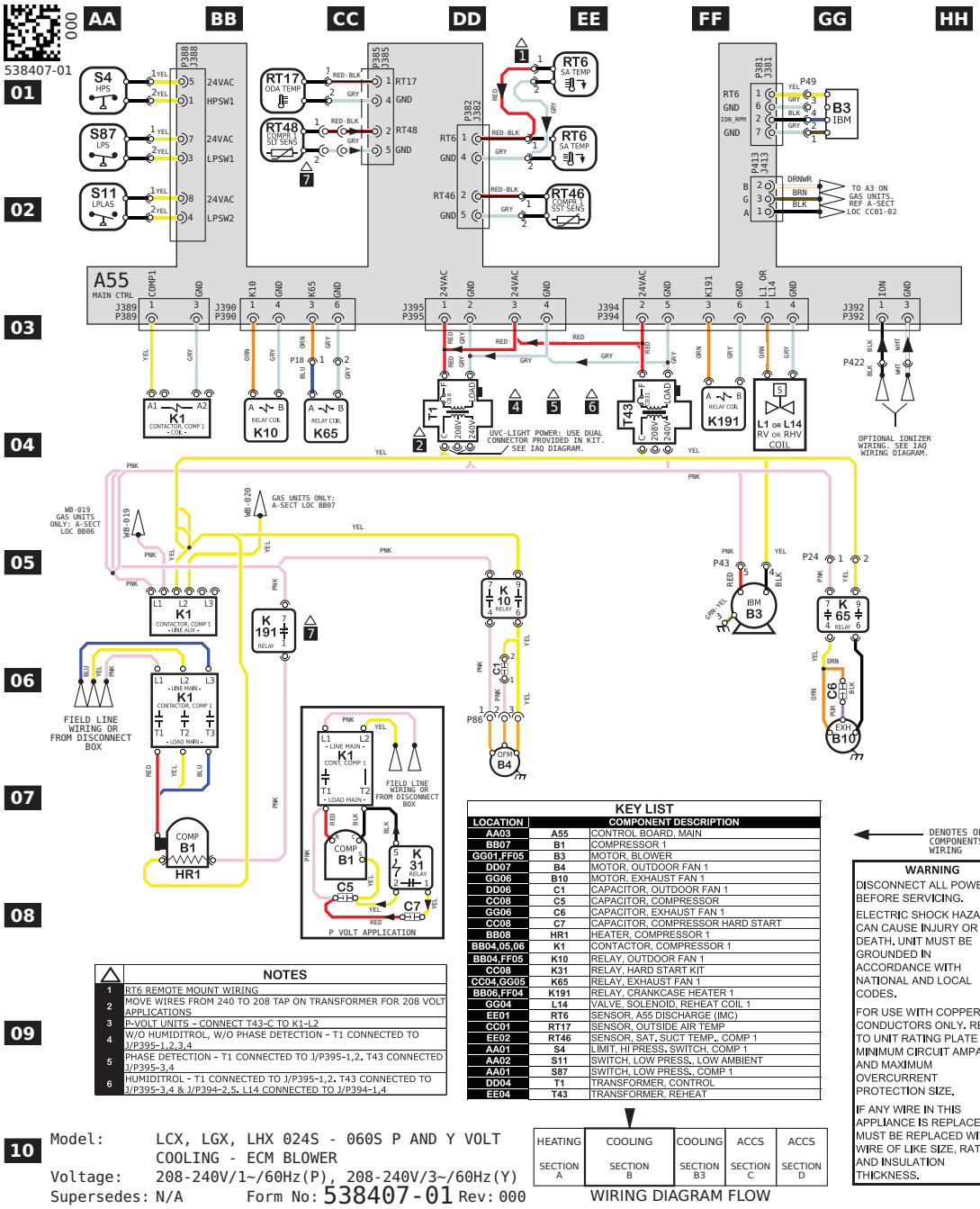



**FIGURE 29**

## LCX024-060 P & Y VOLTAGE UNIT DIAGRAM
## ECM BLOWER




### 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.

### 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 |

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

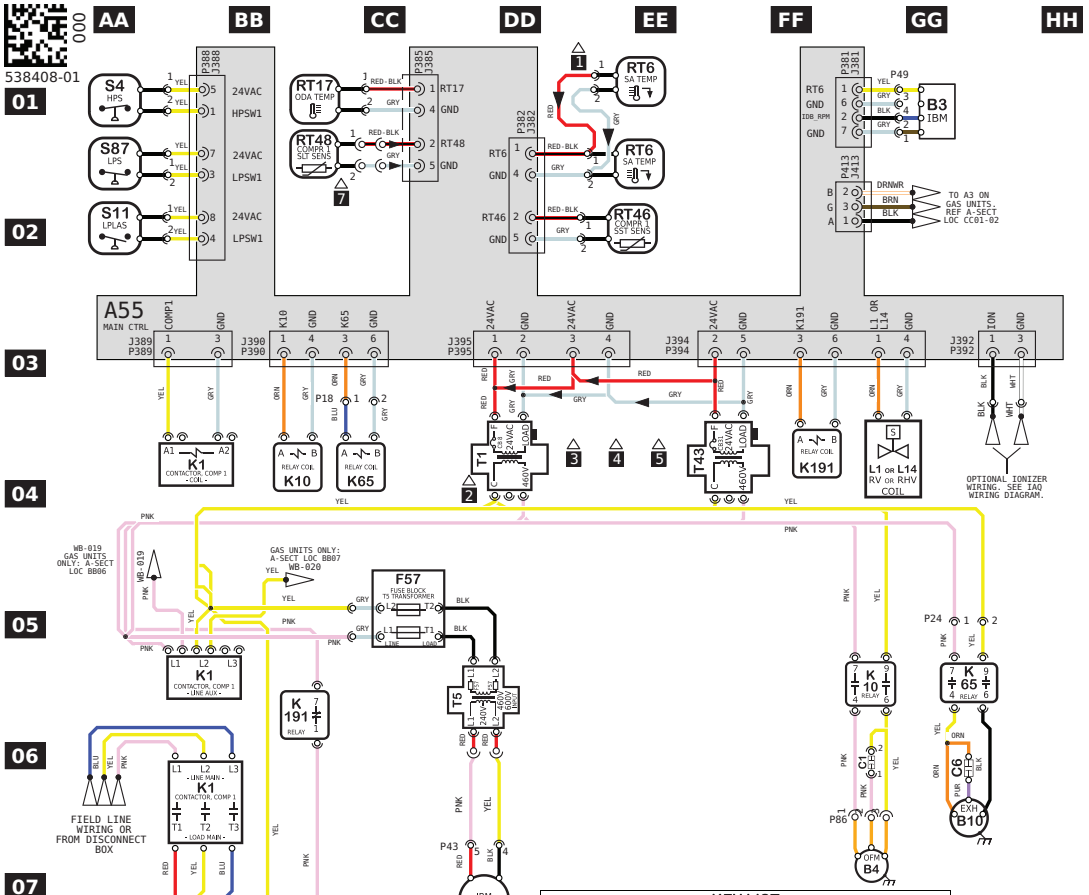
| HEATING | COOLING | COOLING | ACCS | ACCS |
|---|---|---|---|---|
| SECTION A | SECTION B | SECTION B3 | SECTION C | SECTION D |

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 |
| | | | | | |
| | | | | | |

# LCX024-060 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**

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.

### 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

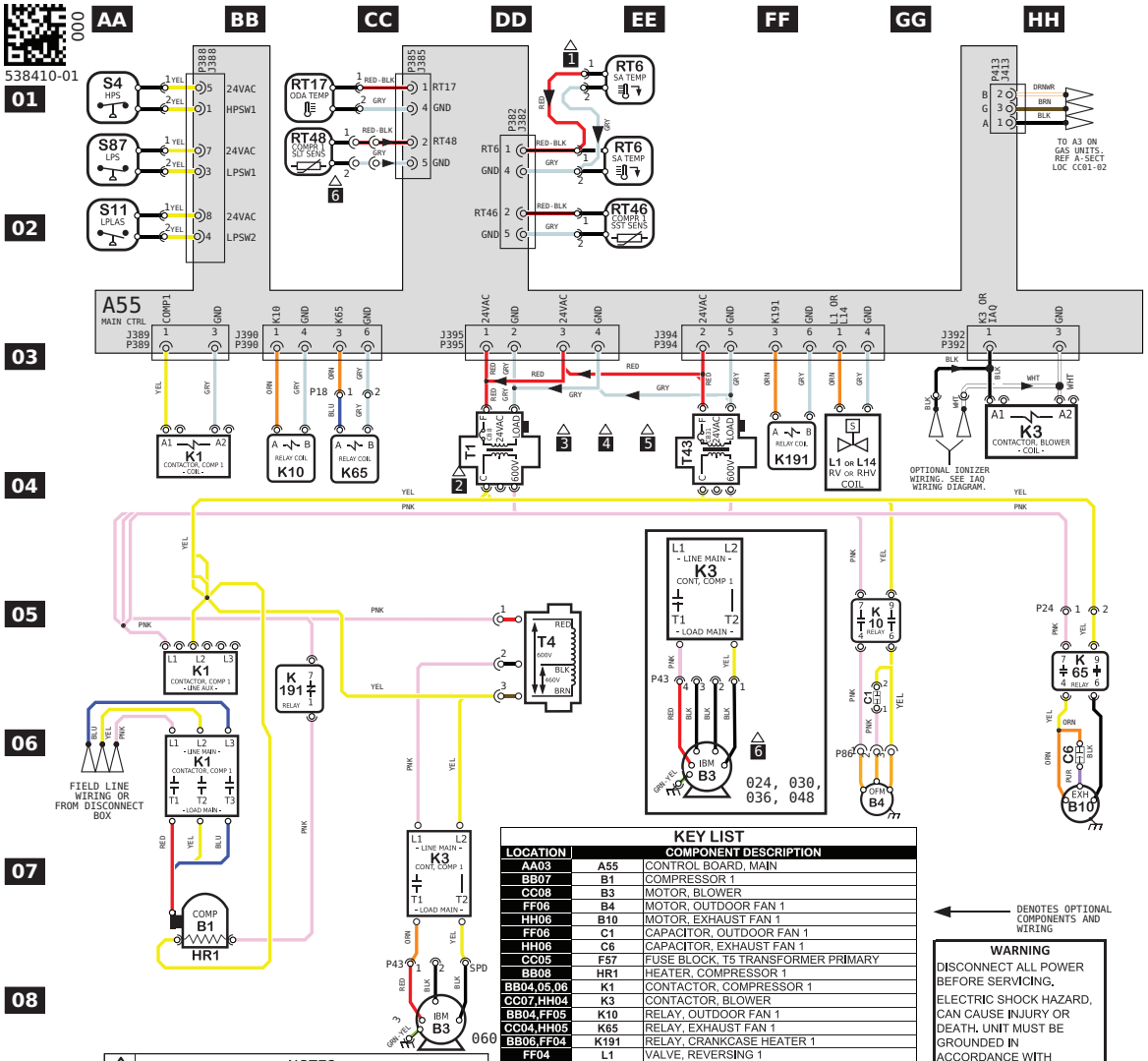
| HEATING SECTION A | COOLING SECTION B | COOLING SECTION B3 | ACCS SECTION C | ACCS SECTION D |
|---|---|---|---|---|

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 |
| | | | | | |
| | | | | | |

# LCX024-060 J VOLT UNIT DIAGRAM
# DIRECT DRIVE BLOWER




| 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**

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.

| 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 |

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

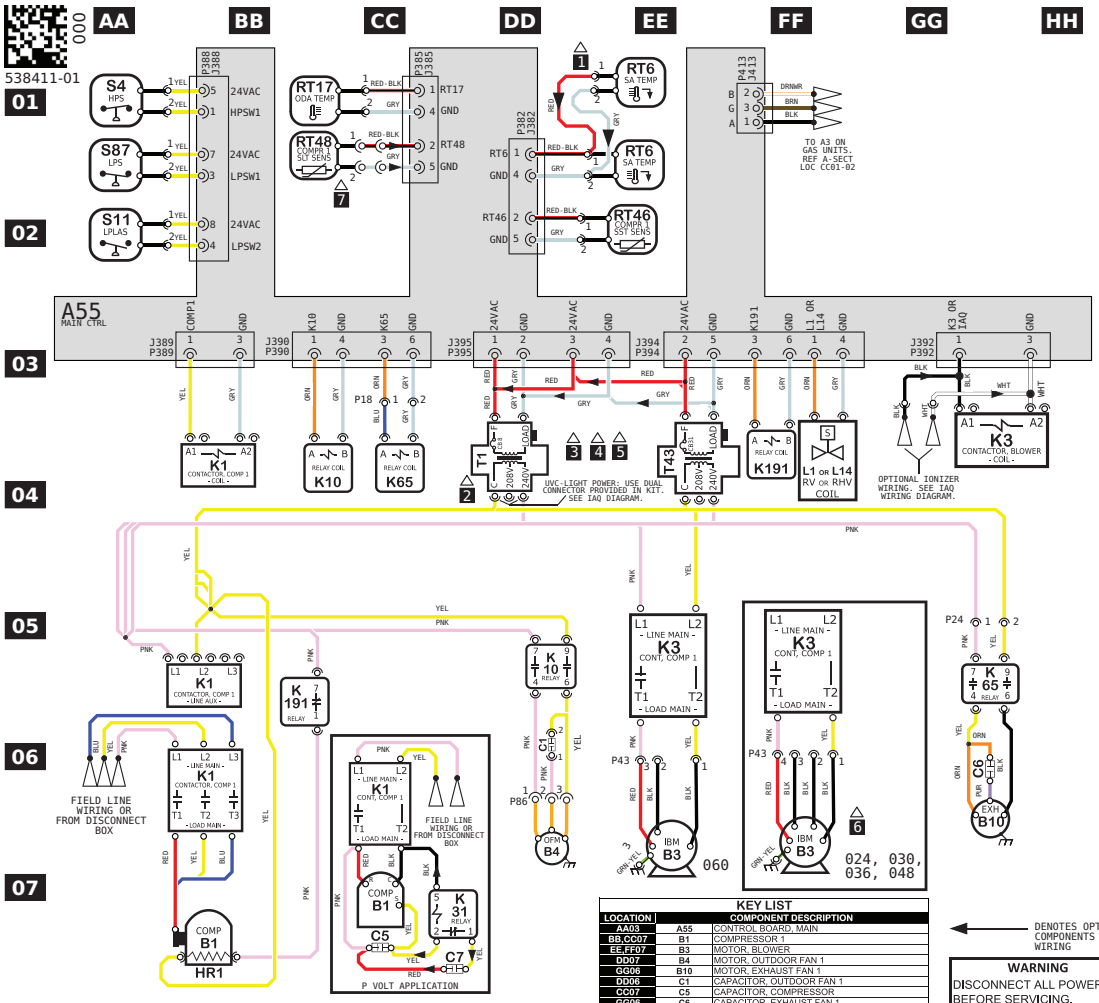
WIRING DIAGRAM FLOW

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 |
| | | | | | |
| | | | | | |

# LCX048-060 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 |
| 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 |
| 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.

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

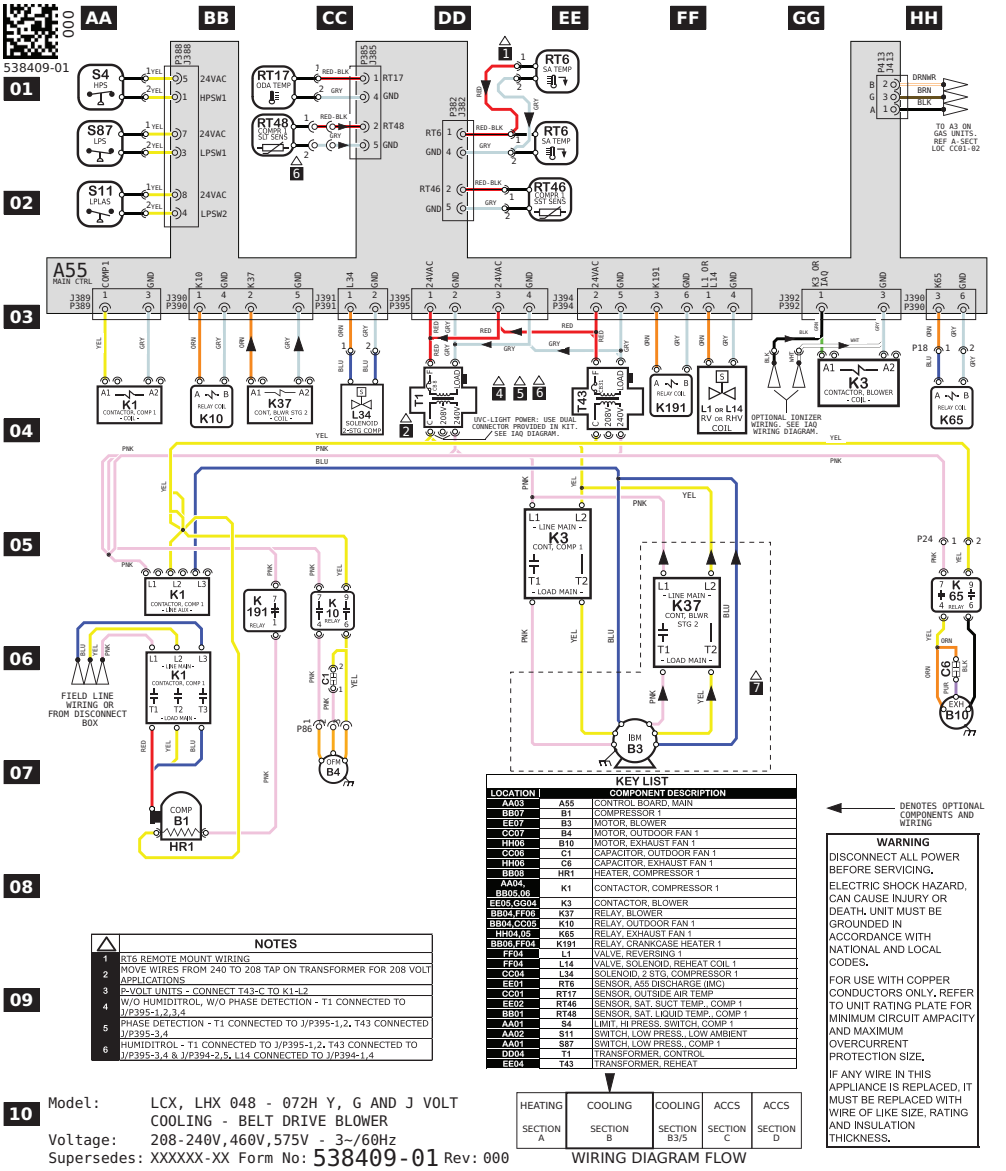
WIRING DIAGRAM FLOW

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 |
| | | | | | |
| | | | | | |

## LCX048-060 Y, G, & J VOLT COOLING DIAGRAM
## BELT DRIVE BLOWER




| KEY LIST | | |
|---|---|---|
| LOCATION | | COMPONENT DESCRIPTION |
| AA03 | A55 | CONTROL BOARD, MAIN |
| BB07 | B1 | COMPRESSOR 1 |
| EE07 | B3 | MOTOR, BLOWER |
| CC07 | B4 | MOTOR, OUTDOOR FAN 1 |
| HH06 | B10 | MOTOR, EXHAUST FAN 1 |
| CC06 | C1 | CAPACITOR, OUTDOOR FAN 1 |
| HH06 | C6 | CAPACITOR, EXHAUST FAN 1 |
| BB08 | HR1 | HEATER, COMPRESSOR 1 |
| AA04, BB05,06 | K1 | CONTACTOR, COMPRESSOR 1 |
| EE05,GG04 | K3 | CONTACTOR, BLOWER |
| BB04,FF05 | K37 | RELAY, BLOWER |
| BB04,CC03 | K10 | RELAY, OUTDOOR FAN 1 |
| HH04,05 | K65 | RELAY, EXHAUST FAN 1 |
| BB05,FF04 | K191 | RELAY, CRANKCASE HEATER 1 |
| FF03 | L1 | VALVE, REVERSING 1 |
| FF04 | L14 | VALVE, SOLENOID, REHEAT COIL 1 |
| CC04 | L34 | SOLENOID, 2 STG, COMPRESSOR 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 |
| AA03 | S87 | SWITCH, LOW PRESS, COMP 1 |
| DD04 | T1 | TRANSFORMER, CONTROL |
| EE04 | T43 | TRANSFORMER, REHEAT |

DENOTES OPTIONAL COMPONENTS AND WIRING

| 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 |

**WARNING**

DISCONNECT ALL POWER BEFORE SERVICING.

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

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

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

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

Voltage: 208-240V,460V,575V - 3~/60Hz

Supersedes: XXXXXX-XX Form No: 538409-01 Rev: 000

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

### LCX-072 Two Stage Units

1. **First stage cooling demand Y1** and G is energized by the thermostat. G energizes blower.
2. A55 energizes contactor K3.
3. Blower contactor K3 energizes blower B3 on low speed.
4. A55 energizes contactor K37
5. Blower contactor K37 energizes blower B3 on high speed.

**LCX024-060 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 with PSC or belt-drive motors will operate at low-speed by energizing the K3 contactor.

**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.

9 - A55 energizes compressor solenoid L34, switching compressor to high speed by energizing high speed blower contactor K37.

**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).

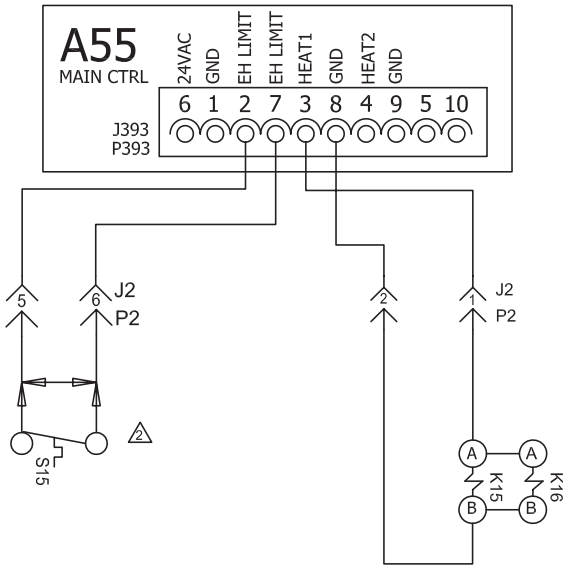
11 - N.O. K65-1 and N.O. K65-2 both close, energizing exhaust fan motor B10.

**Power Exhaust Fan Operation**

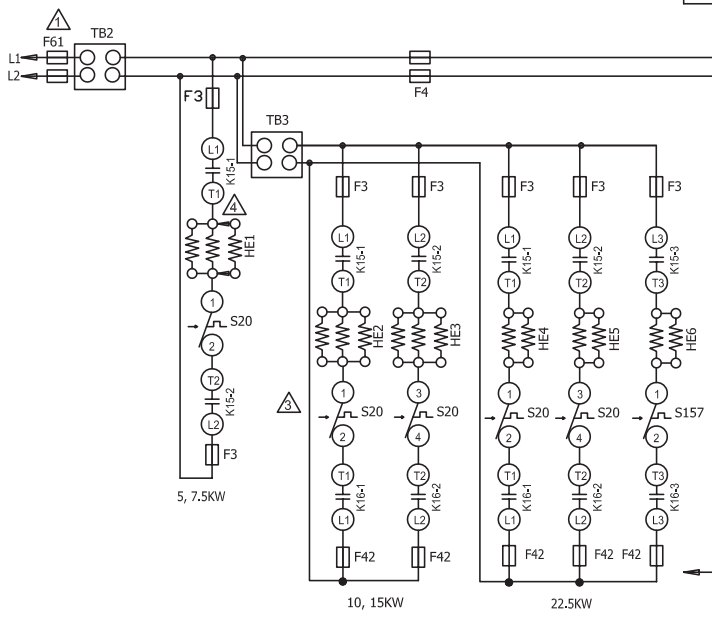
12 - A55 receives a position feedback signal from the economizer damper motor and energizes exhaust fan relay K65 with 24VAC at 50% outside air damper open (adjustable).

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

## ELECTRIC HEAT E1EH - 5, 7.5, 10, 15, 22.5, P VOLT UNIT DIAGRAM




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




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

1. F61 USED ON SCCR UNITS ONLY
2. REMOVE JUMPER PLUG WHEN FIELD INSTALLING ELECTRIC HEAT
3. S20 LIMIT ON "A" BOX UNITS IS RESETABLE
4. 7.5 KW ONLY

DENOTES OPTIONAL COMPONENTS

| | KW | HE1 | HE2 | HE3 | HE4 | HE5 | HE6 |
|---|---|---|---|---|---|---|---|
| 024 - 030 | 5.0 | 5.0 | | | | | |
| | 10.0 | | 5.0 | 5.0 | | | |
| 036 - 048 | 7.5 | 7.5 | | | | | |
| | 15 | | 7.5 | 7.5 | | | |
| 060 | 22.5 | | | | 7.5 | 7.5 | 7.5 |

2023/10

WIRING DIAGRAM 538246-02 — 10/23

HEATING

ELECTRIC HEAT
E1EH - 5, 7.5, 10, 15, 22.5 - P

SECTION A — REV 0

| Supersedes | New Form No. |
|---|---|
| 538246-01 | 538246-02 |

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

**HEATING ELEMENTS:**

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

**FIRST STAGE HEAT:**

2 - Heating demand initiates at W1 in thermostat.

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

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

**END OF FIRST STAGE HEAT:**

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

6 - Electric heat contactor K15 is de-energized.

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

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

**HEATING ELEMENTS:**

1 - Terminal Strip TB2 is energized when the unit disconnect closes. TB2 supplies line voltage to electric heat elements HE1 and TB3. TB3 supplies line voltage to HE2 and HE3. Elements are protected by fuses F3 and or F42.

**FIRST STAGE HEAT:**

2 - Heating demand initiates at W1 in thermostat.

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

4 - *7.5kW and 15kW units* - N.O. contacts K15-1 close energizing HE1.
*22.5kW units* - N.O. contacts K242-1 close energizing HE2 and HE3.

**END OF FIRST STAGE HEAT:**

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

6 - Electric heat contactor K15 is de-energized.

7 - *7.5kW, 15kW units* - N.O. contacts K15-1 open de-energizing HE1.
*22.5kW units* - N.O. contacts K242-1 open de-energizing HE2 and HE3.

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

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

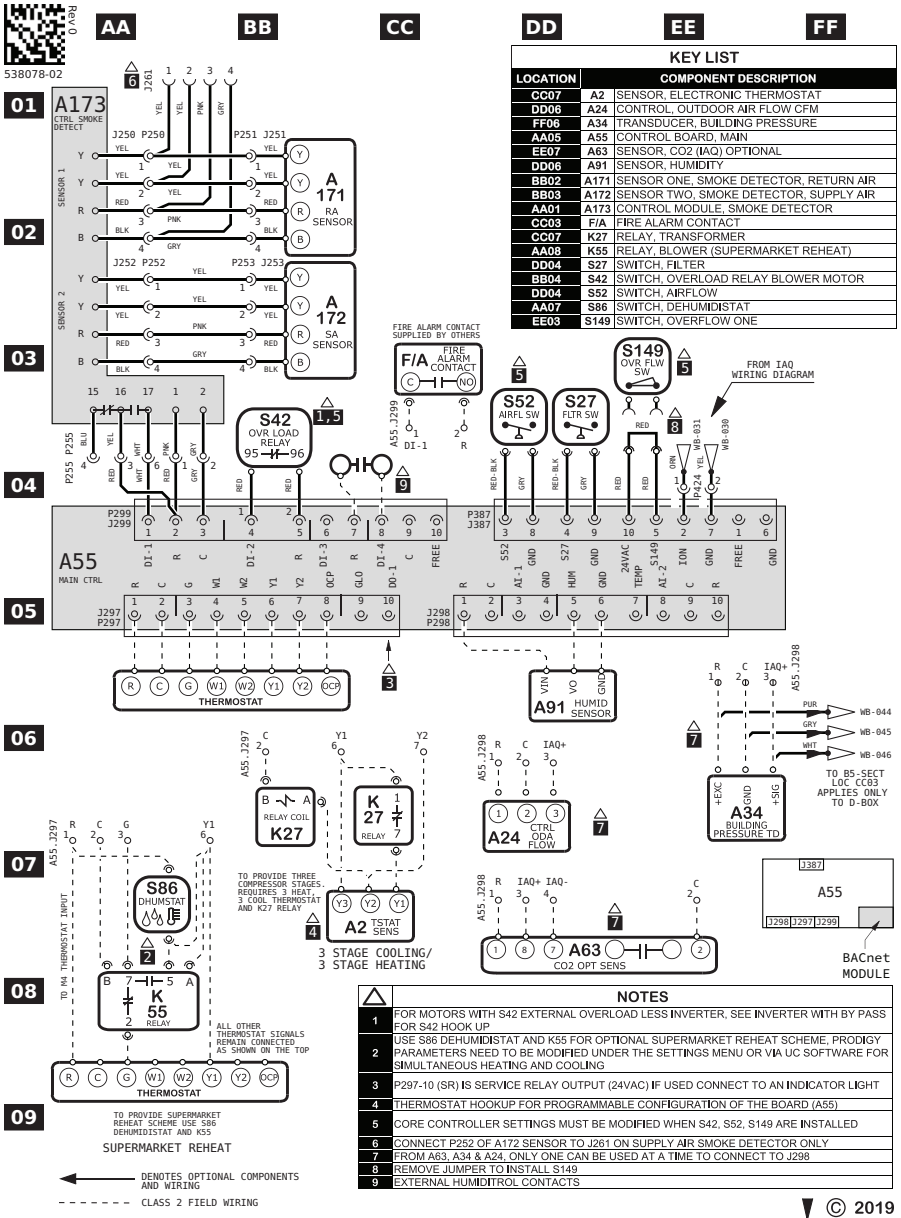
Once power is supplied to unit, zero SCR as follows:

1- Adjust thermostat (A104) to minimum position.

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

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

# 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 |
| | | | | | |
| | | | | | |

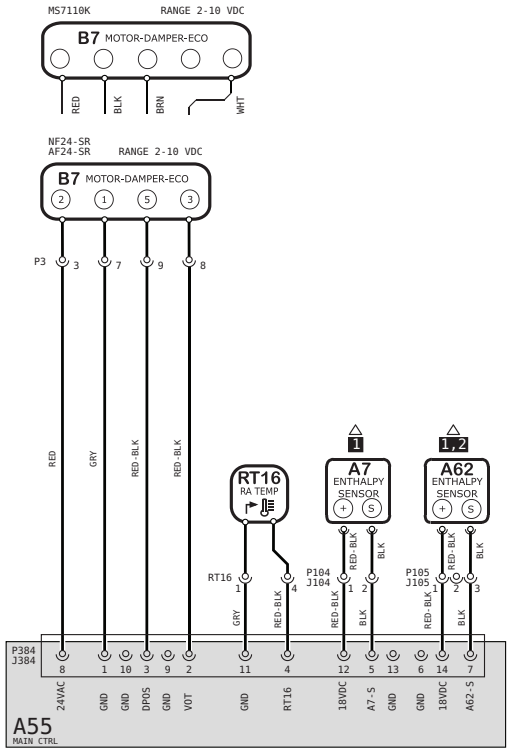
# ECONOMIZER & OUTDOOR AIR DAMPER

Rev 2

538072-01

AA BB CC DD

01 02 03 04 05 06 07 08 09




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

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

10

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



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

WIRING DIAGRAM FLOW

5x10 CUT SIZE

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

## 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.