SEER up to 15.50
1.5 to 5 Tons
Cooling Capacity - 17,500 to 59,000 Btuh

MODEL NUMBER IDENTIFICATION

13 AC X N 024 - 230 - 17

- **Nominal SEER**
- **Unit Type**
  - AC = Air Conditioner
- **Refrigerant**
  - X = R-410A
- **Regional Standards**
  - N = North Region
- **Minor Revision Number**
- **Voltage**
  - 230 = 208/230V-1phase-60hz
- **Nominal Cooling Capacity**
  - 018 = 1.5 tons
  - 024 = 2 tons
  - 030 = 2.5 tons
  - 036 = 3 tons
  - 042 = 3.5 tons
  - 048 = 4 tons
  - 060 = 5 tons
FEATURES HIGHLIGHTS

1. Condenser Fan
2. Copper Tube/Enhanced Fin Coil
3. Scroll Compressor
4. Heavy Gauge Steel Cabinet
5. Refrigerant Line Access

CONTENTS

Approvals And Warranty ................................................................. 3
Contents ........................................................................ 2
Controls - Order Separately .......................................................... 7
Dimensions - Unit ................................................................. 8
Electrical Data .................................................................... 7
Features ........................................................................ 3
Field Wiring .................................................................... 9
Installation Clearance .............................................................. 9
Model Number Identification .................................................. 1
Optional Accessories - Order Separately .............................. 7
Sound Data ....................................................................... 9
Specifications ................................................................... 7
TXV/Orifice Usage ................................................................. 10
APPLICATIONS

• 1.5 through 5 tons
• Single phase power supply
• Sound levels as low as 76 dBA
• Vertical air discharge
• Applicable to indoor air handlers or gas furnaces with indoor add-on coils
• Shipped completely factory assembled, piped and wired

NOTE - Installer must set outdoor unit, connect refrigerant lines and make electrical connections to complete job.

REFRIGERATION SYSTEM

R-410A Refrigerant
• Non-chlorine, ozone friendly
• Unit is factory pre-charged

NOTE - Total system refrigerant charge is dependent on outdoor unit size, indoor unit size and refrigerant line length.

FEATURES

Copper Tube/Enhanced Fin Coil
• Lennox designed and fabricated coil
• Ripple-edged aluminum fins
• Copper tube construction
• Lanced fins for maximum fin surface exposure
• Fin collars grip tubing for maximum contact area
• Flared shoulder tubing connections
• Silver soldering construction
• Coil is factory tested under high pressure
• Steel louvered panels provide complete coil protection
• Panels can be completely removed for servicing

High Capacity Liquid Line Drier
• Furnished with unit for field installation
• Drier traps moisture or dirt
• 100% molecular-sieve, bead type, bi-flow drier

High Pressure Switch
• Shuts off unit if abnormal operating conditions cause the discharge pressure to rise above setting
• Automatic reset

APPROVALS AND WARRANTY

APPROVALS

• AHRI Standard 210/240 certified
• AHRI Certified system match-ups and expanded ratings, visit www.LennoxPros.com
• Sound rated to AHRI Standard 270-2008 test conditions
• Tested in the Lennox Research Laboratory environmental test room
• Rated according to U.S. Department of Energy (DOE) test procedures
• Region specific models meet the minimum efficiency requirements for U.S. DOE Federal Regional Standards in that area.
• Unit and components ETL, NEC and CEC bonded for grounding to meet safety standards for servicing
• ETL certified (U.S. and Canada)
• ISO 9001 Registered Manufacturing Quality System

WARRANTY

• Compressor:
  • Limited five years in residential installations
  • Limited five years in non-residential installations
• All other covered components:
  • Limited five years in residential installations
  • Limited one year in non-residential installations

NOTE - Refer to Lennox Equipment Limited Warranty certificate included with unit for specific details.
REFRIGERATION SYSTEM (continued)

Refrigerant Flow Control
- Units applicable to expansion valve systems or RFC systems when matched with specific indoor coils
- RFCIV:
  - Accurately meters refrigerant in system
  - Refrigerant control is accomplished by exact sizing of refrigerant metering orifice
  - The principle involves matching indoor coil with proper bore size of orifice in metering device
  - Equalizes pressure shortly after compressor stops, unit starts unloaded, eliminating need for additional controls

Optional Accessories

Expansion Valve Kits
- Field installed on certain indoor units
- See TXV Usage Table
- Chatleff-style fittings

Freezestat
- Senses suction line temperature
- Cycles compressor off when suction line temperature falls below its setpoint
- Opens at 29°F and closes at 58°F
- Installs on or near the discharge line of the evaporator or on the suction line

Loss of Charge Switch Kit
- Protects the compressor from damage due low refrigerant charge conditions
- SPST, normally-closed switch
- Automatic reset switch
- Mounted on liquid line

Refrigerant Line Kits
- Refrigerant lines are shipped refrigeration clean
- Lines are cleaned, dried, pressurized and sealed at factory
- Suction line fully insulated
- Lines are stubbed at both ends

COMPRESSOR

Scroll Compressor
- High efficiency with uniform suction flow
- Constant discharge flow, high volumetric efficiency and quiet operation
- Low gas pulses during compression reduces operational sound levels
- Compressor motor is internally protected from excessive current and temperature
- Muffler in discharge line reduces operating sound levels
- Compressor is installed in the unit on resilient rubber mounts for vibration free operation

Scroll Compressor Operation
- Two involute spiral scrolls matched together generate a series of crescent-shaped gas pockets between them
- During compression, one scroll remains stationary while the other scroll orbits around it
- Gas is drawn into the outer pocket, the pocket is sealed as the scroll rotates
- As the spiral movement continues, gas pockets are pushed to the center of the scrolls. Volume between the pockets is simultaneously reduced
- When the pocket reaches the center, gas is now at high pressure and is forced out of a port located in the center of the fixed scrolls
- During compression, several pockets are compressed simultaneously resulting in a smooth continuous compression cycle
- Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency
- Compressor is tolerant to the effects of slugging and contaminants. If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged

Optional Accessories

Compressor Crankcase Heater
- Protects against refrigerant migration that can occur during low ambient operation

Compressor Sound Cover
- Reinforced vinyl compressor cover
- 1-1/2 inch thick batt fiberglass insulation
- All open edges are sealed with a one-inch wide hook and loop fastening tape
**CONTROLS**

**Optional Accessories**

### iComfort® M30 Smart Wi-Fi Thermostat

- Wi-Fi-enabled, electronic 7-day, universal, multi-stage, programmable, touchscreen thermostat
- 4 Heat/2 Cool
- Auto-changeover
- Dual-fuel control with optional outdoor sensor
- Controls dehumidification during cooling mode and humidification during heating mode
- Offers enhanced capabilities including humidification / dehumidification / dewpoint measurement and control, Humiditrol® control, and equipment maintenance reminders
- Easy to read 4.3 in. color touchscreen (measured diagonally)
- LCD display with backlight shows the current and set temperature, time, inside relative humidity, system status (operating mode and schedules) and outside temperature (optional outdoor sensor required)
- Smooth Setback Recovery starts system early to achieve setpoint at start of program period
- Compressor short-cycle protection (5 minutes)
- Up to four separate schedules are available plus Schedule IQ™
- One-Touch Away Mode - A quick and easy way to set the cooling and heating setpoints while away
- Smart Away™ - Uses geo-fencing technology to determine when the homeowner is within a predetermined distance from the home to operate the system when leaving, away and arriving
- Wi-Fi remote monitoring and adjustment through a home wireless network for desktop PCs, laptops and apps for smartphones or tablets
- Smart home automation compatible with Amazon Alexa®, Google Assistant and IFTTT
- Service Dashboard features online real-time monitoring of installed iComfort® thermostats

**NOTE** - See the iComfort® M30 Smart Wi-Fi Thermostat Product Specifications bulletin in the Controls section for more information.

### Remote Outdoor Temperature Sensor

- Used with the iComfort® M30 Smart Thermostat
- Allows thermostat to display outdoor temperature

**NOTE** - Sensor is required for the Enhanced Dehumidification Accessory (EDA).

**Thermostat**

- Thermostat is not furnished with unit
- See Lennox Price Book for selection

**Compressor Hard Start Kit**

- Single-phase units are equipped with a PSC compressor motor
- This type of motor normally doesn’t need a potential relay and start capacitor
- For conditions such as low voltage kit may be required to increase the compressor starting torque

**Compressor Low Ambient Cut-Off Switch**

- Non-adjustable switch (low ambient cut-out) prevents compressor operation when outdoor temperature is below 35°F

**Compressor Time-Off Control**

- Kit prevents compressor short-cycling and allows time for suction and discharge pressure to equalize
- Permits compressor start-up in an unloaded condition
- Automatic reset with 5 minute delay between compressor shut-off and start-up

**Indoor Blower Off Delay Relay**

- Delays the indoor blower-off time during the cooling cycle

**Low Ambient Kit**

- Air conditioners can operate down to 45°F outdoor air temperature without additional controls
- Allows unit to operate properly down to 30°F

**NOTE** - Crankcase heater and freezeastat should be installed on compressors equipped with a low ambient kit.

**NOTE** - A compressor lock-out thermostat should be added to terminate compressor operation below recommended operation conditions.
FEATURES

CABINET

4. Heavy-gauge steel construction
   • Five station metal wash process
   • Louvered heavy gauge steel panels surround unit on all
     four sides to prevent damage to the coil
   • Powder paint finish provides superior rust and corrosion
     protection
   • Control box is conveniently located with all controls
     factory wired
   • Corner patch plate allows access to compressor
     components
   • Drainage holes are provided in base section for moisture
     removal

PermaGuard™ Unit Base

• Durable zinc-coated base section resists rust and
  corrosion

Refrigerant Line Connections, Electrical Inlets, Service Valves

• Sweat connection suction and liquid lines
  • Located on corner of unit cabinet
  • Fully serviceable brass service valves
  • Suction valve can be fully shut off, while liquid valve
    may be front seated to manage refrigerant charge while
    servicing system
  • Refrigerant line connections and field wiring inlets are
    located in one central area of cabinet for easy access
  • See dimension drawing

Optional Accessories

Unit Stand-Off Kit

• Black high density polyethylene feet
• Raises unit off mounting surface
• Four feet furnished per order number
## SPECIFICATIONS

### General Data

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Nominal Tonnage</th>
<th>Northern Region</th>
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<tbody>
<tr>
<td>13ACXN018</td>
<td>1.5</td>
<td>13ACXN024</td>
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<tr>
<td></td>
<td>13ACXN030</td>
<td>13ACXN036</td>
</tr>
<tr>
<td></td>
<td>13ACXN042</td>
<td>13ACXN048</td>
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<td></td>
<td>13ACXN060</td>
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### Connections (sweat)

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Suction line o.d. - in.</td>
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<td></td>
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1 Refrigerant (R-410A) furnished

### Refrigerant (R-410A) furnished

<table>
<thead>
<tr>
<th></th>
<th>4 lbs. 1 oz.</th>
<th>3 lbs. 14 oz.</th>
<th>5 lbs. 4 oz.</th>
<th>5 lbs. 10 oz.</th>
<th>6 lbs. 12 oz.</th>
<th>7 lbs. 12 oz.</th>
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### RFCIV Metering Orifice Size Furnished

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<th>0.072</th>
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### Outdoor Coil

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<td>13.22</td>
<td>13.22</td>
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<td>18.67</td>
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<td>Outer coil</td>
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<tr>
<td>Inner coil</td>
<td></td>
<td></td>
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<tr>
<td>Tube diameter - in.</td>
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<td>5/16</td>
<td>5/16</td>
<td>5/16</td>
<td>5/16</td>
<td>15.71</td>
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<tr>
<td>Fins per inch</td>
<td>26</td>
<td>26</td>
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### Outdoor Fan

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<td>22</td>
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<td>Number of blades</td>
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<td>4</td>
<td>4</td>
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<td>4</td>
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<tr>
<td>Motor hp</td>
<td>1/10</td>
<td>1/10</td>
<td>1/5</td>
<td>1/5</td>
<td>1/4</td>
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<td>Cfm</td>
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<td>Rpm</td>
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<td>1010</td>
<td>1090</td>
<td>1090</td>
<td>825</td>
<td>835</td>
<td>830</td>
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<td>Watts</td>
<td>165</td>
<td>165</td>
<td>185</td>
<td>185</td>
<td>300</td>
<td>295</td>
<td>285</td>
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### Shipping Data - lbs. 1 package

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<tr>
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<th>144</th>
<th>151</th>
<th>188</th>
<th>195</th>
<th>218</th>
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### Electrical Data

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<tr>
<td>Maximum overcurrent protection (MOCP) amps</td>
<td>20</td>
<td>25</td>
<td>25</td>
<td>35</td>
<td>40</td>
<td>50</td>
<td>60</td>
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<tr>
<td>Minimum circuit ampacity (MCA)</td>
<td>12.4</td>
<td>14.7</td>
<td>17.1</td>
<td>20.4</td>
<td>25.7</td>
<td>31.9</td>
<td>34.6</td>
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### Compressor

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<tr>
<th></th>
<th>9.4</th>
<th>11.2</th>
<th>12.8</th>
<th>15.4</th>
<th>19.2</th>
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<tr>
<td>Rated load amps</td>
<td>56.6</td>
<td>60.8</td>
<td>67.8</td>
<td>83.8</td>
<td>123.9</td>
<td>100</td>
<td>125</td>
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<tr>
<td>Locked rotor amps</td>
<td>0.98</td>
<td>0.98</td>
<td>0.98</td>
<td>0.99</td>
<td>0.99</td>
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<tr>
<td>Power factor</td>
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<td>0.99</td>
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### Condenser Fan Motor

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<tr>
<th></th>
<th>0.7</th>
<th>0.7</th>
<th>1.1</th>
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<tbody>
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<td>Locked rotor amps</td>
<td>1.3</td>
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<td>3.2</td>
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### Controls - Order Separately

<p>| | | | | | | | |</p>
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<tbody>
<tr>
<td>iComfort® M30 Smart Wi-Fi</td>
<td>15Z69</td>
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<tr>
<td>Remote Outdoor Temperature Sensor</td>
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### Optional Accessories - Order Separately

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<tbody>
<tr>
<td>Compressor Crankcase Heater</td>
<td>93M04</td>
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<tr>
<td>Compressor Hard Start Kit</td>
<td>10J42</td>
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</tr>
<tr>
<td>Copeland</td>
<td>88M91</td>
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<tr>
<td>Compressor Low Ambient Cut-Off Switch</td>
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<tr>
<td>Compressor Sound Cover</td>
<td>18J42</td>
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<tr>
<td>Compressor Time-Off Control</td>
<td>47J27</td>
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<tr>
<td>Freezestat</td>
<td>3/8 in. tubing</td>
<td>93G35</td>
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<tr>
<td>5/8 in. tubing</td>
<td>50A93</td>
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<tr>
<td>Indoor Blower Off Delay Relay</td>
<td>58M81</td>
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<tr>
<td>Loss of Charge Switch Kit</td>
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<tr>
<td>Low Ambient Kit (Fan Cycling)</td>
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<td>Unit Stand-Off Kit</td>
<td>94J45</td>
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</tr>
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</table>

**NOTE** - Extremes of operating range are plus 10% and minus 5% of line voltage.

1 Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the Installation Instructions for information about line set length and additional refrigerant charge required.

2 HACR type circuit breaker or fuse.

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

4 Crankcase Heater and Freezestat are recommended with Low Ambient Kit.
### DIMENSIONS - UNIT

#### TOP VIEW

- Inlet Air
- Suction Line Connection
- Liquid Line Connection

#### TOP VIEW BASE SECTION

- Compressor
- Optional Unit Stand-Off Kit (4) (Field Installed)
- Coil Drain Outlets (Around perimeter of base)

#### SIDE VIEW

- Outdoor Coil Fan
- Electrical Inlets
- Suction and Liquid Line Connection
- Optional Unit Stand-Off Kit (4) (Field Installed)

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>13ACXN018</td>
<td>24-1/4</td>
<td>616</td>
<td>25-1/4</td>
</tr>
<tr>
<td>13ACXN024</td>
<td>24-1/4</td>
<td>616</td>
<td>25-1/4</td>
</tr>
<tr>
<td>13ACXN030</td>
<td>24-1/4</td>
<td>616</td>
<td>29-1/4</td>
</tr>
<tr>
<td>13ACXN036</td>
<td>24-1/4</td>
<td>616</td>
<td>29-1/4</td>
</tr>
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<td>13ACXN042</td>
<td>28-1/4</td>
<td>718</td>
<td>29-1/4</td>
</tr>
<tr>
<td>13ACXN048</td>
<td>28-1/4</td>
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<td>33-1/4</td>
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<tr>
<td>13ACXN060</td>
<td>28-1/4</td>
<td>718</td>
<td>29-1/4</td>
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### SOUND DATA

<table>
<thead>
<tr>
<th>Unit Model</th>
<th>Octave Band Sound Power Levels dBA, re 10⁻¹² Watts</th>
<th>¹ Sound Rating Number (dBA)</th>
<th>² Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Center Frequency - HZ</td>
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<tr>
<td>018</td>
<td>125 60 64.5 68.5 67 61.5 54.5 76</td>
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<td>69</td>
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<tr>
<td>024</td>
<td>250 62 64.5 68.5 67 60.5 53.5 76</td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>030</td>
<td>500 62 67.5 69 67 61.5 54.5 76</td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>036</td>
<td>1000 67 69 67 61.5 52.5 76</td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>042</td>
<td>2000 74 69.5 62.5 79</td>
<td></td>
<td>72</td>
</tr>
<tr>
<td>048</td>
<td>4000 71 64 58.5 79</td>
<td></td>
<td>72</td>
</tr>
<tr>
<td>060</td>
<td>8000 71 65.5 60.5 79</td>
<td></td>
<td>72</td>
</tr>
</tbody>
</table>

1. Tested according to AHRI Standard 270-2008 test conditions.
2. Estimated sound pressure level at distance based on AHRI Standard 275-2010 method for equipment located on the ground, roof, or on side of building wall with no adjacent reflective surface within 9.8 feet. Sound pressure levels will increase based on changes to assumptions. For other applications, refer to AHRI Standard 275.

### FIELD WIRING

- A - Two Wire Power
- B - Two Wire Power (See Electrical Data)
- C - Two Wire Low Voltage (18 ga. minimum)
- D - Four Wire Low Voltage (Electro-Mechanical) 18 ga. minimum
- Five Wire Low Voltage (Electronic) 18 ga. minimum

**NOTE - Field Wiring Not Furnished**

All wiring must conform to NEC or CEC and local electrical codes.

### INSTALLATION CLEARANCE

**NOTES:**

Service clearance of 30 in. (762 mm) must be maintained on one of the sides adjacent to the control box.

Clearance to one of the other three sides must be 36 in. (914 mm)

Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).

A clearance of 24 in. must be maintained between two units. 48 in. (1219 mm) clearance required on top of unit.
**TXV/ORIFICE USAGE**

Use this table for C35, CH23, CH35 and CR33 Field Installed TXV/Orifice Match-Ups

<table>
<thead>
<tr>
<th>Outdoor Unit</th>
<th>Refrigerant Metering Orifice (RFC)</th>
<th>Order No.</th>
<th>Orifice Size</th>
<th>Thermal Expansion Valve (TXV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>018</td>
<td>10W92</td>
<td>0.050</td>
<td>12J18</td>
<td></td>
</tr>
<tr>
<td>024</td>
<td>97M75</td>
<td>0.057</td>
<td>12J18</td>
<td></td>
</tr>
<tr>
<td>030</td>
<td>10W96</td>
<td>0.059</td>
<td>12J18</td>
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<tr>
<td>036</td>
<td>10W85</td>
<td>0.072</td>
<td>12J19</td>
<td></td>
</tr>
<tr>
<td>042</td>
<td>97M78</td>
<td>0.076</td>
<td>12J20</td>
<td></td>
</tr>
<tr>
<td>048</td>
<td>97M79</td>
<td>0.082</td>
<td>12J20</td>
<td></td>
</tr>
<tr>
<td>060</td>
<td>10M13</td>
<td>0.090</td>
<td>12J20</td>
<td></td>
</tr>
</tbody>
</table>

CX35 and CHX35 coils and all Lennox air handlers are shipped with a factory installed TXV. In most cases, no change out of the valve is needed. If a change out is required it will be listed in the “TXV SUBSTITUTIONS” table by size. The correct TXV must be ordered separately and field installed.

C35 and CH35 coils - Use the RFC orifice shipped with the outdoor unit or replace the factory installed RFC orifice with the expansion valve listed.

CR33 and CH23 coils - Use the RFC orifice shipped with the outdoor unit or use the expansion valve listed.

**TXV SUBSTITUTION**

A general guide for replacing the factory installed TXV if the indoor unit (coil/air handler) is larger than the outdoor unit.

<table>
<thead>
<tr>
<th>Outdoor Unit</th>
<th>Indoor Unit</th>
<th>TXV Furnished</th>
<th>TXV Replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>024</td>
<td>2</td>
<td>38</td>
<td>12J19</td>
</tr>
<tr>
<td>024</td>
<td>2</td>
<td>42</td>
<td>12J20</td>
</tr>
<tr>
<td>024</td>
<td>2</td>
<td>48</td>
<td>12J20</td>
</tr>
<tr>
<td>024</td>
<td>2</td>
<td>49</td>
<td>12J20</td>
</tr>
<tr>
<td>030</td>
<td>2.5</td>
<td>38</td>
<td>12J19</td>
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<tr>
<td>030</td>
<td>2.5</td>
<td>42</td>
<td>12J20</td>
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<tr>
<td>030</td>
<td>2.5</td>
<td>43</td>
<td>12J20</td>
</tr>
<tr>
<td>030</td>
<td>2.5</td>
<td>44/48</td>
<td>12J20</td>
</tr>
<tr>
<td>030</td>
<td>2.5</td>
<td>48</td>
<td>12J20</td>
</tr>
<tr>
<td>030</td>
<td>2.5</td>
<td>50/60</td>
<td>12J20</td>
</tr>
</tbody>
</table>

**TXV Ranges:**
- **12J18** - 1.5 to 2.5 ton systems - Use on 2.5 ton and lower systems.
- **12J19** - 3 ton systems - Use down to 2 ton systems.
- **12J20** - 3.5 to 5 ton systems - Use down to 3 ton systems.

**AHRI STANDARD 210/240**

Cooling or heating capacities are net values, including the effects of blower motor heat, and do not include supplementary heat. Power input is the total power input to the compressor(s) and fan(s), plus any controls and other items required as part of the system for normal operation.

Units which do not have an indoor air-circulating blower furnished as part of the model, i.e., split system with indoor coil only, is established by subtracting from the total cooling capacity 1250 Btu/h per 1,000 cfm, and by adding the same amount to the heating capacity. Total power input for both heating and cooling is increased by 365 W per 1,000 cfm of indoor air circulated.
## REVISIONS

<table>
<thead>
<tr>
<th>Sections</th>
<th>Description of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Data</td>
<td>Updated for 030, 036,042 models.</td>
</tr>
<tr>
<td></td>
<td>RFC Orifice size updated for 030 model.</td>
</tr>
<tr>
<td>Specifications</td>
<td>Refrigerant charge updated for 030, 036,042 models.</td>
</tr>
</tbody>
</table>