The MCFA and MCFB Ceiling/Floor indoor units are installation.

Authorities having jurisdiction should be consulted before do not supersede local or national codes in any way.

These instructions are intended as a general guide and product information.

Refer to the Product Specifications bulletin (EHB) for more product information.

These instructions are intended as a general guide and do not supersede local or national codes in any way. Authorities having jurisdiction should be consulted before installation.

The MCFA and MCFB Ceiling/Floor indoor units are matched with an outdoor heat pump unit to create a mini-split system that uses HFC-410A refrigerant.
Included Parts

Package 1 of 1 contains the following:
1 - Assembled Indoor Unit

<table>
<thead>
<tr>
<th>Parts</th>
<th>Figure</th>
<th>Quantity</th>
<th>Parts</th>
<th>Figure</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOSTAT60Q-1 Wireless controller</td>
<td></td>
<td>1</td>
<td>Installation and owner’s manual</td>
<td></td>
<td>1 ea.</td>
</tr>
<tr>
<td>Wireless control holder with 2 mounting</td>
<td></td>
<td>1</td>
<td>Batteries (AAA)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>screws</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The assembled indoor unit will include the following items:
1 - Assembled Outdoor Unit and the following items:

<table>
<thead>
<tr>
<th>Parts</th>
<th>Figure</th>
<th>Quantity</th>
<th>Parts</th>
<th>Figure</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain connector</td>
<td></td>
<td>1</td>
<td>Seal ring</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Indoor / Outdoor Unit Match-Ups

<table>
<thead>
<tr>
<th>Outdoor Unit</th>
<th>Indoor Unit</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPB024S4S-*P</td>
<td>MCFA024S4-*P</td>
<td>208/230V</td>
</tr>
<tr>
<td>MPB036S4S-*P</td>
<td>MCFA036S4-*P</td>
<td>208/230V</td>
</tr>
<tr>
<td>MPB048S4S-*P</td>
<td>MCFA048S4-*P</td>
<td>208/230V</td>
</tr>
<tr>
<td>MPB018S4S-*P</td>
<td>MCFB018S4-2P</td>
<td>208/230V</td>
</tr>
<tr>
<td>MLA018S4S-*P</td>
<td>MCFB018S4-2P</td>
<td>208/230V</td>
</tr>
<tr>
<td>MLA024S4S-*P</td>
<td>MCFA024S4-2P</td>
<td>208/230V</td>
</tr>
<tr>
<td>MLB036S4S-*P</td>
<td>MCFA036S4-2P</td>
<td>208/230V</td>
</tr>
<tr>
<td>MLB048S4S-*P</td>
<td>MCFA048S4-2P</td>
<td>208/230V</td>
</tr>
</tbody>
</table>
Model Number Identification

OUTDOOR SINGLE ZONE HEAT PUMP UNITS

Series Type
M = Mini-Split

Unit Type
L = Low Ambient Heat Pump
P = Heat Pump

Major Design Sequence
A = 1st Generation
B = 2nd Generation

Nominal Cooling Capacity
018 = 1.5 tons
024 = 2 tons
036 = 3 tons
048 = 4 tons

Voltage
P = 208/230V-1 phase-60hz

Minor Design Sequence
1 = 1st Revision

Refrigerant Circuits
S = Single Circuit

Refrigerant Type
4 = HFC-410A

Cooling Efficiency
S = Standard Efficiency

CEILING/FLOOR NON-DUCTED INDOOR UNITS

Series Type
M = Mini-Split

Unit Type
CF = Ceiling/Floor Non-Ducted

Major Design Sequence
A = 1st Generation
B = 2nd Generation

Nominal Cooling Capacity
018 = 1.5 tons
024 = 2 tons
036 = 3 tons
048 = 4 tons

Voltage
P = 208/230V-1 phase-60hz

Minor Design Sequence
1 = 1st Revision
2 = 2nd Revision

Refrigerant Type
4 = HFC-410A

Cooling Efficiency
S = Standard Efficiency
Typical Single-Zone System Components

**Typical System Shown**

**IMPORTANT** - The refrigerant metering device for this system is located in the outdoor unit. This makes it necessary to insulate the refrigerant lines individually to prevent sweating.

**IMPORTANT** - Condensate drain line must always be located at the bottom of the bundle.)

---

**Figure 1. Typical System Shown**
### System Dimensions

#### Outdoor Units

**Figure 2. Outdoor Unit Dimensions - Inches (mm)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unit of Measurement</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPB018S4S-*P</td>
<td>inches</td>
<td>36</td>
<td>21-1/4</td>
<td>27-5/8</td>
<td>14-1/4</td>
<td>13-3/4</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>914</td>
<td>540</td>
<td>702</td>
<td>363</td>
<td>350</td>
</tr>
<tr>
<td>MPB024S4S-*P</td>
<td>inches</td>
<td>40-1/2</td>
<td>26-1/2</td>
<td>31-7/8</td>
<td>16-1/8</td>
<td>15-7/8</td>
</tr>
<tr>
<td>MPB036S4S-*P</td>
<td>mm</td>
<td>1032</td>
<td>673</td>
<td>810</td>
<td>410</td>
<td>403</td>
</tr>
<tr>
<td>MLA024S4S-*P</td>
<td>inches</td>
<td>40-3/4</td>
<td>26-1/2</td>
<td>31-7/8</td>
<td>15-1/8</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>1035</td>
<td>673</td>
<td>810</td>
<td>384</td>
<td>406</td>
</tr>
</tbody>
</table>

**Figure 3. Outdoor Unit Dimensions (MLB036S4S-*P, MLB048S4S-*P and MPB048S4S-*P - Inches (mm)**

---

5
Indoor Units

**Figure 4.** MCFA and MCFB Indoor Unit Dimensions - Inches (mm)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>in.</th>
<th>mm</th>
<th>in.</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCFA024S4S-*P</td>
<td>42-1/8</td>
<td>1070</td>
<td>39</td>
<td>991</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCFA036S4S-*P</td>
<td>50-5/8</td>
<td>1286</td>
<td>47-3/8</td>
<td>1203</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCFA048S4S-*P</td>
<td>65</td>
<td>1651</td>
<td>61-3/4</td>
<td>1568</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCFB018S4S-*P</td>
<td>42-1/8</td>
<td>1070</td>
<td>39</td>
<td>991</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

System Clearances

**Outdoor Unit**

**Figure 5.** Outdoor Unit Clearances - Inches (mm)

1 Minimum rear clearance can be 6 inches (152 mm) when mounted on brackets and with no obstructions on the other three sides.
**Torque Requirements for Caps and Fasteners**

When servicing or repairing HVAC components, ensure the fasteners are appropriately tightened. "Table 1. Torque Requirements" provides torque values for fasteners.

**IMPORTANT**

Only use Allen wrenches of sufficient hardness (50Rc - Rockwell scale minimum). Fully insert the wrench into the valve stem recess.

Service valve stems are factory-torqued from 9 ft.-lbs. (12 N) for small valves, to 25 ft.-lbs. (34 N) for large valves) to prevent refrigerant loss during shipping and handling. Using an Allen wrench rated at less than 50Rc risks rounding or breaking off the wrench, or stripping the valve stem recess.

See the Lennox Service and Application Notes C-08-1 for further details and information.

---

**Table 1. Torque Requirements**

<table>
<thead>
<tr>
<th>Parts</th>
<th>Recommended Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service valve cap</td>
<td>8 ft.-lb.</td>
</tr>
<tr>
<td>Sheet metal screws</td>
<td>16 in.-lb.</td>
</tr>
<tr>
<td>Machine screws #10</td>
<td>27 in.-lb.</td>
</tr>
<tr>
<td>Compressor bolts</td>
<td>7 ft.-lb.</td>
</tr>
<tr>
<td>Gauge port seal cap</td>
<td>8 ft.-lb.</td>
</tr>
</tbody>
</table>

---

**Figure 6. Indoor Unit Clearances - Inches (mm)**
Indoor Unit Installation

CAUTION
In order to avoid injury, take proper precaution when lifting heavy objects.

Unit Placement Considerations

AVOID
Do not install the unit in the following locations:
- Areas exposed to petrochemicals or petrochemical products
- Areas exposed to salt or other corrosive materials or caustic gases
- Areas exposed to extreme voltage variations (such as factories)
- Tightly enclosed areas that may impede service of the unit
- Areas exposed to fossil fuels (such as oil or gas in kitchens)
- Areas exposed to strong electromagnetic forces
- Areas exposed to acids or alkaline detergents

DO
- Place the unit so that it is not exposed to direct sunlight
- Ensure the structural ceiling can support the weight of the unit
- Select a location where condensate line will have the shortest run to a suitable drain per local codes.
- Allow sufficient space around unit for proper operation and maintenance
- Install unit a minimum of 3 feet (1m) away from any antenna, power cord (line) radio, telephone, security system, or intercom. Electrical interference and radio frequencies from any of these sources may affect operation
- Be sure to instruct customers how to properly operate the unit (especially maintenance of air filter, and operation procedure) by having them carry out operations themselves while looking at the manual provided with the controller

Floor Installation
- Locate a suitable position within the space where maintenance access and supply air will not be restricted or affected by obstacles. See “Figure 6. Indoor Unit Clearances - Inches (mm)” on page 7 for minimum clearances
- Place the MCFA or MCFB on a wall which is both capable of supporting the unit’s weight and which is constructed to enable the unit to fit flush on the wall. An uneven wall may lead to vibration and subsequent unit damage

Figure 7. Floor / Wall Applications

Units are wall mounted using factory-installed hanging brackets.
1. Remove the side panels and grille to expose factory-installed hanging brackets on the sides of the unit.

Figure 8. Remove Side Panel and Grille
2. Install four mounting bolts (appropriate for your application) to the wall. See “Figure 4. MCFA and MCFB Indoor Unit Dimensions - Inches (mm)” on page 6 to ensure proper positioning of the bolts.
3. Upon confirming the four bolts are level, correctly spaced and secured to the wall; lift the unit onto the brackets. Confirm the unit is level before continuing.

Figure 9. Hang Unit on Mounting Bolts
Ceiling Installation

- Locate a suitable position within the space where maintenance access and supply air will not be restricted or affected by obstacles
- Suspend the unit from a ceiling which is capable of supporting the unit's weight

Units are suspended from the ceiling using **factory-installed** hanging brackets.

1. Remove the side panels and grille to expose factory-installed hanging brackets on the sides of the unit.

2. Install suspension rods in the structural ceiling or concrete slab in a suitable location. If the structural ceiling is constructed of concrete, install anchors to accept four suitably sized threaded rods to suspend the indoor unit. If the structural ceiling includes wooden joists, use angle iron or Unistrut channel fixed securely in place to accept the threaded rods.

3. Slide one nut and one washer onto each threaded rod.

4. Use electrical tape to keep the washer from falling off. Position the nuts.

5. Slide a second washer and then a second nut onto each rod slightly above the final resting place of the hanging brackets.

6. If necessary, install a field-provided isolation grommet to prevent transmission of vibration from unit to structural ceiling.

7. Use either a mechanical lifting device or a minimum of two people to raise the unit.

8. Hang the unit by sliding the factory-installed hanging brackets on to the threaded rods between the sets of washers and nuts.

9. Use the leveling nut (beneath hanging brackets) to adjust the unit to the correct height. Remove the electrical tape holding the upper washers and nuts in place and tighten each of the four nuts above the brackets down onto the brackets. This will ensure that the unit remains level.

### Indoor Unit Condensate Piping Connections

**IMPORTANT**

Make sure that drain piping is properly routed and insulated to prevent both leaks and condensation.

1. Use a field-provided hose clamp to secure the drain line stub on the side of the cassette base to a field-supplied 1” (25 mm) drain line.

**NOTE:** Take care not to over-tighten the hose clamp as this may damage the drain line stub.

**NOTE:** Connection between stub and drain line must be watertight. Apply non-hardening plumbing joint compound if needed to ensure a watertight seal.

2. Confirm proper slope (not less than 1/4 inch per foot (18 mm per m)) and routing of condensate lines to ensure moisture is drained away from the indoor unit.

3. Drain should be as short as possible and should not have any droops or kinks that would restrict condensate flow and shall be approved resistant pipe. **There must be a 2-inch (51 mm) space between the end of the condensate drain and the final termination point (ground, open drain, etc.) to ensure that the line will drain freely.**
4. After the system installation is complete, the condensate drain line must be checked for leaks and proper drainage. If a field-provided condensate pump has been installed, it must be checked to ensure proper operation. This check is part of the start-up process which must be done by the installing contractor.

**IMPORTANT**

Drain should have a slope of at least ¼ inch per foot and should be approved corrosion-resistant pipe. You must confirm operation of every drain and pump in the system as part of the commissioning procedure.

**DRAIN LINE**

Slope at least 1/4” per foot (18 mm per M)

**Figure 13. Indoor Unit Suspended from Ceiling using a Properly Sloped Gravity Drain**

**Outdoor Unit Installation**

**Placement Considerations**

**CAUTION**

In order to avoid injury, take proper precaution when lifting heavy objects.

Consider the following when positioning the unit:

- In coastal areas or other places with salty atmosphere of sulfate gas, corrosion may shorten the life of the unit. In coastal areas, the coil should be cleaned with potable water several times per year to avoid corrosive buildup (salt)
- Some localities are adopting sound ordinances based on the unit’s sound level registered from the adjacent property, not from the property where the unit is installed. Install the unit as far as possible from the property line
- When possible, do not install the unit directly outside a window. Glass has a very high level of sound transmission
- Install unit level

**Direct Sunlight, Rain, Snow and Ice Protection**

- If the outdoor unit is subjected to prolong exposure to direct sunlight with temperatures over 100°F (38°C) a canopy is recommended as illustrated in “Figure 15. Outdoor Unit on Pedestal (Stand) and Protective Canopy” or “Figure 20. Dog House-Style Shelter” on page 12.

**IMPORTANT**

The construction of a canopy or shade is recommended because of an ambient limit control set to 122°F (50°C) to protect the electronics. If the outdoor unit is placed in direct sunlight it is possible that the limit may activate and shut down the unit.

- Place unit away from overhanging roof lines which would allow water or ice to drop on, or in front of, coil or into unit. Construct a canopy as illustrated in “Figure 15. Outdoor Unit on Pedestal (Stand) and Protective Canopy”
• The unit base should be elevated above the depth of average snows as illustrated in “Figure 16. Outdoor Unit on Brackets above Snow Line”

• In heavy snow areas, do not place the unit where drifting will occur as illustrated in “Figure 17. Outdoor Unit Air Flow Obstructed by Snow” on page 11

• Carefully consider how to manage defrost water disposal to prevent ice from blocking walkways or creating a safety hazard near the outdoor unit as illustrated in “Figure 18. Avoid Defrost Water Ice Hazard” on page 11

![Figure 15. Outdoor Unit on Pedestal (Stand) and Protective Canopy](image)

![Figure 16. Outdoor Unit on Brackets above Snow Line](image)

![Figure 17. Outdoor Unit Air Flow Obstructed by Snow](image)

![Figure 18. Avoid Defrost Water Ice Hazard](image)

### Prevailing Winds

Normally wind baffles are not required for an outdoor unit. However, in order to maximize reliability and performance, the following best practices should be followed.

If unit coil cannot be installed away from prevailing winter winds, some method of protecting the coil is recommended. However, minimum clearances as reference in “Figure 5. Outdoor Unit Clearances - Inches (mm)” on page 6 must be observed at all times.

Common application examples are:

• When prevailing winds are from the air inlet side, then position the wind barrier a minimum of 12 inches (305 mm) from the unit as illustrated in “Figure 19. Wind Barrier”

• When prevailing wind is into the discharge side, then position the wind barrier a minimum 79 inches (2007 mm) from the front of the unit as illustrated in “Figure 19. Wind Barrier”

• Outdoor unit can be installed in a dog house style shelter as illustrated in “Figure 20. Dog House-Style Shelter”

• a roof overhang as illustrated in “Figure 21. Unit installed in Alcove”

![Figure 19. Wind Barrier](image)
Buried Refrigerant Pipe Protection

- All refrigerant lines must be insulated regardless of if it is buried
- In addition to insulating each line of piping, buried lines must rest inside a sealed, watertight conduit
- The conduit must be designed so it cannot collect and retain water

Outdoor Unit Condensate Piping

Condensate formed during the heating and defrost processes must be drained from heat pump units. Drain holes are provided in the base of the units to ensure proper drainage. Heat pumps must be raised when installed on a concrete pad or the ground to allow drainage to occur. If the heat pump unit is installed on wall mounting bracket, insert the provided drain connector into one of the 1 inch (25 mm) drain holes and attached a field-provided insulated drain hose to the connector. Use field-provided rubber plugs to cover any unused drain holes.

Slab or Roof Mounting

Install the unit a minimum of 4 inches (102 mm) above the roof or ground surface to avoid ice build-up around the unit. Place the unit above a load bearing wall or area of the roof that can adequately support the unit. Consult local codes for rooftop applications.

CAUTION

Roof Damage!
This system contains both refrigerant and oil. Some rubber roofing material may absorb oil. This will cause the rubber to swell when it comes into contact with oil. The rubber will then bubble and could cause leaks. Protect the roof surface to avoid exposure to refrigerant and oil during service and installation. Failure to follow this notice could result in damage to roof surface.

Securing Outdoor Unit to Slab, Frame, or Rails

If the outdoor unit is installed on a field-provided slab or frame, use lag bolts or equivalent to secure the outdoor unit to the slab or frame.
Securing Outdoor Unit To Hanging Brackets

If the outdoor unit is installed on field-provided wall mounting brackets, use lag bolts or equivalent to secure the outdoor unit to the bracket. Minimum rear clearance can be reduced to 6 inches (152 mm) when mounted on brackets and with no obstructions on the other three sides. Allow for condensate disposal when placing units above one another.

![Figure 25. Securing Outdoor Unit to Brackets](image)

Refrigerant Piping Connections

Line sets consist of two copper pipes connecting the outdoor unit to the indoor unit. “Table 3. Refrigerant Piping and Indoor Unit Connection Sizes” lists the connection sizes. The connections are made using the provided brass flare nuts at the end of the refrigerant piping connections.

1. Choose the correct pipe sizes for your application using “Table 3. Refrigerant Piping and Indoor Unit Connection Sizes”.
2. Confirm that you are using the correct diameter piping.
3. Determine the necessary piping length required for the application.
4. Cut the selected pipes with a pipe cutter. Make the cuts flat and smooth as illustrated in “Figure 26. Cutting Pipe”.

![Figure 26. Cutting Pipe](image)

5. Insulate the copper piping.
6. Insert a flare nut onto each pipe before flaring.
7. Use “Table 2. Flaring Piping” to properly flare the pipe.

Table 2. Flaring Piping

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Flare Dimension A (mm)</th>
<th>Flare Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>1/4” (6.35)</td>
<td>8.3</td>
<td>8.7</td>
</tr>
<tr>
<td>3/8” (9.62)</td>
<td>12.0</td>
<td>12.4</td>
</tr>
<tr>
<td>1/2” (9.52”)</td>
<td>15.4</td>
<td>15.8</td>
</tr>
<tr>
<td>5/8” (15.9)</td>
<td>18.6</td>
<td>19.1</td>
</tr>
<tr>
<td>3/4” (22.9)</td>
<td>22.9</td>
<td>23.3</td>
</tr>
</tbody>
</table>

8. After flaring the pipe, temporarily sealed pipe ends with adhesive tape to avoid contaminants from entering the pipes.
9. The seal on the unit refrigerant piping connections should remain in place until the last possible moment. This will prevent dust or water from getting into the refrigerant piping before it is connected.
10. CAREFULLY adjust refrigerant piping connections to suit the application.
11. Slowly loosen one of the flare nuts to release the factory nitrogen charge from the indoor units only.
12. Remove the flare nuts from the connections on the unit and discard the seal from each of the piping connections.
13. Slide the flare nuts onto the ends of the field-provided refrigerant piping before using a suitable flaring tool to flare the end of the copper pipe.
14. Apply recommended HFC-410A refrigerant lubricant to the outside of the flared refrigerant lines.

IMPORTANT

The compressor in this unit contains PVE oil (Polyvinylether). PVE oil is formulated for hydrofluorocarbon (HFC) refrigerants, such as HFC-410A, which this system contains. While it may have some miscibility properties with mineral-based oil and POE oil (Polyolester), it is not recommended to mix PVE oil with any other type of refrigerant oil.

15. Align the threaded connections with the flared refrigerant lines. Tighten the flare nuts lightly at first to obtain a smooth match as illustrated in “Figure 27. Making Connections (Male to Female Connection)”.

Table 3. Refrigerant Piping and Indoor Unit Connection Sizes

<table>
<thead>
<tr>
<th>Size (Btuh)</th>
<th>Liquid Line in.</th>
<th>Gas Line in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>18000</td>
<td>1/4</td>
<td>1/2</td>
</tr>
<tr>
<td>24000, 36000 &amp; 48000</td>
<td>3/8</td>
<td>5/8</td>
</tr>
</tbody>
</table>
16. Once snug, continue another half-turn on each nut which should create a leak-free joint. A torque wrench may be used to tighten flare nuts using “Table 4. Flare Nut Torque Recommendations” on page 14. Do not over-tighten a flared joint. Flared connections should always be accessible and must be insulated to prevent condensation.

17. After refrigerant piping has been installed and checked for leaks, apply insulation over all flared connections.

Table 4. Flare Nut Torque Recommendations

<table>
<thead>
<tr>
<th>Outside Diameter</th>
<th>Recommended Torque</th>
<th>No torque wrench available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>15 ft-lb. (20 N)</td>
<td>1/4 turn</td>
</tr>
<tr>
<td>3/8</td>
<td>26 ft-lb. (35 N)</td>
<td>1/2 turn</td>
</tr>
<tr>
<td>1/2</td>
<td>41 ft-lb. (56 N)</td>
<td>7/8 turn</td>
</tr>
<tr>
<td>5/8</td>
<td>48 ft-lb. (65 N)</td>
<td>1 full turn</td>
</tr>
</tbody>
</table>

Table 5. Refrigerant Line Set Requirements

<table>
<thead>
<tr>
<th>System Size (KBtu)</th>
<th>Line Set Diameters (in.)</th>
<th>Maximum Elevation - Outdoor Unit BELOW Indoor Unit - Feet (Meter)</th>
<th>Maximum Elevation - Outdoor Unit ABOVE Indoor Unit - Feet (Meter)</th>
<th>Maximum Line Set Length - Feet (Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>024</td>
<td>3/8 5/8</td>
<td>82 ft. (25 m)</td>
<td>82 ft. (25 m)</td>
<td>164 ft. (50 m)</td>
</tr>
<tr>
<td>036/048</td>
<td>3/8 5/8</td>
<td>98 ft. (30 m)</td>
<td>98 ft. (30 m)</td>
<td>213 ft. (65 m)</td>
</tr>
</tbody>
</table>

**IMPORTANT**

Do not allow for excess length of line sets to be left rolled up as part of the required distance, or in general. This will also cause additional performance issues.
Leak Test and Evacuation

Air and moisture remaining in the refrigerant system will have undesirable effects as indicated below:

- Pressure in the system rises
- Operating current rises
- Cooling or heating efficiency drops
- Moisture in the refrigerant circuit may freeze
- Water may lead to corrosion of parts in the refrigeration system

The line set between the indoor and outdoor units must be leak tested and evacuated to remove any non-condensables and moisture from the system.

Leak Test

Use the following procedure to test for system leaks:

1. Connect the manifold gauge set and dry nitrogen gas cylinder to the liquid and gas service ports.
2. Open valve on nitrogen cylinder.
3. Pressurize the system per the pressure test specifications in “Table 6. Pressure Test Specifications”.
4. Check that the system pressure remains stable. If there is any movement check system for leaks.
5. After the system is found to be free of leaks:
   - Close valve on nitrogen cylinder
   - Relieve the nitrogen pressure by: loosening the charge hose connector at the nitrogen cylinder
   - When the system pressure is reduced to normal, disconnect the hose from the cylinder

Table 6. Pressure Test Specifications

<table>
<thead>
<tr>
<th>Bar</th>
<th>Psig</th>
<th>kPa</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>44</td>
<td>303</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>220</td>
<td>1517</td>
</tr>
<tr>
<td>3</td>
<td>32</td>
<td>470</td>
<td>3241</td>
</tr>
<tr>
<td>4</td>
<td>45</td>
<td>650</td>
<td>4482</td>
</tr>
<tr>
<td>5</td>
<td>32</td>
<td>470</td>
<td>3241</td>
</tr>
</tbody>
</table>

Wiring Connections

WARNING

Electric Shock Hazard. Can cause injury or death. Unit must be rounded in accordance with national and local codes. Line voltage is present at all components when unit is not in operation. Disconnect all remote electric power supplies before opening access panel. Unit may have multiple power sources.

CAUTION

All terminal connections must be made as illustrated in the following diagrams. Improperly connected wiring could damage unit or cause communication errors between indoor and outdoor units.

In the U.S.A., wiring must conform with current local codes and the current National Electric Code (NEC). In Canada, wiring must conform with current local codes and the current Canadian Electrical Code (CEC).

Outdoor Unit

- Refer to unit nameplate for minimum circuit ampacity and maximum over-current protection size
- Make all electrical power wiring connections at the outdoor unit
- Be sure to reattach all electrical box covers after connections are complete

Indoor Unit

- All indoor units are powered by the outdoor unit.
- Communication Wiring (Indoor Units 30K and Below): Use one stranded 4-conductor wire to provide power and communication
- Communication Wiring (Indoor Units 36K and Above): Use one stranded 3-conductor wire to provide power and one stranded 2-conductor wire to provide communication
- Use minimum of 15 GA stranded wiring
- When installing a condensate pump, wire in-line with the CN5 float switch
IMPORTANT

This unit must be properly grounded and protected by a circuit breaker. The ground wire for the unit must not be connected to a gas or water pipe, a lightning conductor or a telephone ground wire.

Do not connect power wires to the outdoor unit until all other wiring and piping connections have been completed.

Do not install the unit near a lighting appliance that includes a ballast. The ballast may affect remote control operation.

Install unit so that unit disconnect is accessible.

Use specified wiring and cable to make electrical connections. Clamp cables securely and make sure that connections are tight to avoid strain on wiring. Insecure wiring connections may result in equipment failure and risk of fire.

Wiring must be installed so that all cover plates can be securely closed.

IMPORTANT

All diagrams (Figure 31 through Figure 38) are typical wiring diagrams. Refer to the wiring diagram on the unit for actual wiring.

Figure 29. Single-Zone Wiring 30K and Below

Figure 30. Single-Zone Wiring 36K and Above
<table>
<thead>
<tr>
<th>System and Terminal Designations</th>
<th>System Capacity</th>
<th>System Voltage</th>
<th>Number of Conductors</th>
<th>Wire Type</th>
<th>Wire Gauge / MCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor to Outdoor Wiring (Communication/Power) 1, 2, 3 and GND</td>
<td>18K</td>
<td>208/230VAC</td>
<td>4</td>
<td>Stranded and unshielded</td>
<td>16AWG</td>
</tr>
<tr>
<td>Outdoor to Main Power L1, L2 and GND</td>
<td>18K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and unshielded</td>
<td>14AWG / 18A</td>
</tr>
<tr>
<td>Indoor to Outdoor Wiring (Communication/Power) 1, 2, 3 and GND</td>
<td>24K</td>
<td>208/230VAC</td>
<td>4</td>
<td>Stranded and unshielded</td>
<td>16AWG</td>
</tr>
<tr>
<td>Outdoor to Main Power L1, L2 and GND</td>
<td>24K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and unshielded</td>
<td>12AWG / 20A</td>
</tr>
<tr>
<td>Indoor to Outdoor Wiring (Power only) L1, L2 and GND</td>
<td>36K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and unshielded</td>
<td>16AWG</td>
</tr>
<tr>
<td>Indoor to Outdoor Wiring (Communication only) (S1, S2 and GND)</td>
<td>36K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and shielded</td>
<td>24AWG</td>
</tr>
<tr>
<td>Outdoor to Main Power L1, L2 and GND</td>
<td>36K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and unshielded</td>
<td>10AWG / 30A</td>
</tr>
<tr>
<td>Indoor to Outdoor Wiring (Power only) L1, L2 and GND</td>
<td>48K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and unshielded</td>
<td>16AWG</td>
</tr>
<tr>
<td>Indoor to Outdoor Wiring (Communication only) (S1, S2 and GND)</td>
<td>48K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and shielded</td>
<td>24AWG</td>
</tr>
<tr>
<td>Outdoor to Main Power L1, L2 and GND</td>
<td>48K</td>
<td>208/230VAC</td>
<td>3</td>
<td>Stranded and unshielded</td>
<td>8AWG / 35A</td>
</tr>
</tbody>
</table>

MCA = Minimum Circuit Amps
Figure 31. MCFB018S4-*P Unit Wiring Diagram

Figure 32. MCFA024S4-*P Unit Wiring Diagram
Figure 33. MCFA036S4-*P Unit Wiring Diagram

Figure 34. MCFA048S4-*P Unit Wiring Diagram
Figure 35. 208/230V MPB018S4S-*P and MPB024S4S-*P Outdoor Unit Wiring Diagram

Figure 36. 208/230V MPB036S4S-*P Outdoor Unit Wiring Diagram
Figure 37. 208/230V MPB048S4S-*P Outdoor Unit Wiring Diagram

Figure 38. 208/230V MLA024S4S-*P Outdoor Unit Wiring Diagram
**Unit Start-Up**

**IMPORTANT**

Units should be energized 24 hours before unit start-up to prevent compressor damage as a result of slugging.

1. Inspect all factory- and field-installed wiring for loose connections.
2. Verify that the manifold gauge set is connected.
3. Add additional refrigerant charge if required before opening valves and while system is still under a vacuum.
4. Open the liquid and gas line service valves to release the refrigerant charge contained in outdoor unit into the system.
5. Replace the stem caps and tighten to the value listed in “Table 4. Flare Nut Torque Recommendations” on page 14.
6. Check voltage supply at the outdoor unit terminal strip. The voltage must be within the range listed on the unit’s nameplate. If not, do not start the equipment until you have consulted with the power company and the voltage condition has been corrected.
7. Refer to the included user guide to operate the system using the provided remote control.
8. Visually check for binding of both indoor and outdoor fans.

**Adding Refrigerant for Longer Line Set**

The outdoor unit is factory-charged with refrigerant. Calculate the additional refrigerant required according to the diameter and the length of the liquid pipe between the outdoor unit and indoor unit connections.

Be sure to add the proper amount of additional refrigerant. Failure to do so may result in reduced performance.

**Table 8. Additional Refrigerant Charge**

<table>
<thead>
<tr>
<th>System Size (KBtu)</th>
<th>Pipe Length (feet / meters)</th>
<th>Amount of Refrigerant to add</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>&gt;25 (7.5)</td>
<td>0.161 oz/ft (15g/m)</td>
</tr>
<tr>
<td>24</td>
<td>&gt;25 (7.5)</td>
<td>0.322 oz/ft (30g/m)</td>
</tr>
<tr>
<td>36</td>
<td>&gt;25 (7.5)</td>
<td>0.322 oz/ft (30g/m)</td>
</tr>
<tr>
<td>48</td>
<td>&gt;25 (7.5)</td>
<td>0.322 oz/ft (30g/m)</td>
</tr>
</tbody>
</table>
**Troubleshooting**

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E0</td>
<td>Indoor unit EEPROM error</td>
</tr>
<tr>
<td>E1</td>
<td>Communication error between indoor and outdoor units (E2 for outdoor code)</td>
</tr>
<tr>
<td>E3</td>
<td>Indoor fan speed error</td>
</tr>
<tr>
<td>E4</td>
<td>Indoor return air temperature sensor error</td>
</tr>
<tr>
<td>E5</td>
<td>Indoor coil temperature sensor error</td>
</tr>
<tr>
<td>EC</td>
<td>Low refrigerant</td>
</tr>
<tr>
<td>EE</td>
<td>High water level alarm (for ducted units only)</td>
</tr>
<tr>
<td>F0</td>
<td>Outdoor current overload sensed Note: (outdoor unit display --) two dashes</td>
</tr>
<tr>
<td>F1</td>
<td>Outdoor ambient temperature sensor error (T4 malfunction) outdoor unit display E4</td>
</tr>
<tr>
<td>F2</td>
<td>Outdoor coil temperature sensor error (T3 Malfunction outdoor unit display E4</td>
</tr>
<tr>
<td>F3</td>
<td>Compressor discharge temperature sensor error (T5) Malfunction outdoor unit display E4</td>
</tr>
<tr>
<td>F4</td>
<td>Outdoor unit EEPROM error - outdoor display E0</td>
</tr>
<tr>
<td>F5</td>
<td>Outdoor unit fan speed error - outdoor Error display E8</td>
</tr>
<tr>
<td>P0</td>
<td>Inverter module IPM error - outdoor display P6</td>
</tr>
<tr>
<td>P1</td>
<td>High or low voltage protection - outdoor display E5</td>
</tr>
<tr>
<td>P3</td>
<td>Outdoor unit low temperature lockout - outdoor unit display LP</td>
</tr>
<tr>
<td>P4</td>
<td>Compressor drive error</td>
</tr>
<tr>
<td>P6</td>
<td>Mode conflict</td>
</tr>
<tr>
<td>P7</td>
<td>Compressor high- or low-pressure switch open - outdoor unit display P2</td>
</tr>
<tr>
<td>SC</td>
<td>Indoor unit is running a self clean operations.</td>
</tr>
</tbody>
</table>

**Self Clean Feature**

For units that use the provided wireless remote control, there is a button labeled “self clean”. Press to activate self cleaning mode. In cooling or dry mode only, the indoor unit will temporarily change operation to allow condensate on the indoor unit coil to evaporate, and then will turn off. During this operation, code SC will display on the indoor unit.

The sequence of operation for the self-clean function is illustrated below.

**Test Run**

**Pre-Checks**

Only perform test run after you have completed the following steps:
- Electrical Safety Checks – Confirm that the unit’s electrical system is safe and operating properly
- Refrigerant Leak Checks – Check all flare nut connections and confirm that the system is not leaking
- Confirm that liquid and gas valves are fully open

**Procedure**

You should perform the Test Run for at least 30 minutes.
1. Connect power to the unit.
2. Press the ON/OFF button on the remote controller to turn it on.
3. Press the mode button to scroll through the following functions, one at a time:
   - COOL - Select lowest possible temperature
   - HEAT - Select highest possible temperature
4. Let each function run for 5 minutes, and perform the following checks:

**Table 8. Test Run Checklist**

<table>
<thead>
<tr>
<th>Checks</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>No electrical leakage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit is properly grounded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All electrical terminals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>properly covered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor and outdoor units are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>solidly installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All pipe connection points do</td>
<td></td>
<td></td>
</tr>
<tr>
<td>not leak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outdoor (2):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water drains properly from</td>
<td></td>
<td></td>
</tr>
<tr>
<td>drain hose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All piping is properly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>insulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit performs COOL function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>properly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit performs HEAT function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>properly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor unit louvers rotate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>properly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor unit responds to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>remote controller</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dry Mode Operation (Dehumidification)**

**Procedure**

1. Use the provided wireless remote control and press the MODE button and select DRY mode.
2. Press the UP/ DOWN button to select the desired temperature. The temperature setting range is from 15 to 24°C.
62°F (17°C) to 86°F (30°C) in one degree increments.

**NOTE:** The blower is preset at a low speed and cannot be changed therefore it will get cold and most likely will over shoot the temperature setting by 6-10°F (3-5°C) depending on the room size or other various factors. Also the *Follow Me* mode does not operate in this mode.

**NOTE:** In addition, the indoor units do not have a humidistat installed therefore they are unable to determine humidity levels. This product is not recommend as a main source for dehumidification.

**Sequence of Operation**

When in dry mode operation the unit is actually in cooling mode with a low speed blower operation. Set remote temp to a lower room temp to begin the dry mode operation. The compressor will stop when the room temperature is 4°F (2°C) lower than the temperature setting.

However there is a temperature compensation for cooling mode that is two degrees Celsius. So the unit will stop when the temperature is 8°F (4°C) lower than the room temperature settings.