INSTALLATION INSTRUCTIONS

MLB/MPC Outdoor Units with MMA Indoor Units

MULTI-POSITION AIR HANDLERS
Single/Multi-Zone Mini-Split
508280-01 03/2024
Supersedes 12/2023

THIS MANUAL MUST BE LEFT WITH THE HOMEOWNER FOR FUTURE REFERENCE

⚠ 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.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

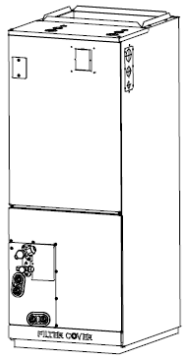
⚠ CAUTION

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.

Table of Contents

Shipping and Packing List

Package 1 of 1 contains:

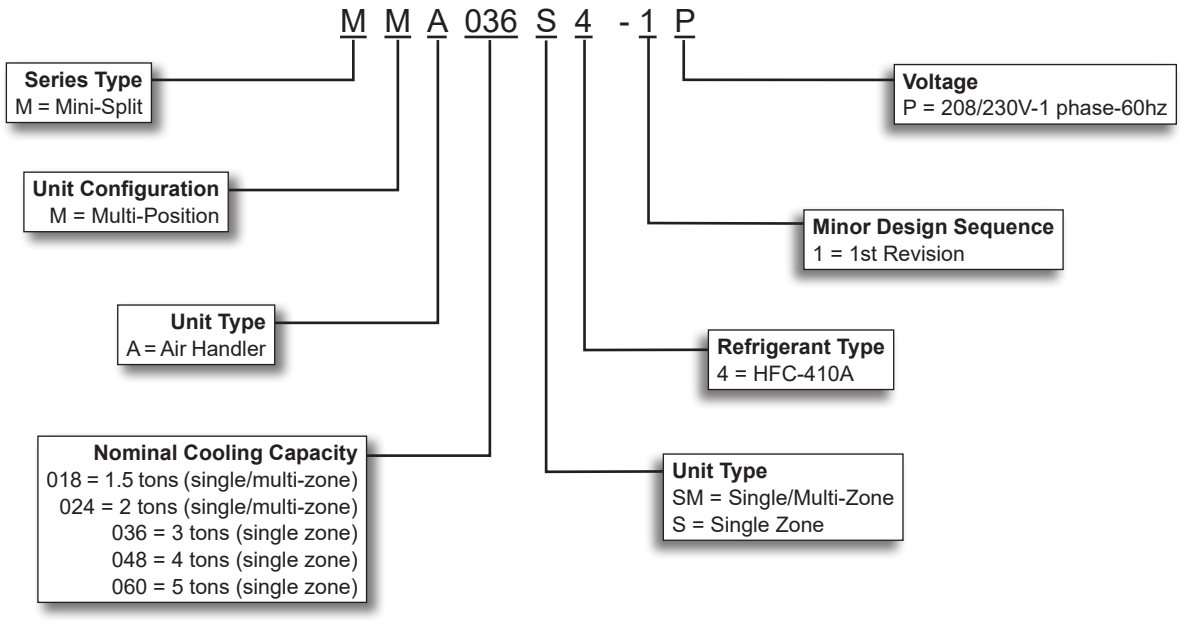
1	Manual	
2	Batteries(optional)	
2	Cable ties	
4	Foam	
2	Flare nut (optional)	
2	Braze to flare adapter (optional)	
1	Assembled air handler unit factory-equipped for upflow or horizontal air discharge application (includes upflow and horizontal drain pans and **preinstalled air filter**) Check the air handler for shipping damage; if found, immediately contact the last carrier. Check the unit rating plate to confirm that delivered unit matches order.	
1	Wired Programmable Controller (M0STAT120N-1)	
1	Wireless Controller (RG10F2)	

General Information

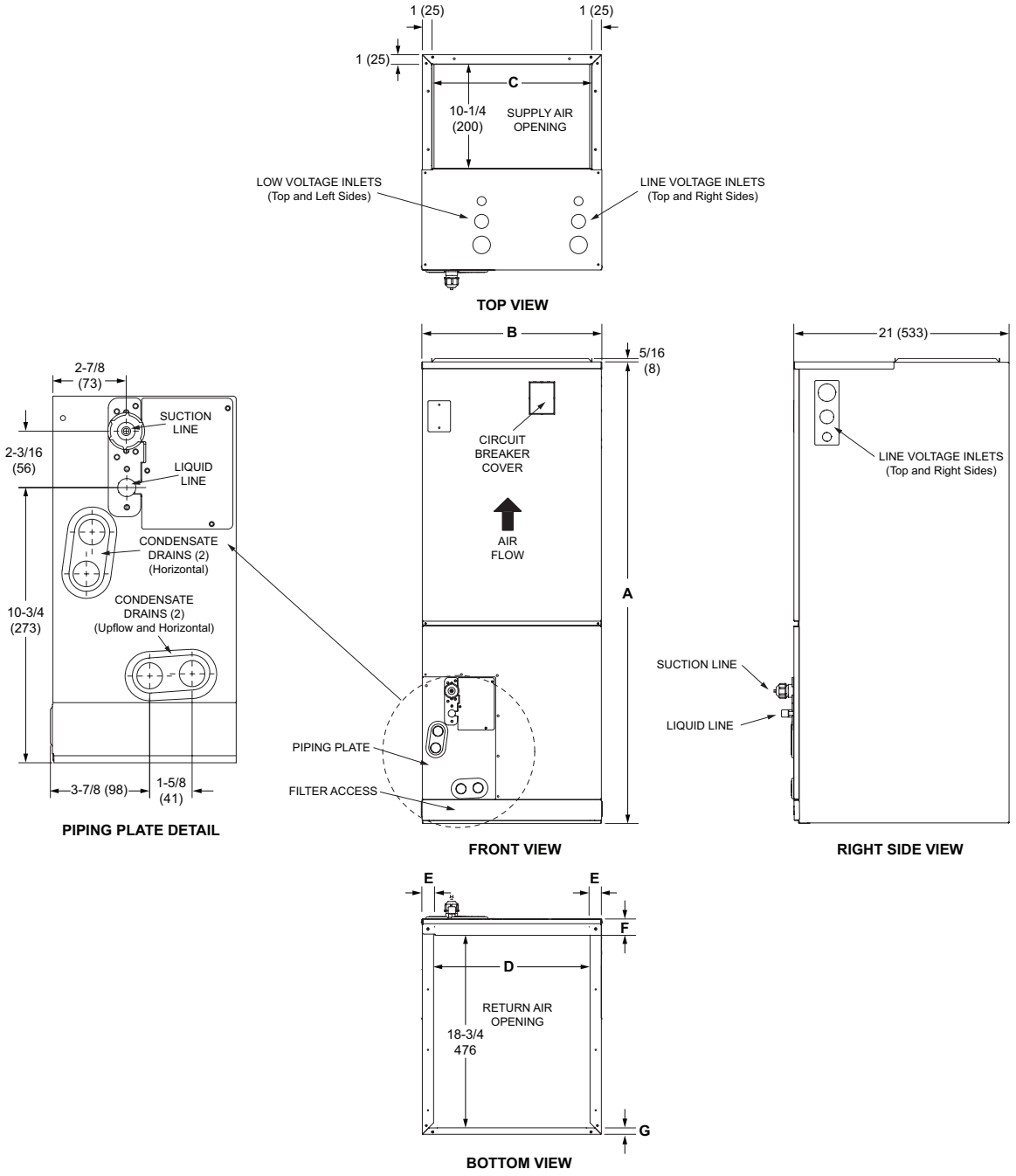
The air handler is designed for indoor installation only. As shipped, the unit is ready for installation in either upflow or horizontal left-hand air discharge applications. Horizontal drain pan may be repositioned in the field to allow installation in the horizontal right-hand air discharge position.

This instruction is intended as a general guide and does not supersede local or national codes in any way. Consult authorities having jurisdiction before installation.

Model Number Identification - Indoor Air Handler



Dimensions - Indoor Air Handler



NOTE: *Unit is shipped configured for horizontal left-hand air discharge. Unit may be converted to horizontal right-hand air discharge by repositioning horizontal drain pan. Dimensions remain the same in all configurations.*

Model No.	018 / 024		036 / 048		060	
	in.	mm	in.	mm	in.	mm
A	45	1143	49	1245	53	1346
B	17-1/2	445	21-1/4	540	24-1/2	622
C	15-5/8	397	19-1/8	486	22-5/8	575
D	15-1/8	384	18-5/8	473	22-1/8	562
E	1-1/4	32	1-1/4	32	1-1/8	28
F	1-1/2	38	1-5/8	41	1-5/8	41
G	5/8	16	5/8	16	3/4	19

Indoor / Outdoor Unit Match-Ups

Single Zone

Outdoor Unit	Indoor Unit	Voltage
MPC018S4S-*P	MMA018	208/230V
MPC024S4S-*P	MMA024	208/230V
MPC036S4S-*P	MMA036	208/230V
MPC048S4S-*P	MMA048	208/230V
MPC060S4S-*P	MMA060	208/230V
MLB018S4S-*P	MMA018	208/230V
MLB024S4S-*P	MMA024	208/230V
MLB036S4S-*P	MMA036	208/230V
MLB048S4S-*P	MMA048	208/230V

Multi-Zone

Outdoor Unit	Indoor Unit	Voltage
MPC024S4M-*P	MMA018 / MMA024	208/230V
MPC030S4M-*P	MMA018	208/230V
MPC036S4M-*P	MMA018 / MMA024	208/230V
MPC048S4M-*P	MMA018 / MMA024	208/230V
MLB030S4M-*P	MMA018	208/230V
MLB036S4M-*P	MMA018 / MMA024	208/230V
MLB048S4M-*P	MMA018 / MMA024	208/230V

Controller Compatibility

Indoor Unit	Controller
MMA018SM4-1P	M0STAT120N-1 (Mini-Split Wired Programmable Controller) 24-Volt Thermostat (optional)
MMA024SM4-1P	
MMA036S4-1P	
MMA048S4-1P	
MMA060S4-1P	

Matching With Multi-Zone Outdoor Unit

Mode of Air Handler (MMA)	Mode of other IDU Zones	Mode Conflict Unit
Fan	Heating/Electric Heat/Emergency Heat	MMA
Cooling		MMA
Dehumidification		MMA
Heating	Fan/Cooling/Dehumidificaton	Other IDU Zones
Electric Heat		Other IDU Zones
Emergency Heat		Other IDU Zones

NOTE: *When Heating reaches the temperature and shuts down with other IDU zones heating normally, the air handler's fan will stop running and the Fan-ON mode is invalid.*

The heat pump will start synchronously when Emergency Heat or Electric Heat is started.

When two air handler units are connected by a multi-zone outdoor unit, the above rules apply. The second air handler unit is regarded as other IDU Zones.

Requirements

⚠ WARNING

Excessive Weight Hazard - Use two or more people when moving and installing the unit. Failure to do so can result in back or other type of injury.

⚠ IMPORTANT

Air handler units include a factory-installed check/expansion valve which will provide optimal refrigerant control and system performance with outdoor units of varying capacities. These units must be installed as a part of a matched system.

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

Compliance with all local, state, or national codes pertaining to this type of equipment should be determined prior to installation. Read this instruction manual, as well as the instructions supplied in separate equipment, before starting the installation.

In addition to conforming to manufacturer's installation instructions and local municipal building codes, installation of Lennox air handler units (with or without optional electric heat), MUST conform with National Fire Protection Association (NFPA) standards: "Standard for Installation of Air Conditioning and Ventilation Systems" (NFPA No. 90A) and "Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems" (NFPA No. 90B).

All models are designed for indoor installation only. The installation of the air handler, field wiring, duct system, etc. must conform to the requirements of the National Electrical Code, ANSI/NFPA No. 70 (latest edition) in the United States, and any state laws, and local ordinances (including plumbing or waste water codes).

Local authorities having jurisdiction should be consulted before installation is made. Such applicable regulations or requirements take precedence over the general instructions in this manual.

Install the conditioned air plenum, ducts and air filters (provided) in accordance with NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems (latest edition).

The air handler is shipped from the factory completely assembled. The unit is provided with flanges for the connection of the duct system.

Do not remove the cabinet knockouts until it has been determined which knockouts will need to be removed for the installation.

Select the air discharge position that best suits the site conditions. Consider required clearances, space, routing requirements for refrigerant line, condensate disposal, filters, duct system, wiring, and accessibility for service. Refer to the rating plate on the air handler for specific information.

⚠ WARNING

Danger of explosion. Keep flammable materials and vapors, such as gasoline, away from air handler. Place air handler so that heating elements are at least 18 inches (46 cm) above the floor for a garage installation. Failure to follow these instructions can result in death, explosion, or fire.

⚠ IMPORTANT

Excessive condensation may occur if the unit is installed in a warm, humid place. When the unit is installed in an unconditioned space, apply sealant around electrical wires, refrigerant piping and condensate lines at the point where they enter the cabinet.

Apply sealant on the inside of the cabinet at the point where the electrical wires exit through the conduit opening. This will also keep warm and moist unconditioned air out of the air handler cabinet where it will form condensate on the cooler control box and electrical controls.

⚠ IMPORTANT

This unit is approved for installation clearance to combustible material as stated on the unit rating plate. Accessibility and service clearances must take precedence over combustible material clearances.

The air handler must be installed so that free access is allowed to the coil/filter compartment and blower/control compartment.

NOTE: *During cooling operation, excessive sweating may occur if the air handler is installed in a warm and humid space.*

If installed in an unconditioned space, sealant should be applied around the electrical wires, refrigerant tubing, and condensate lines where they enter the cabinet.

Electrical wires should be sealed on the inside where they exit the conduit opening. Sealant is required to prevent air leakage into, and condensate from forming inside of, the air handler, the control box, and on the electrical controls.

This unit is approved for installation clearance to combustible material as stated on the unit rating plate. Accessibility and service clearances must take precedence over combustible material clearances.

The air handler must be installed so that free access is allowed to the coil/filter compartment and blower/control compartment.

Installation Clearances

Non-Ducted Return Closet Installation

The air handler can be installed in a closet with a false bottom to form a return air plenum. It may also be installed with a return air plenum under the air handler. Louvers or return air grilles are field-supplied. Local codes may limit application of systems without a ducted return to single-story buildings.

When an air handler unit is installed in a closet with a louvered return opening, the minimum open area for the louvers will be:

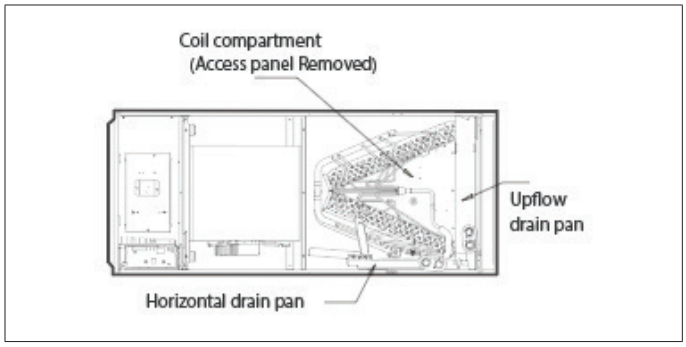
- 320 square inches for 018 and 024 models;
- 360 square inches for 036 models;
- 450 square inches for 048 through 060 models

If the free area is not known, assume a 25% free area for wood or a 75% free area for metal louvers or grilles. Using the louver dimensions and the 25% or 75% assumption, determine if the open area meets the minimum open area listed above.

If a return air plenum is used, the return air grille should be immediately in front of the opening in the plenum to allow for the free flow of return air. When not installed in front of the opening, there must be adequate clearance around the air handler to allow for the free flow of return air.

Indoor Unit

Indoor Unit Parts



⚠ WARNING

Securely install the indoor unit on a structure that can sustain its weight. If the structure is too weak, the unit may fall and cause personal injury, unit and property damage, or death.

DO NOT install the indoor unit in a bathroom or laundry room as excessive moisture can short the unit and corrode the wiring.

Danger of explosion. Keep flammable materials and vapors, such as gasoline, away from the air handler. Position the air handler so that heating elements are at least 18 inches (457 mm) away above the floor for garage installation. Failure to follow these instructions can result in death, explosion, or fire.

⚠ CAUTION

Install the indoor and outdoor units, cables and wires at least 3.2 feet (1 m) from televisions or radios to prevent static or image distortion. Depending on the appliances, a 3.2 feet (1 m) distance may not be sufficient.

If the indoor unit is installed on metal, it must be electrically grounded.

⚠ IMPORTANT

Apply sealant around the places where the wires, refrigerant pipes and condensate pipes enter the cabinet.

The indoor unit should be installed in a location that meet the following requirements:

- Ample space for installation and maintenance
- Ample space for the connecting pipe and drainpipe
- The ceiling is horizontal and its structure can sustain the weight of the indoor unit
- The air inlet and outlet are not impeded

⚠ CAUTION

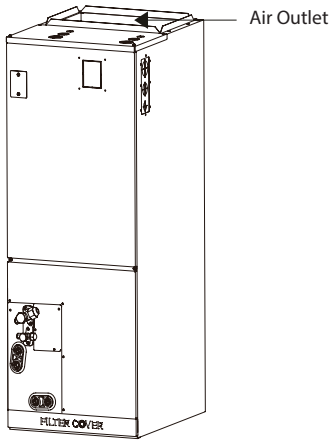
DO NOT install units in:

- Areas with oil drilling or fracking
- Areas with high salt content in the air
- Areas with caustic gases in the air
- Enclosed spaces, such as cabinets
- Areas with strong electromagnetic waves
- Areas that store flammable materials or gas
- Rooms with high humidity, such as bathrooms or laundry rooms

⚠ IMPORTANT

Use duct tape and/or Permagum to seal close any space around the holes where the drain lines exit the cabinet. Warm air must not be allowed to enter through any gaps or holes in the cabinet.

Remove all accessories and packing in the air outlet before installation.



⚠ WARNING

There must be an airtight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, foil duct tape, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this air handler or any gas-fueled appliance (i.e., water heater), or carbon monoxide-producing device (i.e., wood fireplace) is installed.

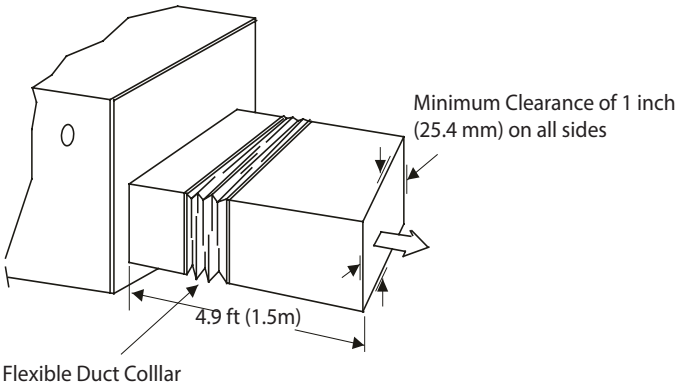
Unit Clearances

The distance between the mounted indoor unit should meet the specifications illustrated in the following diagram.

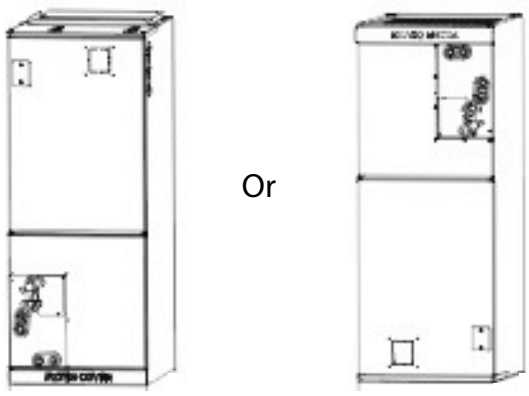
Horizontal

Plenum Clearances

The outlet side pipe length is 4.9 ft (1.5m)

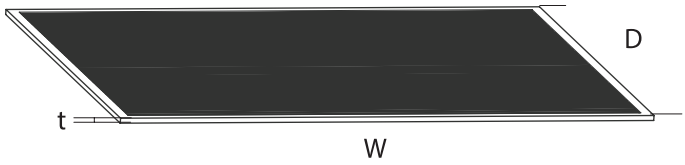


Vertical



NOTE: *When installed vertically (upward or downward), the lower end of the air outlet must be fastened by screws.*

Recommended Filter Size

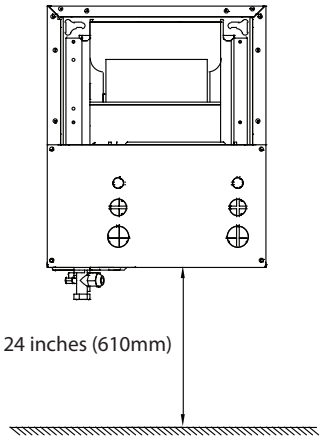


Model A (for North American Models)

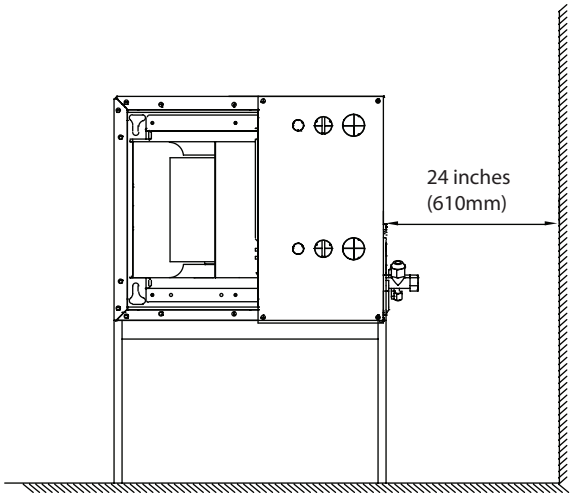
Model (b/tuh)	W		D		t	
	in.	mm.	in.	mm.	in.	mm.
18-24K	16	406.4	20	508	1	25.4
36-48K	19-1/2	495.3	20	508	1	25.4
60K	23	584.2	20	508	1	25.4

Installation Positions

Vertical



Horizontal



Duct Connections

Air supply and return can be handled in one of several ways best suited to the installation (see table for dimensions for duct inlet and outlet connections). The vast majority of problems encountered with combination cooling systems can be linked to improperly designed or installed duct systems. It is therefore highly important to the success of an installation that the duct system be properly designed and installed. Use flexible duct collars to minimize the transmission of vibration/noise into the conditioned space. Where return air duct is short, or where sound could potentially be a problem, use sound absorbing liner inside the duct. Insulation of duct work is a must where it runs through an unconditioned space during the cooling season. The use of a vapor barrier is recommended to prevent absorption of moisture from the surrounding air into the insulation. The supply air duct should be properly sized by use of a transition to match unit opening. All ducts should be suspended using flexible hangers and never fastened directly to the structure. This unit is not designed for non-ducted (freeblow) applications. Duct work should be fabricated and installed in accordance with local and/or national codes. Follow ACCA Manual D guidelines for return air filter grille sizing.

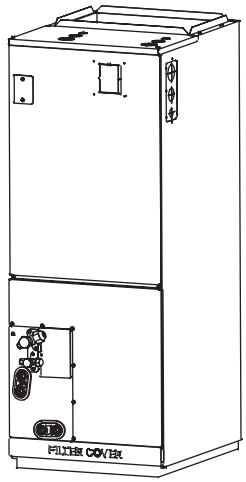
⚠ IMPORTANT

A secondary drain pan, with a drain pipe to the outside of the building is required in all installation over a finished living space or in any area that may be damaged by overflow from the main drain pan. In some localities, local codes may require a secondary drain pan for any horizontal installation.

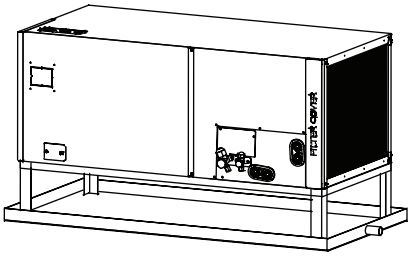
Mount Positions

The units can be installed in a vertical (up/down) and horizontal (right/left) configuration.

Vertical



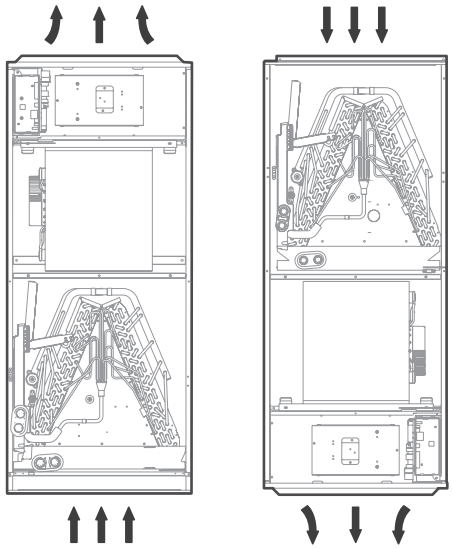
Horizontal



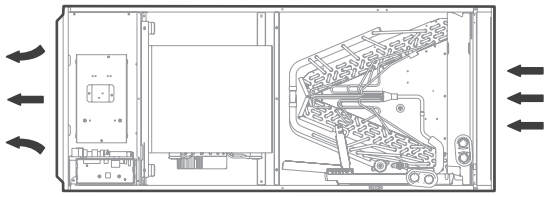
NOTE: *For horizontal installations, a secondary drain pan must be installed.*

To install the air handler Vertically (down) or Horizontally (right):

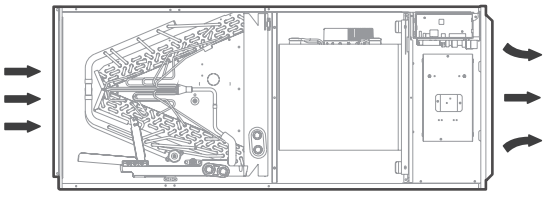
1. Open the upper cover.
2. Connect the wire according to the wiring diagram.
3. Connect the pipes
4. Install the drainage pipes.



Upflow Downflow



Horizontal left



Horizontal right

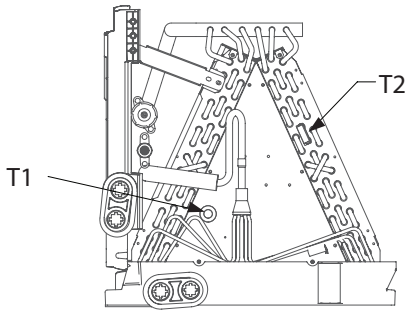
NOTE: *Vertical up and horizontal left installations do not require a change of the direction of the evaporator.*

Temperature Sensor Locations

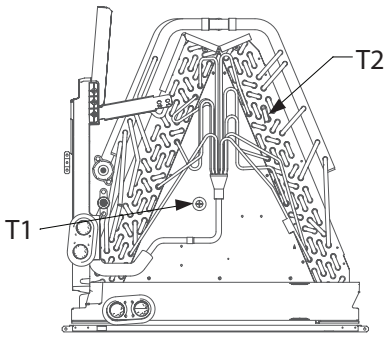
The following image indicates the temperature sensor locations on the evaporator for all units.

NOTE: *The MMA indoor evaporator coil does not have an EEV (Electronic Expansion Valve) installed, as shown below.*

18-24K model



30-48K model



60K model

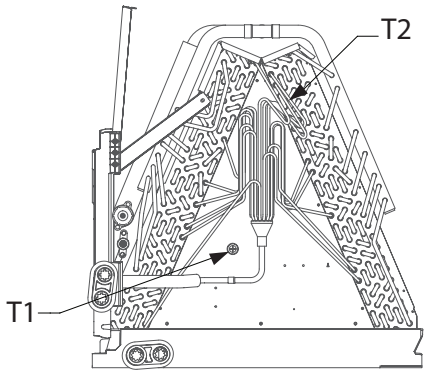
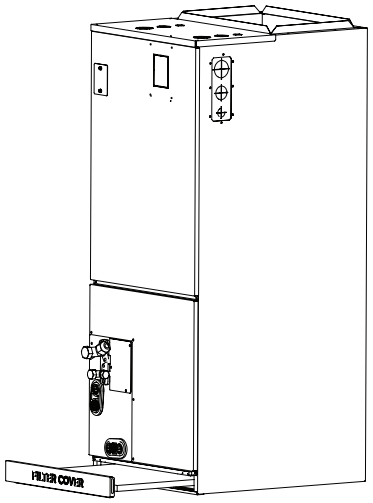


Figure 1. Temperature Sensor Locations

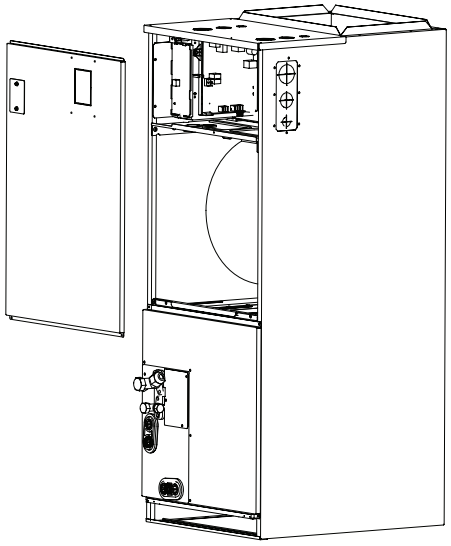
T1	Room Temp Sensor
T2	Evaporator Sensor

Rotating Evaporator and Drain Pan

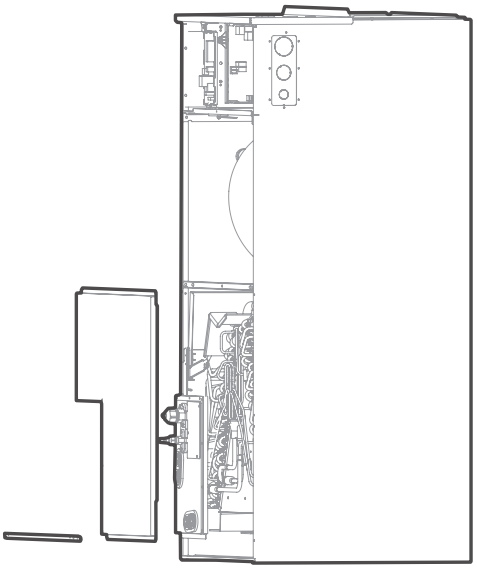
1. Remove the filter cover plate.



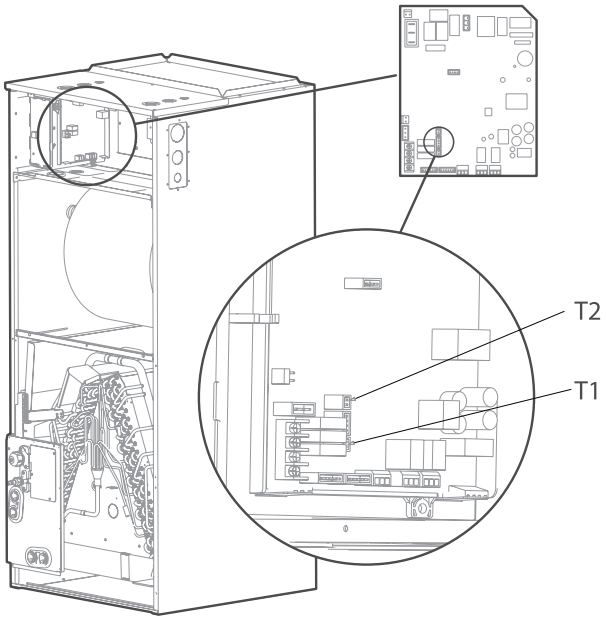
2. Remove the upper cover assembly.



3. Remove evaporator cover plate.

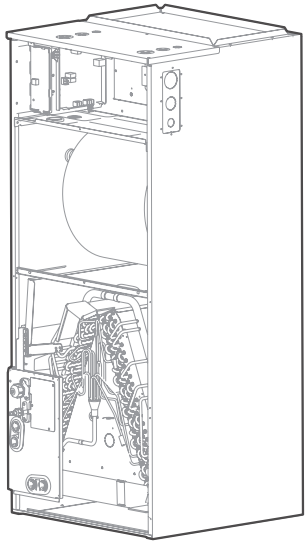


4. Unplug temperature sensors T1, T2 from the control board.
   - T1: Room Temperature Sensor
   - T2: Evaporator Central Sensor Plug

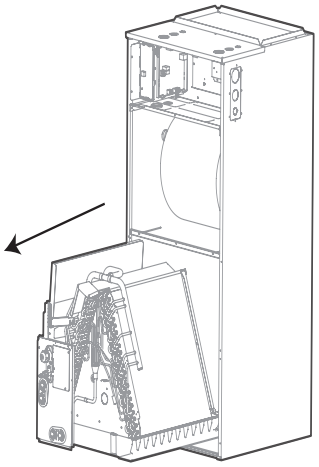


NOTE: *T1 is available on select models.*

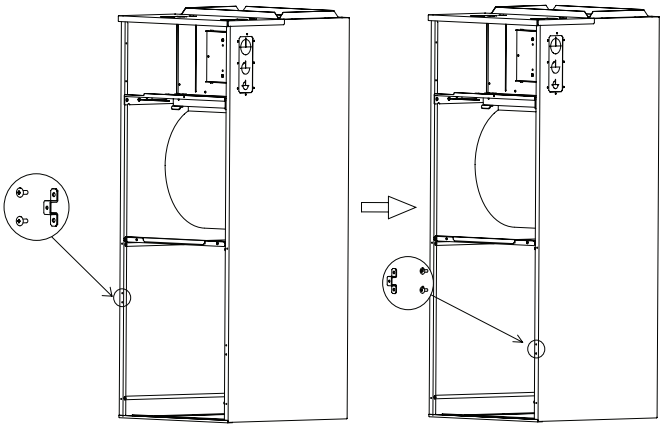
5. Remove T1 and T2 sensor ties.



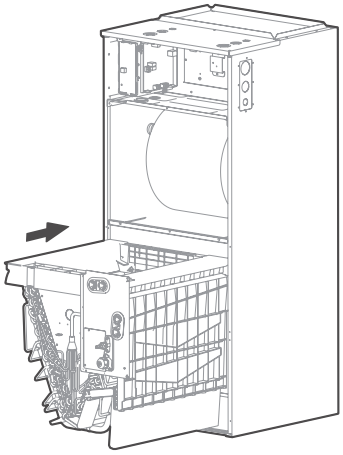
6. Remove the evaporator and drain pan; rotate it 180°.



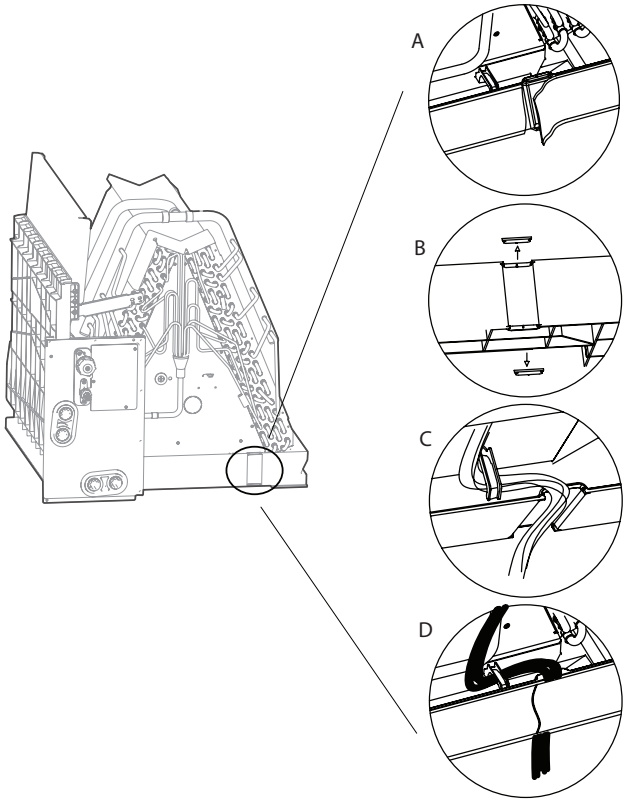
7. Relocate the position of the mounting parts.



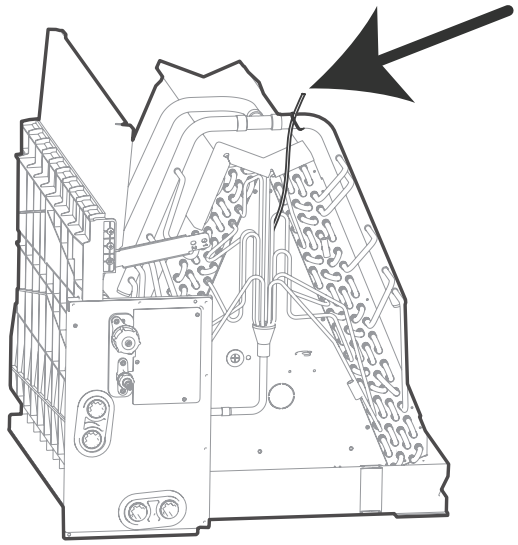
8. Reinstall the evaporator and drain pain.



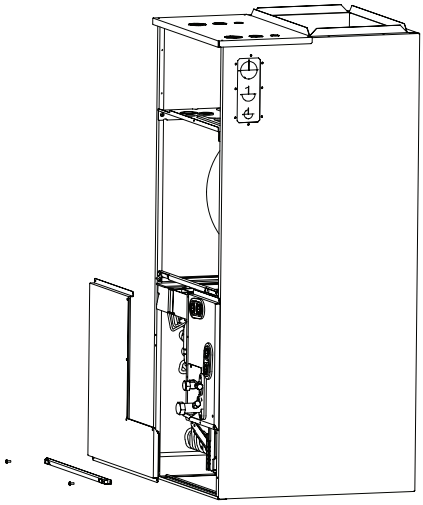
9. Reconnect T1 and T2 sensor plugs to the control board and secure the sensor wires.
   a. Cut the foam gasket.
   b. Remove knockouts.
   c. Hook the wire into the buckle and place the wire down into the wire slot.
   d. Replace the foam gasket over the wires.



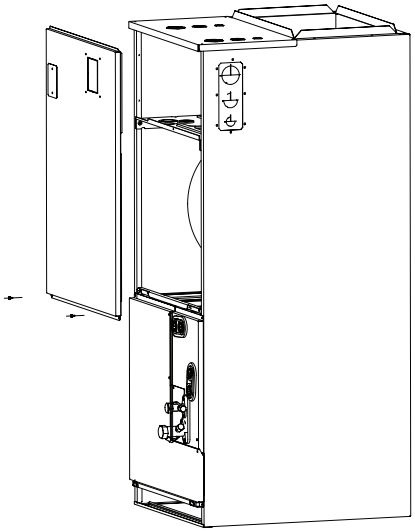
10. Use the cable ties to affix the Temperature Sensor back into place.



11. Reinstall the evaporator cover plate.



12. Connect the wire according to the wiring diagram.
13. Reassemble the upper cover.



14. Reinstall filter cover plate.
15. Connect the pipes.
16. Install the drainage pipes.

Condensate Drain

⚠ IMPORTANT

On units of this type, where the blower “draws” rather than “blows” air through the coil, traps must be installed in the condensate drain lines (primary and auxiliary, if used). Traps prevent the blower from drawing air through the drain lines into the air supply.

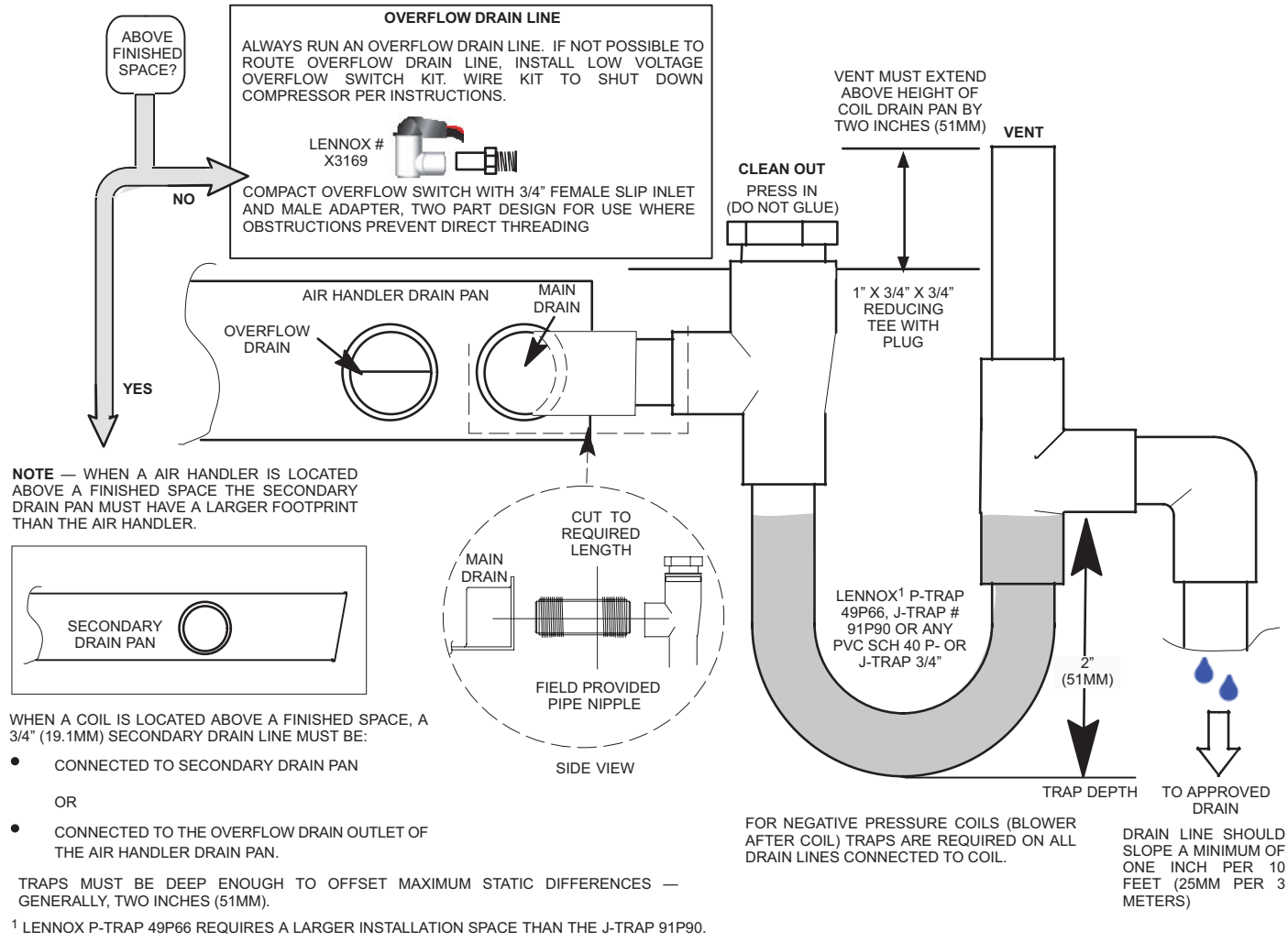


Figure 2. Typical Main and Overflow Drain

⚠ IMPORTANT

A field-fabricated secondary drain pan, with a drain pipe to the outside of the building, is required in all installations over a finished living space or in any area that may be damaged by overflow from the main drain pan. In some localities, local codes may require a secondary drain pan for any horizontal installation.

Sloping the Unit

Make sure the unit is sloped so that the drain pan will empty completely without water standing in the pan. See “Figure 3. Sloping the Unit for Proper Drainage”.

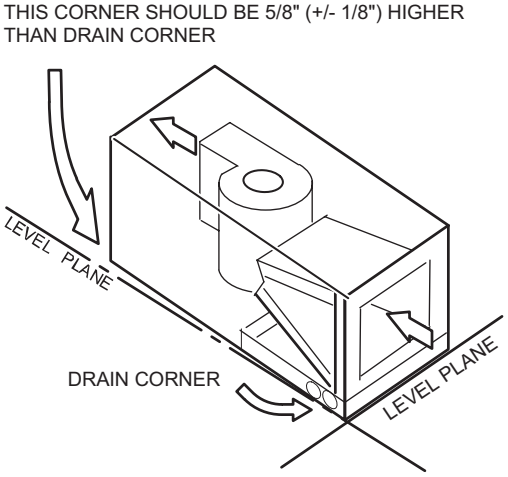


Figure 3. Sloping the Unit for Proper Drainage

Installing Condensate Drain

The air handler is provided with 3/4" NPT condensate drain connections.

⚠ IMPORTANT

On some pans, the primary and secondary drain holes have knockouts.

Confirm primary and secondary drains are open.

1. Units are equipped with a drain pan, which includes green (main drain) and red (secondary drain) plugs. Unscrew the plugs to remove them before inserting condensate drain fittings.

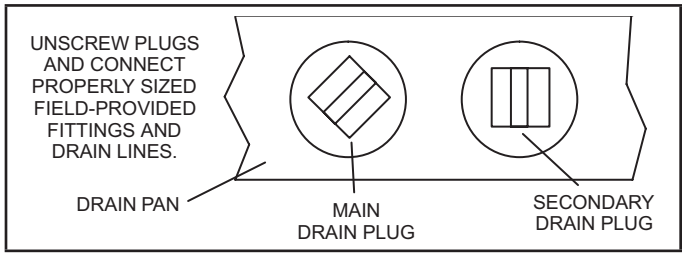


Figure 4. Drain Line Connections

2. Install properly sized, field-provided connection fittings and connect primary drain line to the main drain pan connection.

***NOTE** - When installing drain line connection fittings to the drain pan, hand tighten the fitting and use a thread sealant. Over-tightening the fittings can split connections on the drain pan.*

3. If the secondary drain line is to be used, remove the plug or the knockout and route the drain line so that water draining from the outlet will be easily noticed by the homeowner. Refer to local codes for drain trap requirements on the secondary drain line.
4. Check again to ensure drain ports and drain pan are free of all debris.
5. Plug and check any unused drain pan openings for tightness. Torque plugs to 36 in. lb. to prevent water leaks.
6. Install a 2" trap in the main (primary) drain lines as close to the unit as practical ("Figure 2. Typical Main and Overflow Drain"). Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.

***NOTE** - Horizontal runs must have an anti-siphon air vent (standpipe) installed ahead of the horizontal run. See "Figure 2. Typical Main and Overflow Drain". An extremely long horizontal run may require an oversized drain line to eliminate air traps.*

***NOTE** - Do not operate air handler without a trap in the main (primary) drain. The condensate drain is on the negative pressure side of the blower; therefore, air being pulled through the condensate line will not allow positive drainage without a proper trap.*

7. Route the drain line to the outside or to an appropriate drain. Drain lines must be installed so they do not block service access to the front of the air handler. A 24" clearance is required for filter, coil, or blower removal and service access.

***NOTE** - Check local codes before connecting the drain line to an existing drainage system. Insulate the drain lines where sweating could cause water damage.*

Test Condensate Drain

Test the drain pan and drain line after installation:

1. Pour several quarts of water into drain pan. Use enough water to fill both the drain trap and the line.
2. Check the installed drain pan. Drain pan must be draining completely. Drain line fittings must not be leaking. Water must be draining from the end of the primary drain line.
3. Correct any leaks found.

Refrigerant Piping Connection

⚠ WARNING

- All field piping must be completed by a licensed technician and must comply with the local and national regulations.
- When the heat pump is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. If the refrigerant leaks and its concentration exceeds its proper limit, hazards due to lack of oxygen may result.
- When installing the refrigeration system, ensure that air, dust, moisture or foreign substances do not enter the refrigerant circuit. Contamination in the system may cause poor operating capacity, high pressure in the refrigeration cycle, explosion or injury.
- Ventilate the area immediately if there is refrigerant leakage during the installation. Leaked refrigerant gas is both toxic and flammable. Ensure there is no refrigerant leakage after completing the installation work.

Pipe Length and Elevation

Ensure the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meet the requirements shown in the table below.

Max Length and Drop Height based on Models (ft./m)

Type of Model	Capacity (Btu/h)	Length of Piping	Max. Drop Height
MMA018, MMA024, MMA036, MMA048, MMA060	18K	98/30	66/20
	24K	164/50	82/25
	36K/48K/60K	213/65	98/30

Oil Trap

⚠ CAUTION

If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of oil return. Oil traps in the rising refrigerant piping can prevent this. An oil trap should be installed every 20ft (6m) of vertical suction line riser (less than 36000 Btu/h unit). An oil trap should be installed every 32.8ft (10m) of vertical suction line riser (greater than or equal to 36000Btu/h unit).

Reference the Lennox Refrigerant Piping Guidelines (Corp. 9351-L9) for further guidance.

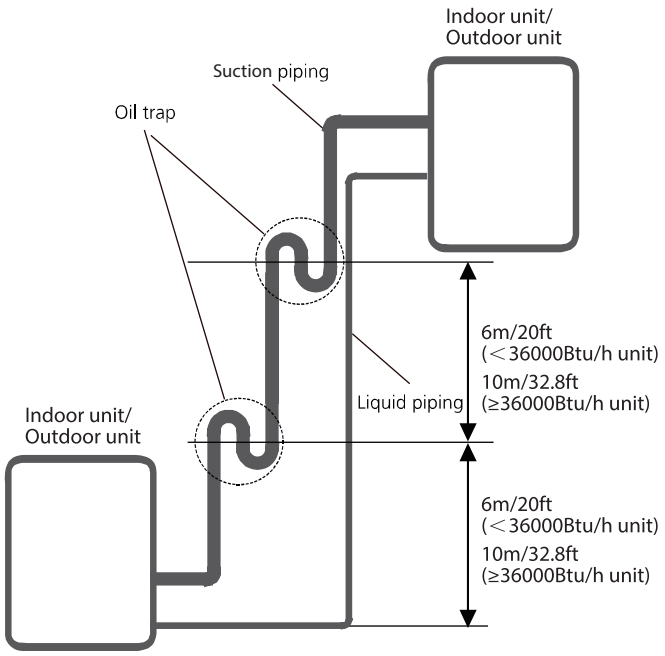


Figure 5. Oil Trap in Rising Gas Pipe

	Shape		Quantity (PC)
Connecting Pipe Assembly	Liquid Side	1/4 in. (Φ6.35)	Parts must be purchased separately.
		3/8 in. (φ9.52)	
	Gas Side	1/2 in. (φ12.7)	
		5/8 in. (φ16)	
		3/4 in. (φ19)	
		7/8 in. (φ22)	

Connection Instructions - Refrigerant Piping

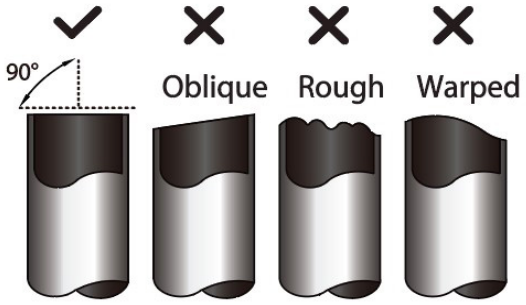
⚠ CAUTION

- DO NOT install the connecting pipe until both indoor and outdoor units have been installed.
- Insulate both gas and liquid piping, and all flared brass connections thoroughly to prevent condensation.

Cut Pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
3. Make sure that the pipe is cut at a perfect 90° angle.

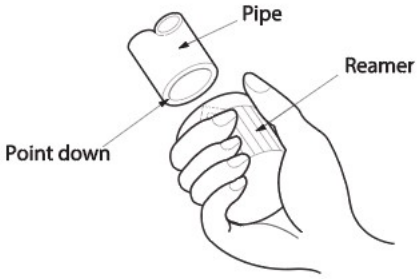


NOTE: *Use extreme caution when cutting the pipe. Avoid damaging, denting, or warping the pipe while cutting it. Damaged pipes will drastically reduce the heating efficiency of the unit.*

Remove Burrs

Burrs can affect the air-tight seal of refrigerant piping connection. Burrs must be completely removed.

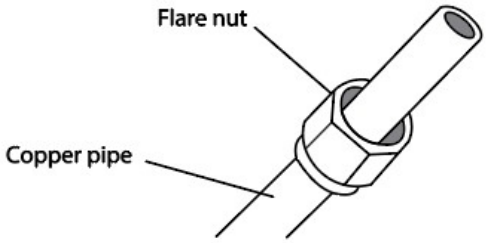
1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



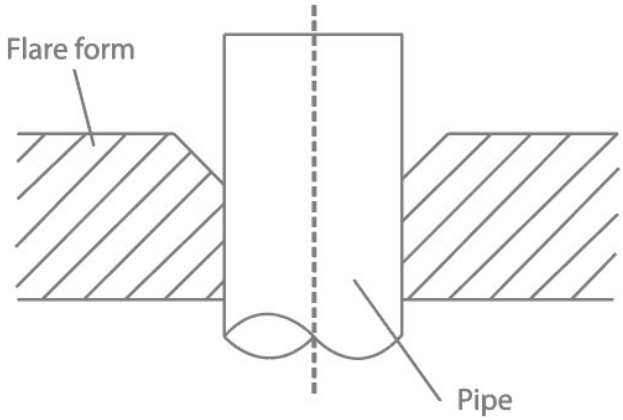
Flare Pipe Ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe.
4. Verify the flare nuts are facing the right direction because the flare nuts cannot be adjusted after flaring.

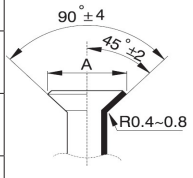


5. Remove PVC tape from ends of pip when ready to perform flare work.
6. Clamp flare form on the end of the pipe.
   The end of the pipe must extend beyond the flare form.



7. Place flaring tool onto the form.
8. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance to the dimensions in Table 1.

Table 1. Piping Extension Beyond Flare Form

Pipe Gauge	Tightening Torque	Flare Dimension (A) (Unit: in. (mm)		Flare Shape
		Min.	Max.	
Φ6.35 (1/4")	18 - 20 N.m. 14 ft.-lb. (13 - 14)	0.33/8.4	0.34/8.7	
Φ9.52 (3/8")	32 - 39 N.m. 26 ft.-lb. (23 - 28)	0.52/13.2	0.53/13.5	
Φ12.7 (1/2")	49 - 59 N.m. 41 ft.-lb. (36 - 43)	0.64/16.2	0.65/16.5	
Φ16 (5/8")	57 - 71 N.m. 48 ft.-lb. (42 - 52)	0.76/19.2	0.78/19.7	
Φ19 (3/4")	67 - 101 N.m. 70 ft.-lb. (49 - 74)	0.91/23.2	0.93/23.7	
Φ22 (7/8")	85 - 110 N.m. 75 ft.-lb. (62 - 81)	1.04/26.4	1.06/26.9	

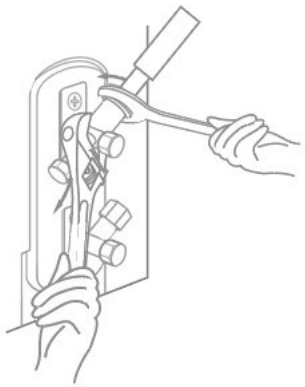
9. Remove the flaring tool and flare form.
10. Inspect the end of the pipe for cracks and even flaring.

Connect Pipes

Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. Connect the low-pressure pipe, then the high-pressure pipe.

1. When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
2. Align the center of the two pipes to be connected.
3. Tighten the flare nut snugly by hand.
4. Use a wrench to grip the nut on the unit tubing.
5. Firmly grip the nut and us a torque wrench to tighten the flare nut according to Table 1.

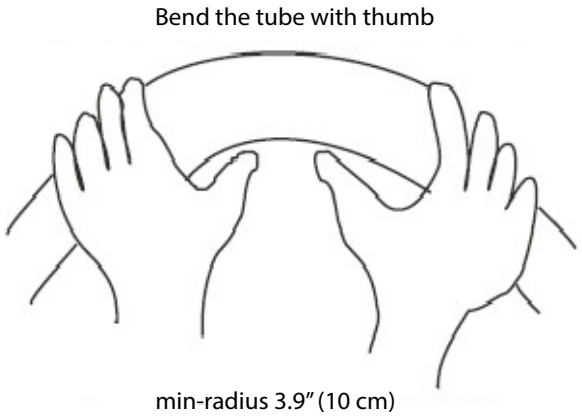
NOTE: *Use a spanner and torque wrench when connecting or disconnecting pipes to/from the unit.*



⚠ CAUTION

- Wrap insulation around the piping.
- Direct contact with bare piping may result in burns or frostbite.
- Ensure the pipe is properly connected. Over-tightening may damage the bell mouth and under-tightening may lead to leakage.

NOTE: *Minimum Bend Radius - Carefully bend the tubing in the middle according to the diagram below. DO NOT bend the tubing more than 90° or more than three times.*



6. After connecting the copper pipes to the indoor unit, wrap the power cable, signal cable and the piping together with binding tape.

NOTE: *DO NOT intertwine or cross the signal cable with any other wiring while bundling the wires together.*

7. Thread this pipeline through the wall and connect it to the outdoor unit.
8. Insulate all the piping, including the valves of the outdoor unit.
9. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

⚠ CAUTION

Verify there is not a refrigerant leak after completing the installation work. If there is a refrigerant leak, ventilate the area immediately and evacuate the system.

Air Handler Air Conditioners Refrigerant Piping Connection

Complete the indoor unit connection pipe assembly as shown below. If it is connected in any way other than what is shown, it will cause performance issues.

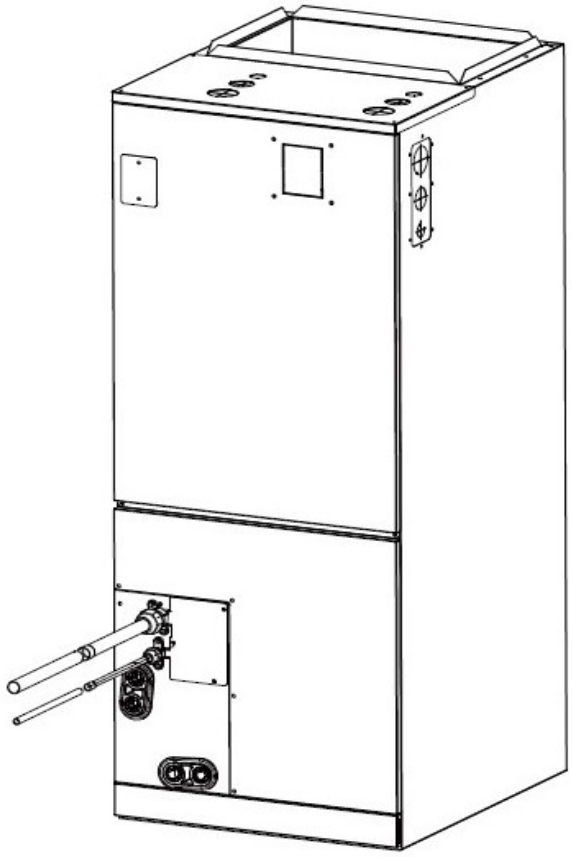


Figure 6. Refrigerant Piping Connections

After the unit is installed, thoroughly wrap the piping and brass fitting with foam tape.

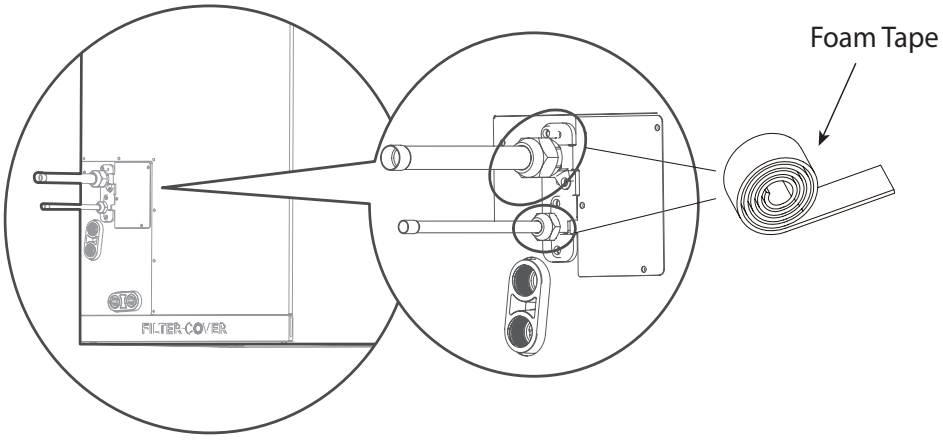
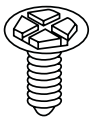
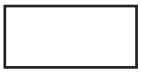


Figure 7. Insulate Valve

Electric Auxiliary Heat Module

Accessories

Name	Shape	Quantity
Manual		2
Foam Gasket		1
Screws		7
Silicone Breaker Cover		1
Electric Auxiliary Heating Wiring Diagram		1
Circuit Breaker Label		1

NOTE: *Installation must be performed by an licensed contractor. Use extreme caution when installing the unit.*

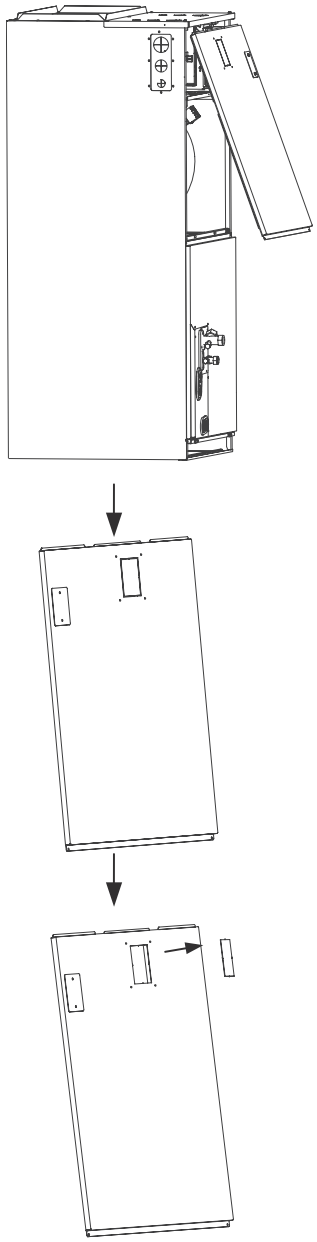
For units requiring supplemental heating, the optional Electric Auxiliary Heat Module is available in sizes from 5kW to 20kW to accommodate appropriate sizing given the specific heat load and electrical requirements of each installation. Refer to the table below for selections of available sizes of each model. Be sure to avoid improper matching.

Model (Btuh)	5kW	8kW	10kW	15kW	20kW
18	Y	Y	Y	- - -	- - -
24	Y	Y	Y	Y	- - -
36	Y	Y	Y	Y	Y
48	- - -	Y	Y	Y	Y
60	- - -	- - -	Y	Y	Y

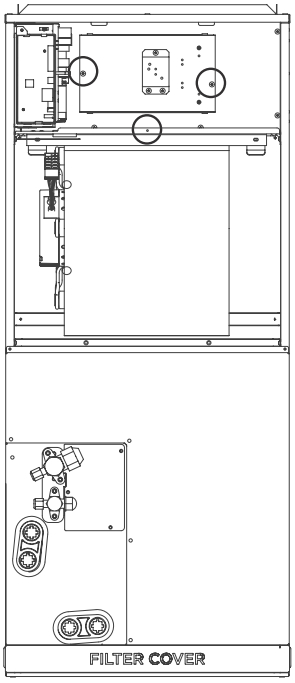
Electric Auxiliary Heat Module Installation and Wiring Operation

Before installation, confirm the electric auxiliary heat module and supplied accessories are present and free of damage. Do not attempt to install if damage is present.

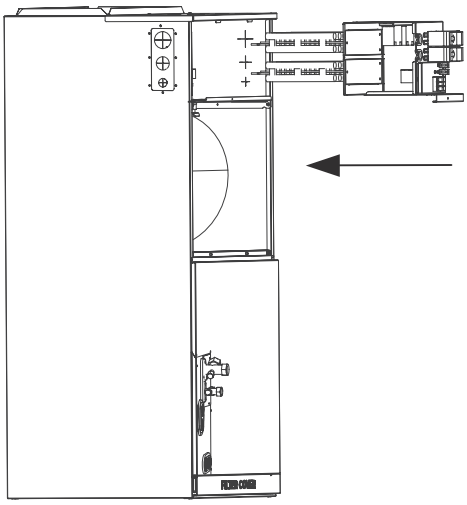
1. Remove the upper cover and remove the knock-out holes of the upper cover.

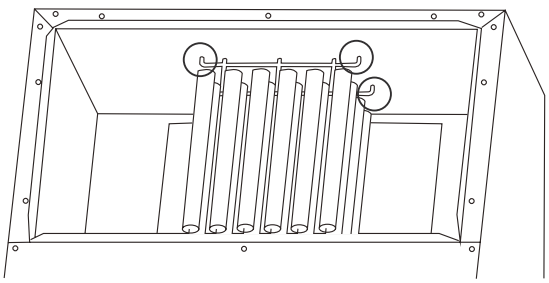


2. Remove the terminal block and power wires, loosen the screws, and remove the electric auxiliary heating cover.

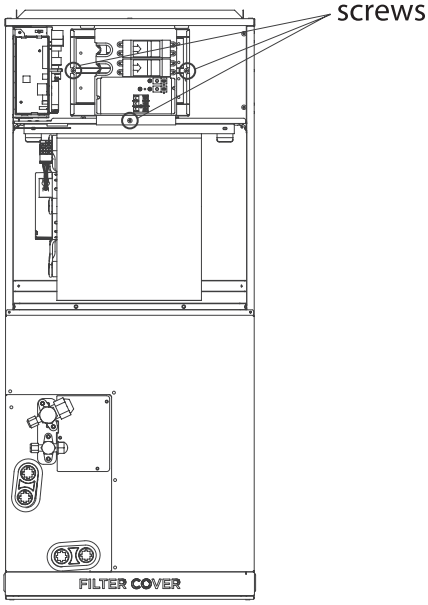


3. Install the electric auxiliary heating assembly into the chassis shell from the front. The front end must be inserted into the shell assembly cavity.

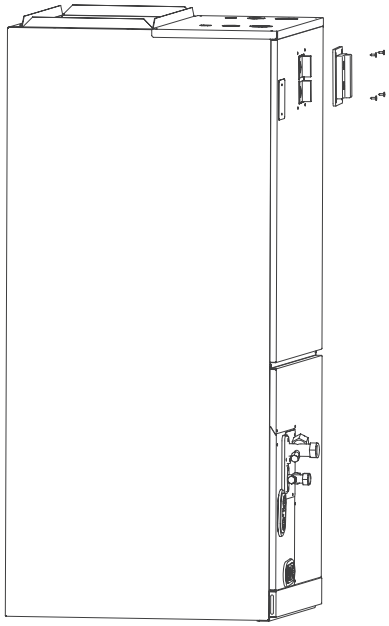




4. Tighten the mounting screws.



5. Wire according to the wiring nameplate.
6. Tape the wiring diagram to the inside cover wiring for future reference.
7. Install the upper cover.
8. Install silicone breaker cover.

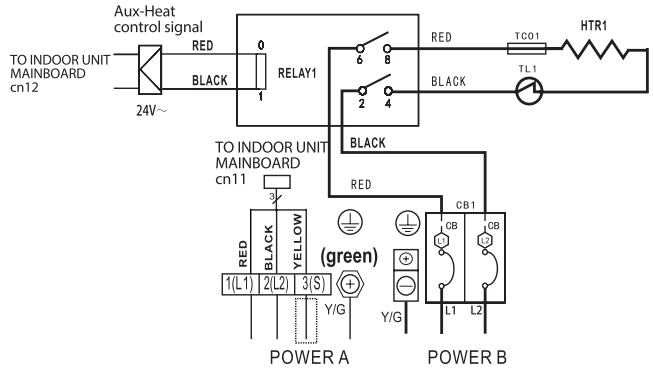


9. Apply the circuit breaker label near the silicone breaker cover.

Electric Auxiliary Heat Wiring Diagram

3KW/5KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



NOTE1: ▭
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

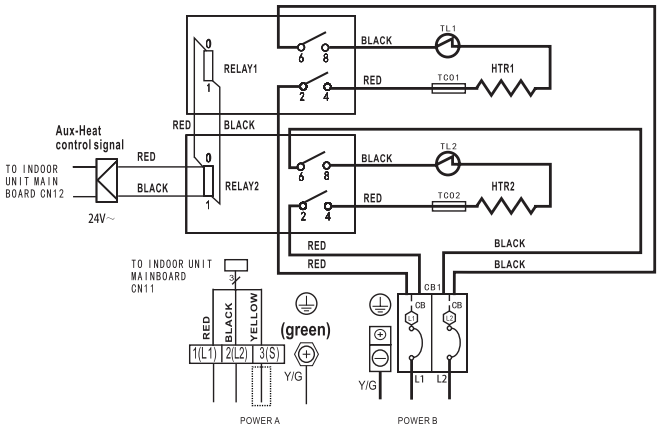
Round hole number	Relay number	Round hole number	Circuit breaker number
✿	RELAY1	✿	CB1
✿✿			
✿✿✿			
✿✿✿✿			
✿✿✿✿✿			

NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.
NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the ourdoor S; for type B, S position shall not be connected.

8KW/10KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



NOTE1: ▭
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

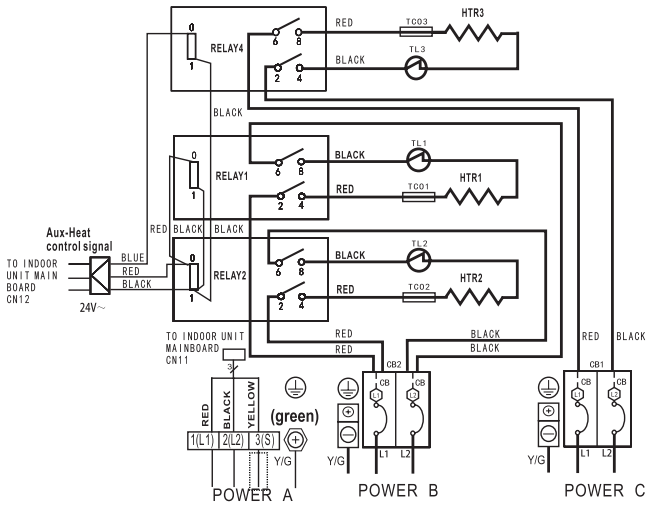
Round hole number	Relay number	Round hole number	Circuit breaker number
✿	RELAY1	✿	CB1
✿✿	RELAY2		
✿✿✿			
✿✿✿✿			
✿✿✿✿✿			

NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.
NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the ourdoor S; for type B, S position shall not be connected.

15KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



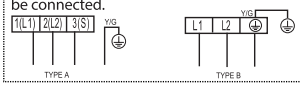
NOTE1: ▭
This symbol indicates the element is optional, The wiring type of the actualunit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

Round hole number	Relay number	Round hole number	Circuit breaker number
✿	RELAY1	✿	CB1
✿✿	RELAY2	✿✿	CB2
✿✿✿	RELAY4		
✿✿✿✿			
✿✿✿✿✿			

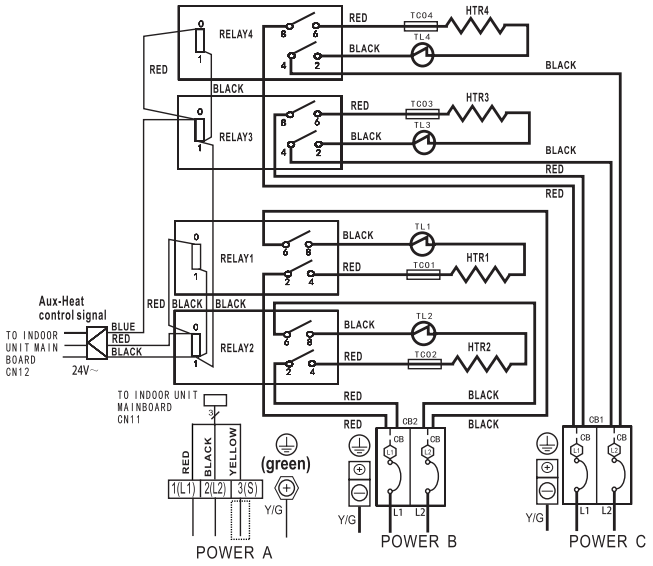
NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.
NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the ourdoor S; for type B, S position shall not be connected.



20KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



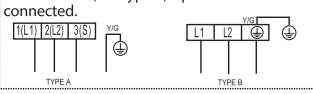
NOTE1: ▭
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

Round hole number	Relay number	Round hole number	Circuit breaker number
✿	RELAY1	✿	CB1
✿✿	RELAY2	✿✿	CB2
✿✿✿	RELAY3		
✿✿✿✿	RELAY4		
✿✿✿✿✿			

NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.
NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the ourdoor S; for type B, S position shall not be connected.



Powering Unit

Confirm the following before powering the unit.

- Check all wiring and ensure reliable connection of wire body
- Check the electric heating fixing screw
- Verify the size selection of power wire meets the power supply requirements.

Specs.	Number of Circuit Breakers	Number of Relays	Number of Power Cord Groups	Number of Power Cord Grounding Screws
5 kW	1	1	2	2
8 kW	1	2	2	2
10 kW	1	2	2	2
15 kW	2	3	3	3
20 kW	2	4	3	3

Units Without Electrical Heat

If the branch circuit wire length exceeds 100 ft., consult NEC210-19a to determine maximum wire length. Use 2% voltage drop.

				Branch Circuit	
Unit Size	Volts-Phase	Rated Current (A)	Min CKT Amps	Min Wire Size AWG	Fuse/ CKT BKR AMPs
18K	208/230-1	2.0	2.5	16#	15.0
24K	208/230-1	3.0	4.0	16#	15.0
36K	208/230-1	4.0	5.0	16#	15.0
48K	208/230-1	6.0	7.5	16#	15.0
60K	208/230-1	7.0	9.0	16#	15.0

Use copper wire only to connect unit. Consult applicable tables of the National Electric Code (ANSI/NFPA 70) if other than uncoated (non-plated) 75°C copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used.

NOTE: *The specification may be different between models. Refer to the indoor unit's nameplate.*

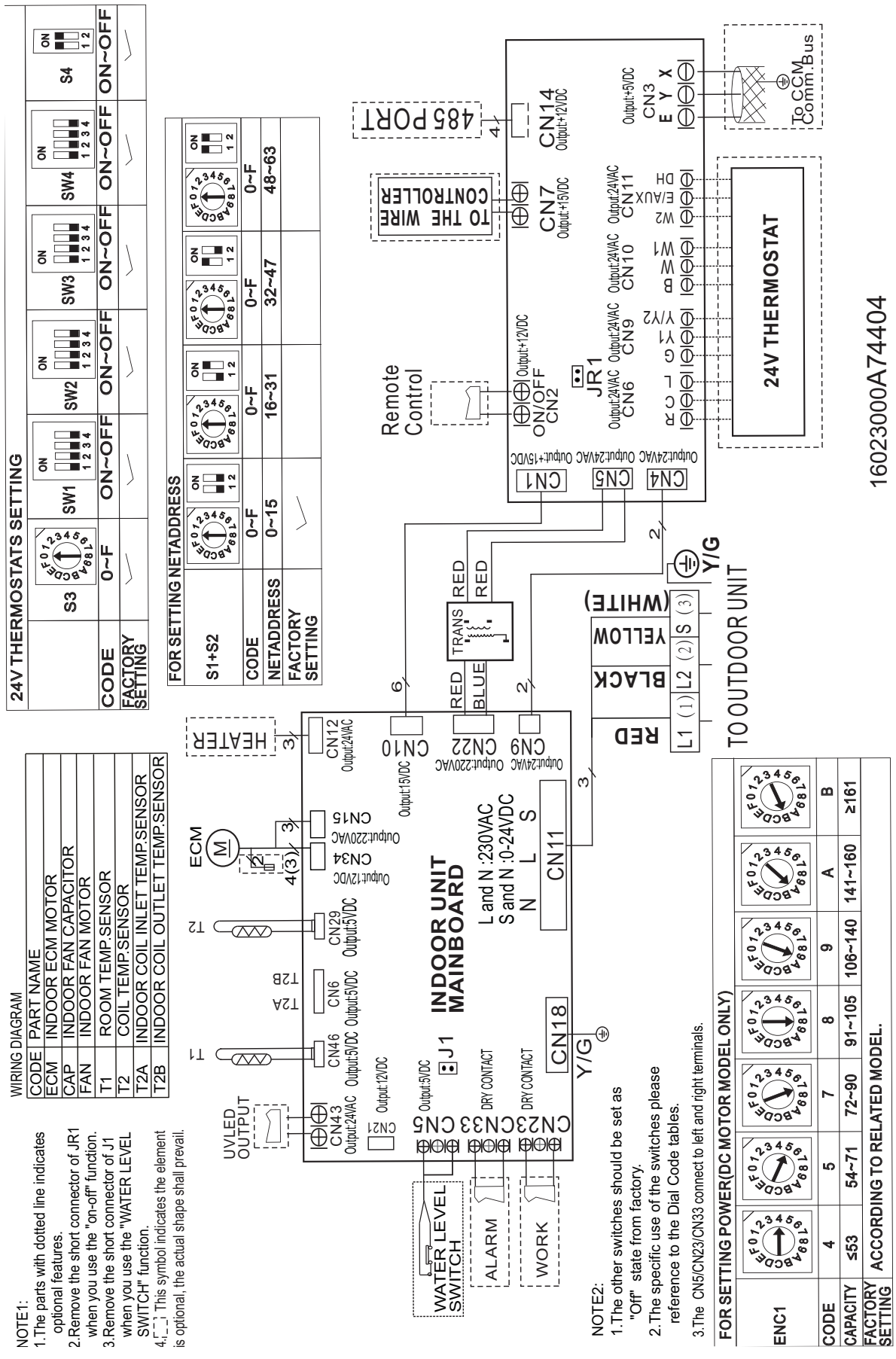
Electric Heat Data

Indoor Model Usage	Electric Heat Size and Model Number		Input			[2] Minimum Circuit Ampacity (MCA)		[3] Maximum Overcurrent Protection (MOCP)	
			Volt	kW	[1] Btuh	Ckt 1	Ckt 2	Ckt 1	Ckt 2
018, 024, 036	**5 kW**	EAH-05B **(24Z26)**	208	3.8	12,800	23 / 27	- - -	25 / 30	- - -
			220	4.2	14,300				
			230	4.6	15,700				
			240	5.0	17,100				
018, 024, 036, 048	**8 kW**	EAH-08B **(24Z27)**	208	6.0	20,500	37 / 42	- - -	40 / 45	- - -
			220	6.7	22,900				
			230	7.3	25,100				
			240	8.0	27,300				
018, 024, 036, 048, 060	**10 kW**	EAH-10B **(24Z28)**	208	7.5	25.600	46 / 53	- - -	50 / 60	- - -
			220	8.4	38.700				
			230	9.2	31.400				
			240	10.0	34.100				
024, 036, 048, 060	**15 kW**	EAH-15B **(24Z29)**	208	11.3	38,400	23 / 27	46 / 53	25 / 30	50 / 60
			220	12.6	43,000				
			230	13.5	47,000				
			240	15.0	51,200				
036, 048, 060	**20 kW**	EAH-20B **(24Z30)**	208	15.0	51,200	46 / 53	46 / 53	50 / 60	50 / 60
			220	16.8	57,300				
			230	18.4	62,700				
			240	20.0	68,200				

[1] Electric heater capacity only - does not include additional blower motor heat capacity.
[2] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F.
[3] HACR type breaker or fuse.

Electric Heat Wiring Diagram

18-24K Units



NOTE1:
1.The parts with dotted line indicates optional features.
2.Remove the short connector of JR1 when you use the "on-off" function.
3.Remove the short connector of J1 when you use the "WATER LEVEL SWITCH" function.
4.[ ] This symbol indicates the element is optional, the actual shape shall prevail.

WIRING DIAGRAM

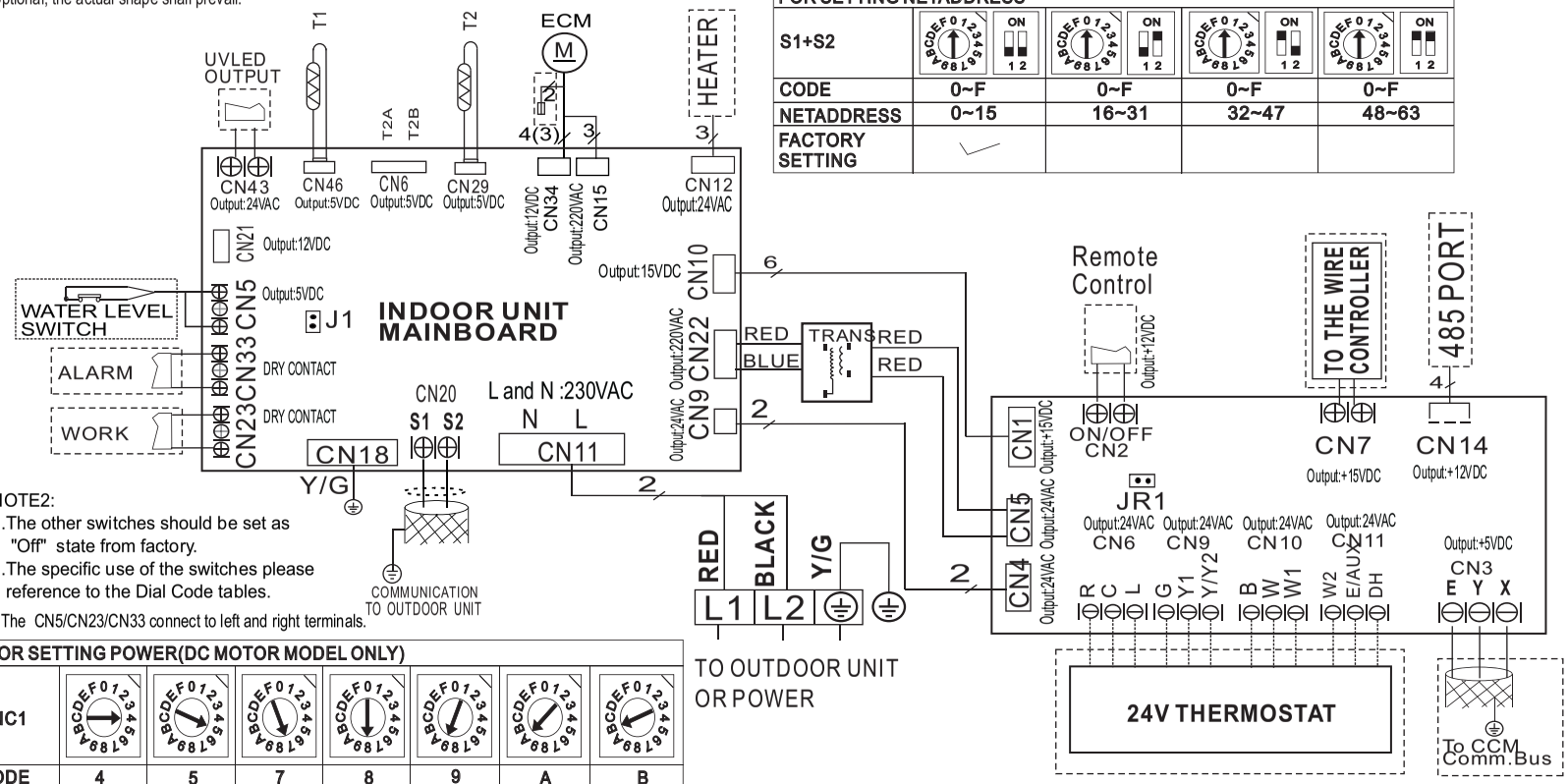
CODE	PART NAME
ECM	INDOOR ECM MOTOR
T1	ROOM TEMP.SENSOR
T2	COIL TEMP.SENSOR
T2A	INDOOR COIL INLET TEMP.SENSOR
T2B	INDOOR COIL OUTLET TEMP.SENSOR

24V THERMOSTATS SETTING

	S3	SW1	SW2	SW3	SW4	S4
CODE	0~F	ON~OFF	ON~OFF	ON~OFF	ON~OFF	ON~OFF
FACTORY SETTING	✓	✓	✓	✓	✓	✓

FOR SETTING NETADDRESS

S1+S2				
CODE	0~F	0~F	0~F	0~F
NETADDRESS	0~15	16~31	32~47	48~63
FACTORY SETTING	✓			



NOTE2:
1.The other switches should be set as "Off" state from factory.
2.The specific use of the switches please reference to the Dial Code tables.
3.The CN5/CN23/CN33 connect to left and right terminals.

FOR SETTING POWER(DC MOTOR MODEL ONLY)

ENC1							
CODE	4	5	7	8	9	A	B
CAPACITY	≤53	54~71	72~90	91~105	106~140	141~160	≥161
FACTORY SETTING	ACCORDING TO RELATED MODEL.						

16023000A74403

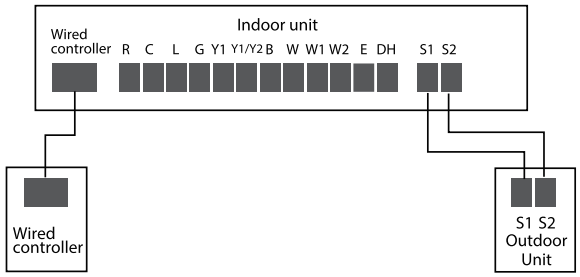
Wired Controller and Thermostat Connections

Wired Controller - M0STAT120N-1

The maximun cable length when using multiple extension cables (sold separately) is 164 feet (50 meters). Do not cut or modify the wiring harness.

Refer to the following wiring diagram for indoor and outdoor unit communication with a wired controller.

(A)



(B)

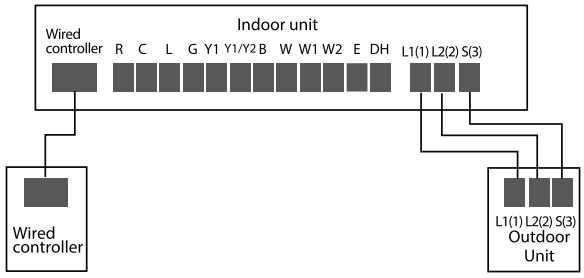
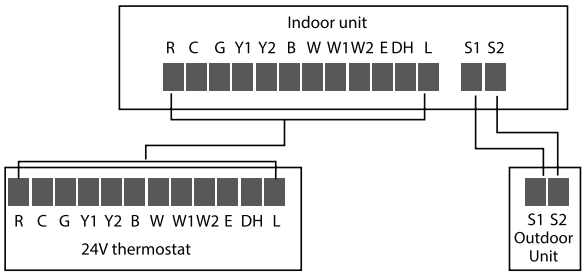


Figure 8. Wired Controller Diagram

24V Thermostat

Refer to the following wiring diagram for indoor and outdoor unit communication with a 24V thermostat.

(A)



(B)

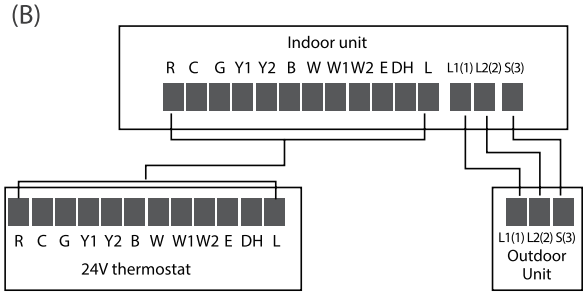
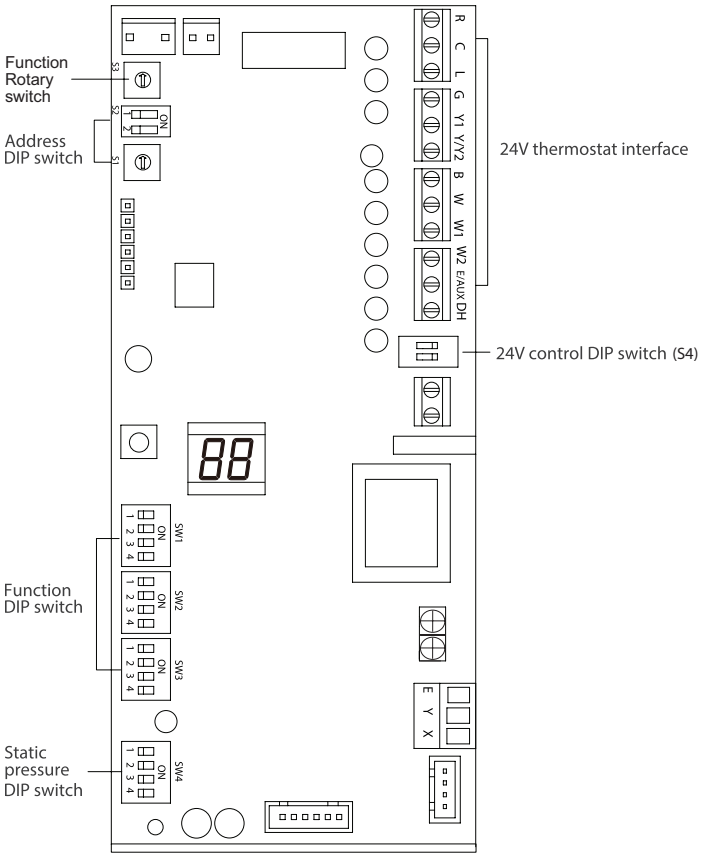
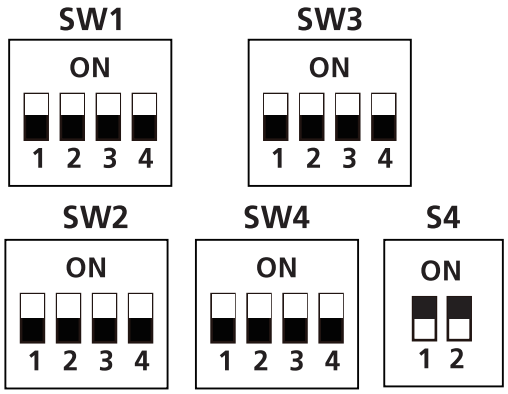


Figure 9. 24V Thermostat Diagram

DIP Switches



24V Thermostat Dip Switch Settings



SW4 Dip Switch settings (Electric Heat Air Volume) adjusts the blower motor's nominal CFM based on the electric heat kit size. See "Electric Heat Air Volume Settings" on page 28.

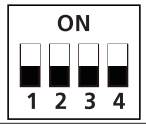
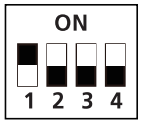
000 is the default setting. The following three-digit combinations can be used when implementing switch settings on indoor units with varying features, such as electric heating:

- *000*
- *001*
- *010*
- *011*
- *100*
- *101*
- *110*
- *111*

Electric Heat Air Volume Settings

Air Handler Model No.	Air Volume DIP Switch Setting	Air Volume (cfm)	Electric Heat kW
018	000 (default)	660	10 kW
	001	630	8 kW, 10 kW
	010	600	8 kW
	011	570	5 kW
024	000 (default)	880	15 kW
	001	850	8 kW, 15 kW
	010	830	8 kW, 10 kW
	011	800	5 kW
036	000 (default)	1320	20 kW
	001	1255	15 KW
	010	1190	8 kW, 10 kW
	011	1125	8 kW, 5 kW
048	000 (default)	1760	20 kW
	001	1675	10 kW, 15 kW
	010	1580	8 kW, 10 kW
	011	1490	8 kW
060	000 (default)	- - -	- - -
	001	2055	15 kW, 20 kW
	010	1920	10 kW, 15 kW
	011	1775	10 kW

Function Combination Table of SW1-1 and SW1-4

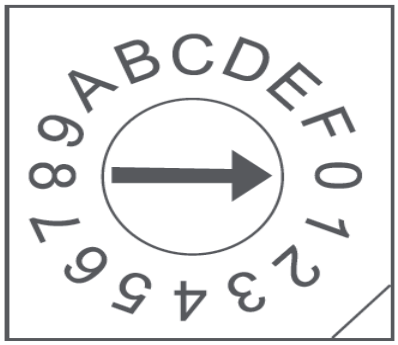
SW1	Control Type	Full System
	Factory Combination	MMA + MPC/MLB + M0STAT120N-1
	24V Thermostat	M30 or (2H/2C) 24V Thermostat

Dial Codes

NOTE: *The SW4 DIP switch is for certified service technical use only.*

No.	Dial Code	Control Scenario	Function	ON	OFF	Note
1	SW1-2	1,2	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	1,2,3	Cooling only applications / heat & cool applications	Cooling	[Default] Cooling & Heating	
3	SW2-1	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W1
4	SW2-1	2	Temperature differential to activate first stage auxiliary heat(the GAP of T1 and Ts),Wire controller demand with heat pump+Electric heat working together	2°F (1°C)	[Default] 4°F (2°C)	
5	SW2-2	2	Electric heat on delay	YES	[Default]NO	
6	SW2-3	2	Electric auxiliary heating delay to start time	30 minutes	[Default] 15 minutes	Based on SW2-2 is activated ON
7	SW2-4	2	Compressor/Auxiliary heat outdoor ambient lockout	The compressor will not operate if the outdoor temperature is lower than the temperature represented by S3	[Default] The heater will not operate if the outdoor temperature is greater than the temperature represented by S3	SW2-4 and S3 need to working together
8	Rotary Switch S3	2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	0 means that the temperature protection is not turned on, the dial range is 1 through F, 1 equals -4°F and it increase up to 46°F. See “Table 2. Dial Range Table” on page 30.		
9	SW3-1	1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user set point	30 minutes	[Default] 90 minutes	
10	SW3-2	1	Cooling and heating Y/Y2 temperature differential adjustment.	Compressor slower speed	[Default] Faster Compressor	Only affects compressor
11	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W2
12	SW3-3	2	Temperature differential to activate second stage auxiliary heating(the GAP of T1 and Ts)Wire controller demand with heat pump+Electric heat working together	4°F (2°C)	[Default] 6°F (3°C)	
13	SW3-4	1,3	Fan speed of cooling mode when 24V Thermostat is applied for.	Turbo	High	
14	SW4	1,2,3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010		
15	S4-1	1,3	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently	
16	S4-2	1,3	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	

Control Scenario	24V Thermostat, S1 + S2	1
	Wired Controller S1 + S2	2
	Full 24V	3



NOTE: *S3 - Outdoor Temperature Limit (shown above)*

S3	S3 (°F)	S3 (°C)
0	OFF	OFF
1	-4	-20
2	0	-18
3	3	-16
4	7	-14
5	10	-12
6	14	-10
7	18	-8
8	21	-6
9	25	-4
A	28	-2
B	32	0
C	36	2
D	39	4
E	43	6
F	46	8

Table 2. Dial Range Table

DIP Switch S1 and S2

Address dialing S1+S2:

Address dialing is required when using the centralized controller.

Network address:

- The address silkscreen is NET address, which is composed of a 16-bit address rotary code S2 plus a two-digit DIP switch S1 (Set during engineering installation, no network function needs to be set)
- When S2 is 00 (the dialing code is not connected), the network address value is S2
- When S2 is 10 (corresponding to the switch of the hardware connected to the 10K resistor), the network address value is S2 plus 32
- Determined by dial code S2 1-10K 2-5.1K. When S2 is 01 (corresponding to the dial code of the 5.1K resistor connected to the hardware is turned on), the network address value is S2 plus 16
- When S2 is 11 (all dialing codes are on), the network address value is S2 plus 48.

NOTE: *The SW4 DIP switch is for certified service technician use only.*

Determined by Dial Code
S2 1-10K 2-5.1K

Dial code selection	Website address
	S2 + 48
	S2 + 32
	S2 + 16
	S2

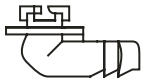
24V Input Terminal												
Mode	**Priority**	**G**	**Y1**	**Y/Y2**	**B**	**W**	**W1**	**W2**	**E/AUX**	**DH/DS/BK**	**Fan speed**	**Display**
OFF	/	0	0	0	0	0	0	0	0	*	OFF	0
FAN	7	1	0	0	*	0	0	0	0	*	Low	1
Cooling stage 1	6	*	1	0	0	0	0	0	0	1	Mid	2
Cooling stage 2		*	*	1	0	0	0	0	0	1	High	3
Dehumidification		*	1	0	0	0	0	0	0	0	Low	4
Dehumidification		*	*	1	0	0	0	0	0	0	Low	5
Heat pump stage 1	5	*	1	0	1	0	0	0	0	1	Mid	6
Heat pump stage 2		*	*	1	1	0	0	0	0	1	High	7
Heat pump stage 2		*	*	*	*	1	0	0	0	1	High	
Electric heater kit 1	3	*	0	0	*	0	1	0	0	*	Turbo	8
Electric heater kit 2		*	0	0	*	0	0	1	0	*	Turbo	
Electric heater kit 1 and kit 2		*	0	0	*	0	1	1	0	*	Turbo	9
Heat pump stage 1 + Electric heater kit 1	4	*	1	0	1	0	1	0	0	1	Turbo	10
Heat pump stage 1 + Electric heater kit 2		*	1	0	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1		*	*	1	1	0	1	0	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1		*	*	*	*	1	1	0	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 2		*	*	1	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 2		*	*	*	*	1	0	1	0	1	Turbo	
Heat pump stage 1 + Electric heater kit 1 and kit 2		*	1	0	1	0	1	1	0	1	Turbo	11
Heat pump stage 2 + Electric heater kit 1 and kit 2		*	*	1	1	0	1	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1 and kit 2		*	*	*	*	1	1	1	0	1	Turbo	
Emergency heat	1	*	*	*	*	*	*	*	1	*	Turbo	12
Heating zone control	2	*	1	0	1	0	*	*	0	0	Low	13
Heating zone control		*	*	1	1	0	*	*	0	0	Low	
Heating zone control		*	*	*	*	1	*	*	0	0	Low	
Heating zone control		*	0	0	*	0	1	0	0	0	Low	
Heating zone control		*	0	0	*	0	0	1	0	0	Low	
Heating zone control		*	0	0	*	0	1	1	0	0	Low	

NOTE: *1: 24V signal*
0: No 24V signal
**: 1 or 0.*
The air handler unit will turn off if the 24V input cannot meet the table.

Outdoor Unit Included Parts

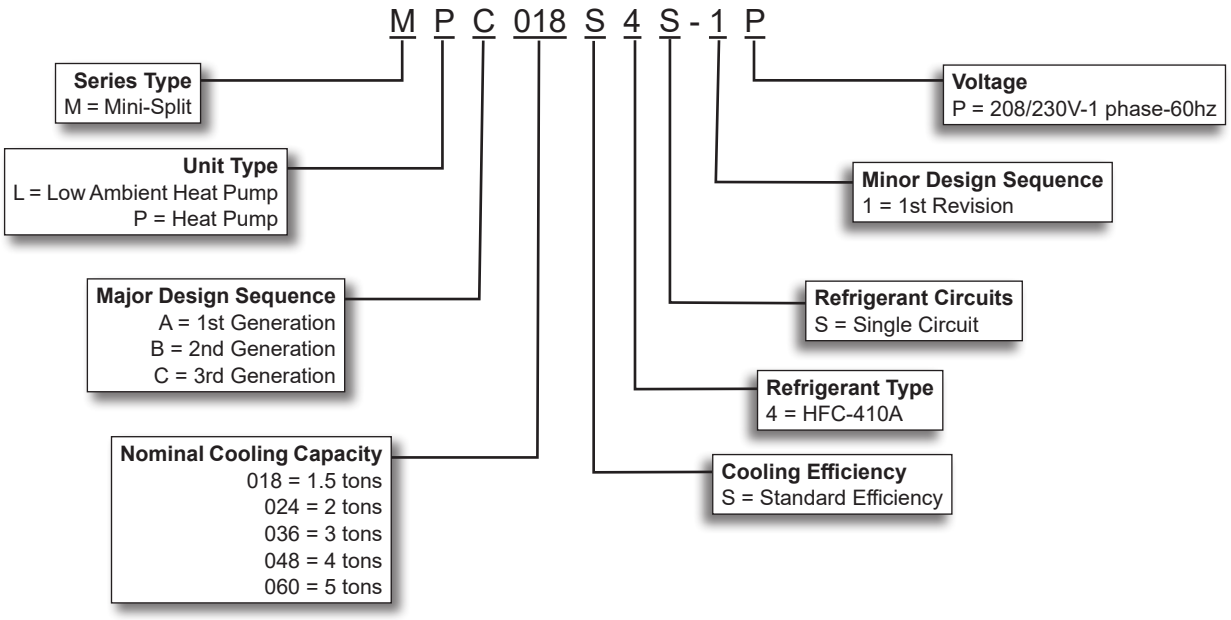
Package 1 of 1 contains the following:

1 - Assembled Outdoor Unit Packaging Content:

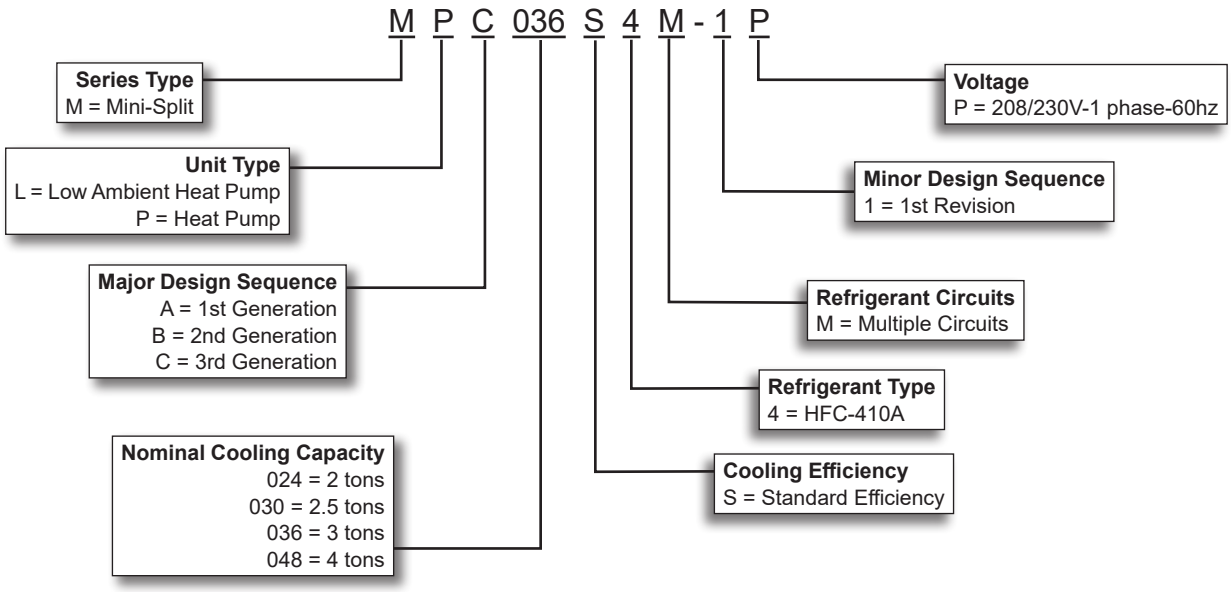
Parts	Figure	Quantity	Parts	Figure	Quantity
Drain connector		1 ea.	Seal ring		1 ea.

Model Identification - Outdoor Unit

OUTDOOR SINGLE ZONE HEAT PUMP UNITS



OUTDOOR MULTI-ZONE HEAT PUMP UNITS



⚠WARNING

The clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs, and HFCs) as of July, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for non-compliance.

⚠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.

MPC Outdoor Unit Dimensions

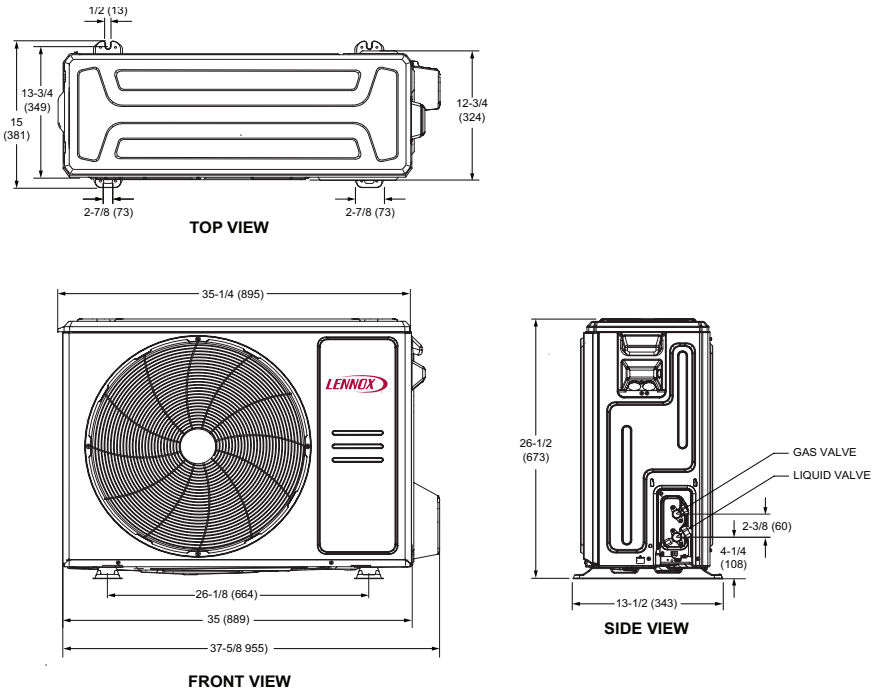


Figure 10. MPC018S4S Outdoor Unit Dimensions - Inches (mm)

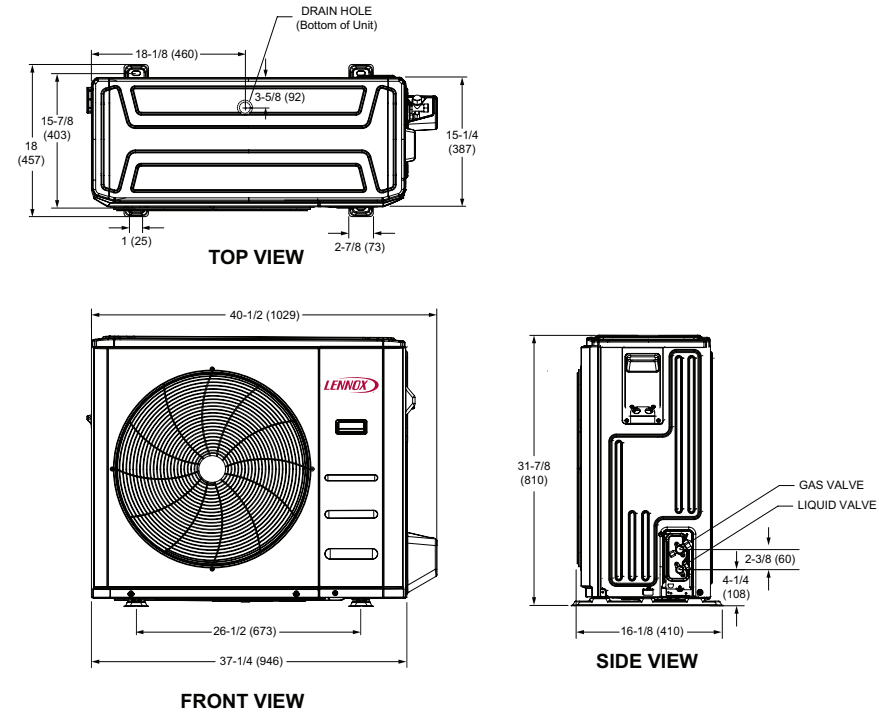


Figure 11. MPC024S4S, MPC030S4S, and MPC036S4S Outdoor Unit Dimensions - Inches (mm)

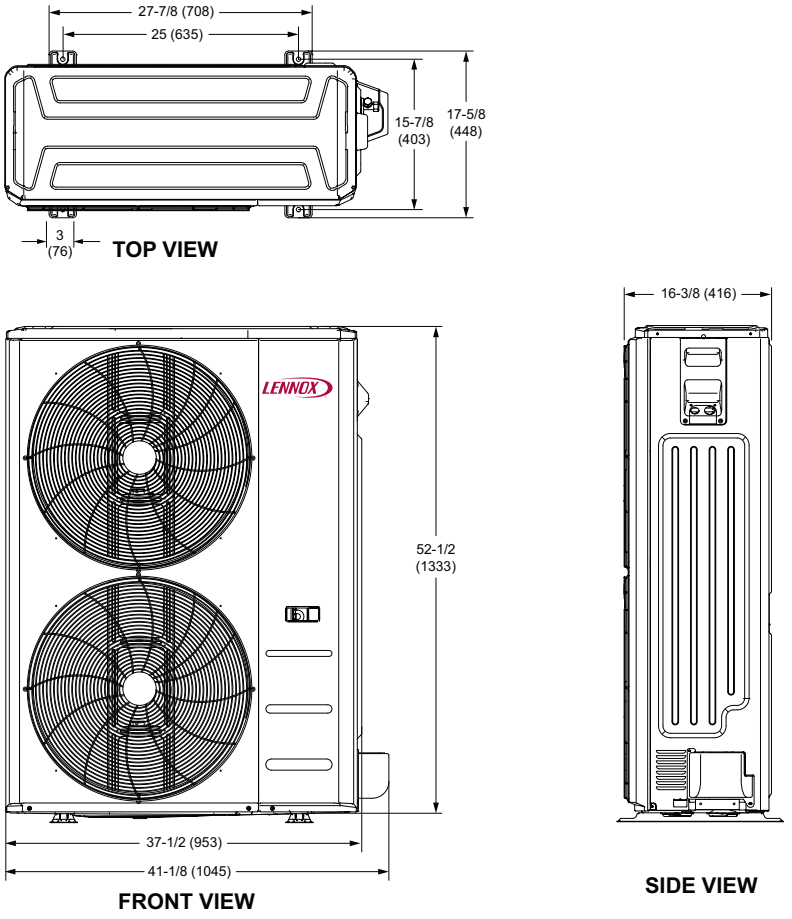


Figure 12. MPC048S4S and MPC060S4S Outdoor Unit Dimensions - Inches (mm)

MLB Outdoor Unit Dimensions

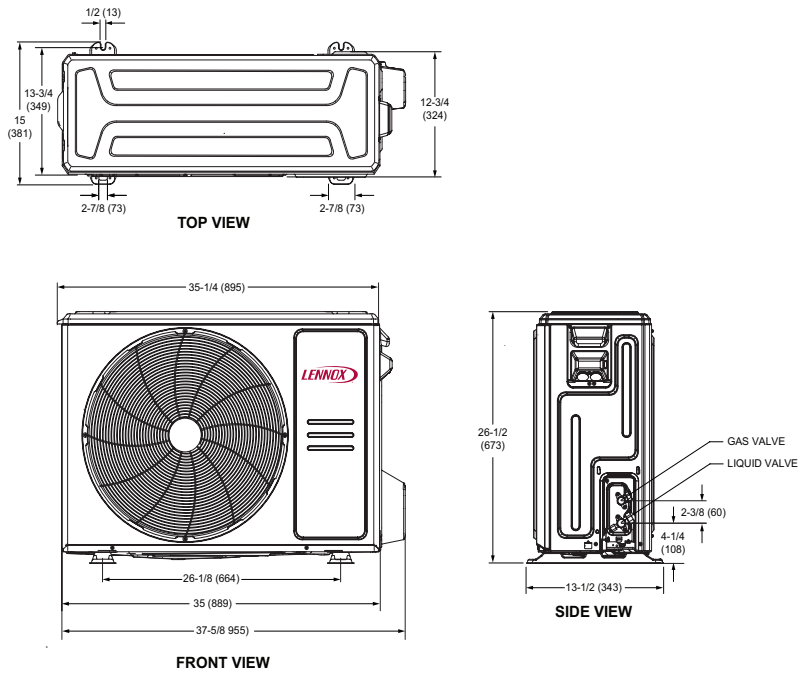


Figure 13. MLB018S4S Outdoor Unit Dimensions - Inches (mm)

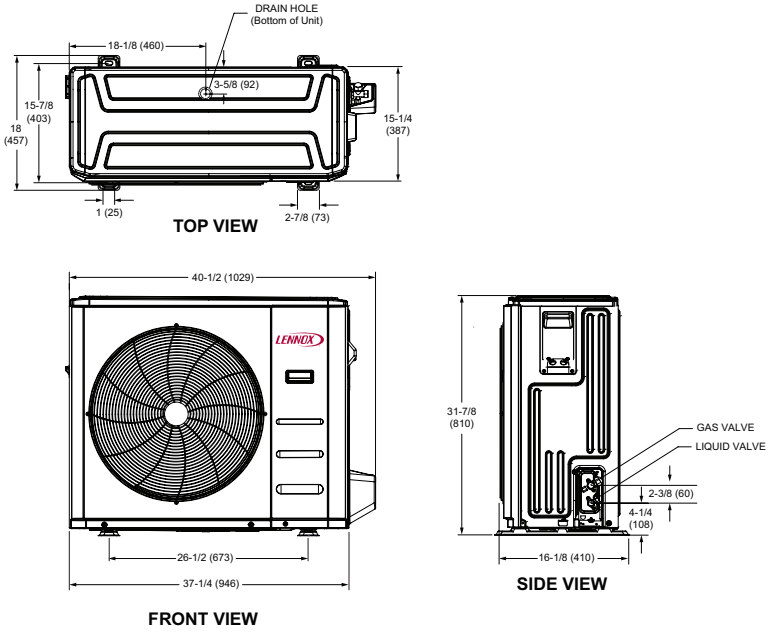


Figure 14. MLB024S4S Outdoor Unit Dimensions - Inches (mm)

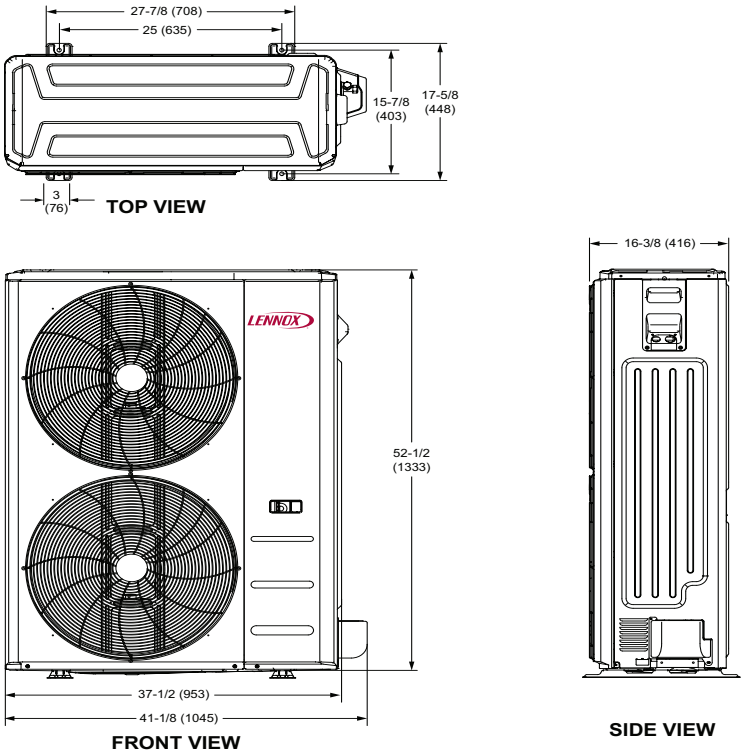


Figure 15. Outdoor Unit Dimensions (MLB036S4S-*P and MLB048S4S-*P) - Inches (mm)

Outdoor Unit Electrical Data

Single Zone

Outdoor Unit Model	MPC018S4S-1P	MPC024S4S-1P	MPC036S4S-1P	MPC048S4S-1P	MPC060S4S-1P	MLB018S4S-1P	MLB024S4S-1P	MLB036S4S-1P	MLB048S4S-1P
Minimum Circuit Ampacity (MCA)	17	22	30	36.6	39	16	25	40	40
Maximum over-current protection (MOCP)	25	30	45	50	50	25	35	50	50

Multi-Zone

Outdoor Unit Model	MPC024S4M-1P	MPC030S4M-1P	MPC036S4M-1P	MPC048S4M-1P	MLB030S4M-1P	MLB036S4M-1P	MLB048S4M-1P
Minimum Circuit Ampacity (MCA)	24.5	24.5	25	35	25	35	35
Maximum over-current protection (MOCP)	30	30	40	50	40	50	50

Air Volume Table

Capacity	External Static Pressure (ESP) Range	Fan Speed	Electric Heater Kit	24V Thermostat		Wired Controller		Airflow Volume (CFM)
				DIP Switch	24V Terminal Engaged	DIP Switch	Mode	
18K	0 - 0.80 in. w.g.	Cooling Turbo	- - -	SW3-4=ON	Y2/Y	- - -	Cool	618
		Cooling High	- - -	SW3-4=OFF	Y2/Y	- - -	Cool	576
		Cooling Medium	- - -	- - -	Y1	- - -	Cool	529
		Cooling Low	- - -	- - -	- - -	- - -	Cool	488
		Heat Pump Turbo	- - -	- - -	- - -	- - -	Heat	565
		Heat Pump High	- - -	- - -	B+Y2/Y, W	- - -	Heat	541
		Heat Pump Medium	- - -	- - -	B+Y1	- - -	Heat	435
		Heat Pump Low	- - -	- - -	- - -	- - -	Heat	400
		Electric Heater Kit 0 (Default)	10 kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	653
		Electric Heater Kit 1	10 kW, 8 kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	624
		Electric Heater Kit 2	8 kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	594
		Electric Heater Kit 3	5 kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	565

NOTE: *The constant airflow volume motor is applied. The airflow volume is constant at all ESP within range.*

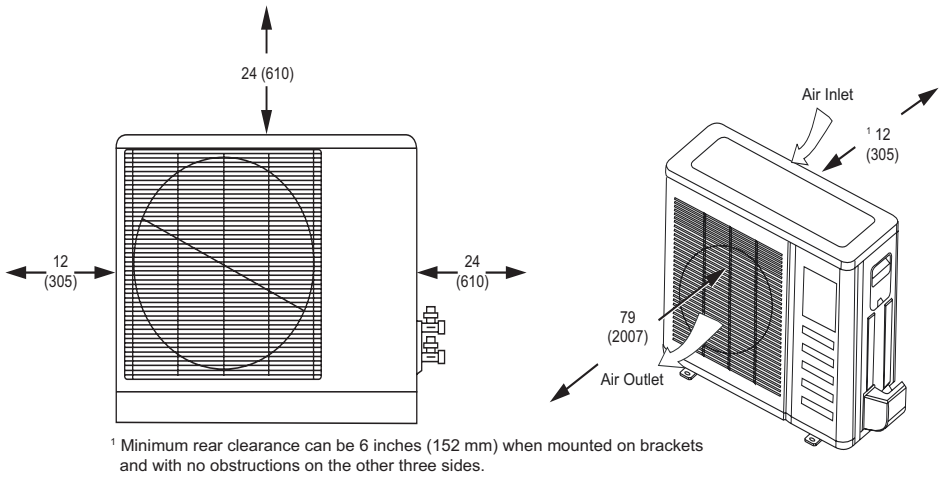
Capacity	External Static Pressure (ESP) Range	Fan Speed	Electric Heater Kit	24V Thermostat		Wired Controller		Airflow Volume (CFM)
				DIP Switch	24V Terminal Engaged	DIP Switch	Mode	
24K	0 - 0.80 in. w.g.	Cooling Turbo	- - -	SW3-4=ON	Y2/Y	- - -	Cool	824
		Cooling High	- - -	SW3-4=OFF	Y2/Y	- - -	Cool	759
		Cooling Medium	- - -	- - -	Y1	- - -	Cool	694
		Cooling Low	- - -	- - -	- - -	- - -	Cool	629
		Heat Pump Turbo	- - -	- - -	- - -	- - -	Heat	788
		Heat Pump High	- - -	- - -	B+Y2/Y, W	- - -	Heat	753
		Heat Pump Medium	- - -	- - -	B+Y1	- - -	Heat	641
		Heat Pump Low	- - -	- - -	- - -	- - -	Heat	524
		Electric Heater Kit 0 (Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	871
		Electric Heater Kit 1	15kW, 10kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	841
		Electric Heater Kit 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	818
		Electric Heater Kit 3	5kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	788
36K	0 - 0.80 in. w.g.	Cooling Turbo	- - -	SW3-4=ON	Y2/Y	- - -	Cool	1188
		Cooling High	- - -	SW3-4=OFF	Y2/Y	- - -	Cool	1082
		Cooling Medium	- - -	- - -	Y1	- - -	Cool	971
		Cooling Low	- - -	- - -	- - -	- - -	Cool	865
		Heat Pump Turbo	- - -	- - -	- - -	- - -	Heat	1112
		Heat Pump High	- - -	- - -	B+Y2/Y, W	- - -	Heat	1059
		Heat Pump Medium	- - -	- - -	B+Y1	- - -	Heat	794
		Heat Pump Low	- - -	- - -	- - -	- - -	Heat	582
		Electric Heater Kit 0 (Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1306
		Electric Heater Kit 1	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1241
		Electric Heater 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1176
		Electric Heater Kit 3	5kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1112

NOTE: *The constant airflow volume motor is applied. The airflow volume is constant at all ESP within range.*

Capacity	External Static Pressure (ESP) Range	Fan Speed	Electric Heater Kit	24V Thermostat		Wired Controller		Airflow Volume (CFM)
				DIP Switch	24V Terminal Engaged	DIP Switch	Mode	
48K	0 - 0.80 in. w.g.	Cooling Turbo	- - -	SW3-4=ON	Y2/Y	- - -	Cool	1471
		Cooling High	- - -	SW3-4=OFF	Y2/Y	- - -	Cool	1282
		Cooling Medium	- - -	- - -	Y1	- - -	Cool	1094
		Cooling Low	- - -	- - -	- - -	- - -	Cool	906
		Heat Pump Turbo	- - -	- - -	- - -	- - -	Heat	1471
		Heat Pump High	- - -	- - -	B+Y2/Y, W	- - -	Heat	1306
		Heat Pump Medium	- - -	- - -	B+Y1	- - -	Heat	1141
		Heat Pump Low	- - -	- - -	- - -	- - -	Heat	976
		Electric heater kit 0 (Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1741
		Electric heater kit 1	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1653
		Electric heater kit 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1559
		Electric heater kit 3	8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1471
60K	0 - 0.80 in. w.g.	Cooling Turbo	- - -	SW3-4=ON	Y2/Y	- - -	Cool	1806
		Cooling High	- - -	SW3-4=OFF	Y2/Y	- - -	Cool	1582
		Cooling Medium	- - -	- - -	Y1	- - -	Cool	1359
		Cooling Low	- - -	- - -	- - -	- - -	Cool	1135
		Heat Pump Turbo	- - -	- - -	- - -	- - -	Heat	1659
		Heat Pump High	- - -	- - -	B+Y2/Y, W	- - -	Heat	1582
		Heat Pump Medium	- - -	- - -	B+Y1	- - -	Heat	1247
		Heat Pump Low	- - -	- - -	- - -	- - -	Heat	976
		Electric heater kit 0 (Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	2171
		Electric heater kit 1	15kW, 20kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	2029
		Electric heater kit 2	10kW, 15kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1894
		Electric heater kit 3	10kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1753

NOTE: *The constant airflow volume motor is applied. The airflow volume is constant at all ESP within range.*

Outdoor Unit Clearances



[1] Minimum rear clearance can be 6 inches (152 mm) when mounted on brackets and with no obstructions on the other three sides.

Figure 16. Outdoor Unit Clearances - Inches (mm) - (Typical)

Torque Requirements for Caps and Fasteners

When servicing or repairing HVAC components, ensure the fasteners are appropriately tightened. “Table 3. 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*m) 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 3. Torque Requirements

Parts	Recommended Torque	
	U.S.	**Newton-Meter- N**
Service valve cap	8 ft.-lb.	11
Sheet metal screws	16 in.-lb.	2
Machine screws #10	27 in.-lb.	3
Compressor bolts	7 ft.-lb.	10
Gauge port seal cap	8 ft.-lb.	11
Flare Nut	**U.S.**	**Newton-Meter- N**
1/4	15 ft.-lb.	20
3/8	26 ft.-lb.	35
1/2	41 ft.-lb.	56
5/8	48 ft.-lb.	65

Outdoor Unit Installation

⚠CAUTION

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

Placement Considerations

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.

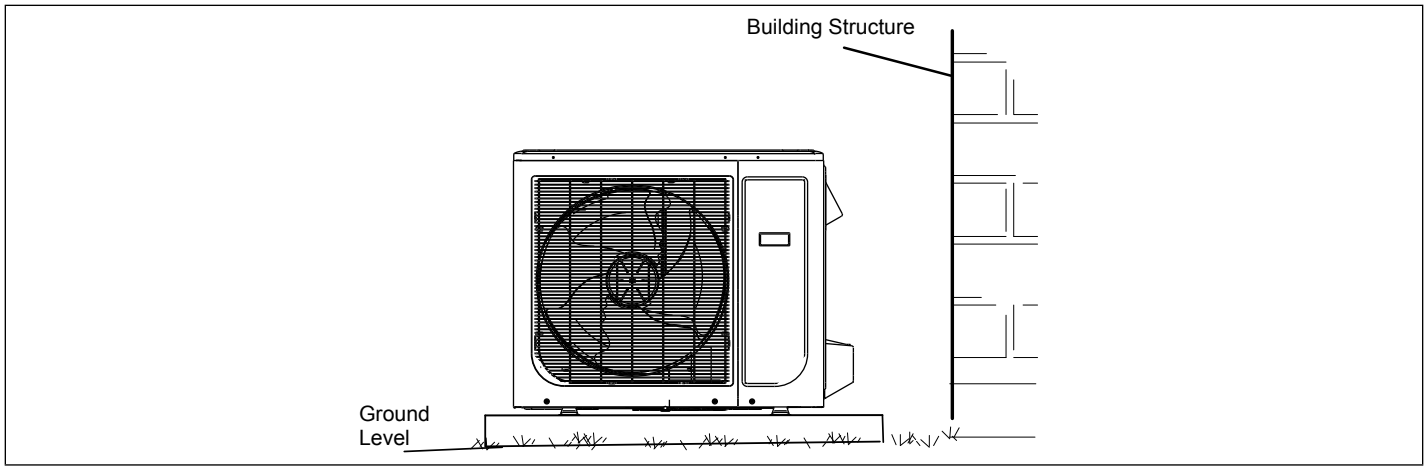


Figure 17. Install Unit Level (Typical)

- Choose a place solid enough to bear the weight and vibration of the unit, where the operation noise will not be amplified.
- Choose a location where the hot air discharged from the unit or the operation noise will not be a nuisance to neighbors.
- Avoid installing the outdoor unit near a bedroom or other places where noise may cause a problem.
- There must be sufficient space to carry the unit into and out of the site.
- There must be unobstructed air flow around the air inlet and the air outlet.
- The unit must not be installed in areas where a flammable gas leak may occur.
- Install the outdoor 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.
- Since water drains from the outdoor unit during various stages of operation, do not place anything which may be damaged by moisture under the unit.

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 18. Outdoor Unit on Pedestal (Stand) and Protective Canopy (Typical)" or "Figure 23. Dog House-Style Shelter (Typical)" on page 43.

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 18. Outdoor Unit on Pedestal (Stand) and Protective Canopy (Typical)".
- The unit base should be elevated above the depth of average snows as illustrated in "Figure 19. Outdoor Unit on Brackets above Snow Line (Typical)".
- In heavy snow areas, do not place the unit where drifting will occur as illustrated in "Figure 20. Outdoor Unit Air Flow Obstructed by Snow (Typical)".
- 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 21. Avoid Defrost Water Ice Hazard (Typical)".

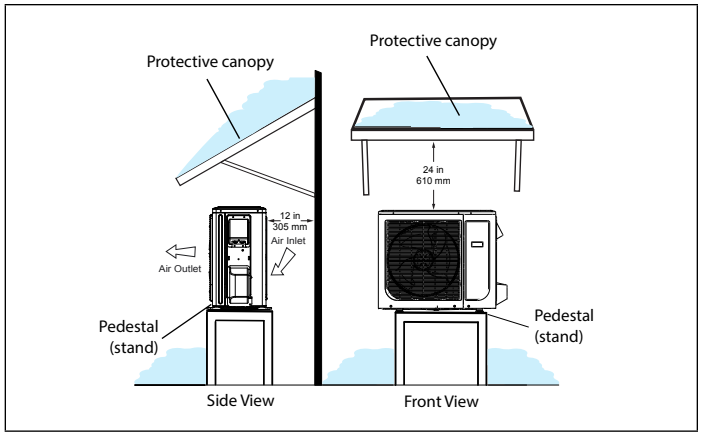


Figure 18. Outdoor Unit on Pedestal (Stand) and Protective Canopy (Typical)

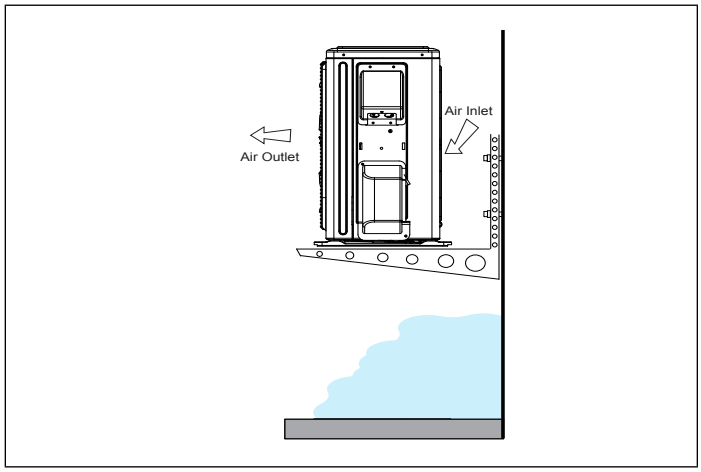


Figure 19. Outdoor Unit on Brackets above Snow Line (Typical)

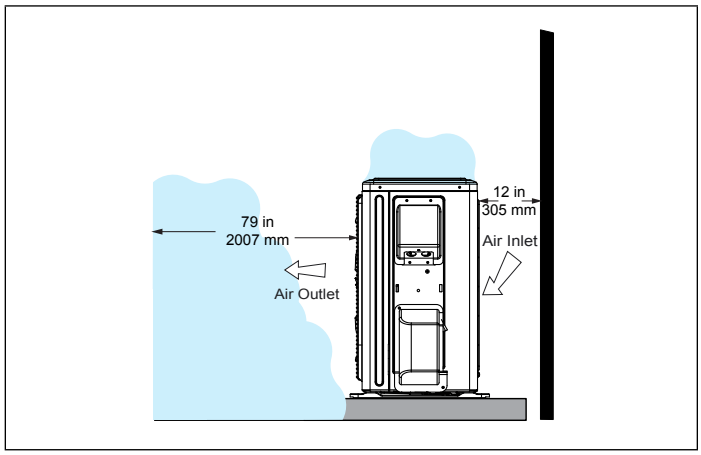


Figure 20. Outdoor Unit Air Flow Obstructed by Snow (Typical)

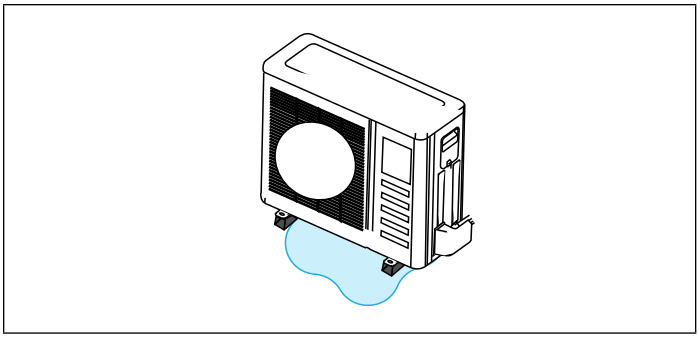


Figure 21. Avoid Defrost Water Ice Hazard (Typical)

Prevailing Winds

Normally wind baffles are not required for a 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 16. Outdoor Unit Clearances - Inches (mm) - (Typical)” on page 40 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 22. 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 22. Wind Barrier”.
- Outdoor unit can be installed in a dog house style shelter as illustrated in “Figure 23. Dog House-Style Shelter (Typical)”.
- Outdoor unit can be installed in a alcove or under a roof overhang as illustrated in “Figure 24. Unit installed in Alcove (Typical)”.

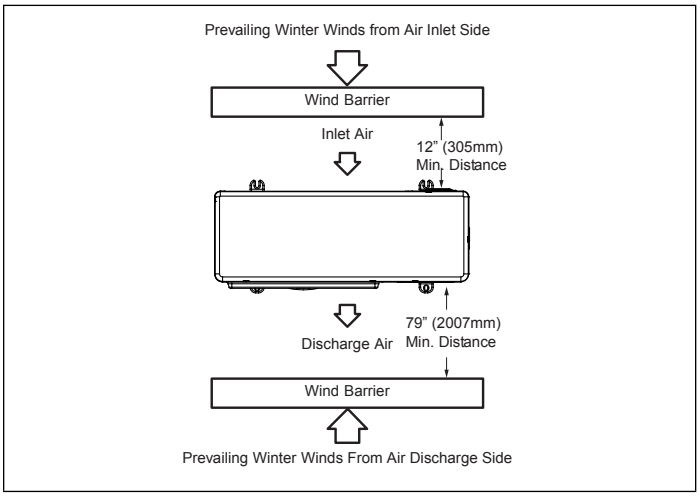


Figure 22. Wind Barrier

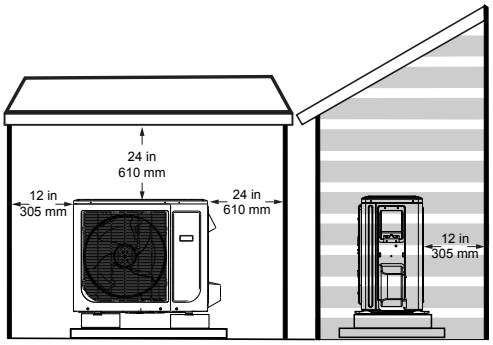


Figure 23. Dog House-Style Shelter (Typical)

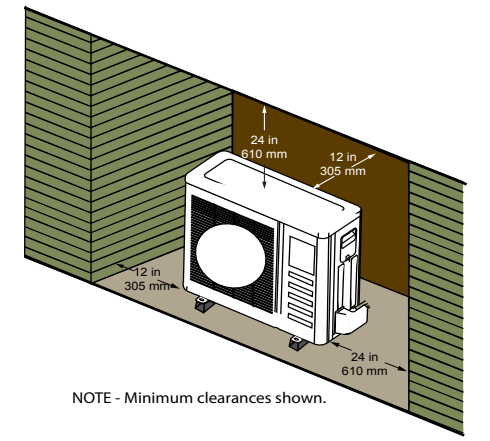


Figure 24. Unit installed in Alcove (Typical)

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.

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.

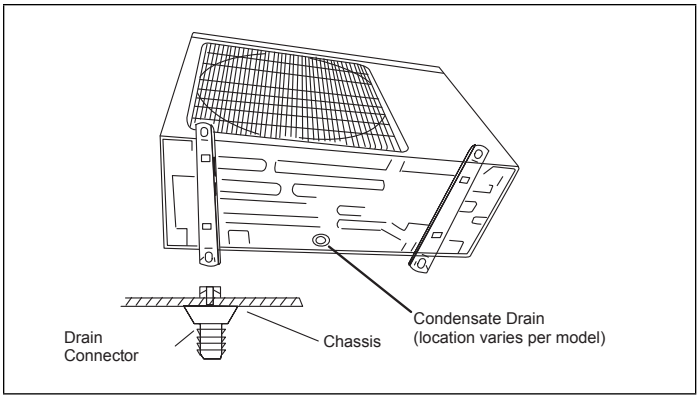


Figure 25. Condensate Drain (Typical)

Securing the Outdoor Unit

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.

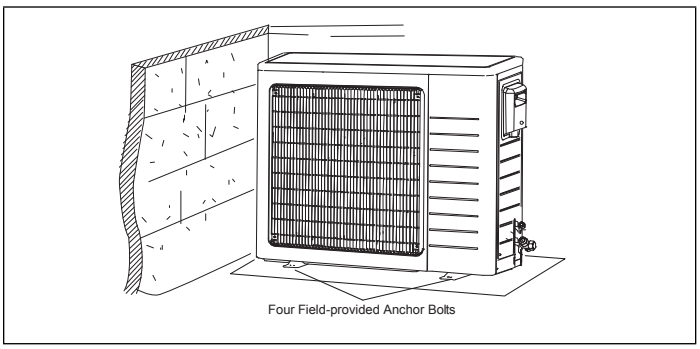


Figure 26. Securing Outdoor Unit to Slab (Typical)

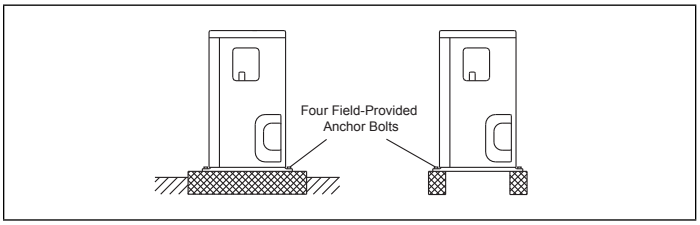


Figure 27. Securing Outdoor Unit to Rails (Typical)

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.

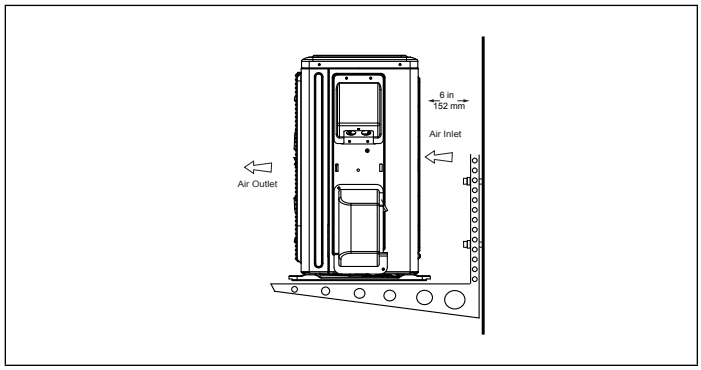
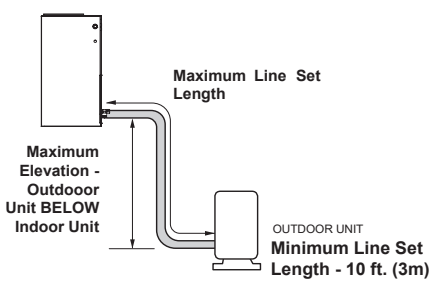


Figure 28. Securing Outdoor Unit to Brackets (Typical)

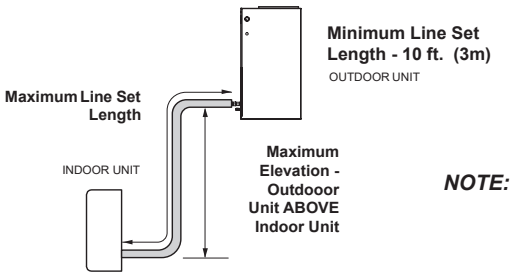
Refrigerant Line Minimum and Maximum Elevations

Single Zone Piping Limitations

Figure 29. Refrigerant Line Minimum and Maximum Elevations



Outside Unit BELOW Indoor Unit



Outside Unit ABOVE Indoor Unit

NOTE: *See "Oil Trap" on page 16.*

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.

NOTE: *Each system size has a line set length and vertical elevation parameters.*

Outdoor Unit Size (KBtu)	Line Set Diameters (in.)		Maximum Elevation Outdoor Unit BELOW Indoor Unit - Feet (Meter)	Maximum Elevation Outdoor Unit ABOVE Indoor Unit - Feet (Meter)	Maximum Line Set Length - Feet (Meter)
	Liquid	Gas			
018	1/4	1/2	66 (20)	66 (20)	98 (30)
024 / 30	3/8	5/8	82 (25)	82 (25)	164 (50)
036 / 048 / 060	3/8	5/8	98 (30)	98 (30)	213 (65)

Multi-Zone Piping Limitations

⚠CAUTION

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

IMPORTANT

Pipe and wire to each zone separately.

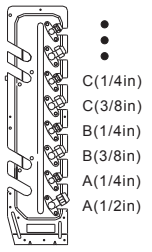
Test each indoor unit separately to ensure proper operation.

Connecting Multiple Capacity Indoor Units

- The largest capacity indoor unit must be connected to the lowest refrigerant connection ports on the outdoor unit.
- The 24,000 Btu indoor unit is only allowed to be connected to MPC036S4M, MPC048S4M, MLB036S4M and MLB-048S4M outdoor units.

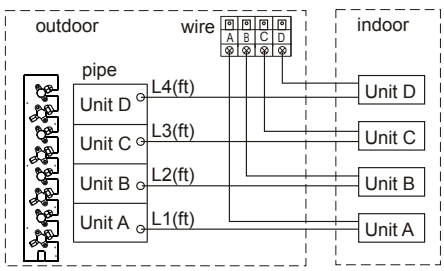
NOTE: *Each indoor unit must be piped AND wired to the correct zone piping connections and wiring terminals. Make sure that indoor unit A is wired to the zone A terminal block and connected to the appropriate refrigerant pipe connections.*

Connecting Multiple Capacity Indoor Units



Four-Zone System Example Shown Above

Pipe and Wire Each Zone Separately



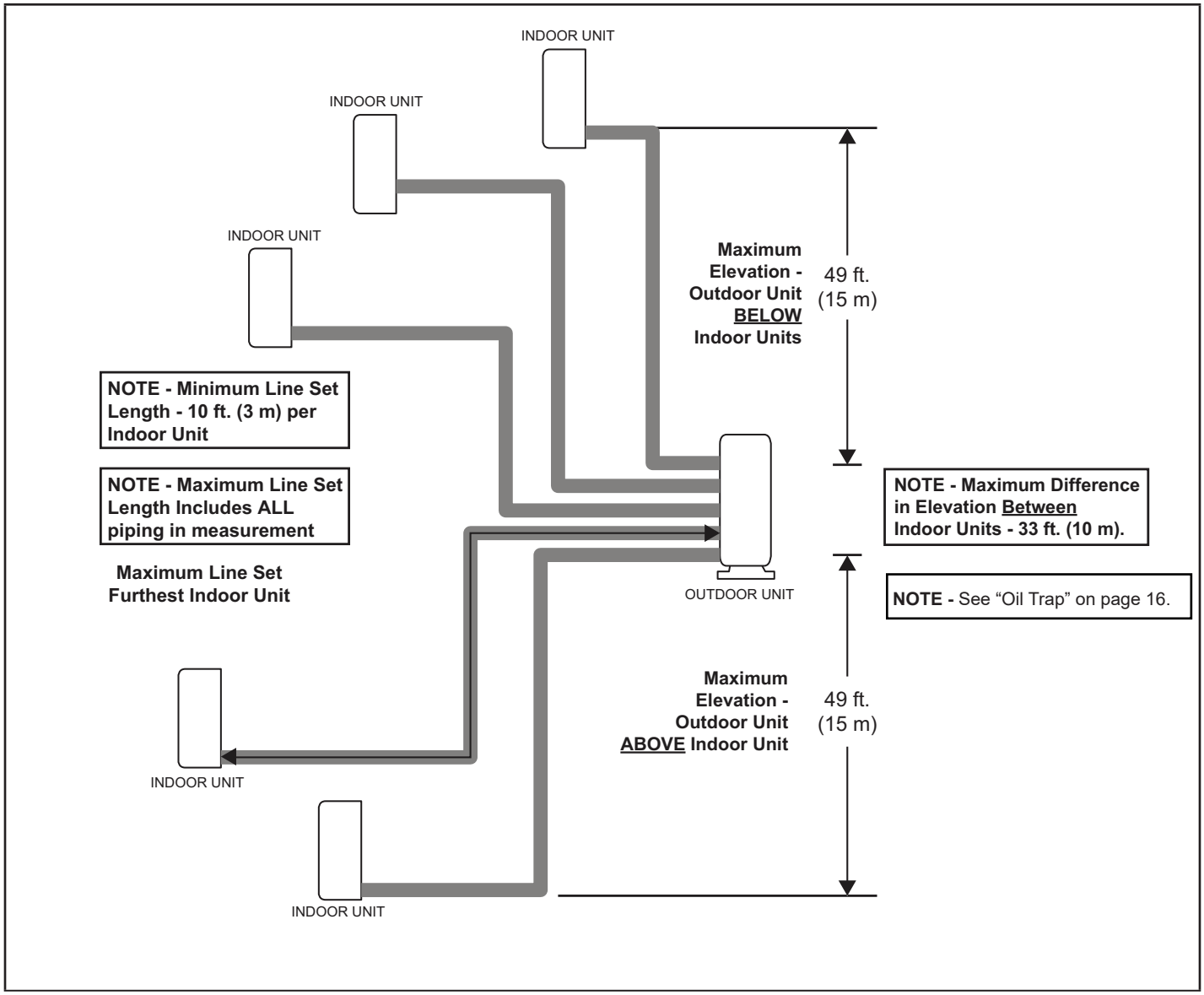


Figure 30. MPC and MLB Line Set Elevations

Outdoor Unit Model No.	MPC024SM	MLB030S4M / MPC030S4M	MLB036S4M / MPC036S4M	MLB048S4M / MPC048S4M
Maximum Number of Indoor Units/Zones	Three	Three	Four	Five
Indoor Unit Connections	(3) 1/4 liq. (3) 3/8 gas	(3) 1/4 liq. (3) 3/8 gas	(4) 1/4 liq. (3) 3/8 gas (1) 1/2 gas	(5) 1/4 liq. (3) 3/8 gas (2) 1/2 gas
Maximum Pipe Length for all Rooms	197 ft. (60 m)	197 ft. (60 m)	262 ft. (80 m)	262 ft. (80 m)
Maximum Line Set Length - Furthest Indoor Unit	98 ft. (30 m)	98 ft. (30 m)	115 ft. (35 m)	115 ft. (35 m)

NOTE: *Refer to Table 4 on page 46 for correct refrigerant line adapters furnished with outdoor units.*

Table 4. Line Set Adapters

Number of Zones	Model	Number x Liquid side/ Gas side (inch)	Adapter	Adapter Quantity
3	MPC024S4M-*P MPC030S4M-*P	3 X (1/4"/3/8")	3/8"-->1/2"	3

Table 4. Line Set Adapters

Number of Zones	Model	Number x Liquid side/ Gas side (inch)	Adapter	Adapter Quantity
4	MPC036S4M-*P	3x (1/4"/3/8") & 1x (1/4"/1/2")	3/8"-->1/2"	3
			1/2"-->3/8"	1
			1/4"-->3/8"	1
			1/2"-->5/8"	1
5	MPC048S4M-*P	3x (1/4"/3/8") & 2x (1/4"/1/2")	1/2"-->3/8"	2
			1/4"-->3/8"	2
			1/2"-->5/8"	2
			3/8"-->1/2"	3
3	MLB030S4M-*P	3x (1/4"/3/8")	3/8"-->1/2"	2
			1/2"-->3/8"	1
			1/4"-->3/8"	1
			1/2"-->5/8"	1
4	MLB036S4M-*P	3x (1/4"/3/8") & 1x (1/4"/1/2")	3/8"-->1/2"	2
			1/2"-->3/8"	2
			1/4"-->3/8"	2
			1/2"-->5/8"	2
5	MLB048S4M-*P	3x (1/4"/3/8") & 2x (1/4"/1/2")	1/2"-->3/8"	2
			1/4"-->3/8"	2
			1/2"-->5/8"	2
			3/8"-->1/2"	3

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 5. Additional Refrigerant Charge (Single Zone)

Outdoor Unit Size (KBtu)	Pipe Length (feet / meters)	Amount of Refrigerant to add
18	>25 (7.5)	0.16 oz/ft (15g/m)
24	>25 (7.5)	0.32 oz/ft (30g/m)
30	>25 (7.5)	0.32 oz/ft (30g/m)
36	>25 (7.5)	0.32 oz/ft (30g/m)
48	>25 (7.5)	0.32 oz/ft (30g/m)
60	>25 (7.5)	0.32 oz/ft (30g/m)
Note: *1/4" = 0.16 oz/ft; 3/8" = 0.32 oz/ft*		

Table 6. Additional Refrigerant Charge (Multi-Zone)

System	Pre-charge Pipe Length	Amount of Refrigerant to add
Two-port	50 ft. (15 m)	0.16 oz ((L1 ft + L2 ft) - 50 ft) 0.005 kg ((L1 m + L2 m) - 15 m)
Three-port	75 ft. (23 m)	0.16 oz ((L1 ft + L2 ft + L3 ft) - 75 ft) 0.005 kg ((L1 m + L2 m + L3 m) - 23 m)

Table 6. Additional Refrigerant Charge (Multi-Zone)

System	Pre-charge Pipe Length	Amount of Refrigerant to add
Four-port	100 ft. (30 m)	0.16 oz ((L1 ft + L2 ft + L3 ft + L4 ft) - 100 ft) 0.005 kg ((L1 m + L2 m + L3 m + L4 m) - 30 m)
Five-port	125 ft. (38 m)	0.16 oz ((L1 ft + L2 ft + L3 ft + L4 ft + L5 ft) - 125 ft) 0.005 kg ((L1 m + L2 m + L3 m + L4 m + L5 m) - 38 m)

Leak Test and Evacuation

This procedure is performed after all connections both plumbing and wiring are completed.

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 7. 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 7. Pressure Test Specifications

	Bar	Psig	kPa	Duration
1	3	44	303	Minimum of 10 minutes
2	15	220	1517	Minimum of 10 minutes
3	32	470	3241	Minimum of 10 minutes
4	45	650	4482	1 hour. Stress test to prove the integrity of the complete installation.
5	32	470	3241	24 hours. Lower system pressure test, after confirmation No. 4 was successfully completed.

Triple Evacuation Procedure

A Micron gauge must be used for this procedure.

1. Discharge the oxygen-free nitrogen and evacuate the system to a reading of 8000 Microns using all service valves.
2. Break the vacuum by allowing nitrogen into the port connections (liquid and gas line pipes) until a positive pressure is achieved.
3. Evacuate the system to a reading of 5000 Microns.
4. Break the vacuum by allowing nitrogen into the port connections (liquid and gas line pipes) until a positive pressure is achieved.
5. Evacuate the system to a minimum reading of 500 Microns.
6. For a moisture-free system, ensure the vacuum is held without movement for a minimum of 4 hours.
7. If vacuum fails to hold, carry out steps 2 through 6 until vacuum holds.

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 3. Torque Requirements" on page 40. See "Table 5. Additional Refrigerant Charge (Single Zone)" on page 47 for multi-zone zone applications.
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.

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

Checks	Pass	Fail
No electrical leakage		
Unit is properly grounded		
All electrical terminals properly covered		
Indoor and outdoor units are solidly installed		
All pipe connection points do not leak		
Water drains properly from drain hose		
All piping is properly insulated		
Unit performs COOL function properly		
Unit performs HEAT function properly		

Error Codes

Table 9. MLB and MPC Multi-Zone Outdoor Unit Error Codes

Display	Malfunction and Protection Indication
EL01	Communication malfunction between indoor and outdoor units.
FL14	Capability mismatch between indoor unit and outdoor unit
EC50	Outdoor temperature sensor error.
EC51	Outdoor EEPROM error.
EC52	Condenser coil temperature sensor (T3) malfunction.
EC53	Outdoor ambient temperature sensor (T4) malfunction.
EC54	Compressor discharge temperature sensor TP is in open circuit or has short circuited
EC55	Outdoor IPM module temperature sensor malfunction
EC56	Outdoor T2B sensor error.
EC57	Refrigerant pipe temperature sensor error.
EC07	Outdoor DC fan motor malfunction/fan speed out of control.
EC71	Over current failure of outdoor DC fan motor.
EC72	Lack phase failure of outdoor DC fan motor.
PC00	Inverter module (IPM) protection.
PC02	Top temperature protection of compressor.
PC06	Discharge temperature protection of compressor.
PC08	Outdoor over-current protection.
PC0A	High temperature protection of condenser.
PC0F	PFC module protection.
PC0L	Low temperature protection of outdoor unit.
PC10	Outdoor unit low AC voltage protection.
PC11	Outdoor unit main control board DC bus high voltage protection.
PC12	Outdoor unit main control board DC bus high voltage protection / 341 Machine Check Error (MCE) error.
PC30	System high pressure protection
PC31	System low pressure protection

Table 9. MLB and MPC Multi-Zone Outdoor Unit Error Codes

Display	Malfunction and Protection Indication
PC40	Communication error between outdoor main chip and compressor driven chip
PC42	Compressor start failure of outdoor unit
PC43	Outdoor compressor lack phase protection
PC44	Outdoor unit zero speed protection
PC45	Outdoor unit IR chip drive failure
PC46	Compressor speed has been out of control
PC49	Compressor over-current failure
PCA1	Condensation protection of refrigerant pipe
PH90	High temperature protection of Evaporator
PH91	Low temperature protection of Evaporator
LC06	High temperature protection of Inverter module (IPM)