



VRF

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INSTALLATION INSTRUCTIONS

Mode Selection Box

VRF SYSTEMS

507886-04

09/2019

Shipping and Packing List

Check the components for shipping damage. If you find any damage, immediately contact the last carrier.

Package 1 of 1 contains the following:

- 1 - Assembled mode selection box
- 6 - Insulation sleeves for piping from outdoor unit (3 sleeves per side)
- 2 - Liquid pipe adaptors
- 2 - High pressure gas pipe adaptors
- 2 - Low pressure gas pipe adaptors
- 1 - Flexible condensate connector
- 1 - Hose clamp
- 1 - Installation manual

Installation

Mode selection boxes V8MSBB02-3P, V8MSBB04-3P, V8MSBB06-3P V8MSBB08-3P, V8MSBB10-3P, and V8MSBB12-3P are used with VRB heat recovery outdoor units to allow simultaneous heating and cooling in multiple zones. Mode selection boxes are designed for indoor installation only.

Mode selection boxes include solenoid valves which control refrigerant flow through the individual indoor units so that unit operation (heating or cooling) matches the comfort requirements set by the occupant.

Mode selection boxes are sized to accommodate up to 290,000 Btus of indoor units. See Table 1.

Mode selection boxes are equipped with braze fittings for indoor unit and outdoor unit refrigerant piping connections.

Refer to the Product Specification bulletin (EHB) for the proper use of mode selection boxes with matching VRB heat recovery units, indoor units, branch pipes, line sets and controls.



V8MSBB12 Shown

THIS MANUAL MUST BE LEFT WITH THE OWNER FOR FUTURE REFERENCE

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

! 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, service agency or the gas supplier.

Failure to follow safety warnings and these instructions exactly could result in property damage, dangerous operation, serious injury, or death.

Any additions, changes, or conversions required in order for the appliance to satisfactorily meet the application needs must be made by a licensed professional HVAC installer (or equivalent) using factory-specified parts.

Do not use this system if any part has been under water. A flood-damaged appliance is extremely dangerous. Immediately call a licensed professional HVAC service technician (or equivalent) to inspect the system and to replace all controls and electrical parts that have been wet, or to replace the system, if deemed necessary.

! 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.

⚠ CAUTION

To ensure proper system performance and reliability, Lennox does not recommend operation of VRF systems during any phase of construction. Construction debris, low temperatures, harmful vapors, and operation of the unit with misplaced filters can damage the units. Failure to follow these guidelines will result in the warranty being voided.

⚠ IMPORTANT

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

System Piping

⚠ CAUTION

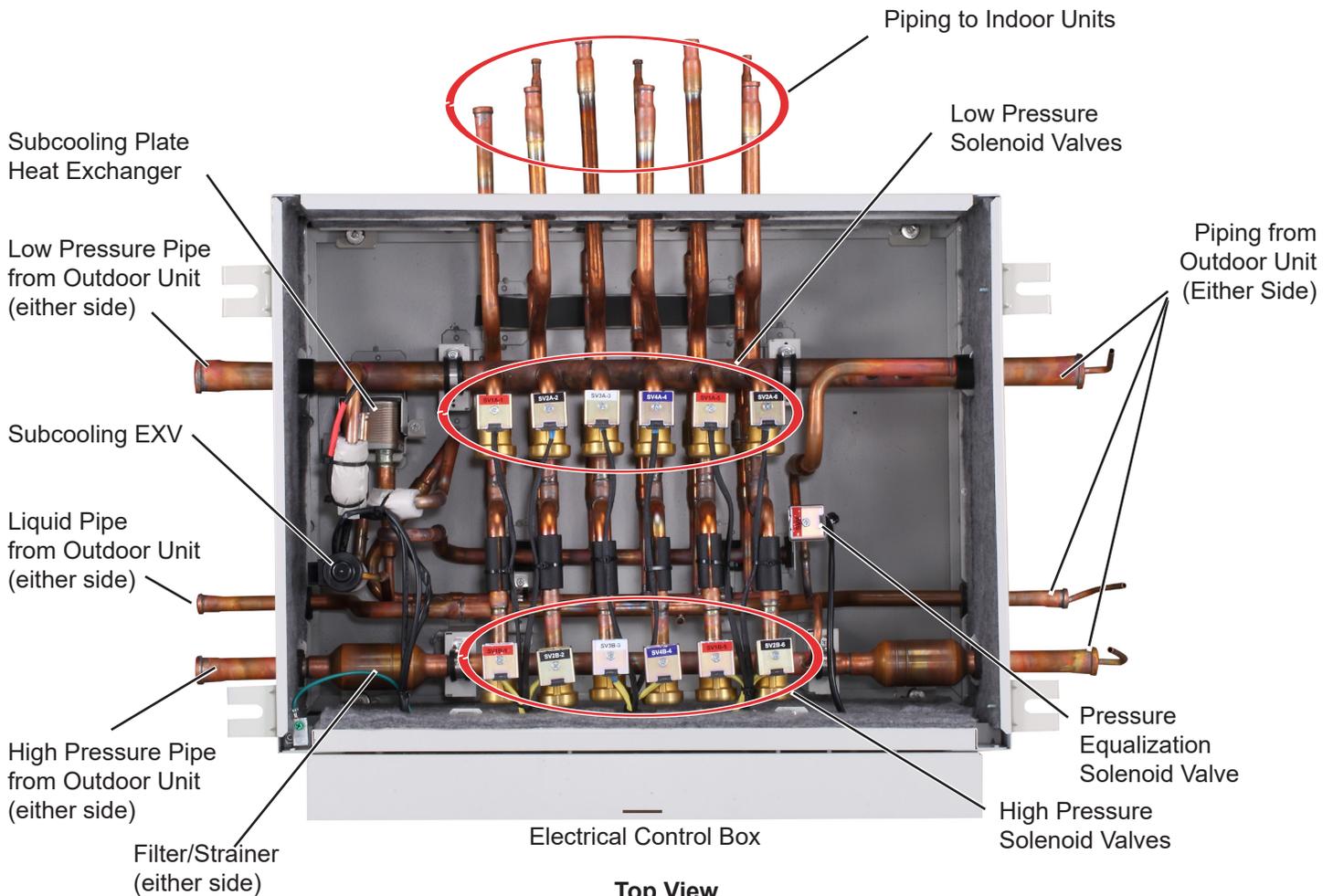
VRF system piping is customized for each installation. The LVSS piping report is an engineered design that must be followed. The piping diagram or diagrams included within the LVSS report have been prepared based on the information provided to the Lennox VRF applications department.

When the indicated lengths change from the figures stated within the report, it is imperative that prior to the commencement of the refrigerant pipe work installation, Lennox VRF applications department are informed of these proposed changes.

Upon receipt of this new information the Lennox VRF applications department will confirm any changes that may be applicable to this installation. If changes are required, a new piping diagram will be produced and will supersede all other previously provided documents.

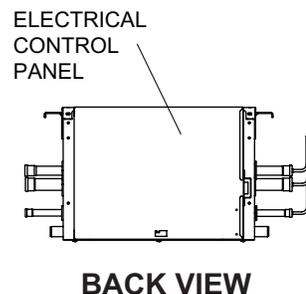
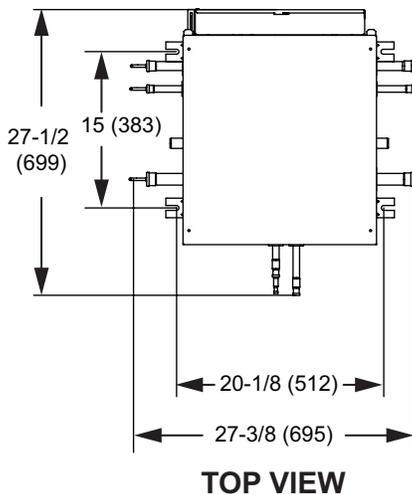
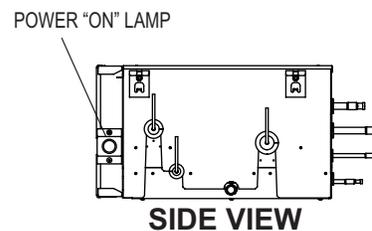
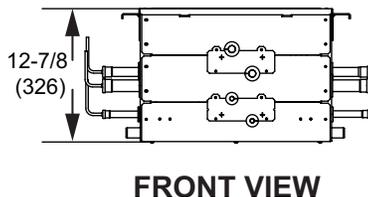
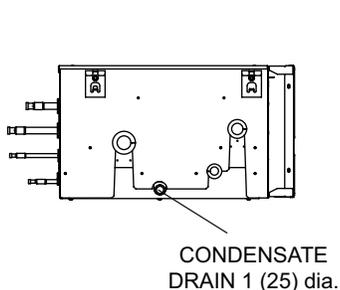
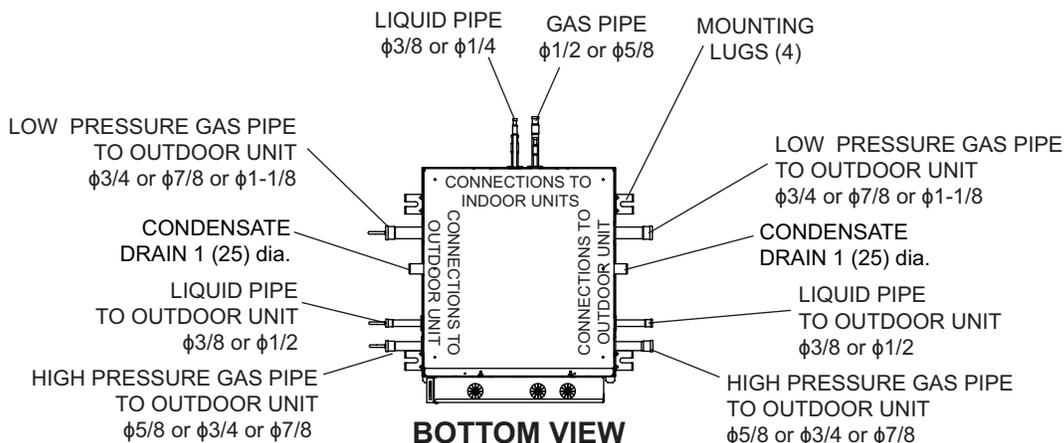
Failure to provide this information regarding changes to the original design may lead to insufficient capacity, equipment failure, warranty being made void and the refusal to commission the system.

Unit Components



Unit Dimensions - inches (mm)

V8MSBB02-3P

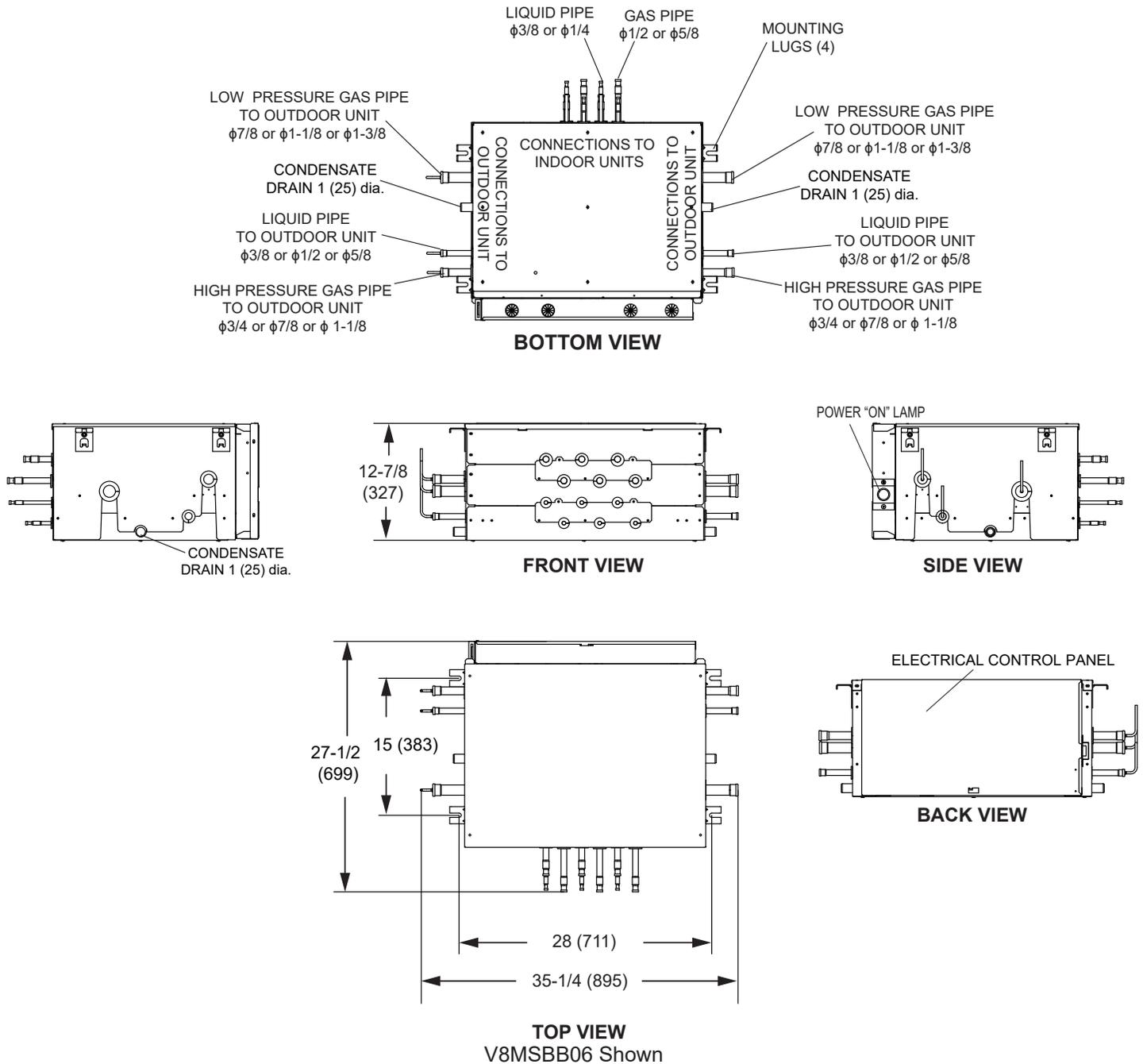


NOTE - Horizontal installation only.

NOTE - Field piping connections for the outdoor unit gas and liquid pipes are provided on the right and left side of the mode selection box. **Only one side can be used. Piping through the box to another mode selection box is not allowed; use the proper branch joint kit when multiple mode selection boxes are connected.**

Unit Dimensions - inches (mm)

V8MSBB04-3P, V8MSBB06-3P

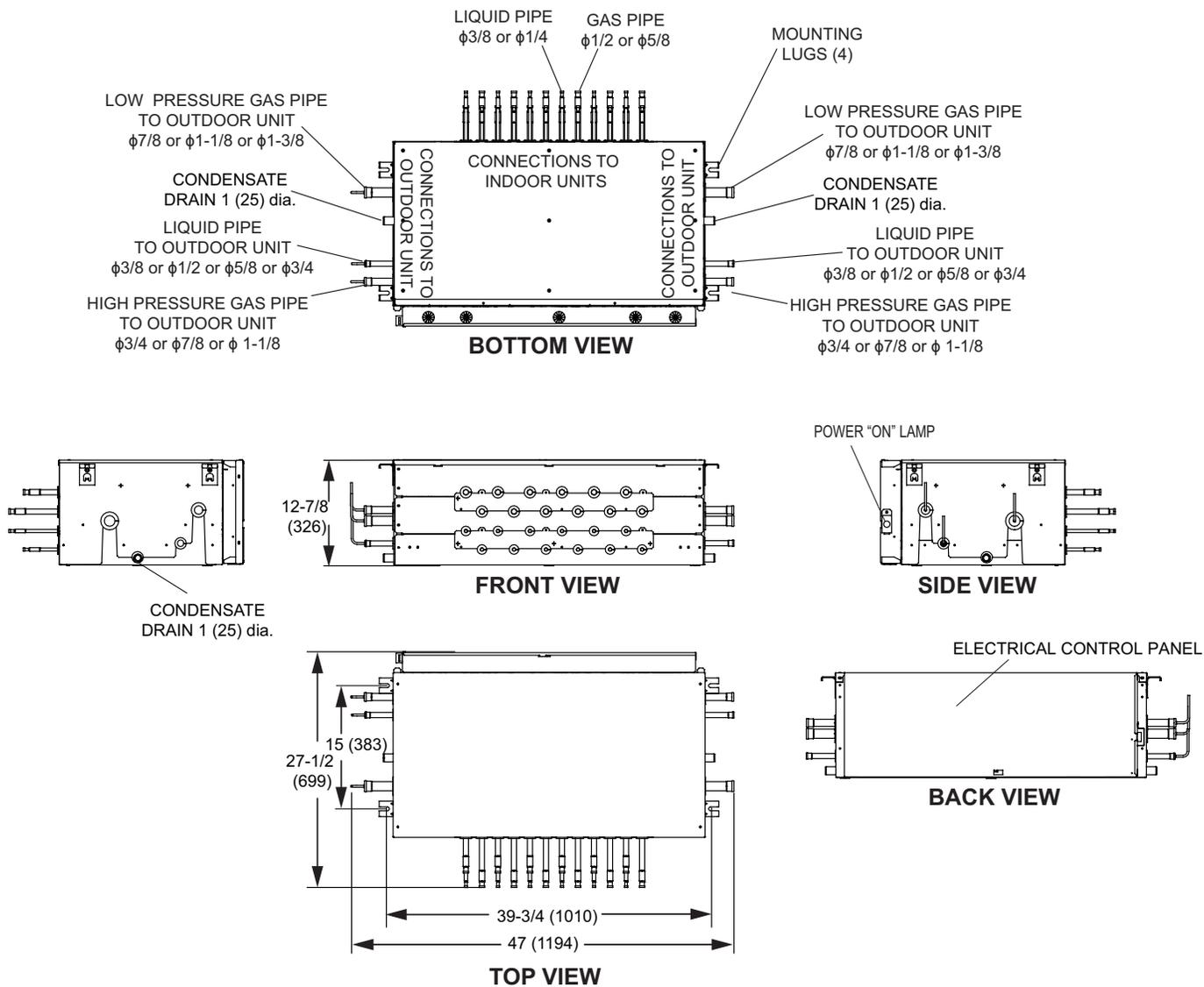


NOTE - Horizontal installation only.

NOTE - Field piping connections for the outdoor unit gas and liquid pipes are provided on the right and left side of the mode selection box. **Only one side can be used. Piping through the box to another mode selection box is not allowed; use the proper branch joint kit when multiple mode selection boxes are connected.**

Unit Dimensions - inches (mm)

V8MSBB08-3P, V8MSBB10-3P, V8MSBB12-3P

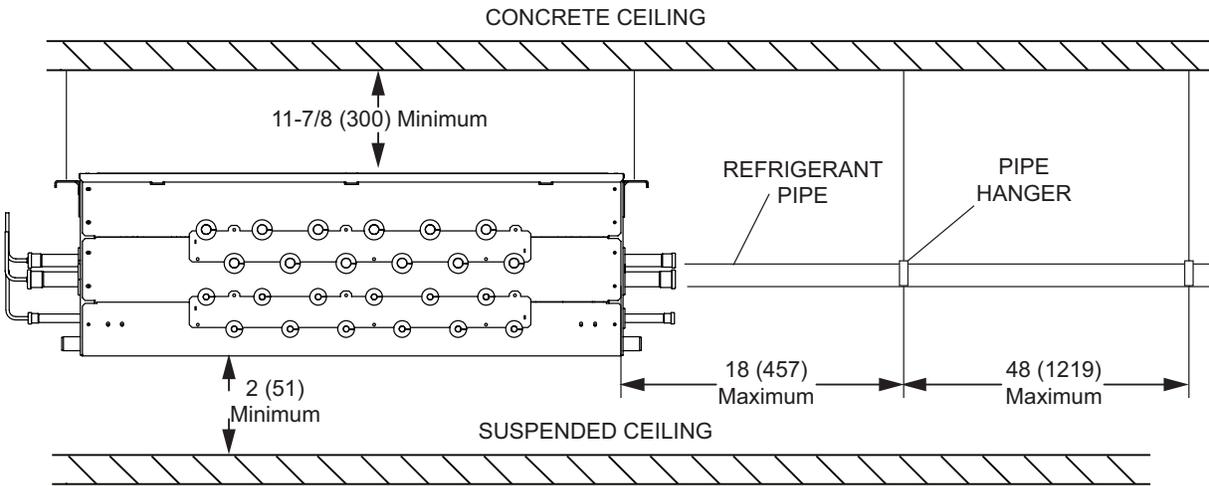


V8MSBB12 Shown

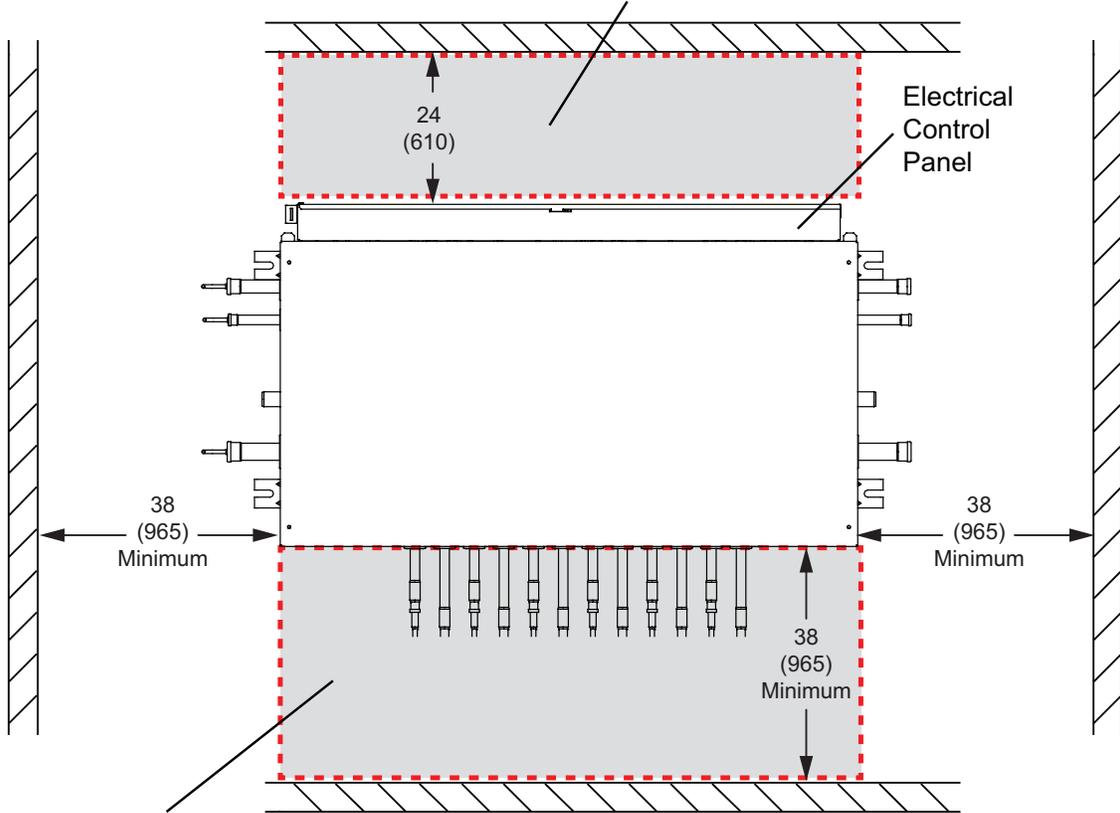
NOTE - Horizontal installation only.

NOTE - Field piping connections for the outdoor unit gas and liquid pipes are provided on the right and left side of the mode selection box. **Only one side can be used. Piping through the box to another mode selection box is not allowed; use the proper branch joint kit when multiple mode selection boxes are connected.**

Installation Clearances - inches (mm)



Required! Suitably sized access panel required to provide full access to electrical panel



Suitably sized access panel for gaining access to isolating ball valves (if used) if mounted above a solid ceiling

Access panels are a requirement for system commissioning and future preventative maintenance.

Table 1. Mode Selection Boxes

Model No.	Application	Maximum Capacity
V8MSBB02	2 ports, 5 indoor units maximum per port 10 indoor units maximum for box	108,000 Btus
V8MSBB04	4 ports, 5 indoor units maximum per port 20 indoor units maximum for box	168,000 Btus
V8MSBB06	6 ports, 5 indoor units maximum per port 30 indoor units maximum for box	216,000 Btus
V8MSBB08	8 ports, 5 indoor units maximum per port 40 indoor units maximum for box	290,000 Btus
V8MSBB10	10 ports, 5 indoor units maximum per port 41 indoor units maximum for box	290,000 Btus
V8MSBB12	12 ports, 5 indoor units maximum per port 41 indoor units maximum for box	290,000 Btus

NOTE - Each box has a maximum capacity of 290,000 Btus.

Mode Selection Box Location

WARNING

Use the provided and specified components when installing equipment. Failure to do so may result in unit falling, water leaking or electrical shocks, causing personal injury or equipment or property damage.

Check suitability of structure to which the unit support mechanism will be fixed to. If structure is not capable of carrying the weight of the unit, unit may fall causing personal injury or equipment damage.

Consider the possibility of earthquakes in your area when installing the equipment. If the unit is not correctly secured, it may fall, causing personal injury or equipment damage.

Safely dispose of packing materials, which include nails, wood and other sharp objects, as well as plastic wrapping. Children playing with plastic wrap or bags risk the danger of suffocation.

CAUTION

Do not place items which may be damaged by water under or around the unit.

Consider the following items when positioning the mode selection box for installation:

- Sounds are made by refrigerant as solenoid valves open and close inside the mode selection box. Do not install the mode selection box where these sounds may disturb building occupants.
- The mode selection box must be sloped 1/8" toward condensate drain outlet.
- Provide sufficient clearance around mode selection box to allow 3 feet of straight pipe before the first elbow or branch pipe is installed. See Figure 6.
- If the unit is being installed in an application that includes a sheet rock (plasterboard) ceiling, it is required that an access panel be installed in a suitable location. This will also allow access for future maintenance (requirement of Lennox warranty program).

Access is required during the commissioning process to check the unit's internal components and to check the local disconnect.

Mode Selection Box Installation

! 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. These units must be installed as a part of a matched system as specified in the Product Specifications (EHB) bulletin.

Use the provided suspension brackets to suspend the mode selection box(es) between the outdoor and indoor units. The mode selection box location must be able to accommodate the size of the box, as well as the required 3 feet of straight pipe length between the box and the first elbow or branch pipe. Refer to the dimension drawing on Page 3 and Figure 6.

1. Make sure that the structural ceiling is able to support the weight of the mode selection box(es). It may be necessary to add extra support. If the structural ceiling is constructed of concrete, install anchors to accept four $\frac{3}{8}$ inch threaded rods to suspend the mode selection box. If the structural ceiling includes wooden joists, use angle iron or a Unistrut channel fixed securely in place to accept the $\frac{3}{8}$ inch threaded rods. See Figure 1.

NOTE - Threaded rod (requirement of Lennox warranty program) is the ONLY acceptable method of suspending the unit; do not use chains or straps.

2. Slide one nut and one washer onto each threaded rod. Use electrical tape to keep the washer from falling off. Position the nuts slightly above the final resting place of the four suspension brackets.

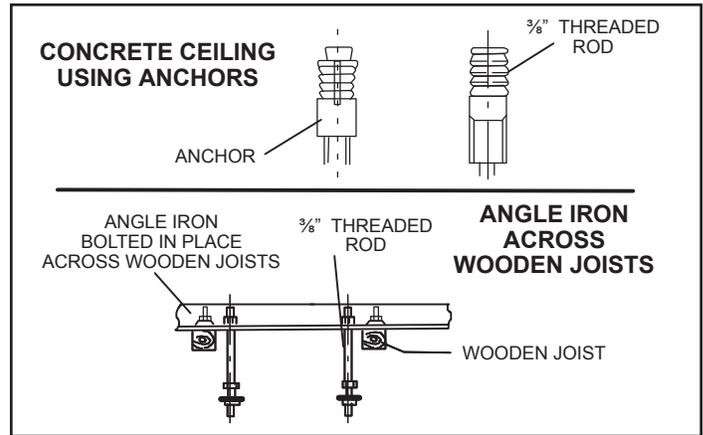


Figure 1. Suspending Methods

3. Raise the mode selection box and insert the threaded rods into the suspension brackets. Slide a washer and then a nut onto each rod below each suspension bracket. Use the leveling nut (beneath suspension bracket) to adjust the mode selection box. Remove the electrical tape holding the upper washers and nuts in place and tighten each of the four nuts above the brackets down onto the brackets. The mode selection box must be sloped $\frac{1}{8}$ " toward condensate drain outlet.

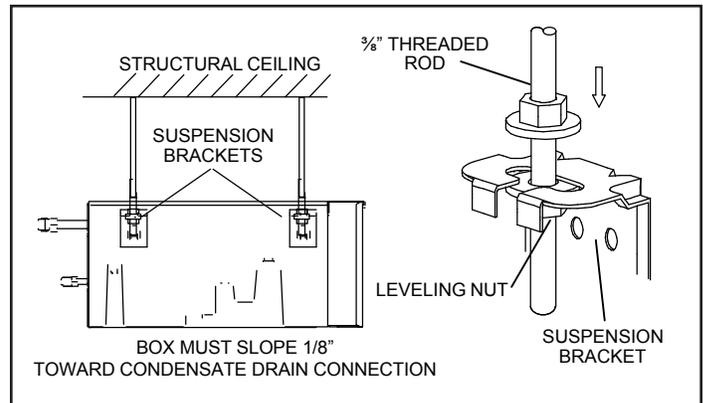


Figure 2. Suspension Hardware

4. Continue with refrigerant piping connections.

Refrigerant Piping Connections

WARNING

Refrigerant leaks are unlikely; however, if a refrigerant leak occurs, open a door or windows to dilute the refrigerant in the room. Turn off the unit and all other appliances that may cause a spark. Call a licensed professional HVAC technician (or equivalent) to repair the leak.

Use only R410A refrigerant to charge this system. Use of other refrigerant or gas will damage the equipment.

Do not allow air or other contaminants to enter system during installation of refrigerant piping. Contaminants will result in lower system capacity and abnormally high operating pressures and may result in system failure or explosion.

Insulate all refrigerant piping.

Refrigerant pipes may be very hot during unit operation. Do not allow contact between wiring and bare copper pipes.

After refrigerant piping connections have been completed, check the system for leaks per commissioning instructions.

IMPORTANT

Do not remove seals from refrigerant piping stubs until connections are being made. This will prevent dust or water from getting into the refrigerant piping before it is connected.

- Field-provided piping consists of three HVAC/R rated copper lines from the outdoor unit connected to the mode selection box, and two HVAC/R rated copper lines from the mode selection box to each connected indoor unit.
- Field piping connections for the outdoor unit gas and liquid pipes are provided on the right and left side of the mode selection box. **Only one side can be used.** Piping through the box to another mode selection box is not allowed; use the proper branch joint kit when multiple mode selection boxes are connected. Adapters are provided in the accessory package to allow for connection to different sizes of piping from the outdoor unit.
- Field refrigerant piping for the VRB heat recovery units includes a variety of branch pipe kits, mode selection boxes and field-provided piping.
 - Outdoor unit branch pipe kits are used to join multiple outdoor units to reach the required system capacity.
 - Mode selection box branch pipe kits are available to evenly split system capacity among the varying numbers of mode selection boxes.
- Refrigerant piping connections to outdoor unit(s) and indoor units are made with field braze connections
- Final equipment connections must be brazed connections. Compression or other types of fittings are not permitted for final connections.
- Refrigerant lines must be connected by a qualified technician in accordance with established procedures.
- Copper-phosphorous brazing alloys are to be used to join all pipework connections where applicable.
- Always flow/purge nitrogen to avoid oxidation while brazing.
- Always use an appropriate heat absorption compound to protect the unit and internal sensors from conductive heat while brazing.
- Allow a minimum of 3 feet between the mode selection box and the first elbow or branch pipe in refrigerant piping. See Figure 6.
- After refrigerant piping has been installed and checked for leaks, apply the provided insulation sleeves over all connections. All lines must be individually insulated.
- Refer to the VRB heat recovery unit installation instructions and product specifications (EHB) bulletin for more detailed information on refrigerant piping connections. The mode selection boxes can accommodate varying numbers of indoor units. See Table 1. Outgoing gas and liquid connections for the indoor units are on the front of the box. See Table 3.
 - Indoor unit branch pipe kits split the system capacity among up to five indoor units per connection from each mode selection box.

Piping Connections

Remove the factory-brazed cap or cut the pipe for each port to connect to the indoor units.

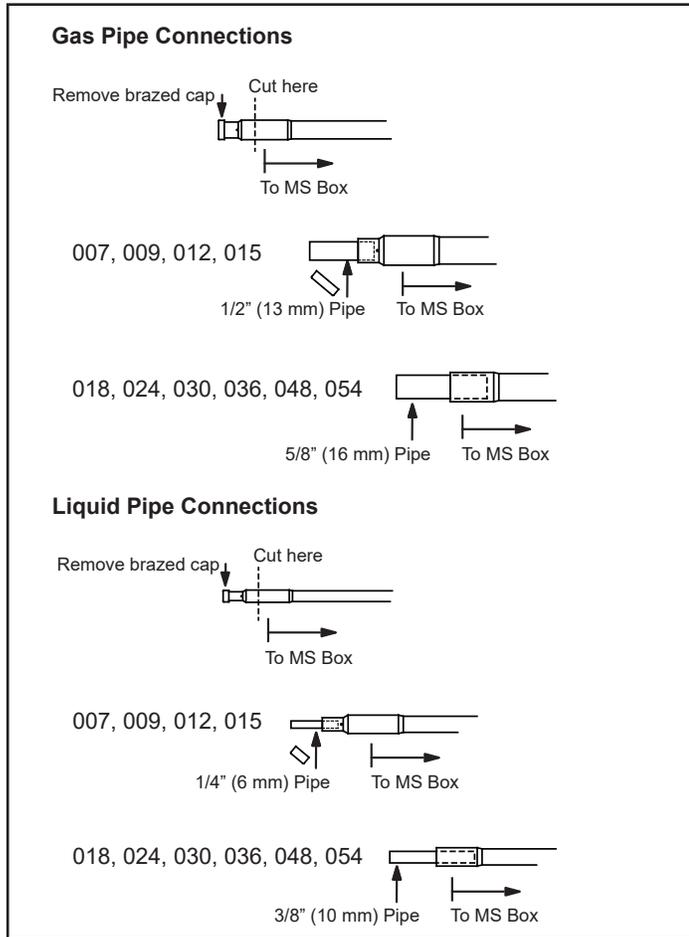


Figure 3. Connect to Indoor Unit 054k and Smaller

Connecting 060, 072 and 096 Indoor Units

NOTE - Dip switch handle location is shown as a solid black box in the tables.

0 = OFF (down)

1 = ON (up)

NOTE - Turn off power to the unit before setting the dial/dip switch. The function will be available when the unit is powered on again.

S1 & S2 Connected Ports Setting

ON		No ports Combined (Default factory setting)
ON		PCB 1 - Ports 1 & 2 Combined
ON		PCB 2 - Ports 5 & 6 Combined
ON		PCB 3 - Ports 9 & 10 Combined

- Indoor units larger than 054k require two mode selection box ports to operate at the intended capacity.
- Combine the two ports using branch joint kit V81DBP06.
- The maximum combined capacity is 108,000 Btu/h.
- The ports must be next to each other, for example Ports 1 & 2 or Ports 3 & 4, or Ports 5 & 6, or Ports 7 & 8, or Ports 9 & 10 or Ports 11 & 12. Ports 2&3 cannot be combined.
- Connect communication wiring to the lower port number. If connecting Port 1 and Port 2, connect communication wiring, PQ, to the Port 1 terminals.
- Refer to the table below or Table 5 in the Electrical Connections section in this manual for required dip switch settings.

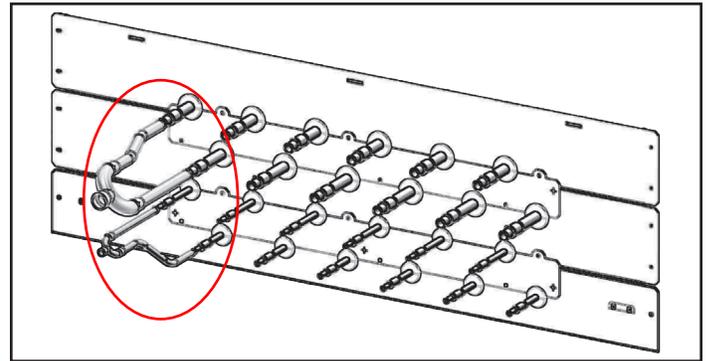


Figure 4. Combine Two Ports

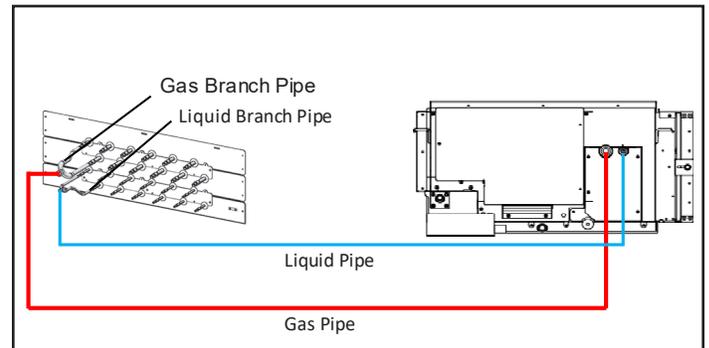


Figure 5. Connect to Indoor Unit Larger than 054k

ON		No ports Combined (Default factory setting)
ON		PCB 1 - Ports 3 & 4 Combined
ON		PCB 2 - Ports 7 & 8 Combined
ON		PCB 3 - Ports 11 & 12 Combined

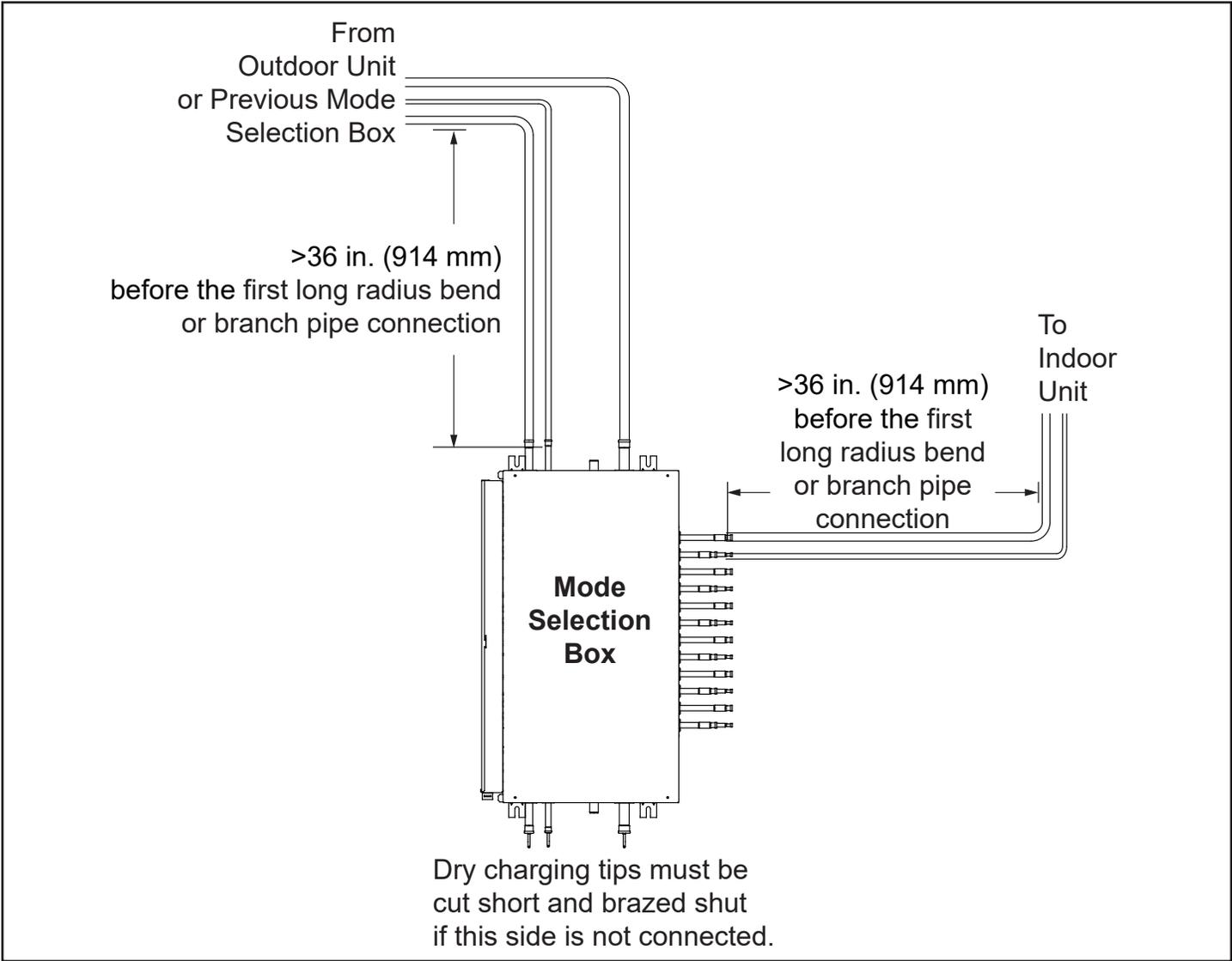


Figure 6. Mode Selection Box Piping

1. The seal on the unit refrigerant piping connections should remain in place until the last possible moment. This will prevent dust or moisture from getting into the refrigerant piping before it is connected.
2. Prior to brazing remove rubber air grommets from indoor unit refrigerant line ports.
3. Carefully release dry nitrogen charge from the unit.
4. Remove the rubber plug from both liquid and gas lines.
5. Dry charging tips must be cut short and brazed shut.
6. All refrigerant piping shall be free of defects, debris, and oil.
7. Connect the liquid and gas lines to the indoor unit coil.
8. Always use an appropriate heat absorption compound to protect the unit and internal sensors from conductive heat while brazing. Take care to protect the cabinet and internal components.
9. Ensure nitrogen is flowing at all times during the brazing process.
10. Magnets may be used to open solenoid valves to reduce nitrogen pressure for easier flow rates.
11. Braze connections. Allow pipe to cool before removing wet rag.
12. Reinstall the rubber grommets into the refrigerant piping panel.
13. After refrigerant piping has been installed and checked for leaks, apply insulation over the piping.

Table 2. Indoor Unit Piping Connection Information

Indoor Unit Capacity BTUs	Indoor Unit Factory Braze Connection Sizes Gas/Liquid	Piping Length From MS Box to Indoor Unit Is equal to or less than 100 ft. (30 m)	Piping Length from MS Box to Indoor Unit is greater than 100 ft. (30 m)
7,000	1/2 x 1/4	1/2 x 1/4	5/8 x 3/8
9,000	1/2 x 1/4	1/2 x 1/4	5/8 x 3/8
12,000	1/2 x 1/4	1/2 x 1/4	5/8 x 3/8
15,000	1/2 x 1/4	1/2 x 1/4	5/8 x 3/8
18,000	5/8 x 3/8	5/8 x 3/8	3/4 x 1/2
24,000	5/8 x 3/8	5/8 x 3/8	3/4 x 1/2
30,000	5/8 x 3/8	5/8 x 3/8	3/4 x 1/2
36,000	5/8 x 3/8	5/8 x 3/8	3/4 x 1/2
48,000	5/8 x 3/8	5/8 x 3/8	3/4 x 1/2
54,000	5/8 x 3/8	5/8 x 3/8	3/4 x 1/2
60,000	7/8 x 3/8	7/8 x 3/8	1-1/8 x 1/2
72,000	7/8 x 3/8	7/8 x 3/8	1-1/8 x 1/2
96,000	7/8 x 3/8	7/8 x 3/8	1-1/8 x 1/2

Table 3. MS Box Piping Connection Information

		V8MSBB02	V8MSBB04	V8MSBB06	V8MSBB08	V8MSBB10	V8MSBB12
Indoor Unit Pipe Connections (in)	Liquid	φ3/8 or φ1/4					
	Gas	φ1/2 or φ5/8					
Outdoor Unit Pipe Connections (in)	L.P. Gas	φ3/4 or φ7/8 or φ1-1/8	φ7/8 or φ1-1/8 or φ1-3/8		φ7/8 or φ1-1/8 or φ1-3/8		
	Liquid	φ3/8 or φ1/2	φ3/8 or φ1/2 or φ5/8		φ3/8 or φ1/2 or φ5/8 or φ3/4		
	H.P. Gas	φ5/8 or φ3/4 or φ7/8	φ3/4 or φ7/8 or φ 1-1/8		φ3/4 or φ7/8 or φ 1-1/8		

NOTE - Field piping connections for the outdoor unit gas and liquid pipes are provided on the right and left side of the mode selection box. Only one side can be used. Piping through the box to another mode selection box is not allowed; use the proper branch joint kit when multiple mode selection boxes are connected. Remove charging stems and braze shut should that side of the box not be used.

Always refer to the provided LVSS piping diagram for correct piping sizes. ▲ Contact Lennox VRF Application support for assistance with piping sizing or an updated piping diagram.

! WARNING

Refrigerant leaks are unlikely; however, if a refrigerant leak occurs, open a door or windows to dilute the refrigerant in the room. Turn off the unit and all other appliances that may cause a spark. Call a licensed professional HVAC technician (or equivalent) to repair the leak.

Use only R410A refrigerant to charge this system. Use of other refrigerant or gas will damage the equipment.

Do not allow air or other contaminants to enter system during installation of refrigerant piping. Contaminants will result in lower system capacity and abnormally high operating pressures and may result in system failure or explosion.

Insulate all refrigerant piping.

Refrigerant pipes may be very hot during unit operation. Do not allow contact between wiring and bare copper pipes.

After refrigerant piping connections have been completed, check the system for leaks per commissioning instructions.

! WARNING



Danger of fire. Bleeding the refrigerant charge from only the high side may result in pressurization of the low side shell and suction tubing. Application of a brazing torch to a pressurized system may result in ignition of the refrigerant and oil mixture. Check the high and low pressures before applying heat.

! CAUTION

Brazing alloys and flux contain materials which are hazardous to your health.

Avoid breathing vapors or fumes from brazing operations. Perform operations only in well-ventilated areas.

Wear gloves and protective goggles or face shield to protect against burns.

Wash hands with soap and water after handling brazing alloys and flux.

! CAUTION

This device is pressurized. Remove the crimped piping tips to release the dry charge from the mode selection box prior to unsweating the piping caps. Dry charging tips must be cut short and brazed shut.

! CAUTION

Purge low pressure nitrogen [1 to 2 psig (6.0 to 12.8 kPa)] through the refrigerant piping during brazing. This will help to prevent oxidation and the introduction of moisture into a system.

To prevent the build-up of high levels of nitrogen when purging be sure it is done in a well ventilated area.

! IMPORTANT

Refrigerant lines must be clean, dry, refrigerant-grade copper lines. Air handler coils should be installed only with specified line sizes for approved system combinations.

Handle refrigerant lines gently during the installation process. Sharp bends or kinks in the lines will cause restrictions.

! IMPORTANT

Only use brazing rods/sticks which are suitable/recommended for air conditioning pipework installations - Do Not Use Soft Solder.

! IMPORTANT

The compressor in the unit this air handler is matched with contains PVE oil (Polyvinyl ether). PVE oil is formulated for hydrofluorocarbon (HFC) refrigerants, such as R410A, which this system contains. While it may have some miscibility properties with mineral-based oil and POE oil (Polyolester), it is not recommended to mix PVE oil with any other type of refrigerant oil.

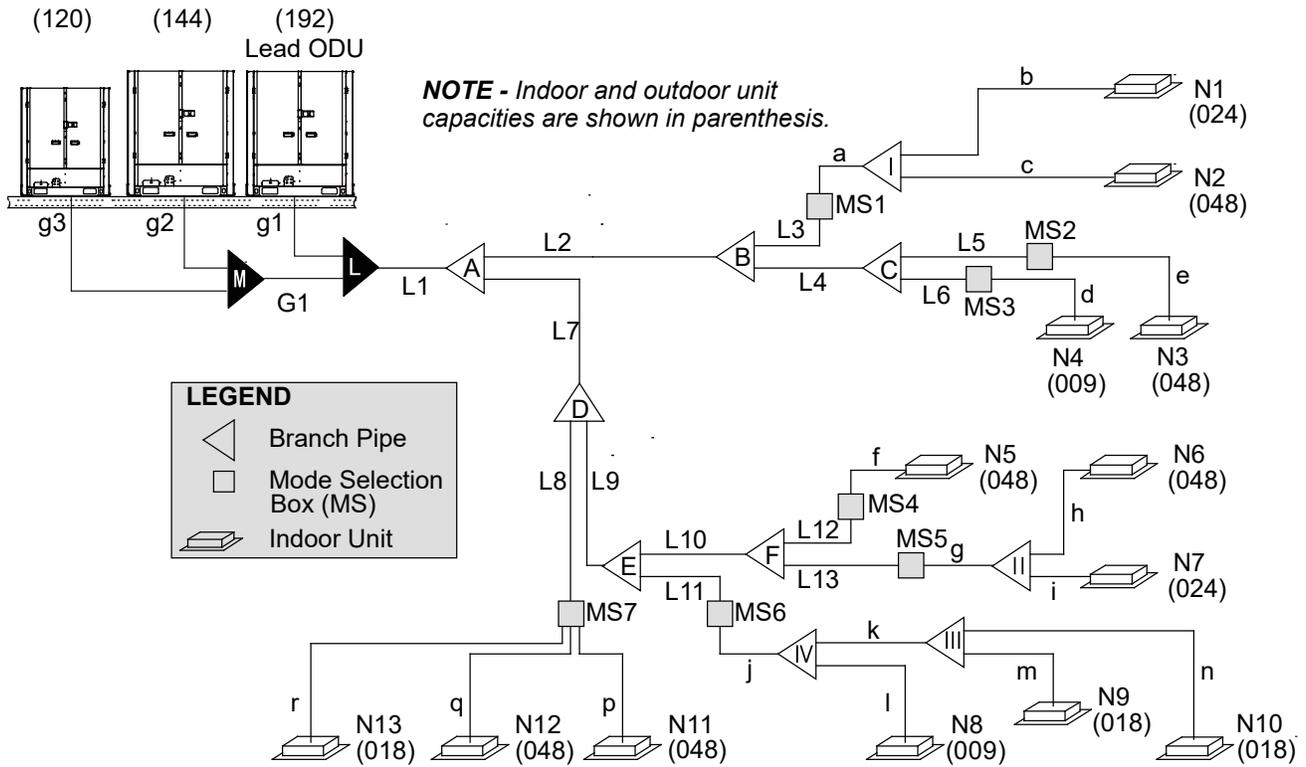
! IMPORTANT

It is imperative that the system piping is installed per the LVSS (Lennox VRF Selection Software) piping report! If the measurements on the Lennox VRF piping diagram do not match the anticipated field measurements, contact Lennox VRF Application Support before beginning piping installation.

	Low-Pressure Gas Side Joints - Inch	High-Pressure Gas Side Joints - Inch	Liquid Side Joints - Inch	Adapter Pipe - Inch	Insulation Material (furnished)
V8MSBP01					
V8MSBP02					
V8MSBP03					
V8MSBP04					
V8MSBP05					

! IMPORTANT
 Locate first branch pipe kit of system centrally to ensure even distribution of refrigerant.

Figure 7. Mode Selection Box Branch Pipe Kits



PIPE AND COMPONENT NAMES

Name	Designation
Outdoor Unit Connection Pipe	g1, g2, g3, G1
Outdoor Unit Branch Pipe Assembly	L, M
Main Pipe	L1
Indoor Unit Main Pipe	L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13
Branch Pipe Assembly between Main Pipe and Mode Selection Box (MS)	A, B, C, D, E, F
Mode Selection Box (MS)	MS1, MS2, MS3, etc.
Branch Pipe Assembly between Mode Selection Box (MS) and Indoor Unit	I, II, III, IV
Indoor Unit auxiliary pipe between Mode Selection Box (MS) and downstream Branch Pipe joint	a, g, j, k
Indoor Unit auxiliary pipe from Indoor Unit to the nearest Branch Pipe joint or direct connected Mode Selection Box (MS)	b, c, d, e, f, h, i, l, m, n, p, q, r
Indoor Unit	N1, N2, N3, etc.

Figure 8. Typical Piping Diagram

Flowing Nitrogen through Mode Selection Box

- Nitrogen can flow through the box regardless of whether or not power has been supplied.
- All valves on the Suction and Hot Gas are normally closed and power open. Backflow nitrogen through the valve to open it.
- The liquid line manifold is always open.
- There are three methods of flowing nitrogen through the mode selection box.

Method 1. With Indoor Units Connected - Flowing through Low Pressure Gas (Suction) Line

- When flowing nitrogen in through the low pressure gas (suction) line it flows through the mode selection box and out the indoor unit suction connection.
- With the indoor units are connected, the nitrogen flows back through the liquid indoor unit connection and out the main liquid connection on the mode selection box.
- When flowing through the high pressure gas (hot gas) main to the mode selection box the nitrogen stops at the mode selection box and pressurizes the main hot gas line.

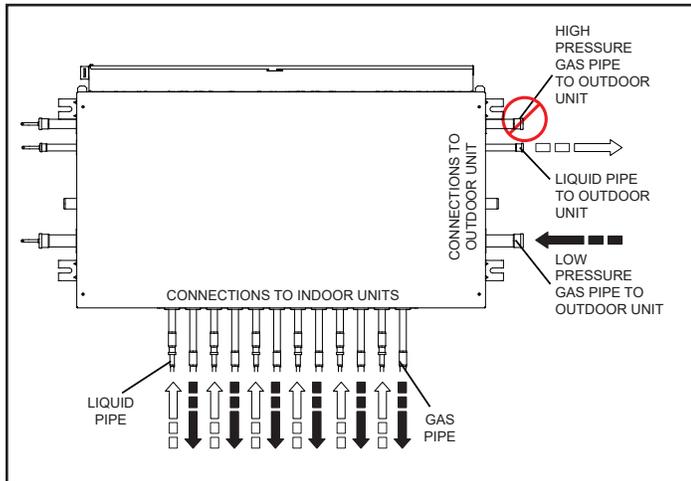


Figure 9. Indoor Units Connected - Flowing through Low Pressure Gas (Suction) Line

Method 2. Indoor Unit Connection Ports Capped Off - Flowing through Low Pressure Gas (Suction) Line

- If the indoor unit suction connections are capped off, the nitrogen will flow out the main hot gas line on the mode selection box.
- If the indoor unit liquid line connection is capped off, nitrogen will not flow through the mode selection box and will pressurize the main liquid line connection.

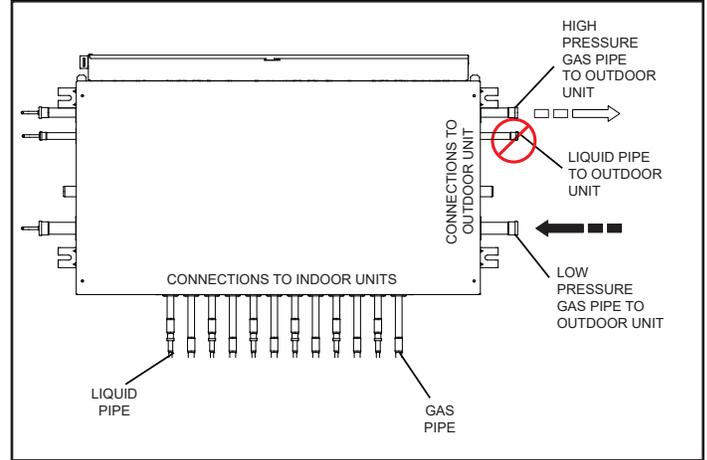


Figure 10. Indoor Units Ports Capped Off - Flowing through Low Pressure Gas (Suction) Line

- When flowing nitrogen (greater than 3 psi) through the low pressure gas (suction) line to the mode selection box, if the indoor unit suction connections are open the nitrogen will flow out the suction connection.

Method 3. Indoor Units Connected - Flowing Through Liquid Line

- When flowing nitrogen through the liquid line to the mode selection box, the nitrogen flows through mode selection box, out the indoor unit liquid connection ports.
- With the indoor unit connections are open, the nitrogen will flow back through the indoor unit suction connection port and out the main hot gas connection on the mode selection box.

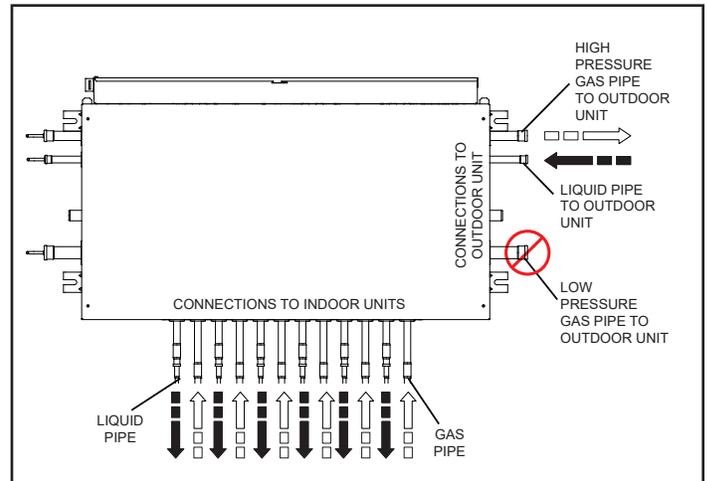


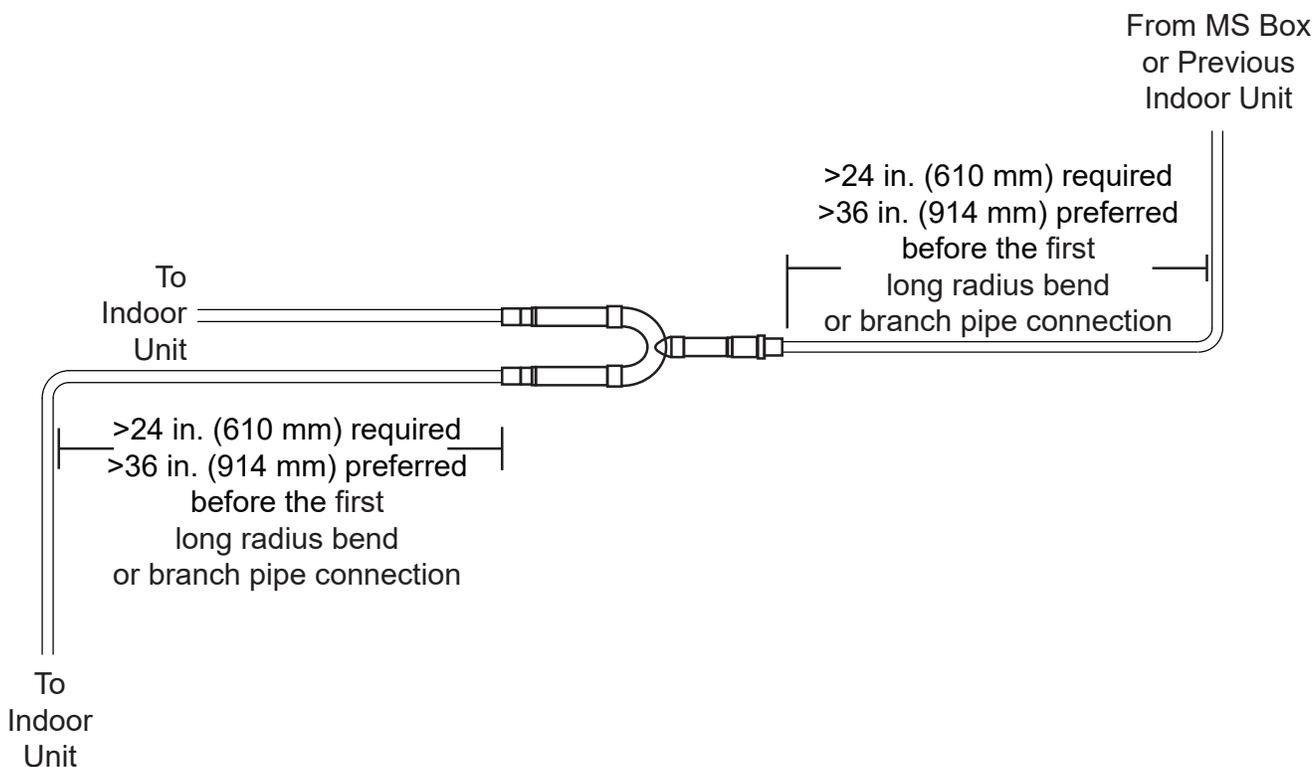
Figure 11. Indoor Units Connected - Flowing through Low Pressure Liquid Line

Branch Pipe Kit Placement

Provide 24 inches to 36 inches of straight pipe before and after each branch pipe kit to avoid creating refrigerant turbulence, flash points, refrigerant noise and refrigerant hammering. Failure to follow 24 inch minimum guideline can lead to reduced capacity and equipment damage. See Figure 12.

CAUTION

24 inches minimum straight pipe required before and after branch pipe kit to prevent capacity loss and equipment damage.



Top View

Branch pipe kits **MUST** be installed horizontal +/- 10°

NOTE - A maximum of five indoor units can be connected to one port on the mode selection box. The combined maximum capacity of all indoor units connected to one port on a mode selection box must not exceed 54,000 Btus. For larger capacity indoor units, combine two ports using branch joint kit V81DBP06 and the instructions in this manual.

Name	Gas Side Joints (inch)	Liquid Side Joints (inch)	Insulation Material (furnished)
V81DBP01			<p>(2 sets)</p>

IMPORTANT

OPERATION NOTE — All indoor units within a group (units connected to a single piping connector on the mode selection box) must operate in the same mode at all times.

Figure 12. Inches of Straight Pipe Before and After Branch Pipe Kit

Condensate Drain Connection

A 1 inch OD condensate drain connection is provided on the mode selection box. Route condensate piping to a suitable drain per best practices, taking care to slope the drain properly to ensure drainage. A 1 inch to ¾ inch adaptor is provided if ¾ inch condensate pipe is preferred.

The mode selection box must be sloped 1/8" toward drain outlet.

Mode Selection Box Wiring Connections

⚠ WARNING

Isolate the power supply before accessing unit electrical terminals.

Install unit so that unit disconnect is accessible.

Follow all local and national codes, as well as this installation instruction, during installation. Do NOT overload electrical circuit, as this may lead to failure and possible fire.

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

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

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

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

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

Refer to unit nameplate for minimum circuit ampacity and maximum overcurrent protection size.

NOTE - Two-conductor shielded cable must be used for the communication wiring. This is necessary to ensure proper system communication and operation.

Remove the cover panel from the mode selection box and locate the terminal strip.

Connect properly sized power wiring and three-conductor shielded cable as shown.

Indoor units and mode selection boxes on the same refrigeration circuit should have a common power supply but must have an independent disconnect switch installed adjacent to the mode selection box for servicing and maintenance purposes. Indoor unit and mode selection box power supply **MUST** not be taken from the outdoor unit. Always follow NEC/CEC and Local Codes.

Connecting 060, 072 and 096 Indoor Units

When two ports are combined using branch joint kit V81DBP06, it is necessary to make changes to the S1 or S2 dip switch. See Table 5 for settings.

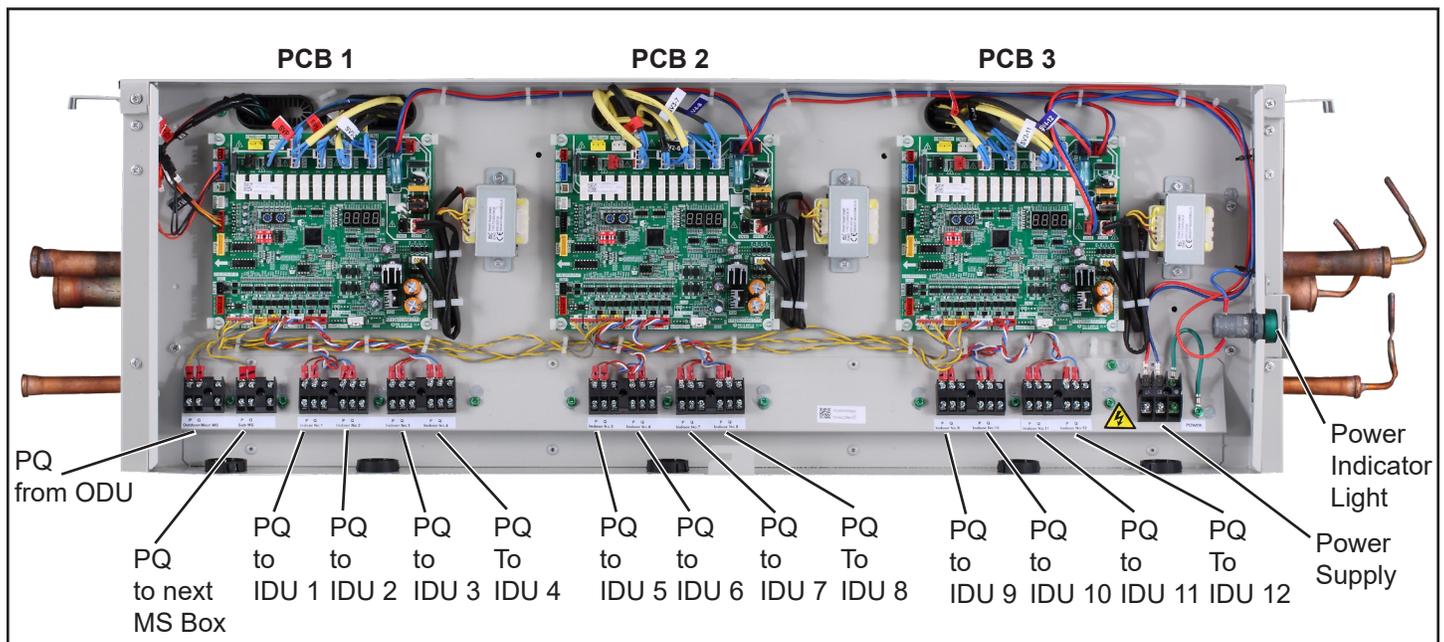


Figure 13 Typical Electrical Control Box (V8MSBB12-3P Shown)

Indoor units and mode selection boxes on the same refrigeration circuit should have a common power supply but must have an independent disconnect switch installed adjacent to each item of equipment for servicing and

maintenance purposes. Indoor unit and mode selection box power supply **MUST** not be taken from the outdoor unit. Always follow NEC/CEC and Local Codes.

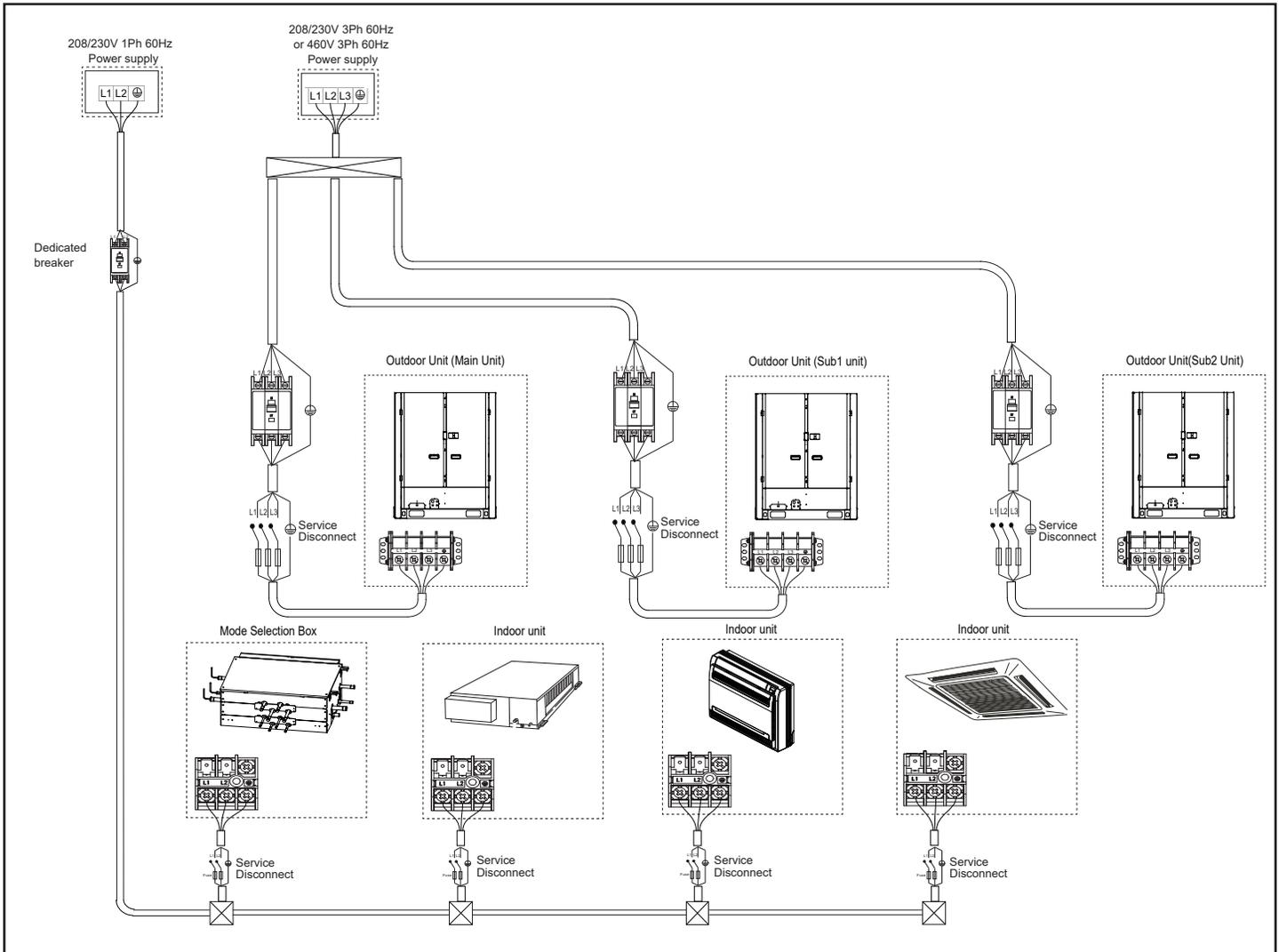


Figure 14. Typical Power Wiring Diagram (VRF Heat Recovery System Shown)

The mode selection box has a power indicator light on the side. The light is lit when power is applied to the unit. Always isolate incoming power supply before accessing electrical control box.



Figure 15. Power Indicator

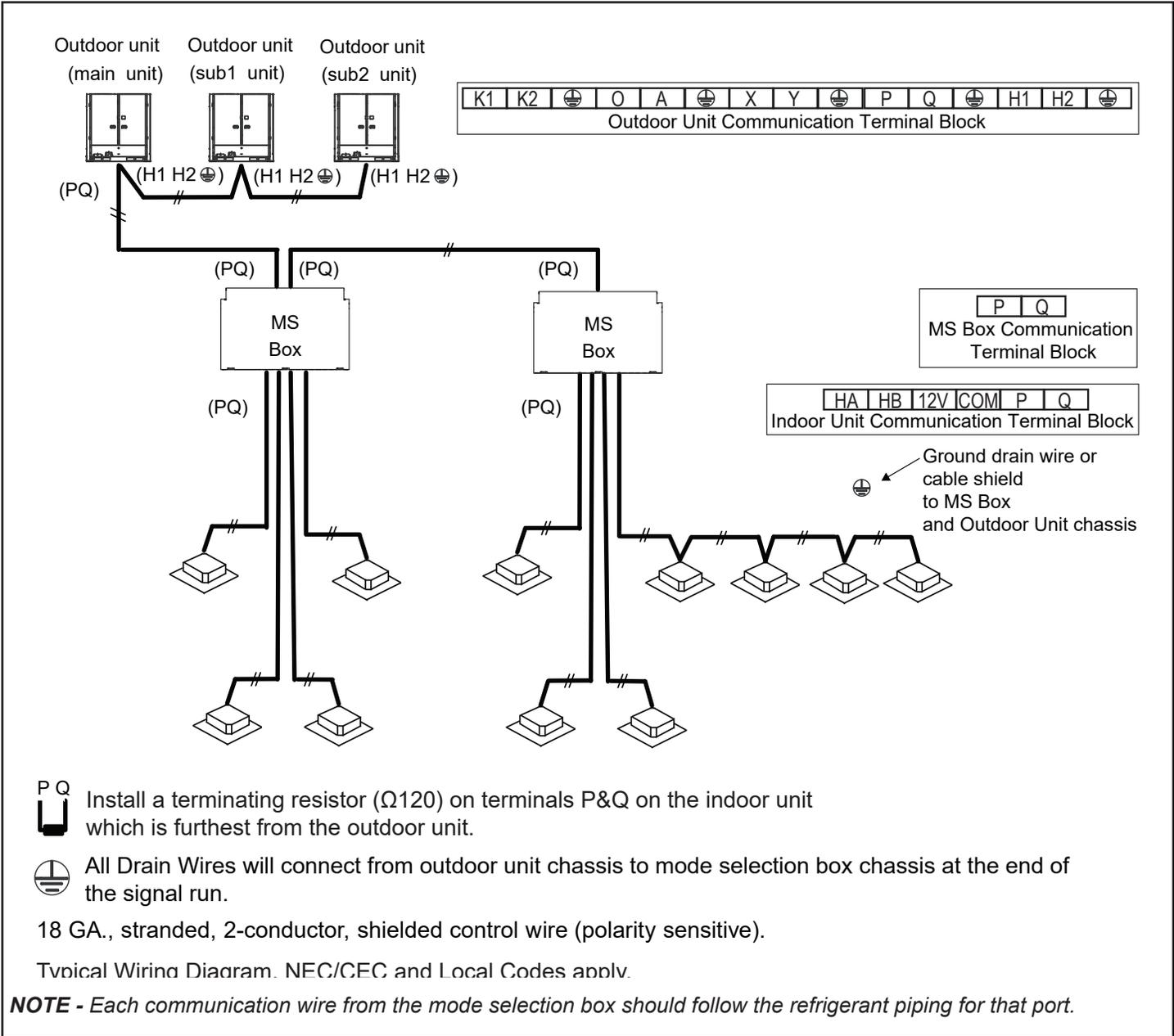


Figure 16. Typical Communication Wiring Diagram (VRF Heat Recovery System)

Network Address and Commissioning

After the system has been installed, use the outdoor unit service console, the local wired controller or the handheld wireless controller to assign a separate address for each of the indoor units as part of the commissioning procedure.

Use the dial switch on the mode selection box main PCB to assign the mode selection box a unique address.

Each mode selection box and each indoor unit connected to the mode selection box must be assigned an individual address.

Table 4. PCB Quantity

Model	PCB Quantity
V8MSBB02-3P & V8MSBB04-3P	1
V8MSBB06-3P & V8MSBB08-3P	2
V8MSBB10-3P & V8MSBB12-3P	3

Table 5. Control Board Switch Settings

Switch	Definition
S1 + S2	Default – S1 and S2 both OFF
	Used when two ports are combined to connect to an indoor unit larger than 054k Btus. S1 & S2 switches are located on each PCB. Adjust the switch that corresponds to the combined port. S1-ON: PCB 1 - Ports 1 & 2, PCB 2 - Ports 5 & 6, PCB 3 - Ports 9 & 10 S2-ON: PCB 1 - Ports 3 & 4, PCB 2 - Ports 7 & 8, PCB 3 - Ports 11 & 12
ENC1	MS Box address. Each mode selection box requires a unique address. Set on the first PCB only.
ENC2	PCB address. Factory setting, not field adjustable. 0 – PCB 1 1 – PCB 2 2 – PCB 3

▲ Contact the Lennox VRF applications department for assistance.

Troubleshooting

Error Codes

No.	Description
E2	Communication error between MS box to master outdoor unit
E3	Outlet of plate exchanger(subcooler) error
E4	Inlet of plate exchanger(subcooler) error
H0	Communication error between first PCB to the other PCBs in the same MS box
LL	S1/S2 setting is not consistent to communication wiring

Spot Check SW1 & SW2

Press SW1 and SW2 to advance forward or backwards to retrieve MS Box spot check data

No.	Description	Notes	Recorded Value/Date
	Indoor unit quantity under this mode selection box		
1	Running indoor unit quantity under this mode selection box		
2	Outdoor operation mode	0 : off 2 : cooling 3 : heating 4 : force cooling 5 : mix cooling 6 : mix heating	
3	System high pressure		
4	System low pressure		
5	T1C1 Outlet temperature sensor of subcooling heat exchanger bypass		
6	T1C2 Inlet temperature sensor of subcooling heat exchanger bypass		
7	EXV opening		
8	Software version		
9	MS PCB address		
10	--	--	

Spot Check SW3 & SW4

Press SW3 and SW4 to advance forward or backwards to retrieve MS Box spot check data

No.	Description
1.**	1 means the port number
2.**	2 means the port number
3.**	3 means the port number
4.**	4 means the port number

** means the indoor address, if there are more than one indoor unit connected to the port, the addresses will show one by one in 2-second intervals.

-- means the end of the indoor address list.

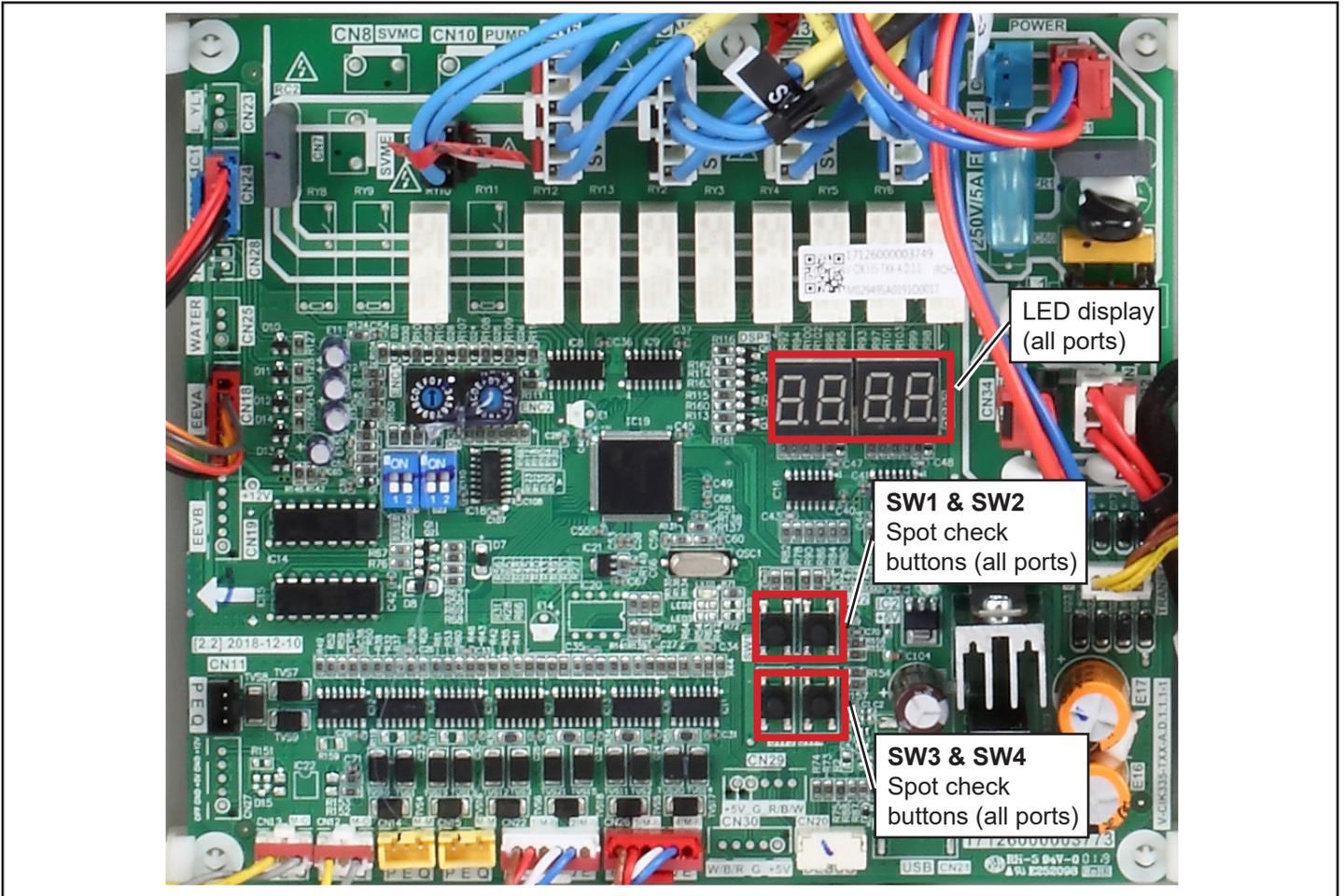


Figure 19. Spot Check

Technical Support

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