LENNOX VRF

INSTALLATION INSTRUCTIONS

Outdoor Unit Low Ambient Cooling Kit

VRF SYSTEMS
507904-01
02/2020

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

THIS MANUAL MUST BE LEFT WITH THE OWNER FOR FUTURE REFERENCE

⚠ WARNING

Before beginning any installation or service work, disconnect all power from the outdoor unit.

⚠ 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.

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 one of the following:

LAKA

1 - Low Ambient Cooling Hood Assembly (LAKA-1)
1 - Rear Wind Deflector (LAKA-2)
2 - Side Wind Deflectors (LAKA-3)
1 - Wiring harness and conduit assembly
5 - Wiring conduit mounting brackets
6 - Plastic cable ties
26 - 10-16x1/2” self-tapping screws
1 - Installation and operation manual

LAKB

1 - Low Ambient Cooling Hood Assembly (LAKB-1)
1 - Rear Wind Deflector and rear corner panels (LAKB-2)
2 - Side Wind Deflectors (LAKB-3)
1 - Wiring harness and conduit assembly
5 - Wiring conduit mounting brackets
6 - Plastic cable ties
48- 10-16x1/2” self-tapping screws
1 - Installation and operation manual

⚠ 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.

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.

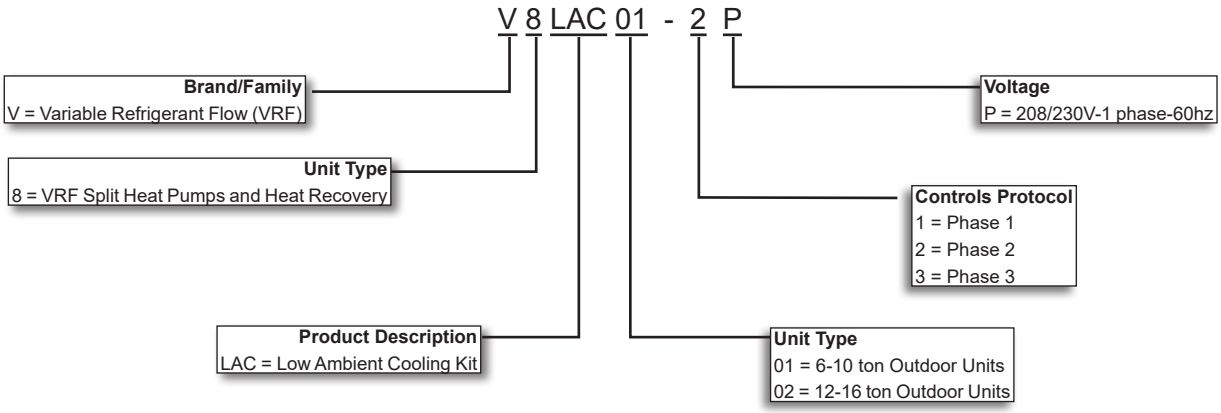
⚠ IMPORTANT

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.

Application

Lennox VRF Low Ambient Cooling Kits, V8LAC01 and V8LAC02, are to be used with VPB/VRB 6 to 16-ton outdoor units in cold climate applications. The kits extend cooling operation range from the standard 5°F (-15°C) down to -10°F (-23°C).

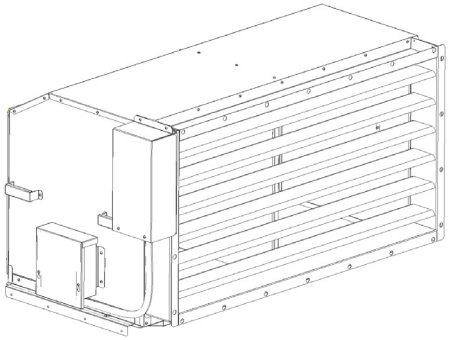
Model Number Identification



Component Identification

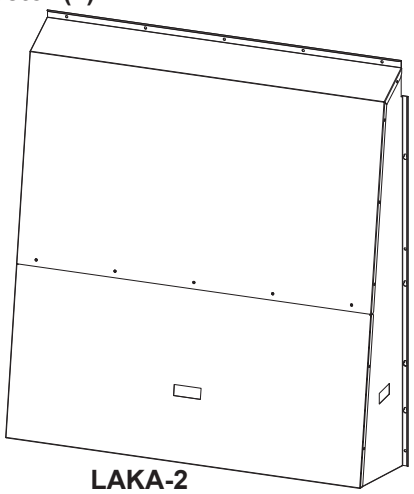
V8LAC01

Low Ambient Cooling Hood Assembly with Damper & Control Box (1)



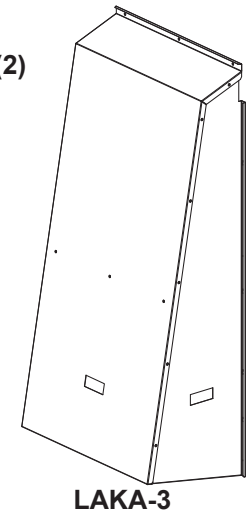
LAKA-1

Rear Wind Deflector (1)



LAKA-2

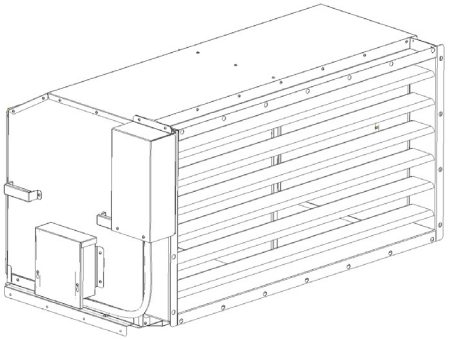
Side Wind Deflectors (2)



LAKA-3

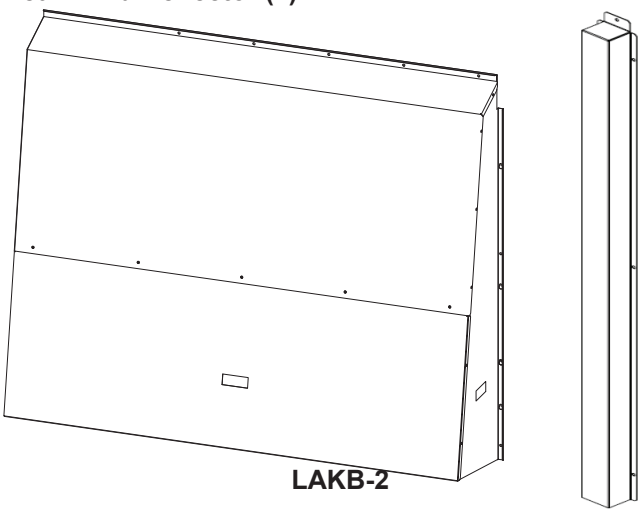
V8LAC02

Low Ambient Cooling Hood Assembly with Damper & Control Box (1)



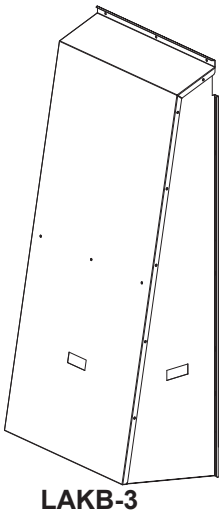
LAKB-1

Rear Wind Deflector (1)



LAKB-2

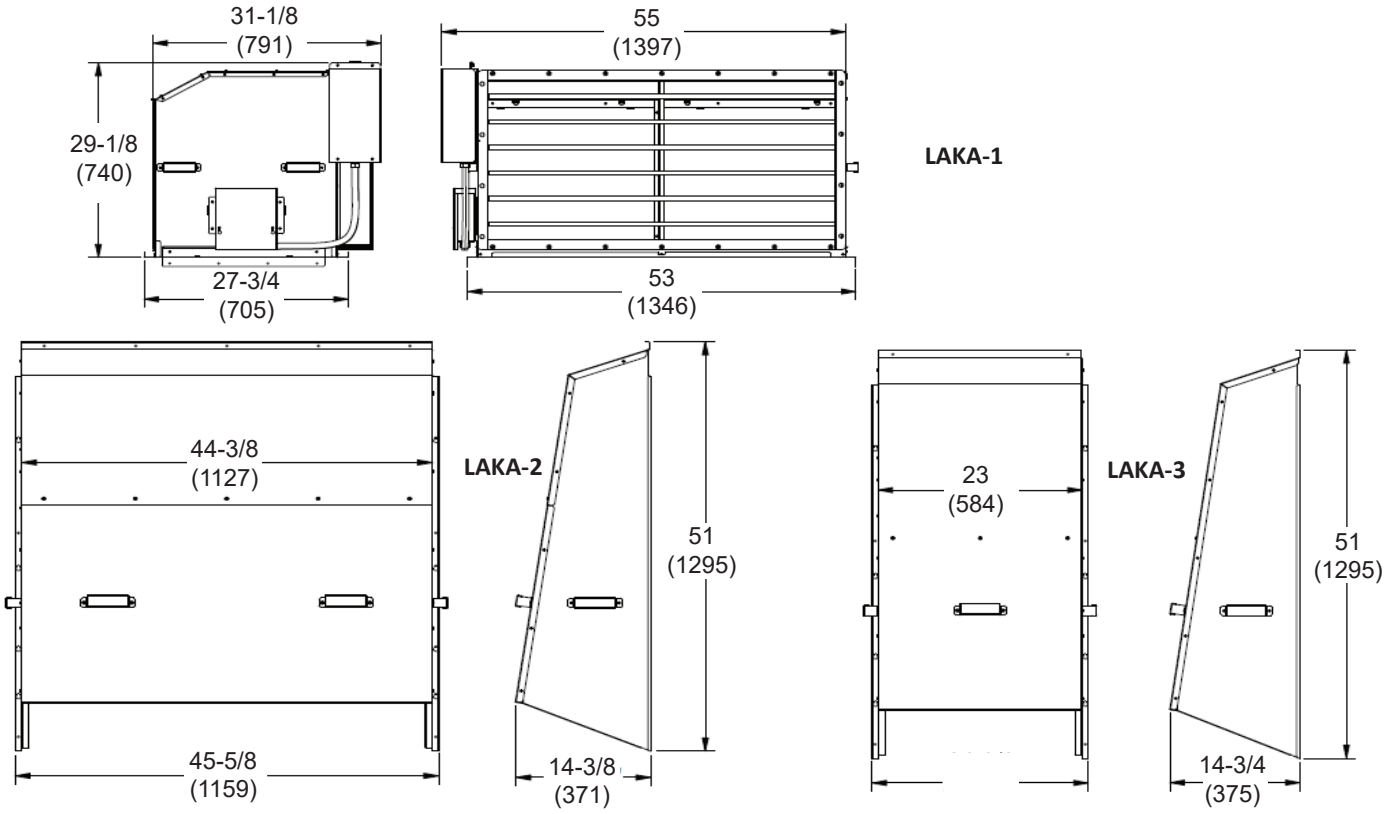
Side Wind Deflectors (2)



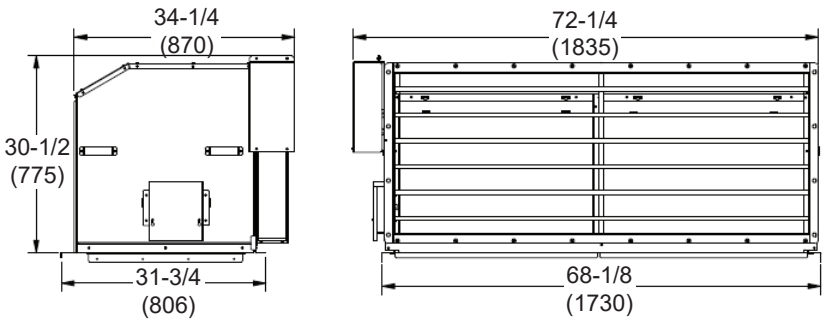
LAKB-3

Rear Corner Channel

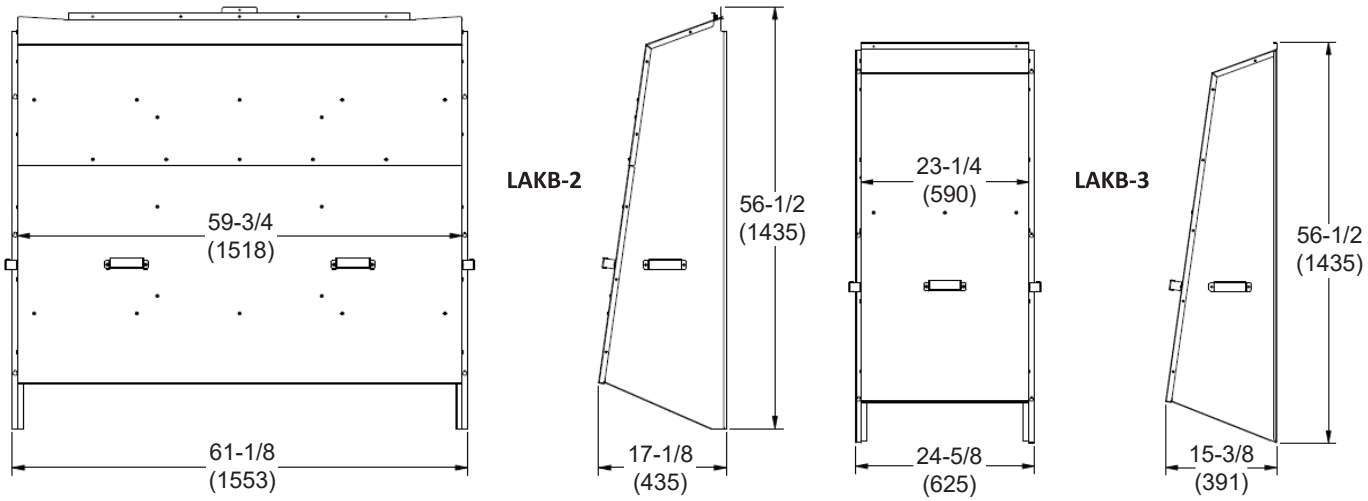
LAKA (6-10 Ton Outdoor Unit) Dimensions - inches (mm)



LAKB (12-16 Ton Outdoor Unit) Dimensions - inches (mm)

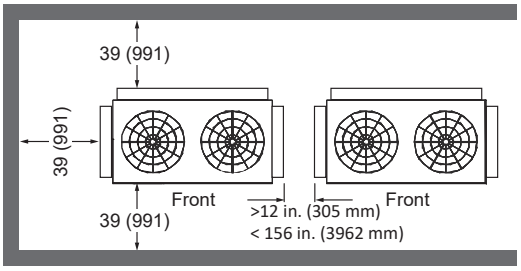


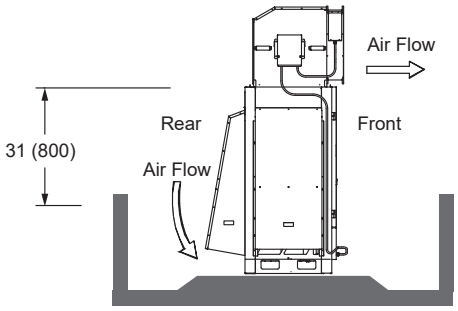
LAKB-1



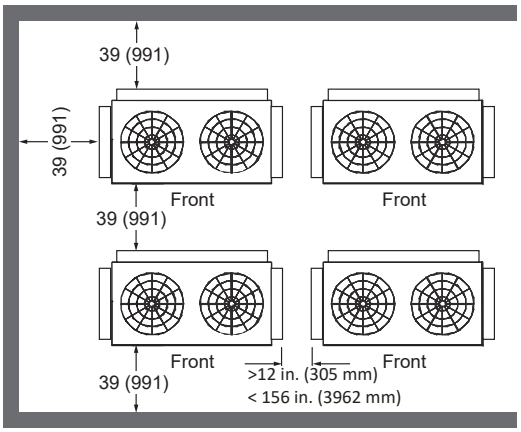
Installation Clearances - inches (mm)

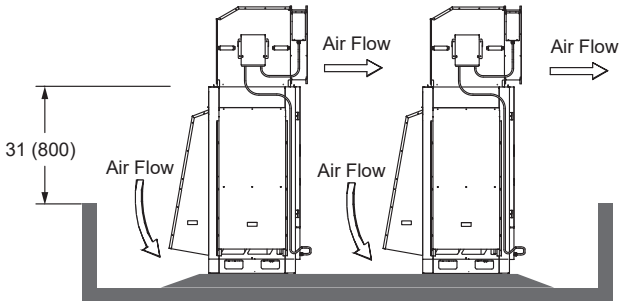
SINGLE ROW



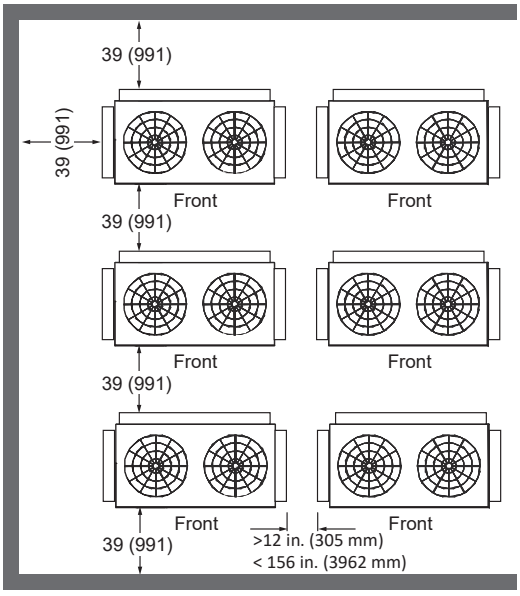


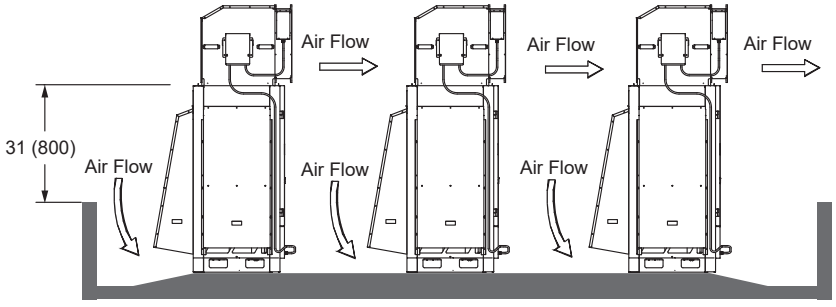
TWO ROWS





THREE OR MORE ROWS





NOTEs - *Discharge air duct will remain free of obstructions at a minimum distance of 18 ft. (5.5 m).*
Discharge air shall not be directed toward operable windows or building fresh air intakes.

Placement

⚠ 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 stability of unit support. If support is not capable of carrying 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.

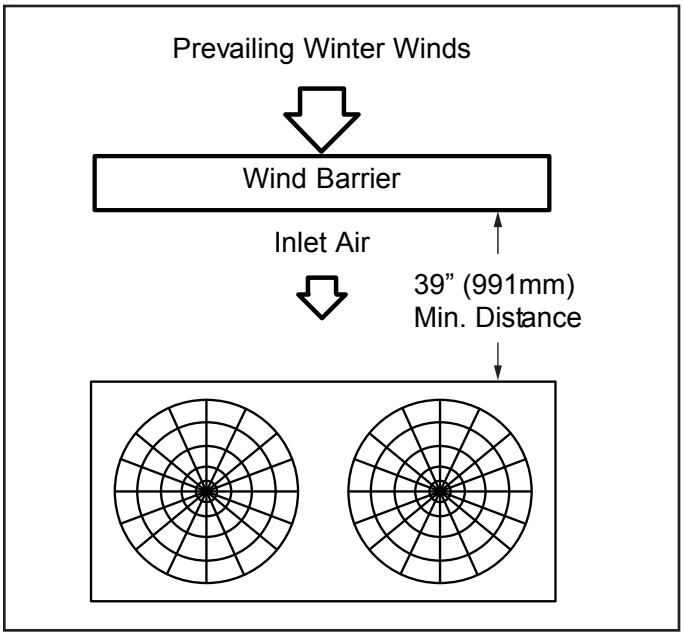


Figure 1. Prevailing Winds Barrier

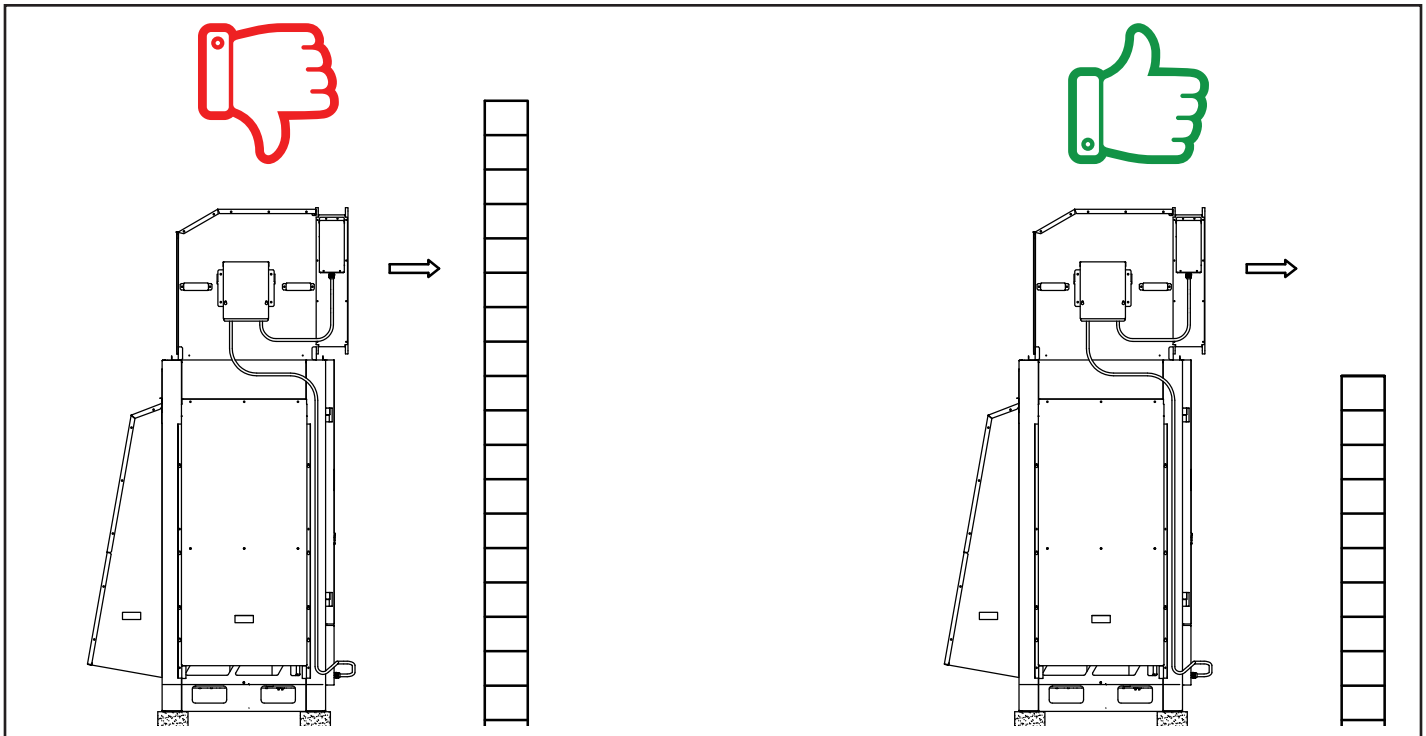
Outdoor Unit Positioning Considerations

In addition to clearances, the following items should be considered when setting the outdoor unit:

- If low ambient cooling hood is applied, the outdoor unit should be set at medium static pressure mode (40Pa). Add 12 in. (305 mm) to standard mounting clearances
- Allow sufficient space around unit for proper operation and maintenance.
- Install the unit high enough above the ground or roof to allow adequate drainage of defrost water and prevent ice or snow build-up.
- Carefully consider how to manage defrost and condensate water disposal to prevent ice from creating hazardous conditions near walkways and egresses.
- Use heated tape on condensate drain line.
- Locate unit so winter prevailing winds do not blow directly on to the outdoor unit.
- In heavy snow areas, do not locate the unit where drifting will occur. The unit base should be elevated above the depth of average snows.
- Discharge air duct will remain free of obstructions at a minimum distance of 18 ft. (5.5 m).
- Discharge air shall not be directed toward operable windows or building fresh air intakes.
- Appliance exhaust such as drier and kitchen exhaust vents shall maintain a minimum distance of 15 ft. (4.5 m).
- Outdoor unit shall maintain a minimum distance of 10 ft. (3 m) from fossil fuel lines, gas meters and electrical meters.
- Outdoor unit shall maintain a minimum distance of 10 ft. (3 m) away from plumbing ventilation stacks.
- Outdoor unit should maintain a minimum distance of 3 ft. (1 m) from walkways and emergency exits.
- Outdoor unit shall maintain a distance of 3 ft. (1 m) away from electrical panels.
- Outdoor unit shall be raised 12 in. (305 mm) above average snow fall lines.
- Weather resistant equipment supports shall be constructed in a manner that will minimize snow or ice buildup.
- Outdoor unit exhaust and air intakes shall not be obstructed with filter material, bird screen or mesh.
- Artificial heat shall not be introduced to the outdoor unit or air intake areas.

⚠ IMPORTANT

The equipment supports must elevate the unit at least 12 in. (305 mm) above the maximum expected snow depth.



NOTEs - *Discharge air duct will remain free of obstructions at a minimum distance of 18 ft. (5.5 m). Discharge air shall not be directed toward operable windows or building fresh air intakes.*

Figure 2. Direct Hood Discharge Out and Over Enclosure Walls

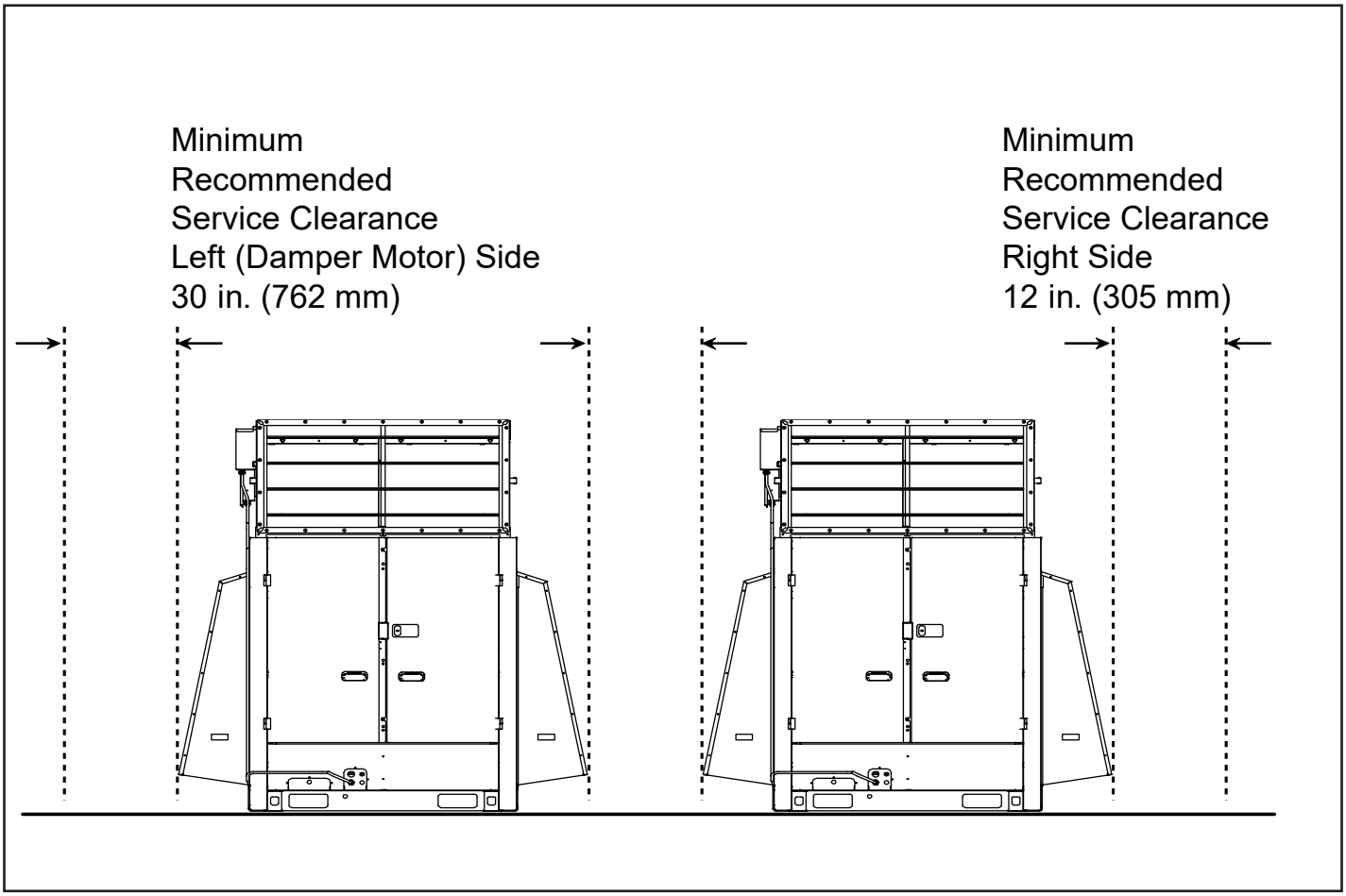


Figure 3. Distance Between Units with Kit Installed

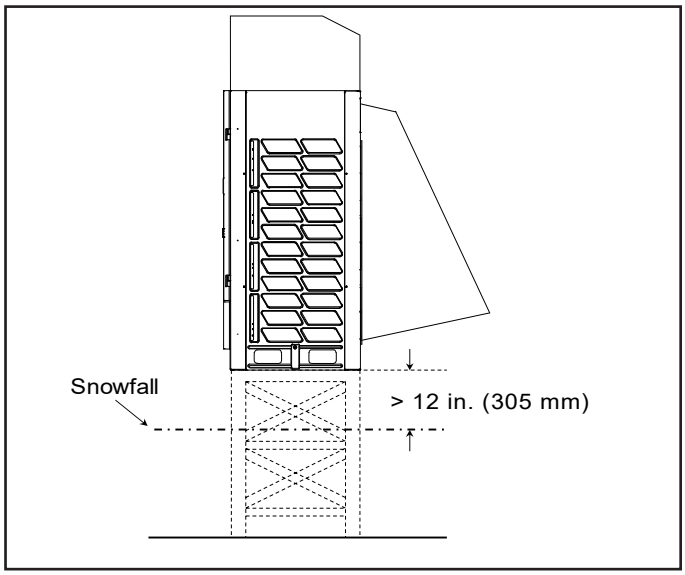


Figure 4. Elevate Unit Above Snow Level

Due to wind resistant construction, Low ambient cooling kits are better suited for ground level applications. Should low ambient applications require the outdoor unit to be installed in elevated areas such as a roof top it is important to follow all installation guidelines and to observe local and national equipment fastening guidelines.

Additional Rooftop Mounting Guidelines

- The low ambient cooling hood increases the overall height of the unit and therefore makes it more susceptible to wind stresses. Ensure that unit is secured to its support using either lag bolts or safety strap. See Figures 5, 6 and 7.
- Outdoor units should be located in an area protected from prevailing winds. Hood discharge should be directed away from or perpendicular to the prevailing winds; never toward prevailing winds.
- Add an additional 12 in. (305 mm) to the standard mounting clearances. See Page 6.

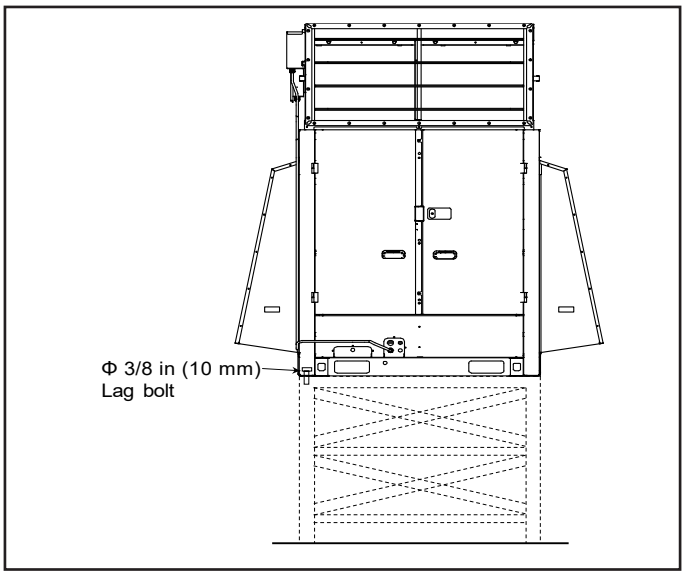


Figure 5. Secure Unit to Weather Resistant Support

- For all roof top and other high wind installations, weather resistant safety straps must be securely fastened between the discharge air hood and the equipment support system. Straps should not be installed where service access is impeded or restricted. Straps should be a minimum 3/16” vinyl coated cable. See Figures 6 and 7.
- Straps must be attached to the hood where they will not interfere with the movement of the dampers. Attachment to both the hood and mounting structure is to be with a bolt through connection using a bolt ¼” or larger in diameter.

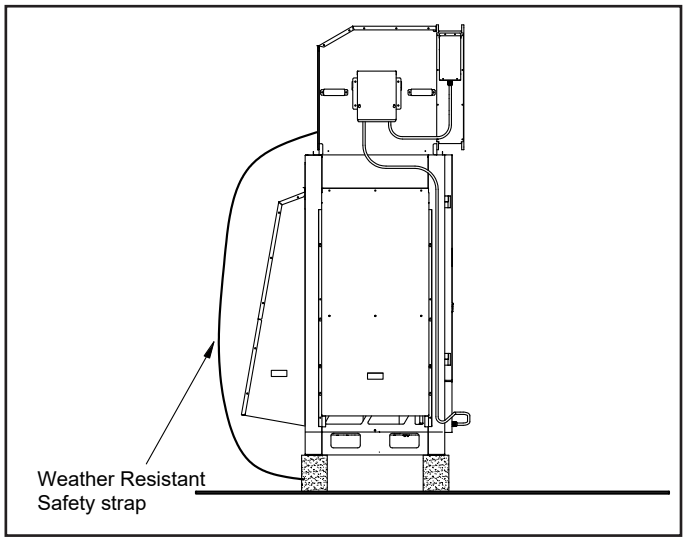


Figure 6. Secure Unit with Safety Strap (Back)

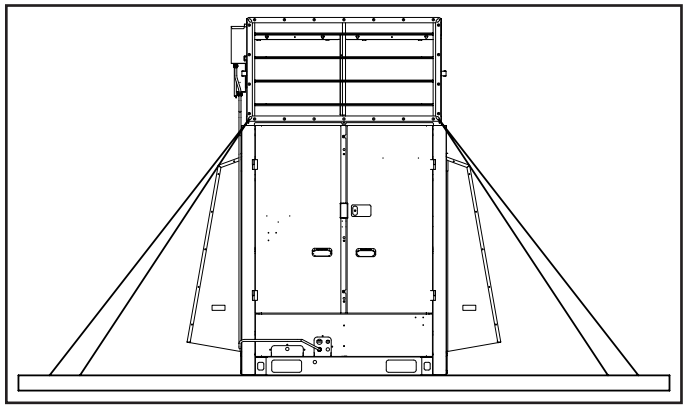


Figure 7. Secure Unit with Safety Strap (Sides)

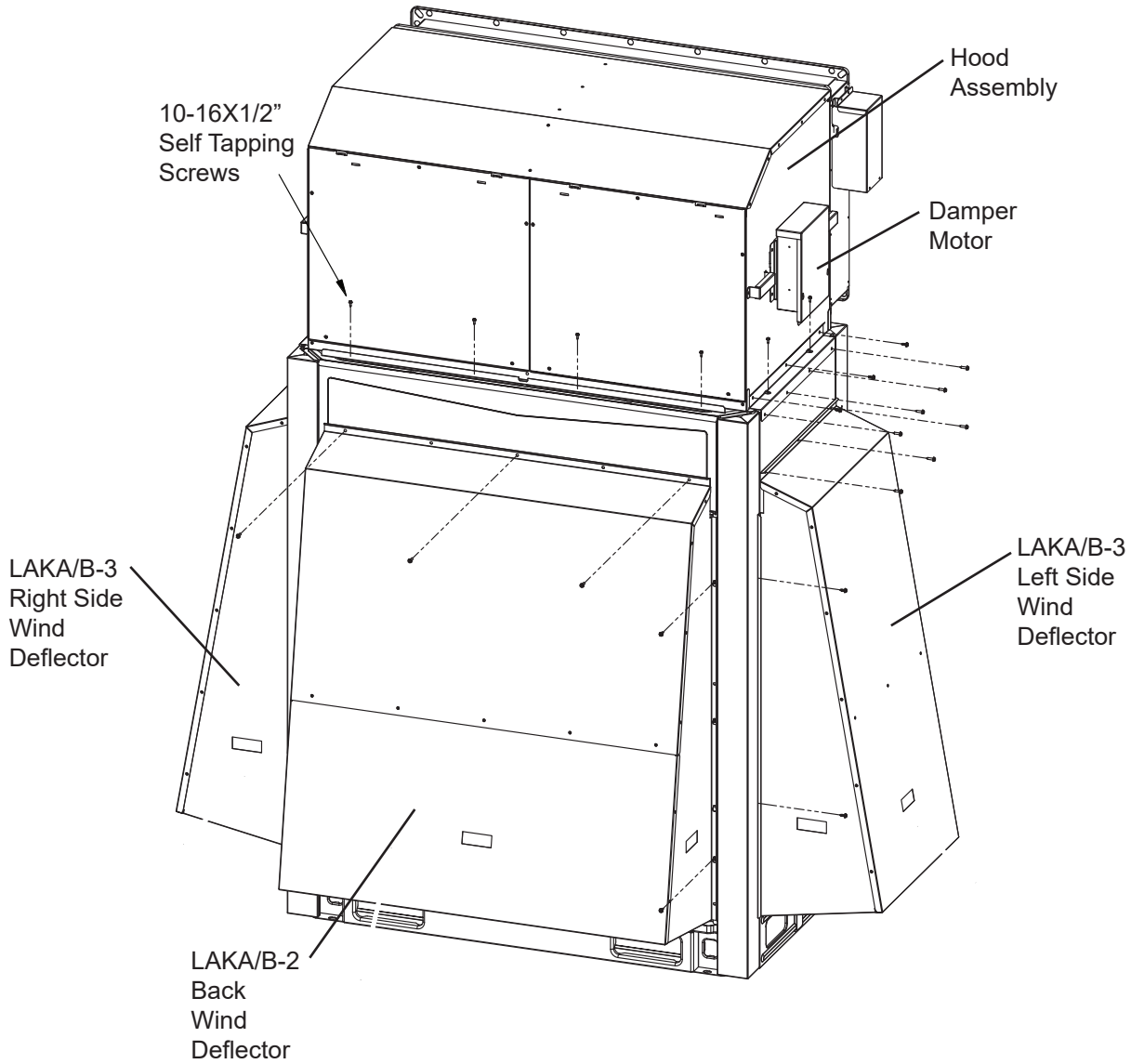
- The outdoor unit and equipment support should be firmly attached to the structure. Or, if the equipment support is the type that does not attach to the structure, refer to the equipment support manufacturer’s guidelines for proper size and construction.
- Depending on location, exposure and other factors influencing the wind, Additional support (or cables) may be required.

Installation

⚠ CAUTION

AVOID TOUCHING OR DAMAGING COIL SURFACE!

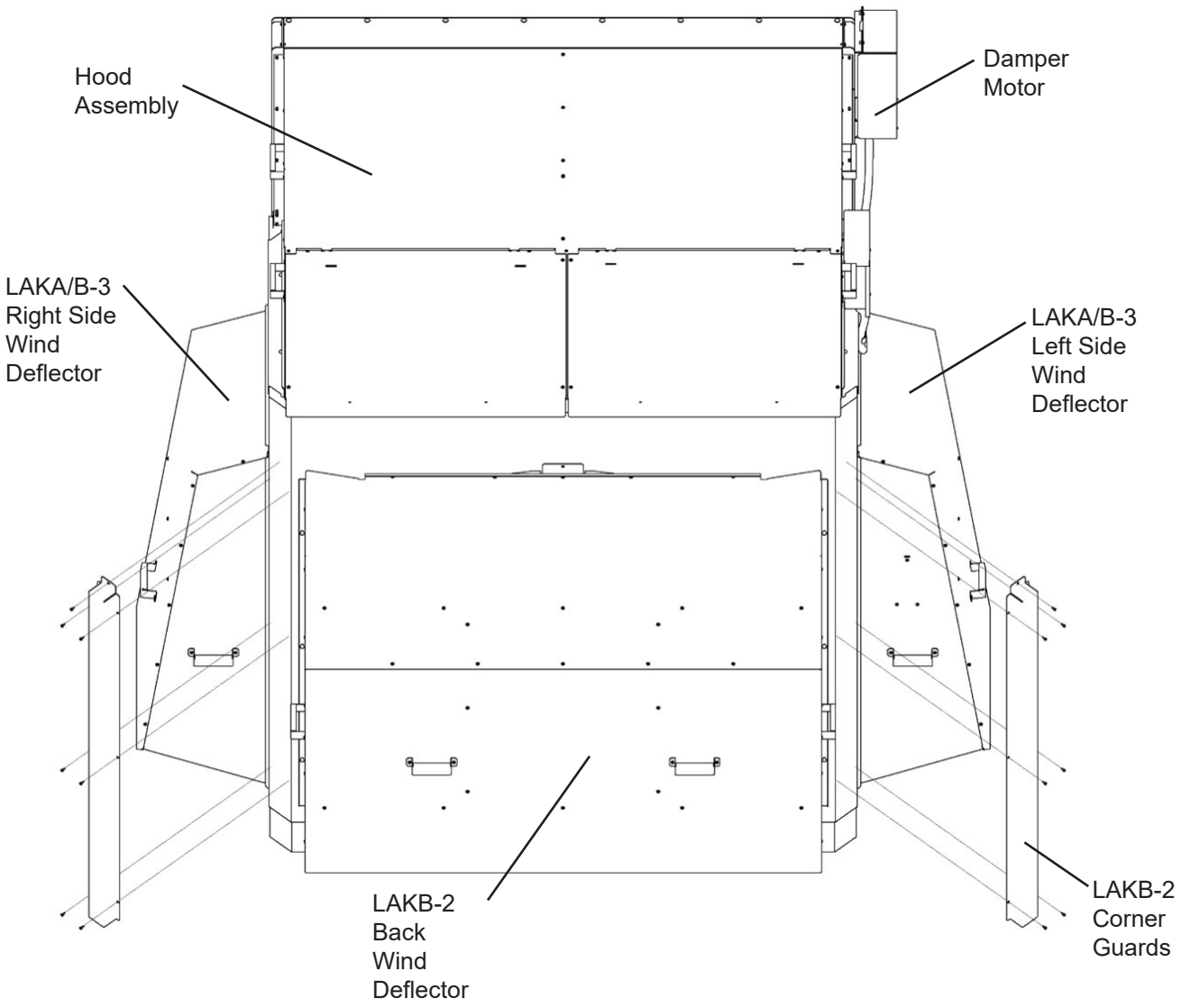
1. Remove rear wire guard from unit and discard. Retain screws for rear LAKA-2/LAKB-2 wind deflector installation.
2. Remove four side screws from side of the outdoor unit and retain, use these and 3 provided screws for LAKA-3/LAKB-3 side deflector installation.
3. Using the provided self-tapping screws, attach hood assembly and wind deflectors to the outdoor unit. Be sure to level the wind deflectors before securing.
4. Install the side screws part way first and then hang the wind deflector over the coil.
5. Install remaining screws and tighten all screws securely. Repeat with all wind deflectors.
6. It is necessary to use self-tapping screws in the outdoor unit cabinet in order to secure the top of each wind deflector. Screw ONLY into the indicated locations. See Figure 9. **No material shall be fastened to the coil or copper tubing.**



Labels are oriented from the Front View. See Figure 11 for Front View.

LAKA-2 consists of one back wind deflector only as shown in this illustration.

Figure 8. Attach Hood and Wind Deflectors Using Provided Screws



Labels are oriented from the Front View. See Figure 11 for Front View.

LAKB-2 consists of one back wind deflector and two corner guards as shown in this illustration.

Figure 9. Attach Corner Panels LAKB Only Using Provided Screws

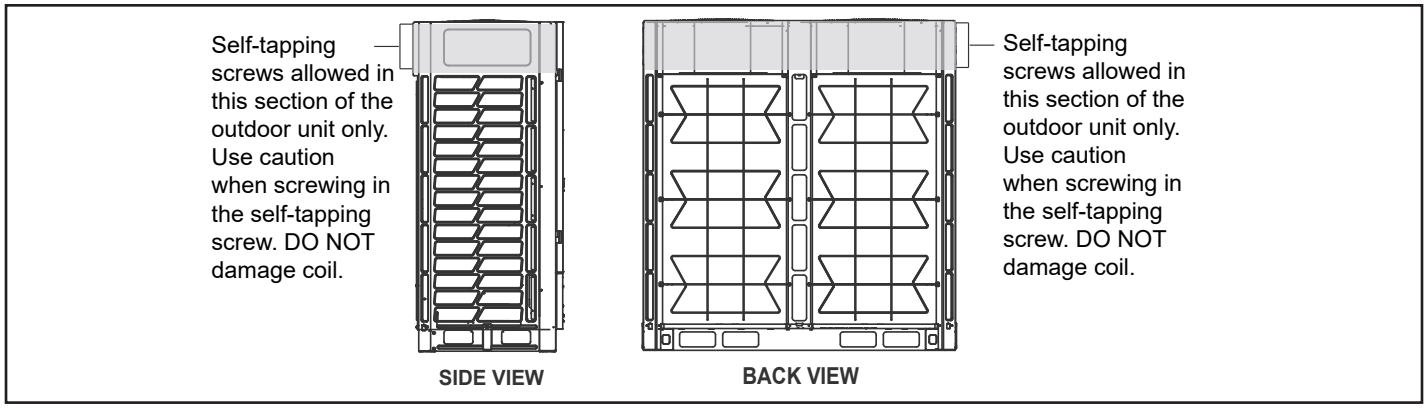


Figure 10. Field-Made Screw Hole Permitted Locations

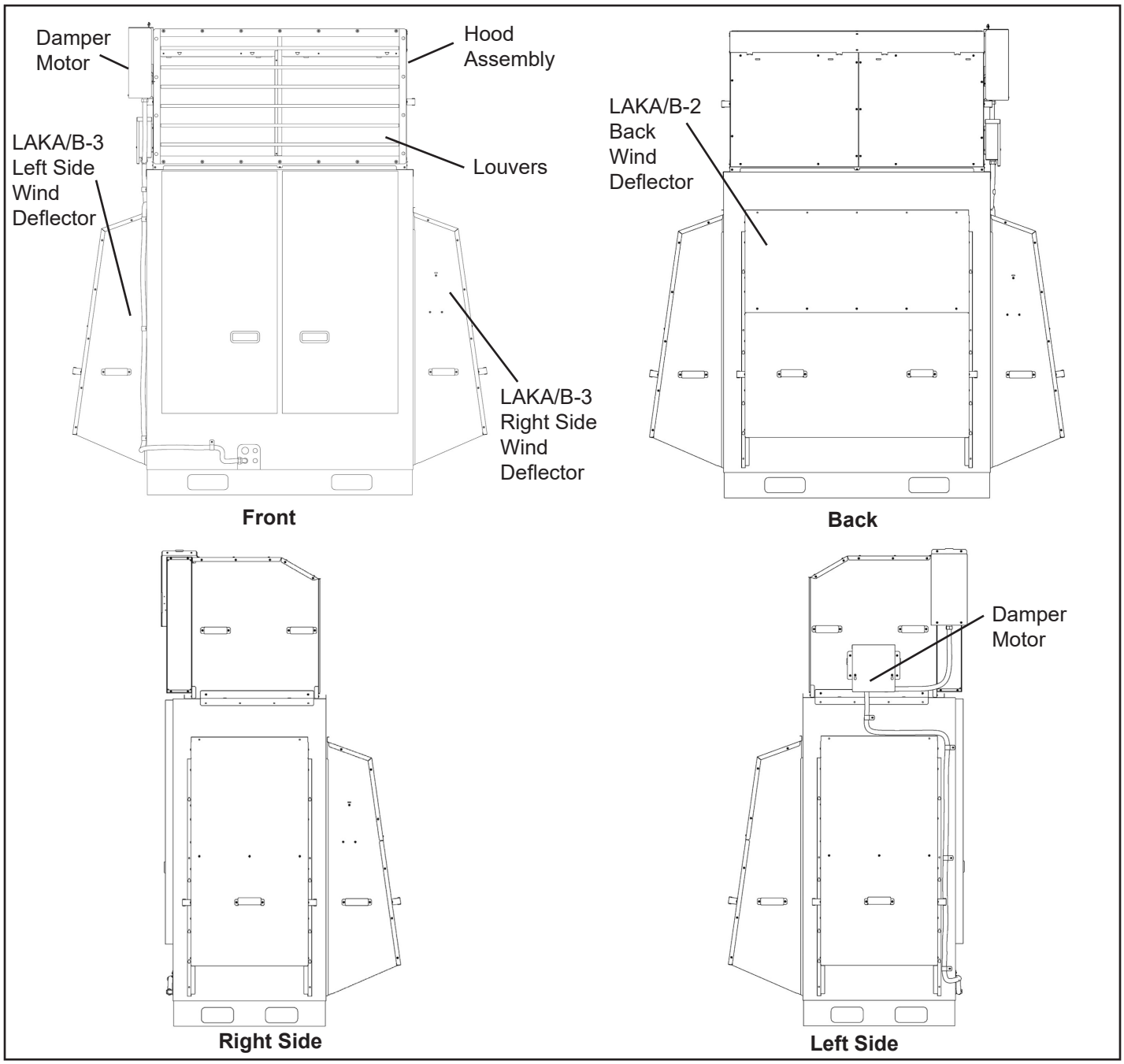


Figure 11. Low Ambient Kit Installed (All Views)

Electrical Installation for Kit

⚠ WARNING

Before beginning any installation or service work, disconnect all power from the outdoor unit.

- Remove the Φ1/2 in. (13 mm) knockout on the wiring entry panel on the bottom front of the unit as shown in Figure 12.

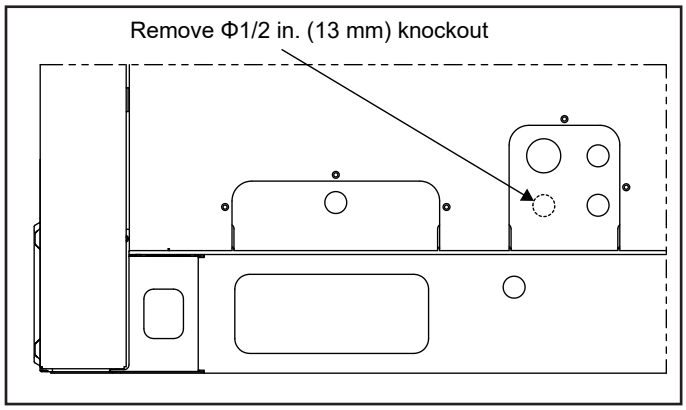


Figure 12. Remove Knockout

- The flexible conduit can be routed along the front corner panel of the unit as shown in Figure 14.
- All conduit, washers and gaskets shall be of weather resistant and UV rated construction.
- Extreme caution should be used when fastening conduit to the outdoor unit cabinet as the coil and copper manifold may be directly behind outer outdoor unit cabinet. **No material shall be fastened to the coil or copper tubing.**
- Once the conduit is secured in place route the wires up through the bottom compartment and into the top section of the unit.
- The wires will connect to the main control board as shown in Figure 13.

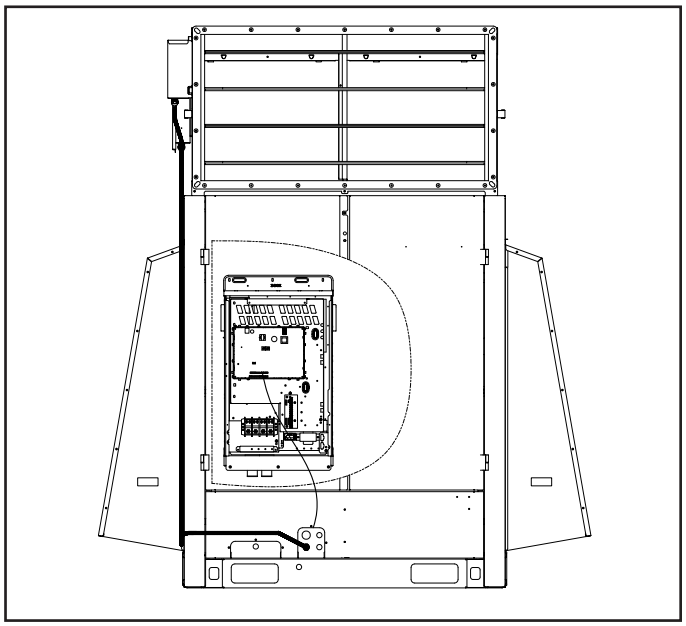


Figure 14. Outdoor Unit Control Board Location

1. Open outdoor unit left-side service panel.
2. Locate outdoor unit control board. Figure 14.
3. Locate CN1 and CN3 connections on the PCB of the low ambient cooling kit hood damper. Figures 13 & 16.
4. Locate the CN29 connection on the PCB of outdoor unit. Figure 16.
5. Follow the connection instructions shown in Figure 16.
6. Indicate that the unit has a low ambient kit installed by either changing the outdoor unit main board dip switch S9-1 to ON.
7. Set the damper actuator rotation switch at 0. See Figure 18.
8. Secure any extra or loose wires with plastic zip ties.

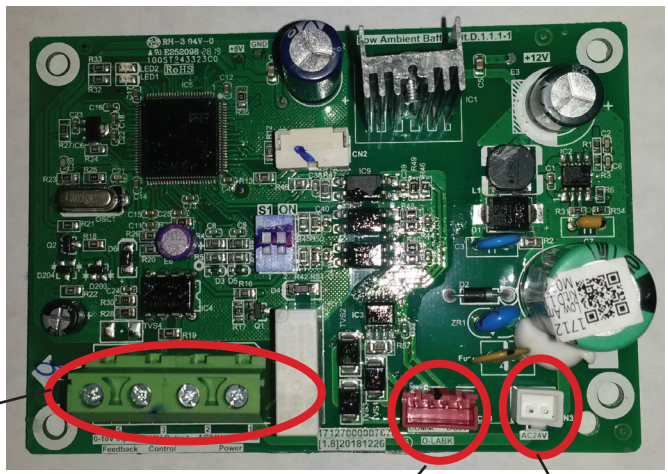


Figure 13. Damper Motor Control Board

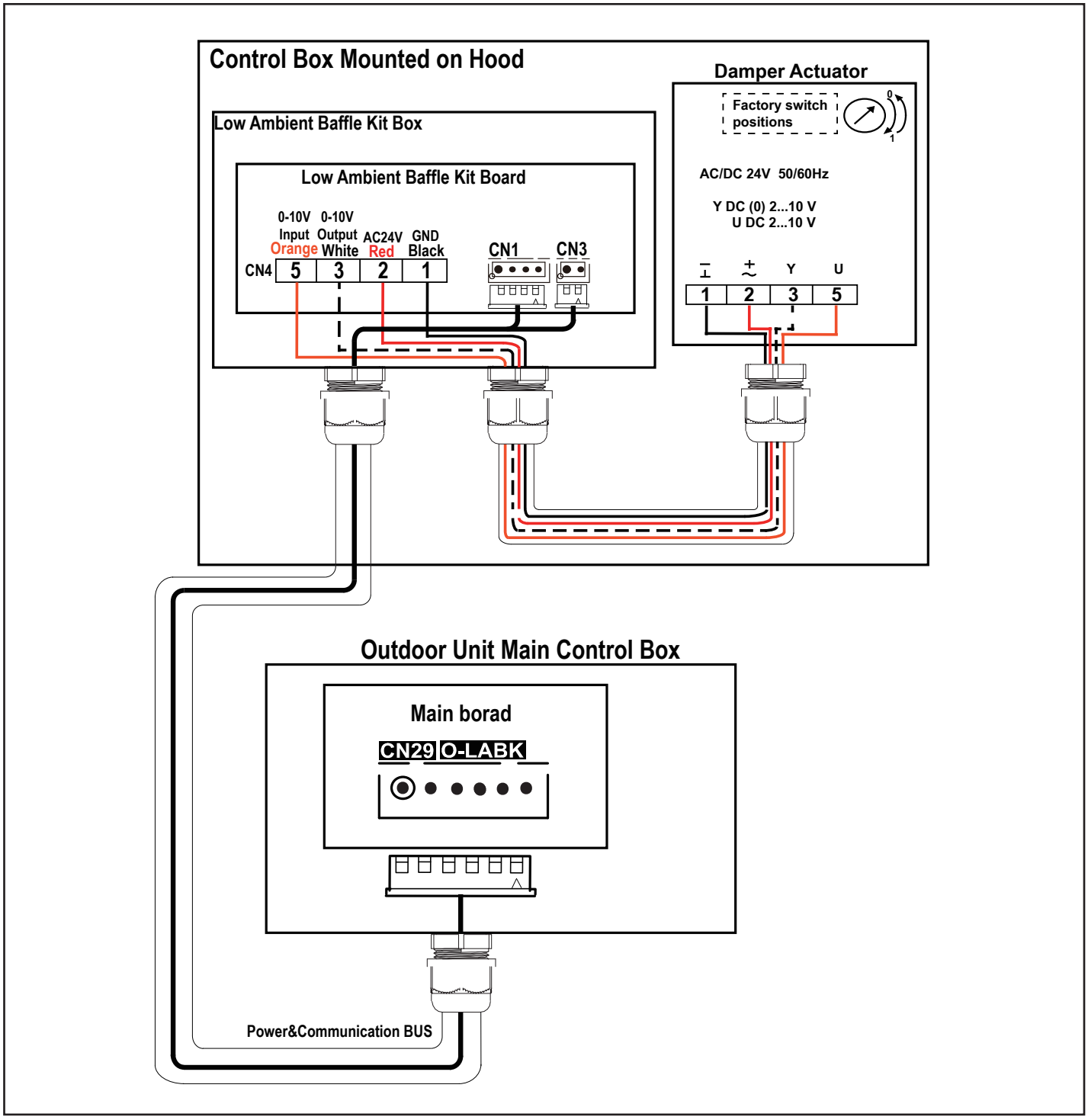
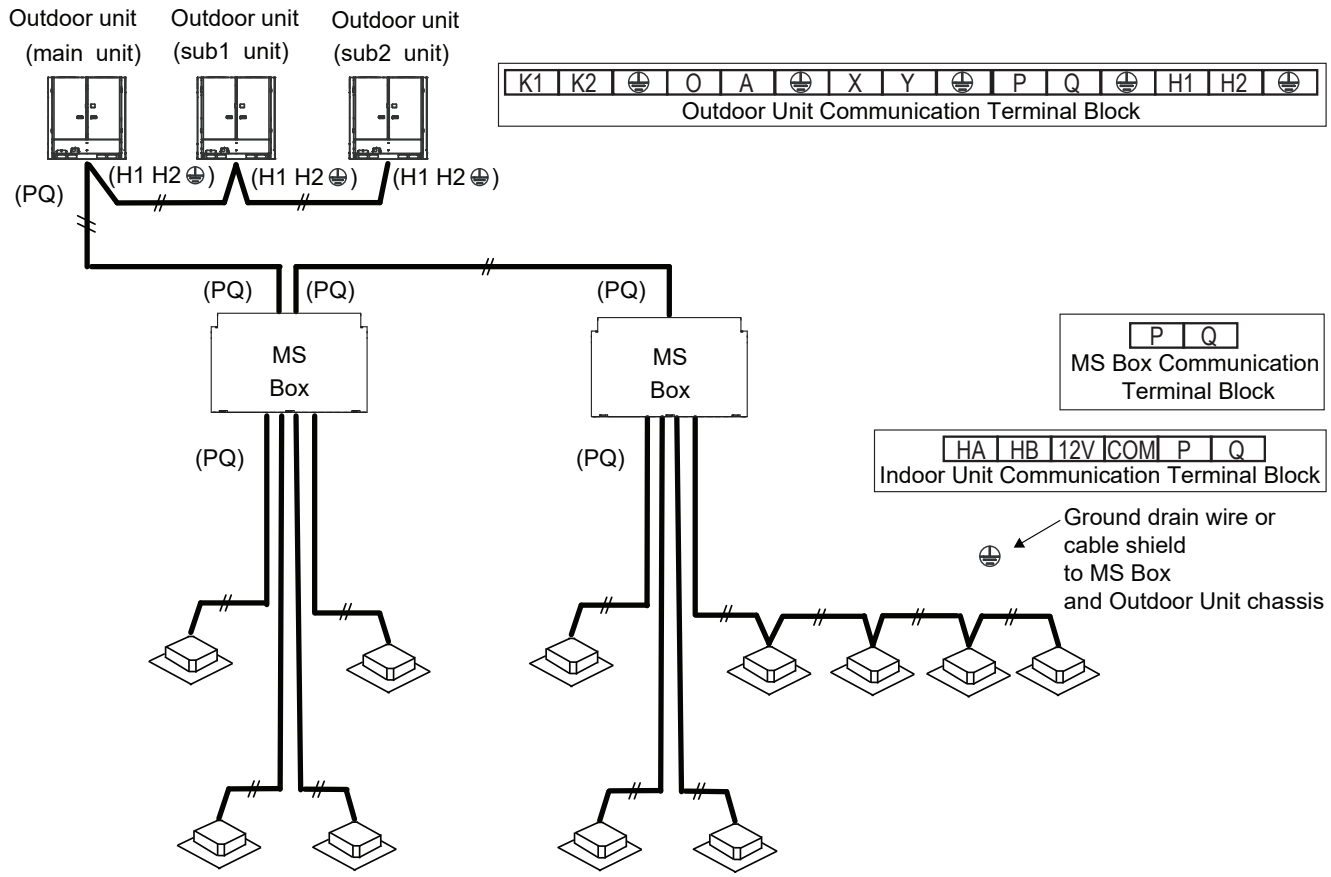


Figure 16. Connection Diagram

Outdoor Unit Main Board S9-1

1 ON	Low Ambient Kit Installed Factory default is OFF.

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



P Q Install a terminating resistor (Ω120) on terminals P&Q on the indoor unit which is furthest from the outdoor unit.

All Drain Wires will connect from outdoor unit chassis to mode selection box chassis at the end of the signal run.

18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive).

Typical Wiring Diagram, NEC/CEC and Local Codes apply.

Figure 17. VRF System Communication Wiring Diagram

Damper Position Setting

Set the rotation switch at 0 (actuator turns clockwise CW with increasing control signal 2V to 10V to close damper and turns counter-clockwise CCW with decreasing control signal 10V to 2V to open damper.

⚠ IMPORTANT

Avoid contact between the wires and any refrigerant piping inside the cabinet. If necessary, use plastic zip ties included with the kit to secure away from refrigerant piping.

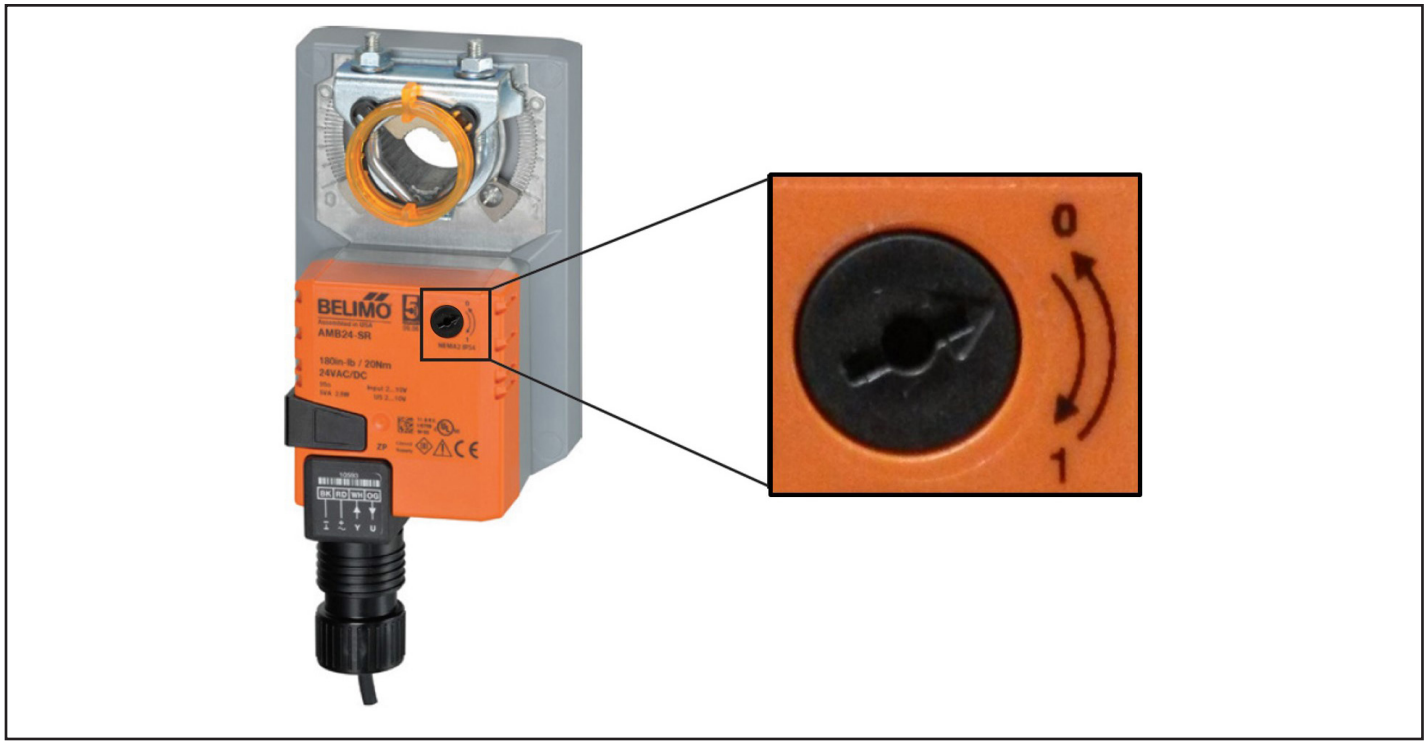


Figure 18. Damper Actuator Setting

Technical Support

1-844-GET-VRF1

(1-844-438-8731)

vrftechsupport@lennoxind.com

www.LennoxVRF.com

Download the app

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