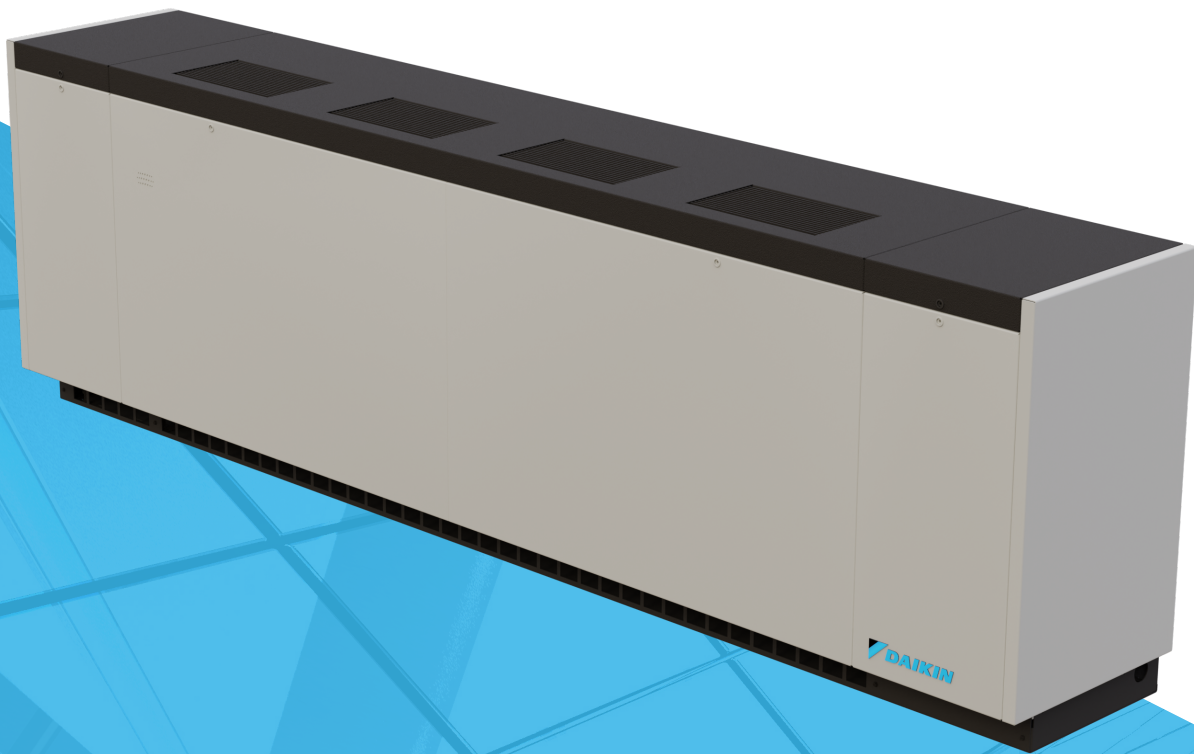


CLASSROOM UNIT VENTILATOR

SELF-CONTAINED



- MODELS AZQ, AZU, AZR
- SIZES 024- 054 (2 TO 4 1/2 TONS)
- R-32 REFRIGERANT

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Safety Information

Hazard Identification

DANGER

Danger indicates a hazardous situation, which will result in death or serious injury if not avoided.

WARNING

Warning indicates a potentially hazardous situations, which can result in property damage, personal injury, or death if not avoided.

CAUTION

Caution indicates a potentially hazardous situations, which can result in minor injury or equipment damage if not avoided.

NOTICE

Notice indicates practices not related to physical injury.

NOTE: Indicates important details or clarifying statements for information presented in Figures or Tables.

Safety Considerations

This manual provides installation and maintenance information for Daikin Applied CLASSROOM UNIT VENTILATOR with a MicroTech® controller.

NOTICE

Installation and maintenance are to be performed only by licensed, if required by local codes and regulations, or qualified personnel who are familiar with local codes and regulations and are experienced with this type of equipment.

DANGER

LOCKOUT/TAGOUT all power sources prior to service, pressurizing, depressurizing, or powering down the unit. Failure to follow this warning exactly can result in serious injury or death. Disconnect electrical power before servicing the equipment. More than one disconnect may be required to de-energize the unit. Be sure to read and understand the installation, operation, and service instructions within this manual.

This unit is equipped with a Refrigerant Detection System, and the system components, such as supply fans, may begin operation unexpectedly and without warning.

WARNING

Electric shock hazard. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Connections to and service of the MicroTech control panel must be performed only by personnel that are knowledgeable in the operation of the equipment being controlled.

WARNING

Hazardous Voltage! Use copper conductors only. Unit terminals are not designed to accept other types of conductors. Failure to do so may cause damage to the equipment.

WARNING



This unit contains R-32, a class A2L refrigerant that is flammable. This unit should only be installed, serviced, repaired, and disposed of by qualified personnel licensed or certified in their jurisdiction to work with R-32 refrigerant. Installation and maintenance must be done in accordance with this manual. Improper handling of this equipment can cause equipment damage or personal injury.

For installation only in locations not accessible to the general public.

Be aware that R-32 refrigerant may not contain an odor. Place in a well ventilated area to prevent accumulation of refrigerant. When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.

Do not pierce or burn this unit.

Never use an open flame during service or repair. Never store in a room with continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater.), where there is ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled.

Only use pipes, nuts, and tools intended for exclusive use with R-32 refrigerant in compliance with national codes (ASHRAE15 or IRC).

Do not mix air or gas other than R-32 in the refrigerant system. If air enters the refrigerant system, an excessively high pressure results, which may cause equipment damage or injury.

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

For more information, consult "Refrigerant Information" on page 82.

WARNING

The appliance is designed to activate leak mitigation airflow in the event a refrigerant leak is detected. This is required to ensure dilution and prevent stagnation of any leaked refrigerant. Always ensure the supply fans are able to operate freely. Always maintain proper airflow and do not allow filters, air inlets, or air outlets to become blocked.

WARNING

When moving flammable A2L refrigerant to/from the unit from an auxiliary tank, a grounding strap must be used. An electrical charge builds when halo-carbon refrigerant travels in a rubber hose. A grounding strap must be used between the auxiliary refrigerant tank and the unit's end sheet (earth ground), which will safely take the charge to the ground. A fire risk could occur if this procedure is not followed.

WARNING

Polyester Oil, commonly known as POE oil is a synthetic oil used in many refrigeration systems, and may be present in this Daikin Applied product. POE oil, if ever in contact with PVC/CPVC, will coat the inside wall of PVC/CPVC pipe causing environmental stress fractures. Although there is no PVC/CPVC piping in this product, please keep this in mind when selecting piping materials for your application, as system failure and property damage could result. Refer to the pipe manufacturer's recommendations to determine suitable applications of the pipe.

⚠ WARNING

Cleaning agents may cause serious damage to internal components, such as aluminum coils and electronic controls, etc. Do not operate unit ventilator while building maintenance cleaning agents are in use.

⚠ CAUTION

Personal injury hazard. Wear protective gloves to avoid possible cuts and abrasions from exposed edges. Avoid contact with sharp edges.

⚠ CAUTION

Static sensitive components. A static discharge while handling electronic circuit boards can cause damage to the components. Discharge any static electrical charge by touching the bare metal inside the control panel before performing any service work. Never unplug any cables, circuit board terminal blocks, or power plugs while power is applied to the panel.

NOTICE

This unit is not intended for use in laundry rooms.

- Equipment not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children shall not be allowed to play on or with equipment.
- If unit is permanently connected to water main; hose sets are not to be used.

Unit Labels

Pictogram warning and informational labels may be present on the unit. Consult the table below for reference.

Label	Description
 Refrigerant class per ISO 817	WARNING - flammable refrigerant present
	Read the technical manual for service instructions
	WARNING - A2L low-burning velocity refrigerant present
	Pressurized medium present
	Ultraviolet (UV) radiation present
	Read the technical manual for instructions
	WARNING - flammable refrigerant present

UL Compliance Statements for Unit Work

- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e., non-sparking, adequately sealed or intrinsically safe.
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available at hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
- No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards. Safety checks are necessary to ensure that the risk of ignition is minimized and "No Smoking" signs shall be displayed.
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Introduction

Model Nomenclature

U	AZR	K	024	H	G	12	Z	B1	AL	22	G	I	B	3
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Category	Code Item	Code Option	Code Designation & Description										
Product Category	1	1	U	Unit Ventilators									
Model Type	2	2-4	AZU	Air Source DX, Valve Heating				AZQ	Air Source DX, Face & Bypass Heating				
			AZR	Air Source DX, Valve Reheat									
Design Series	3	5	K	Design K									
Nominal Capacity	4	6-8	024	24,000				044	44,000				
			036	36,000				054	54,000				
Voltage	5	9	C	208/60/1				H	230/60/3				
			G	230/60/1				K	460/60/3				
			D	208/60/3									
Coil Options	6	10	G	Direct Expansion				9	Direct Expansion with Stainless Steel Drain Pan				
Heating Options	7	11-12	12	3 Element Low Cap. Electric Heat				68	Steam Low Cap.				
			13	6 Element Low Cap. Electric Heat				69	Steam High Cap.				
			65	1 Row HW				00	None				
			66	2 Row HW									
Hand Orientation	8	13	Z	Not Available									
Controls	9	14-15	##	MicroTech Controls (see control code table below)									
			Control Features			Feature Selections							
			Open Protocol	BACnet / Stand-Alone	•		•		•	•			
				LonMark		•		•			•	•	
			DCV	CO ₂ Sensor			•	•		•		•	
			Factory Installed Keypad	LUI					•	•	•	•	
						Control Code							
			Economizer Control	Basic	B1	B5	B9	BD	BH	BL	BP	BT	
				Expanded	E1	E5	E9	ED	EH	EL	EP	ET	
				Leading-Edge	L1	L5	L9	LD	LH	LL	LP	LT	
44	Electromechanical w/2-Position OA Damper for Remote Thermostat												
Discharge	10	16-17	AL	16-5/8" Top Bar Grille									
Return Air/ Outside Air	11	18-19	22	Return Air Bottom Front/Outdoor Air Rear									
Power Connection	12	20	G	Box with Switch									
Color	13	21	I	Antique Ivory				G	Soft Gray				
			W	Off White				C	Cupola White				
			B	Putty Beige									
SKU Type	14	22	B	Standard Delivery									
Product Style	15	23	3	R-32 Refrigerant									

Installation

Receiving and Handling

Carefully check equipment against the bill of lading to ensure all items have been received. Before unloading any unit, check the nameplate to make sure the voltage complies with the power supply available.

Inspect all units for damage upon arrival. If a unit has become dirty during shipment, carefully clean it prior to completing the inspection. Daikin Applied is not responsible for physical damage after the unit leaves the factory unless the contract with Daikin Applied states otherwise.

NOTICE

All units should be carefully inspected for damage when received. Report all loss or shipping damage using a claim form supplied by Daikin Applied.

VISIBLE LOSS OR DAMAGE: Any external evidence of loss or damage must be noted on the freight bill or carrier's receipt, and signed by the carrier's agent. Failure to adequately describe such external evidence of loss or damage may result in the carrier's refusal to honor a damage claim.

CONCEALED LOSS OR DAMAGE: Concealed loss or damage means loss or damage which does not become apparent until the unit has been unpacked or unwrapped. The contents may be damaged in transit due to rough handling even though the exterior may not show damages. When the damage is discovered, make a written request for inspection by the carrier's agent within **five (5) days** of the delivery date and file a claim with the form provided by Daikin Applied. Refer to the Daikin Applied Freight Policy for further information.

Lifting Unit

A forklift with 72" tines, or other lifting device is needed to move these products (Figure 1).

Move the louver, wall sleeve, or unit to the location at which it is to be installed before uncrating. Check tagging on carton to confirm that the item is correct for the location. The carton for the unit is imprinted with the Daikin Applied trademark which is the "front" or room side of the unit. The end of the unit carton marked "Truck From This End" should be on the right-hand side when facing the front of the carton.

Forklift-type vehicles may be used to unload and move the cartons. When using a forklift, it is important that the product remain banded to its skid and be lifted only from the end designated on the carton (Figure 5). Move only one unit at a time. Do not drop unit.



CAUTION

Use 72" length forklift tines. Short tines will damage the unit bottom. Improper handling can damage internal components.

Figure 1: Forklift Lifting Requirements



Storage

If equipment is stored for any length of time before installation, it should remain in its shipping packaging in a clean, dry, climate controlled area. For extended storage times, rotate indoor fan motor and outdoor fan motor assemblies periodically to prevent flattening of the bearing.

To help avoid concealed damage:

Lay the louvers on their side for handling and storage. Do not stack louver more than 10 high. See Figure 2.

Do not stack wall sleeves more than two (2) high. See Figure 3.

Unit ventilators must be handled and stored right-side up. Do not stack units more than two (2) high. See Figure 4.

Stacking

Figure 2: Stack Louvers Maximum 10 High as Shown

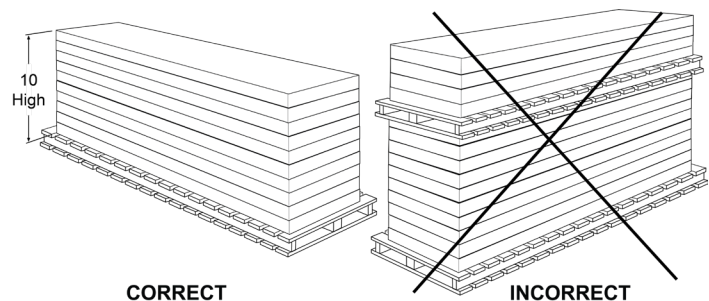


Figure 3: Stack Wall Sleeve Maximum (2) Two High as Shown

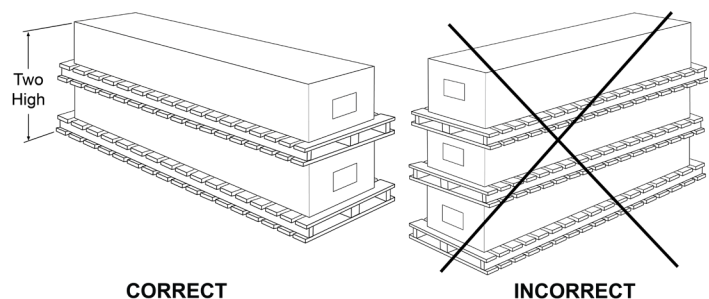


Figure 4: Stack Units Maximum (2) Two High as Shown

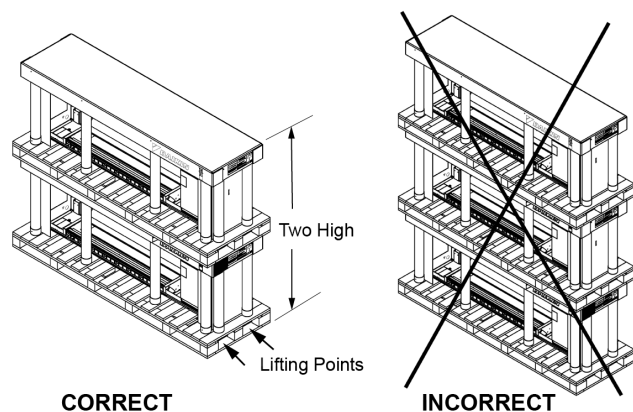


Figure 5: Unit Package Dimensions

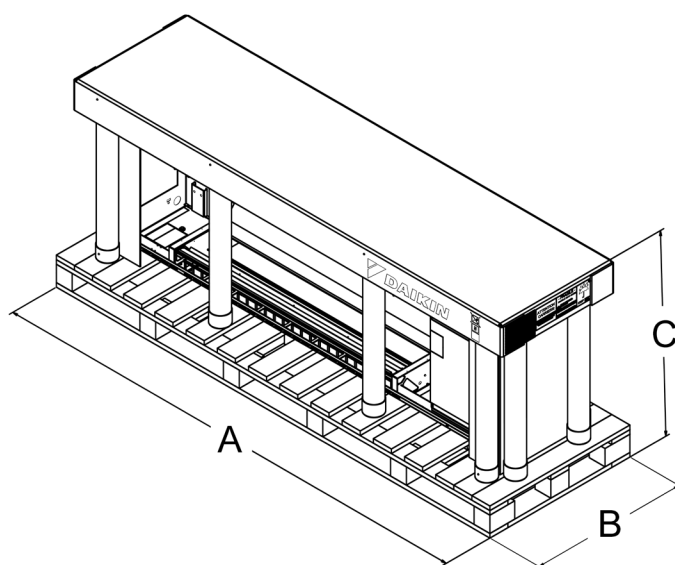


Table 1: Shipping Carton Dimensions & Weights

Unit Size	"A"	"B"	"C"	Shipping Weight	Loading (L x W x H)	Truckload Quantity of Identical Units
024	96"	37"	38"	885 lbs.	5' x 3' x 2'	30
036	108"	37"	38"	975 lbs.	5' x 3' x 2'	30
044, 054	120"	37"	38"	1075 lbs.	4' x 3' x 2'	24

NOTE: All dimensions are approximate only and are subject to change without notice. Refer to approved submittal prints for rough-in details and construction purposes and for recommended wall opening size.

Table 2: Physical Data

			024	036	044	054
Fan Data	Nominal CFM (L/s)	High Speed	1000 (472)	1250 (590)	1500 (708)	1500 (708)
		Medium speed	750 (354)	1000 (472)	1050 (496)	1050 (496)
		Low Speed	650 (307)	800 (378)	850 (401)	800 (378)
	Number of Fans		3	4	4	4
	Size	Diameter - in (mm)	8.12 (206 mm)	8.12 (206 mm)	8.12 (206 mm)	8.12 (206 mm)
Width - in (mm)		8.25 (210 mm)	8.25 (210 mm)	8.25 (210 mm)	8.25 (210 mm)	
Room Fan Motor Horsepower			1/4	1/4	1/4	1/4
Outdoor Fan Motor Horsepower			1/3	1/3	3/4	3/4
Filter Data	Nominal Size	in	10 x 48½ x 1	10 x 60½ x 1	10 x 36½ x 1	10 x 36½ x 1
		(mm)	254 x 1232 x 25	254 x 1537 x 25	254 x 927 x 25	254 x 927 x 25
	Area - ft² (m²)		3.37 (.31)	4.2 (.39)	5.08 (.47)	5.08 (.47)
	Quantity		1	1	2	2
Shipping Weight		lb (kg)	885 (402)	975 (442)	1075 (448)	1075 (448)
Refrigerant Charge (R-32)		oz (lbs)	106 (6.63)	156 (9.75)	114 (7.13)	111 (6.94)
Coil Water Volume gal (L)	1 Row Coil		0.25 (0.95)	0.31 (1.17)	0.38 (1.44)	0.44 (1.67)
	2 Row Coil		0.45 (1.70)	0.57 (2.16)	0.69 (2.61)	0.82 (3.10)

Properly Identify Unit Ventilator(s)

To be sure the correct unit ventilator(s) is/are in the correct location(s), the installer must check the packing list and unit identification/tagging number(s) against the plans. Further, the unit data plate, located on the lower right end of the unit ventilator, contains specific information of standard components (refer to “Model Nomenclature” on page 5).



WARNING

Plastic packaging is a suffocation hazard, dispose of properly. Keep away from children.

The self-contained unit comes with an Allen wrench, four (4) insulation donuts, and four (4) lagging washers in the envelope placed in the left end compartment of the unit.

1. Move only one unit at a time.
2. DO NOT DROP UNIT!
3. Store in a clean dry environment.
4. Lift only from designated end.

Lower crated unit from dolly (if used), but DO NOT DROP. Remove unit from skid if unit will be installed immediately (See [Figure 72 on page 39](#)). If storing unit prior to installation, replace the carton over the unit until installation is begun. This will prevent the unit from being scratched or damaged by other workers preparing the area.

End panels are shipped separate from the unit and are installed after unit installation is complete.

- Unit comes encased in plastic bag. Be sure that the plastic bag is disposed of properly after removing permanently.
- Units are shipped in trucks. See [Table 1 on page 7](#) for loading, truckload quantities, weights and dimensions.
- Strap type sling of nylon or other material should be used rather than wire rope to prevent damage to the unit.

NOTICE

These are general instructions. Refer to the Daikin Applied submittal drawings for specific dimensions, unit arrangement, stub-up locations, recommended wall opening size, etc.

Pre-Installation Considerations

Carefully arrange the location and installation of the unit to provide convenient service access for maintenance and, if necessary, removal of the unit. The installation consists of four basic elements in the following order:

1. Louver
2. Galvanized Wall Sleeve
3. Horizontal Air Splitters by Others (if Required)
4. AZ Self-Contained Unit Ventilator

The louver brings in outdoor air for the condenser fan section and ventilation air to the classroom while providing a path for heated condenser air to exit.

The wall sleeve secures the unit, provides a watertight and air tight seal to the building and brings in electrical and control wiring (if required). It contains the unit main power disconnect switch which is located in the wall sleeve junction box. All field electrical connections are made inside this box.

Horizontal air splitters provide proper air paths and minimize air recirculation.

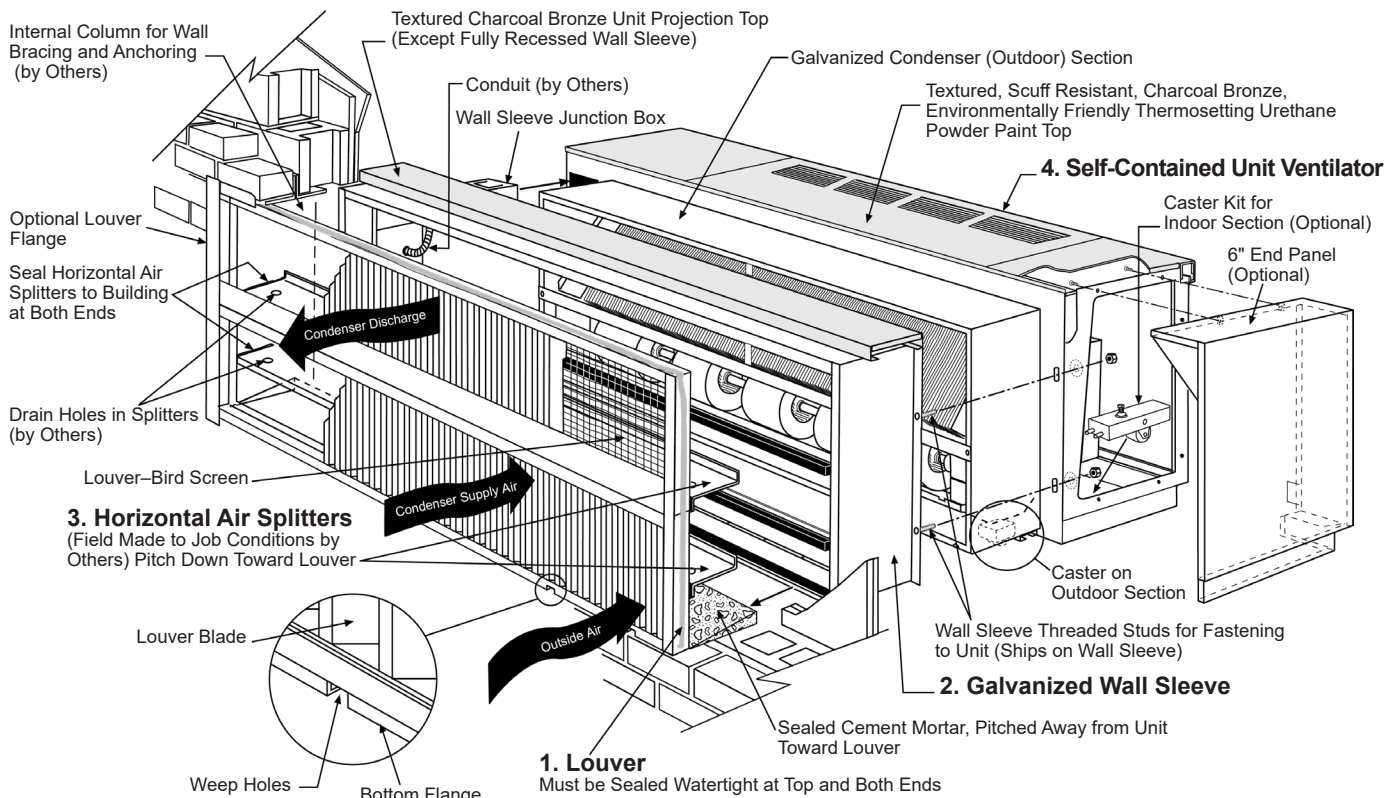
The self-contained unit ventilator provides comfort cooling and heating for the space. The unit is designed to be installed into or up against an inside wall. The louver, air splitters (if required) and wall sleeve are installed before the unit ventilator is installed.

On many jobs, the louver and wall sleeve are shipped ahead of the unit itself. Installation instructions for these components are shipped with the individual components included in this publication.

Pre-Installation Checklist for Unit

- ☐ Lintel installed above wall louver to support masonry wall
- ☐ Bird screen on wall louver facing toward room interior
- ☐ Embossments of wall louver at bottom and free for drainage
- ☐ Wall sleeved to prevent moisture seepage into wall
- ☐ Free opening under wall louver clear for water run-out
- ☐ Wall louver anchored to building and sealed against air and water leaks
- ☐ Horizontal air splitters between wall sleeve and louver (if required), water and air tight
- ☐ Wall sleeve anchored to building and sealed against air or water leaks
- ☐ Sealant material applied to “D” seal cross channel flange to seal to drainage slope edge
- ☐ Unit inspection complete for damage, data plate information and correct location of unit

Figure 6: Typical Frame and Brick Construction with Partial Recess



Unit Location

Locating Wall Opening (Existing Building)

CAUTION

Unit ventilators use fresh air to condition the interior space. Obstructions near the louver wall opening must be removed to allow free flow of entering and discharge air. Building and vehicle exhaust, etc., near the louver intake must be identified and eliminated.

NOTICE

Wall and floor must be at 90° to one another. If not, the floor must be leveled (90°) to wall.

An opening in the outside wall is required to accommodate the wall sleeve and louver. The wall opening must be of sufficient size to allow proper fit of the louver and will depend on the type of wall. National and local codes for building construction must be followed and may supersede the suggested methods in this manual.

The first step in the installation is to carefully locate the area of interior and exterior wall to be removed. Determine the appropriate location on the interior wall where the unit ventilator is to be installed. Using the rear edge of the wall sleeve as a guide, mark the interior wall surface for the rough-in wall sleeve opening 1/4" larger at each end than the wall sleeve recess dimension, and 1/4" higher (see [Table 4 on page 11](#)). In all

cases, the bottom of the outdoor louver opening must be at the same height as the floor line.

For non-recessed (full projection) installations, mark the position of the wall sleeve on the interior wall surface with the wall mount flanges removed to help determine the location of the outdoor wall surface rough opening.

Transfer the interior wall opening dimensions to the exterior wall surface, being certain the opening is 1/4" larger at each end than the wall sleeve recess dimension, and 1/4" higher.

Figure 7: Partial Recess, Frame and Brick Construction

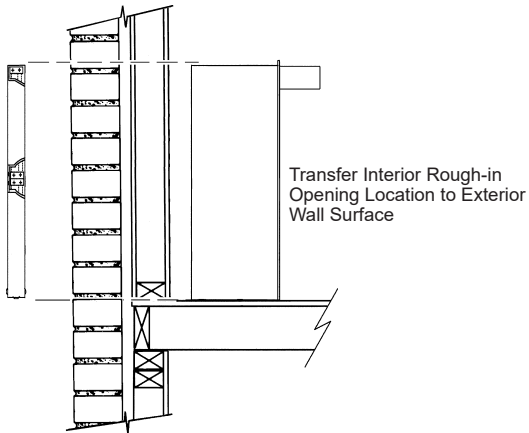


Figure 8: No Recess (Full Projection), Thin Wall Construction

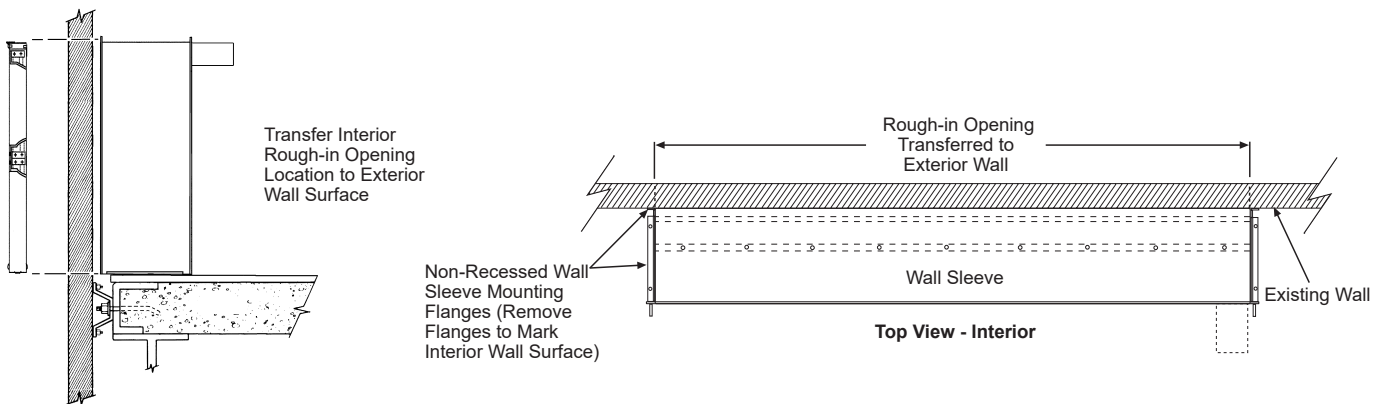
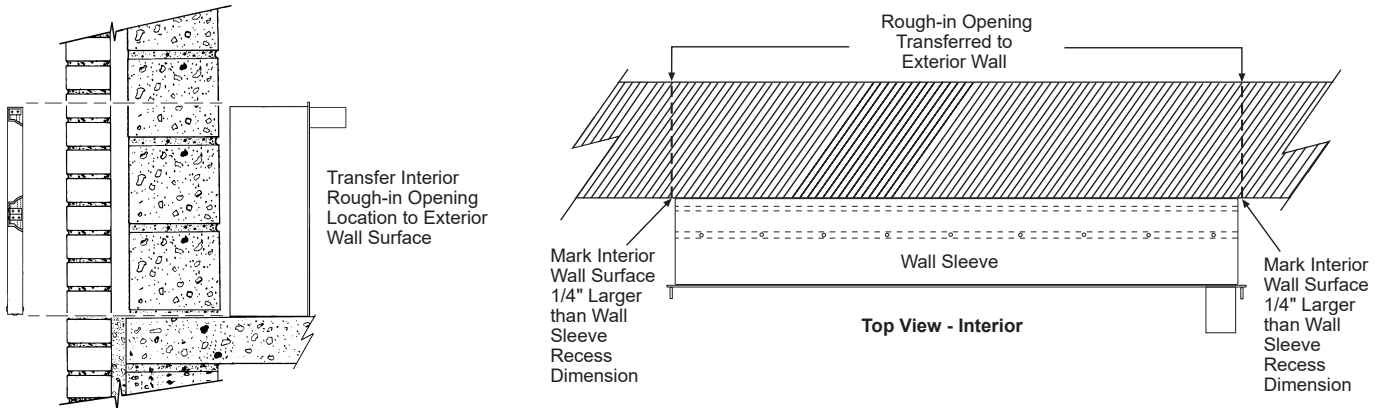


Figure 9: Full Recess, Thick Wall Construction



Cutting Exterior Wall Opening

The wall opening must be of sufficient size to allow proper, yet snug, fit of the louver and will depend on the type of wall. If the louver is to be installed in a masonry wall, install a lintel to support the wall above the wall sleeve and louver. Install a sleeve to prevent moisture from seeping into the wall interior. Refer to approved submittal prints for recommended rough wall opening size.



CAUTION

Read louver and wall sleeve installation sections before proceeding (page 11 - page 34). Improper installation can result in property damage.

The following is a typical procedure for installing in existing masonry walls. Follow local codes and safety procedures.

If the Model AZ unit is to be installed in an existing classroom, an opening must be cut in the outside wall to accommodate the wall sleeve and louver. This is accomplished as follows: First, the outside of the masonry wall is cut with a carborundum or other suitable blade as shown in Figure 10. This opening should be 1/2" larger overall than the size of the louver supplied with the unit (see Figure 10 & Table 3).

Figure 10: Cutting the Outside Wall Rough Opening Slightly Larger Than the Size of the Louver



Figure 11: Rough-in Dimensions of Exterior Wall for Louvers

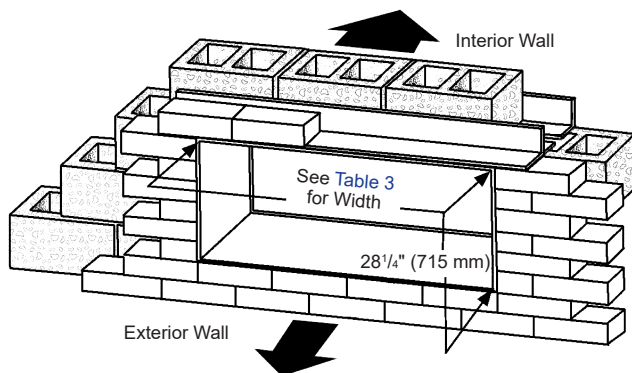


Table 3: Recommended Rough-in Dimensions for Louvers with or Without Flanges (Exterior Wall)

Unit Size	Width		Height	
	in	mm	in	mm
024	84½	2140	28¾	715
036	96½	2444	28¾	715
044	108½	2747	28¾	715
054				

NOTE: See louver installation section. Dimensions are approximate and are dictated by job site conditions.



CAUTION

Horizontal splitters (by others) must be installed whenever there is space between the wall sleeve and the louver.

Seal the ends of the wall opening. Pitch splitters toward the louver for water drainage (see sealing wall sleeve and horizontal splitters, Figure 56 on page 31 & Figure 59 on page 33).

Cutting Interior Wall Opening

Next, the interior wall is cut as shown in Figure 12. If any portion of the wall sleeve is to be recessed into the wall, the opening must be large enough to accommodate the wall sleeve (see Table 4 on page 11). In all cases, the bottom of the wall opening must be at the same height as the floor line. Seal the floor of the wall opening to permit water to drain under the louver and away from the building interior. If the building is a panel wall, the sleeve will be nonrecessed (full projection) and all of the unit will remain in the room.

Figure 12: The Interior Wall Opening is Cut



Table 4: Recommended Rough-in Wall Opening for Wall Sleeve

Unit Size	Wall Sleeve w/Flange Length	Sleeve (Recessed) Length	Recommended Rough-in Wall Opening	
			Length	Height
024	86" (2184 mm)	84" (2145 mm)	84½" (2146 mm)	28½" (724 mm)
036	98" (2489 mm)	96" (2489 mm)	96½" (2451 mm)	28½" (724 mm)
044, 054	110" (2794 mm)	108" (2755 mm)	108½" (2756 mm)	28½" (724 mm)

The interior wall is then knocked out in the area cut for the wall sleeve as shown in [Figure 13](#).

Figure 13: The Interior Wall is Knocked Out in the Area Cut for the Wall Sleeve



If the wall consists of concrete block with brick (or other) veneer and the louver opening is smaller than the opening of the wall sleeve (which is to be recessed), be careful to knock out only the veneer that is necessary.

After the opening is finished ([Figure 14](#)), a lintel must be installed above the opening in masonry walls to support the remaining block and brick ([Figure 15](#)). The wall must contain a solid surface or an internal column at each end for bracing and anchoring the wall sleeve and louver (by others).

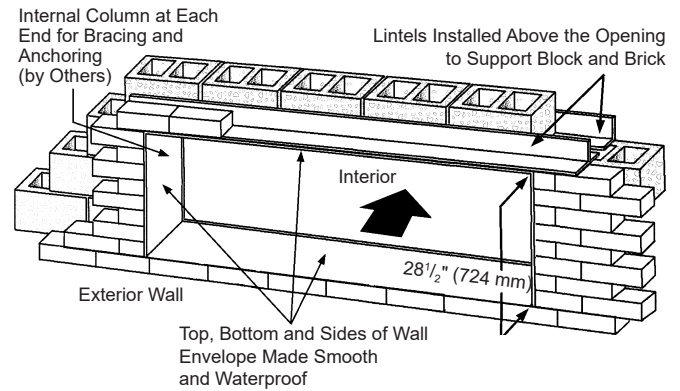
CAUTION

Shut-off valves for hot water and steam must be flush with the floor to allow unit installation and removal (see "Typical EOC Piping Arrangements" on page 49).

Figure 14: A Lintel Must be Installed Above the Opening to Support the Remaining Block and Brick



Figure 15: Lintels Installed



CAUTION

The wall opening must be sealed and made watertight. See the louver, splitter and wall sleeve installation sections.

New Buildings

In new construction, if any portion of the wall sleeve is to be recessed into the wall, the opening must be large enough to accommodate the wall sleeve (see [Table 4](#)). For smaller wall thickness, the wall sleeve will be nonrecessed (full projection) and all of the unit will project into the room. In all cases, the bottom of the wall opening must be at the same height as the floor line. A lintel must be installed above the opening in masonry walls to support the block and brick. The wall must contain a solid surface or an internal column at each end for bracing and anchoring the wall sleeve and louver (by others).

Installing Louver

Figure 16: Typical Wall Louver and Grille

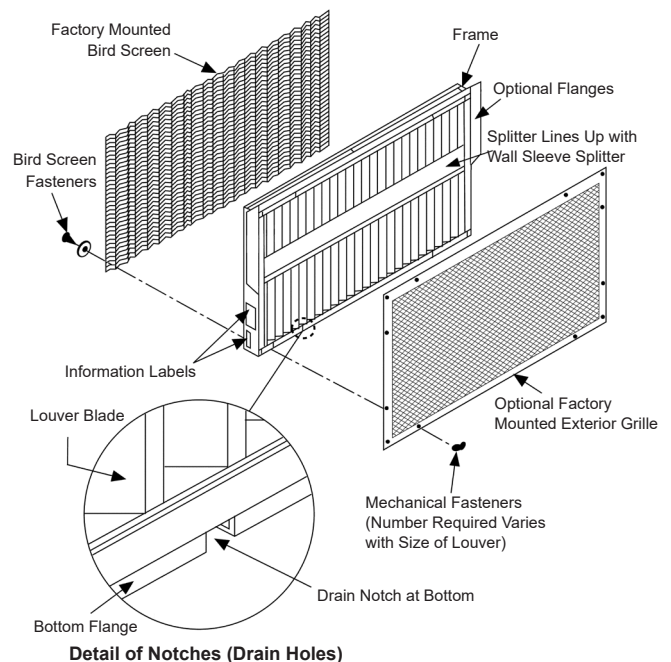
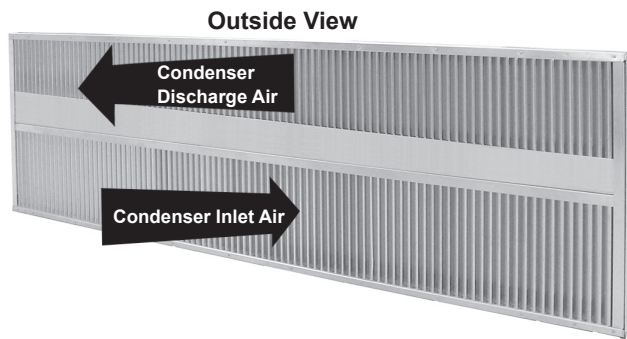


Figure 17: Vertical Blade Louver, Without Flange



NOTE: See CAUTION at right for louver blade orientation and drainage.

Figure 18: Vertical Louver with Flange

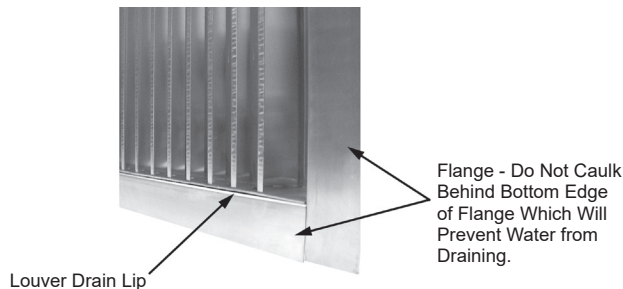


Figure 19: Grille Detail

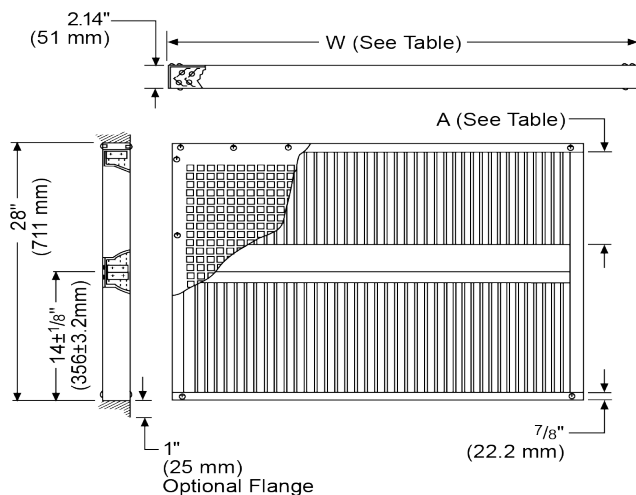
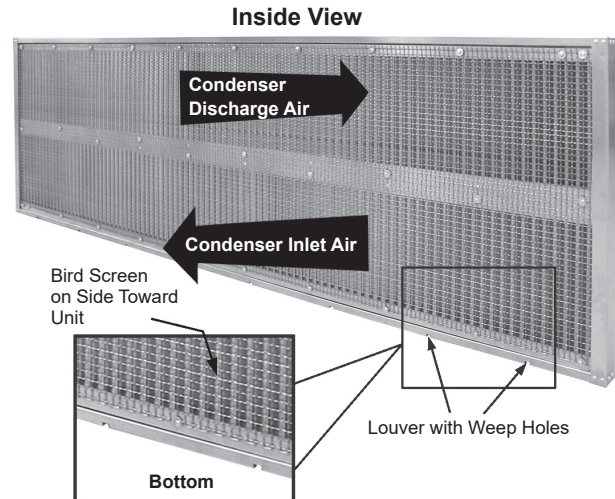


Table 5: Wall Louver Dimensions

Unit Size	Louver Size (Height x W)	Discharge Air Opening (A)
024	28" x 84" (711 mm x 2134 mm)	9" (229 mm)
036	28" x 96" (711 mm x 2438 mm)	9" (229 mm)
044, 054	28" x 108" (711 mm x 2743 mm)	7" (178 mm)

NOTE: All dimensions are approximate and subject to change without notice. Refer to approved submittal prints for rough-in details and construction purposes, and for recommended wall opening size.

Figure 20: Vertical Blade Louver, Without Flange



CAUTION

Locate Drain Lip at bottom of vertical louver to allow proper drainage. Bird screen should always be on side toward unit.

Louver Installation Considerations

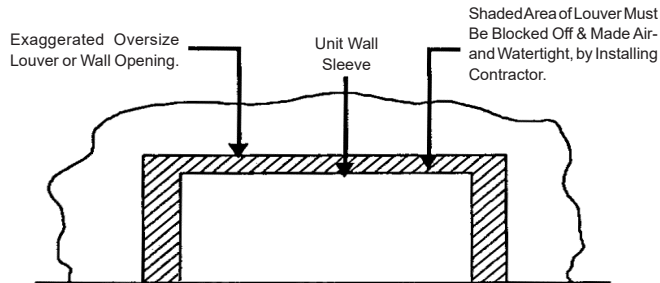
The standard louver is an aluminum, vertical, divided blade design complete with bird screen. This louver is also available with flanges and/or with a heavy-duty exterior lattice grille.

CAUTION

Daikin Applied supplied louvers provide proper airflow. Proper unit performance has not been verified with louvers supplied from others.

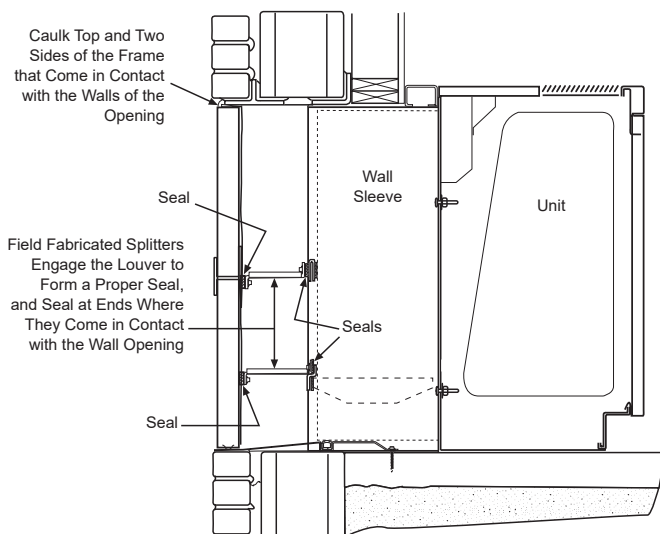
1. Figure 17 & Figure 20 on page 13 show detail of a typical louver. Before installation, carefully examine the louver and note the location of the bird screen and the notches (drain holes). The louver must be installed with the small opening at the top, notches at the bottom and the bird screen toward the room. If the louver is to be installed in a masonry wall, there must also be a lintel to support the existing wall above the louver.
2. Measure the opening to be sure there is adequate clearance for the louver around the sides. Observe the opening in relation to the wall sleeve and unit. For proper unit operation, the louver must be centered left to right and top to bottom to the wall sleeve. If the louver is of such a dimension that it extends above, below, or beyond the wall sleeve, then these areas must be blocked off airtight (Figure 21).

Figure 21: Oversize Wall Opening



3. If the wall sleeve does not extend into the wall far enough to meet the louver, field fabricated splitter(s) must be provided. The splitter(s) need to extend far enough to engage the louver in order to form a proper seal (see “Unit Room Projection & Splitter Length Details” on page 28).

Figure 22: Typical Field Fabricated Splitters



NOTE: See Figure 60 on page 34 for detail of attaching splitters to wall sleeve.



CAUTION

See important information on bottom splitter seal, and drainage from condenser section drain pan (Figure 53 & Figure 54 on page 30).

4. Check to see if the horizontal divider on the louver is the same height as the top horizontal splitter rail of the wall sleeve. The louver frame must be permanently mounted in the wall.
5. Before installing the louver in the opening, place a heavy bead of caulk along the top and two sides of the frame that come in contact with the walls of the opening. Use a flexible, waterproof caulk such as silicone.
6. Once the louver has been placed in the opening, further mechanical fastening may be desired or required. Fasten in a manner appropriate to the installation (see “Typical Installation Methods” on page 14). Care must be taken if fasteners are to be placed in the frame. If this is necessary,

remove the louver by removing the screws that hold it in place. Drill holes in the desired locations and fasten with flat head screws. Be sure these screws do not interfere with the reinstallation. Shims must be placed between the louver and the wall so it won't be distorted. After the louver has been properly positioned, secure with fasteners.

In masonry wall applications, the louver may be permanently mounted by placing mortar around the top and sides in order to prevent it from being removed. Mortar keys may be attached to the louver, if necessary.

Typical Installation Methods

If the outside opening has not yet been made, see page 9 through page 12 for the recommended locations and the job-specific plans for the exact location. Follow national and local codes.

Wall Opening

Cut the wall opening so that it is slightly larger than the louver being installed (see Table 4 on page 11).

For dimensions, see Table 6 on page 16. If the opening is already there, measure to be sure there is a minimum of 3/8" (9 mm) clearance around all sides. For masonry installations, follow national and local codes and install a lintel above all louvers.

Outside Air Plenum

In thick wall applications, the portion of the wall between the louver and the unit is the outside air plenum. Line this plenum area with 3/8" (9 mm) sealed cement mortar or other suitable material. In some applications, the job specifications require a metal sleeve connection between the louver and the unit. If using such a sleeve, properly caulk it for a weather tight seal to help prevent moisture from seeping into the wall.



CAUTION

Sealing is critical in preventing freeze-ups, cold drafts, air infiltration, and to prevent moisture from entering the wall or room. Be sure the wall is smooth, square, and provides a suitable mating surface.

Sloping, Sealed Cement Mortar Base

Before setting the louver, construct a sloping, sealed cement mortar base to drain unwanted moisture to the outside (Figure 23). Be sure the mortar base tapers toward the louver and away from the wall sleeve. The mortar at the wall sleeve also acts as a drain for excess moisture from the outside to drain back outside, thus it must extend so it meets the “D” seal flange of the wall sleeve. Temporarily slide the wall sleeve into place to mark this meeting point on the floor (refer to “Recessed Applications” on page 30). The mortar should be the same height as the “D” seal flange. Be sure the sealed cement mortar base is smooth and flush along the wall sleeve “D” seal flange. This is critical in preventing water leaks and air leaks under the unit.

CAUTION

A space must exist between the bottom back edge of the wall sleeve and the sloping sealed cement mortar base to allow moisture to drain away from the condenser section. Do not fill this space with mortar (Figure 23).

Sloped Flashing

If it is not possible to construct a sloping mortar base, then field-supplied flashing is required that is pitched for water drainage (Figure 24). The flashing should terminate flush with the exterior of the building. The flashing should extend so it is under the wall sleeve and meets the "D" seal flange of the wall sleeve. Place a bead of caulk under the flashing to prevent moisture from wicking back to the unit. Do not caulk the joint between the louver and the flashing. This joint is designed to let unwanted moisture escape.

Before setting the louver, be sure the drain lip (vertical louver) is at the bottom, and the bird screen is toward the unit (refer to Figure 16 through Figure 20 on page 13). Place a heavy bead of caulk along the top and the two vertical sides of the louver, leaving the bottom uncaulked so that if moisture gets into the area between the louver and the unit, it can drain to the outside, unrestricted.

Figure 23: Typical Louver Installation with Sloping Sealed Cement Mortar Base (Splitters Not Shown)

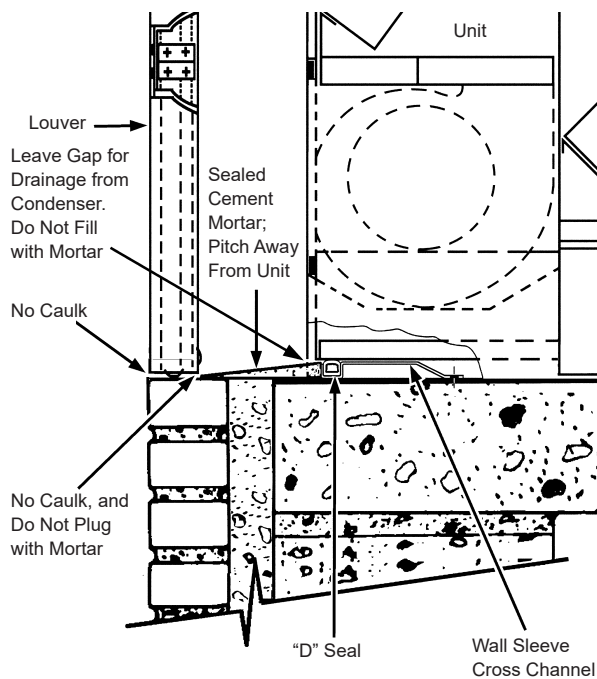
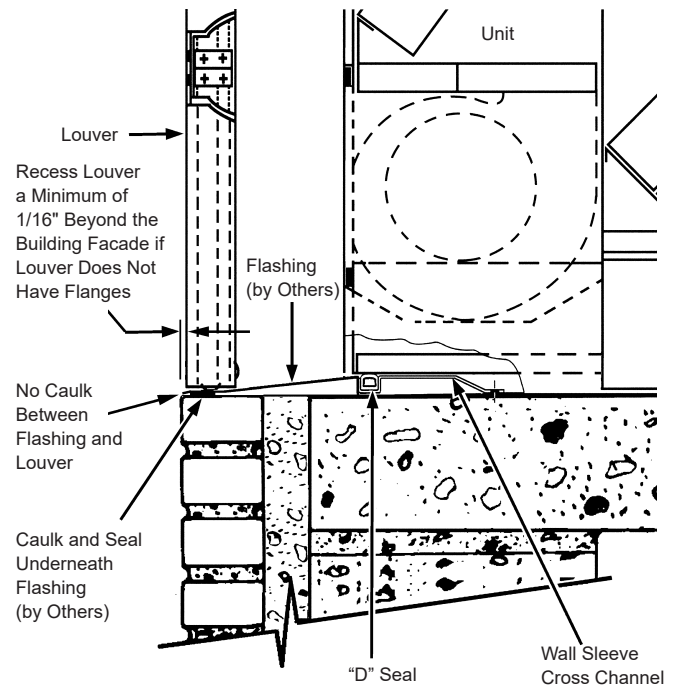


Figure 24: Typical Louver Installation with Sloped Flashing



CAUTION

Personal injury hazard. Avoid contact with sharp edges.

Louver with Flanges

Place an additional bead of caulk on the inside of the top and side flanges that come in contact with the building facade. Do not caulk the bottom flange. Place the louver in the opening and push it tight against the building. Fasten it to the exterior of the building using fasteners (by others) appropriate to the installation. Seal the top and sides with a waterproof caulk to make it weather-tight. Do not caulk the bottom of the louver; doing so will trap unwanted moisture behind the flange.

Louver Without Flanges

Place the louver in the opening so that it is recessed a minimum 1/16" (2 mm) beyond the building facade or as directed in the architectural plans (Figure 24). If specified in the plans, secure the louver in the wall using mechanical fasteners (supplied by others) appropriate to the installation. With the louver solidly in place, run a bead of caulk around the perimeter of the louver to seal it weather-tight. Do not plug the bottom weep holes or the drip line of the louver. This will restrict the flow of unwanted moisture to the outside.

If flashing was used instead of the sloping mortar base, caulk the flashing where it contacts the "D" seal of the wall sleeve, the sides of the wall, etc. (Figure 24). This helps prevent moisture and outside air from getting under the flashing and into the room.

Top Plan Views – No Recess (Full Projection)

CAUTION

The bottom of the louver must be installed flush with the bottom of the unit for proper air inlet/outlet orientation and to permit water to drain under the louver from the building exterior.

Louver dimensions are $\pm 1/16"$ (1.6 mm) except as noted.

Intake and discharge must not be restricted. Trees, shrubs, etc., must be a minimum of 30" (762 mm) away from intake.

Louver must be blanked off airtight (by others) if it extends beyond the confines of the wall sleeve.

Horizontal splitters (by others) must be installed whenever there is any space between the wall sleeve and the louver. Seal the ends of the wall opening. Locate splitters between condenser discharge and condenser inlet, and between condenser air inlet and outdoor air inlet. Pitch the splitters toward the louver for water drainage.

Daikin Applied supplied louvers provide proper airflow. Proper unit performance has not been verified with louvers supplied from others.

Grille must be flush with louver to provide proper airflow.

Table 6: Unit & Louver Dimensions with No Unit Recess

Unit Size	Unit "A"		Louver "L"	
	in	mm	in	mm
024	86	2184	84	2134
036	98	2489	96	2438
044, 054	110	2794	108	2743

NOTE: "A" is unit length without end panels.

Figure 25: Panel Wall Application with Flush Louver

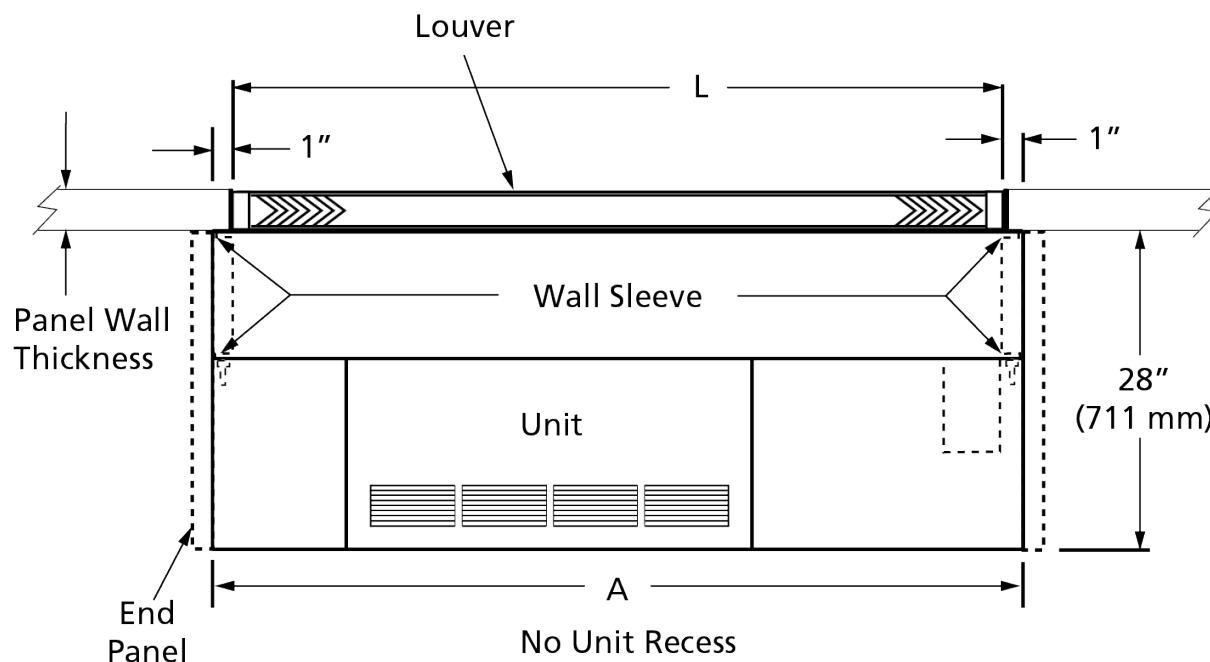
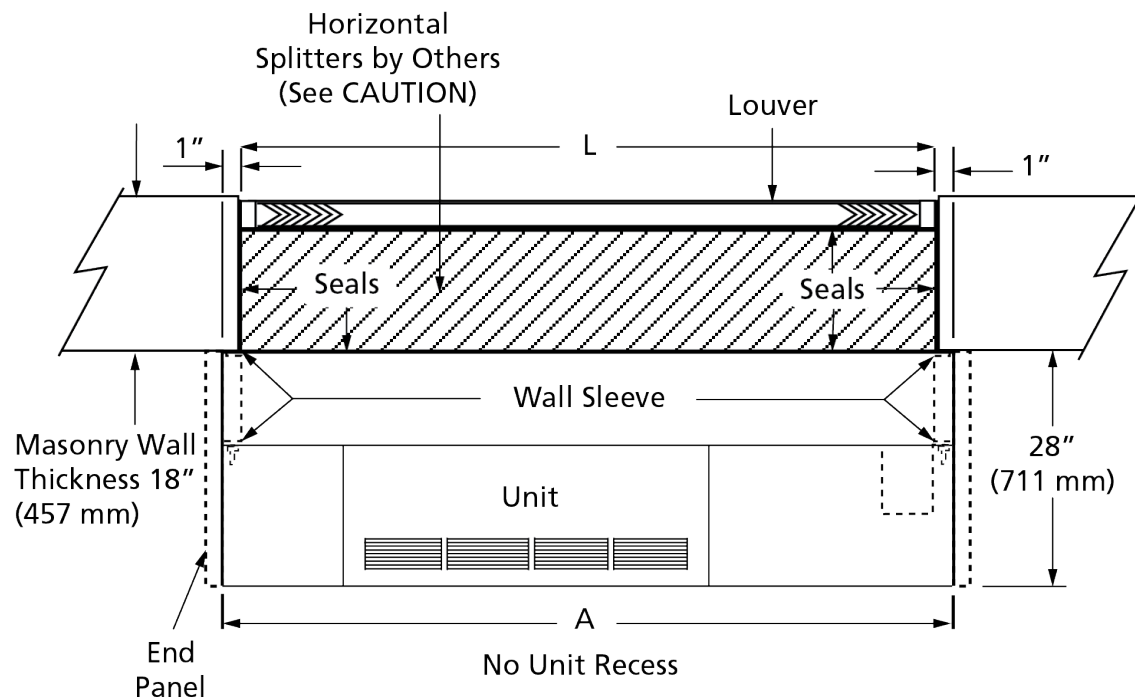


Figure 26: Masonry Wall Application with Flush Louver

Top Plan Views – Partial or Full Recess

CAUTION

The bottom of the louver must be installed flush with the bottom of the unit for proper air inlet/outlet orientation and to permit water to drain under the louver from the building exterior.

Louver dimensions are $\pm 1/16"$ (1.6 mm) except as noted.

Intake and discharge must not be restricted. Trees, shrubs, etc., must be a minimum of 30" (762 mm) away from intake.

Louver must be blanked off airtight (by others) if it extends beyond the confines of the wall sleeve.

Horizontal splitters (by others) must be installed whenever there is any space between the wall sleeve and the louver. Seal the ends of the wall opening. Locate splitters between condenser discharge and condenser inlet, and between condenser air inlet and outdoor air inlet. Pitch the splitters toward the louver for water drainage.

Daikin Applied supplied louvers provide proper airflow. Proper unit performance has not been verified with louvers supplied from others.

Grille must be flush with louver to provide proper airflow.

Table 7: Unit & Louver Dimensions with Partial or Full Unit Recess

Unit Size	Unit "A"		Louver "L"	
	in	mm	in	mm
024	86	2184	84	2134
036	98	2489	96	2438
044, 054	110	2794	108	2743

NOTE: "A" is unit length without end panels.

Table 8: Room Projection/End Panel Depth with Partial or Full Unit Recess

Application	B Room Projection of Unit in (mm)	C Amount Unit Recessed Into Wall in (mm)
Full Recess	16% (422)	11% (289)
Recess	19% (498)	8% (213)
	21% (556)	6% (156)
No Recess	28 (711)	0 (0)

Figure 27: Masonry Wall Application with Flush Louver

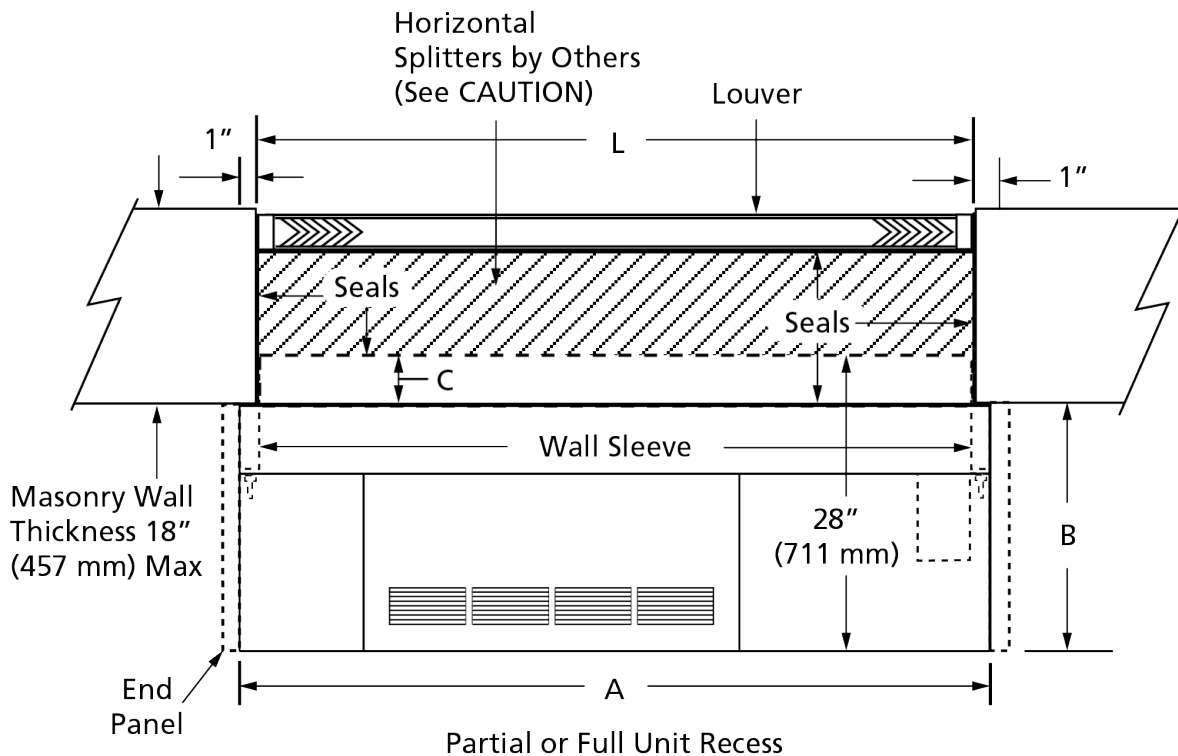
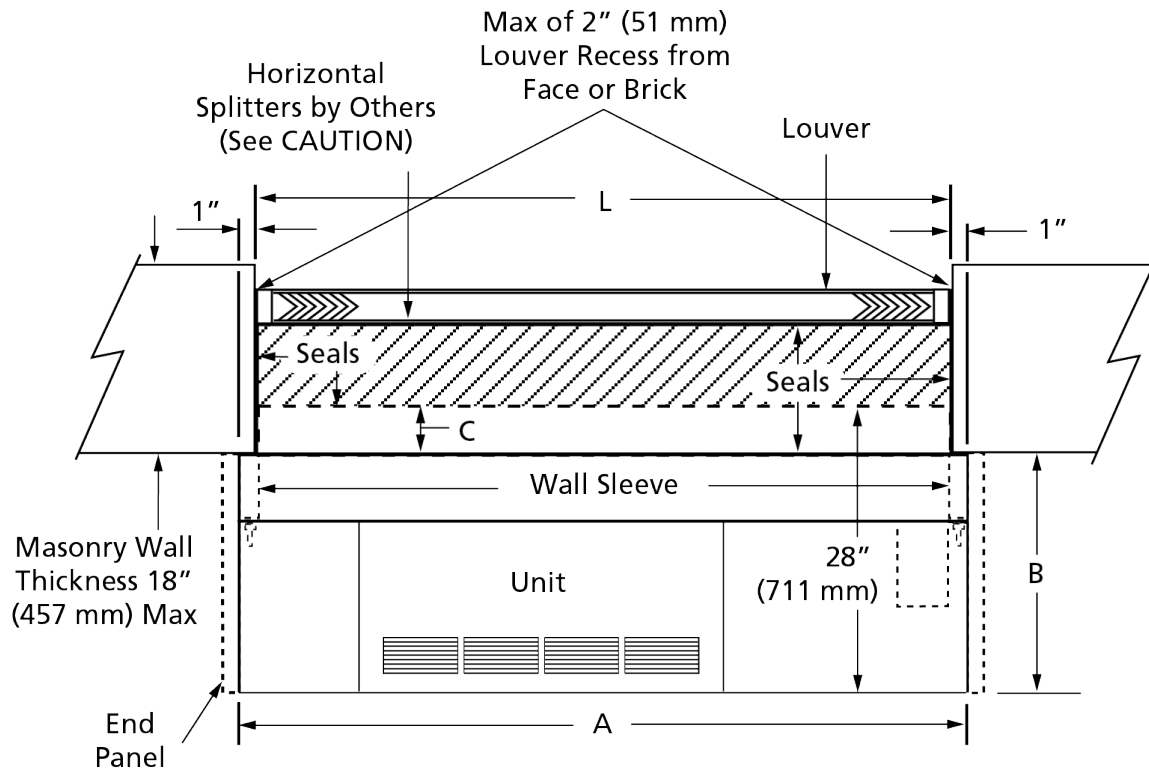


Figure 28: Masonry Wall Application with Recessed Louver



Partial or Full Unit Recess



CAUTION

Maximum of 2" (51 mm) louver recess from face of brick

Louver Installation Methods

Figure 29 through Figure 37 show various methods of installation. Select the appropriate method.

The following is a brief description of several popular methods of installation. Many variations are possible, depending on wall thickness, opening size, method of fastening, etc.

Louvers Without Flanges

Friction Fit Installation

Figure 29 shows a friction fit of the louver where the wall opening is made just large enough for the louver to be held in place by the friction between the wall and the louver. This will require each wall opening be “custom cut” to the intake size, which can be done only after the intake is on site for actual measurements. Recommended wall openings provided in this manual do not apply for this method of installation.



CAUTION

Appropriate fasteners must be used to prevent removal by unauthorized personnel.

Friction Fit Using Shims Installation

In cases where the opening is too large and the louver fits too loosely, friction fit may be obtained by the use of shims to help hold the louver in place. See Figure 30.

Fastens To Wall Sleeve Installation

It may be desired to mount the louver to the wall sleeve so as to allow demounting the louver from the building exterior. See Figure 31.

The louver may be fastened to the wall sleeve using appropriate fasteners on each corner of the wall sleeve where it butts up against the louver. The louver must be at least as long as the wall sleeve to be secured to the sleeve in this fashion. No holes are provided in the louver or in the wall sleeve for this type of mounting; the holes must be drilled in the field. Mounting hardware must also be provided by the installer. The wall sleeve must be properly secured to the wall structure.



CAUTION

INSTALL SO THAT THE EMBOSSEMENTS ARE AT THE BOTTOM OF THE LOUVER AND THE BIRD SCREEN IS ON THE UNIT (ROOM) SIDE (Figure 20 on page 13).

If the wall intake louver extends above, below, or beyond the ends of the wall sleeve, it must be blanked off airtight in these areas only.

THE WALL OPENING SHOULD BE OF SUFFICIENT SIZE TO ALLOW PROPER, YET SNUG, FIT OF THE LOUVER, AND WILL DEPEND ON THE TYPE OF INSTALLATION.

REFER TO APPROVED SUBMITTAL PRINTS FOR RECOMMENDED WALL OPENING SIZE.

If the louver is to be installed in a masonry wall, there should also be a lintel to support the wall above the louver to prevent moisture from seeping into the wall. If it is to be installed in a panel wall, the louver should be placed so that it is as flush as possible with the inside wall.

Figure 29: Friction Fit Louver

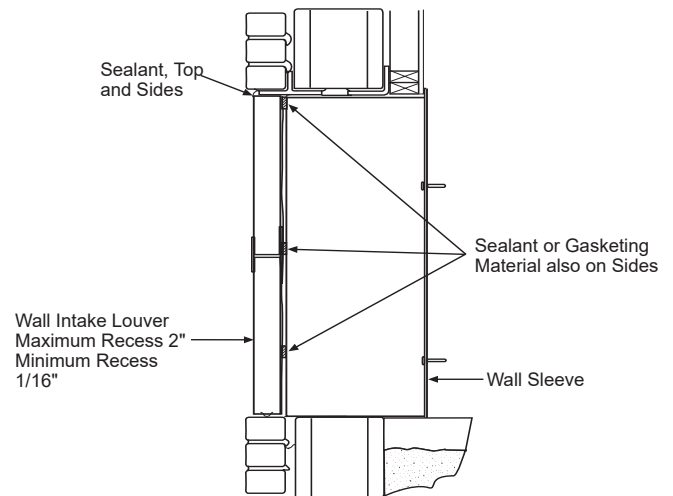


Figure 30: Friction Fit Using Shims

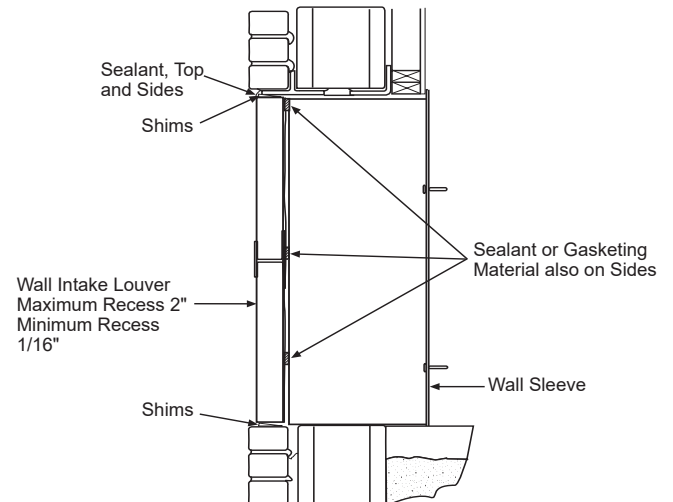
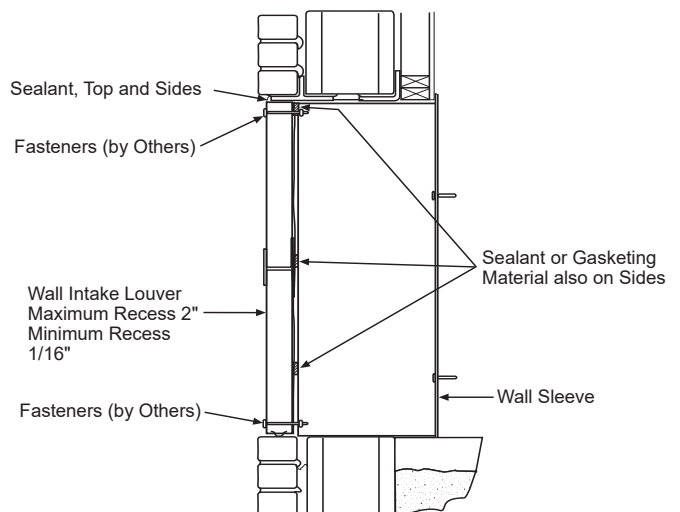


Figure 31: Louver Fastens to Wall Sleeve



Angle Bracket Mounting to Exterior Surface

Figure 32 shows a typical application where an angle bracket is affixed to the edges of the louver and then the entire assembly is mounted from the outside by fastening to the exterior surface using suitable hardware. This figure shows an application where the wall sleeve is fully recessed into the wall and butts up against the louver. However, the same method of installation may be used where only partial or no recess is required and a horizontal air splitter between louver and wall sleeve must be installed.



CAUTION

Do not use mounting angles or strips at the bottom of the intake louver that run across the louver's entire length and plug the weep hole locations. Property damage and poor indoor air quality will result if water cannot drain to the outside from the weep holes.

Appropriate fasteners must be used to prevent removal by unauthorized personnel.

Angle Bracket Mounting to Interior Surface

Figure 33 shows a variation of the installation shown in Figure 32 where the angle brackets are mounted on the inside of the louver and fastened to the wall from the interior of the building. This also shows usage of a horizontal air splitter with a partially recessed wall sleeve. Once the louver has been installed, run a bead of caulk around the outside perimeter of the frame to seal it watertight.



CAUTION

Do not plug the weep holes in the bottom of the louver. Property damage and poor indoor air quality will result if water cannot drain to the outside from the weep holes. Appropriate fasteners must be used to prevent removal by unauthorized personnel.

Panel Wall - Angle Bracket Mounting on Exterior Surface

Figure 34 shows a typical panel wall installation where the panel wall thickness is greater than that of the louver. In this case, it is possible to mount the louver without flange using angle brackets. The louver could be removable from the exterior of the building.

On many panel wall applications, the panel wall manufacturer may accomplish louver mounting by using various aluminum extrusions to "build-in" the louver as a permanent part of the panel wall. All panel wall applications will most likely utilize a full finish collar, meaning no wall sleeve recess into the wall itself. See CAUTIONS above.

Figure 32: Angle Bracket on Louver Mounts to Exterior Surface

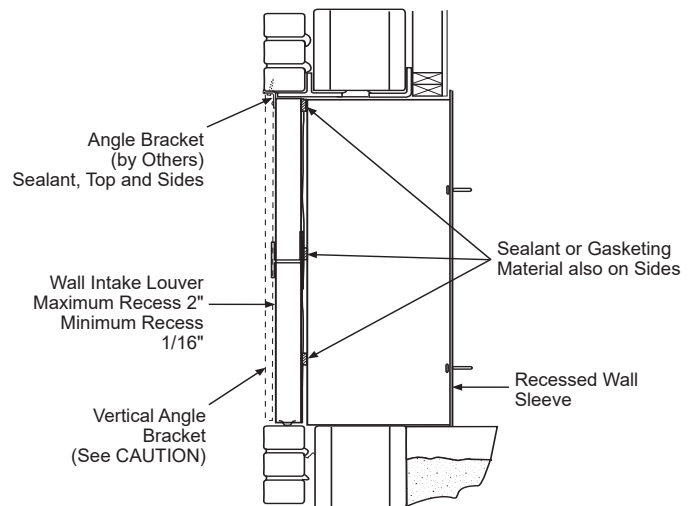


Figure 33: Angle Brackets on Louver Mounts to Interior Surface

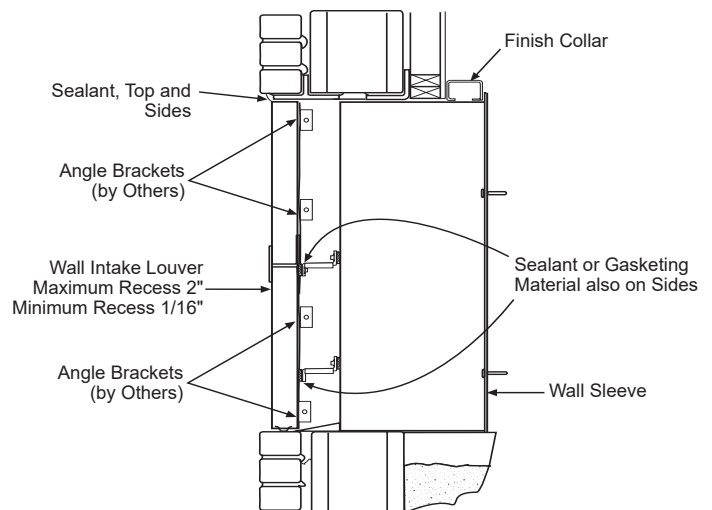
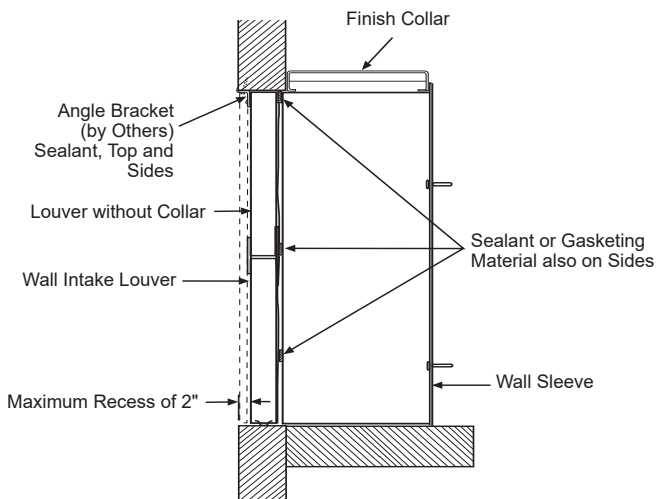


Figure 34: Panel Wall Using Angle Bracket on Exterior Surface



Panel Wall Using Moisture Resistant Material/Sheet Metal Framing

If desired, the louver may be “framed” in moisture resistant material or a moisture resistant material/sheet metal combination and then inserted into the panel wall for final mounting. This installation is desirable when the wall opening is considerably larger than that required by the louver. Provide an air and watertight seal and avoid blocking drainage at the bottom of the louver. After installation, be sure that there are no obstructions (mortar, nails, etc.) on the inside of the louver where it meets the wall sleeve. See [Figure 35](#).



CAUTION

Do not use mounting angles or strips at the bottom of the intake louver that run across the louver's entire length. This will plug the weep hole locations and property damage and poor indoor air quality will result if water cannot drain to the outside from the weep holes.

Appropriate fasteners must be used to prevent removal by unauthorized personnel.

Louvers with Flange

Masonry Installation

If the louver is supplied with a flange (see [Figure 36](#)), follow these steps:

1. A bead of caulk is applied to the inside of the top and side flange that come in contact with the building facade.
2. The louver with flange is placed into the opening and pushed tight against the building.
3. Fasten it to the exterior of the building using appropriate fasteners for the installation.
4. Seal the top and two sides from the inside with waterproof caulk to make it weathertight. Do not seal the bottom flange. To do so may trap water behind the flange. See CAUTION above.

Panel Wall Installation

This installation is typical when the thickness of the panel wall very closely approximates the thickness of the louver itself. Here only mounting straps may be required, running the entire top length and vertical width of the louver. This installation is perhaps the easiest. The louver could be removable from the exterior of the building. See CAUTION above. See [Figure 37](#).

Figure 35: Panel Wall Using Moisture Resistant Material/Sheet Metal Framing

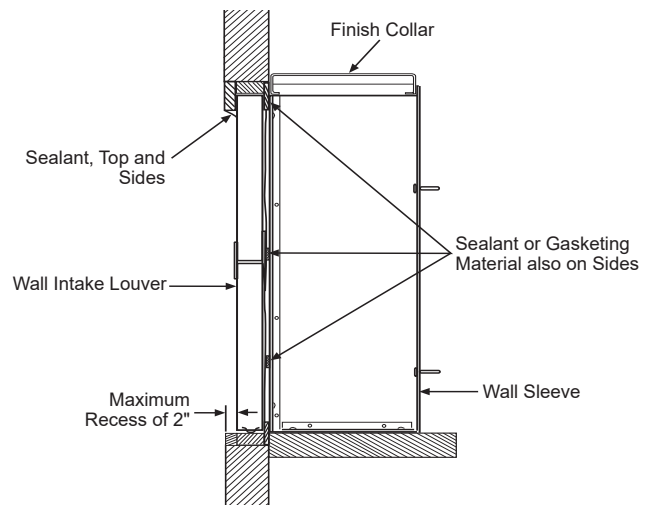


Figure 36: Masonry Wall Using Collar on Exterior Surface

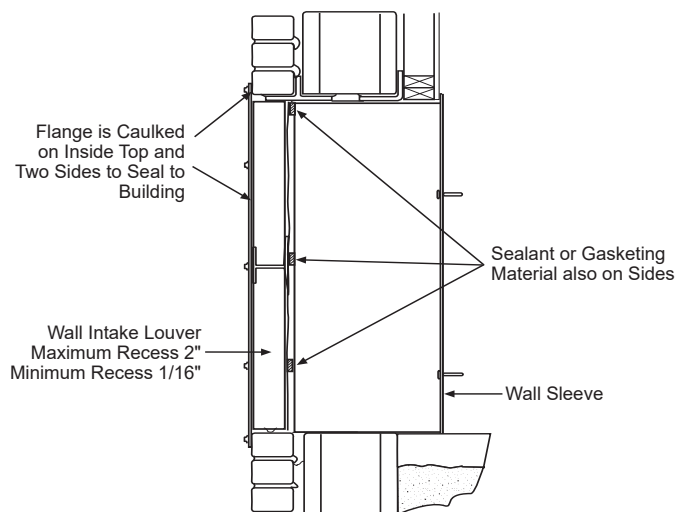
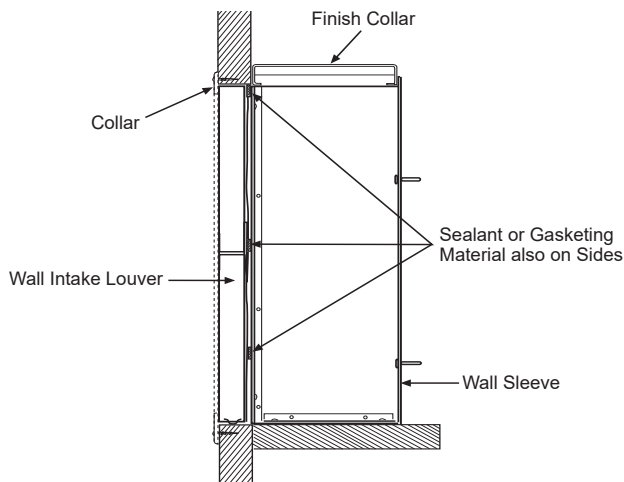
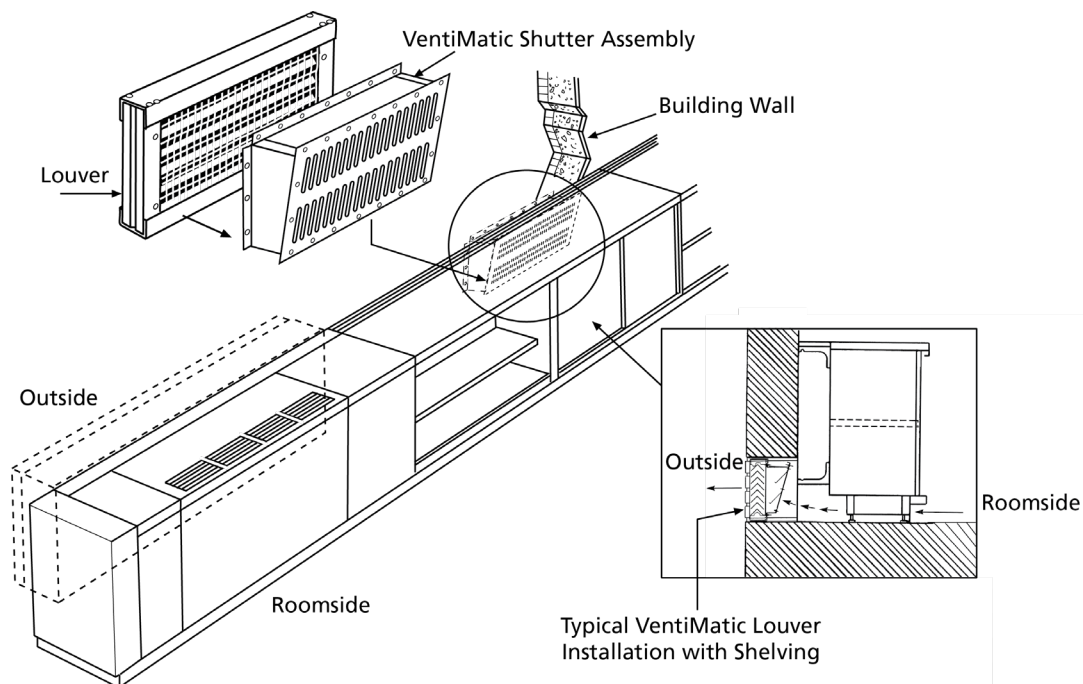


Figure 37: Panel Wall Using Collar on Exterior Surface



Installing the VentiMatic Shutter Assembly

Figure 38: Typical VentiMatic™ Shutter Assembly Installation



VentiMatic™ Shutter Assembly

The Daikin Applied VentiMatic Shutter Assembly is a one-way shutter. It is a continuously variable, gravity-actuated, room exhaust vent that operates in direct response to positive static pressure, opposing any airflow into the room resulting in a slight positive pressure.



CAUTION

For proper operation, the VentiMatic shutter assembly must be mounted on the same wall as the unit ventilator louvers to neutralize wind effect.

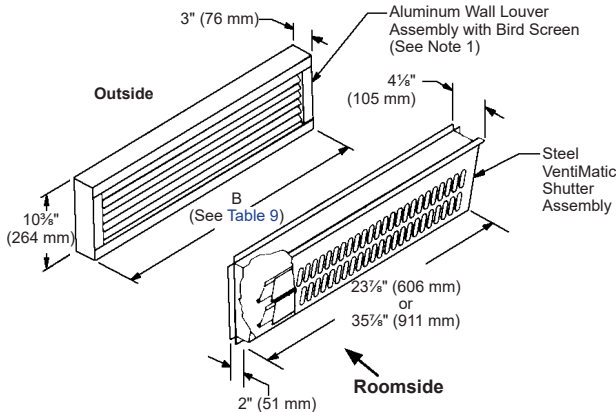
When mounting the VentiMatic Shutter(s) on the wall louver, make sure that all moving parts are unobstructed and placed level and plumb for proper operation. If an optional steel interior wall grille is furnished, install as shown in [Figure 41 on page 24](#).

For large units, two VentiMatic Shutters may be mounted side by side on the same louver ([Figure 40](#)).

Table 9: Recommended Wall Opening for VentiMatic Wall Louvers

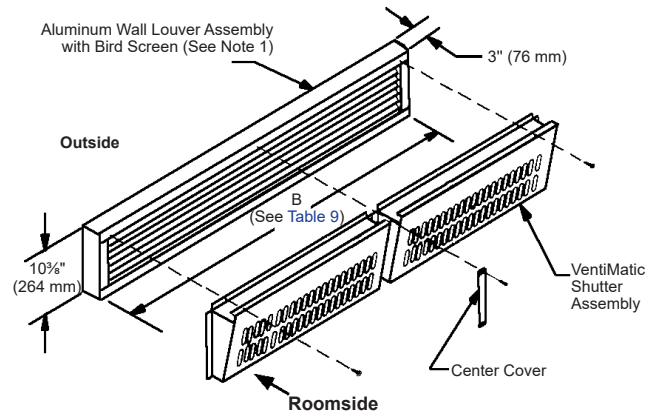
B in (mm)	C in (mm)	Recommended Wall Openings For Wall Louvers		Maximum Number of VentiMatic Shutters Which Can Be Mounted On Standard Louver		VentiMatic Shutter(s) Air Capacity Maximum	
		Length	Height	24" Shutter	36" Shutter	cfm	L/s
24" (610)	27" (659)	24½" (622)	10¼" (267)	1	0	500	236
36" (914)	39" (991)	36½" (927)	10⅝" (267)	0	1	750	354
48" (1219)	51" (1295)	48½" (1232)	10⅞" (267)	2	0	1000	472
60" (1524)	63" (1600)	60½" (1537)	10¾" (267)	1	1	1250	590
72" (1829)	75" (1905)	72½" (1842)	19⅞" (495)	0	2	1500	708

Figure 39: Single VentiMatic Shutter and Wall Louver



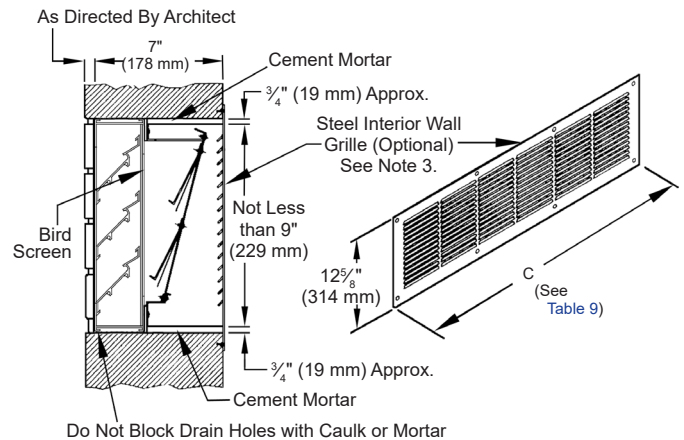
- NOTE 1:** Horizontal blade wall louver shown. Vertical blade wall louver also available.
- NOTE 2:** The optional exterior grille shown mounted on the wall louver.
- NOTE 3:** The optional steel interior wall grille is used to conceal the interior wall opening whenever the VentiMatic shutter is not located behind shelf cabinets. Hardware to mount the interior wall grille is not included.

Figure 40: Two VentiMatic Shutters and Wall Louver



- NOTE 1:** Horizontal blade wall louver shown. Vertical blade wall louver also available.
- NOTE 2:** The optional exterior grille shown mounted on the wall louver.
- NOTE 3:** The optional steel interior wall grille is used to conceal the interior wall opening whenever the VentiMatic shutter is not located behind shelf cabinets. Hardware to mount the interior wall grille is not included.

Figure 41: Louver, VentiMatic Shutter, Interior Wall Grille Details, Dimensions



- NOTE 1:** Horizontal blade wall louver shown. Vertical blade wall louver also available.
- NOTE 2:** The optional exterior grille shown mounted on the wall louver.
- NOTE 3:** The optional steel interior wall grille is used to conceal the interior wall opening whenever the VentiMatic shutter is not located behind shelf cabinets. Hardware to mount the interior wall grille is not included.

Wall Sleeve Details

Figure 42: Wall Sleeve

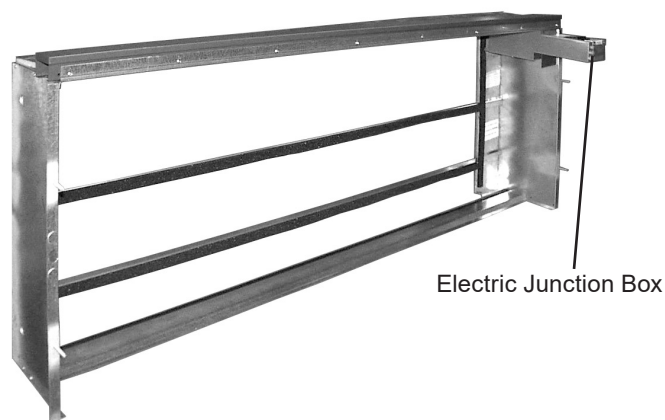


Table 10: Wall Sleeve Dimensions

Unit Size	Overall Length "L" in (mm)	Sleeve Recess Length "Lr" in (mm)
024	86 (2184)	84 (2145)
036	98 (2489)	96 (2450)
044, 054	110 (2794)	108 (2755)

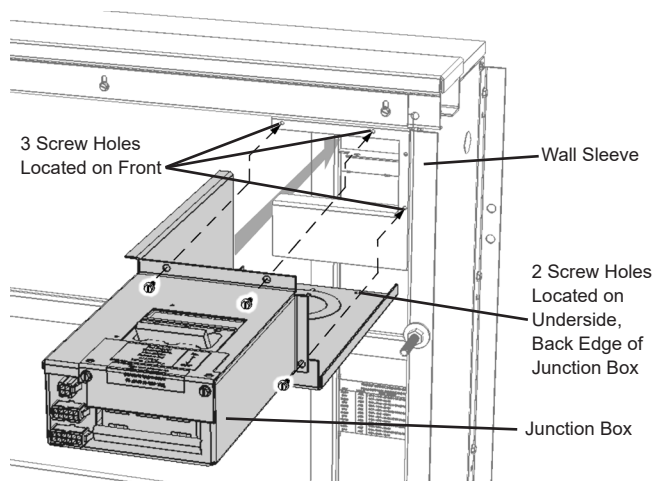
Mount The Junction Box To Wall Sleeve

NOTICE

Electric junction box is strapped to the wall sleeve during shipping and is field mounted.

Mount the junction box to the wall sleeve as shown in Figure 43 with five (5) provided screws. Three (3) screws on the front and two (2) screws on the underside back edge secure the junction box to the wall sleeve.

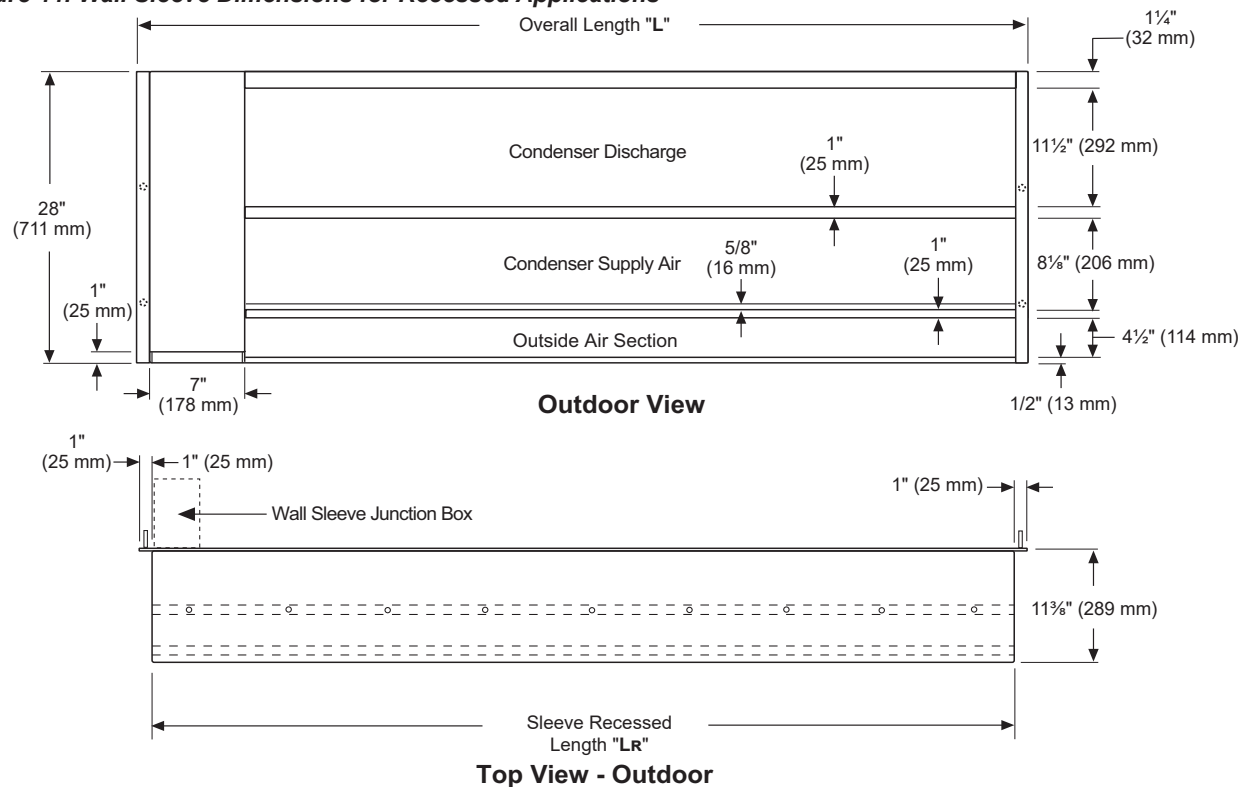
Figure 43: Attach Electric Junction Box to Wall Sleeve



CAUTION

The opening between the wall sleeve and the louver must be completely enclosed by the installer to prevent air and water leaks into the building.

Figure 44: Wall Sleeve Dimensions for Recessed Applications



Wall Sleeve Pre-Installation Checklist

- Wall sleeve section of manual read in its entirety with understanding of the installation procedures
- Louver installed and sealed with bird screen toward wall sleeve with 9" exhaust opening at top
- Structural columns exist to attach wall sleeve
- Sides of rough opening smooth and sealed
- Electrical and control wiring stubbed up
- Top, and bottom of wall envelope smooth and sealed and 90° to interior mounting wall
- Splitters installed and sealed for mate-up to wall sleeve
- Metal flashing in place or sealed sloped mortar bed for drainage from wall sleeve "D" seal channel to bottom of louver
- Correct wall sleeve confirmed
- Wall sleeve assembled



CAUTION

Unit wall sleeve must be anchored to an internal wall column or other suitable support.

The Daikin Applied wall sleeve and louver design is based on a "wet sleeve" concept. In brief, this means the design accommodates the penetration of some moisture into the rear outdoor section of the AZ unit with provisions for containment and

disposal of this moisture to the outdoors (see details in [Figure 6 on page 9](#)). Therefore, proper Louver, Splitter and Wall Sleeve installation is critical.

The wall sleeve must be installed before the AZ self-contained unit ventilator can be placed. The recessed portion of the wall sleeve measures approximately 84", 96" or 108" wide by 28" high and may be recessed into the wall up to 11 3/8" in depth. Consult approved Daikin Applied submittal drawings for the job to determine the proper amount of recess, if any, and recommended wall opening size.

The AZ unit chassis attaches to the wall sleeve threaded studs using 4-nuts and washers ([Figure 45](#)).

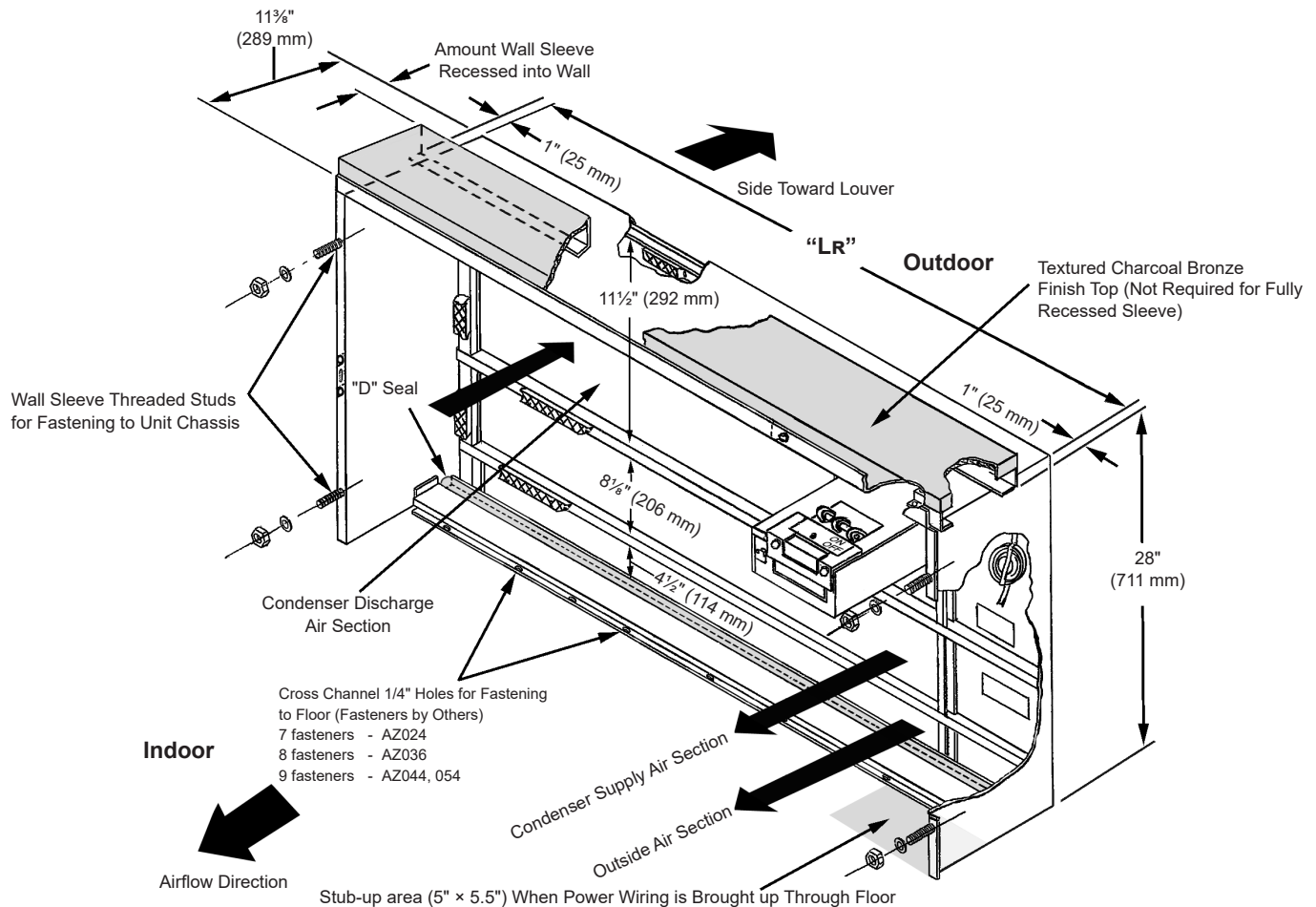
NOTICE

Wall and floor must be at 90° to one another. If not, the floor must be leveled (90°) to wall.

Table 11: Recommended Rough-in Wall Opening

Unit Size	Recommended Rough-in Wall Opening		Sleeve Recess Length "LR" in (mm)
	Length in (mm)	Height in (mm)	
024	84 1/2" (2146)	28 1/2" (724)	84" (2184)
036	96 1/2" (2451)		96" (2489)
044, 054	108 1/2" (2756)		108" (2794)

Figure 45: Wall Sleeve Details (Recessed Type)



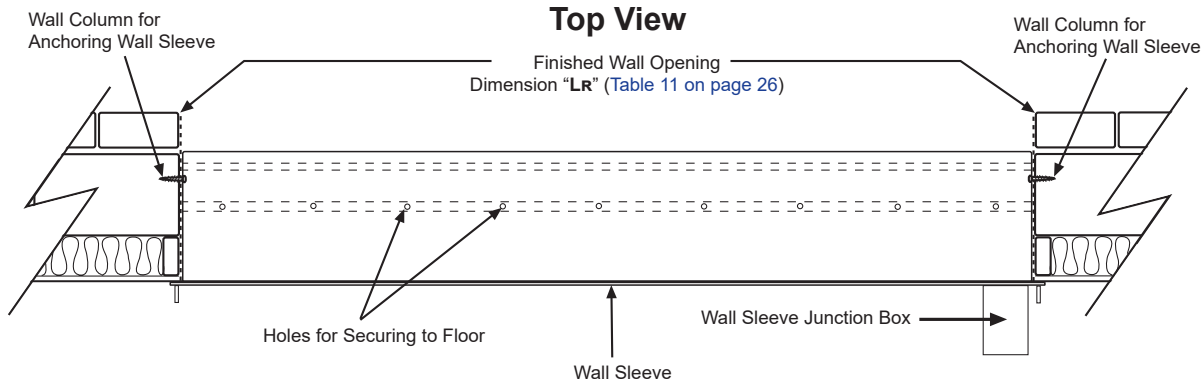
Typical Wall Sleeve Applications

The following is a brief description of three typical methods of installation. Many variations are possible, depending on wall thickness.

Thick Masonry Wall with Full Recess

This example shows the wall sleeve fully recessed into a masonry (thick) wall.

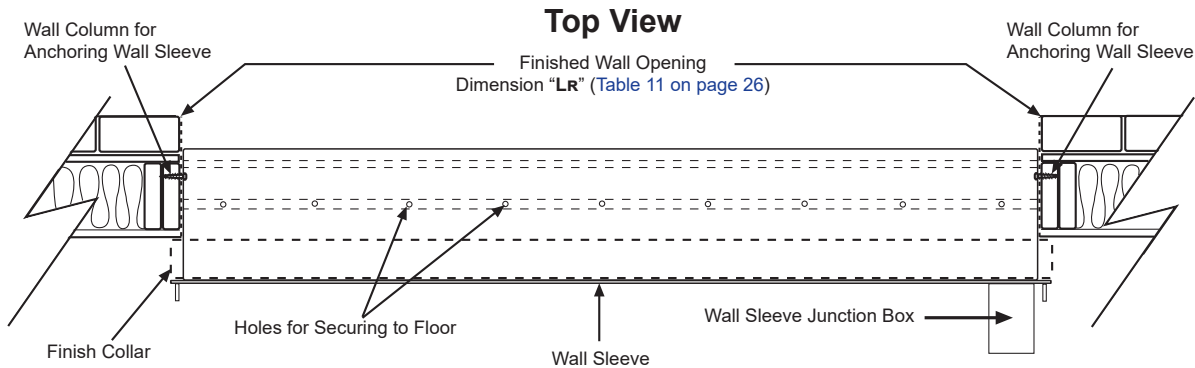
Table 12: Thick Masonry Wall with Full Recess Wall Sleeve



Masonry Wall with Partial Recess

This example shows the wall sleeve partially recessed into a masonry (thick) wall.

Figure 46: Masonry Wall with Partial Recess Wall Sleeve



Panel Wall with No Recess (Full Projection)

This is an example of a panel (thin) wall construction with no recess (full projection). The wall sleeve is secured flush to the wall and floor with the addition of flanges. The wall opening is the same as the wall sleeve recessed length (refer to dimension "Lr" in, Table 11 on page 26).

Figure 47: Panel (Thin) Wall with No Recess (Full Projection) Wall Sleeve

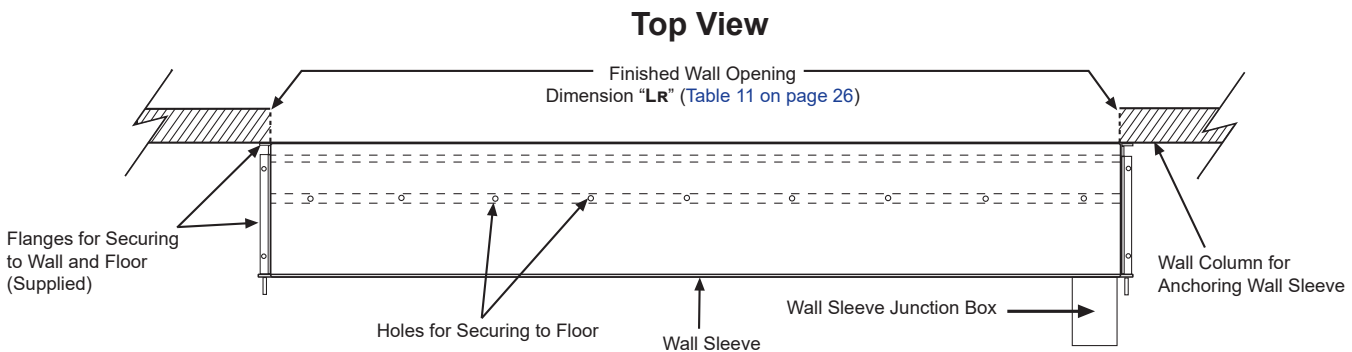


Table 13: Wall Thickness, Unit Projection Into Room

Wall Thickness “W”	Louver	Unit Projection into Room and Wall Sleeve Type			
		28"	21 ⁷ / ₈ "	19 ⁵ / ₈ "	16 ⁵ / ₈ "
		Figure 52	Figure 51	Figure 50	Figure 49
		Splitter Length from Wall Sleeve to Louver “S”			
2½"	2½"	0			
4"	2½"	1½"			
6"	2½"	3½"			
8"	2½"	5½"			
8 ⁵ / ₈ "	2½"	6 ¹ / ₈ "	0"		
10"	2½"	7½"	1 ³ / ₈ "		
10 ⁷ / ₈ "	2½"	8 ³ / ₈ "	2¼"	0"	
12"	2½"	9½"	3 ³ / ₈ "	1 ¹ / ₈ "	
13 ³ / ₈ "	2½"			3"	0"
14"	2½"			3 ¹ / ₈ "	1/8"
16"	2½"				2 ¹ / ₈ "
18"	2½"				4 ¹ / ₈ "
24"	2½"				10 ¹ / ₈ "

NOTE: All dimensions are approximate and subject to change without notice. Actual building dimensions may vary.

General Considerations

The installing contractor shall do the following:

1. Make sure there is a masonry lintel supporting the wall above any masonry opening and vertical wall column on the ends.
2. Frame and seal airtight and watertight all openings between the louver and wall sleeve not enclosed by the wall sleeve.

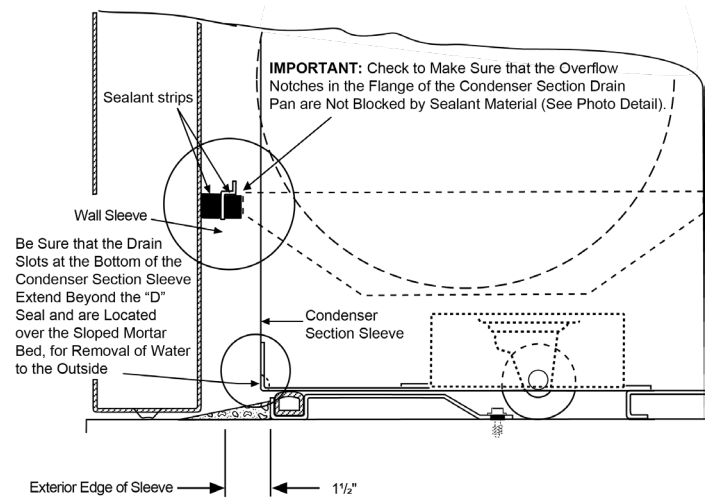
CAUTION

Installation and maintenance are to be performed only by qualified personnel who are familiar with and in compliance with state, local and national codes and regulations, and experienced with this type of equipment. Sharp edges and coil surfaces are potential injury hazards. Avoid contact with them.

NOTICE

Condenser section drain pan drain notches must not be obstructed by splitter or foam seal. Condensate overflow must drain from these notches in order that it can be removed from the drain pan to the outside (Figure 53 & Figure 54).

Figure 53: Wall Sleeve Sealant Material Where It Contacts The Condenser Section Drain Flange



CAUTION

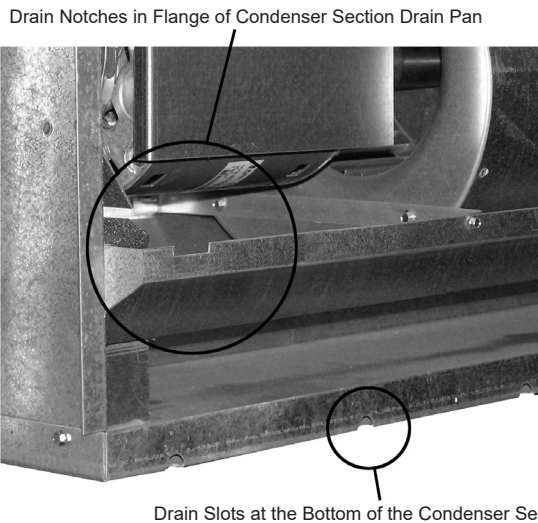
Accumulated moisture can cause property damage if not properly drained. Installing contractor must provide such drainage.

3. For details of required sealing, refer to Figure 56 and Figure 57 for recessed wall sleeve applications and Figure 59 and Figure 60 for nonrecessed wall sleeve applications.
4. Seal watertight both ends and top of wall sleeve to building at rear flange of wall sleeve.
5. Seal watertight the bottom of wall sleeve at rear "D" seal to building and pitch toward louver bottom channel. Also fasten the wall sleeve cross channel to the floor through 1/4" holes with fasteners (by others) (7 fasteners - AZ 024), (8 fasteners - AZ 036), (9 fasteners - AZ 044, 054). Refer to Figure 45 on page 26.
6. The louver must be installed with the drain notches located at the bottom and the bird screen located on the unit side. Openings between louver drain notches must be free of mortar or other foreign material for water removal.

CAUTION

The two (2) overflow drain notches in the flange of the condenser drain pan must not be blocked. Remove any sealant material from wall sleeve bottom splitter rail that may cover these notches.

Figure 54: Condenser Section Drain Pan Notches



NOTE: The condenser section drain pan notches are located approximately 1" from the left end and right end of the condenser drain pan flange.

7. Apply rubber stripping or sealant material (by others) across full length of wall sleeve splitters.
8. If the louver does not butt up against the wall sleeve:
 - a. Fabricate a horizontal air splitter from galvanized steel, or some other suitable weather resistant material. Pitch the splitters toward the louver for water drainage. The width of the air splitters is determined by the width of the wall opening. The depth of the air splitters is determined by the distance between the louver horizontal splitter and the wall sleeve splitter rails.
 - b. Position a 1" diameter drain hole in the horizontal splitter, approximately 6" from each end, next to the louver.



CAUTION

Use appropriate screws to attach to the wall sleeve splitters. Ensure the screws do not restrict proper mate-up or sealing of the unit to the wall sleeve.

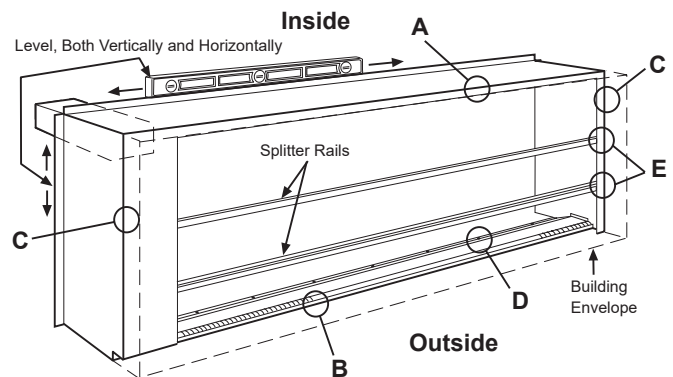
- c. Install the horizontal air splitters by fastening to the wall sleeve splitter rails.
- d. Apply rubber stripping or sealant material (by others) across full length of horizontal air splitters to seal against louver.
9. Permanently seal any remaining air leaks so that, when finished:
 - a. There is an airtight separation between the condenser inlet air, condenser discharge air and the outdoor air inlet.
 - b. There are no air leaks around the perimeter of the wall sleeve where it adjoins the wall.

Recessed Applications

The installing contractor must do the following:

1. Place the wall sleeve into the wall opening and recess it the amount shown on the approved Daikin Applied submittal drawings.
2. Level the wall sleeve horizontally and plumb the wall sleeve vertically.
3. (See Figure 55). Mark top (A), bottom (at "D" seal flange) (B), and sides where wall sleeve extends into the wall opening (C). Mark the wall sleeve cross channel holes (D). Also mark points where wall sleeve splitters meet the building envelope (E).

Figure 55: Mark Edges and Points of Wall Sleeve On Building Envelope



4. Drill with the appropriate masonry bit, holes to receive fasteners (by others), for securing the wall sleeve to the building envelope.
5. Make a galvanized metal flashing or use sealed cement mortar from marked edge of "D" seal on wall sleeve, and pitch toward louver. The mortar or flashing should be the same height as the "D" seal flange.



CAUTION

Sloped mortar bed or metal flashing must not restrict water drainage under louver.

6. Fabricate splitter enclosure and /or splitters to fit space between louver and wall sleeve, at marked reference points (see splitter details).
7. Apply gasketing (sealant material) to splitters and seal each end where splitters contact building envelope. A thin layer of caulk is suggested along the edge of the flashing or sloped mortar bed, where it contacts the "D" seal flange.
8. Position the wall sleeve into the opening, making sure all critical sealing points make contact. Fasten the wall sleeve securely in place using the previously drilled holes, and through the two knockouts provided on each end.
9. Secure the splitters to the wall sleeve and seal each splitter to each wall sleeve splitter rail (Figure 56 and Figure 60).
10. Caulk or seal any space between the wall sleeve and the wall on both the indoor side and the outdoor side (Figure 56 and Figure 60).



CAUTION

Locate drain lip at bottom of vertical louver to allow proper drainage. Bird screen must always be on side toward unit.



CAUTION

Wall sleeve must be anchored to an internal wall column or other suitable support.

Figure 56: Recessed Wall Sleeve – Mounting and Sealing Splitters to Wall Sleeve and Louver

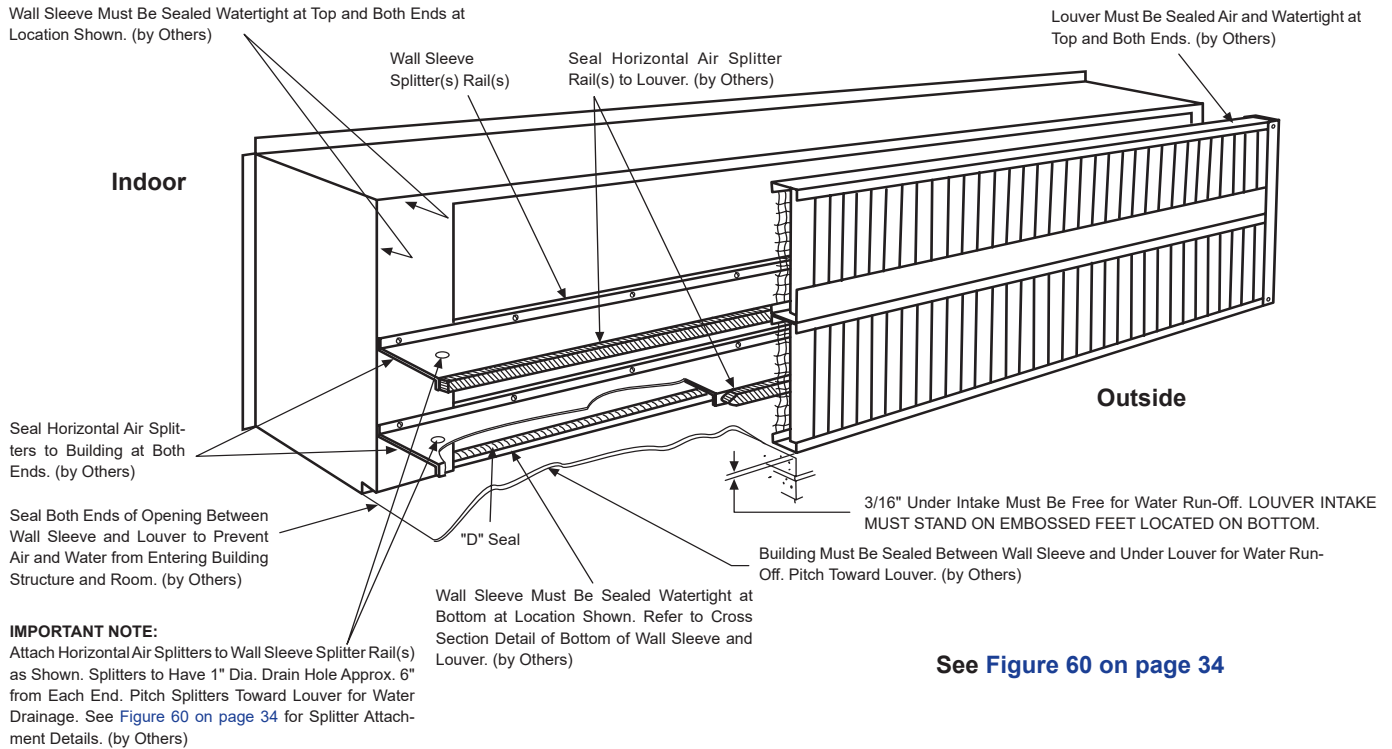
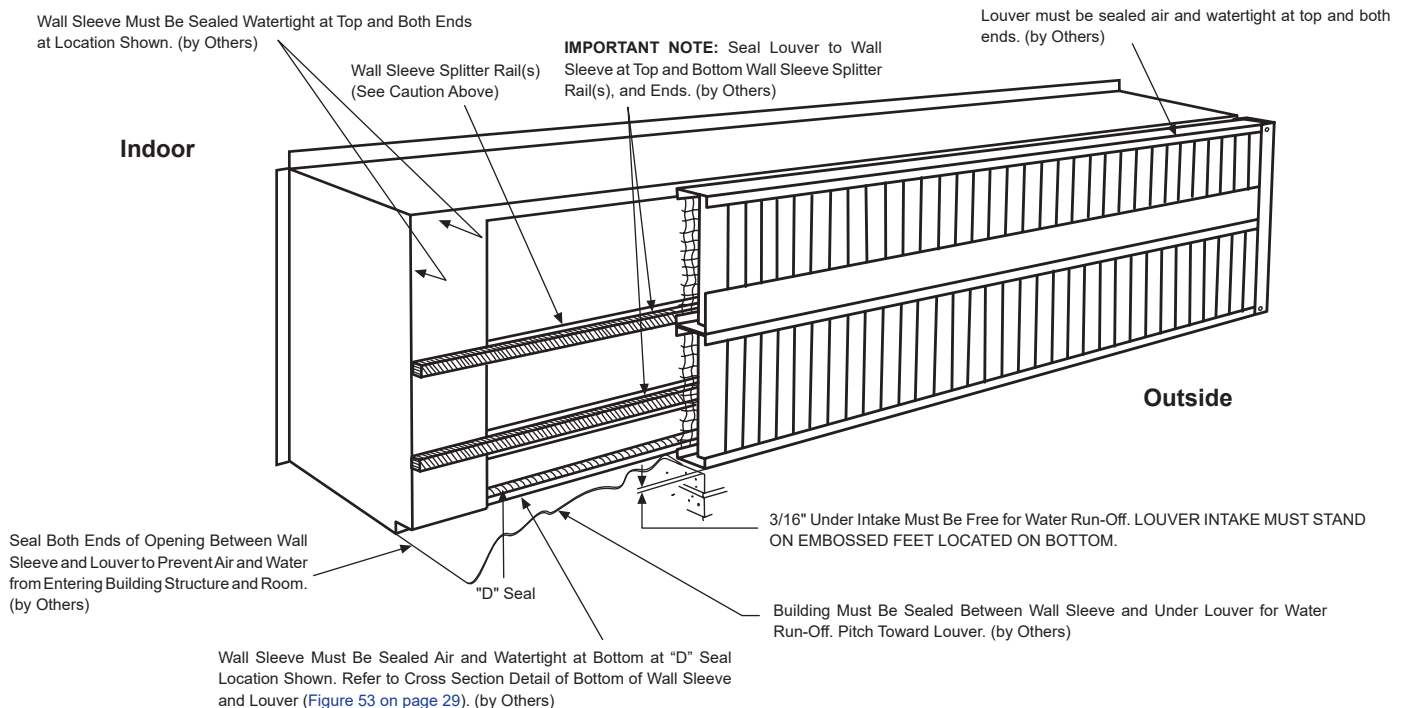


Figure 57: Recessed Wall Sleeve - Direct Sealing Wall Sleeve to Louver



Full Projection Applications

The installing contractor must check the following before proceeding:

- A structural wall column exists in the wall for anchoring the wall sleeve to the building.
- The louver is installed correctly and sealed, with the wall cavity air and water tight.
- Electrical and wall sleeve control wiring is roughed in.
- The wall behind the unit is smooth and plumb.
- The seals on the rear of the wall sleeve take up the small irregularities of normal masonry construction.
- Moisture resistant material strips are installed on irregular walls or walls with mullions in order to provide a flush surface for the wall sleeve to seal against.
- Moldings at the floor/wall line are omitted behind the unit.

The installing contractor must do the following:

1. Apply sealant (by others) to bottom edge at rear of unit top and both end flanges on rear of wall sleeve to provide air and water tight seal to interior wall of building.
2. Level the wall sleeve horizontally, and plumb the wall sleeve vertically.
3. Mark top, bottom (at "D" seal flange), and sides where wall sleeve extends into the wall opening. Mark the two (2) wall sleeve cross channel holes and the two (2) vertical frame holes. Also mark points where the wall sleeve splitter rail(s) meet the building envelope.
4. Drill with the appropriate masonry bit, holes to receive fasteners (by others), for securing the wall sleeve to the building envelope.
5. Make a galvanized metal flashing or use sealed cement mortar from marked edge of "D" seal on wall sleeve, and pitch toward louver.
6. Fabricate splitter enclosure and/or splitters to fit space between louver and wall sleeve, at marked reference points (see splitter details).

7. Apply gasketing (sealant material) to splitters and seal each end where splitters contact building envelope. A thin layer of caulk is required along the edge of the flashing or sloped mortar bed, where it contacts the "D" seal flange to provide an air and water tight seal.
8. Fasten the wall sleeve securely in place by:
 - a. Securing it to the floor through the two (2) 3/8" diameter holes in the turned out bottom flanges of the wall sleeve at each end, and/or;
 - b. Securing it to the wall through the two (2) 3/8" diameter holes in the turned out vertical flanges of the wall sleeve at each end to a wall structural column on each side.
9. Panel wall applications must have:
 - a. The wall opening sleeved to prevent moisture from seeping into the wall interior.
 - b. If the panel wall is less than 2¼" thick, the wall louver must be installed flush to the interior wall and be allowed to extend to the outside as required, and must be air and water tight.
10. Seals on wall sleeve must be compressed to provide a watertight seal after installation is complete.
11. Secure the splitters to the wall sleeve and seal each splitter to each wall sleeve splitter rail (see [Figure 59](#) and [Figure 60](#) on page 34).



CAUTION

Leakage of outdoor air wastes energy, causes drafts and erratic unit ventilator operation. These passages are also a potential pathway for water. Provide a sealing surface at the floor line. Install the wall sleeve in a wall made of noncombustible material, and on a floor made of noncombustible material. Floor must be level, unbroken and structurally strong to support the unit.



CAUTION

Wall sleeve must be anchored to an internal wall column or other suitable support.

Figure 58: Sealing Full Projection Wall Sleeve to Louver Intake Without Horizontal Air Splitters

Apply Sealant (by Others) to Bottom Edge of Unit (Not Shown) and to Top Flange and Both End Flanges of Wall Sleeve (as Shown.) This Must Provide a Watertight Seal to the Wall of the Building. (by Others)

Louver Must Be Sealed Watertight at Top and Both Ends. (by Others)

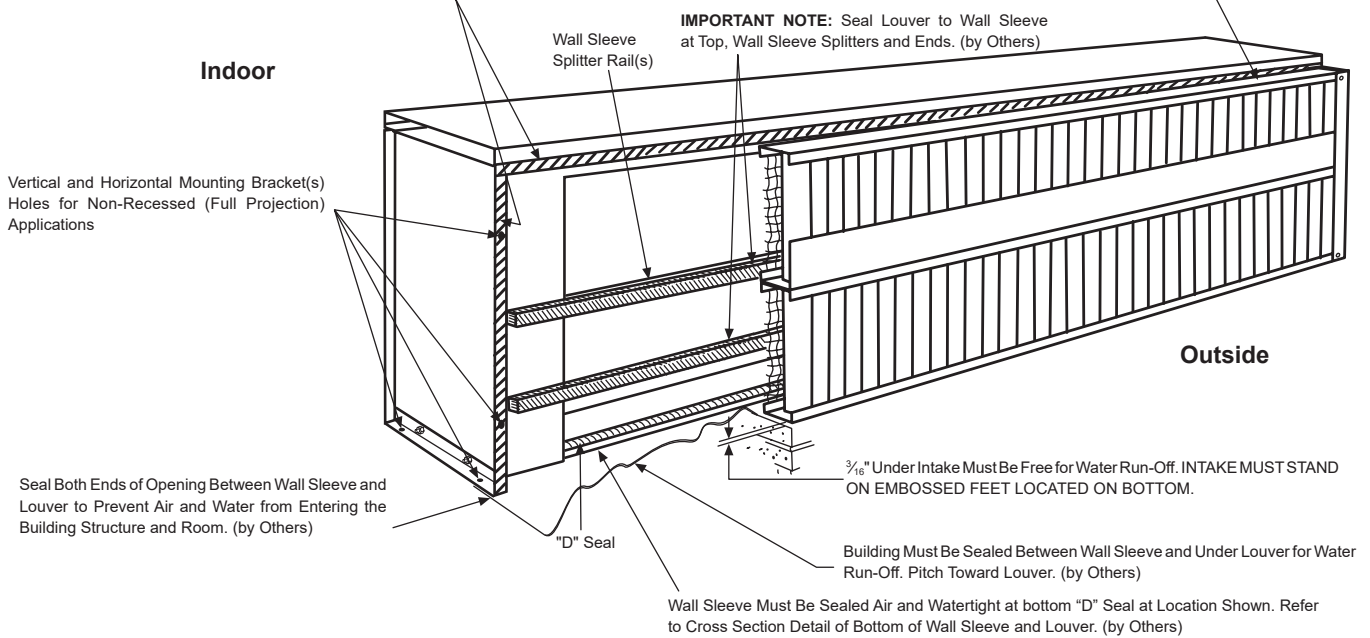
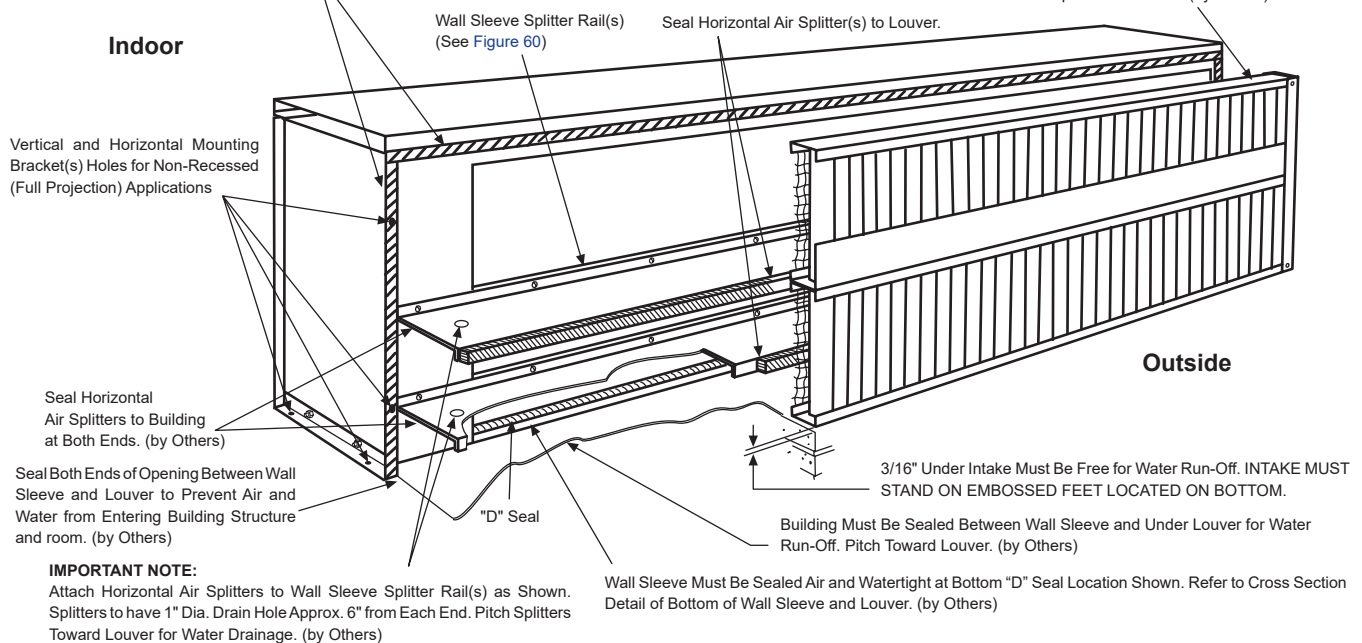


Figure 59: Sealing Full Projection Wall Sleeve and Horizontal Air Splitters

Apply Sealant (by Others) to Bottom Edge of Unit (Not Shown) and to Top Flange and Both End Flanges of Wall Sleeve (as Shown.) This Must Provide a Watertight Seal to the Wall of the Building. (by Others)

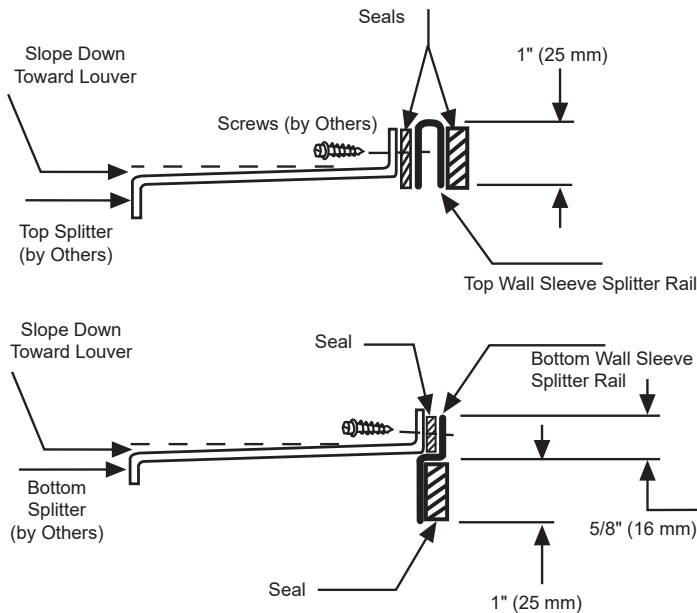
Louver Must Be Sealed Air and Watertight at Top and Both Ends. (by Others)



CAUTION

Locate drain lip at bottom of vertical louver to allow proper drainage. Bird screen must always be on side toward unit.

Figure 60: Attaching Splitters to Wall Sleeve Splitter Rails and Seals



Typical Field Assembled Cross-Over Piping Considerations

Wall sleeves used for unit projections of $21\frac{1}{8}$ " and 28" into the room can accommodate field hydronic cross-over piping. $1\frac{3}{8}$ " O.D. maximum piping with insulation resulting in $1\frac{7}{8}$ " total can be installed: (Figure 61) through the wall sleeve finish collar top, or (Figure 62) enclosed in wall cavity. Pipes must be well insulated against freezing.

Figure 61: Cross-Over Piping in Wall Sleeve Top (by Others)

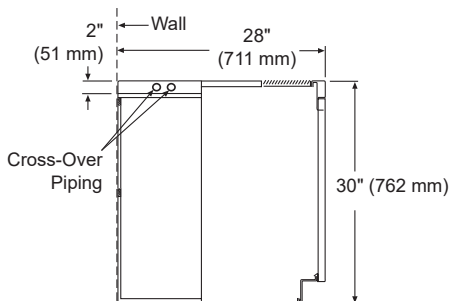
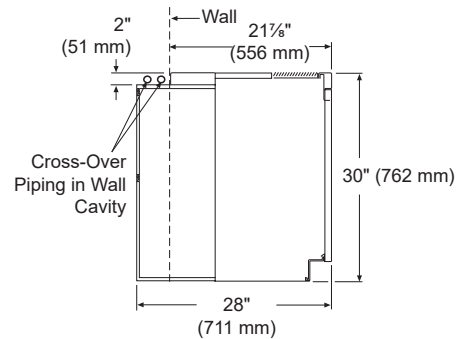


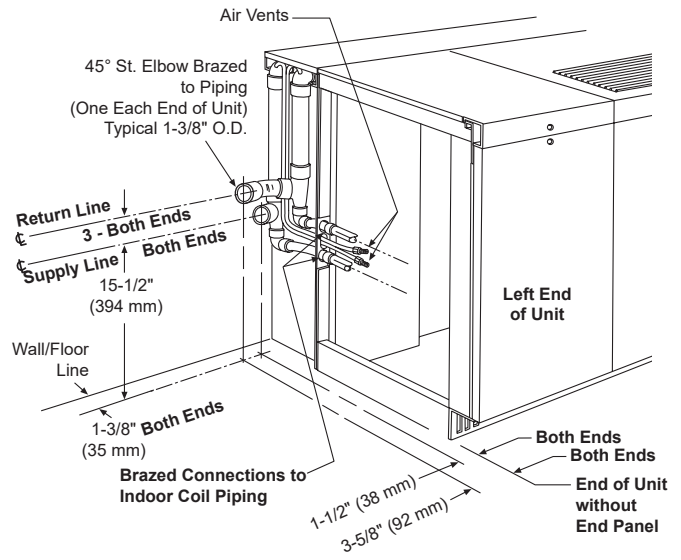
Figure 62: Cross-Over Piping in Wall Cavity (by Others)



WARNING

Insulate cross-over piping to help protect against freezing and sweating.

Figure 63: Typical Cross-Over Piping Locations Through Unit Wall Sleeve Top



Wall Sleeve Electrical Connections

Refer to the wiring diagram furnished with the unit to determine electrical connections required.



CAUTION

Use copper conductors only. Aluminum conductors can cause equipment failure and overheating hazards. All wiring in right hand compartment must be class 1.



CAUTION

All field wiring must be in accordance with the National Electric Code and applicable local codes.

Refer to [Figure 66 & Figure 67](#) on page 36 for stub-up locations. Refer to [“Unit Electrical and Control Connections”](#) on page 60 for main power connections and field wired communication module, and [“MicroTech Wall Mounted Sensors”](#) on page 67 for remote wall mounted sensor controls, if any.

Check wall sleeve nameplate to verify it is the correct voltage and amperage for the AZ model to be installed.

Whenever the electric stub-up is brought in through the floor within the confines of the wall sleeve and any portion of the wall sleeve is recessed into the wall, the watertight conduit must be flush with the floor to permit installation of the wall sleeve. Sufficient space must be left around the conduit to permit the attachment of continuing watertight conduit after the wall sleeve is installed. For concrete slabs, it is recommended that this be accomplished either by sleeving the conduit or by recessing a watertight junction box into the slab.

⚠ DANGER

Disconnect all electrical power before servicing unit to prevent injury or death due to electrical shock.

Procedure – Main Power Connections

The main steps to wiring the wall sleeve are as follows:

1. Confirm that the main power to the wall sleeve wires are de-energized and tagged-out.
2. Remove top cover plate and protective plate covering the terminal lugs on the wall sleeve junction box (Figure 64).
3. Bring the main power through the waterproof conduit to the junction box on the wall sleeve, to the terminal lugs on the upstream side of SW1-Main Power non-fused "ON-OFF" switch. See Figure 65 for terminal lug locations and phase connections. Insert main power wires into the terminal lugs (A, B, C) and tighten securely. Power wiring must be hooked up with proper phasing. Electrical (3) phasing must be A, B, and C for electrical phase 1, 2, and 3 (A = L1, B = L2, C = L3). Single phase power wiring must be A and C. Check supply power with a phase meter to match the unit phase wiring.

⚠ CAUTION

AZ unit compressors are single-direction rotation compressors and can be damaged if rotated in the wrong direction. For this reason, proper phasing of electrical power is important. Running the compressor backward will damage the compressor and void the warranty.

Figure 64: Wall Sleeve Junction Box Cover Plates

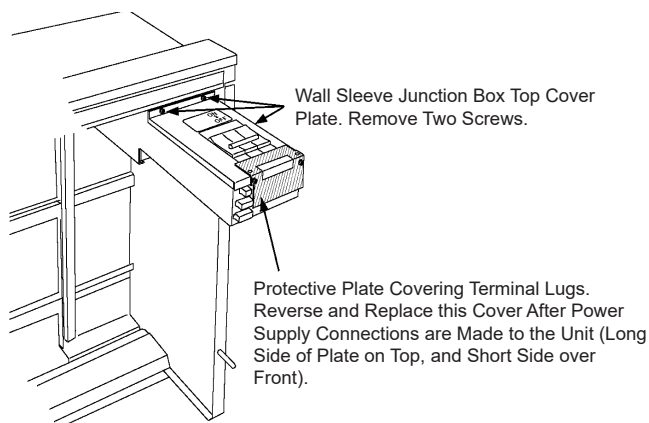
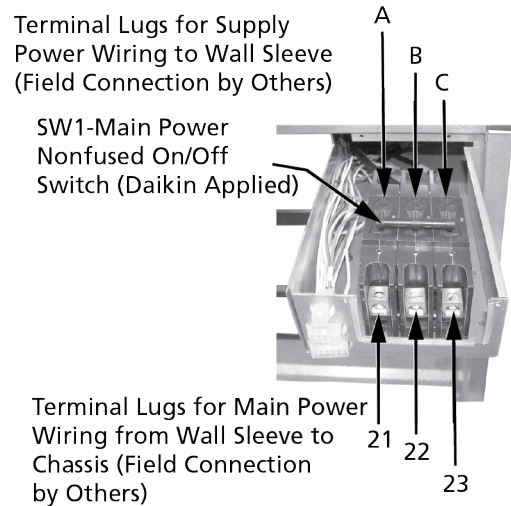


Figure 65: Detail of Sw1-Main Power Connections



NOTE: B and 22 not used on single phase.

⚠ CAUTION

Whenever the electric stub-up is brought in through the floor within the confines of the wall sleeve, and any portion of the wall sleeve is recessed into the wall, the conduit must be flush with the floor to permit installation of the wall sleeve. Sufficient space must be left around the watertight conduit to permit the attachment of continuing conduit after the wall sleeve is installed. For concrete slabs, this should be accomplished either by sleeving the watertight conduit or by recessing a watertight junction box into the slab.

4. Bring the control wiring (optional remote wall sensor, optional building automation control wiring to the optional communication module, optional communications for other external inputs/outputs) through the waterproof conduit to the junction box on the wall sleeve, to the appropriate capped wires within the wall sleeve junction box.
5. Connect remote wall sensors and external input/output devices to the appropriate wires using the existing wire caps. Verify that the wires are securely fastened within the wire caps. Wiring diagrams for doing so are provided in Figure 68 and Figure 69.
6. Reinstall the top cover plate and protective plate covering the terminal lugs of the wall sleeve junction box.

Wall Sleeve Electrical Stub-up Details

Figure 66: Wall Sleeve with Electric Stub-Up From Bottom

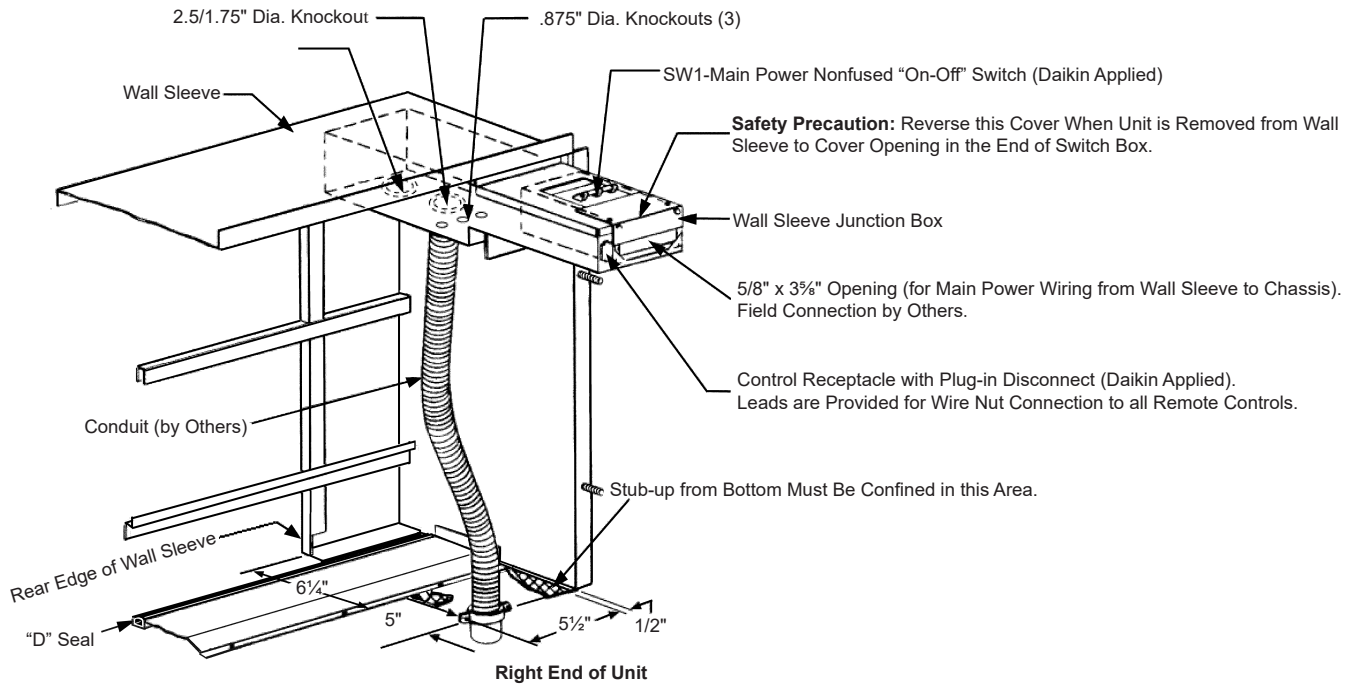
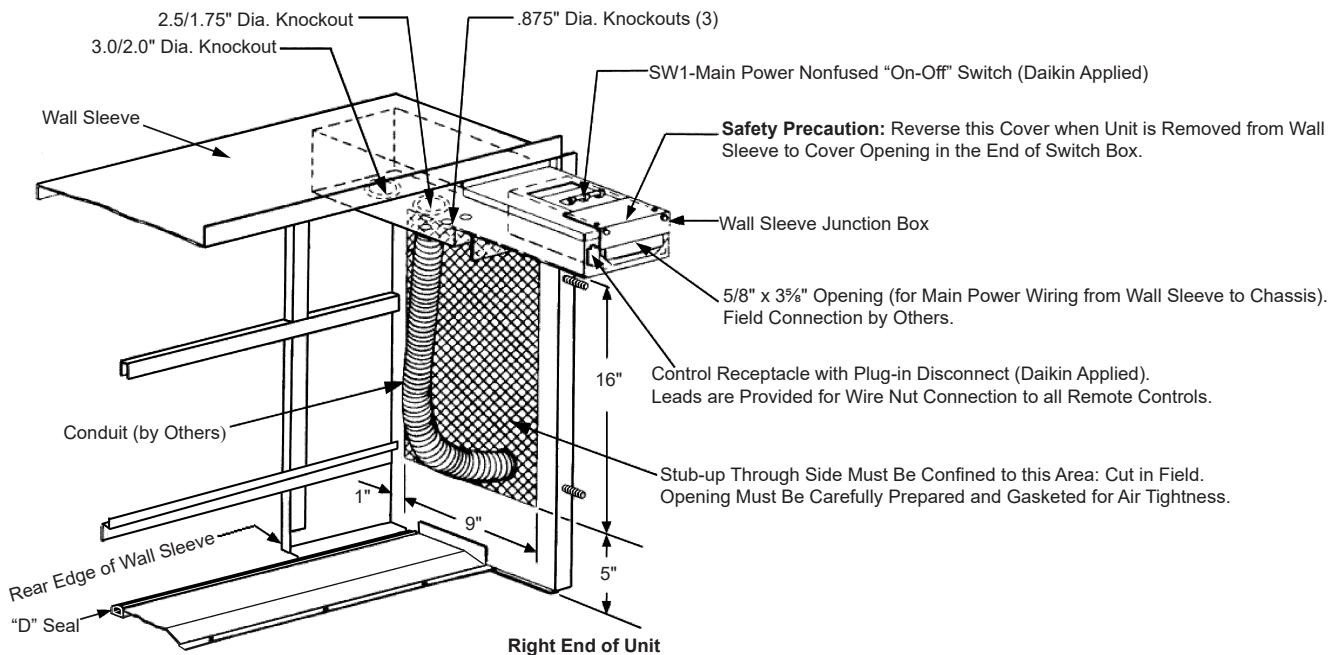


Figure 67: Wall Sleeve with Electric Stub-Up From Side



DANGER

Disconnect all electrical power before servicing unit to prevent injury or death due to electrical shock.

CAUTION

AZ unit compressors are single-direction rotation compressors and can be damaged if rotated in the wrong direction. For this reason, proper phasing of electrical power is important.

Unit Connection Procedure to Wall Sleeve

Before installing the unit ventilator into the wall sleeve confirm that power to the wall sleeve is de-energized and tagged out.

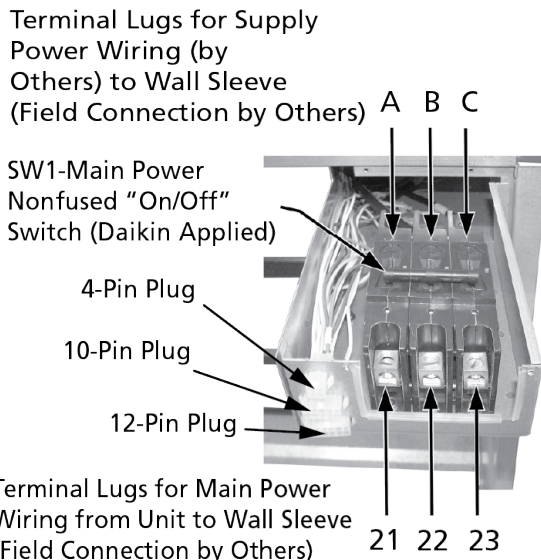
After the unit ventilator has been installed into the wall sleeve, do the following:

1. Confirm that power to the wall sleeve is de-energized and locked and tagged-out.
2. Plug in the unit control wiring male plug(s) into the appropriate wall sleeve female plug(s) (Figure 68).
 - 4-pin (for MicroTech and Electromechanical).
 - 10-pin (MicroTech only).
 - 12-pin (MicroTech only).
3. Remove the wall sleeve junction box terminal lugs cover plate.
4. Insert the unit chassis main power wires (21, 22, and 23) into the wall sleeve disconnect switch terminal lugs. Tighten the terminal lugs securely.
5. Reinstall the wall sleeve terminal lugs cover plate over the main power wires with the label reading correctly, (long edge of plate on top and short edge over front).
6. Proceed to "Unit Electrical and Control Connections" on page 60 to complete electrical procedure.

NOTICE

For electromechanical, use 4-pin plug only. The 10-pin and 12-pin plugs are not used for electromechanical. Control connections for electromechanical are made to the terminal block in the left end compartment.

Figure 68: Wall Sleeve Junction Box Details For MicroTech

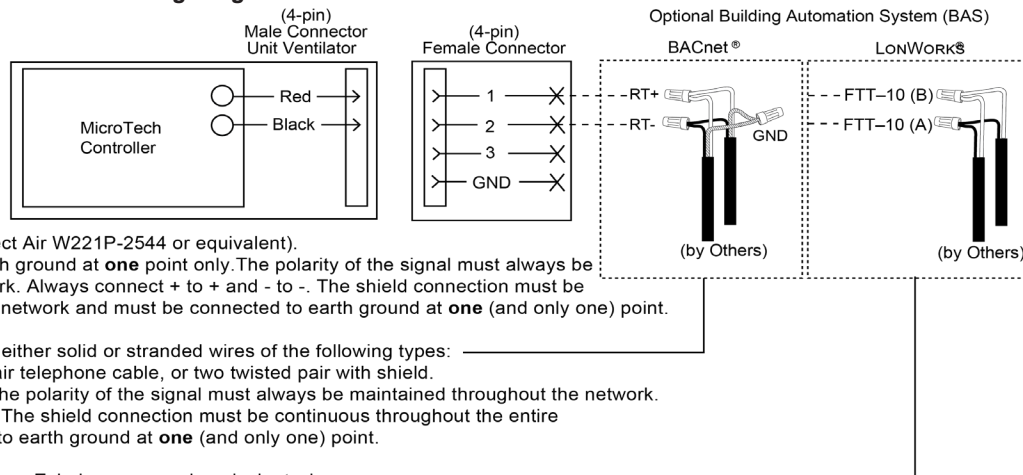


NOTE: B and 22 not used on single phase.

Table 14: Wall Sleeve Junction Box Wiring Legend

Legend			
	Plug In		Comp Tie Point
	Splice		Optional Wiring
	Tap Conn.		Wired by Others
	Term Conn.		Factory Wired
	Capped Wire		Ground
			External Device by Others

Figure 69: 4-Pin Plug MicroTech Control Wiring Diagram



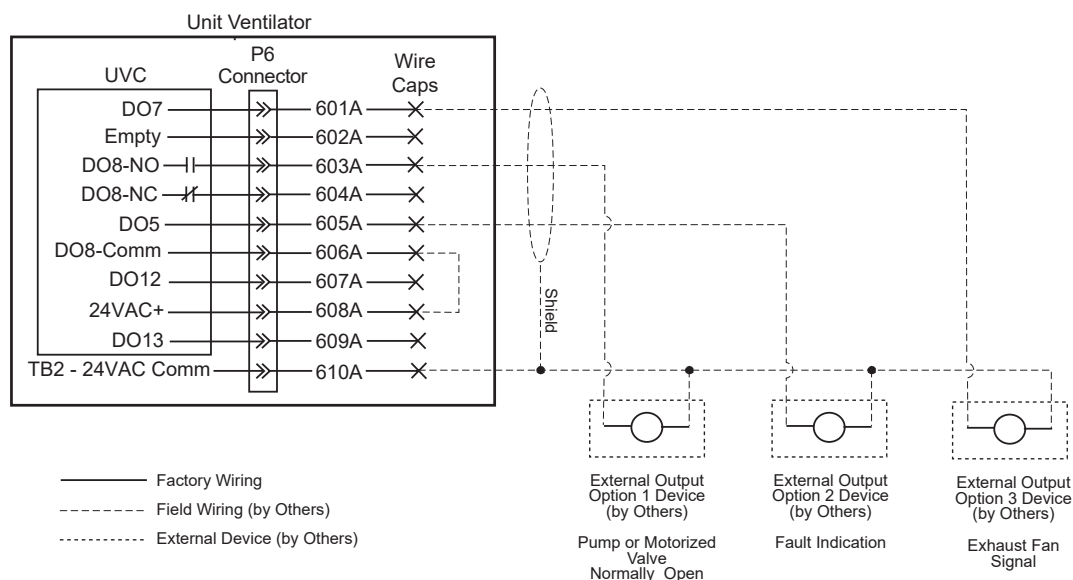
Wiring:

Use twisted shielded pair (Connect Air W221P-2544 or equivalent). Daisy-chain and tie shield to earth ground at **one** point only. The polarity of the signal must always be maintained throughout the network. Always connect + to + and - to -. The shield connection must be continuous throughout the entire network and must be connected to earth ground at **one** (and only one) point.

The BACnet MS/TP bus can use either solid or stranded wires of the following types: 3-wire twisted cable, 2 twisted-pair telephone cable, or two twisted pair with shield. The wiring is polarity sensitive. The polarity of the signal must always be maintained throughout the network. Always connect + to + and - to -. The shield connection must be continuous throughout the entire network and must be connected to earth ground at **one** (and only one) point.

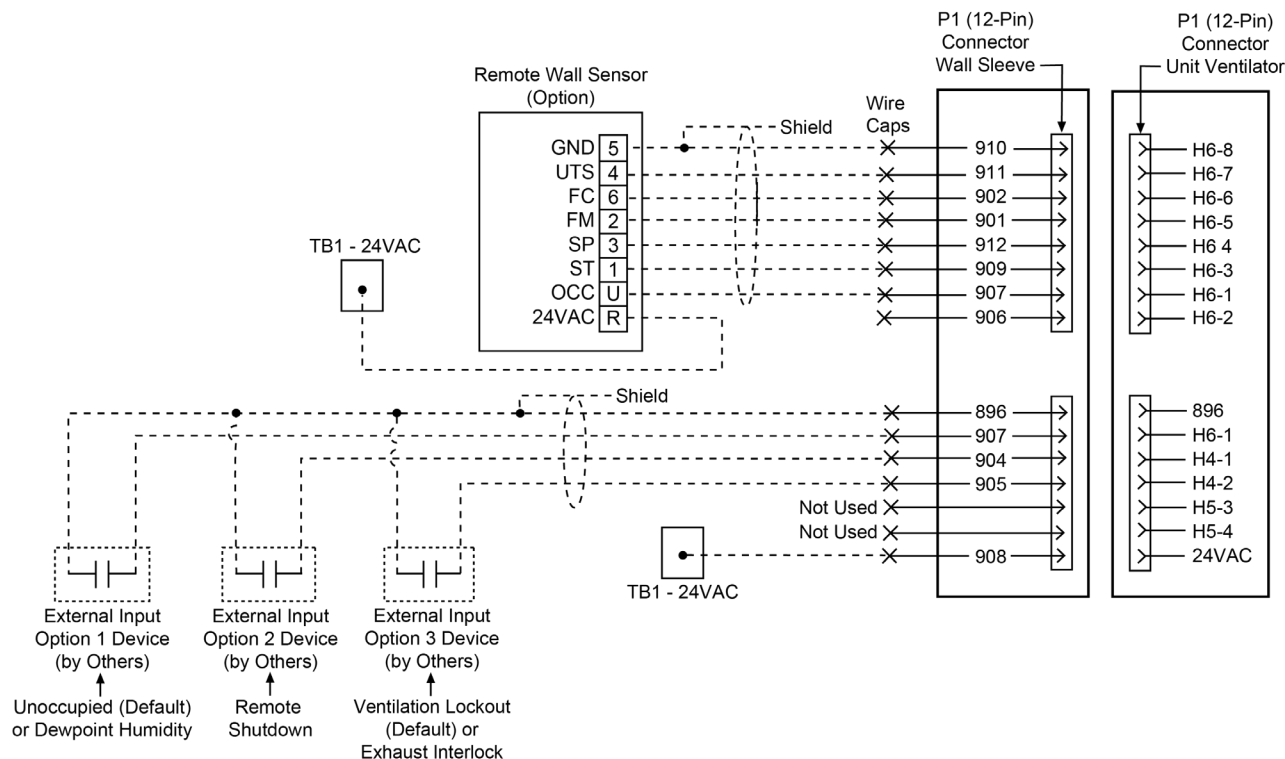
Use Belden 8471, NEMA Level 4, or Echelon-approved equivalent wire. Since the LonWorks communication wiring is polarity insensitive, no polarity must be observed when making connections via the unshielded twisted-pair wiring.

Figure 70: 10-Pin Plug MicroTech Wiring Diagram



NOTE: Not all external input options are available for all models.

Figure 71: 12-Pin Plug MicroTech Control Wiring Diagram



NOTE: Not all external input options are available for all models.

Before Moving Unit Up to Wall Opening Checklist

- Unit is correct for the location
- Unit installation section of manual was read in its entirety with understanding of the installation procedures of the wall sleeve and air intake louver in accordance with the instructions
- For full projection applications, the field applied pressure adhesive gasketing has been inspected and forms an unbroken and tight seal to prevent air and water leaks
- Room air and condenser fan bearings are secure and oiled
- Room air and outdoor condenser fan shaft coupling set screws are tightened securely to both motor shaft and fan shaft
- Room air and condenser fans rotate freely and quietly
- Fan wheel set screws are tight
- Construction debris inside unit, in the area of the wall sleeve, the entire surface of the sealed, sloped mortar bed, and the drainage space at the bottom of the outdoor air louver has been cleaned up
- Adequate access space for maintenance, service and unit removal has been provided
- Wall sleeve is properly sealed air and watertight
- Power to wall sleeve is correctly hooked up and control wiring if any is hooked up
- Wall and floor are 90° to one another. If not, floor needs to be leveled (90°) to wall
- Unit power supply is correct and verified by unit data plate

NOTICE

Directions given in this bulletin for right and left sides assume a position facing the indoor side of the unit ventilator.

Position the Unit Ventilator

Move the unit ventilator to the correct location. See [Table 2](#) on [page 7](#) for approximate shipping weights.

If the unit packaging has already been removed, carefully remove unit ventilator from wood skid ([Figure 72](#)). Be sure to properly dispose of the skid in accordance with local recycling rules and guidelines.

Lower crated unit from dolly (if used), but DO NOT DROP. Remove external carton by lifting off, and SAVE THIS CARTON.

DANGER

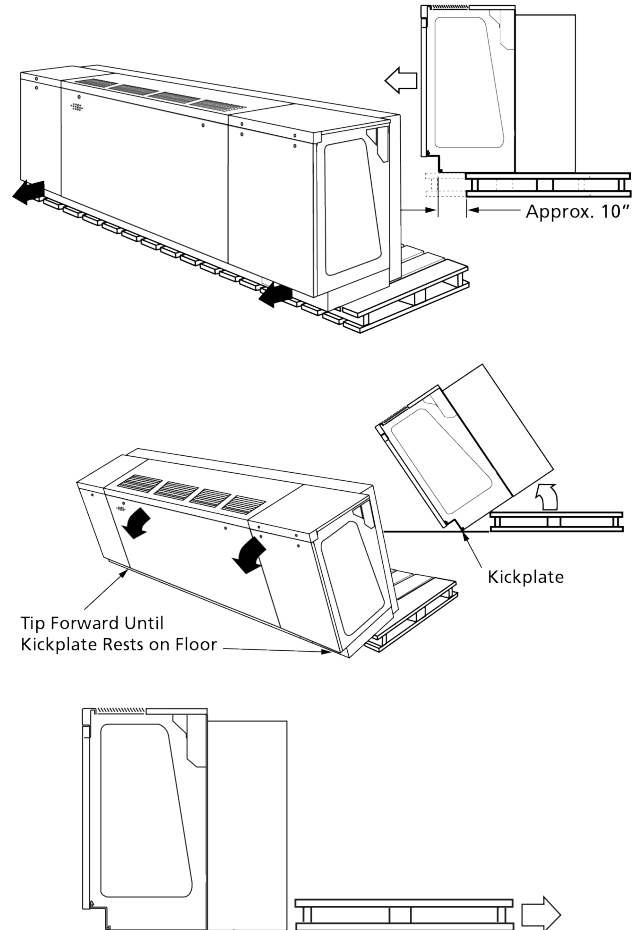
Hold down clamps must be on unit when moved. If unit shifts or slides off skid, it can be damaged or cause personal injury.

Removing Unit from the Skid

1. Remove fasteners at each end which hold the unit to the skid and carefully slide the front of the unit off the front of the skid.
2. While supporting unit from the front, slowly tip unit forward until the bottom of the slotted front kickplate is resting on the floor.

3. Lift rear of unit off of the skid by tipping unit forward while supporting the unit from the front, until it is possible to slide skid out from under the unit. GENTLY LOWER the rear of the unit to the floor. (DO NOT DROP).

Figure 72: Removing Unit From Skid



Before Sliding the Unit into Place

Sliding of this unit to the wall can be made easier with the assistance of Caster Kit P/N 105629001 ([Figure 73](#) and [Figure 74](#)). A piece of cardboard placed under the unit will make this job easier and reduce marring the floor. (Do not leave cardboard under unit after installation.)

Be certain that the field-supplied electrical connections are in place, de-energized and in accordance with the plans.

DANGER

Disconnect all electrical power before installing the unit to prevent injury or death due to electrical shock. Ensure the wall sleeve junction box protective cover plate is installed.

Installing

If the unit was ordered with the optional caster wheels, utilize these casters to help move the unit into position. The outdoor section comes with two swivel casters. Casters are installed as follows:

1. Remove the left and right front access panels.
2. With the left side (one-wheeled) caster, ensure the caster is fully up (turn bolt clockwise to raise, counterclockwise to lower).
3. Locate the slots and bolt location in the left end compartment.
4. Insert the tines of the caster channel into the slots.
5. Securely bolt the front to the unit front rail.
6. Repeat for the right side (two-wheeled) caster.
7. Slowly engage the casters by lowering the bolt. Make all caster adjustments equally before raising the unit.
8. When full engaged, the unit will roll forward into the wall sleeve. When installed, reverse the procedure and remove the caster kit. Save the caster kit for future unit servicing or replacement.

Figure 73: (Optional) Indoor Section Caster Installation

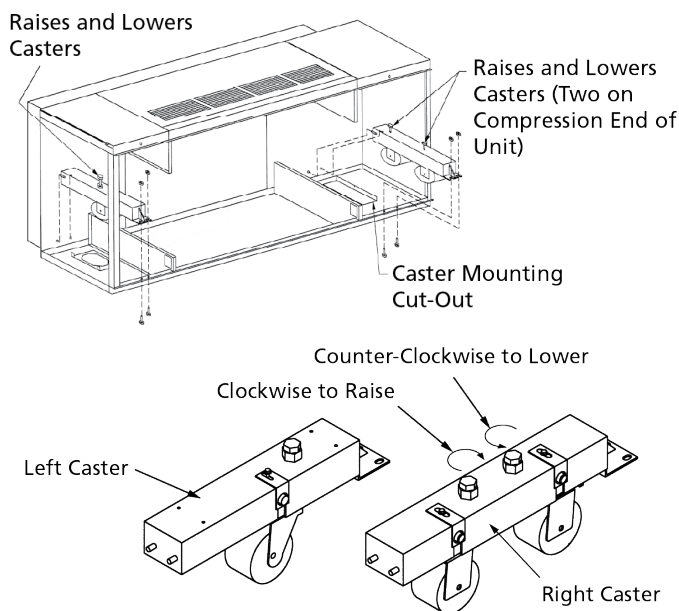


Figure 74: (Optional) Indoor Section Caster Shown in Right End Compressor Compartment



Procedure

Wall and floor must be at 90° to one another. If not, the floor needs to be leveled (90°) to wall. Be sure that the condenser section drain pan notches are not blocked (see [Figure 54 on page 30](#) and [Figure 78 on page 41](#)).

Slide the unit up to the wall sleeve aligning the four threaded studs on the wall sleeve with the holes on each end of the unit. See [Figure 75](#) and [Figure 76](#). If the optional indoor caster kit is not used, a piece of cardboard placed under the unit will make the job easier and prevent marking the floor (Do not leave the cardboard under the unit after installation). The wall sleeve mounting studs should slide through the holes in the unit.

If a finish collar is used, make sure that the unit, finish collar and wall sleeve all line up properly.

Confirm that the bottom splitter rail seal in area of unit condenser drain pan notches is removed (see [Figure 77 on page 41](#)).

Figure 75: Slide the Unit Up to the Wall Sleeve

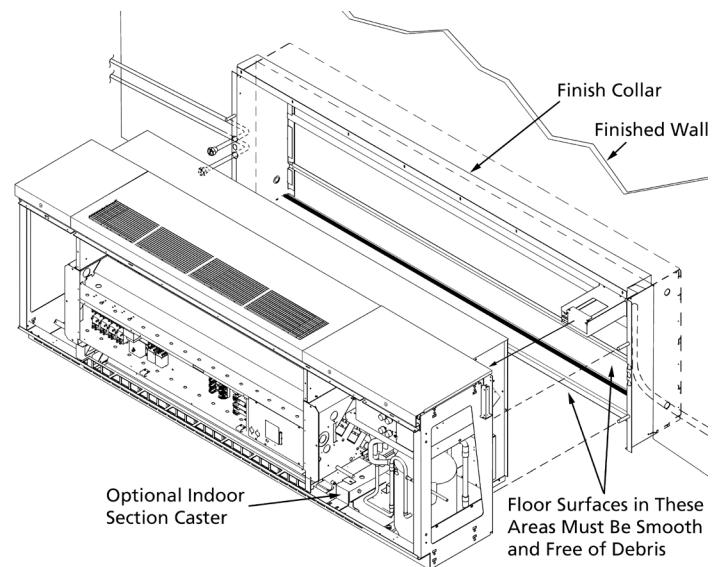
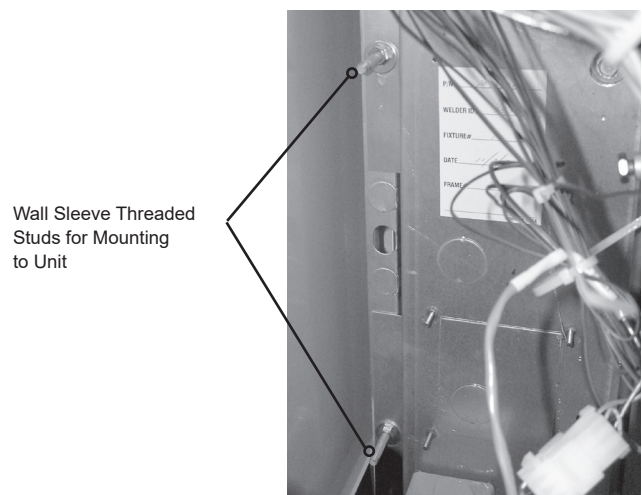


Figure 76: Slide the Unit Up to the Wall Sleeve Threaded Studs



Check to see that the unit ventilator is level from end to end and back to front. Using a 4' level is recommended.

Place the washers over the threaded studs and tighten the mounting nuts (see cautions).



CAUTION

Do not draw the nuts up as tight as possible as they may distort the unit and loosen the caulking and wall sleeve from their position.



CAUTION

Leakage of outdoor air wastes energy, causes drafts and erratic unit ventilator operation. These passages are also a potential pathway for water. Provide a sealing surface at the floor line. Install the wall sleeve in a wall made of noncombustible material, and on a floor made of noncombustible material. Floor must be level, 90° to wall, unbroken and structurally strong to support the unit.

Figure 77: Bottom Splitter Rail Seal Removal

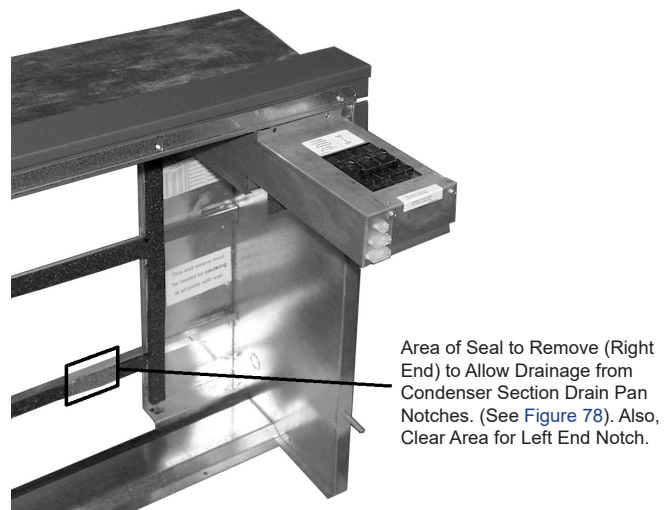
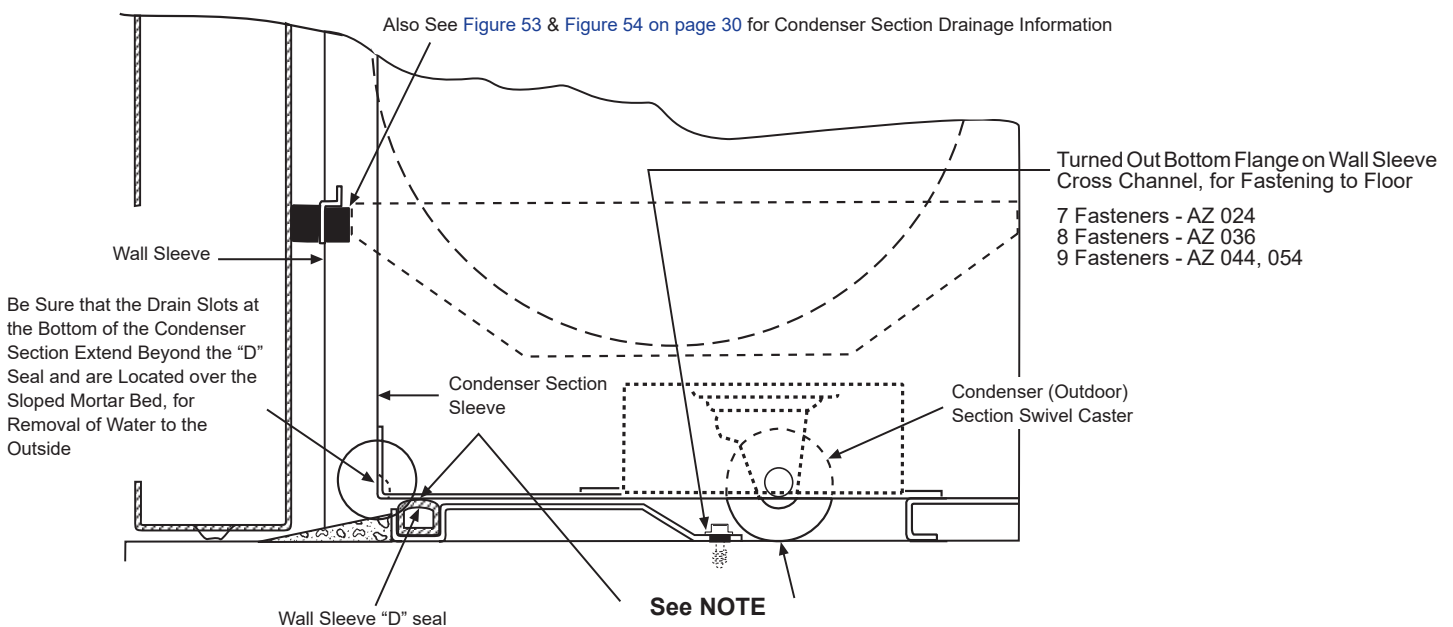


Figure 78: Wall Sleeve Drainage Considerations



NOTE: The floor, at the location of the outside condenser section caster wheels must be smooth and level, and free of any debris. The condenser section must make contact and seal to the "D" seal on the cross channel of the wall sleeve to help prevent air and water leaks into the building.

Water Piping

In All Systems



CAUTION

Be sure the hot water supply and return system are thoroughly flushed and cleaned before connecting piping to the unit ventilator. Debris in the lines can damage the unit.

Be sure to install the control valve(s) on the correct unit ventilator. Mixing of valves in the field can result in valves improperly sized for the desired flow rate, which can result in poor operation and coil freeze-ups. Install control valve so there is at least 2" (51 mm) minimum clearance to remove the actuator from the valve body.

Be certain that the control valve is installed correctly, with its orientation vertical. Install valves at least 5 degrees off center.

CAUTION

Be certain that the control valves are installed with the proper port orientation to provide proper flow and fail safe operation. Incorrect installation can result in improper unit operation, and/or the possibility of coil freeze-up.

With future servicing considerations in mind, use standard, field-supplied shut-off valves and union connections; this permits easy removal of the coil or control valve if servicing is required. Locate Isolator valves below the floor level, to allow removal of the unit.

WARNING

While brazing, have an extinguisher readily available. Wear appropriate eye and hand protection. Confirm all areas with shared ventilation have ample fresh air ventilation.

Proper ventilation is required for brazing. When brazing, be sure to protect unit ventilator components from overheating damage (melting insulation, also damage to valves, wiring, electronics, sensors, etc.).

Before filling, be sure to flush all piping adequately so that all debris is removed. Debris can prevent proper valve operation, resulting in overheating, over-cooling, etc.

Ensure proper insulation of supply and return piping. Proper insulation prevents loss of unit ventilator capacity, overheating of end compartment.

The piping to and from the unit must be protected from outside air and freeze conditions. The piping must be suitably insulated for condensation or heat lose or gain. Penetrations entering the unit end compartments must be fitted/sealed for unit integrity.

Water Coil Connections

Hook up water piping in accordance with [Figure 79](#) through [Figure 81](#) for hot water coil connections.

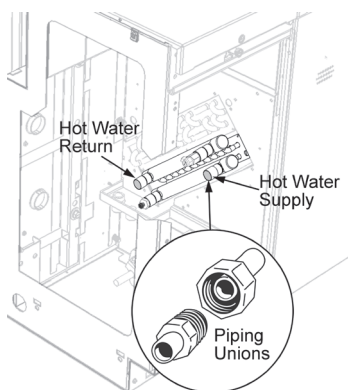
CAUTION

Failure to install water piping to coils properly can result in improper unit operation and coil freeze-ups.

NOTICE

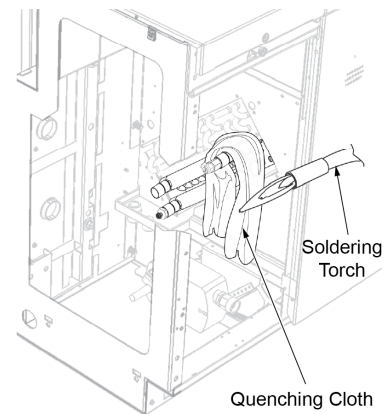
Use piping shut off valves and connection unions for future servicing to the coil supply and return stubs, instead of hard piping. This permits easy removal of the coil or control valve if servicing is required.

Figure 79: Hot Water Coil Connections



NOTE: Consider adding piping unions for future servicing (by others).

Figure 80: Protect Components From Overheating Before Brazing



NOTE: Use a quenching cloth and open all valves when brazing to prevent overheating the piping components (avoid valve damage and erratic operation).

After Brazing

Install provided donut shaped insulation seals around pipe fittings, by removing white backing. Press seals up to coil partition to seal gaps in partition insulation.

CAUTION

Donut insulation seals must be installed for proper airflow through the coil.

In Water Systems

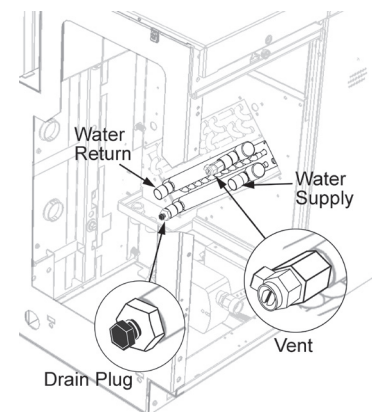
After flushing piping adequately, so all debris is removed, fill the system.

WARNING

Water system under pressure. Keep face and body parts well away from vent. Unscrew the vent plug only one or two complete turns, and vent slowly. Water pressure can result in severe personal injury.

At initial operation, vent manually by unscrewing the vent plug one or two turns, [Figure 81](#). After venting, tighten the vent plug firmly.

Figure 81: Vent and Drain Plug



NOTE: Unscrew the vent plug one or two turns to manually vent system.

AZU and AZQ Hot Water Coil Connection Locations

Heating Coils

65 = 1-row Hot Water Coil

66 = 2-row Hot Water Coil

S = Supply

R = Return

Figure 82: 28" Room Projection From Wall

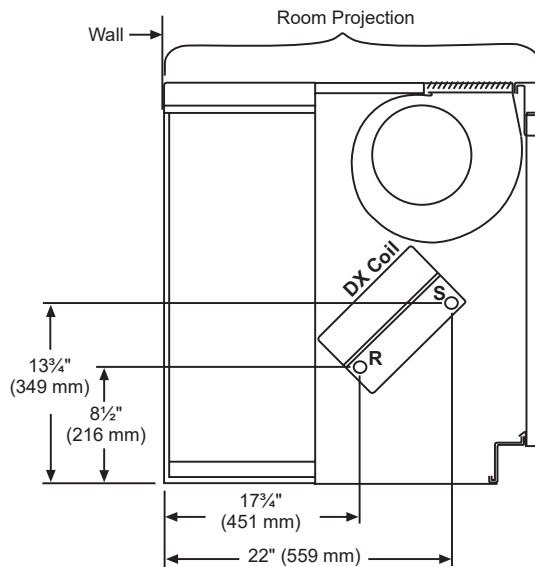


Figure 83: 21 1/8" Room Projection From Wall

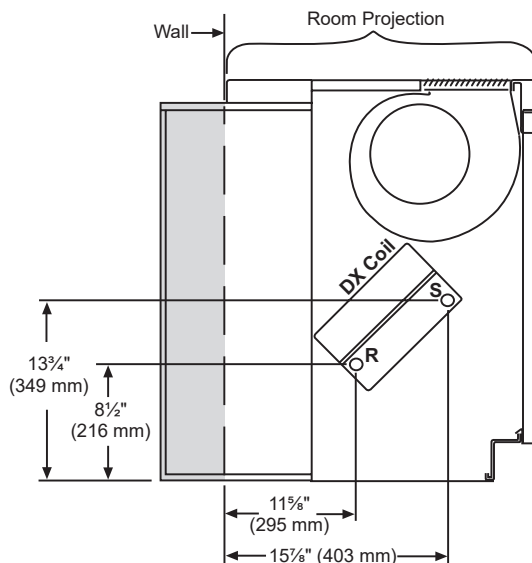


Figure 84: 19 5/8" Room Projection From Wall

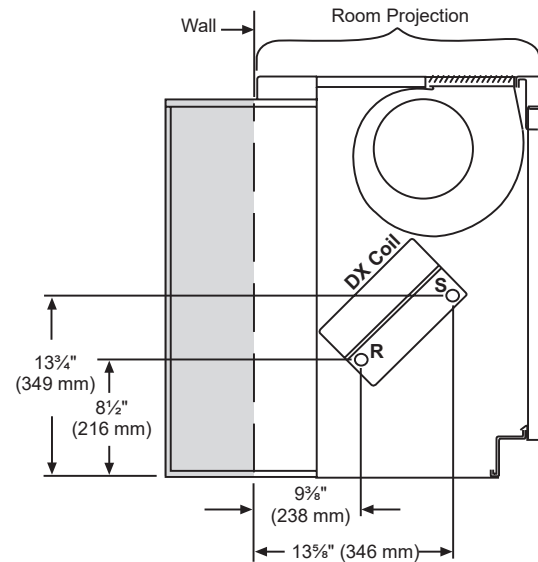
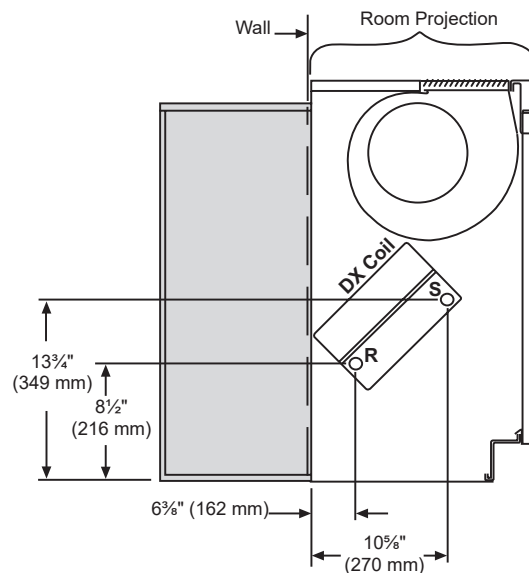


Figure 85: 16 5/8" Room Projection From Wall



NOTE 1: Shading indicates portion of unit wall sleeve recessed into wall opening.

NOTE 2: Water coil connections are 7/8" (22 mm) female sweat and terminate 9" (229 mm) from the left end of the unit.

NOTE 3: All coils have the supply and return connections in the left hand compartment.

NOTE 4: Piping connections are parallel flow through hot water coil.

NOTE 5: All dimensions are approximate.

AZR Hot Water Coil Connection Locations

Heating Coils

65 = 1-Row Hot Water Coil

66 = 2-Row Hot Water Coil

S = Supply

R = Return

Figure 86: Hot Water Coil Connections – 28" Type

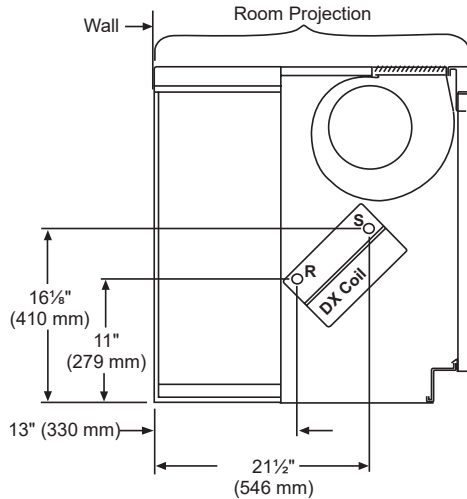


Figure 87: Hot Water Coil Connections – 21 1/8" Type

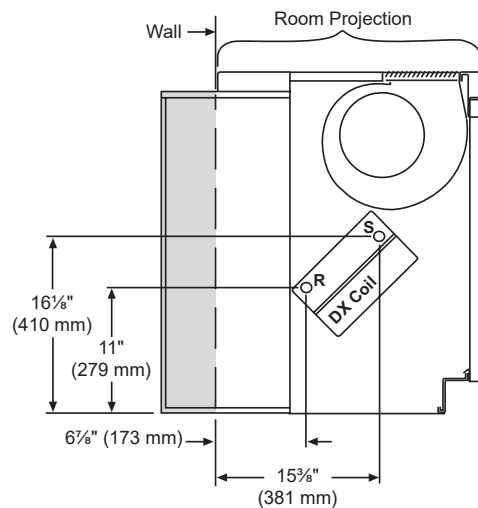


Figure 88: Hot Water Coil Connections – 19 5/8" Type

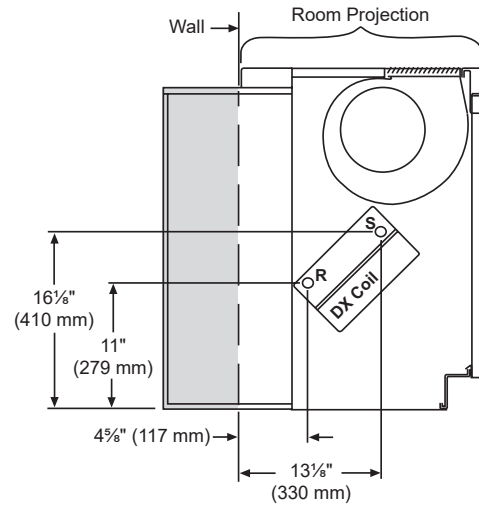
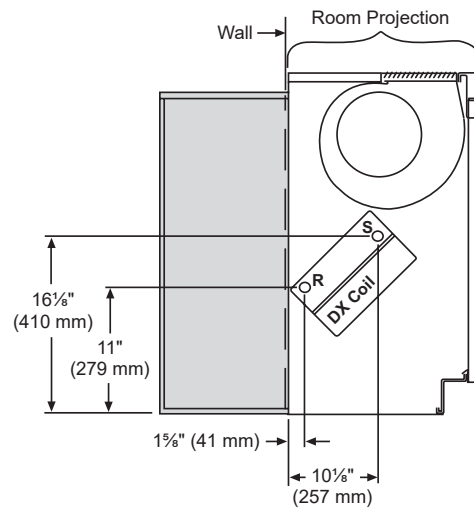


Figure 89: Hot Water Coil Connections – 16 5/8" Type



- NOTE 1:** Shading indicates portion of unit wall sleeve recessed into wall opening.
- NOTE 2:** Water coil connections are 7/8" (22 mm) female sweat and terminate 9" (229 mm) from the left end of the unit.
- NOTE 3:** All coils have the supply and return connections in the left hand compartment.
- NOTE 4:** Piping connections are parallel flow through hot water coil.
- NOTE 5:** All dimensions are approximate.

AZU, AZR, and AZQ Steam Coil Connection Locations

Heating Coils

68 = Low Capacity Steam Coil

69 = High Capacity Steam Coil

S = Supply

Figure 90: Steam Coil Connections – 28" Type

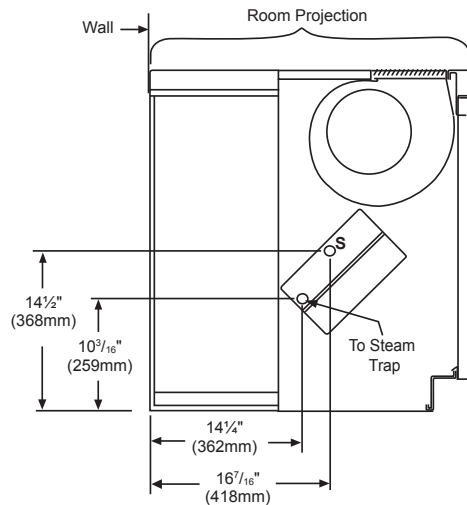


Figure 91: Steam Coil Connections – 21 7/8" Type

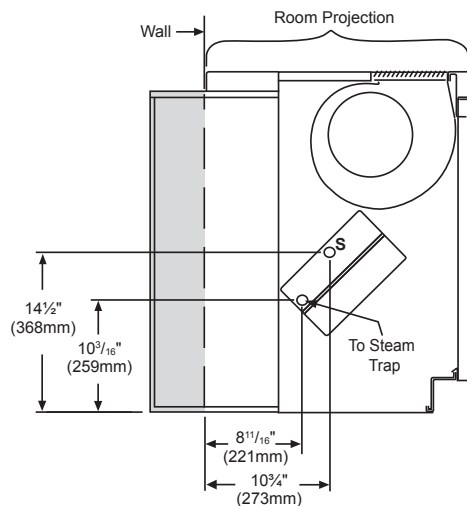


Figure 92: Steam Coil Connections – 19 5/8" Type

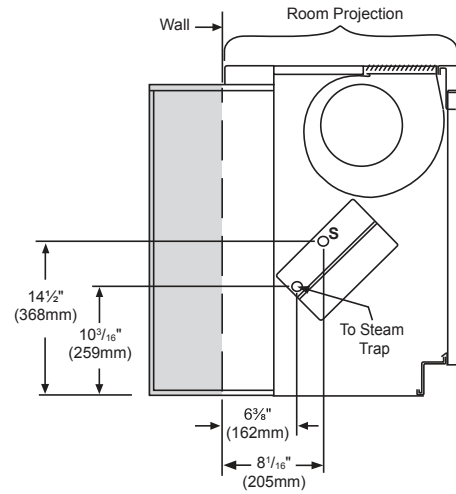
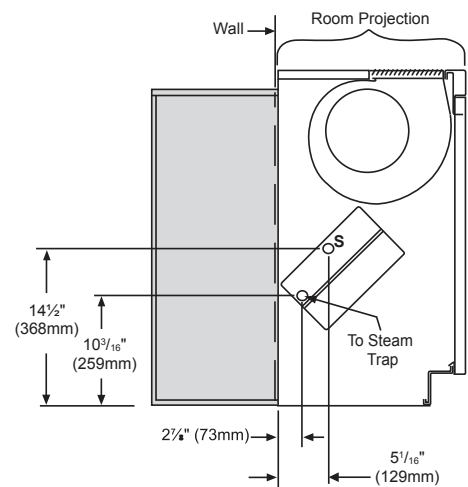


Figure 93: Steam Coil Connections – 16 5/8" Type



NOTE 1: Shading indicates portion of unit wall sleeve recessed into wall opening.

NOTE 2: Steam coil connections are 1 1/8" (29 mm) female sweat and terminate 9" (229 mm) from the left end of the unit.

NOTE 3: All coils have the supply and return connections in the left hand compartment.

NOTE 4: Steam coils have a factory installed pressure equalizing line which terminates in a 1/2" (13 mm) MPT fitting.

NOTE 5: All dimensions are approximate.

Model AZQ Valves and Piping – Typical

Face & Bypass End of Cycle (EOC) Valves

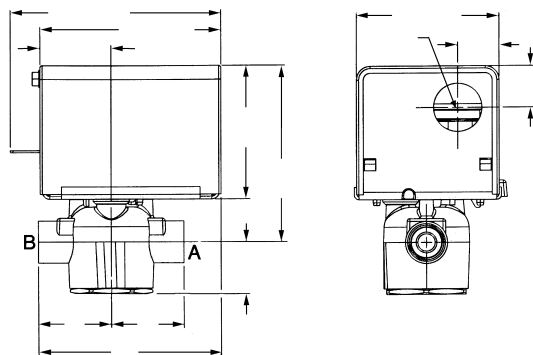
2-Way EOC Valve



When piping the 2-Way EOC valve, refer to label to determine the direction of flow. The valve should be installed so that there is a 2" (51 mm) minimum clearance to remove the actuator from the valve body. Provide unions for removal of unit coil and/or control valve as a future service consideration. Hot water connections may be same end as cooling coil connections, but are recommended to be opposite end to facilitate piping.

When using MicroTech controls, they must be opposite end. The EOC valve accessory must be field installed on the unit for which it was selected.

Figure 94: 2-Way EOC Valve Dimensions



Connection	Cv	X	Y	Z
3/4" (19 mm) FNPT	7.5	11 1/16" (43 mm)	15/16" (24 mm)	3 5/8" (92 mm)

2-Way EOC, Normally Open, Steam Valve Piping

The 2-way EOC steam valve is furnished normally open to the coil. When the valve is de-energized (off) there is full flow through the coil. Energizing the valve reduces the steam flow in the EOC fashion.

Refer to the EOC valve label to determine the direction of flow. The valve should be installed so that there is a 2" (51 mm) minimum clearance to remove the actuator from the valve body.

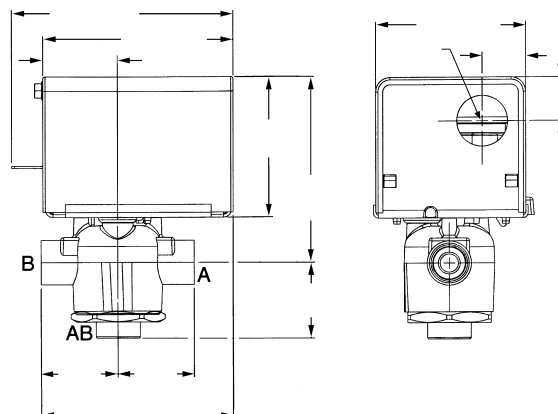
3-Way EOC Valve



When piping the 3-Way EOC valve, refer to label to determine the direction of flow. The valve should be installed so that there is a 2" (51 mm) minimum clearance to remove the actuator from the valve body. Provide unions for removal of unit coil and/or control valve as a future service consideration. Hot water connections may be same end as cooling coil connections, but are recommended to be opposite end to facilitate piping.

When using MicroTech controls, they must be opposite end. The EOC valve accessory must be field installed on the unit for which it was selected.

Figure 95: 3-Way EOC Valve Dimensions



Connection	Cv	Y
3/4" (19 mm) FNPT	5.0	15/16" (24 mm)

Figure 96: 2-Way EOC Steam Valve Dimensions

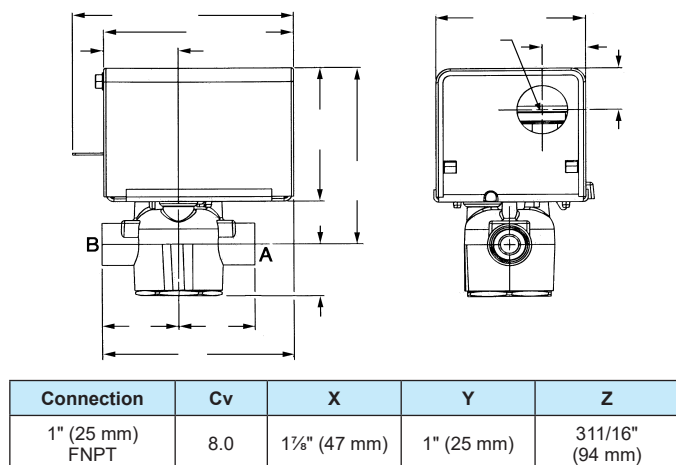


Table 15: EOC Actuator Specifications

Control	2 Position
Electrical	24 VAC, 50/60 Hz
Stroke	Power Stroke 9 to 11 seconds Spring return 4 to 5 seconds
Ambient	32°F to 125°F (0°C to 52°C)

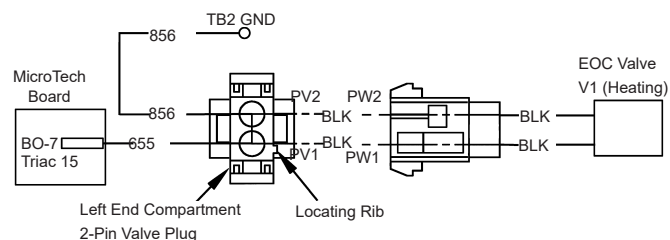
Table 17: 2-Way and 3-Way EOC Valve Pressure Drop

				Valve Pressure Drop at Listed Water Flow Rate															
	Cv	Connection Size	GPM	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
			L/s	0.32	0.38	0.44	0.50	0.57	0.63	0.69	0.76	0.82	0.88	0.95	1.01	1.07	1.14	1.20	1.26
3-Way Hot Water EOC Valve, FNPT	5.0	3/4 inch	ft H ₂ O	2.3	3.3	4.5	5.9	7.5	9.2	11.2	13.3	15.6	18.1	20.8	23.6	26.7	29.9	33.3	36.9
			kPa	6.9	9.9	13.5	17.7	22.3	27.6	33.4	39.7	46.6	54.1	62.1	70.6	79.7	89.4	99.6	110.3
2-Way Hot Water EOC Valve, FNPT, Normally Open	7.5	3/4 inch	ft H ₂ O	1.0	1.5	2.0	2.6	3.3	4.1	5.0	5.9	6.9	8.0	9.2	10.5	11.9	13.3	14.8	16.4
			kPa	3.1	4.4	6.0	7.8	9.9	12.3	14.8	17.7	20.7	24.0	27.6	31.4	35.4	39.7	44.2	49.0

Table 16: F&BP EOC Valve Body Specifications

	2-Way Valve	3-Way Valve
Connections	3/4" FNPT, 1" FNPT	3/4" FNPT
Static Pressure	300 psi (2100 kPa)	300 psi (2100 kPa)
Close-Off Pressure	13 & 15 psi (90 & 103 kPa)	13 psi (90 kPa)
Temperature	32°F to 200°F (0°C to 93°C)	32°F to 200°F (0°C to 93°C)

Figure 97: Typical EOC Valve 2-Pin Plug Wiring



Inspection of Valves

Inspect the package for damage. If package is damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.



WARNING

Electrical shock hazard! Disconnect power before installation to prevent electrical shock or equipment damage.

Make all connections in accordance with the electrical wiring diagram and in accordance with national and local electrical codes. Use copper conductors only.



CAUTION

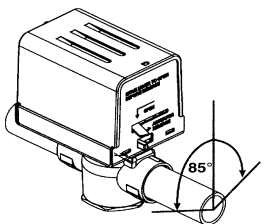
Avoid locations where excessive moisture, corrosive fumes, explosive vapors, or vibration are present.

Avoid electrical noise interference. Do not install near large conductors, electrical machinery, or welding equipment.

Mounting EOC Valves

The valves can be mounted in horizontal or vertical piping. When installed in horizontal piping, the actuator must be above the valve body. Refer to [Figure 98](#). When installed in horizontal piping the actuator can be tilted left or right but it must not be tilted below 85° from vertical.

Figure 98: Mounting Position



EOC Piping

These valves must be piped so the paddle closes against the direction of flow. Flow is from B to A. Refer to the appropriate application in [Figure 99](#) & [Figure 100](#). When installing the actuator to a normally open valve, the actuator must be placed in the manually open position by using the manual operating lever. The first time the valve is operated electrically, the manual operating lever of the actuator will transfer to the automatic position. The manual operating lever can be used to allow flushing of the system after installation. The valves are designed for application in closed hydronic heating systems. High levels of dissolved oxygen and chlorine found in open systems may attack the valve materials and result in premature failure.

Threaded Connection

Apply Teflon tape to all but the last two threads of male pipe thread. Hand screw the pipe into the valve, turning it as far as it will go. Use a wrench to fully tighten the valve to the pipe. Do not over tighten or strip the threads.

Heating – Hot Water EOC Valve Piping

When piping the EOC valve, refer to label to determine the direction of flow. The valve should be installed so that there is a 2" (51 mm) minimum clearance to remove the actuator from the valve body. Provide unions for removal of unit coil and/or control valve as a future service consideration. Hot water connections will be opposite the Direct Expansion (DX) cooling coil connections to facilitate piping. The EOC valve accessory must be field installed on the unit for which it was selected.

Coil Piping – Typical

Mount heating valve actuators in an upright position above the center-line of the valve body and should be piped normally open to the coil. Two-position, EOC valves used with face and bypass damper controlled units may be positioned above the valve body a maximum of 85 degrees from the vertical (see [Figure 98](#)). All control valves are shipped loose to help avoid shipping damage to the piping or the coil connection stub from the weight of the valve, and to provide the installing contractor with maximum flexibility in making the field piping connections. Refer to Daikin Applied factory instruction sheet shipped with the unit for port orientation and a piping schematic. Control valves must be installed on the units in which they are shipped. Indiscriminate mixing of valves among units can result in valves not properly sized for the desired flow rate.



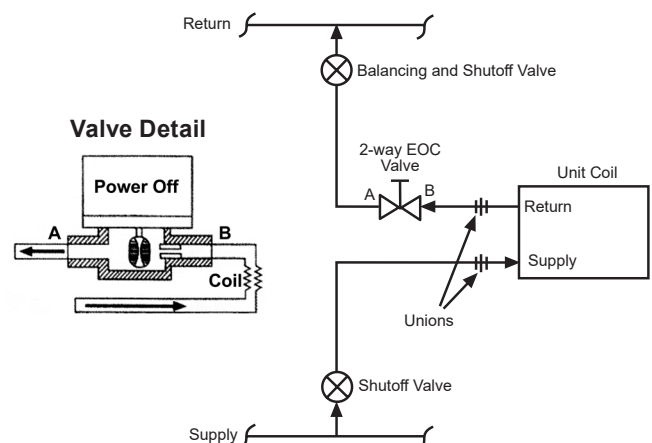
CAUTION

Refer to the arrows on the modulating valve body to determine the direction of flow. If the valve is mounted improperly, the unit will not operate properly and damage to the valve may result. Flow is from B to A.

2-Way EOC, Normally Open, Hot Water Valve Piping (Typical)

The 2-way EOC hot water valve is furnished normally open to the coil. When the valve is de-energized (off) there is full flow through the coil. Energizing the valve shuts off the water flow.

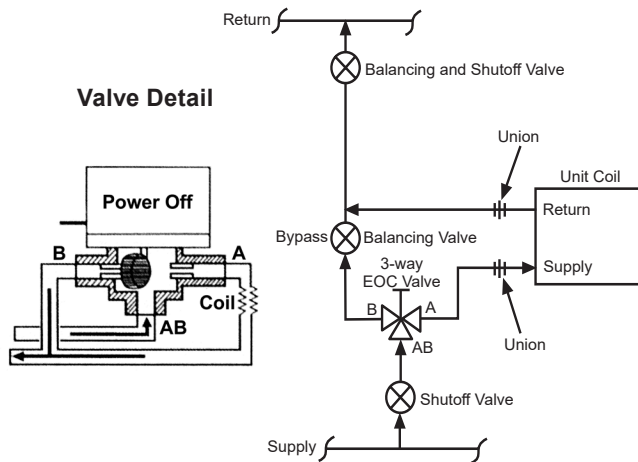
Figure 99: 2-Way EOC, Normally Open, Hot Water Valve Piping



3-Way EOC, Normally Open, Hot Water Valve Piping (Typical)

The 3-way EOC hot water valve is furnished normally open to the coil. When the valve is de-energized (off) there is full flow through the coil. Energizing the valve allows the water to bypass the coil.

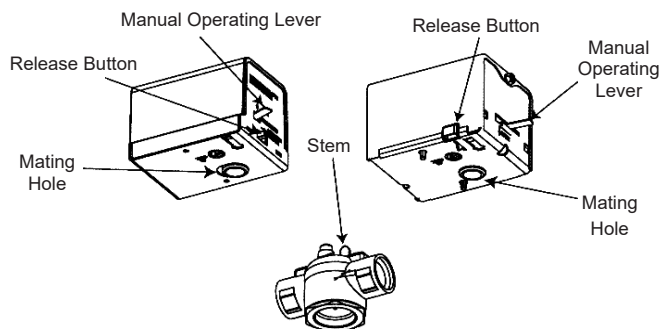
Figure 100: 3-Way EOC, Normally Open, Hot Water Valve Piping



Actuator and Valve Body Assembly

Slowly latch the manual operating lever in the open, engaged position (AG1 or AH1 only). Depress the release button (Figure 101). Align the body with the actuator to ensure the stem is inserted into the large mating hole on the bottom side of the actuator. Engage the actuator on the body and release the button.

Figure 101: Installing Actuator Body Onto Valve Assembly



Typical EOC Piping Arrangements

Legend for Figure 102 Through Figure 105	
1	Three-way EOC control valve (Daikin Applied accessory or by others)
2	Coil air vent (Daikin Applied)
3	Coil drain (Daikin Applied)
4	Shut-off valve (by others)
5	Balancing Shut-off valve(s) (by others)
6	Supply
7	Return
8	Unions (by others) – Must disconnect below floor line
9	Two-way EOC two-position valve (Daikin Applied accessory or by others)
10	Union: Half attached to coil, half attached to valve
12	Steam check valve and pressure equalizing line (Daikin Applied)
13	Float and thermostatic steam trap (by others)
14	Supply and return coil connection and stub-up unions by others

Typical Water Coil Piping - EOC Valve Piping

Figure 102: Face and Bypass with 3-Way EOC Valve (Piping Within Unit End Compartment)

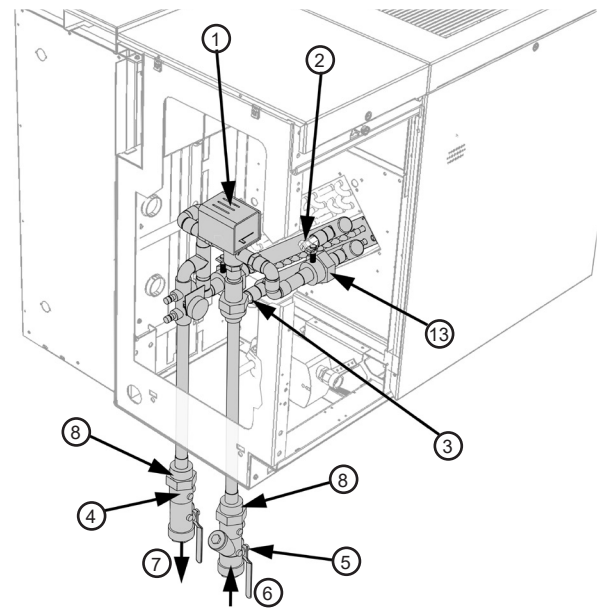
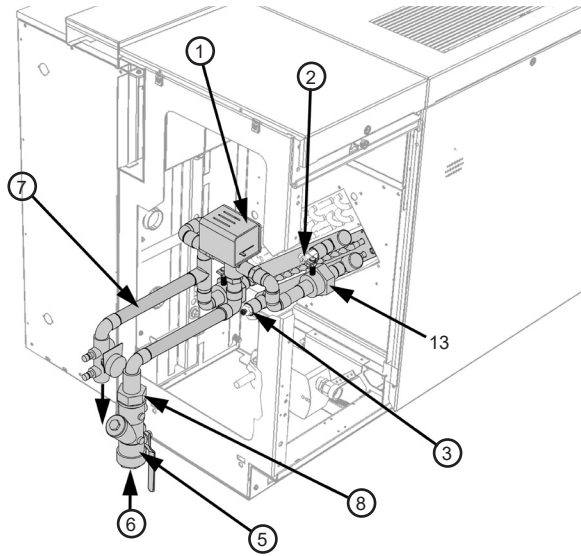


Figure 103: Face and Bypass with 3-Way EOC Valve (Piping Outside Unit End Compartment)



Typical Steam Coil Piping - EOC Valve Piping

Figure 104: Face and Bypass with 2-Way EOC Valve - Same End Drain Connection (Piping Outside Unit End Compartment)

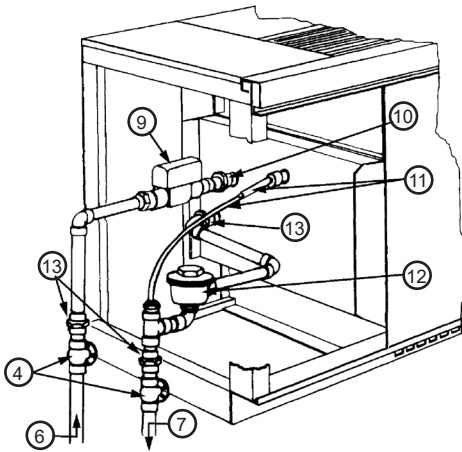


Figure 105: Face and Bypass with 2-Way EOC Valve - Same End Drain Connection (Piping Within Unit End Compartment)

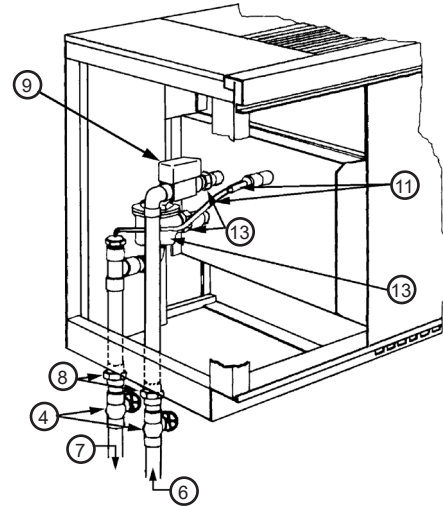
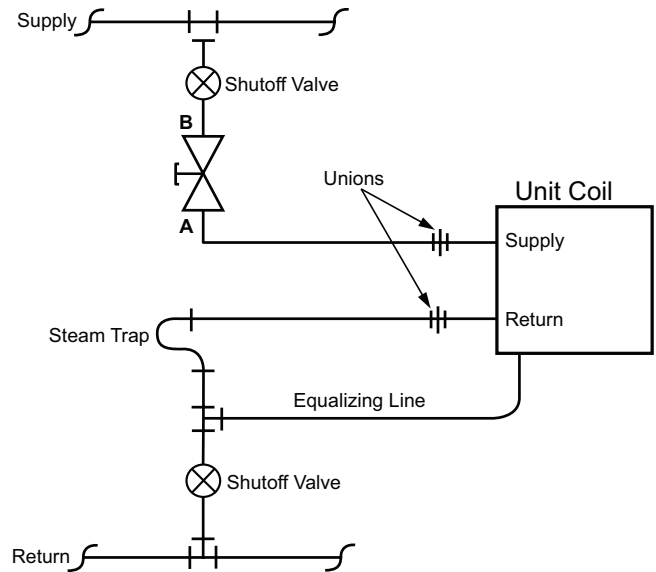


Figure 106: Typical 2-Way EOC Valve, Steam Piping



NOTE: See label furnished on 2-way valve to determine direction of flow through the valve. Erie EOC steam valves always have the direction of steam flow piped to the B-port of the control valve.

2-Way Modulating Valve (Hot Water)



Two-way modulating control valves for MicroTech are designed to regulate the flow of hot water. They consist of a nickel plated brass body and stainless steel ball valve and stem, with a spring return proportional actuator. The optional valve accessory is shipped separate from the unit ventilator for field installation to prevent shipping damage and to provide flexibility in making the field piping connection.

Figure 107: 2-Way Modulating Valve Dimensions

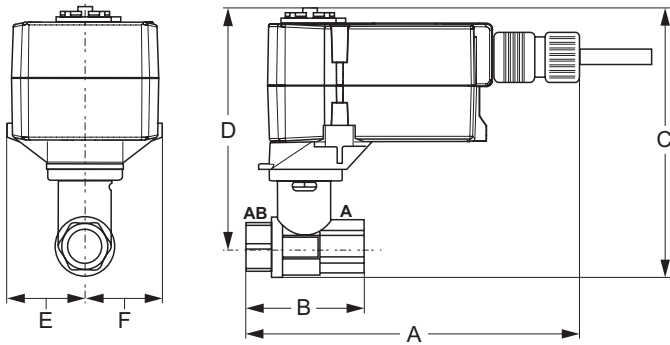


Table 20: 2-Way Modulating Valve 1/2" – Dimensions (HW)

Valve Part No.	Cv	Connection Size (inches)	A	B	C	D	E	F
B209	0.8	1/2"	6.59" (167 mm)	2.38" (60 mm)	4.9" (124 mm)	4.32" (110 mm)	1.53" (38 mm)	
B210	1.2							
B211	1.9							
B212	3.0		6.59" (167 mm)	2.38" (60 mm)	5.48" (139 mm)	4.71" (120 mm)	1.53" (38 mm)	
B213	4.7							
B214	7.4							

Table 21: 2-Way Modulating Water Valve 1/2" – Pressure Drop (HW)

2-Way CCV Part No.	Cv Maximum Rating	Connection Size	Pressure Drop Across the Valve									
			1 PSI	2 PSI	3 PSI	4 PSI	5 PSI	6 PSI	7 PSI	8 PSI	9 PSI	10 PSI
B209	0.8	1/2"	0.8	1.1	1.4	1.6	1.8	2.0	2.1	2.3	2.4	2.5
B210	1.2		1.2	1.7	2.1	2.4	2.8	2.9	3.2	3.4	3.6	3.8
B211	1.9		1.9	2.7	3.3	3.8	4.2	4.7	5.0	5.4	5.7	6.0
B212	3.0		3.0	4.2	5.2	6.0	6.8	7.3	7.9	8.5	9.0	9.5
B213	4.7		4.7	6.6	8.1	9.4	11	12	12	13	14	15
B214	7.4		7.4	10	13	15	17	18	20	21	22	23

Table 18: 2-Way Actuator Specifications (HW)

Power Supply	24 VAC, $\pm 20\%$, 50/60 Hz, 24 VDC, $\pm 10\%$
Electrical Connection	3ft [1m], 18 GA plenum cable with 1/2" conduit connector
Overload Protection	electronic throughout 0° to 95° rotation
Operating Range Y	2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 Ω , 1/4 W resistor)
Input Impedance	100 k Ω for 2 to 10 VDC (0.1 mA), 500 Ω for 4 to 20 mA
Feedback Output U	2 to 10 VDC, 0.5 mA max
Angle of Rotation	Max. 95°, 90°
Position Indication	visual indicator, 0° to 95° (0° is full spring return position)
Running Time (Motor)	95 sec
Running Time (Fail-Safe)	<25 sec
Ambient Humidity	max. 95% RH non-condensing
Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]

Table 19: 2-Way Valve Body Specifications (HW)

Service	hot water, up to 60% glycol
Flow Characteristic	equal percentage
Controllable Flow Range	75°
Body Pressure Rating [psi]	600
Media Temperature Range (Water)	0°F to 250°F [-18°C to 120°C]
Max Differential Pressure (Water)	50 psi (345 kPa)
Close-Off Pressure	200 psi

2-Way Modulating Valve (Steam) - 1/2"



Two-way modulating control valves for MicroTech are designed to regulate the flow of steam. They consist of a nickel plated brass body and stainless steel ball valve and stem, with a spring return, proportional actuator. The optional valve accessory is shipped separate from the unit ventilator for field installation to prevent shipping damage and to provide flexibility in making the field piping connection.

Figure 108: 2-Way Modulating Valve (Steam) Dimensions

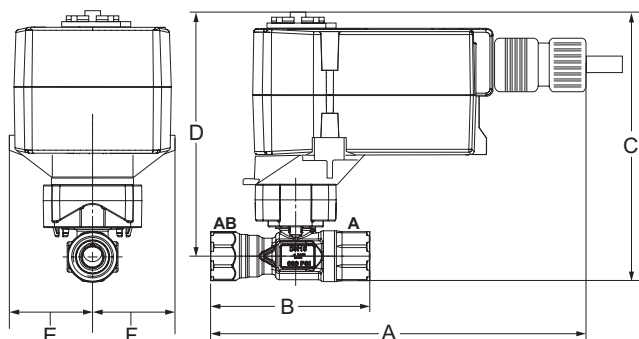


Table 24: 2-Way Modulating Steam Valve 1/2" – Dimensions

Valve Part No.	Cv	Connection Size (inches)	A	B	C	D	E	F
B215HT073	0.73	1/2"	7.32" (186 mm)	3.33" (85 mm)	5.8" (147 mm)	5.3" (135 mm)	1.52" (39 mm)	1.52" (38.5 mm)
B215HT186	1.86							

Table 25: 2-Way Modulating Steam Valve 1/2" – Pressure Drop

2-Way CCV Part No.	Cv Maximum Rating	Connection Size	Pressure Drop Across the Valve					
			2 PSI	3 PSI	4 PSI	5 PSI	10 PSI	15 PSI
B215HT073	0.73	1/2"	10.99	13.71	16.11	18.33	28.03	36.74
B215HT186	1.86		22.34	34.93	41.06	46.70	71.42	93.60

Table 22: 2-Way Actuator Specifications (Steam)

Power Supply	24 VAC $\pm$ 20%, 50/60 Hz, 24 VDC $\pm$ 10%
Electrical Connection	3ft [1m], 18 GA plenum cable with 1/2" conduit connector"
Overload Protection	electronic throughout 0° to 95° rotation
Operating Range Y	2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 Ω , 1/4 W resistor)
Input Impedance	100 k Ω for 2 to 10 VDC (0.1 mA), 500 Ω for 4 to 20 mA
Feedback Output U	2 to 10 VDC, 0.5 mA max
Angle of Rotation	Max. 95°, 90°
Position Indication	visual indicator, 0° to 95° (0° is full spring return position)
Running Time (Motor)	95 sec
Running Time (Fail-Safe)	<25 sec
Ambient Humidity	max. 95% RH non-condensing
Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]

Table 23: Valve Body Specifications (Steam)

Service	high temperature hot water/low pressure steam, up to 60% glycol
Flow Characteristic	A-port equal percentage
Controllable Flow Range	75°
Body Pressure Rating [psi]	600
Max Inlet Pressure (Steam)	15 psi
Media Temperature Range (Water)	60°F to 266°F [16°C to 130°C]
Media Temperature Range (Steam)	250°F [120°C]
Maximum Differential Pressure (Steam)	15 psi
Max Differential Pressure (Water)	60 psi partially open ball, 116 psi full open
Close-Off Pressure	200 psi

3-Way Modulating Valve (Hot Water)



Three-way modulating control valves for MicroTech are designed to regulate the flow of hot water. They consist of a nickel plated brass body and stem with chrome plated brass ball valve, with a spring return, proportional actuator. The optional valve accessory is shipped separate from the unit ventilator for field installation to prevent shipping damage and to provide flexibility in making the field piping connection.

Table 26: 3-Way Modulating Valve (Hot Water) Dimensions

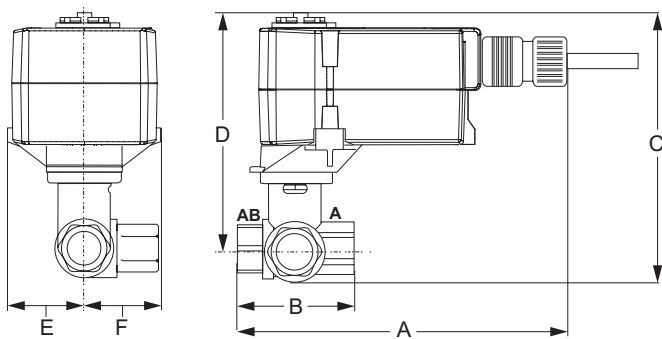


Table 29: 3-Way Modulating Valve Dimensions

Valve Part No.	Cv	Connection Size (inches)	A	B	C	D	E	F
B309(B)	0.8	1/2"	6.59" (167 mm)	2.38" (60 mm)	4.9" (124 mm)	4.32" (110 mm)	1.53" (38 mm)	1.2" (31 mm)
B310(B)	1.2							
B311(B)	1.9							
B312(B)	3.0							
B313(B)	4.7							

Table 30: Modulating 3-Way Hot Water Valve - Pressure Drop

3-Way CCV Part No.	Cv Maximum Rating	Connection Size	Pressure Drop Across the Valve									
			1 PSI	2 PSI	3 PSI	4 PSI	5 PSI	6 PSI	7 PSI	8 PSI	9 PSI	10 PSI
B309(B)	0.8	1/2"	0.8	1.	1.4	1.6	1.8	2.0	2.	2.3	2.4	2.5
B310(B)	1.2		1.2	1.7	2.	2.4	2.8	2.9	3.2	3.4	3.6	3.8
B311(B)	1.9		1.9	2.7	3.3	3.8	4.2	4.7	5.0	5.4	5.7	6.0
B312(B)	3.0		3.0	4.2	5.2	6.0	6.8	7.3	7.9	8.5	9.0	9.5
B313(B)	4.7		4.7	6.6	8.1	9.4	11	12	12	13	14	15

Table 27: 3-Way Actuator Specifications (HW)

Power Supply	24 VAC, $\pm 20\%$, 50/60 Hz, 24 VDC, $\pm 10\%$
Electrical Connection	3ft [1m], 18 GA plenum cable with 1/2" conduit connector
Overload Protection	electronic throughout 0° to 95° rotation
Operating Range Y	2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 Ω , 1/4 W resistor)
Input Impedance	100 k Ω for 2 to 10 VDC (0.1 mA), 500 Ω for 4 to 20 mA
Feedback Output U	2 to 10 VDC, 0.5 mA max
Angle of Rotation	Max. 95°, 90°
Position Indication	visual indicator, 0° to 95° (0° is full spring return position)
Running Time (Motor)	95 sec
Running Time (Fail-Safe)	<25 sec
Ambient Humidity	max. 95% RH non-condensing
Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]

Table 28: 3-Way Valve Body Specifications (HW)

Service	hot water, up to 60% glycol
Flow Characteristic	A-port Equal percentage; B-port modified linear for constant flow
Controllable Flow Range	75°
Body Pressure Rating [psi]	600
Media Temperature Range (Water)	0°F to 250°F [-18°C to 120°C]
Max Differential Pressure (Water)	50 psi (345 kPa)
Close-Off Pressure	200 psi

Steam Modulating Valve Selection

The steam modulating control valve is expected to vary the quantity of steam through the coil. Any movement of the valve stem should produce some change in the steam flow rate. To select a modulating steam valve:

1. Obtain the supply steam inlet pressure.
2. Determine the actual heat requirement of the space to be heated.

Table 31: Modulating 2-Way, Normally Open, Steam Valve – Pressure Drop

2-Way CCV Part No.	Cv Maximum Rating	Connection Size	Pressure Drop Across the Valve					
			2 PSI	3 PSI	4 PSI	5 PSI	10 PSI	15 PSI
B215HT073	0.73	1/2"	10.99	13.71	16.11	18.33	28.03	36.74
B215HT186	1.86		22.34	34.93	41.06	46.70	71.42	93.60

2-Way and 3-Way Hot Water Modulating Valve Selection

The unit ventilator control valve is expected to be able to vary the quantity of water that flows through the coil in a modulating fashion. Any movement of the valve stem should produce some change in the amount of water that flows through the coil. Oversized control valves cannot do this. For example, assume that when the control valve is fully open, the pressure drop through the coil is twice as great as the drop through the valve. In this case, the control valve must travel to approximately 50% closed before it can begin to have any influence on the water flow through the coil. The control system, no matter how sophisticated, cannot overcome this. Oversized control valves can also result in "hunting" which will shorten the life of the valve and actuator and possibly damage the coil.

To correctly select the proper Hot Water Modulating Valve:

1. Determine the flow of water and the corresponding pressure drop through the coil.
2. Obtain the pressure difference between the supply and return mains.
3. Select a valve size (Cv) from Table 30, on the basis of taking 50% of the available pressure difference (at design flow) between the supply and return mains at the valve location. The valve should have a pressure drop greater than that of the coil.

Formula to calculate Cv

Q = Capacity in gallons per minute

Cv = Valve sizing coefficient determined experimentally for each style and size of valve, using water at standard conditions as the test fluid

ΔP = Pressure differential in psi

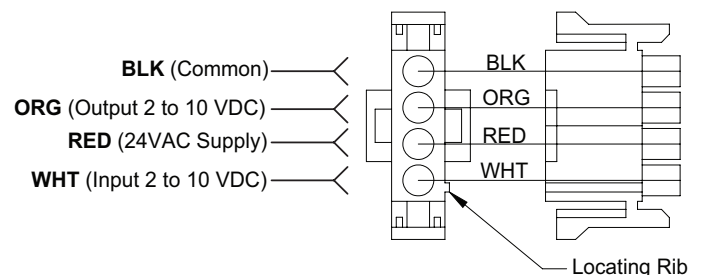
G = Specific gravity of fluid (water at 60°F = 1.0000)

$$C_v = Q \sqrt{\frac{G}{\Delta P}}$$

CAUTION

Care must be taken with modulating valves to provide proper water flow. In freezing conditions, water flow must be maintained through the heating coil or a suitable freeze-prevention solution employed to prevent freeze-up. Similarly, the cooling coil must be drained or a suitable freeze-prevention solution employed.

Figure 109: Actuator Wiring



NOTE: The actuator spring returns the valve to the open position when the actuator is de-energized (off).

Hot Water Modulating Valve Piping

When piping the modulating valve, refer to the arrows on the modulating valve body to determine the direction of flow. The valve should be installed so that there is a 2" (51 mm) minimum clearance to remove the actuator from the valve body. Provide unions for removal of unit coil and/or control valve as a future service consideration. Hot water connections will be opposite the Direct Expansion (DX) cooling coil connections, to facilitate piping. The modulating valve accessory must be field installed on the unit for which it was selected.

CAUTION

Modulating valve size must be selected to provide proper water flow. In freezing conditions, water flow must be maintained through the heating coil or a suitable freeze-prevention solution employed to prevent freeze-up.

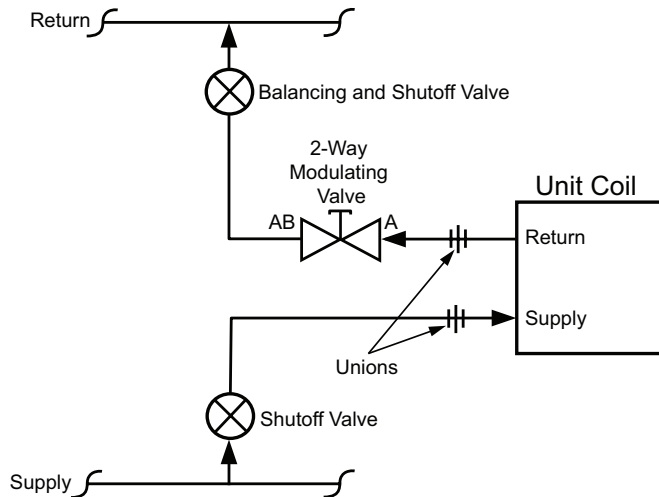
CAUTION

Refer to the arrows on the modulating valve body to determine the direction of flow. If the valve is mounted improperly, the unit will not operate properly and damage to the valve may result. Flow is from B to A.

2-Way Modulating, Normally Open, Hot Water Valve Piping (Typical)

The 2-way Modulating hot water valve is furnished normally open to the coil. When the valve is de-energized (off) there is full flow through the coil. Energizing the valve reduces the volume of water flow in a modulating fashion.

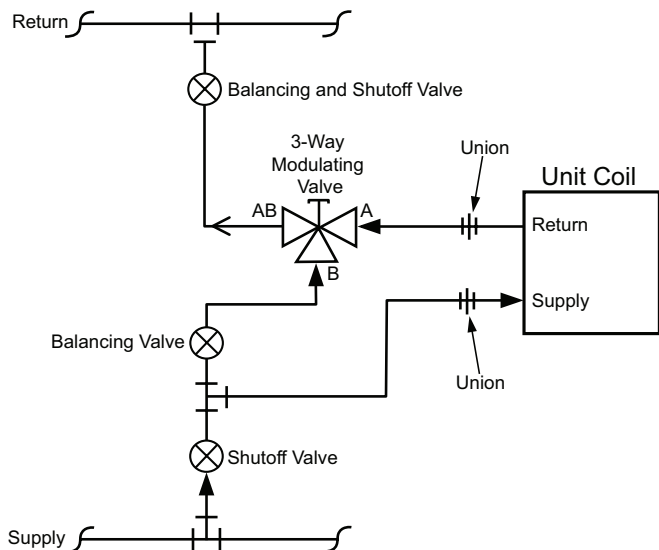
Table 32: 2-Way Modulating Valve Control, Normally Open, Hot Water



3-Way Modulating, Normally Open, Hot Water Valve Piping (Typical)

The 3-way Modulating hot water valve is furnished normally open to the coil. When the valve is de-energized (off) there is full flow through the coil. Energizing the valve allows a varying amount of water to bypass the coil.

Table 33: 3-Way Modulating Hot Water Valve Control



NOTE: The A port is always piped to the coil. Actuator to be configured for A port to be Normally Open.

Steam Modulating Valve Piping

The steam modulating control valve is expected to vary the quantity of steam through the coil. Any movement of the valve stem should produce some change in the steam flow rate.

The optional factory supplied Daikin Applied MicroTech 2-way Modulating steam valve is furnished normally open to the coil. When the valve is de-energized (off) there is full flow through the coil. Energizing the valve reduces the steam flow in a modulating fashion.



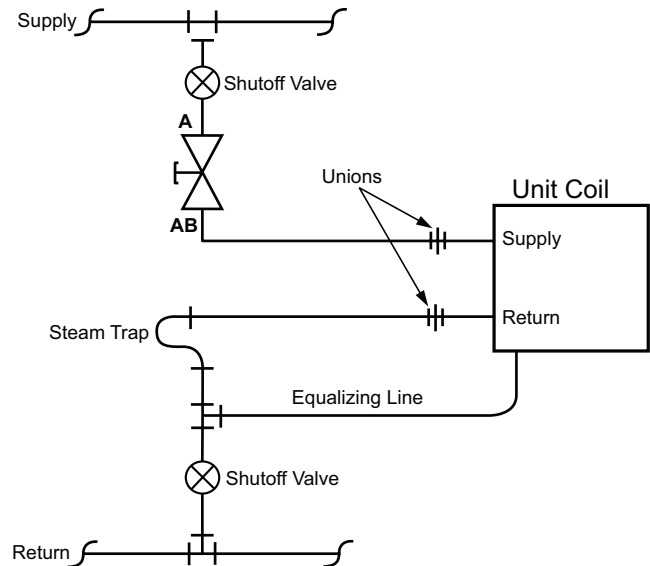
CAUTION

Refer to the arrow on the modulating valve body to determine the direction of flow. If the valve is mounted improperly, the unit will not operate properly and damage to the valve may result.

The valve should be installed so that there is a 2" (51 mm) minimum clearance to remove the actuator from the valve body. Provide unions for removal of unit coil and/or control valve as a future service consideration.

Steam connections will be opposite the Direct Expansion (DX) cooling coils connection to facilitate piping. The modulating valve accessory must be field installed on the unit for which it was selected.

Table 34: Typical 2-Way Steam Modulating Valve Piping



Steam coils have a factory-installed pressure equalizing valve and a 24" (610 mm) long pressure equalizing line that terminates in a 1/2" M.P.T. fitting.

Refer to [Figure 110](#) and [Figure 111](#) and connect the 1/4" (6.35 mm) vacuum breaker tube to the downstream return line. Make this connection downstream of the trap outlet.

In Steam Systems:

The optional factory-supplied Daikin Applied MicroTech Modulating Control Valve for steam applications is the 2-way type. It is shipped separately from the unit ventilator to help avoid shipping damage, yet provide the installer with maximum flexibility in making the field piping connection. For steam applications, the 2-way, angle pattern valve furnished is normally piped open to the coil. All steam coils are 1-1/8" (34 mm) female sweat connections. Coil connections terminate 9" (229 mm) from the end of the unit.

Figure 110: Same End Connections

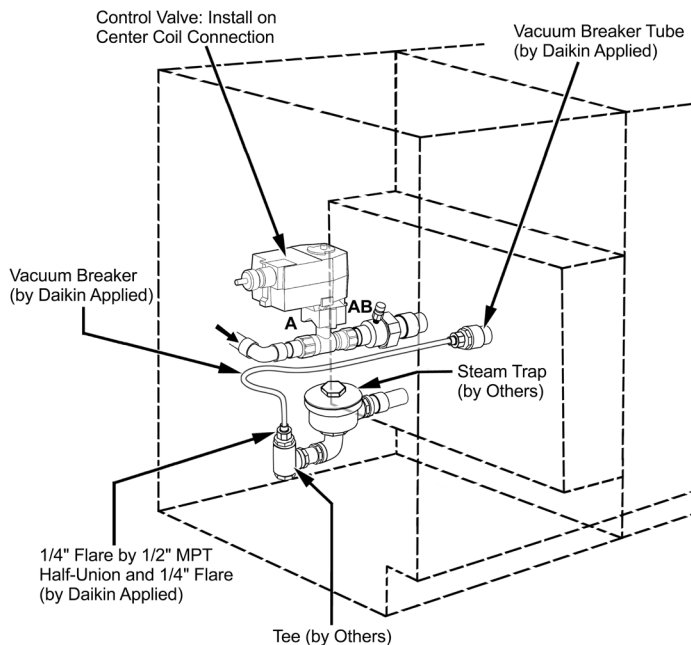
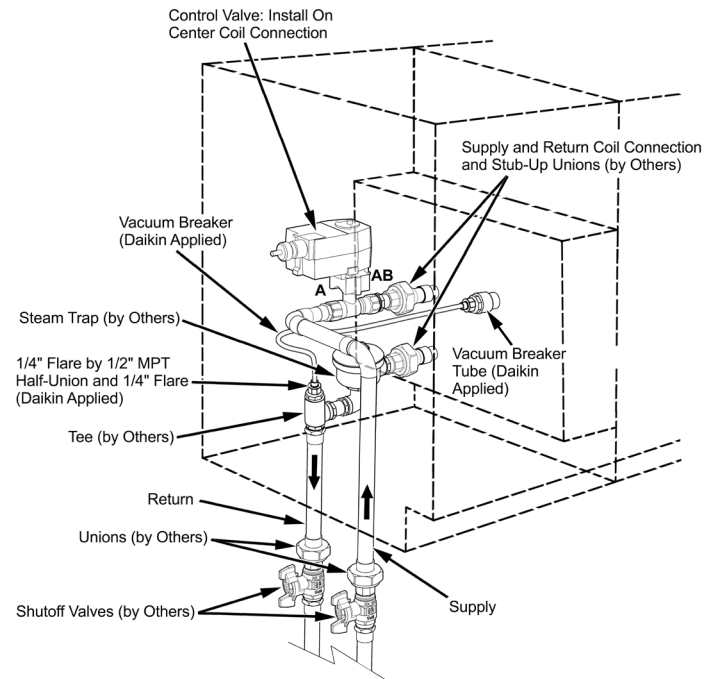


Figure 111: 2-Way Steam Modulating Valve Control - Same End Drain Connection (Piping Within Unit End Compartment)



Condensate Piping

No internal building condensate drain piping system shall be required for condensate removal. Condensate from the indoor (primary) drain pan drains into the (lower) outdoor condenser section drain pan, positioned beneath the condenser fans in the wall-sleeve. Cooling condensate is disposed of when it is directed it into the condenser fan scrolls, which throw the condensate against the hot condenser coils for evaporation. Remaining moisture that does not evaporate is collected in the (upper) outdoor drain pan and routed back to the (lower) outdoor drain pan.

During heavy dehumidification periods, excess condensate that does not evaporate, drains into the (lower) outdoor drain pan and away through the drain notches in the rear flange of the condenser section drain pan, as well as the drain slots at the bottom of the condenser section. With proper wall sleeve opening preparation and unit installation, the excess condensate will flow out the drain notches and follow the slope of the wall sleeve opening and flow under the bottom edge of the louver to the outside. For proper water removal, louvers must be installed with drain notches located at the bottom, and kept free of sealant, mortar and other debris.

Field Installed Accessories

Installing Optional End Panel

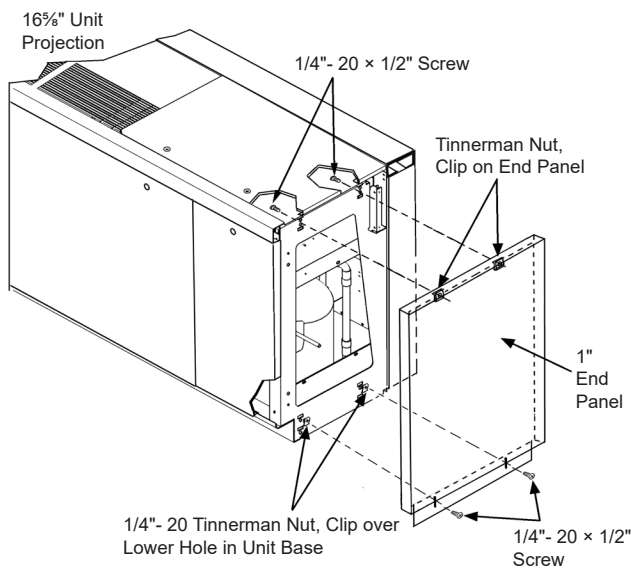
End Panel Assembly

Accessory end panels are shipped separately with hardware and kickplate.

The final step of unit installation is attaching the end panels. End panels are required unless the unit has adjoining matching cabinets.

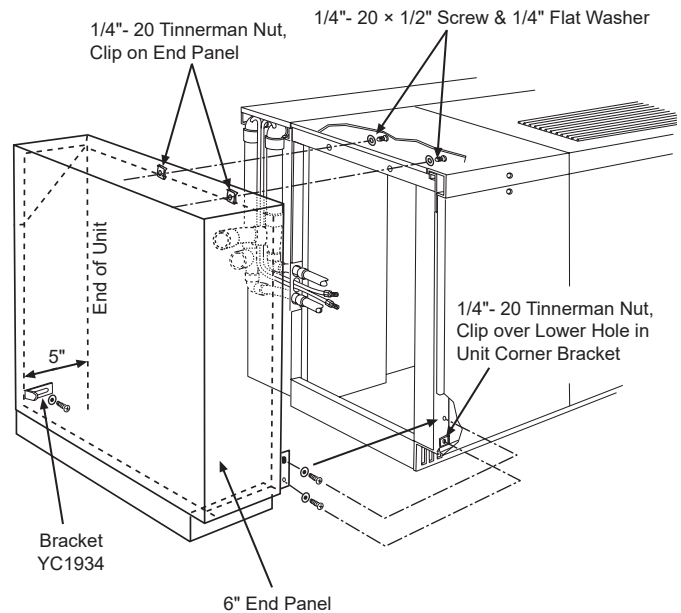
1. Refer to [Figure 112](#) for a 1" thick end panel. Attach two (2) Tinnerman nuts to the top edge of the end panel and two (2) to the bottom end of the unit. Align the end panel with the front and top edges of the unit. Insert through upper mounting holes inside unit end compartment and thread into Tinnerman clips on the end panel. Attach the end panel to the unit using four (4) 5/32" hex socket head fasteners provided.

Figure 112: 1" End Panel



2. Refer to [Figure 113](#) for 6" thick end panel.
 - a. Position bracket (YC1934) on wall so angle is 5" from end of unit and near bottom.
 - b. Mark and drill required hole for device to fasten bracket to wall (not included).
 - c. Attach the bracket to wall.
 - d. Attach two (2) Tinnerman nuts to the top edge of the end panel and one (1) to the bottom front of the end frame.
 - e. Align the end panel with the front and top edges of the unit. Attach end panel to the unit using three (3) 5/32" hex socket head fasteners provided. Bracket should prevent movement of panel toward the unit when pressure is applied to the end panel.

Figure 113: 6" End Panel with Provided Hardware



End Panel Dimensions

Figure 114: 1" (25 mm) and 6" (152 mm) End Panel Dimensions – Self-Contained Floor Unit Ventilators

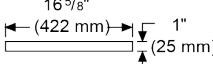
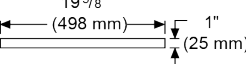
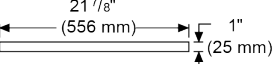
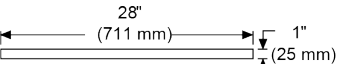
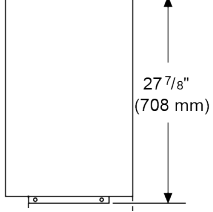
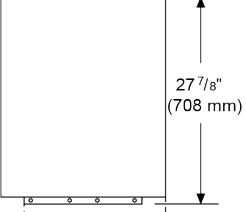
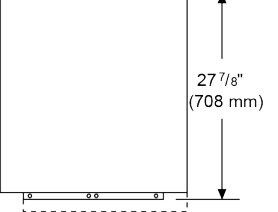
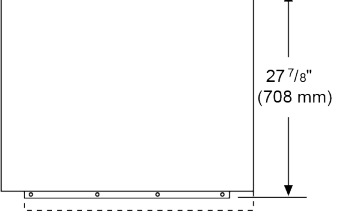
All Dim. in inches	16 ⁵ / ₈ " (422 mm) Deep End Panels	19 ⁵ / ₈ " (498 mm) Deep End Panels	21 ⁷ / ₈ " (556 mm) Deep End Panels	28" (711 mm) Deep End Panels
Top View				
End View with No Cut-Out				

Figure 115: 6" (152 mm) End Panel Dimensions

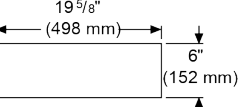
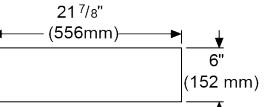
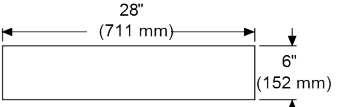
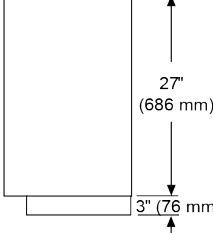
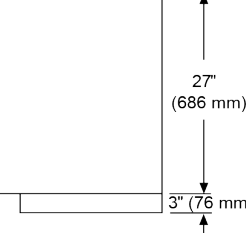
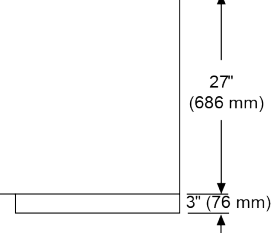
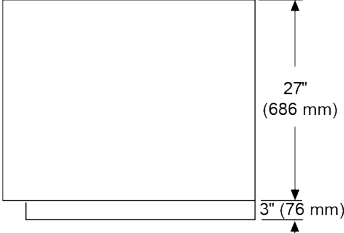
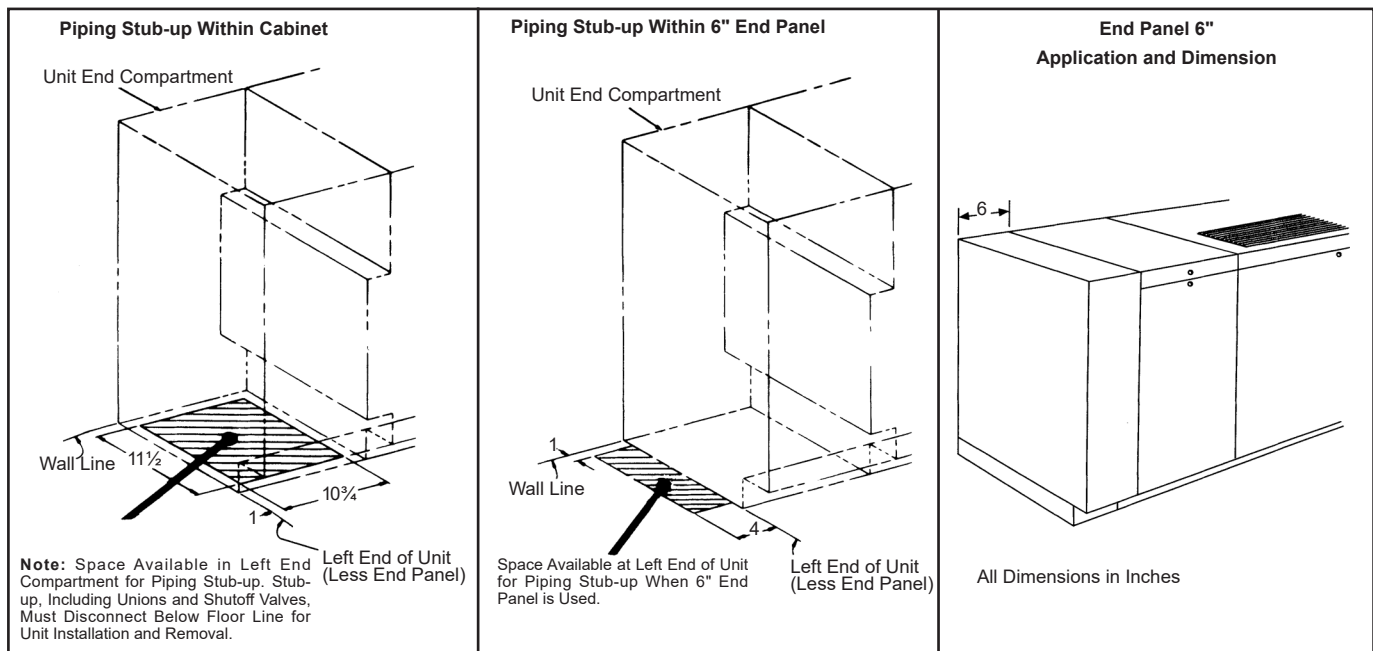
All Dim. in inches	16 ⁵ / ₈ " (422 mm) Deep End Panels	19 ⁵ / ₈ " (498 mm) Deep End Panels	21 ⁷ / ₈ " (556 mm) Deep End Panels	28" (711 mm) Deep End Panels
Top View				
End View with No Cut-Out				

Figure 116: Piping Stub-Up Details, 6" End Panel

Electrical and Controls

Unit Electrical and Control Connections

WARNING

To avoid electrical shock, personal injury, or death, be sure that field wiring complies with local and national fire, safety, and electrical codes, and voltage to the system is within the limits shown in the job-specific drawings and unit electrical data plate(s).

WARNING

Power supply to unit must be disconnected before making field connections. To avoid electrical shock, personal injury, or death, be sure to rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.

See “Electrical Data” on page 63 and Figure 129 on page 73 and the job-specific electrical drawings before proceeding with field power and control wiring. See also the wiring diagram provided on the unit ventilator right front access panel.

CAUTION

Confirm the wiring and phase is correct. Running the compressor backward will damage the compressor and void the warranty.

Procedure

1. Confirm that the power to the wall sleeve is de-energized and tagged-out.
2. Verify that all wiring has been hooked up per the instructions in the “Wall Sleeve Electrical Connections” section. See Figure 131 and Figure 132 for electromechanical control wiring details and Figure 127 through Figure 130 for MicroTech controls.
3. Confirm that the unit SW1-Main Power non-fused “On-Off” switch is “Off.”
4. Provide power to the wall sleeve.
5. Verify that the main power is correctly phased to the wall sleeve and unit without closing SW1.

MicroTech Unit Mounted DDC Control Components

NOTICE

Figure 118 & Figure 117 provide a top view of the unit and its components. A description of each component follows, by callout number.

1. **MicroTech Unit Ventilator Controller (UVC):** (Located beneath the Local User Interface panel). Factory mounted and run tested, microprocessor-based DDC control device capable of complete, Stand-alone unit control or incorporated into a building-wide network using the optional BACnet plug-in communication module. The UVC contains a microprocessor that is pre-programmed with the application code required to operate the unit. The UVC supports up to 16 analog inputs, 8 binary inputs, 4 analog outputs, 2 PWM outputs, and 14 binary outputs. Client-

server unit controllers are field configured for local peer-to-peer network between units, with the wiring field-installed.

2. **Communication Modules (optional):** (Located beneath the Local User Interface panel). Plug-in network communication module that is attached to the UVC via a 12-pin header and 4 locking standoffs. Available communication modules:
 - **Building Automation and Control Network (BACnet™) Client-Server Token Passing (MS/TP):** Allows the UVC to inter-operate with systems that use the BACnet (MS/TP) protocol with a conformance level of 3. Meets the requirements of ANSI/ASHRAE 135-2008 standard for BACnet systems.
 - **LonWorks™ compliant Space Comfort Controller (SCC):** Supports the LonWorks SCC profile number 8500-10.
3. **Local User Interface (LUI) (optional):** (see Figure 117 and Figure 119) The LUI provides a unit mounted interface which indicates the current unit operating state and can be used to adjust the unit ventilator operating parameters (operating mode, temperature set points, fan speed and occupancy mode). The LUI has a built in menu structure (password protected) with 4 keys and 2 individual LED indicators to adjust the unit ventilator operating parameters.
4. **External Signal Connection Plugs:** (Located beneath the Local User Interface panel). Three (3) multi-pin plugs are factory provided and pre-wired with amp plug connections that plug into the wall sleeve. Provided for field wiring of:
 - **Remote Wall Mounted Temperature Sensor:** Multiple options available. Contact your Daikin Applied representative.
 - **External Input Signals (by others):** unoccupied, remote shutdown, ventilation lockout, dew point/humidity (night time operation) or exhaust interlock signals.
 - **External Output Options (by others):** fault indication signal, exhaust fan on/off or auxiliary heat signal.

NOTICE

Not all external signal options can be used simultaneously and may not be available on all software models.

5. **Motor speed transformer:** (Located beneath the Local User Interface panel). Multi-tap auto-transformer provides multiple fan motor speed control through the LUI.
6. **Unit Main Power “On-Off” Switch (not shown):** Shipped with the wall sleeve accessory, the “On-Off” switch disconnects the main power to the unit for servicing or when the unit is to be shut down for an extended period of time.

MicroTech Control Components

7. **Fuse(s):** Fan motor and controls have the hot line(s) protected by factory installed cartridge type fuse(s).
8. **Control Transformer:** (Located beneath the Local User Interface panel). 75 VA 24-volt NEC Class 2 transformer for 24 volt power supply.

9. **Outdoor Air/Return Air Damper Actuator (A1):** Proportional, direct coupled actuator that spring returns the outdoor air damper to the closed position upon a loss of power.
10. **Face and Bypass Damper Actuator (A2):** Proportional, direct coupled actuator that is non-spring returned (Model AZQ only, other units are valve control).
11. **Hydronic Coil Low Air Temperature Limit (T6 freezestat):** Factory installed on all units with hydronic (water) coils. The T6 freezestat cuts out at 38°F (+/- 3°F) and automatically resets at 45°F (+/- 3°F).
12. **Indoor, Direct Expansion (DX) Coil Refrigerant Temperature Sensor (ICT):** The sensor is installed on the unit ventilator's indoor refrigerant coil on the right hand side of the coil "u-bend". It is used to sense low refrigerant temperatures on the indoor coil.
13. **Outdoor, Direct Expansion (DX) Coil Refrigerant Temperature Sensor (OCT):** The sensor is installed on the unit ventilator's outdoor refrigerant coil on the right hand side of the coil "u-bend". It is used to sense the refrigerant temperature on the outdoor coil.
14. **Room Temperature Sensor (RAT):** The RAT is a field-installed, optional accessory. The unit mounted sensor can be installed in the sampling chamber (front, center section) where room air is continuously drawn through for prompt response to temperature changes in the room. A Remote Wall Mounted Temperature Sensor is available for remote room temperature sensing.
15. **Discharge Air Temperature Sensor (DAT):** The sensor is located on the second fan from the right to sense discharge air temperatures.
16. **Outdoor Air Temperature Sensor (OAT):** The sensor is located in the outdoor air section of the unit before the outdoor air damper. With network applications, the unit mounted sensor can be overridden by a remote sensor through the network.
17. **Outdoor Air Humidity Sensor (optional / standard with expanded and leading edge controls) (OH):** Unit mounted humidity sensor for units using Expanded outdoor enthalpy economizer or Leading Edge indoor/outdoor, true enthalpy comparison economizer. The sensor is located in the outdoor air section of the unit before the outdoor air damper. With network applications, the unit mounted sensor can be overridden by a remote sensor through the network.
18. **Room Humidity Sensor (optional / standard with expanded controls) (IH):** Unit mounted humidity sensor for units capable of passive or active dehumidification (Reheat) or with units using Leading Edge indoor/outdoor, true enthalpy comparison economizer. The sensor is located in the sampling chamber (front, center panel) where room air is continuously drawn through for fast response to humidity changes in the room. With network applications, the unit mounted sensor can be overridden by a remote sensor through the network.
19. **CO₂ Sensor (CO₂) (optional):** Unit mounted, single beam absorption infrared gas sensor with a sensing range of 0 – 2000 ppm and voltage output of 0 to 10 VDC (100 Ω output impedance). The Pitot Tube sensing device is located in the unit ventilator's return air stream. The optional CO₂ sensor is used with the UVC's Demand Control Ventilation feature to vary the amount of outside air based on actual room occupancy. With network applications, the unit mounted sensor can be overridden by a remote sensor through the network.
20. **Control Valve(s) (not shown):** Optional accessory valve(s) may be either 2-position EOC (model AZQ) or modulating (model AZU and AZR), to control the quantity of water through the coil. Available in 2-way or 3-way configurations. Spring return actuators are required for all hot water and steam heating valves. All heating valves are Normally Open (NO).
21. **A2L Sensor (A2L1-2):** Up to two unit mounted R32 refrigerant sensors are installed in the base of each end pocket. They are used to detect a refrigerant leak for initiating leak mitigation control.
22. **MT6210 A2L Mitigation Controller:** Factory mounted controller monitors the A2L sensors and indicates a refrigerant leak or refrigerant sensor failure should one occur.

Figure 117: Top Right Access View with LUI Panel Installed

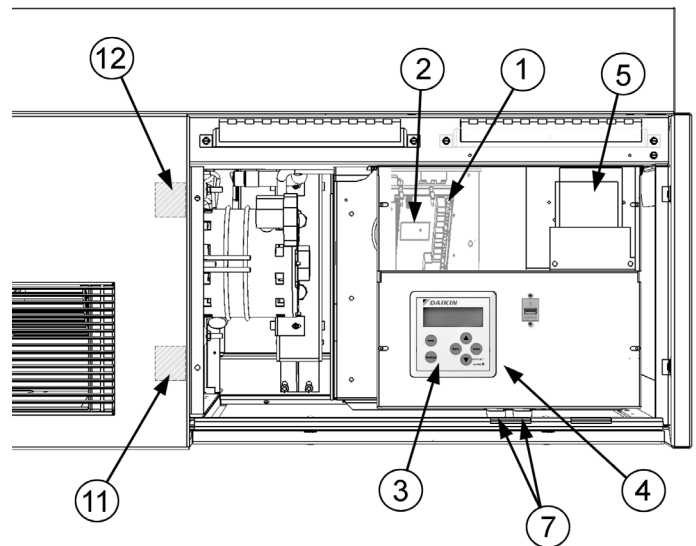
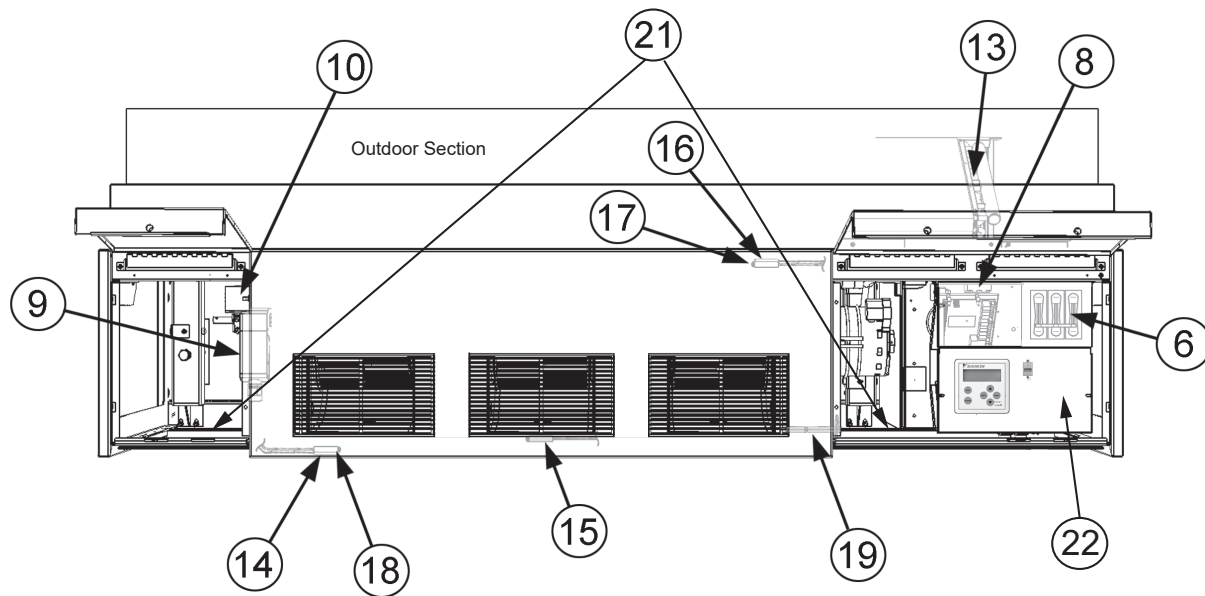


Figure 118: MicroTech Sensor and Component Locations (Top View)

MicroTech Control Components

Economizer Control Capabilities

Basic – Compares the inside and outside air temperature using item 14 (Room Temperature Sensor) and item 16 (Outdoor Air Temperature Sensor) to determine if outdoor air can be used for “free”, economizer cooling operation.

Expanded – Compares the inside and outside air temperature using item 14 (Room Temperature Sensor) and item 16 (Outdoor Air Temperature Sensor) and calculates the enthalpy of the outside air relative humidity using item 17 (Outdoor Air Humidity Sensor) to determine if outdoor air can be used for “free”, economizer cooling operation.

Leading Edge – True enthalpy comparison economizer that compares the inside and outside air temperature using item 14 (Room Temperature Sensor) and item 16 (Outdoor Air Temperature Sensor) and compares the enthalpy of the inside and outside air relative humidity using item 17 (Outdoor Air Humidity Sensor) and item 18 (Room Humidity Sensor) to determine if outdoor air can be used for “free”, economizer cooling operation.

Economizer for Reheat (Model AZR)

Basic – Uses item 14 (Room Temperature sensor), item 16 (Outdoor Air Temperature Sensor) and item 18 (Room Humidity Sensor) for active dehumidification (reheat) or to determine if outdoor air can be used for “free”, economizer cooling operation.

Leading Edge – Uses item 14 (Room Temperature Sensor), item 16 (Outdoor Air Temperature Sensor), item 17 (Outdoor Air Humidity Sensor) and item 18 (Room Humidity Sensor) for active dehumidification (reheat) or to determine if outdoor air can be used for “free”, economizer cooling operation.

Local User Interface (LUI)

The optional built-in LUI touch pad with digital OLED display is located in the right hand compartment below the top right access door. The 4 x 20 OLED display will provide a variety of information including:

- Operating mode states
- Fan functions
- Room set point temperature
- Current room temperature
- Fault codes for quick diagnostics at the unit

The LUI has a built in menu structure (password protected) with 4 keys and 2 individual LED indicators to adjust the unit ventilator operating parameters shown in the following.

Figure 119: Local User Interface (LUI)

Operating Mode States

- **Heat:** Heating and economizer operation only
- **Cool:** Cooling and economizer operation only

Fan Only: Fan operation only

Auto: Unit automatically switches between heating, cooling and economizer operation to satisfy the room load conditions. The current unit state is also displayed.

Fan States

High: (constant speed)

Medium: (constant speed)

Low: (constant speed)

Auto (part load, variable air): Varies the fan speed automatically to meet the room load conditions whether the unit is in heating, cooling or economizer mode. The current fan speed is also displayed. During low load or normal operation (about 60% of the time) the fans will operate at low speed. When the load increases to an intermediate demand the fans automatically shifts to medium speed. At near design or design load conditions, the fans will operate on high speed. A 10-minute delay between speed changes is incorporated to minimize the awareness of these changes. The outdoor air damper will index based on the fan speed to maintain the required minimum cfm (cubic feet per minute) of ventilation air.

Occupancy Modes

Occupied: Normal, daytime operation where the unit maintains the room set point.

Unoccupied: Night set back operating mode in which the unit responds to a new room set point and cycles to maintain the condition. The fan comes on when heating or cooling is needed and runs until the load is satisfied. The outside air damper is closed during this mode. When a cooling load is satisfied by the refrigerant system, the compressor is de-energized and the Unit Ventilator indoor fan continues to run for a fixed period of time to remove possible frost buildup on the evaporator coil.

Stand By Mode: The unit ventilator maintains the stand by mode set point temperature with the outside air damper closed. The fan runs continuously unless it is configured to cycle in response to the room load.

Bypass Mode: By depressing the Tenant Override Switch (Item 4) the unit is placed back into the Occupied Mode for a predetermined time (default of 120 minutes). This time can be set in 1-minute increments from 1 minute to 240 minutes through the Service Tool or a network.

Electrical Data**Table 35: AZU & AZQ – Size 024**

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	2.8	11.1	67.5	None, HW Steam		—	—	20.98	30
			3.2	2.8	11.1	67.5	Elec. Heat¹ (AZU Only)	Low (3 elem.)	8.0	38.5	53.50	60
			3.2	2.8	11.1	67.5		High (6 elem.)	16.0	76.9	101.50	110
230/60/1	207	253	3.2	2.8	11.1	67.5	None, HW Steam		—	—	20.98	30
			3.2	2.8	11.1	67.5	Elec. Heat¹ (AZU Only)	Low (3 elem.)	7.3	33.3	47.00	50
			3.2	2.8	11.1	67.5		High (6 elem.)	14.7	66.7	88.75	90
208/60/3	197	228	3.2	2.8	7.8	28.0	None, HW Steam		—	—	16.85	20
			3.2	2.8	7.8	28.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	8.0	22.2	33.13	35
			3.2	2.8	7.8	28.0		High (6 elem.)	16.0	44.4	60.88	70
230/60/3	207	253	3.2	2.8	7.8	28.0	None, HW Steam		—	—	16.85	20
			3.2	2.8	7.8	28.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	7.3	19.2	29.38	30
			3.2	2.8	7.8	28.0		High (6 elem.)	14.7	38.5	53.50	60
460/60/3	414	506	3.2	1.5	4.3	29.0	None, HW Steam		—	—	11.71	15
			3.2	1.5	4.3	29.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	7.3	9.6	18.04	20
			3.2	1.5	4.3	29.0		High (6 elem.)	14.7	19.2	30.04	35

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

Table 36: AZR – Size 024

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	2.8	11.1	67.5	None, Steam		—	—	20.98	30
			3.2	2.8	11.1	67.5	Elec. Heat [†]	Low (3 elem.)	8.0	38.5	69.10	70
			3.2	2.8	11.1	67.5		High (6 elem.)	16.0	76.9	117.10	125
230/60/1	207	253	3.2	2.8	11.1	67.5	None, Steam		—	—	20.98	30
			3.2	2.8	11.1	67.5	Elec. Heat [†]	Low (3 elem.)	7.3	33.3	62.60	70
			3.2	2.8	11.1	67.5		High (6 elem.)	14.7	66.7	104.35	110
208/60/3	197	228	3.2	2.8	7.8	28.0	None, Steam		—	—	16.85	20
			3.2	2.8	7.8	28.0	Elec. Heat [†]	Low (3 elem.)	8.0	22.2	44.60	45
			3.2	2.8	7.8	28.0		High (6 elem.)	16.0	44.4	72.35	80
230/60/3	207	257	3.2	2.8	7.8	28.0	None, Steam		—	—	16.85	20
			3.2	2.8	7.8	28.0	Elec. Heat [†]	Low (3 elem.)	7.3	19.2	40.85	45
			3.2	2.8	7.8	28.0		High (6 elem.)	14.7	38.5	64.98	70
460/60/3	414	506	3.2	1.5	4.3	29.0	None, Steam		—	—	11.71	15
			3.2	1.5	4.3	29.0	Elec. Heat [†]	Low (3 elem.)	7.3	9.6	23.71	25
			3.2	1.5	4.3	29.0		High (6 elem.)	14.7	19.2	35.71	40

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

Table 37: AZU & AZQ – Size 036

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	2.8	20.5	126.0	None, Steam		—	—	32.73	50
			3.2	2.8	20.5	126.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	10.0	48.1	65.50	70
			3.2	2.8	20.5	126.0		High (6 elem.)	20.0	96.2	125.63	150
230/60/1	207	253	3.2	2.8	20.5	126.0	None, Steam		—	—	32.73	50
			3.2	2.8	20.5	126.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	9.2	41.7	57.50	60
			3.2	2.8	20.5	126.0		High (6 elem.)	18.4	83.3	109.50	110
208/60/3	197	228	3.2	2.8	10.2	82.0	None, Steam		—	—	19.85	30
			3.2	2.8	10.2	82.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	10.0	27.8	40.13	45
			3.2	2.8	10.2	82.0		High (6 elem.)	20.0	55.5	74.75	80
230/60/3	207	253	3.2	2.8	10.2	82.0	None, Steam		—	—	19.85	30
			3.2	2.8	10.2	82.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	9.2	24.1	35.50	40
			3.2	2.8	10.2	82.0		High (6 elem.)	18.4	48.1	65.50	70
460/60/3	414	506	3.2	1.5	6.0	56.0	None, Steam		—	—	12.08	15
			3.2	1.5	6.0	56.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	9.2	12.0	21.04	25
			3.2	1.5	6.0	56.0		High (6 elem.)	18.4	24.1	36.16	40

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

Table 38: AZR – Size 036

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	2.8	20.5	126.0	None, Steam		—	—	32.73	50
			3.2	2.8	20.5	126.0	Elec. Heat [†]	Low (3 elem.)	10.0	48.1	92.85	100
			3.2	2.8	20.5	126.0		High (6 elem.)	20.0	96.2	152.98	175
230/60/1	207	253	3.2	2.8	20.5	126.0	None, Steam		—	—	32.73	50
			3.2	2.8	20.5	126.0	Elec. Heat [†]	Low (3 elem.)	9.2	41.7	84.85	90
			3.2	2.8	20.5	126.0		High (6 elem.)	18.4	83.3	136.85	150
208/60/3	197	228	3.2	2.8	10.2	82.0	None, Steam		—	—	19.85	30
			3.2	2.8	10.2	82.0	Elec. Heat [†]	Low (3 elem.)	10.0	27.8	54.60	60
			3.2	2.8	10.2	82.0		High (6 elem.)	20.0	55.5	89.23	90
230/60/3	207	257	3.2	2.8	10.2	82.0	None, Steam		—	—	19.85	30
			3.2	2.8	10.2	82.0	Elec. Heat [†]	Low (3 elem.)	9.2	24.1	49.98	50
			3.2	2.8	10.2	82.0		High (6 elem.)	18.4	48.1	79.98	80
460/60/3	414	506	3.2	1.5	6.0	56.0	None, Steam		—	—	12.08	15
			3.2	1.5	6.0	56.0	Elec. Heat [†]	Low (3 elem.)	9.2	12.0	27.08	30
			3.2	1.5	6.0	56.0		High (6 elem.)	18.4	24.1	42.21	45

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

Table 39: AZU & AZQ – Size 044

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	6.8	25.9	128.4	None, Steam		—	—	43.48	60
			3.2	6.8	25.9	128.4	Elec. Heat¹ (AZU Only)	Low (3 elem.)	12.0	57.7	77.50	80
			3.2	6.8	25.9	128.4		High (6 elem.)	24.0	115.4	149.63	150
230/60/1	207	253	3.2	6.8	25.9	128.4	None, Steam		—	—	43.48	60
			3.2	6.8	25.9	128.4	Elec. Heat¹ (AZU Only)	Low (3 elem.)	11.0	50.0	67.88	70
			3.2	6.8	25.9	128.4		High (6 elem.)	22.0	100.0	130.38	150
208/60/3	197	228	3.2	6.8	13.4	105.3	None, Steam		—	—	27.85	40
			3.2	6.8	13.4	105.3	Elec. Heat¹ (AZU Only)	Low (3 elem.)	12.0	33.3	47.00	50
			3.2	6.8	13.4	105.3		High (6 elem.)	24.0	66.6	88.63	90
230/60/3	207	253	3.2	6.8	13.4	105.3	None, Steam		—	—	27.85	40
			3.2	6.8	13.4	105.3	Elec. Heat¹ (AZU Only)	Low (3 elem.)	11.0	28.9	41.50	45
			3.2	6.8	13.4	105.3		High (6 elem.)	22.0	57.7	77.50	80
460/60/3	414	506	3.2	2.2	6.9	61.8	None, Steam		—	—	15.66	20
			3.2	2.2	6.9	61.8	Elec. Heat¹ (AZU Only)	Low (3 elem.)	11.0	14.4	24.04	25
			3.2	2.2	6.9	61.8		High (6 elem.)	22.0	28.9	42.16	45

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

Table 40: AZR – Size 044

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	6.8	25.9	128.4	None, Steam		—	—	43.48	60
			3.2	6.8	25.9	128.4	Elec. Heat¹	Low (3 elem.)	12.0	57.7	115.60	125
			3.2	6.8	25.9	128.4		High (6 elem.)	24.0	115.4	187.73	200
230/60/1	207	253	3.2	6.8	25.9	128.4	None, Steam		—	—	43.48	60
			3.2	6.8	25.9	128.4	Elec. Heat¹	Low (3 elem.)	11.0	50	105.98	110
			3.2	6.8	25.9	128.4		High (6 elem.)	22.0	100	168.48	175
208/60/3	197	228	3.2	6.8	13.4	105.3	None, Steam		—	—	27.85	40
			3.2	6.8	13.4	105.3	Elec. Heat¹	Low (3 elem.)	12.0	33.3	69.48	70
			3.2	6.8	13.4	105.3		High (6 elem.)	24.0	66.6	111.10	125
230/60/3	207	257	3.2	6.8	13.4	105.3	None, Steam		—	—	27.85	40
			3.2	6.8	13.4	105.3	Elec. Heat¹	Low (3 elem.)	11.0	28.9	63.98	70
			3.2	6.8	13.4	105.3		High (6 elem.)	22.0	57.7	99.98	100
460/60/3	414	506	3.2	2.2	6.9	61.8	None, Steam		—	—	15.66	20
			3.2	2.2	6.9	61.8	Elec. Heat¹	Low (3 elem.)	11.0	14.4	33.66	35
			3.2	2.2	6.9	61.8		High (6 elem.)	22.0	28.9	51.78	60

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

Table 41: AZU & AZQ – Size 054

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	6.8	30.2	178.0	None, Steam		—	—	48.85	70
			3.2	6.8	30.2	178.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	12.0	57.7	77.50	80
			3.2	6.8	30.2	178.0		High (6 elem.)	24.0	115.4	149.63	150
230/60/1	207	253	3.2	6.8	30.2	178.0	None, Steam		—	—	48.85	70
			3.2	6.8	30.2	178.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	11.0	50.0	67.88	70
			3.2	6.8	30.2	178.0		High (6 elem.)	22.0	100.0	130.38	150
208/60/3	197	228	3.2	6.8	16.9	140.0	None, Steam		—	—	32.23	45
			3.2	6.8	16.9	140.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	12.0	33.3	47.00	50
			3.2	6.8	16.9	140.0		High (6 elem.)	24.0	66.6	88.63	90
230/60/3	207	253	3.2	6.8	16.9	140.0	None, Steam		—	—	32.23	45
			3.2	6.8	16.9	140.0	Elec. Heat¹ (AZU Only)	Low (3 elem.)	11.0	28.9	41.50	45
			3.2	6.8	16.9	140.0		High (6 elem.)	22.0	57.7	77.50	80
460/60/3	414	506	3.2	2.2	8.2	54.7	None, Steam		—	—	17.28	25
			3.2	2.2	8.2	54.7	Elec. Heat¹ (AZU Only)	Low (3 elem.)	11.0	14.4	24.04	25
			3.2	2.2	8.2	54.7		High (6 elem.)	22.0	28.9	42.16	45

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

Table 42: AZR – Size 054

Volt/Hz/Phase	Voltage Range		Indoor Fan FLA	Outdoor Fan FLA	Compressor		Heating Option				Power Supply	
	Min.	Max.			RLA	LRA	Heat Type		Heater kW	Rated Heater Amps	MCA	Maximum Fuse
208/60/1	197	228	3.2	6.8	30.2	178.0	None, Steam		—	—	48.85	70
			3.2	6.8	30.2	178.0	Elec. Heat [†]	Low (3 elem.)	12.0	57.7	120.98	125
			3.2	6.8	30.2	178.0		High (6 elem.)	24.0	115.4	193.10	200
230/60/1	207	253	3.2	6.8	30.2	178.0	None, Steam		—	—	48.85	70
			3.2	6.8	30.2	178.0	Elec. Heat [†]	Low (3 elem.)	11.0	50	111.35	125
			3.2	6.8	30.2	178.0		High (6 elem.)	22.0	100	173.85	175
208/60/3	197	228	3.2	6.8	16.9	140.0	None, Steam		—	—	32.23	45
			3.2	6.8	16.9	140.0	Elec. Heat [†]	Low (3 elem.)	12.0	33.3	73.85	80
			3.2	6.8	16.9	140.0		High (6 elem.)	24.0	66.6	115.48	125
230/60/3	207	257	3.2	6.8	16.9	140.0	None, Steam		—	—	32.23	45
			3.2	6.8	16.9	140.0	Elec. Heat [†]	Low (3 elem.)	11.0	28.9	68.35	70
			3.2	6.8	16.9	140.0		High (6 elem.)	22.0	57.7	104.35	110
460/60/3	414	506	3.2	2.2	8.2	54.7	None, Steam		—	—	17.28	25
			3.2	2.2	8.2	54.7	Elec. Heat [†]	Low (3 elem.)	11.0	14.4	35.28	40
			3.2	2.2	8.2	54.7		High (6 elem.)	22.0	28.9	53.41	60

¹ Electric Heat Options are without Compressor and Outdoor Fan.

Legend			
FLA	Full Load Amps	LRA	Locked Rotor Amps
RLA	Rated Load Amps	MCA	Minimum Circuit Amps

MicroTech Wall Mounted Sensors



WARNING

Rigorously adhere to field wiring procedures regarding proper lockout and tagout of components.



WARNING

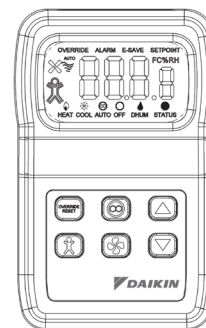
To avoid electrical shock, personal injury, or death:

1. Installer must be a qualified, experienced technician.
2. Disconnect power supply before installation to prevent electrical shock and damage to equipment.
3. Make all connections in accordance with electrical wiring diagrams, and in compliance with national and local codes. Use copper conductors only.
4. Do not exceed ratings of the device. This is a low voltage device: Never apply more than 12VAC/VDC to any lead or damage will result.
5. Avoid locations where excessive moisture, corrosive fumes, or vibrations are present.

NOTICE

Avoid placing wall sensor near drafty areas such as doors or windows. Avoid external walls, or dead spots near exposed columns. Avoid direct sunlight on wall sensor.

Figure 120: Wall Mounted Temperature Sensor



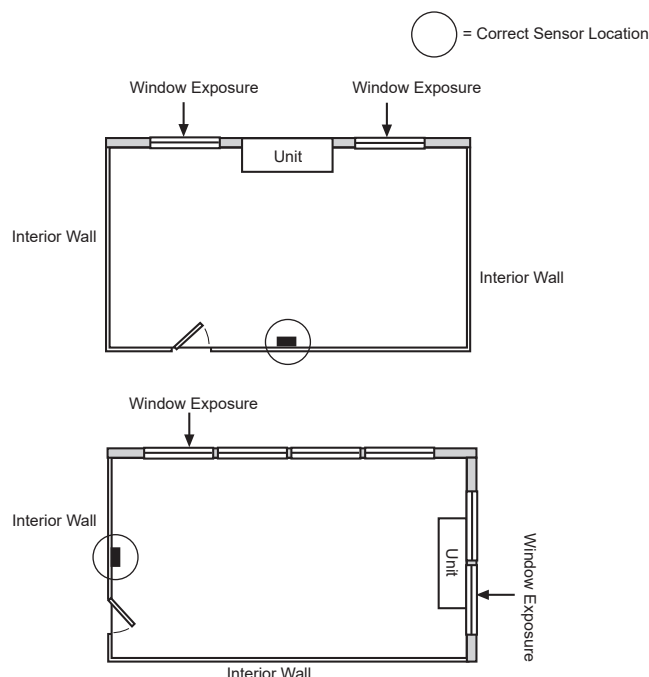
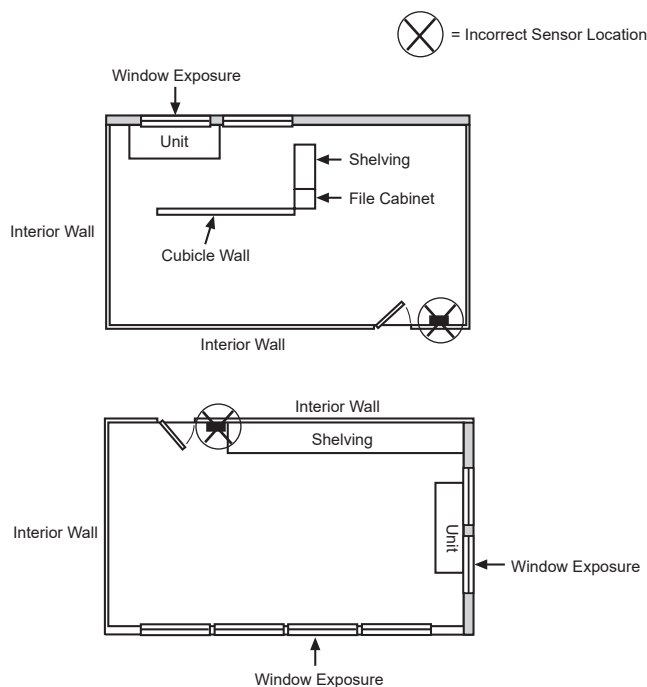
When Using A Remote Temperature Sensor

If a decision is made to use a Wall Mounted Temperature Sensor instead of the unit mounted room air sensor then placement of the Remote Wall Mounted Temperature Sensor is critical for proper room temperature sensing (see Figure 121 and Figure 122). The UVC is capable of using one of four remote wall mounted temperature sensors. It is recommended that additional wires be pulled to compensate for potential wire breakage or future options.

- 6-Button Digital Adjustable Sensor (PN 910247458) 8-wires
- 4-Button Digital Adjustable Sensor (PN 910247448) 6-wires
- The Basic Sensor with setpoint adjustment (PN 910247453) 4-wires
- The Basic Sensor (PN 910247450) 3-wires

NOTICE

For sensor terminal wiring details see the installation manual specific to the sensor being used.

Figure 121: Correct Wall Sensor Locations**Figure 122: Incorrect Unit and Wall Sensor Locations****Table 43: Max Sensor Wire Length and Gauge**

Maximum sensor wire length for less than 1°F error	
Gauge	Length
14 AWG	800 ft. (244 m)
16 AWG	500 ft. (152 m)
18 AWG	310 ft. (94 m)
20 AWG	200 ft. (61 m)
22 AWG	125 ft. (38 m)

**CAUTION**

Static sensitive components. A static discharge while handling electronic circuit boards can cause damage to the components. Discharge any static electrical charge by touching the bare metal inside the main control panel before performing any service work. Never unplug any cables, circuit board terminal blocks, relay modules, or power plugs while power is applied to the panel.

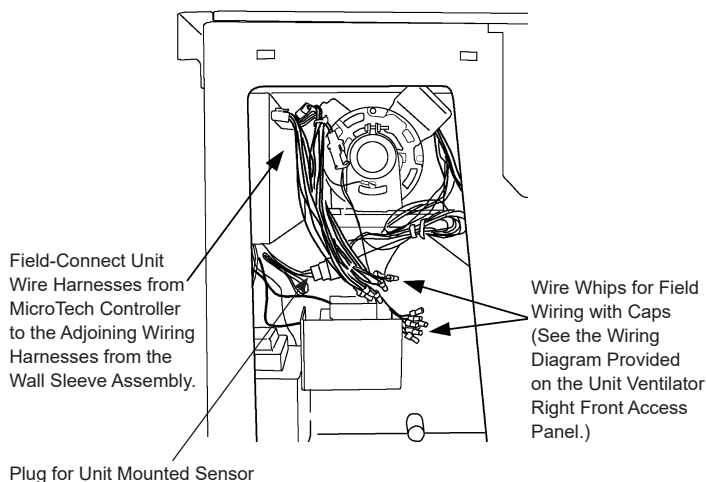
Typical Connections For Temperature Sensor Applications

The low voltage field wiring connections have all been centrally located within the unit ventilator and are easily accessible.

To simplify field connections, multi-pin plugs are factory provided and pre-wired with short wire whips (Figure 123). Each of the wires in these wire whips is capped and should remain capped if not used. See Table 44 on page 70 for wiring the remote mounted temperature sensor to the unit control wiring.

NOTICE

The capped wire whips are built into the wall sleeve. The mating-connections from the MicroTech control board plug into the wall sleeve wire whip harnesses when the unit ventilator is installed and connected to the wall sleeve.

Figure 123: Field Wiring Whips with Caps Viewed From Right End Compartment

NOTE: The capped wire whips are built into the wall sleeve. The mating-connections from the MicroTech control board plug into the wall sleeve wire whip harnesses when the unit ventilator is installed and connected to the wall sleeve.

All low voltage field wiring connections must be run in shielded cable with the shield drain wires connected as shown in the field wiring diagrams.

For sensor terminal wiring details see the installation manual specific to the sensor being used.

Sensor Functions

- Display sensor to show room Temperature, fan speed (AUTO/HIGH/MEDIUM/LOW), system mode (HEAT/COOL AUTO/OFF), ALARM, Override and occupancy.

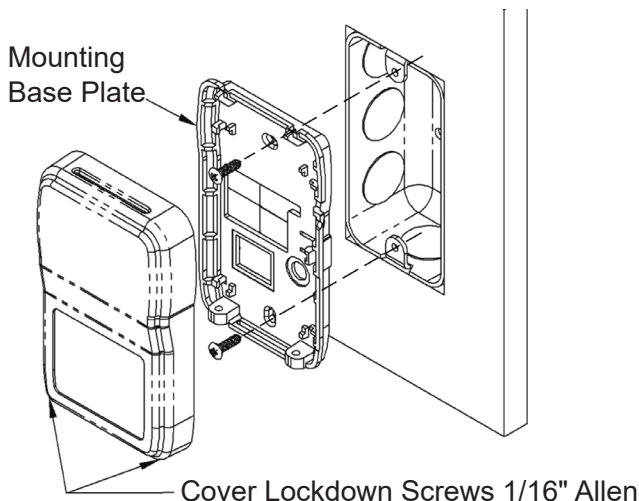
Mounting Location

Avoid mounting on outside walls or in direct sunlight.

Junction Box, (J-Box)

1. Pull the wire through the wall and out of the junction box, leaving about six inches free.
2. Pull the wire through the hole in the base plate.
3. Secure the back plate to the box using the #6-32 × 1/2 inch mounting screws provided.
4. Screw the plate firmly to the wall so the foam plate backing is compressed about 50%.
5. Terminate the unit according to the guidelines in the Termination section.
6. Attach Cover by latching it to the top of the base, rotating it down and snapping into place.
7. Secure the cover by backing out the lock-down screws using a 1/16" Allen wrench until it is flush with the bottom of the cover.

Figure 124: Junction Box Mounting (Hardware is Provided for Both Junction Box and Drywall Installation.)



Drywall Mounting

1. Place the base plate against the wall where you want to mount the sensor.
2. Mark out the two mounting holes where the unit will be attached to the wall. Drill a 3/16" hole in the center of each mounting hole and insert a drywall anchor into the holes.
3. Drill one 1/2" hole in the middle of the marked wiring through hole area.
4. Pull the wire through the wall and out the 1/2" hole, leaving about six inches free.
5. Pull the wire through the hole in the base plate.
6. Secure the base to the drywall anchors using the #6 × 1" mounting screws provided.
7. Screw the plate firmly to the wall so the foam plate backing is compressed about 50%.
8. Terminate the unit according to the guidelines in the Termination section.
9. Attach cover by latching it to the top of the base, rotating it down and snapping it into place.
10. Secure the cover by backing out the lock-down screws using a 1/16" Allen wrench until it is flush with the sides of the cover.

NOTICE

In any wall-mount application, the wall temperature and the temperature of the air within the wall cavity can cause erroneous readings.

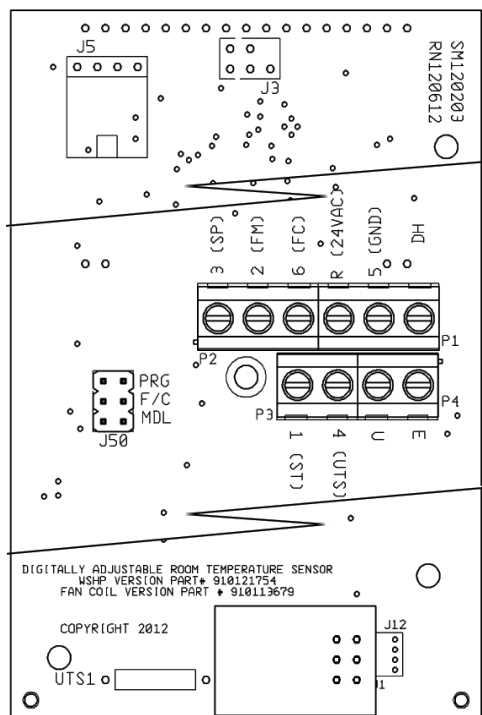
The mixing of room air and air from within the wall cavity can lead to condensation, erroneous readings and sensor failure. To prevent these conditions, Daikin Applied recommends sealing the conduit leading to the junction box with fiberglass.

Maintenance

Wipe the display as needed with a damp water only cotton cloth. Do not use any type of cleaner as it may damage the buttons or scratch the display. Do not paint.

Terminations

Daikin Applied recommends using shielded 22AWG for all connections and a separate twisted pair for the power wire connections. The shield should be earth grounded only at the power source. Larger gauge wire may be required for runs greater than 250'.

Figure 125: Sensor Circuit Board**CAUTION**

The AC power wiring at terminals [R] & [5] should be run in a separate twisted shielded pair to avoid fluctuating and inaccurate signal levels induced into the other sensor signal wires. This sensor AC power can be run in the same conduit with the sensor signal wire as long as it's run in twisted, shielded pair and terminated properly.

All wiring must comply with the National Electric Code (NEC) and local codes. Do NOT run any of this device's wiring in the same conduit as other AC power wiring. Tests show that fluctuating and inaccurate signal levels are possible when AC power wiring is present in the same conduit as the signal lines. If you are experiencing any of these difficulties, please contact your Daikin Applied representative.

Table 44: Unit Ventilator MicroTech Board to Room Temperature Sensor Wiring

MicroTech Base Board									
Terminal Block Label	TB1	H6-1	H6-2	H6-3	H6-4	H6-5	H6-6	H6-7	H6-8
Sensor 910247458	•	•	○	•	•	•	•	•	•
Sensor 910247448	•	•	○	•	•	○	○	•	•
Sensor 910247453	○	○	○	•	•	○	○	•	•
Sensor 910247450	○	○	○	•	○	○	○	•	•
Description	24VAC	Occupancy	Shutdown (Not Used)	Status LED	Setpoint	Unit Mode	Fan Speed	10K RTD	Ground
Wire	908	907	906	909	912	901	902	911	910

Typical Wiring

Terminal Label	R	U	1 (ST)	3 (SP)	2 (FM)	6 (FC)	4 (UTS)	5 (GND)
Description	24VAC	Unoccupied	Unit Status Output	Setpoint Adjust	Unit Mode	Fan Speed	Room Temp Sensor & Tenant Override	Ground

Terminal Designations

• = Active Terminal ○ = Not Used

Electromechanical Unit Wiring Connections

DANGER

Disconnect all electrical power before servicing unit to prevent injury or death due to electrical shock.

CAUTION

Refer to unit wiring diagram located on inside-right front panel, for actual wiring. Improper wiring can cause equipment and property damage.

CAUTION

Use copper conductors only. Unit terminals are not designed to accept other types of conductors. Failure to do so may damage the equipment.

Electromechanical control connections are made to the terminals located behind the left-front access panel as shown in [Figure 126](#). Refer to [Figure 127 on page 72](#) for wiring details and the wiring diagram provided with the unit.

Terminal A2LCUST is intended to be used to provide notification of a refrigerant leak. For electromechanical units, the A2LCUST terminal is connected to Thermostat Control Terminal X. See [Figure 126](#). This normally de-energized output will energize providing 24 VAC when the MT6210 Mitigation Controller detects a refrigerant leak as indicated by one of the A2L sensors. In the event of an A2L leak, the compressor and any electric heat outputs will be de-energized and the fan will be forced to run at high speed for at least 5 minutes after refrigerant centrifugation is no longer detected. See [Figure 127](#).

Upon indication of a refrigerant leak by the MT6210 Mitigation Controller, the field installed controller should disable compressor and electric heat signals immediately and also command the fan speed so that sufficient airflow is delivered within 10 seconds of leak indication. The MT6210 Mitigation Controller will continue to deliver the airflow until the leak indication signal is re-energized.

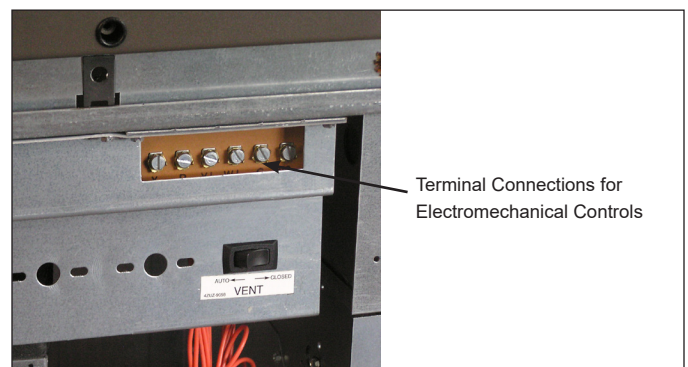
The Adjustable Analog Relay (AAR) board is intended to provide notification of a refrigerant sensor failure. Relay 1 on the AAR will be energized under normal operating conditions (closed circuit between C1 and N.O., open circuit between C1 and N.C.) and energized when the MT6210 Mitigation Controller detects that any of the sensors are reporting a failure, or if they are not communicating with the MT6210 Mitigation Controller or when a refrigerant leak is detected.

Upon indication of a sensor failure by the MT6210 Mitigation Controller, the field installed controller should command the fan speed so that sufficient airflow is delivered within 10 seconds of sensor failure indication. The MT6210 Mitigation Controller will continue to deliver the airflow until the sensor failure indication signal is re-energized.

CAUTION

The Adjustable Analog Relay (AAR) is factory calibrated to provide an indication of a R-32 sensor failure or communication problem. Consult the factory before making any adjustments to the settings on the AAR.

Figure 126: Thermostat Control Terminal Connections Located in Left Front Compartment



Typical MicroTech Wiring Diagrams

Figure 127: Electromechanical Controls – A2L Leak Mitigation

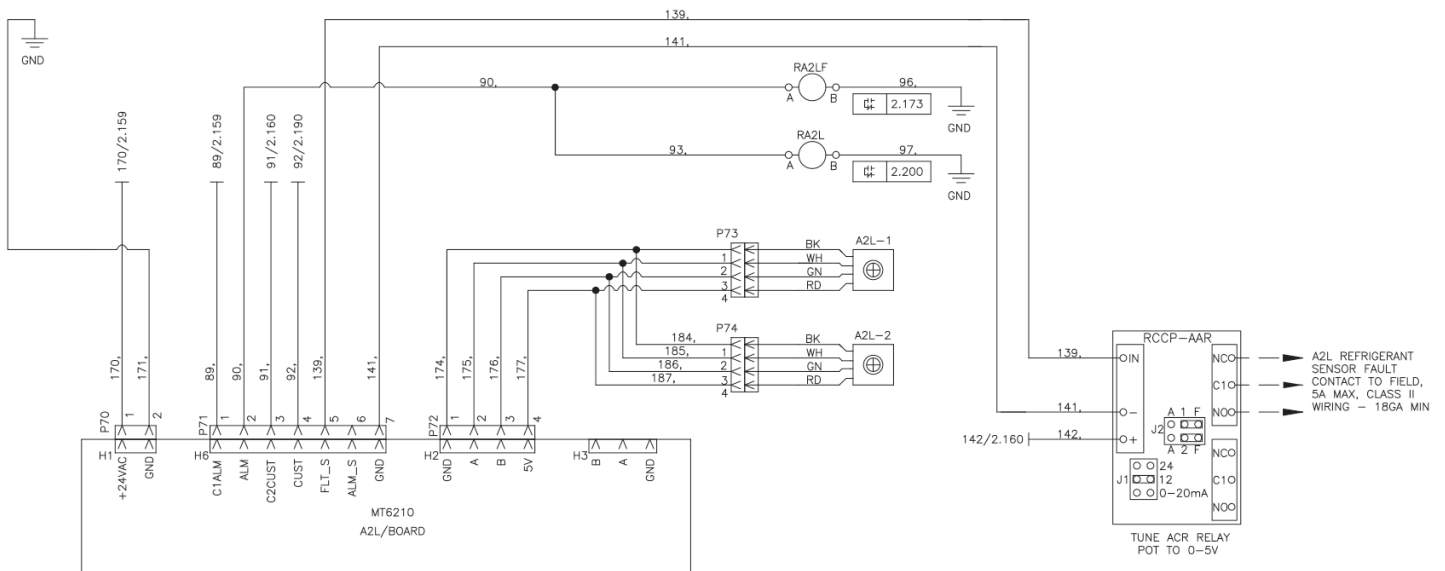


Figure 128: MicroTech Controls – A2L Leak Mitigation

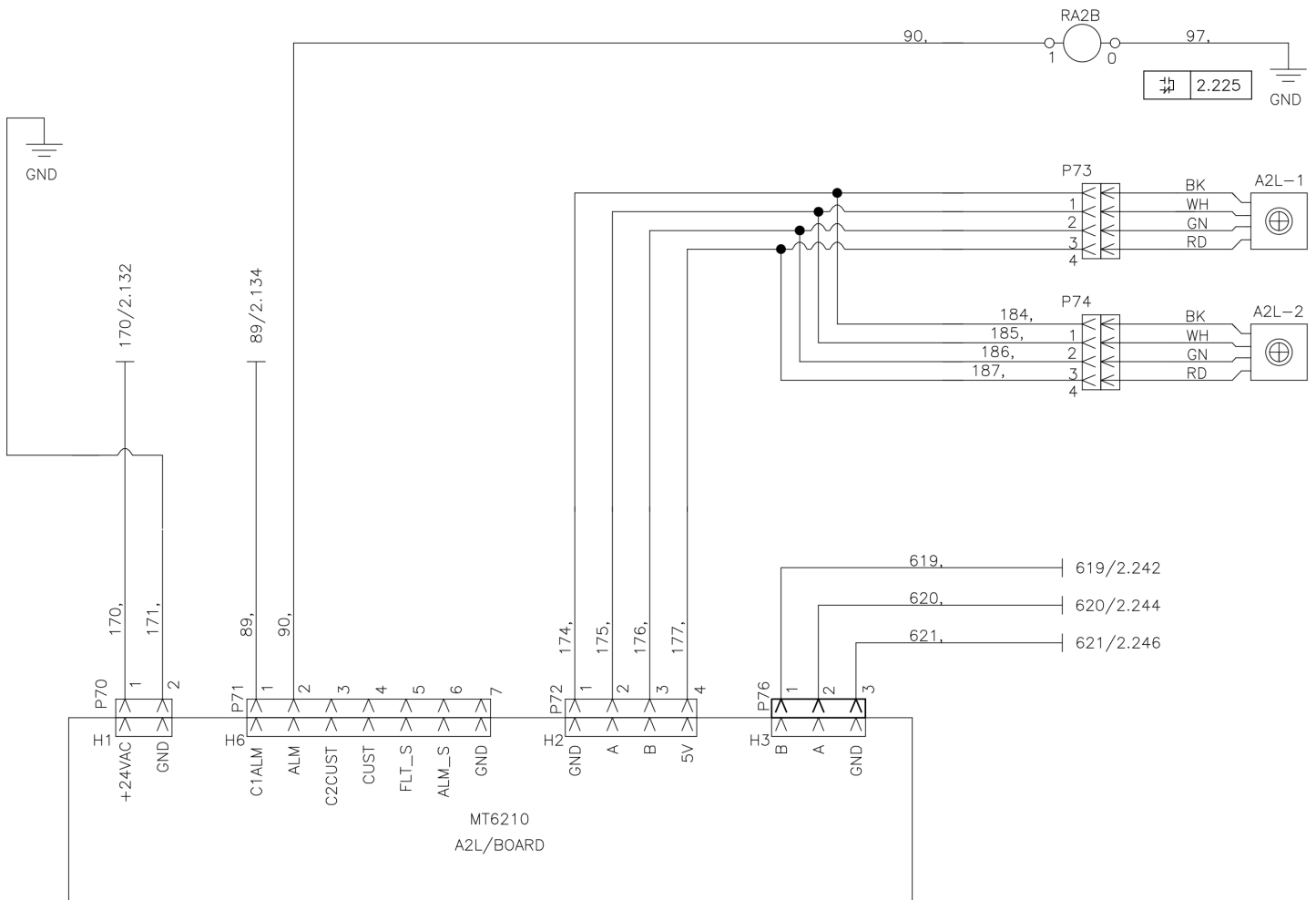


Figure 129: Typical MicroTech Controls Wiring Diagram – 208V / 60Hz / 1Ph

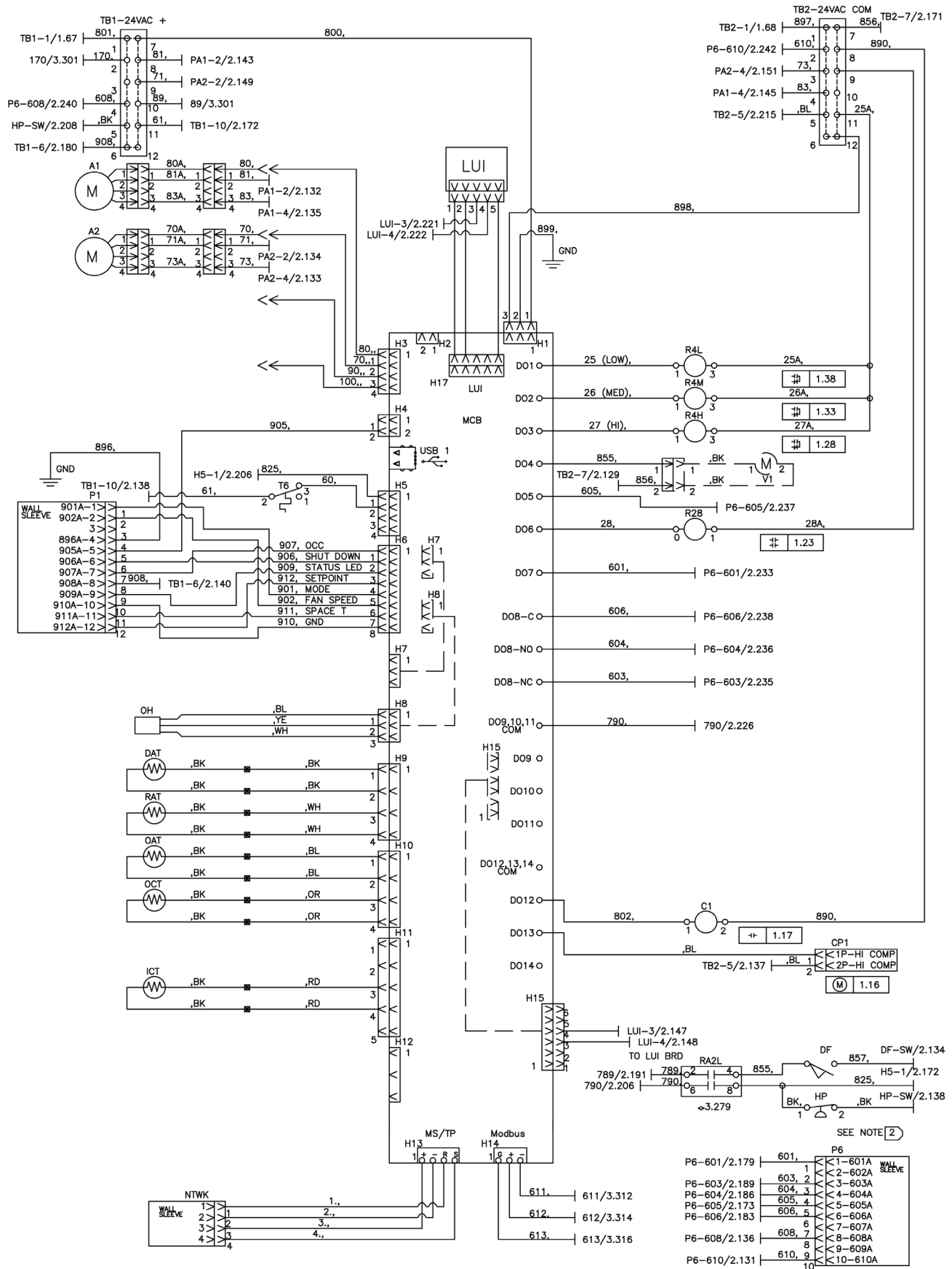
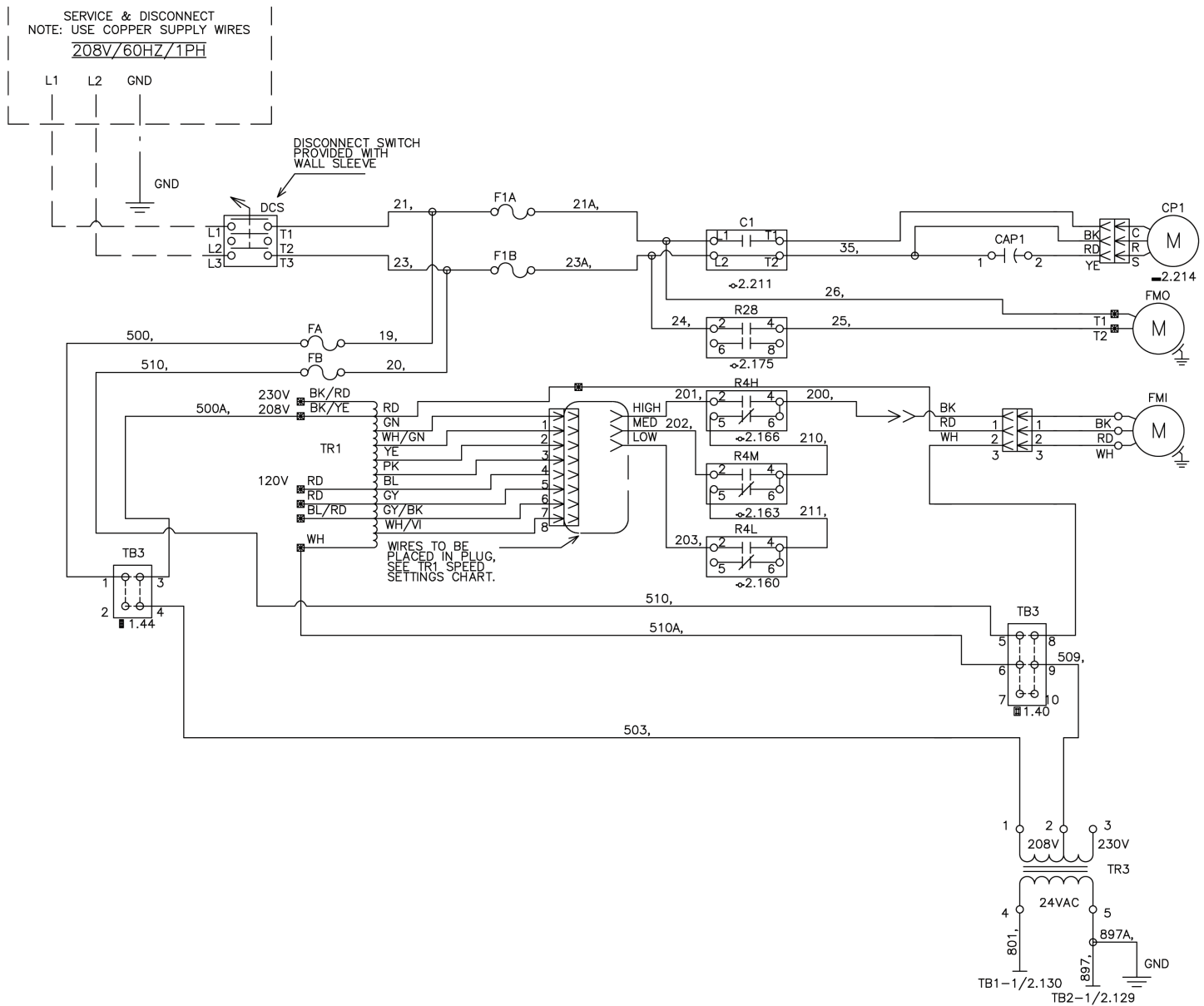


Figure 130: Typical MicroTech Wiring Diagram – Service and Disconnect – 208V / 60Hz / 1Ph

Wiring Schematics Legend for “Operation”

Legend			
A1	Actuator- Outdoor Air	OH1	Thermostat - Overheat
A2	Actuator- Face & Bypass	OH2	Thermostat - Overheat
A2L1-2	A2L Refrigerant Sensor	OHM	E.H. Man Reset - Overheat Stat
CP1	Motor Compressor 2-Stage	PL1	LED Occupancy / Fault Status
C1	Compressor Contactor	R1-R3	Relay Electric Heat (Backup)
CAP1	Capacitor Run	R10-R12	Relay – Electric Heat
CEH1-3	Electric Heat Contactor	R4H	Relay – Fan High Speed
CO2	Sensor - Indoor Air CO2	R4M	Relay– Fan Medium Speed
DAT	Sensor - Discharge Air Temperature	R4L	Relay– Fan Low Speed
DCS	Switch - Unit Power	R32	Relay - Drain Pan Heater
DF	Dead Front Switch	R28	Relay - Outdoor Motor Air
EH1-6	Heater - Electric	RA2L	Relay A2L
EH10	Heater - Outdoor Drain Pan	RAT	Sensor - Room Air Temperature
EWT	Sensor - Entering Water Temperature	RCCP	Transducer AAR
F1A/F1B	Fuse - Compressor	RV	Reversing Valve
F2A/F3C	Fuse - Electric Heat	SRT	Sensor - Suction Line
FA/FB	Fuse– Control, Load	T6	Thermostat - Freeze Stat
FC/FD	Fuse– Control, Transformer	TB1	Terminal Block - 24VAC+
FMI	Motor - Room Fan	TB2	Terminal Block – 24VAC Gnd
FMO	Motor Outdoor Air	TB3 (A,B)	Terminal Block – Main Power
HP	High Pressure Switch	TBE	Terminal Block - Electric Heat
ICT	Sensor - Indoor DX Coil Temperature	TR1	Transformer - Motor Speed
IH	Sensor - Indoor Humidity	TR3	Transformer - 208 / 230V-24V, 75VA
LWT	Sensor - Leaving Water Temperature	TR4	Transformer - 460V–230V
MCB	Main Control Board	TR5	Transformer - 208 / 230V-24V
MT6210	A2L Control Board	V1	Valve - Heat EOC (Accessory)
NTWK	Network Connection	V2	Valve - Cool EOC (Accessory)
OAT	Sensor - Outdoor Air Temperature	VH	Valve - Heat (Accessory)
OCT	Sensor - Outdoor DX Coil Temperature	VC	Valve - Cool (Accessory)
OH	Sensor - Outdoor Humidity		

Legend - Symbols	
— — —	Accessory or field mounted component
	Ground
	Wire nut / splice
	Overlap point - common potential wires
L1/1.20	Wire link (wire link ID / page # . line #)

TR1 Speed Settings				
	054	044	036	024
High	GN	GN	WH/GN	YE
Med	YE	YE	PK	GY
Low	PK	PK	GY	GY/BK

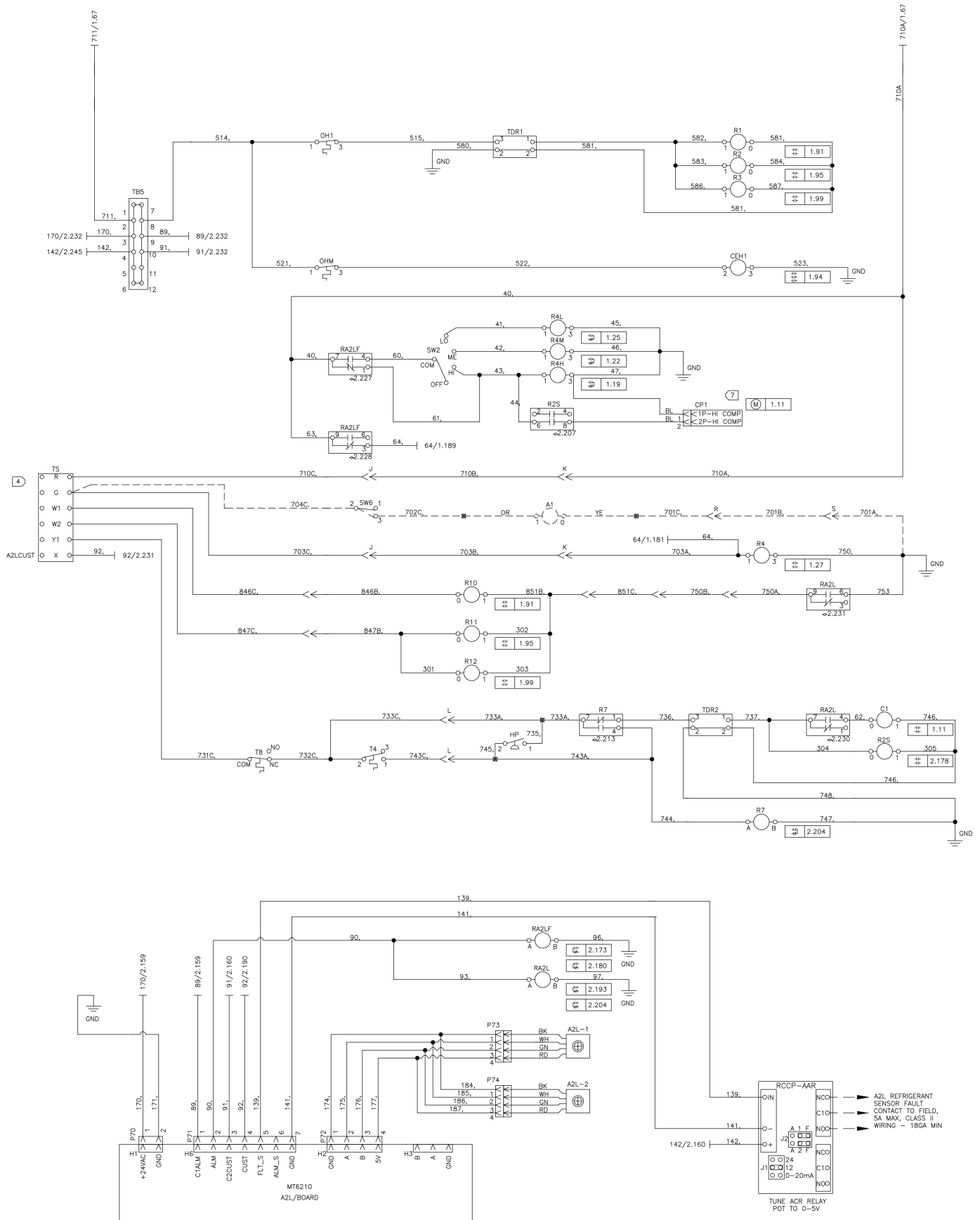
NOTE 1: All electrical installation must be in accordance with national and local electrical codes and job wiring schematic.

NOTE 2: External wiring options - see IM for the different configured options, wiring to be minimum 18 gauge, 90°C.

NOTE 3: EC motors are factory programmed for specified airflow. Contact Daikin Applied for replacement.

NOTE 4: Cap extra wire. Switch wire 42A to RD wire for 208V operation.

NOTE 5: Devices in legend may or may not be on unit.

Figure 132: Electric Heat Wiring Diagram – Typical 460 V/60 Hz/3 Ph

Wiring Schematics Legend for “Typical Electric Heat Wiring Diagrams”

Legend					
A1	Actuator (Optional)	R1-R3	Relay Electric Heat (Backup)	T2	Thermostat EH Relay - 0A Temp>20°
A2LB	A2L Mitigation Board	R2S	Relay – High (2nd) Stage Compr	T4	Thermostat Low Temp 28°
A2L-1	A2L Sensor	R3B	Relay – Defrost/EH Coil (24 VAC)	T5	Thermostat Defrost
CP1	Motor Compressor 2-Stage	R4	Relay – Fan Coil (24 VAC)	T6	Thermostat - Freeze Stat
C1	Compressor Contactor	R4H	Relay – Hi Fan Speed Coil (24 VAC)	T7	Thermostat Changeover 60°
CAP1	Capacitor Run	R4L	Relay – Low Fan Speed Coil (24 VAC)	T8	Thermostat - Cooling Lockout 59° F
CEH1-3	Electric Heat Contactor	R4M	Relay – Med Fan Speed Coil (24 VAC)	TDR1	Time Delay Low Voltage 5 Min
CS	Current Sensor (Hawkeye 800)	R7	Relay – Compressor Lockout	TDR2	Protector Low Voltage 5 Min
DCS	Switch – Unit Power	R8-9	Relay – Emergency Heat	TB4	Terminal Board
DF	Dead Front Switch	R10-R12	Relay – Electric Heat	TB5	Terminal Board
EH1-6	Heater - Electric	R11A	Relay – Defrost	TB-DE	Terminal Board for DE Contactor
EH10	Heater - Outdoor Drain Pan	R12A	Relay – Heating	TBE	Terminal Block - Electric Heat
F1A/F1B	Fuse – Compressor	RA1	Relay - Actuator/Valve	TR1	Transformer - Motor Speed
F2A/F3C	Fuse - Electric Heat	RA2L	A2L Actuator	TR3	Transformer - 24V, 75VA
FA/FB	Fuse – Control, Load	RA2LF	A2L Actuator	TR4	Transformer - 460V–230V
FC/FD	Fuse – Control, Transformer	RCCP	Transducer AAR	TR5	Transformer - 24 V
FMI	Motor – Room Fan	REH	Relay – H1 Fan 3rd STG EH	TS	Terminal Strip for EH
FMO	Motor Outdoor Air	RV	Reversing Valve	V1	Valve - Heat EOC (Accessory)
OH1	Thermostat - Overheat	SW2	Switch – On - Off and Fan Speed	V2	Valve - Cool EOC (Accessory)
OH2	Thermostat - Overheat	SW5	Switch – Emergency Heat		
OHM	E.H. Man Reset - Overheat Stat	SW6	Switch Rocker SPDT		

Legend - Symbols	
---	Accessory or field mounted component
	Ground
	Wire nut / splice
	Overlap point - common potential wires
L1/1.20	Wire link (wire link ID / page # . line #)

	TR1 Speed Settings			
	054	044	036	024
High	GN	GN	WH/GN	YE
Med	YE	YE	PK	GY
Low	PK	PK	GY	GY/BK

Electric Heat Sequence:

NOTE 1: Backup relays R1, R2, and R3 are energized when power is applied.

NOTE 2: Main relays R10, R11, and R12 are energized when a 24 VAC source is connected to STG1, STG2, and STG3 on terminal strip.

NOTE 3: Electric heat can be staged by applying the 24 VAC to the stages (1, 2, and 3) at different time intervals.

Control Wiring Notes:

NOTE 1: Make electrical installation in accordance with job wiring schematic complying with national and local electrical codes.

NOTE 2: NEC class 1 wiring - Factory mounted night controls connect to BLK and WHT wires. When remote night controls are used, they must be connected to BLK and WHT wires shown capped, and the BLK and WHT wires in the main control box must be disconnected and individually capped.

NOTE 3: Terminal block (TB) furnished when total electric heat load is less than 48 amps.

NOTE 4: See control and thermostat drawing for additional controls.

NOTE 5: R2 furnished with 3, 4 elm; R3 furnished with 5, 6 elm.

NOTE 6: SW2 contacts 5, 6 and 7, 8 open only when SW2 is in OFF position.

NOTE 7: High (2nd stage) compressor rectifier energized when compressor is on and fan speed is on high.

NOTE 8: For 230V operation, switch wire 509, 508B, and 505 to 240V terminal in the transformer.

NOTE 9: Cap all unused transformer leads.

NOTE 10: Devices in legend may or may not be on unit.

Operation

Start-Up

Oiling the Fan Shaft End Bearing

CAUTION

Turn off unit before servicing to avoid danger of injury from rotating fans.

CAUTION

Do not attempt to operate the unit fans until the room air fan shaft bearing has been oiled. Oiled bearings provide smooth, and quiet operation of the fan system.

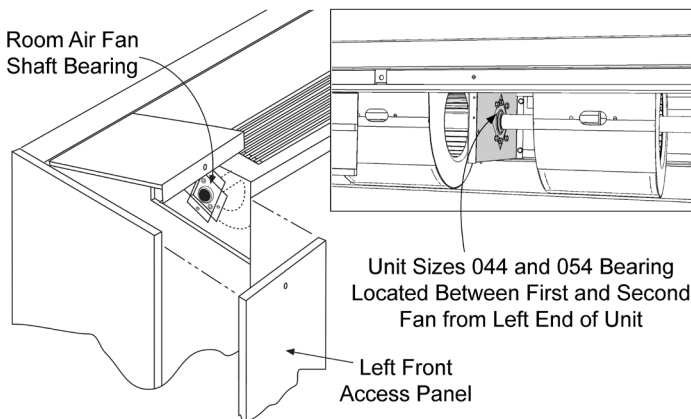
The fan shaft end bearings are permanently sealed. Before unit start-up, lubrication should be applied to the fan shaft near the end bearing.

Access to fan shaft is through the left top access door (Figure 133). For unit sizes 044 and 054, there is an additional fan shaft bearing located between the first and second fan from the unit left end (Figure 133). Oil, using a few drops of high grade SAE 20 or 30 non detergent oil near the bearing.

CAUTION

When oiling the middle fan shaft bearing DO NOT allow oil to drip down on the components located below the bearing.

Figure 133: Oiling Point



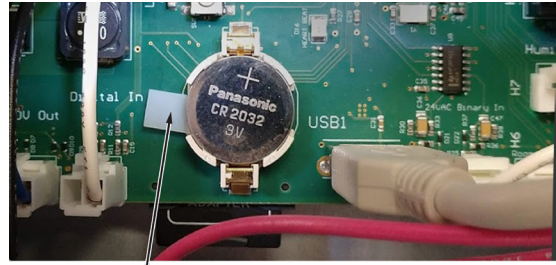
NOTICE

Do not oil the fan motor.

Remove Battery Shipping Tab

The controller battery protects the time clock schedule in the event of a power loss. Remove the board backup battery shipping tab by grasping the tab and pulling gently. The battery should be replaced every 3 years with a new CR2032 or equivalent.

Figure 134: Battery Shipping Tab



Remove Battery Shipping Tab

Check, Test, and Start Procedure

Provide completed Check, Test and Start form to your local Daikin Applied representative and specifying engineer for verification that proper start-up was completed. Please see the Check, Test and Start document beginning on page 88.

CAUTION

Remove debris, dust, dirt, and any obstruction from the area in front of the return air intake grille at the floor.

1. Before proceeding, inspect the fan system, to verify that all parts are aligned properly and move freely. Inspect fans and fan discharge area for obstructions. Verify that power has been disconnected. Rotate the fan assembly manually. Check that a clean filter is installed and the area in front of unit ventilator is free of debris. All panels should be in place and properly fastened. Check for outdoor air leaks and condensation. Verify that the coil section is properly sealed using the insulating foam donuts supplied.
2. After the unit ventilator has been properly installed, activate unit electrical power and applicable hot water/steam/refrigerant systems.
3. Using the applicable control, activate the unit ventilator. Depending on the operating mode selected, the dampers, fans, and other components should operate as needed.
4. Run the unit ventilator for ten minutes, listening and observing. Fans should be operating correctly and rotating in the proper direction, without unusual noise. Likewise, the unit should be free of sheet metal rattles and / or unusual noises. All panels should be in place and properly fastened. Check for air leaks and condensation. Compressor should run without noise. If noisy, check electrical phases to verify that the compressor is rotating correctly. Phase reversal can damage the compressor and void the warranty.
5. Test Refrigerant Detection System (RDS). See "A2L Leak Detection Sensor and Board Troubleshooting and Diagnostics" on page 84. For full details on the mitigation modes and sequence of operation please refer to the literature for the unit controller and A2L mitigation control board.

Post Installation Checklist

- ☐ Unit is securely fastened to wall sleeve.
- ☐ Electrical hook-up is complete; power, control, wall thermostat (if applicable) in accordance with unit wiring diagram(s).
- ☐ Air filter is clean and in place.
- ☐ All access and end panels in place and protective covering has been removed.
- ☐ No debris, dust, dirt, or obstructions exist in front of the return air intake grille at the floor.
- ☐ All installation work has been completed in accordance with applicable local, state and national codes.
- ☐ Unit is square and level and is running smoothly and quietly.
- ☐ Refrigerant Detection System for refrigerant leak mitigation has been tested.
- ☐ No air infiltration has been detected.
- ☐ Paint nicks and scratches have been touched up (as required).
- ☐ Access space is provided for maintenance, service and unit removal.
- ☐ Shipping carton replaced over unit for protection (as required).
- ☐ Owner or maintenance personnel provided with a copy of this manual and other manuals/documents shipped with the unit.
- ☐ Owner or maintenance personnel instructed on proper unit operation and maintenance.

Maintenance

General Maintenance

1. Normal maintenance on all units is generally limited to filter changes. Units are provided with permanently lubricated motors and require no oiling even though oil caps may be provided.
2. Filter changes are required at regular intervals. The time period between changes will depend upon the project requirements. Check filters at 60-day intervals for the first year until experience is acquired. If light cannot be seen through the filter when held up to sunlight or a bright light, it should be changed. A more critical standard may be desirable.
3. The condensate drain pan should be checked annually and cleaned and flushed as required.
4. Record performance measurements of volts, amps, and water temperature differences (both heating and cooling). A comparison of logged data with start-up and other annual data is useful as an indicator of general equipment condition.
5. Periodic lockouts almost always are caused by air or water problems. The lockout (shutdown) of the unit is a normal protective result. Check for dirt in the water system, water flow rates, water temperatures, airflow rates (may be a dirty filter), and air temperatures. If the lockout occurs in the morning following a return from night setback, entering air below machine limits may be the cause.

Oiling (Not Required)

No oiling required. Both the indoor and the outdoor condenser motor and fan shaft bearings are permanently sealed.

NOTICE

Motor manufacturer recommends not oiling the room fan motor.

Filter(s)

Daikin Applied single-use filters are standard on all self-contained unit ventilators. Permanent wire mesh and renewable media filters are available in lieu of single-use filters.

- Single-use filters feature Amerglas media. They are designed to be used once and discarded.
- Permanent filters are metal filters that may be removed for cleaning and reused numerous times.
- Renewable media filters (Figure 135) consist of a heavy painted metal structural frame and renewable Amerglas media.

Turn off the unit (fan speed switch or unit on/off switch is located behind the right front end compartment panel). Remove the center front panel, pull out the filter and replace with a clean filter. Replace the center panel and restart the unit.

Filters should be replaced during the first week of placing into service to prevent dirt carry-over into the internals of the unit and back into the classroom (Figure 135). A periodic filter changeout program should be established. Filters should be checked monthly or more often if conditions indicate. Filters are included in all units.



CAUTION

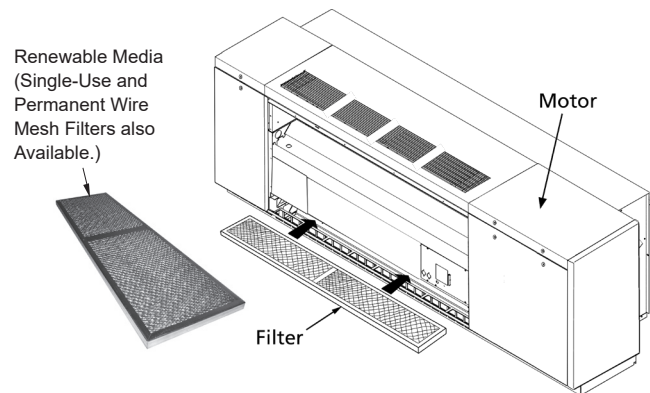
Units must have a filter installed when operating. Operation without a filter can compromise unit performance due to build up of dust and dirt on components.



CAUTION

Dirty or clogged filters can impact unit performance, resulting in damage to the unit.

Figure 135: Filter Installation



Refrigerant Information

Refrigerant Guidelines

WARNING

A2L

This unit contains R-32, a class A2L refrigerant that is flammable. This unit should only be installed, serviced, repaired, and disposed of by qualified personnel licensed or certified in their jurisdiction to work with R-32 refrigerant. Installation and maintenance must be done in accordance with this manual. Improper handling of this equipment can cause equipment damage or personal injury.

For installation only in locations not accessible to the general public.

Be aware that R-32 refrigerant may not contain an odor. Place in a well ventilated area to prevent accumulation of refrigerant. When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.

Do not pierce or burn this unit.

Never use an open flame during service or repair. Never store in a room with continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater), where there is ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled.

Only use pipes, nuts, and tools intended for exclusive use with R-32 refrigerant in compliance with national codes (ASHRAE15 or IRC).

Do not mix air or gas other than R-32 in the refrigerant system. If air enters the refrigerant system, an excessively high pressure results, which may cause equipment damage or injury.

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

WARNING

The appliance is designed to activate leak mitigation airflow in the event a refrigerant leak is detected. This is required to ensure dilution and prevent stagnation of any leaked refrigerant. Always ensure the supply fans are able to operate freely. Always maintain proper airflow and do not allow filters, air inlets, or air outlets to become blocked. Refer to [Table 45](#).

WARNING

The appliance shall be installed, operated, and stored in a room with a floor area not less than the minimum room area.



≥ 298 ft² (27.69 m²)
Minimum Room Area*

*See the required minimum room area for your specific unit size in [Table 45](#).

NOTICE

Refer to [Table 46](#) for the altitude adjusted room area calculation referenced later in this manual.

The indoor equipment mitigation requirements are calculated at sea level. For higher altitudes, adjust the minimum room area specified on or near the serial plate by the corresponding altitude adjustment factor shown in [Table 46](#). This table is provided as a reference. Adjusted room area (A_{min adj}) is the product of the minimum room area specified in the serial plate and the minimum room area multiplier, as shown in formula below.

A_{min adj} = A_{min} (serial plate) * (minimum room area multiplier)

The minimum room area can also be found in [Table 45](#).

Table 45: Minimum Airflow and Room Area Requirements

Unit Size	R-32 Refrigerant Charge oz (kg)	Minimum Room Area A _{min} ft ² (m ²)	Minimum Airflow Q _{min} ft ³ /min (m ³ /min)
024	106 (3.01)	277 (25.73)	174 (4.93)
036	156 (4.42)	407 (37.81)	256 (7.25)
044	114 (3.23)	298 (27.69)	187 (5.30)
054	111 (3.15)	290 (26.94)	182 (5.15)

Table 46: Minimum Room Area Multipliers by Altitude

Altitude (Meters)	Minimum Room Area Multiplier
0	1.000
305	1.047
500	1.078
750	1.117
1000	1.156
1250	1.195
1500	1.234
1750	1.273
2000	1.312
2250	1.351
2500	1.390
2750	1.429
3000	1.468
3250	1.507
3500	1.546

Refrigerant Detection System (RDS) Operation

The Refrigerant Detection System (RDS) is controlled by refrigerant sensors, which are secured to designated locations for active monitoring. If the sensors detect the presence of R-32 refrigerant above 15% LFL mitigation actions are initiated. Compressor and electric heat operation is disabled and the supply fan blower fan is activated, providing airflow at or above the minimum required airflow to evacuate excess concentration. Once refrigerant concentration reaches below a safe threshold, the unit will resume normal operation. If the sensors detect another refrigerant concentration excess, the unit will go back into mitigation mode and will repeat the same process.

High speed airflow must be maintained above minimum airflow levels for proper operation of the RDS. See [Table 45](#) for specific airflow requirements.

Refrigerant Detection System and Sensors

For additional instructions on how to operate the RDS including how to activate a manual test of the RDS, refer to the unit controller manual.

WARNING

This unit is equipped with a Refrigerant Detection System (RDS). Only components and refrigerant detection sensors specified by Daikin Applied may be used for replacement and maintenance.

WARNING

Always ensure the refrigerant detection sensors installed in the equipment are free of debris and the inlet is not blocked. If replacing a refrigerant detection sensor, always install in the identical orientation as the original sensor.

Figure 136: Sample Refrigerant Detection Sensor



NOTE: Identify the sensor inlet marked “Do Not Block Inlet,” and ensure it is free of debris.

WARNING

Auxiliary devices which may be a Potential Ignition Source shall not be installed in the duct work. Examples of such Potential Ignition Sources are hot surfaces with a temperature exceeding 700°C (1292°F) and electric switching devices.

WARNING

The unit must be stored and/or located to prevent mechanical damage of the refrigeration system. Do not store the unit near sources of open flame, electrical switching devices, or hot surfaces above 700°C (1292°F). If the unit is stored indoors, the storage area should be larger than the Minimum Room Area specified in this manual. The storage space should be well ventilated and not allow for the stagnation of leaked refrigerant. Failure to do so may result in a fire or explosion hazard.

WARNING

Only auxiliary devices approved by Daikin Applied or declared suitable for installation with R-32 shall be installed in the connecting ductwork.

Lubrication

R-32 should be used only with polyolester (POE) oil. The HFC refrigerant components in R-32 will not be compatible with mineral oil or alkylbenzene lubricants. R-32 systems will be charged with the OEM recommended lubricant, ready for use with R-32.

Competence of Personnel

Information of procedures additional to usual information for refrigerating equipment installation, repair, maintenance and decommission procedures is required when equipment with flammable refrigerants is affected.

The training of these procedures is carried out by national training organizations or manufacturers that are accredited to teach the relevant national competency standards that may be set in legislation. The achieved competence should be documented by a certificate.

WARNING

Service on this equipment is to be performed by qualified refrigeration personnel familiar with equipment operation, maintenance, correct servicing procedures, and the safety hazards inherent in this work. Causes for repeated tripping of equipment protection controls must be investigated and corrected. Disconnect all power before doing any service inside the unit. If refrigerant leaks from the unit, there is a potential danger of suffocation since refrigerant will displace the air in the immediate area. Servicing this equipment must comply with the requirements of all applicable industry related published standards and local, state and federal, statutes, regulations and codes in regards to refrigerant reclamation and venting. Avoid exposing refrigerant to an open flame or other ignition source.

Maintaining and servicing R-32 refrigerant should only be performed as recommended by this manual and by personnel licensed or certified in their jurisdiction to handle A2L refrigerants. Dismantling the unit and treatment of the refrigerant, oil, and additional parts must be done in accordance with the relevant local, state, and national regulations.

Only use tools meant for use on R-32 refrigerant, such as a gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.

The following guidelines align with UL Standard 60335-2-40.

Maintenance and Repair

- Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with FLAMMABLE REFRIGERANTS.
- Ensure sufficient ventilation at the repair place.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Discharge capacitors in a way that won't cause any spark. The standard procedure to short circuit the capacitor terminals usually creates sparks.
- When brazing is required, the following procedures shall be carried out in the right order:
 - Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
 - Evacuate the refrigerant circuit.
 - Remove parts to be replaced by cutting, not by flame.

- Purge the braze point with nitrogen during the brazing procedure.
- Carry out a leak test before charging with refrigerant.
- Reassemble sealed enclosures accurately. If seals are worn, replace them.
- Check safety equipment before putting into service.

Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- marking to the equipment continues to be visible and legible. Markings that are illegible shall be corrected; and
- refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

A2L Leak Detection Sensor and Board Troubleshooting and Diagnostics

At power up, the Refrigerant Detection System RDS control board display shows what sensors are detected and what sensors are not detected.

- Where X is the sensor number (1 to 8):
 - SX = 1, sensor X is active and communicating
 - SX = 0, sensor X is not communicating or inactive

By pressing and holding the push button for:

- Less than 2 seconds:
The RDS control board display shows the last 10 sensor faults (can be loss of communication or faulted state reported by a specific sensor). General configuration fault (Flt CFG) is also shown when the expected number of sensors does not match the number of sensors detected online.
- More than 2 seconds and less than 5 seconds:
The display shows sensor(s) status info:
 - The current LFL level.
 - Loss of communication or faulted state reported by a specific sensor.

- More than 5 seconds and less than 10 seconds:
The RDS control board starts a mitigation test. The board will go into alarm mode and the MT6210 controller will begin the mitigation sequence. The mitigation test will last approximately 5 minutes.
As part of the test, the following will occur:
 - Compressor outputs will be de-energized.
 - Electric heat outputs will be de-energized.
 - Supply fan circulation will be energized to provide airflow above minimum required levels.
- More than 10 seconds:
The display shows all the GID values supported by the sensor board.

Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system; and
- that there is continuity of earth bonding.

Sealed electrical and intrinsically safe components

- All sealed electrical components shall be replaced.
- All intrinsically safe components must be replaced.

Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Leak Detection

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. NEVER use the following when attempting to detect flammable refrigerant leaks:

- A halide torch (or any other detector using a naked flame)
- Substances containing chlorine

Detection of flammable refrigerants

The following leak detection methods are deemed acceptable for all refrigerant systems:

- Electronic leak detectors may be used to detect refrigerant

leaks. For FLAMMABLE REFRIGERANTS, the sensitivity of electronic leak detectors may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.

- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. Examples of leak detection fluids are:
 - bubble method; or
 - fluorescent method agents.
- If a leak is suspected, all open flames shall be removed/ extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Removal of refrigerant shall be according to instructions in “[Pressure Testing and Refrigerant Evacuation](#)”.

Pressure Testing and Refrigerant Evacuation

- Make sure that air or any matter other than R-32 refrigerant does not get into the refrigeration cycle.
- If refrigerant gas leaks occur, ventilate the room/area as soon as possible.
- R-32 should always be recovered and never released directly into the environment.
- Only use tools meant for use on R-32 refrigerant (such as a gauge manifold, charging hose, or vacuum pump adapter).

Removal and evacuation

When breaking into the refrigerant circuit to make repairs, or for any other purpose, conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.

- The following procedure shall be adhered to:
 - i. safely remove refrigerant following local and national regulations - see “[Recovery](#)” section;
 - ii. purge the circuit with inert gas;
 - iii. evacuate;
 - iv. purge with inert gas;
 - v. open the circuit by cutting (if flammable refrigerant) or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders according to local and national codes. For equipment containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the equipment safe for flammable refrigerants. This process

might need to be repeated several times.

- Compressed air or oxygen shall not be used for purging refrigerant systems.
- For equipment containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
- When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

Handling and Storage

Conditions for safe storage

- Requirements to be met by storerooms and receptacles:
 - Store only in unopened original receptacles
 - Store in a cool and dry location
- Further information about storage conditions:
 - Keep container tightly sealed
 - Store in cool, dry conditions in well sealed receptacle
 - Protect from heat and direct sunlight
- Maximum storage temperature: 40°C (104°F)

Fire and explosion protection information

Open and handle refrigerant receptacle with care. Keep ignition sources away. Do not smoke. Protect against electrostatic charges. Waste air is to be released into the atmosphere only via suitable separators.

Commissioning

- Ensure that the floor area is sufficient for the refrigerant charge or that the ventilation duct is assembled in a correct manner.
- Connect the pipes and carry out a leak test before charging with refrigerant.
- Check safety equipment before putting into service.

Charging procedures

In addition to conventional charging procedures and specific unit charging guidelines, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).

- Extreme care shall be taken not to overfill the refrigerating system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Decommissioning

- If the safety is affected when the equipment is put out of service, the refrigerant charge shall be removed before decommissioning.
- Ensure sufficient ventilation at the equipment location.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Discharge capacitors in a way that won't cause any spark.
- Remove the refrigerant according to details in "Recovery" section. If recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
- Ensure all isolation valves on the equipment are closed off.

Labeling

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For equipment containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e., special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, FLAMMABLE REFRIGERANTS. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that FLAMMABLE REFRIGERANT does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Recovery procedure

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant.

It is essential that electrical power is available before the task is commenced.

1. Become familiar with the equipment and its operation.
2. Isolate system electrically.
3. Before attempting the procedure, ensure that
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
4. Pump down refrigerant system, if possible.
5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
6. Make sure that cylinder is situated on the scale before recovery takes place.
7. Start the recovery machine and operate in accordance with instructions.
8. Do not overfill cylinders (no more than 80% volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

Disposal

- Waste treatment method recommendation:

- Must be specially treated adhering to official regulations
- Incineration in an adequate incinerator is recommended
- Uncleaned packaging disposal must be made according to official regulations
- Ensure sufficient ventilation at the working place
- The following procedure shall be adhered to:
 - i. safely remove refrigerant following local and national regulations - see ["Recovery"](#) section;
 - ii. evacuate the refrigerant circuit;
 - iii. purge the refrigerant circuit with nitrogen gas for 5 minutes;
 - iv. evacuate again; and
 - v. If compressors are to be removed, cut out the compressor and drain the oil.

Appendix

Warranty Registration Form

Warranty - Check, Test and Start	Form: 5F-4240
	Group: ATS
	Date: June 2024
	Supersedes: 573882Y

Unit Ventilator Warranty Registration Form

Check, test & start procedure for Daikin Applied Unit Ventilators

This form must be completely filled out and the record retained by the sales representative or the owner in order to comply with the terms of the Daikin Applied warranty.

Sales Office: _____ S.O.#: _____ Date Started: _____
 Job Name: _____ G.O. # _____
 Job Location: _____
 Unit Location: _____ Unit Tagging: _____
 Model No: _____ Serial No.: _____
 Supply Voltage: L1/L2 _____ L2/L3 _____ L3/L1 _____ Rated: _____
 Room Fan Motor Amps: T1: _____ RPM _____ Nameplate Rating: _____

I. Initial check

- A. Does electrical service correspond to unit nameplate? Yes ☐ No ☐
 B. Are all electrical power connections tight? Yes ☐ No ☐
 C. Does all field wiring conform to unit electrical schematic? Yes ☐ No ☐
 D. Is unit installed per IM bulletin? Yes ☐ No ☐
 E. Cabinet paint O.K.? Yes ☐ No ☐
 F. Cabinet bent? Yes ☐ No ☐
 G. Do outdoor (AEQ, AZU, AZQ & AZR) and indoor fans turn freely? Yes ☐ No ☐
 H. Are all setscrews on outdoor and indoor fan couplings tight? Yes ☐ No ☐
 I. Is the fan coupler aligned between the shaft and motor? Yes ☐ No ☐
 J. Are end bearing bolts on outdoor and indoor fan shaft tight? Yes ☐ No ☐
 K. Have the fan shaft end bearing and room fan motor been oiled (if applicable)? Yes ☐ No ☐
 L. Are outdoor air and return air dampers operating properly? Yes ☐ No ☐
 M. Is the filter clean? Yes ☐ No ☐
 N. Is there excessive noise or vibration? Yes ☐ No ☐
 If Yes, corrective action (if any) _____

II. Controls check

- A. Does the unit have Daikin Applied controls (MicroTech)? Yes ☐ No ☐
 If No, control company _____
 If controls are not by Daikin Applied, skip to Section III.
 B. Condensate disposal system operating O.K.? Yes ☐ No ☐
 C. Does unit start and perform per sequence of operation as stated in OM? Yes ☐ No ☐
 D. If the unit has a unit mounted sensor, has the insulation been removed from the sampling chamber inlet? Yes ☐ No ☐
 E. Are all sensors installed and insulated properly? Yes ☐ No ☐
 F. If the unit has MicroTech controls, room setpoint: _____°F Deadband 6° or _____°F

III. Refrigeration system

- A. Has all field piping been leak tested to 100 psig (AVS, AVV, AVR, AHF, AHV, & AHR)? Yes ☐ No ☐
 B. Is expansion valve bulb properly installed and insulated? Yes ☐ No ☐
 C. High pressure control cutout (if applicable) _____ psig
 D. Crankcase heater operating O.K.? Yes ☐ No ☐
 E. Reversing valve operating O.K.? Yes ☐ No ☐
 F. Emergency heat operating O.K.? Yes ☐ No ☐
 G. Piping correct (AVS, AVV, AVR, AHF, AHV, & AHR to remote condensing unit)? Yes ☐ No ☐
 H. Checked for refrigerant leaks? Yes ☐ No ☐

IV. Hydronic piping check

- A. Is unit piping correct (the remainder of this section applies only to units with Daikin Applied controls)? Yes ☐ No ☐
 B. Is the modulating control valve(s) piped correctly (valve controlled units)? Yes ☐ No ☐
 C. Is the modulating control valve(s) placed in the upright position (valve controlled units)? Yes ☐ No ☐
 D. Is 2 - position control valve(s) piped correctly (face and bypass)? Yes ☐ No ☐

Warranty Registration Form

V. Start-up (Readings must be taken at full load conditions)

A. Outdoor Fan Motor Amps: T1 _____ Nameplate Rating: _____

B. Compressor Amps (Cig): T1 _____ T2 _____ T3 _____ Nameplate Rating: _____

C. Compressor Amps (Htg): T1 _____ T2 _____ T3 _____ Nameplate Rating: _____

D. Refrigerant Pressures Htg./Clg.: Suction: _____ / _____ Discharge: _____ / _____

E. Refrigerant Temperature Htg./Clg.: Suction _____ °F / _____ °F Discharge: _____ °F / _____ °F

F. O.A.Temp.: _____ °F Super Heat: _____ °F Subcooling: _____ °F

G. R.A. Temp. Htg./Clg.: _____ °F / _____ °F Discharge Air Temp.: _____ °F / _____ °F

H. Electric Htg. Amp: L1 _____ L2 _____ L3 _____ Total Amp: _____

I. Water Temperature Htg./Clg.: In _____ °F / _____ °F Out _____ °F / _____ °F

VI. Performed by:

Company: _____

Name: _____

Title: _____

Signature: _____ Date: _____

Comments: _____

Service Technician: _____

Contractor Representative: _____

Limited Product Warranty



DAIKIN APPLIED AMERICAS INC. LIMITED PRODUCT WARRANTY (United States and Canada)

WARRANTY

Daikin Applied Americas Inc. dba Daikin Applied ("Company") warrants to contractor, purchaser and any owner of the product (collectively "Owner") that, subject to the exclusions set forth below Company, at its option, will repair or replace defective parts in the event any product manufactured by Company, including products sold under the brand name Daikin and used in the United States or Canada, proves defective in material or workmanship within twelve (12) months from initial startup or eighteen (18) months from the date shipped by Company, whichever occurs first. Authorized replacement parts are warranted for the remainder of the original warranty. All shipments of such parts will be made FOB factory, freight prepaid and allowed. Company reserves the right to select carrier and method of shipment. In addition, Company provides labor to repair or replace warranty parts during Company normal working hours on products with rotary screw compressors or centrifugal compressors. Warranty labor is not provided for any other products.

Company must receive the Registration and Startup Forms for products containing motor compressors and/or furnaces within ten (10) days of original product startup, or the ship date and the startup date will be deemed the same for determining the commencement of the warranty period and this warranty shall expire twelve (12) months from that date. For additional consideration, Company will provide an extended warranty(ies) on certain products or components thereof. The terms of the extended warranty(ies) are shown on a separate extended warranty statement.

No person (including any agent, sales representative, dealer or distributor) has the authority to expand the Company's obligation beyond the terms of this express warranty or to state that the performance of the product is other than that published by Company.

EXCLUSIONS

1. If free warranty labor is available as set forth above, such free labor does not include diagnostic visits, inspections, travel time and related expenses, or unusual access time or costs required by product location.
2. Refrigerants, fluids, oils and expendable items such as filters are not covered by this warranty.
3. This warranty shall not apply to products or parts : (a) that have been opened, disassembled, repaired, or altered, in each case by anyone other than Company or its authorized service representative; (b) that have been subjected to misuse, abuse, negligence, accidents, damage, or abnormal use or service; (c) that have not been properly maintained; (d) that have been operated or installed, or have had startup performed, in each case in a manner contrary to Company's printed instructions; (e) that have been exposed, directly or indirectly, to a corrosive atmosphere or material such as, but not limited to, chlorine, fluorine, fertilizers, waste water, urine, rust, salt, sulfur, ozone, or other chemicals, contaminants, minerals, or corrosive agents; (f) that were manufactured or furnished by others and/or are not an integral part of a product manufactured by Company; or (g) for which Company has not been paid in full.
4. This warranty shall not apply to products with rotary screw compressors or centrifugal compressors if such products have not been started, or if such startup has not been performed, by a Daikin Applied or Company authorized service representative.

SOLE REMEDY AND LIMITATION OF LIABILITY

THIS WARRANTY CONSTITUTES THE SOLE WARRANTY MADE BY COMPANY. COMPANY'S LIABILITY TO OWNER AND OWNER'S SOLE REMEDY UNDER THIS WARRANTY SHALL NOT EXCEED THE LESSER OF: (i) THE COST OF REPAIRING OR REPLACING DEFECTIVE PRODUCTS; AND (ii) THE ORIGINAL PURCHASE PRICE ACTUALLY PAID FOR THE PRODUCTS. COMPANY MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, REGARDING PREVENTION OF MOLD/MOULD, FUNGUS, BACTERIA, MICROBIAL GROWTH, OR ANY OTHER CONTAMINATES. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT AND UNDER NO CIRCUMSTANCE SHALL COMPANY BE LIABLE TO OWNER OR ANY THIRD PARTY FOR INCIDENTAL, INDIRECT, SPECIAL, CONTINGENT, CONSEQUENTIAL, DELAY OR LIQUIDATED DAMAGES FOR ANY REASON, ARISING FROM ANY CAUSE WHATSOEVER, WHETHER THE THEORY FOR RECOVERY IS BASED IN LAW OR IN EQUITY, OR IS UNDER A THEORY OF BREACH CONTRACT OR WARRANTY, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE. THE TERM "CONSEQUENTIAL DAMAGE" INCLUDES, WITHOUT LIMITATION, THOSE DAMAGES ARISING FROM BUSINESS INTERRUPTION OR ECONOMIC LOSS, SUCH AS LOSS OF ANTICIPATED PROFITS, REVENUE, PRODUCTION, USE, REPUTATION, DATA OR CROPS.

ASSISTANCE

To obtain assistance or information regarding this warranty, please contact your local sales representative or a Daikin Applied office.

Form No. 933-430285Y-01-A (11/2023)
Part No. 043028500 Rev.0F

Notes / Comments

[illegible]

COMPLETE HVAC SYSTEM SOLUTIONS

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LEARN MORE AT
DAIKINAPPLIED.COM

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