

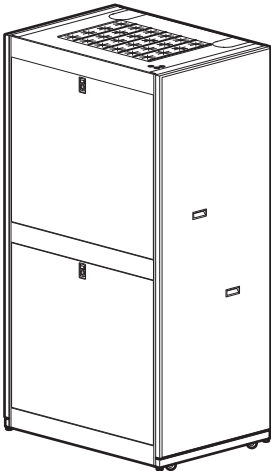
Installation Manual

Cooling Distribution Unit (CDU)

ACFD12-B, ACFD12-T

990-3125A-001

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Safety

Important Safety Information

Read the instructions carefully to become familiar with the equipment before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.

Safety While Installing This Equipment

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow these instructions will result in death or serious injury.

WARNING

ELECTRICAL HAZARD

- Electrical service must conform to local and national electrical codes and regulations.
- The equipment must be grounded.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

WARNING

HAZARD OF EQUIPMENT FALLING OVER

- Use two or more persons at all times to move or turn this equipment.
- Always push, pull, or turn while facing the front and rear of this equipment. Never push pull, or turn while facing the sides of this equipment.
- Slowly move this equipment across uneven surfaces or door thresholds.
- Lower leveling feet to floor when this equipment is at rest.
- Lower leveling feet and attach joining brackets to adjacent racks when this equipment is in final position.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

HAZARD OF EQUIPMENT FALLING OVER

- Use two or more persons at all times to move or turn this equipment.
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- Lower leveling feet and attach joining brackets to adjacent racks when this equipment is in final position.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

General Information

Save these instructions

This manual contains important instructions that must be followed during the installation of this equipment.

Intended users

This manual is intended for Schneider Electric authorized personnel. It provides component specifications and instructions for installing the equipment.

Manual updates

Check for updates to this manual on the Schneider Electric Web site, www.schneider-electric.com/support. Select the **Download Documents and Software** link under the **Support** tab and enter the manual part number or SKU for your equipment in the search field. See the back cover of this manual for the part number.

Cross-reference symbols used in this manual



Indicates that more information is available on the same subject in a different section of this manual or in a different manual.

Receiving the Equipment

Receiving and inspecting

Your CDU has been tested and inspected for quality assurance prior to shipment from Schneider Electric. To ensure that the equipment has not been damaged during transit, carefully inspect both the exterior and interior immediately upon receipt. Verify that all parts ordered were received as specified.

Filing a claim

If damage is identified on receipt of the equipment, note the damage on the bill of lading and file a damage claim with the shipping company. Contact Worldwide Customer Support at a number listed on the Web site on the back cover of this manual for information on how to file a claim with the shipping company. The shipping claim must be filed at the receiving end of the delivery.

Storing the CDU before installation

NOTICE
HAZARD TO EQUIPMENT Leaving the equipment uncovered and exposed to possible damage from the environment will void the factory warranty. Failure to follow these instructions can result in equipment damage.

NOTICE
UV HAZARD Avoid exposing PEX-AL-PEX piping to direct sunlight. Failure to follow these instructions can result in equipment damage.

Cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX) piping can be damaged by direct sunlight. Store PEX-AL-PEX piping in its carton to avoid dirt accumulation and extended exposure to direct sunlight.

NOTE: If the equipment will not be installed immediately, store it in a safe place protected from the elements.

Moving the CDU

⚠ CAUTION
HEAVY EQUIPMENT The equipment should remain on its pallet when a forklift or pallet jack will be used to move it. Lift only from the bottom. Do not use a forklift or pallet jack if the equipment has been removed from its pallet. Failure to follow these instructions can result in injury or equipment damage.

Select the appropriate tools for moving the equipment. Each site will have different requirements.

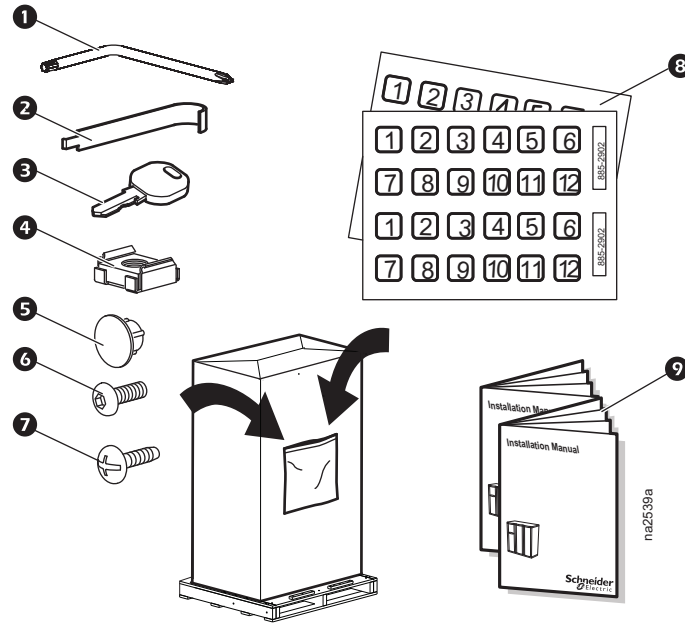
Pallet jack

Forklift



Inventory

Literature and hardware kits

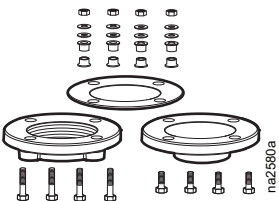
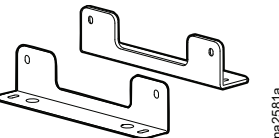



Item	Description	Quantity	Item	Description	Quantity
①	T30/#2 Phillips wrench	1	⑥	M6 X 12 mm pan head TORX™ screws	6
②	Cage nut tool	1	⑦	8-32 X 3/8 Phillips head screws	4
③	Keys to CDU front panels	2	⑧	Pipe identification labels (1 through 12)	4
④	Cage nuts	4	⑨	Literature	3
⑤	Black plastic plugs	10			

NOTE: Save the fasteners removed from the shipping brackets attaching the unit to the pallet. Use these fasteners to attach the stabilizing brackets () to the unit and the floor.

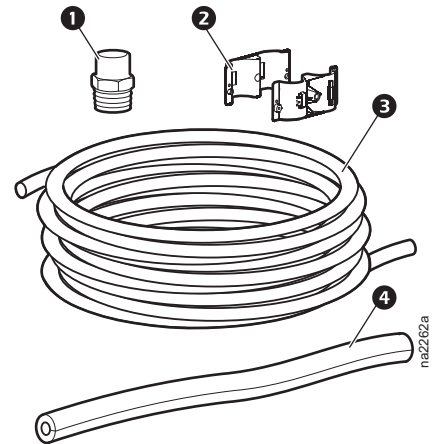
Items included in shipment

Some items are shipped in boxes stored inside the unit. Other items are shipped in boxes on the pallet with the CDU.

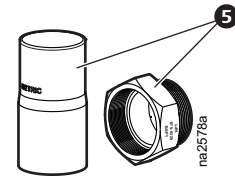
Item	Quantity	Description	Location
	2	Dielectric flange kit	On the pallet with the CDU (See “Unpacking the dielectric flange kit” on page 8.)
	2	Stabilizing bracket	Inside the box containing the flange kits
	1	Bottom trim assembly (bottom piping configuration only)	On the pallet with the CDU

Items shipped separately

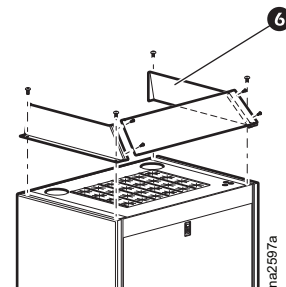
PEX-AL-PEX piping **3**, fittings **1**, pipe clamps **2**, and piping insulation **4** are shipped in separate containers. Quantities will vary for each installation.



Optional metric/BSPT adapter kit **5**.



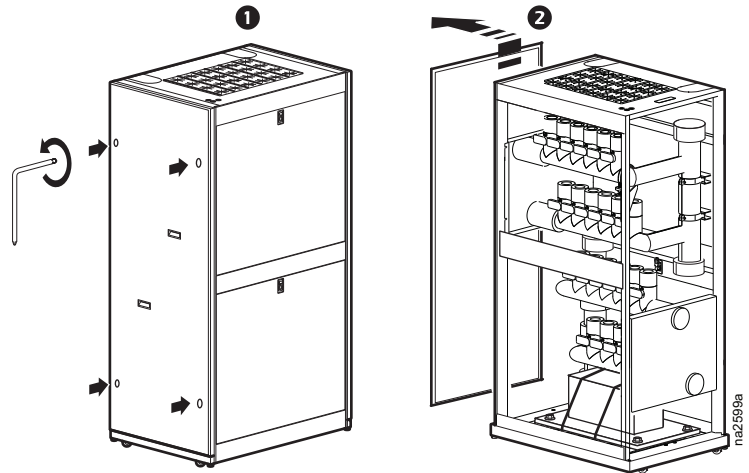
Optional top protective trim assembly **6**.



Unpacking the dielectric flange kit

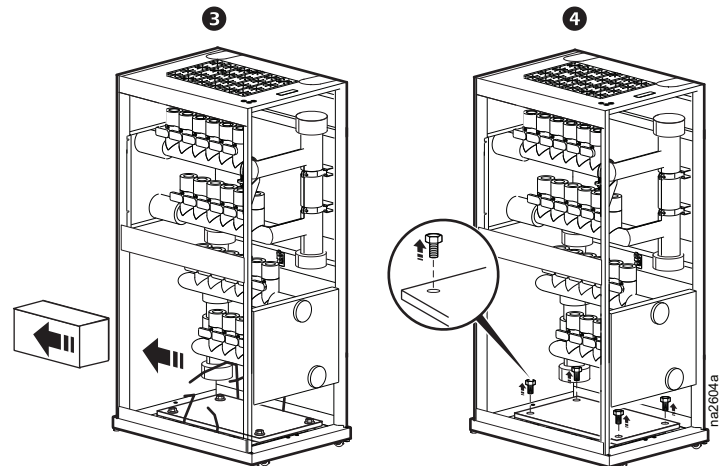
Remove the panel on your left as you face the front of the CDU.

1. Loosen the four screws that secure the side panel to the CDU frame.
2. Lift the panel up and away from the CDU. Set the panel aside.



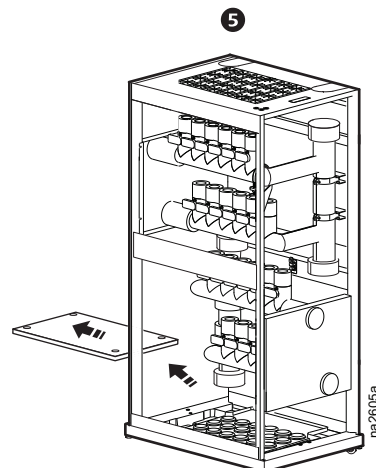
*Opposite side panel and front doors removed for clarity

3. Cut the straps securing the box to the support board. Remove the box.
4. Remove the four 13-mm bolts and washers securing the board to the bottom of the CDU.



*Opposite side panel and front doors removed for clarity

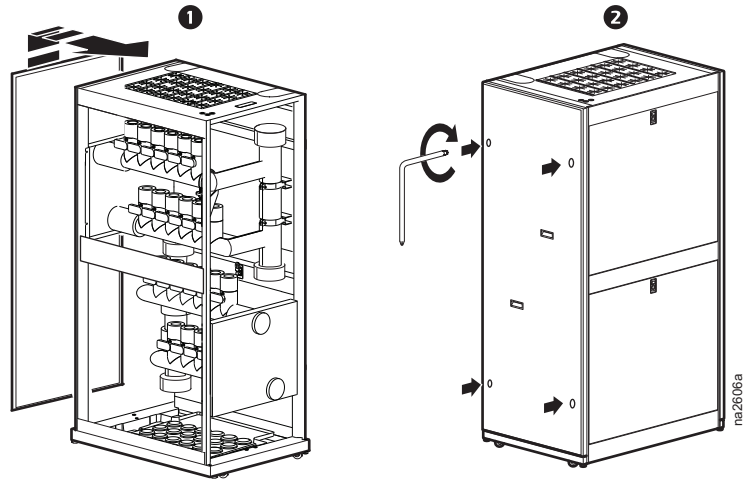
5. Remove the support board.



*Opposite side panel and front doors removed for clarity

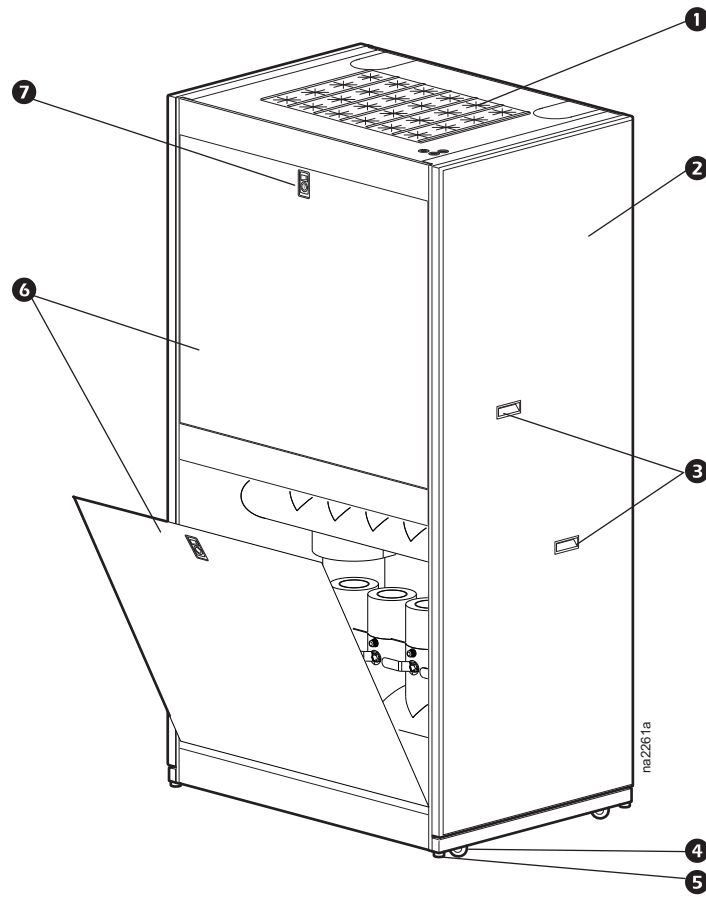
If no further installation procedures will be done at this time:

1. Replace the side panel.
2. Tighten the screws in the panel to secure the panel to the CDU frame.



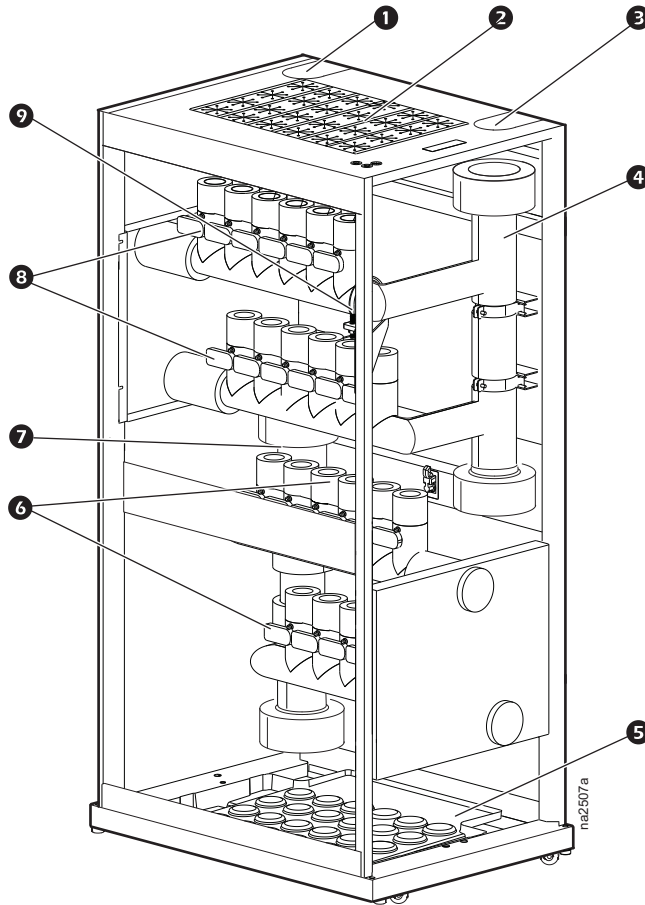
Component Identification

Exterior



Item	Description
1	Top pipe egress
2	Side panel
3	Lift handles
4	Casters
5	Leveling feet
6	Front panels
7	Front panel locks

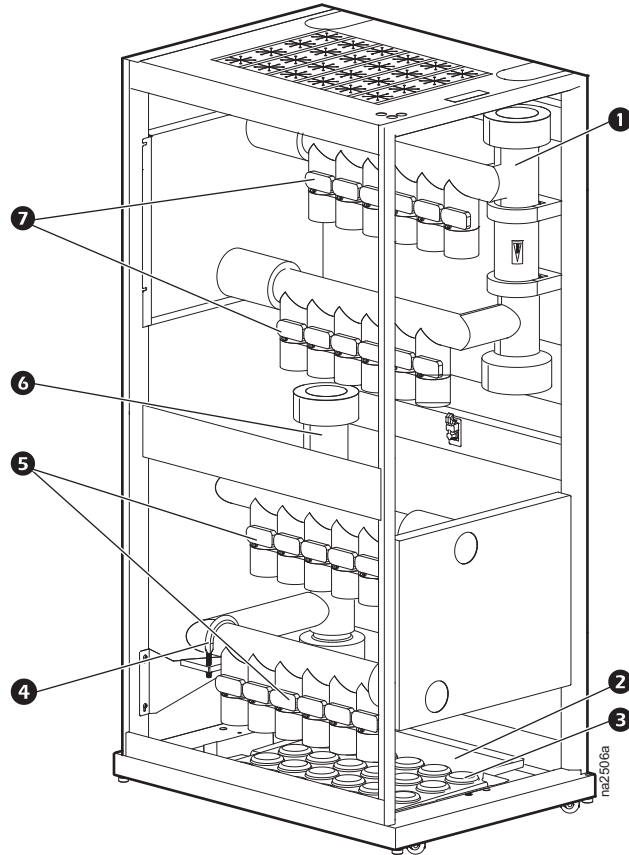
Interior—top piping configuration



(Panels removed for clarity)

Item	Description	Item	Description
1	Access to chiller return header	6	1-inch full port ball valve (return)
2	Flexible pipe pass-through	7	Chiller return header
3	Access to chiller supply header	8	1-inch calibrated balancing valve (supply)
4	Chiller supply header	9	Shipping bracket
5	Condensate drain pan		

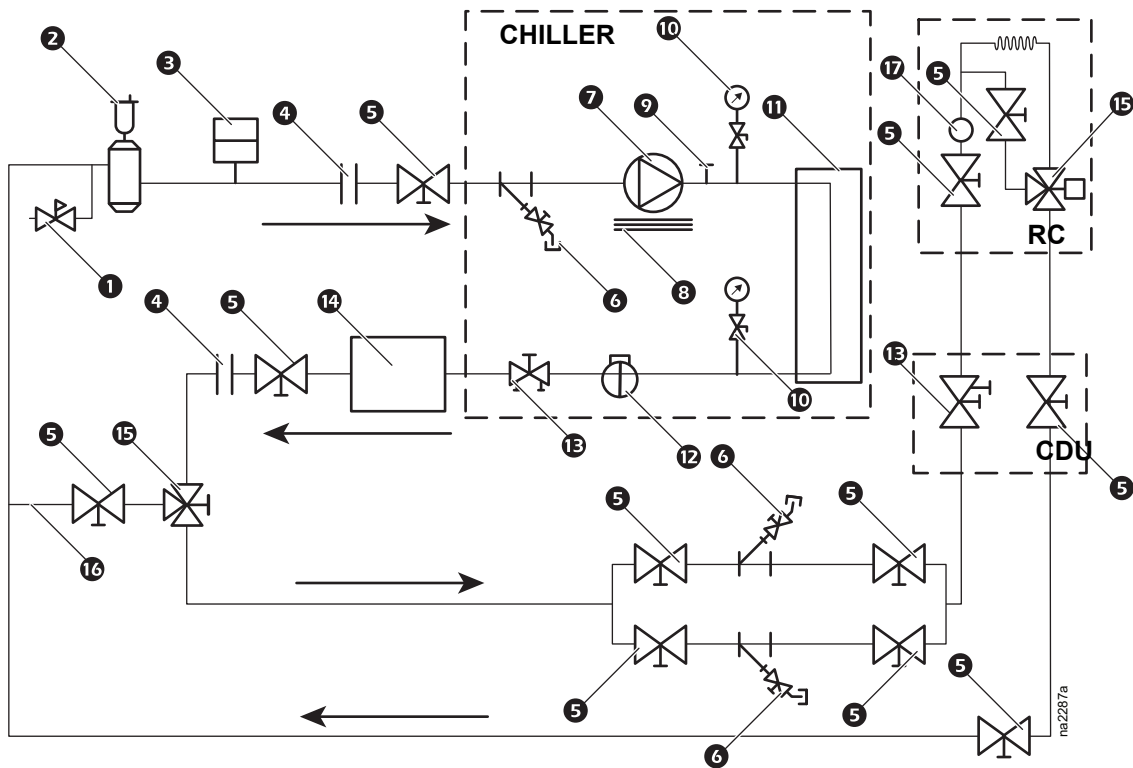
Interior—bottom piping configuration



(Panels removed for clarity)

Item	Description	Item	Description
❶	Chiller return header	❺	1-inch calibrated balancing valve (supply)
❷	Condensate drain pan	❻	Chiller supply header
❸	Flexible piping pass-through with plugs	❼	1-inch full port ball valve (return)
❹	Shipping bracket		

Piping Diagram



Typical piping—chiller to CDU

NOTE: Components inside dashed lines are included with the chiller, InRow RC, and CDU. All other items (valves, piping, etc.) are customer-supplied.

Item	Description
1	Pressure reducing/fill valve
2	Air separator and vent*
3	Expansion tank
4	Flex connections
5	Isolation valves
6	Strainer/blow-down valve**
7	Dual pump
8	Electric heater
9	Air vent connection port
10	Pressure gauges/petcocks
11	Heat exchanger
12	Flow switch
13	Balance valve/drain plug
14	Storage tank***
15	3-way valve
16	Bypass line
17	Flow meter

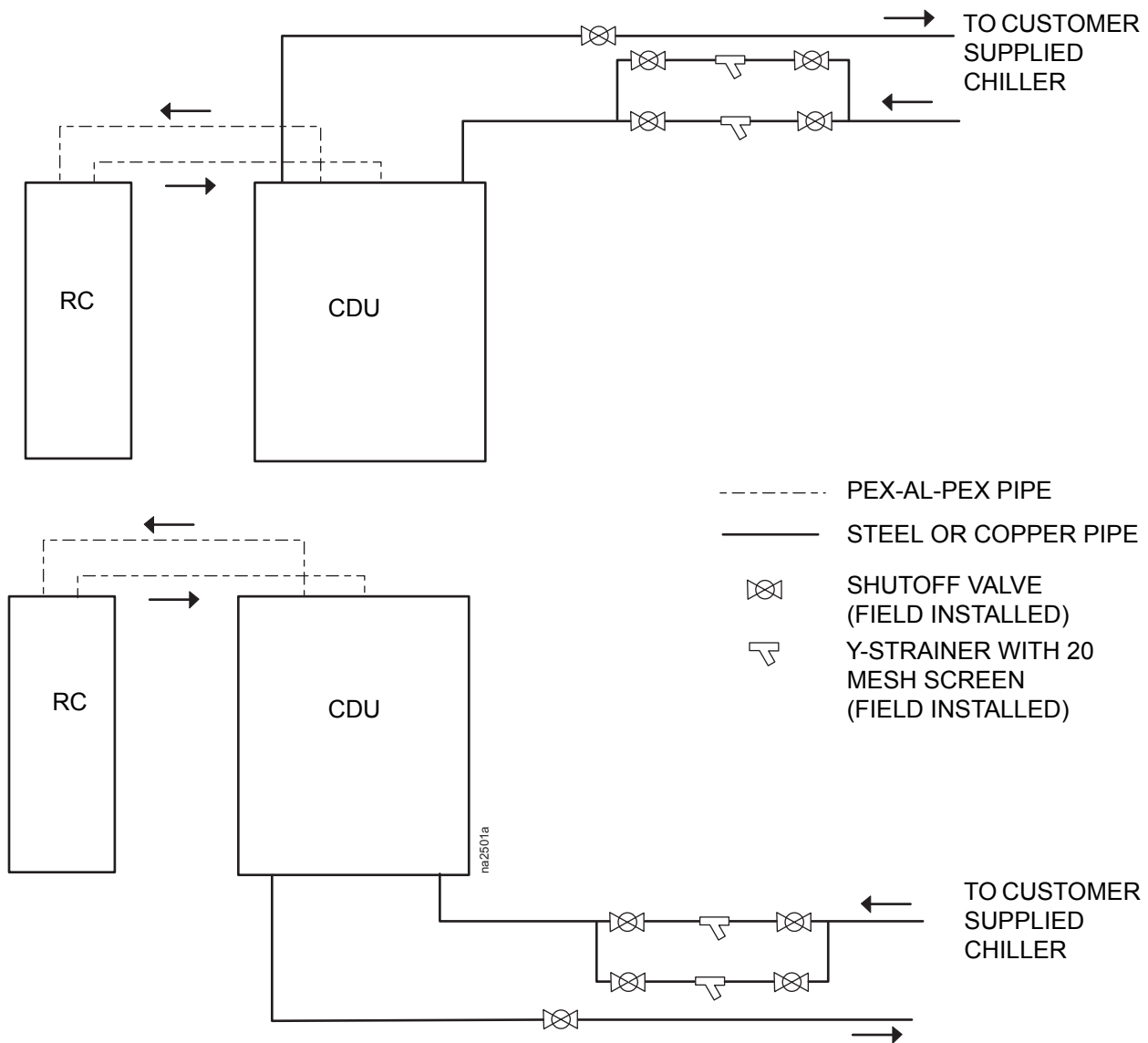
*Install at the warmest and lowest pressure point in the system.

**For systems with possible debris or heavy particulates a redundant strainer in the bypass line is recommended. Install isolation valves and particulate strainers with 20 mesh stainless steel screen (opening size: 865 micron) in the supply line between the chiller and CDU.

***Customer supplied. To provide the coldest possible water to the load, install the storage tank on the leaving side of the chiller.

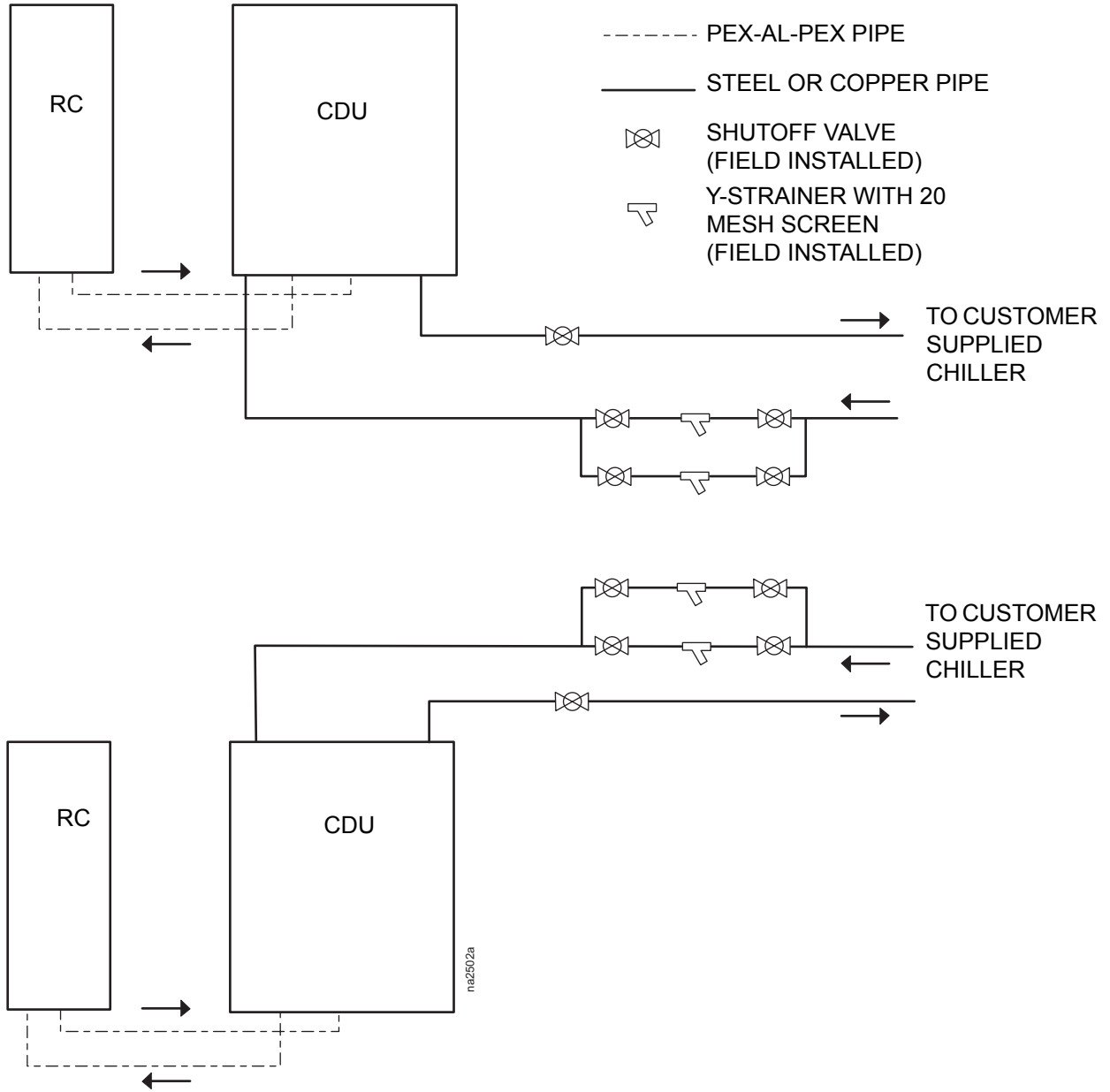
Piping configurations

Top piping configuration: Chilled water lines can be brought in from the top or bottom of the CDU.



NOTE: Install isolation valves and particulate strainers with 20 mesh stainless steel screen (opening size: 865 micron) in the supply line between the chiller and CDU.

Bottom piping configurations: Chilled water can be brought in from the bottom or top of the CDU.



NOTE: Install isolation valves and particulate strainers with 20 mesh stainless steel screen (opening size: 865 micron) in the supply line between the chiller and CDU.

Pre-Installation

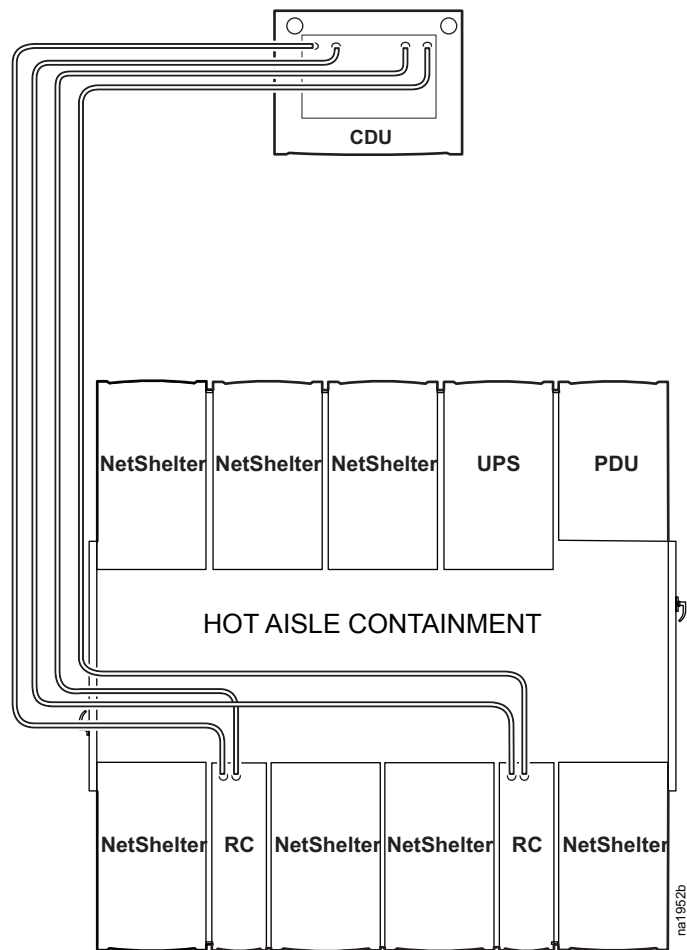
Room preparation

During the design of the data center, consider ease of entry for the equipment, floor loading factors, and accessibility to piping and wiring.

Seal the room with a vapor barrier to minimize moisture infiltration. (Polyethylene film is recommended for ceiling and wall applications.) Apply rubber or plastic based paints to concrete walls and floors.

Insulate the room to minimize the influence of exterior heat loads. Use the minimum required amount of fresh air for make up to comply with local and national codes and regulations. Fresh air imposes extreme load variation on the cooling equipment from summer to winter and causes increased group operating costs.

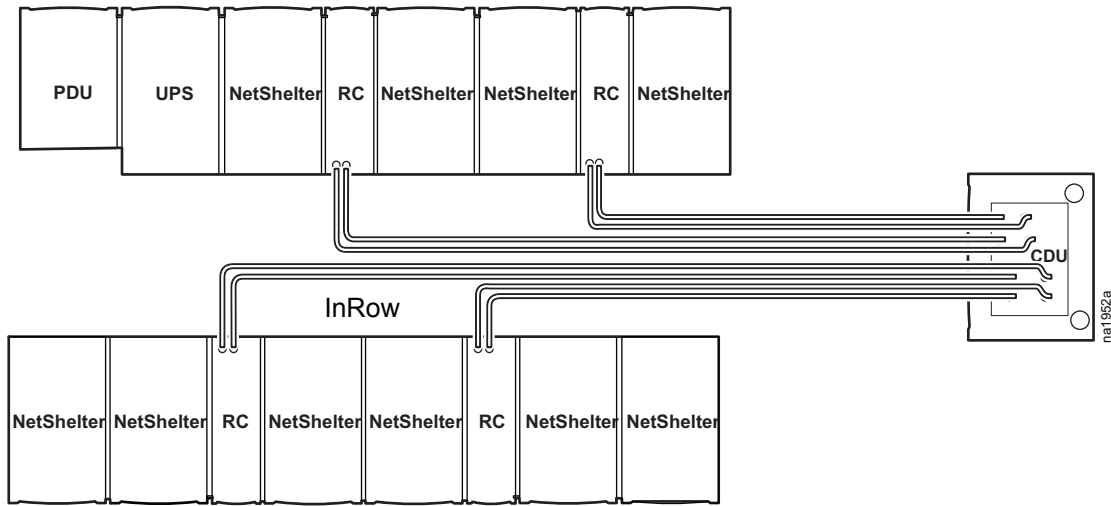
TOP PIPING EXAMPLE 1



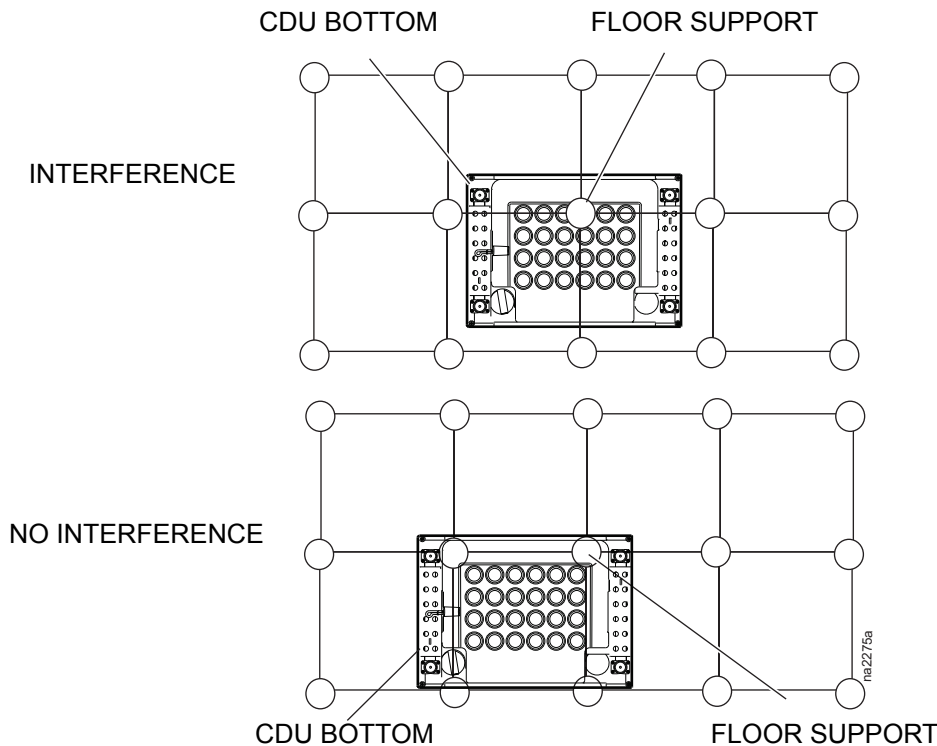
Layout and piping considerations

Top piping: Do not install fluid piping directly above electrical equipment. All piping must be done above the aisles. If any piping makes a turn, or must be routed over electrical equipment, there must be a drip tray under the pipe that will protect the equipment from condensation and leaks. All piping must be kept separate from any electrical runs of wiring.

TOP PIPING EXAMPLE 2



Bottom piping: A computer room with a raised floor plenum for air distribution can be used for below-floor pipe routing. Check that floor supports do not interfere with piping. Keep all piping separate from any electrical runs of wiring.



Material considerations

Working with PEX-AL-PEX flexible piping

NOTICE	
UV HAZARD	Avoid exposing PEX-AL-PEX piping to direct sunlight.
Failure to follow these instructions can result in equipment damage.	

IMPORTANT: Never install PEX-AL-PEX piping that has been exposed to direct sunlight for more than 30 days.

Cutting PEX-AL-PEX piping: Always make your cuts square to the length of the piping.

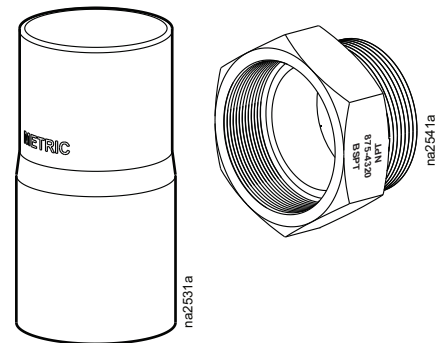
Chamfering PEX-AL-PEX piping: Always chamfer the piping prior to assembly. Use the appropriate chamfering tool for the pipe size.

Assembling PEX-AL-PEX piping and fittings: Always insert the piping into the fitting until the piping is visible through the witness holes on the sleeve. Do not damage the O-rings.

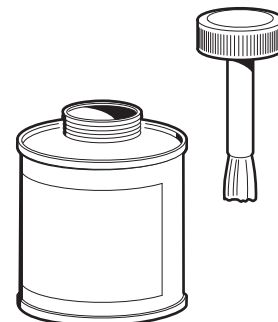
Crimping the Fittings: Always verify that the correct press head is installed. Always manually place the press head into position. Ensure the press head is perpendicular to the length of piping before crimping.

IMPORTANT: Check your part numbers when using or reordering PEX-AL-PEX piping and fittings. Verify piping and fittings are compatible. Specifications vary between manufacturers.

Connecting to metric or BSPT pipe: Customers with metric or BSPT chilled water pipes require an adapter to fit the appropriate flange from the dielectric flange kit. The kit contains two copper adapters and two threaded steel adapters. The male side of the steel adapters has NPT threads for attaching to the steel flange that connects to the CDU. The female side has BSPT threads for joining to the customer supplied chilled water pipe. The copper adapter has a 3-inch end for attaching to the brass flange that connects to the CDU. The metric end of the copper adapter is 76-mm pipe for joining to the customer supplied chilled water line.



Insulation adhesive Use a low-VOC (Volatile Organic Compounds), black contact adhesive specifically designed for joining seams in pipe insulation. Use a black colored adhesive to achieve a neater finished insulation. Apply a thin coat of adhesive to both surfaces. Allow the adhesive to dry but still be tacky to the touch. Position the pieces accurately when contact is made. Apply moderate pressure over the entire area to ensure the seam is sealed.



Supply and return connections

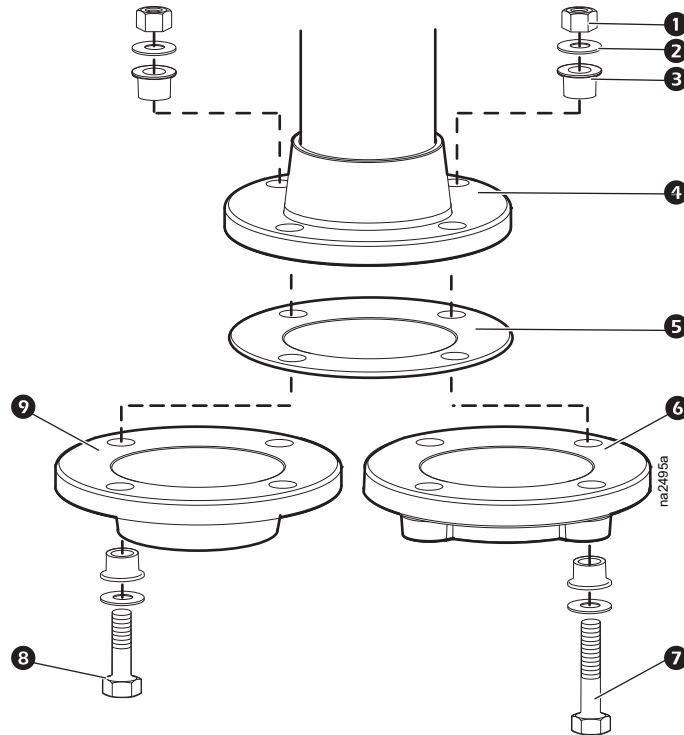
Dielectric flange kits: Use the appropriate flange for your water system piping material.

NOTICE

CORROSION HAZARD

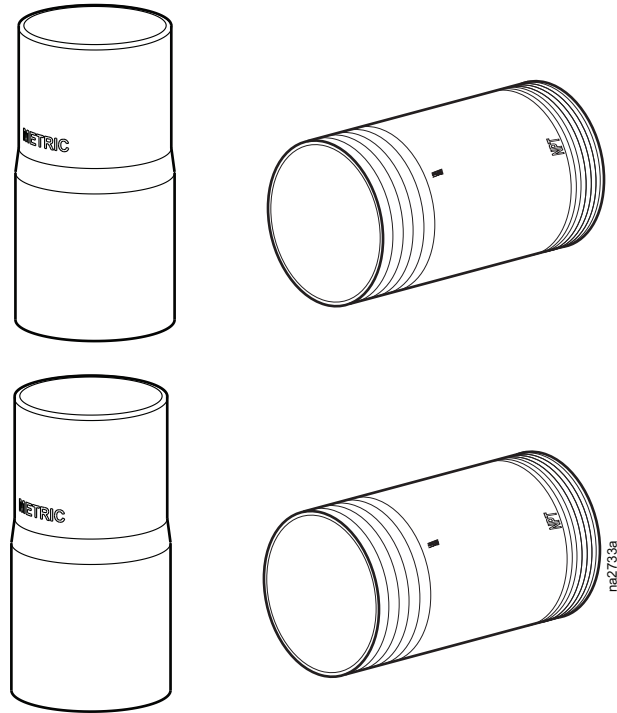
Protection against galvanic corrosion is strongly recommended if dissimilar metals are used. Use the appropriate flange from the kits supplied with your CDU.

Failure to follow these instructions can result in equipment damage.

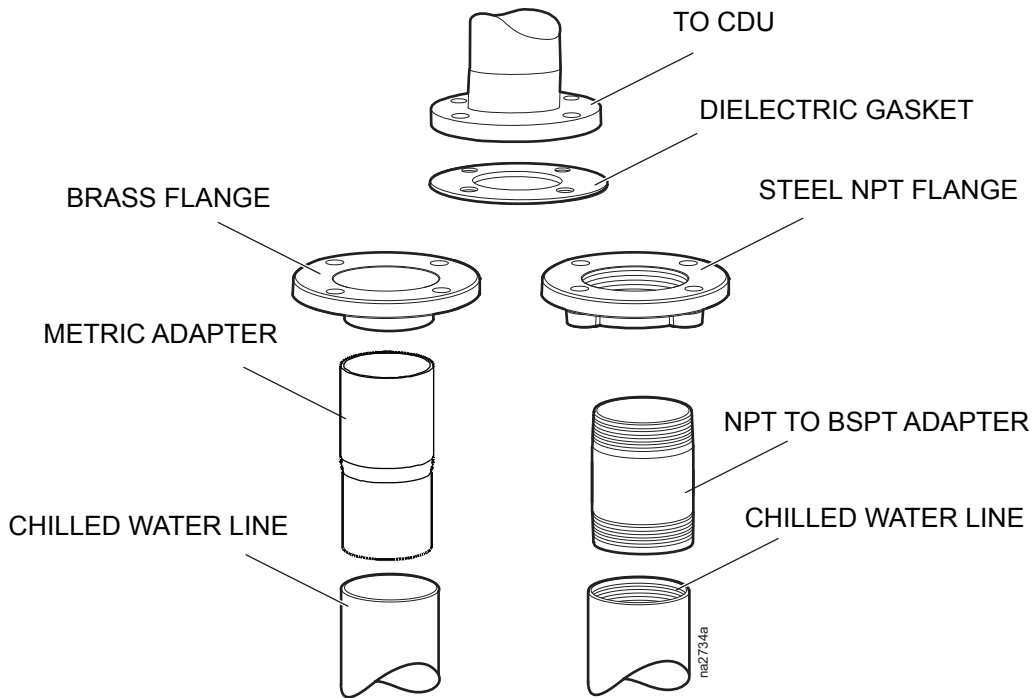


Item	Description
1	Nut
2	Washer
3	Insert
4	CDU connection flange
5	Gasket
6	Steel flange
7	3-inch bolt (use with steel flange)
8	2.25-inch bolt (use with brass flange)
9	Brass flange

Adapter kit installation: An adapter must be installed between metric sized or BSPT (British Standard Pipe Thread) chilled water pipes and the flanges from the dielectric flange kit. The adapter kit contains two copper adapters and two threaded steel adapters. One side of the steel adapters has NPT (National Pipe Thread) pipe threads for attaching to the steel flange. The other side has BSPT pipe threads for joining to the steel chilled water pipe. The copper adapter has a 3-in. end for attaching to the brass flange that connects to the CDU. The metric end of the copper adapter is 76-mm pipe for joining to the copper chilled water pipe.



Connect adapters between CDU flanges and chilled water supply and return pipes.



Installation access

The CDU is designed to be a stand-alone unit. It can be placed against a wall or in any open area that is suitable for use.

Both side and front panels may be removed during the installation process. An area of 36 in. (914 mm) of clear floor space in front and 24 in (609.6 mm) at each side of the CDU is recommended for installation.

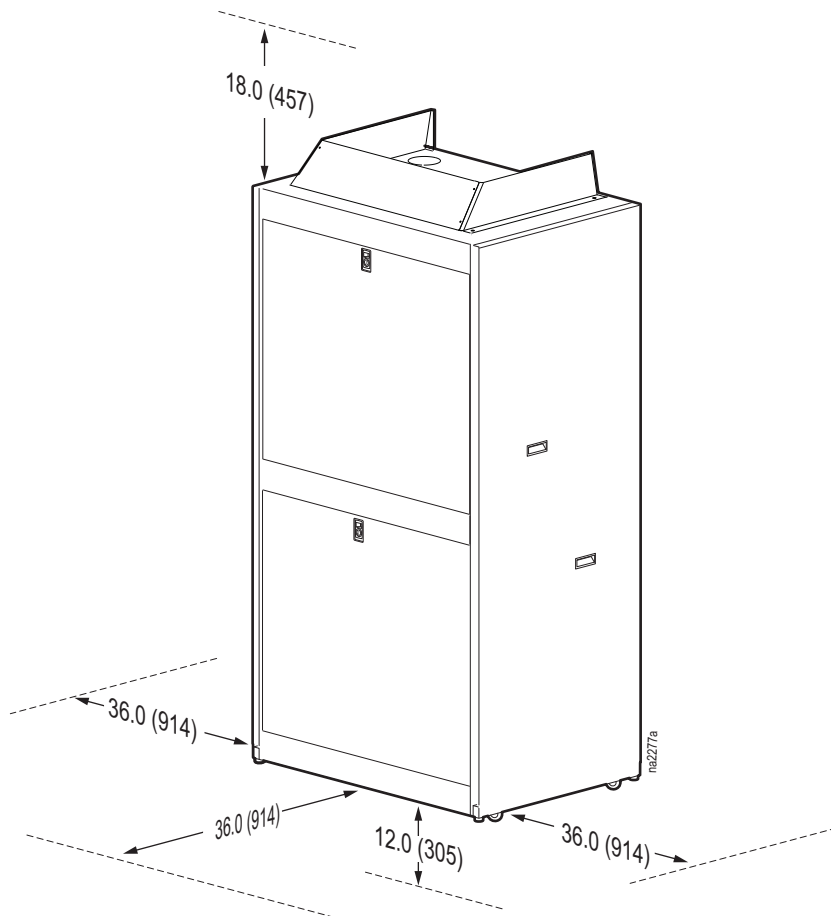
Clearance

The minimum clearance for top piping installations is 18 in. (457 mm).

NOTE: The minimum clearance between suspended ceilings and solid ceilings is 12 in. (305 mm). The minimum clearance for bottom piping installations is 12 in (305 mm).

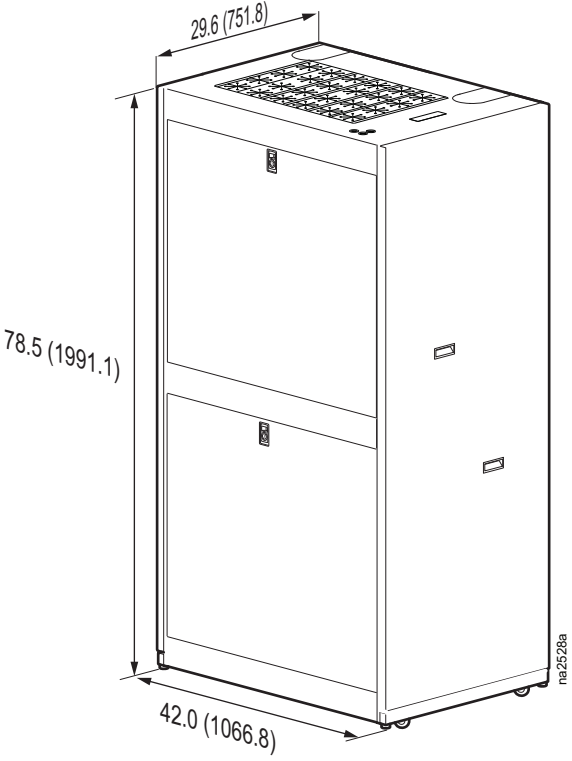
Service access

For service, an area of 36 in. (914 mm) of clear floor space in front of the CDU is required. All required maintenance can be performed from the front of the unit.



Dimensions are in inches (millimeters).

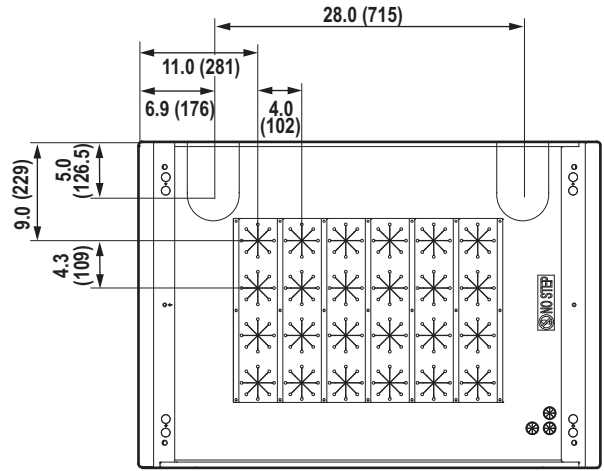
Equipment Dimensions



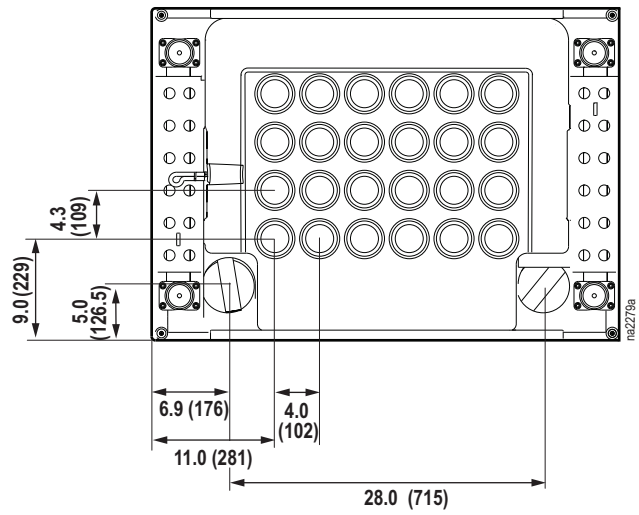
Dimensions are in inches (millimeters).

Piping access locations

TOP PIPING

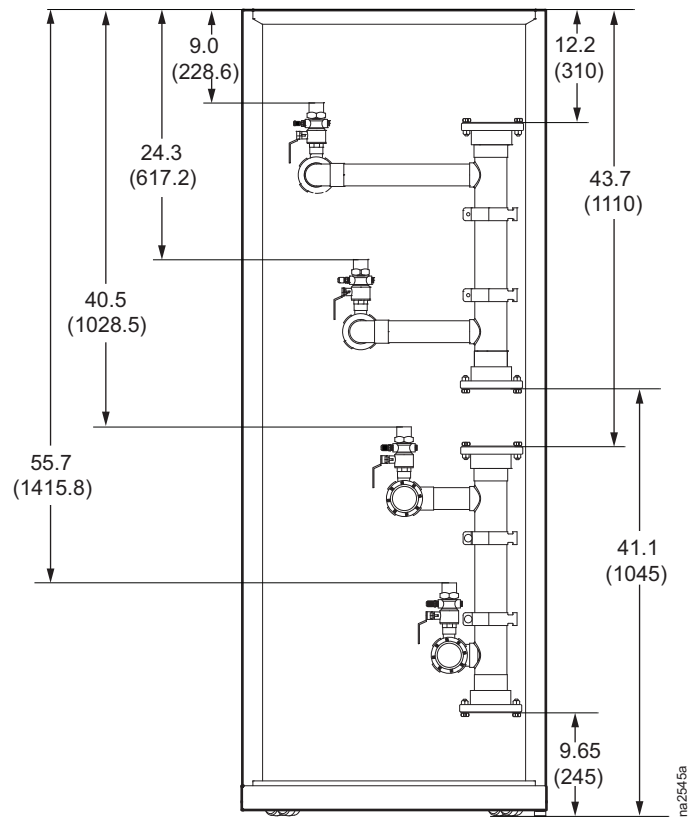


BOTTOM PIPING



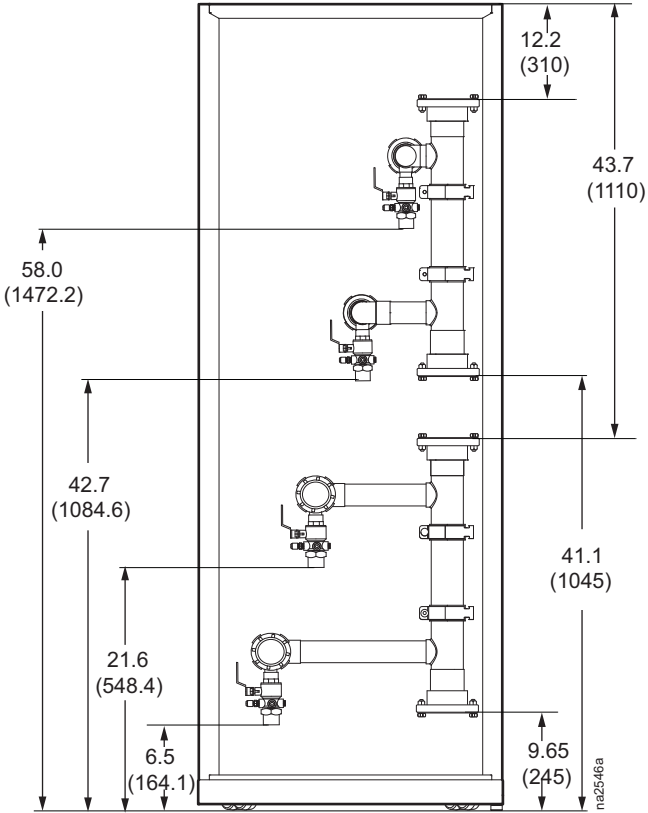
Dimensions are in inches (millimeters)

TOP PIPING



Dimensions are in inches (millimeters).

BOTTOM PIPING



Dimensions are in inches (millimeters).

Installation

Leveling

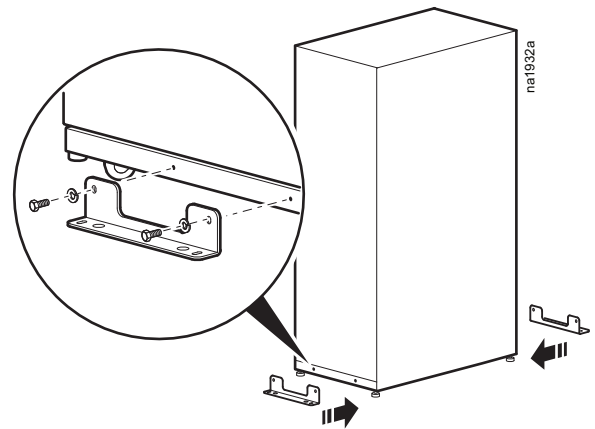
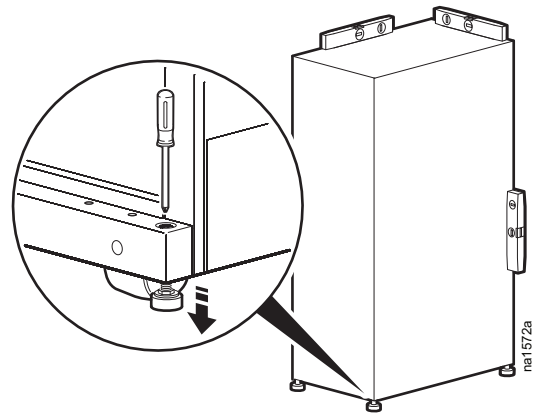
The leveling feet provide a stable base if the floor is uneven but cannot compensate for a badly sloped surface.

Once the equipment is in its intended location, use a screwdriver to turn each leveling foot until it makes contact with the floor. Adjust each foot until the equipment is level and plumb.

You can remove the casters and leveling feet to allow the equipment to rest directly on the floor.

Stabilizing the CDU

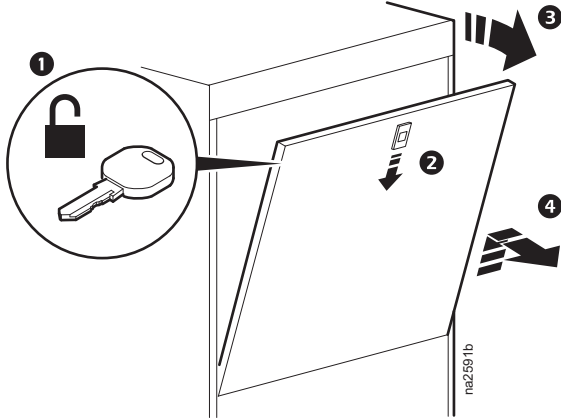
1. Attach the stabilizing brackets using the fasteners removed from the shipping brackets (see page 7).
NOTE: For bottom piping configurations, attach brackets after protective trim is installed. See page 38.



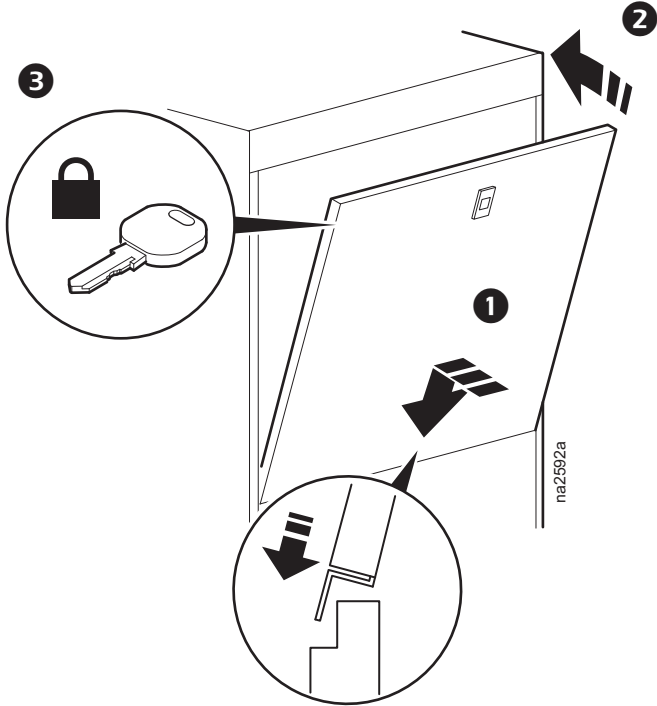
2. Secure the brackets to the floor using fasteners appropriate for the floor material.
NOTE: Use code-compliant fasteners to secure the unit to the floor.

Panel Removal and Installation

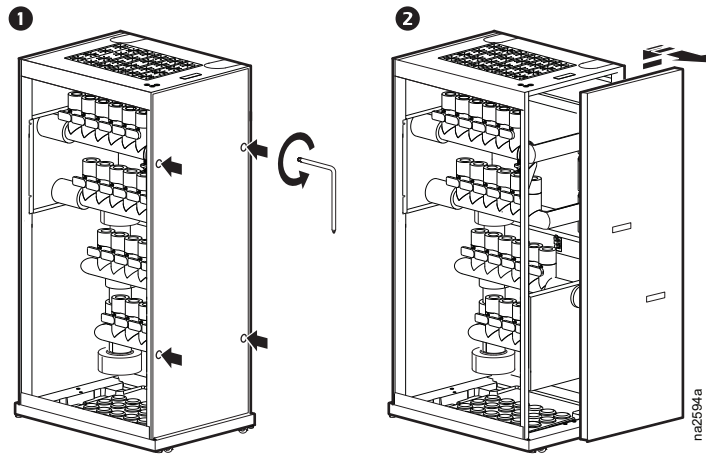
Front panel removal



Front panel installation

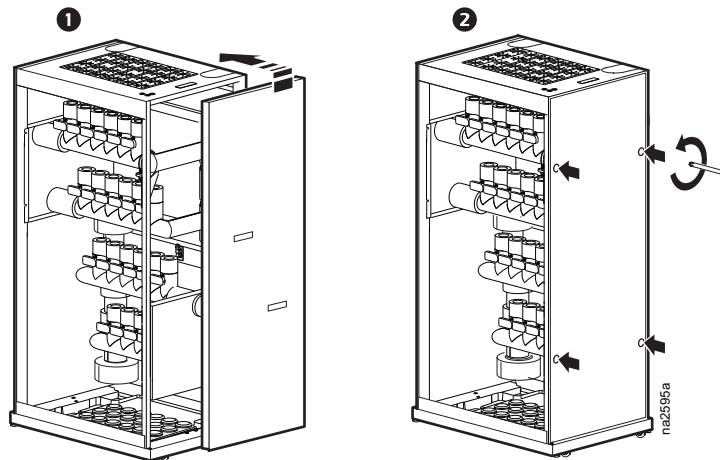


Side panel removal

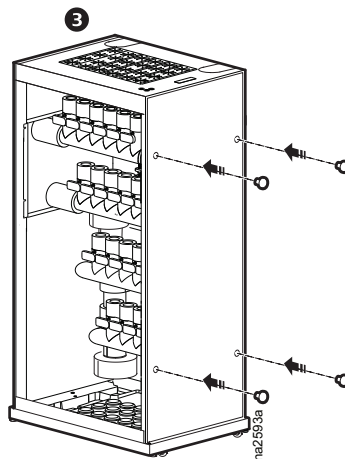


Side panel installation

1. Reverse the removal procedure to install.



1. Install the plugs from the hardware bag (see page 6).



Connections

Chilled water piping to the CDU

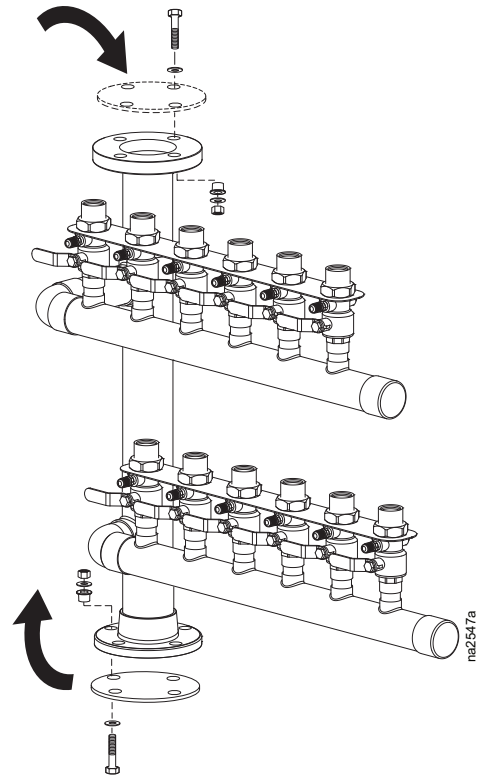
NOTICE

CORROSION HAZARD

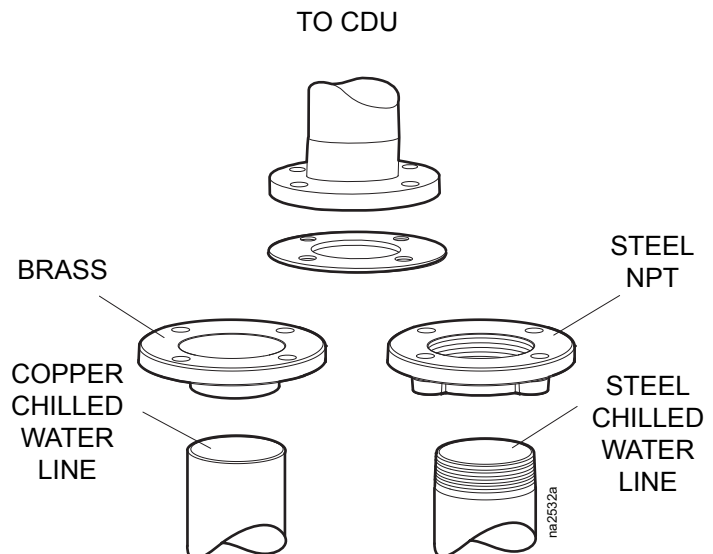
Protection against galvanic corrosion is strongly recommended if dissimilar metals are used. Use the appropriate flange from the kits supplied for the supply and return lines.

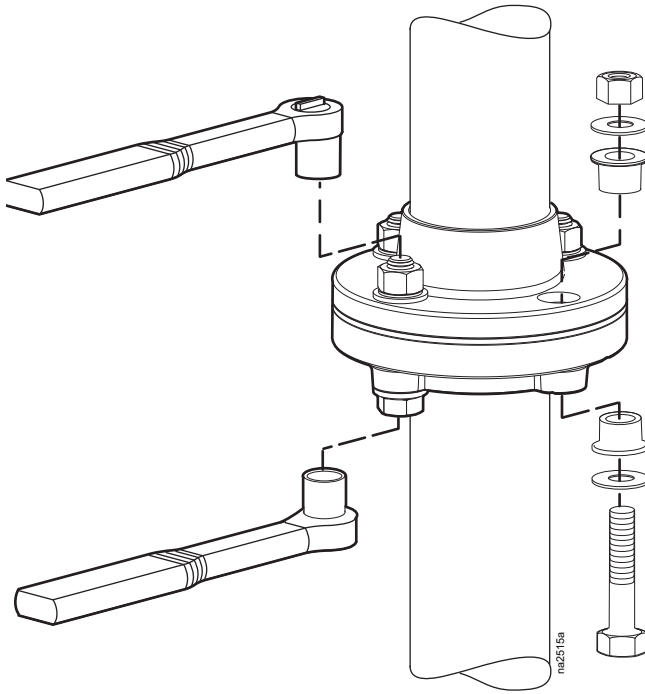
Failure to follow these instructions can result in equipment damage.

Pipe size: The chilled water supply and return connections on the CDU are 3-inch copper with brazed brass flanges. As in the example to the right, the chilled water supply and return can be redirected from the top to the bottom or from the bottom to the top as necessary.

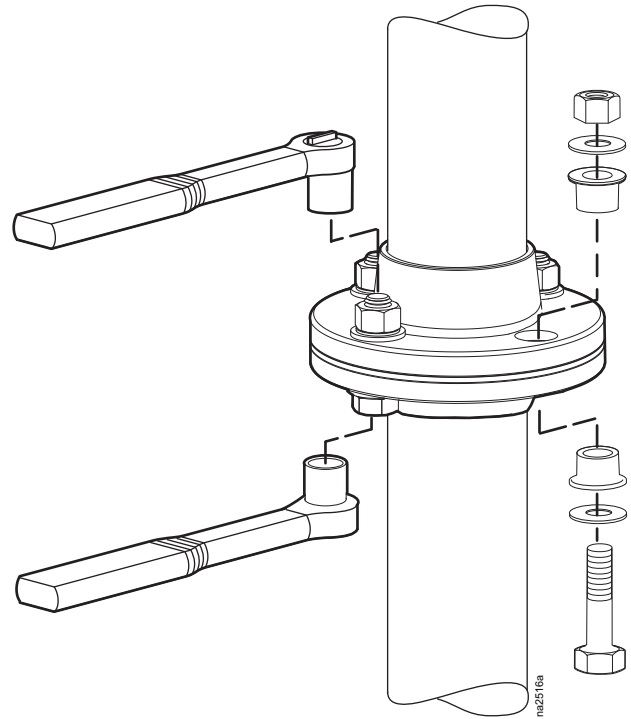


Dielectric Flange kit If the chilled water lines are copper, use the brass flanges from the kit. If the chilled water lines are steel or another material, use the steel flanges. The steel flanges have NPT threads and require the 3 inch bolts provided in the kit. See page 19 for the flange kit inventory.

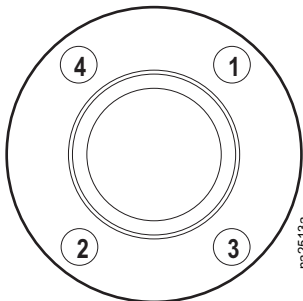




STEEL FLANGE



BRASS FLANGE



TIGHTENING SEQUENCE



TORQUE WRENCH

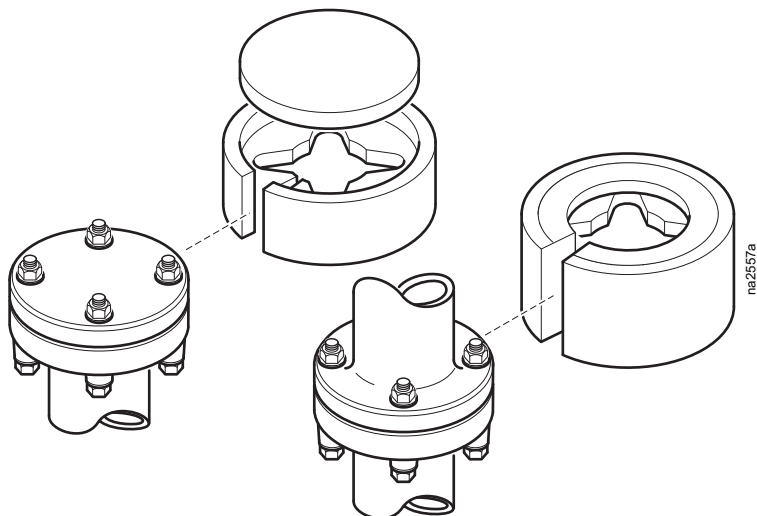
TIGHTEN BOLTS TO 90 ft. lbs. (122 N-m)

Install isolation valves, and particulate strainers with 20 mesh stainless steel screen (opening size: 865 micron) in the supply line between the chiller and CDU. See illustrations on “Top piping configuration:” on page 14 and “Bottom piping configurations:” on page 15. Connections to the CDU can be with hard or flexible piping.

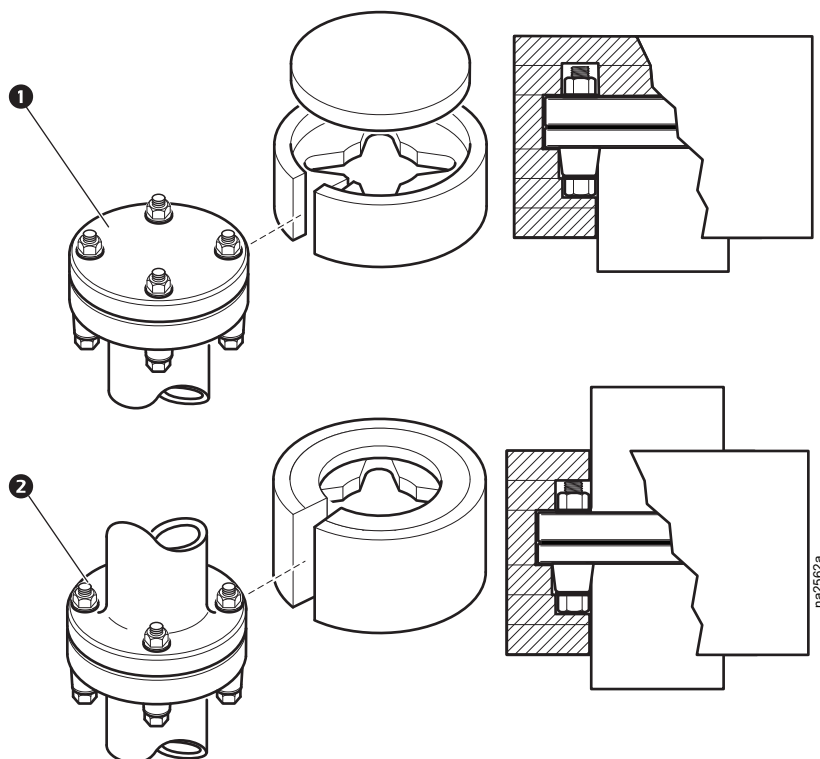
NOTE: To minimize obstructions, install particulate strainers and filters on the supply line coming into the CDU. Locate strainers between the CDU and any other devices on the chilled water supply line.

NOTE: For systems with possible debris or heavy particulates a redundant strainer in the bypass line is recommended. Install isolation valves and particulate strainers with 20 mesh stainless steel screen (opening size: 865 micron) in the supply line between the chiller and CDU.

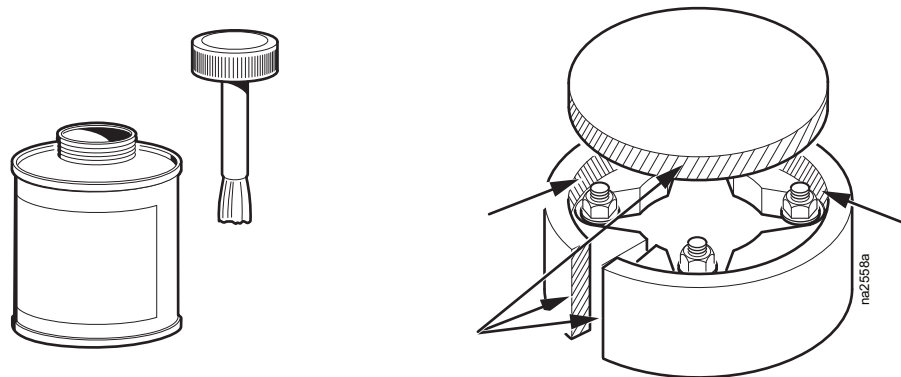
Insulation: The flange insulation is only temporarily installed for shipping and must be carefully removed before connecting the supply and return water lines. After the supply and return water lines have been connected, install the insulation to the flanges.



The insulation boots provided in this kit are made to fit one flange that has a cap installed **1** and one flange that has a chilled water line installed **2**.



Apply a thin coat of adhesive to surfaces. Allow the adhesive to dry but still be tacky to the touch. Position the pieces accurately when contact is made. Apply moderate pressure over the entire area to ensure the seam is sealed.



Install insulation (not included) to the water lines to minimize condensation. Seal all seams. Properly installed insulation will prevent condensation.

See page 18 for material considerations regarding insulation adhesive requirements.

Distribution piping installation and connections

The preferred system to connect the CDU and InRow RC units is PEX-AL-PEX piping and fittings.

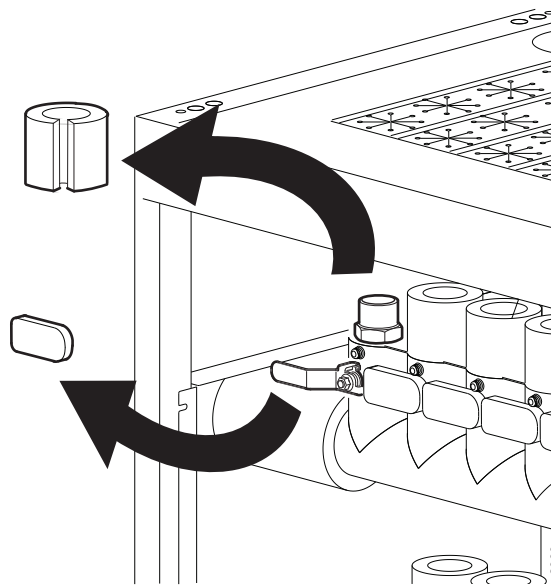
NOTE: PEX-AL-PEX piping and fittings may vary slightly between manufacturers and should not be interchanged.

Using your pipe diagram as a reference, start by loosely hanging the longest set of supply and return pipes from their support braces.

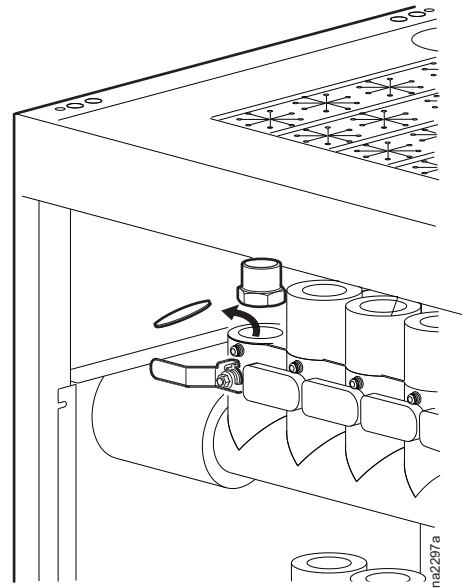
NOTE: It helps to mark each pipe as either “supply” or “return” before making the final connection. Use a marker pen to mark each pipe and piping header (for both supply and return) S1, S2 and R1, R2 etc.

Connecting the CDU

1. Carefully remove the insulation covering the valve handles and the tops of the valves. Set aside to be installed later.

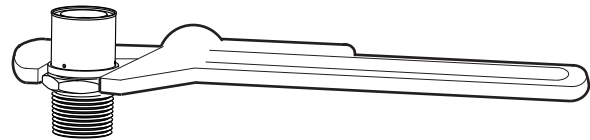


2. Remove the couplings from the top of the valves.
Remove and discard the stainless steel protective disk from under each valve coupling.



3. Apply liquid thread sealant to the threads of each fitting.
Follow the sealant manufacturer's instructions for cure time before proceeding.

4. Attach a valve coupling to each fitting (use the 7/8-inch hex key and an adjustable wrench for this procedure).



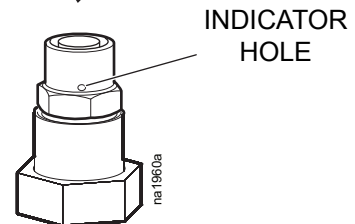
5. Route the pipes through the roof panel or floor pan to the designated supply and return valves.



6. Chamfer each pipe end, then insert the pipe into the fitting so that the pipe is visible in the indicator hole, and crimp.
NOTE: Make sure the inside of the pipe is clean of debris and plastic shavings after chamfering.



7. Attach each pipe and fitting to the appropriate supply or return valve and secure the union nut hand tight plus an additional 1/4 turn.



Connecting the InRow RC

NOTICE

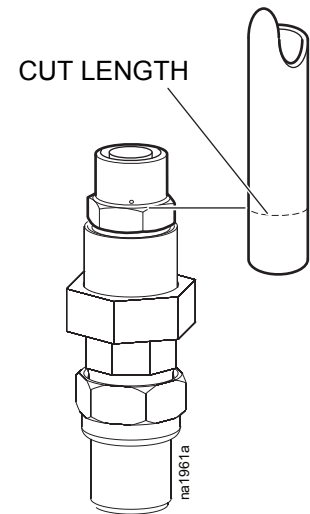
LEAK HAZARD

Do not overtighten the couplings that connect the pipe fittings. Doing so may deform the threads and create possible leaks.

Failure to follow these instructions can result in equipment damage.

1. Insert a fitting into each of the supply and return connection pipes (hand tighten only).
2. Mark each pipe for cut length, and cut.
3. Remove both fittings, and apply liquid thread sealant to the threads of each fitting.
4. Re-insert the fittings into the inlet and return pipes, and tighten in place.
5. Chamfer each pipe, then insert the pipe into the fitting so that the pipe is visible in the indicator hole, and crimp.
NOTE: Make sure the inside of the pipe is clean of debris and plastic shavings after chamfering.

Repeat steps for each InRowRC unit attached to the CDU.



Leak test

NOTICE

EQUIPMENT DAMAGE

Introduction of water to the system without prior testing for leaks could result in damage to other equipment in the vicinity.

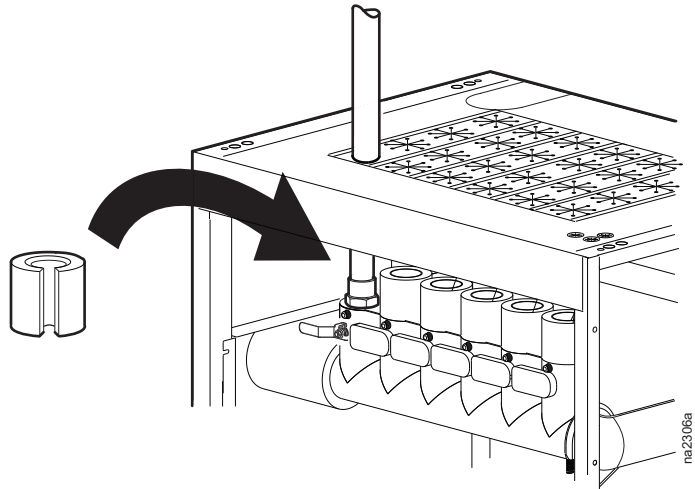
Failure to follow these instructions can result in equipment damage.

When all pipe runs are completed, and before installing the insulation, perform a leak test on the system. Bring pressurized air or nitrogen into the equipment to reach the maximum working pressure. See table on page 43. Ensure there are no leaks before introducing water into the system.

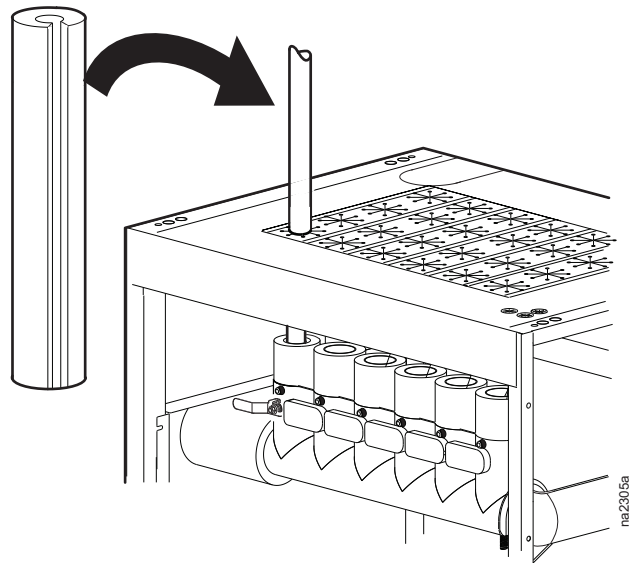
Piping insulation

Use only approved insulation. The closed cell insulation with sealing seams has an inner diameter of 1 3/8 in. (34.9 mm), and is 1/2 in. (12.7 mm) thick. All horizontal insulation sections must be installed with seams facing up. Each section of insulation must be glued to the adjacent section. Any insulation sections that must be fitted around piping support clamps (other than supplied clamps) must be glued together to prevent leaks.

1. Replace the insulation that was removed from the valves.



2. Insulate each run of piping.
NOTE: At each InRow RC, attach an identification label (1–12) (see page 6) to the insulation sleeve of the supply and return pipes that corresponds to the number at the valves on the CDU.



Pipe clamps

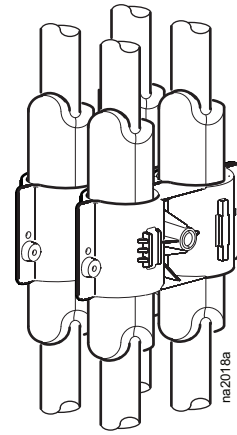
Pipe clamps are provided to properly secure the PEX-AL-PEX piping. Always refer to local and national codes for regional specifications on spacing and anchoring of the pipe clamps.



See table Guidelines for Spacing Between Clamps on page 44.



For clamp installation, follow instructions in the **InfraStruXure PEX-AL-PEX Piping Clamp** Installation Sheet.

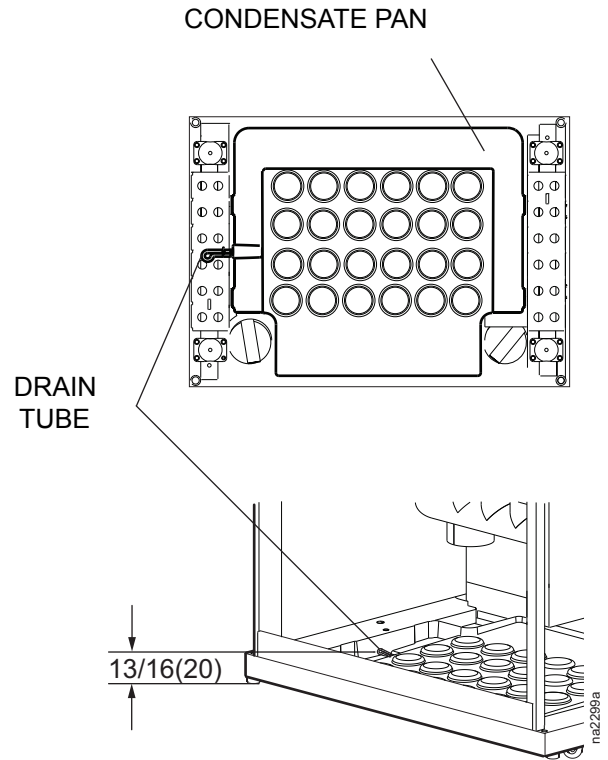


Condensate drain piping

The CDU is equipped with a condensate pan located in the bottom of the unit. Any moisture will be collected here and directed to a drain port in the pan. A 6 in. x 1/4 in. (152 mm x 6 mm) (inner diameter) condensate drain tube is supplied for use with this unit. Connect to this tubing and route it to an open drain.

NOTE: Use code-compliant piping practices when installing the condensate drain line to an open drain.

Condensate drain to floor dimension: The distance of the drain from the floor about 13/16 in. ± 1/4 in. (20 mm, ± 6 mm). This is a consideration when using a condensate pump with the CDU.



Dimensions are in inches (millimeters).

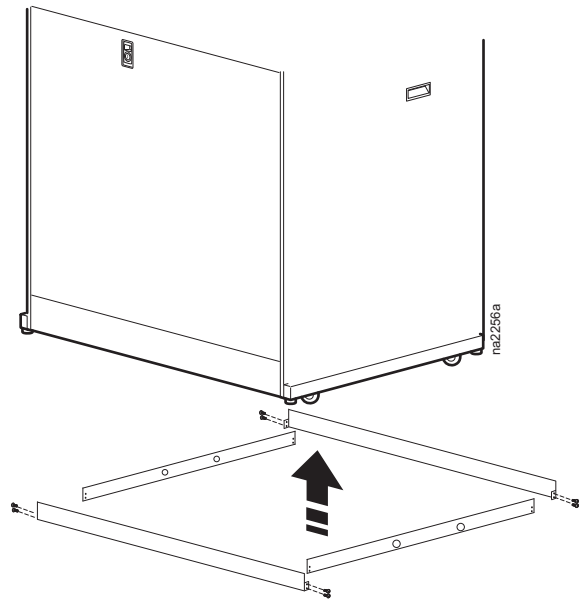
Protective Trim

Bottom protective trim

Bottom piped units are shipped with unassembled protective trim for the bottom of the unit (see page 7). This assembly conceals and protects the pipes between the bottom of the CDU and the floor. After the piping installation is complete, assemble and install the trim with the provided fasteners.

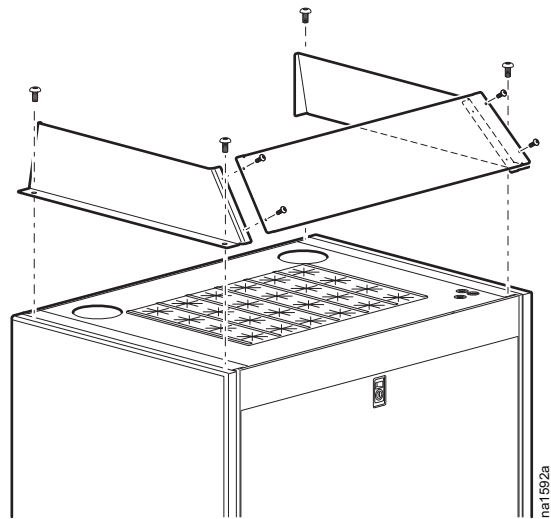


If the stabilizing brackets (page 27) will be used, they may now be attached to secure the CDU to the floor.



Optional top protective trim kit

An optional protective trim assembly to shroud the pipe egress on the top of the unit is available. After the piping installation is complete, assemble the three pieces with the provided fasteners, and install the assembly to the top of the CDU.



Commissioning

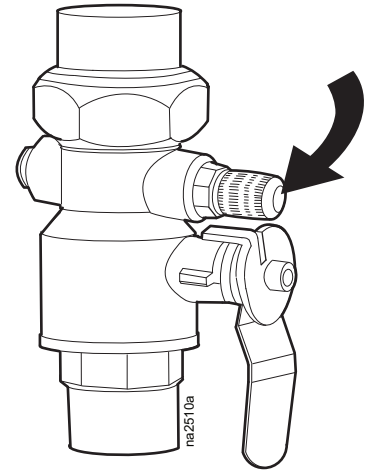
Purge air before start-up

1. When the supply valves are opened during start-up, leave the return valves shut.
2. Purge air at the service valves until water is discharged.
3. Open the return manifold valves.

Purge the InRow RC units at this time.

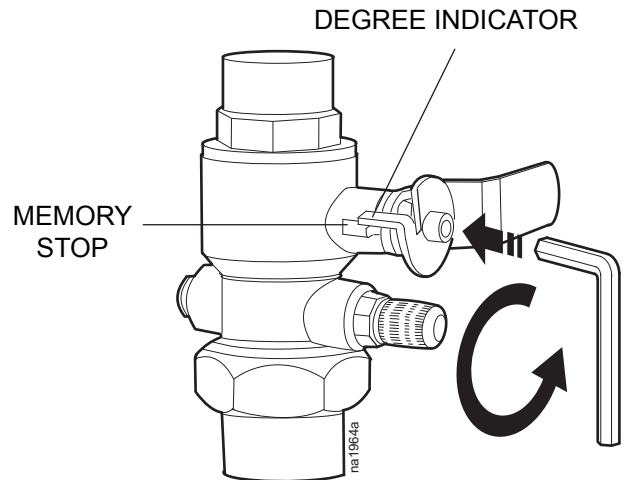
Flow calibration

To provide optimal flow to each InRow RC, the system must be balanced. This is done by manually setting the flow rate of each valve on the supply header. The desired flow rate, or GPM (gallons per minute), must be set by slowly adjusting the ball valve until the display on each InRow RC indicates the desired GPM. This procedure must be performed multiple times on each valve to achieve a properly balanced system.

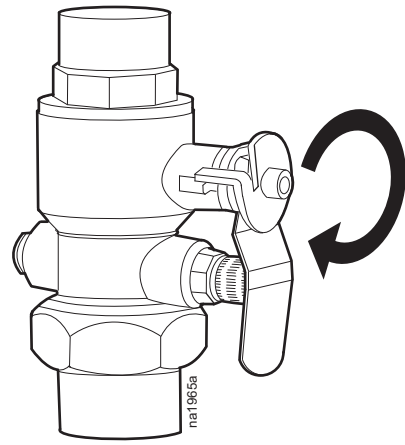


Valve adjustment

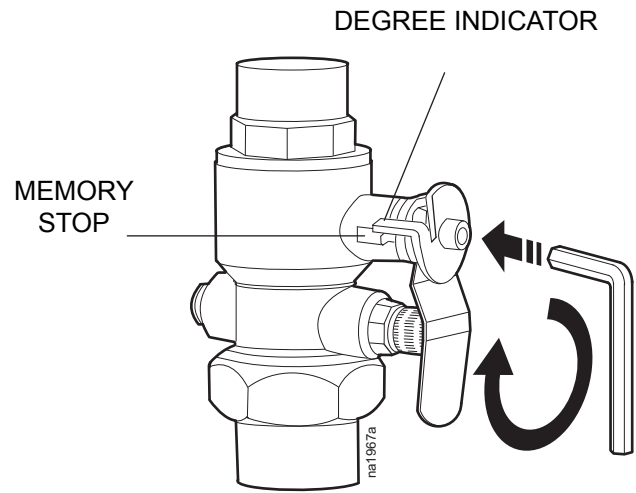
1. Using a 4-mm hex key wrench, loosen the fastener securing the degree indicator against the memory stop.



2. Slowly open the valve while monitoring the InRow RC for desired GPM (gallons per minute), see the InRow *Operation and Maintenance* manual for the flow rate indication display.

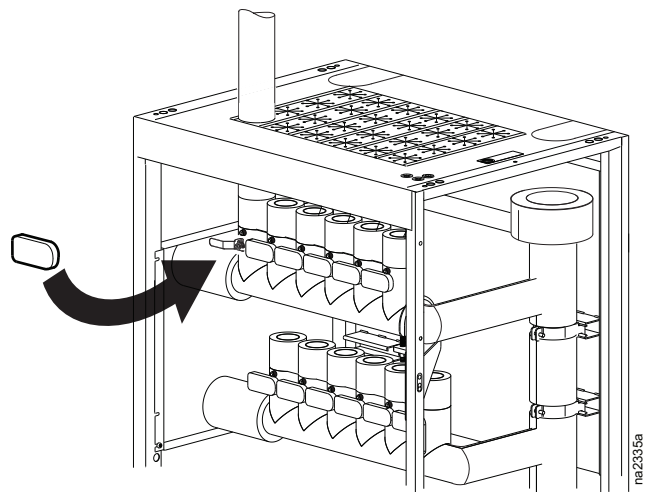


3. Once the valve is opened to a point where the desired flow rate has been achieved on the InRow RC, hold the degree indicator against the memory stop and tighten the fastener.



Repeat step 3 for each valve in the system, and then again for each valve after all the valves have been adjusted. This step is performed multiple times on each valve to achieve a properly balanced system.

4. When calibration is complete, replace the insulating covers on the valve handles. Apply glue to seal them to the insulation surrounding the valve.



Checklists

Initial Inspection

Ensure that the:

- CDU shows no signs of damage.
 - Available clearance around the unit is in accordance with ASHRAE, local, and national codes, as well as this installation manual.
 - The unit has been secured to the floor.
-

Mechanical Inspection

IMPORTANT: Failure to properly install piping may result in improper CDU operation.

Ensure that the:

- Condensate drain line is the size of the drain connection and is routed properly.
 - Mechanical connections are tight.
 - Isolation valves are installed on the supply and return lines.
 - Strainers have been installed in the supply line to the unit.
 - A by-pass line with strainer and isolation valves has been installed in the supply line to the unit.
 - Piping is insulated.
 - Piping does not have any leaks.
 - External chilled water isolation valves are open.
 - Air is bled from the system. If air remains in the system, bleed it out now.
 - Supply water temperature is within specifications.
 - Water flow balance between each CRAC and the CDU is correct.
 - Installation is complete according to this installation manual.
-

Final Inspection

Ensure that the

- Interior and exterior of the unit are clean and free from debris.
 - Panels are locked and keys are secure.
 - Packaging materials are disposed of properly.
 - The start-up form is filled in and sent to Schneider Electric.
-

Specifications

Weight	lbs (kgs)
Net weight	530 (240.9)
Operating weight	560 (254.01)
Shipping weight	700 (318.20)

Nominal Dimensions	in. (mm)
Net height (not including pipe shroud)	78.4 (1991)
Shipping height	85.1 (2161)
Net width	29.53 (750)
Shipping width	41.90 (1065)
Net depth	42.13 (1070)
Shipping depth	46.00 (1168)

Connection Sizes	in. (mm) - nominal
Supply to InRow RC	1 (25.4)
Return from InRow RC	1 (25.4)
Main supply from chiller	3 (76.2)
Main return from chiller	3 (76.2)

Control Valves	in. (mm) - nominal
Isolation ball valve	1 (25.4)
Balancing ball valve	1 (25.4)

Flow Rate	GPM (l/s)
Flow rate	144 (9.08)
Maximum flow rate of CDU	175 (11.4)
Maximum circuit flow rate	20.2 (1.27)

Working Pressure	psi (kPa)
Maximum working pressure of CDU	150 (1035)

Recommended Coolant Requirements	°F (°C)
Entering water temperature	45–55 (7.2–12.8)

Recommended Environmental Factors

Chilled water/glycol	4°F (7.2°C)
Maximum dry bulb temperature	90°F (32.2°C)
Percent relative humidity	40%

NOTE: Properly installed insulation will prevent condensation at this condition. Additional insulation may be required for higher dew points or lower water/glycol temperatures

Scalability

Maximum number of InRow RC units supported	12
Minimum number on InRow RC units supported	1
Maximum length of PEX-AL-PEX pipe between the CDU and InRow RC	150 ft (45.72 m)

CDU Pressure Drop Water Only)

Number of InRow RC Units Supported	Flow Rate Through PEX-AL-PEX Pipe	Total Pressure Drop
Quantity	GPM (l/s)	Feet of Water (kPa)
1-12	2 (0.13)	0.2 (0.6)
1-12	4 (0.25)	0.9 (2.7)
1-12	6 (0.38)	2 (6.0)
1-12	8 (0.50)	3.4 (10.2)
1-12	10 (0.63)	5.3 (15.9)
1-12	12 (0.76)	7.6 (22.7)
1-10	16 (1.00)	10.2 (30.5)
1-9	18 (1.14)	16.7 (49.9)
1-9	18.5 (1.17)	17.6 (52.6)

Guidelines for Spacing Between Clamps

PEX-AL-PEX – 1 in. (25 mm) Inner Diameter	Minimum Support Distance Horizontal – in. (mm)	Minimum Support Distance Vertical – in. (mm)
International Plumbing Code - Section 308 Piping Support, Table 308.5 Hanger Spacing	32 (813)	42 (1219)
Uponor Multi-layer Composite Piping Systems Installation Guide Installation Manual	63 (1600)	63 (1600)
IAPMO/ANSI UPC 1-2003 - Uniform Plumbing Code Table 3-2 Hangers and Supports	98 (2489)	Base and each floor. Provide mid-story.

**PEX-AL-PEX Weight With and Without Fluid
1 in. (25 mm) Inner Diameter**

Weight PEX-AL-PEX per unit length	0.218 lb/ft (0.324 kg/m)
Volume of H ₂ O per unit length	4.28 gal/100 ft (53.2 l/100 m)
Weight of H ₂ O per unit length	0.357 lb/ft (0.53 kg/m)
Weight of 40% propylene glycol solution by mass per unit length	0.371 lb/ft (0.552 kg/m)
Weight of 150 ft (45.7 m) span of PEX-AL-PEX with 40% propylene glycol solution by mass	88.4 lb (40.0 kg)

**PEX-AL-PEX Pressure Drop
1 in. (25 mm) Inner Diameter (water only)**

Flow rate through pipe GPM (l/s)	Pressure drop through pipe feet of water/feet of pipe (kPa/m)
2 (0.13)	0.004 (0.04)
4 (0.25)	0.01 (0.1)
6 (0.38)	0.03 (0.29)
8 (0.50)	0.05 (0.49)
10 (0.63)	0.07 (0.69)
12 (0.76)	0.1 (0.98)
14 (0.88)	0.13 (1.28)
16 (1.00)	0.17 (1.67)
18 (1.14)	0.21 (2.06)
18.5 (1.17)	0.21 (2.06)

**PEX-AL-PEX pipe bend length for pressure drop*
1 in. (25 mm) inner diameter**

Estimated Number of Bends In Pipe	Equivalent pipe length, ft (m)
1	1 (0.31)
2	2 (0.61)
3	3 (0.92)
4	4 (1.22)
5	5 (1.53)
6	6 (1.83)
7	7 (2.14)
8	8 (2.44)
9	9 (2.75)
10	10 (3.05)

* For pressure drop calculation only. Do not include equivalent pipe length in total PEX-AL-PEX length for installation.

NOTE: Pressure drop of the system should be based on the highest individual circuit, which is dependent on line length and flow rate.

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Customer support for this or any other product is available at no charge in any of the following ways:

- Visit the Schneider Electric Web site to access documents in the Schneider Electric Knowledge Base and to submit customer support requests.
 - **www.schneider-electric.com** (Corporate Headquarters)
Connect to localized Schneider Electric Web sites for specific countries, each of which provides customer support information.
 - **www.schneider-electric.com/support/**
Global support searching Schneider Electric Knowledge Base and using e-support.
- Contact the Schneider Electric Customer Support Center by telephone or e-mail.
 - Local, country-specific centers: go to **www.schneider-electric.com > Support > Operations around the world** for contact information.

For information on how to obtain local customer support, contact the representative or other distributors from whom you purchased your product.

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