

Uniflair™ Direct Expansion InRow® Cooling

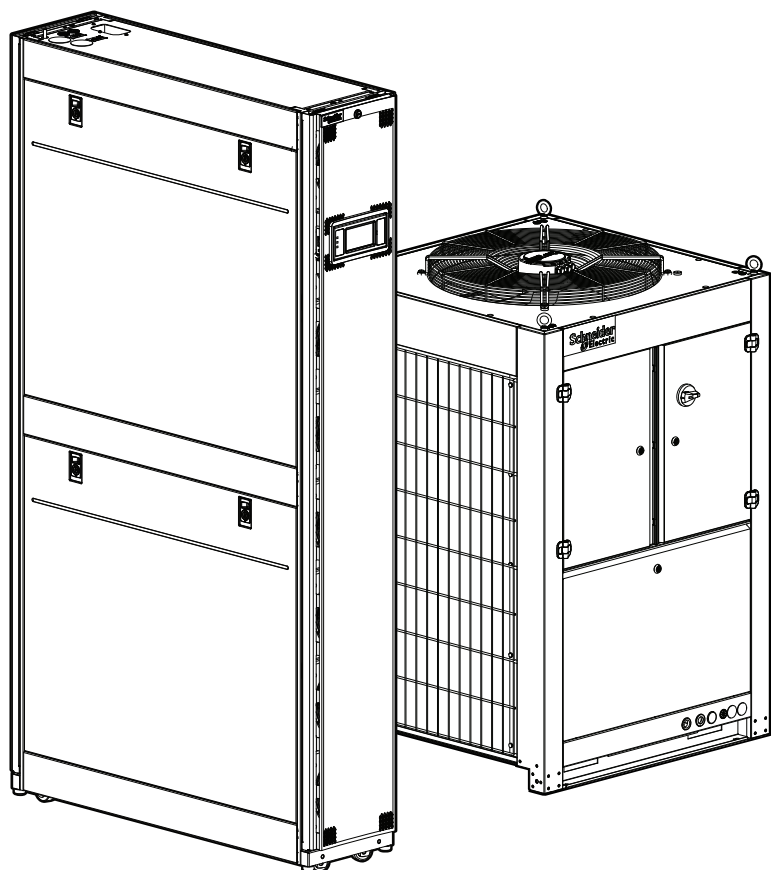
ACRD300 and ACCU300 Series

Installation Manual

30 kW, CE/UL Certified

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Safety

Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety 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 message 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 with this symbol to avoid possible injury or death.

⚠ DANGER
<p>DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.</p> <p>Failure to follow these instructions will result in death or serious injury.</p>
⚠ WARNING
<p>WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p> <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>
⚠ CAUTION
<p>CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.</p> <p>Failure to follow these instructions can result in injury or equipment damage.</p>
NOTICE
<p>NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.</p> <p>Failure to follow these instructions can result in equipment damage.</p>

Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Always abide strictly by local laws and regulations in the place of installation.

Safety During Installation

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- This equipment must be installed and serviced by qualified and trained personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- 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

HAZARD TO EQUIPMENT OR PERSONNEL

This equipment is not to be operated or installed by persons with reduced physical, sensory, or mental capabilities, or persons lacking experience or knowledge. Children are not to operate or play on or around this equipment.

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 FROM MOVING PARTS

Keep hands, clothing, and jewelry away from moving parts. Check the equipment for foreign objects before closing the doors and starting the equipment.

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

WARNING

HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified and trained personnel.

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

General Information

Document Overview

Original Instructions

These are the original instructions provided by the manufacturer.

Save These Instructions

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

Manual Updates

Schneider Electric™ policy is one of continuous technological innovation and the company reserves the right to amend any data herein without prior notice. The images shown in this manual are for descriptive purposes only and they may differ from specific models that are selected.

NOTE: Unit images and component identification information are examples only. The final configuration of the unit may change according to the different options.

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 Symbol Used in This Manual



See another section of this document or another document for more information on this subject.

Abbreviations

The following are abbreviations and terms used in this manual:

- EEV: Electronic expansion valve
- VFD/VSD: Variable-frequency drive/variable-speed drive
- BMS: Building management system
- ATS: Automatic transfer switch
- HACS: Hot aisle containment system
- CACS: Cold aisle containment system
- RACS: Rack aisle containment system

Receiving and Inspecting the Equipment

Your Uniflair InRow air conditioner has been tested and inspected for quality assurance before shipment from Schneider Electric. Carefully inspect both the exterior and interior of the equipment immediately upon receipt to ensure that the equipment has not been damaged during transit.

Verify that all parts ordered were received as specified and that the equipment is the correct type, size, and voltage.

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 Schneider Electric Worldwide Customer Support at one of the numbers listed on the Web page on the back page 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.

NOTE: In case of shipping damage, do not operate the equipment. Keep all packaging for inspection by the shipping company and contact Schneider Electric.


Radio Frequency Interference

The cooling units comply with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. These devices may not cause harmful interference.
2. These devices must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

California Proposition 65—Warning Statement for California Residents

 **WARNING:** This product can expose you to chemicals including lead and lead compounds, that are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Storing the Cooling Unit Before Installation

NOTICE

DAMAGE FROM EXPOSURE

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.

If the cooling unit will not be installed immediately, store it in a safe place, protected from the weather.

Moving the Unit

▲ WARNING

DAMAGE TO EQUIPMENT OR PERSONNEL

- The equipment is heavy. For safety purposes, adequate personnel must be present when moving this item.
- The load must always be solidly anchored to the bearing element of the lifting equipment and means of transport.
- No one should be near the suspended load, nor in the working area of the crane, forklift, truck, or any other lifting equipment or means of transport.

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

Lifting and transporting the units must be carried out by qualified personnel as described in this manual.

Use all relevant safety standards to prevent any possible damage to people or objects.

Indoor Unit

The cooling unit is packaged in a wooden crate or anchored to a pallet and covered with transparent film. The recommended tools for moving and installing the equipment include the following:

Forklift



Pallet Jack



Outdoor Unit

The condensing unit is packaged in a wooden crate. The recommended tools for moving and installing the equipment include the following:

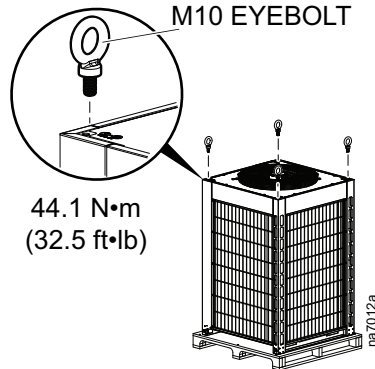
Forklift



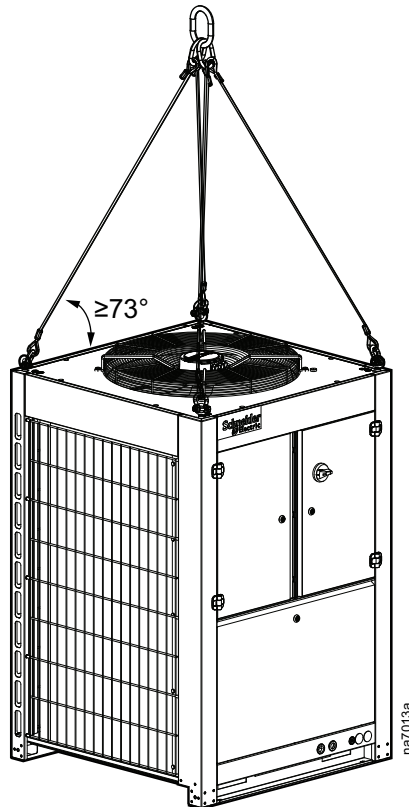
Crane



Use field-supplied eyebolts rated for angular lifting with a shoulder similar to the one shown below. The minimum weight rating for a 90° lift is 726 kg (1600 lb).



The lifting angle for the lifting straps must be greater than or equal to 73°.



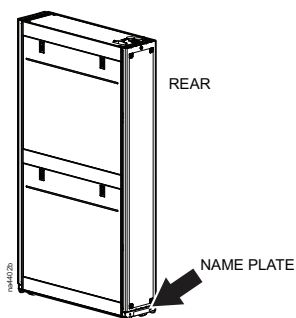
Unit Overview

Model Identification

Indoor Unit

The model number can be found on the outside of the shipping crate and on the name plate located on the unit as shown. Use the table below to verify that the equipment is the right type and voltage.

NOTE: The unit is not to be accessed by the general public.

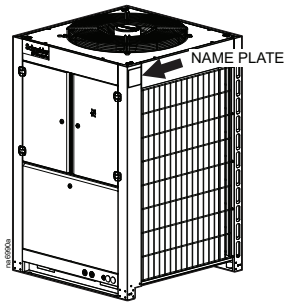


SKU	Voltage	Frequency	65 kAIC	Power Feed	Number of Fan Power Supplies	Drainage System	Humidification/ Reheat
ACRD301S	100–120 V~* / 200–240 V~	50/60 Hz	Yes	Dual feed	1	Condensate pump	No/No
ACRD301P	200–240 V~	50/60 Hz	No	Dual feed	1	Condensate pump	Yes/Yes

*Configure proper voltage before applying power to the cooling unit.

NOTE: All units have a rear-to-front airflow pattern.

Outdoor Unit



The model number can be found on the outside of the shipping crate and on the name plate located on the unit as shown. Use the table below to verify that the equipment is the right type and voltage.

NOTE: The unit is not to be accessed by the general public.

SKU	Voltage	Frequency	Power Feed
ACCU300	200–240 V 3~	50/60 Hz	Single feed
ACCU300D	200–240 V 3~	50/60 Hz	Dual feed
ACCU302	380–415 V 3~	50/60 Hz	Single feed
ACCU302D	380–415 V 3~	50/60 Hz	Dual feed
ACCU301	460–480 V 3~	50/60 Hz	Single feed
ACCU301D	460–480 V 3~	50/60 Hz	Dual feed

NOTE: All units are 65 kAIC-ready.

Equipment Guidelines

Working Conditions and Environmental Limits

Uniflair Direct Expansion InRow units have a minimum heat load to ensure proper operation. Failure to operate the unit with at least the minimum load will result in one or more of the following conditions:

- Unstable unit operation
- Decreased operating efficiency
- Equipment on/off cycling
- Inadequate dehumidification
- Increased wear and tear caused by frequent on/off cycles
- Decreased group control effectiveness
- Potential increase in cost of ownership

Limit Working Conditions—Indoor Units (ACRD301P, ACRD301S)	
Refrigerant type	R410A
Voltage input tolerance	±10%
Approximate minimum recommended load	8.0 kW (27,297 BTU/hr)
Outdoor ambient temperature without the low ambient temperature kit installed	Down to –15°C (+5°F) Up to 48°C (118°F)
Outdoor ambient temperature with the low ambient temperature kit installed	Down to –40°C (–40°F) Up to 48°C (118°F)
Ambient %RH	5 to 80%RH
Altitude	3000 m (9843 ft)
Storage Conditions	
Temperature	–25°C to +65°C (–13°F to +149°F)
Humidity	5 to 95%RH

NOTE: ACRD301P and ACRD301S are in accordance with the Electromagnetic Compatibility Standard (EMC): EN 55032, EN55024, EN61000-3-2, EN61000-3-3, EN61000-6-3, EN61000-6-1, EN61000-3-11, EN 61000-3-12.
ACRD301P and ACRD301S are in accordance with FCC: ANSI C63.4.

NOTE: The SKUs comply with EN61000-3-12 provided that the short-circuit power SSC is greater than or equal to 350 at the interface point between the user supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power SSC greater than or equal to 350.

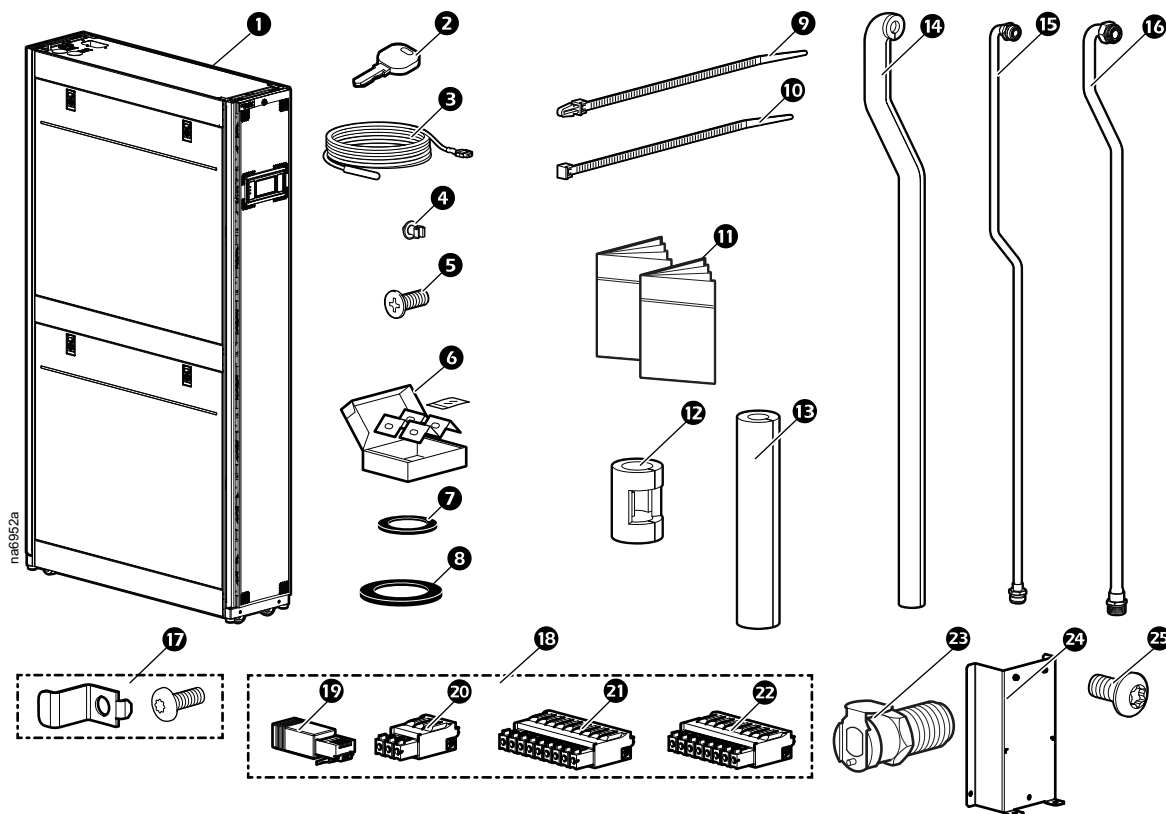
Limit Working Conditions—Outdoor Units (ACCU300, ACCU300D, ACCU302, ACCU302D, ACCU301, and ACCU301D)	
Refrigerant type	R410A
Operating outdoor temperature	–40°C to +46°C (–40F to +115°F)
Altitude	3000 m (9843 ft)
Storage Conditions	
Temperature	–25°C to +65°C (–13°F to +149°F)
Humidity	5 to 95%RH

NOTE: ACCU302 and ACCU302D are in accordance with the Electromagnetic Compatibility Standard (EMC): EN 55032, EN55024, EN61000-3-2, EN61000-3-3, EN61000-6-3, EN61000-6-1, EN61000-3-11, EN 61000-3-12.
ACCU300, ACCU300D, ACCU301, and ACCU301D are in accordance with FCC: ANSI C63.4.

NOTE: The SKUs comply with EN61000-3-12 provided that the short-circuit power SSC is greater than or equal to 350 at the interface point between the user supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power SSC greater than or equal to 350.

Inventory

Package Contents—Indoor Unit



Item	Description	Quantity	Item	Description	Quantity
1	ACRD3xx	1	14	Suction line pipe insulation	1
2	Panel keys	2	15	Liquid line pipe*	1
3	Temperature sensor	1	16	Suction line pipe*	1
4	Wire clip	3	17	Bracket and screw for ACCS1009 installation***	1
5	Philips screw—M5 x 12**	4	18	Connector kit	—
6	Bolt-down kit	1	19	RJ-45 terminator	1
7	Gasket (inlet pipe)—1 in.	2	20	3-position connector†	2
8	Gasket (outlet pipe)—1 1/4 in.	2	21	9-position connector‡	1
9	Tie wrap	16	22	8-position connector‡	1
10	Tie wrap	3	23	Humidifier inlet water connection, shutoff —1/4-in. NPT and 1/4-in. BSPT (ACRD301P)	1
11	Documentation	—	24	Lower junction box cover (ACRD301P)	1
12	Clamp insulation	1	25	TORX® M4 x 8 mm screw (ACRD301P)	4
13	Suction line pipe insulation	1			

*Shipped inside the unit attached to side braces.

**Use to join the equipment to adjacent enclosures.

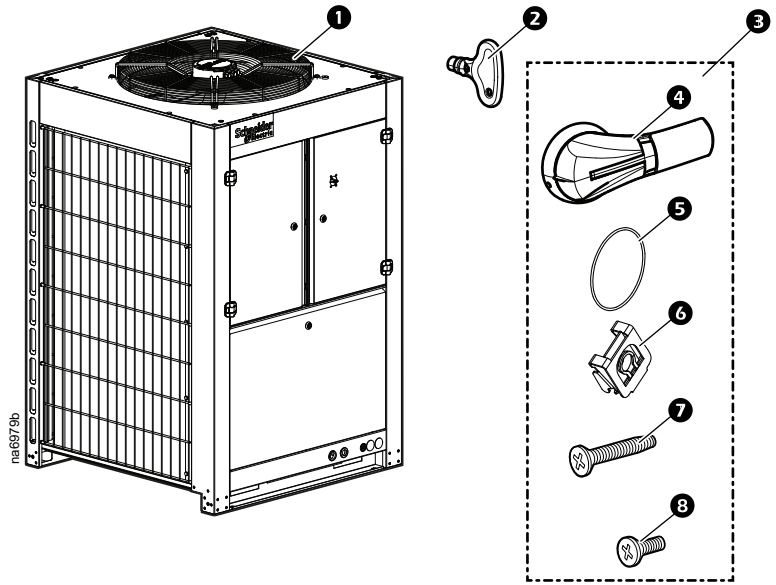
***Do not throw away. Keep these parts for use with the ACCS1009 extension kit.

†Use for the controller connection (RS485 (1)) for the condensing unit communication cable. (See Outdoor Unit Connection, page 94.)

‡Use for the output relay and standby input connections. (See Output Relays and Standby Input, page 89.)

Package Contents—Outdoor Unit

ACCU300, ACCU300D, ACCU302, ACCU302D, ACCU301, ACCU301D



Item	Description	Quantity
1	ACCU30X unit	1
2	Key*	1
3	Main switch handle installation kit**	
4	Main switch handle***	1
5	Main switch gasket***	1
6	Nuts***	4
7	Machine screws***	4
8	Tap screws****	4

*Attached to the fan grille with a wire tie.

**Shipped inside the electrical panel.

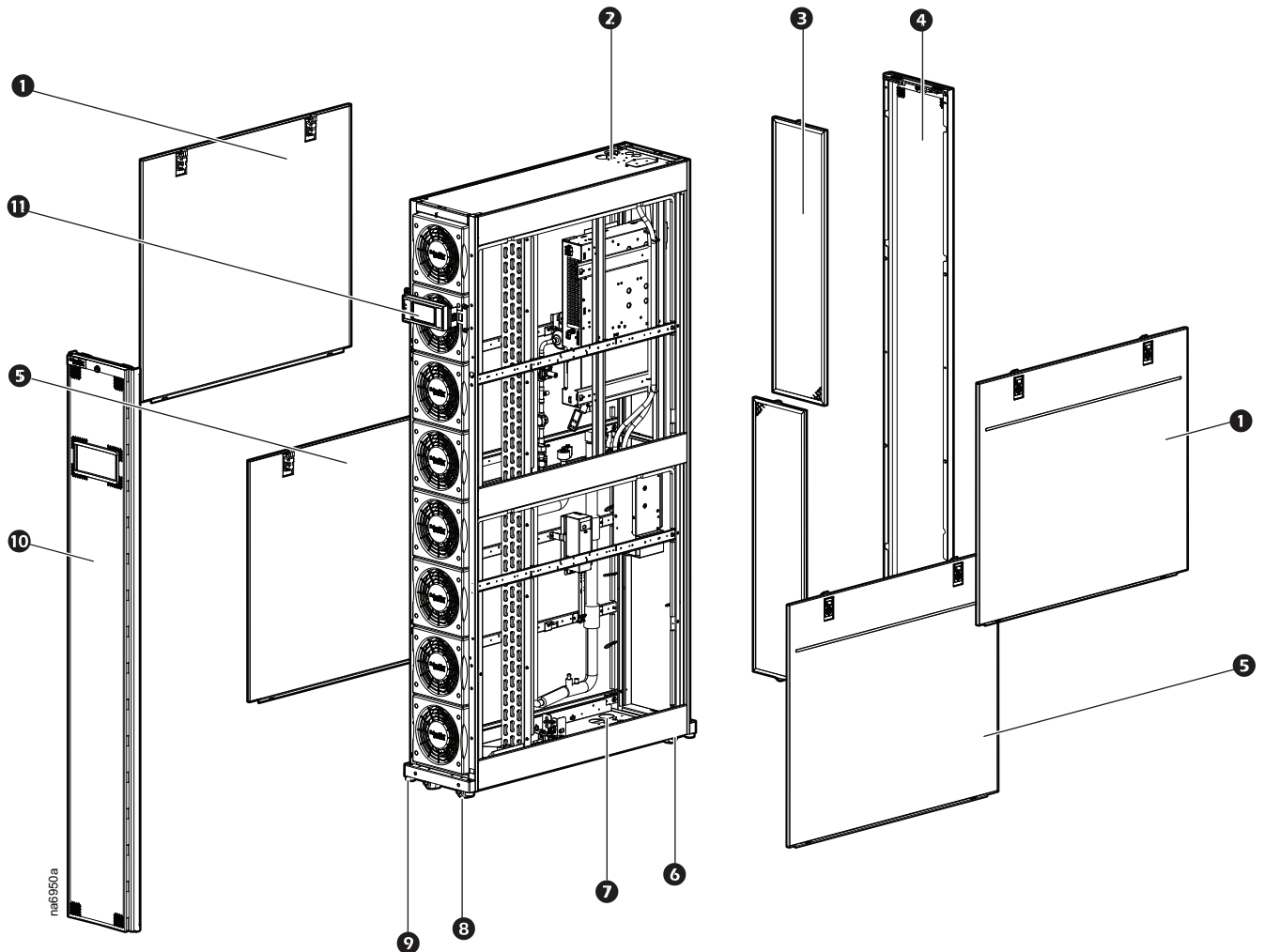
***Quantity will be doubled for models ACCU300D, ACCU302D, and ACCU301D.

****Not used. This item can be recycled.

Component Identification

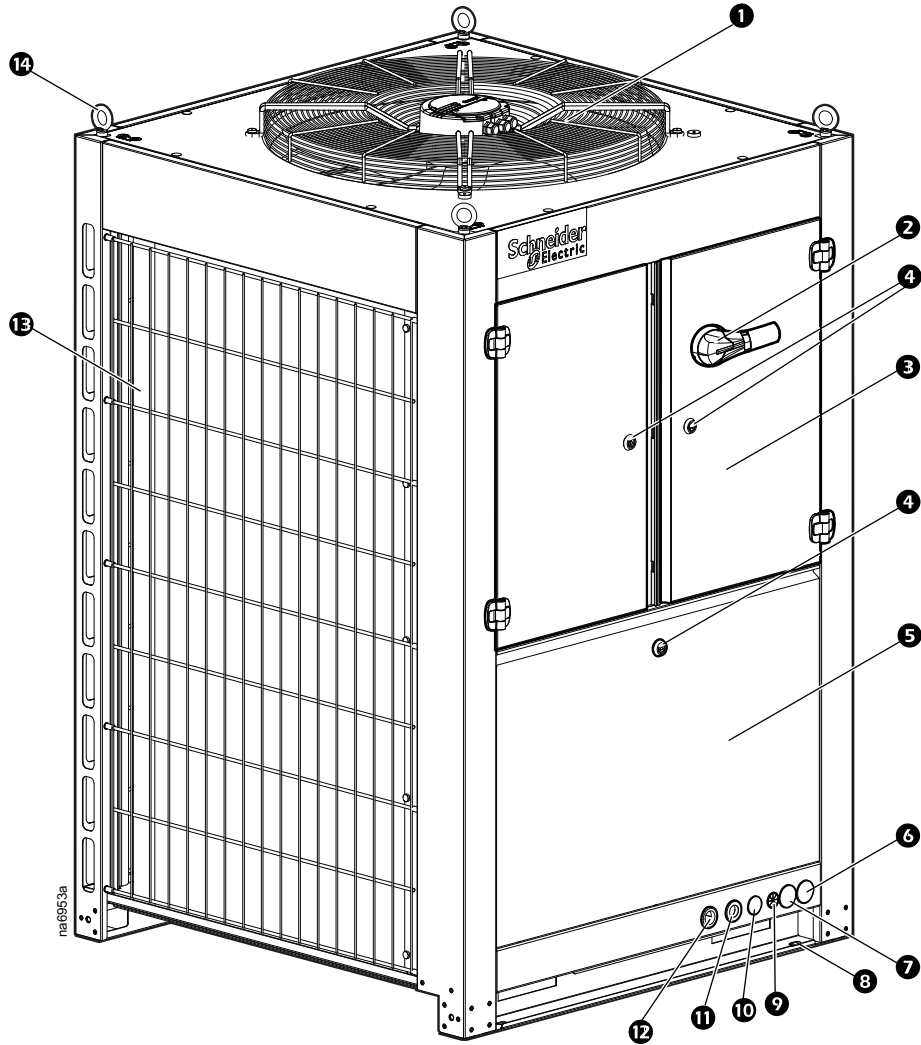
External Components

Indoor Unit—All ACRD30X Units



Item	Description
1	Upper side panel
2	Upper piping connection openings
3	Filters
4	Rear panel
5	Lower side panel
6	Rear casters (non-swiveling)
7	Lower piping connection openings
8	Front casters (swiveling)
9	Leveling feet
10	Front panel
11	Display interface

Outdoor Unit—All ACCU Units



NOTE: Model ACCU300 is shown

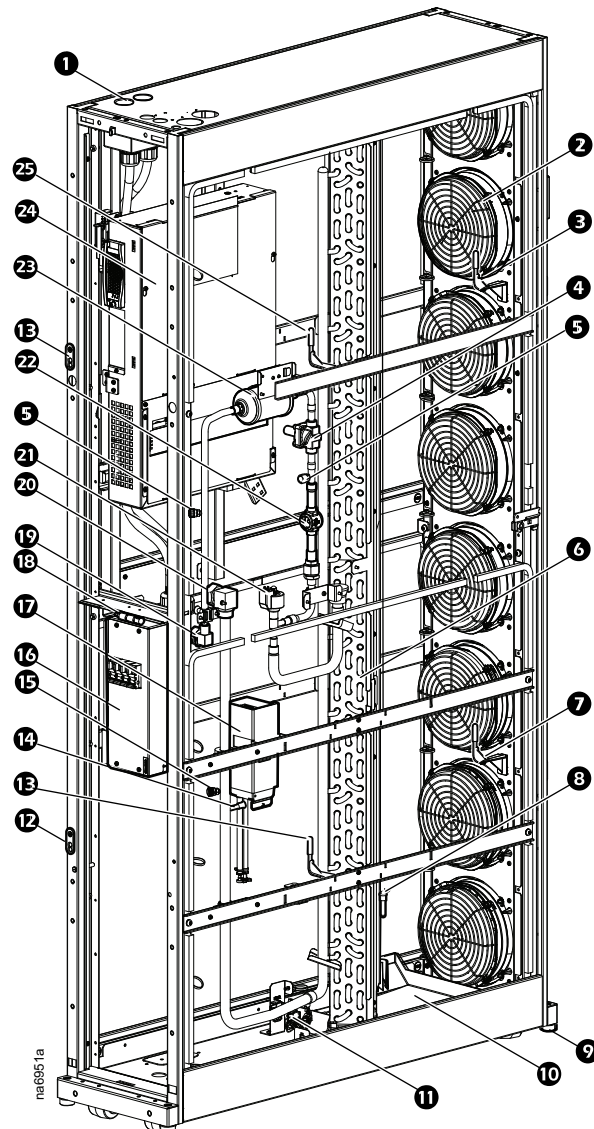
Item	Description	Item	Description
1	Fan	8	Mounting holes
2	Main disconnect switch handle (field installed)	9	Signal cable inlet
3	Electrical panel access doors	10	Liquid receiver connection outlet*
4	Quarter-turn latches	11	Liquid line inlet
5	Service panel	12	Suction line inlet
6	Power feed A inlet	13	Coil grilles
7	Power feed B inlet	14	Lifting eyebolts (field supplied)

*ACCU300, ACCU300D, ACCU301, ACCU301D, ACCU302, ACCU302D only

Internal Components

Indoor Unit

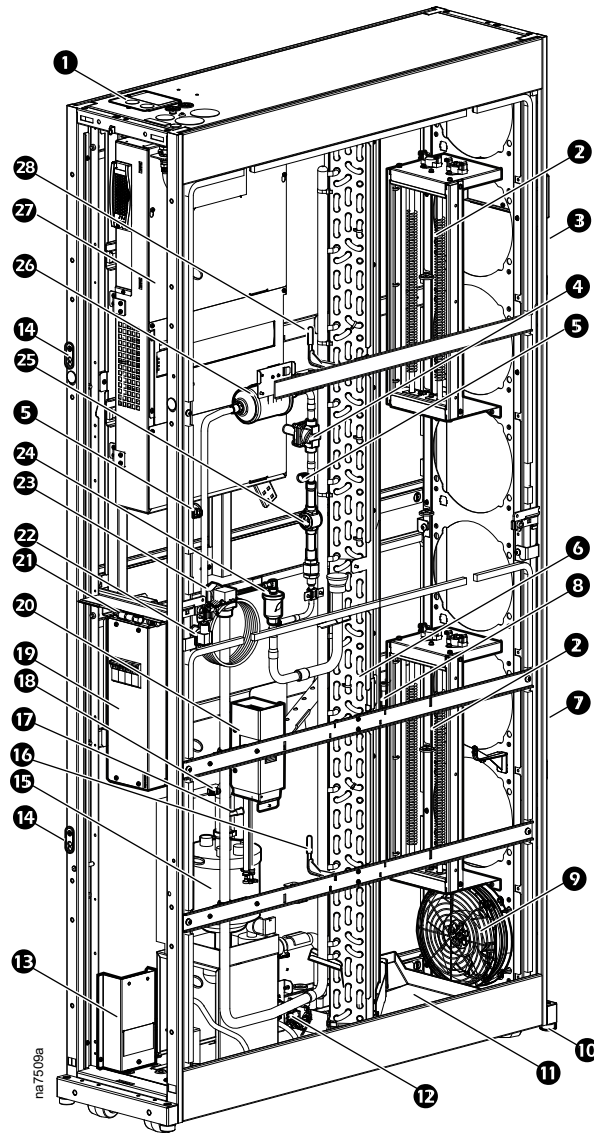
ACRD301S



NOTE: Some components not shown for easier viewing.

Item	Description	Item	Description
1	Power supply connections (top)	14	Temperature sensor (suction)
2	Fans	15	Gas line service port
3	Upper supply air temperature sensor	16	Automatic transfer switch (ATS)
4	Solenoid valve	17	Condensate drain pump
5	Liquid line service port	18	Temperature and humidity sensor (optional)
6	Cooling coil	19	Inlet connection
7	Lower supply air temperature	20	Outlet connection
8	Refrigerant temperature sensor	21	Electronic expansion valve (EEV)
9	Leveling feet	22	Sight glass
10	Condensate drain pan	23	Filter drier
11	Drain pan float switch	24	Electrical box
12	Joining bracket	25	Upper return air temperature sensor
13	Lower return air temperature sensor		

ACRD301P

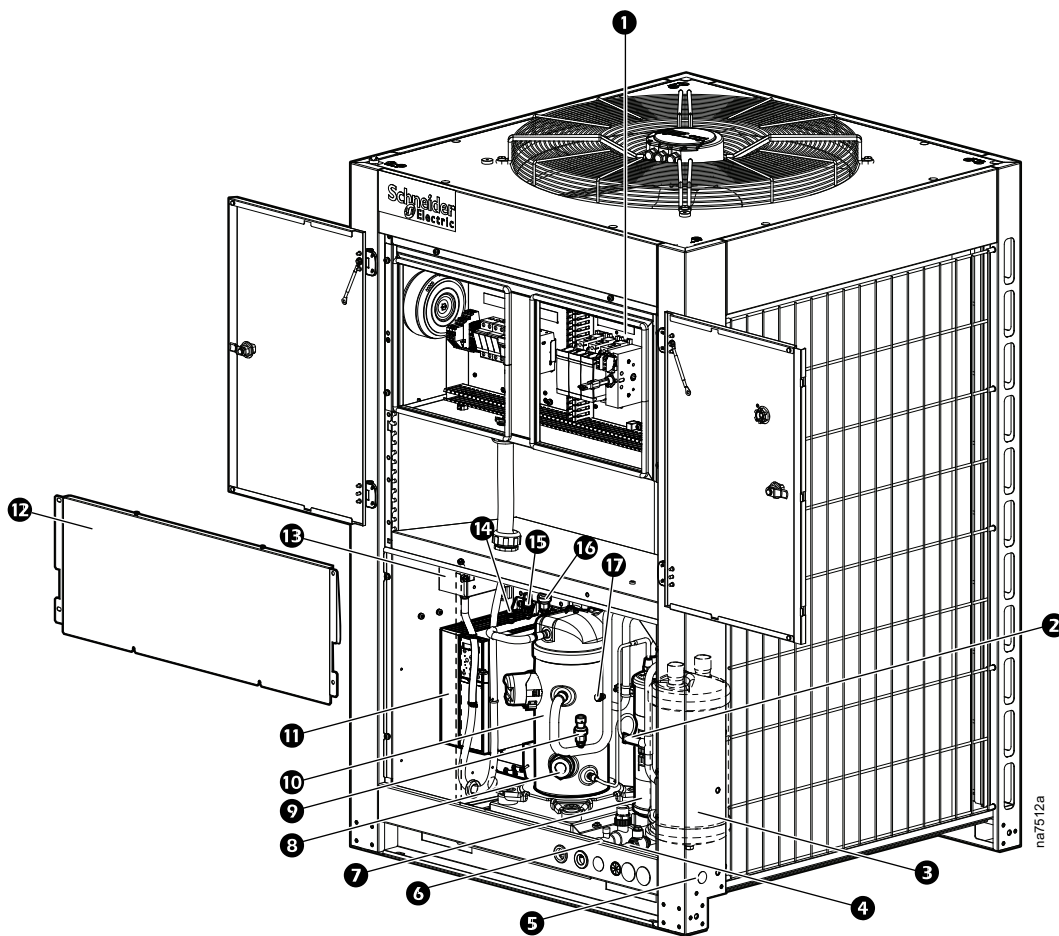


NOTE: Some components not shown for easier viewing.

Item	Description	Item	Description
1	Power supply connections (top)	15	Humidifier
2	Electric heaters	16	Lower return air temperature sensor
3	Upper supply air temperature sensor (attached to fan grille)	17	Temperature sensor (suction)
4	Solenoid valve	18	Gas line service port
5	Liquid line service port	19	Automatic transfer switch (ATS)
6	Cooling coil	20	Condensate drain pump
7	Lower supply air temperature (attached to fan grille)	21	Temperature and humidity sensor
8	Refrigerant temperature sensor*	22	Inlet connection
9	Fans	23	Outlet connection
10	Leveling feet	24	Electronic expansion valve (EEV)
11	Condensate drain pan	25	Sight glass
12	Drain pan float switch	26	Filter drier
13	Power supply connection (lower)	27	Electrical box
14	Joining bracket	28	Upper return air temperature sensor

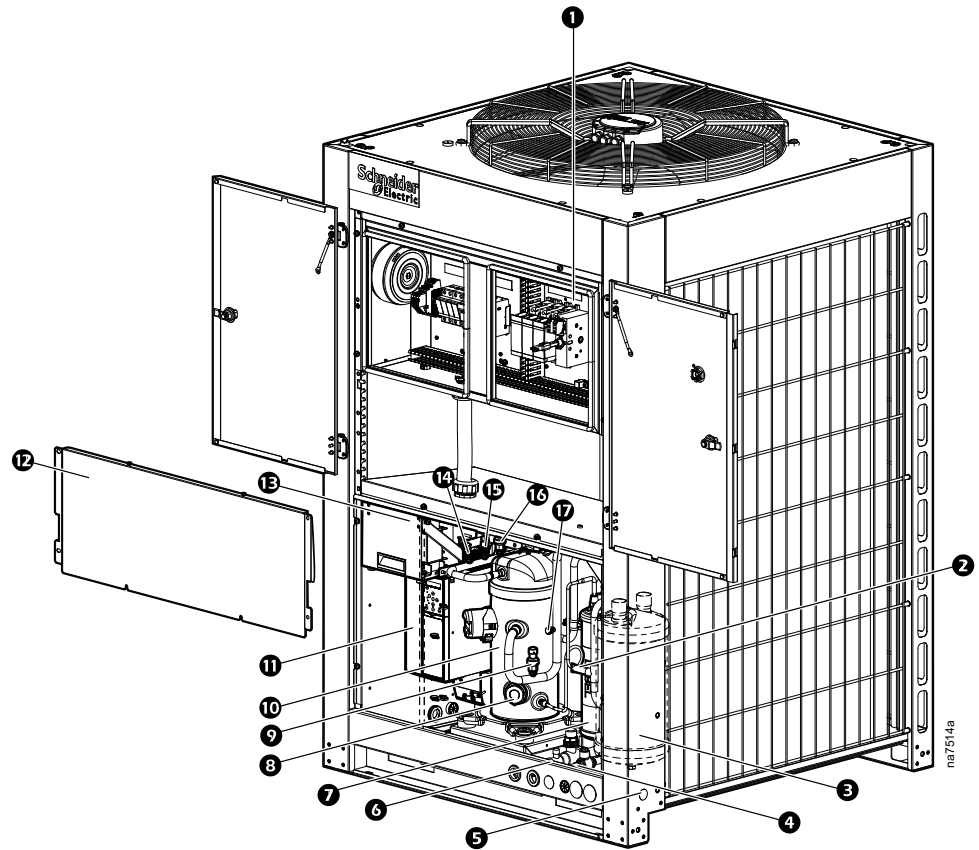
Outdoor Unit

ACCU300, ACCU300D, ACCU301, ACCU301D



Item	Description	Item	Description
1	Electrical panel	10	Variable-speed compressor
2	Pipe stub for connection to liquid receiver	11	Variable frequency drive (VFD)
3	Accumulator	12	Interior protection panel
4	Liquid line connection	13	EMI filter
5	Liquid receiver cable inlet	14	Service port
6	Suction line connection	15	High pressure switch
7	Oil separator	16	High (discharge) pressure sensor
8	Compressor sight glass	17	Service port
9	Low (suction) pressure sensor		

ACCU302, ACCU302D

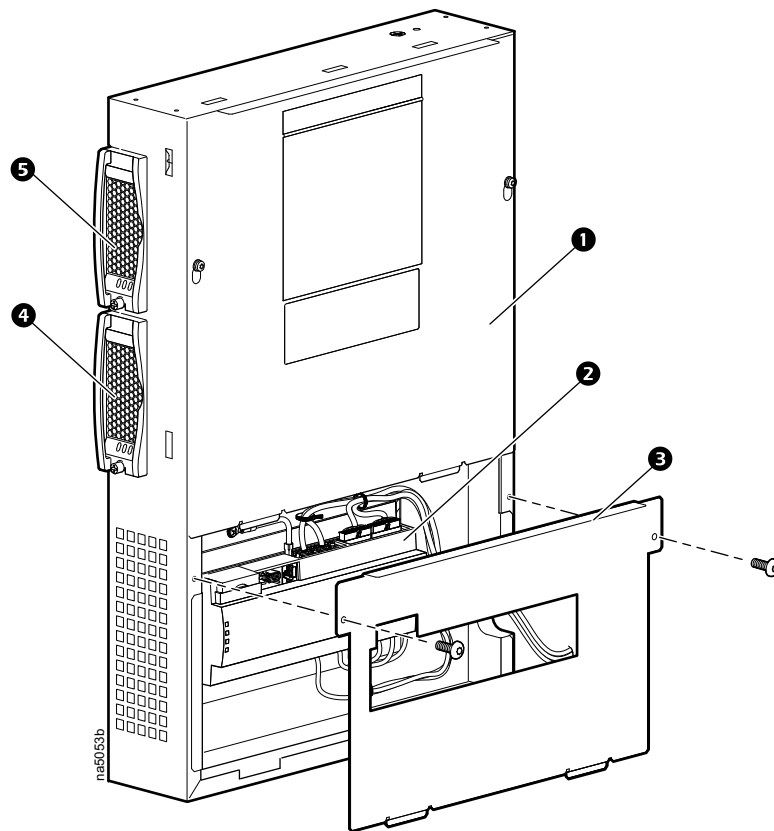


Item	Description	Item	Description
1	Electrical panel	10	Variable-speed compressor
2	Pipe stub for connection to liquid receiver	11	Variable frequency drive (VFD)
3	Accumulator	12	Interior protection panel
4	Liquid line connection	13	Line reactor and EMI filter
5	Liquid receiver cable inlet	14	Service port
6	Suction line connection	15	High pressure switch
7	Oil separator	16	High (discharge) pressure sensor
8	Compressor sight glass	17	Service port
9	Low (suction) pressure sensor		

Electrical Panels

Indoor Unit

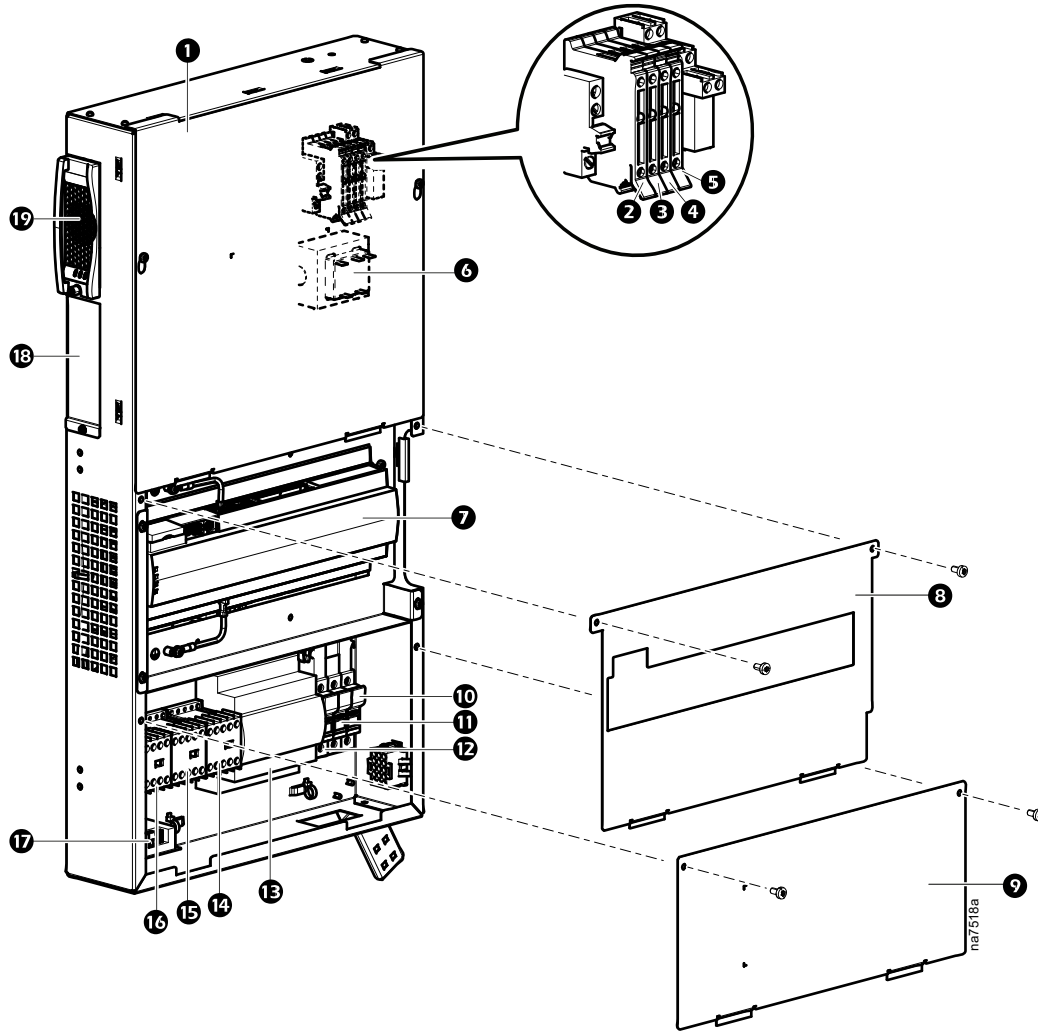
ACRD301S



Item	Description
------	-------------

- | | |
|---|---|
| 1 | Upper electrical box cover |
| 2 | J5 controller |
| 3 | Controller cover |
| 4 | Power supply 2 (Optional field-installed accessory) |
| 5 | Power supply 1 |

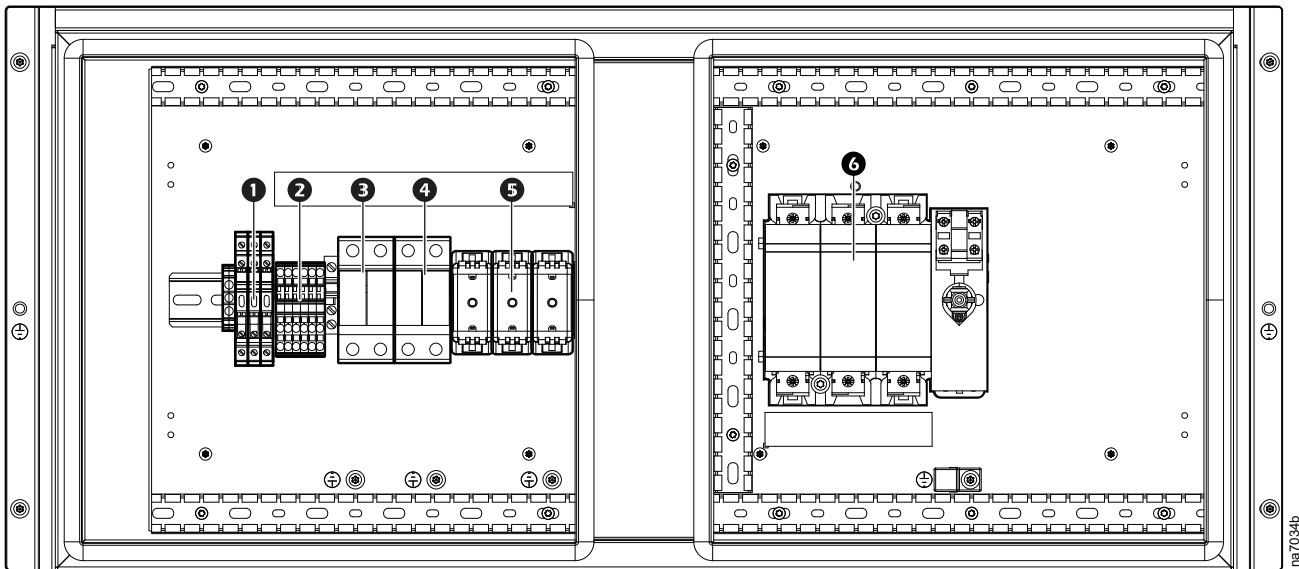
ACRD301P



Item	Description	Item	Description
1	Upper electrical box cover	11	Fuse for heater 2 (bottom heater)
2	Humidifier controller fuse (F4)	12	Fuse for heater 1 (top heater)
3	Liquid line solenoid valve fuse (F3)	13	Humidifier controller (CPY)
4	24-VAC supply transformer fuse (F2)	14	Humidifier electrode contactor
5	Condensate pump fuse (F1)	15	Heater 2 contactor
6	24-V transformer for CPY	16	Heater 1 contactor
7	J5 controller	17	Power supply 1
8	Controller cover	18	Power supply 2 (Optional field-installed accessory)
9	Lower electrical box cover	19	Humidifier electrode current sensor
10	Humidifier electrode fuse		

Outdoor Unit

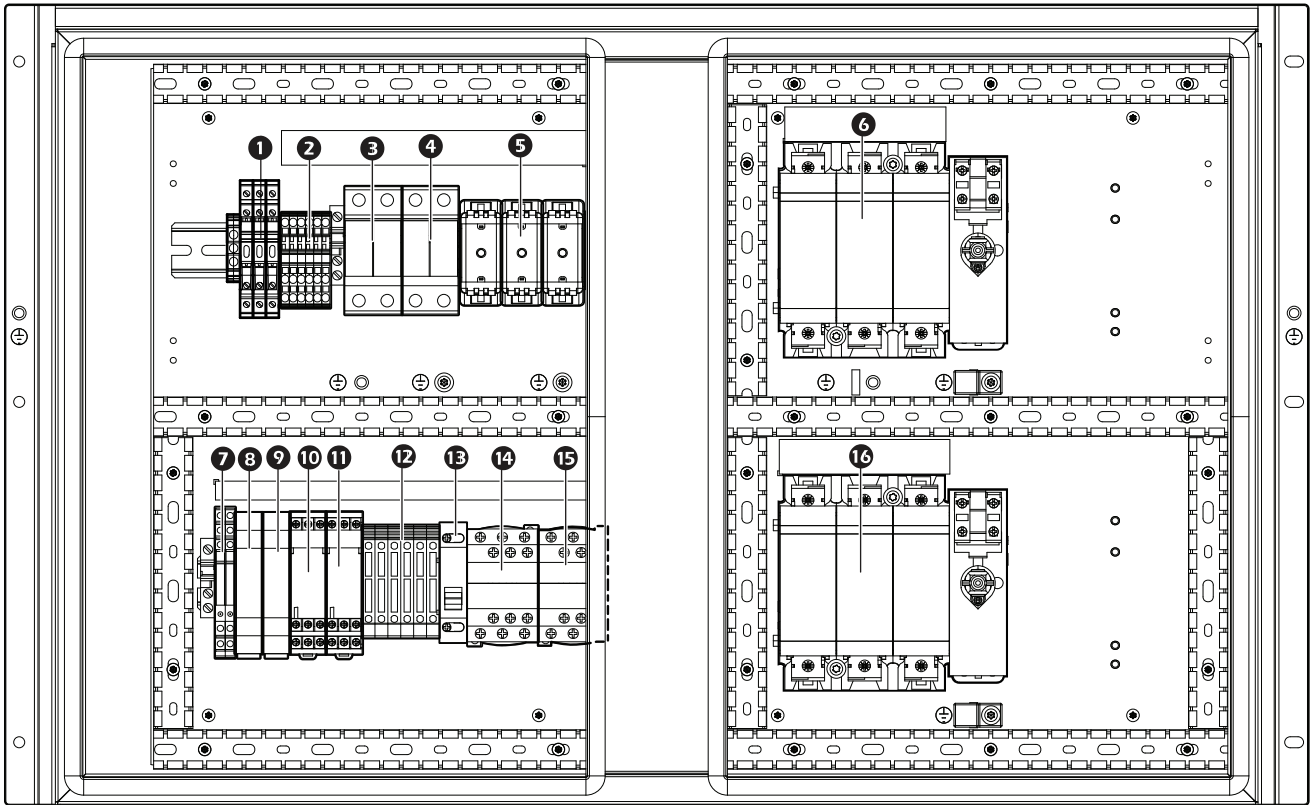
ACCU300



na7034b

Item	Description	Item	Description
1	Low temperature kit fuse block	4	Fan motor switch
2	Terminal block	5	Compressor variable-speed drive switch
3	Crank case heater switch	6	Main switch

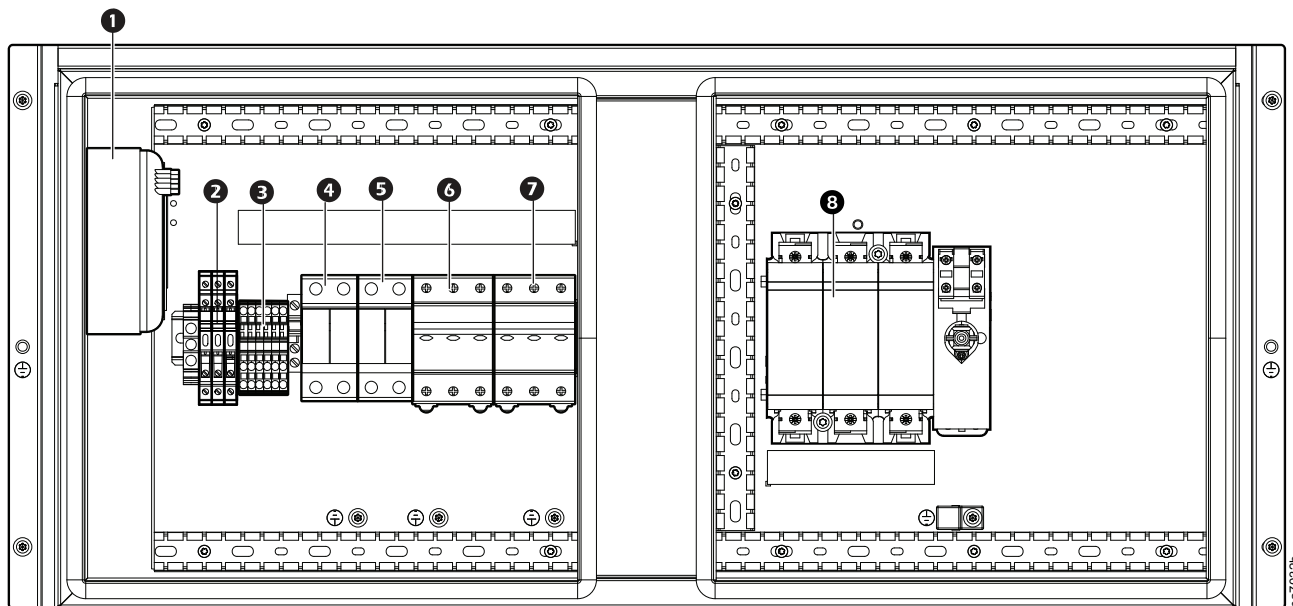
ACCU300D



na7035b

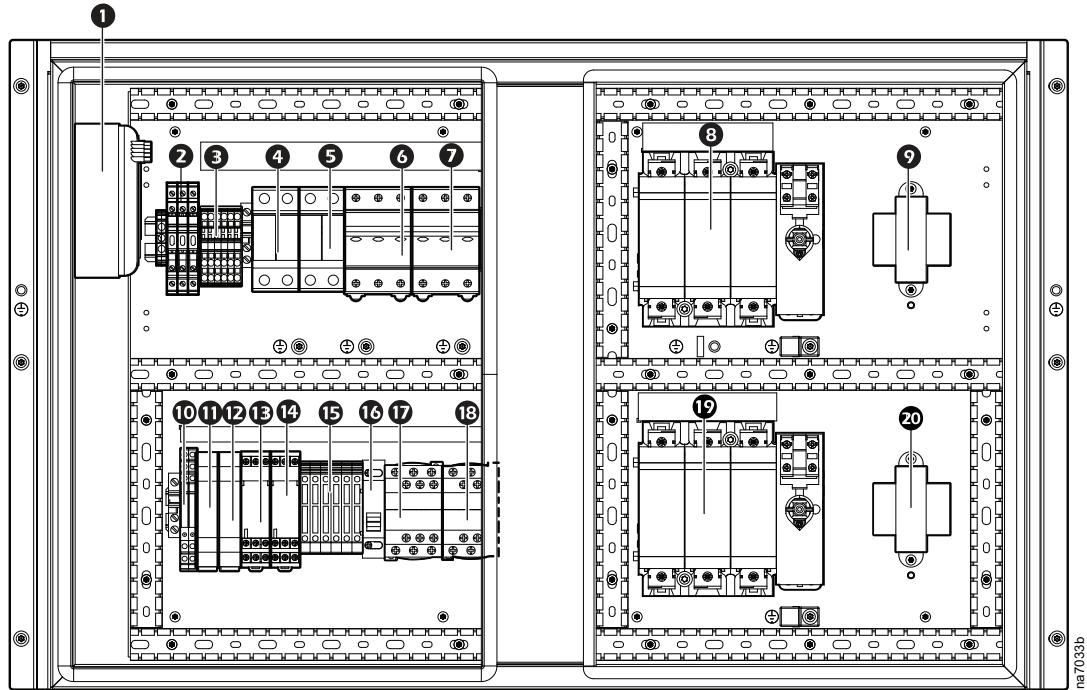
Item	Description	Item	Description
1	Low temperature kit fuse block	9	Supply B line monitor
2	Terminal block	10	Supply A contactor timer
3	Crank case heater switch	11	Supply B contactor timer
4	Fan motor switch	12	ATS circuit fuse
5	Compressor variable-speed drive switch	13	Supply line selector A/B
6	Power supply A main switch	14	Supply A contactor
7	Supply line selector relay	15	Supply B contactor
8	Supply A line monitor	16	Power supply B main switch

ACCU301 and ACCU302



Item	Description	Item	Description
1	Crank case heater power transformer	5	Crank case heater power transformer switch
2	Low temperature kit fuse block	6	Fan motor switch
3	Terminal block	7	Compressor variable-speed drive switch
4	Crank case heater switch	8	Main switch

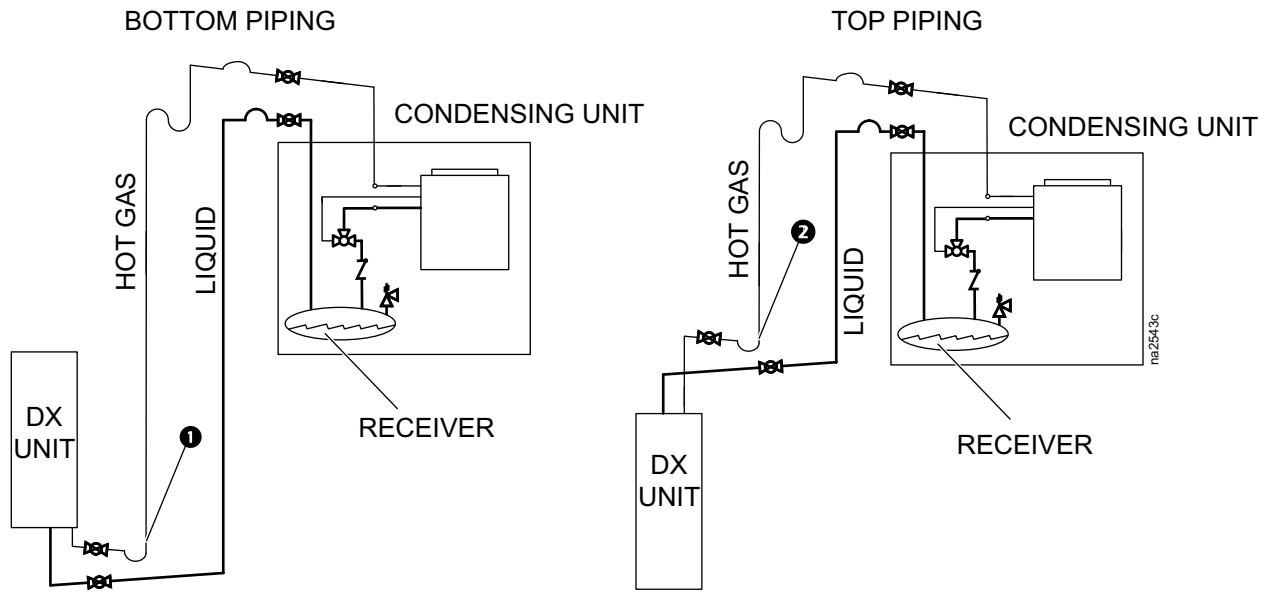
ACCU301D and ACCU302D










Item	Description	Item	Description
1	Crank case heater power transformer	11	Supply A line monitor
2	Low temperature kit fuse block	12	Supply B line monitor
3	Terminal block	13	Supply A contactor timer
4	Crank case heater switch	14	Supply B contactor timer
5	Crank case heater power transformer switch	15	ATS circuit fuse
6	Fan motor switch	16	Supply line selector A/B
7	Compressor variable-speed drive switch	17	Supply A contactor
8	Power supply A main switch	18	Supply B contactor
9	ATS supply A power transformer	19	Power supply B main switch
10	Supply line selector relay	20	ATS supply B power transformer

Refrigeration Piping Diagram

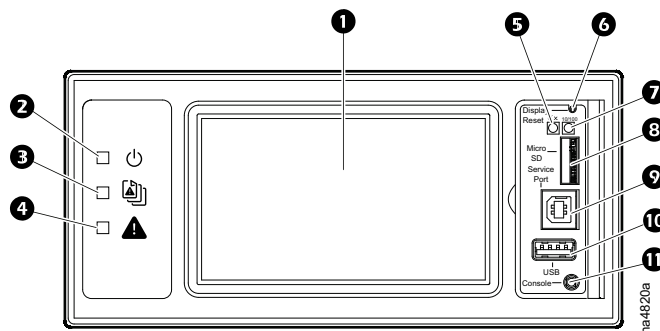
ACRD301P, ACRD301S



Item	Description
①	Pitch in direction of refrigerant flow; 4 mm per m (1/2-in. per 10 ft)
②	Reduction of piping diameter for vertical piping run (if necessary)
	Shut-off valve
	Head pressure control valve
	Pressure relief valve

Item	Description
	Check valve
	P-trap
	S-trap
	Inverted P-trap

Display Interface



Item	Description	Function
1	LCD Display	4.3-inch touch-screen color display
2	Power LED	The cooling unit is powered when the LED is illuminated. Unit firmware is updating when LED is blinking.
3	Check Log LED	When this LED is illuminated, a new entry has been made to the event log.
4	Alarm LED	Displays current alarm condition of unit.
5	Status LED	Displays current network management card status.
6	Display Reset button	Resets the display microprocessor. This has no effect on the air conditioner controller.
7	Link-RX/TX (10/100) LED	Displays current network link status.
8	Micro SD card slot	Memory card expansion slot.
9	Service port	USB-B port used only by service personnel.
10	USB-A port	Supports firmware upgrades.
11	Serial Configuration port	Connects the display to a local computer to configure initial network settings or access the command line interface (CLI).

Alarm LED

This LED indicates active alarms on the display.

Condition	Description
Off	No alarm
Solid yellow	Warning alarm
Solid red	Critical alarm

Status LED

This LED indicates the status of the display.

Condition	Description
Off	One of the following situations exist: <ul style="list-style-type: none"> The display is not receiving input power. The display is not operating properly. It may need to be repaired or replaced. Contact Schneider Electric Customer Support.
Solid green	The display has valid TCP/IP settings.
Solid orange	A hardware malfunction has been detected in the display. Contact Schneider Electric Customer Support.
Flashing green	The display does not have valid TCP/IP settings.
Flashing orange	The display is making BOOTP requests.
Alternately flashing green and orange	If the LED is flashing slowly, the display is making DHCP requests. If the LED is flashing rapidly, the display is starting up.

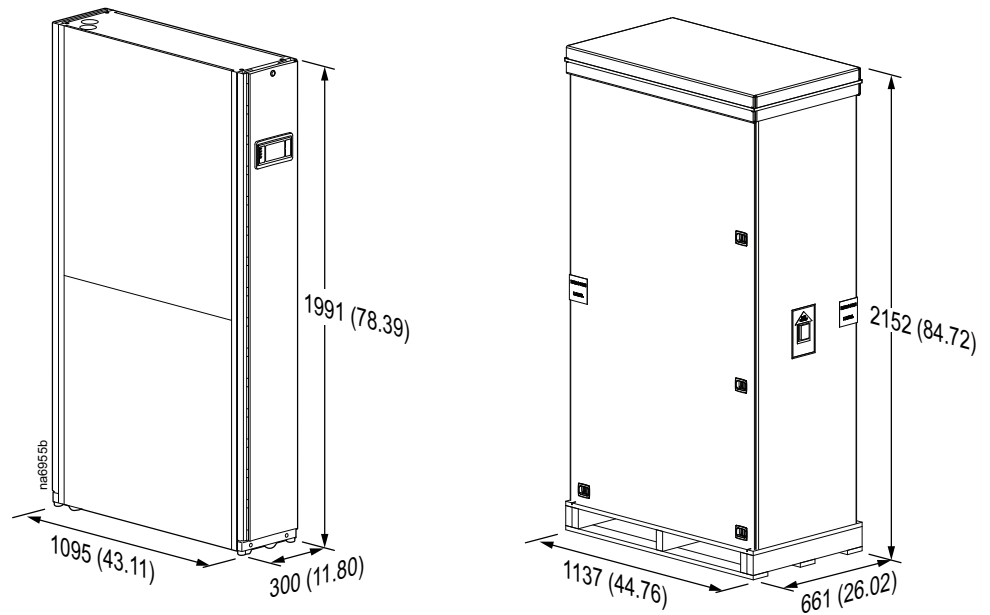
Link-RX/TX (10/100) LED

This LED indicates the network status of the display.

Condition	Description
Off	One or more of the following situations exist: <ul style="list-style-type: none"> The display is not receiving input power. The cable or device that connects the cooling unit to the network is disconnected or not functioning properly. The display itself is not operating properly. It may need to be repaired or replaced. Contact Schneider Electric Customer Support.
Solid green	The display is connected to a network operating at 10 megabits per second (Mbps).
Solid orange	The display is connected to a network operating at 100 Mbps.
Flashing green	The display is receiving or transmitting at 10 Mbps.
Flashing orange	The display is receiving data packets at 100 Mbps.

Dimensions and Weights

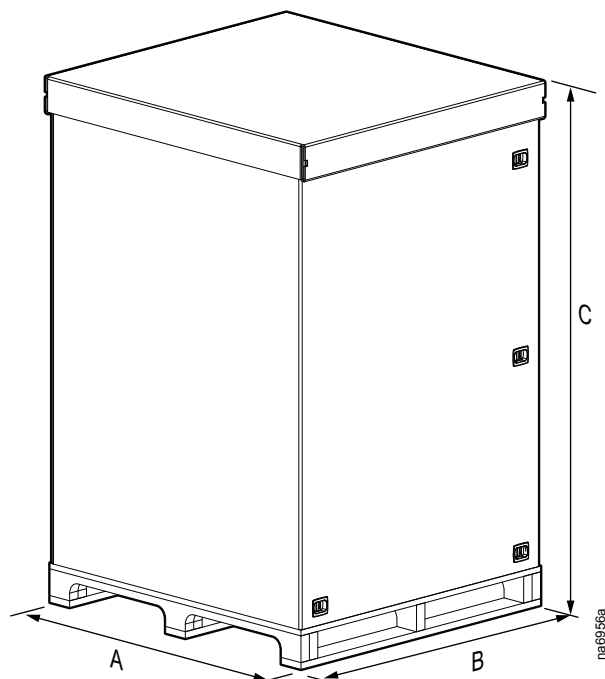
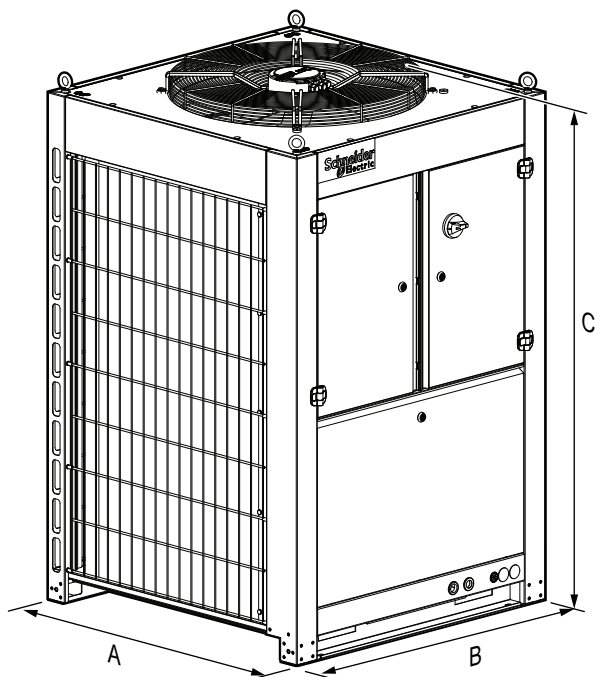
Indoor Unit



NOTE: Image is an example only to show dimensions of unit: your unit may differ.

SKU	Net Weight – kg (lb)	Shipping Weight – kg (lb)
ACRD301S	160.0 (352.7)	200.0 (440.9)
ACRD301P	173.5 (382.5)	213.5 (470.7)

Outdoor Unit



SKU	Unit Dimensions – mm (in.)			Shipping Dimensions – mm (in.)			Net Weight – kg (lb)	Shipping Weight – kg (lb)
	A	B	C	A	B	C		
ACCU300	1000 (39.4)	1000 (39.4)	1555 (61.2)	1136 (44.7)	1085 (42.7)	1745 (68.7)	267 (588.6)	297 (654.8)
ACCU300D	1000 (39.4)	1000 (39.4)	1555 (61.2)	1136 (44.7)	1085 (42.7)	1745 (68.7)	272 (600.0)	305 (672.4)
ACCU301	1000 (39.4)	1000 (39.4)	1555 (61.2)	1136 (44.7)	1085 (42.7)	1745 (68.7)	267 (588.6)	297 (654.8)
ACCU301D	1000 (39.4)	1000 (39.4)	1555 (61.2)	1136 (44.7)	1085 (42.7)	1745 (68.7)	272 (600.0)	305 (672.4)
ACCU302	1000 (39.4)	1000 (39.4)	1555 (61.2)	1136 (44.7)	1085 (42.7)	1745 (68.7)	273 (601.9)	303 (668.0)
ACCU302D	1000 (39.4)	1000 (39.4)	1555 (61.2)	1136 (44.7)	1085 (42.7)	1745 (68.7)	278 (612.9)	308 (679.0)

Service Access

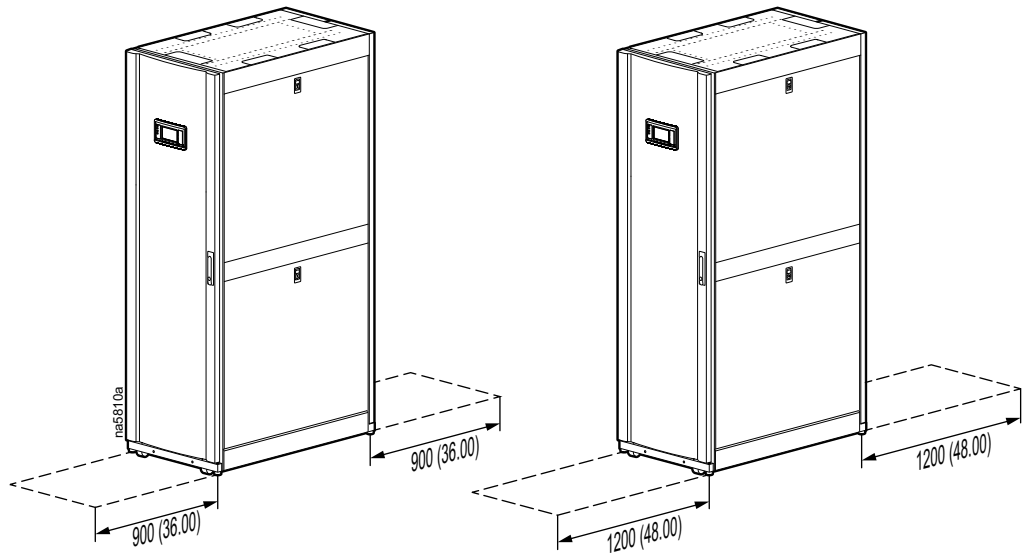
Indoor Unit

A minimum of 900 mm (36 in.) of clear floor space in front of and behind the equipment is recommended for service access. All required normal maintenance is performed from the front and rear of the equipment.

Most of the cooling components in the equipment can be replaced while the unit is installed in row and without the use of heavy lift equipment or a welding torch. However, if it is necessary to remove the unit for repair, use the casters on the equipment to remove it from the row. An area of minimum 1200 mm (48 in.) of clear floor space in front of or behind the equipment is recommended to roll out the equipment.

NOTE: Check local and national codes and regulations for further service access requirements.

NOTE: Image is an example only: your unit may differ.



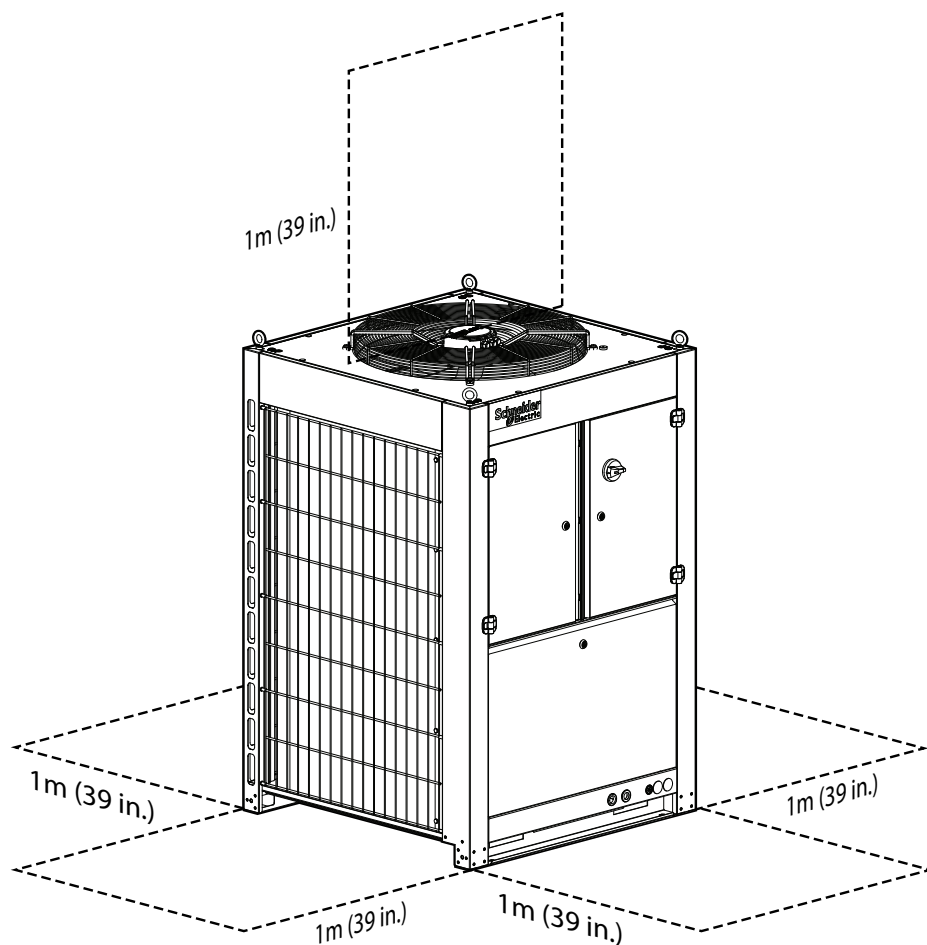
SERVICE ACCESS REQUIRED
WHEN EQUIPMENT IS
INSIDE THE ROW

FREE SPACE NEEDED TO
MOVE EQUIPMENT
OUTSIDE THE ROW

NOTE: Dimensions are shown in mm (in.).

Outdoor Unit

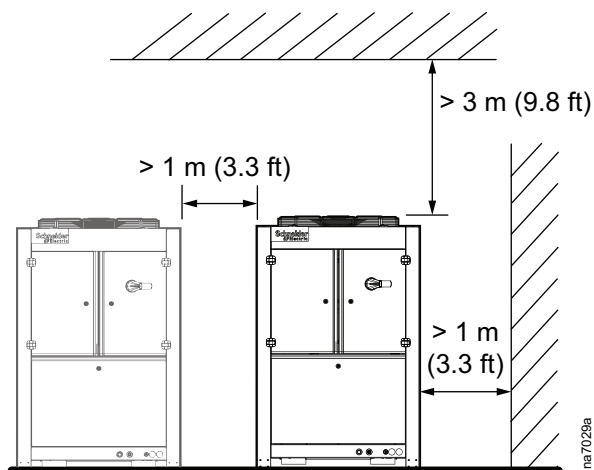
A minimum of 1 m (39 in.) of clear space on all sides of the equipment is recommended for service access.



na6963a

Airflow Clearance

The following clearances are required for proper airflow around the outdoor unit.

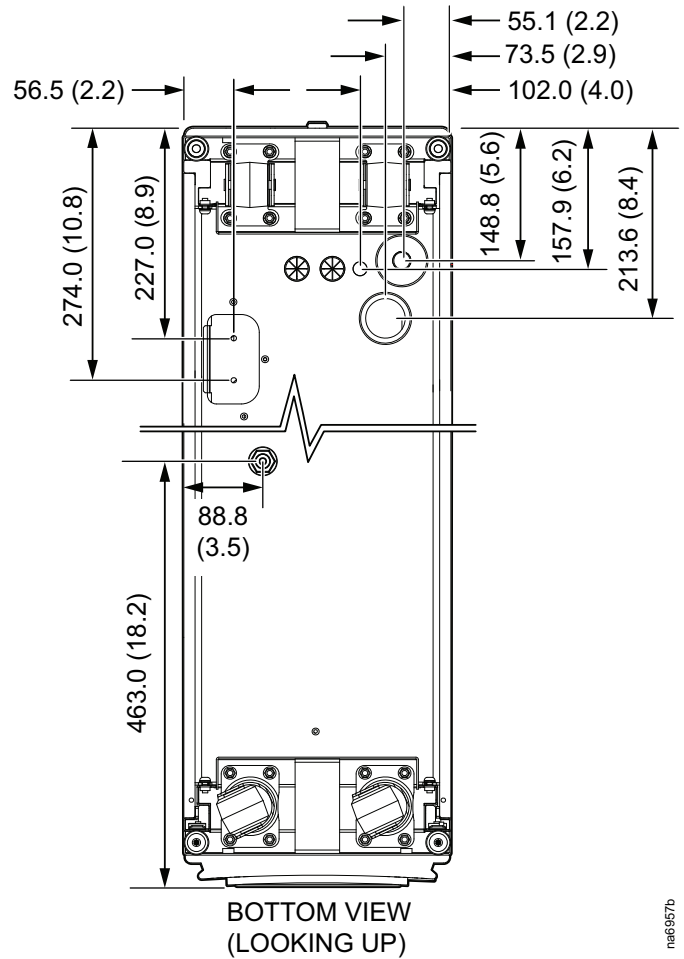
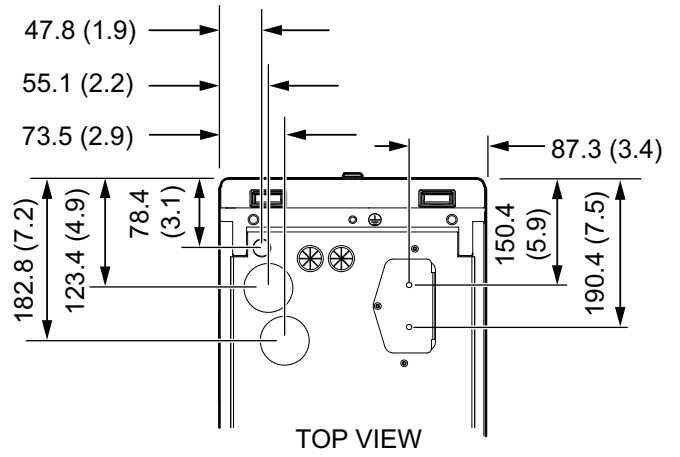
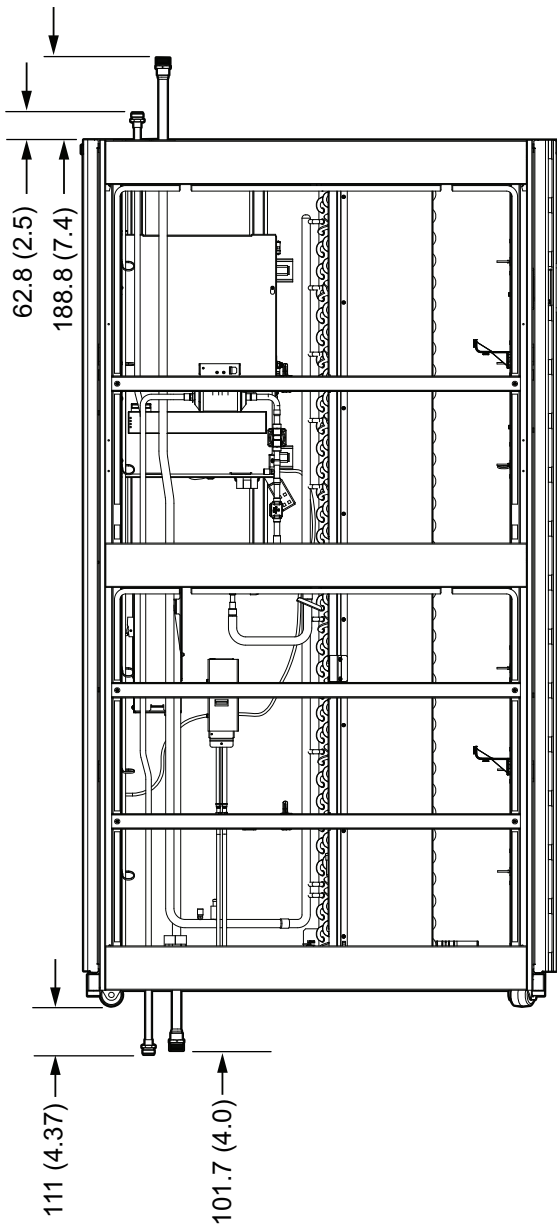


na7029a

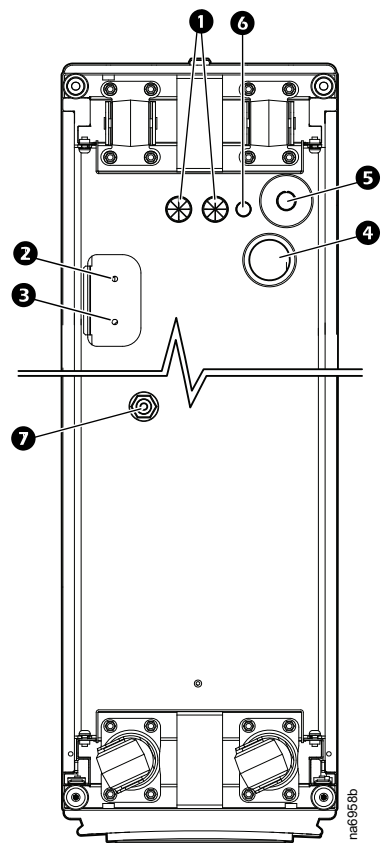
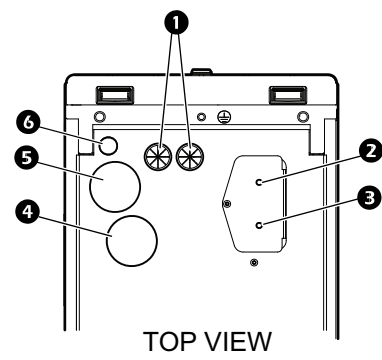
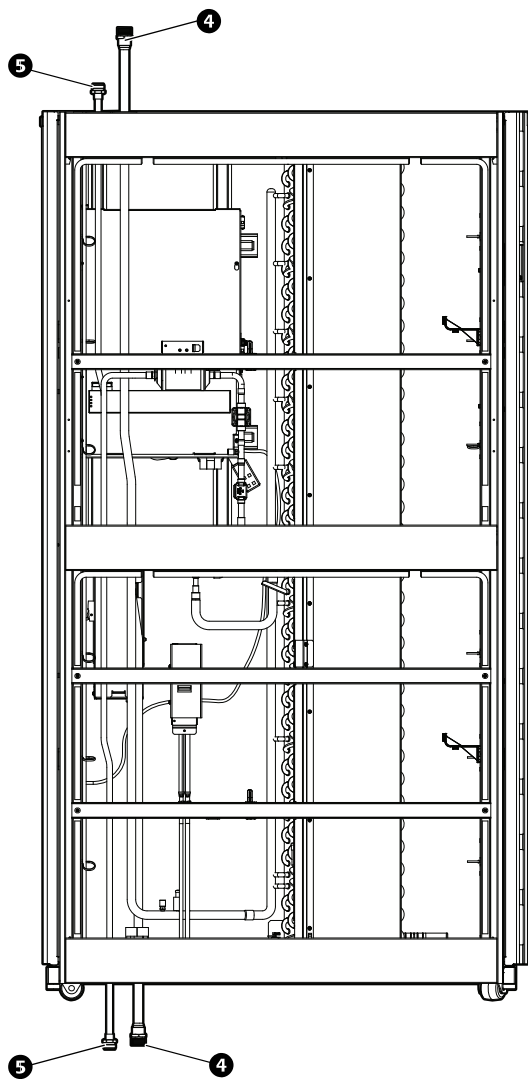
Piping and Electrical Access Locations

Indoor Unit

ACRD301S

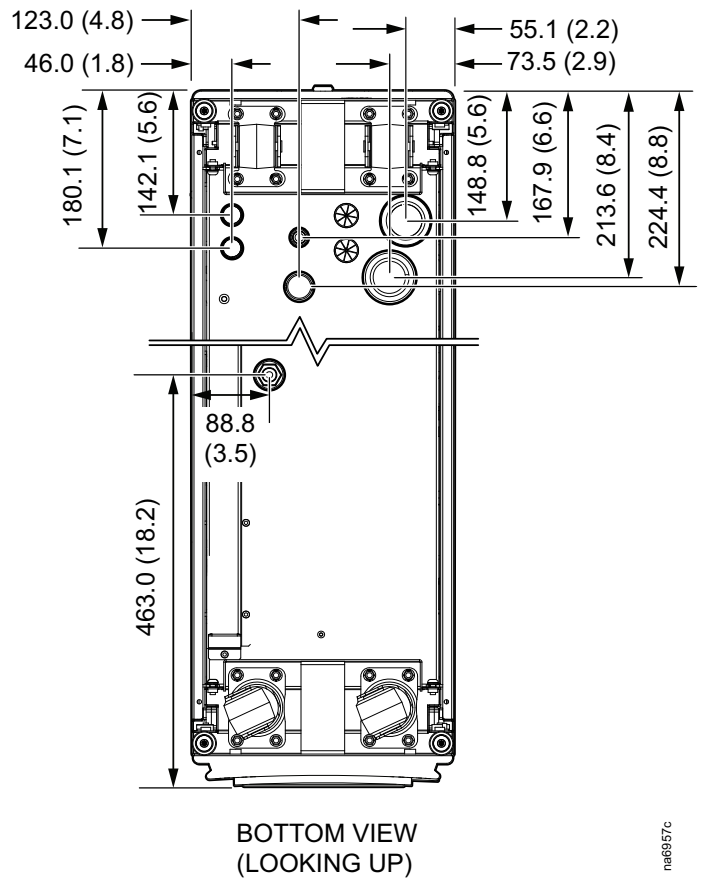
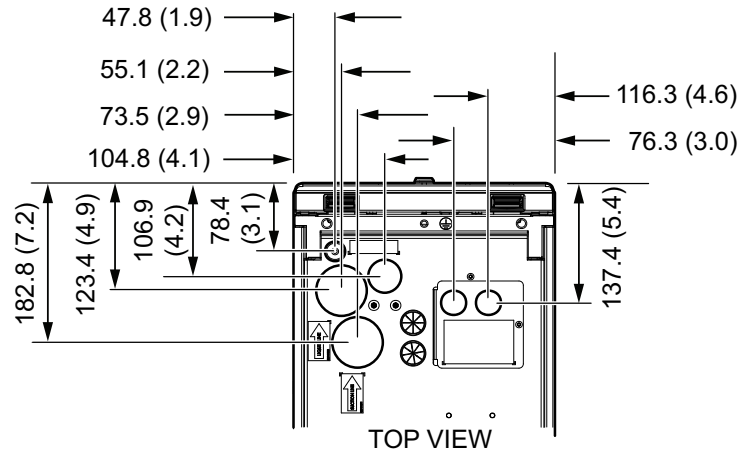
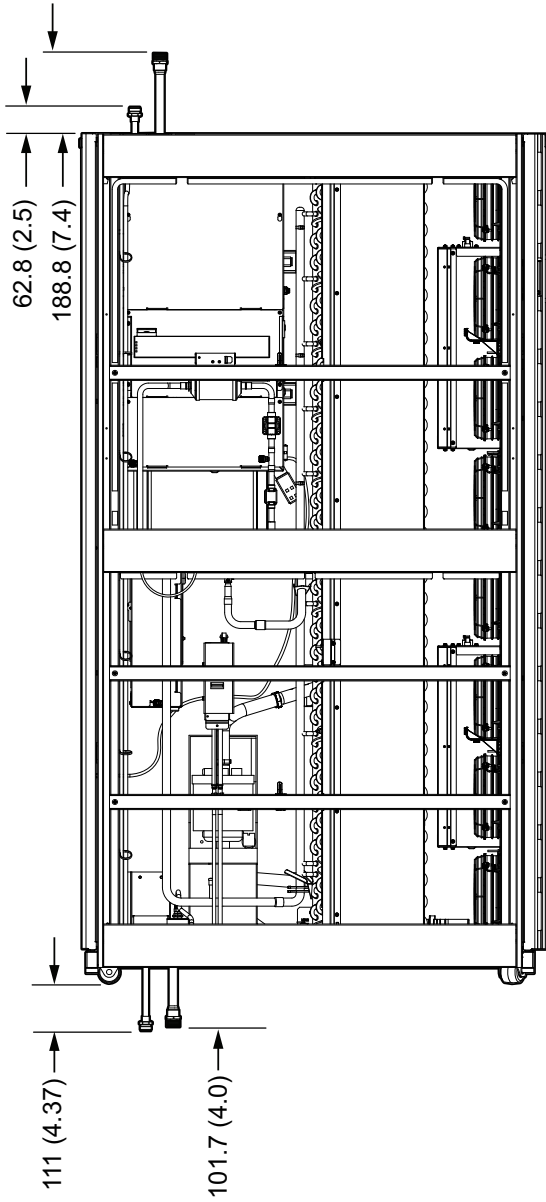


na6957b

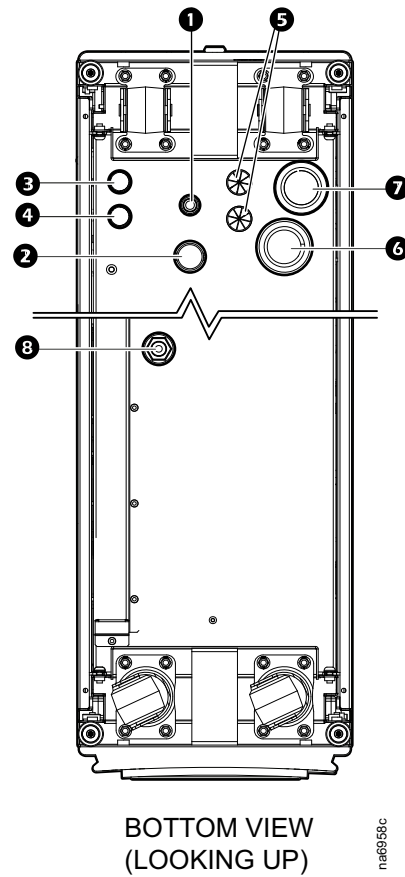
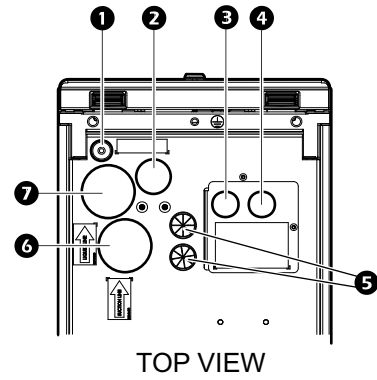
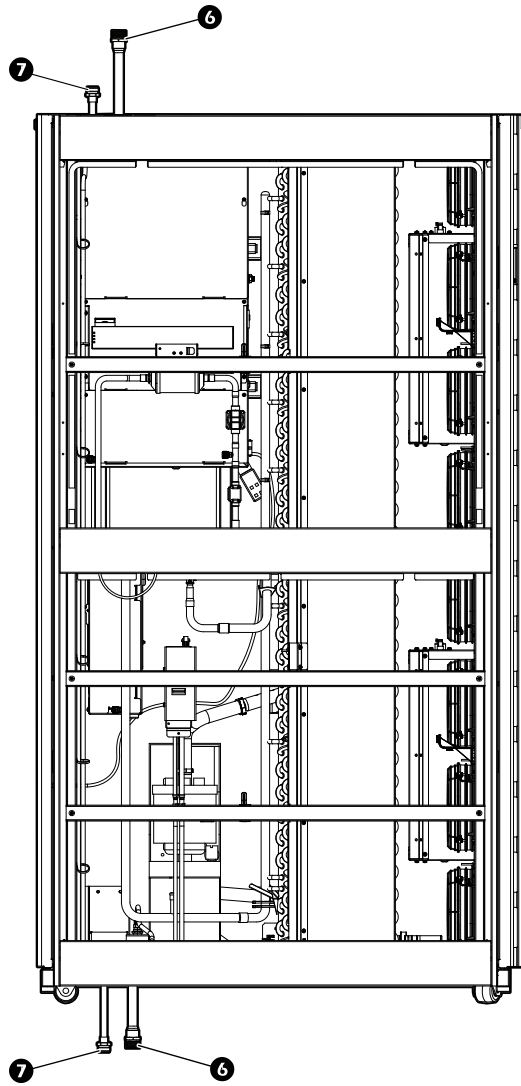


Item	Description
1	Low voltage input wiring inlets
2	Power supply 1 inlet
3	Power supply 2 inlet
4	Suction line connection—1 1/4 in. (12 UNF)
5	Liquid line connection—1 in. (14 UNS)
6	Condensate drain line outlet
7	Gravity drain connection

ACRD301P



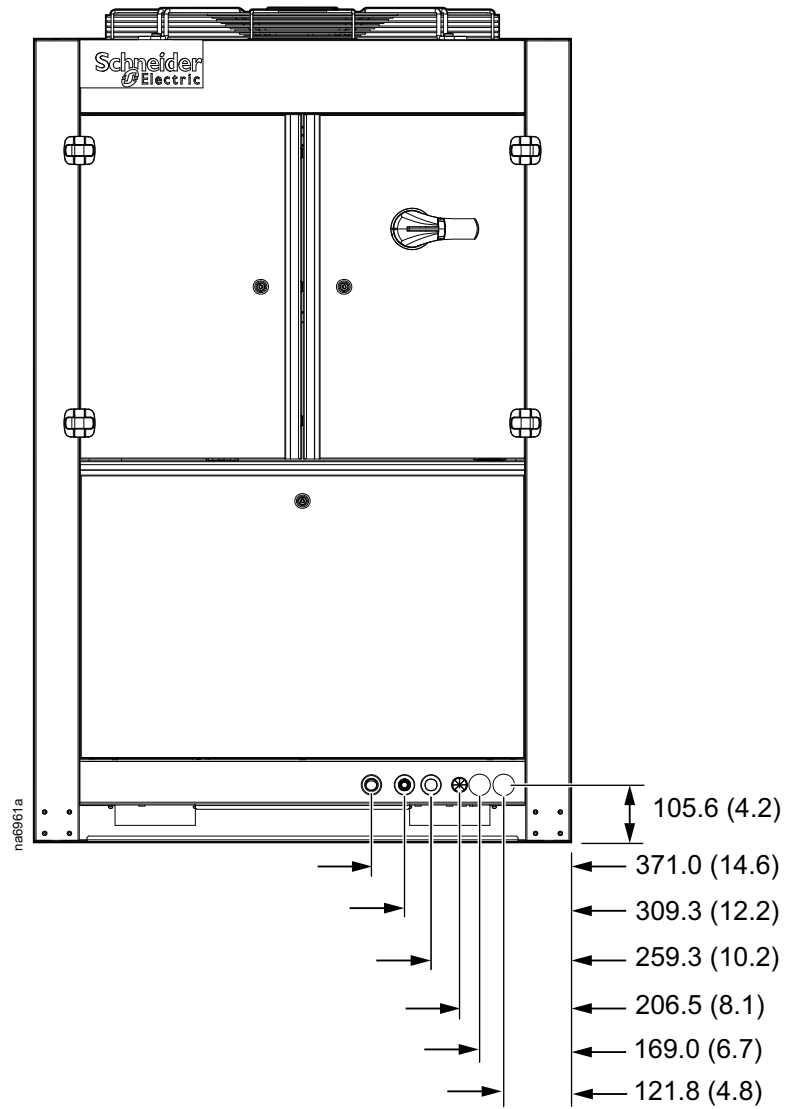
net6957c

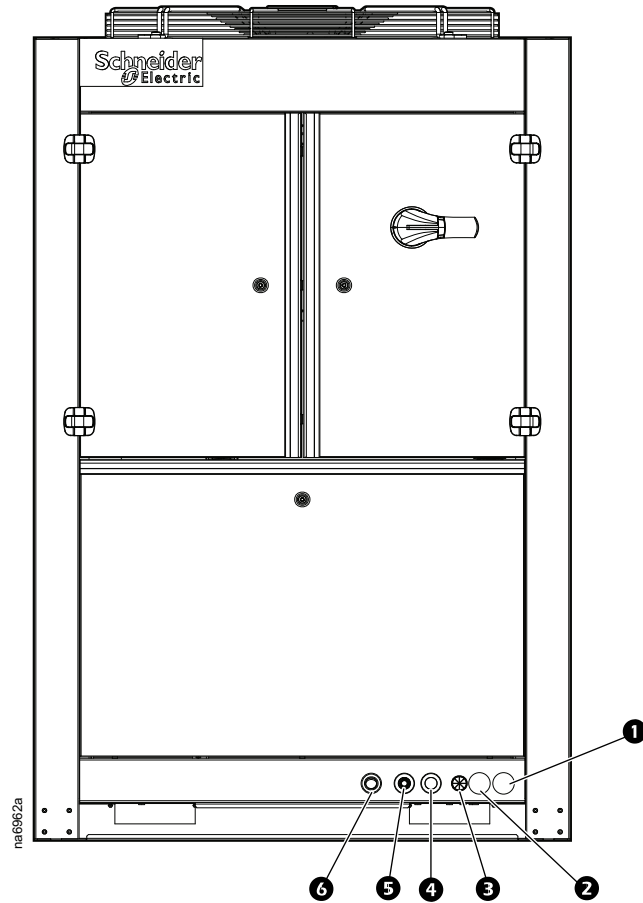


na6958c

Item	Description
1	Condensate drain line outlet
2	Humidifier water supply inlet connection—1/4-in. NPT or 1/4-in. BSPT
3	Power supply 1 inlet
4	Power supply 2 inlet
5	Low voltage input wiring inlets
6	Suction line connection—1 1/4 in. (12 UNF)
7	Liquid line connection—1 in. (14 UNS)
8	Gravity drain connection

Outdoor Unit





NOTE: Dimensions are shown in mm (in.).

Item	Description
①	Power supply 1 inlet
②	Power supply 2 inlet
③	Communication cable inlet
④	Liquid receiver connection outlet
⑤	Liquid line connection inlet
⑥	Suction line connection inlet

Installation

Location and Power Considerations


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. In addition, the room temperature and humidity combination should conform to the environmental operating envelope as defined in the following graphics.

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. Reduce fresh air to the minimum required by local and national codes and regulations. Fresh air imposes extreme load variation on the cooling equipment from summer to winter and causes increased system operating costs.

Incoming Power Supply Requirements

 WARNING
ELECTRICAL HAZARD <ul style="list-style-type: none">• 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.

See the name plate on the unit to determine the maximum possible current draw of the cooling unit. Provide either a single outlet circuit or a Power Distribution Unit (PDU) with sufficient capacity to handle all loads. Do not plug two Uniflair InRow cooling units into the same branch circuit or PDU.

Indoor Unit Location

Refer to the floor layout drawing for the exact placement of the cooling unit in the row of IT equipment. This layout drawing can be found in the Configure-to-Order (CTO) report or the engineering specification drawings provided by the Consulting Engineer.

Due to potentially high noise levels during peak loads, the Uniflair InRow cooling unit is not intended to be used in an occupied office environment. It is recommended that ear protection be worn if prolonged exposure to the high noise level is expected.

Outdoor Unit Location

The installation area must follow these requirements:

- Installed on a flat, level surface
- Can only be installed at the same level or higher than the indoor unit
- Not exposed to air containing inflammable or greasy substances
- Service clearance of 1 m (39 in.) must be available on all sides
- Clearance of 3 m (10.8 ft) above the unit to allow for proper airflow
- Installing the unit in areas with increased airborne debris may result in more frequent service intervals

Secure the unit to its foundation using the mounting holes located on the bottom of the frame.



See Stabilizing the Outdoor Unit, page 50.

Removing Doors and Panels

⚠ WARNING

MOVING PARTS HAZARD

Do not remove rear panels if the equipment is operating.

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

NOTICE

EQUIPMENT DAMAGE

Do not lean the doors against a wall with the side panel latches facing the wall. This can deform the latches and prevent them from working properly.

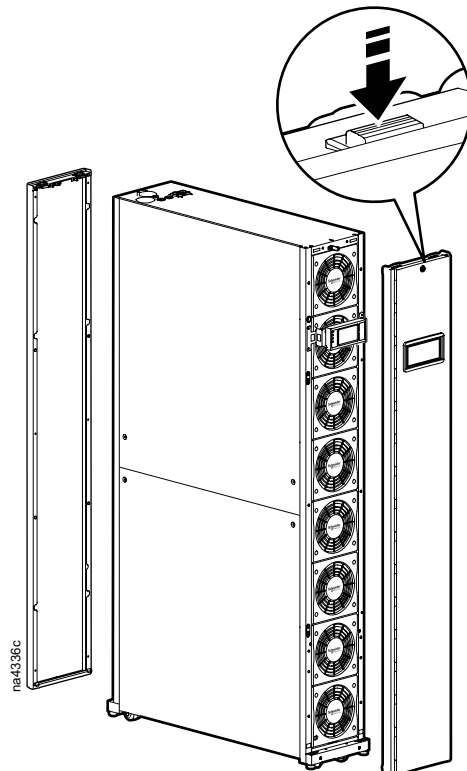
Failure to follow these instructions can result in equipment damage.

Indoor Unit

Front and Rear Panels

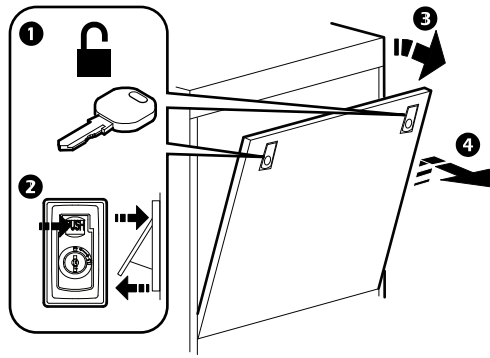
The front and rear panels must first be unlocked before they can be removed. Two keys are provided with the unit.

NOTE: Image is an example only: your unit may differ.

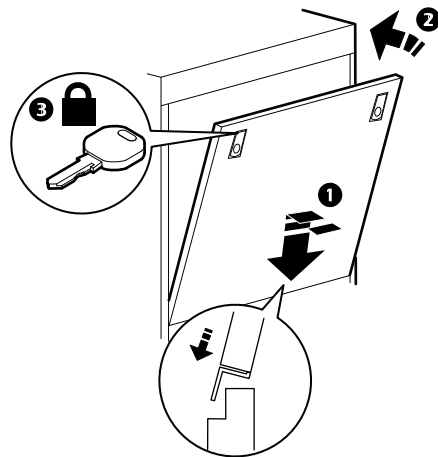


Side Panels

REMOVING THE SIDE PANEL



INSTALLING THE SIDE PANEL



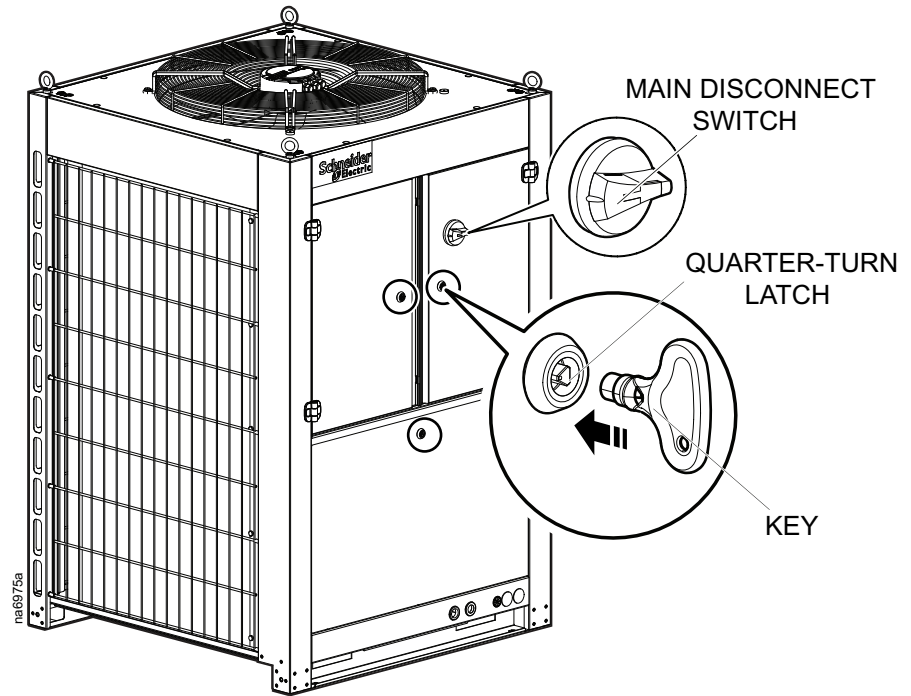
na5720c

Outdoor Unit

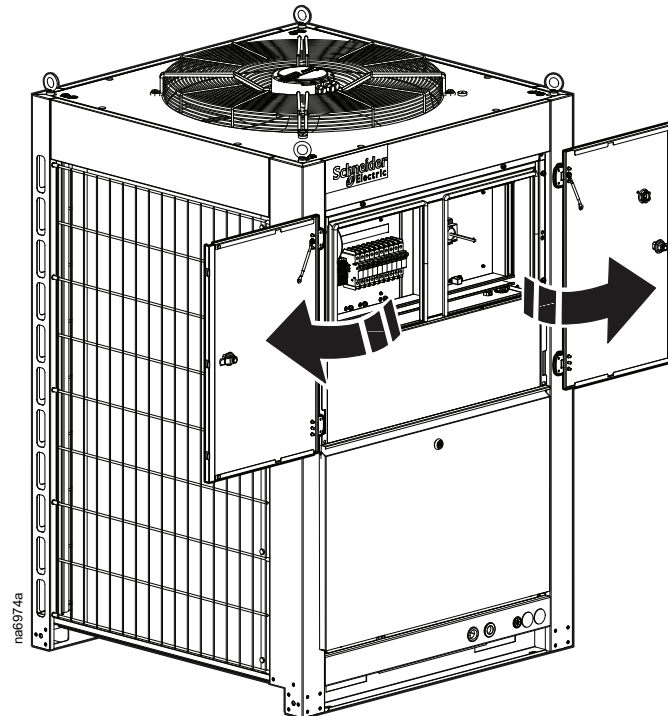
Electrical Panel Access

NOTE: Images are examples only; your unit may differ.

1. Turn the main switch to the "Off" position and then rotate the quarter-turn latches to the right.

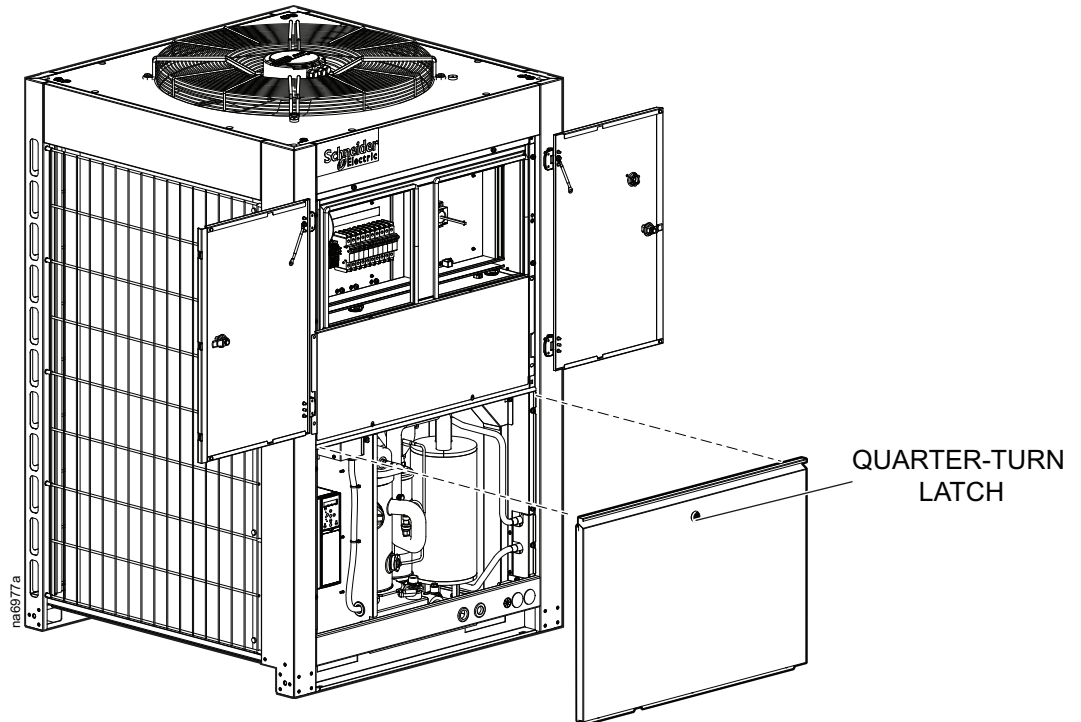


2. Open the electrical panel access doors.

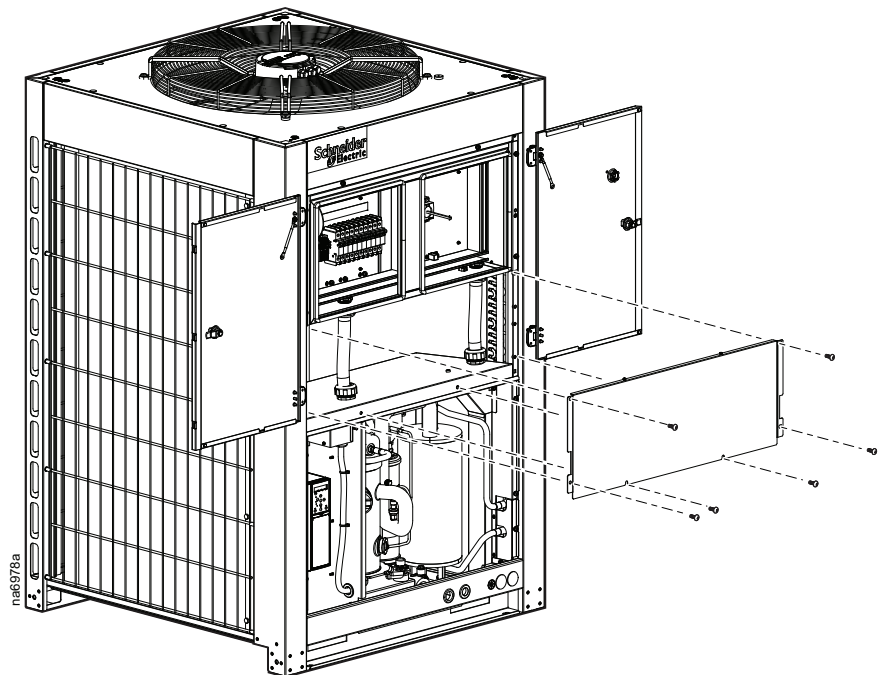


Panel Removal

1. Turn the quarter-turn latch to the right and pull the service panel away from the unit.



2. Remove the screws and pull the internal protective panel away from the unit.



Stabilizing the Cooling Unit

⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Turn off all power supplying this equipment before working on the equipment. All electrical work must be performed by qualified personnel. Practice Lockout/Tagout procedures. Do not wear jewelry when working with electrical equipment.

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

⚠ 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.

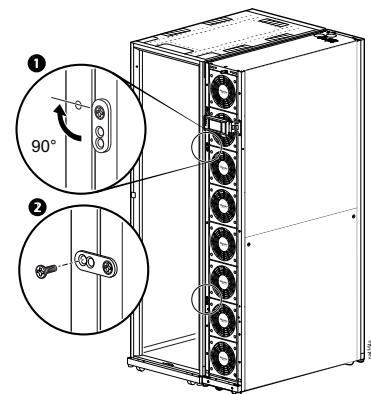
Joining the Equipment to Enclosures

Joining to NetShelter™ SX Enclosures

Joining brackets are installed on the unit, two in the front and two on the rear. Each bracket is designed to accommodate both 24-in. or 600-mm enclosure spacing.

NOTE: Image is an example only: your unit may differ.

1. Loosen the attachment screw.
2. Rotate the brackets 90°.
3. Install a provided Phillips M5 screw through the bracket and into the adjoining enclosure.
4. Re-tighten the attachment screw.



Joining to NetShelter VX and VS Enclosures



For information on joining the equipment to NetShelter VX and VS enclosures, see the installation sheet *NetShelter SX to VX or VS External Joining Kit—AR7601, AR7602*.

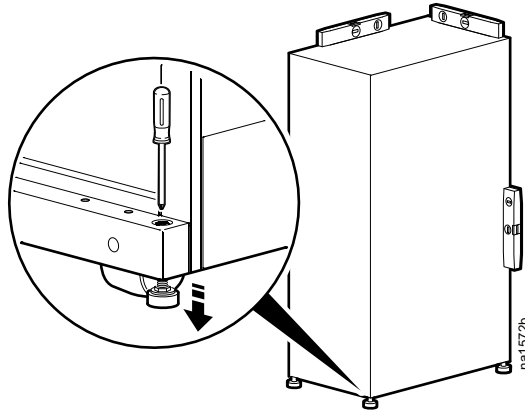
Leveling

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

Once the cooling unit 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 cooling unit is level and plumb. The casters and leveling feet can be removed to allow the cooling unit to rest directly on the floor.

NOTE: Front and rear panels will need to be removed to access the leveling screw.

NOTE: Image is an example only: your unit may differ.

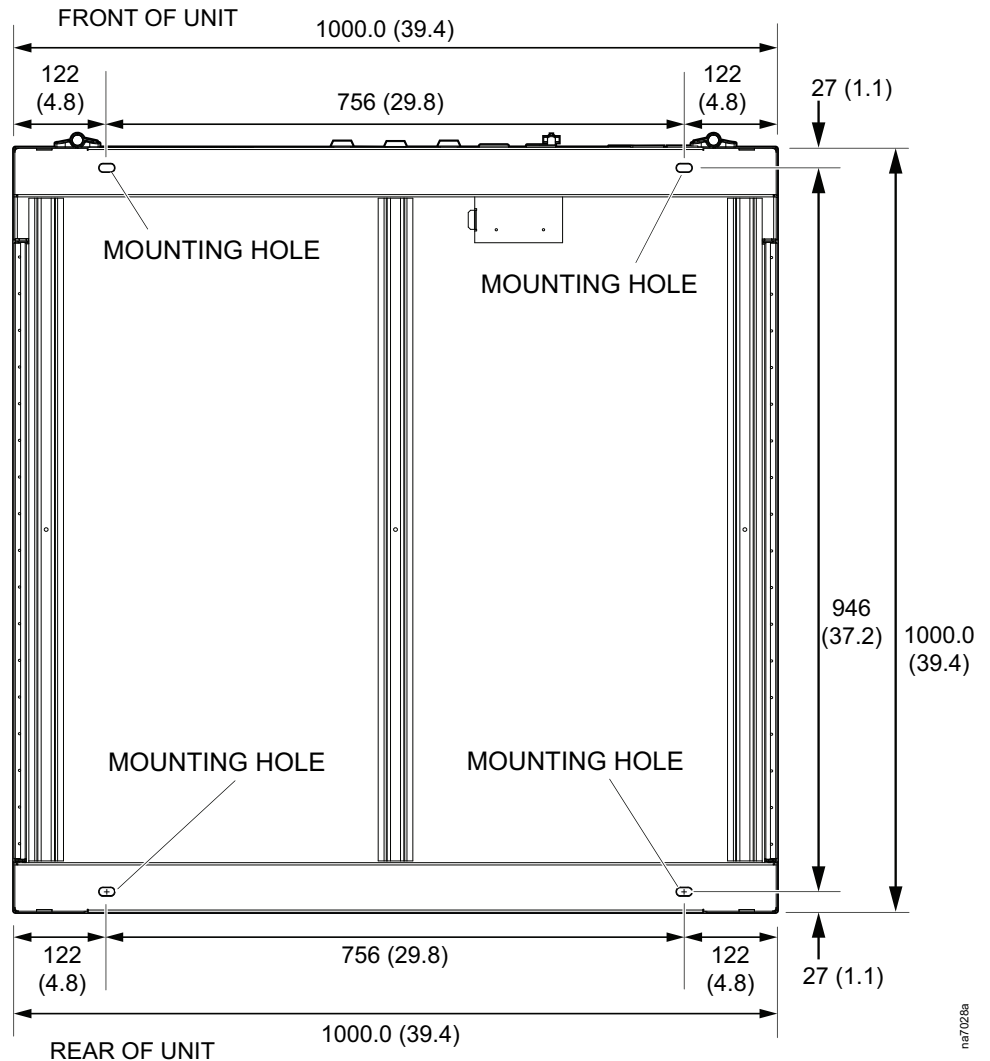


NOTE: Use a 13-mm open-ended wrench to level the equipment without removing the doors.

Stabilizing the Outdoor Unit

Mounting Hole Dimensions

The following image shows the dimensions for the mounting holes located on the frame of the outdoor unit.



NOTE: Dimensions are shown in mm (in.).

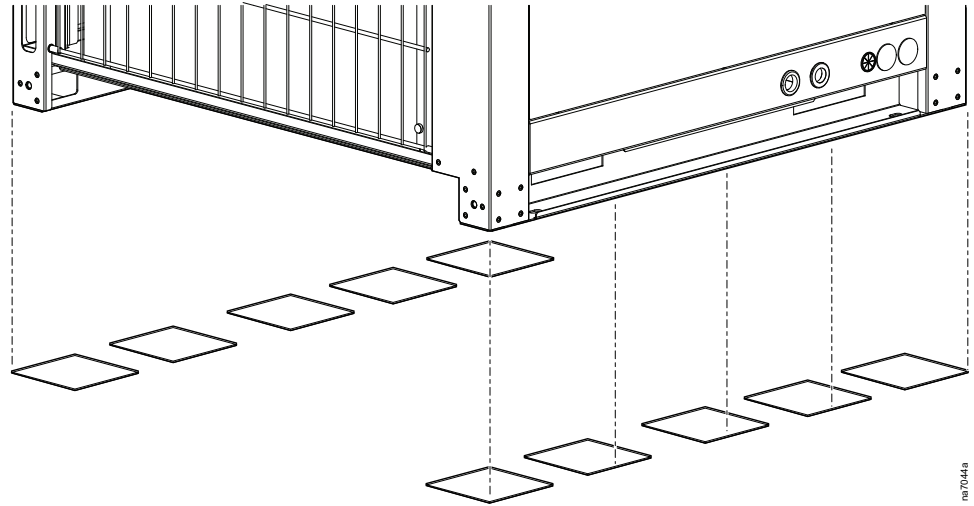
NOTE: View is bottom view looking up.

Vibration Damping Pads

It is recommended to place field-supplied vibration damping pads under the outdoor unit to minimize vibration and noise. The following specs are recommended for the vibration pads:

- Hardness: Durometer 90A
- Material: Green neoprene rubber
- Dimensions: 152 mm x 152 mm (6 in. x 6 in.)
- Thickness: 9.5 mm (3/8 in.)

Place the vibration damping pads flush with the edges of the unit so they are not visible. The following is the recommended placement of the vibration damping pads:



NOTE: Do not block the mounting holes with vibration damping pads. Vibration damping pads may need to be cut to size.

na7044a

Connections Overview

All connections to and from the indoor unit can be made through either the top or the bottom of the unit. Once the corresponding connectors are brazed or soldered into place, the equipment can be disconnected without soldering, welding, or gluing. See the following tables for information about the sizes and types of connectors.

Power Connections

Model	Type	Minimum	Maximum	Torque
ACRD301P	Screw connector	AWG 14 (2.5 mm ²)	—	1.0 Nm (0.74 ft-lb)
ACRD301S	Screw connector	AWG 14 (2.5 mm ²)	—	1.0 Nm (0.74 ft-lb)
ACCU300	Screw connector	AWG 14 (2.5 mm ²)	—	1.5 Nm (1.1 ft-lb)
ACCU300D	Screw connector	AWG 14 (2.5 mm ²)	—	1.5 Nm (1.1 ft-lb)
ACCU301	Screw connector	AWG 14 (2.5 mm ²)	—	1.5 Nm (1.1 ft-lb)
ACCU301D	Screw connector	AWG 14 (2.5 mm ²)	—	1.5 Nm (1.1 ft-lb)
ACCU302	Screw connector	AWG 14 (2.5 mm ²)	—	1.5 Nm (1.1 ft-lb)
ACCU302D	Screw connector	AWG 14 (2.5 mm ²)	—	1.5 Nm (1.1 ft-lb)

Sensor and Communication Connections

Wire Size

Connection	Type	Minimum	Maximum
Rack temperature	RJ-45	—	—
Leak Rope	RJ-45	—	—
A-Link IN	RJ-45	—	—
A-Link OUT	RJ-45	—	—
Network port	RJ-45	—	—
Console port	USB (Type B)	—	—
Customer output, Normally Closed (NC)	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Customer output, Common (COM)	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Customer output, Normally Open (NO)	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Supply GND	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Supply 12 Vdc	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Supply 24 Vdc	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Customer input +	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Customer input -	Push-in spring connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Modbus D1	Push-in spring connection/ Spring-cage connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Modbus D0	Push-in spring connection/ Spring-cage connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Modbus GND	Push-in spring connection/ Spring-cage connection	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)
Temperature sensor	2P Molex Mini-Fit Jr.™	—	—
Humidity sensor	6P Molex Mini-Fit Jr.™	—	—
Display interface	HDMI	—	—

Mechanical Connections

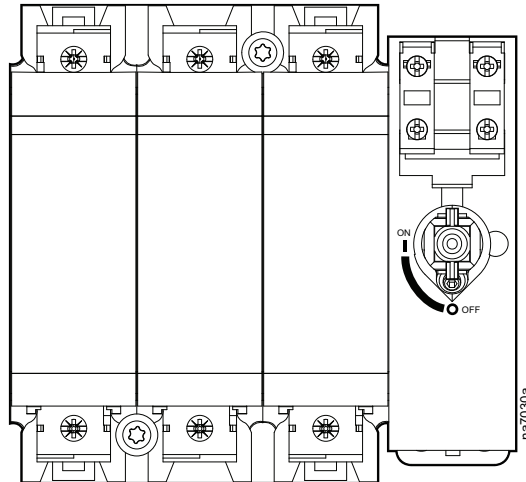
Installing the Main Switch

ACCU300, ACCU300D, ACCU301, ACCU301D, ACCU302, and ACCU302D

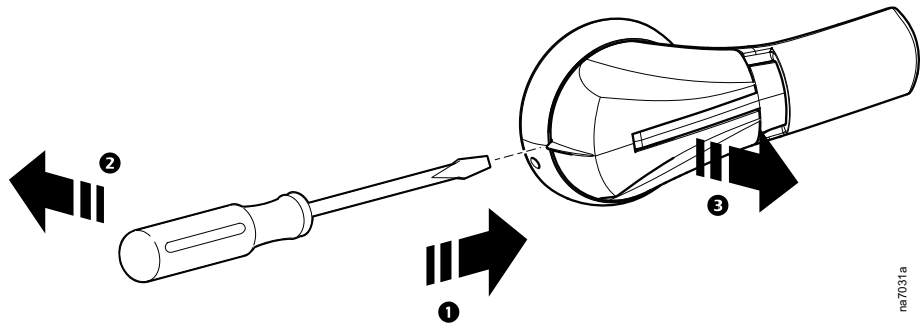
The main switch handle of the condensing unit is shipped inside the electrical panel of the unit and must be installed in the field.

1. Open the electrical panel access door.
2. Make sure the power supply is in the "OFF" position.

NOTE: Make sure both power supplies are in the "OFF" position if two are present.

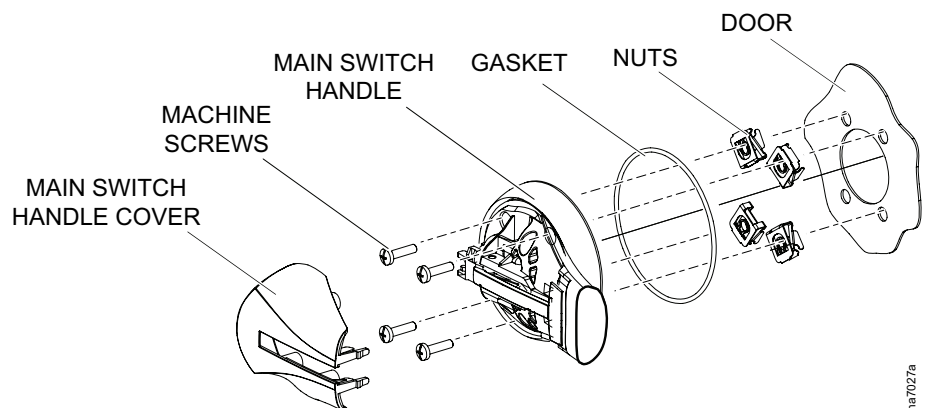


3. Remove the cover from the main switch handle.



4. Install the main switch handle on the outside of the door using the gasket, 4 machine screws, and 4 nuts.

NOTE: Place the flat side of the nuts against the main switch handle.



Condensate Drain Connections

NOTICE

COMPLIANCE REQUIREMENT

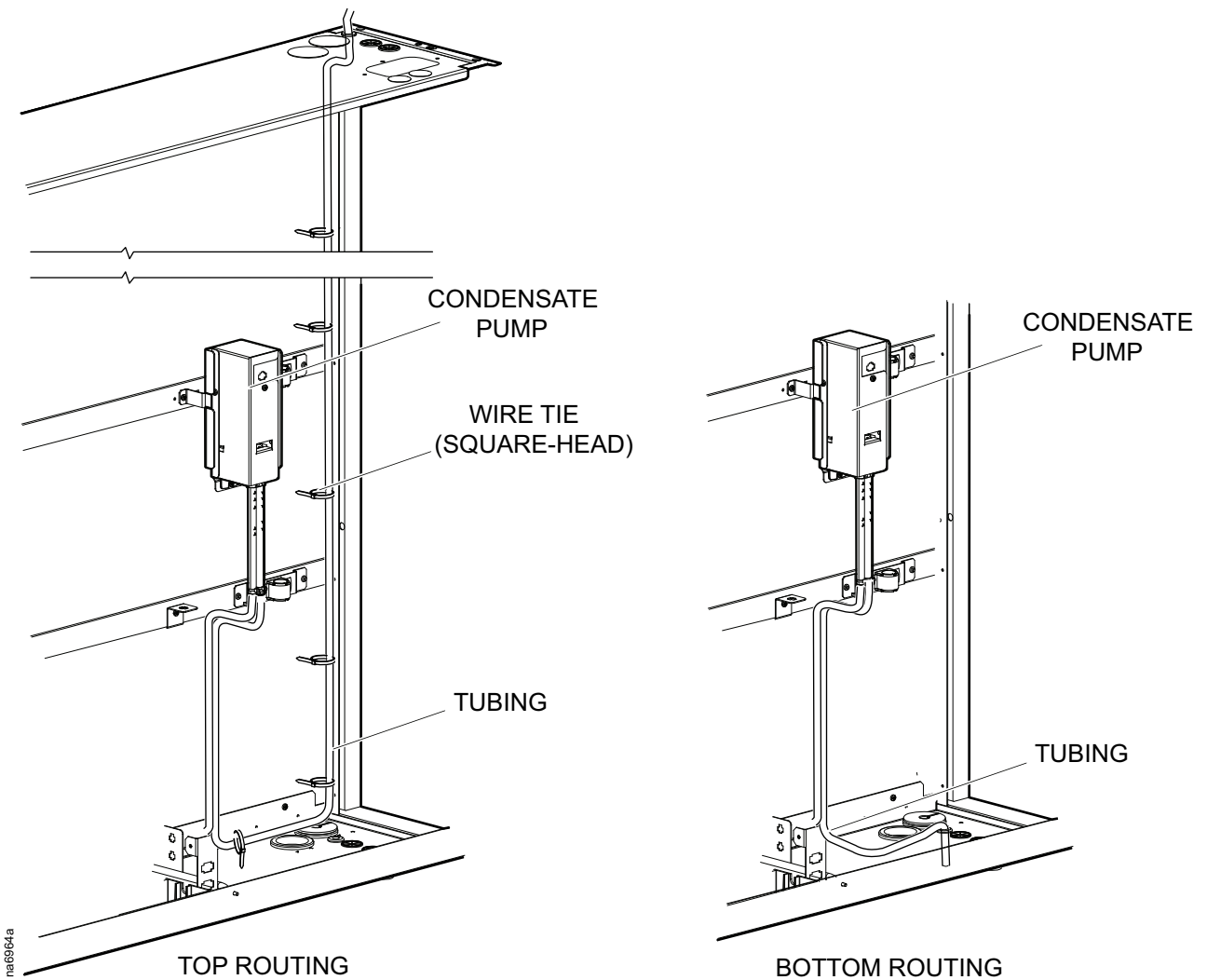
The installation must comply with local plumbing codes.

Failure to follow these instructions can result in equipment damage.

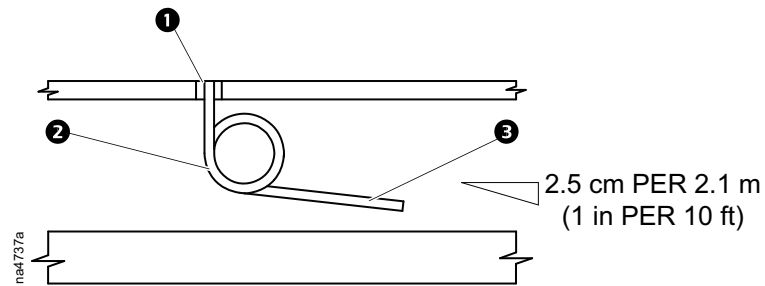
With Condensate Pump

The pump is factory-wired and piped internally to the condensate drain pan. The pump uses an on-board, condensate-high-level float switch wired into the equipment for alarm capabilities.

The condensate drain line can be connected through either the top or the bottom of the equipment using factory-installed male quick connectors and tubing. The following image shows routing options for the condensate drain line:



Connection to Building Drain



Item	Description
------	-------------

- | | |
|---|---------------|
| ① | Drain |
| ② | Trap |
| ③ | Minimum slope |

1. Connect the unit drainage tube to the building drains using a rubber or plastic tube with a 25-mm (1-in.) internal diameter.
2. Use a trap on the external drainage tube in order to avoid unpleasant odors and to allow the condensate pan to drain properly. Consult local building codes for drain requirements.
3. Once the connections have been made, pour water into the condensate drain until the trap inside the unit is full.

Humidifier (ACRD301P Only)

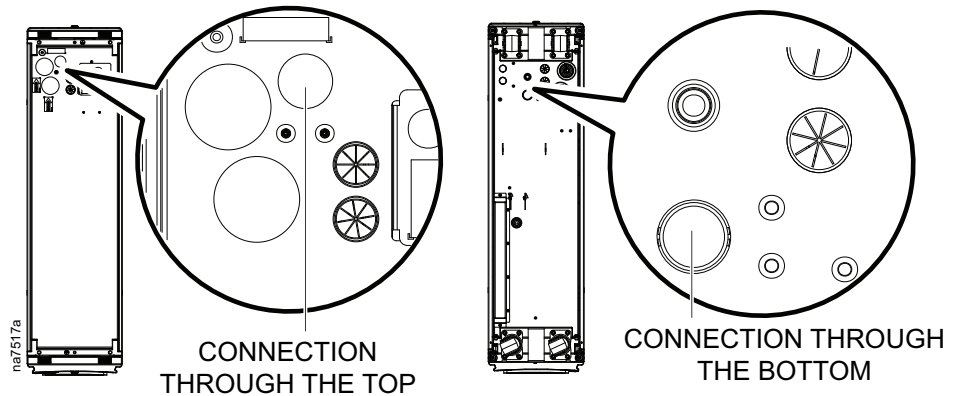
NOTICE
<p>COMPLIANCE REQUIREMENT</p> <p>The installation must comply with local plumbing codes.</p> <p>Failure to follow these instructions can result in equipment damage.</p>

The humidifier water supply line is routed to the unit in flexible tubing (or alternative tubing approved by local building codes) that will allow the humidifier water supply line connector to be moved approximately 25 mm (1 in.) away from the equipment. This facilitates removing the equipment from a row.

A factory-installed quick-connector for connecting the tubing to the equipment is supplied. The quick connector has a male 1/4-in. NPT or male 1/4-in. BSPT to connect to a compression fitting. The quick-connector has a shut-off function, so no separate shut-off valve is necessary.

The humidifier water supply line can be connected through either the top or the bottom of the equipment as shown. Male quick-connectors are positioned in both the top and the bottom of the equipment.

Water pressure should be between 100 and 800 kPa (15 and 115 psi) for proper humidifier operation. Dirty water must be filtered before it is supplied to the humidifier. Water temperature must be between 1°C and 40°C (34°F and 104°F). Do not use softened, de-mineralized, or de-ionized water.

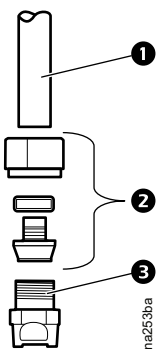


See the manual included with the humidifier for more information about water quality, mineral content, hardness, and minimum/maximum levels for conductivity.

NOTE: Before making any connections, clear any debris that may have accumulated during assembly from the humidifier water supply line.

NOTE: It is recommended that a solenoid water valve be installed in the humidifier supply line, connected to a leak detector.

Connect the fittings to the humidifier water supply line as shown, then connect the water supply line quick-connector to the top or bottom humidifier input.



Item	Description
1	Flexible tubing (field supplied and installed)
2	Compression fitting (field supplied and installed)
3	Quick connector (supplied)

Refrigerant Piping

The indoor unit connects to an external condensing unit. Install all refrigerant lines in accordance with applicable industry guidelines as well as local and national codes and regulations. Calculate an equivalent length based on the actual linear length of the run, including valves and fittings.

NOTE: All fittings should be long-radius to minimize pressure drop.



See Refrigeration Piping Diagram, page 29.

Make all refrigerant lines as short and direct as possible. Horizontal suction lines must be pitched downward at a minimum of 4 mm per m (1/2 in. per 10 ft) in the direction of flow to aid in oil return. Install a trap in the suction line at the bottom of the riser and additional traps approximately every 6 m (20 ft) of rise to ensure proper oil return. Isolate piping from structural surfaces using vibration clamps.

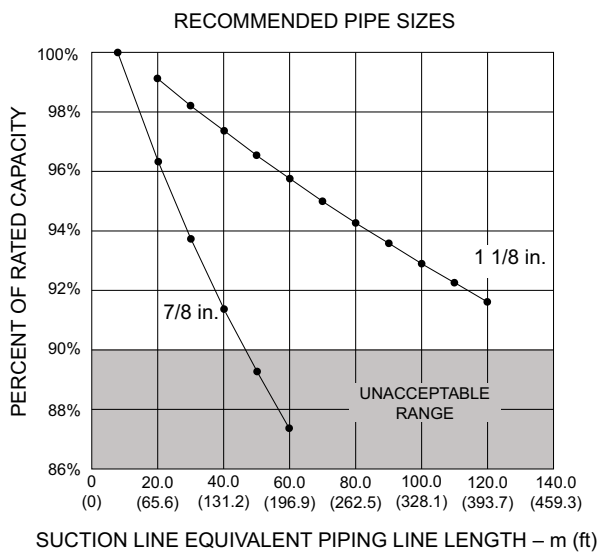
NOTE: Field-installed gas lines must be insulated.

NOTE: Install all piping in accordance with applicable industry guidelines as well as local and national codes and regulations.

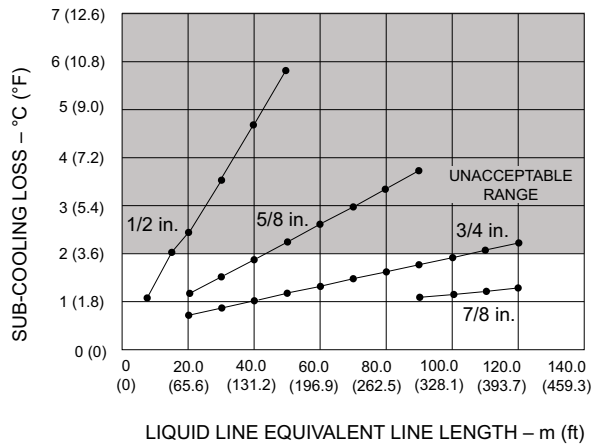
The following table provides ASHRAE standards for equivalent piping lengths of fittings and valves.

Type of Fitting or Valve—Equivalent Length of Pipe in m (ft)								
ACR Tubing Size	Gate Valve	Angle Valve	Globe Valve	Standard 90° Elbow	Long Radius 90° Elbow	Reducer 1/2	Tee Branch	Tee Straight
1/2 in.	0.18 (0.6)	1.83 (6.0)	5.18 (17.0)	0.43 (1.4)	0.27 (0.9)	0.43 (1.4)	0.82 (2.7)	0.27 (0.9)
5/8 in.	0.21 (0.7)	2.13 (7.0)	5.49 (18.0)	0.49 (1.6)	0.3 (1.0)	0.49 (1.6)	0.91 (3.0)	0.3 (1.0)
7/8 in.	0.27 (0.9)	2.74 (9.0)	6.71 (22.0)	0.61 (2.0)	0.43 (1.4)	0.61 (2.0)	1.22 (4.0)	0.43 (1.4)
1 1/8 in.	0.30 (1.0)	3.66 (12.0)	8.84 (29.0)	0.79 (2.6)	0.52 (1.7)	0.79 (2.6)	1.52 (5.0)	0.52 (1.7)
1 3/8 in.	0.46 (1.5)	4.57 (15.0)	11.59 (38.0)	1.01 (3.3)	1.07 (3.3)	0.55 (1.8)	2.13 (7.0)	0.70 (2.3)
1 5/8 in.	0.55 (1.8)	5.49 (18.0)	13.11 (43.0)	1.22 (4.0)	0.79 (2.6)	1.22 (4.0)	2.44 (8.0)	0.79 (2.6)

Size the suction line piping based on the equivalent length to provide a capacity greater than 90% of the rated capacity.



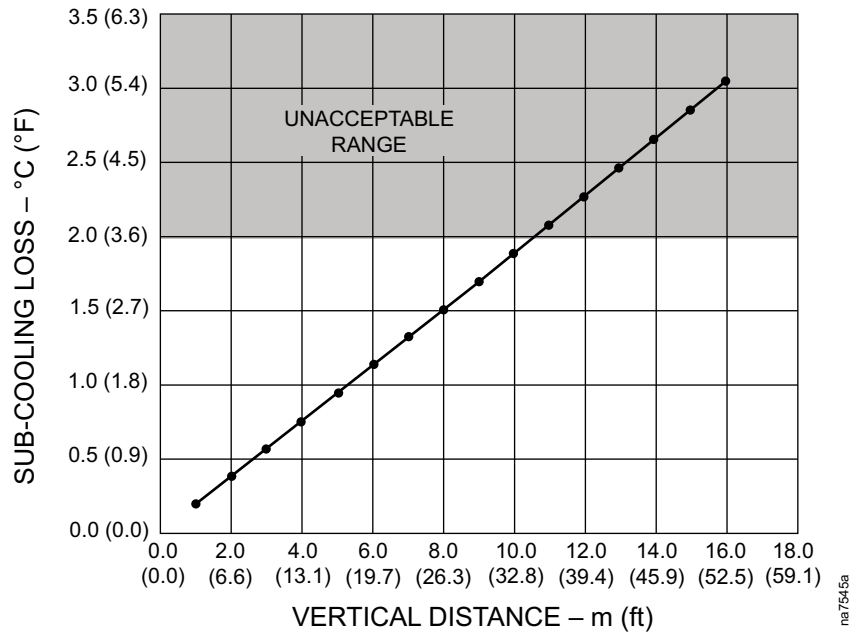
Size the liquid line piping based on the equivalent length to provide a sub-cooling loss of less than 2°C (3.6°F).



NOTE: The maximum vertical height of the condensing unit above the indoor unit is 30 m (98 ft).

Indoor Unit Installed Above the Condensing Unit

The indoor unit can be installed at an elevation higher than the condensing unit; however, the following sub-cooling loss due to this installation configuration will occur:



NOTE: The maximum vertical height of the condensing unit below the indoor unit is 10 m (32.8 ft).

NOTE: The total sub-cooling loss must be lower than 2.0°C (3.6°F).

Unit Connections

Be sure to use only clean, air conditioning/refrigeration (ACR) pipe and follow standard procedures for pipe size selection for air-cooled equipment. All refrigerant piping must be Type L ACR hard-drawn copper pipes (soft/annealed copper is unacceptable) and must be 700 psig UL rated or equivalent. The maximum allowable equivalent length between the evaporator and condenser is 120 equivalent m (394 equivalent ft). Vertical runs require a trap every 6 m (20 ft) of rise.

NOTE: When brazing field-installed copper refrigeration lines, use a nitrogen purge to minimize contamination of the refrigeration system during the brazing process.

The air-cooled equipment has been dehydrated at the factory and is shipped with a holding charge of nitrogen. Test refrigerant connections for leaks before replacing the holding charge.

NOTE: Remove the nitrogen holding charge tag from the lines after nitrogen removal and product startup.

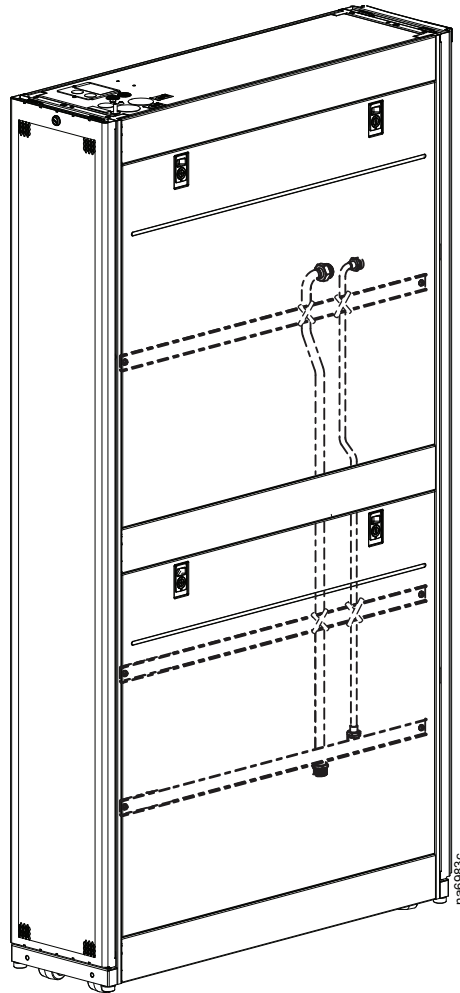
Suction and Liquid Line Piping Connections

The suction and liquid line pipes are shipped inside the unit attached to the side braces. Remove the piping from inside the unit.



See Removing Doors and Panels, page 44.

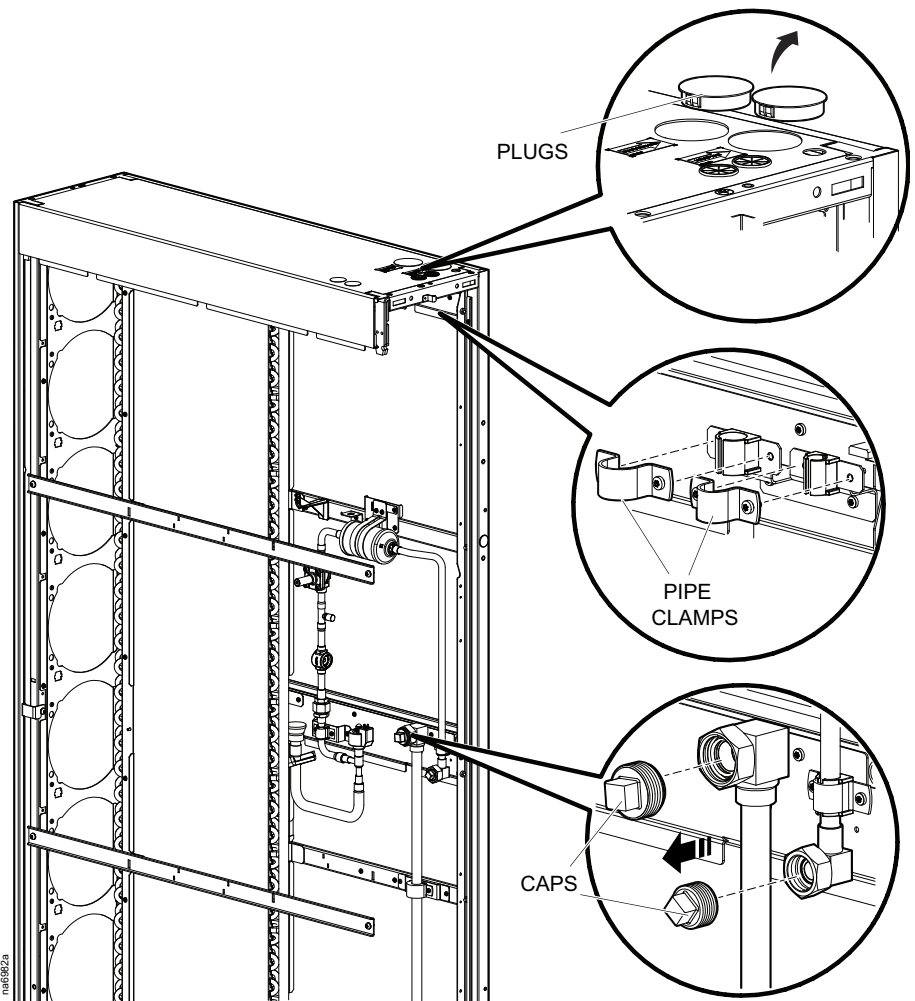
ACRD301S, ACRD301P



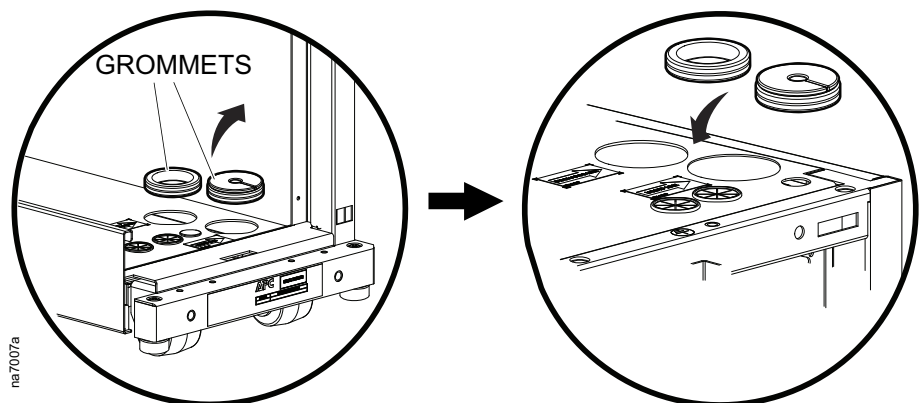
NOTE: Some components not shown for clarity.

Top Routing

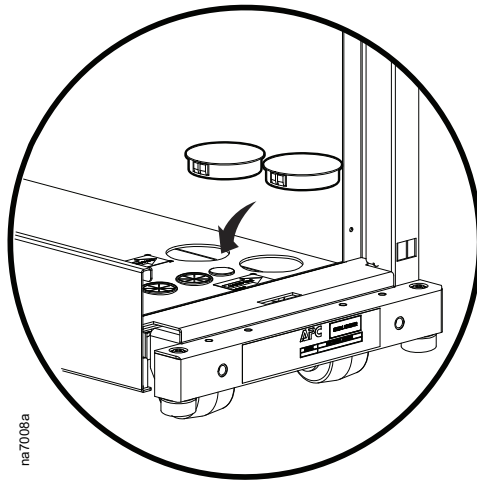
1. Remove the pipe connection caps from the unit piping, the caps from the inlets, and the pipe clamps from the side of the unit.



2. Remove the grommets from the bottom piping inlets and move them to the top piping inlets.



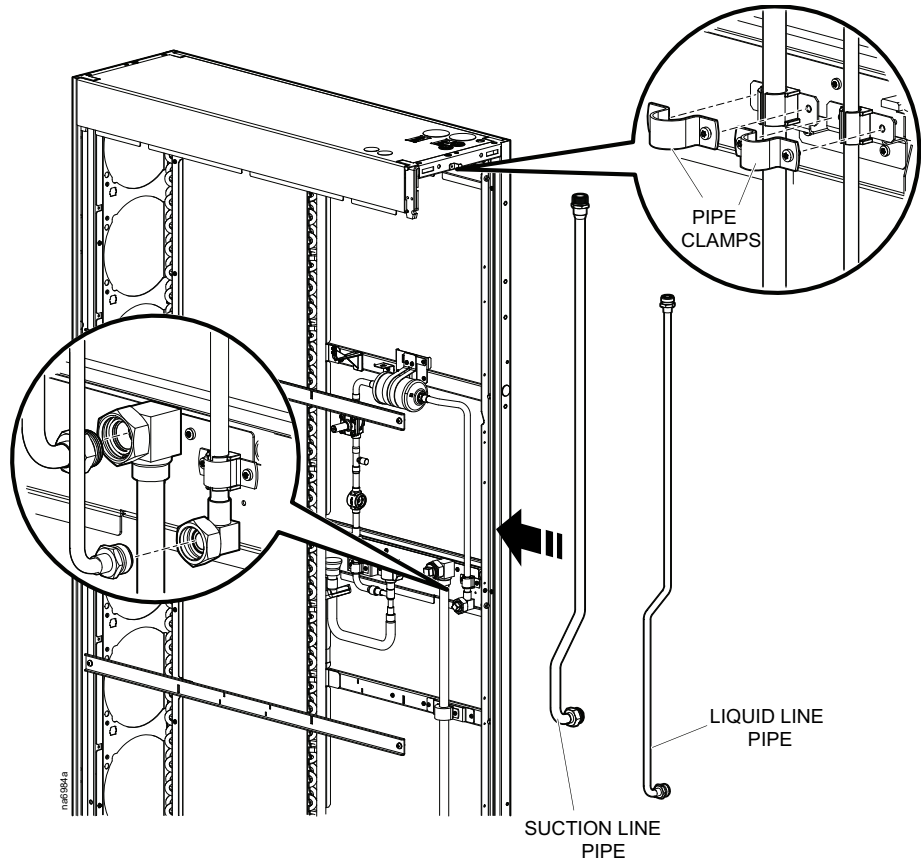
- Place the plugs from the top piping inlets in the bottom piping inlets.



na7008a

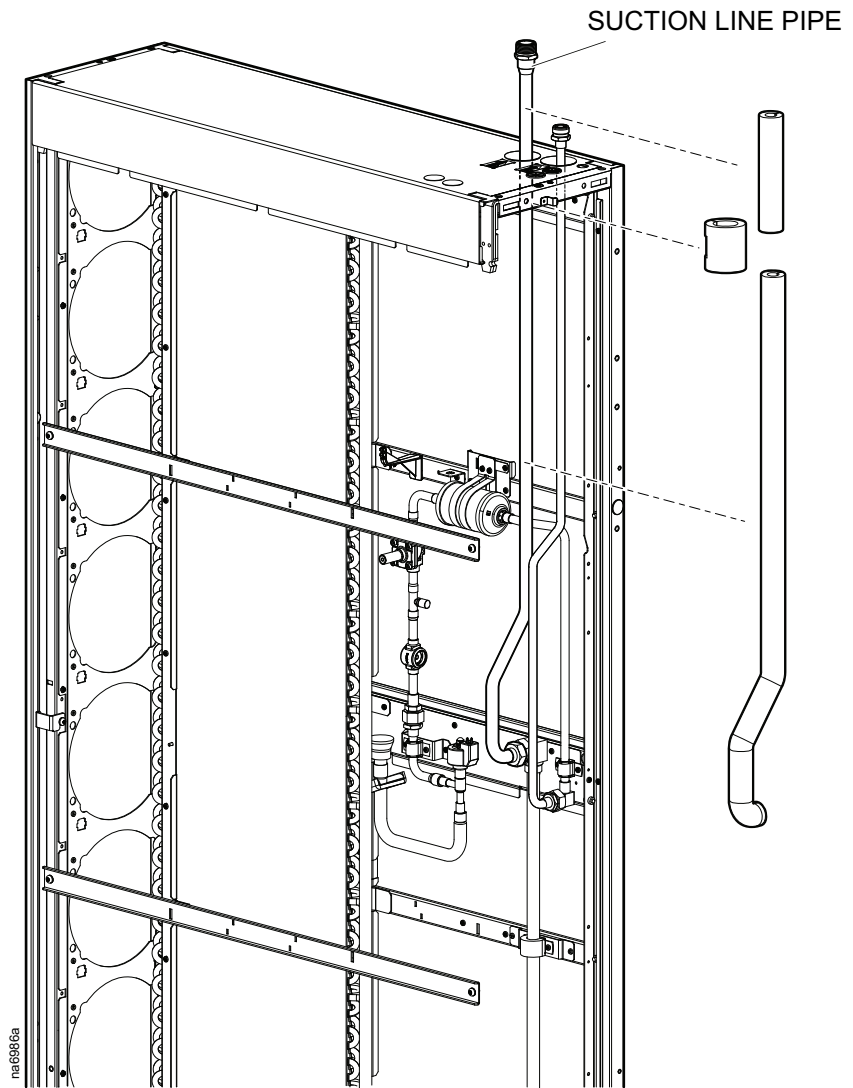
- Hold the pipes in position by replacing the pipe clamps. Tighten connections to 50 Nm (37 lb-ft).

NOTE: Use caution when routing the pipes through the top of the unit to avoid damaging sensors.

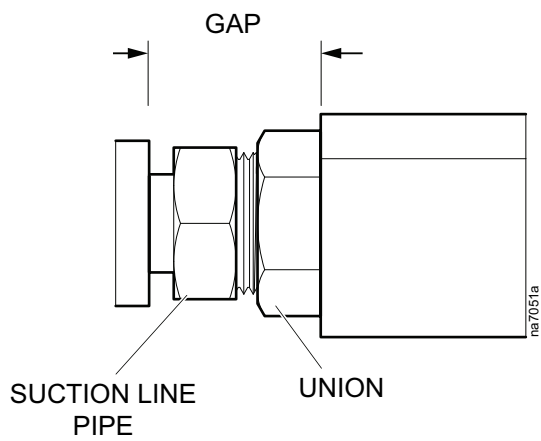


na6184a

5. Place insulation on the suction line unit piping.



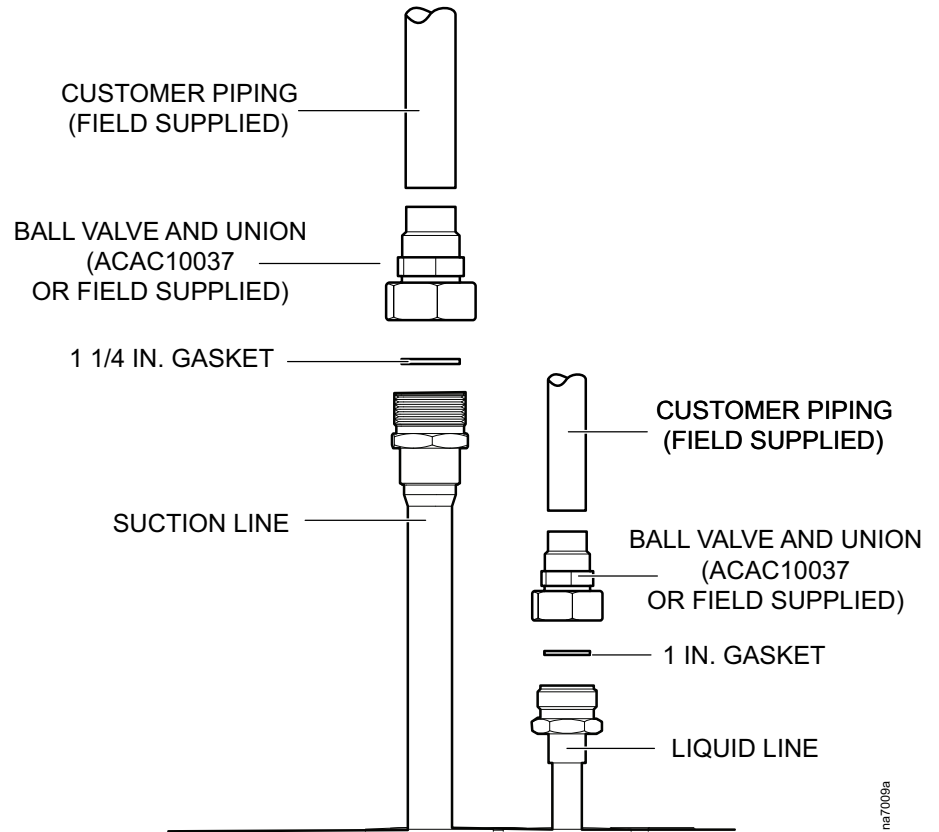
NOTE: There is a gap between the provided insulation around the union. Insulation needs to be field supplied for the suction line union.



6. Make customer piping connections.

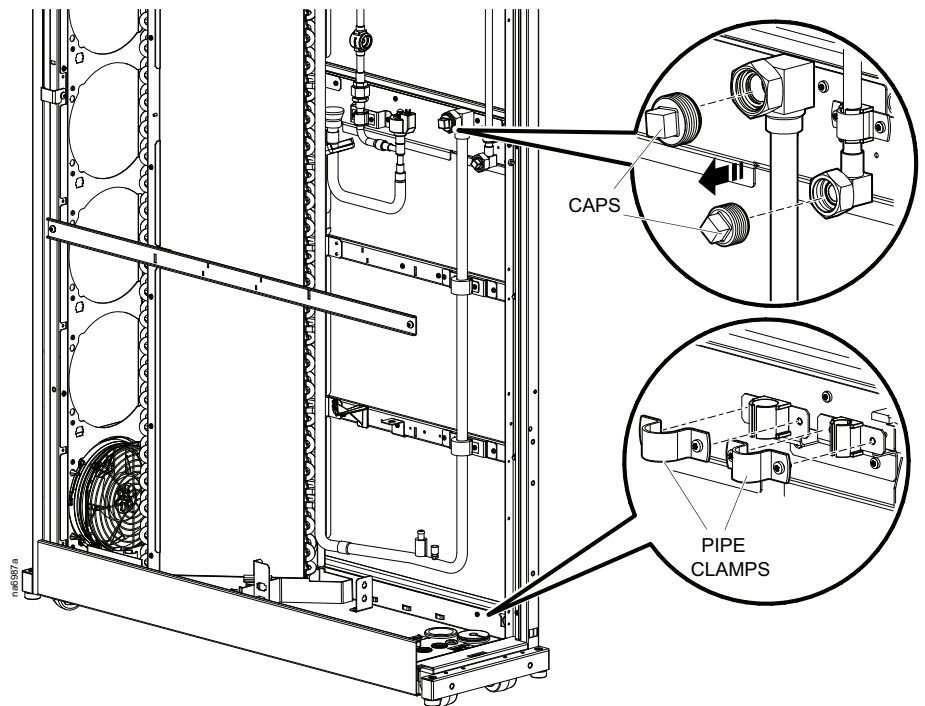


If the ball valve and union kit (ACAC10037) will be installed, see the sheet included with the kit for installation instructions.



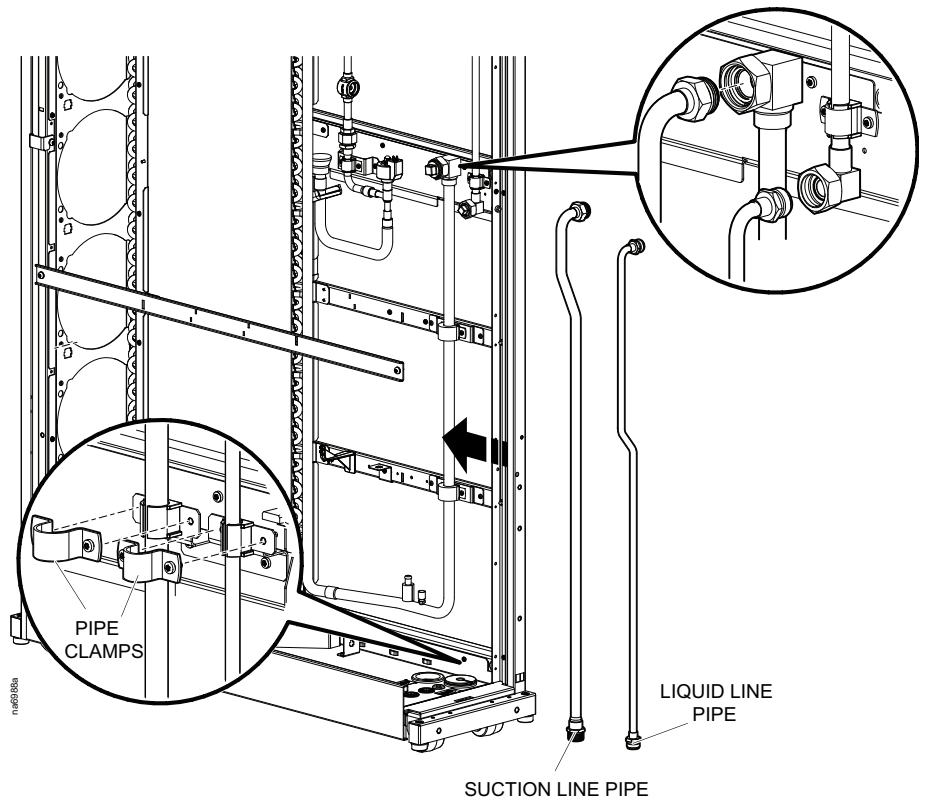
Bottom Routing

1. Remove the pipe connection caps from the unit piping and the pipe clamps from the side of the unit.

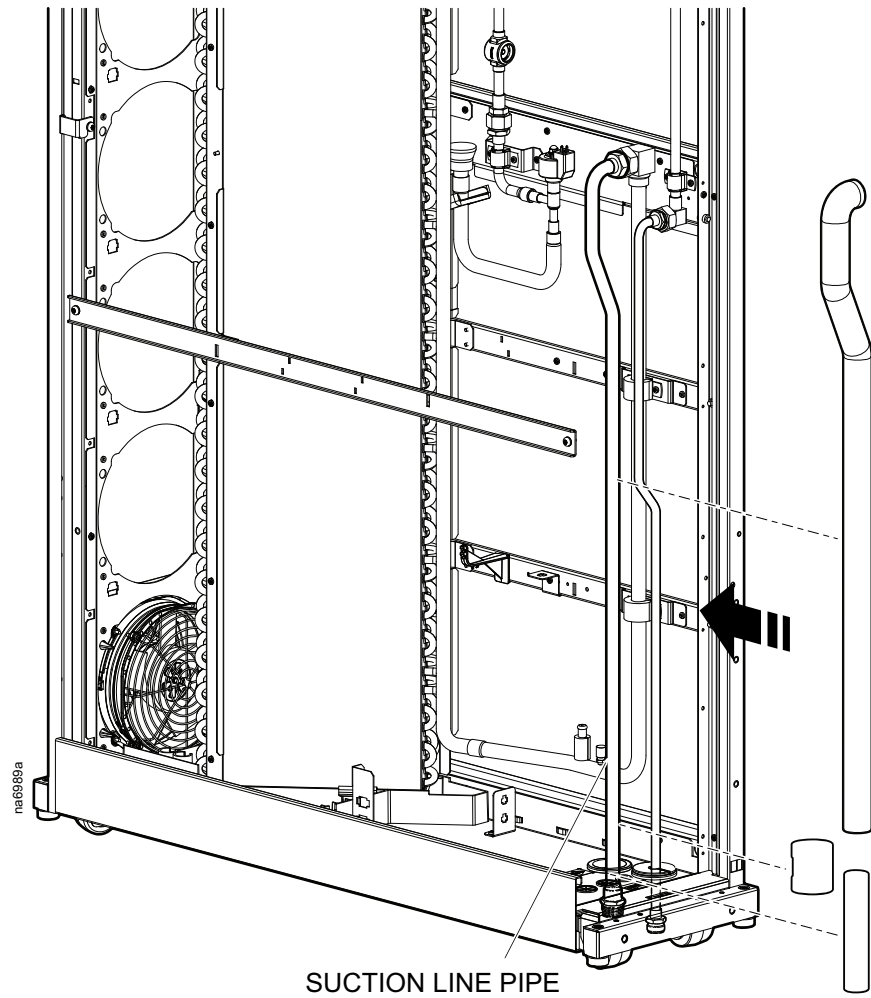


2. Hold the pipes in position by replacing the pipe clamps. Tighten connections to 50 Nm (37 lb-ft).

NOTE: Use caution when routing the pipes through the bottom of the unit to avoid damaging sensors.

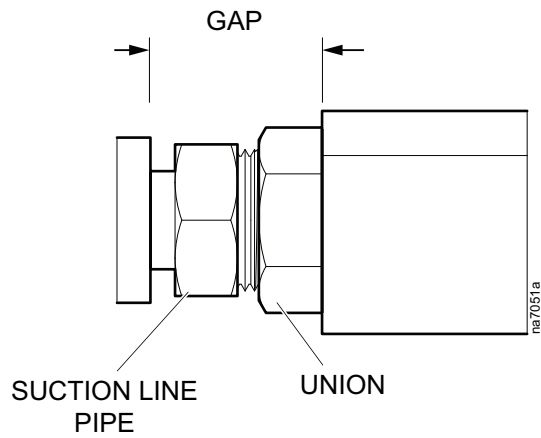


3. Place insulation on the suction line unit piping.



SUCTION LINE PIPE

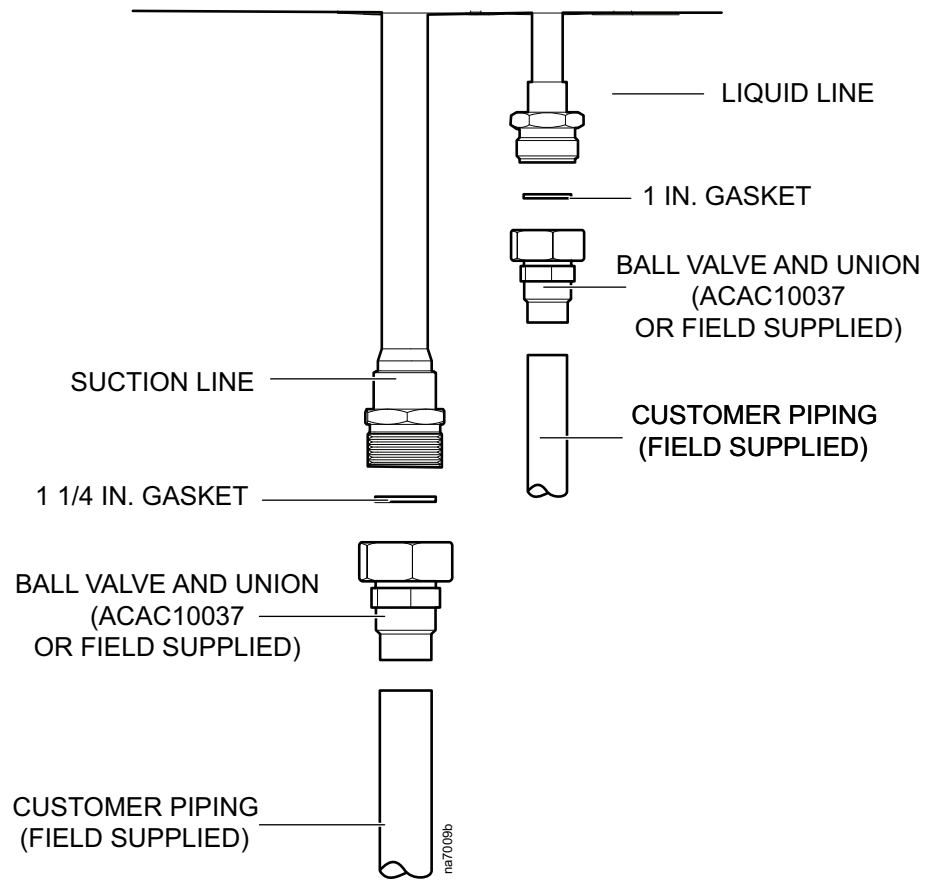
NOTE: There is a gap between the provided insulation around the union. Insulation needs to be field supplied for the suction line union.



4. Make customer piping connections.



If the ball valve and union kit (ACAC10037) will be installed, see the sheet included with the kit for installation instructions.



Electrical Connections

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- This equipment must be installed and serviced by qualified and trained personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- 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.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Potentially dangerous and lethal voltages exist within this unit. More than one disconnect switch may be required to energize or de-energize this equipment. Observe all cautions and warnings. Failure to do so could result in serious injury or death. Only qualified service and maintenance personnel may work on 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.

The following electrical connections are required in the field:

- Power to the indoor unit (single-phase plus ground)
- Power to the outdoor unit (three-phase plus ground)
- Communication (A-Link, Building Management System, Modbus)
- Outdoor unit RS-485 connection
- Sensors



See the electrical schematic (located on the electrical box) for all electrical connections.



See the equipment name plate for voltage and current requirements.

All low-voltage connections, including data and control connections, must be made with properly insulated wires. Low-voltage wiring must be insulated based on the wiring with which it is routed. The low-voltage connections must have 300-V minimum insulation.

NOTE: A power disconnect is required to isolate each unit for maintenance and servicing.

Power Connections

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 TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified and trained personnel.

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

Primary and Secondary Power Feeds

All indoor unit models and some of the outdoor units (ACCU300D, ACCU301D, and ACCU302D) are capable of receiving power through one of two separate feeds: primary feed or secondary feed. Use the display interface to configure the unit to receive power through the primary feed, the secondary feed, or both. The equipment receives power through the primary feed regardless of whether the secondary feed is receiving power. If power is removed from the primary feed, the secondary feed takes over and supplies power to the equipment (if a secondary feed is connected).

Connect the primary feed and secondary feed input cables to individual, breaker-controlled branch circuits or to PDUs backed by separate Uninterruptible Power Supply (UPS) units.

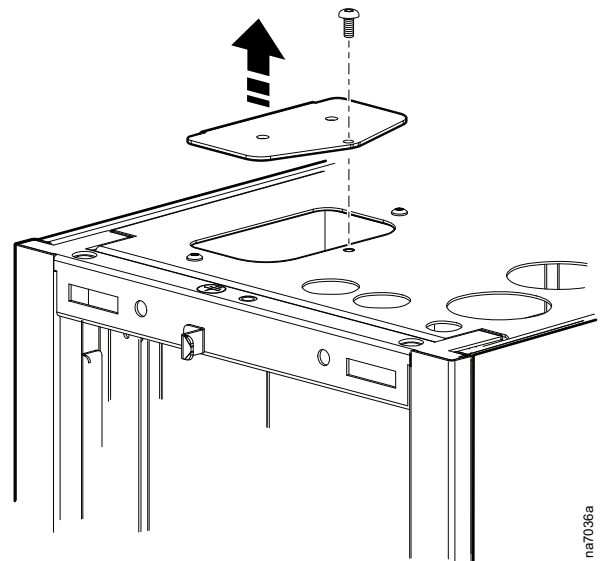
NOTE: The primary and secondary feeds must not use the same branch circuit, PDU, or UPS.

Indoor Unit (Top Routing)—ACRD301S

Power connections can be routed through the top or bottom of the unit: this section covers a top routing.

NOTE: Some components not shown for easier viewing.

1. Remove the cover plate from the top of the unit.

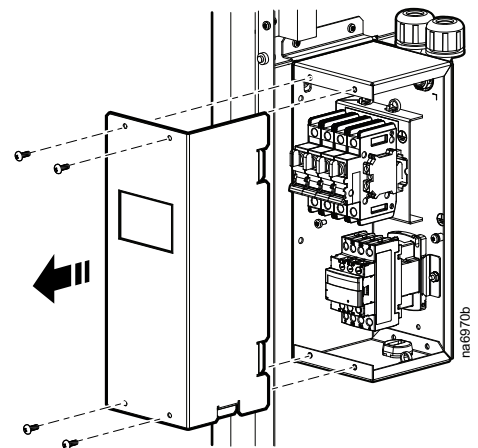


2. Remove the rear door and filters.

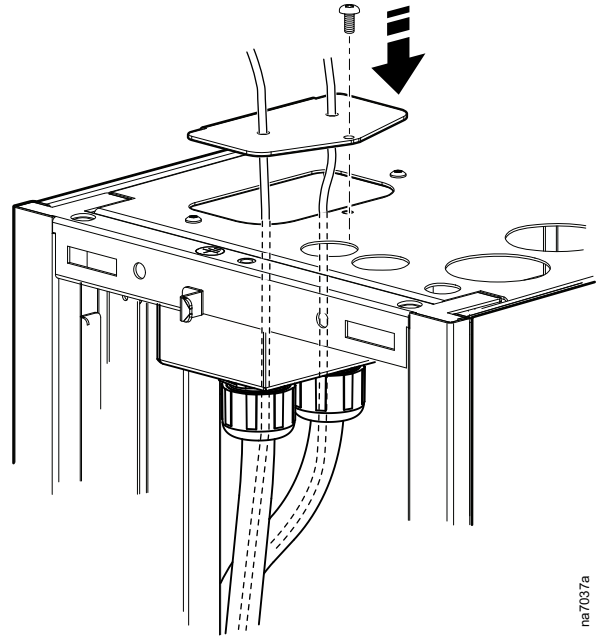


See Removing Doors and Panels, page 44.

3. Remove the cover from the ATS.

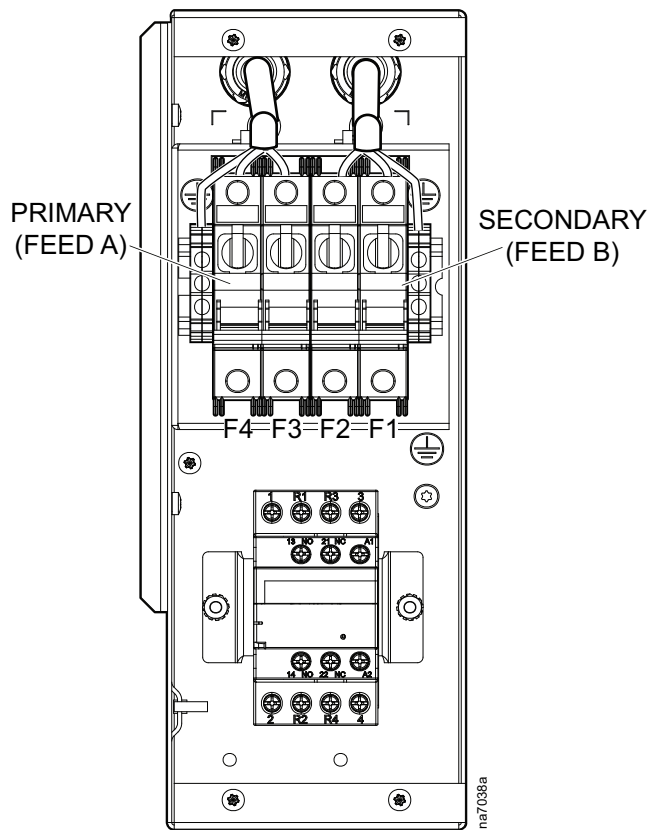


4. Route the cable or cables through the cover plate and through the factory-installed conduits to the ATS.



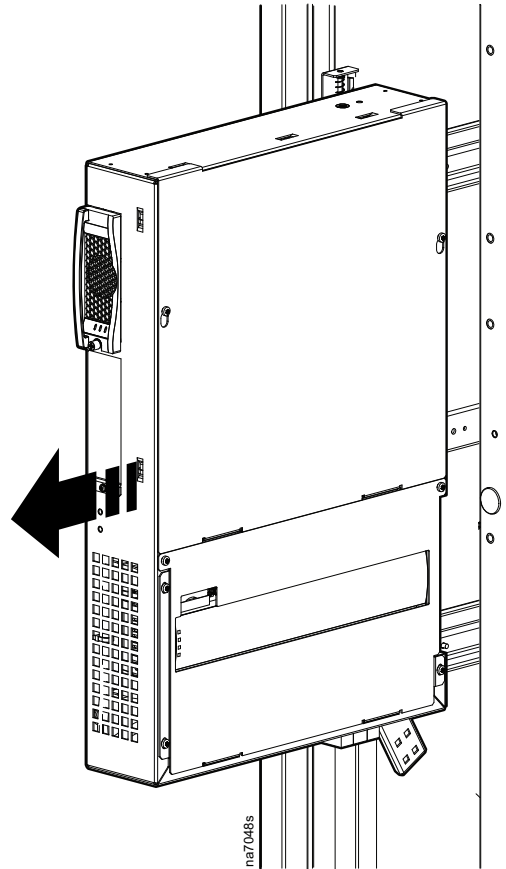
na7037a

5. Connect the power cables in the ATS.

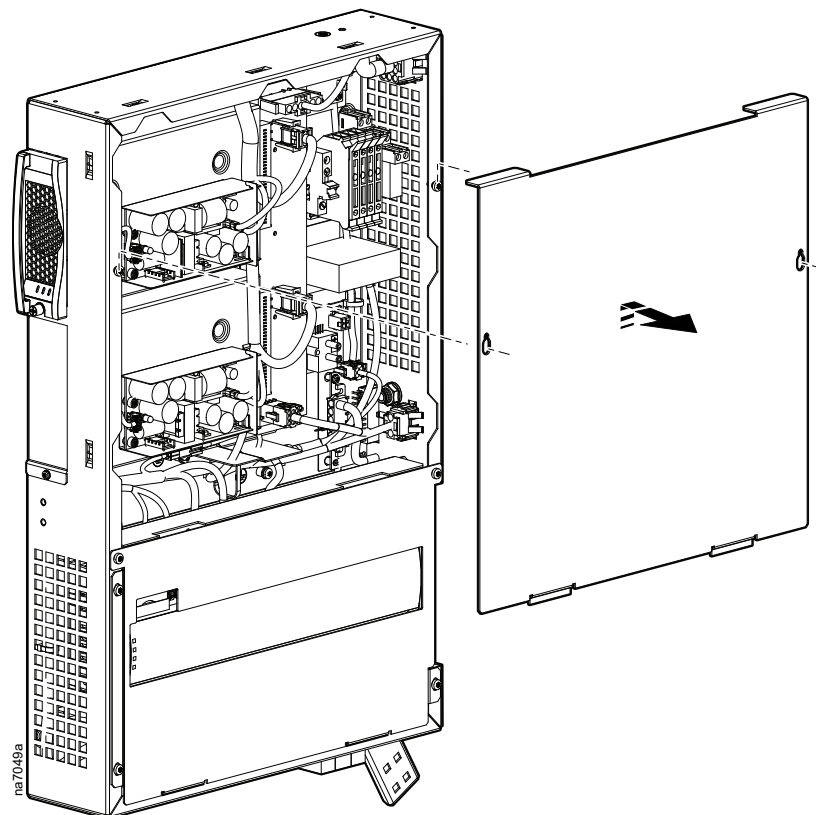


na7038a

- Slide the electrical box out of the unit.

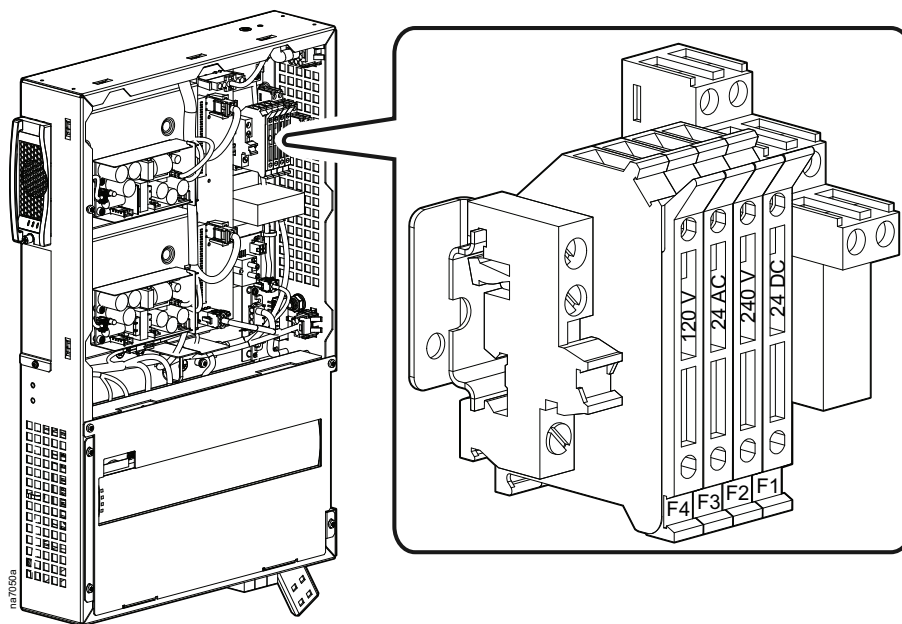


- Remove the upper electrical box cover.



8. Configure the voltage.

- 200–240 V: Connect the wire labeled F2-1 to the 240-V fuse.
- 100–120 V: Connect the wire labeled F2-1 to the 120-V fuse.



See the ladder diagram included with the unit for more information.

9. Replace the ATS cover, filters, and rear door.

Indoor Unit (Bottom Routing)—ACRD301S

Power connections can be routed through the top or bottom of the unit: this section covers a bottom routing.

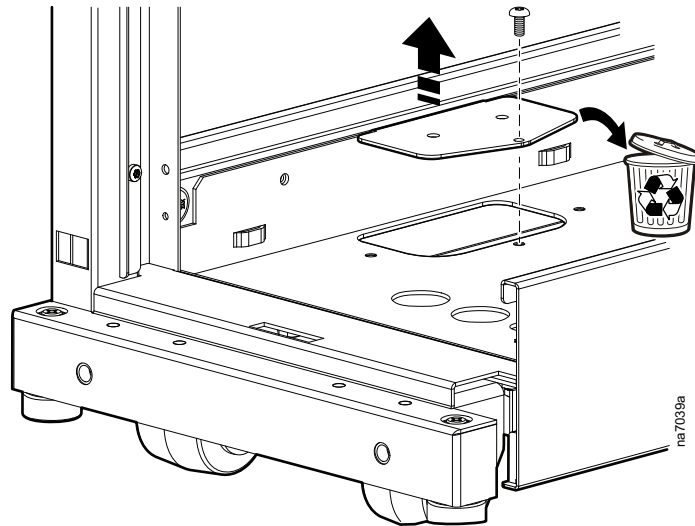
NOTE: Some components not shown for easier viewing.

1. Remove the rear door and filters.

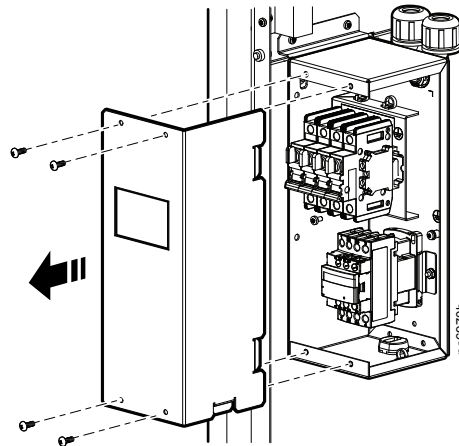


See Removing Doors and Panels, page 44.

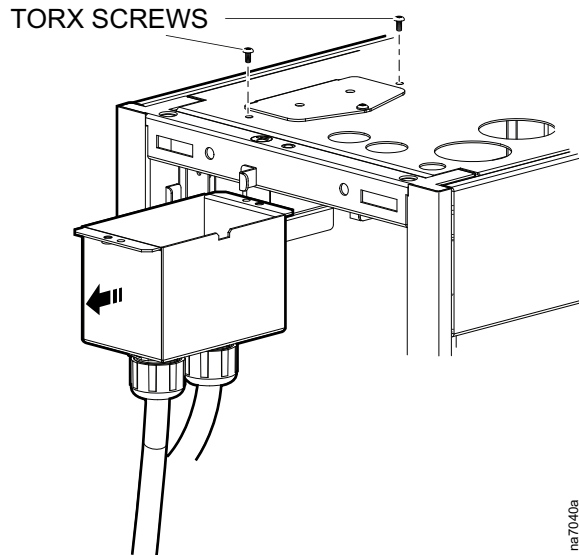
2. Remove the cover plate from the bottom of the unit and recycle the plate.



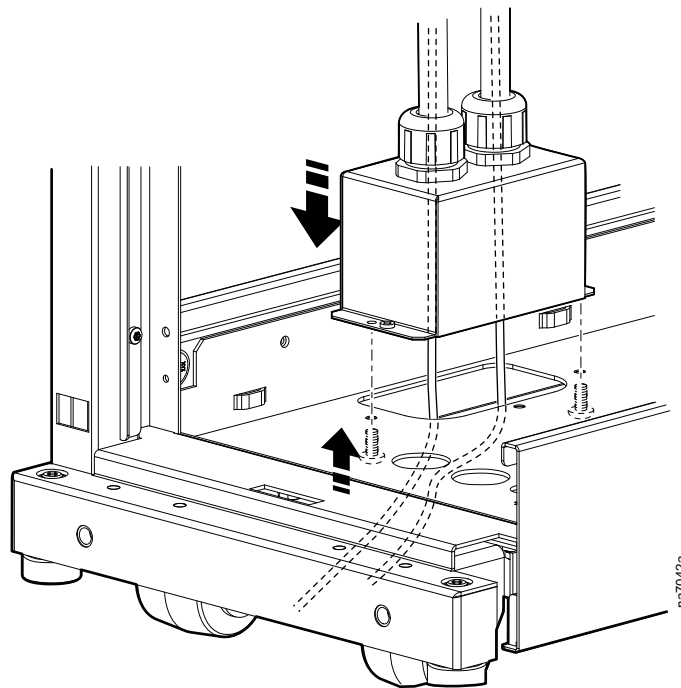
3. Remove the cover from the ATS.



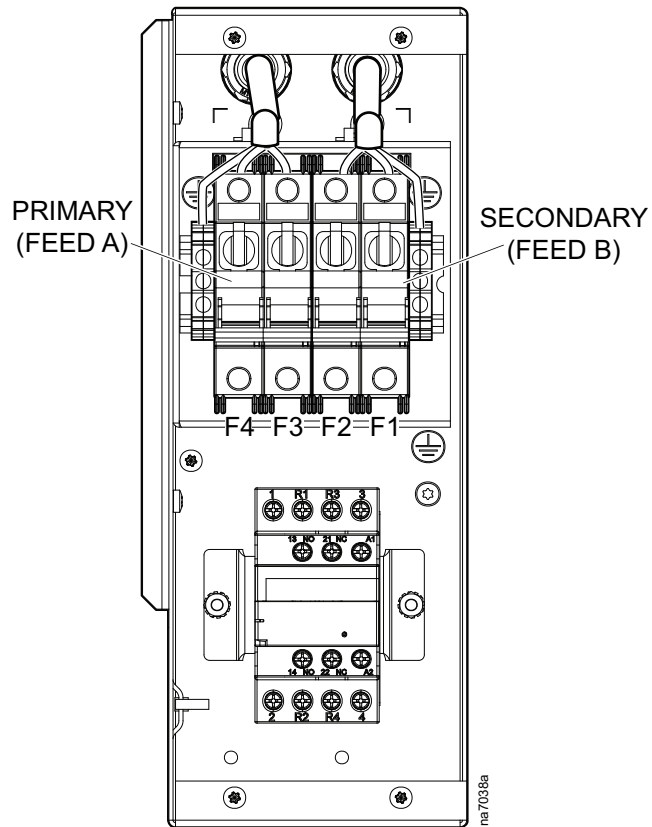
4. Remove the power cable conduit box from the top of the unit.



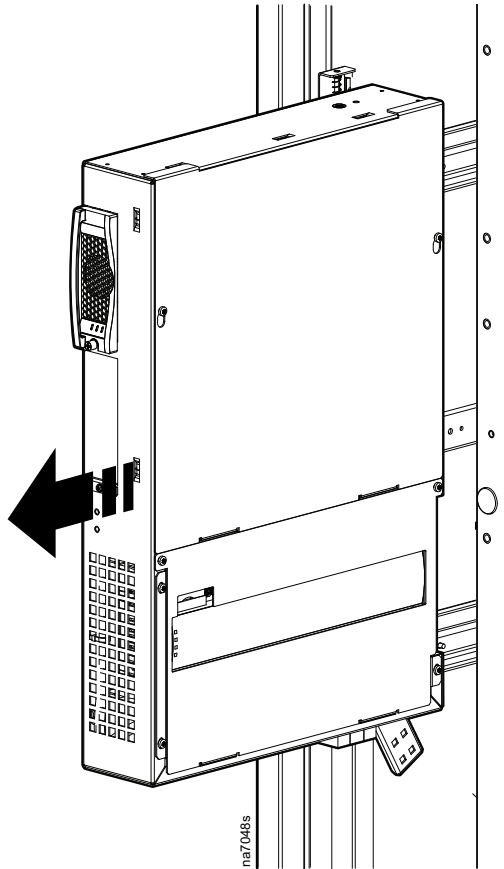
5. Route the power cables through the conduits to the ATS and attach the conduit box to the bottom of the unit.



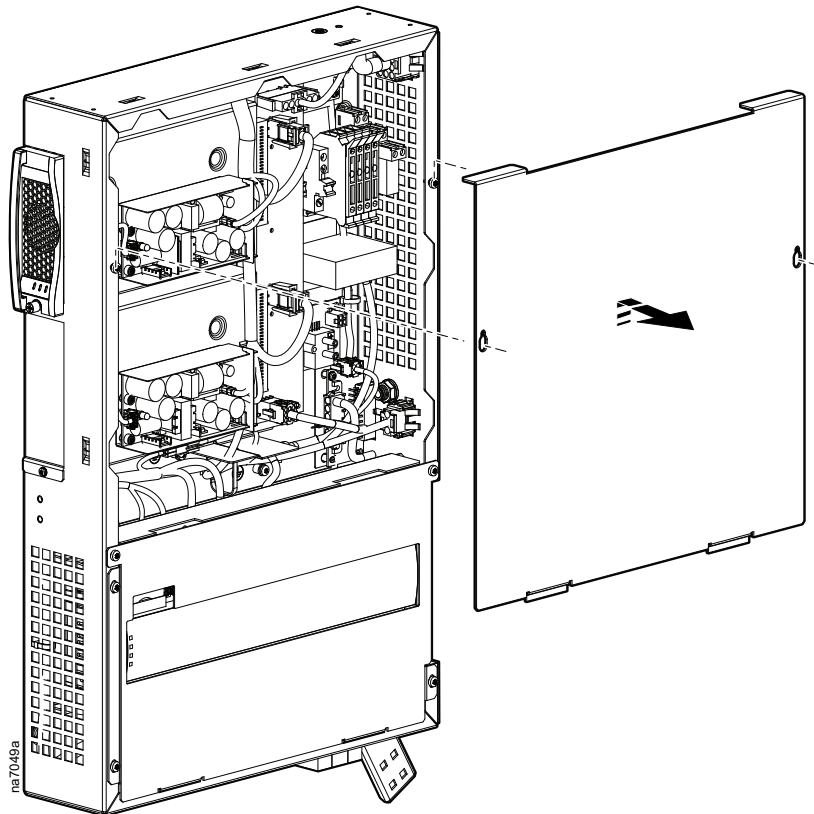
6. Connect the power cables in the ATS.



7. Slide the electrical box out of the unit.

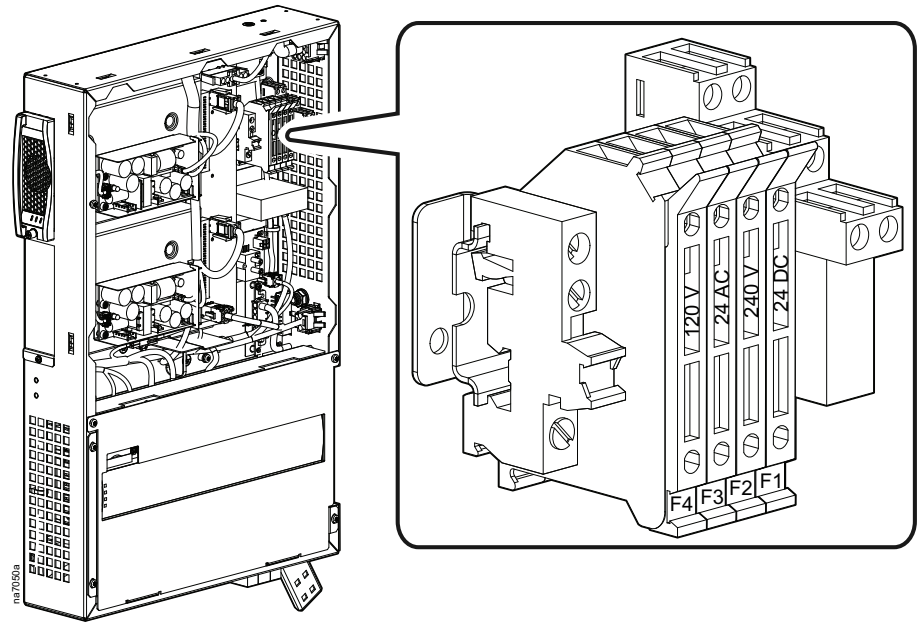


8. Remove the upper electrical box cover.



9. Configure the voltage.

- 200–240 V: Connect the wire labeled F2-1 to the 240-V fuse.
- 100–120 V: Connect the wire labeled F2-1 to the 120-V fuse.

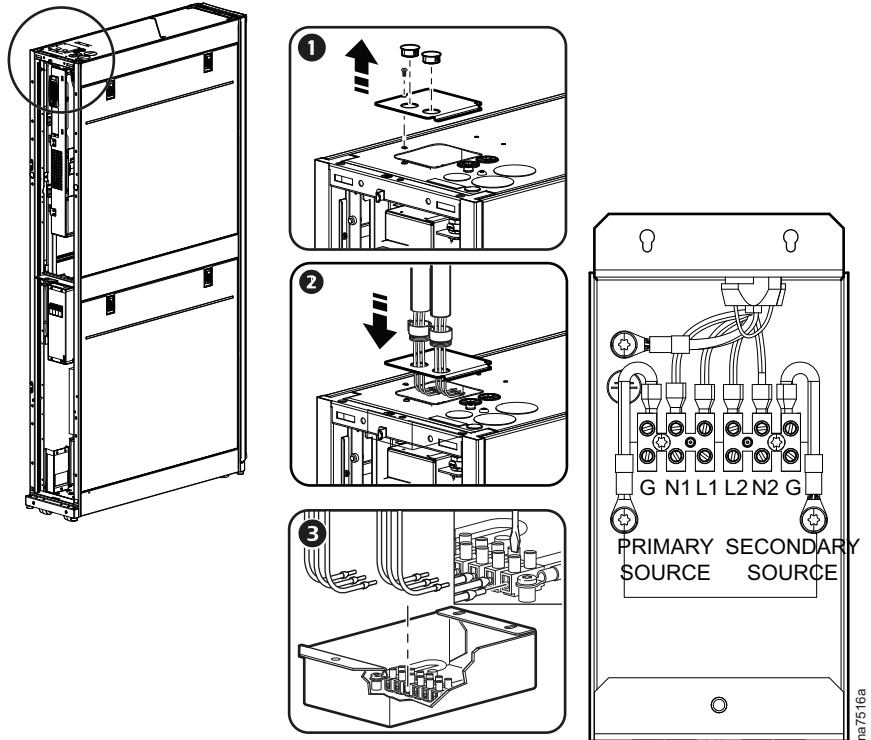


See the ladder diagram included with the unit for more information.

10. Replace the ATS cover, filters, and rear door.

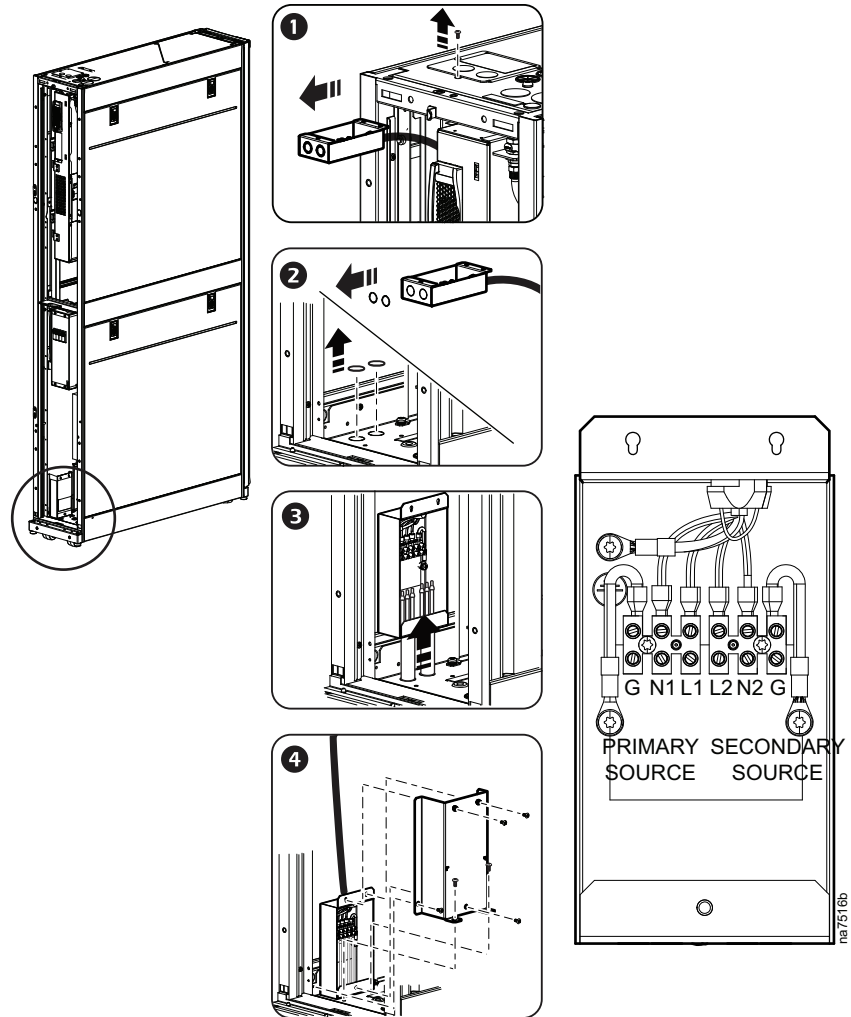
Top Configuration—ACRD301P

1. Remove the cover plate and plugs from the top of the unit.
2. Route the cables through the cover plate.
3. Make the power connections in the junction box.
4. Replace the cover.



Bottom Configuration—ACRD301P

1. Remove the screw that fastens the junction box to the top of the unit. Cut and remove tie wraps as needed to allow the power cord to be repositioned for bottom power feed connection.
2. Remove the plugs from the holes in the junction box and from the bottom of the cooling unit.
3. Route the power connections through the bottom of the unit into the junction box.
4. Place the junction box on the bottom of the unit and connect the cover plate with the M4x8 TORX screws from the ship-loose kit.



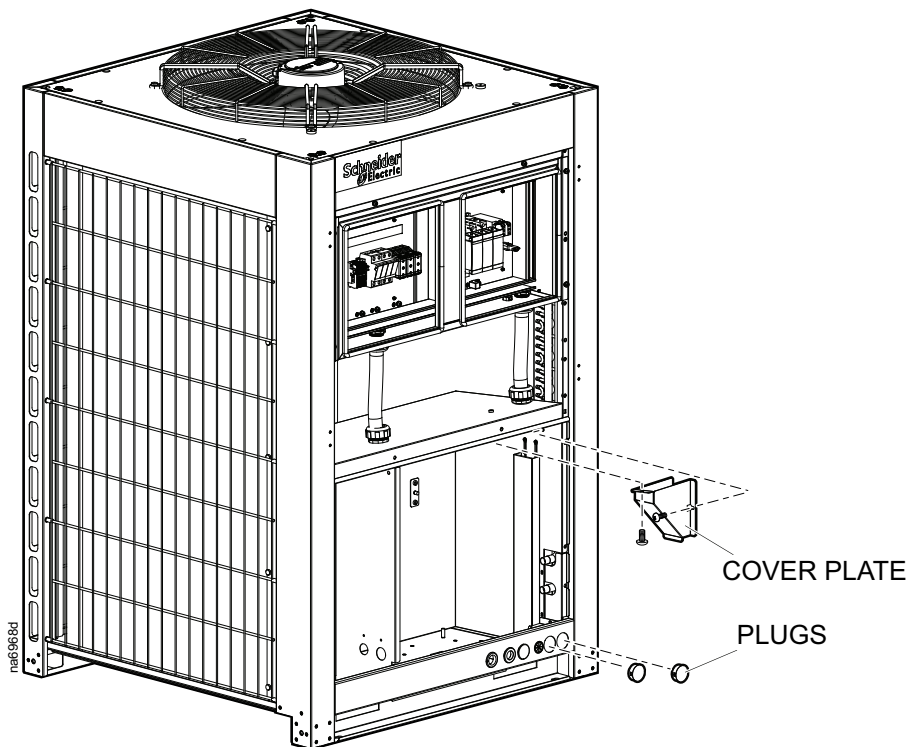
Outdoor Unit

1. Remove the service and internal protection panels, and open the electrical panel.



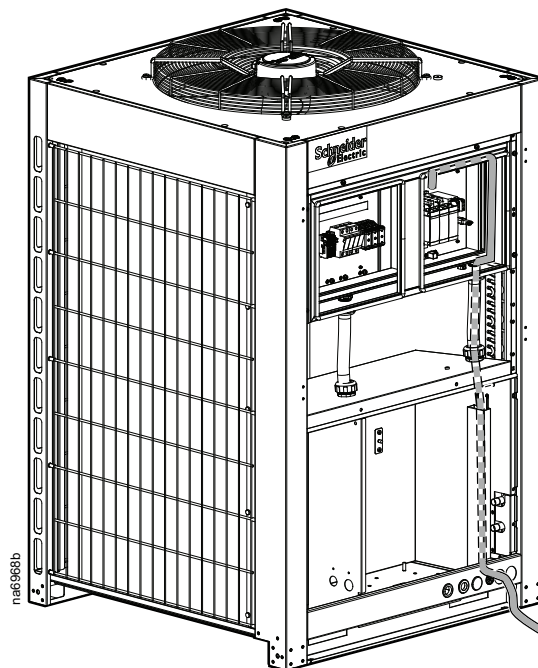
See Removing Doors and Panels, page 44.

2. Remove the cover plate and plugs from the power supply inlets.

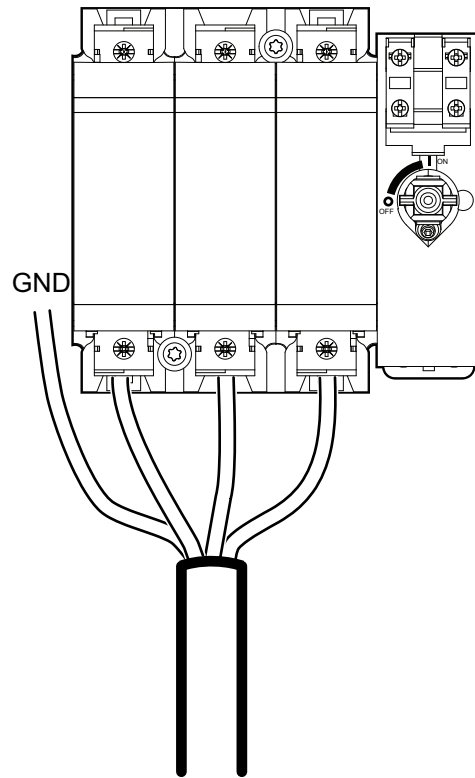


3. Route the cable or cables through the unit to the electrical panel.

NOTE: Use a conduit at least 25 mm (1 in.) ID to protect the exposed portion of the power cable between the unit and the building. The conduit must conform to any applicable local and national codes.



4. Connect the power cables to each power supply.



5. Re-install the panels and close the doors.

ATS Function Settings

IMPORTANT: Supply A/B line monitor, supply A/B contactor timer, and supply line selector A/B are adjustable on the front panel. The default factory settings are on the provided wiring diagram.

Supply A/B Line Monitor

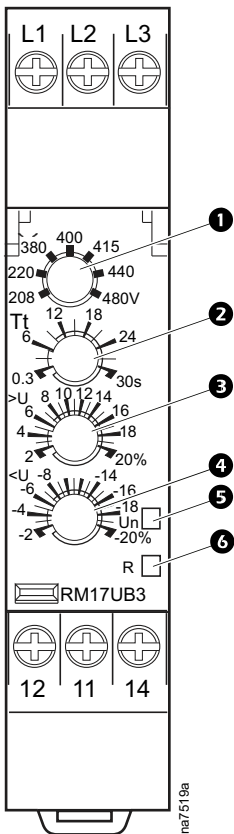
The supply line monitor determines at what point when sensing the voltage that you would transfer to the other power supply. This is based on the following parameters:

1. The relay monitors the following:
 - The undervoltage
 - The overvoltage
 - Phase loss (U measured < 150 V)
2. An adjustable time delay from 0.3 to 30 seconds allows inhibition of the output relay if a transient fault occurs.
3. If a voltage fault is detected, the relay opens at the end of the time delay set by the user.
4. Upon energization of the device with a detected measured fault, the relay stays open.
5. If phase loss is detected, the relay opens instantly

NOTE: Tt is the overvoltage and undervoltage threshold delay (adjustable on the front panel).



See Outdoor Unit, page 25 for the location of components in the electrical panel.



Item	Description
1	Voltage range selector switch
2	Time delay control potentiometer (Tt)
3	Potentiometer for overvoltage adjustment (>U)
4	Potentiometer for undervoltage adjustment (<U)
5	Power supply status (green) LED (Un)
6	Relay output status (yellow) LED (R)

Supply A/B Contactor Timer

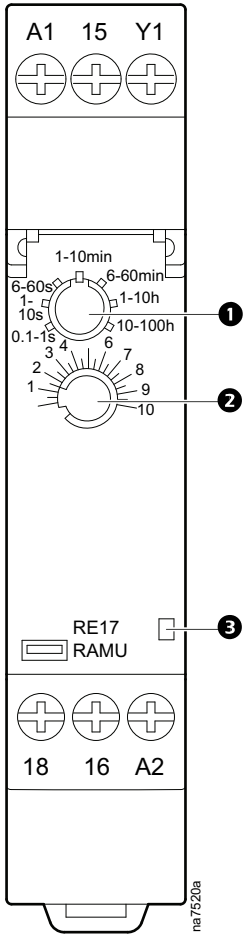
The contactor timer defines conditions that will prevent the ATS from transferring from source A to source B

1. The timing period 'T' begins on power-on.
2. At the end of this timing period, the output relay closes to energized supply A or B contactors.

NOTE: T is the timing period (adjustable on front panel).



See *Outdoor Unit*, page 25 for the location of components in the electrical panel.



Item	Description
1	T time delay range
2	T time delay setting
3	LED indicator

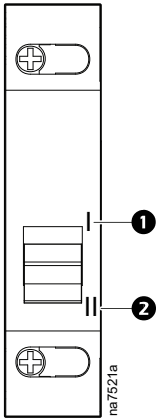
Supply Line A/B Selector

The supply line selector defines the primary source and the secondary source.

- I = Power supply A is the primary source
- II = Power supply B is the primary source



See *Outdoor Unit*, page 25 for the location of components in the electrical panel.

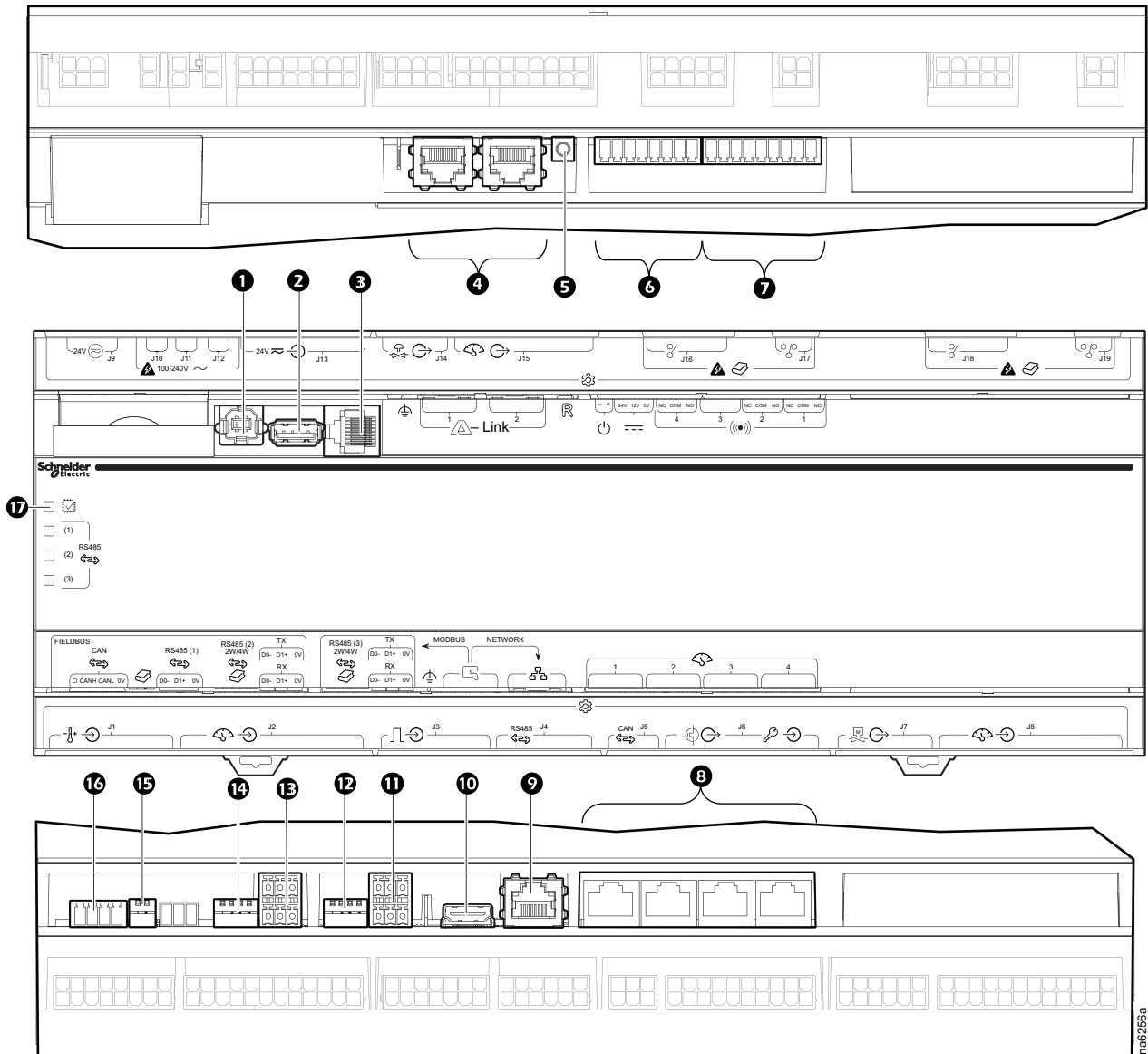


Item	Description
------	-------------

- | | |
|---|----------|
| ① | Supply A |
| ② | Supply B |

Communication Connections

Interface Connection



na6256a

Item	Description	Item	Description
1	USB device port	10	Touch screen display connection
2	USB host port (Not available)	11	Modbus connection
3	Serial port (Not available)	12	Modbus configuration switches
4	A-Link ports	13	Fieldbus Modbus connection (Not available)
5	Reset button	14	Fieldbus Modbus configuration switches (Not available)
6	Output relay 4/standby input	15	Fieldbus CANbus configuration switches
7	Output relay 1–3 (Not available)	16	Fieldbus CANbus connection
8	Universal sensor ports	17	Processor status LED
9	Network connection		

A-Link Connections

NOTE: All input and output connections should be wired as Class 2 circuits.

The A-Link bus connection allows a maximum group of twenty (20) Uniflair InRow ACRD30X units to communicate with each other.

To enable the units to function as a group, link them together using a standard pin-out CAT-5 cable with RJ-45 connectors. The A-Link bus must be terminated at the first and last unit installed in the group. An A-Link terminator is supplied with each unit.

NOTE: The maximum wire length for the entire group must not exceed 500 m (1640 ft).

Active Flow Controllers (AFC)

AFC units are installed in the cooling group in a HACS or CACS environment, they are connected to the A-Link bus as shown. If the cooling group is in an under floor environment, the AFC unit is connected through the J5 port on the controller.

NOTICE

CAT 5 PINOUT

Devices connected on the A-Link ports should use a standard pin-out (1-1, 2-2, 3-3, 4-4, 5-5, 6-6, 7-7, 8-8) CAT5 cable only.

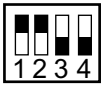




Failure to follow these instructions can result in equipment damage.



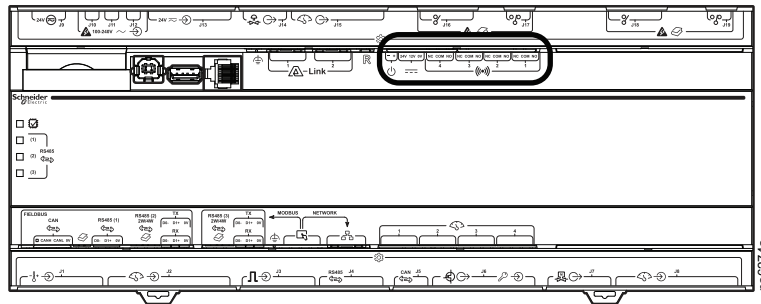
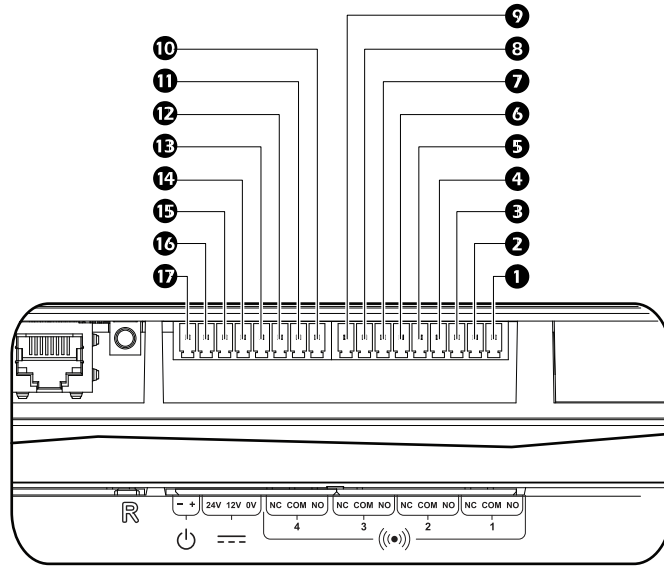
See the *AFC Installation Manual* for more information.

Modbus Switch Configuration

The DIP switches in DIP switch bank RS485 (3) (⑫ in Interface Connection, page 86) may need to be configured during installation.

Position	Status	DIP Switches	Mode
1 and 2	Open (up)		4-wire Modbus (needs TXD0-, TXD1+, RXD0-, RXD0+, and COM connected to Modbus master)
1 and 2	Closed (down)		2-wire Modbus (needs TXD0-, TXD1+, and COM, or RXD0-, RXD0+, and COM)
3 and 4	Open (up)		2-wire or 4-wire Modbus (no termination)
3 and 4	Closed (down)		4-wire Modbus (termination enabled)
3	Closed (down)		2-wire Modbus (termination enabled, position 4 must remain in the Open (up) position in 2-wire mode, or double termination will occur)

Output Relays and Standby Input



Item	Name	Description
1	Output relay 1 N.O. (Not available)	Normally Open contact
2	Output relay 1 COM (Not available)	Common contact
3	Output relay 1 N.C. (Not available)	Normally Closed contact
4	Output relay 2 N.O. (Not available)	Normally Open contact
5	Output relay 2 COM (Not available)	Common contact
6	Output relay 2 N.C. (Not available)	Normally Closed contact
7	Output relay 3 N.O. (Not available)	Normally Open contact
8	Output relay 3 COM (Not available)	Common contact
9	Output relay 3 N.C. (Not available)	Normally Closed contact
10	Output relay 4 N.O.	Normally Open contact
11	Output relay 4 COM	Common contact
12	Output relay 4 N.C.	Normally Closed contact
13	Ground	Ground reference, typically connected to the negative connection of Standby Input, when using the 12-VDC or 24-VDC power supply.
14	12VDC	Standby input 12-VDC supply current limited to 20 mA
15	24VDC	Standby input 24-VDC supply current limited to 20 mA
16	Standby Input +	Positive connection used for Standby Input
17	Standby Input -	Negative connection used for Standby Input. Typically connected to ground.

Output Relays

Four output relay connections are available. These relays can be configured, through the user interface, to various alarms detecting normal or abnormal conditions.

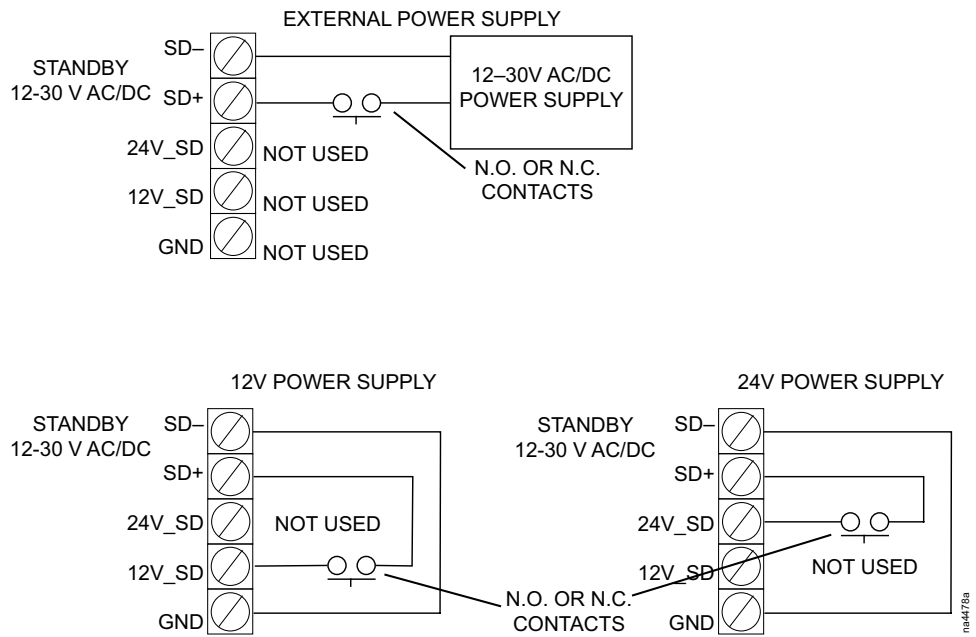
Output relays are Form C type, having a Normally Open (N.O.), Normally Closed (N.C.), and Common (COM) contacts.

NOTE: Output relays are rated at 24 VDC, 6 A maximum.

Standby Input

Standby input allows the cooling unit to be remotely placed in backup mode. Backup mode is configured through the user interface and can be set as a normally “active” or “not active” input.

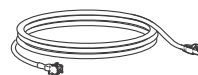
NOTE: Standby Input is rated at 12-/24-V AC or DC. If using field supplied voltage, the Standby Input consumes 10 mA maximum at 24 VDC:



*Normally open contacts shown.

Leak Detector—Optional

The leak rope detector (NBES0308) connects to a universal sensor port connection using the supplied cable in the leak detector kit. Route the leak detector cable through one of the low voltage wiring openings.



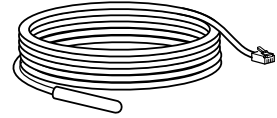
NOTE: The total length of the rope leak sensor can be extended up to 24.4 m (80 ft) using a Rope Leak Sensor Extension kit (NBES0309).



See the documentation supplied with the kit for installation information.

Rack Air Temperature Sensors

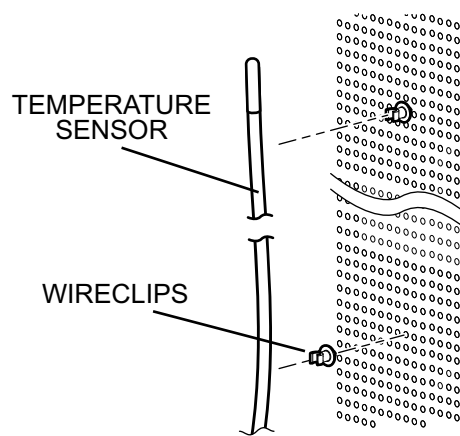
The rack air temperature sensors control unit airflow and ensure an adequate supply of cooling air to the server racks in the data center. The unit is supplied with three external rack temperature sensors. These sensors are attached on the unit front door.



Installation

NOTE: Rack temperature sensor installation is not required if the equipment operates in Rack Air Containment System (RACS) or Hot Aisle Containment System (HACS) mode. The Uniflair InRow configuration requires temperature sensor installation.

1. Route the sensor through either the top or the bottom of the adjacent server rack.
2. Secure the temperature sensor cable to the front door of the adjacent server rack at multiple locations using the provided wire clips as shown.

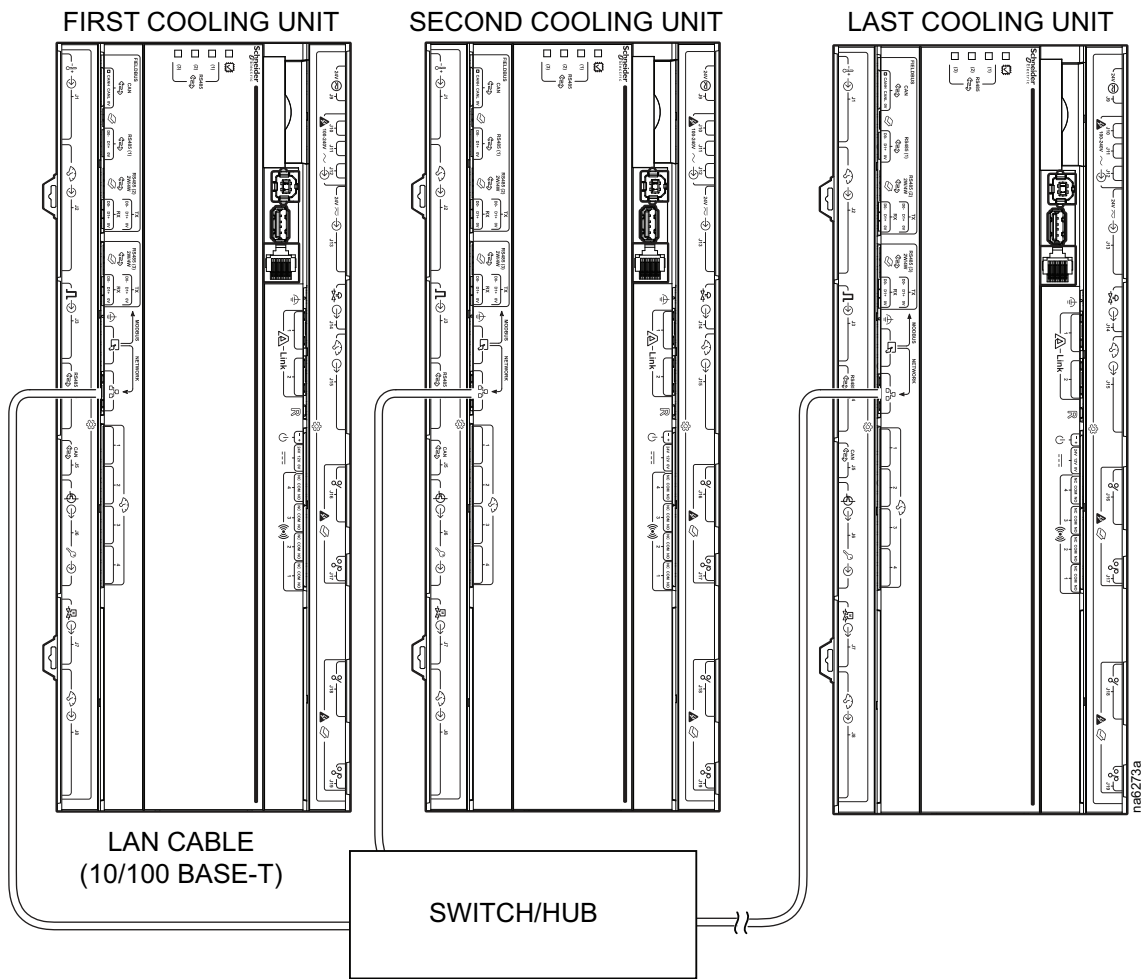


NOTE: Remote rack sensors must be installed for proper operation.

The sensors should be located on racks that are adjacent to the cooling unit. The optimum position of the rack temperature sensors will vary from installation to installation but should be located in close proximity to fan-cooled IT equipment to ensure accurate readings. Servers most likely to have insufficient or inadequately cooled cooling air due to the recirculation of hot air from the hot aisle include:

- Servers positioned at the top of a rack
- Servers positioned at any height in the last rack at an open end of a row
- Servers positioned behind flow-impairing obstacles such as building elements
- Servers positioned in a bank of high-density racks
- Servers positioned next to racks with Air Removal Units (ARU)
- Servers positioned very far from the equipment
- Servers positioned very close to the equipment

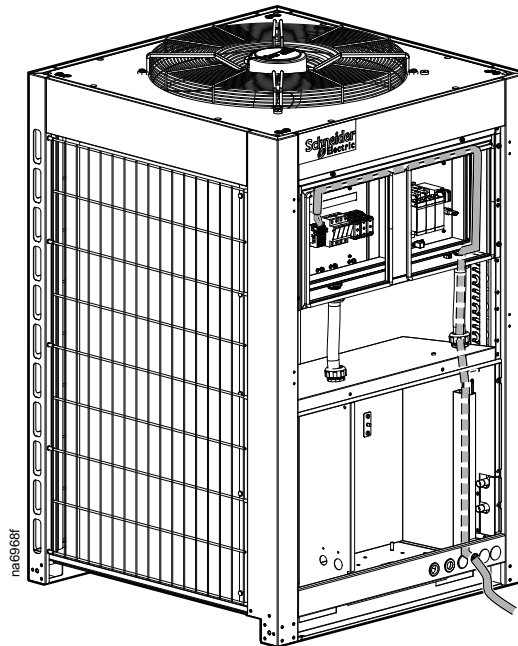
Network Connection



Outdoor Unit Connection

Remove the cover plate and route the signal cable through the unit as shown below:

NOTE: Some components not shown for easier viewing.

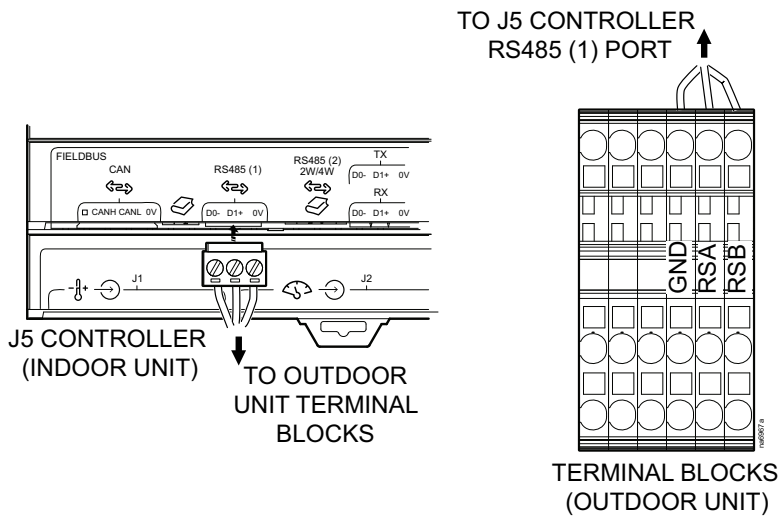


NOTE: Routing of the signal cable in the indoor unit is left to the discretion of the installer. The signal cable located outside the building requires a conduit to protect the cable. The cable protection must conform to local regulations.

NOTE: Do not connect shield to GND. This GND connection is for the communication ground.

Indoor Unit J5 Controller	Outdoor Unit Terminal Blocks
---------------------------	------------------------------

- | | |
|--------|-----|
| 0 V to | GND |
| D1+ to | RSB |
| D0- to | RSA |



Charging the Refrigeration System

Calculating R410A Refrigerant Charge

Model	Nominal Charge
ACRD301x	11.3 kg (24.9 lb)
ACRD301x with Low Temp Kit	29.3 kg (64.6 lb)

The total system charge has to be adjusted based on the liquid line length as shown in the table below.

ACR Tube Sizing – in.	Wall Thickness – mm	Cross-Section – mm ²	Refrigerant Charge – kg/m (lb/ft)
1/2	0.89	94	0.094 (0.063)
5/8	1.02	150	0.151 (0.101)
3/4	1.07	224	0.226 (0.151)
7/8	1.14	312	0.314 (0.211)

Refrigerant Charging Process

R410A is a mixed refrigerant. When charging this equipment with mixed refrigerant, only liquid refrigerant must be used.

NOTE: The equipment must be charged only with R410A refrigerant. The installing contractor is responsible for providing sufficient refrigerant for a complete system charge during start-up.



See Component Identification, page 17 for the location of service ports.

1. Pressurize the system to 17.2 bar (250 PSI) with nitrogen (use the service and discharge ports). Leave the system pressurized for 24 hours then check the gauges for a drop in pressure.
2. Use a vacuum pump and pull the first vacuum down to 750 microns (use the vacuum ports on the connection piping). The initial pull-down can take up to 24 hours.
3. Once the vacuum level has reached 750 microns, close the manifold gauge valves and turn off the vacuum pump. Wait for one hour (the vacuum should not rise above 1500 microns) and then break the vacuum with nitrogen gas (use the service and discharge ports) until the system pressure equals atmospheric pressure.
4. Pull a final vacuum down to 300 microns for a minimum of two hours.
5. Charge with liquid R410A refrigerant through the service port and needle valve on the condenser until the pressure equalizes with the refrigerant canister.
6. Open the ball valves and start the system. Charge the refrigerant slowly through the suction.

Compressor Oil Charge

Oil Charging Procedure

⚠ WARNING

HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified and trained personnel.

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

NOTICE

DAMAGE TO EQUIPMENT

Do not charge the compressor with too much oil: compressor damage could result. The only way to drain oil from the compressor is to remove the compressor from the equipment. The following system damage could also occur:

- Failure of valves and pistons due to oil slugging.
- Excessive oil carryover.
- Loss of evaporator performance due to oil level build-up in the low-pressure side of the system.

Failure to follow these instructions can result in equipment damage.

The system must be field-charged with 600 ml (20 oz) of PVE oil to make sure the system functions normally.

In installations with good oil return and line runs up to 15 m (49 ft), no additional oil above the initial 600 ml (20 oz) of oil is required. If the installation lines exceed 15 m (49 ft), additional oil may be needed. 1% or 2% of the total system refrigerant charge can be used to calculate the required oil. Regardless, the oil charge has to be adjusted based on the oil level in the compressor sight glass: the oil level must be no lower than 1/3 in the sight glass when the compressor is running.

Use the following oil type:

- PVE (Daphne Hermetic Oil FVC32D)

Use the following calculations to get the total charge amount:

- **Metric**

Total oil charge in ml = 600 ml + (charge in kg) * 0.02 * 1000

◦ Example: Charge = 25 kg

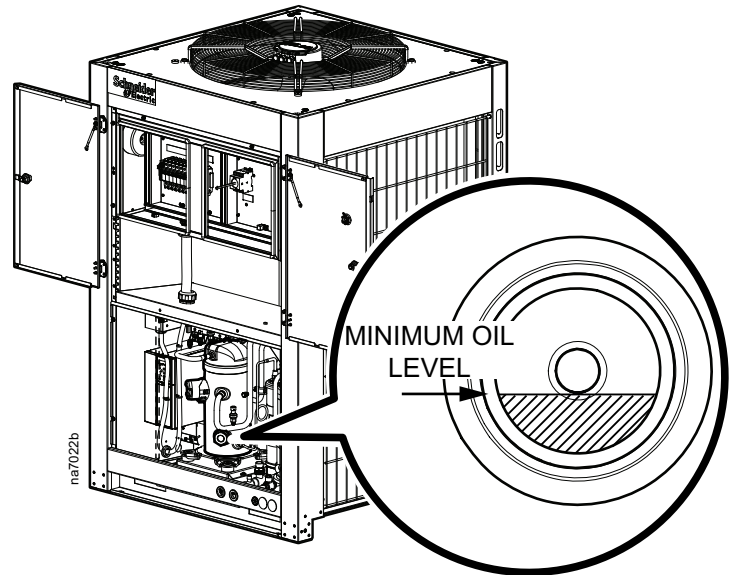
$$600 \text{ ml} + (25 * 0.02 * 1000) = 600 + 500 = \mathbf{1100 \text{ ml}}$$

- **US Standard**

Total oil charge in oz = 20 oz + [(charge in lb)/2.2046] * 0.02 * 33.8

◦ Example: Charge = 55.1 lb

$$20 \text{ oz} + (55.1/2.2046) * 0.02 * 33.8 = 20 + (25 * 0.02 * 33.8) = 20 + 16.9 = \mathbf{36.9 \text{ oz}}$$



1. Prepare to add oil:
 - a. Use a new sealed oil can and a manual oil pump. The pump hose must be sized for 1/4 in. flare fittings and must include a valve depressor at its end, which will open the valve on the suction port of the compressor.
 - b. Use Daphne Hermetic PVE Oil FVC32D. Any other oil must be approved by Schneider Electric before using.
2. Purge the pump and hose
 - a. Ensure that the oil pump is clean. Insert the pump in the oil container and make sure that the container is open to the atmosphere for as short a period of time as possible. When available, use a plug adapter kit to further reduce the exposure of the oil to the atmosphere.
 - b. Bleed all air from the pump and hose with a few strokes of the pump. Purging the pump removes the moisture-saturated oil left inside the hose from previous usage.
 - c. Connect the hose to the suction port of the compressor immediately after purging to avoid moisture contamination.
3. While the equipment is running, charge 600 ml (20 oz) PVE oil through the suction port. Pump the oil very slowly. (This is to ensure the oil separator is functioning properly.)
4. Other than the amount required for the oil separator, no additional oil should be required. Let the compressor run at full capacity for at least one hour and check the oil level in the oil sight glass. The level should be between 1/3 and 2/3 full, or within the limit shown on the oil level sticker. If the oil is not within the acceptable limit, check the oil return line for restrictions. When oil is flowing properly, the oil return line should feel warm to the touch.

NOTE: Dispose of the oil waste appropriately.

Worldwide Customer Support

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 esupport.
- Contact the Schneider Electric Customer Support Center by telephone or e-mail.
Local, country-specific centers: go to www.schneider-electric.com/support/contact **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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