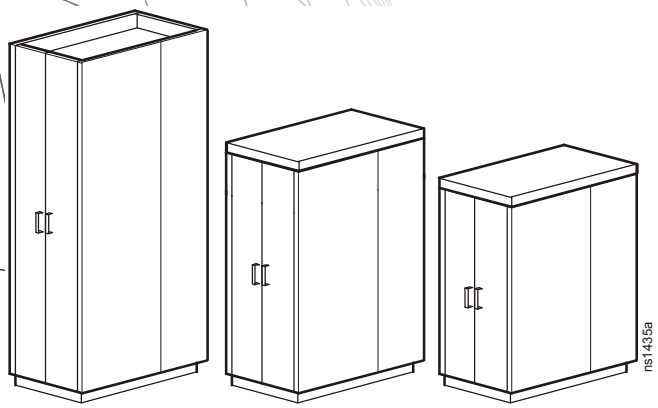
APC
by Schneider Electric

Unpacking, Installation, and Customization

NetShelter® CX Enclosures



This manual is available in English on the APC Web site (www.apc.com).

Dieses Handbuch ist in Deutsch auf der APC Webseite (www.apc.com) verfügbar.

Este manual está disponible en español en la página web de APC (www.apc.com).

Ce manuel est disponible en français sur le site internet d'APC (www.apc.com).

Questo manuale è disponibile in italiano sul sito web di APC (www.apc.com).

本マニュアル＜各国の言語に対応する＞はAPC ウェブサイト(www.apc.com)からダウンロードできます。

Instrukcja obs³ugi w jêzyku polskim jest dostêpna na stronie internetowej APC (www.apc.com).

Este manual está disponível em português no site da APC (www.apc.com).

Данное руководство на русском языке доступно на сайте APC (www.apc.com)

Bu kullanim klavuzunun Türkçesi APC web sayfasinda (www.apc.com) mevcuttur.

在 APC 公司的网站上（www.apc.com）有本手册的中文版。

Contents

Product Overview 1

Description 1
NetShelter CX Enclosures 1

Product Inventory 2

Components of the enclosure 2

Before Installation 3

Tools 3

Other tools required (not provided) 3

Unpacking 4

Unpacking the enclosure 4
Please recycle 6
Disclaimer 6
Verify the inventory 6
Moving the enclosure 7

Configuration 7

Removing and Installing the Side Panels 8

Removing the side panels 8
Installing the side panels 8

Removing and Installing the Doors 9

Removing the doors 9
Installing the doors 9

Installation 10

Installation and Setup 10

Leveling the enclosure and installing bottom trim 10
Installing the door handles 10
Installing the rear cable port 11
Rack stabilization options 12

Removing and Installing Fan Modules 13

Removing the fan module 13
Installing the fan module 13

Rack PDU 14
AP9567 - North American 14
AP9568 - International 14
Specifications 14
Electrical 14
Vertical Mounting Flanges 15
Adjusting the vertical mounting flanges on the side braces 16
Installing Equipment 17
Identifying one U-space on the vertical mounting flange 17
Installing cage nuts 17
Removing cage nuts 17
Equipment Planning Guidelines 18
Cable Management 19
Rear cable access port 19
Vertical 0U accessory channels 19
Cable management options for 600-mm and 750-mm enclosures 20
Specifications 23
750-mm, 18, 24, 38-U Enclosures 23
Dimensions 24
Enclosure dimensions internal 24
Enclosure dimensions top 25
External enclosure dimensions 26
Two-Year Factory Warranty 27
Terms of warranty 27
Non-transferable warranty 27
Exclusions 27
Warranty claims 28

Product Overview

Description

The APC by Schneider Electric NetShelter® CX enclosures are specialized enclosures with integrated cooling, noise dampening, and power distribution for server and network applications in office environments. The enclosures provide storage for industry-standard (EIA-310), 19-inch rack-mount hardware, which includes servers, voice, data, networking, internetworking, and APC power protection equipment.

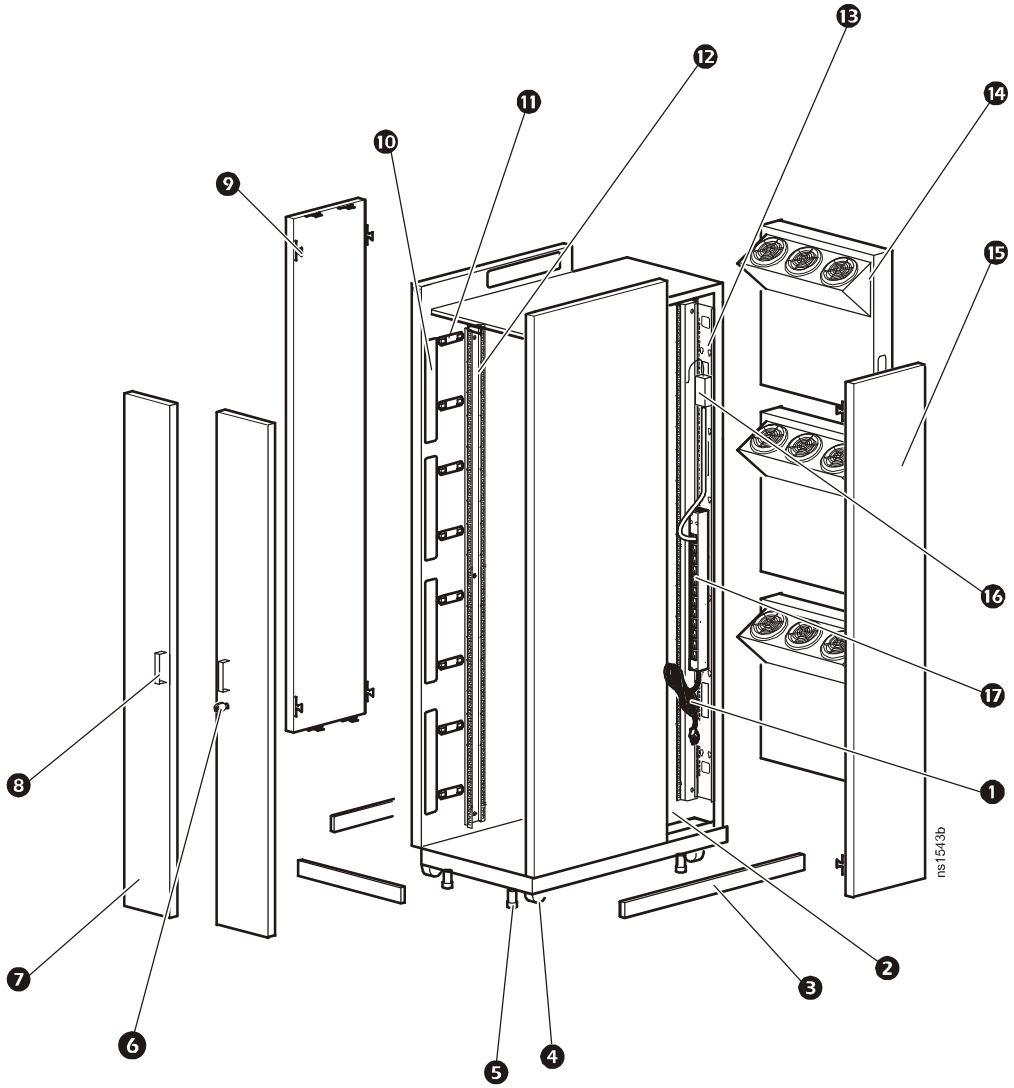
NetShelter CX Enclosures

Model	Availability	Rack Mounting Height	Rack Mounting Width	External Enclosure Width	Enclosure Depth
AR4018	North America	18 U†	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4018I	International	18 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4024	North America	24 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4024I	International	24 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4038	North America	38 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4038I	International	38 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)

†One U= 44.45 mm (1.75 in). See “Identifying one U-space on the vertical mounting flange” on page 17.

Product Inventory

Components of the enclosure



❶ Rack Power Distribution Unit (PDU) power cord †

❷ Rear cable access port

❸ Bottom trim†

❹ Caster

❺ Leveling foot†

❻ Key†

❼ Front door

❽ Door handle†

❾ Attachment clip

❿ Airflow opening

⓫ Vertical cable management clips‡

⓬ Vertical mounting flange

⓭ Rear vertical 0U accessory channel

⓮ Fan module

⓯ Side panel

⓰ Fan module power supply

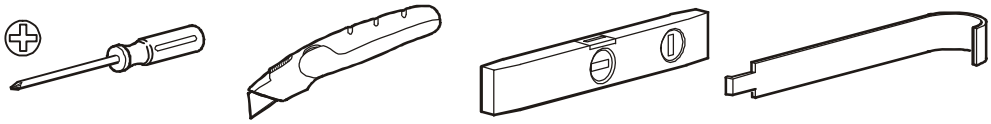
⓱ Basic Rack PDU

† The bottom trim, leveling feet, front door key, door handles, and rack PDU power cord are not installed and can be found inside the enclosure.
‡ Vertical cable management clips are available only on AR4038 and AR4038I. All other enclosures have a vertical 0U accessory channel in the front of the enclosure.

Before Installation

Tools

Other tools required (not provided)



Phillips screwdriver | Utility knife | Level | Cage nut tool

Unpacking

Unpacking the enclosure

Heavy: Use at least two people to unpack the enclosure.

Warning: To prevent the enclosure from tipping over after installation:

• Stabilize the enclosure before installing the components. See "Installing the rear cable port" on page 11.

• Do not extend components on sliding rails out from the enclosure until you have installed three or more pieces of similar equipment, or the stabilizer plate or bolt-down brackets are installed. See "Installing the rear cable port" on page 11.

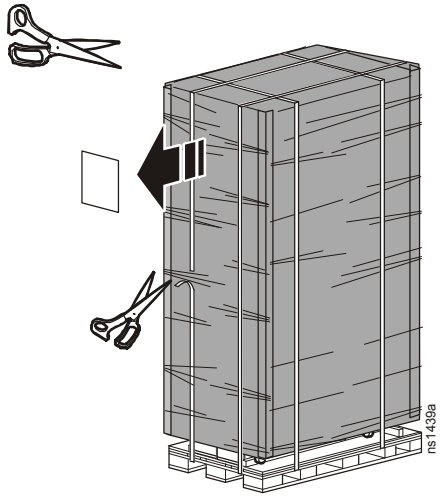
• Do not extend more than one component from the enclosure at a time.

• Load the heaviest components first, and place them toward the bottom of the enclosure to prevent the enclosure from becoming top-heavy.

• Use caution when moving an empty enclosure on its casters; the enclosure may be unstable when pushed or pulled from the side. Push the enclosure from the front or back when moving it on its casters. For extra stability, load 158 kg (350 lbs) of equipment into the bottom of the enclosure before moving it on its casters.

1. Move the shipping pallet to a firm, level surface in an open area. Inspect the enclosure for visible signs of shipping damage. If you detect shipping damage, contact APC Customer Support at the number listed on the yellow label on the front of the enclosure or on the back cover of this manual.
2. See the label on the packaging to determine where to cut the wrapping. Using sturdy shears or a utility knife, carefully remove the plastic stretch wrap surrounding the enclosure.

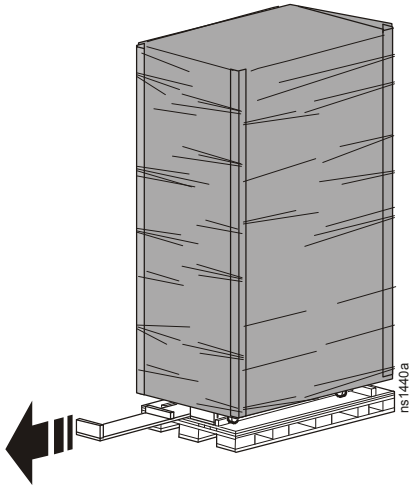
Note: Save the bag containing the warranty card and installation manual.



3. See the label on the packaging to determine where to cut the wrapping. Using sturdy shears or a utility knife, carefully remove the plastic stretch wrap surrounding the enclosure.

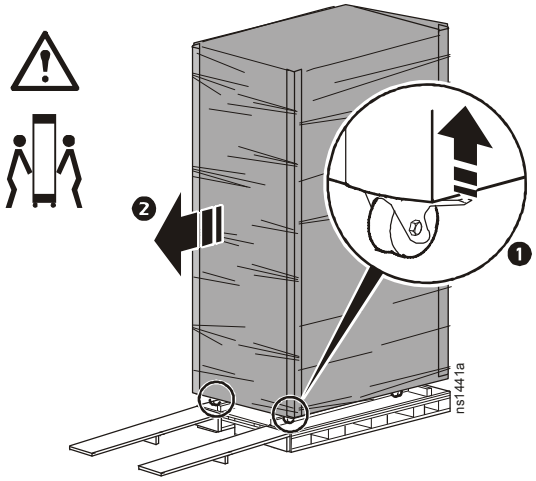
Note: Save the bag containing the warranty card and installation manual.

4. Remove the ramps from underneath the enclosure and place them in front of the pallet.

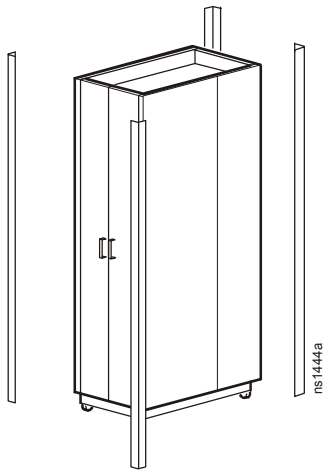


5. Unlock the casters and roll the enclosure off of the pallet.

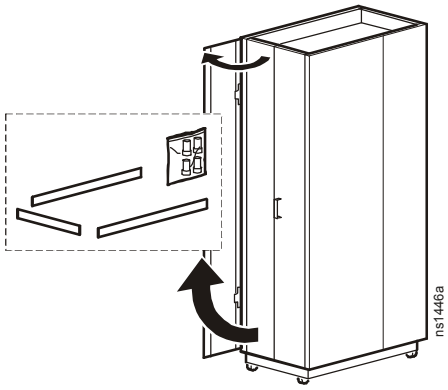
Note: Save the pallet if you plan to reship the enclosure.



6. Remove the four corners protectors.



7. Remove the packaged contents from within the enclosure.



Please recycle

The shipping materials are recyclable. Save them for later use, or dispose of them appropriately.

Disclaimer

APC is not responsible for damage sustained during reshipment of this product.

Verify the inventory

After unpacking the enclosure, verify that all required components and hardware have been shipped with the enclosure. See “Product Inventory” on page 2 for a list of components.

Note: If any items are missing, contact APC Customer Support at a number on the back cover of this manual, or at the APC Web site, **www.apc.com**.

Moving the enclosure

Casters. The total load on the casters may not exceed 450 kg (992 lbs).

For the weights see the enclosure “Specifications” on page 14.

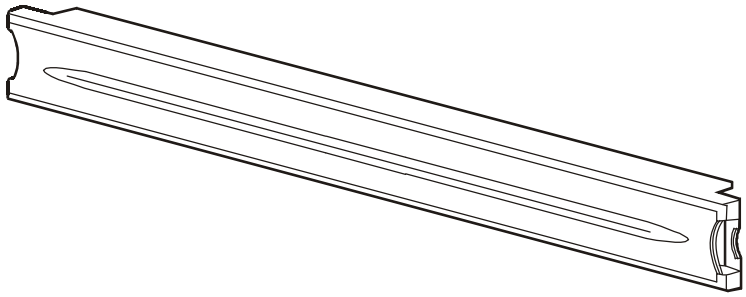
The front wheels have 360 degree rotation for maneuverability. Rear wheels have front-to-back motion for stability. Push the enclosure from the front or the back, not the sides; it may be unstable when pushed from the side. For greater stability, load 159 kg (350 lbs) or more of equipment into the enclosure before moving it on its casters.

Configuration

Before installing the enclosure, plan the location and space needed to install equipment, and plan the ergonomics of keyboards and video monitors.

Caution: Improper airflow could damage installed components.

To maintain proper airflow, cover any empty vertical enclosure space with blanking panels (not included). APC offers modular, plastic Airflow Management Blanking Panels that snap into place without tools (AR8136BLK).

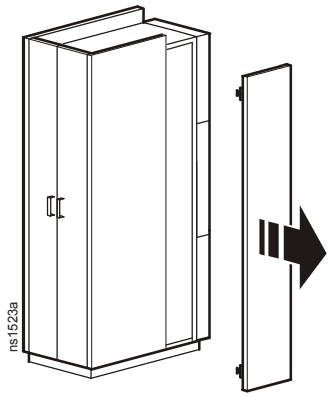


Removing and Installing the Side Panels

Remove the side panels to access the interior. Side panels offer additional security and assist with proper airflow within the enclosure.

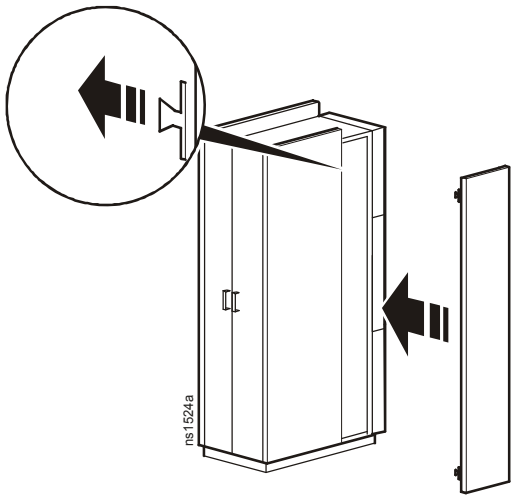
Removing the side panels

1. Pull the top rear corner of the panel from the enclosure clip.
2. Pull the top front corner of the panel.
3. Moving your hands down the panel, remove the remaining clips.



Installing the side panels

1. Engage the bottom of the panel with the bottom clips and push into place.
2. Move up the panel pushing the panel into the clips on the enclosure.
3. Push the top of the panel into the top enclosure clips.



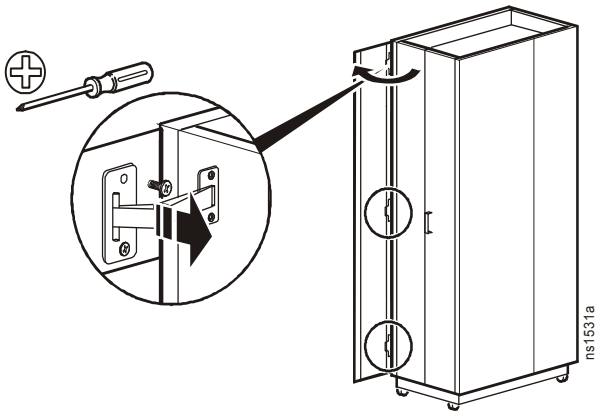
Removing and Installing the Doors

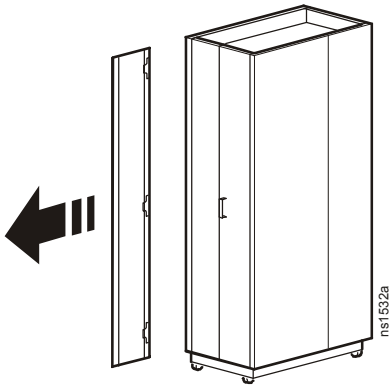
Warning: To avoid personal injury or damage to the enclosure, one person should support the door while another person removes the door from its frame.

Removing the doors

You can remove the front doors of the enclosure to gain better access to the equipment.

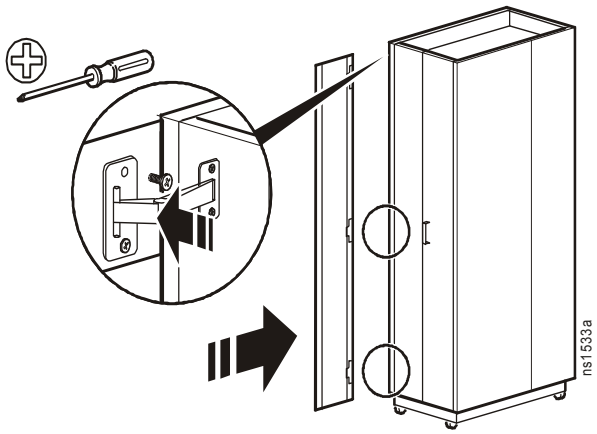
1. Remove the two screws holding each hinge to the door.
2. Close the door gently and, as it closes, remove the door from the enclosure hinges.





Installing the doors

1. Pull the hinges open.
2. Align the hinge holes on the new door with the hinges on the enclosure and push them together.
3. Install the screws in the hinges.



Installation

Installation and Setup

Warning: For extra stability in AR4038 and AR4038I enclosures, load 158 kg (350 lbs) of equipment into the bottom of the enclosure before moving it on its casters.

Note: The bottom trim, leveling feet, and door handles are packaged together and placed in the enclosure.

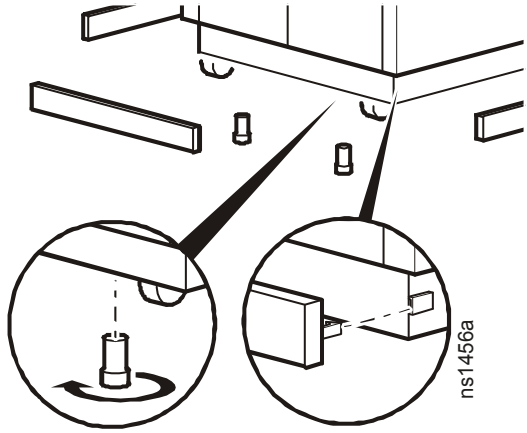
Leveling the enclosure and installing bottom trim

Level the enclosure before installing equipment.

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

1. Move the enclosure to a level location.
2. For each leveling foot turn the leveling foot clockwise to extend the leveling foot until it makes firm contact with the floor.
3. Install the front and side bottom trim.

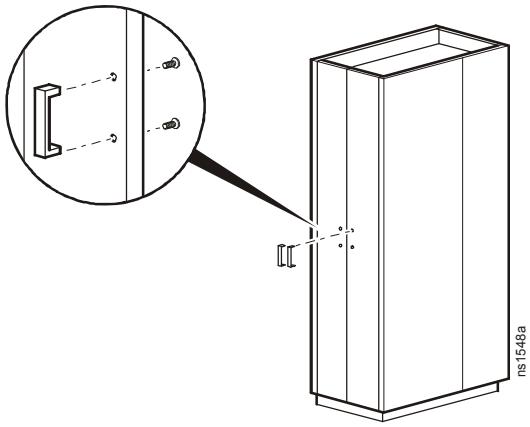
The enclosure can be leveled after equipment has been installed. Turn the leveling foot clockwise to extend the leveling foot until it makes firm contact with the floor.



Installing the door handles

The front door handles are provided with the enclosure but are not installed.

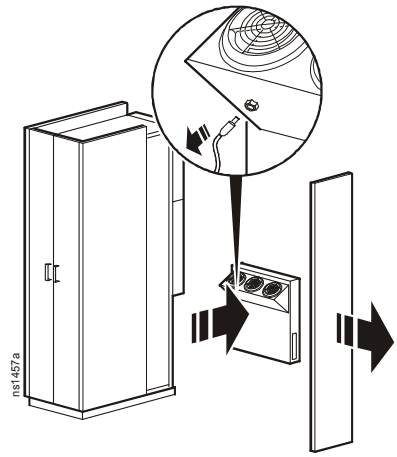
1. Open the enclosure doors.
2. Install the door handle using the screws provided.



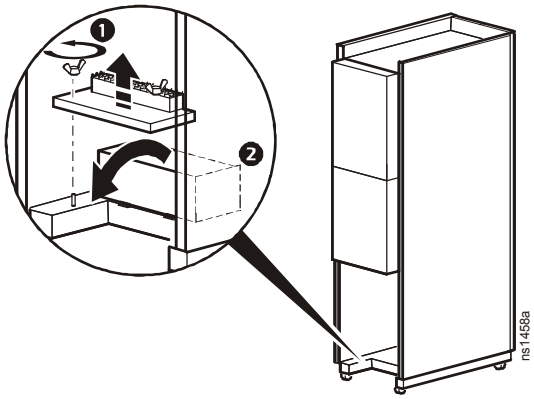
Installing the rear cable port

1. Remove the side panel and lower fan module.

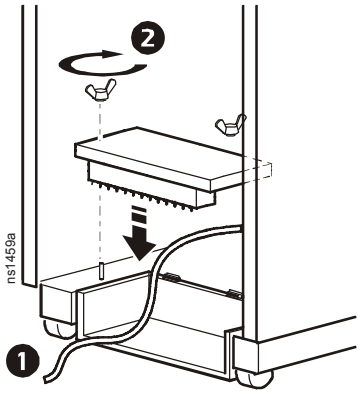
See “Removing and Installing the Side Panels” on page 8 and “Removing and Installing Fan Modules” on page 13.



2. Remove the butterfly fasteners from the cable port cover and remove the cover.
3. Tilt the cable port away from the inside of the enclosure and into position.

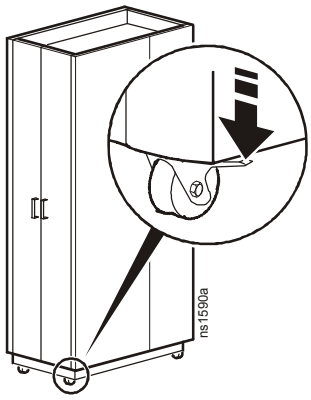


4. Install your cabling.
5. To reinstall the cable port and properly seal the cables and soundproof the enclosure, turn the cable port cover over and reinstall with the butterfly fasteners.



Rack stabilization options

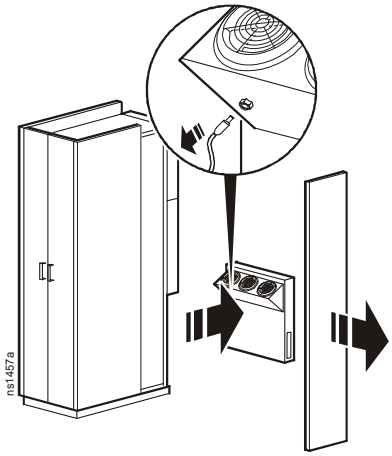
Lock the casters for additional stabilization.



Removing and Installing Fan Modules

Removing the fan module

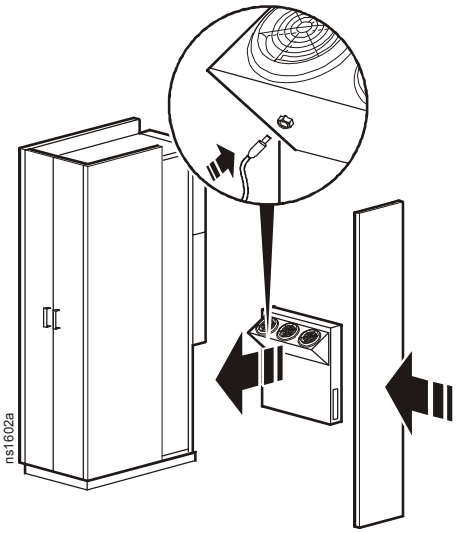
1. Remove the fan module from the enclosure clips by pulling directly away from the rear of the enclosure and hold the fan module in place.



2. Disconnect the fan module power supply plug from the fan module.

Installing the fan module

1. Connect the fan module power supply plug to the fan module.
2. Align the fan module with the enclosure clips and push the fan module back into place, firmly ensuring all edges are pushed against the enclosure.



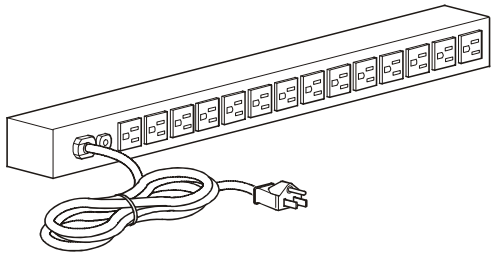
Rack PDU

The NetShelter CX Enclosure is provided with one Basic Rack PDU. The Rack PDU distributes power to devices in the enclosure.

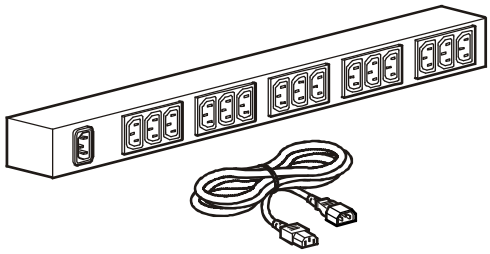
AP9567 - North American

Outlets. The Rack PDU has fourteen (14) NEMA 5015R outlets.

Power cord. The 12-foot (3.66-meter) power cord terminates with a NEMA 5-15P plug.



AP9568 - International



Outlets. The Rack PDU has fifteen (15) IEC-320-C13 outlets.

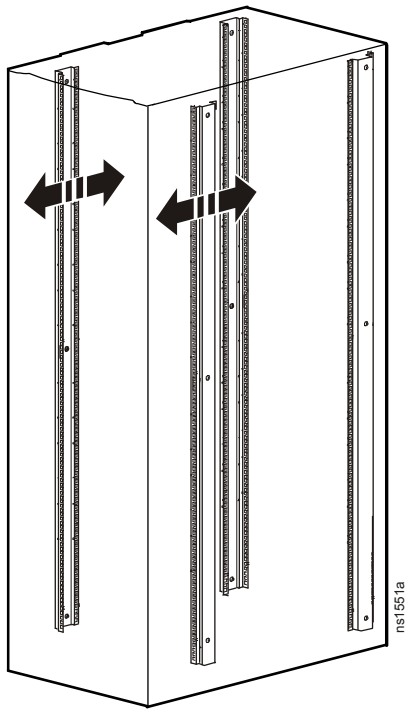
Power cord. The 6.5-foot (1.98-meter) power cord terminates with a IEC-320-C14 plug.

Specifications

Electrical	**AP9567**	**AP9568**
Input connector	NEMA 5-15P	IEC-320-C14 inlet
Output connectors	(14) NEMA 5-15R outlets	(15) IEC-320-C13 outlets
Nominal input voltage	100-120 VAC	120-240 VAC
Acceptable input voltage	± 10% of nominal voltage	
Input frequency	50/60 Hz	

Vertical Mounting Flanges

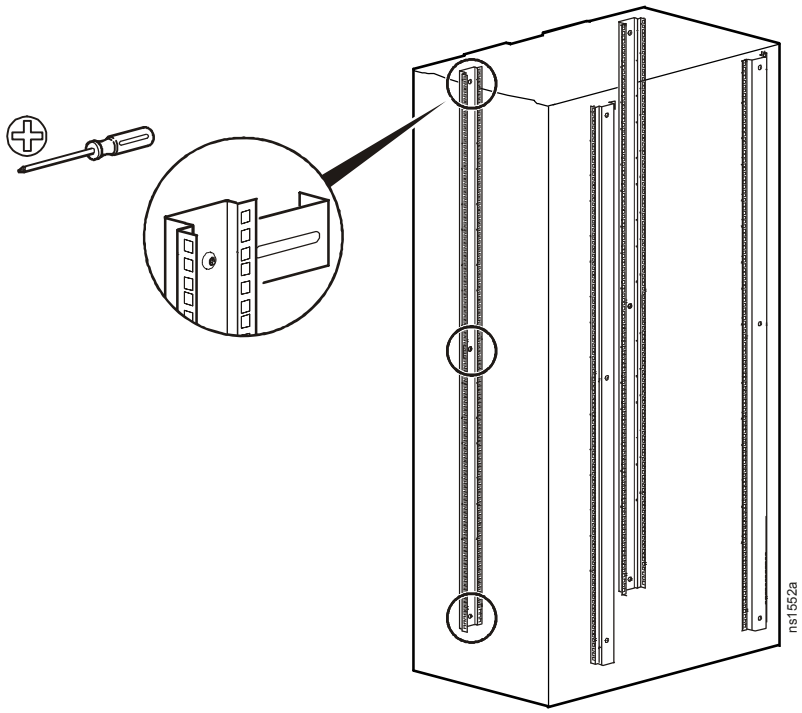
Vertical mounting flanges come factory-installed on the enclosure in the proper position for use with rack-mountable equipment that has a depth of 800 mm (31.5 in). The front mounting flanges are adjustable towards the front or the rear of the enclosure to accommodate different rails or equipment with other depths. The flanges can be adjusted to be as close as 724 mm (28.5 in) or as far as 800 mm (31.5 in) apart.



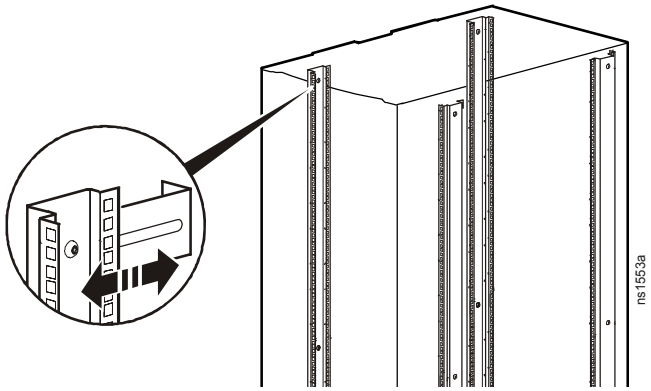
Adjusting the vertical mounting flanges on the side braces

Warning: To avoid personal injury or damage to the enclosure, perform this procedure without any equipment installed on the mounting flanges.

1. Use a Phillips screwdriver (not provided) to loosen—but not remove—the screws in the vertical mounting flange.



2. Move the vertical mounting flange to the desired location and tighten the screws.

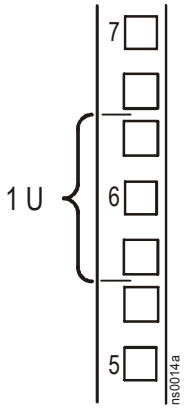


Installing Equipment

This section provides information on how to install rack-mount equipment in the enclosure. The instructions provided with the equipment provide more detailed information.

Identifying one U-space on the vertical mounting flange

When installing equipment, locate the top and bottom of a U-space on the mounting flanges. Every third hole on the mounting flanges of a NetShelter enclosure is numbered to indicate the middle of a U-space. A U-space consists of one of these numbered holes and one hole directly above and below it, as shown.



Installing cage nuts

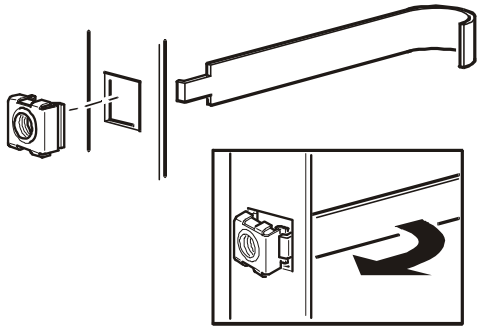
APC offers a cage nut hardware kit (AR8100) for use with square holes.

Warning: Install cage nuts horizontally, with the ears engaging the sides of the square hole. Do NOT install cage nuts vertically with the ears engaging the top and bottom of the square hole.

1. Insert the cage nut into the square hole by hooking one ear of the cage nut assembly through the far side of the hole.

Note: Install the cage nuts on the interior of the vertical mounting flange.

2. Place the cage nut tool (not provided) on the other side of the cage nut and pull to snap it into position.



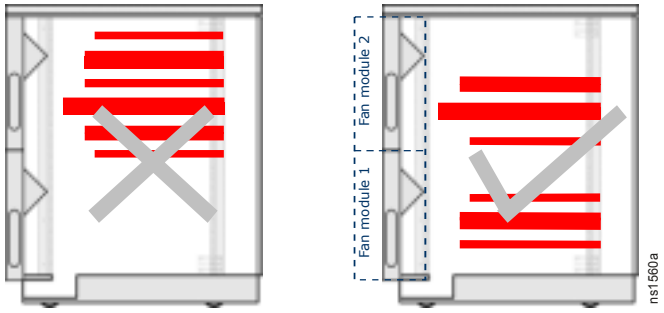
Removing cage nuts

1. Remove any attached screw.
2. Grasp the cage nut and squeeze the sides to release it from the square hole.

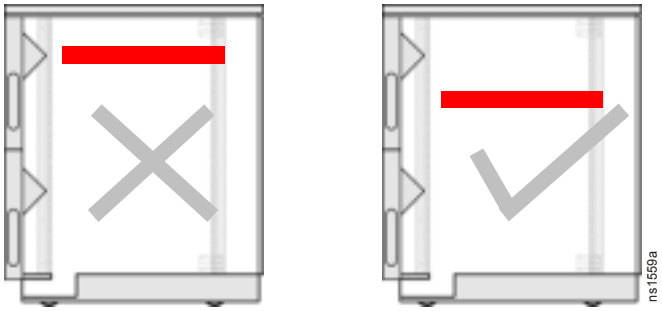
Equipment Planning Guidelines

Please note the following guidelines for proper installation and operation of hardware in a NetShelter CX Enclosure.

Avoid clustering hot-running equipment such as servers, dense redundant arrays of independent disks (RAID), and large voice-over-internet-protocol (VOIP) switches in one part of the enclosure. Distribute the thermal load evenly up and down the enclosure such that each fan module supports an equal amount of the thermal load.



Each fan module has a triangular metal section protruding slightly into the enclosure. This does not create an issue for installation of most equipment, but to allow for ample cabling space to the rear of the enclosure, deep servers should be installed in the enclosure space above and below these triangular metal protrusions.



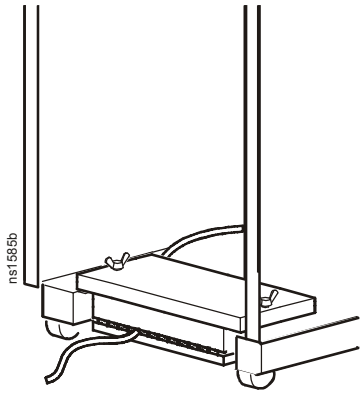
Cable Management

The NetShelter CX enclosure has a cable access opening at the rear the enclosure. Six vertical 0U accessory channels are factory installed in the AR4018, AR4018I, AR4024, AR4024I and four in AR4038 and AR4038I enclosures. Also provided in the front of AR4038 and AR4038I enclosures are vertical cable management clips in place of an accessory channel. APC offers a variety of other cable management accessories.

Rear cable access port

The cable port is large enough to accommodate several hundred ethernet cables and has a removable top cover. The design is such that pre-terminated data distribution panels can be installed effortlessly, with no need for de-termination and re-termination.

To install or remove the rear cable access port see "Installing the rear cable port" on page 11.

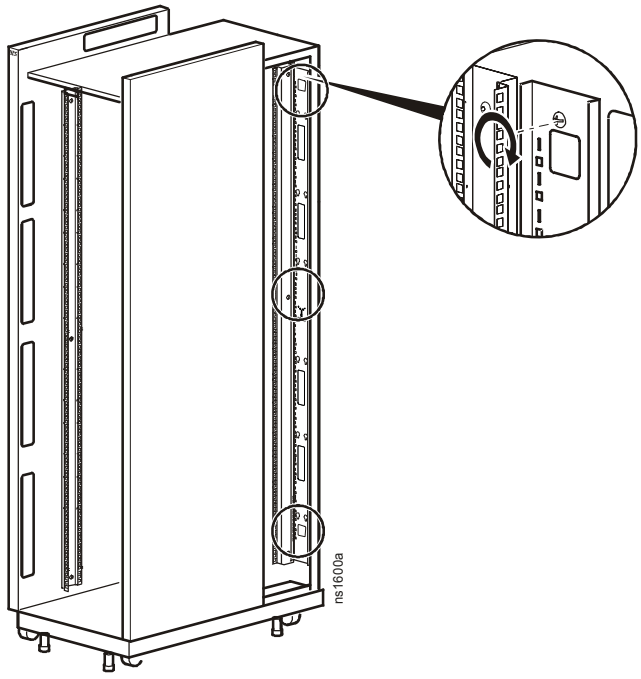


Vertical 0U accessory channels

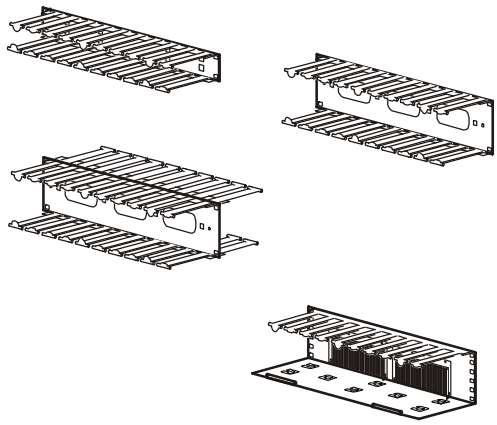
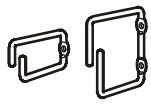
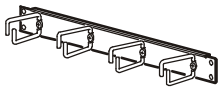
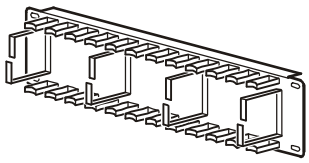
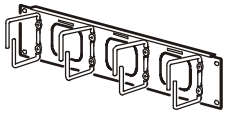
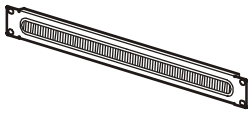
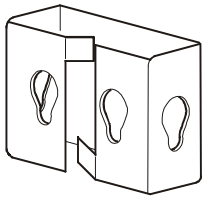
The vertical 0U accessory channels provide toolless mounting capabilities for APC Rack Power Distribution Units, APC cable containment brackets, and tie-off locations for cables. The standard position for the accessory channels is two located in the front of the enclosure and four in the rear of the enclosure.

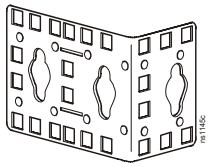
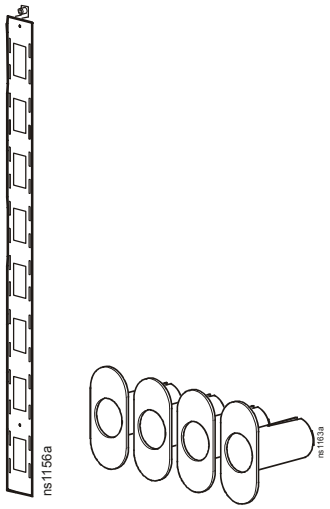
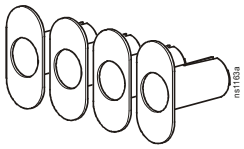
Removing vertical 0U accessory channels.

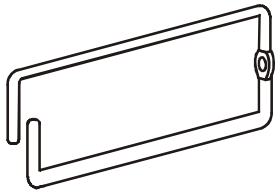
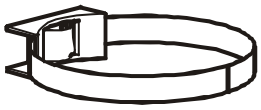
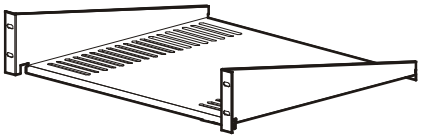
Vertical 0U accessory channels can be removed completely from the enclosure. Loosen the fasteners that attach the vertical 0U accessory to the enclosure.



Cable management options for 600-mm and 750-mm enclosures

Product	SKU	Description	Figure
19-inch horizontal cable organizers	AR8602 (1 U) AR8600 (2 U) AR8601 (2 U double sided) AR8603 (2 U high density)	Route patch cables horizontally at the front or rear of a 19-inch EIA enclosure.	
Cable management rings	AR8113A	Fastens cables to posts, mounting rails, or braces.	
19-inch horizontal cable organizer	AR8425A (1U) AR8426A (2U)	Routes cables horizontally on the front or back of the 19-inch EIA rack.	
19-inch 2-U patch cord organizer	AR8427A	Routes cables horizontally on the front or back of the 19-inch EIA rack.	
19-inch 2-U horizontal cable organizer pass-through	AR8428	Routes cables horizontally or front-to-rear.	
19-inch 1-U cable pass-through with brush strip	AR8429	Assists with containing air in the enclosure.	
Cable containment brackets	AR7710	Contains cables along the vertical 0U accessory channel and is installed without tools. Quantity of six.	

Product	SKU	Description	Figure
Zero-U accessory mounting bracket	AR7711	The bracket can be mounted in various locations throughout the enclosure for supporting small accessories and equipment.	
Vertical Cable Organizer for NetShelter 0-U Channel	AR8442	Eliminates cable stress by organizing cable layout within the rear channels of the enclosure. Takes up zero U of space within the enclosure. Consists of two pieces of equal size that, when connected, span the height of a 42-U enclosure. Can be used in any APC enclosure.	
Vertical fiber organizer and spools	AR8443A	The vertical fiber organizer and fiber organizer spools provide a method to manage fiber cabling within an enclosure and mount toollessly into the vertical 0U accessory channel of the enclosure. Quantity of two.	
Fiber organizer (spools only)	AR8444	Can be mounted toollessly to the vertical fiber organizer or attached with screws to the mounting rails of 750-mm wide enclosures.	

Product	SKU	Description	Figure
1-U cable ring	AR7707	Fastens cables to posts, for use with 750-mm enclosure networking applications.	
Toolless Hook-and-Loop Cable Managers	AR8621	A toolless mount hook-and-loop cable fastener for organizing data cable bundles. Various mounting positions are available on the back panel of a vertical cable organizer. Quantity of ten.	
Fixed-shelf 50-lb	AR8105BLK	Cantilever fixed shelf to enable the mounting of a monitor or other equipment into the rack environment or to allow cable pass-through from the front to rear of the enclosure.	

Dimensions

Enclosure dimensions internal

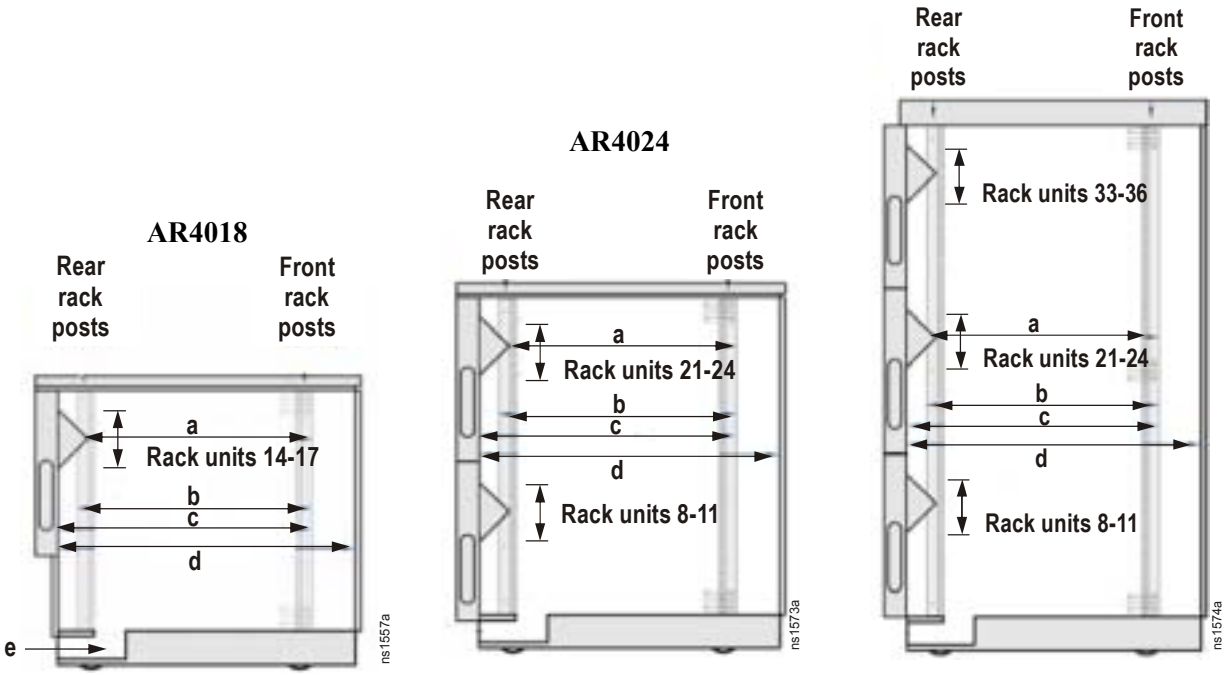
Note: Reduction in internal cabinet depth in some rack units due to triangular protrusion of fan modules.

Dimension key.

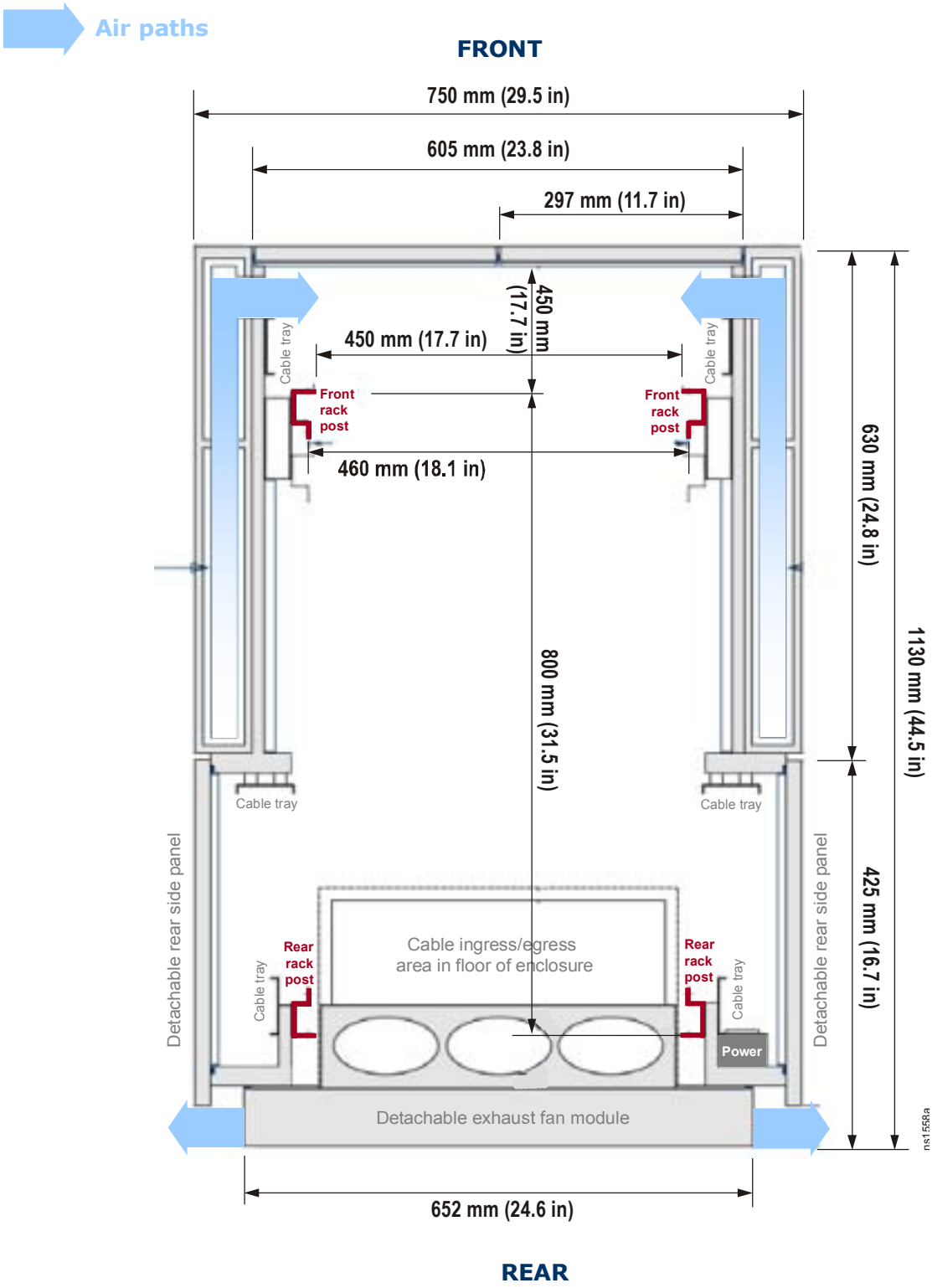
- a. 775 mm (30.5 in)
- b. 800 mm (31.5 in)
- c. 860 mm (33.5 in)
- d. 1010 mm (39.5 in)
- e. Indicates soundproofed cable entry/exit pathway.

Enclosure dimensions.

AR4038

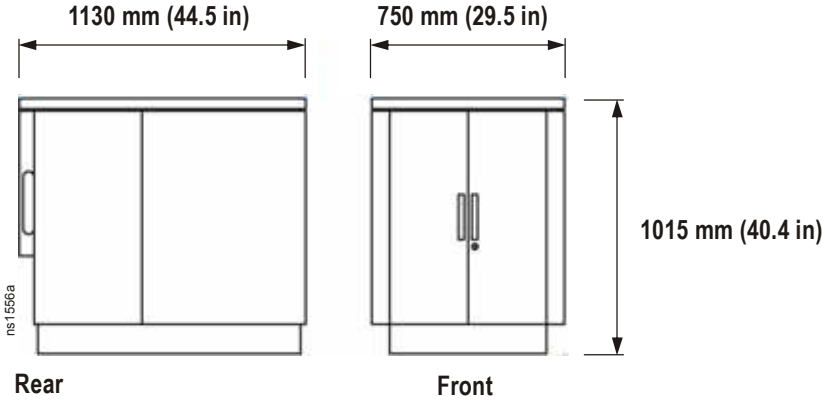


Enclosure dimensions top

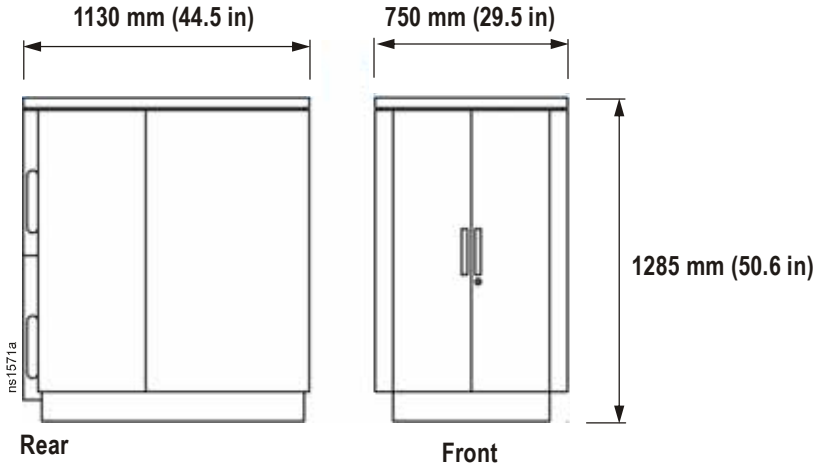


External enclosure dimensions

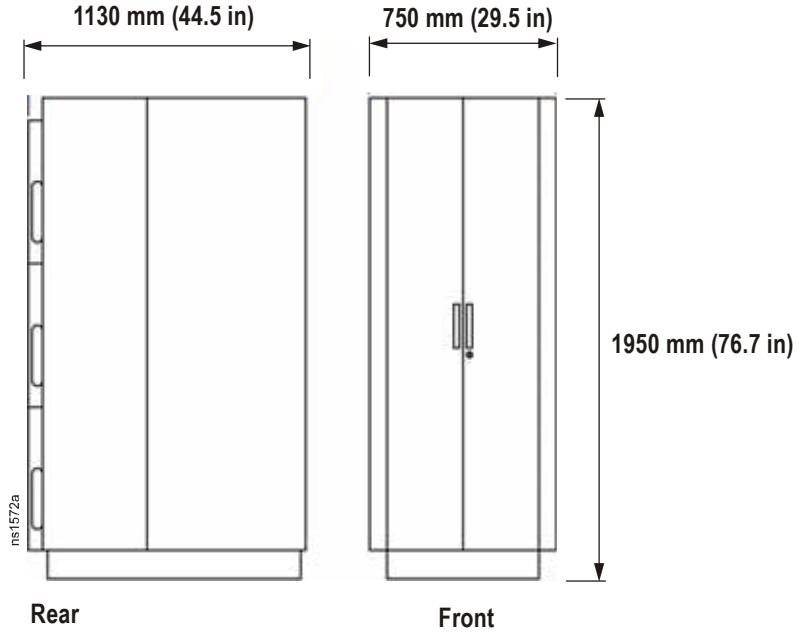
AR4018 and AR4018I.



AR4024 and AR4024I.



AR4038 and AR4038I.



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