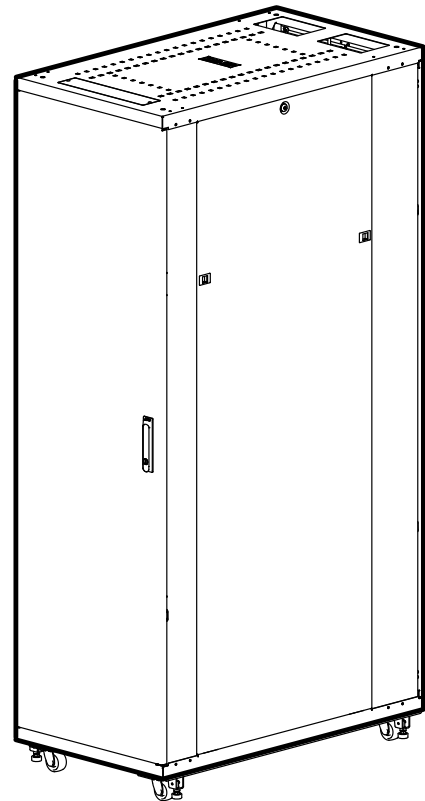


User Manual

NetShelter SV





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

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

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Instrukcja obsługi w języku polskim jest dostępna na stronie internetowej APC (www.apc.com).

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

Bu kullanım klavuzunun Türkçesi APC web sayfasında (www.apc.com) mevcuttur.

在 APC 公司的网站上 (www.apc.com) 有本手册的中文版。

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

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Please Note:

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. 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.

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General Information

Introduction

The NetShelter® SV cabinet is for storage of industry-standard (EIA/ECA-310), 19-inch rack-mount hardware, which includes servers and voice, data, networking, internetworking, and APC by Schneider Electric power protection equipment.

This manual provides installation and customization instructions for the following:

- NetShelter SV 42 U, 600 mm (23.6 in) wide, 1000 mm (39.4 in) deep cabinet (AR2200)
- NetShelter SV 42 U, 600 mm (23.6 in) wide, 1060 mm (41.7 in) deep cabinet (AR2400)
- NetShelter SV 42 U, 600 mm (23.6 in) wide, 1060 mm (41.7 in) deep cabinet without side panels (AR2401)
- NetShelter SV 42 U, 600 mm (23.6 in) wide, 1200 mm (47.2 in) deep cabinet (AR2500)
- NetShelter SV 42 U, 800 mm (31.5 in) wide, 1000 mm (39.4 in) deep cabinet (AR2280)
- NetShelter SV 42 U, 800 mm (31.5 in) wide, 1060 mm (41.7 in) deep cabinet (AR2480)
- NetShelter SV 42 U, 800 mm (31.5 in) wide, 1200 mm (47.2 in) deep cabinet (AR2580)
- NetShelter SV 48 U, 600 mm (23.6 in) wide, 1060 mm (41.7 in) deep cabinet (AR2407)
- NetShelter SV 48 U, 600 mm (23.6 in) wide, 1200 mm (47.2 in) deep cabinet (AR2507)
- NetShelter SV 48 U, 800 mm (31.5 in) wide, 1060 mm (41.7 in) deep cabinet (AR2487)
- NetShelter SV 48 U, 800 mm (31.5 in) wide, 1200 mm (47.2 in) deep cabinet (AR2587)

NOTICE

- NetShelter SV cabinets are intended for use with approved equipment. If you install other than approved equipment, fully evaluate the safety of your configuration.
- Use qualified personnel to install the cabinet.

Safety

Important Safety Information

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



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



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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, can result in moderate injury.

NOTICE

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

Receiving and Unpacking

NOTICE

APC by Schneider Electric is not responsible for damage sustained during shipment of this product.

Inspection

Upon receipt, inspect the package and contents for damage. Verify the contents are complete.

Report missing contents, damage, or other problems immediately to APC by Schneider Electric or your APC reseller. Keep all packaging for inspection if damage is found.

Please Recycle



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

Moving the Equipment

Recommended tools for moving the equipment while it is still on the pallet:

Pallet Jack



Forklift



Unpacking

⚠ WARNING

TIP HAZARD

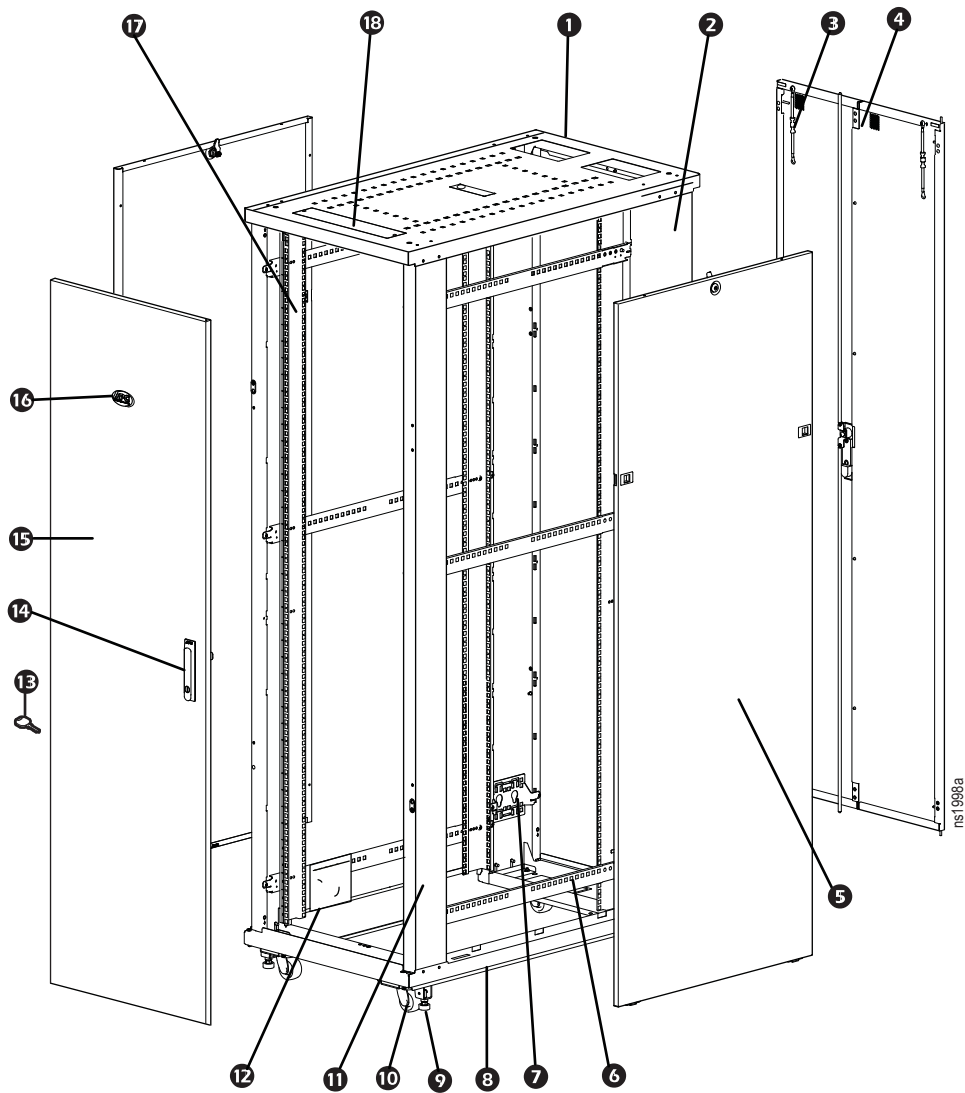
This cabinet is easily tipped. Use extreme caution when unpacking or moving.

- Use at least two people to unpack and move the cabinet.
- Before moving the cabinet on its casters, load 158 kg (350 lbs) of equipment into the bottom of the cabinet for extra stability.
- When moving on its casters, make sure the leveling feet are up and push the cabinet from the front or rear.

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

1. Move the shipping pallet to a firm, level surface.
2. Inspect for visible signs of shipping damage. If damage has been detected, contact APC Customer Support using the contact information on the back cover of this manual.
3. Remove the plastic stretch wrap, cardboard corners, and polyethylene bag surrounding the equipment.
4. Use the Torx T30/#2 Phillips wrench (provided) and 13 mm wrench (not provided) to remove the four pallet mounting brackets. Save these mounting brackets if you plan to bolt the cabinet to the floor.
5. Carefully roll the equipment off the pallet and onto the floor.

Component Identification

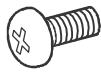


Item	Description	Qty	Item	Description	Qty
1	Roof	1	10	Casters	4
2	Rear Frame	1	11	Front Frame	1
3	Grounding wire	3	12	Hardware Bag	1
4	Rear Split Doors	2	13	Door and Side Panel Keys	2
5	Side Panels	2	14	Door Handles	2
6	Horizontal Side Braces	6	15	Front Door	1
7	Accessory Mounting Brackets	4	16	APC Nameplate	1
8	Base	1	17	Vertical Mounting Flanges	4
9	Leveling Feet	4	18	Roof/Base Access Panels	2

Equipment Installation Hardware



Plastic cup washers (30)



M6 x 16 Phillips head screws (30)



Cage nuts (30)



Joining Brackets for M5 x 12 screws (4)
24 in centers (4)



Tools (provided)

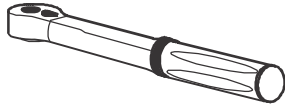


Torx® T30/#2 Phillips wrench

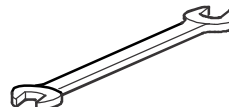


Cage nut tool

Tools (not provided)



Torque wrench



Open end wrench

Cabinet Installation

Moving the Cabinet

⚠ WARNING

TIP HAZARD

This cabinet is easily tipped. Use extreme caution when unpacking or moving.

- Use at least two people to unpack and move the cabinet.
- Before moving the cabinet on its casters, load 158 kg (350 lb) of equipment into the bottom equipment mounting space of the cabinet for extra stability.
- When moving on its casters, make sure the leveling feet are up and push the cabinet from the front or rear.

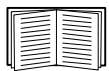
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Casters: To move the cabinet on its casters, the equipment load must be evenly distributed, must not exceed 460 kg (1,014 lb) and the equipment must not be installed above the 20 U height.

Level the Cabinet

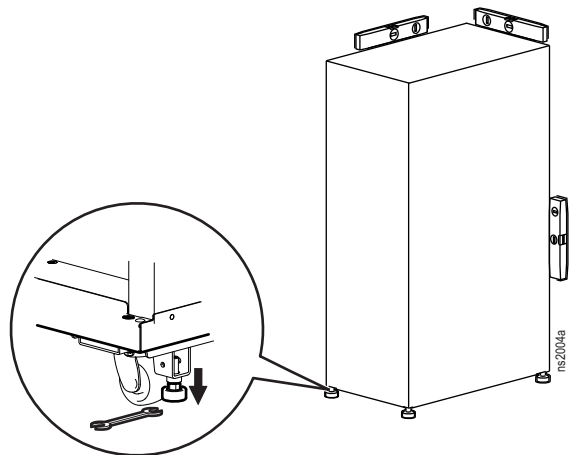
NOTICE

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



The front door may need to be reversed. See “Reverse the Front Door” on page 10 for removal and installation instructions.

1. Using a 13 mm wrench, lower each leveling foot until it makes contact with the floor.
2. Adjust each foot until the equipment is level and plumb.



Joining Cabinets

Cabinets can be joined with or without side panels installed to provide for alignment and some stability. The cabinets are shipped with preinstalled joining brackets for 600 mm centers. To join on 24 in centers, the cabinet is provided with 24 in joining brackets in the hardware bag.

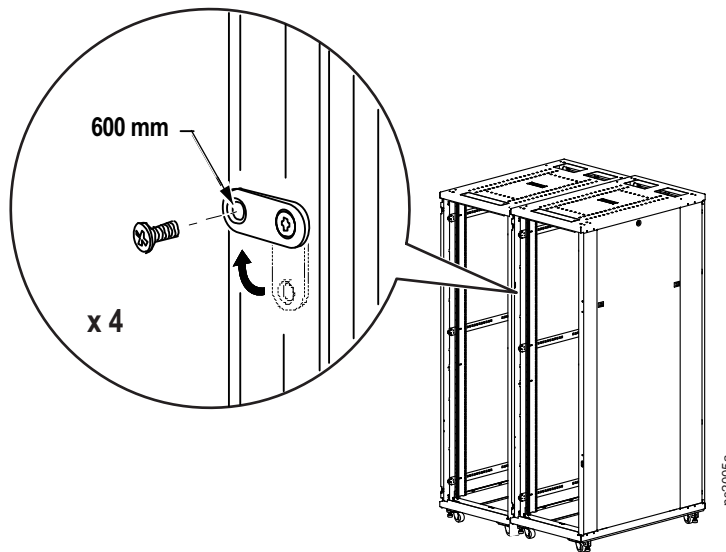
⚠ WARNING

TIP HAZARD

Joining cabinets provides limited stability. Ensure the cabinet is secured to the floor before installing equipment.

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

1. Remove the front and rear doors.
2. The cabinet is preinstalled with 600 mm centers. To join with 24 in centers, replace the preinstalled joining brackets with 24 in joining brackets (provided in the hardware bag).
3. Align the cabinets and join them using one M5 x 12 flat-head screw (provided in the hardware bag) per bracket—two brackets for the front and two brackets for the rear.
4. Reinstall the doors.



Secure the Cabinet

NOTICE

Bolt-down brackets secure the cabinet to the pallet during shipment. Remove them from the cabinet and pallet and save them to secure the cabinet to the floor during installation.

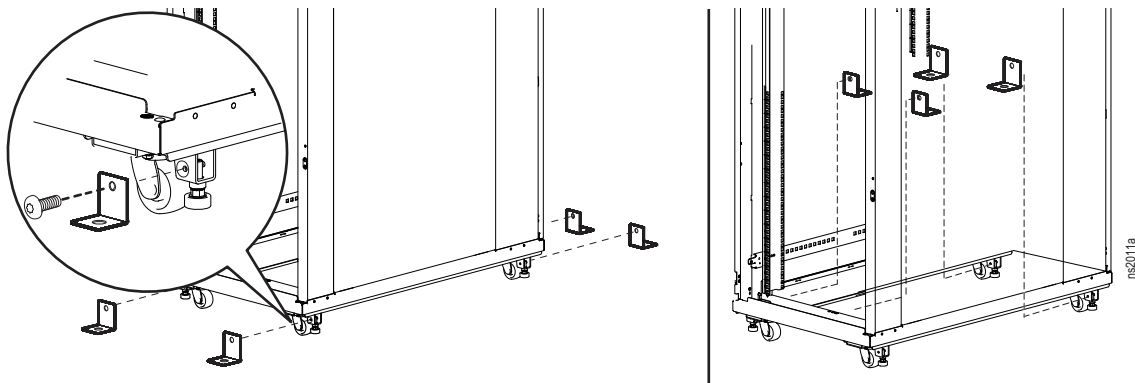
⚠ WARNING

TIP HAZARD

Secure the cabinet to the floor before installing equipment.

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

To secure the cabinet to the floor, use fastener locations on the outside or inside of the cabinet and the bolt-down brackets (provided).

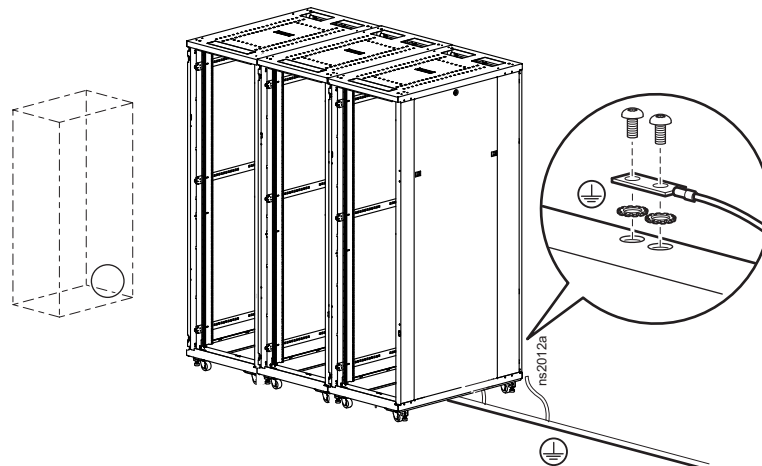


Ground the Cabinet

Each cabinet should be bonded directly to a common ground using the designated grounding location (two M6 threaded inserts) at the bottom rear of the cabinet.

- Use a Common Bonding Network Jumper kit (not provided). For example, Listed [KDER] Panduit® RGCBNJ660PY or equivalent.
- Use paint-piercing washers between ground terminal and cabinet frame or remove paint on frame under ground terminals per NEC NFPA 70 Article 250.12
- Torque screws to (60 in-lb, 6.8 N-m).

Bonding Location on the Cabinet

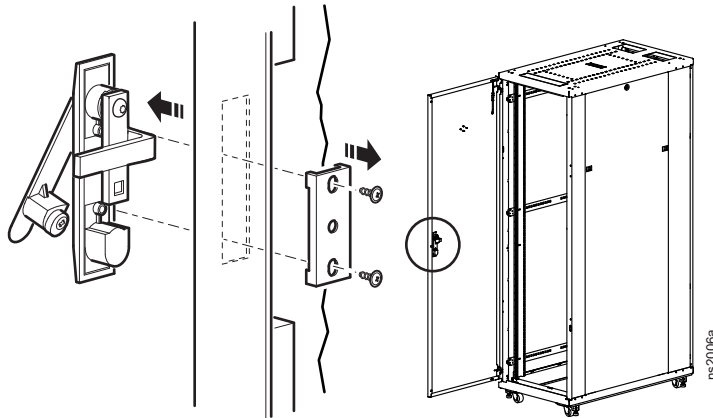


Customize the Cabinet

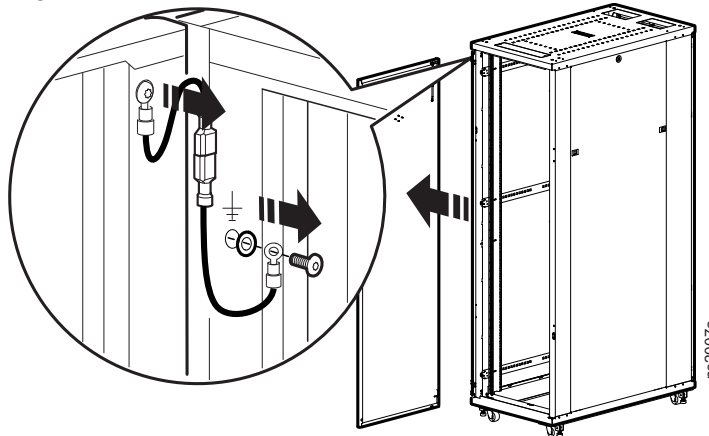
Reverse the Front Door

You can reverse the front door so that the door is hinged on the opposite side.

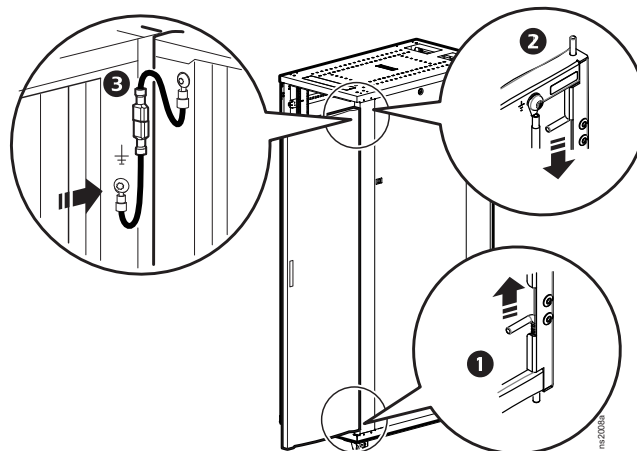
1. Remove the handle using the Torx T30/#2 Phillips wrench (provided).



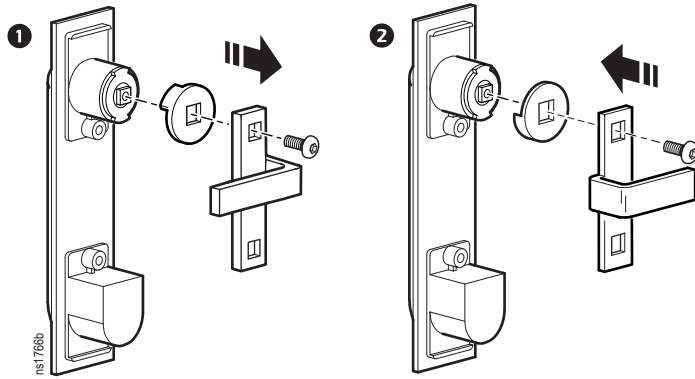
2. Unfasten the ground wire from the cabinet and door, then remove the door.



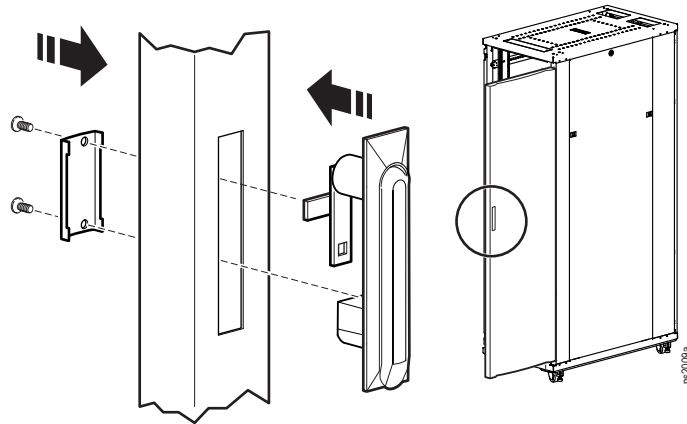
3. Rotate and reinstall the door to the opposite side. Remove any plastic hole plugs and reinstall the ground wire to the door and cabinet.



4. Remove and reinstall the latch and washer oriented as shown using a Torx T30/#2 Phillips wrench. The washer is rotated 90 degrees from its original orientation, and the latch is rotated 180 degrees.

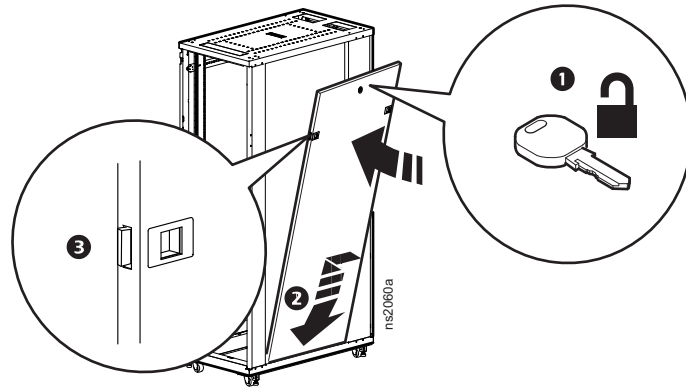


5. Reinstall the handle to the door. Torque the screws to 28 - 30 in-lb (3.2 - 3.4 N-m).



Side Panels

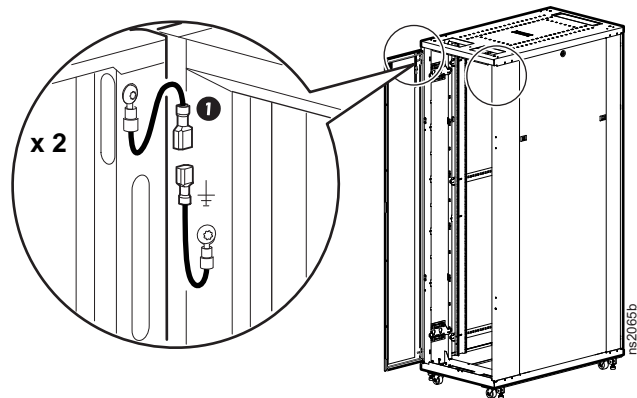
Remove and install side panels



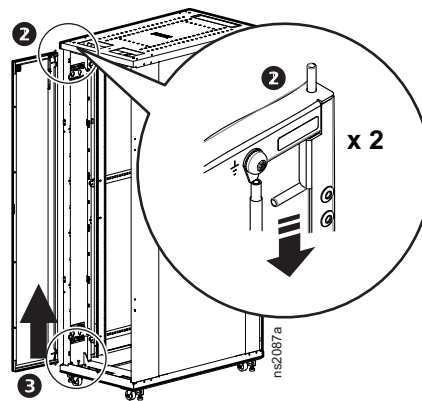
Rear Doors

Removal

1. Disconnect the grounding wires attached to the rear doors at the connector.

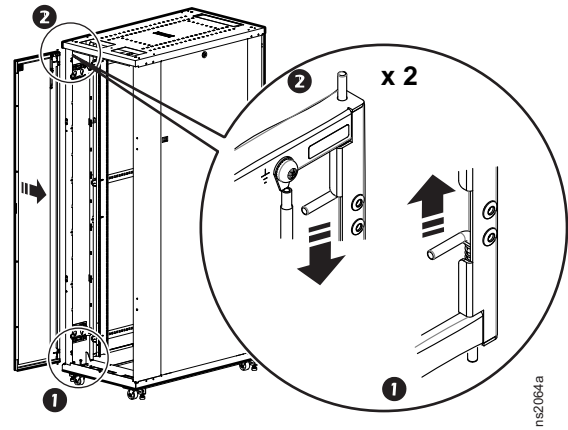


2. Remove the left and right rear doors by pulling the top hinge pin down to release the pin from the hole securing it to the frame.
3. Lift the door to remove the bottom hinge pin from the hole in the cabinet base.

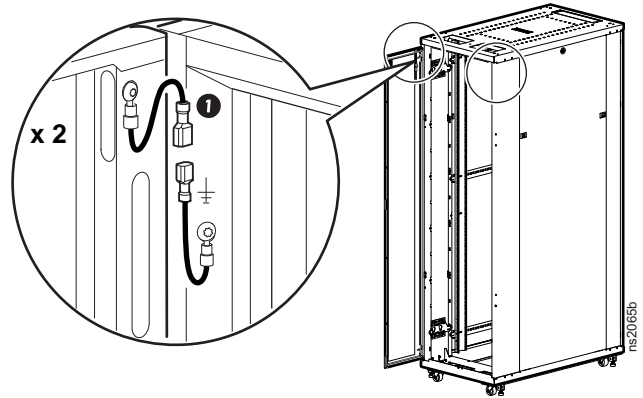


Installation

1. Install the left and right rear doors by aligning the bottom hinge pin to the hole in the cabinet base.
2. Pull the top hinge pin down, align with the hole in the roof, then release.



3. Connect the grounding wires.



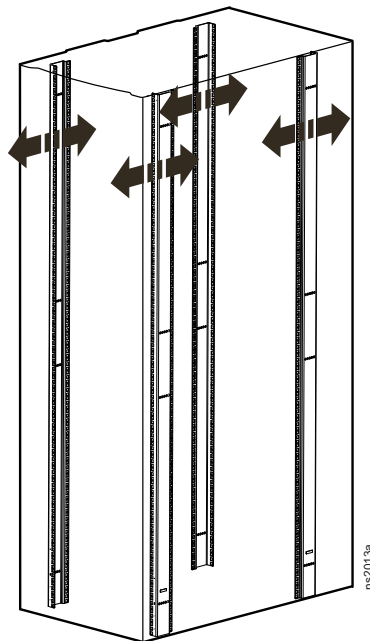
Equipment Installation

NOTICE

NetShelter SV cabinets are intended for use with Listed equipment. If you install un-Listed equipment, you should evaluate the safety of your configuration.

Adjust Vertical Mounting Flanges

Vertical mounting flanges come factory-installed in the proper location for use with rack-mountable equipment. The mounting flanges are adjustable towards the front or the rear of the cabinet to fit different rails or equipment with other depths to accommodate a wide variety of networking and telecommunications equipment.



Adjustable Vertical Mounting Flange

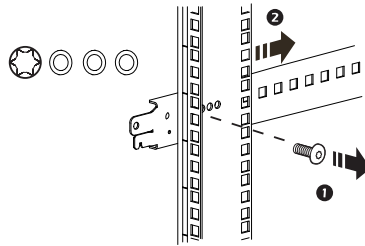
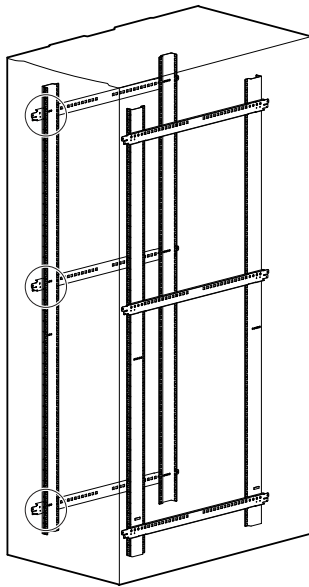
Cabinet Depth	Factory Installed	Minimum Depth	Maximum Depth
1000 mm	678 mm (26.7 in)	168 mm (6.6 in)	718 mm (28.3 in)
1060 mm	738 mm (29.1 in)	168 mm (6.6 in)	778 mm (30.6 in)
1200 mm	878 mm (34.6 in)	258 mm (10.2 in)	918 mm (36.1 in)

NOTICE

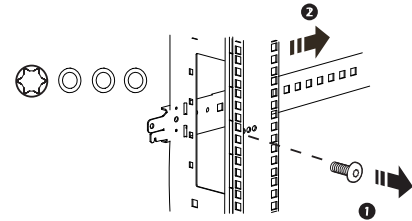
If the vertical mounting flanges are adjusted from their factory mounting position more than 60 mm (2.4 in), the vertical mounting flanges attach to the cabinet side brace using cage nuts and fasteners. Refer to the instructions on page 15.

Installation

1. Use the Torx T30/#2 Phillips wrench (provided) to adjust a vertical mounting flange. Remove the T30 screws at the top, middle, and bottom of the vertical mounting flange. Save the screws for adjustment and reinstallation in the new position.



600 mm cabinet



800 mm cabinet

⚠ CAUTION

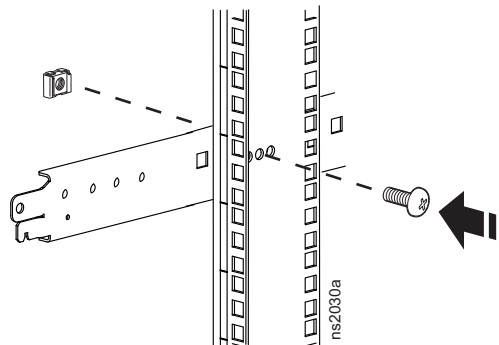
STABILITY HAZARD

When adjusting vertical mounting flanges, ensure that no equipment is installed on the vertical mounting flanges.

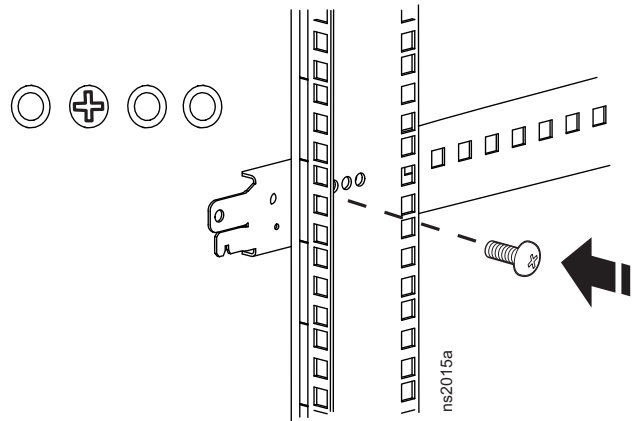
Failure to follow these instructions can result in injury or equipment damage.

NOTICE

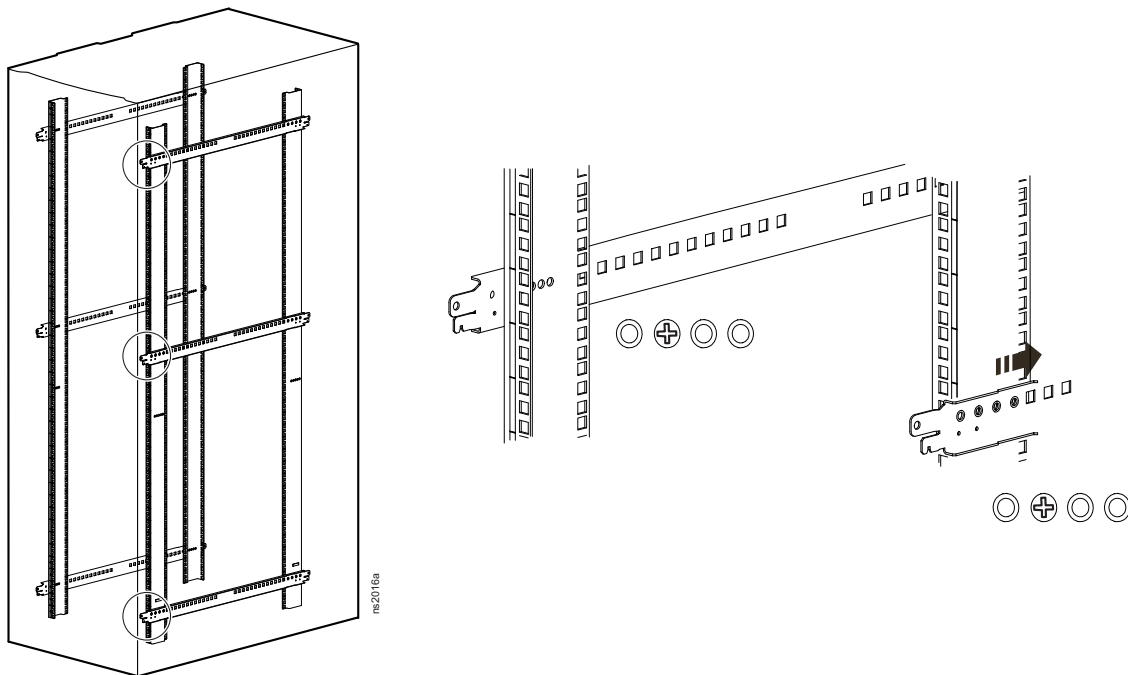
- Vertical mounting flange attachment positions are in 10 mm (0.4 in) increments.
- If the vertical mounting flanges are adjusted from their factory mounting position more than 60 mm (2.4 in), the vertical mounting flanges attach to the cabinet side brace using cage nuts and fasteners.



2. Move the mounting flange to the desired location and reinstall the T30 fastener at the top, middle and bottom to secure the vertical mounting flange.



3. Perform the vertical mounting flange adjustment to the opposite side of the cabinet. Ensure that the same mounting position is used at the top, middle and bottom. Torque to 28 - 30 in-lb (3.2 - 3.4 N-m).



NOTICE

Verify that all Vertical Mounting Flanges are properly aligned before installing equipment in place.

Installing Equipment

⚠ WARNING

TIP HAZARD

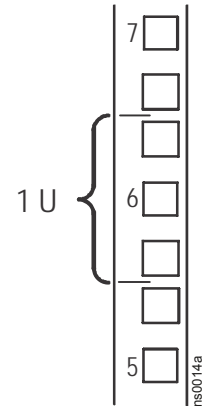
This cabinet is easily tipped. Follow the precautions below during and after equipment installation.

- Make sure you have secured the cabinet to the floor before installing equipment.
- Install the heaviest equipment first toward the bottom of the cabinet to prevent the cabinet from becoming top-heavy.
- Do not extend equipment on sliding rails until you have installed 158 kg (350 lbs) of equipment into the bottom of the cabinet for stability or until you have installed the bolt-down brackets. Do not extend more than one piece of equipment on sliding rails at a time.

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

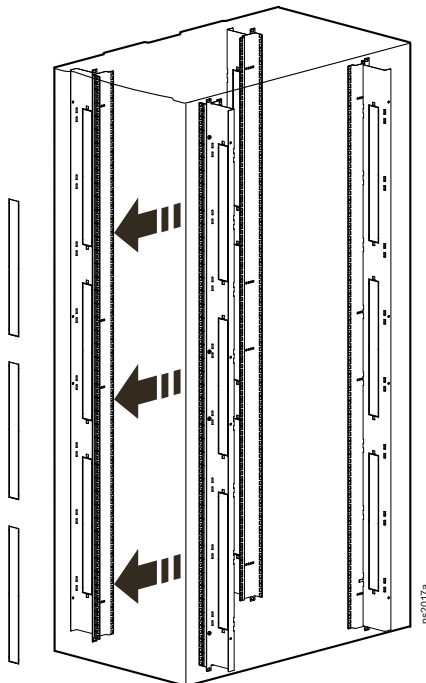
To install rack-mount equipment in the cabinet:

1. Review the equipment manufacturer's installation instructions.
2. Locate the top and bottom U-space on the vertical mounting rails. Every third hole on the mounting rail is numbered to indicate the middle of a U-space.
3. Install the cage nuts on the interior of the vertical mounting rail; then install the equipment. (To remove a cage nut, squeeze the sides to release it from the square hole.)



Vertical Mounting Flange Cutouts

For NetShelter SV 800 mm (31.5 in) wide cabinets with equipment requiring side airflow, remove the vertical mounting flange cutouts from the side of the cabinet nearest the air intake for the equipment. Once the cutouts are removed, if requirements change, a selection of accessories can be used to cover the holes for airflow and cable management. Get more accessory information at the website (www.apc.com).



Cable Management

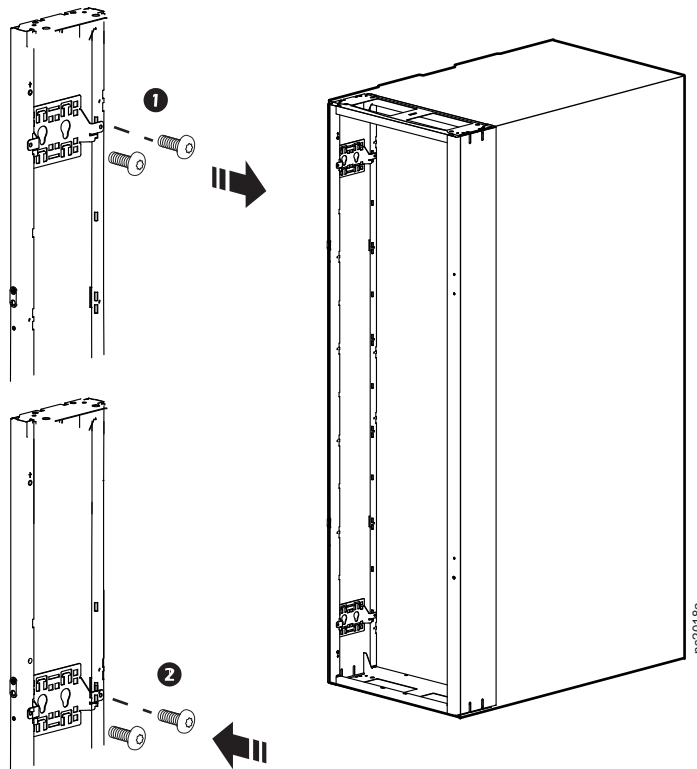
Route, secure, and organize cables using the multiple cable access openings on the cabinet roof, sides, and bottom, the accessory mounting brackets included with the cabinet, plus the variety of cable management accessories available.

Adjust Vertical 0 U Accessory Mounting Brackets

The vertical 0 U accessory mounting brackets (four included) provide toolless mounting capabilities for APC by Schneider Electric Rack Power Distribution Units (PDUs) and cable management. They also provide tie-off locations for cables.

The factory-default position for the vertical 0 U accessory brackets is in the rear of the cabinet. The brackets are positioned for full-height vertical Rack PDUs. The bracket can be moved up or down to accommodate different accessories. Additional brackets are available for purchase as requirements change.

1. Use the Torx[®] T30/#2 Phillips wrench (provided) to remove the two T30 screws.
2. Move to the desired position, and reinstall the brackets.

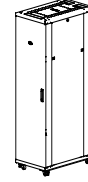


Specifications

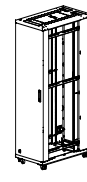
42 U Cabinets



AR2200



AR2400

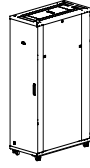


AR2401

Height	2057 mm (80.9 in)	2057 mm (80.9 in)	2057 mm (80.9 in)
Width	600 mm (23.6 in)	600 mm (23.6 in)	600 mm (23.6 in)
Depth	1000 mm (39.4 in)	1060 mm (41.7 in)	1060 mm (41.7 in)
Net weight	108.8 kg (239.9 lb)	112.2 kg (247.4 lb)	85.0 kg (187.4 lb)
Total open area front door	778 176 mm ² (30,637 in ²)	778 176 mm ² (30,637 in ²)	778 176 mm ² (30,637 in ²)
Total open area rear door	805 637 mm ² (31,718 in ²)	805 637 mm ² (31,718 in ²)	805 637 mm ² (31,718 in ²)
Open area per U front door	18 528 mm ² (730 in ²)	18 528 mm ² (730 in ²)	18 528 mm ² (730 in ²)
Open area per U rear door	19 182 mm ² (755 in ²)	19 182 mm ² (755 in ²)	19 182 mm ² (755 in ²)
Perforation pattern	69.4 % open area	69.4 % open area	69.4 % open area
Perforation pattern front door	69.3 %	69.3 %	69.3 %
Perforation pattern rear door	71.7 %	71.7 %	71.7 %
Clearance (for wiring between front door and vertical mounting flange)	14.0 mm (0.6 in)	14.0 mm (0.6 in)	14.0 mm (0.6 in)
Weight rating: static (leveling feet) load	1000 kg (2,205 lb)	1000 kg (2,205 lb)	1000 kg (2,205 lb)
Weight rating: dynamic (casters) load [†]	460 kg (1,014 lb)	460 kg (1,014 lb)	460 kg (1,014 lb)
Weight rating: cabinet roof cable load	45 kg (99 lb)	45 kg (99 lb)	45 kg (99 lb)

[†] To move the cabinet on its casters, the equipment load must be evenly distributed, must not exceed 460 kg (1,014 lb) and the equipment must not be installed above the 20 U height.

42 U Cabinets, continued



AR2500

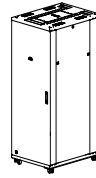


AR2280

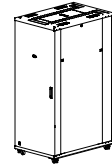
Height	2057 mm (80.9 in)	2057 mm (80.9 in)
Width	600 mm (23.6 in)	800 mm (31.5 in)
Depth	1200 mm (47.2 in)	1000 mm (39.4 in)
Net weight	121.3 kg (267.4 lb)	126.7 kg (279.3 lb)
Total open area front door	778 176 mm ² (30,637 in ²)	1 137 330 mm ² (44,777 in ²)
Total open area rear door	805 637 mm ² (31,718 in ²)	1 171 657 mm ² (46,128 in ²)
Open area per U front door	18 528 mm ² (730 in ²)	27 079 mm ² (1,066 in ²)
Open area per U rear door	19 182 mm ² (755 in ²)	27 897 mm ² (1,098 in ²)
Perforation pattern	69.4 % open area	69.4 % open area
Perforation pattern front door	69.3 %	75.8 %
Perforation pattern rear door	71.7 %	78.0 %
Clearance (for wiring between front door and vertical mounting flange)	14.0 mm (0.6 in)	14.0 mm (0.6 in)
Weight rating: static (leveling feet) load	1000 kg (2,205 lb)	1000 kg (2,205 lb)
Weight rating: dynamic (casters) load [†]	460 kg (1,014 lb)	460 kg (1,014 lb)
Weight rating: cabinet roof cable load	45 kg (99 lb)	45 kg (99 lb)

[†] To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.

42 U Cabinets, continued



AR2480



AR2580

Height	2057 mm (80.9 in)	2057 mm (80.9 in)
Width	800 mm (31.5 in)	800 mm (31.5 In)
Depth	1060 mm (41.7 in)	1200 mm (47.2 in)
Net weight	130.5 kg (287.7 lb)	139.5 kg (307.5 lb)
Total open area front door	1 137 330 mm ² (44,777 in ²)	1 137 330 mm ² (44,777 in ²)
Total open area rear door	1 171 657 mm ² (46,128 in ²)	1 171 657 mm ² (46,128 in ²)
Open area per U front door	27 079 mm ² (1,066 in ²)	27 079 mm ² (1,066 in ²)
Open area per U rear door	27 897 mm ² (1,098 in ²)	27 897 mm ² (1,098 in ²)
Perforation pattern	69.4 % open area	69.4 % open area
Perforation pattern front door	75.8 %	75.8 %
Perforation pattern rear door	78.0 %	78.0 %
Clearance (for wiring between front door and vertical mounting flange)	14.0 mm (0.6 in)	14.0 mm (0.6 in)
Weight rating: static (leveling feet) load	1000 kg (2,205 lb)	1000 kg (2,205 lb)
Weight rating: dynamic (casters) load [†]	460 kg (1,014 lb)	460 kg (1,014 lb)
Weight rating: cabinet roof cable load	45 kg (99 lb)	45 kg (99 lb)

[†] To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.

48 U Cabinets



AR2407

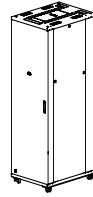


AR2507

Height	2324 mm (91.5 in)	2324 mm (91.5 in)
Width	600 mm (23.6 in)	600 mm (23.6 in)
Depth	1060 mm (41.7 in)	1200 mm (47.2 in)
Net weight	123.5 kg (272.3 lb)	131.2 kg (289.2 lb)
Total open area front door	900 609 mm ² (35,457in ²)	900 609 mm ² (35,457in ²)
Total open area rear door	917 858 mm ² (36,136 in ²)	917 858 mm ² (36,136 in ²)
Open area per U front door	187 63 mm ² (739.4 in ²)	187 63 mm ² (739.4 in ²)
Open area per U rear door	19 122 mm ² (753 in ²)	19 122 mm ² (753 in ²)
Perforation pattern	69.4 % open area	69.4 % open area
Perforation pattern front door	70.3 %	70.3 %
Perforation pattern rear door	71.6 %	71.6 %
Clearance (for wiring between front door and vertical mounting flange)	14.0 mm (0.6 in)	14.0 mm (0.6 in)
Weight rating: static (leveling feet) load	1000 kg (2,205 lb)	1000 kg (2,205 lb)
Weight rating: dynamic (casters) load [†]	460 kg (1,014 lb)	460 kg (1,014 lb)
Weight rating: cabinet roof cable load	45 kg (99 lb)	45 kg (99 lb)

[†] To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.

48 U Cabinets, continued



AR2487



AR2587

Height	2324 mm (91.5 in)	2324 mm (91.5 in)
Width	800 mm (31.5 in)	800 mm (31.5 in)
Depth	1060 mm (41.7 in)	1200 mm (47.2 in)
Net weight	143.8 kg (317.0 lb)	152.8 kg (336.9 lb)
Total open area front door	1 316 270 mm ² (51,286 in ²)	1 316 270 mm ² (51,286 in ²)
Total open area rear door	1 334 498 mm ² (52,539.4 in ²)	1 334 498 mm ² (52,539.4 in ²)
Open area per U front door	27 422 mm ² (1,080 in ²)	27 422 mm ² (1,080 in ²)
Open area per U rear door	27 802 mm ² (1,095 in ²)	27 802 mm ² (1,095 in ²)
Perforation pattern	69.4 % open area	69.4 % open area
Perforation pattern front door	76.9 %	76.9 %
Perforation pattern rear door	78.0 %	78.0 %
Clearance (for wiring between front door and vertical mounting flange)	14.0 mm (0.6 in)	14.0 mm (0.6 in)
Weight rating: static (leveling feet) load	1000 kg (2,205 lb)	1000 kg (2,205 lb)
Weight rating: dynamic (casters) load [†]	460 kg (1,014 lb)	460 kg (1,014 lb)
Weight rating: cabinet roof cable load	45 kg (99 lb)	45 kg (99 lb)

[†] To move the cabinet on its casters, the equipment load must be evenly distributed, and must not exceed 460 kg (1,014 lb) and equipment must not be installed above the 20 U height.

NOTICE

It is prohibited to ship a NetShelter SV cabinet while the unit is loaded with any equipment.

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