

Site Preparation Guide

40U-P Cabinet

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This Site Preparation Guide contains information about the 40U-P cabinet. Topics include:

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About this guide

This document includes information on:

- Environmental requirements
 - Temperature
 - Weight
 - Altitude
 - Air Quality
- Shock and vibration
- Cabinet clearance
- Cabinet stabilizing
- Site floor load-bearing requirements
- Casters and leveling feet
- Power requirements
- Package dimensions and clearance

i **NOTE: The illustrations in this guide are examples only. Depending on what your ordered, your configuration may look somewhat different from what is shown here.**

Tools required

- Scissors
- Mechanical Lift or Pallet Jack

Environmental requirements

- +15°C to +32°C (59°F to 89.6°F) site temperature.*
A fully configured cabinet (with six 30A single-phase line cords) may produce up to 49,100 BTUs per hour. Calculate the BTUs for your configuration at <http://powercalculator.emc.com>
- 40% to 55% relative humidity*
- The 40U-P weighs 198 KG (435); a cabinet fully configured with EMC products can weigh approximately 1,182 kg (2600 pounds).
Make sure your flooring can safely support your configuration. Calculate the minimum load-bearing requirements for your site using the product-specific weights for your system components at <http://powercalculator.emc.com>
- 0 to 2439 meters (0 to 8,000 feet) above sea level operating altitude*
- LAN and telephone connections for remote service and system operation

* Recommended operating parameters. Contents of the cabinet may be qualified outside these limits; refer to the product-specific documentation for system specifications.

Air quality requirements

The products are designed to be consistent with the requirements of the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Environmental Standard Handbook and the most current revision of Thermal Guidelines for Data Processing Environments, Second Edition, ASHRAE 2009b.

Cabinets are best suited for Class 1 datacom environments, which consist of tightly controlled environmental parameters, including temperature, dew point, relative humidity and air quality. These facilities house mission-critical equipment and are typically fault-tolerant, including the air conditioners.

The data center should maintain a cleanliness level as identified in ISO 14664-1, class 8 for particulate dust and pollution control. The air entering the data center should be filtered with a MERV 11 filter or better. The air within the data center should be continuously filtered with a MERV 8 or better filtration system. In addition, efforts should be maintained to prevent conductive particles, such as zinc whiskers, from entering the facility.

The allowable relative humidity level is 20 to 80% non condensing, however, the recommended operating environment range is 40 to 55%. For data centers with gaseous contamination, such as high sulfur content, lower temperatures and humidity are recommended to minimize the risk of hardware corrosion and degradation. In general, the humidity fluctuations within the data center should be minimized. It is also recommended that the data center be positively pressured and have air curtains on entry ways to prevent outside air contaminants and humidity from entering the facility.

For facilities below 40% relative humidity, it is recommended to use grounding straps when contacting the equipment to avoid the risk of Electrostatic discharge (ESD), which can harm electronic equipment.

As part of an ongoing monitoring process for the corrosiveness of the environment, it is recommended to place copper and silver coupons (per ISA 71.04-1985, Section 6.1 Reactivity), in airstreams representative of those in the data center. The monthly reactivity rate of the coupons should be less than 300 Angstroms. When monitored reactivity rate is exceeded, the coupon should be analyzed for material species and a corrective mitigation process put in place.

Storage time (unpowered) recommendation: do not exceed 6 consecutive months of unpowered storage.

Fire suppressant disclaimer

Fire prevention equipment in the computer room should always be installed as an added safety measure. A fire suppression system is the responsibility of the customer. When selecting appropriate fire suppression equipment and agents for the data center, choose carefully. An insurance underwriter, local fire marshal, and local building inspector are all parties that you should consult during the selection a fire suppression system that provides the correct level of coverage and protection.

Equipment is designed and manufactured to internal and external standards that require certain environments for reliable operation. We do not make compatibility claims of any kind nor do we provide recommendations on fire suppression systems. It is not recommended to position storage equipment directly in the path of high pressure gas discharge streams or loud fire sirens so as to minimize the forces and vibration adverse to system integrity.

NOTE: The previous information is provided on an “as is” basis and provides no representations, warranties, guarantees or obligations on the part of our company. This information does not modify the scope of any warranty set forth in the terms and conditions of the basic purchasing agreement between the customer and Dell EMC .

Shock and Vibration

Products have been tested to withstand the shock and random vibration levels. The levels apply to all three axes and should be measured with an accelerometer on the equipment enclosures within the cabinet and shall not exceed:

Platform condition	Response measurement level
Non operational shock	10 G's, 7 ms duration
Operational shock	3 G's, 11 ms duration
Non operational random vibration	0.40 Grms, 5–500 Hz, 30 minutes
Operational random vibration	0.21 Grms, 5–500 Hz, 10 minutes

Systems that are mounted on an approved package have completed transportation testing to withstand the following shock and vibrations in the vertical direction only and shall not exceed:

Packaged system condition	Response measurement level
Transportation shock	10 G's, 12ms duration
Transportation random vibration	<ul style="list-style-type: none"> · 1.15 Grms · 1 hour Frequency range 1–200 Hz

Cabinet Clearance

This cabinet ventilates from front to back; you must provide adequate clearance to service and cool the system. Depending on component-specific connections within the cabinet, 15-foot extension power cords are required.

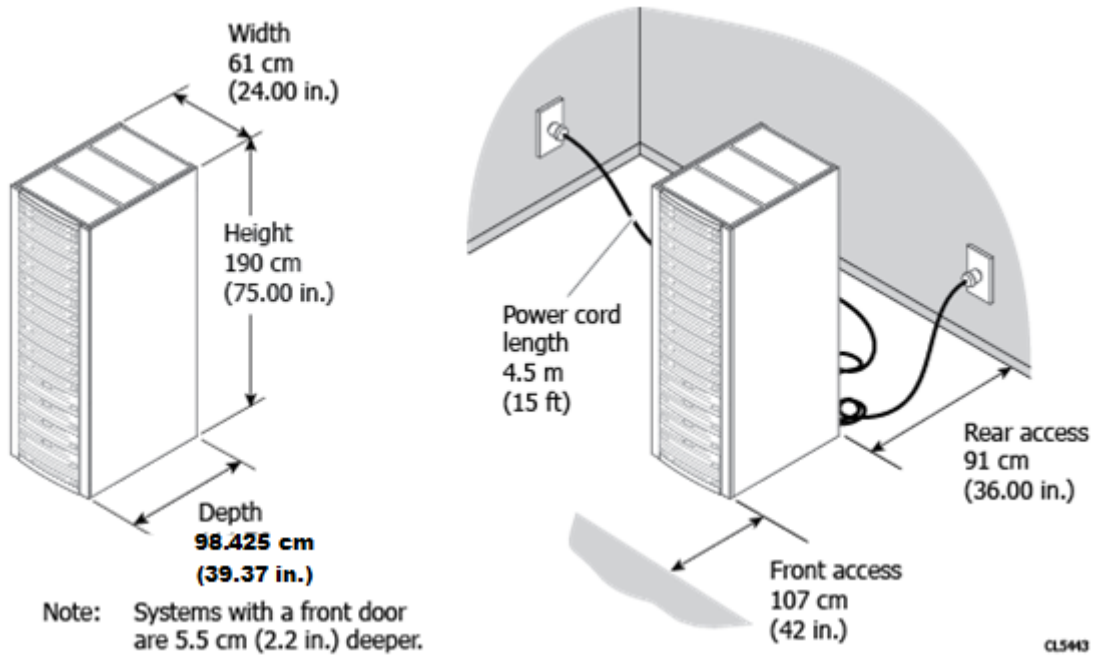


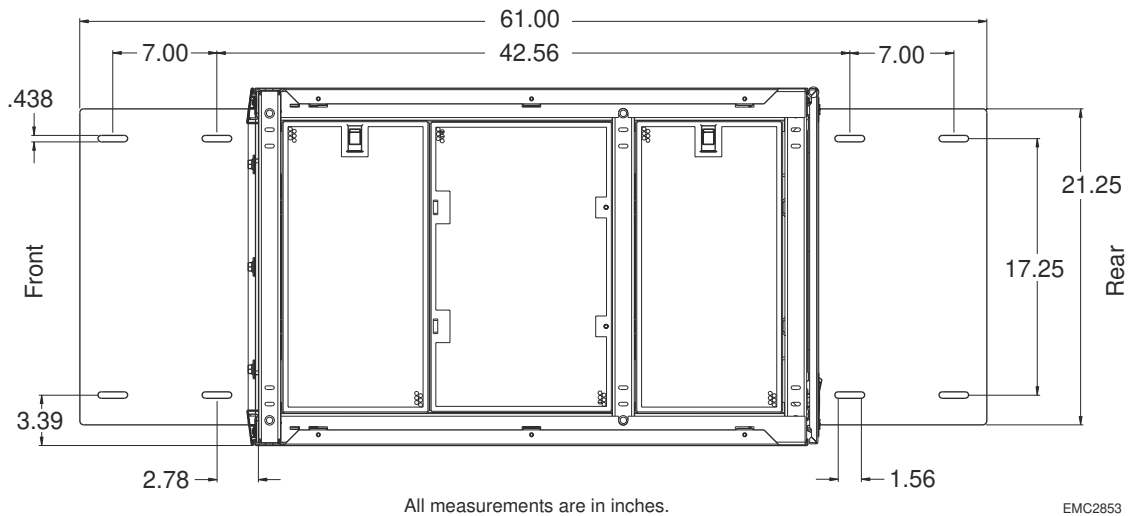
Figure 1. Cabinet Clearance

NOTE: The illustrations in this guide are examples only. Depending on what you ordered, your cabinet may look somewhat different from what is shown here.

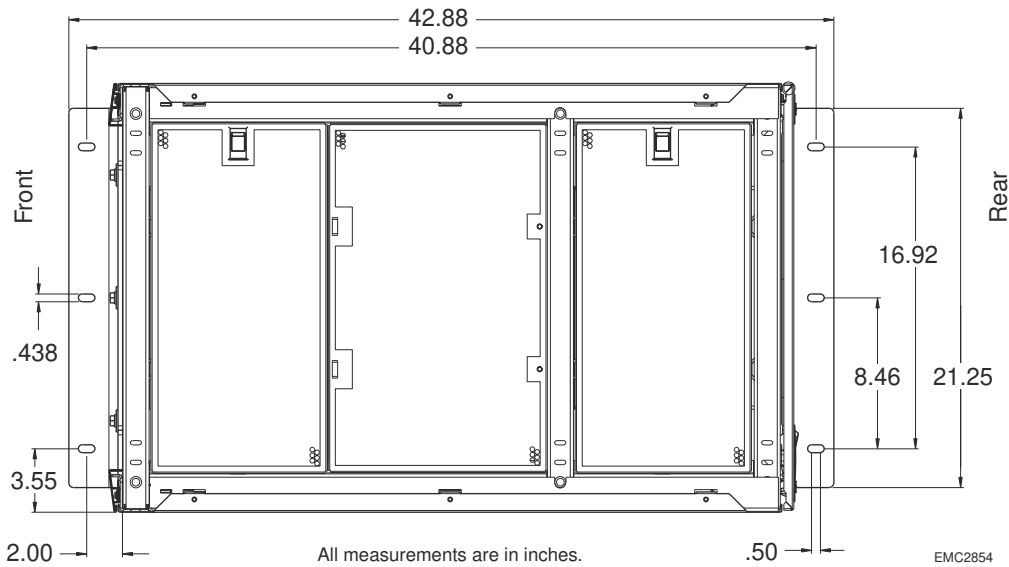
Cabinet stabilizing

If you intend to secure the optional stabilizer brackets to your site floor, prepare the location for the mounting bolts. (The additional brackets help to prevent the cabinet from tipping while you service cantilevered levels, or from rolling during minor seismic events.) The brackets provide three levels of protection for stabilizing the unit:

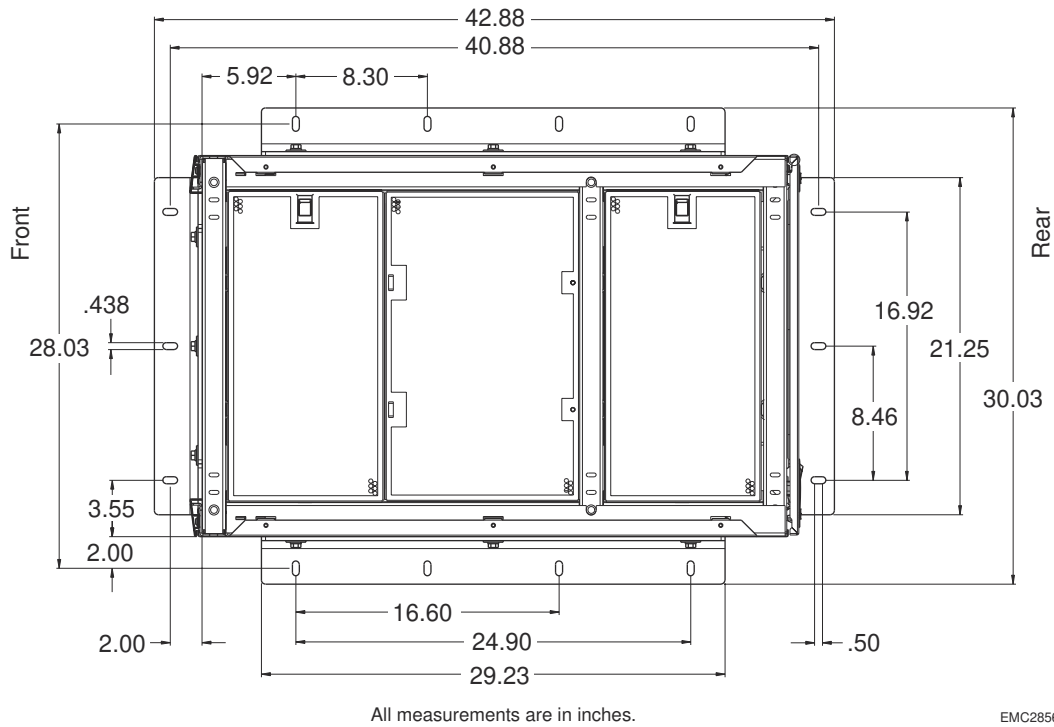
- Anti-tip bracket - Use this bracket to provide an extra measure of anti-tip security. One or two kits may be used. For cabinets with components that slide, we recommend that you use two kits.



- Anti-move bracket - Use this bracket to permanently fasten the unit to the floor.



- Seismic restraint bracket - Use this bracket to provide the highest protection from moving or tipping.



Site floor load-bearing requirements

Install the cabinet in raised or non-raised floor environments capable of supporting at least 1,180kg (2,600 lbs.) per cabinet. Your system may weigh less, but requires extra floor support margin to accommodate equipment upgrades and/or reconfiguration.

In a raised floor environment:

- 24 x 24 inch or (60 x 60 cm) heavy-duty, concrete filled steel floor tiles are recommended.
- Use only floor tiles and stringers rated to withstand:
 - concentrated loads of two casters or leveling feet, each weighing up to 1,000 lb (454 kg).
 - minimum static ultimate load of 3,000 lb (1,361 kg).
 - rolling loads of 1,000 (454) kg). On floor tiles that do not meet the 1,000 lb rolling load rating, use coverings such as plywood to protect floors during system roll.
- Position adjacent cabinets with no more than two casters or leveling feet on a single floor tile.

- Cutouts in 24 x 24 in tiles must be no more than 8 inches (20.3 cm) wide by 6 inches (15.3 cm) deep, and centered on the tiles, 9 inches (22.9 cm) from the front and rear and 8 inches (20.3 cm) from the sides. Since cutouts will weaken the tile, you can minimize deflection by adding pedestal mounts adjacent to the cutout; the number and placement of additional pedestal mounts relative to a cutout must be in accordance with the floor tile manufacturer's recommendations.

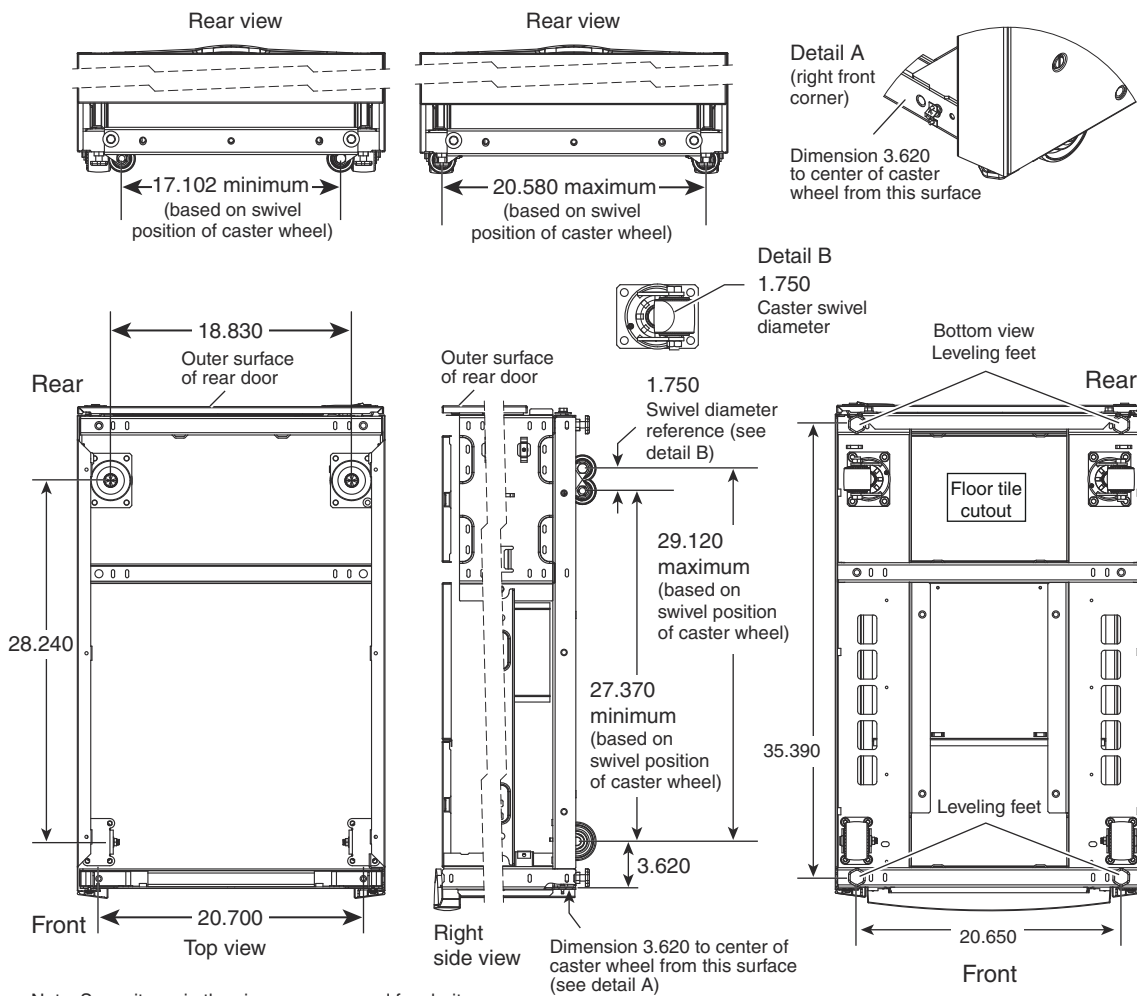
When positioning the cabinet, take care to avoid moving a caster into a floor tile cutout.

Ensure that the combined weight of any other objects in the data center does not compromise the structural integrity of the raised floor and/or the subfloor (non-raised floor).

We recommend that a certified data center design consultant inspect your site to ensure that the floor is capable of supporting the system and surrounding weight. Note that actual cabinet weight depends on your specific product configuration; you can calculate your total using the tools available at <http://powercalculator.emc.com>

Casters and leveling feet

The cabinet bottom includes four caster wheels. The front wheels are fixed; the two rear casters swivel in a 1.75-inch diameter. Swivel position of the caster wheels will determine the load-bearing points on your site floor, but does not affect the cabinet footprint. Once you have positioned, leveled, and stabilized the cabinet, the four leveling feet determine the final load-bearing points on your site floor.



NOTE: The customer is ultimately responsible for ensuring that the data center floor on which the system is to be configured is capable of supporting the system weight, whether the system is configured directly on the data center floor, or on a raised floor supported by the data center floor. Failure to comply with these floor-loading requirements could result in severe damage to the system, the raised floor, subfloor, site floor and the surrounding infrastructure. Notwithstanding anything to the contrary in any agreement between the manufacturer and customer, the manufacturer fully disclaims any and all liability for any damage or injury resulting from customer's failure to ensure that the raised floor, subfloor and/or site floor are capable of supporting the system weight as specified in this guide. The customer assumes all risk and liability associated with such failure.

Power requirements

Depending on the cabinet configuration and input ac power source, single or three-phase, the cabinet requires two to 12 independent power sources. To determine your site requirements, use the published technical specifications and device rating labels. This will help provide the current draw of the devices in each rack. The total current draw for each rack can then be calculated. For Dell EMC products, visit the "Dell EMC Power Calculator" on the web at <http://powercalculator.dell.com>.

Table 1. Single-phase power connection requirements

Specification	North American 3 wire connection (2 L and 1 G) ^a	International and Australian 3 wire connection (1 L, 1 N, and 1 G)
Input nominal voltage	200 - 240 V ac +/- 10% L - L nom	220 - 240 V ac +/- 10% L - L nom
Frequency	50 - 60 Hz	50 - 60 Hz
Circuit breakers	30 A	32 A
Power zones	Two	Two
Power requirements at site (minimum to maximum)	<ul style="list-style-type: none"> One to six 30 A, single-phase drops per zone Each rack requires a minimum of two drops to a maximum of 12 drops. This will be determined by the system configuration and the power needs for that configuration. 	

a. L = line phase, N = neutral, G = ground

Table 2. Single-phase AC power input connector options









Single-phase rack connector options	Customer AC source interface receptacle	Site
 NEMA L6-30P	 NEMA L6-30R	North America and Japan
 Russellstoll 3750DP	 Russellstoll 9C33U0	North America and Japan
 IEC-309 332P6	 IEC-309 332C6	International
 CLIPSAL 56PA332	 CLIPSAL 56CSC332	Australia

Table 3. Three-phase AC power connection requirements

Specification	North American (Delta) 4 wire connection (3 L and 1 G) ^a	International and Australian (Wye) 5 wire connection (3 L, 1 N, and 1 G)
Input nominal voltage	200 - 240 V ac +/- 10% L - L nom	220 - 240 V ac +/- 10% L - N nom
Frequency	50 - 60 Hz	50 - 60 Hz
Circuit breakers	50 A	32 A

Table 3. Three-phase AC power connection requirements (continued)

Specification	North American (Delta) 4 wire connection (3 L and 1 G) ^a	International and Australian (Wye) 5 wire connection (3 L, 1 N, and 1 G)
Power zones	Two	Two
Power requirements at site (minimum to maximum)	<p>North America (Delta):</p> <ul style="list-style-type: none"> One to two 50 A, three-phase drops per zone Each rack requires a minimum of two drops to a maximum of four drops. This will be determined by the system configuration and the power needs for that configuration. <p>International (Wye):</p> <ul style="list-style-type: none"> One 32 A, three-phase drop per zone Each rack requires a minimum of two drops to a maximum of four drops. This will be determined by the system configuration and the power needs for that configuration. <p>NOTE: The interface connector options for the Delta and Wye three-phase PDUs are listed in and</p>	

a. L = line phase, N = neutral, G = ground

Table 4. Three-phase Delta-type AC power input connector options





Three-phase Delta rack connector options	Customer AC source interface receptacle	Site
 Russellstoll 9P54U2	 Russellstoll 9C54U2	North America and International
 Hubbell CS-8365C	 Hubbell CS-8364C	North America

Table 5. Three-phase Wye-type AC power input connector options







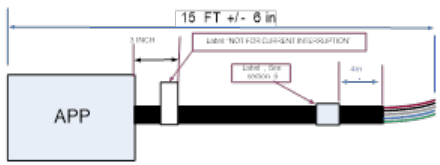
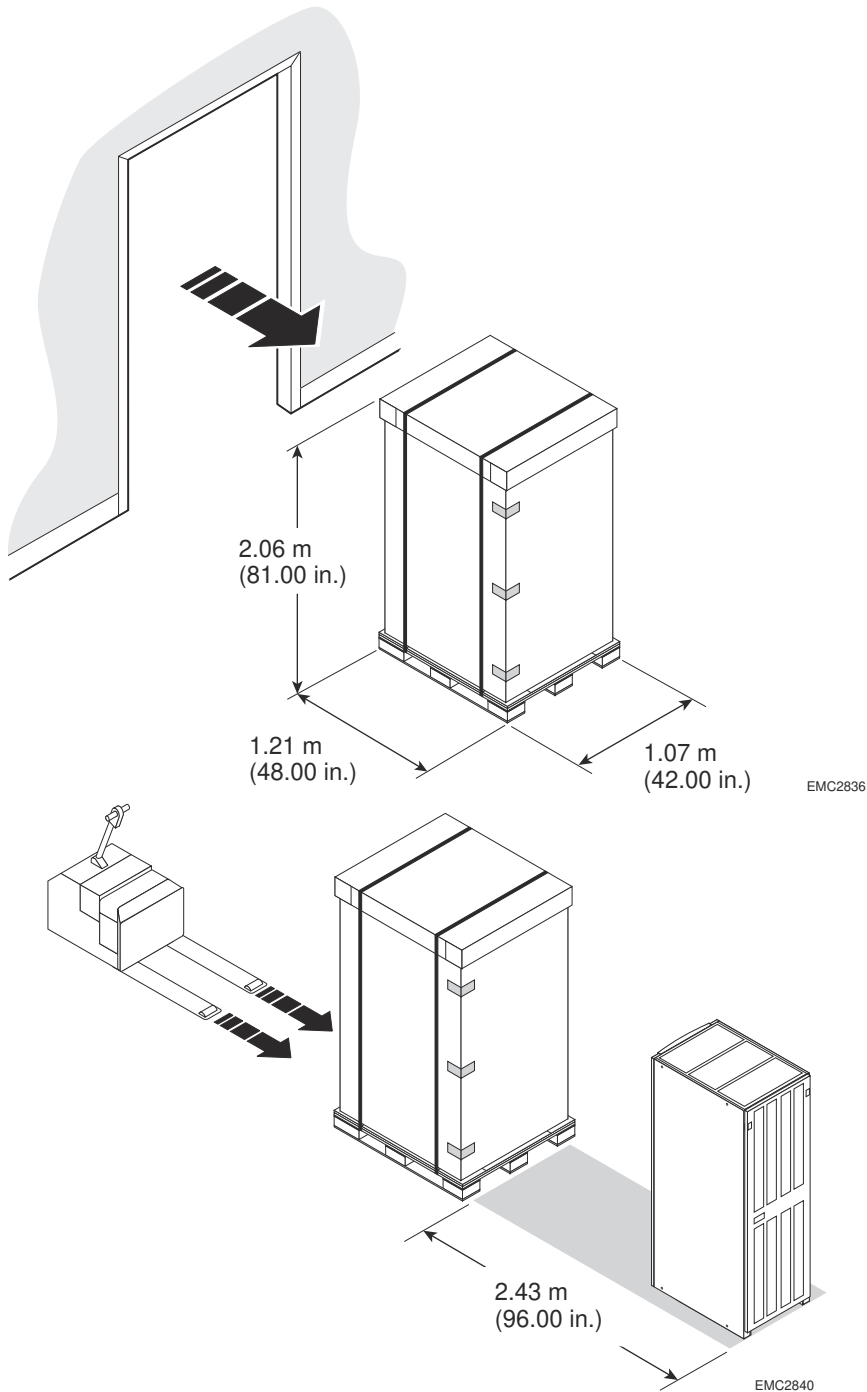
Three-phase Wye rack connector options	Customer AC source interface receptacle	Site
 GARO P432-6	 GARO S432-6	International
  L22-30P 30A 277/480V	  L22-30P 30A 277/480V	North America
Fly Lead	Customer Receptacle	International

Table 5. Three-phase Wye-type AC power input connector options (continued)

Three-phase Wye rack connector options	Customer AC source interface receptacle	Site
		

Package dimension and clearance

Make certain your doorways and elevators are wide enough and tall enough to accommodate the shipping pallet and cabinet. Use a mechanical lift or pallet jack to position the packaged cabinet in its final location.



Your next step

Follow the illustrated instructions printed on the outside of the shipping unit to remove the cardboard packing material; cut the shipping straps and corner tape, then remove the top cover and tape.

Refer to the 40U-P Cabinet Unpacking and Setup Guide located on for instructions on:

- attaching the unloading ramp,
- releasing the cabinet from the pallet,
- unloading the cabinet
- setting up the cabinet in your environment, and
- repackaging shipping material.

If you need help

For questions about technical support and service, contact you service provider.

For questions about upgrades, contact your sales office.

Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.