

SGI® 39U Tall Rack Installation Instructions

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Contents

Marketing Codes	2
Rack System Hardware Setup Safety Measures	3
39U Rack Features	4
Technical Specifications	4
Power Distribution Units	5
Installing the Rack	7
Preinstallation Activities	7
Site Plan Verification	7
Tools Required	8
Single-phase Power Receptacle Verification	8
3-phase Power Receptacle Verification	13
Unloading and Moving System Racks	16
Unloading the Equipment from the Truck	16
Inspecting the Shipping Container	18
Transporting the Shipping Container	19
Unpacking and Installing the Rack	19
Positioning and Leveling Racks	22
Contacting the SGI Customer Service Center	23

Chapter 1

SGI 39U Rack Installation Instructions

This document guides a knowledgeable user through the unpacking, installation and basic setup of an SGI 39U rack enclosure (refer to Figure 1-1). If your system is being unpacked and set up by SGI professional services personnel, set these instructions aside as a reference.

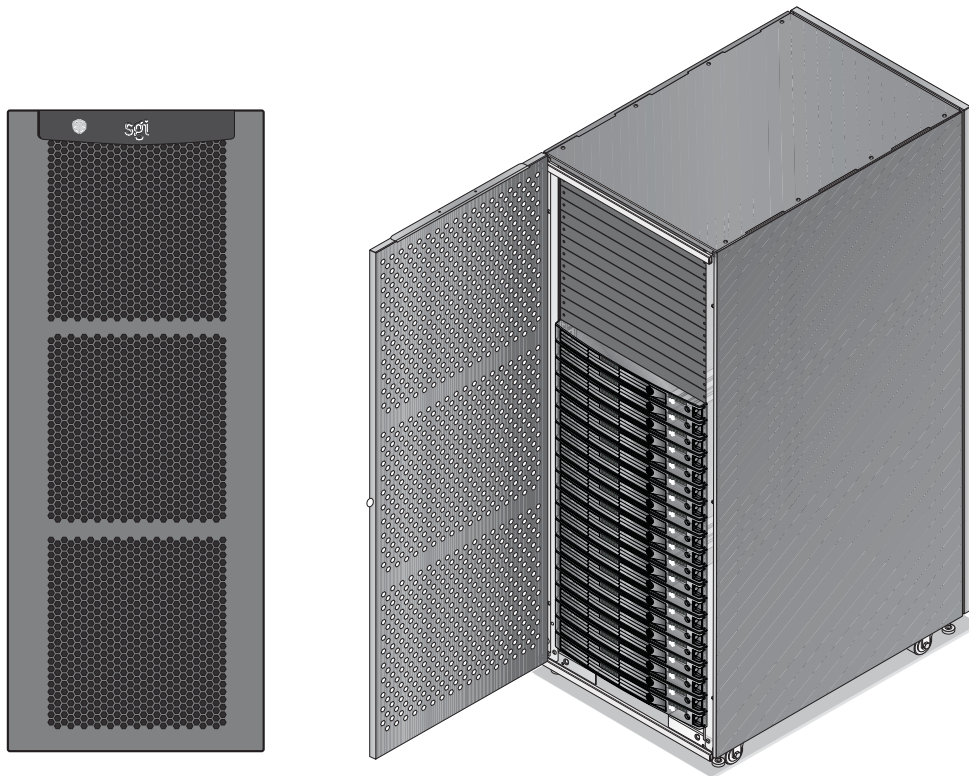


Figure 1-1 SGI 39U Tall Rack

This document contains the following major topics:

- “Rack System Hardware Setup Safety Measures” on page 3
- “Preinstallation Activities” on page 7
- “Installing the Rack” on page 7
- “Unloading and Moving System Racks” on page 16
- “Unpacking and Installing the Rack” on page 19
- “Positioning and Leveling Racks” on page 22
- “Contacting the SGI Customer Service Center” on page 23

Other SGI documents are available in PDF or other formats, and can be accessed and downloaded via internet from the SGI publications library.

<http://docs.sgi.com>

Various formats are available. This library contains the most recent and most comprehensive set of online books, release notes, man pages, and other information.

Marketing Codes

The following marketing codes are for the SGI 39U tall rack:

- LSX-RACK-TALL (SGI Altix XE servers)
- NEXIS-RACK-TALL (SGI InfiniteStorage NAS)
- LSX-RACK-TALL-EXP (expansion rack)

Refer to on Table 1-2 on page 5 for power distribution unit (PDU) marketing codes.

Rack System Hardware Setup Safety Measures

Observe the following safety measures when you install the system:

- Use caution when you remove the system from the shipping container. Failure to handle the system carefully can result in personal injury or property damage.



Caution: Ensure that the shipping container is positioned close to its destination before you unpack the container.

- Do not move the system while it is connected to power.



Danger: Keep fingers and conductive tools away from high-voltage areas. Failure to follow these precautions may result in serious injury or death. The high-voltage areas of the system are indicated with high-voltage warning labels.

- Ensure that a qualified site electrician has properly installed the power receptacles.
- Set all PDU circuit breakers to the OFF (O) position before you plug in the system power cord.



Warning: Use the following guidelines to prevent the rack from toppling over. Otherwise, people could be seriously injured and/or equipment could be damaged.

- Follow these guidelines to prevent a rack from toppling over:
 - Install all equipment in the lowest available position in the rack.
 - Use optional seismic tiedowns where appropriate.
 - Always site the unit on a level surface.

39U Rack Features

- Cable entry/exit area located in the rear base of the rack. The rack is mounted on four casters; the two rear casters swivel. The base of the rack has leveling pads, a ground strap, and seismic tie-downs.
- I/O and power cables pass through the bottom of the rack. Interconnect cables pass through the top and sides of the rack. Cable management occurs in the rear of the rack.
- One, two, or three power distribution units (PDUs) per rack, depending on the number of components installed. A PDU can be a single-phase power or three-phase power distribution unit.

Technical Specifications

Table 1-1 lists the technical specifications of the 39U rack.

Table 1-1 39U Rack Specifications

Characteristic	Specification
Height	
With trim	75.8-in (192 cm)
Without trim	75.8-in (192 cm)
Width	
With trim	29.1-in (74 cm)
Without trim	28.6-in (73 cm)
Depth	
With trim	43.2-in (115 cm)
Without trim	40.1-in (102 cm)
Weight of rack (maximum)	1710 lbs (771 kg)
Weight of rack (empty)	346 lbs (157 kg)
Weight of shipping container	262 lbs (119 kg)

Power Distribution Units

Each 39U rack supports a maximum of four power distribution units (PDUs). The single-phase PDUs used on the 39U rack are listed in Table 1-2 and shown in Figure 1-2. The 3-phase PDUs used on the 39U rack are listed in Table 1-2 and shown Figure 1-3.

Table 1-2 39U Rack Single-phase PDU Marketing Codes

Single-phase	LSX-PDU-220-Z	12 outlet, 30A, 220 VAC PDU (North America)
Single-phase	LSX-PDU-AUS-Z	10 outlet, 32A, 220 VAC PDU (Australia, NZ, Arg., China)
Single-phase	LSX-PDU-EURO-Z	10 outlet, 32A 220 VAC PDU (Europe)
3-phase	LSX-PDU-3PH-AC	24 outlet, 60A, 200/240 VAC (North American/Japan)
3-phase	LSX-PDU-3PH-AC-I	24 outlet, 60A, 400 VAC (International)

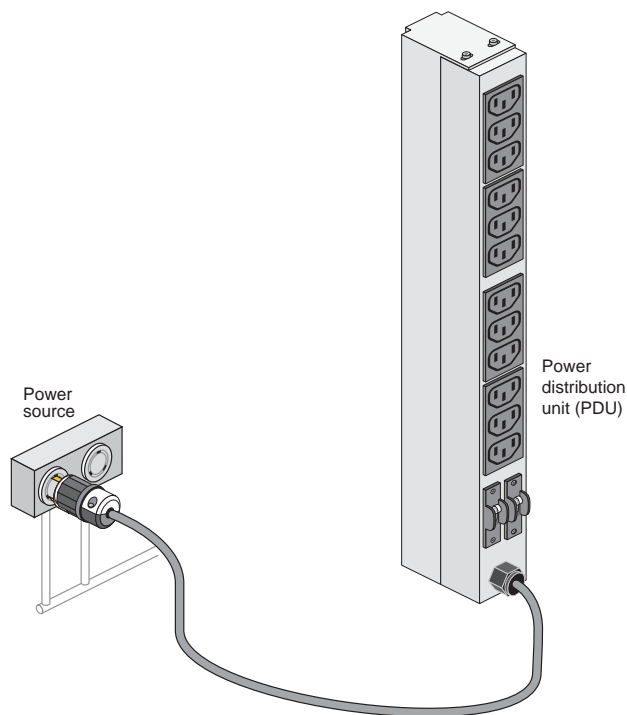


Figure 1-2 39U Rack 12-outlet Single-phase PDU

Figure 1-3 shows the 3-phase, 60-A 24-outlet PDU for the 39U rack (North America and Japan).

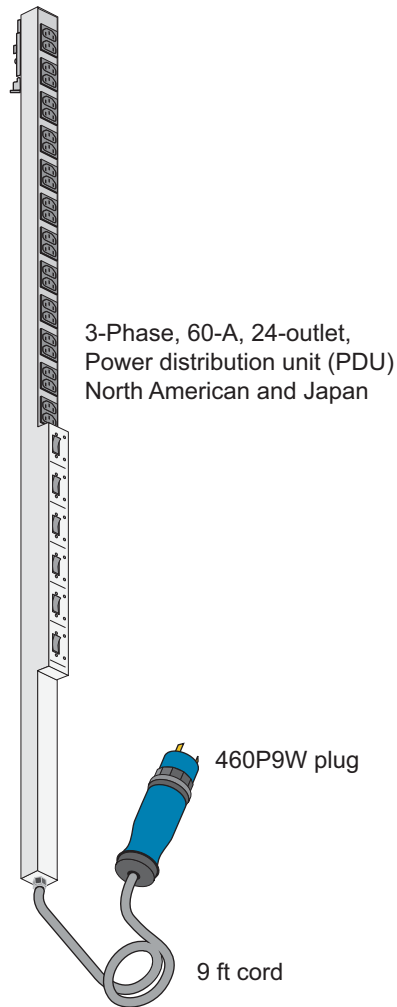


Figure 1-3 39U Rack 3-Phase PDU

Installing the Rack

This section describes how to unpack and install a rack that already has your system components rackmounted and cabled together. The following information is provided:

- “Preinstallation Activities” on page 7
- “Unloading and Moving System Racks” on page 16
- “Unpacking and Installing the Rack” on page 19
- “Positioning and Leveling Racks” on page 22

After you have completed installing your rack, refer to your system user’s guide to continue your installation.

Preinstallation Activities

Perform the following preinstallation activities:

- Perform site verifications (see “Site Plan Verification” on page 7)
- Gather appropriate tools to complete the installation (see “Tools Required” on page 8)
- Ensure that the correct power receptacle is installed and properly wired (see “Single-phase Power Receptacle Verification” on page 8)

Note: You can perform the preinstallation activities days or weeks before you receive your system.

Site Plan Verification

Ensure that all site requirements are met before your system arrives. If you have questions about the site requirements or you would like to order full-size floor templates for your site, contact a site planning representative by e-mail (site@sgi.com).

Tools Required

Table 1-3 lists the tools that you need to complete the installation.

Table 1-3 Installation Tools

Tool	Purpose
13-mm wrench	Adjust the leveling pads
Ratchet, reversible, 3/8-in. drive	Used with extension and sockets
Extension, 6-in. (3/8-in. drive)	Used with ratchet and sockets
9/16-in (14 mm) socket, 3/8-in drive	Remove angle iron bolts from rack shipping container wooden base
3/4-in. (18 mm) socket, 3/8-in. drive	Remove the M12 bolts from angle iron
Level, 9-in.	Level the rack
Pallet jack	Move the rack

Single-phase Power Receptacle Verification



Caution: 3-phase power receptacles should be installed and tested by a qualified site electrician.

Ensure that a qualified technician installs the correct power receptacles. Your SGI system uses one or two single-phase power receptacles. For North American sites, the single-phase receptacle is a 30-amp, 200- to 240-volt receptacle that has two phase sockets and one ground socket. For international sites, the single-phase receptacle is a 32-amp, 200-volt receptacle that has one phase socket, one neutral socket, and one ground socket. Note that the ground pin is slightly longer than the other two pins on the North American plug.

For a North American or Japanese Sites:

Use these steps to ensure that a single-phase power receptacle is properly wired:



Danger: Shock Hazard. Potentially lethal voltages exists at the power receptacles. Do not check voltages alone. Have someone nearby capable of rendering aid. Failure to follow these precautions may result in serious injury or death.

1. Set the voltmeter to a high AC voltage range.
2. Check the voltage between socket X and socket Y (see Figure 1-4). The meter should read between 200 and 240 VAC.
3. Check the voltage between socket X and the ground socket. The meter should read approximately 120 VAC.
4. Check the voltage between socket Y and the ground socket. The meter should read approximately 120 VAC.
5. Check the voltage between the ground socket and an earth-ground location. The meter should read 0 VAC.
6. Change the voltmeter to a low-resistance setting.
7. Measure between the ground socket and an appropriate earth-ground location and ensure that resistance is less than 1 ohm.
8. Repeat steps 1 through 7 for any additional single-phase power receptacles.



Caution: If a voltage reading is incorrect, or if the resistance measured in step 7 is more than 1 ohm, contact a site-approved electrician. Do not proceed with the installation.

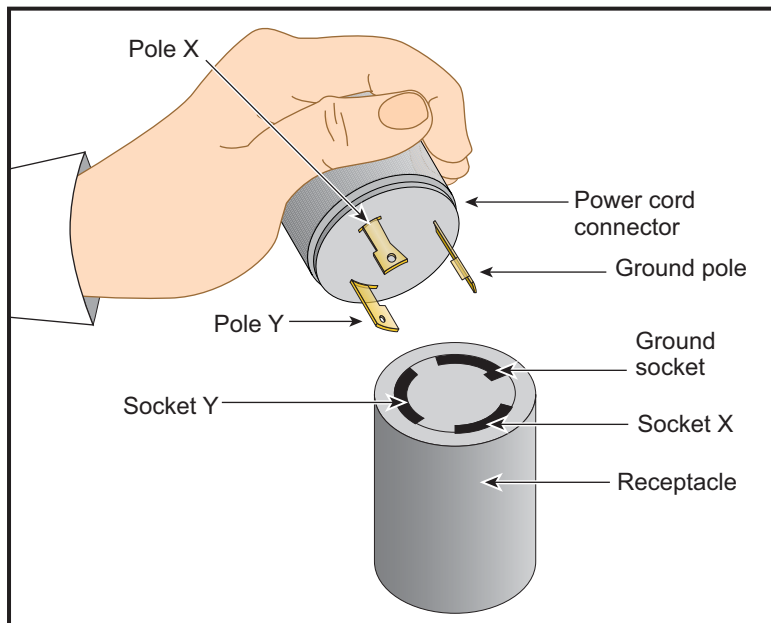


Figure 1-4 Single-phase Power Receptacle for North America and Japan

For International Sites:

Use these steps to ensure that a single-phase power receptacle is properly wired:



Danger: Shock Hazard. Potentially lethal voltages exists at the power receptacles. Do not check voltages alone. Have someone nearby capable of rendering aid. Failure to follow these precautions may result in serious injury or death.

1. Set the voltmeter to a high AC voltage range.
2. Check the voltage between socket 1 and socket 2 (see Figure 1-5). The meter should read between 200 and 240 VAC.
3. Check the voltage between socket 1 (line) and the ground socket. The meter should read between 200 and 240 VAC.

Note: The ground pin is slightly larger in diameter than the other two pins.

4. Check the voltage between socket 2 (neutral) and the ground socket. The meter should read approximately 0 VAC.
5. Check the voltage between the ground socket and an earth-ground location. The meter should read 0 VAC.
6. Change the voltmeter to a low-resistance setting.
7. Measure between the ground socket and an appropriate earth-ground location and ensure that resistance is less than 1 ohm.
8. Repeat steps 1 through 7 for any additional single-phase power receptacles.



Caution: If a voltage reading is incorrect, or if the resistance measured in step 7 is more than 1 ohm, contact a site-approved electrician. Do not proceed with the installation.

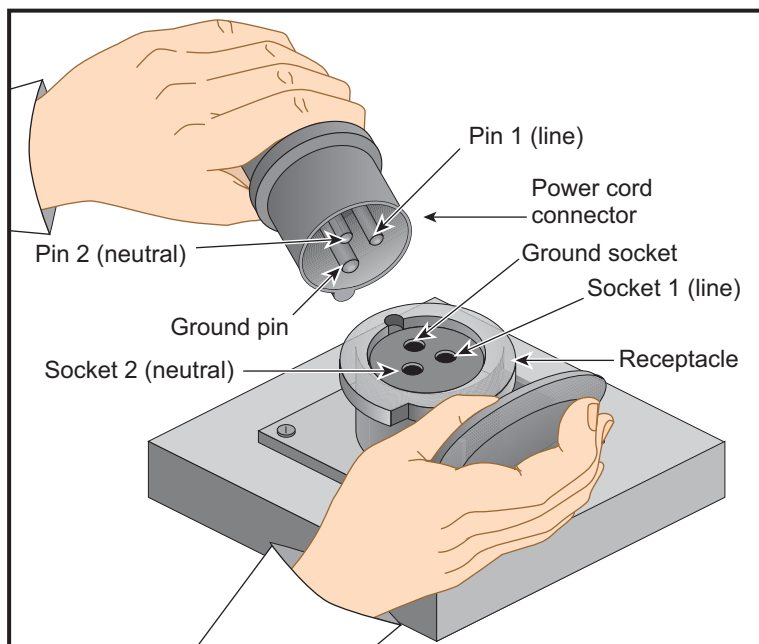


Figure 1-5 Single-phase Power Receptacle for International Sites

3-phase Power Receptacle Verification

For North American or Japanese Sites:

Use these steps to ensure that a 60-A three-phase power receptacle is properly wired:



Danger: Shock Hazard. Potentially lethal voltages exists at the power receptacles. Do not check voltages alone. Have someone nearby capable of rendering aid. Failure to follow these precautions may result in serious injury or death.

1. Set the voltmeter to a high AC voltage range.
2. Check the voltage between sockets X (L1) and Y (L2), sockets X (L1) and Z (L3), and sockets Y (L2) and Z (L3). The meter should read approximately 208 VAC between each pair of sockets.
3. Check the voltage between each of the three-phase sockets and the ground socket. The meter should read approximately 120 VAC between the ground socket and each phase socket.
4. Check the voltage between the ground socket and an earth-ground location (metal case receptacle, circuit breaker box). The meter should read 0 VAC.
5. Change the voltmeter to a low-resistance setting.
6. Measure the resistance between the ground socket and an appropriate earth-ground location and ensure that it is less than 1 ohm.
7. Repeat Step 1 through Step 6 for any additional three-phase power receptacles.



Caution: If a voltage reading is incorrect or if the resistance that is measured in Step 6 is more than 1 ohm, contact a site-approved electrician.

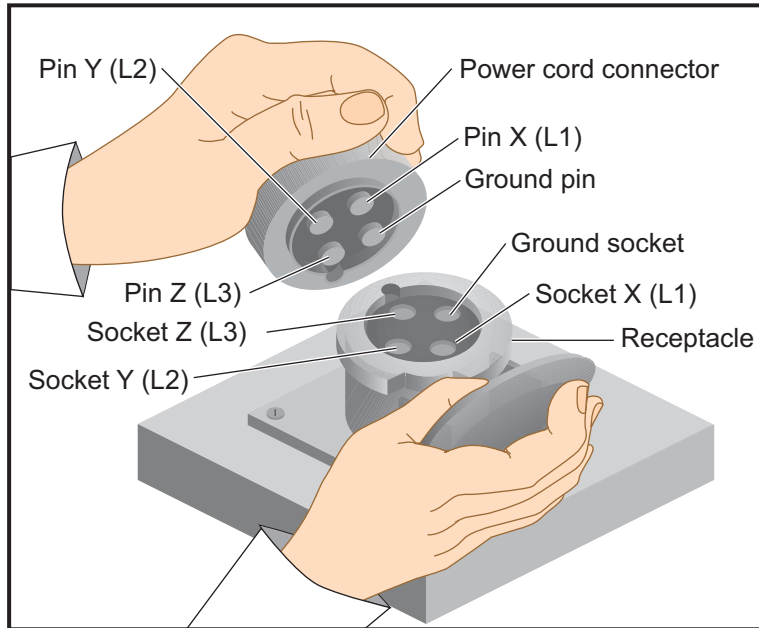


Figure 1-6 3-phase Power Receptacle for North America and Japan

For International Sites:

Use these steps to ensure that a 60-A three-phase power receptacle is properly wired:



Danger: Shock Hazard. Potentially lethal voltages exists at the power receptacles. Do not check voltages alone. Have someone nearby capable of rendering aid. Failure to follow these precautions may result in serious injury or death.

1. Set the voltmeter to a high AC voltage range.
2. Check the voltage between Sockets X (L1) and Y (L2), sockets X (L1) and Z (L3), and sockets Y (L2) and Z (L3). The meter should read approximately 400 VAC.
3. Check the voltage between each of the three-phase sockets and the neutral socket. The meter should read about 230 VAC between the neutral socket and each phase socket.
4. Check the voltage between each of the three-phase sockets and the ground socket. The meter should read approximately 230 VAC between the ground socket and each phase socket.
5. Check the voltage between the neutral and ground sockets. The meter should read 0 VAC.

6. Check the voltage between the ground socket and an earth-ground location (metal case receptacle, circuit breaker shell). The meter should read 0 VAC.
7. Change the voltmeter to a low-resistance setting.
8. Measure the resistance between the ground socket and an appropriate earth-ground location and ensure that it is less than 1 ohm.
9. Repeat Step 1 through Step 8 for any additional three-phase power receptacles.



Caution: If a voltage reading is incorrect or if the resistance that is measured in Step 8 is greater than 1 ohm, contact a site-approved electrician.

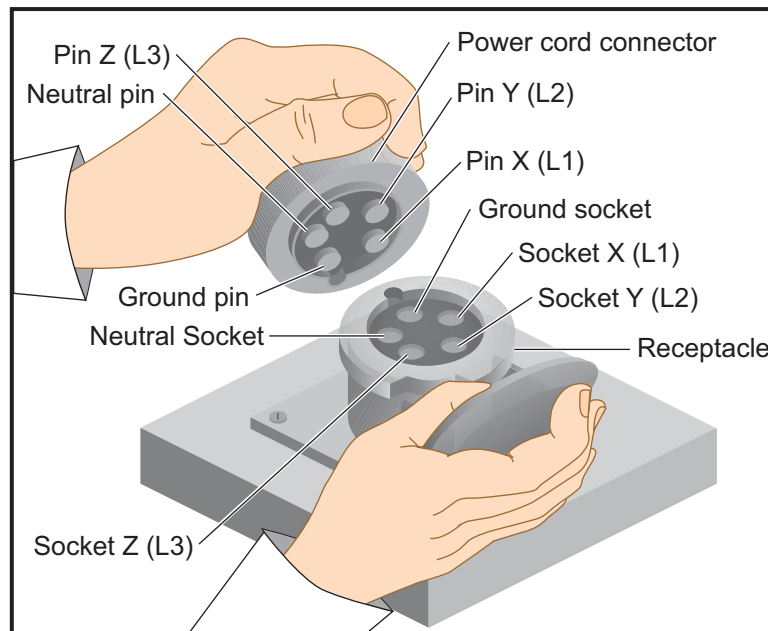


Figure 1-7 3-phase Power Receptacle for International Sites

Unloading and Moving System Racks

Your system arrives at the site in a pallet-mounted corrugated shipping container. Any documentation, CDs, accessories and other optional hardware arrive in separate cartons.

This section describes how to unload and transport the rack system to its designated location, as follows:

- “Unloading the Equipment from the Truck” on page 16
- “Inspecting the Shipping Container” on page 18
- “Transporting the Shipping Container” on page 19

Unloading the Equipment from the Truck

If your loading dock is the same height as the transportation vehicle, use a pallet jack to unload the system from the transportation vehicle. The pallet jack should have 48-in. tines or forks. Follow any instructions that are printed on the packing containers.

If the loading dock is not the same height as the vehicle, you must provide a forklift or another approved method to unload the system. You can use a platform or ramp to obtain the desired level as long as the ramp incline does not exceed a ratio of one unit vertical to six units horizontal. For more information on site requirements, contact SGI site planning by e-mail (site@sgi.com).



Danger: Use two or more people to prevent computer equipment from rolling off the transportation vehicle. Failure to do so could result in serious damage to the computer equipment, serious personal injury or death.

If your site does not have a loading dock, arrange for a forklift to unload the system from the transportation vehicle. Ensure that two or three people are available to help unload the equipment. Move all containers slowly and carefully.

Figure 1-8 shows the lift openings and dimensions of the rack shipping container. This figure also shows where to position the pallet jack.

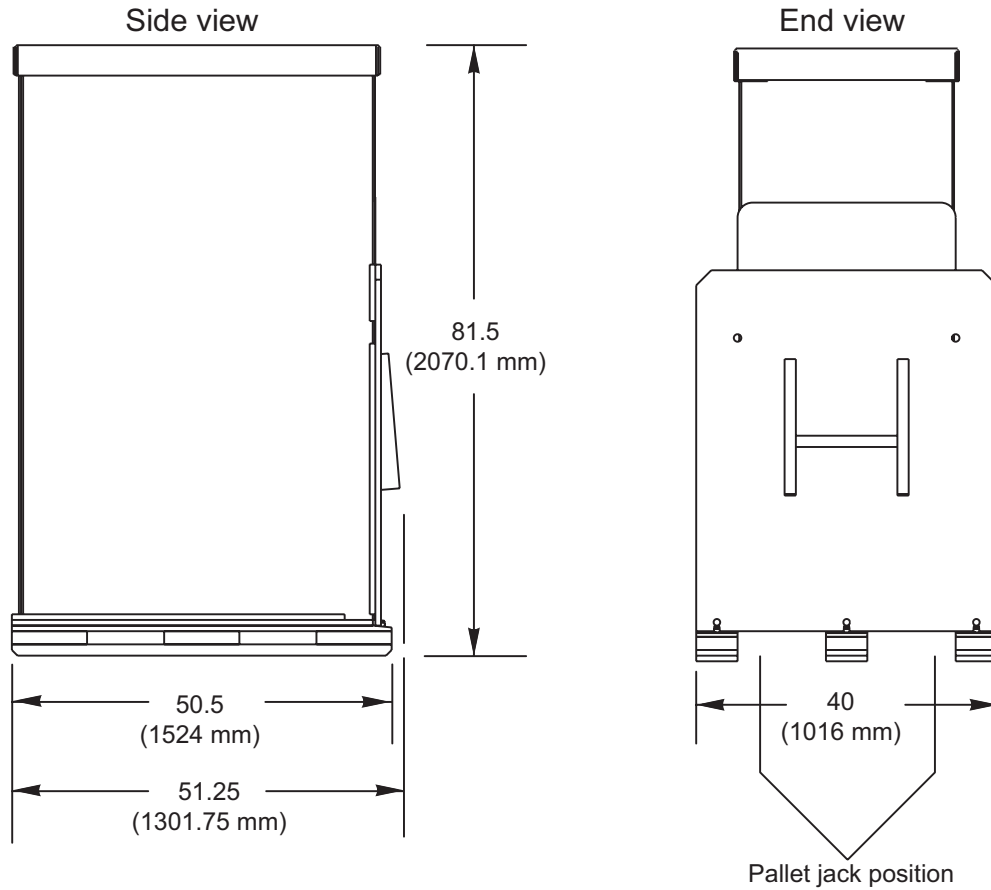


Figure 1-8 Dimensions of 39U Rack Shipping Container

Inspecting the Shipping Container

After the system is unloaded from the truck, follow these steps before you unpack it:

1. Ensure that the containers and cartons arrive unopened.
2. Inspect the shipping container for signs of external damage such as dents, holes, crushed corners, and water marks.
3. Ensure that the tilt monitor card has not been tripped (refer to Figure 1-9). Silver disk should appear in each “check” window.
4. If the container is damaged, file a damage claim with the carrier immediately. In addition, notify your local Customer Support Center (CSC) for any missing, incorrect, or damaged items. For CSC contact information, see <http://www.sgi.com/support/supportcenters.html>.



Figure 1-9 Tilt Monitor Card

Transporting the Shipping Container

Use a pallet jack with forks that are 48 in. (122 cm) long or longer to transport the shipping container to the designated location. Refer to Figure 1-8 for the container dimensions and location to position the pallet jack.

If the container does not fit through all access doors, you may need to partially disassemble the container.



Caution: If the system shipping or storage environment is significantly colder than the environment in which it will be installed [40 °F (22 °C) or greater disparity], leave the rack in its shipping container for at least 24 hours at room temperature before you start the installation. This acclimation prevents damage to the equipment that could result from thermal shock and condensation.

Unpacking and Installing the Rack



Warning: In its maximum configuration, a 39U rack system can weigh up to approximately 1,710 lbs (771 kg). Use caution when you unpack and move this rack. A pallet jack is needed to move the rack prior to unpacking. Ensure that the rack remains on a level surface and that the rack weight remains evenly distributed across the four casters.

To unpack a tall rack, you need the following tools:

- Extension, 6-inch, 3/8-in. drive
- 3/4-in. standard 3/8-in. drive socket
- Ratchet, reversible, 9/16-in.

Refer to Figure 1-10 as you follow these steps; the numbered illustrations correspond to the numbered steps. Ensure that the temperature of the rack is acclimated to the installation environment and that the system container is stable, and in an upright position



Caution: Use caution cutting the horizontal band holding the wooden ramp to the shipping container, if the ramp is not supported, it may fall on you and cause serious personal injury.



Caution: Use eye protection when cutting the plastic bands on the shipping container. Cutting the bands under high tension may cause them to snap back and strike your face. Use caution when cutting the metal bands.

1. Use a sharp cutting tool to remove the band that secures the ramp to the shipping container.
2. Position the ramp as shown in Figure 1-10. Holes in the ramp fit over the pegs in the base.
3. Remove the vertical bands that secure the load to the wooden base and remove top corrugated cap, corrugated sleeves, foam top cushion and poly bag from the rack.
4. Remove the four M12 bolts securing the rack to the wooden base:
 - a. Open the front door and locate the two M12 bolts that secure the rack to the large metal bracket.
 - b. Open the rear door, and disconnect the rear door ground wire.
 - c. Remove the rear door by lifting it off the two hinge pins.
 - d. Use a 3/4-in. socket and ratchet, remove the two M12 bolts securing the back of the rack to the wooden base.
5. Remove four 9/16-in. hex head cap screws that secure the large metal bracket to the front of the wooden base and remove the metal bracket.



Warning: Serious personal injury or death could result if the rack becomes unbalanced or gains too much momentum when rolled. Always get the assistance of other qualified personnel when rolling a rack.

6. Get four qualified persons to carefully roll the rack down the ramp and onto the floor.
7. Install the rear door onto rack by aligning the door on the hinge pins pushing downward.
8. Connect the door ground wire.

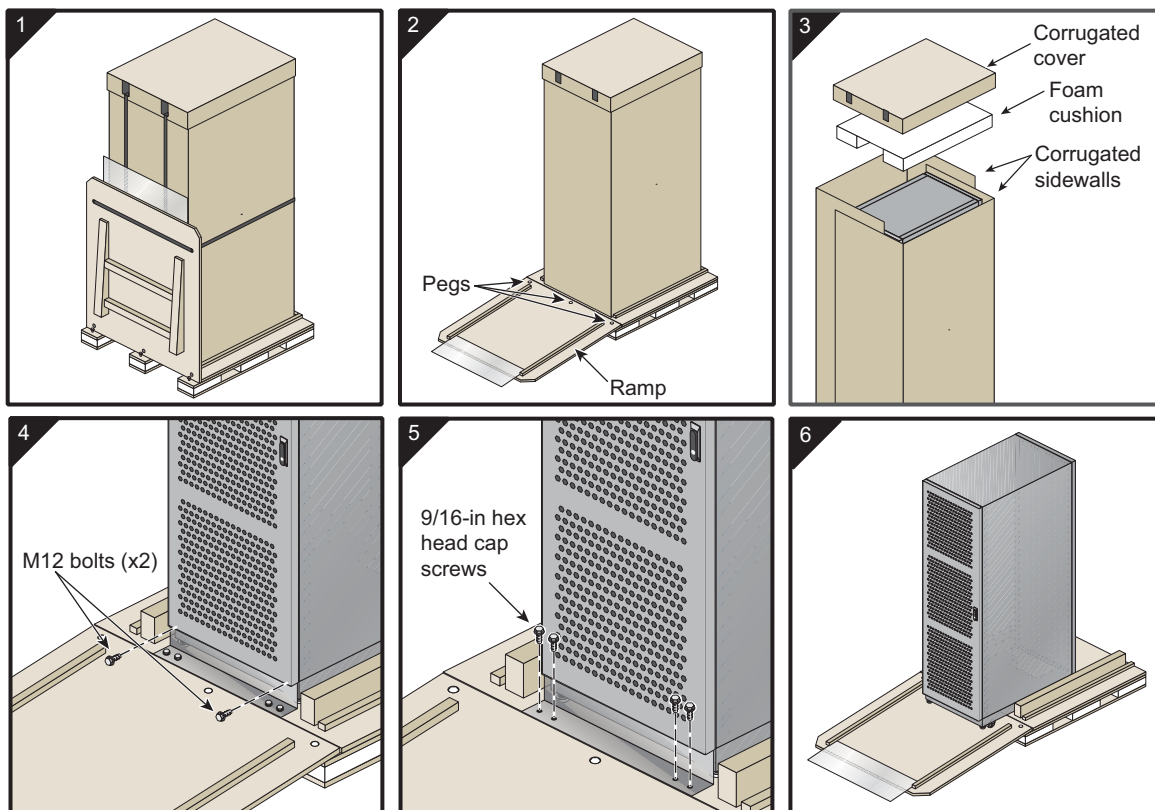


Figure 1-10 Removing a Tall Rack from the Shipping Container

Positioning and Leveling Racks



Caution: To avoid ESD damage to the electronic components, be sure to position the racks before you remove the ESD bags that cover the rack assemblies.

To position and level your system racks, follow these steps:

1. Grasp the rear of each rack and roll the rack to its designated location.
2. Adjust the leveling bolts of a rack, as shown in Figure 1-11, until the rack is level.
3. If you are installing additional racks, repeat until all of the racks are level.
4. Ensure that the circuit breakers on the power distribution units are in the OFF (●) position. Then connect the power cords to grounded power outlets. Plugging in the power cords grounds the racks.
5. SGI recommends that you secure all racks if you are installing the system in an earthquake zone.

Note: Four threaded weldnuts (M12 bolts) are located at the bottom of the rack (see Figure 1-12). Use these weldnuts to secure the seismic tie-downs. SGI does not supply the seismic tie-downs.

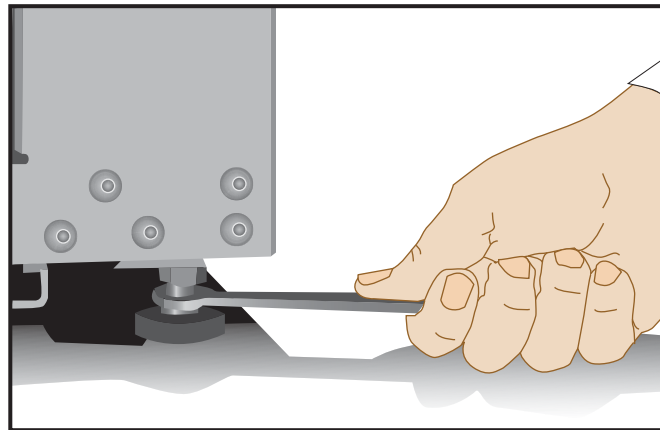


Figure 1-11 Leveling Bolts

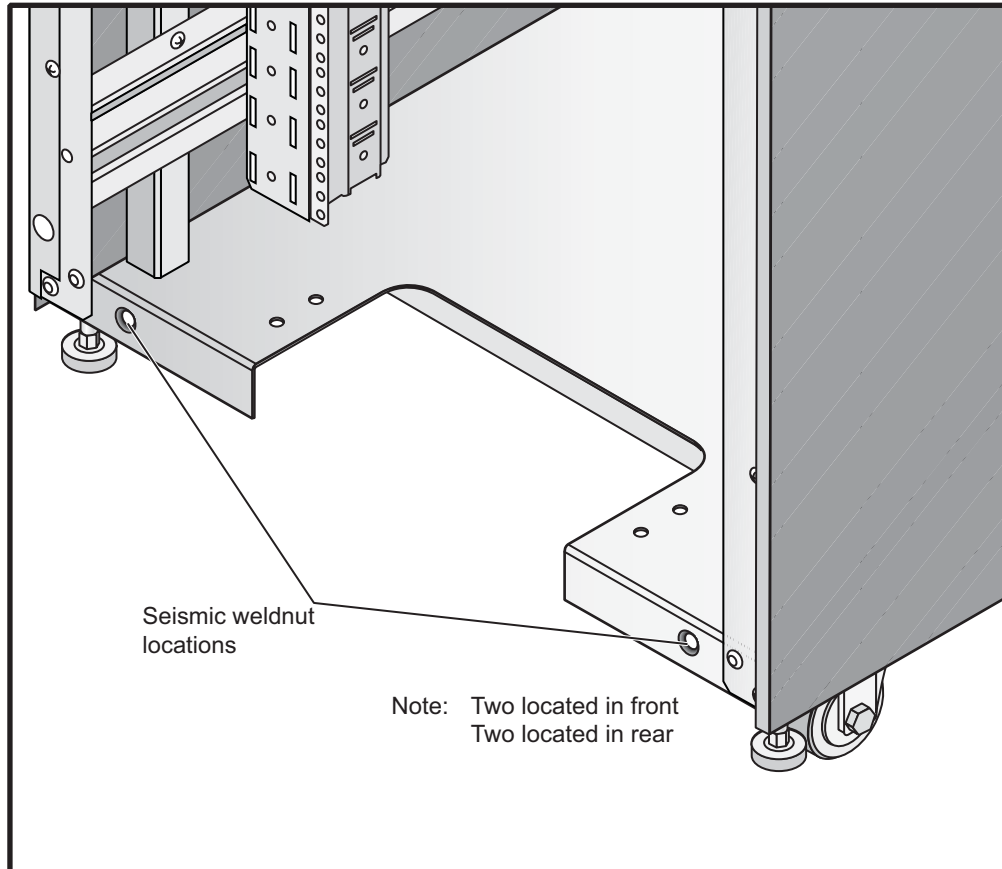


Figure 1-12 Seismic Tie-down Attachment Points

Contacting the SGI Customer Service Center

To contact the SGI Customer Service Center, call 1-800-800-4SGI, or visit <http://www.sgi.com/support/customerservice.html>.

From outside the United States contact your local SGI sales office.

