IBM TotalStorage SAN Cabinet

2109 Model C36 Installation and Service Guide

GC26-7632-03

IBM TotalStorage SAN Cabinet

2109 Model C36 Installation and Service Guide

GC26-7632-03

Note:
Before using this information and the product it supports, read the information in “Notices” on page 33.

Fourth Edition (June 2006)

Order publications through your IBM representative or the IBM branch office serving your locality.

Read this first

Summary of changes

This section summarizes changes to this publication. A vertical line in the left margin indicates each change.

Fourth edition

The following changes have been made in this edition:

- The director power distribution units (PDUs) were changed. These are new parts, now installed in the lower vertical, side-mount slots.
- Instructions for removing and replacing these new PDUs were added.
- SAN64B-2 and SAN18B-R product information and publication titles were added.
- A table listing power cables that are now obsolete was removed.

Third edition

The following changes have been made in this edition:

- An additional danger notice was added, indicating the requirement for professional movers to move a cabinet and components with a combined weight of more than 227 kg (500 lb).
- SAN16B-R SAN router product information and publication titles was added.
- The *Read this first* section was added, including this summary of changes section.
- New side-mount power distribution units (PDUs) for switches, routers and other products were added.

Second edition

The following changes have been made in this edition:

- Product recycling information was updated.
- New products (SAN256B, SAN16B-2, SAN32B-2) and their associated documentation titles were added, and the IBM and Brocade product matrix was updated.
- A general reorganization was made to group switch and director products under generic names "switch" and "director", rather than listing each model multiple times throughout the document.
- Contact information in the *Getting help* section was updated.

Getting help

For the latest version of your product documentation, visit the web at http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi.

For more information about IBM® SAN products, see the following Web site: http://www.ibm.com/servers/storage/san/

For support information for this product and other SAN products, see the following Web site:
http://www.ibm.com/servers/storage/support/san

For detailed information about the Fibre Channel standards, see the Fibre Channel Industry Association (FCIA) Web site at:
www.fibrechannel.org/

Visit www.ibm.com/contact for the contact information for your country or region.

You can also contact IBM within the United States at 1-800-IBMSERV (1-800-426-7378). For support outside the United States, you can find the service number at:
http://www.ibm.com/planetwide/.

How to send your comments

Your feedback is important in helping us provide the most accurate and high-quality information. If you have comments or suggestions for improving this document, you can send us comments electronically by using the following addresses:

- Internet: starpubs@us.ibm.com
- IBMLink™ from U.S.A.: STARPUBS at SJEVM5
- IBMLink from Canada: STARPUBS at TORIBM
- IBM Mail Exchange: USIB3VVD at IBMMAIL

You can also mail your comments by using the Reader Comment Form in the back of this manual or direct your mail to:

International Business Machines Corporation
Information Development
Department GZW
9000 South Rita Road
Tucson, Arizona 85744–0001 U.S.A.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Contents

Figures

Tables

Safety and environmental notices

This section contains information about:

Safety notices and labels

When using this product, observe the danger, caution, and attention notices contained in this guide. The notices are accompanied by symbols that represent the severity of the safety condition. The danger and caution notices are listed in numerical order based on their IDs, which are displayed in parentheses, for example (D004), at the end of each notice. Use this ID to locate the translation of these danger and caution notices in the *IBM eServer™ Safety Notices* (G229–9054) publication, which is on the CD-ROM that accompanies this product.

The following notices and statements are used in IBM documents. They are listed below in order of increasing severity of potential hazards. Follow the links for more detailed descriptions and examples of the danger, caution, and attention notices in the sections that follow.

- **Note:** These notices provide important tips, guidance, or advice.
- **"Attention notices" on page xvi:** These notices indicate potential damage to programs, devices, or data.
- **"Caution notices" on page xiv:** These statements indicate situations that can be potentially hazardous to you.
- **"Danger notices":** These statements indicate situations that can be potentially lethal or extremely hazardous to you. Safety labels may also attached directly to products to warn of these situations.
- In addition to these notices, "Safety labels" on page xv may be attached to the product to warn of potential hazards.

Danger notices

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people. A lightning bolt symbol accompanies a danger notice to represent a dangerous electrical condition. Read and comply with the following danger notices before installing or servicing this device.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

DANGER

Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device or the power rating label for electrical specifications. (D002)

DANGER

If the receptacle has a metal shell, do not touch the shell until you have completed the voltage and grounding checks. Improper wiring or grounding could place dangerous voltage on the metal shell. If any of the conditions are not as described, STOP. Ensure the improper voltage or impedance conditions are corrected before proceeding. (D003)

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

A comprehensive danger notice provides instructions on how to avoid shock hazards when servicing equipment. Unless instructed otherwise, follow the procedures in the following danger notice.

DANGER

Electrical voltage and current from power, telephone, and communication cables are hazardous.

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet. Ensure outlet supplies proper voltage and phase rotation according to the system rating plate.**
- **Connect any equipment that will be attached to this product to properly wired outlets.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described below when installing, moving, or opening covers on this product or attached devices.**

To Disconnect:

1. **Turn everything OFF (unless instructed otherwise).**
2. **Remove power cords from the outlet.**
3. **Remove signal cables from connectors.**
4. **Remove all cables from devices.**

To Connect:

1. **Turn everything OFF (unless instructed otherwise).**
2. **Attach all cables to devices.**
3. **Attach signal cables to connectors.**
4. **Attach power cords to outlet.**
5. **Turn device ON.**

(D005)

The weight of the 2109 C36 cabinet is greater than 227 kg (500 lb), and has a fully loaded capacity of 816 kg (1795 lb). Under these conditions, the following statement and notice apply.

Delivery and subsequent transportation of the equipment

The customer should prepare his environment to accept the new product based on the installation planning information provided, with assistance from an IBM Installation Planning Representative (IPR) or IBM authorized service provider. In anticipation of the equipment delivery, the final installation site should be prepared in advance such that professional movers/riggers can transport the equipment to the final installation site within the computer room. If for some reason, this is not possible at the time of delivery, the customer will need to make arrangements to

have professional movers/riggers return to finish the transportation at a later date. Only professional movers/riggers should transport the equipment. The IBM authorized service provider will only perform minimal frame repositioning within the computer room, as needed, to perform required service actions. The customer is also responsible for using professional movers/riggers in the case of equipment relocation or disposal.

DANGER

Heavy Equipment - Personal injury or equipment damage may result if mishandled (D006)

Caution notices

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition. A caution notice can be accompanied by different symbols, as in the examples below:

If the symbol is...	It means....
	A hazardous electrical condition with less severity than electrical danger.
	A generally hazardous condition not represented by other safety symbols.
 >55kg (121.2 lb)	A specification of product weight that requires safe lifting practices. The weight range of the product is listed below the graphic, and the wording of the caution varies, depending on the weight of the device.
	A potential hazard of pinching the hand or other body parts between parts.
	A hazardous condition due to moving parts nearby.
 Class I	A hazardous condition due to the use of a laser in the product. Laser symbols are always accompanied by the classification of the laser as defined by the U. S. Department of Health and Human Services (for example, Class I, Class II, and so forth).

Read and comply with the following caution notices before installing or servicing this device.

CAUTION:
Energy hazard present. Shorting may result in system outage and possible physical injury. Remove all metallic jewelry before servicing. (C001)

CAUTION:
This product is equipped with a 3-wire (two conductors and ground) power cable and plug. Use this power cable with a properly grounded electrical outlet to avoid electrical shock. (C018)

CAUTION:
Servicing of this product or unit is to be performed by trained service personnel only. (C032)

Safety labels

As an added precaution, safety labels are often installed directly on products or product components to warn of potential hazards. These can be either danger or caution notices, depending upon the level of the hazard.

The actual product safety labels may differ from these sample safety labels:

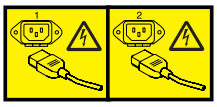
DANGER

Hazardous voltage, current, or energy levels are present inside any component that has this label attached. (L001)

Do not service, there are no serviceable parts.

DANGER

Rack-mounted devices are not to be used as a shelf or work space. (L002)



DANGER

Multiple power cords (L003)

To remove all power to the device, disconnect all power cords.

DANGER

High voltage present (L004)

CAUTION:
High energy present (L005)

DANGER

Heavy Equipment - Personal injury or equipment damage may result if mishandled (D006)

CAUTION:
Hazardous moving parts nearby (L008)

CAUTION:
Pinch point nearby

Attention notices

An attention notice indicates the possibility of damage to a program, device, or system, or to data. An exclamation point symbol may accompany an attention notice, but is not required. A sample attention notice follows:

Attention: Do not bend a fibre cable to a radius less than 5 cm (2 in.); you can damage the cable. Tie wraps are not recommended for optical cables because they can be easily overtightened, causing damage to the cable.

Rack safety

Rack installation

DANGER

- **Always lower the leveling pads on the rack cabinet.**
- **Always install stabilizer brackets on the rack cabinet.**
- **To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinets.**
- **Rack-mounted devices are not to be used as a shelf or work space. Do not place any object on top of rack-mounted devices.**
- **Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet before servicing any device in the rack cabinet.**
- **Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.**

CAUTION:

- **Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.**
- **Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.**
- **Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection.**
- **To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.**
- *(For sliding drawers.)* **Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack may become unstable if you pull out more than one drawer at a time.**
- *(For fixed drawers.)* **This drawer is a fixed drawer and should not be moved for servicing unless specified by manufacturer. Attempting to move the drawer partially or completely out of the rack may cause the rack to become unstable or cause the drawer to fall out of the rack.**

(R001)

Rack relocation (19″ rack)

CAUTION:
Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building:

- **Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must do the following:**
  - **Remove all devices in the 32U position and above.**
  - **Ensure that the heaviest devices are installed in the bottom of the rack cabinet.**
  - **Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.**
  - **If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.**
  - **Inspect the route that you plan to take when moving the rack to eliminate potential hazards.**
  - **Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that came with your rack cabinet for the weight of a loaded rack cabinet.**
  - **Verify that all door openings are at least 760 x 2030 mm (30 x 80 in.).**
  - **Ensure that all devices, shelves, drawers, doors, and cables are secure.**
  - **Ensure that the four leveling pads are raised to their highest position.**
  - **Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.**
  - **Do not use a ramp inclined at more than ten degrees.**
  - **Once the rack cabinet is in the new location, do the following:**
    - **Lower the four leveling pads.**
    - **Install stabilizer brackets on the rack cabinet.**
    - **If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.**
  - **If a long distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also, lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.**

(R002)

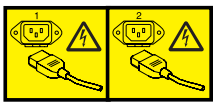
Safety inspections

Perform the following safety checks to identify unsafe conditions. Be cautious of potential safety hazards that are not covered in the safety checks. If unsafe conditions are present, determine how serious the hazards are and whether you should continue before you correct the problem.

Removing ac power

Perform the following steps to remove the alternating current (ac) power:

1. Perform a controlled system shutdown.
2. Set the power switch on the product to the off position.
3. Disconnect the power cables from the power source.



DANGER

Multiple power cords. (L003)

External machine checks

Perform the following external machine checks:

1. Verify that all external covers are present and are not damaged.
2. Ensure that all latches and hinges are in correct operating condition.
3. Check the power cable for damage.
4. Check the external signal cable for damage.
5. Check the cover for sharp edges, damage, or alterations that expose the internal parts of the device.
6. Check that any unused serial ports are covered for dust and ESD protection. The cover should be kept on the serial port whenever it is not being used.
7. Correct any problems that you find.

Internal machine checks

Perform the following internal machine checks:

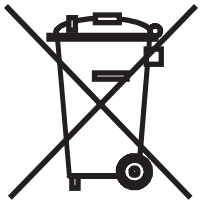
1. Check for any non-IBM changes that might have been made to the machine. If any are present, obtain the “Non-IBM Alteration Attachment Survey” form, number R009, from the IBM branch office. Complete the form and return it to the branch office.
2. Check the condition of the inside of the machine for:
   - Metal or other contaminants
   - Indications of water or other fluid
   - Fire
   - Smoke damage
3. Check for any obvious mechanical problems, such as loose components.
4. Check any exposed cables and connectors for wear, cracks, or pinching.

Environmental notices

Use the environmental statements and warning in this section to guide you when using this product and in properly disposing of the product and its components.

Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at http://www.ibm.com/ibm/environment/products/prp.shtml



Note: This mark applies only to countries within the European Union (EU) and Norway.

Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

Remarque : Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'étiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

About this document

This document describes how to install and service the IBM TotalStorage® SAN Cabinet 2109 Model C36. A number of different machine type 2109 and 2005 b-type models of directors, switches, and routers can be installed in this cabinet, including products that are no longer marketed by IBM. These products include the following:

- 2109 SAN director models
  - M48
  - M14
  - M12
- 2109 SAN switch models
  - F16
  - F32
- 2109 SAN router
  - A16 (SAN16B-R)
- 2005 SAN router
  - R18 (SAN18B-R)
- 2005 SAN switch models
  - B16 and 16B (SAN16B-2)
  - B32 and 32B (SAN32B-2)
  - B64 (SAN64B-2)
  - H08 and H16

For specific installation and service information for these IBM TotalStorage SAN products, refer to their respective installation and service guides.

Throughout this document, the IBM TotalStorage SAN Cabinet 2109 Model C36 is referred to as the Model C36, or simply the C36. The term *cabinet* is also used, where appropriate, to refer to the C36. The IBM TotalStorage SAN Switch 2109 director models M12, M14, and M48, are referred to as *directors*. The 2109 models F16, and F32, and 2005 models B64, B32, 32B, B16, 16B, H08, and H16 are referred to as *switches*. The 2005 R18 SAN router (SAN18B-R) and the 2109 A16 SAN router (SAN16B-R) are referred to as *routers*. The term *devices* refers generically to switches, routers, directors, or other products.

The sections that follow provide information about:

Who should read this document

This document is intended for service representatives who are responsible for installing and servicing the 2109 Model C36 cabinet.

Product documentation

The following documents contain information related to this product:

- *IBM TotalStorage SAN Cabinet 2109 Model C36 Installation and Service Guide*, GC26-7633 (this document)
- *IBM eServer Safety Notices*, G229–9054

Related documents

You can find installation and service information for the directors, switches, and routers that can be installed in the C36 cabinet in the following documents:

Note: A number of the products listed in the publications below are no longer marketed by IBM.

Service publications

IBM TotalStorage SAN256B Director Installation, Service, and User's Guide (GC26–7761)
IBM TotalStorage SAN Switch 2109 Model M14 Installation and Service Guide (GC26–7631)
IBM TotalStorage SAN Switch 2109 Model M12 Installation and Service Guide (GC26–7633)
IBM System Storage SAN64B-2 Installation, Service, and User's Guide (GC26-7899)
IBM TotalStorage SAN32B-2 Installation, Service, and User's Guide (GC26-7695)
IBM TotalStorage SAN16B-2 Installation, Service, and User's Guide (GC26-7753)
IBM TotalStorage SAN Switch 2109 Model F16 Installation and Service Guide (SY27–7623)
IBM TotalStorage SAN Switch 2109 Model F32 Installation and Service Guide (GC26–7496)
IBM TotalStorage SAN Switch 2005 Model H08 and Model H16 Installation, Service, and User's Guide (GC26–7629)
IBM TotalStorage SAN16B-R Installation, Service, and User's Guide (GC26–7742)
IBM System Storage SAN18B-R Installation, Service, and User's Guide (GC26–7798)

User's publications

For information related to using these products, see the specific user's guides:

IBM TotalStorage SAN256B Director Installation, Service, and User's Guide (GC26–7761)
IBM TotalStorage SAN Switch 2109 Model M12 and Model M14 User's Guide (GC26–7636)
IBM System Storage SAN64B-2 Installation, Service, and User's Guide (GC26-7899)
IBM TotalStorage SAN32B-2 Installation, Service, and User's Guide (GC26-7695)
IBM TotalStorage SAN16B-2 Installation, Service, and User's Guide (GC26-7753)
IBM TotalStorage SAN Switch 2005 Model H08 and Model H16 Installation, Service, and User's Guide (GC26–7629)
IBM TotalStorage SAN Switch 2109 Model F16 User's Guide (GC26-7439)
IBM TotalStorage SAN Switch 2109 Model F32 User's Guide (GC26–7517)
IBM TotalStorage SAN16B-R Installation, Service, and User's Guide (GC26–7742)
IBM System Storage SAN18B-R Installation, Service, and User's Guide (GC26–7798)

IBM and Brocade product matrix

When you use any of the Brocade documents, you will notice that the model numbers reflect the original Brocade switches. Table 1 provides a product matrix for you to use to correlate the Brocade model numbers to the IBM product names and machine types and model numbers. Note that a number of these products are no longer marketed by IBM or Brocade.

Table 1. Brocade and IBM product and model number matrix

Brocade product name	IBM product name	IBM machine type and model number
SilkWorm AP7420	SAN16B-R multiprotocol router	2109 Model A16
SilkWorm 200E	SAN16B-2	2005 Models B16 and 16B
SilkWorm 3250	SAN Switch H08	2005 Model H08
SilkWorm 3800	SAN Switch F16	2109 Model F16
SilkWorm 3850	SAN Switch H16	2005 Model H16
SilkWorm 3900	SAN Switch F32	2109 Model F32
SilkWorm 4100	SAN32B-2	2005 Models B32 and 32B
SilkWorm 4900	SAN64B-2	2005 Model B64
SilkWorm 7500	SAN18B-R	2005 Model R18
SilkWorm 12000	SAN Switch M12	2109 Model M12
SilkWorm 24000	SAN Switch M14	2109 Model M14
SilkWorm 48000	SAN256B Director	2109 Model M48

Chapter 1. Installing the 2109 Model C36 cabinet

This section contains the procedures to install a 2109 Model C36 cabinet (hereafter referred to as the *cabinet*) and prepare it for use.

The installation steps are as follows:

Attention: Refer to "Safety and environmental notices" on page xi for safety information and notices before starting any installation or service procedures.

Step 1. Position the cabinet

DANGER

Heavy Equipment - Personal injury or equipment damage may result if mishandled (D006)

Attention: An IBM service support representative must install the cabinet. Professional movers/riggers must transport the cabinet to within the installation room. The IBM authorized service provider will only perform minimal frame repositioning within the computer room, as needed, to perform required service actions. Refer to "Danger notices" on page xi for more information.

Perform the following steps to position the cabinet:

1. Remove all packing and tape from the cabinet.
2. Position the cabinet according to the customer floor plan.
3. Lock each caster wheel by tightening the screw on the caster. See Figure 1 on page 2.

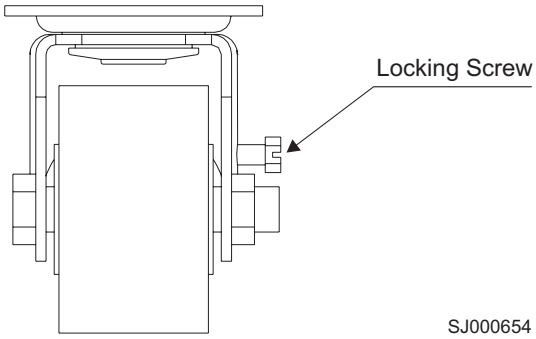


Figure 1. Caster wheel

Use the following conditions to determine the next step:

- If you are not attaching the cabinet to the floor, go to “Step 2. Level the cabinet.”
- If you are bolting the cabinet to a concrete floor, go to “Step 4. Attach the cabinet to a concrete floor” on page 4.
- If you are bolting the cabinet to a concrete floor beneath a raised floor, go to “Step 5. Attach the cabinet to a concrete floor beneath a raised floor” on page 6.

Step 2. Level the cabinet

Perform the following steps to adjust the leveling feet:

1. Loosen the jam nut on each leveling foot by turning the nut counterclockwise, away from the bottom of the cabinet. See Figure 2 on page 3.
2. Rotate each leveling foot downward until it contacts the surface on which the cabinet is placed.
3. Adjust the leveling feet downward as needed until the cabinet is level. When the cabinet is level, tighten the jam nuts against the base by turning the nut clockwise, toward the bottom of the cabinet.

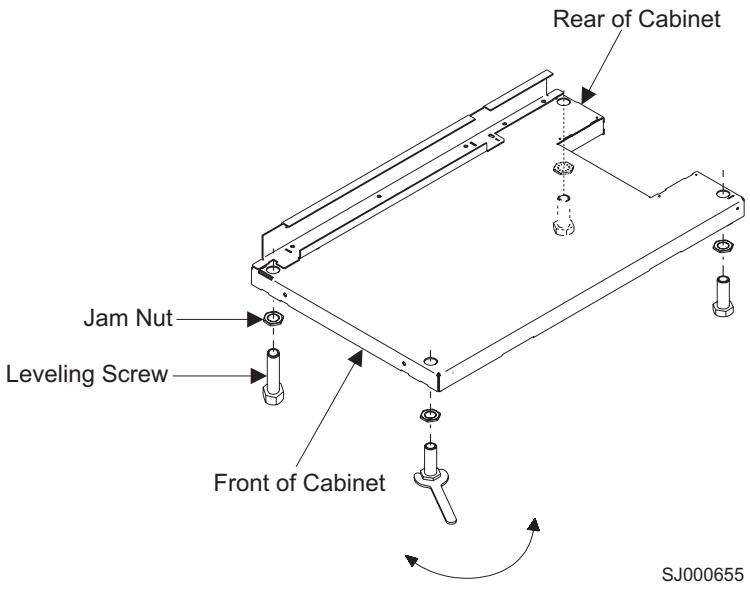


Figure 2. Adjusting the leveling feet

Step 3. Attach the stabilizers

DANGER

You must firmly attach the stabilizers to the bottom front and bottom rear of the cabinet to prevent the cabinet from turning over when the switches are pulled out of the cabinet. (R001)

1. Align the slots in the stabilizer with the mounting holes at the bottom front of the cabinet. See Figure 3.

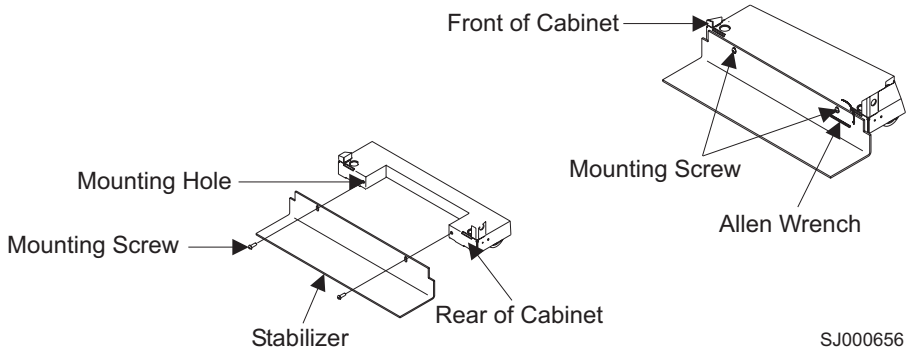


Figure 3. Stabilizers

2. Install the two mounting screws.
3. Ensure that the base of the stabilizer rests firmly on the floor. Use the Allen wrench that is supplied with the cabinet to alternately tighten the mounting screws until they are tight.

4. Repeat step 1 through step 3 to install the stabilizer at the bottom rear of the cabinet.

Step 4. Attach the cabinet to a concrete floor

Perform the following steps to attach the rack-mounting plates directly to a concrete floor. Refer to Figure 4 while you perform the steps.

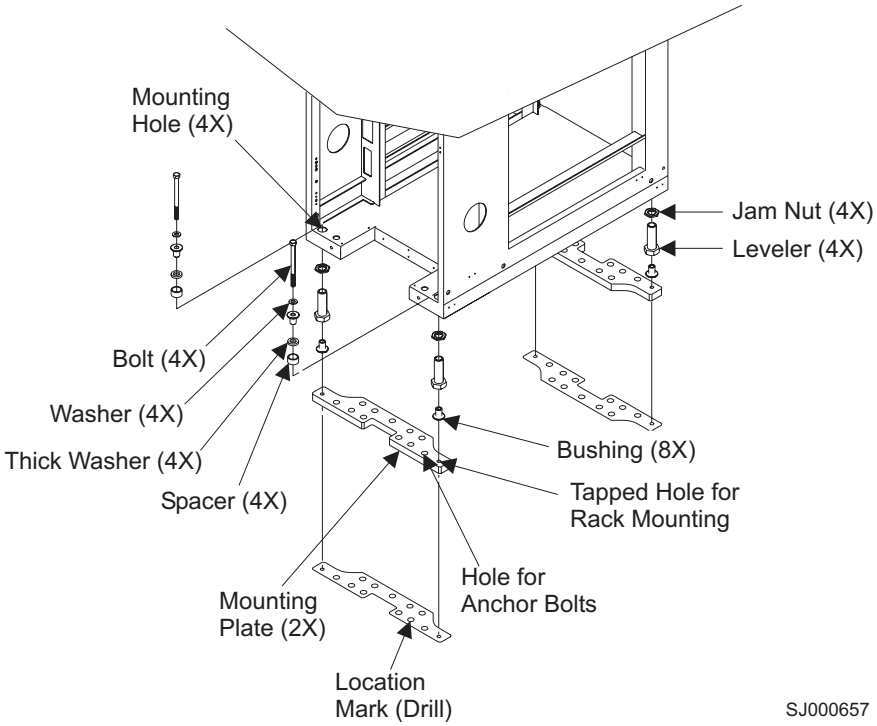


Figure 4. Attaching the cabinet to a concrete floor

1. Ensure that the cabinet is in the correct location.
2. In this cabinet, temporarily install the bushings to help position the rack-mounting plates.
3. Ensure that the bushing is in the leveling foot. Position the two rack-mounting plates in the approximate mounting location under the cabinet. If necessary, raise the leveling feet for clearance.
4. Place a bushing on a rack-mounting bolt. Insert the bolt and bushing through the leveling foot and bushing and out the bottom bushing.
5. Insert the four rack-mounting bolts through the leveling feet and bushings and out the bottom of the cabinet.
6. Position the rack-mounting plates under the four rack-mounting bolts. Center the rack-mounting bolts directly over the tapped holes.
7. Turn the rack-mounting bolts 3–4 rotations into the tapped holes.
8. Mark the floor around the edges of both rack-mounting plates.
9. Mark the rack-mounting plate bolt-down holes that are accessible through the opening in the rear of the cabinet.
10. Remove the rack-mounting bolts and bushings.
11. Remove the rack-mounting plates.

12. Loosen the locking screws on the casters. Move the cabinet so that the cabinet is clear of the locator marks for the rack-mounting plates.
13. Position the rack-mounting plates within the marked areas.
14. Mark the floor at the center of each hole in the rack-mounting plates (including the tapped holes).
15. Remove the two rack-mounting plates from the marked locations.
16. At the marked location of the tapped rack-mounting bolt holes, drill four holes approximately 5 cm (2 in.). This allows clearance for the ends of the four rack-mounting bolts. The ends of the rack-mounting bolts protrude past the thickness of the mounting plate.

    Note: You must use a minimum of two anchor bolts for each rack-mounting plate to attach it to the concrete floor. Because some of the holes in the rack-mounting plates might align with the concrete reinforcement rods that are below the surface of the concrete, some of the rack-mounting plate holes might not be suitable.
17. For each rack-mounting plate, select at least two suitable holes. Select holes as close to the threaded holes as possible. Be sure that the holes you select at the rear of the cabinet are accessible. Drill the selected holes (two for each rack-mounting plate).
18. Position the front rack-mounting plate within the marked area.
19. Using anchor bolts, attach the front rack-mounting plate to the concrete floor.

    Note: Do not use the four plastic isolator bushings.
20. Position the cabinet over the front rack-mounting plate.
21. Position the rear rack-mounting plate within the marked area.
22. Using anchor bolts, attach the rear rack-mounting plate to the concrete floor.
23. Insert each of the rack-mounting bolts through a flat washer, a thick washer, and through a leveling foot.
24. Align the four rack-mounting bolts with the four tapped holes in the two rack-mounting plates and turn the bolts 3–4 rotations.
25. Tighten the locking screw on each caster.
26. Adjust the leveling screw downward, as needed, until the cabinet is level. See Figure 5 on page 6. When the cabinet is level, tighten the jam nuts against the base by turning the jam nut clockwise, toward the bottom of the cabinet. Torque the four bolts to 54–67 nm (40–50 ft-lbs).

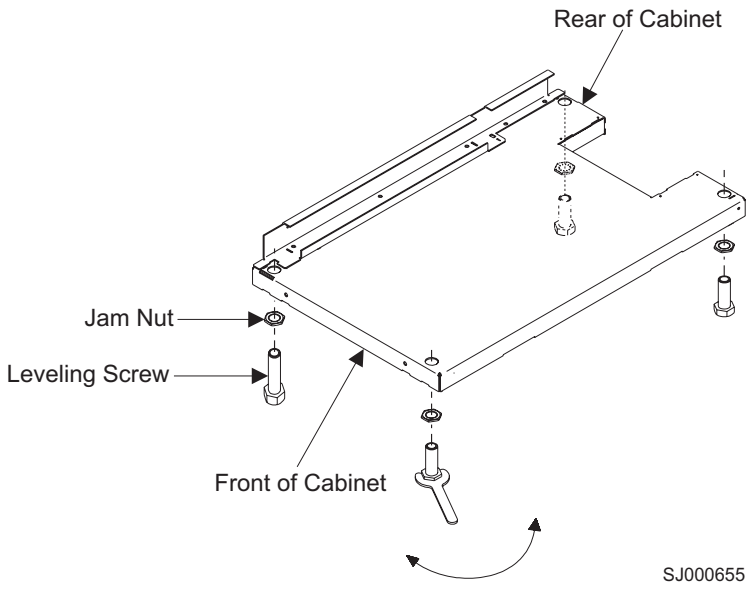


Figure 5. Leveling the cabinet

27. After you bolt down the cabinet, go to “Step 6. Attach the mounting plates” on page 9.

Step 5. Attach the cabinet to a concrete floor beneath a raised floor

Perform the following steps to attach the rack-mounting plates to the concrete floor beneath a raised floor.

Refer to Figure 6 on page 7 while you perform the steps.

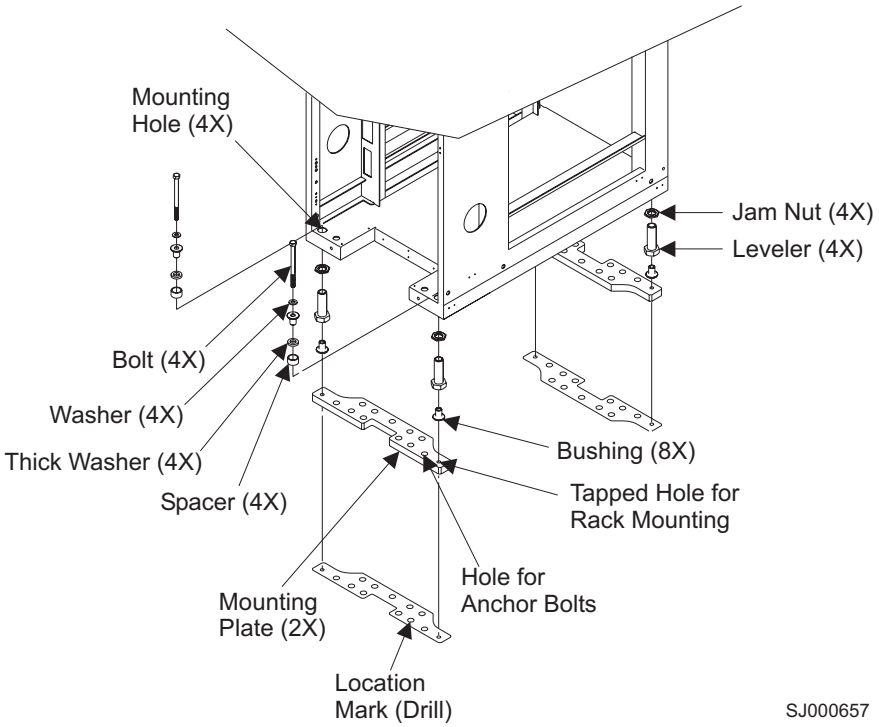


Figure 6. Attaching the cabinet to a raised floor

1. Ensure that the cabinet is in the correct location.
2. In this cabinet, temporarily install the bushings to help position the rack-mounting plates.
3. Ensure that the bushing is in the leveling foot. Position the two rack-mounting plates in the approximate mounting locations under the cabinet. If necessary, raise the leveling feet for clearance.
4. Place a bushing on a rack-mounting bolt. Insert the bolt and bushing through the leveling foot and bushing, and out of the bottom bushing.
5. Insert the four rack-mounting bolts through the leveling feet and bushings, and out the bottom of the cabinet.
6. Position the rack-mounting plates under the four rack-mounting bolts. Center the rack-mounting bolts directly over the tapped holes.
7. Turn the rack-mounting bolts 3–4 rotations into the tapped holes.
8. Mark the raised-floor panel around the edges of both rack-mounting plates.
9. Mark the rack-mounting plate bolt-down holes that are accessible through the opening in the rear of the cabinet.
10. Remove the rack-mounting bolts and bushings.
11. Remove the rack-mounting plates.
12. Loosen the locking screws on the casters. Move the cabinet so that it is clear of the locator marks for the rack-mounting plates.
13. Position the rack-mounting plates within the marked areas.
14. Mark the raised-floor panel at the center of each hole in the rack-mounting plates (including the tapped holes).
15. Remove the two rack-mounting plates from the marked locations.
16. Transfer the locations of the holes from the raised-floor panel to the concrete floor directly beneath. Mark the holes on the concrete floor.

Note: You must use a minimum of two anchor bolts for each rack-mounting plate to attach it to the concrete floor. Because some of the holes in the rack-mounting plates might align with concrete reinforcement rods below the surface of the concrete, some of the rack-mounting plate holes might not be suitable.

17. For each rack-mounting plate, select at least two suitable holes. Select holes as close to the threaded holes as possible. Be sure that the holes you select at the rear of the cabinet are accessible. Drill the selected holes (two for each rack-mounting plate) in the concrete floor.
18. Drill pass-through holes in the raised-floor panel at the location of the four rack-mounting bolts.
19. Position the front rack-mounting plate within the marked area.
20. Using anchor bolts, attach the front rack-mounting plate to the concrete floor. Do not use the four plastic isolator bushings.
21. Position the cabinet on the raised-floor panel over the front rack-mounting plate.
22. Position the rear rack-mounting plate within the marked area.
23. Using anchor bolts, attach the rear rack-mounting plate to the concrete floor.
24. Insert each of the rack-mounting bolts through a flat washer, a plastic isolator bushing, a thick washer, and through a leveling foot.
25. Align the four rack-mounting bolts with the four tapped holes in the two mounting plates and turn the bolts 3–4 rotations.
26. Tighten the locking screw on each caster.
27. Adjust the leveling feet downward, as needed, until the cabinet is level. See Figure 7. When the cabinet is level, tighten the jam nuts against the base by turning the jam nut clockwise (toward the bottom of the cabinet). Torque the four bolts to 54–67 nm (40–50 ft-lbs).

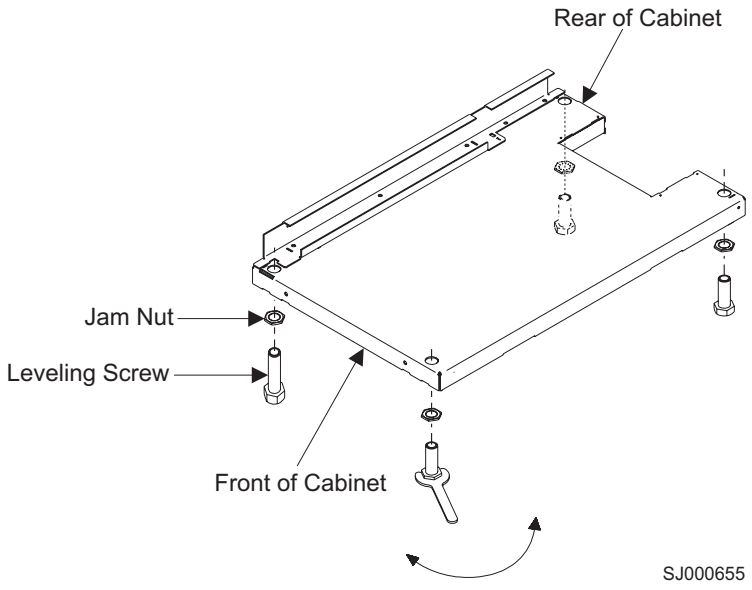


Figure 7. Leveling the cabinet

28. If the cabinet does not have a front door, install the top, left, and right trim panels.

29. After you bolt down the cabinet, go to “Step 7. Attach the front door.”

Step 6. Attach the mounting plates

Note: You attach the front and rear mounting plates through the same mounting holes that you use to mount the stabilizers. Therefore, you must bolt down the cabinet rather than use the stabilizers. Install the mounting plates *only* if you bolted the cabinet to the floor.

The mounting plates are part of the Earthquake Mounting Kit, feature code 6080.

Align the holes on the mounting plate with the holes on the front of the cabinet. Use the Allen wrench that is supplied with the cabinet to install the mounting plate screws (stabilizer mounting screws). Repeat this procedure for the mounting plate on the rear of the cabinet. See Figure 8.

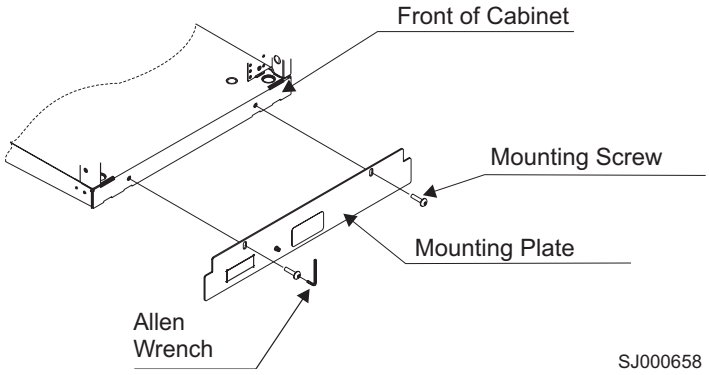


Figure 8. Attaching the mounting plate

Step 7. Attach the front door

If necessary, perform the following steps to attach the front door. Refer to Figure 9 on page 10 while you perform the steps.

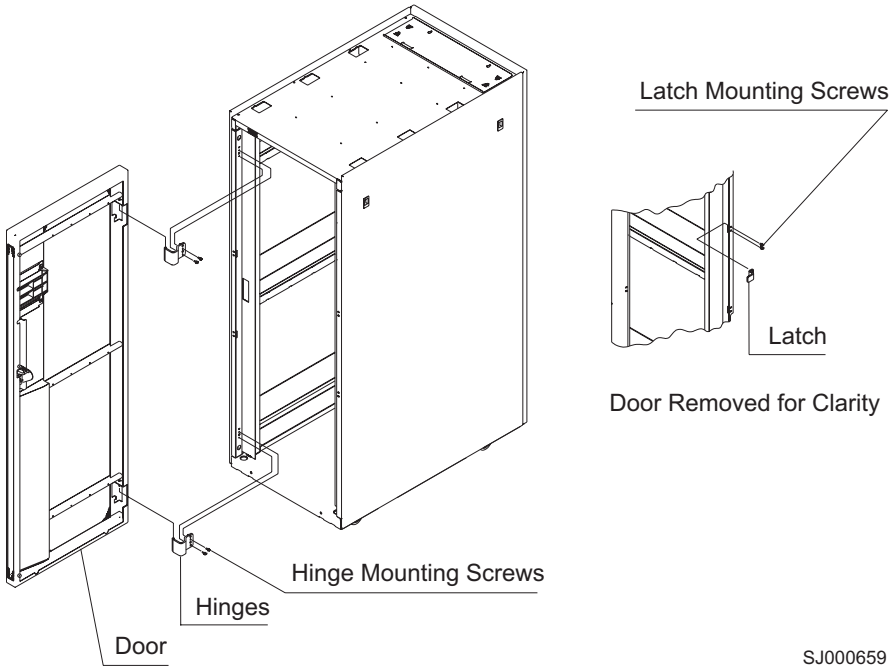


Figure 9. Attaching the front door

1. Install the hinges.
2. Install the latch.
3. Align the lower hinge pin on the front door with the hinge. Partially insert the pin into the hinge.
4. Align the upper hinge pin with the hinge. Lower the door into position.
5. Adjust the latch so that the door is latched securely.

Step 8. Check the customer's ac power source

Before you plug the power cord into the ac power source, perform the following checks on the customer's ac power source.

DANGER

If the receptacle has a metal shell, do not touch the shell until you have completed the voltage and grounding checks. Improper wiring or grounding could place dangerous voltage on the metal shell. If any of the conditions are not as described, STOP. Ensure the improper voltage or impedance conditions are corrected before proceeding. (D003)

CAUTION:
Ensure the building power circuit breakers are turned off *BEFORE* **you connect the power cord(s) to the building power. (C023)**

1. Have the customer turn off the branch circuit breaker for the ac power outlet into which the power cord will plug. Attach a "Do Not Operate" tag (S229–0237) to the circuit breaker switch.

Note: All measurements are made with the receptacle face plate in the normal installed position.

2. Some receptacles are enclosed in metal housings. For this type of receptacle, perform the following steps:
   a. Check for less than 1 volt from the receptacle case to any grounded metal structure, such as a raised-floor metal structure, water pipe, building steel, or similar structure.
   b. Check for less than 1 volt from the receptacle ground pin to a grounded point in the building.

      Note: If the receptacle case or face plate is painted, be sure that the probe tip penetrates the paint and makes good electrical contact with the metal.

   c. Check the resistance from the ground pin of the receptacle to the receptacle case. Check the resistance from the ground pin to the building ground. The readings should be less than 0.1 ohm, which indicates the presence of a continuous grounding conductor.
3. If any of the three checks that you made in step 2 are not correct, ask the customer to:
   - Remove the power from the branch circuit.
   - Make the wiring corrections.

   Recheck the receptacle.

   Note: Do not use a digital multimeter to measure grounding resistance in the following steps.
4. Check for infinite resistance between the ground pin of the receptacle and each of the phase pins. This check is for a wiring short to ground or a wiring reversal.
5. Check for infinite resistance between the phase pins. This check is for a wiring short.

CAUTION:
If the reading is other than infinity, do not proceed! Have the customer make the necessary wiring corrections before you continue. Do not turn on the branch circuit breaker until you satisfactorily complete all the previous steps. (Refer to danger notices D004, D005 in "Safety and environmental notices" on page xi for more specific information.)

6. Have the customer turn on the branch circuit breaker. Measure for the appropriate voltages between phases. If no voltage is present on the receptacle case or the ground pin, the receptacle is safe to touch.
7. With an appropriate meter, verify that the voltage at the ac outlet is correct.
8. Verify that the grounding impedance is correct by using the ECOS 1020, 1023, B7106, C7106, or an appropriately approved ground impedance tester.

Step 9. Check the power distribution units

The C36 can contain up to four power distribution units (PDUs). The PDUs contains ac outlets to provide power to the directors, switches, routers, or other products. Two PDUs (PN 39Y8984) are factory-installed along the left and right sides of the cabinet in the lower cutouts. These PDUs provide power for the directors. You can install two additional PDUs (PN 39J1183) along the sides of the cabinet in the upper cutouts to provide power for any additional switches, routers, or other products you choose to install. These PDUs must be installed in pairs. See

"Installing optional PDUs for switches and routers" for instructions on an initial installation of these optional PDUs if you are installing additional switches, routers and other products.

Note: Cabinets with serial numbers ending in an alphabetic character (for example, 100600A) come with the director PDUs installed in the lower slots along the side of the cabinet. Earlier versions of the cabinet (with totally numeric serial numbers) have PDUs installed horizontally at the top of the cabinet.

Note: The optional PDU for switches and routers, PN 39J1183, replaced PN 97P6221.

The input ac power is not switched, so each outlet has a separate circuit breaker to protect against excessive current. When the switch power cords are plugged into the PDU outlets, resistance should be less than 0.1 ohm between input ground and either switch or cabinet frames.

For instructions on how to remove and install the PDUs:

- See "Installing optional PDUs for switches and routers" for an initial installation of the switch PDUs.
- See "Side-mounted PDUs for directors and switches" on page 16 for instructions for removing and replacing the side-mounted director and switch PDUs.
- See "Top-mounted PDUs for directors" on page 18 for instructions for removing and replacing the earlier version top-mounted director PDUs.

Installing optional PDUs for switches and routers

The rear of the cabinet contains cutouts for PDUs. The cutouts for the switch and router PDUs are located on the upper right side and the upper left side of the cabinet (see **1** in Figure 11 on page 16 and **2** in Figure 13 on page 27).

Complete the following steps to install the two additional PDUs into the cabinet:

1. Install the four nut clips (PN 74F1823) in the top right PDU cutout.
2. Insert the PDU (PN 39J1183 or PN 97P6221) into the top right cutout.
3. Insert the four screws (PN 1624779) into the PDU and tighten.
4. Install the four nut clips (PN 74F1823) in the top left PDU cutout.
5. Insert the PDU (PN 97P6221) into the top left cutout.
6. Insert the four screws (PN 1624779) into the PDU and tighten.

Attention: The PDUs for switches, routers, and other devices (PN 39J1183) have a maximum total current capacity of 24 amps. Ensure that attached devices do not exceed this capacity.

Figure 10 on page 13 shows how the power cords should be looped inside the cabinet. Be sure that the cords do not loop below the lower cabinet brace.

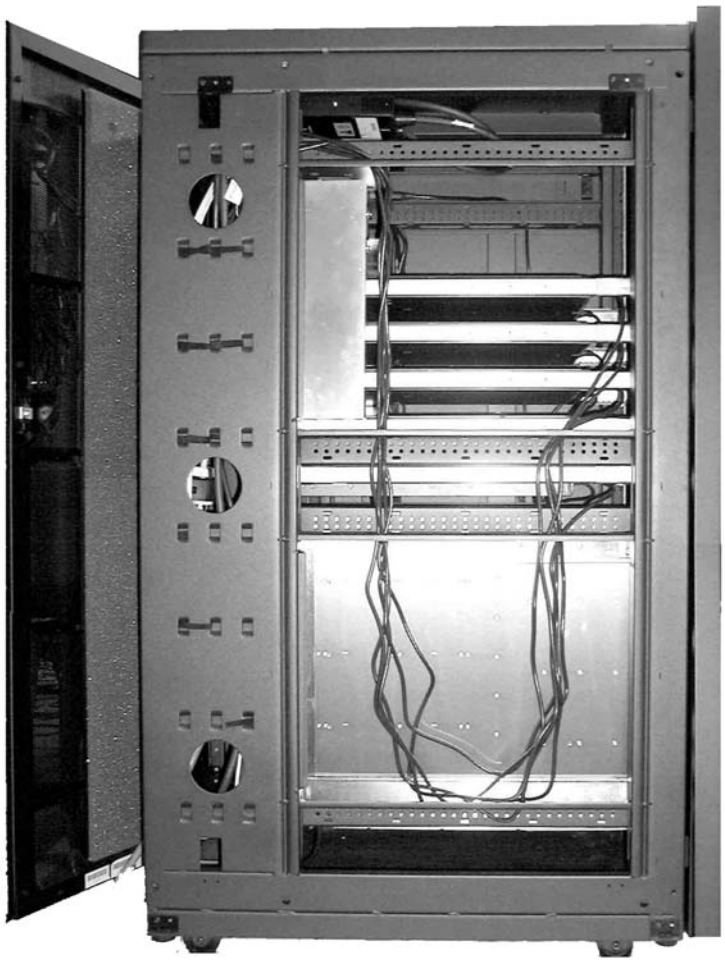


Figure 10. Power cord cabling (cabinet side view)

Attention: To ensure proper air circulation and cooling, filler panels (see “Blank fillers” on page 23) must be installed in all blank spaces in the cabinet.

Step 10. Connect switch and device cables

The factory configures the cabinet and installs all of the director power cables.

The factory does not install switches or routers. These products should be installed only by qualified personnel.

If you need to install device cables, follow the installation instructions provided with the component that you are installing.

Step 11. Power on the cabinet

Perform the following steps to power on the cabinet:

1. Plug all power cords into the outlets on the power distribution units (PDUs).
2. Plug the power cord of each PDU into the customer’s ac power outlets. Use only the cords supplied with the cabinet and PDUs.

CAUTION:
This product is equipped with a 3-wire (two conductors and ground) power cable and plug. Use this power cable with a properly grounded electrical outlet to avoid electrical shock. (C018)

Note: See “Power cables” on page 26 for information about the power cords that are available for the cabinet.

3. Follow the power-on procedures for the switches and directors installed in the cabinet. See the specific installation and service guides for each installed switch.
4. Close the front door of the cabinet.

Chapter 2. Service procedures

The service procedures described in this chapter are for the C36 cabinet and associated hardware only. Service procedures for the individual products mounted in the cabinet are described in their respective installation and service guides. This chapter contains the following sections:

- "Switch, router, and director power-off procedure"
- "Removing and replacing the PDUs"
- "Removing and replacing the front or rear cabinet door" on page 19
- "Relocating the cabinet" on page 20

Attention: Refer to "Safety and environmental notices" on page xi before performing any service procedures in this chapter.

Attention: To ensure proper air circulation and cooling, filler panels (see "Blank fillers" on page 23) must be installed in all blank spaces in the cabinet. If you remove any devices, fill the blank spaces with filler panels.

Switch, router, and director power-off procedure

Use the following procedure to power-off a switch, router, or director before attempting to remove or replace any cabinet components. For more specific instructions to power off a particular device, refer to the installation and service guide for that particular product.

Attention: Removing power to a mounted switch, router, director or other device has an adverse effect on the customer's systems and networks if they are not properly prepared. Inform the customer before you power off any product.

1. Open the rear door of the cabinet.
   Check the power cabling from the device that is attached to the PDU that you are servicing. Most devices have dual power cords, which are plugged into PDUs with independent ac sources.
2. Before you power off the switch, router, or director, make sure that the customer has removed, dismounted, or taken the devices off line from their systems.
3. Turn off the ac power switches (circuit breakers) of the devices connected to the PDU you are servicing.
4. Unplug the power cord from the customer's ac power outlet(s).
5. Unplug all power cords from the PDU you are servicing.

Removing and replacing the PDUs

For all cabinets with serial numbers ending in an alphabetic character, PDUs for the directors and PDUs for switches and other devices are mounted only in the side cutouts. See "Side-mounted PDUs for directors and switches" on page 16 for instructions on removing and replacing side-mounted director PDUs and side-mounted switch PDUs.

For cabinets with totally serial numbers ending in numbers, PDUs for the directors are mounted at the top of the cabinet. See "Top-mounted PDUs for directors" on page 18 for instructions on removing and replacing the top-mounted director PDUs.

Figure 11 shows the C36 cabinet with the factory installed director PDUs (**2**) and the optional PDUs for the switches (**1**) (PN 39J1183 or PN 97P6221). Each director PDU has six receptacles (see Figure 14 on page 28. Each switch PDU has twelve receptacles (see Figure 15 on page 29).

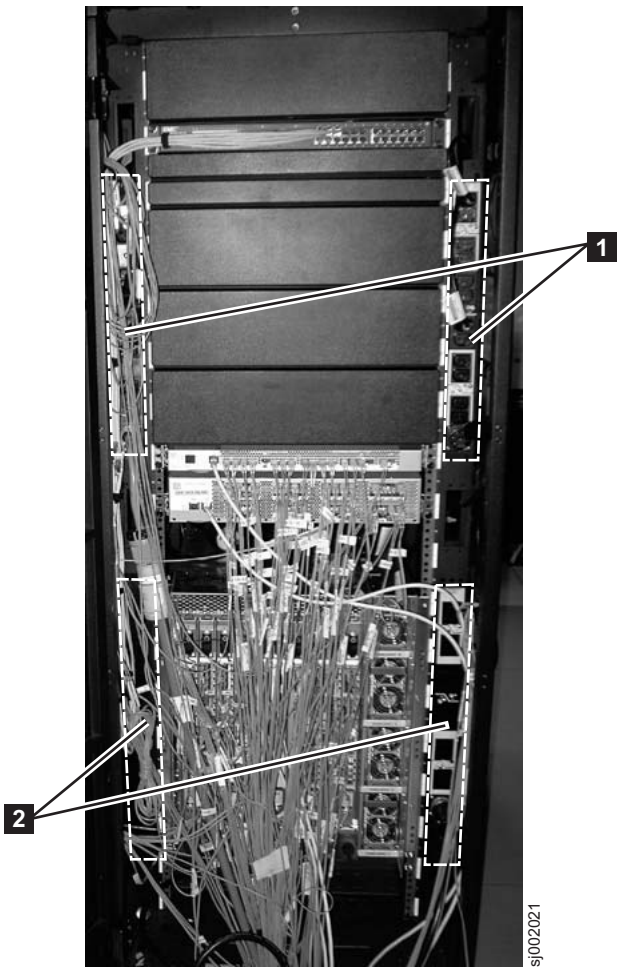


Figure 11. C36 cabinet with director and switch PDU locations

Item	Description	Part number
1	PDU for switch attachment	PN 39J1183 or PN 97P6221
2	PDU for director attachment	PN 39Y8948

Note: This illustration is for locating the positions of the PDUs only. The director door and cable management trays are not installed, and the cables are not sufficiently organized. Refer to the appropriate director installation and service guides for information on cable management.

Side-mounted PDUs for directors and switches

PDUs for the directors are located in the lower cutouts in the left and right sides of the cabinet. PDUs for switches and other devices are located in the upper cutouts in the left and right sides of the cabinet.

Removing the side-mounted director PDU

Complete the following steps to remove the side-mounted director PDU from the cabinet:

1. Follow the steps in “Switch, router, and director power-off procedure” on page 15.
2. Turn off power and disconnect the ac power distribution bus from the customer’s ac power outlet. Record the locations of the director ac power cables that are plugged into the PDU.
3. Unplug the director ac power cables from the PDU.
4. Remove the four screws from the PDU. Set aside for later use.
5. With one hand under the PDU to support it, remove the PDU from the cabinet.
6. Set the PDU aside. Follow the return instructions that accompany the replacement PDU.

Replacing the side-mounted director PDU

Complete the following steps to replace the side-mounted director PDU:

1. Insert the new PDU (PN 39Y8948) into the cutout until the PDU mounting tabs are against the nut clips.
2. Insert the four screws through the PDU mounting tabs and into the nut clips. Tighten each screw.
3. Reattach the PDU power cable to the PDU and to the power source.
4. Reconnect any director power cables that you disconnected from the PDU, using the locations you noted during the removal process.
5. Follow the steps in “Step 11. Power on the cabinet” on page 13.

Removing the switch/router PDU

Complete the following steps to remove the switch/router PDU from the cabinet:

1. Follow the steps in “Switch, router, and director power-off procedure” on page 15.
2. Turn off power and disconnect the ac power distribution bus from the customer’s ac power outlet. Record the locations of the switch ac power cables that are plugged into the PDU.
3. Unplug the switch ac power cables from the PDU.
4. Remove the four screws from the PDU. Set aside for later use.
5. With one hand under the PDU to support it, remove the PDU from the cabinet.
6. Set the PDU aside. Follow the return instructions that accompany the replacement PDU.

Replacing the switch/router PDU

Complete the following steps to replace a switch/router PDU in the cabinet:

Note: A new installation of the switch/router PDU requires the use of four (4) nut clips (PN 00N8709, supplied with the PDU). Slide the nut clips over the mounting holes before completing the steps below.

1. Insert the PDU (PN 39J1183 or PN 97P6221) into the cutout until the PDU mounting tabs are against the nut clips.
2. Insert the four screws through the PDU mounting tabs and into the nut clips. Tighten each screw.
3. Reconnect any power cables that you disconnected from the PDU.
4. Plug the power cables into the locations that you recorded during the removal procedure.

5. Follow the steps in “Step 11. Power on the cabinet” on page 13.

Top-mounted PDUs for directors

Cabinets with serial numbers ending in a number (not an alphabetic character) have PDUs for directors mounted at the top of the cabinet. Follow the instructions below to remove and replace these PDUs.

Removing the top-mounted director PDU

Complete the following steps to remove the top-mounted director PDU from the cabinet:

1. Follow the steps in “Switch, router, and director power-off procedure” on page 15.
2. Turn off power and disconnect the ac power distribution bus from the customer’s ac power outlet. Record the locations of the switch ac power cables that are plugged into the PDUs.
3. Unplug the switch ac power cables from the PDUs.
4. Remove the four mounting screws from the PDU. Pull the unit toward you.
5. Remove the PDU from the cabinet.
6. Remove the four M6 screws from the dual device attachment bracket (the center bracket attaching the two PDUs together). Set the screws aside for reuse when you replace the PDU.
7. Remove the two M3 x 5 screws from the dual-device attachment bracket of the PDU that you are replacing. Set the screws aside for reuse when you replace the PDU.
8. Remove the two M3 x 5 screws from the horizontal mounting bracket of the PDU that you are replacing (the bracket that is attached to the cabinet). Set the screws aside for reuse when you replace the PDU.

Replacing the top-mounted director PDU

Complete the following steps to replace a director PDU in the cabinet:

1. Replace the horizontal mounting bracket on the new PDU (FRU PN 32P1077) by using the two M3 x 5 screws that you removed during the removal procedure.
2. Replace the dual device attachment bracket by using the two M3 x 5 screws that you removed earlier in the procedure.

   Note: Make sure that the threaded holes are on the opposite side of the device as the holes on the other attachment bracket.
3. Push the two PDUs together, aligning the holes on the dual device attachment brackets.
4. Secure the front and rear of the brackets to each other by using the four M6 screws that you removed during the removal procedure.
5. Slide the PDU into position. Install the four mounting screws.
6. Reconnect any power cables that you disconnected from the PDU.
7. Plug the power cables into the locations that you recorded during the removal procedure.
8. Follow the steps in “Step 11. Power on the cabinet” on page 13.

Removing and replacing the front or rear cabinet door

Use this procedure to remove and replace the front or rear cabinet doors.

Removing the cabinet door

Perform the following steps to remove the front or rear door:

1. Open the door of the cabinet.
2. Remove the door by lifting it up and out.
3. Remove the hinge bracket (if necessary) by removing the hinge mounting screws that attach the bracket to the rack. See Figure 12.

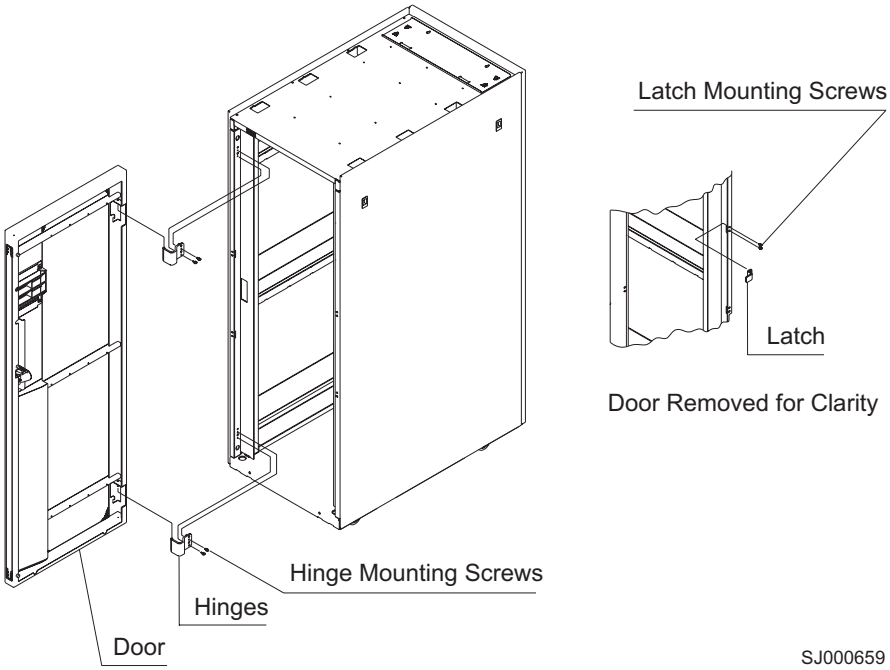


Figure 12. Removing the cabinet door

Replacing the cabinet door

Perform the following steps to replace the front or rear door:

1. Align the door with the hinge pin.
2. Install the bottom hinge pin (the longest pin) first.
3. Install the top hinge pin (the shortest pin) second.

Relocating the cabinet

DANGER

Heavy Equipment - Personal injury or equipment damage may result if mishandled (D006)

Attention: Refer to “Danger notices” on page xi for safety information regarding moving the cabinet. Professional movers/riggers may be required.

CAUTION:
Refer to “Rack safety” on page xvii (R001, R002) for weight balance and loading safety notices before moving loaded racks or cabinets.

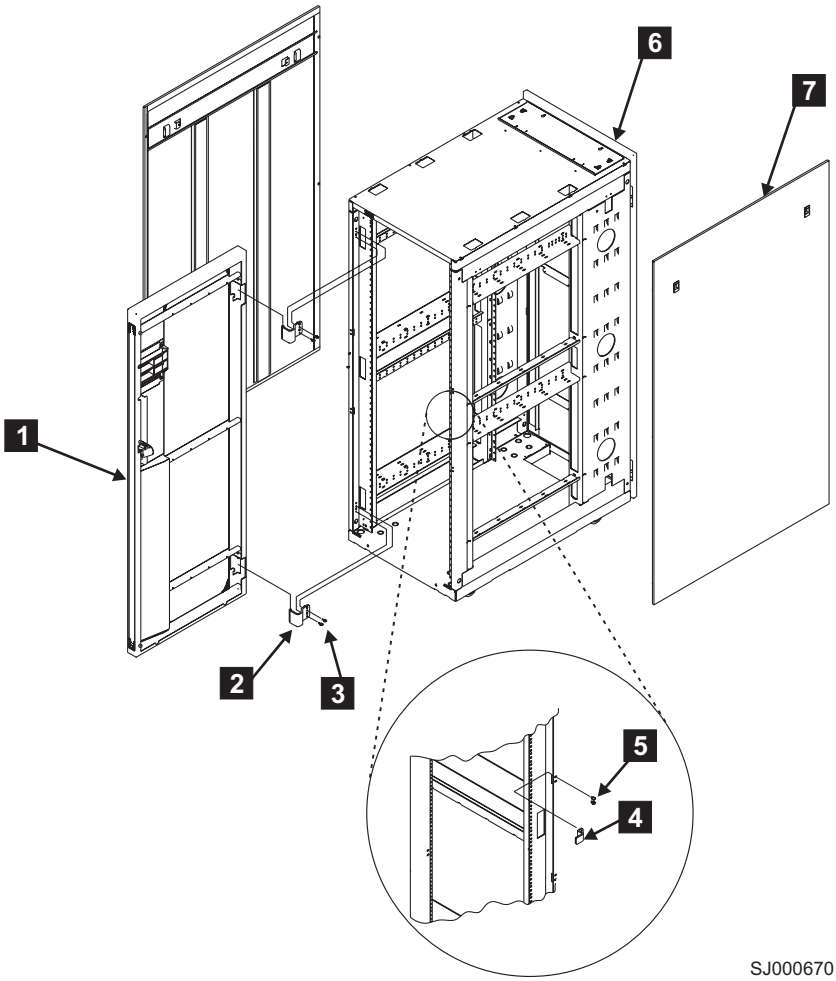
Perform the following steps to relocate the cabinet:

1. Turn off all power to the cabinet and the devices installed.
2. Disconnect all power and all device cables.
3. Unbolt the cabinet from the floor or remove the stabilizers.
4. Raise all the leveling feet.
5. Unlock each caster wheel by loosening the screw on the caster.
6. Move the cabinet to the new position.
7. Reposition the cabinet. Go to “Step 1. Position the cabinet” on page 1.

Appendix A. Parts information

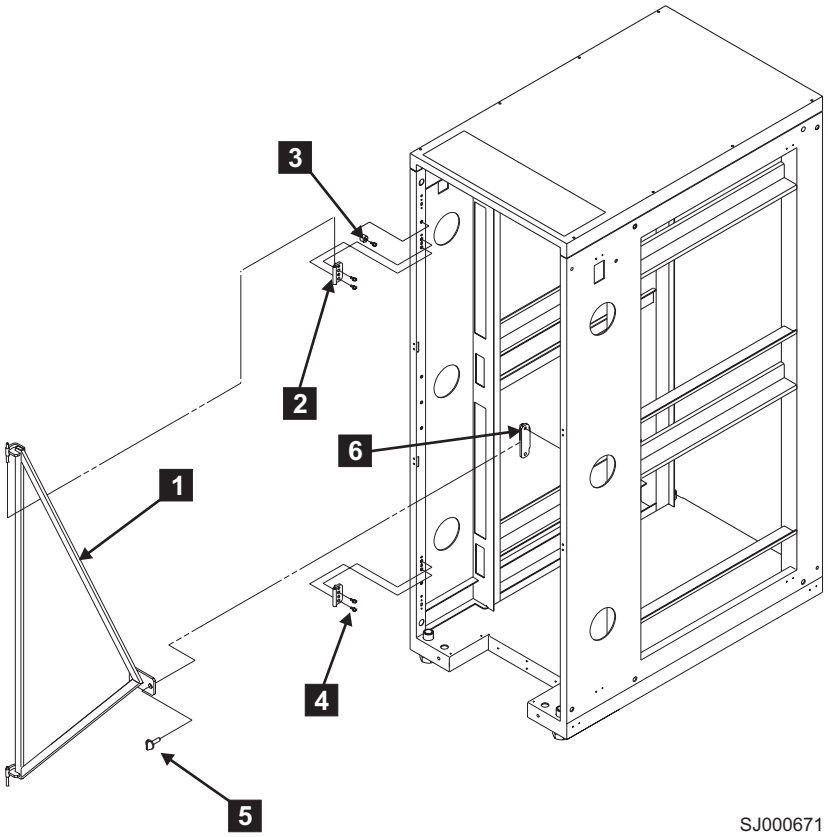
This chapter contains detailed drawings, FRU part numbers, and part descriptions for a 2109 Model C36 cabinet. For parts information specific to individual devices installed in the cabinet, see the installation and service guides for those products.

Cabinet door and side panels



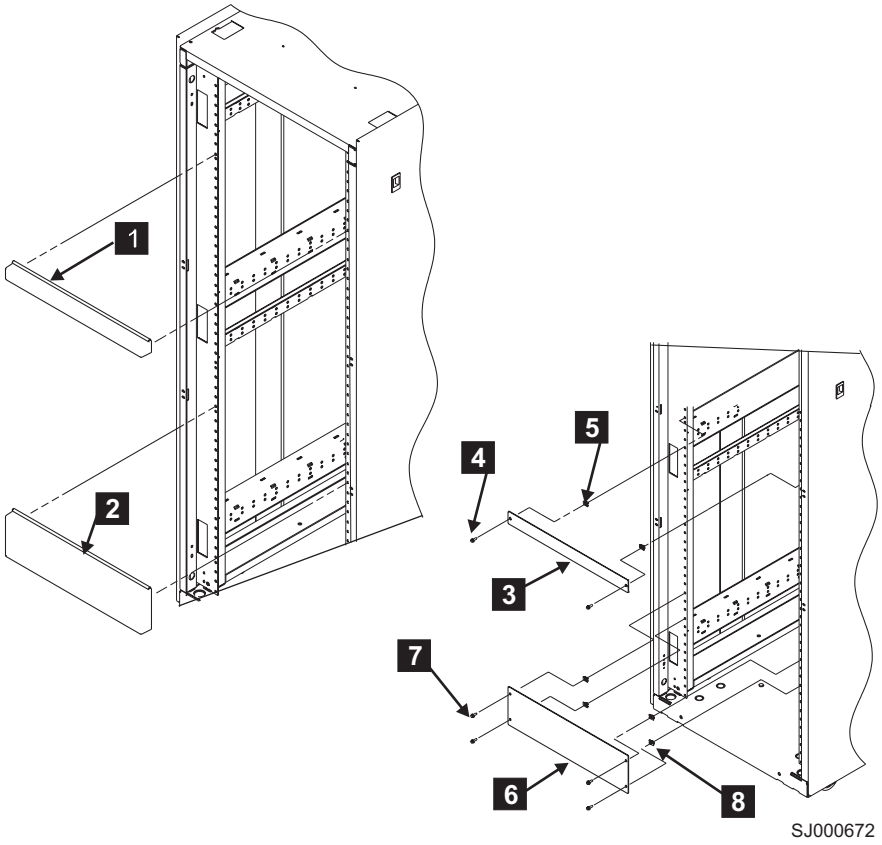
Index number	FRU part number	Units per assembly	Description
1	18P2120	1	Front door
2	31L7547	2	Hinge, front door
3	31L8594	4	Screw, front hinge
4	31L7545	1	Latch, front door
5	31L7540	2	Screw, front door latch
6	11P0724	1	Rear door (black)
7	05N6478	2	Side panel (black)

Earthquake brace



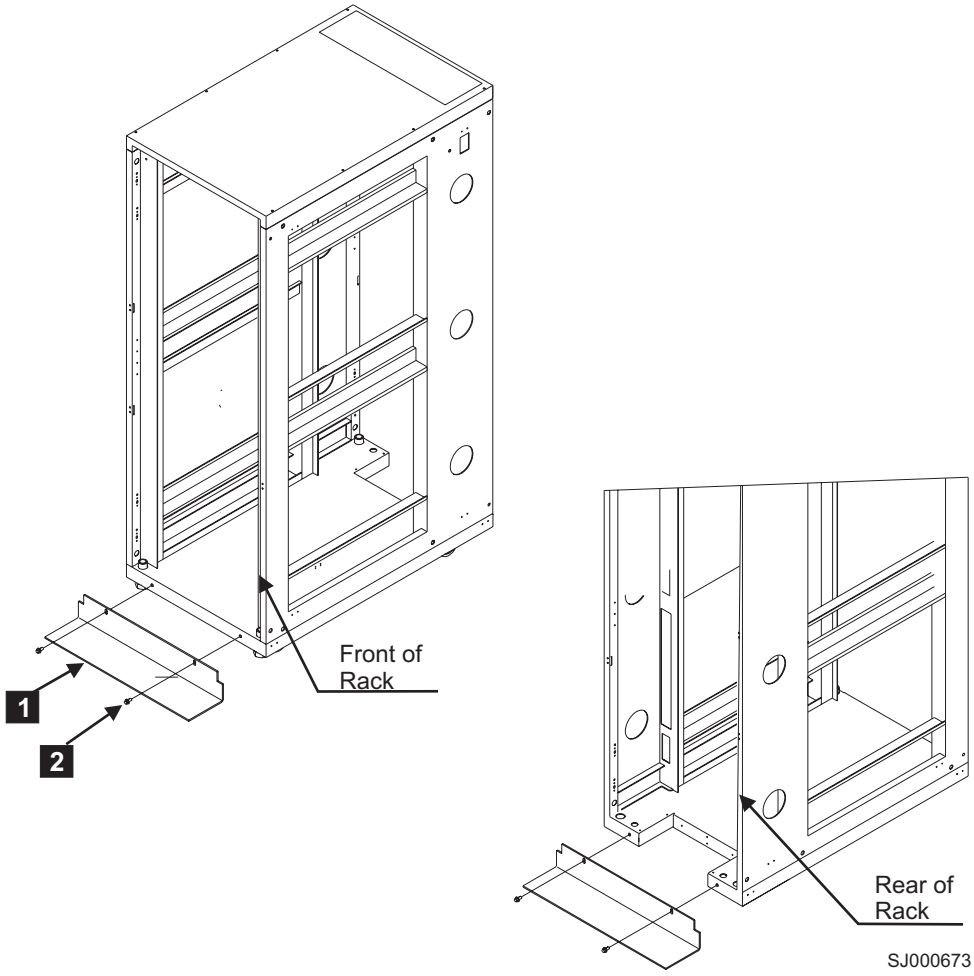
Index number	FRU part number	Units per assembly	Description
	41V0488	1	Earthquake brace kit
1	Reference only	1	Bracket
2	Reference only	2	Hinge
3	Reference only	1	Spacer
4	Reference only	7	Screw
5	Reference only	1	Bolt
6	Reference only	1	Latch plate

Blank fillers



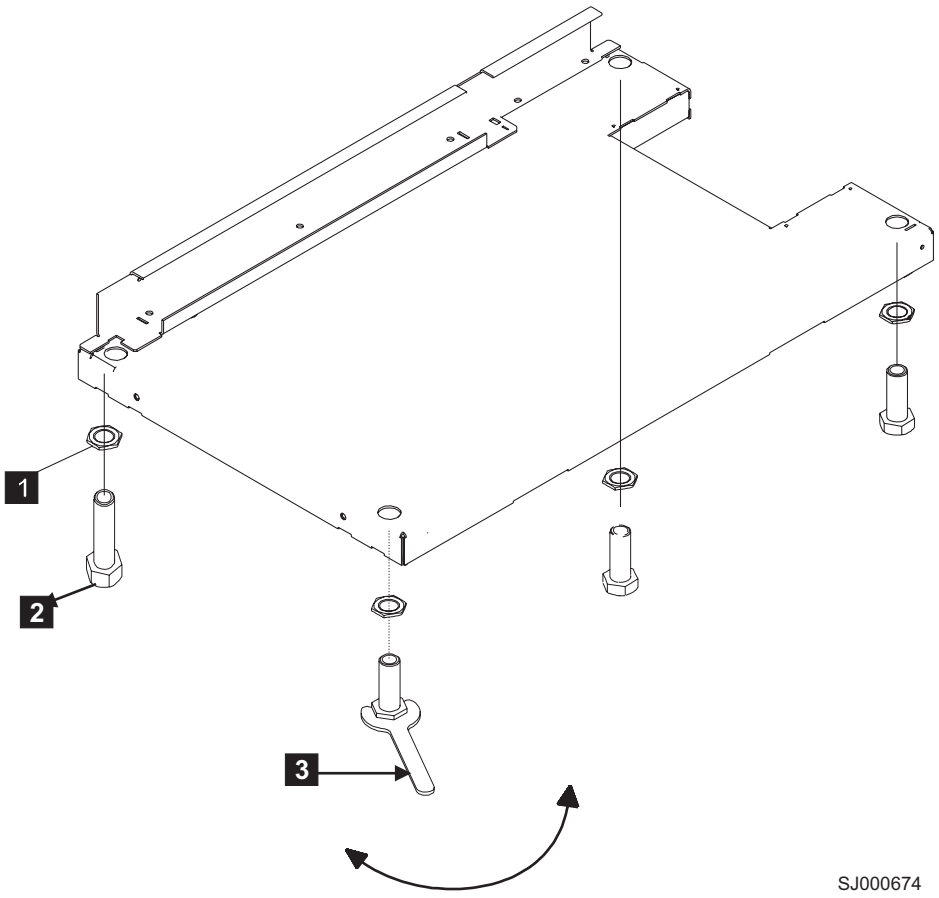
Index number	FRU part number	Units per assembly	Description
1	97H9754	As needed	1U (black) filler snap
2	97H9755	As needed	3U (black) filler snap
	18P2265	As needed	1U bolt-in panel kit, (black)
3	Reference only	1	Panel (1U kit)
4	Reference only	2	M5 X 14 Hex screw (1U kit)
5	Reference only	2	M5 nut clip (1U kit)
	18P2233	As needed	3U bolt-in panel kit, (black)
6	Reference only	1	Panel (3U kit)
7	Reference only	4	M5 X 14 hex screw (3U kit)
8	Reference only	4	M5 nut clip (3U kit)

Stabilizers



Index number	FRU part number	Units per assembly	Description
	31L8305	1	Stabilizer kit (black)
1	Reference only	2	Bracket
2	Reference only	4	M8 X 25 screw, button head socket

Leveling feet



Index number	FRU part number	Units per assembly	Description
1	Reference only	4	Jam nut
2	Reference only	4	Leveller
3	31L8313	1	Wrench

Power cables

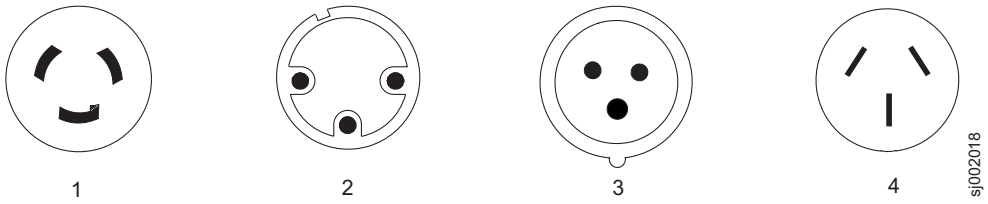


Table 2. Power cables for side-mount PDUs

Index number	FRU part number	Nomenclature	Country or region supported
1	39M5416	NEMA L6-30P	U.S., Canada, Argentina, Bahamas, Bangladesh, Barbados, Bermuda, Bolivia, Brunei, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Hong Kong, India, Indonesia, Jamaica, Japan, Macao, Malaysia, Mexico, Myanmar, Netherlands, Antilles, Panama, Peoples Republic of China, Peru, Philippines, Singapore, Sri Lanka, Suriname, Taiwan, Trinidad, Uruguay, Venezuela
1	39M5418	Russell Stol Water Tight	U.S., Canada, Argentina, Bahamas, Bangladesh, Barbados, Bermuda, Bolivia, Brunei, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Hong Kong, India, Indonesia, Jamaica, Japan, Macao, Malaysia, Mexico, Myanmar, Netherlands, Antilles, Panama, Peoples Republic of China, Peru, Philippines, Singapore, Sri Lanka, Suriname, Taiwan, Trinidad, Uruguay, Venezuela
2	39M5419		Australia / New Zealand
3	39M5414	IEC 309	Bahrain, Belgium, Botswana, Brazil, Egypt, Ethiopia, France, Germany, Ghana, Greece, Iceland, Iraq, Ireland, Italy, Kenya, Jordan, Kuwait, Lebanon, Malawi, Nigeria, Norway, Oman, Qatar, Saudi Arabia, Spain, Sudan, Tanzania, Uganda, United Arab Emirates, United Kingdom, Zaire, Zambia, Zimbabwe
4	39M5420		Korea

Cabinet parts list

Table 3 lists the items that are supplied with the 14U chassis mount kit.

Table 3. Items supplied with the 14U chassis mount kit

Item No.	Description	Quantity
1	Left mount shelf bracket	1
2	Right mount shelf bracket	1
3	Left upper mount bracket assembly, containing:	1
3a	Left upper mount bracket (flat)	1
3b	Left upper mount bracket (L-shaped)	1
3c	Screw	2
4	Right upper mount bracket assembly, containing:	1
4a	Right upper mount bracket (flat)	1
4b	Right upper mount bracket (L-shaped)	1

Table 3. Items supplied with the 14U chassis mount kit (continued)

Item No.	Description	Quantity
4c	Screw	2
5	10-32 x 5/16-in. Phillips flathead screw	8
6	10-32 x 5/8 in. Phillips panhead screw with washer	4
7	10-32 clip nut (package of 20; only four are required)	20
8	1/4-20 x 1/2 in. Phillips panhead screws, with lock washer	16
Discard the following		
9	10-32 retainer nuts	4
10	1/4-20 x 1/2 in. Phillips panhead screws with glue	16
11	0.375 in. square washers	16
12	8-32 x 5/16 in. Phillips flathead screws	8

Power distribution units

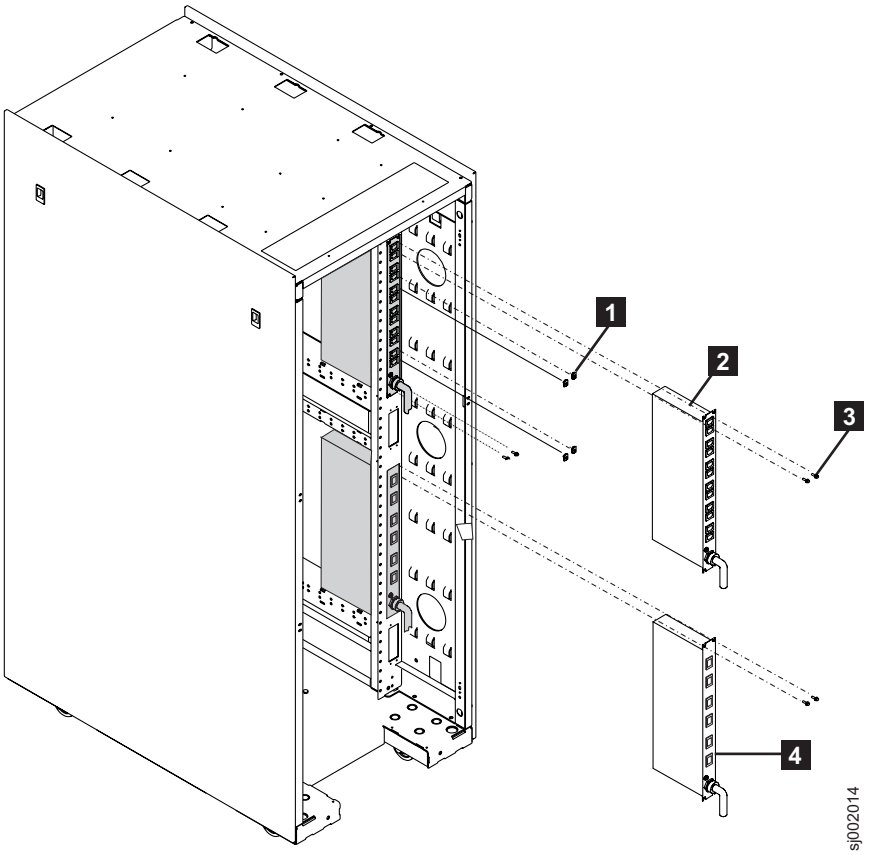


Figure 13. PDU locations

Index number	Units per assembly	Description
1	4	Nut clip
2	1	Switch, router PDU (PN 39J1183 or 97P6221)
3	4	Screw
4	1	Director PDU (PN 39Y8948)

PDU for director attachment

Figure 14. Director PDU (PN 39Y8948)

PDU for switch and router attachment

Figure 15. PDU (PN 39J1183 or PN 97P6221) for switch, router, and other device attachment

Appendix B. Cabinet specifications

The physical dimension specifications for the C36 cabinet are listed in Table 4. An example weight with two M12 switches installed is also included. (The M12 is heavier than either the M14 or M48, fully populated.) The total weight of a cabinet with switches installed will depend upon which switches are installed. For the specifications of individual switches, see the respective installation and service guides.

Table 4. 2109 Model C36 cabinet specifications

Dimension	Value
Height	1785 mm (70.3 in.)
Depth	• With rear door installed: 1042 mm (41 in.) • With rear and front door installed: 1098 mm (43.3 in.)
Width	• With side panels installed: 650 mm (25.6 in.) • Without side panel installed: 623 mm (24.5 in.)
EIA units	36 EIA units
Weight	Cabinet with two 2109 Model M12 switches: 816 kg (1795 lb).

Note: The maximum supported configuration for a C36 cabinet is either two directors (M12, M14, or M48) **or** one director plus no more than a total of five switches, routers, or other devices.

Notices

This information was developed for products and services offered in the U. S. A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe on any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, N.Y. 10504-1785
U.S.A.

For additional information, visit the web at:
http://www.ibm.com/ibm/licensing/contact/

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:
INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM web sites are provided for convenience only and do not in any manner serve as an endorsement of those web sites. The materials at those web sites are not part of the materials for this IBM product and use of those web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been

estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

If you are viewing this information in softcopy, the photographs and color illustrations may not appear.

Trademarks

The following terms are trademarks of the International Business Machines Corporation in the United States, other countries, or both:

IBM
eServer
TotalStorage

Index

Numerics

A

B

C

D

E

F

G

H

S

T

W

Readers' Comments — We'd Like to Hear from You

IBM TotalStorage SAN Cabinet
2109 Model C36 Installation and Service Guide

Publication No. GC26-7632-03

Overall, how satisfied are you with the information in this book?

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	☐	☐	☐	☐	☐

How satisfied are you that the information in this book is:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	☐	☐	☐	☐	☐
Complete	☐	☐	☐	☐	☐
Easy to find	☐	☐	☐	☐	☐
Easy to understand	☐	☐	☐	☐	☐
Well organized	☐	☐	☐	☐	☐
Applicable to your tasks	☐	☐	☐	☐	☐

Please tell us how we can improve this book:

Thank you for your responses. May we contact you? ☐ Yes ☐ No

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you. IBM or any other organizations will only use the personal information that you supply to contact you about the issues that you state on this form.

Name

Address

Company or Organization

Phone No.

Readers' Comments — We'd Like to Hear from You
GC26-7632-03

Cut or Fold
Along Line

Fold and Tape | **Please do not staple** | Fold and Tape

NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

International Business Machines Corporation
Information Development
Department GZW
9000 South Rita Road
Tucson, AZ 85744-0001

Fold and Tape | **Please do not staple** | Fold and Tape

GC26-7632-03

Cut or Fold
Along Line

Part Number: 22R6572

Printed in USA

(1P) P/N: 22R6572

GC26-7632-03

Spine information:

IBM TotalStorage SAN Cabinet 2109 Model C36 Installation and Service Guide