Bull ESCALA

EPC400 Rack Service Guide

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Bull ESCALA

EPC400 Rack Service Guide

Hardware

January 2001

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Communication Statements

The following statements apply to this product. The statements for other products intended for use with this product appears in their accompanying manuals.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider or the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

EC Council Directive

This product is in conformity with the protection requirements of the following EC Council Directives:

- 89/336/EEC and 92/31/EEC (for the electromagnetic compatibility)
- 73/23/EEC (for the low voltage)
- 93/68/EEC (for CE marking).

Neither the provider nor the manufacturer can accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards not supplied by the manufacturer.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

VCCI Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

The following is the translation of the VCCI Japanese statement in the box above.

This is a Class A product based on the standard of the Voluntary Control Council for Interferences by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Safety Notices

Definitions of Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury.

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

A *warning* notice indicates an action that could cause damage to a program, device, system, or data.

Placement of Safety Notices Inside This Guide

System safety notices which do not refer to a specific situation are included in these pages. Any specific safety notices are mentioned inside this guide whenever these must be observed during system operating or handling.

IT Power Systems

This equipment has been designed also for connection to IT Power Systems.

Disconnect Device - Rack (Isolation from Primary Power)

To remove the primary power from the rack, unplug the PDU input plug from the power source.

Disconnect Device - CPU and PCI Expansion Drawers (Isolation from Primary Power)

To remove the primary power from the CPU and PCI expansion drawers, unplug the “Appliance Coupler” from the relevant PDU outlet.

Laser Safety Information

Note: The Optical Link Card (OLC) referred to in this information is part of the Serial Optic Channel Converter assembly.

This system may contain a laser product called the Optical Link Card (OLC). In the U.S., the OLC is certified as a Class 1 laser product that conforms to the requirements contained in the Department of Health and Human Services (DHHS) regulation 21 CFR Subchapter J. Internationally, the OLC is certified as a Class 1 laser product that conforms to the requirements contained in the International Electrotechnical Commission (IEC) standard 825 (1984), the Verband Deutscher Elektrotechniker (VDE) standard 0837 (1986), and the CENELEC (European Committee for Electrotechnical Standardization) Harmonization Document HD 482 S1 (1988). The German testing institute VDE assigned a certificate of conformity to DIN IEC 825/VDE 0837/02.86 and CENELEC HD 482 S1/03.88; the certificate registration number is 3642.

In addition, Statens Provningsanstalt (Swedish National Testing Institute) tested and approved the OLC for use in Sweden as a Class 1 laser product and assigned the approval number SP LA 89:184. The CDRH certification label and the VDE certificate of conformity mark are located on the plastic retainer of the OLC product. The figure shows the system Class 1 information label required by IEC 825.

Class 1 laser products are not considered to be hazardous. The OLC internally contains a gallium aluminum arsenide (GaAlAs) semiconductor laser diode emitting in the wavelength range of 770 to 800 nanometers. This laser diode is a Class 3B laser that is rated at 5.0 milliwatts. The design of the OLC is such that access to laser radiation above a Class 1 level during operation, user maintenance, or service conditions is prevented.

The Optical Link Card (OLC) must only be connected to another OLC or a compatible laser product. Any compatible laser product must contain the open fiber link detection and laser control safety system used in OLC. This is a requirement for correct operation of the optical link. In addition, the OLC product is designed and certified for use in applications with point-to-point optical links only. Using this product in any other type of optical link configuration (for example, links containing optical splitters or star couplers) is considered as not using the product correctly and may require that the user certify the laser product again for conformance to the laser safety regulations.

About This Guide

Audience

This guide is addressed to the people in charge of the rack system upgrading.

Note: The procedures described in this guide must be performed by people trained to perform service tasks on the system and must be executed carefully following the instructions given in this guide. The system supplier will not be liable for any problems deriving from incorrect handling or wrong installations.

Overview of the Contents

- Chapter 1, **Rack Overview**, contains a short presentation of the rack. It also includes the description of any supported hardware components and drawers.
- Chapter 2, **Installation and Removal Procedures**, describes how to install and remove the rack drawers.

Related Publications

- *Site Preparation for Rack Systems* (86 A1 30PX), details the environmental and electrical characteristics of the site where the rack must be installed.
- *Disks and Tapes Configuration Information* (86 A1 88GX), describes the setting of addresses and switches for both disk and tape drives. It also includes information on CD-ROM drives setting.
- *Bull ESCALA PowerCluster & HA Solutions Setup Guide* (86 A2 79HX), describes how to set up PowerCluster and High Availability solutions; it discusses both the hardware and software aspects.

In addition, if a PCI expansion drawer is connected to the CPU drawer, you can find the relevant information in the PCI expansion drawer specific documentation.

- *PCI Expansion Drawer Quick Set Up* (86 A1 32PX), contains the step by step hardware procedures for a quick set up of the PCI expansion drawer.
- *PCI Expansion Drawer Service Guide* (86 A1 33PX), provides the description of the PCI expansion drawer hardware components and the instructions for their removal and installation. This guide is addressed to people trained to perform service tasks on the system.

For any additional information you may need, please refer to the CPU drawer base documentation set.

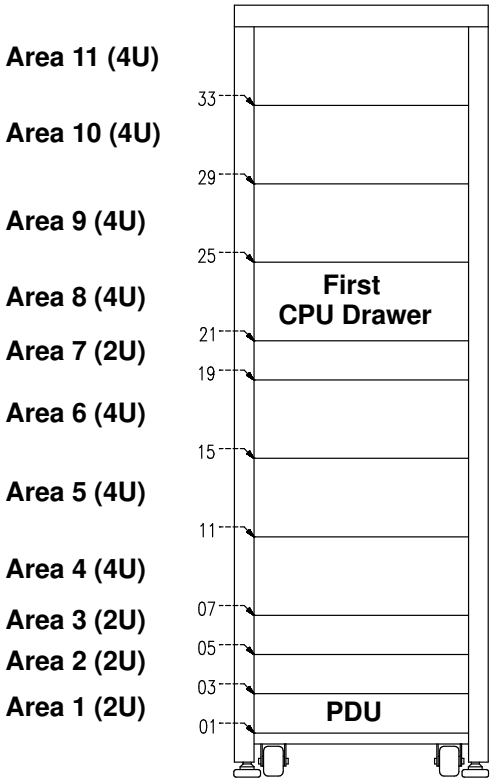
Chapter 1. Rack Overview

- **Rack Description**, below
- **Drawers**, on page 1-2.

Rack Description

The rack system provides a framework into which different drawers can be installed.

It is a standard 19” rack divided into 36U. It is logically divided into 11 areas.



The rack always houses:

- One Power Distribution Unit (PDU)**,** which provides power to all the rack drawers
- One CPU drawer (unless the rack is part of a configuration where the CPU drawer is installed in another rack).

Optional drawers are described in **Drawers** section, on page 1-2.

Drawers

The rack can house several drawers with different functions.

Each drawer must be installed in specific areas according to its characteristics, such as function and weight, and to the global rack configuration; plan the configuration referring to the CPU drawer base documentation set, **Configuring the System** section.

Then, save the personalized configuration, recording each drawer position.

The drawers are delivered with an installation kit containing rails, cable retainers and all specific components necessary for their installation. Some drawers are installed on a rack-mounted shelf.

The following drawers can be installed into the rack.

- **CPU Drawer** (one per system is mandatory)
- **Cluster Administration Hub Drawer**
- **PortServer Console Concentrator**
- **DAS Drawer**
- **DLT4000/7000 Drawer**
- **EPC440 Drawer**
- **Fast Ethernet Switch Drawer**
- **FC-AL Hub Drawer**
- **Vixel 1000 Fiber Channel Hub**
- **FC Switch Drawer – 16 Ports**
- **FC Switch Drawer – 8 Ports**
- **Gbit Ethernet Switch Drawer**
- **LibraryXpress System Drawer**
- **PCI Expansion Drawer**
- **SSA Drawer**
- **VDAT Tape Drive Drawer**
- **PDU** (one per rack is mandatory).

A brief description of the supported drawers follows.

CPU Drawer

The CPU drawer is the core of the rack system. Several CPU drawers can be present in the same rack and work either jointly or separately, depending on the implemented architecture (e.g. PowerCluster architecture).

The rack supports different CPU drawer models. For any specific information related to the CPU drawer installed in the rack, please refer to the documentation specific to the CPU drawer itself.

Cluster Administration Hub Drawer

The Cluster Administration Hub (SuperStack II Hub) is an IEEE 802.3 Standard repeater for Local Area Networks.

This hub has 12 RJ45 twisted pair ports, and an AUI port, allowing connections over a maximum length of 100m, using data grade category 5 twisted pair cable.

Hub expansion connectors allow the stacking of several hubs, using hub expansion cables.

PortServer 16–port Console Concentrator

The PortServer console concentrator is a terminal server providing connection up to 16 asynchronous serial ports to TCP/IP Ethernet networks.

It connects to 10 Mbps Ethernet LANs using 10Base–T (Twisted Pair) or 10Base–2 (Thinnet) connectors.

Hardware Features:

- 16 EIA–232 high–speed asynchronous ports.
- 57600 bps throughput on all ports.
- 80186 microprocessor.
- Password access security.
- SNMP MIB–II management.
- 256K EPROM non–volatile memory.
- Connects to 10 Mbps Ethernet LAN.
- Telnet, Reverse Telnet and Rlogin support.
- Ports may be shared by multiple different hosts running different operating systems.
- Full modem and hardware flow control.
- Up to 64 simultaneous TCP/IP sessions.
- Front panel LEDs to monitor both serial and Ethernet line activity.
- Supports up to 16 alternate IP addresses.
- Supports RARP allowing for IP configuration.
- Easily upgradable firmware via TFTP or BOOTP.
- Save/Restore configuration to host.
- Up to nine Telnet or Rlogin sessions per port.
- Surge protection on all ports.

DAS Drawer

DAS disk-array storage systems provide a high-capacity, high-availability disk storage. It is possible to access the disks via a SCSI-2 interface or fibre channel interface and to manage (that is control and monitor) the storage system via an RS-232 interface or FC-AL loop. Several models of DAS are supported.

- SCSI disk array
  - DAS 1300 contains up to 10 disks
  - DAS 2900 contains up to 20 disks
  - DAS 3200, upgradable to fibre channel interface, contains up to 30 disks.
- Fibre channel disk array
  - DAS 3500 contains up to 30 disks
  - DAS 5300 contains up to 10 disks, consists of the Standby Power Supply (SPS), and can be expanded with one or two DAEs
  - DAS 5700/4500 consists of the Disk Array Processor Enclosure (DPE), containing up to ten disks and of the Standby Power Supply (SPS), providing backup power for DPE; it can be expanded with one or more DAEs
  - DAE 5000 is a Disk Array Enclosure which contains up to ten disks.

DLT4000/7000 Drawer

The DLT is a high-performance, high-capacity streaming cartridge tape unit, capable to read and write half-inch magnetic tapes. This tape drive features the following:

- 5-1/4 inch form factor, half-inch tape drive
- Tape cartridge capacity of up to 20G bytes per cartridge
- Data transfer rate of 3M bytes per second
- Dual-channel read/write head
- High-efficiency data compression (up to 40G bytes)
- Tape mark directory to maximize data throughput and minimize data access time.
- Embedded diagnostic software.

The DLT includes Flash EEPROM technology that allows easy on-site installation of microcode updates from tape.

EPC440 Drawer

The EPC440 CPU drawer is a based PowerPc platform system. The EPC440 CPU drawer has the following features:

- Up to four PowerPc processors
- Up to 8G bytes system memory
- Up to twelve 9.1G bytes hot-swap disk drives
- One 1.44M bytes diskette drive
- One CD-ROM drive
- One additional media drive
- Two power supplies (providing redundant power).

Fast Ethernet Switch Drawer

The Fast Ethernet Switch is a high performance switch for Local Area Networks.

This switch has 12 auto-negotiating 10BASE-T 100BASE-TX RJ45 ports. These ports can be set to 10BASE-T, 100BASE-TX or they can automatically detect the speed of a link.

It allows connection to Ethernet or Fast Ethernet devices over a maximum length of 100m, using data grade category 5 twisted pair cable.

Note: If this switch is not used, it is recommended not to leave it in auto-negotiating mode. Automatic speed detection consumes too much CPU time. Either disconnect the switch or set it to one or other of the speed settings.

The Fast Ethernet Switch has the following features:

- Twelve auto-negotiating 10BASE-T / 100BASE-TX ports
- Plug-in Module slot (Asynchronous Transfer Mode and Fast Ethernet)
- Support for up to 8160 addresses in the Switch Database
- Store-and-forward forwarding mode, ensuring the Switch forwards all valid Ethernet frames and discards invalid Ethernet frames, such as those with an incorrect CRC
- Intelligent Flow Management for congestion control
- Full Duplex on all ports, including Fast Ethernet Plug-in Module ports
- Resilient links
- Support for 16 Virtual LAN's (VLAN's)
- Spanning Tree Protocol (STP) per VLAN

- PACE (Priority Access Control Enabled) for supporting multimedia applications over Ethernet.

FC-AL Hub Drawer

The Fibre Channel Arbitrated Loop Hub is an active hub providing the same functions as a 10 Base-T hub while supporting 100 times the bandwidth. The FC-AL Hub has the following features:

- 1 Gbit per second bandwidth
- Map a number of common transport protocols, including SCSI and IP
- Up to 100M bytes/sec throughput
- Intelligent port detection and bypass circuitry dynamically re-configures the Arbitrated Loop to preserve communication between all operating devices
- Nodes are constantly monitored: down nodes are automatically bypassed, newly nodes are automatically entered onto the loop.

The hub can be cascaded to other FC-AL hubs for the expansion of the loop. Port expansion is supported to the limit of 127 nodes.

Vixel 1000 Fibre Channel Hub

The Vixel 1000 Hub is an unmanaged 7–port Fibre Channel–Arbitrated Loop (FC–AL) device that provides gigabit–per–second data transmission between servers, storage arrays and libraries. It is designed as a cost–effective, high–speed alternative to SCSI server–to–storage connectivity employing speeds up to 100 times faster. It is optimized for small ESCALA clusters and ESCALA server farms. Features are:

- 7 FC–AL ports.
- 1 FC–AL loop, 100 Mbps
- Hot pluggable GBICs based ports (SC/SWL, SC/LWL, active copper DB9).
- Cascading support.
- Automatic Bypass of unused ports.
- Clock and data recovery on each port.
- Fully ANSI X3T11 FC–AL standards compliant.
- Rack packaging (2 hubs per 1U space), or tabletop unit.

FC Switch Drawer – 16 Ports

The FC Switch 16-port, is a non-blocking switch and full line-speed switching. Each port sustains 200M bytes per second, full duplex.

FC Switch Drawer – 8 Ports

The FC Switch 8-port, is a non-blocking switch and full line-speed switching. Each port sustains 100M bytes per second, full duplex.

Gbit Ethernet Switch Drawer

The Gbit Ethernet Switch is a 12-port, non-blocking switch. Each port sustains 1 Gbit per second, full-duplex data rate. The switch includes integrated management to provide fault tolerance and maximum network availability.

LibraryXpress System Drawer

The LibraryXpress system is an expandable, modular tape library system. The LX system is designed for hierarchical storage management, high-volume backup and archival service.

The minimum configuration consists of one module, the base module (LXB).

This configuration can be expanded adding:

- A Global Control Module (LXG)
- A XpressChannel cartridge elevator
- One or more additional LibraryXpress Capacity module (slave modules, LXC).

The LX system has the following features:

- SCSI-2 interface
- Native transfer rate of 1.25M bytes/second
- Compressed data rate is approximately 2:1
- Compact Tape 1/2-inch cartridge
- Tape capacity from 10G bytes to 20G bytes.

PCI Expansion Drawer

The PCI Expansion drawer is an expansion drawer physically similar to the CPU drawer that provides up to twelve PCI slots, up to six additional disk devices and two media devices.

SSA Drawer

The SSA Serial Storage Architecture Disk Subsystem is a storage unit. Up to 16 SSA disk drive modules can be installed in a rack-mounted drawer. The disks are divided in groups and the groups are managed by a SSA adapter.

The SSA drawer can be disconnected from its related SSA adapters while the rack system is running.

VDAT Tape Drive Drawer

This is a high capacity storage device. It is typically used to:

- Save and restore system data files
- Archive important records
- Distribute upgrades to operating system software.

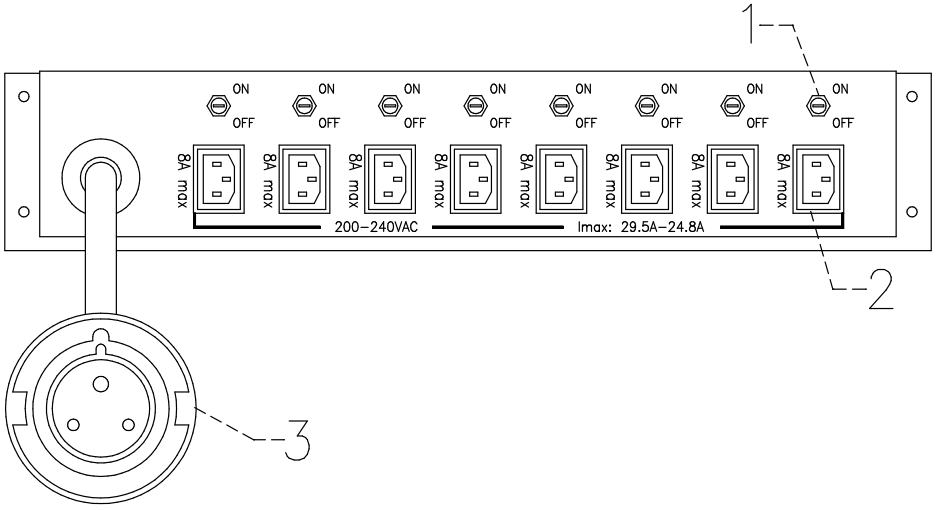
This 8 mm tape drive features the following:

- Tape cartridge capacity of up to 20G bytes per cartridge
- Data transfer rate of 3M bytes per second
- Hardware data compression that increases tape cartridge capacity and transfer rate
- A liquid crystal display that provides operating and error messages.

Power Distribution Unit (PDU)

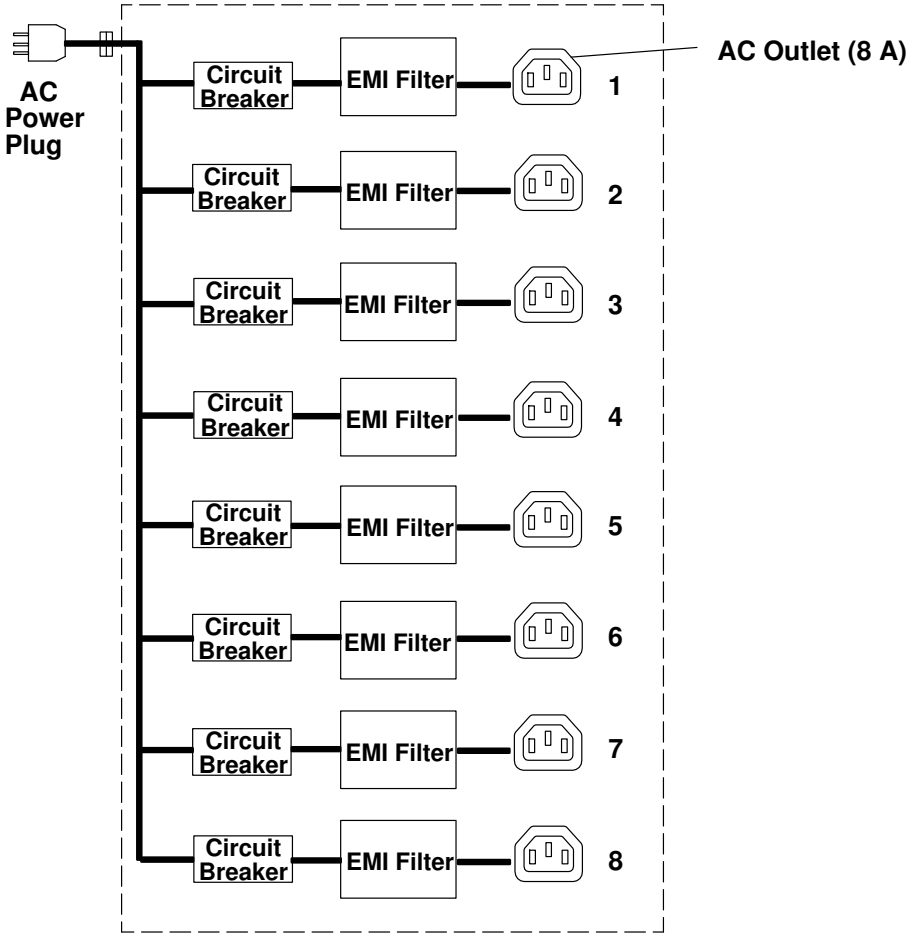
The Power Distribution Unit (PDU) is a mandatory component of the rack.

The PDU distributes power to all the rack drawers; it receives power from an AC source, and then provides power to the drawers connected to its eight outlets. Each PDU outlet is connected to a separate circuit breaker for protection against excessive current; it is also provided with EMI filters. The PDU AC voltage is 200-240 V.
The rack can host two PDU's: the first must always be present, the second is optional.



1 **Circuit breakers**
2 **PDU outlets**
3 **PDU male connector**

Power Distribution with the Power Distribution Unit



Chapter 2. Installation and Removal Procedures

This section describes how to install and remove any drawers supported by the rack.

It also describes some preliminary operations required by the drawer installation procedures, such as removing front and rear doors of the rack or rack-mount the shelf.

Note: All the yellow components presents inside the rack, must be removed before starting the system. These components are necessary for shipment only.

- **Front and Rear Doors**, on page 2-2
- **Rails**, on page 2-5
- **Shelf**, on page 2-6
- **CPU Drawer / PCI Expansion Drawer**, on page 2-8
- **Cluster Administration Hub Drawer**, on page 2-21
- **Console Concentrator Drawer**, on page 0
- **DAE 5000 Drawer**, on page 2-24
- **DAS 1300 Drawer**, on page 2-27
- **DAS 2900 Drawer**, on page 2-30
- **DAS 3X00 Drawer**, on page 2-33
- **DAS 5300 Drawer**, on page 2-40
- **DAS 5700/4500 Drawer**, on page 2-46
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- **VDAT Tape Drive Drawer**, on page 2-78
- **First Power Distribution Unit (PDU)**, on page 2-80
- **Additional Power Distribution Unit (PDU)**, on page 2-84.

Note: It is not necessary to stop the rack activities and power it off to add a new drawer. In case you need to power off the rack, please refer to the specific documentation delivered with the CPU drawer model to power it off.

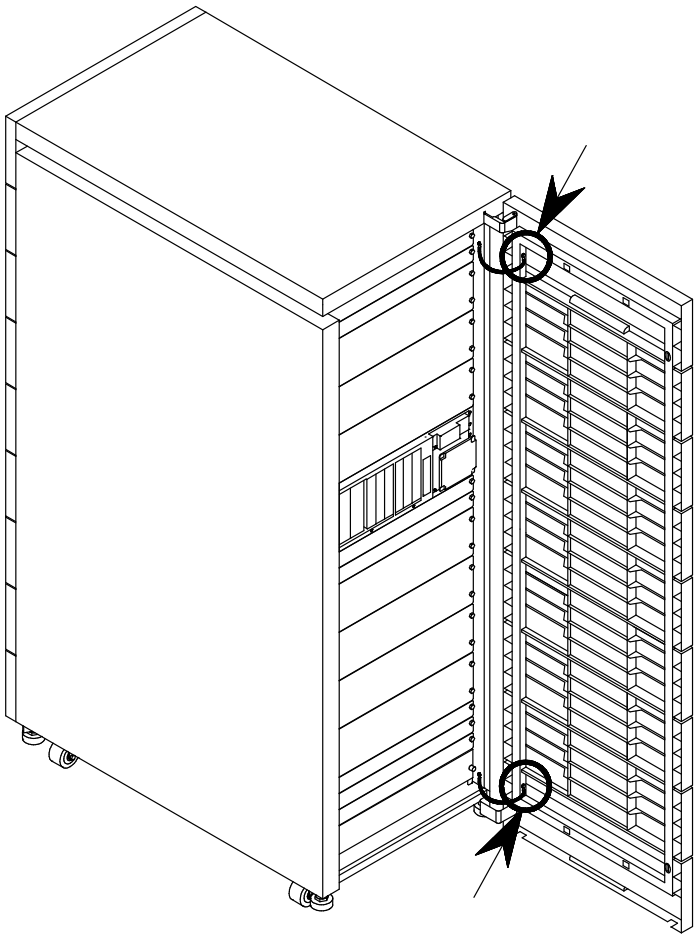
Front and Rear Doors

- **Removal**, below
- **Installation**, on page 2-4.

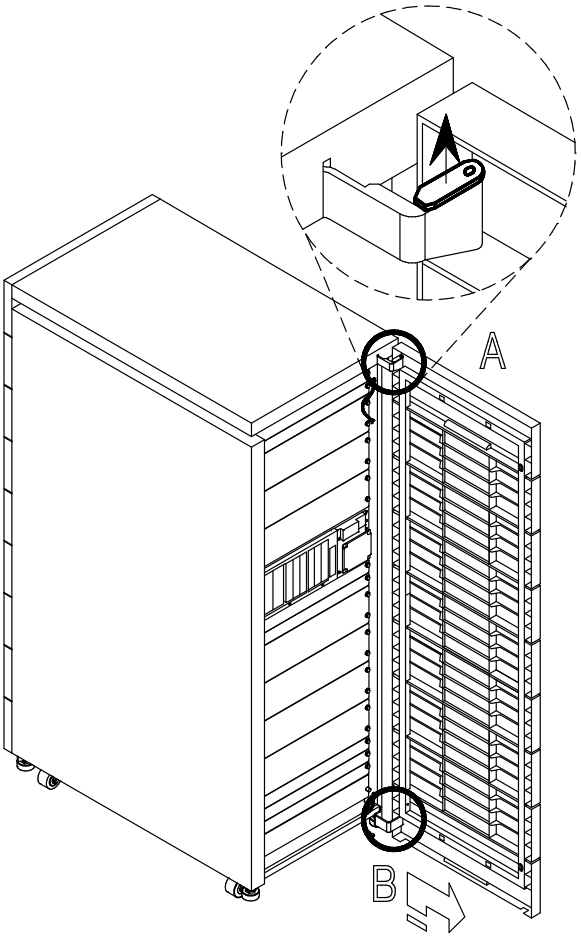
The following procedures can be applied both to the front and the rear door.

Removal

1. Open the door and identify the two ground braids.
2. Disconnect the two ground braids from the door side, unscrewing the related screws.

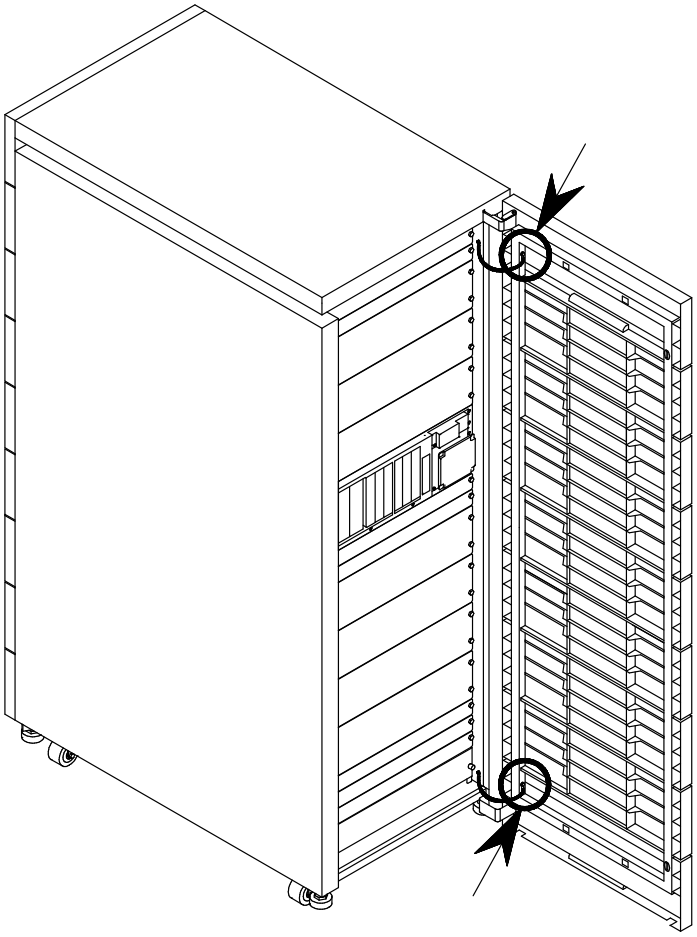


3. Identify the lever on the top of the door and lift it up, as indicated at A in the figure.
4. Lift the door, to unlock its bottom hook, and remove it, as indicated at B in the figure.



Installation

1. Lift the door and insert its bottom hook in the corresponding hole on the chassis.
2. Shift the upper part of the door close to the chassis and lock the upper lever.
3. Connect the two ground braids, screwing the related screws, as shown in the figure.

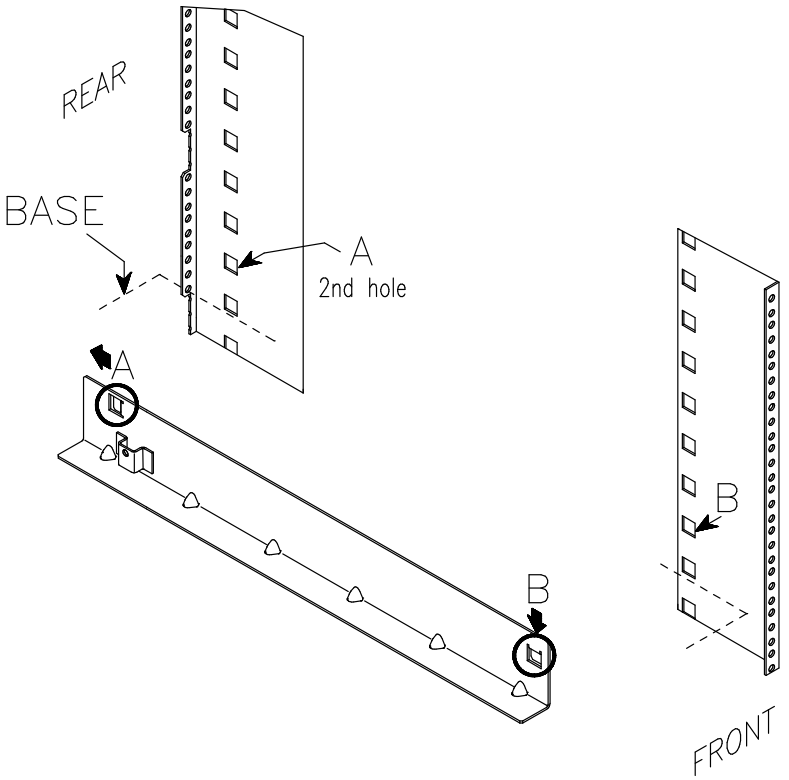


Rails

- **Installation**, below
- **Removal**, below.

Installation

1. Locate the area where the new drawer is to be installed.
2. Remove the blank(s) from the area where the new drawer is to be installed.
3. Install the rails in the designated area on the rack, performing the following steps on both sides of the rack chassis:
   a. Insert the front tongue of the rail into the square hole on the rear side of the rack, as indicated at A in the figure.
   b. Insert the rear tongue of the rail into the corresponding square hole on the front side of the rack, and push the rail downwards to lock it to the rack chassis. See B in the figure.



Removal

Remove in the reverse order.

Shelf

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-7.

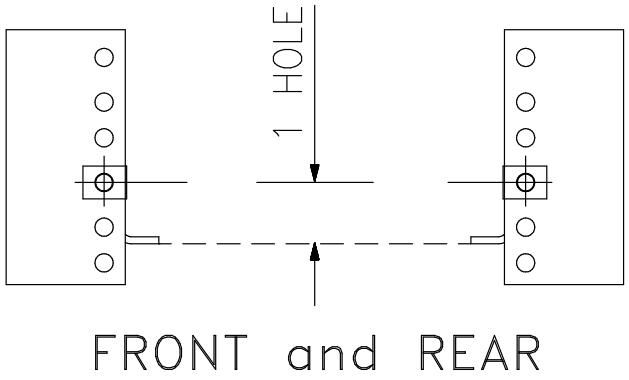
Preliminary Operations

Note: The shelf occupies 1U. Its installation inside the rack depends on the drawer that will be laid on it. Therefore, before installing the shelf, learn the configuration rules for the related drawer, as described in the CPU drawer base documentation set, **Configuring the System** section.

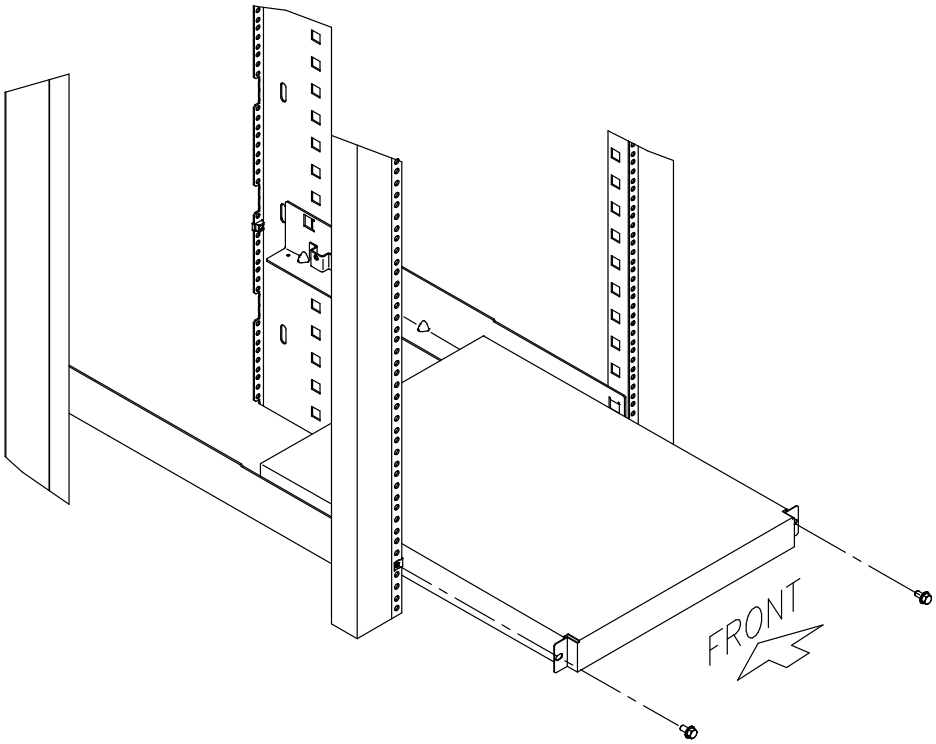
1. Open the front door of the rack.
2. After having identified the area designated to house the drawer, on the rack front remove the corresponding blanks, by unscrewing their retaining screws.
3. Install the rails in the designated area on the rack, as described in **Rails**, on page 2-5.

Installation

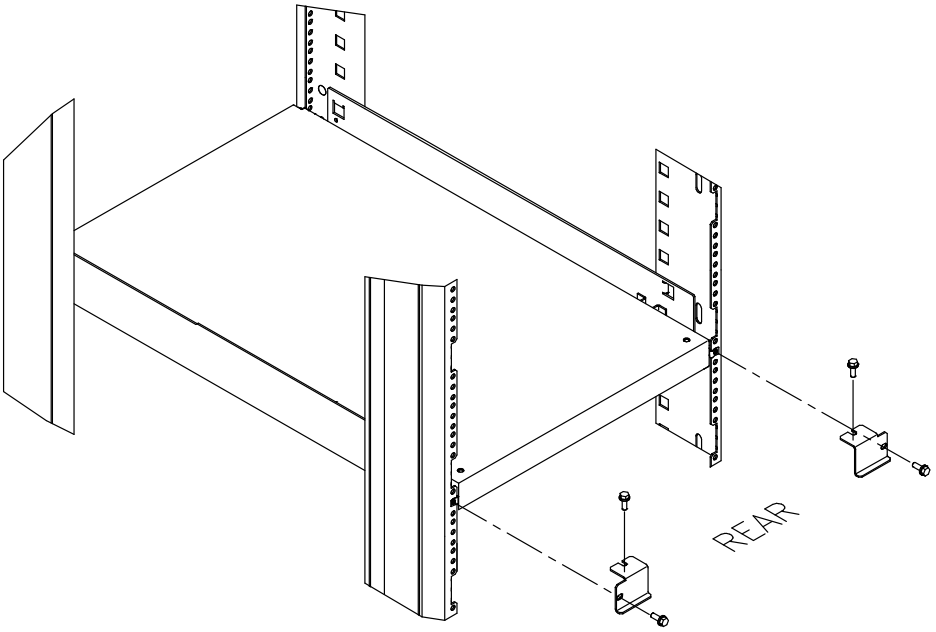
1. Position the threaded nut clips both on the front and on the rear side of the rack, on the position indicated in the figure. Nut clips are needed to secure the drawer.



2. Align the shelf with its rails, then carefully slide it into the rack.
   Secure the shelf on the front side, tightening the mounting screws to the threaded nut clips.



3. Secure the shelf on the back side using the appropriate brackets, as shown in the figure.



Removal

Remove in the reverse order.

CPU Drawer / PCI Expansion Drawer

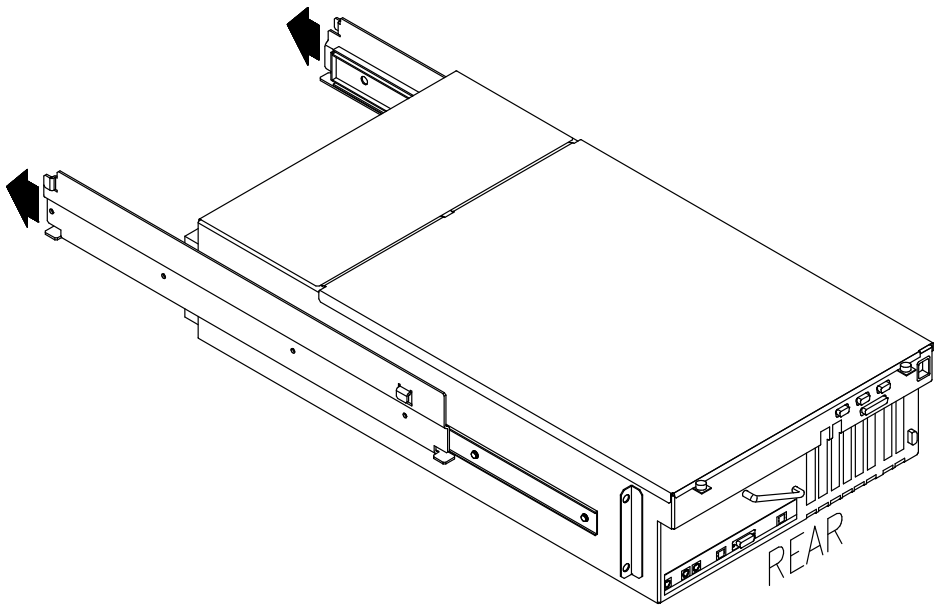
- **Installation**, below
- **Removal**, on page 2-20.

Note: The installation and removal procedures apply to the CPU drawer and to the PCI expansion drawer.

Warning: The CPU drawer must be properly installed in the rack system as described in the following procedure. Different set up are not allowed.

Installation

1. Open the front door of the rack.
2. Remove the rear door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Locate the area designated to house the CPU drawer or the PCI expansion drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. Unmount the drawer telescopic rails, sliding them out of the corresponding guides, at sides of the drawer itself.

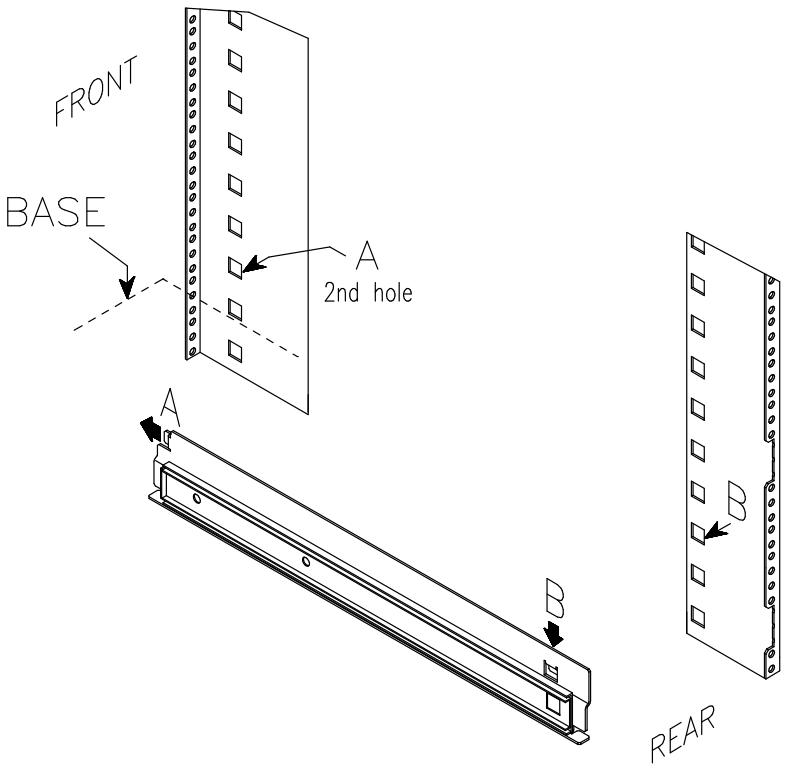


6. Identify the rack chassis holes where the telescopic rails must be fixed. Take as reference point the bottom of the designated area and select the holes indicated in the figure, then:

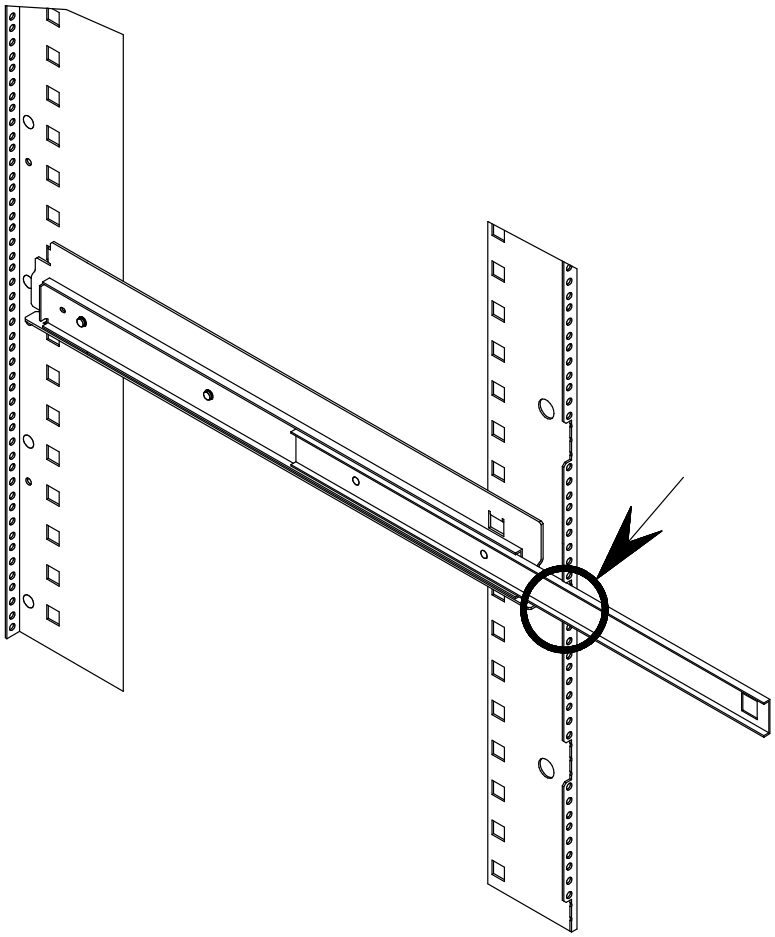
   a. Insert the front tongue of one rail into the hole on the front side of the rack, as shown at A.

   b. Insert the rear tongue of the rail into the hole on the rear side of the rack, and push the rail downwards to lock it to the rack chassis. See B in the figure.

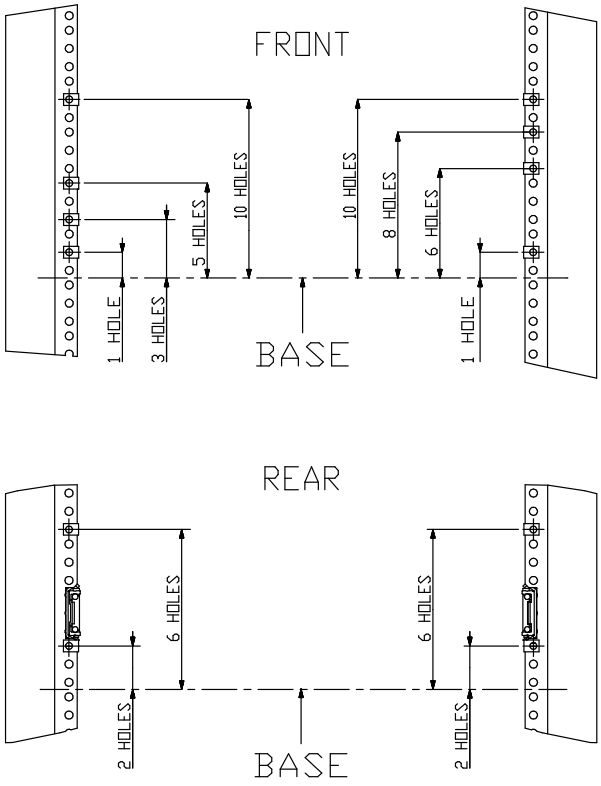
   c. Repeat the same operations to mount the second rail on the other side of the rack chassis.



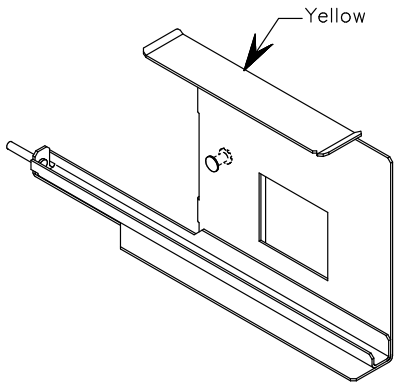
7. Before installing the drawer, check that both the telescopic rails properly slide out, as shown in the figure.



8. Position the threaded nut clips on both sides of the rack, on the positions specified in the figure, starting from the bottom of the area just identified. These nut clips are needed to secure the drawer to the rack chassis.

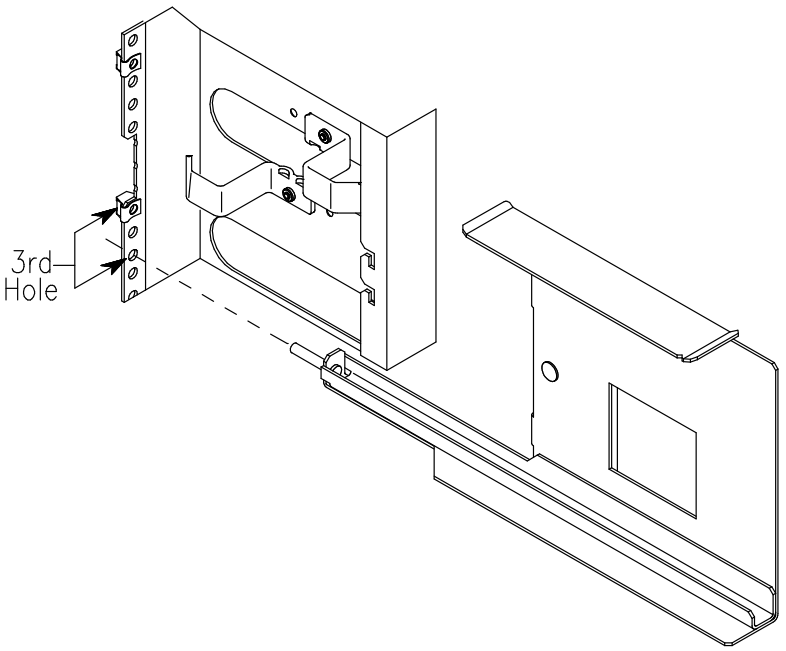


9. Take the tools needed for the drawer installation. These are two specular tools, which are delivered with the rack, and look as indicated in the following figure.



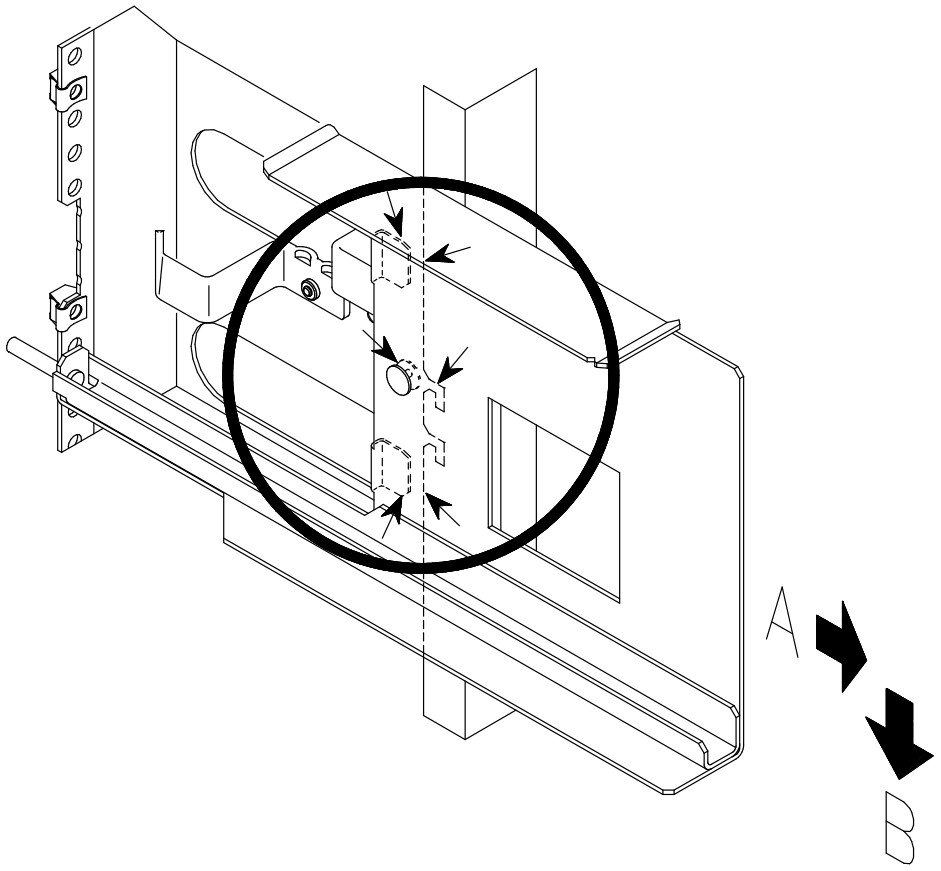
10. Accessing the rack from the rear side, install the two tools needed for the drawer installation, performing the following steps for each tool:

    a. Insert the retaining pin at the bottom of the tool into the designated hole on the rack chassis, as shown in the figure.

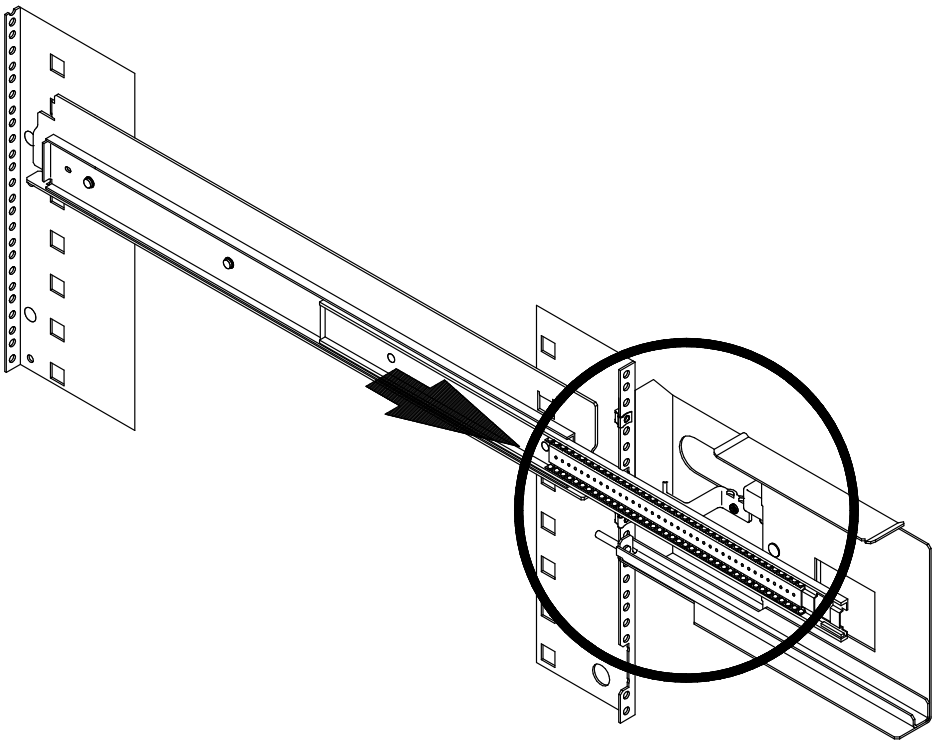


    b. Lightly slide the tool backwards, as indicated at A in the figure, until you are able to anchor the retaining pin located in the middle of the tool to the rack chassis, making sure to fix the two retaining tongues, as indicated in the figure.

    c. Firmly push the tool downwards until it is locked, as indicated at B.

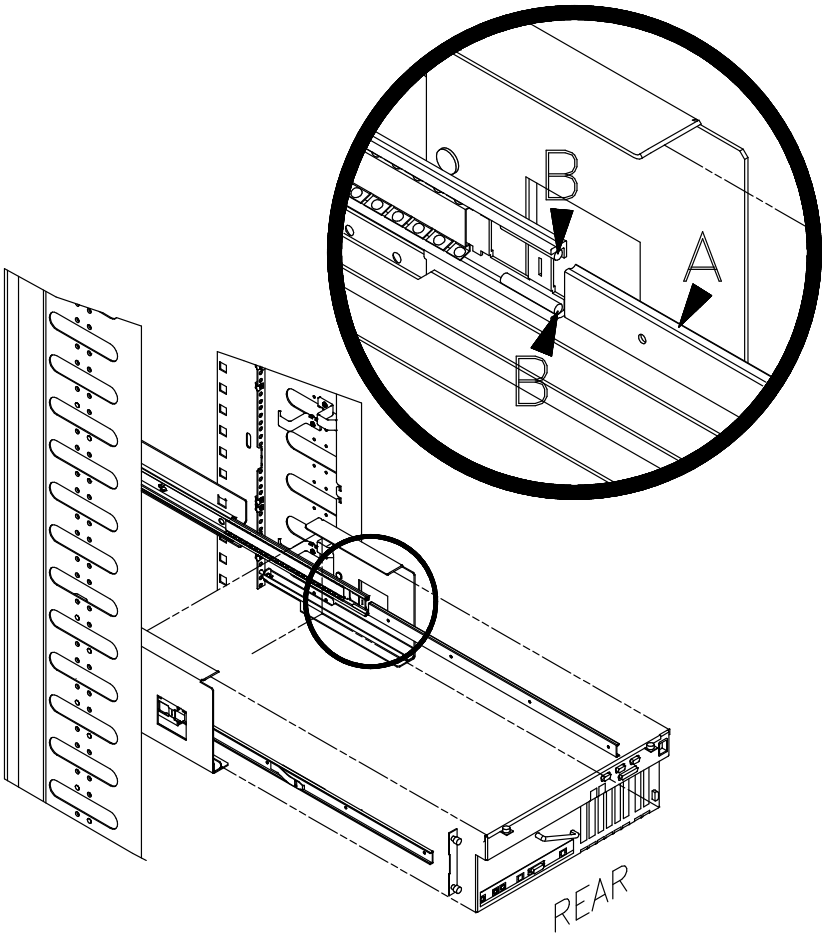


11. Slide out the telescopic rails until they are well locked.Verify that the ball bearing cage of each telescopic rail is at the forwardmost outward position, as shown in the figure.



12. If present, remove the front cover from the drawer, unscrewing the related screws.

13. Lift the drawer and align its guides (A) with the two plastic guides (B) on each side of the drawer. This is important for correct installation of the drawer. You can see the related position of A and B from the lateral slits of the installation tools.



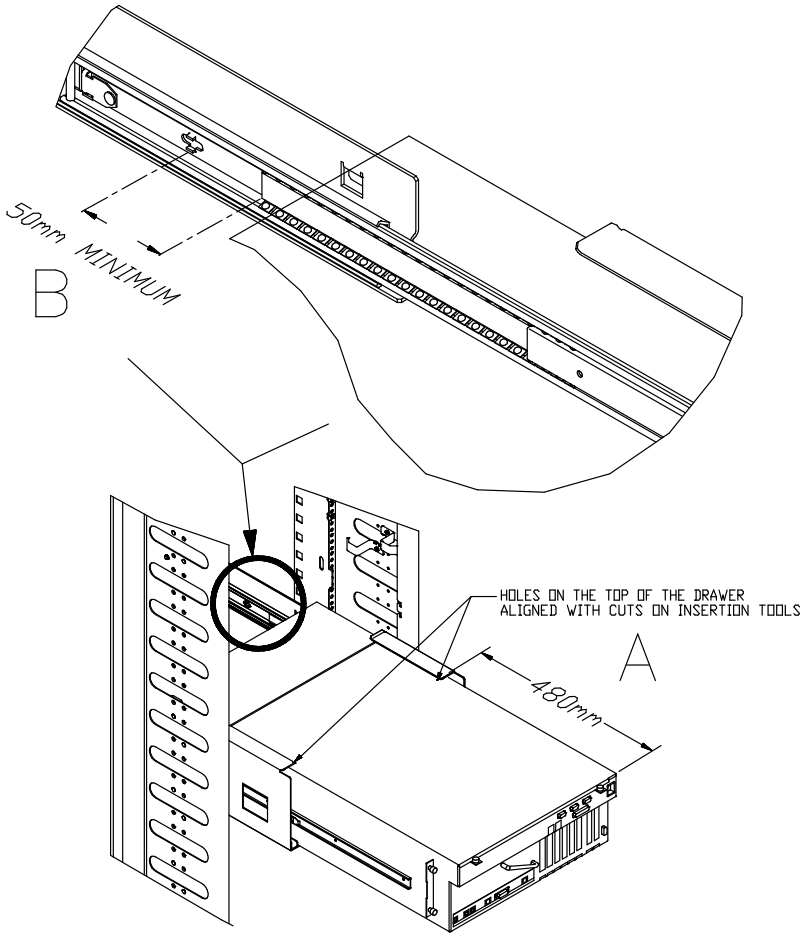
CAUTION:
Take care in handling the CPU or PCI expansion drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

Warning: Hold the drawer until it is well locked in the rack. Do not leave it hanging on the tools. Tools are used to facilitate the insertion of the drawer inside the rack, but must not be used as a drawer support.

14. Carefully slide the drawer inside the rack until the two holes on the top of the drawer (if present) are well aligned with the corresponding cuts on the insertion tools: the distance between the cuts on the insertion tools and the edge of the drawer must be 480 mm, as shown at A in the figure.

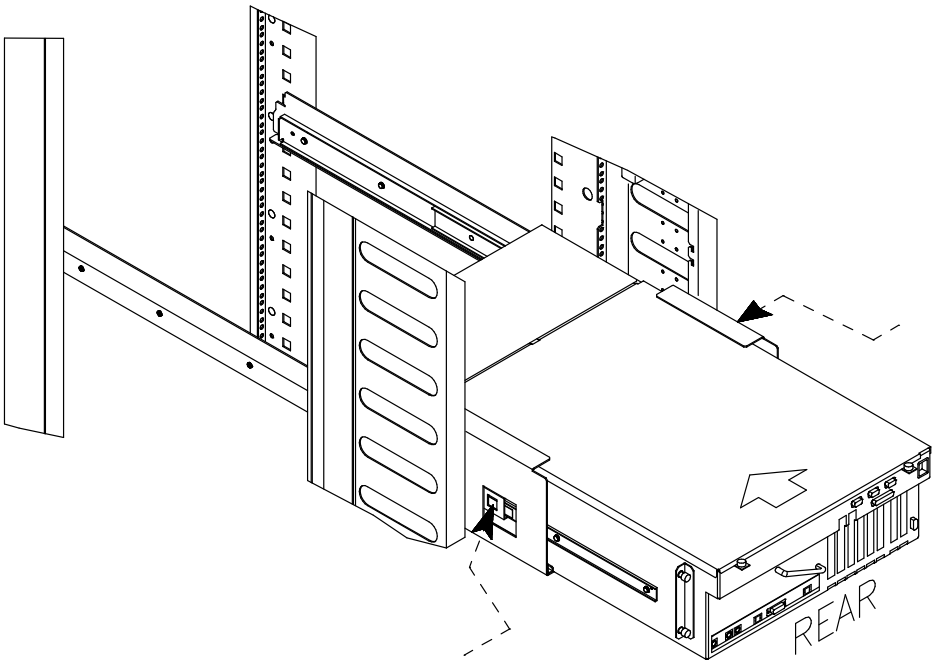
    At this point, to check the correct position of the drawer on the rail, go to the front of the system and check that the distance between the end of the ball bearing cage and the hole on the rail is more than 50 mm, as shown at B in the figure.

CAUTION:
If the distance between the end of the ball bearing cage and the hole on the rail is less than 50 mm, you have to extract the drawer and restart from step 13.

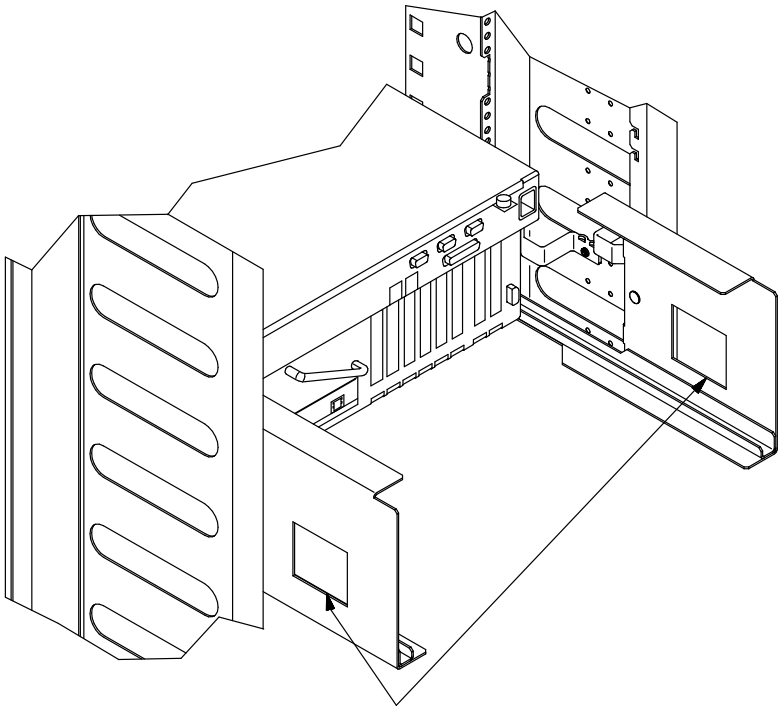


15. When you have checked the right position of the drawer, you can push it until it locks.

16. To completely install the drawer inside the rack, push the retaining tongues at sides of the drawer, which can be accessed from the lateral slits of the installation tools, and slide the drawer until it is well seated in the rack.

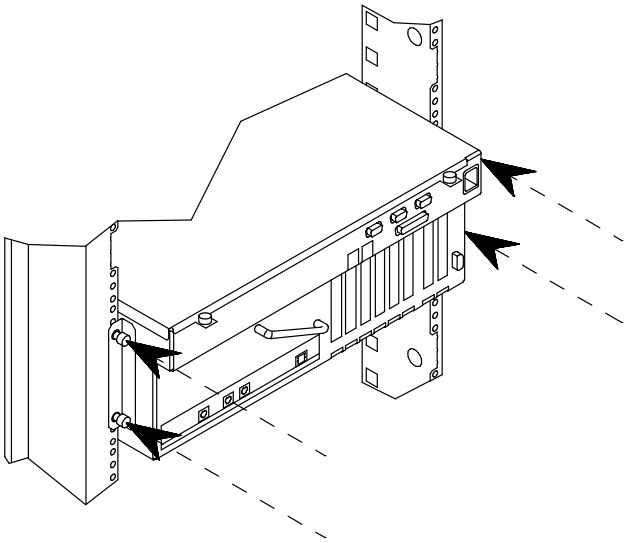


17. Once the drawer is completely inserted in the rack, remove the installation tools.

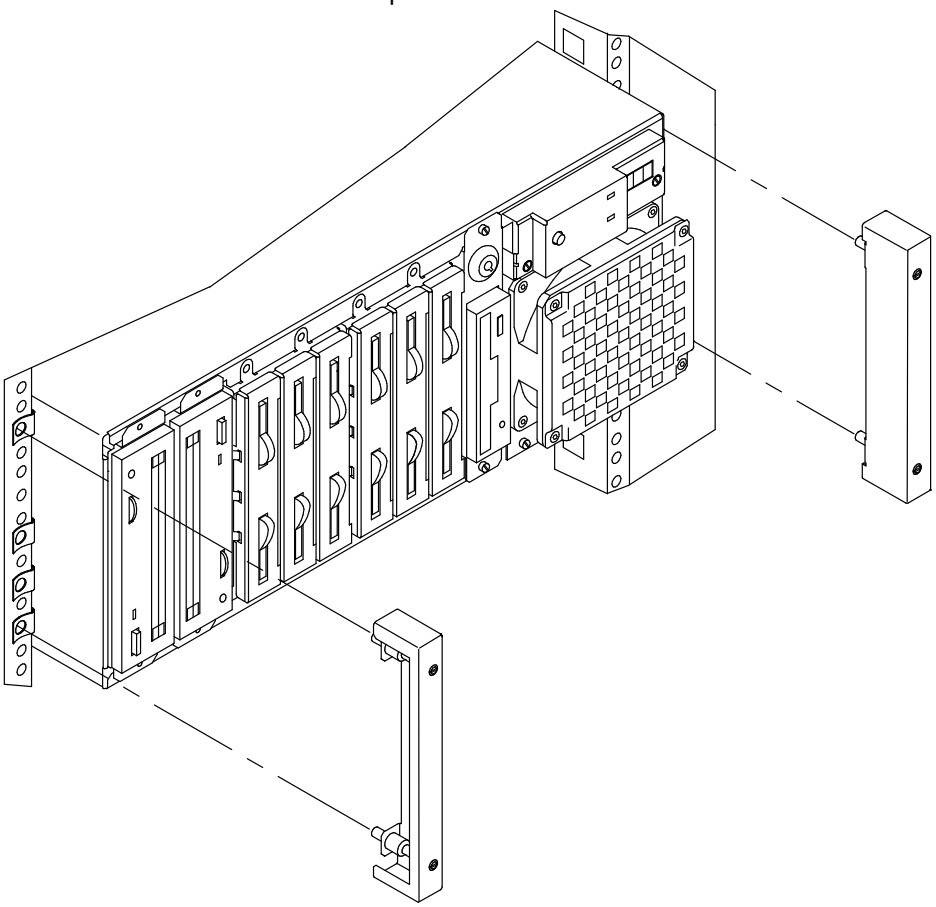


INSTALLATION TOOLS

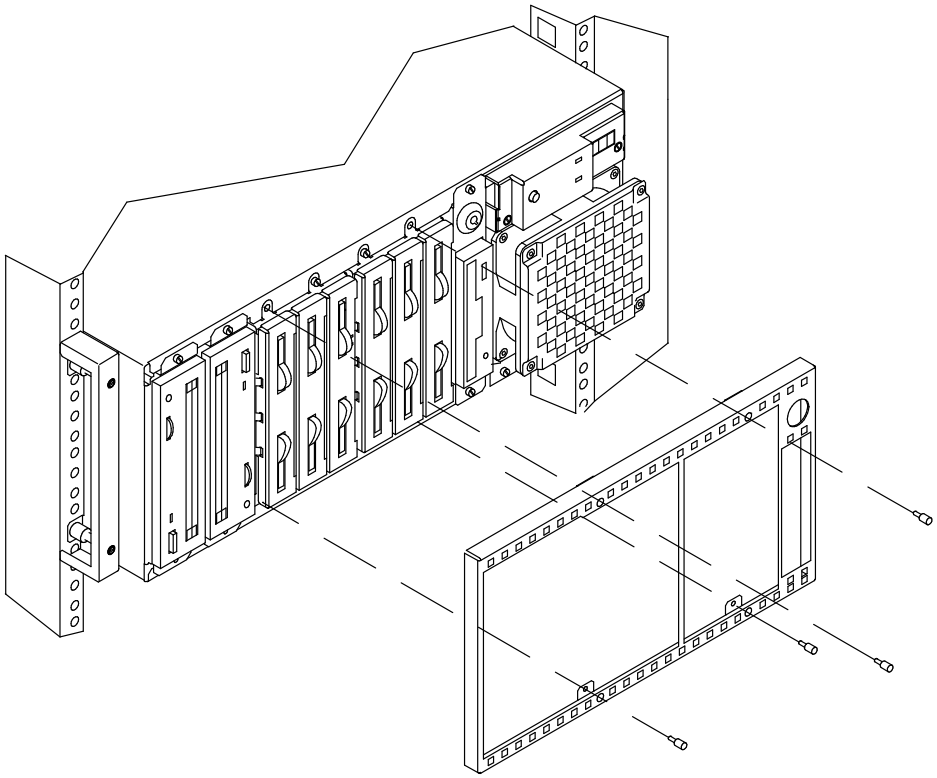
18. Secure the drawer on the rear side, tightening the mounting screws to the threaded nut clips.



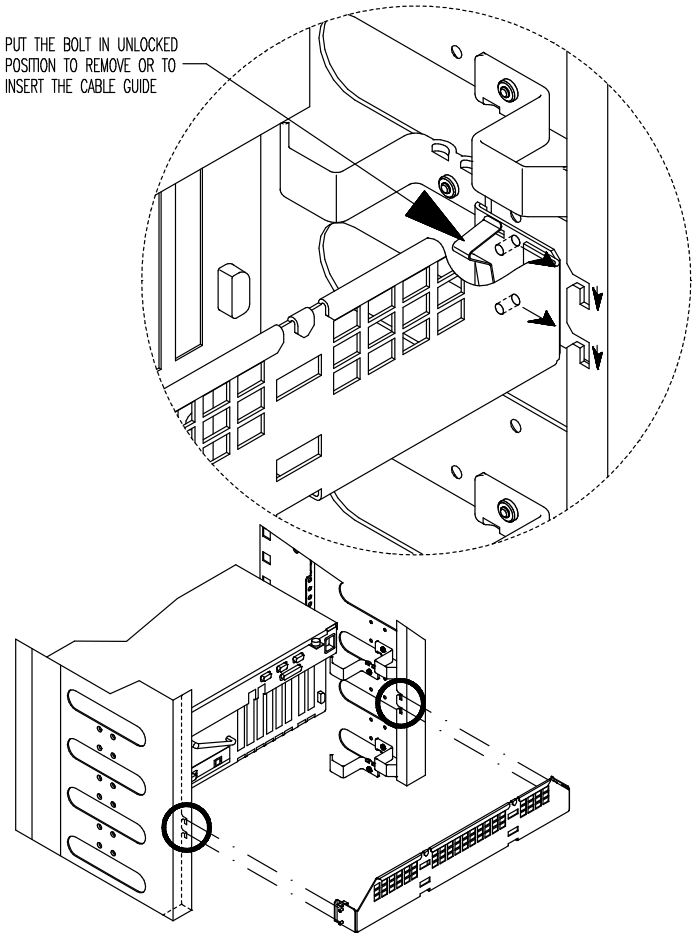
19. On the front side, mount the lateral aesthetic panels and fix it, tightening the related screws to the threaded nut clips.



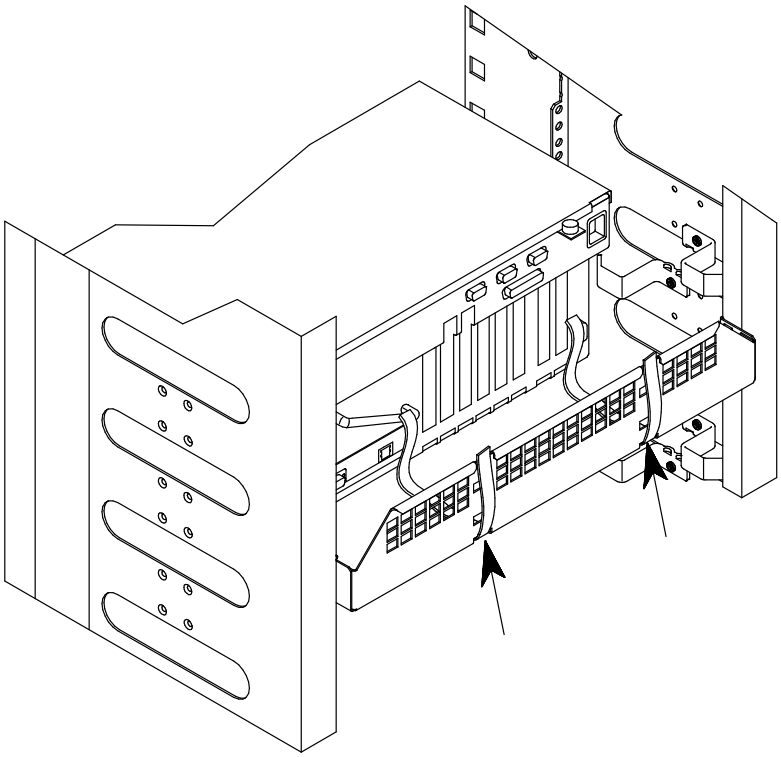
20. Mount the front cover, and fix it tightening the related screws.



21. Mount the cable guide, fixing the retaining pins into the corresponding holes of the chassis.



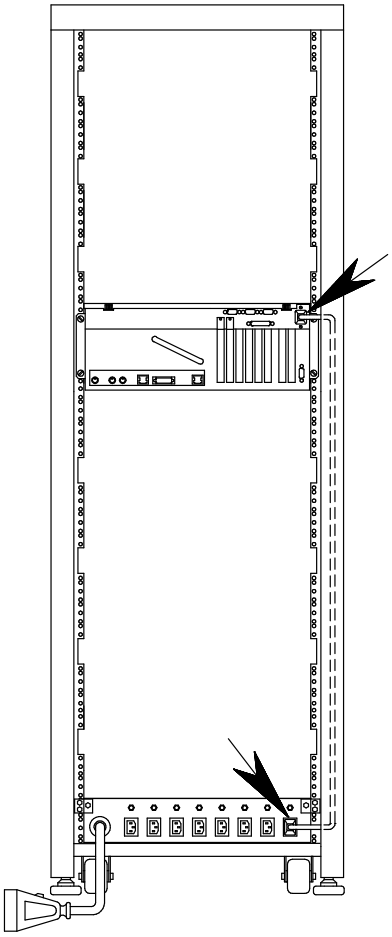
22. Insert the two cable retaining straps into the corresponding holes of the cable guide, as shown in the figure.



23. Connect the drawer to the other drawers in the rack, if this is required by the system architecture. Connect also any external devices, like terminals and printers. For any detailed information, please refer to the CPU drawer base documentation set.

24. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.

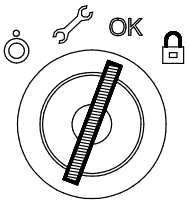
25. Connect the drawer power cord to the chosen PDU outlet and to the dedicated receptacle on the drawer itself, then set the relevant circuit breaker to ON.



Warning: Do not connect the drawer to a power source other than the PDU.

26. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.

27. Switch on the connected drawers and external devices, if any, and power on the system by setting the key mode switch of the CPU drawer to the Normal position.



Removal

Remove in the reverse order.

Cluster Administration Hub Drawer

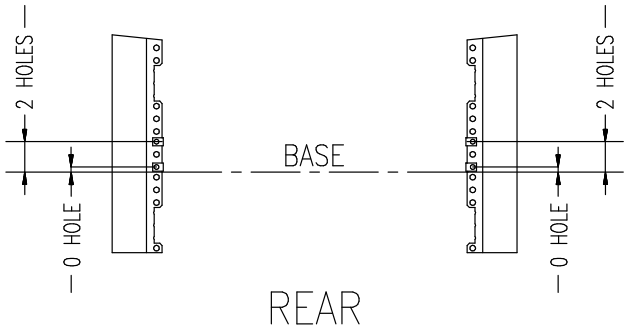
- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-22.

Preliminary Operations

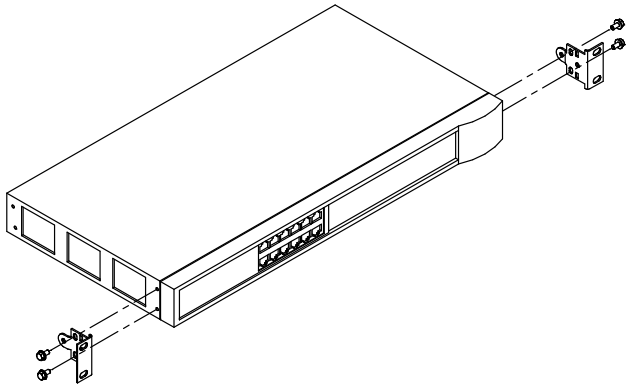
1. Open the front and rear doors of the rack.
2. Locate the area designated to house the Cluster Administration Hub drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
3. Install the rails on the rack, as described in **Rails**, on page 2-5.

Installation

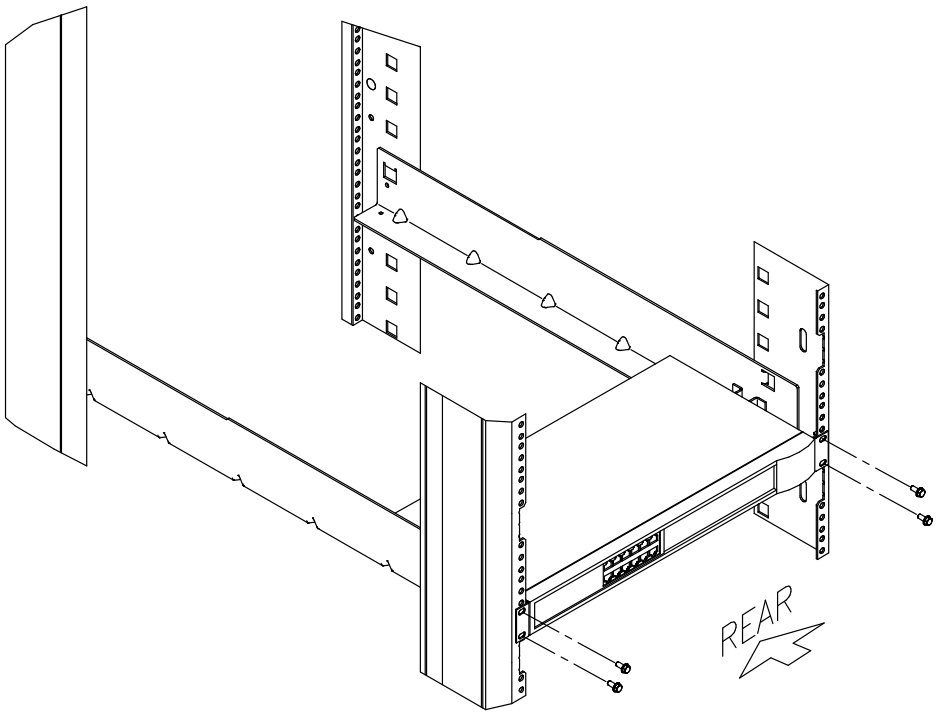
1. Position the threaded nut clips on the rear side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.
   These nut clips are needed to secure the drawer to the rack chassis, on the rear side.



2. Fix the mounting plates on the Cluster Administration Hub using the four related screws, as shown in the figure.



3. Put the drawer on the rails and secure it, tightening the mounting screws to the threaded nut clips, as shown in the figure.



4. Connect the Cluster Administration Hub to the CPU drawer as required. For any detailed information about settings and connections, please refer to the Cluster Administration Hub specific documentation.
5. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
6. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
7. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
8. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
9. Close the front and rear doors of the rack.

Removal

Remove in the reverse order.

DAE 5000 Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-26.

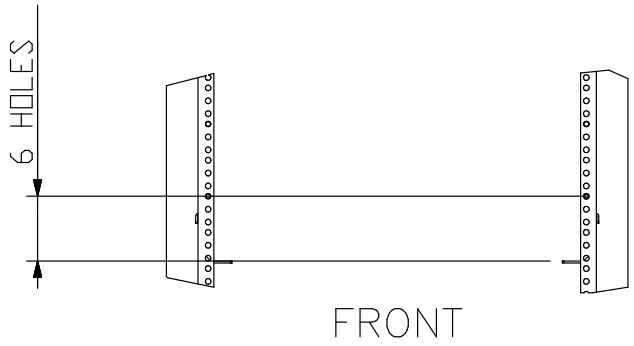
Preliminary Operations

1. Open the rear door of the rack.
2. Remove the front door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Accessing the rack from the front side, locate the area designated to house the DAE 5000 drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. Install the rails, as described in **Rails**, on page 2-5.

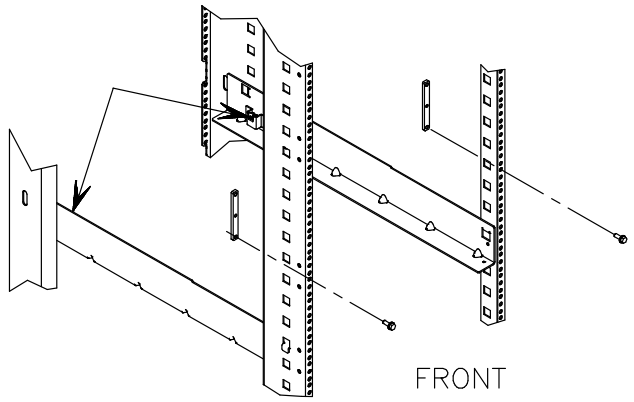
Installation

1. Identify the position to install the threaded drilled plates on the front side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.

   These drilled plates are needed to secure the drawer to the rack chassis, on the front side.



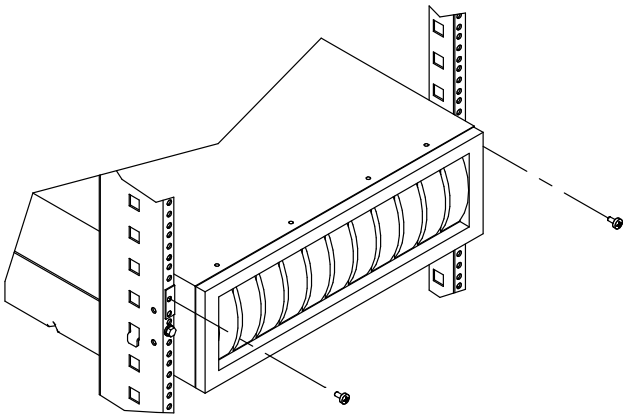
2. Secure the threaded drilled plates on the front side of the rack, on the positions just identified.



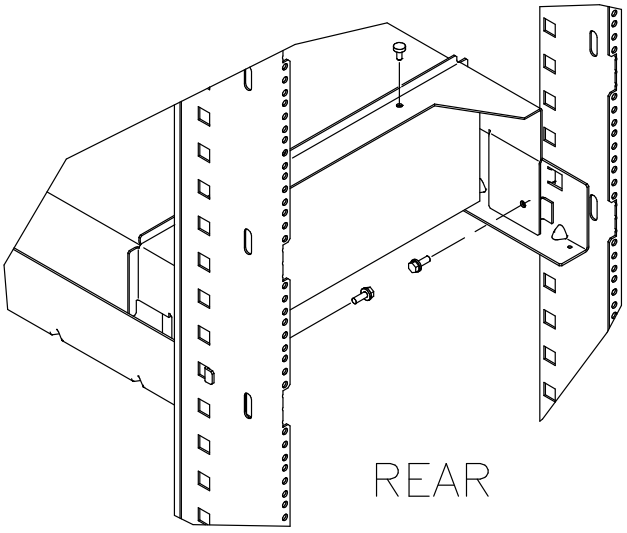
3. Carefully slide the drawer into the rails.

CAUTION:
Take care in handling the DAE 5000 drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

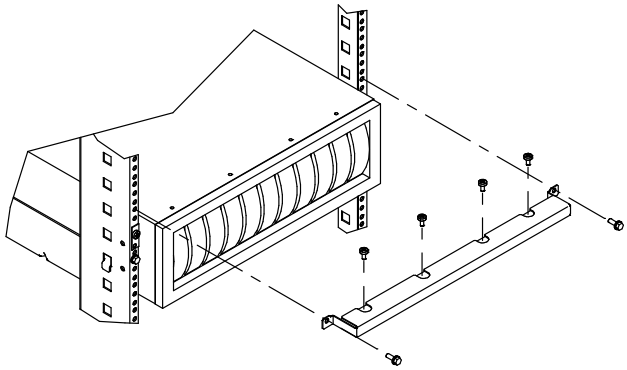
4. Secure the drawer to the rack chassis, on the front side.



5. On the rear side of the rack, install the square bracket and secure it on the rack chassis and on the drawer top.



6. Install the top bracket on the front side, securing it to the top of the drawer and then secure the drawer to the rack chassis.



7. Connect the DAE 5000 either to the CPU drawer or to the DAS drawer, DPE/DAS 5700/4500 or DAS 5300, according to the configuration requirements. For more detailed information about settings and connections, please refer to the DAE 5000 drawer and DAS 5700/4500 and DAS 5300 drawers specific documentation.
8. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
9. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
10. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
11. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
12. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
13. Close the rear door of the rack.

Removal

Remove in the reverse order.

DAS 1300 Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-29.

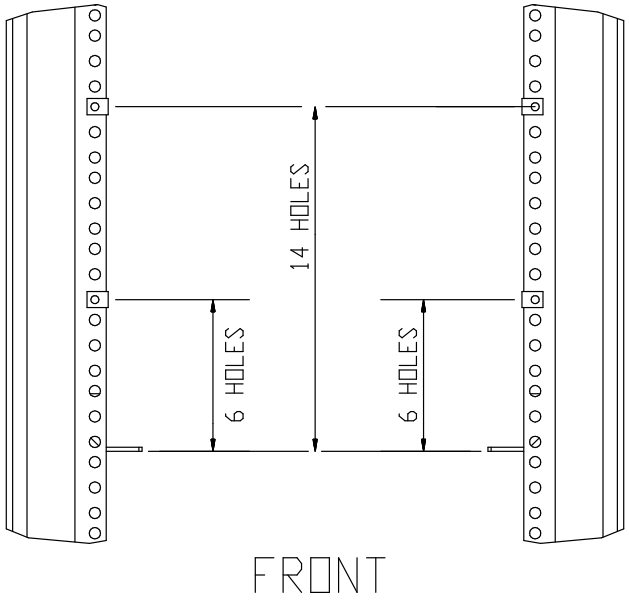
Preliminary Operations

1. Open the rear door of the rack.
2. Remove the front door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Locate the area designated to house the DAS1300 drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. Install the rails, as described in **Rails**, on page 2-5.

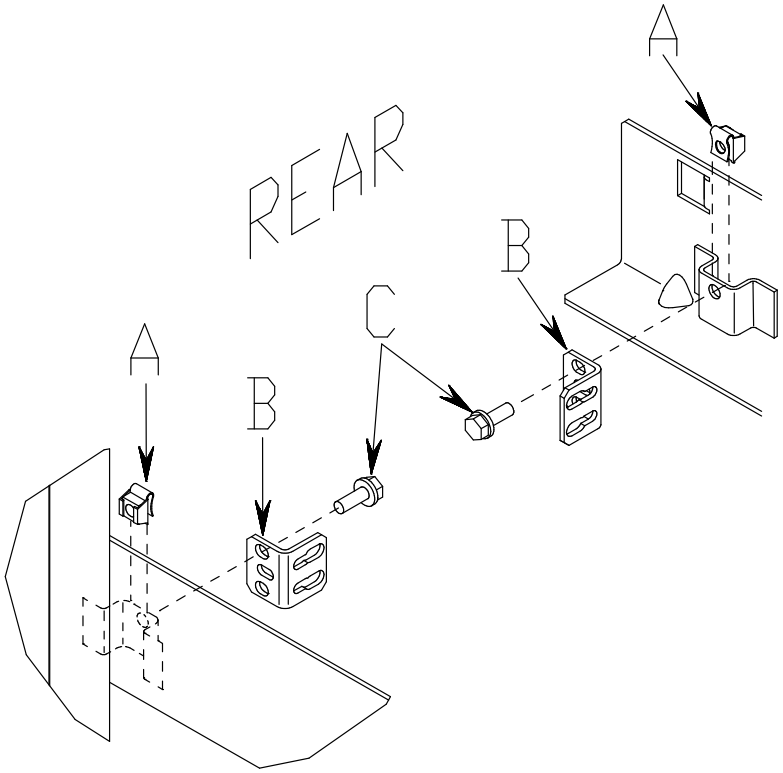
Installation

1. Position the threaded nut clips on the front side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.

   These nut clips are needed to secure the drawer to the rack chassis, on the front side.



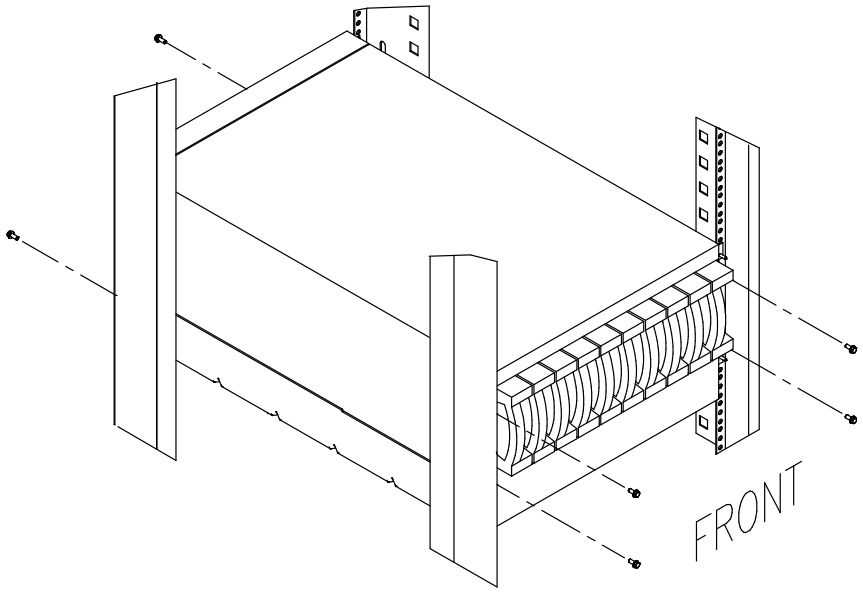
2. On the rear side of the rack, install the square brackets needed to secure the drawer on the rear, performing the following steps:
   a. Install the threaded nut clips on the rails, as indicated at A in the figure.
   b. Position the square brackets near the chassis, paying attention to the correct position of the square brackets, as shown at B.
   c. Secure the square brackets by means of the screws indicated at C.



3. Carefully slide the drawer into the rails.

CAUTION:
Take care in handling the DAS 1300 drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

4. Secure the drawer on the front side tightening the mounting screws into the threaded nut clips previously installed. Then secure it on the rear side tightening the mounting screws into the square brackets previously installed.



5. Install the aesthetic panel on the front side of the drawer.
6. Connect the DAS 1300 to the CPU drawer. For more detailed information about settings and connections, please refer to the DAS 1300 drawer specific documentation.
7. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
8. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
9. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
10. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
11. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
12. Close the rear door of the rack.

Removal

Remove in the reverse order.

DAS 2900 Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-32.

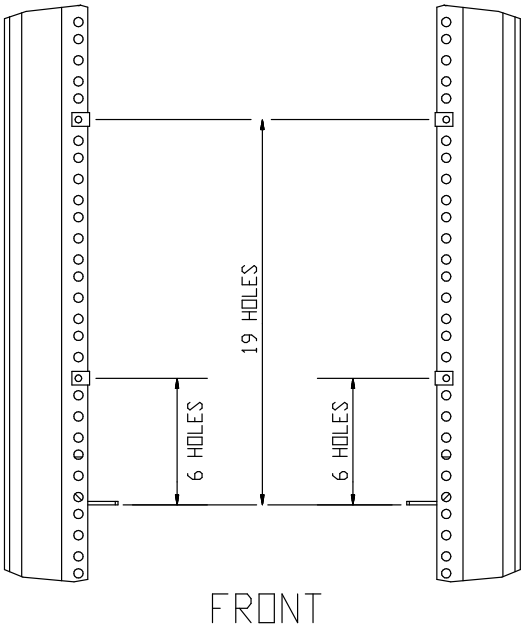
Preliminary Operations

1. Open the rear door of the rack.
2. Remove the front door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Accessing the rack from the front side, locate the area designated to house the DAS 2900 drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. Install the rails, as described in **Rails**, on page 2-5.
6. If present, remove the aesthetic panel from the front side of the drawer.

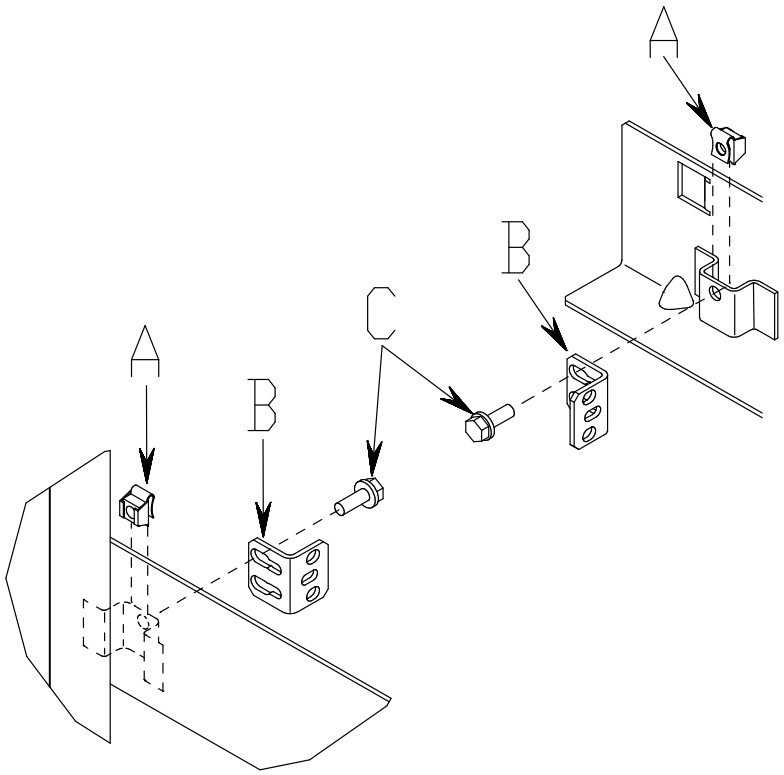
Installation

1. Position the threaded nut clips on the front side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.

   These nut clips are needed to secure the drawer to the rack chassis, on the front side.



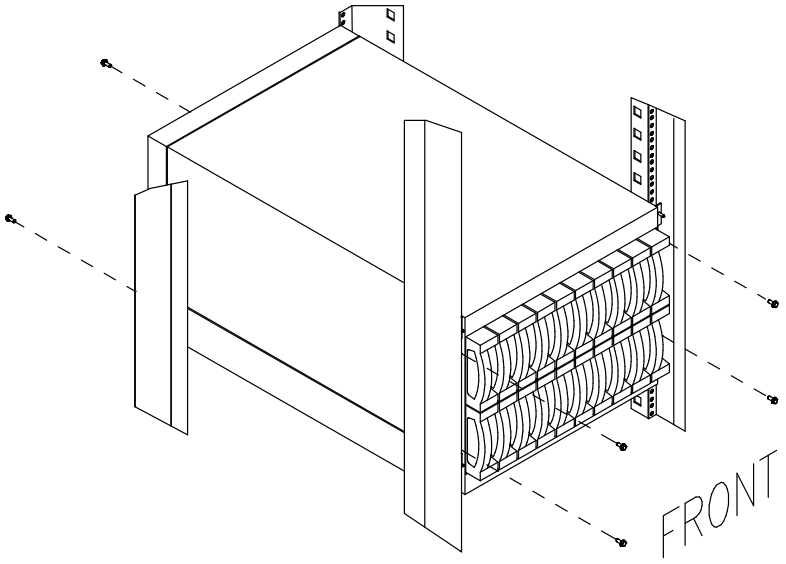
2. On the rear side of the rack, install the square brackets needed to secure the drawer on the rear, performing the following steps:
   a. Install the threaded nut clips on the rails, as indicated at A in the figure.
   b. Position the square brackets near the chassis, paying attention to the correct position of the square brackets, as shown at B.
   c. Secure the square brackets by means of the screws indicated at C.



3. Carefully slide the drawer into the rails.

CAUTION:
Take care in handling the DAS 2900 drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

4. Secure the drawer to the rack chassis, performing the following steps:
   a. First secure it on the front side, tightening the mounting screws into the threaded nut clips.
   b. Then secure it on the rear side, tightening the mounting screws into the square brackets previously installed.



5. Install the aesthetic panel on the front side of the drawer.
6. Connect the DAS 2900 to the CPU drawer. For more detailed information about settings and connections, please refer to the DAS 2900 drawer specific documentation.
7. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
8. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
9. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
10. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
11. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
12. Close the rear door of the rack.

Removal

Remove in the reverse order.

DAS 3X00 Drawer

- **Preliminary Operations**, below
- **Installation A**, on page 2-34
- **Installation B**, on page 2-37
- **Removal**, on page 2-39.

Preliminary Operations

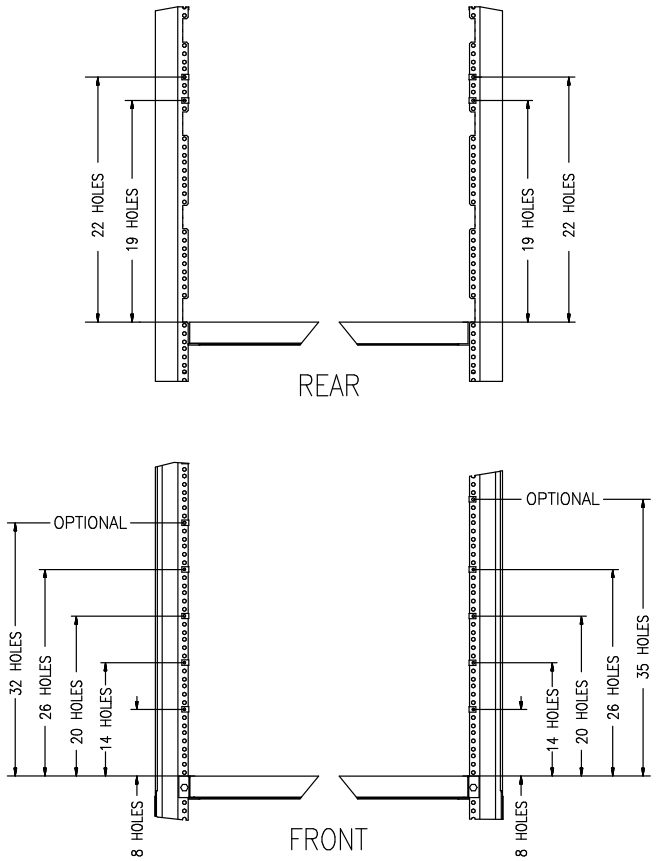
1. Open the rear door of the rack.
2. Remove the front door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Accessing the rack from the front side, locate the area designated to house the DAS 3X00 drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. Install the rails, as described in **Rails**, on page 2-5.
6. Install the shelf, as described in **Shelf**, on page 2-6.
7. If present, remove the aesthetic panel from the front side of the drawer.

Depending on the identified area where the DAS 3X00 will be installed, two situations can occur:

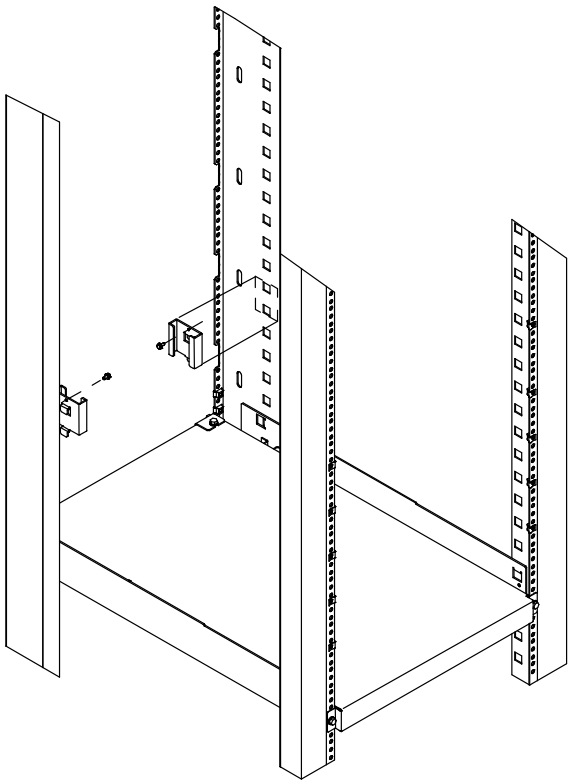
- The DAS 3X00 drawer is installed with the rack chassis cut just above the shelf
- The DAS 3X00 drawer is installed with the rack chassis cut just below the shelf.

Installation A (Rack Chassis Cut above the Shelf)

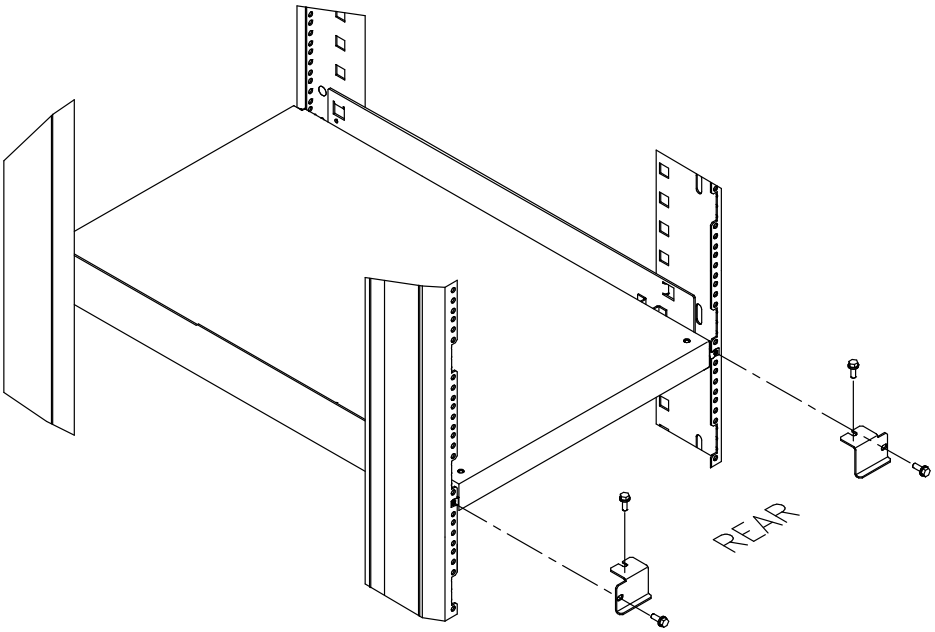
1. Position the threaded nut clips on the front side and on the rear side of the rack, on the positions specified in the figure, starting from the bottom of the shelf just installed. These nut clips are needed to secure the drawer to the rack chassis.



2. On the rear side of the rack, position the spacers as indicated in the figure and secure them.



3. Remove then the rear brackets used to secure the shelf on the chassis, as shown in the figure.

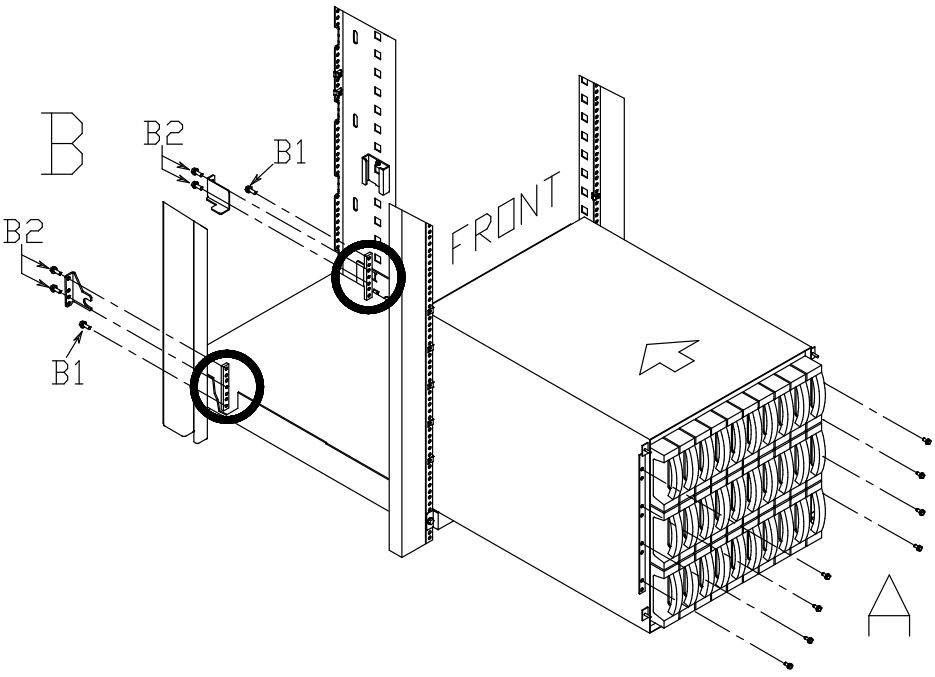


4. Carefully slide the drawer on the shelf and secure it (as indicated at A in the figure).

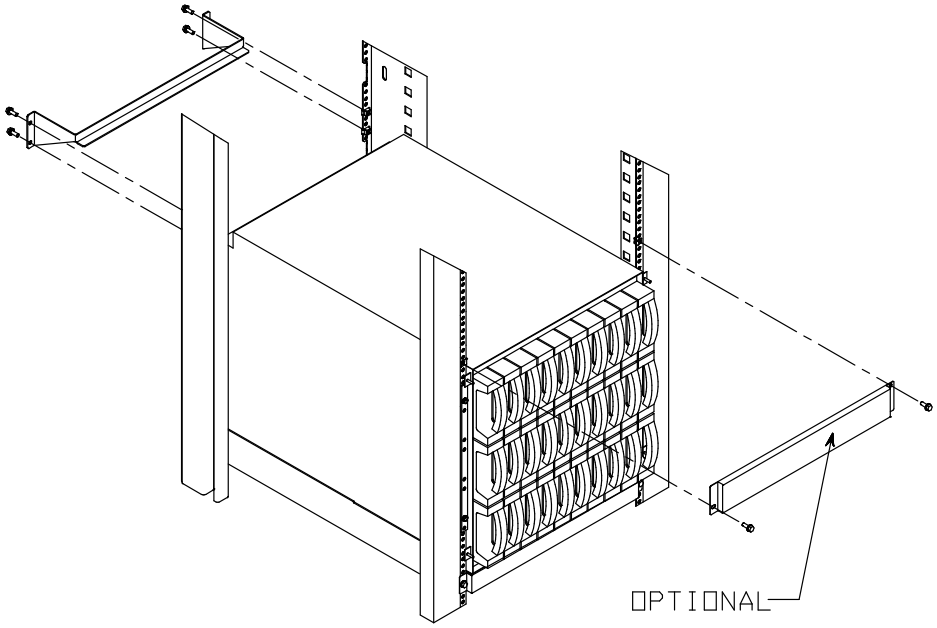
CAUTION:
Take care in handling the DAS 3X00 drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

5. On the rear side of the rack, position the drilled plates on the chassis, making sure the designated holes of each drilled plate fit the corresponding holes on the chassis (covering the cut), and then fix the drilled plates on the chassis tightening the related screws, as indicated at B1 in the figure.
6. Position the square brackets and secure them, tightening the related screws, as shown at B2 in the figure.

Note: The square brackets are not specular. Pay attention to their installation.



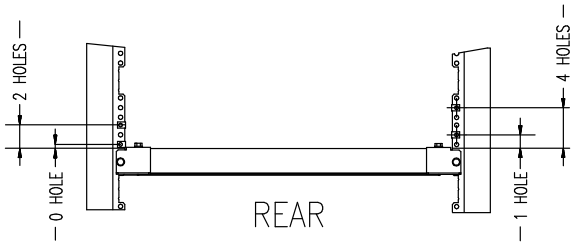
7. Install the top bracket to secure the drawer on the rear side.
8. Install the blank on the front side, if possible.

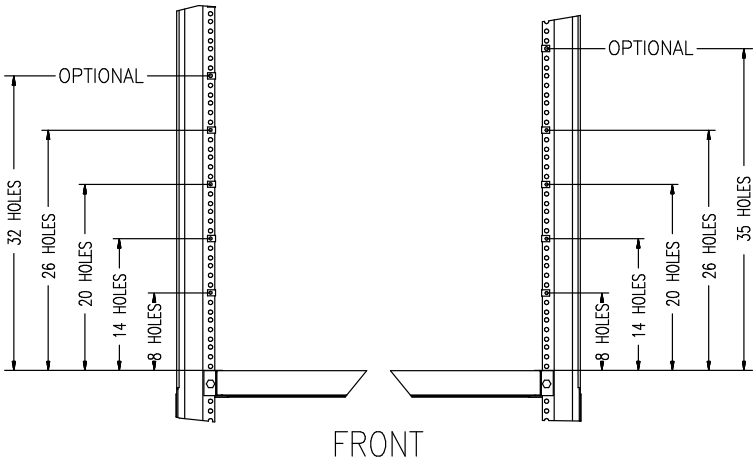


9. Install the aesthetic panel on the front side of the drawer.
10. Connect the DAS 3X00 to the CPU drawer. For more detailed information about settings and connections, please refer to the DAS 3X00 drawer specific documentation.
11. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
12. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
13. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
14. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
15. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
16. Close the rear door of the rack.

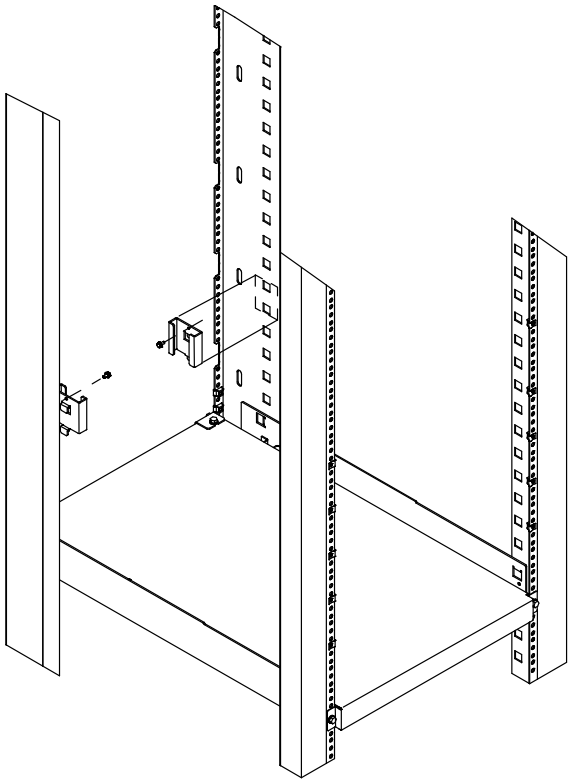
Installation B (Rack Chassis Cut below the Shelf)

1. Position the threaded nut clips on the front side and on the rear side of the rack, on the positions specified in the figure, starting from the bottom of the shelf just installed. These nut clips are needed to secure the drawer to the rack chassis.





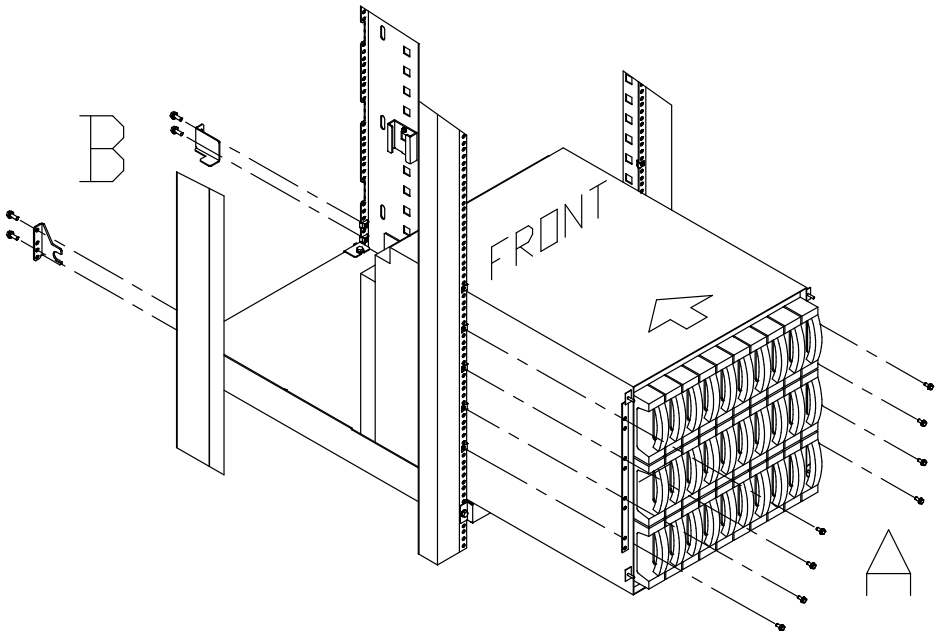
2. On the rear side of the rack, position the spacers as indicated in the figure and secure them.



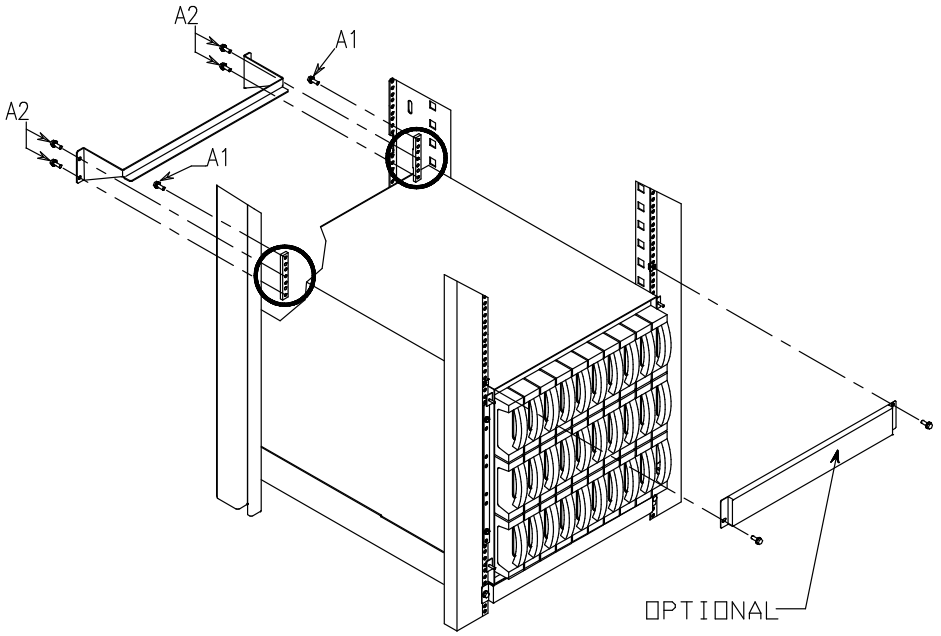
3. Carefully slide the drawer on the shelf and secure it on the front side, tightening the related screws, as indicated at A in the figure.

CAUTION:
Take care in handling the DAS 3X00 drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

4. On the rear side of the rack, install the bottom brackets needed to secure the drawer on the rear, as shown at B in the figure.



5. Secure the drawer to the rack chassis, performing the following steps:
   a. Position the drilled plates on the chassis, and fix them tightening the related screws, as indicated at A1 in the figure.
   b. Position the top bracket and secure them using the related screws, as shown at A2 in the figure.
   c. Install the blank on the front side, if possible.



6. Install the aesthetic panel on the front side of the drawer.
7. Connect the DAS 3X00 to the CPU drawer. For more detailed information about settings and connections, please refer to the DAS 3X00 drawer specific documentation.
8. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
9. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
10. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
11. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
12. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
13. Close the rear door of the rack.

Removal

Remove in the reverse order.

DAS 5300 Drawer

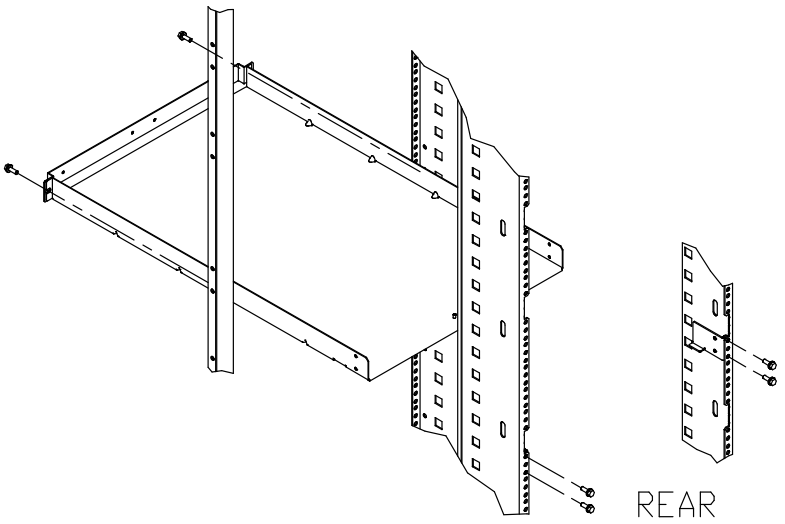
- **Preliminary Operations**, below
- **SPS Installation**, below
- **DAS 5300 Installation**, on page 2-43
- **Removal**, on page 2-45.

Preliminary Operations

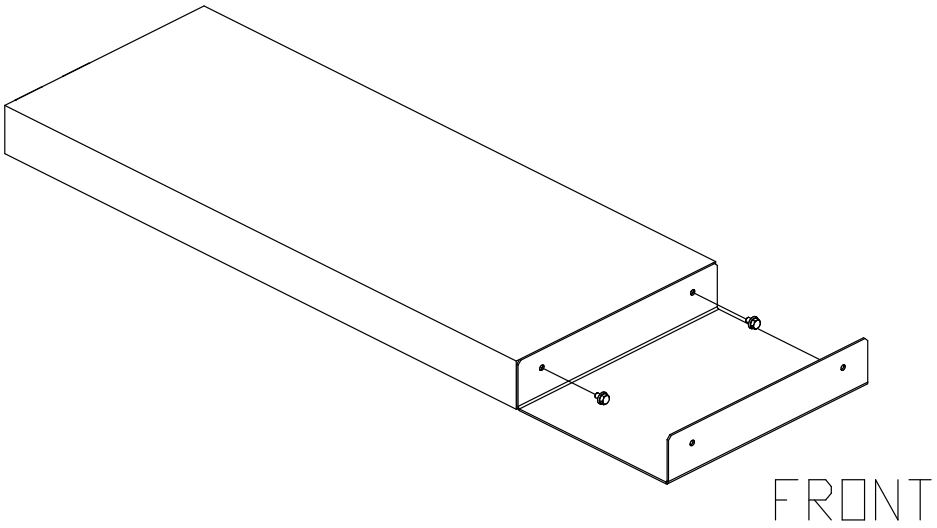
1. Open the rear door of the rack.
2. Remove the front door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Accessing the rack from the front side, locate the area designated to house the DAS 5300 drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. Starting from the bottom of the area, install the SPS unit, backup power supply, as described in **SPS Installation**, below.
6. Install the rails, as described in **Rails**, on page 2-5.

SPS Installation

1. At the bottom of the area just identified, on the rear side of the rack, secure the square brackets to the rack chassis. Slide the SPS support shelf, laying it on the square brackets just installed and secure it on the front side of the rack.

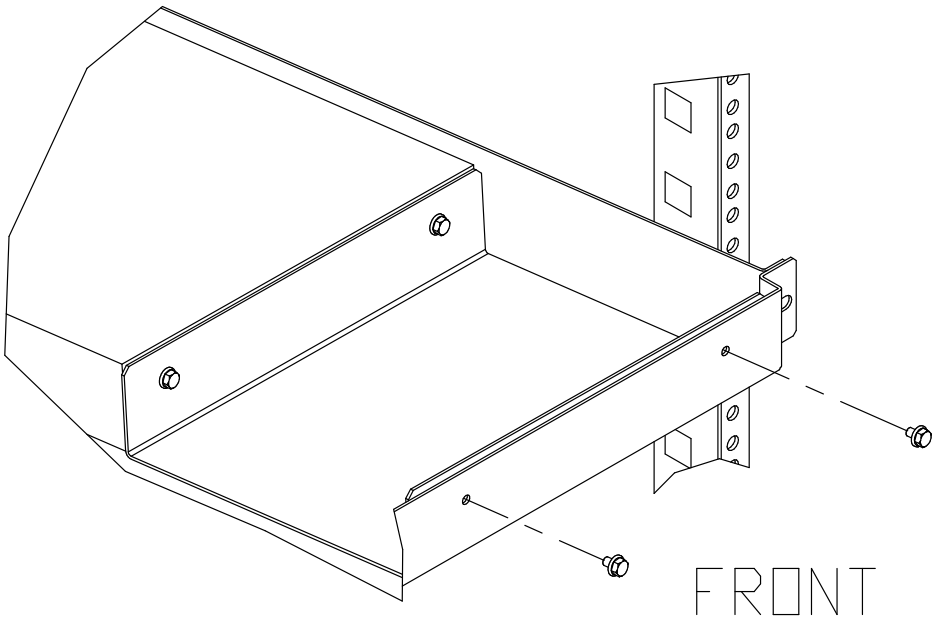


2. Position and secure the spacer tray to the front side of the SPS as indicated in the figure.

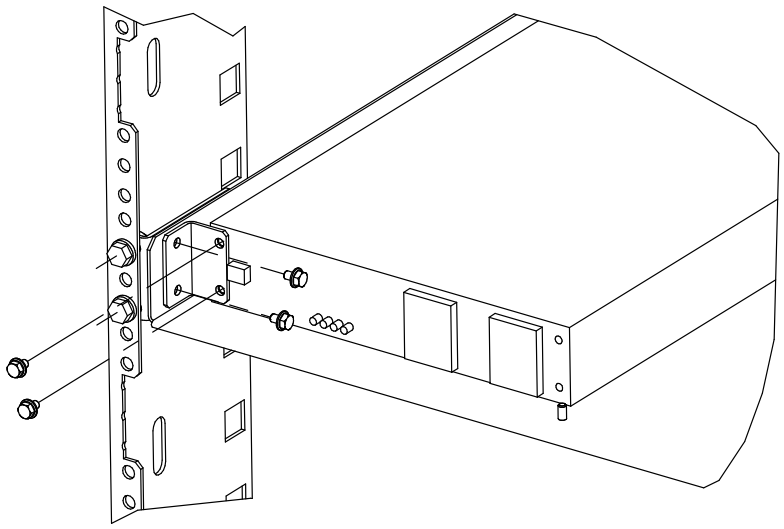


3. On the rear side of the rack, carefully slide the SPS on the support shelf, keeping it close to the left side of the support shelf. Then, secure it on the front side of the rack, as indicated in the figure.

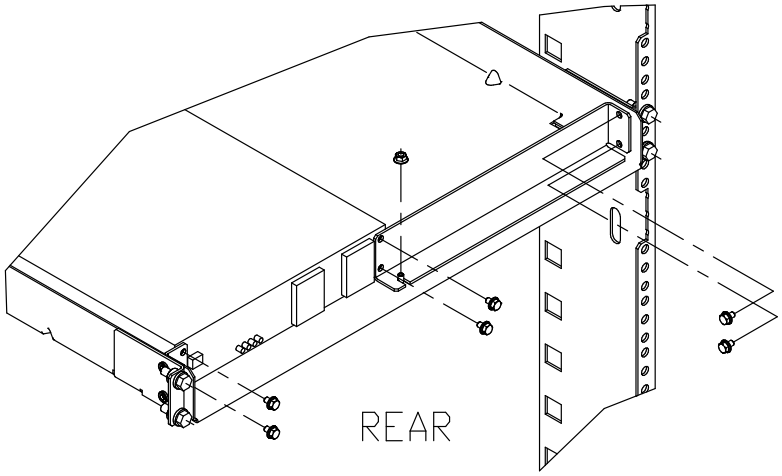
CAUTION:
Take care in handling the SPS unit. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.



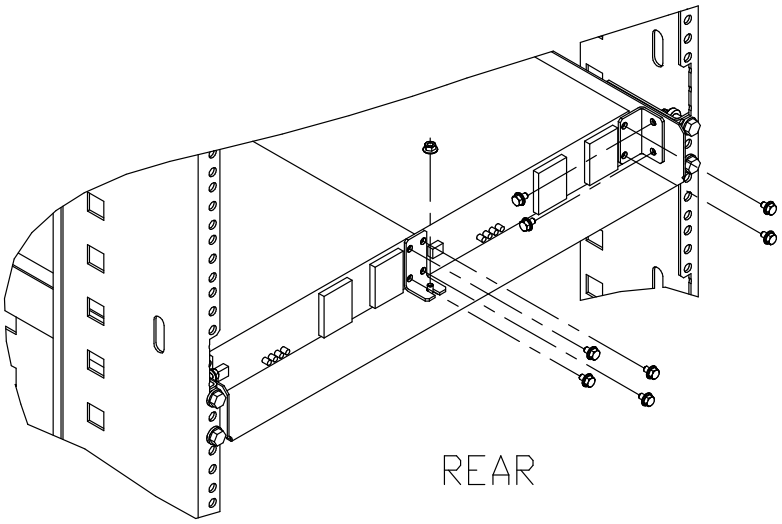
4. On the rear side of the rack, secure the SPS to the support shelf using the square bracket, as indicated in the figure.



5. If only one SPS unit is installed, secure the SPS to the support shelf using the attachment bracket, as indicated in the figure.



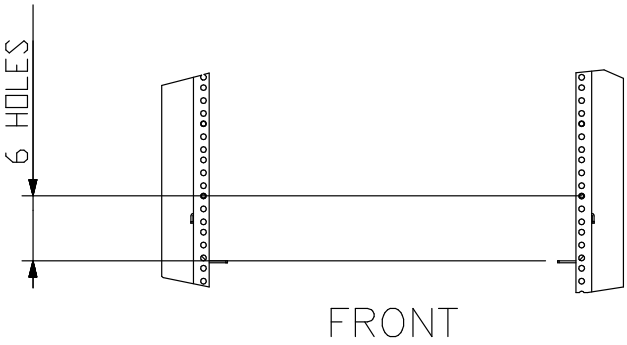
6. If an additional SPS unit is to be installed, remove the attachment bracket from the rear side of the rack, slide the new SPS unit on the support shelf and secure it on the front side of the rack. Then secure it on the rear side of the rack, using the square brackets, as indicated in the figure.



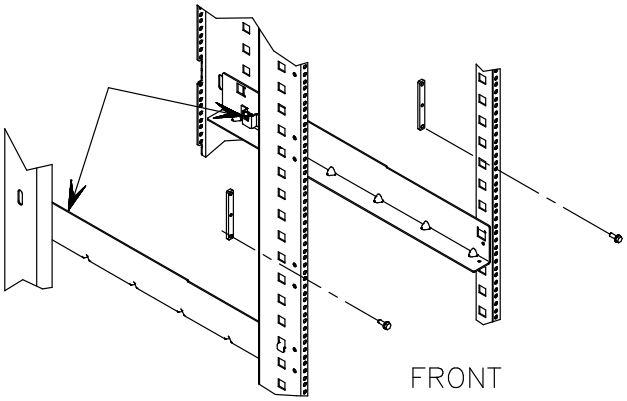
DAS 5300 Installation

1. Identify the position to install the threaded drilled plates on the front side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.

   These drilled plates are needed to secure the drawer to the rack chassis, on the front side.



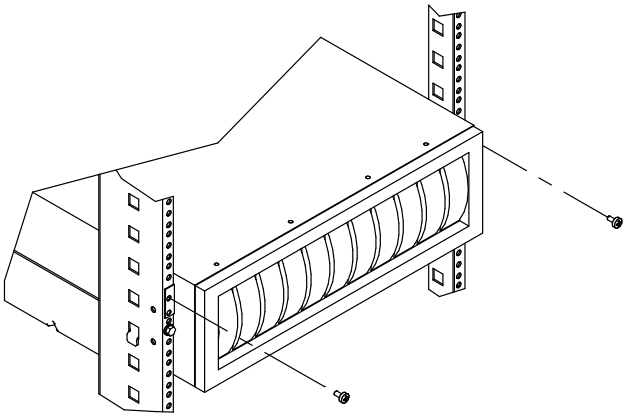
2. Secure the threaded drilled plates on the front side of the rack, on the positions just identified.



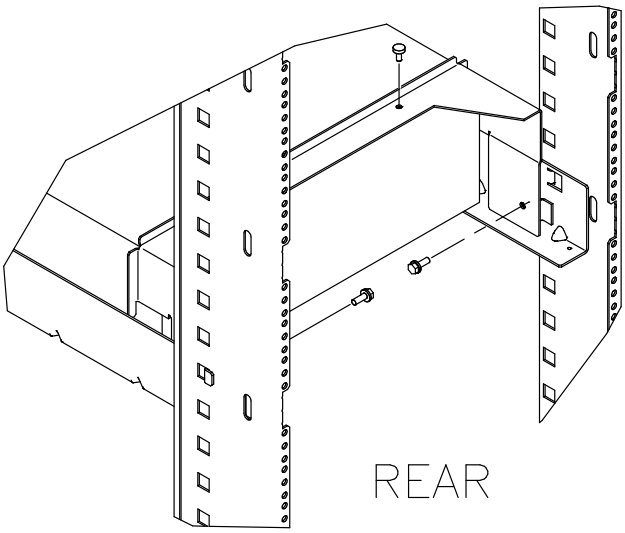
3. Carefully slide the drawer into the rails.

CAUTION:
Take care in handling the DAS 5300 drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

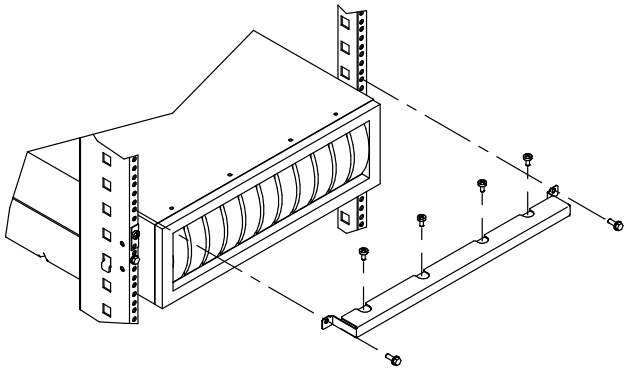
4. Secure the drawer to the rack chassis, on the front side.



5. On the rear side of the rack, install the square bracket and secure it on the rack chassis and on the drawer top.



6. Install the top bracket on the front side, securing it to the top of the drawer and then secure the drawer to the rack chassis.



7. Connect the DAS 5300 to the SPS unit and to the CPU drawer. It is possible to connect also one or two DAE 5000 drawers to the DAS 5300, depending on the configuration. For more detailed information about settings and connections, please refer to the DAS 5300 and DAE 5000 drawers specific documentation.
8. Choose a free PDU outlets, where the drawer power cords will be connected. Make sure the circuit breakers for these PDU outlets are set to OFF.
9. Connect the DAS 5300 drawer and the SPS unit power cords to the chosen PDU outlets, then set the relevant circuit breaker to ON.
10. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
11. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
12. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
13. Close the rear door of the rack.

Removal

Remove in the reverse order.

DAS 5700/4500 Drawer

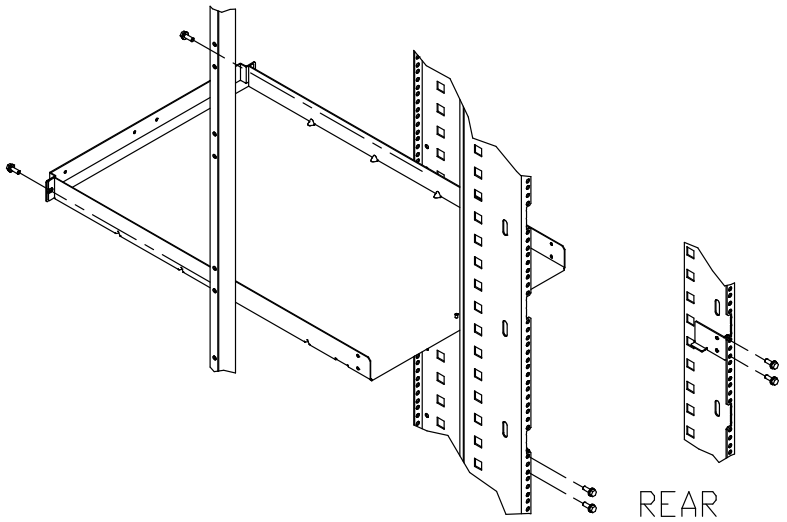
- **Preliminary Operations**, below
- **SPS Installation**, below
- **DPE Installation**, on page 2-49
- **Removal**, on page 2-51.

Preliminary Operations

1. Open the rear door of the rack.
2. Remove the front door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Accessing the rack from the front side, locate the area designated to house the DAS 5700/4500 drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. Starting from the bottom of the area, install the SPS backup power supply, as described in **SPS Installation**, below.
6. Install the rails just above the SPS power supply, as described in **Rails**, on page 2-5.
7. Install the DPE, as described in **DPE Installation**, on page 2-49.

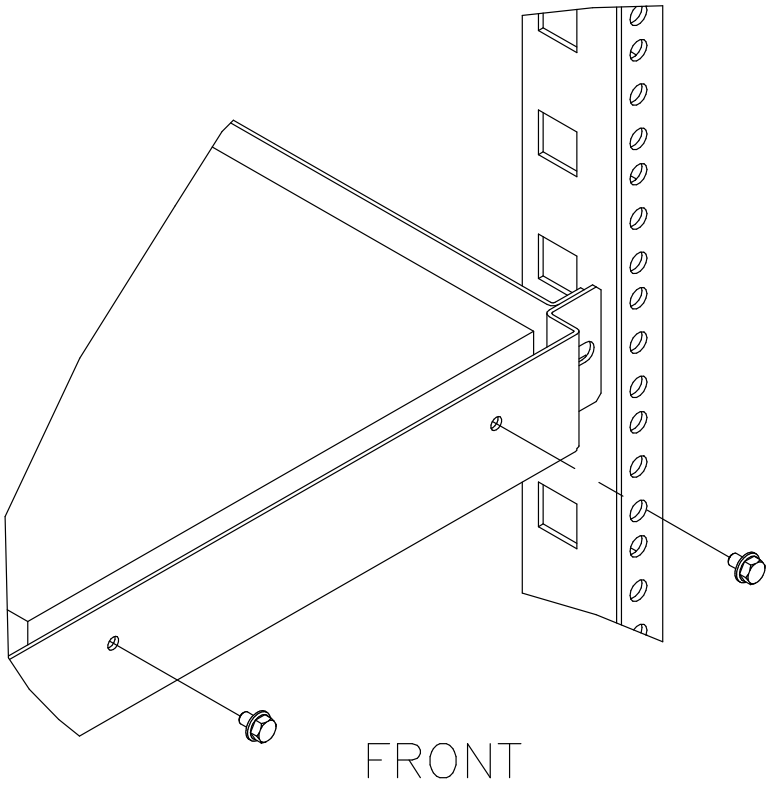
SPS Installation

1. At the bottom of the area just identified, on the rear side of the rack, secure the square brackets to the rack chassis. Slide the SPS support shelf, laying it on the square brackets just installed and secure it on the front side of the rack.

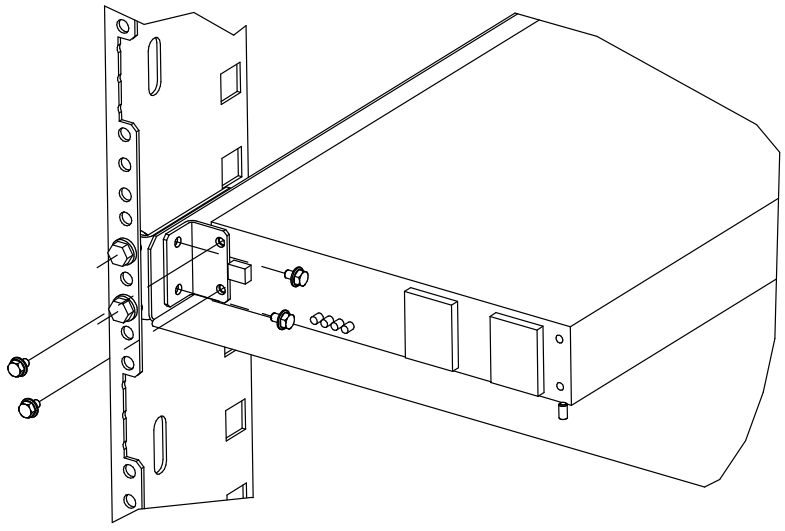


2. On the rear side of the rack, carefully slide the SPS on the support shelf, keeping it close to the left side of the support shelf. Then secure it on the front side of the rack, as indicated in the figure.

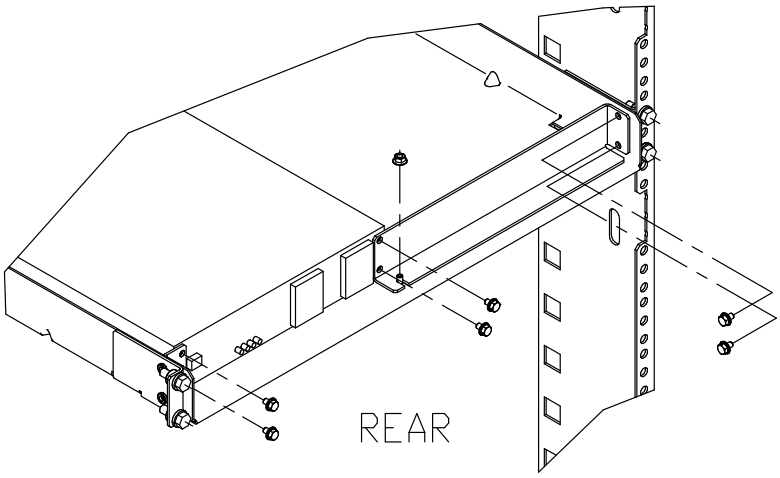
CAUTION:
Take care in handling the SPS unit. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.



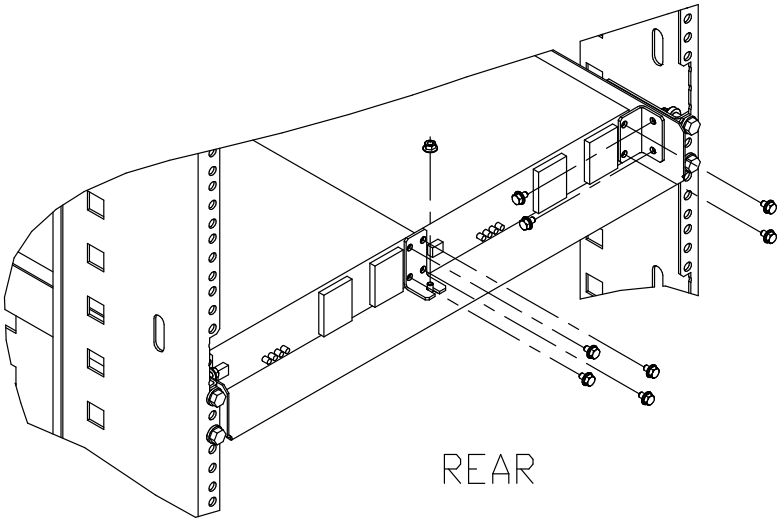
3. On the rear side of the rack, secure the SPS to the support shelf using the square bracket, as indicated in the figure.



4. If only one SPS unit is installed, secure the SPS to the support shelf using the attachment bracket, as indicated in the figure.



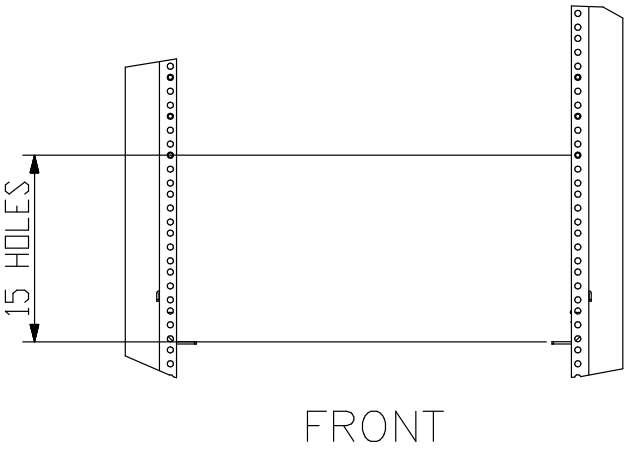
5. If an additional SPS unit is to be installed, remove the attachment bracket from the rear side of the rack, slide the new SPS unit on the support shelf and secure it on the front side of the rack. Then, secure it on the rear side of the rack, using the square brackets, as indicated in the figure.



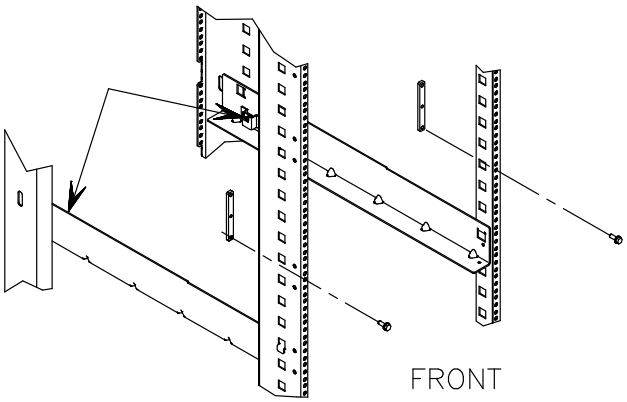
DPE Installation

1. Identify the position to install the threaded drilled plates on the front side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.

   These drilled plates are needed to secure the drawer to the rack chassis, on the front side.



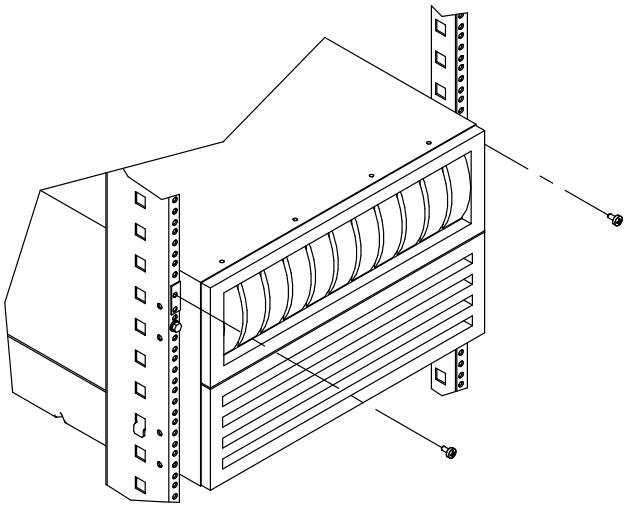
2. Secure the threaded drilled plates on the front side of the rack, on the positions just identified.



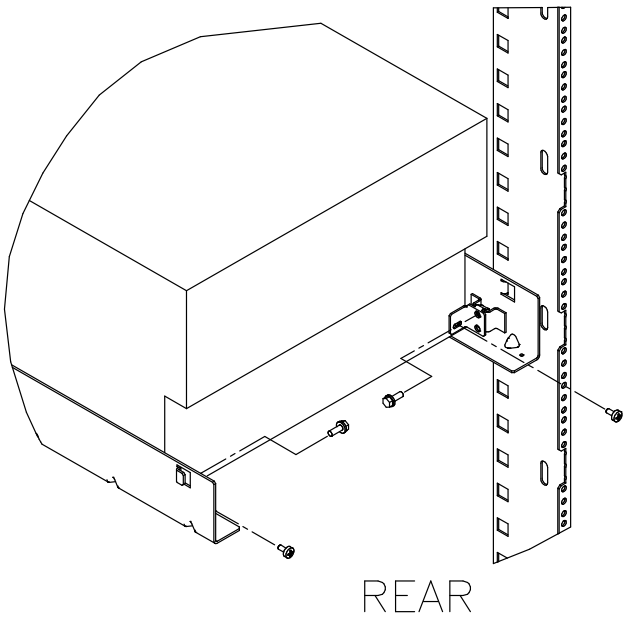
3. Carefully slide the drawer into the rails.

CAUTION:
Take care in handling the DPE drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

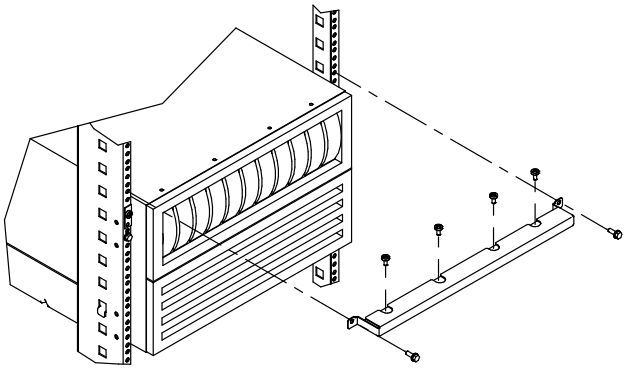
4. Secure the drawer to the rack chassis, on the front side.



5. On the rear side of the rack, secure the drawer to the rails using the square brackets.



6. Install the top bracket on the front side, securing it to the top of the drawer and then secure the drawer to the rack chassis.



7. Connect the DPE to the SPS unit and then the DPE to the CPU drawer. It is possible to connect also the DAE 5000 to the DPE (DAS 5700/4500 drawer), depending on the configuration. For more detailed information about settings and connections, please refer to the DAS 5700/4500 and DAE 5000 drawer specific documentation.
8. Choose free PDU outlets, where the drawer power cords will be connected. Make sure the circuit breakers for these PDU outlets are set to OFF.
9. Connect the DPE and the SPS drawer power cords to the chosen PDU outlets, then set the relevant circuit breaker to ON. If two SPS units are present, it is recommended to connect the two SPS units to different PDUs.
10. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
11. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
12. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
13. Close the rear door of the rack.

Removal

Remove in the reverse order.

DLT 4000/7000 Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-53.

Preliminary Operations

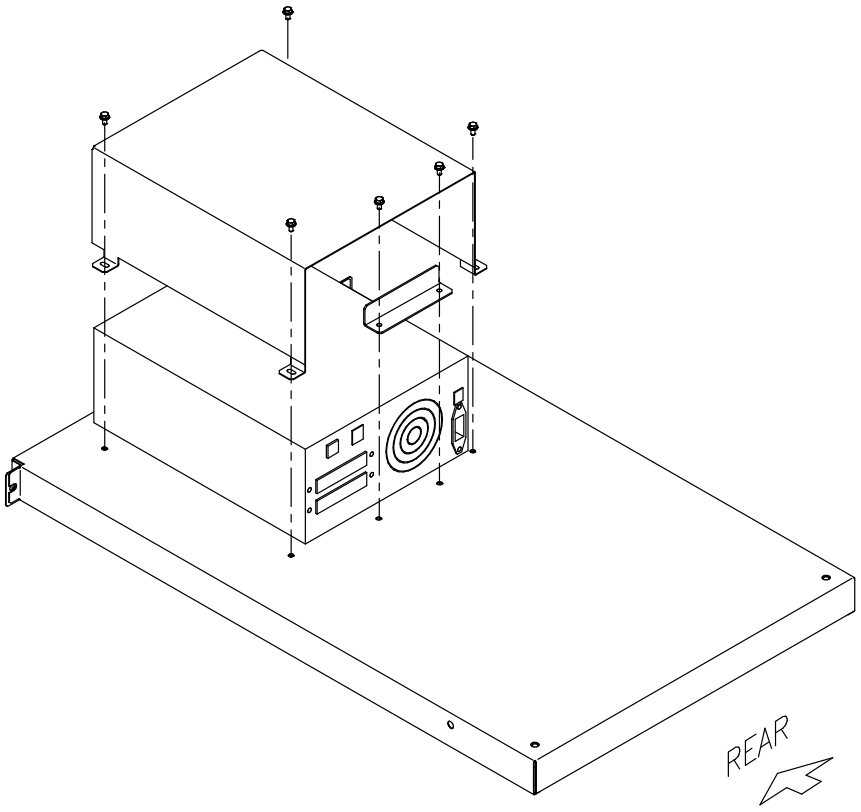
1. Open the front and rear doors of the rack.
2. Locate the area designated to house the DLT 4000/7000, following the rules indicated in the CPU drawer base documentation set, **Configuring the System** section.
3. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.

Note: The DLT 4000/7000 must be installed on the shelf. It is recommended to consider also the space needed for the shelf before starting the DLT 4000/7000 installation.

4. Install the rails on the rack, as described in **Rails**, on page 2-5.

Installation

1. Lay the DLT 4000/7000 on the designated shelf. Secure the DLT 4000/7000 by means the appropriate metal covering and lock it turning clockwise the relevant retaining screws.



2. Install the shelf with the DLT 4000/7000 on it, into the rack, following the operations described in **Shelf**, on page 2-6.
3. Connect the drawer to the CPU drawer as required. For any detailed information about settings and connections, please refer to the DLT 4000/7000 specific documentation.
4. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.

5. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
6. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
7. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
8. Close the front and rear doors of the rack.

Removal

Remove in the reverse order.

EPC440 Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-56.

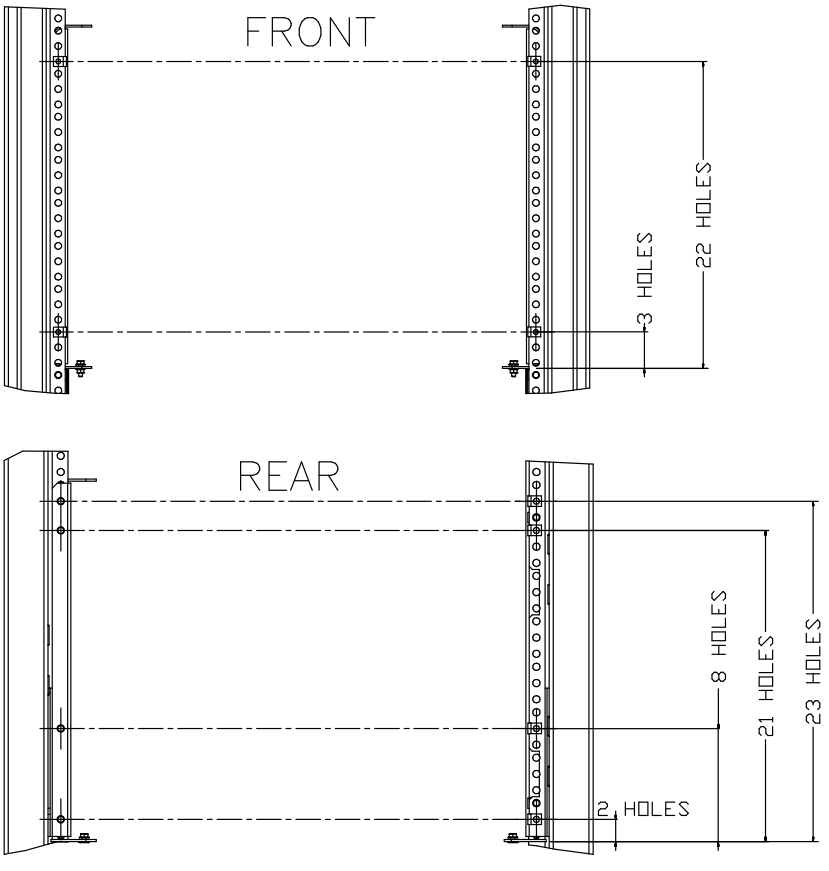
Preliminary Operations

1. Open the rear door of the rack.
2. Remove the front door, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Locate the area designated to house the EPC440 drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.

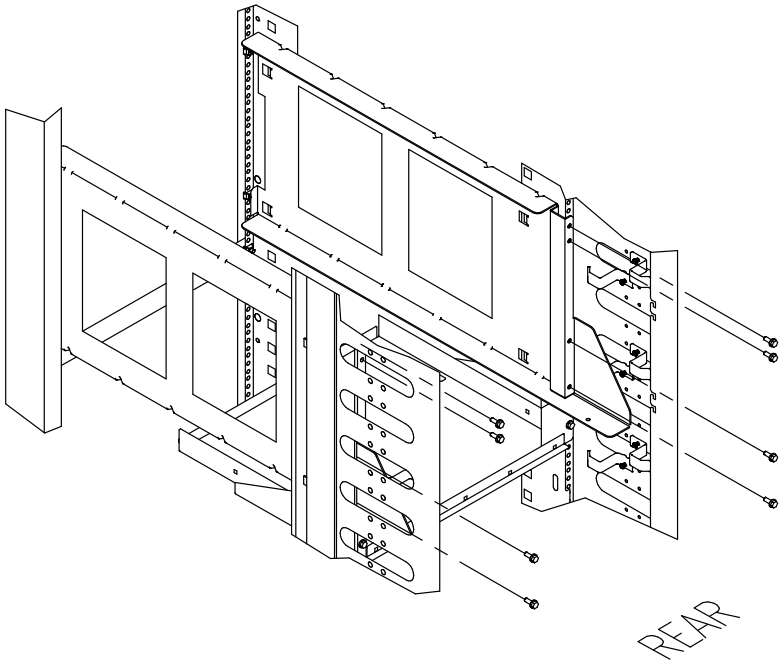
Installation

1. Position the threaded nut clips on both sides of the rack, on the positions specified in the figure, starting from the bottom of the identified area.

   These nut clips are needed to secure the drawer to the rack chassis.



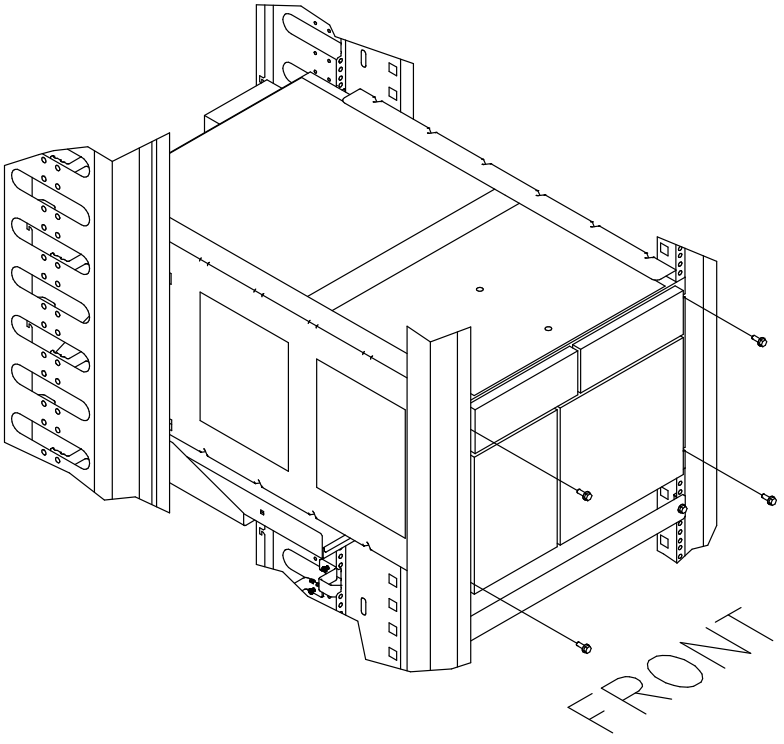
2. From the rear side of the rack, install the right and left metal supports in the designated area on the rack chassis. Fix them tightening the mounting screws to the threaded nut clips, as shown in the figure.



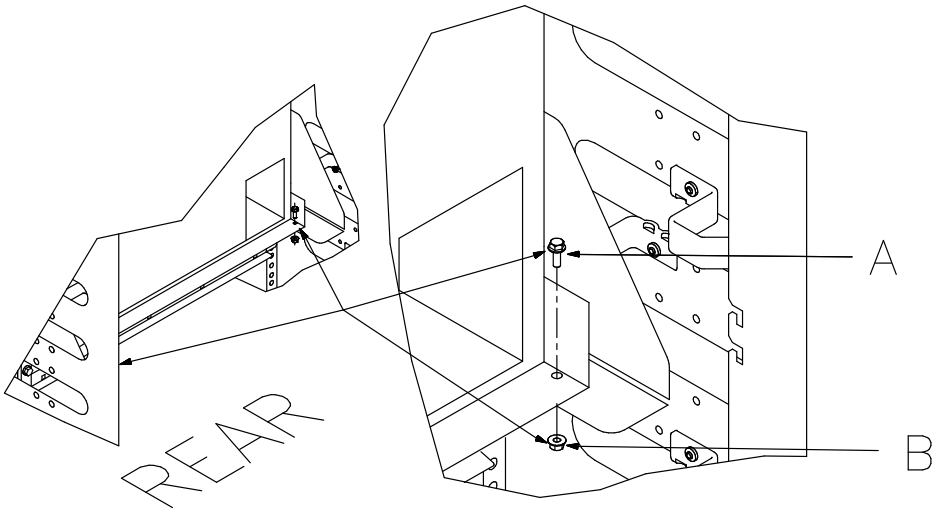
3. From the front side of the rack, carefully lift and slide the drawer on the metal supports.

CAUTION:
Take care in handling the EPC440 drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.

4. Secure the drawer to the rack chassis, performing the following steps:
   a. Secure it on the front side, tightening the mounting screws into the threaded nut clips.



b. Secure it on the rear side, tightening the mounting screws, as indicated at A, with the washer nuts, as indicated at B in the figure, in the corresponding holes of the drawer and of the metal support.



5. Connect the EPC440 drawer. For more detailed information about settings and connections, please refer to the EPC440 drawer specific documentation.
6. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
7. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
8. Remount the front door of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
9. Close the rear door of the rack.

Removal

Remove in the reverse order.

Fast Ethernet / Gbit Ethernet Switch Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-58.

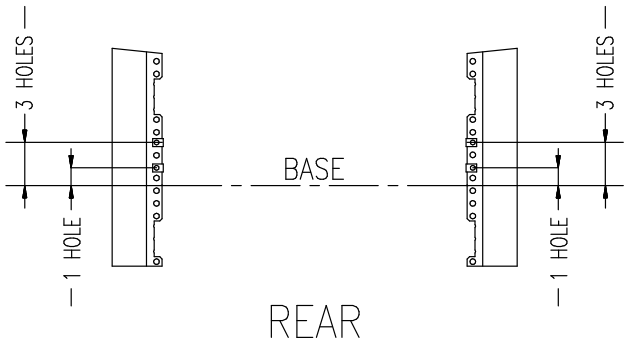
Note: These procedures apply both to the Fast Ethernet Switch drawer and to the Gbit Ethernet Switch drawer.

Preliminary Operations

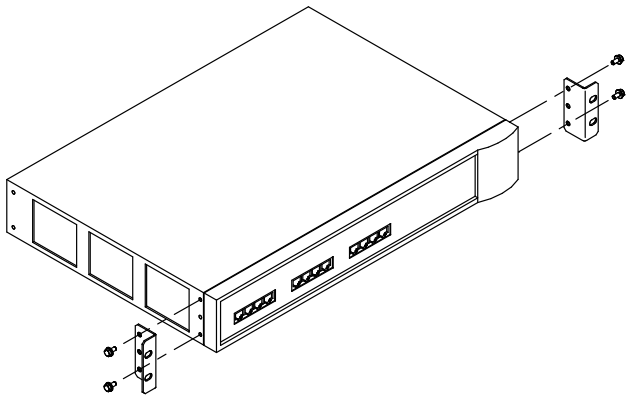
1. Open the front and rear doors of the rack.
2. Locate the area designated to house the Switch drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
3. Install the rails on the rack, as described in **Rails**, on page 2-5.

Installation

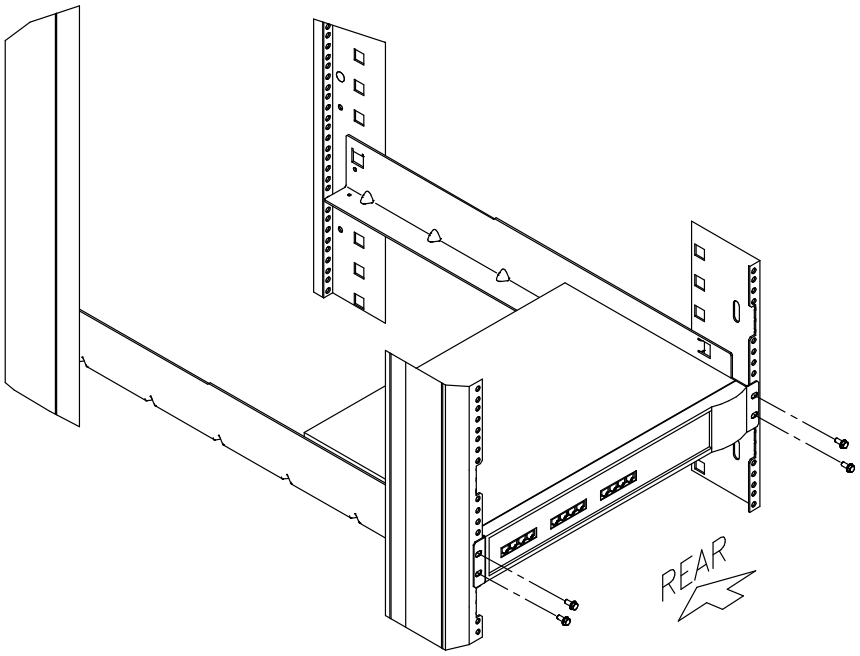
1. Position the threaded nut clips on the rear side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.
   These nut clips are needed to secure the drawer to the rack chassis, on the rear side.



2. Fix the mounting plates on the Switch using the four related screws, as shown in the figure.



3. Slide the drawer on the rails and secure it, tightening the mounting screws to the threaded nut clips, as shown in the figure.



4. Connect the Switch to the CPU drawer as required. For any detailed information about settings and connections, please refer to the Switch specific documentation.
5. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
6. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
7. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
8. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
9. Close the front and rear doors of the rack.

Removal

Remove in the reverse order.

FC-AL Hub Drawer

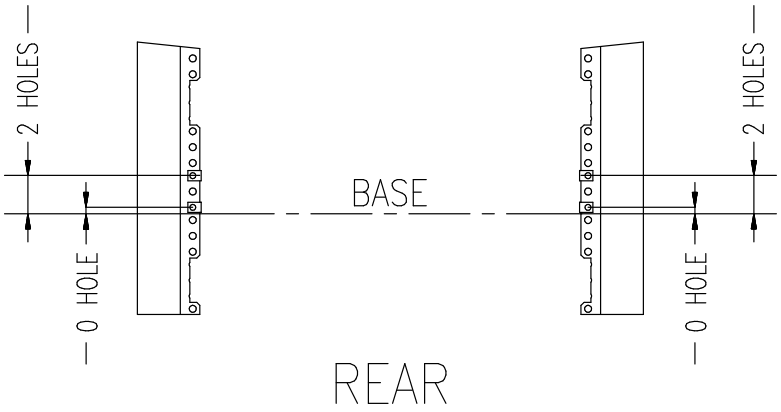
- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-60.

Preliminary Operations

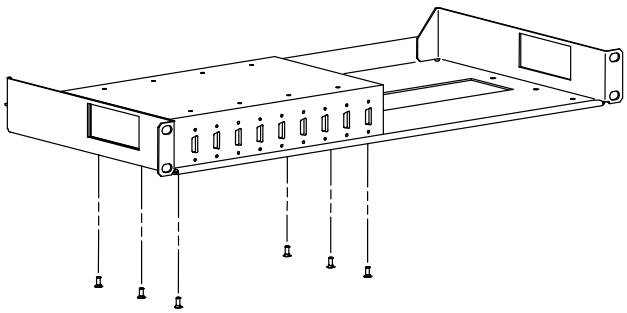
1. Open the front door of the rack.
2. Locate the area designated to house the FC-AL Hub drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.

Installation

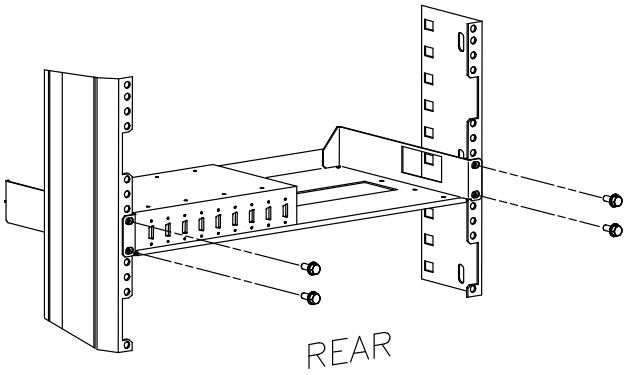
1. Position the threaded nut clips on the rear side of the rack, on the positions specified in the figure, starting from the bottom of the identified area.
   These nut clips are needed to secure the drawer to the rack chassis, on the rear side.



2. Secure the FC-AL Hub from the bottom side of the specific shelf, by means of the related screws, as shown in the figure.



3. Put the shelf in the designated position and secure it, tightening the mounting screws to the threaded nut clips, as shown in the figure.



4. Connect the FC-AL Hub to the CPU drawer as required. For any detailed information about settings and connections, please refer to the FC-AL Hub specific documentation.
5. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
6. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
7. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
8. Close the front door of the rack.

Removal

Remove in the reverse order.

Vixel 1000 Fibre Channel Hub Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-63

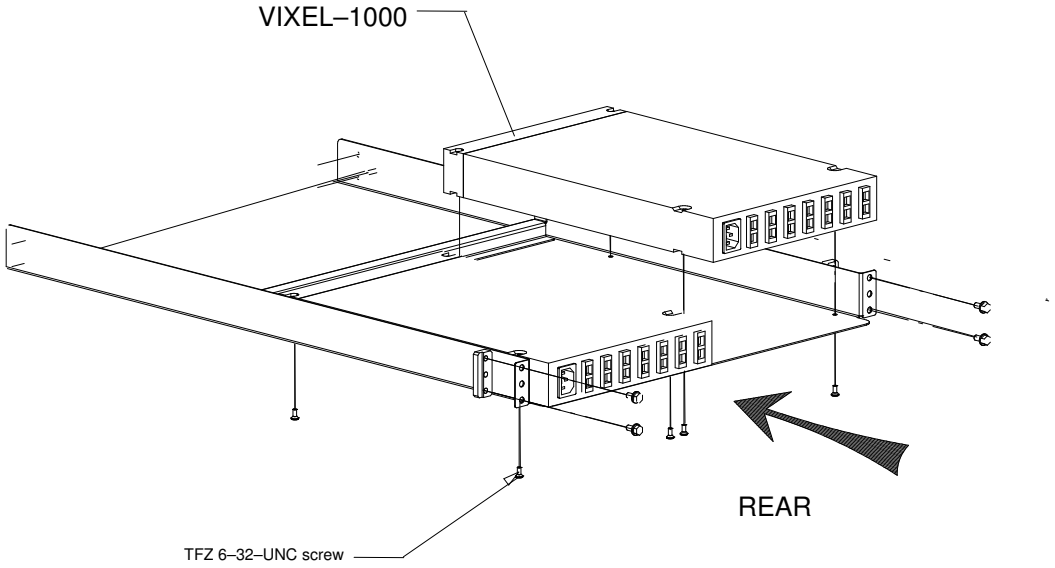
Preliminary Operations

Note: Before you start installing the drawers in the rack, test the system to make sure it is in correct operating order.

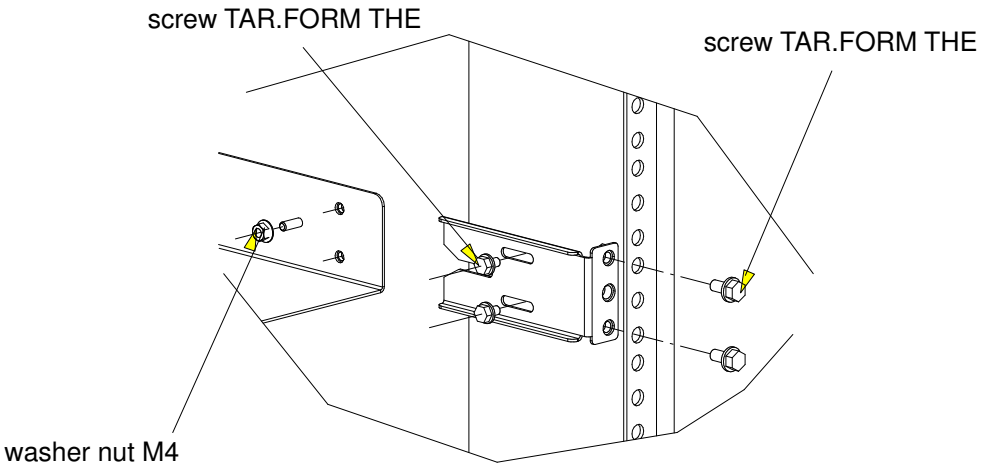
1. Power down the system.
2. Open the front and rear door of the rack.
3. Remove the blank covers from the front of the rack.
4. Locate the position designated to house the Vixel 1000 Hub according to the configuration rules in Chapter 1.

Installation

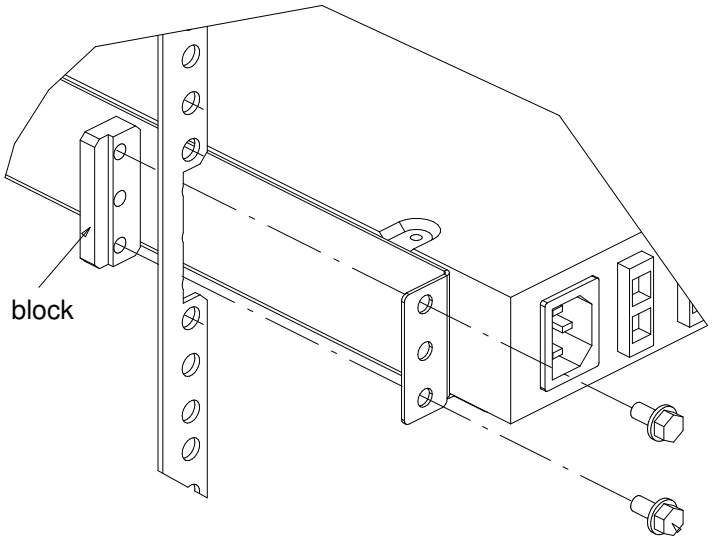
5. Install the Vixel on its support plate and secure it using four (4) TFZ 6–32–UNC screws (remove two screws from the bottom of the Vixel, front side). You can install two Vixels side to side on the same support plate.



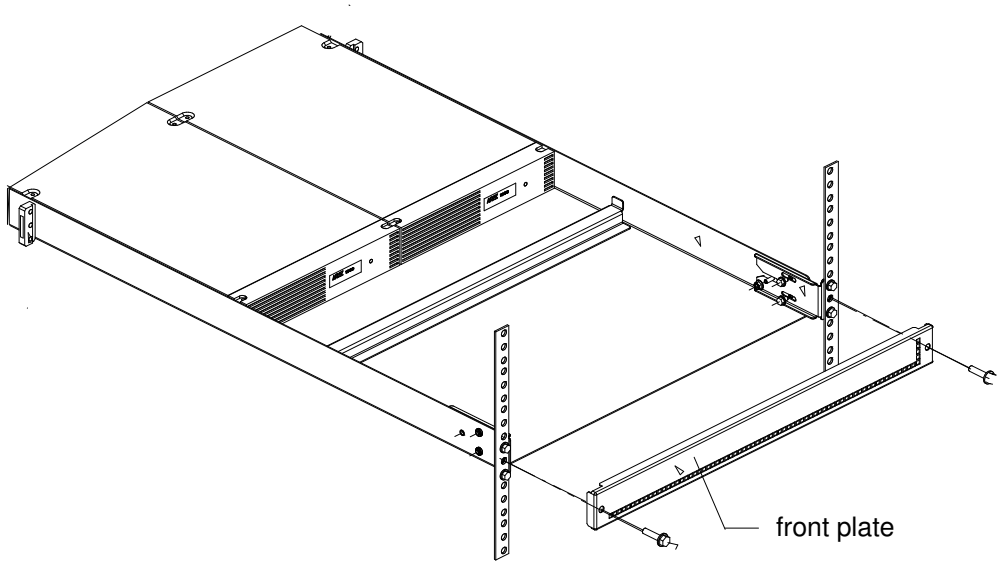
6. Secure the two front attachment brackets to the side of the rack using two (2) TAR.FORM THE screws.



7. Slide the support plate in place.
8. At the **front** of the rack, secure the support plate to the attachment brackets using two (2) TAR.FORM THE screws and one (1) washer nut M4, as shown above
9. At the **rear** of the rack, secure the support plate to each side of the rack using the support plate rear brackets and the Vixel blocks and two (2) TAR.FORM THE screws.



10. Fix the 1U front plate to the rack using two (2) TAR.FORM THE screws.



11. If the installation of all the drawers in the rack is complete, start up the system.

Removal

Remove in the reverse order.

FC Switch Drawer – 16 Ports

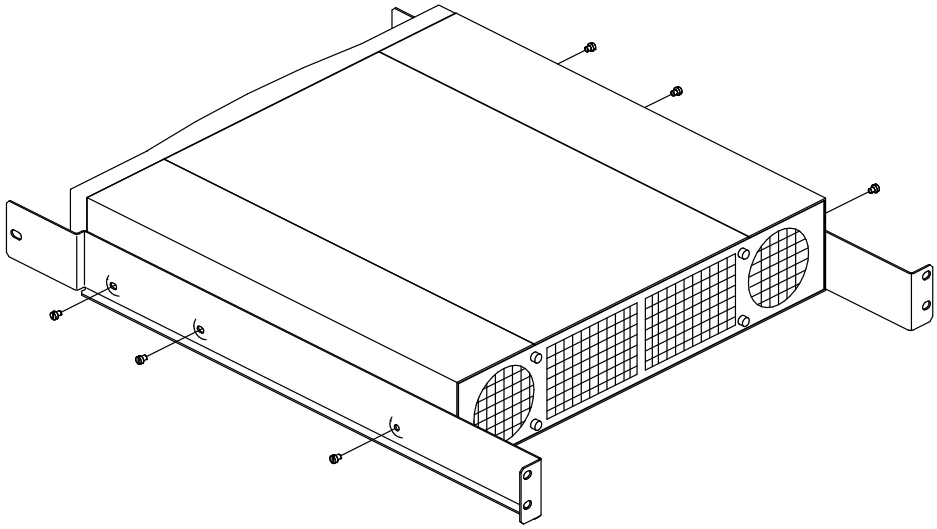
- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-66.

Preliminary Operations

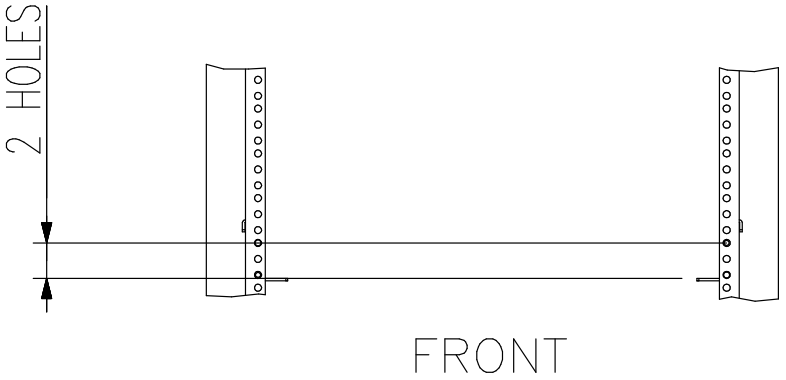
1. Open the front and rear doors of the rack.
2. Locate the area designated to house the FC Switch drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
3. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
4. Install the rails on the rack, as described in **Rails**, on page 2-5.

Installation

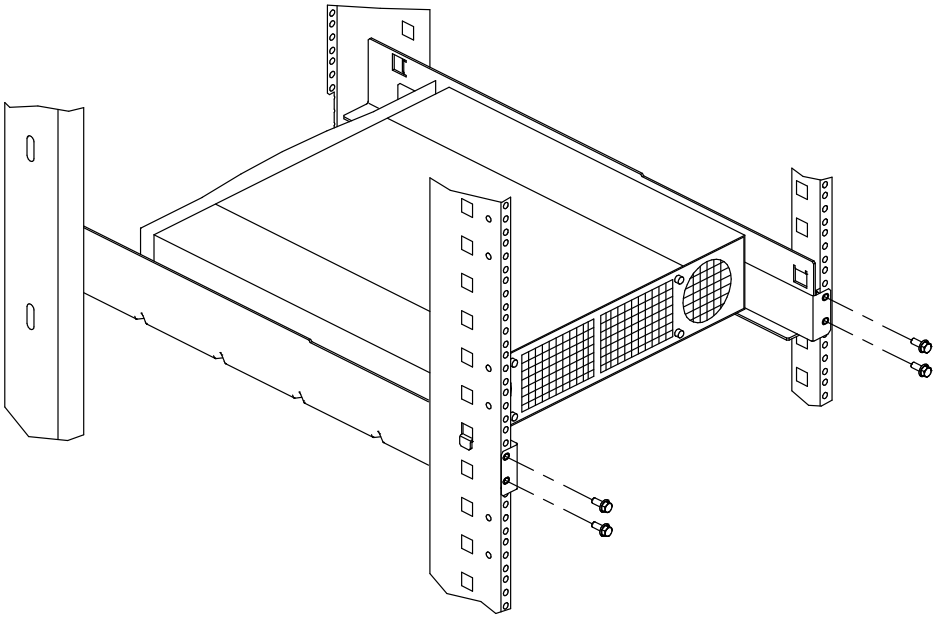
1. If not already done, mount the drawer guides, at sides of the drawer itself.



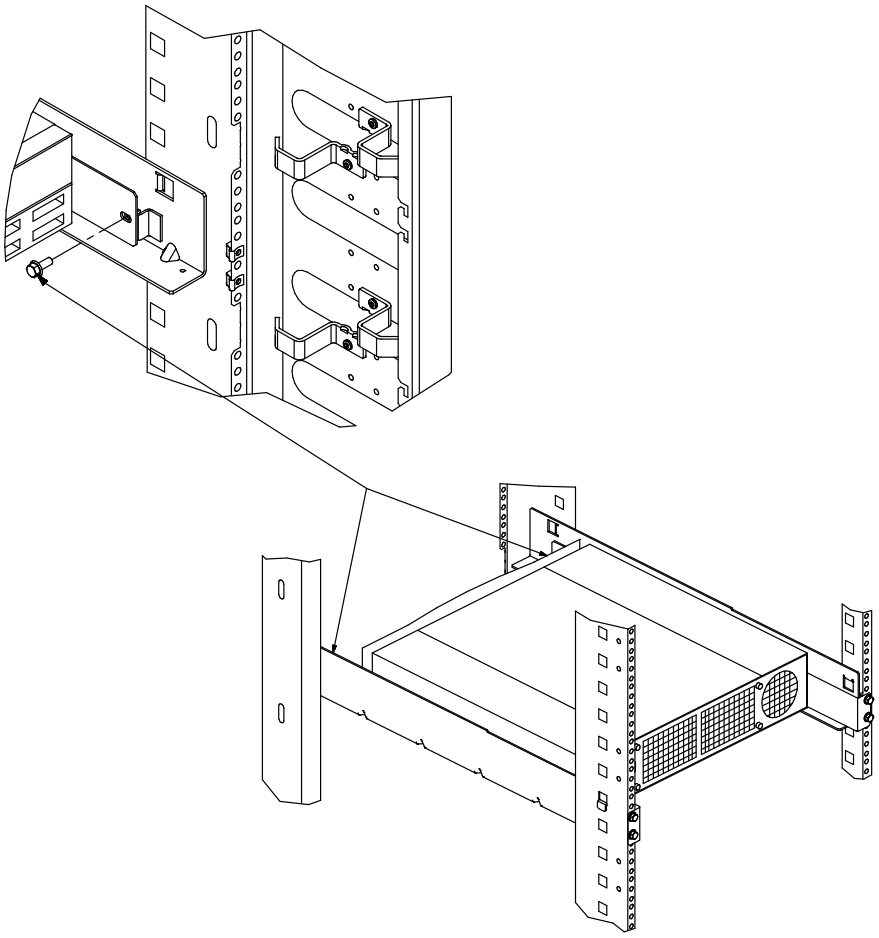
2. Position the threaded nut clips on both sides of the rack, on the positions specified in the figure, starting from the bottom of the area just identified. These nut clips are needed to secure the drawer to the rack chassis.



3. Slide the drawer on the rails and secure it, tightening the mounting screws to the threaded nut clips, as shown in the figure.



4. Accessing the rack from the rear side, secure the drawer to the rack chassis by means of the appropriate screws.



5. Connect the drawer to the CPU drawer as required. For any detailed information about settings and connections, please refer to the FC Switch specific documentation.
6. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
7. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
8. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
9. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
10. Close the front and rear doors of the rack.

Removal

Remove in the reverse order.

FC Switch Drawer – 8 Ports

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-68.

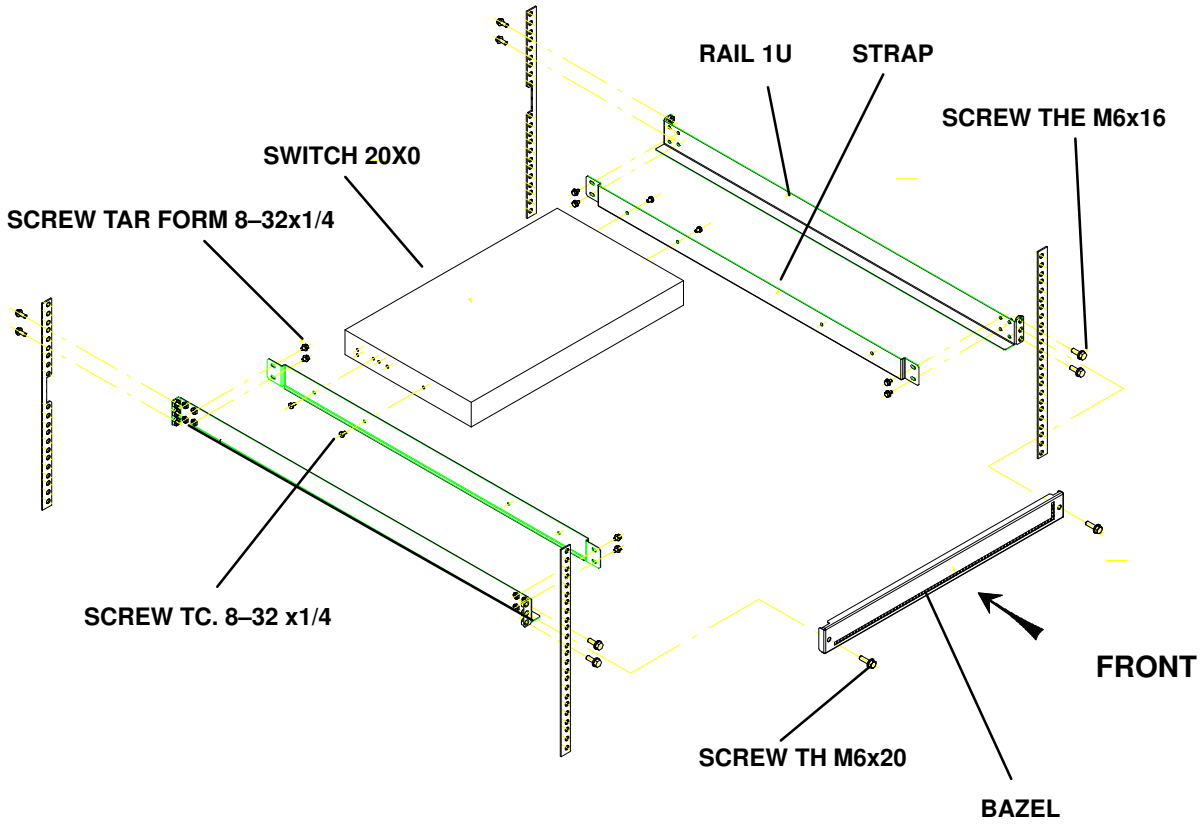
Preliminary Operations

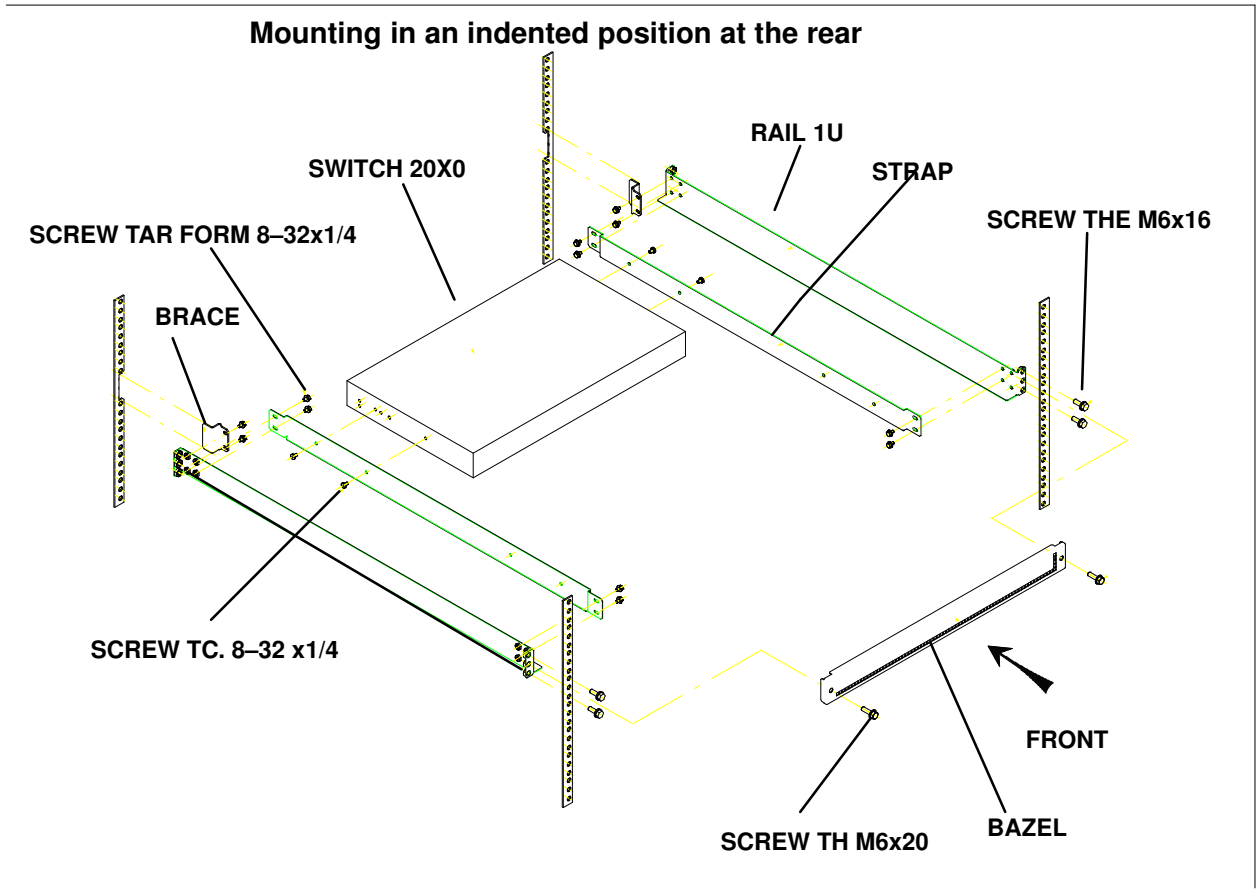
1. Open the front and rear doors of the rack.
2. Locate the area designated to house the FC Switch drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
3. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.

Installation

1. Mount the rails as described in one of the following figures, depending on the position where you install the switch: indented or non-indented.
2. Secure the FC switch with the appropriate screws.
3. Install the bazel on the front.

Mounting in a non indented position at the rear





Removal

Remove in the reverse order.

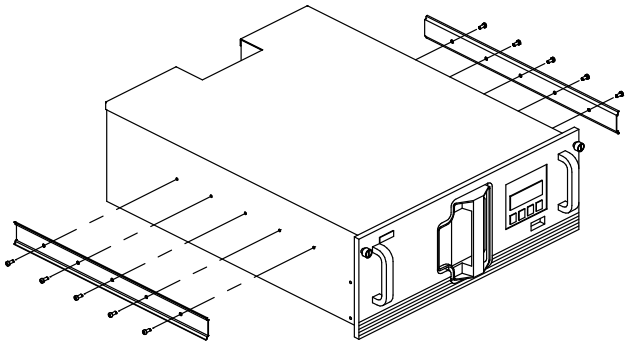
LX System Drawer

- **Installation**, below
- **Removal**, on page 2-74.

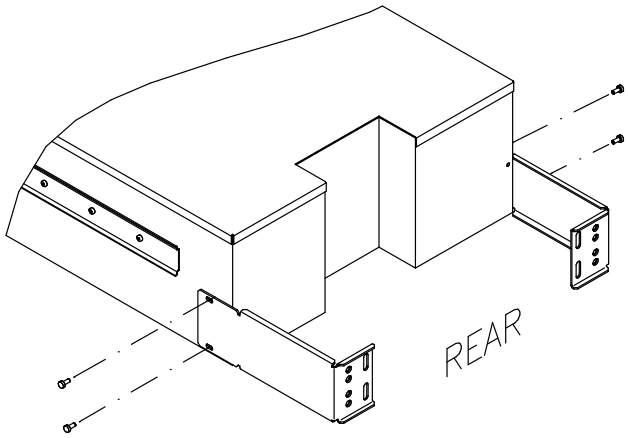
Installation

Note: This installation procedure applies to any LibraryXpress System drawer.

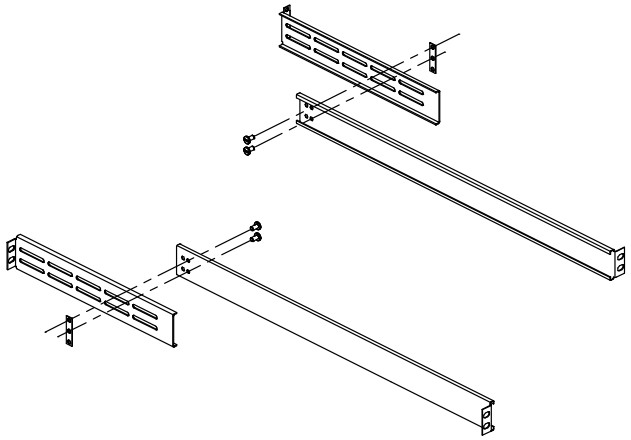
1. Open the front door of the rack.
2. Remove the front and rear doors, following the operations described in **Front and Rear Doors**, on page 2-2.
3. Locate the area designated to house the LX drawer, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
4. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
5. If not already done, mount the drawer guides, at sides of the drawer itself.



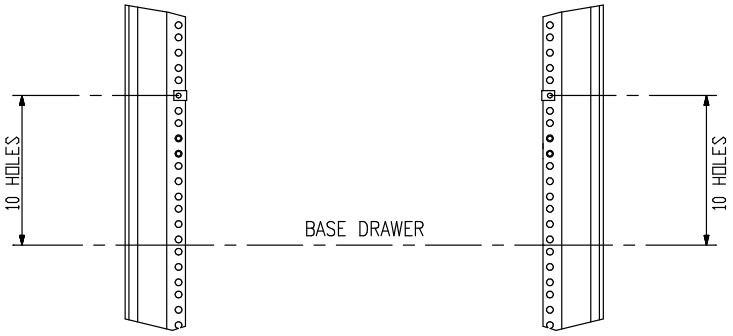
6. Install the brackets on the rear side of the drawer, as shown in the figure.



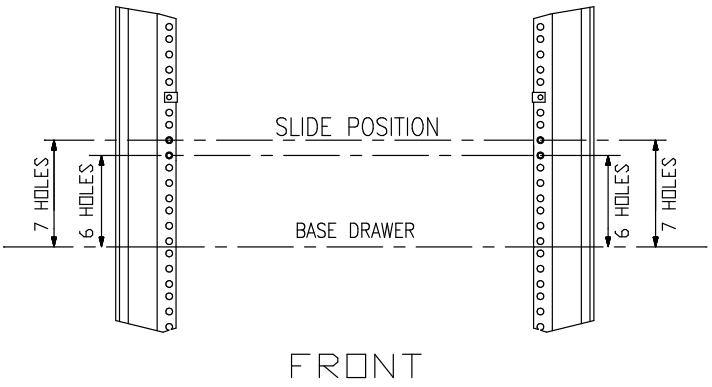
7. Assemble the rails, using the proper plates, paying attention to keep the screws loosen, as indicated in the figure.

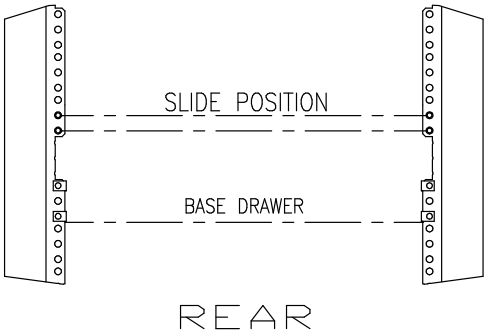


8. Position the threaded nut clips on both sides of the rack, on the positions specified in the figure, starting from the bottom of the area just identified. These nut clips are needed to secure the drawer to the rack chassis.

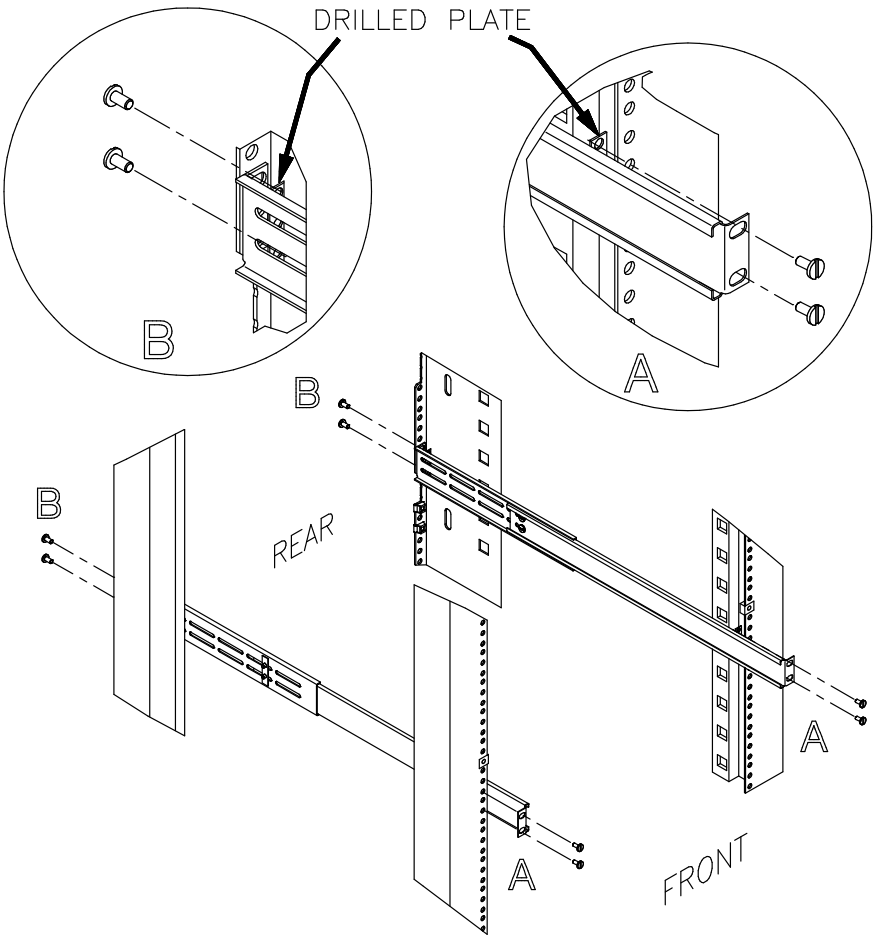


9. Position the rails on both sides of the rack, on the positions specified in the figure, starting from the bottom of the area just identified.

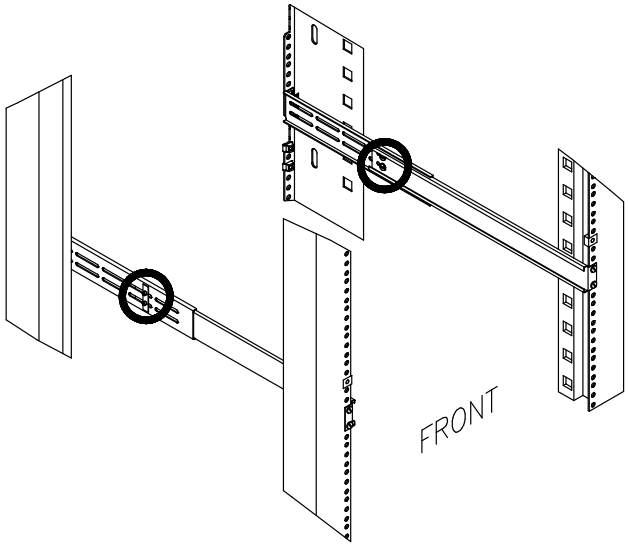




10. Install the rails just positioned on the rack chassis, securing them using the drilled plates, on the front side (as indicated at A) and on the rear side (as indicated at B).

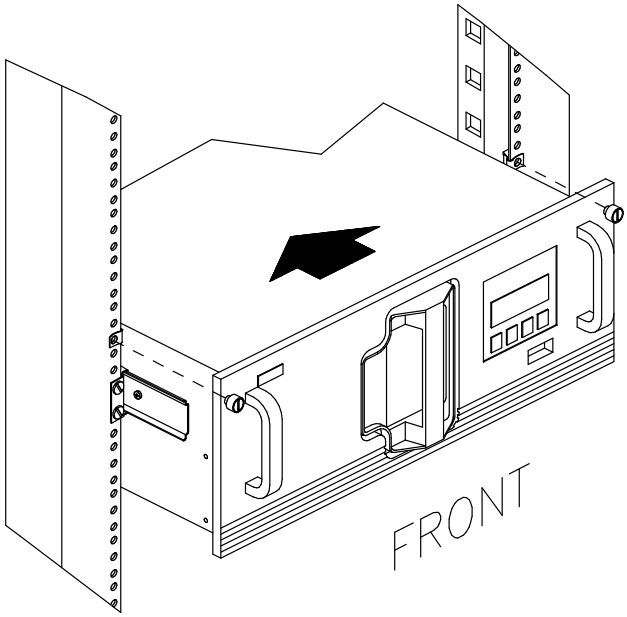


11. Secure the rails until they are well locked, tightening the securing plates.

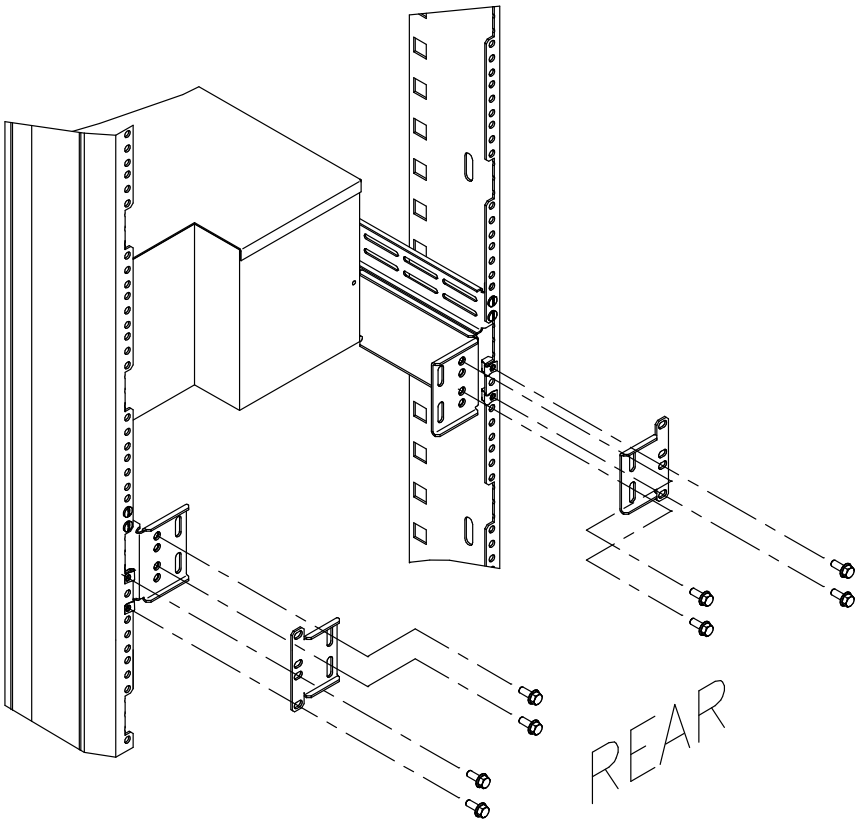


12. Carefully slide the drawer, aligning the two guides on each side of the drawer with its rails. Secure then the drawer on the front side, tightening the related screws.

CAUTION:
Take care in handling the LX drawer. At least two persons are required to move it, to prevent it from incidental fall, and to avoid human accidents.



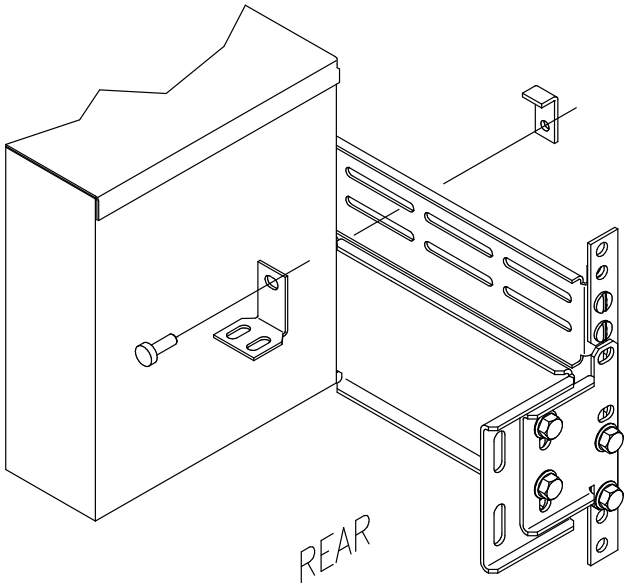
13. Secure the drawer on the rear side, tightening the brackets to the rails and to the threaded nut clips.



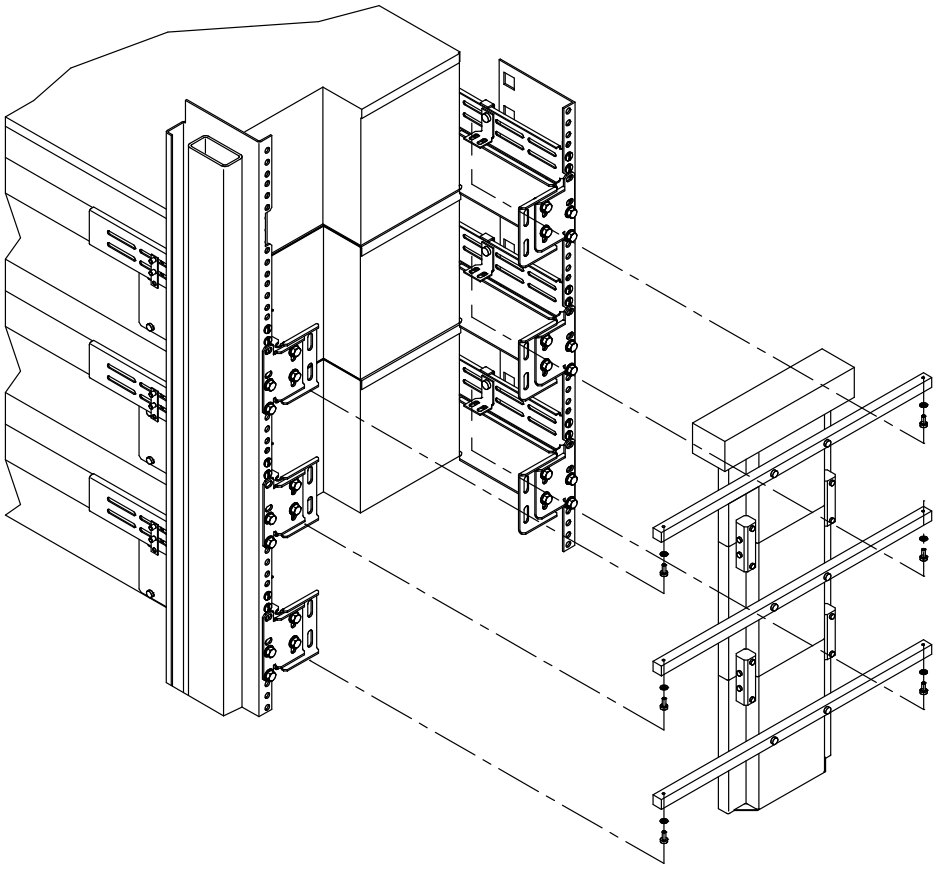
If only one LX drawer is installed on the rack, skip to step 16.

If more than one LX drawer is installed on the rack, it is possible to have an optional cartridge elevator. To assemble the elevator module, refer to the proper installation guide delivered with the drawer. To install the elevator module, execute the following steps.

14. Secure the angle brackets to the nut plates, as indicated in the figure.



15. The figure shows the installation of the elevator module when three LX drawers are installed on the rack. Secure the elevator support braces to the angle brackets, as indicated in the figure.



16. Connect the LX to the CPU drawer as required. For any detailed information about settings and connections, please refer to the LX specific documentation.
17. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
18. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
19. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
20. Remount the front and rear doors of the rack, following the operations described in **Front and Rear Doors**, on page 2-2.
21. Close the front and rear doors of the rack.

Removal

Remove in the reverse order.

SSA Drawer

- **Preliminary Operations**, below
- **Installation**, on page 2-76
- **Removal**, on page 2-77.

Preliminary Operations

1. Open the front and rear doors of the rack.
2. Locate the area designated to house the SSA drawer, following the rules indicated in the CPU drawer base documentation set, **Configuring the System** section.
3. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.
4. Install the rails on the rack, as described in **Rails**, on page 2-5.
5. Install the shelf, as described in **Shelf**, on page 2-6.
6. Ensure that an SSA adapter, such as an SSA 4-Port Adapter (type 4-D) or an Enhanced SSA 4-Port Adapter (type 4-G), is installed in the rack system.
7. Ensure that the system software is at the correct level for the SSA Drawer and that the correct level of microcode for the SSA adapter and disk drive modules has been loaded. Diskettes and instructions are supplied with the SSA adapter.

CAUTION:
The SSA drawer is very heavy (it can weight up to 50 kg) with disk drive modules installed. Do not attempt to manage this drawer unless all the disk drive modules have been removed.

Note: Disk drive modules are fragile. Handle them with care and keep them away from magnetic fields.

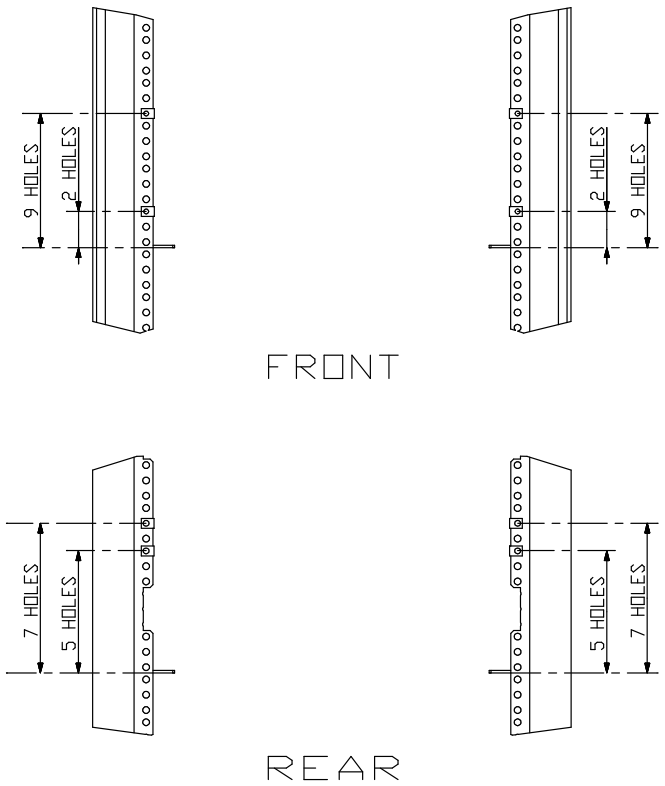
8. Identify and record the position of each disk drive module in order to reinstall it in the correct slot. (Disk drive modules have a serial number label).

Note: The SSA drawer can contain dummy disk drive modules: the dummy module provides continuity of the SSA loop and ensure the correct airflow in the drawer.

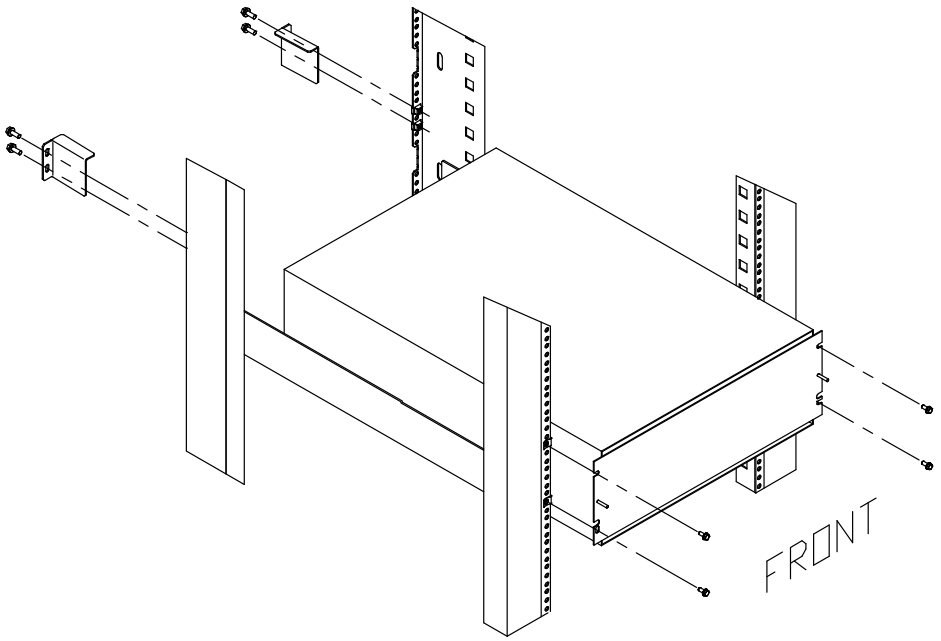
9. Remove the disk drive modules.

Installation

1. Position the threaded nut clips on the front side of the rack, on the positions specified in the figure, starting from the bottom of the rails just installed.
   These nut clips are needed to secure the drawer to the rack chassis.



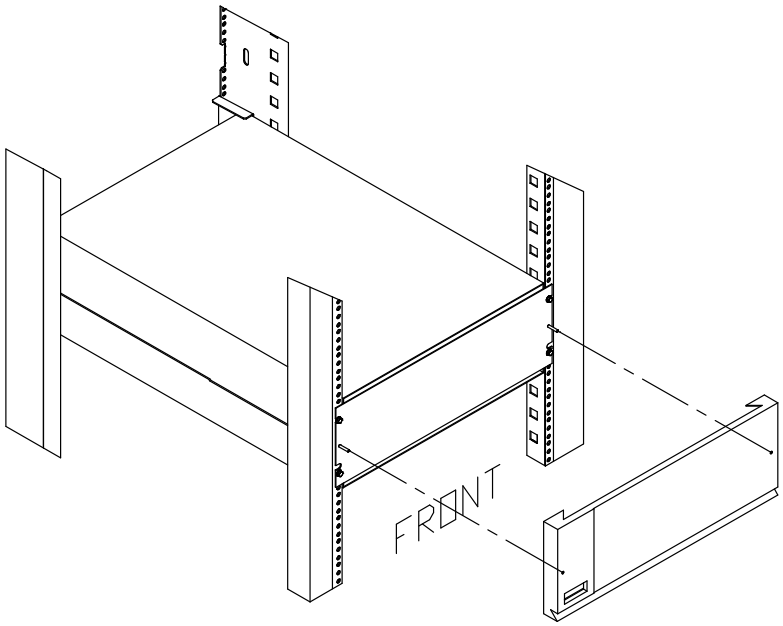
2. Carefully slide the drawer inside the rack and lay it on the dedicated shelf.
3. Secure the drawer on the front side tightening the mounting screws into the threaded nut clips previously installed. Then secure it on the rear side by means of the appropriate brackets, tightening the mounting screws into the threaded nut clips previously installed.



4. Reinstall each disk drive module in the position previously noted.

Note: Any slot that has no disk drive module installed must contain a dummy disk drive module. Ensure that the SSA drawer has no empty slots.

5. Connect the SSA drawer to the SSA adapter, following the rules described in the SSA drawer specific documentation.
6. Install the aesthetic panel on the front side of the drawer firmly pushing it against the rack until it locks.



7. Connect the SSA drawer to the CPU drawer. For more detailed information about settings and connections, please refer to the SSA drawer specific documentation.
8. Connect the drawer to the CPU drawer in charge of its management.
9. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
10. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
11. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
12. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
13. Close the front and rear doors of the rack.

Removal

Remove in the reverse order.

VDAT Tape Drive Drawer

- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-79.

Preliminary Operations

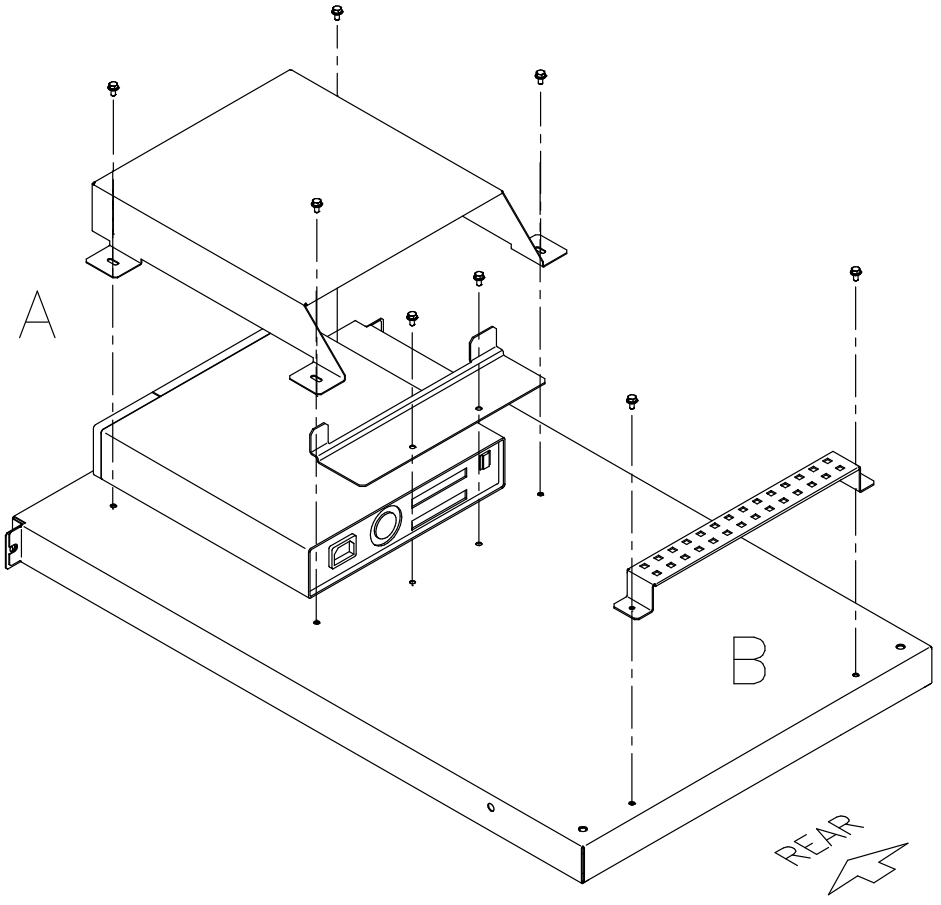
1. Open the front and rear doors of the rack.
2. Locate the area designated to house the VDAT, following the rules indicated in the CPU drawer base documentation set, **Configuring the System** section.
3. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.

Note: The VDAT must be installed on the shelf. It is recommended to consider also the space needed for the shelf before starting the VDAT installation.

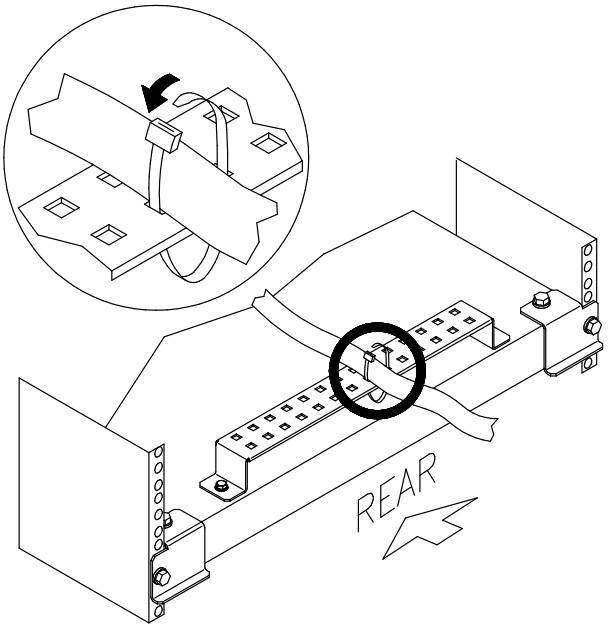
4. Install the rails on the rack, as described in **Rails**, on page 2-5.

Installation

1. Lay the VDAT on the designated shelf. Secure the VDAT by means the appropriate metal covering and lock it turning clockwise the relevant retaining screws, as shown at A in the figure.
2. Put the cable retaining bar on the shelf and fix it with the related screws, as shown at B in the figure.



3. Install the shelf with the VDAT on the rack, following the operations described in **Shelf**, on page 2-6.
4. Connect the VDAT to the CPU drawer as required. For any detailed information about settings and connections, please refer to the VDAT specific documentation.
5. Choose a free PDU outlet, where the drawer power cord will be connected. Make sure the circuit breaker for this PDU outlet is set to OFF.
6. Connect the drawer power cord to the chosen PDU outlet, then set the relevant circuit breaker to ON.
7. Secure the cables at the back of the drawer to the cable retainer bar.



8. Secure the cables at the back of the drawer, along the side of the rack, using the dedicated cable retainers.
9. Switch on the drawer. Refer to the drawer specific documentation for information on the configuration operations you need to execute to have it working.
10. Close the front and rear doors of the rack.

Removal

Remove in the reverse order.

First Power Distribution Unit (PDU)

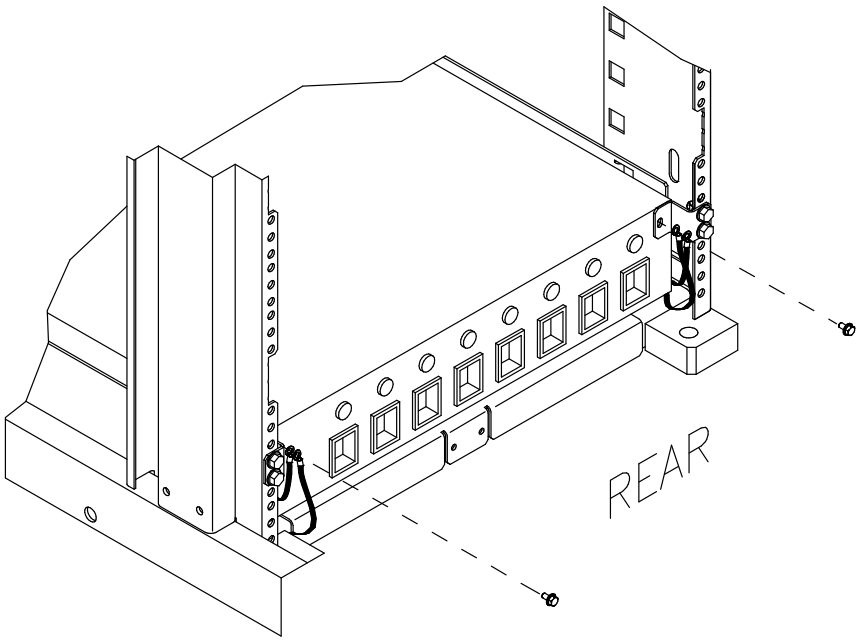
- **Preliminary Operations**, below
- **Removal**, below
- **Installation**, on page 2-83.

Preliminary Operations

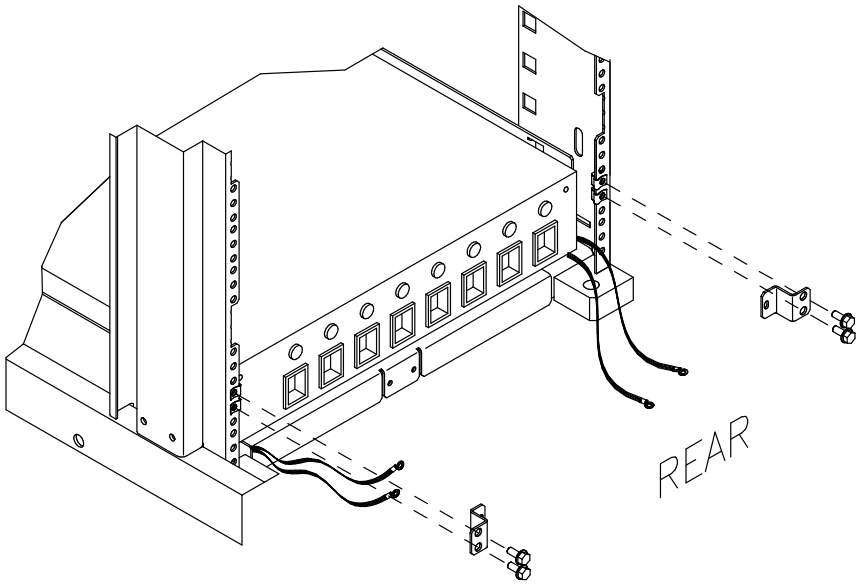
1. Open the front and rear doors of the rack.
2. Make sure that the rack system activity is completely stopped.
3. Make sure that all the circuit breakers on the PDU are set to OFF.
4. Unplug the drawer power cords from the PDU outlets.
5. Unplug the PDU power cord from the AC source.

Removal

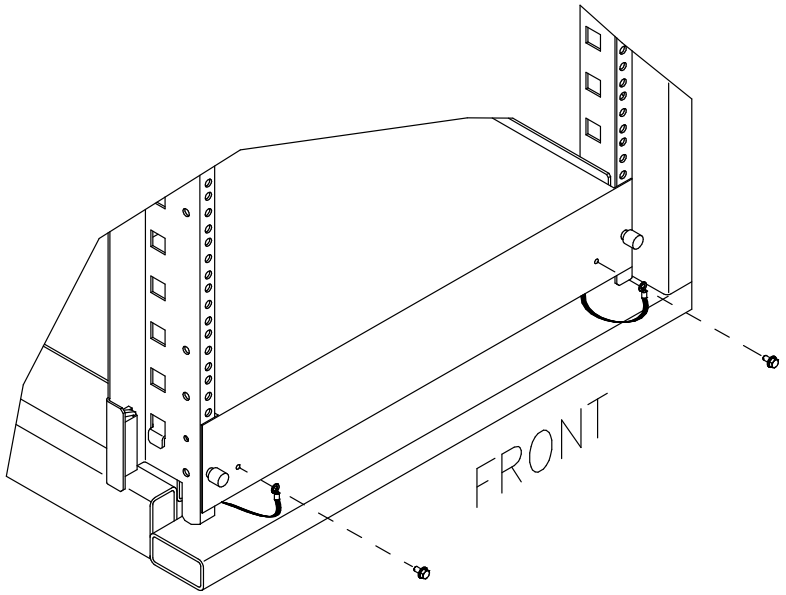
1. Accessing the rack from the rear side, unscrew the screws fixing the PDU drawer and the ground braids to the square brackets, as shown in the figure.



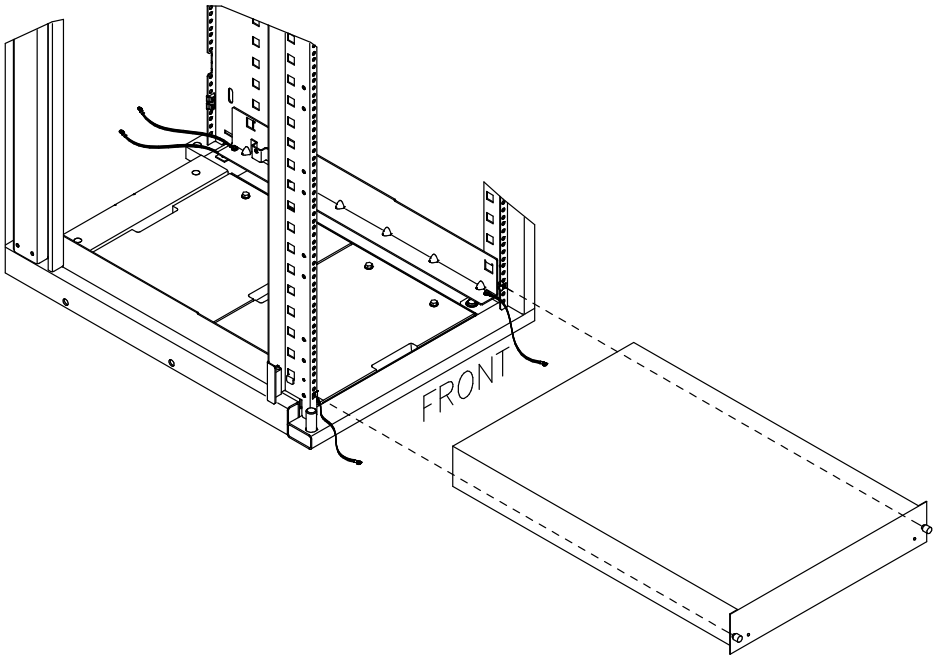
2. Unlock the square brackets unscrewing the related screws, then remove them, as shown in the figure.



3. On the front side of the rack, unlock the two ground braids unscrewing the related screws, as shown in the figure.

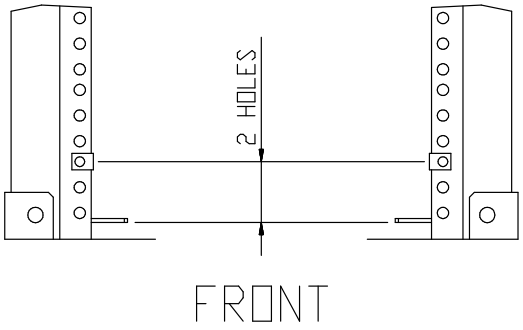


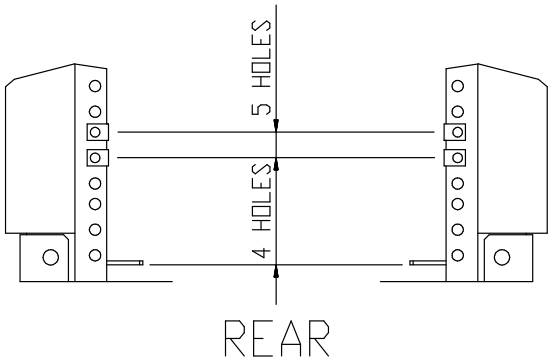
4. Unlock the PDU from the rack chassis, unscrewing the related screws, as shown in the figure, then carefully slide out the PDU.



Installation

1. Locate the area designated to house the first PDU, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
2. If not present, install the rails on the rack, as described in **Rails**, on page 2-5.
3. Check the position of the threaded nut clips on both the front side and the rear side of the rack, as specified in the figure, starting from the bottom of the rails installed in the area.
   These nut clips are needed to secure the PDU to the rack chassis, on both the front side and the rear side.





4. Perform the operations described in the **Removal** procedure in the reverse order.

Additional Power Distribution Unit (PDU)

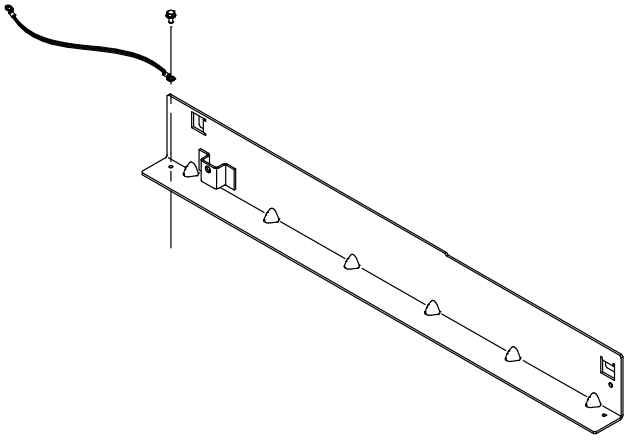
- **Preliminary Operations**, below
- **Installation**, below
- **Removal**, on page 2-87.

Preliminary Operations

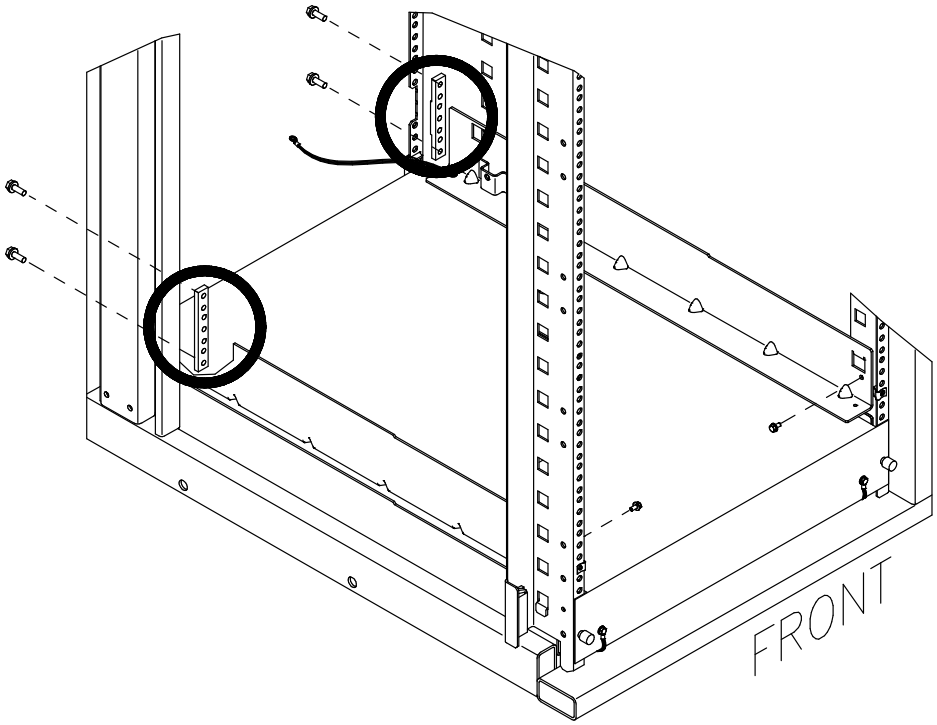
1. Open the front and rear doors of the rack.
2. Locate the area designated to house the additional PDU, following the configuration rules described in the CPU drawer base documentation set, **Configuring the System** section.
3. On the rack front, remove the blanks from the area just identified, by unscrewing their retaining screws.

Installation

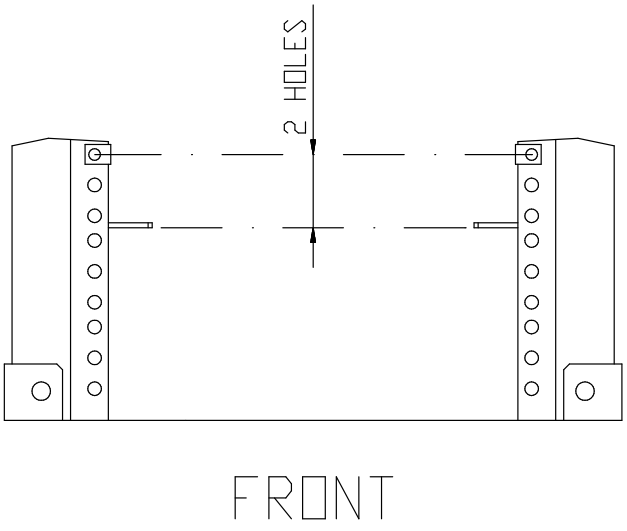
1. Fix a ground braid to each rail using the appropriate screw, as shown in the figure.



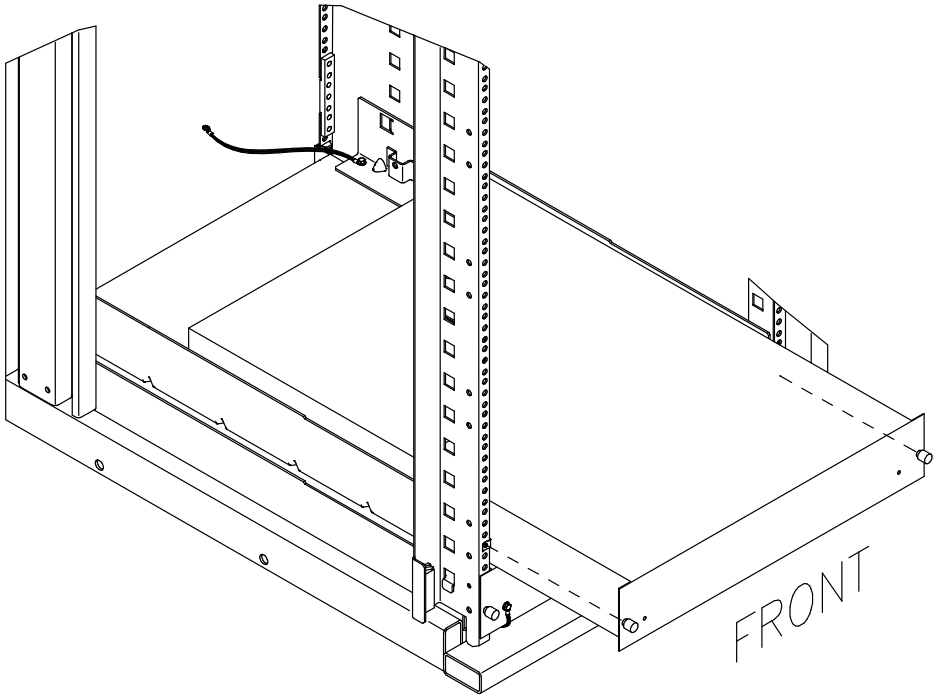
2. Install the rails on the rack, as described in **Rails**, on page 2-5.
3. On the front of the rack, fix the rails with the two related screws; at the rear of the rack, fix the two drilled plates to the rack chassis with the related screws, as shown in the figure.



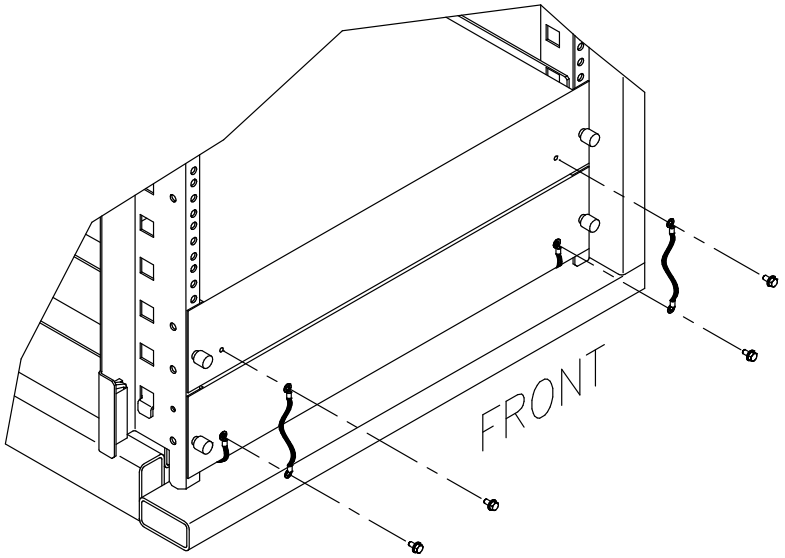
4. Position the threaded nut clips on both the front side and the rear side of the rack, on the positions specified in the figure, starting from the bottom of the rails installed in the area. These nut clips are needed to secure the PDU to the rack chassis, on both the front side and the rear side.



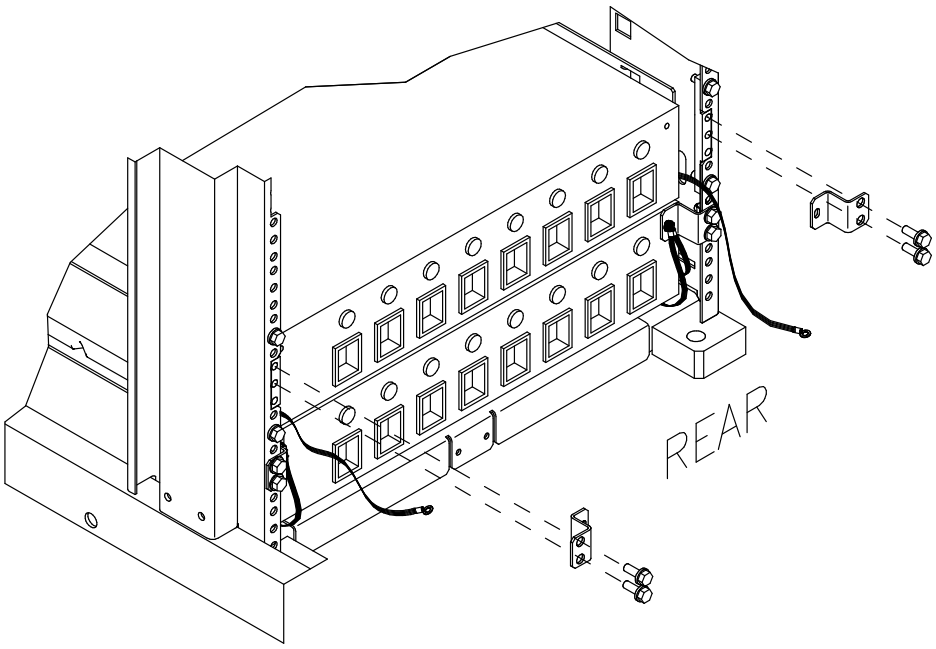
5. Carefully slide the PDU into the rails. Secure it to the front side of the rack chassis, tightening its retaining screws.



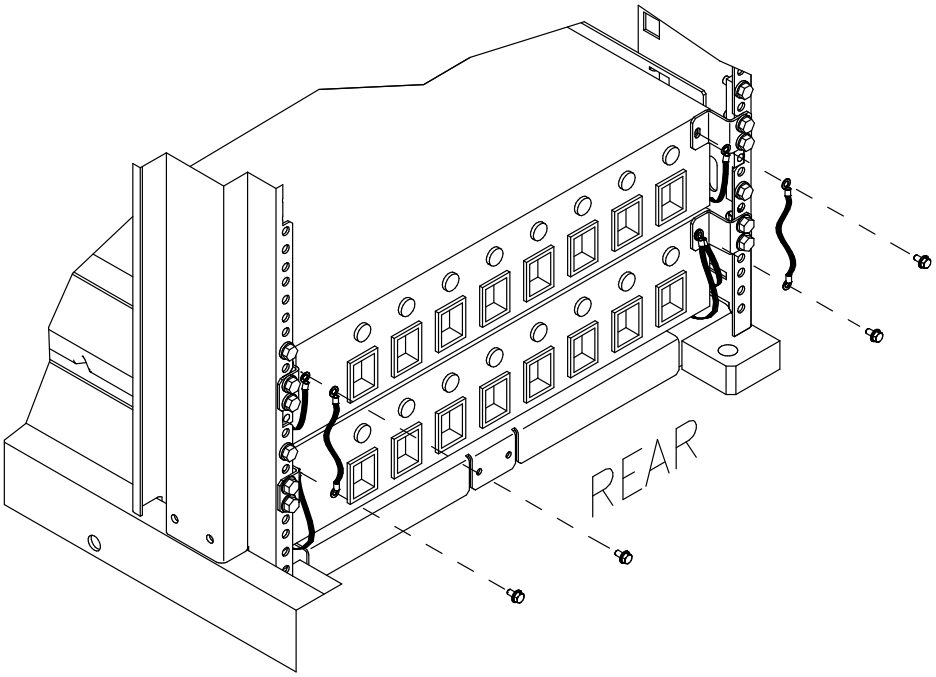
6. On the front side of the rack, unscrew the two screws fixing the first PDU ground braids, then secure the two additional PDU ground braids with the four related screws, as shown in the figure.



7. Accessing the rack from the rear side, position each square bracket needed to secure the PDU, making sure the designated holes fit the corresponding holes on the rack chassis and on the PDU, and secure each bracket by means of its retaining screws.



8. Unscrew the two screws fixing the first PDU ground braids, then secure the PDU to the rack chassis, on the rear side, tightening the mounting screws into the square brackets, making sure to fix all the ground braids, as shown in the figure.



9. Make sure that all the circuit breakers on the PDU are set to OFF.
10. Connect the drawer(s) power cord(s) to the PDU outlet(s), and set the circuit breakers to ON.
11. Connect the PDU power cord to the proper AC source.
12. Close the front and rear doors of the rack.

Removal

1. Make sure that the rack system activity is completely stopped.
2. Perform the operations described in the **Installation** procedure in the reverse order.

Glossary

A

A: Ampere.

AC: Alternating Current.

AIX: IBM's implementation of UNIX operating system.

ANSI: American National Standards Institute.

Appliance Coupler: A standard IEC 320 male plug placed on the drawer rear side.

ASCII: American Standard Code for Information Interchange.

AUI: Attachment Unit Interface.

B

bank: See memory bank.

BUMP: Bring-Up Microprocessor. A low power microprocessor which monitors the system, especially during the various boot phases before the operating system is loaded.

C

CD-ROM: Compact Disc Read-Only Memory. High-capacity read-only memory in the form of an optically readable compact disc.

chip: Synonym for integrated circuit (IC).

CHRP: Common Hardware Reference Platform. System model architecture, implemented on multiple bus systems (PCI, ISA). Standard CHRP functions are provided to isolate the operating system from every specific hardware implementation.

CPU: Central Processing Unit.

D

DAE: Disk Array Enclosure.

DAS: Disk Array Subsystem. A RAID disk drawer, available in different models.

DC: Direct Current generated by the power supply.

DDS: Digital Data Storage.

device areas: See media and disk device areas.

device shutter: The shutter which protects media and disk device areas. This shutter should be kept closed during system operations.

DIMM: Dual In-line Memory Module. It is the smallest component of the system memory. See also memory bank, riser.

disk cage: A metallic box which hosts up to three disk carriers. See also FD3, KP2, KP3.

disk carrier: A sled used to install hard disk drives into the system. See also disk cage.

DPCI: Dual Port PCI host bridge.

DPE: Disk Array Processor Enclosure.

DRAM: Dynamic Random Access Memory.

drawer: Each system or subsystem installed in a rack is a drawer. There are several types of drawers, such as CPU drawers, expansion drawers, DAS drawers.

DUART: Dual Universal Asynchronous Receiver Transmitter.

E

ECMA: European Computer Manufacturers Association.

EEPROM: Electrically Erasable Programmable Read-Only Memory. An EPROM that can be reprogrammed while it is in the system.

EIA: Electronic Industries Association.

EMI: ElectroMagnetic Interference.

EPROM: Erasable Programmable Read-Only Memory.

ESD: Electrostatic Discharge. An undesirable discharge of static electricity that can damage equipment and degrade electrical circuitry.

F

FAST-10 WIDE-16: A standard SCSI interface, 16 bits, providing synchronous transfer rate of up to 10 MHz, with a data transfer speed of 20M bytes per second.

FAST-20 WIDE-16: An enhanced standard SCSI interface, 16 bits, providing synchronous transfer rate of up to 20 MHz, with a data transfer speed of up to 40M bytes per second. It is also called ULTRA WIDE.

FAST-40 WIDE-16: An enhanced standard SCSI interface, 16 bits, providing synchronous transfer rate of up to 40 MHz, with a data transfer speed of up to 80M bytes per second. It is also called ULTRA-2/LVD.

FC: Fibre Channel.

FD3: The back plane of a disk cage that connects up to three 1-inch ULTRA-2/LVD disk devices. See also disk cage, disk carrier.

FEPROM: Flash Erasable Programmable Read-Only Memory. An EPROM containing the system firmware.

firmware: The microcode in read-only memory (ROM). It consists of an ordered set of instructions and data stored in a way that is functionally independent of main storage.

Forth: The Open Firmware based language interpreter.

FPL: See system planar.

FSB: It is a card housing the BUMP logic. Also, it holds two dedicated connectors which interconnect the FSB card to the KBB card and to the KHS card, if this is installed.

FW: See firmware.

G

GUI: Graphical User Interface.

H

High Availability: A particular configuration which shares resources between two CPU drawers, so that if one CPU drawer fails, the other one takes the control without interrupting any activity.

hot swapping: The operation of removing a faulty hard disk drive and replacing it with a good one without interrupting the system activity.

I

I2C: Inter Integrated Circuit.

ID: A number which uniquely identifies a device on a bus.

IEC: International Electrotechnical Commission.

I/O: Input/Output.

ISA: Industry Standard Architecture (Bus).

J

JBOD: Just a Bunch Of Disks.

K

KBB: It is a card that provides three RS-232 lines and one parallel line. It is also connected to the KSB or FSB card by means of a dedicated flat cable.

KBR: A card dedicated to the connection of a PCI expansion drawer.

KDD: A card installed in the PCI expansion drawer and interconnecting all the expansion drawer resources. It manages also the input and output RS-485 connection between the CPU drawer and the PCI expansion drawer.

KDK Complex: It is composed by the KDK card and two flat cables connected to it. Its main functionality is to define the hard disk drive SCSI-ID.

key mode switch: Key controlled switch which controls system operation mode.

KHS: An optional card to be installed in presence of a RAID configuration. It interfaces the RAID controller card.

KOP: See operator panel.

KP2: The back plane of a disk cage that connects two 1.6-inch ULTRA/SE disk devices. See also disk cage, disk carrier.

KP3: The back plane of a disk cage that connects two 1-inch ULTRA/SE disk devices. See also disk cage, disk carrier.

KPE: The planar hosting the PCI controllers in the PCI expansion drawer. Up to two KPE planars can be installed in each PCI expansion drawer.

KPL: See system planar.

KPS: See power supply.

KSB: It is a card housing the BUMP logic. Also, it holds two dedicated connectors which interconnect the KSB card to the KBB card and to the KHS card, if this is installed.

KXB: A card installed in the PCI expansion drawer, dedicated to the connection to the CPU drawer.

L

LAN: Local Area Network.

LED: Light-Emitting Diode.

LVD: Low Voltage Differential.

M

media and disk device areas: Areas which house the media drives and the hard disk drives.

memory bank: The minimum quantity of memory used by the system. It physically consists of four memory DIMM's. See also DIMM and riser.

MFG: Manufacturing.

MP: MultiProcessor.

MPIC: MultiProcessor Interrupt Controller.

multimedia: Information presented through more than one type of media. On computer systems, this media includes sound, graphics, animation and text.

multitasking: The ability to perform several tasks simultaneously. Multitasking allows you to run multiple applications at the same time and exchange information among them.

N

NVRAM: Non Volatile Random Access Memory.

NVRAMRC: The area where Open Firmware user-defined commands are stored.

O

OF: See Open Firmware.

OP: See operator panel.

Open Firmware: An architecture for the firmware that controls a computer before the operating system execution. It also provides a user-interface.

operator panel (KOP): The system panel where the 3-Digit Hexadecimal Display, two LEDs and the Reset button are located.

operating system: The software which manages the computer's resources and provides the operating environment for application programs.

P

PCI: Peripheral Component Interconnect. A bus architecture that supports high-performance peripherals such as graphic boards, multimedia video cards and high-speed network adapters.

PDU: Power Distribution Unit. The rack power distribution system for the installed drawers.

PID: Product IDentification.

PowerPC: A standard RISC microprocessor family.

power supply (KPS): The CPU drawer and the PCI expansion drawer are equipped with one power supply module. See also redundant power supply.

PPI: Parallel Port Interface.

Q

No entries.

R

rack: The metallic frame which houses the drawers and provides them power through its Power Distribution Unit (PDU).

RAID: Redundant Array of Inexpensive Disks. A method of combining hard disk drives into one logical storage unit which offers disk-fault tolerance.

RAM: Random Access Memory.

redundant power supply (KPS): The power supply composed by two modules in redundant configuration. They are the same and work in parallel. In case of a power supply fault, the second module takes over automatically providing the needed power.

riser: A card used for memory configuration hosting memory DIMM connector(s).

RMS: Recovery Management Support.

ROM: Read Only Memory.

ROS: Read Only Storage.

RPM: Revolutions Per Minute.

RS-232: An EIA interface standard that defines the physical, electronic and functional characteristics of an interface line.

RS-422: An EIA interface standard that defines the physical, electronic and functional characteristics of an interface line.

RS-485: A line for drawer interconnection. It is used for the connection of expansion drawers.

RSF: Remote Services Facilities.

rspc: PowerPc Reference Platform. System model architecture, implemented on multiple bus systems (PCI, ISA).

S

SCSI: Small Computer System Interface. An input and output bus that provides a standard interface used to connect peripherals such as disks or tape drives in a daisy chain.

SE: Single Ended.

SID: System IDentifier.

slot cover: A metallic plate that covers free PCI/ISA controller card slots.

SPS: Standby Power Suppy. It provides backup power.

Stand-By Menu: A menu which is available on the terminal connected to the COM1 port when the system is in standby state. It is used for system maintenance and testing activities.

SYSID: SYStem IDentification.

system console: A console, usually equipped with a keyboard and display screen, that is used by an operator to control and communicate with a system.

system planar: The planar which interconnects all the system resources.

SVGA: Super Video Graphics Array.

T

TOD: Time of Day.

torx: A special screw with a six-point starlike hollow.

U

U: Unit. Racks and drawers are measured in Units. Each U corresponds to 44.45 mm (1.75 inches).

UART: Universal Asynchronous Receiver Transmitter.

ULTRA-2/LVD: See Fast-40 WIDE-16.

ULTRA/SE: See Fast-20 WIDE-16.

UPS: Uninterruptible Power Supply. A device which provides continuous power and sustains the system it is connected to, in case of outages.

V

V: Volt.

VCC: Voltage Continuous Current.

VCCI: Voluntary Control Council for Interference.

VGA: Video Graphics Array.

VPD: Vital Product Data.

W

No entries.

X

No entries.

Y

No entries.

Z

No entries.

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