HP Series 6000
Disk Storage Systems
Installation Guide

Models 335H, 670H, and 670XP

(hp) HEWLETT PACKARD

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Printing History

New editions incorporate all update material since the previous edition. Updating Supplements, which are issued between editions, contain additional and revised information to be incorporated into the manual by the user. The date on the title page changes only when a new edition is published.

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Safety Symbols and Conventions

The following conventions are used throughout this manual:

- *Italic* is used for emphasis or manual titles.

Note   Notes contain important information set off from the text.

Caution   Caution messages indicate procedures which, if not observed, could result in damage to equipment. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

Warning   **Warning messages indicate procedures or practices which, if not observed, could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.**

FCC Statement

FOR U.S.A. ONLY

The Federal Communications Commission (in 47 CFR 15.105) has specified that the following notice be brought to the attention of the users of this product.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE 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 instructions 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.

The end user of this product should be aware that any changes or modifications made to this equipment without the approval of Hewlett-Packard could result in the product not meeting the Class A limits, in which case the FCC could void the user's authority to operate the equipment.

FTZ Statements

FUNKENTSTÖRUNGSVORSCHRIFTEN
FÜR DEUTSCHLAND
HERSTELLERBESCHEINIGUNG

Hiermit wird bescheinigt, daß das Gerät in Übereinstimmung mit den Bestimmungen von Postverfügung 1046/84 funkentstört ist. Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Wird das Gerät innerhalb eines Systems betrieben, so muß bei Inanspruchnahme der Allgemeinen Genehmigung FTZ 1046/84 das gesamte System der oben genannten Genehmigung entsprechen. Wird das Gerät innerhalb eines Systems betrieben das mit einer FTZ-Serienprüfnummer gekennzeichnet ist, und für welches eine Betriebsgenehmigung vorliegt oder beantragt wird, so sind in der Regel keine weiteren Schritte notwendig.

ELECTROMAGNETIC INTERFERENCE REGULATIONS
FOR GERMANY
MANUFACTURER'S DECLARATION

This is to certify that the equipment is in accordance with the Radio Interference Requirements of Directive FTZ 1046/84. The German Bundespost was notified that this equipment was put into circulation and the right to check the series for compliance with the requirements was granted.

If this equipment is to be operated with a system, and if the General License is being claimed, the complete system must comply with the General Licensing requirements. If this equipment is to be operated with a system which has its own FTZ-Serial-License, and for which an operating license has been submitted or applied, usually no further steps are necessary.

VCCI Statements FOR JAPAN ONLY

この装置は，第二種情報装置（住宅地域又はその隣接した地域において使用

されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置

等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。

しかし，本装置をラジオ，テレビジョン受信機に近接してご使用になると，

受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

This apparatus is a class 2 ITE (information apparatus which may be used in residential and adjacent areas) which meets the VCCI standards to prevent radio interference in residential and adjacent areas. However, this apparatus may become a source of radio interference if used within close range of radio or television receivers. To ensure compliance, this apparatus must be operated according to instructions included with the product.

Communication Statement For Canada Only

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

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Introduction

This guide contains all the information needed to install the following models of the HP Series 6000 disk storage systems:

- 335H
- 670H
- 670XP

This information is intended for qualified individuals who have been trained in the installation of these products. If you do not have the proper training, do not attempt to install the disk storage system.

This guide contains the following information:

- Handling the disk storage system properly.

- Selecting a proper operating site.

- Identifying the parts of the disk storage system.

- Mounting the disk storage system in a cabinet.

- Connecting the disk storage system to the HP-IB bus.

- Connecting the disk storage system to ac power.

- Performing a power-on checkout.

Before Beginning the Installation

The following paragraphs describe the steps that must be performed before beginning the installation of the disk storage system.

Unpacking and Inspecting the Disk Storage System

Before unpacking the disk storage system, inspect the shipping carton carefully for any signs of damage or mishandling that may have occurred during shipping. If you suspect that damage may have occurred during shipping, request that the carrier's agent be present when the disk storage system is unpacked. An unpacking sheet included in the shipping carton shows how the disk storage system is unpacked.

After unpacking the disk storage system, inspect it carefully for any signs of damage that may have occurred in shipment. If any damage is evident, contact your local Hewlett-Packard Sales Office and the carrier involved.

Note

Keep the packing material in case it should ever become necessary to repack the disk storage system for shipment.

Handling the Disk Storage System

To avoid accidentally damaging the disk storage system during installation, observe the following precautions:

■ When moving the disk storage system to its installation site, avoid any sudden or jarring movements. The disk storage system can be placed back into its original packing container to provide protection when moving.

■ During installation, avoid dropping or bumping the disk storage system. A sudden mechanical shock can damage it.

Selecting a Location for the Disk Storage System

A detailed list of the environmental requirements for the disk storage system is included in the *HP Series 6000 Disk Storage Systems Owner's Manual, Models 335H, 670H, and 670XP,* part number C2200-90901. Refer to this information to make sure the installation site provides the proper operating environment for the disk storage system.

Identifying the Parts of the Disk Storage System

The various controls and connectors used during installation of the disk storage system are shown in Figure 1-1 and Figure 1-2. Use the figures to locate the corresponding parts on the disk storage system.

Assembling the Parts Required For Installation

The following items are required to install the disk storage system:

■ HP-IB cable - supplied with the disk storage system.

■ Power cord - supplied with the disk storage system.

Recording the Serial Number

Locate the serial number on the rear panel of the disk storage system. Record the number in "Serial Number" in chapter 2 of the *HP Series 6000 Disk Storage Systems Owner's Manual, Models 335H, 670H, and 670XP,* part number C2200-90901.
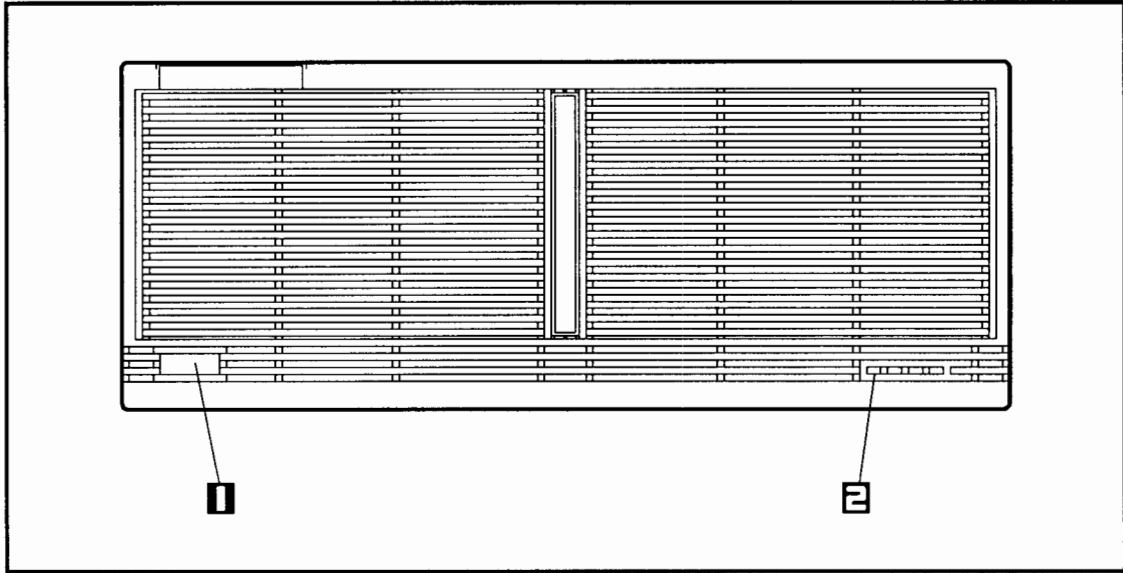
Figure 1-1. Front Panel

1. LINE ~ switch   2. Status display
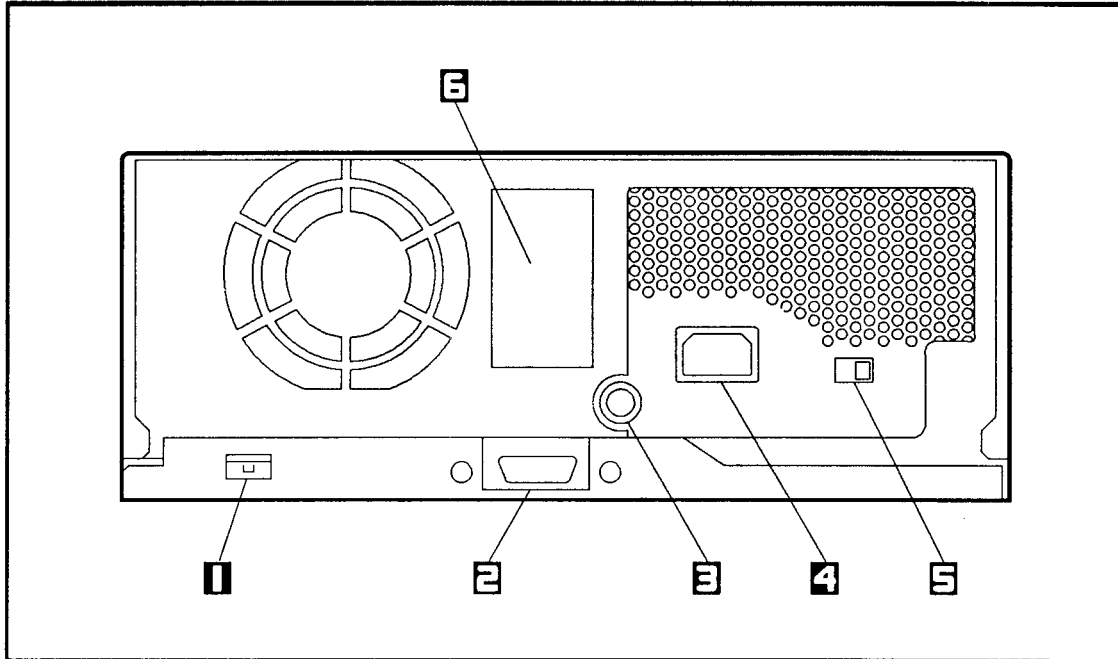
Figure 1-2. Rear Panel

1. Address switch
2. HP-IB connector
3. Fuse [1]

4. Power cord connector
5. Voltage select switch [1]
6. Serial number

[1]*A fuse and voltage select switch are not included on disk storage systems equipped with an automatic ranging power supply.*

Mounting the Disk Storage System in a Cabinet

The following paragraphs describe how to mount the disk storage system in each of the four approved cabinets. The four cabinets included here have been fully tested and found to comply with the necessary environmental and regulatory requirements. To ensure compliance with UL Listing and CSA Certification requirements, only HP Series 6000 Disk Storage Systems may be installed in the cabinet.

Refer to the appropriate information for the cabinet you will be using. If the disk storage system will not be installed in a cabinet, skip this section.

Note

If you choose to mount the disk storage system in a cabinet other than the four listed above, make sure the cabinet meets the necessary regulatory and environmental requirements. The regulatory requirements are listed at the front of this manual. In addition, factors such as temperature, electromagnetic interference (EMI), and adequate power distribution must be considered before installing the disk storage system in an unapproved cabinet. A complete regulatory evaluation of the proposed cabinet configuration is strongly recommended.

Some Hewlett-Packard computer systems include their own cabinets which may be approved for mounting the disk storage systems. Consult your system documentation for approved cabinet configurations.

HP 46299A Cabinet

The HP 46299A Cabinet has been designed to accommodate eight disk storage systems. Eight HP 35199C Rack Adapters have been installed in the cabinet in the proper positions. The first adapter mounting tray is installed in the 17th hole down from the top, and the remaining mounting trays are installed in every 9th hole.

Warning

To ensure cabinet stability, the leveling feet on the cabinet must be lowered before installing the disk storage systems. Also, do not transport the cabinet with disk storage systems installed. Moving a fully loaded cabinet could cause it to tip over.

To install each disk storage system, perform the following steps.

1. Open the cabinet front door.

2. Loosen the two screws securing each flange to the cabinet. See Figure 1-3.

3. Slide the flanges aside so they will not interfere when putting the disk storage system into the cabinet.

4. Carefully set the disk storage system on the mounting tray and position it so the front of the disk storage system is flush with the front of the cabinet.

5. Slide the flanges up against the disk storage system so the flanges fit into the groove directly behind the front panel. The flanges should be flush with the rear edge of the front panel. If necessary, slide the disk storage system forward or backward slightly until the flanges are aligned properly.

6. Tighten the two flange mounting screws to hold the disk storage system in place.
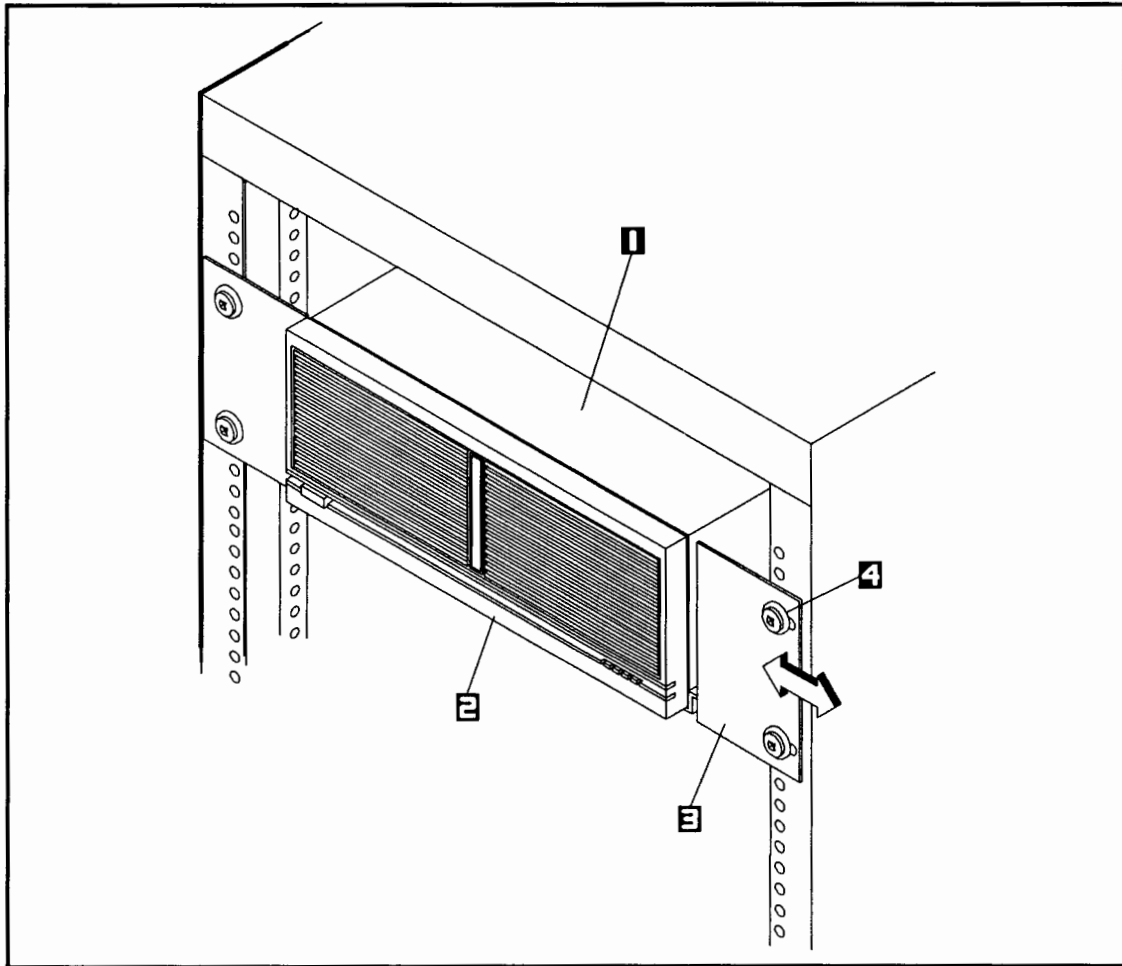
Figure 1-3. Installing the Disk Storage System in an HP 46299A Cabinet

1. Disk storage system
2. Front panel
3. Flange
4. Mounting screws

HP 92211Y Cabinet

The HP 92211Y Cabinet has been designed to accommodate four disk storage systems. The disk storage systems are installed using the HP 92211S Mounting Rail Kit. The kit mounting rails have already been installed in the cabinet in the proper positions. The instructions for installing the disk storage system are included with the remaining pieces of the mounting kit. Follow these instructions, but skip the steps involving the installation of the rails.

Caution

Installation instructions included with the HP 92211S Mounting Rail Kit tell you to turn the product upside down and remove the feet. The disk storage system does not have feet that need to be removed. Never turn the disk storage upside down or it may be damaged.

To accommodate four disk storage systems, the mounting rails have been installed in the proper hole positions in the cabinet upright posts. These hole positions, counting from the bottom of the cabinet, are:

- 3
- 8
- 13
- 18

HP 19514A Cabinet   Up to eight disk storage systems can be installed in this
                             cabinet. An HP 92211Q Rack Adaptor kit is required to
                             mount each disk storage system. Complete instructions
                             for mounting the disk storage system in the HP 19514A
                             Cabinet are included with the HP 92211Q kit.

HP 19511A Cabinet   Up to two disk storage systems can be installed in this
                             cabinet. The disk storage systems are installed using the
                             HP 92211S Mounting Rail Kit, which includes complete
                             mounting instructions.

                             To position the disk storage systems properly in the HP
                             19511A Cabinet, the rails included with the kit must
                             be installed in the proper hole positions in the cabinet
                             upright posts. These hole positions, counting from the
                             bottom of the cabinet, are:

                             ■ 4

                             ■ 15

Caution   Installation instructions included with the HP 92211S
                             Mounting Rail Kit tell you to turn the product upside
                             down and remove the feet. The disk storage system does
                             not have feet that need to be removed. Never turn the
                             disk storage upside down or it may be damaged.

Installing the Disk Storage System

Installing the disk storage system involves two steps:

- Connecting the disk storage system to the computer system's HP-IB.

- Connecting the disk storage system to ac power.

Connecting the HP-IB Cable

Note 👆 The HP-IB has certain cabling restrictions that must be observed when connecting any component to the bus. These restrictions and other technical information on HP-IB are included in the *HP Series 6000 Disk Storage Systems Owner's Manual, Models 335H, 670H, and 670XP*, part number C2200-90901.

1. Switch off power to all components connected to the HP-IB.

2. Locate the HP-IB cable supplied with the disk storage system, or use a suitable alternative.

3. Connect one end of the HP-IB cable to the HP-IB connector on the rear of the disk storage system.

4. Connect the other end of the HP-IB cable to the computer system HP-IB.

5. Set the address switch to the desired HP-IB address.

Connecting the Disk Storage System to AC Power

Warning ⚡ ■ **The ac branch service must be properly current protected by either a fuse or circuit breaker.**

■ **Use only a UL/CSA approved power cord, SVT type, rated for suitable voltage and current. These power cords have two conductors plus a ground. Failure to use the proper power cord could result in a shock or fire hazard.**

The method of connecting the disk storage system to ac power varies slightly depending on whether the disk storage system is being installed in a cabinet. Before proceeding, determine which of the following situations applies to your installation.

■ No cabinet - use the power cord supplied with disk storage system to connect to an ac power outlet.

■ HP 19511A cabinet - use the power cord supplied with disk storage system to connect to an ac power outlet.

■ HP 92211Y cabinet - use one of the power cords supplied with the cabinet to connect the disk storage system to the power strip in the cabinet. Use the power cord supplied with the disk storage system to connect the cabinet power strip to an ac power outlet.

■ HP 19514A cabinet - use one of the power cords supplied with the cabinet to connect the disk storage system to the power distribution unit (PDU) in the cabinet.

■ Other cabinets - follow the instructions included with your cabinet to determine how to connect the ac power cord.

■ HP 46299A cabinet - use one of the power cords supplied with the cabinet to connect the disk storage system to the PDU in the cabinet. Instructions for connecting the PDU power cord are included with the cabinet. If the disk storage system has a voltage select switch, the switch must be set to the 240V position.

Warning

•Due to high leakage current, reliable ground circuit continuity is vital for safe operation of the HP 46299A Cabinet. Never operate the cabinet with the ground conductor disconnected. If there is any doubt about the integrity of the ground provided by the supply circuit, a redundant ground path should be created. An additional grounding terminal is installed at the base of the left rear cabinet column for this purpose. See Figure 1-4. To create a redundant ground path, connect a conductor (12 AWG minimum) from the grounding terminal to a reliable earth ground. Do not use conduit as the grounding conductor because electrical shock can result if the ground conductor opens.

•When installing the disk storage system in an HP 46299A cabinet, make sure the power cables are routed properly to avoid any pinching or binding when the cabinet door is closed. The proper routing of the power cords is shown in Figure 1-4.

Route the disk storage system power cords inside the left rear cabinet column. The four power cords from the upper half of the cabinet should be routed down through the top and center cable clamps and then to the PDU. The four power cords from the lower half of the cabinet should be routed up through the bottom and center cable clamps and then to the PDU. Proper cable routing is shown in Figure 1-4.
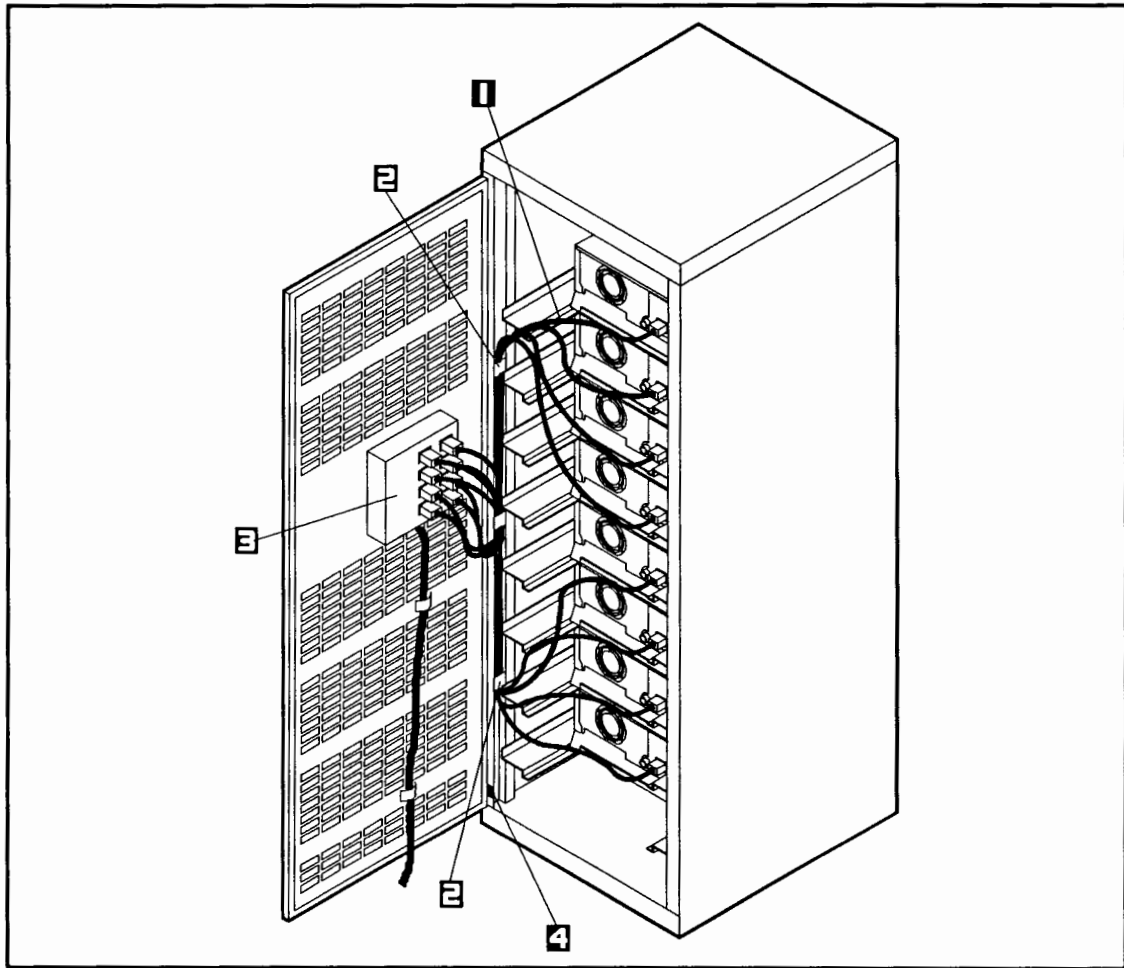
Figure 1-4. Routing Power Cords in an HP 46299A Cabinet

1. Power cords
2. Cable clamps
3. PDU
4. Redundant ground terminal

Once you have determined how you will connect to ac power, proceed with the following steps.

1. Check the LINE˜ switch on the front of the disk storage system and make sure it is in the 0 (OFF) position.

Note

Disk storage systems equipped with an automatic ranging power supply do not have a voltage select switch. This type of power supply automatically adjusts itself to operate on either of the voltage ranges listed in step 2.

2. If the disk storage system has a voltage select switch, check the switch and make sure it is set for the available ac line voltage. Set the voltage select switch according to the following information:

If the input voltage range is:	Set the switch to this setting:
100 V to 120 V, 50 or 60 Hz	120V
200 V to 240 V, 50 or 60 Hz	240V

3. Locate the power cord you will use to connect to ac power.

4. Connect the power cord to the power cord connector on the rear of the disk storage system.

5. Plug the power cord into the appropriate ac power outlet.

Performing a Power-On Checkout

Caution

If the disk storage system has been exposed to temperature extremes, allow two hours for the disk storage system to stabilize at room temperature and humidity before operating it. Operating a disk storage system that is either very cold or very hot could damage it.

1. Switch the disk storage system power on by setting the LINE˜ switch to the 1 (ON) position.

2. Wait for the disk storage system to complete its internal self-test. The self-test takes about 30 seconds to complete for a 335H or a 670H, and about 60 seconds for a 670XP.

3. Check the status display. The green LED should be on and the amber LED should be off, indicating a successful self-test.

If the status display indicates the self-test was successful, the disk storage system is now ready for use.

Handling Self-Test Failures

If the disk storage system experienced a problem during the power-on self-test, the front panel status display will indicate something other than a successful test. Use Table 1-1 to determine the type of problem that occurred. If it is a problem you can solve, do so and repeat the power-on checkout.

If the status display indicates a hardware failure, the problem is more serious. If you are trained to service the disk storage system, refer to the *CE Service Handbook for HP Series 6000 Disk Storage Systems, Models 335H, 670H, 670XP, 670FL, and 1340FL,* part number C2200-90905 for information on isolating and correcting the problem. If you are not trained in servicing the disk storage system, contact your local Hewlett-Packard Sales Office for help in solving the problem.

Table 1-1. Status Display Indications

Amber	Green	Disk Storage System Status
Off	Off	NO POWER. There is no ac power to the disk storage system. If the disk storage system is connected to ac power and the ˜LINE switch is in the 1 (ON) position, the problem may be a fuse or a failure of the internal power supply.
Off	On	READY. The disk storage system has passed its self-test and is ready to communicate with the computer. This is normal operating status.
On	Off	BAD DISK MECHANISM. The disk storage system failed its self-test due to a problem with the disk mechanism.
On	On	BAD CONTROLLER PCA. The disk storage system failed its self-test due to a problem with the HP-IB controller PCA.
Off	Flashing	DISK ACTIVE. The disk storage system is communicating with the computer. This is normal operating status.

Table 1-1. Status Display Indications (continued)

Amber	Green	Disk Storage System Status
Flashing	Flashing	SELF-TEST IN PROGRESS. The disk storage system is executing its internal self-test. This is the status you will see immediately after switching the disk storage system on. The self-test takes about 30 seconds to complete for a 335H or a 670H, and about 60 seconds for a 670XP. If this display pattern continues, it indicates that the disk storage system has entered a special diagnostic mode of operation. This mode is activated by setting the address switch to address 8 or 9. If the address switch has inadvertently been set to one of these two addresses, switch the disk storage system off, set the address switch to the proper address, and switch the disk storage system on again.
Flashing	Off	DIAGNOSTIC MODE ERROR. This is an indication you should not see under normal circumstances. It indicates that the disk storage system has entered a special diagnostic mode of operation. This mode is activated by setting the address switch to address 8 or 9. If the address switch has inadvertently been set to one of these two addresses, switch the disk storage system off, set the address switch to the proper address, and switch the disk storage system on again.

Configuring the Disk Storage System Into the Computer System

Once installed and operating properly, the disk storage system must be configured into the computer system. The information for configuring the disk storage system is included in the computer system documentation. Table 1-2 identifies the system manual containing the information on configuring the disk storage system.

Table 1-2. Locating Configuration Information

Computer	Operating System	System Manual
HP 9000 Series 300	HP-UX (7.0 and later)	*HP-UX System Administration Tasks Manual* and *HP-UX Installing Peripherals*
HP 9000 Series 800	HP-UX (7.0 and later)	*Configuring HP-UX for Peripherals*
HP 1000	RTE-A (5.2 and later)	*Driver Reference Manual*
HP 1000	RTE-6 (5.2 and later)	*Driver Reference Manual*
HP 3000 Series	MPE/XL (2.0 and later)	*System Configuration Reference Manual*
HP 3000 Series	MPE V (Delta 8 and later)	*System Operation and Resource Management Reference Manual*