



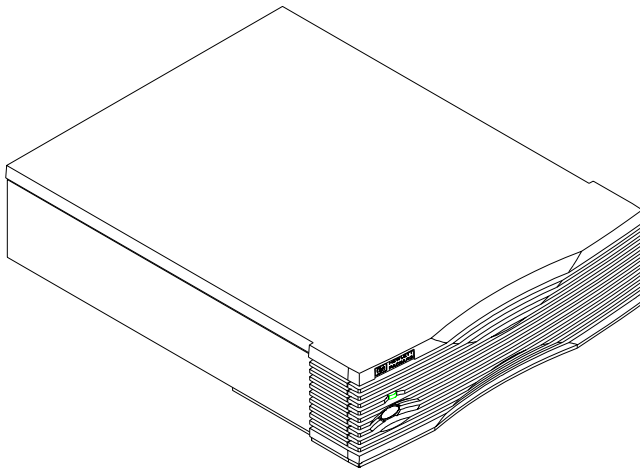
C6388B Desktop
C6389A Rack-Ready
C6390A Desktop
C6391A Rack-Ready
C6394B Desktop
C6395A Rack-Ready
C6396A Desktop
C6397A Rack-Ready

HP SCSI Disk Drives User Manual

English
Japanese



HP C6388B
HP C6389A
HP C6390A
HP C6391A
HP C6394B
HP C6395A
HP C6396A
HP C6397A



User Manual

SCSI Disk Drives
Desktop & Rack-Ready Models

Warranty

HP offers a two-year warranty for models C6388B, C6389A, C6390A, C6391A, C6394B, C6395A, C6396A, and C6397A.

1. HP warrants HP hardware, accessories, and supplies against defects in materials and workmanship for the period specified above. If HP receives notice of such defects during the warranty period, HP will, at its option, either repair or replace products that prove to be defective. Replacement products may be either new or like-new.

2. HP warrants that HP software will not fail to execute its programming instructions, for the period specified above, due to defects in material and workmanship when properly installed and used. If HP receives notice of such defects during the warranty period, HP will replace software media that does not execute its programming instructions due to such defects.

3. HP does not warrant that the operation of HP products will be uninterrupted or error free. If HP is unable, within a reasonable time, to repair or replace any product to a condition as warranted, customer will be entitled to a refund of the purchase price upon prompt return of the product.

4. HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.

5. The warranty period begins on the date of delivery or on the date of installation if installed by HP. If customer schedules or delays HP installation more than 30 days after delivery, warranty begins on the 31st day from delivery.

6. Warranty does not apply to defects resulting from (a) improper or inadequate maintenance or calibration; (b) software, interfacing, parts or supplies not supplied by HP; (c) unauthorized modification or misuse; (d) operation outside of the published environmental specifications for the product; or (e) improper site preparation or maintenance.

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Publication number

C6388-90001

Applicable Products:

HP C6388B
HP C6389A
HP C6390A
HP C6391A
HP C6394B
HP C6395A
HP C6396A
HP C6397A

Safety Considerations

Prior to the installation and use of this product, review all safety markings and instructions.



Instruction Manual Symbol. If the product is marked with this symbol, refer to the product manuals to protect the product from damage.

WARNING Denotes a hazard that can cause injury

CAUTION Denotes a hazard that can damage equipment or data.

Do not proceed beyond a **WARNING** or **CAUTION** notice until you understand the hazard and take appropriate precautions.

Servicing

Any servicing, adjustment, maintenance or repair must be performed only by authorized service-trained personnel.

Grounding

This product provides a protective grounding terminal. There must be an uninterrupted safety ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

Servicing

Any servicing, adjustment, maintenance, or repair must be performed by HP authorized and trained service personnel.

Support

For online product support information 24 hours/day and 7 days/week:

World Wide Web:

<http://www.hp.com>

Patches can be downloaded from Hewlett-Packard's Electronic Support Center at:

<http://us-support.external.hp.com/>

America Online:

Keyword: HP

CompuServe:

GO: HP

Regulatory Information

USA

Federal Communications Commission (FCC)

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment to an outlet on a another circuit
- Consult the dealer or an experienced radio/TV technician for help

Compliance with these regulations requires the use of shielded cables. Changes or modifications to the equipment not expressly approved by Hewlett-Packard could void the user's authority to operate it.


Canada

Canadian Department of Communications (DOC)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Requirements of the Canadian Department of Communications, ICES-003.

Compliance with these regulations requires the use of shielded cables.

Europe

Declaration of Conformity according to ISO/IEC Guide 22 and EN45014		
Manufacturer's Name:	Hewlett-Packard	
Manufacturer's Address:	333 Logue Avenue Mountain View, CA 94043 U.S.A.	
Declares that the product		
Product Name:	External Desktop Mass Storage Devices	
Product Type:	Disk Drives	
Model Numbers:	C6388B, C6389A, C6390A, C6391A, C6394B, C6395A, C6396A, C6397A	
Product Options:	All	
Conforms to the following Product Specifications:		
Safety:	IEC 950:1991+A1+A2+A3+A4 EN 60950:1992+A1+A2+A3+A4	
EMC:	CISPR 22:1993 / EN 55022:1994 - Class B ⁽¹⁾ EN 50082-1:1992 IEC 801-2:1991 / prEN 55024-2:1992 - 4kV CD, 8kV AD IEC 801-3:1984 / prEN 55024-3:1991 - 3V/m IEC 801-4:1988 / prEN 50024-4:1992 - 1kV power lines - 0.5kV signal lines FCC Title 47 CFR, Part 15, Class B ⁽¹⁾	
Supplementary Information:		
The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and 93/68/EEC and the EMC Directive 89/336/EEC and 92/31/EEC and 93/68/EEC and carries the CE Marking, accordingly.		
⁽¹⁾ The product was tested in a typical configuration with a Hewlett-Packard computer system.		
Mountain View, CA, U.S.A.	July 1, 1998	
Location	Date	Cal Maclean, Business Manager
Only for Regulatory Compliance Information:		
European Contact: Your local Hewlett-Packard Sales & Service Office or Hewlett-Packard GmbH, Department HQ-TRE / Standards Europe, Herrenberger Strasse 130, D-71034 Böblingen (Fax: +49-7031-14-3143).		

Japan

VCCI Class B ITE

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B情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取り扱い説明書に従って正しい取り扱いをして下さい。

English Translation

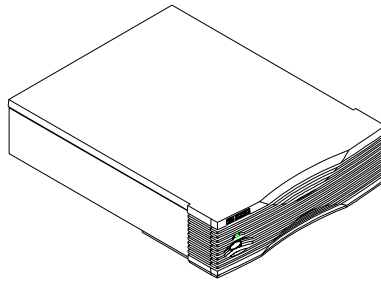
This equipment is in the Class B category information technology equipment based on the rules of Voluntary Control Council for Interference by Information Technology Equipment (VCCI). Although aimed for residential area operation, radio interference may be caused when used near a radio or TV receiver.

Read the instructions for correct operation.

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Overview



HP Desktop Disk Drive

HP's Desktop and Rack-Ready Disk Drives provide a wide range of storage flexibility and reliability:

- HP offers a boot capable disk storage solution beginning with the HP C6388B Desktop 4GB drive to the HP C6396A Desktop 9GB disk drive.
- When space is at a premium, all desktop versions can be vertically mounted and ship with a vertical mount stand.
- The desktop and rack-ready drives are highly reliable with a MTBF (Mean Time Between Failure) minimum rating of one million hours for mechanisms. (Actual failure rates will vary from unit to unit. See Appendix A.)
- This series of HP drives is backed by a two-year warranty.

Note *Some versions of HP-UX do not support bootable disks. See Appendix A.

Disk Installation

1. Contents of the Kit for Desktop Models

Ensure that the kit contains the following parts:

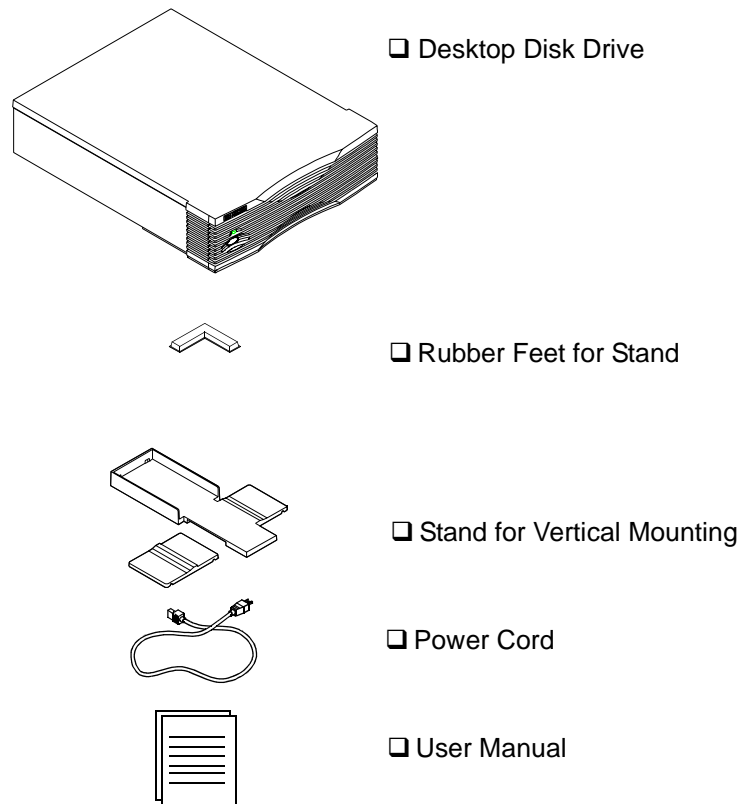


Figure 2-1 Kit Contents

Note HP rack-ready models C6389A, C6391A, C6395A, and C6397A do not require rubber feet or a stand.

Rack-Ready Drives

The HP C4318B 3U-4Bay Rack Mount Kit allows you to rack mount up to four HP disk drives into a standard HP 19-inch EIA rack. The C4317A 2U 2-Bay Rack Mount Kit has a two drive capacity. See the specifications in Appendix B for more details.

Note HP desktop models C6388B, C6390A, C6394B, and C6396A are not supported in a rack-ready environment.

2. Environment

Observe the following environmental factors to get top performance from your disk drive.

Clearance. Maintain a space of 70-80 mm (3 in) behind and in front of the drive for air circulation.

Location. Locate the drive away from sources of particulate contamination such as frequently used doors and walkways, printers, and smoke-filled rooms.

3. Check Your SCSI Cable

Verify that you have ordered or received a SCSI cable to connect to your drive. See Appendix C for information on cable accessories.

CAUTION Because single-ended SCSI devices and differential SCSI devices use different electrical signals to communicate with the bus, they cannot share the same host adapter or terminators.

Ensure that you have a Wide Single-Ended SCSI compatible terminator if you have a Wide Single-Ended disk drive or a Wide Differential compatible terminator if you have a Wide Differential disk drive.

If your drive is a Wide Differential or a Wide Single-Ended device, it will have a label located on the back panel between the two SCSI connectors. (See Figure 2-7 on page 2-7.)

4. Operating System Compatibility

Obtain a patch or its updated replacement from the HP Electronic Support Center or call your local HP Response Center. See page vi.

5. Set the SCSI ID Selector Switch

Follow the instructions about checking the SCSI IDs in your system owner's guide to determine which SCSI IDs are in use on your system. Your external disk drive ships preset to SCSI ID 5. If your system already uses a SCSI device set to ID 5, change the SCSI ID of your drive to an unused ID.

The SCSI ID selector allows you to set the SCSI ID from 0 to 15. To change the default setting, push the top button to select a lower number and push the bottom button to select a higher number.

Note Each SCSI device must be assigned a unique SCSI ID. Before selecting the SCSI ID for this device, confirm which SCSI ID numbers are already in use by internal and external devices. The default for an internal boot disk drive is usually 6. The Boot ROM searches from bus address 6 to 0. Your boot disk should have a higher bus address than any other device on the bus. **SCSI address 7 is usually reserved for the SCSI host adapter.** For additional information, see your workstation or server manual.

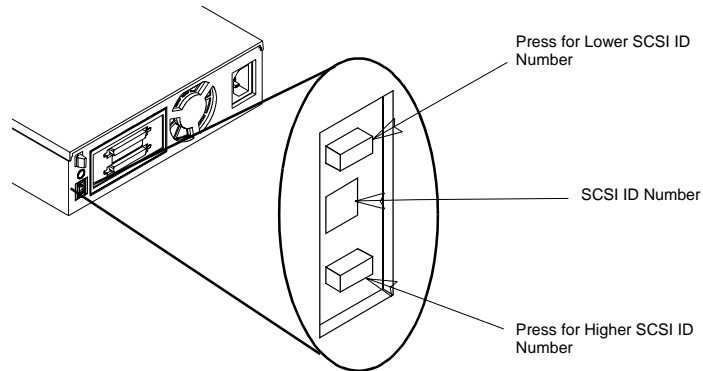


Figure 2-2 Setting the SCSI ID

6. Mount Your Drive Vertically (Optional)

Your HP desktop disk drive can be used in a vertical or horizontal position, as shown in Figure 2-3. Always use the supplied stand when using the drive in the vertical position.

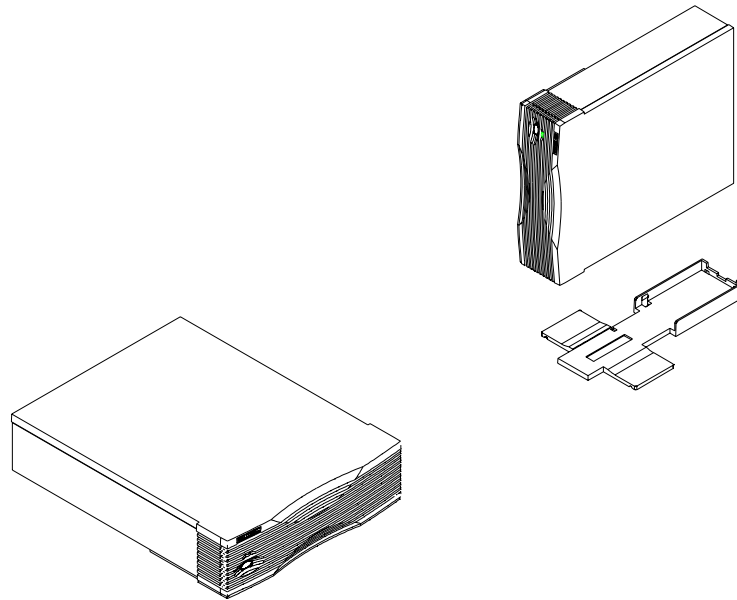


Figure 2-3 Examples of Drive Configuration

If you wish to mount your disk drive in the vertical position, perform the following steps:

- A. Remove the backing from the four rubber feet and install them on the stand.

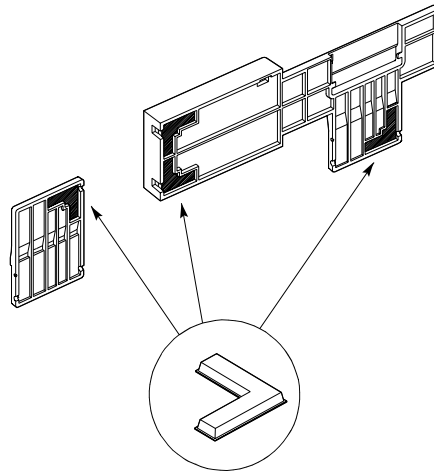


Figure 2-4 Attaching the Rubber Feet

- B. Slide the notches in the foot over the pins on the bottom of the stand. Swing up the foot to lock the pieces together.

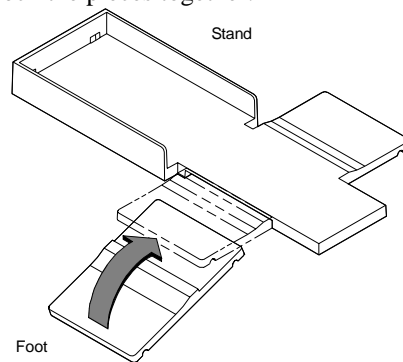


Figure 2-5 Assembling the Stand

- C. Insert the corner of the disk unit into the rear of the stand, then swing the unit down to lock it into the stand.

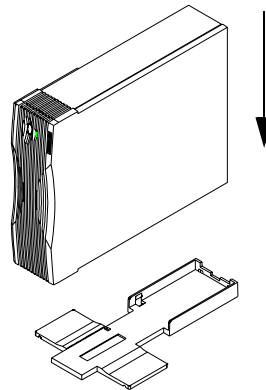


Figure 2-6 Inserting the Drive into the Stand

7. Connect the SCSI Cable

You can connect the disk drive directly to your system or to another external SCSI device that is connected to your system. To connect the disk drive to another external device, see the information about connecting multiple storage devices in your system owner's guide.

CAUTION You must power down your system before connecting the SCSI cable.

To connect the disk drive to your system, connect the SCSI cable to either SCSI connector on the disk drive unit and to the SCSI connector on the system. Connect the SCSI terminator to the unused SCSI connector on the disk unit.

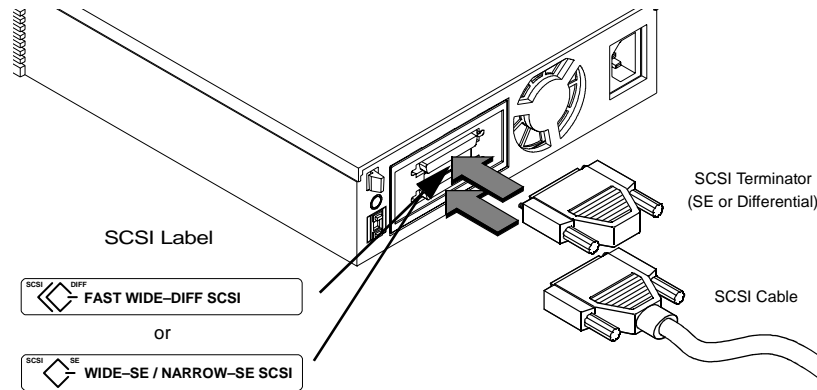


Figure 2-7 Connecting the SCSI Cable

8. Connect the Power Cable

CAUTION To ensure optimal performance, use the 3-wire power cord supplied with this unit.

Connect the power cable to the disk drive unit and an AC wall outlet. See Figure 2-8.

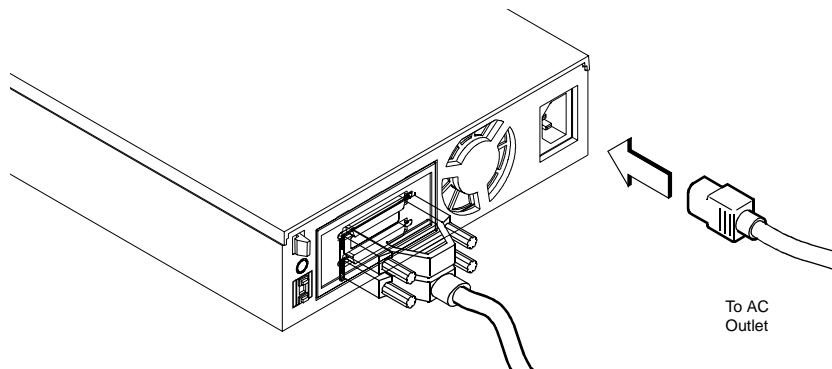


Figure 2-8 Connecting the Power Cable

9. Power On the Unit

Push in the power switch on the front of the unit to ensure that your drive is recognized by your system during boot-up.

10. Configuring the Drive

Reference your workstation owner's guide for instructions about using the HP-UX **sam** utility to configure your drive.

11. Rack Mounting

The Rack-Ready Drives can be mounted into a standard HP 19-inch rack by using the optional HP C4317A (2 EIA units) or the C4318B (3 EIA units) rack mount kits. See Appendix B for more details.

Specifications

**Table 1: C6388B Desktop and C6389A Rack-Ready
4GB Wide Single-Ended/Narrow Single-Ended Disk Drive**

Physical Dimensions	62mm(H) x 215mm(W) x 273mm(D)
Weight	2.8kg (6.1 lbs)
Data Interface	Wide SCSI Single-Ended, Dual High-Density 68-pin
Boot Disk Exceptions	HP 9000 Workstations & Servers: Supported on HP-UX 9.XX – 10.01 as data disks only. For HP-UX 10.10 and above as data or boot disk.
Rated A/C Input	100-240V 50/60Hz. Max 1.2A
A/C Current Draw	Typical: 0.4 A - 0.2 A
Typical Heat Dissipation	22 W, 75 BTU/hr
Mechanism	Disk
Capacity	4.2 GB
Interface Transfer Rate	Up to 40 MB/s Synchronous
Int. Transfer Rate	120-190 Mbits/sec
Cache	512 KB
Average Access Time	7.4ms Read, 8.1ms Write
Spindle Speed	7200 RPM
MTBF (Mechanism)	1,000,000 hours*
Warranty	2 Years

Note *Hewlett-Packard Company does not warrant that this predicted MTBF is representative of any particular unit installed for customer use. Failure rates are derived from a large database of test samples. The actual failure rate will vary from unit to unit.

**Table 2: C6390A Desktop and C6391A Rack-Ready
4GB Fast Wide Differential Disk Drive**

Physical Dimensions	62mm(H) x 215mm(W) x 273mm(D)
Weight	2.8kg (6.1 lbs)
Data Interface	Fast Wide SCSI-3 Differential, Dual High-Density 68-pin
Boot Disk Exceptions	HP 9000 Workstations: Supported on HP-UX 9.XX as data disks only. For HP-UX 10.XX and above as data or boot disk.
A/C Input Characteristics	100-240V 50/60Hz. Max 1.2A
A/C Current Draw	Typical: 0.4 A - 0.2 A
Typical Heat Dissipation	22 W, 75 BTU/hr
Mechanism	Disk
Capacity	4.2 GB
Interface Transfer Rate	Up to 20 MB/s Synchronous
Int. Transfer Rate	120-190 Mbits/sec
Cache	512 KB
Average Access Time	7.4ms Read, 8.1ms Write
Spindle Speed	7200 RPM
MTBF (Mechanism)	1,000,000 hours*
Warranty	2 Years

Note *Hewlett-Packard Company does not warrant that this predicted MTBF is representative of any particular unit installed for customer use. Failure rates are derived from a large database of test samples. The actual failure rate will vary from unit to unit.

**Table 3: C6394B Desktop and C6395A Rack-Ready
9GB Wide Single-Ended/Narrow Single-Ended Disk Drive**

Physical Dimensions	62mm(H) x 215mm(W) x 273mm(D)
Weight	2.8kg (6.1 lbs)
Data Interface	Wide SCSI Single-Ended, Dual High-Density 68-pin
Boot Disk Exceptions	HP 9000 Workstations & Servers: Supported on HP-UX 9.XX – 10.01 as data disks only. For HP-UX 10.10 and above as data or boot disk.
A/C Input Characteristics	100-240V 50/60Hz. Max 1.2A
A/C Current Draw	Typical: 0.4 A - 0.2 A
Typical Heat Dissipation	22 W, 75 BTU/hr
Mechanism	Disk
Capacity	9.1 GB
Interface Transfer Rate	Up to 40 MB/s Synchronous
Int. Transfer Rate	120-190 Mbits/sec
Cache	512 KB
Average Access Time	7.4ms Read, 8.1ms Write
Spindle Speed	7200 RPM
MTBF (Mechanism)	1,000,000 hours*
Warranty	2 Years

Note *Hewlett-Packard Company does not warrant that this predicted MTBF is representative of any particular unit installed for customer use. Failure rates are derived from a large database of test samples. The actual failure rate will vary from unit to unit.

**Table 4: C6396A Desktop and C6397A Rack-Ready
9GB Fast Wide Differential Disk Drive**

Physical Dimensions	62mm(H) x 215mm(W) x 273mm(D)
Weight	2.8kg (6.1 lbs)
Data Interface	Fast Wide SCSI Differential, Dual High-Density 68-pin
Boot Disk Exceptions	Boot capable on all supported operating systems.
A/C Input Characteristics	100-240V 50/60Hz. Max 1.2A
A/C Current Draw	Typical: 0.4 A - 0.2 A
Typical Heat Dissipation	22 W, 75 BTU/hr
Mechanism	Disk
Capacity	9.1 GB
Interface Transfer Rate	Up to 40 MB/s Synchronous
Int. Transfer Rate	120-190 Mbits/sec
Cache	512 KB
Average Access Time	7.4ms Read, 8.1ms Write
Spindle Speed	7200 RPM
MTBF (Mechanism)	1,000,000 hours*
Warranty	2 Years

Note *Hewlett-Packard Company does not warrant that this predicted MTBF is representative of any particular unit installed for customer use. Failure rates are derived from a large database of test samples. The actual failure rate will vary from unit to unit.

Rack-Ready Modules

The 3U 4-Bay Rack Kit is designed for mounting into 1.1-meter, 1.6-meter, and 2.0-meter HP 19-inch racks.

1. The HP C4317A (2 EIA units) and C4318B (3 EIA units) are designed for horizontal mounting of four half-height products.
2. These rack enclosures include blind-mate, easy plug connectors providing easy installation and removal of Rack-Ready Modules. See Figure B-1.
3. The HP C4317A (not shown) and HP C4318B rack kits feature Wide 68-pin SCSI connectors. This standardizes SCSI daisy-chaining inside the 19-inch rack. Select the appropriate 50-pin to 68-pin or 68-pin to 68-pin cable to connect the rack to your system.

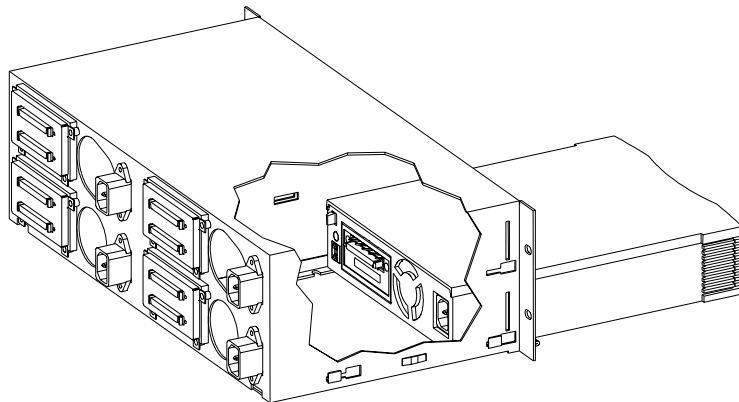


Figure B-1 C4318B 3U 4-Bay Rack Enclosure

Installation and Removal of Drives

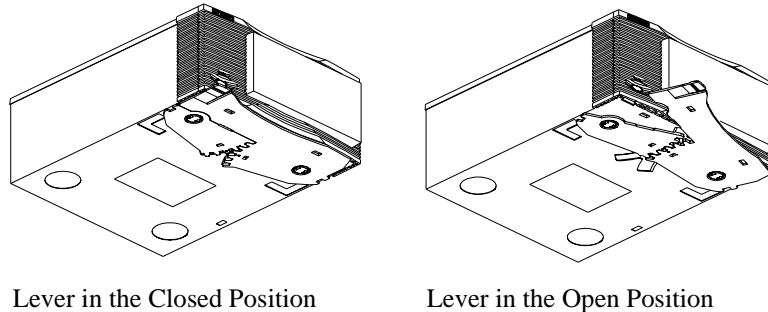


Figure B-2 Ejection Lever Assembly

The Rack-Ready Drives are equipped with an ejection lever assembly in place of the rubber feet used on the desktop version. See Figure B-2. The ejection lever assembly is designed for easy installation and removal of drives from the rack mount kit.

1. Power down the host system.
2. Open the ejection lever assembly.
3. **Installation:** Slide the drive into the enclosure until the drive's power and I/O port plug into the back of the rack mount kit.
4. Close the Ejection Lever assembly, locking the unit in place.
5. **Removal:** Move the ejection lever forward until the drive is disengaged from the rear power and I/O plugs. Slide the drive out of the enclosure, using both hands to grasp the unit.

Note For comprehensive installation instructions see *HP 3U 4-Bay Rack Enclosure Installation Guide* (HP part number C4318-90001) or *HP 2U 2-Bay Rack Enclosure Installation Guide* (HP part number C4317-90002).

Cable Accessories

Cables and Terminators

Connection on System	Device Type*	Cable Pins	Cable Length	Part Number
FWD 68p	FWD	68-68	0.9	C2911A
FWD 68p	FWD	68-68	2.5	C2924A
FWD 68p	WD	WD terminator	-	C2905A
WSE 68p	WSE	68-68	0.5m	C2978A
WSE 68p	WSE	68-68	1.5m	C2979A
WSE 68p	WSE	SE terminator	-	C2972A
Device to Device in Rack	any	68-68	0.5m	C2981A
NSE 50p	WSE	50-68	1.0m	C2961A
NSE 50p	WSE	50-68	1.5m	C2962A
NSE 50p	WSE	50-68	2.0m	C2906A

*All HP rack-ready devices connect to the rack enclosure through a blind-mate, easy-plug connector. The connectors on the back of the rack enclosure are all 68-pin. To connect a device in your rack enclosure with the host system, you may need either a 50-pin or 68-pin cable depending on the type of bus used by the host system. (Wide single-ended cables can be used with narrow single-ended devices.) For device-to-device connection in the rack use a C2981A (68p-68p) 0.5 meter cable.

WSE = wide single-ended NSE = narrow single-ended
 FWD = fast wide differential p = pin

If your drive is the only SCSI device or if it is the last SCSI device in a daisy-chain of devices, you must install a terminator.



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Manual Part No.
C6388-90001



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