Hard Disk Drive
User's Manual

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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.

Edition 1 June 1991

Typographical Conventions

The following safety symbols and typographical conventions are used in this manual:

- LINE~ indicates the power button on a storage system.
- *Italic* is used for emphasis or titles of manuals.

Note

Notes contain important information.

Caution

Caution messages appear before procedures which, if not observed, could result in damage to equipment or loss of your data.

About This Manual

This manual provides information on operating and maintaining hard disk drives included in Hewlett-Packard storage systems.

How It's Organized

- Chapter 1, Operating Your Hard Disk Drive, provides information on the basic tasks of operating the drive.
- Chapter 2, More About Your Hard Disk Drive, provides additional useful information about the drive. Once the drive is operating, you should read this chapter to gain a better understanding of the product.
- Appendix A, Hard Disk Drive Technical Information, includes the technical specifications of and environmental requirements for the drive.

How To Use It

1. Using the information in Chapter 1, begin operating the drive.
2. Once the drive is operating, read through Chapter 2 to learn more about the drive.

Contents

1. Operating Your Hard Disk Drive

Identifying Front Panel Parts 1-1
Switching On Power 1-4
Learning More About Your Drive 1-5

2. More About Your Hard Disk Drive

Drive Description 2-1
Maintenance 2-2
Troubleshooting 2-2
Service 2-4
Warranty 2-5
Repacking the Drive 2-5

A. Hard Disk Drive Technical Information

Technical Specifications A-2
Environmental Requirements A-3

Index

Figures

1-1. Hard Disk Drive (5.25-inch Model) 1-2
1-2. Hard Disk Drive (3.5-inch Model) 1-2

Tables

1-1. Drive Status Light Indications 1-3

1

Operating Your Hard Disk Drive

This chapter describes how to operate your hard disk drive within your HP storage system. Normal operation of the hard disk drive includes switching on drive power and ensuring the drive passes self-test.

Identifying Front Panel Parts

There are two hard disk drive models: the 5.25-inch model and the 3.5-inch model. Your disk drive front panel may look like Figure 1-1 or Figure 1-2. The drive status light is the only indicator on the front panel, and is described on page 1-3.

Note

Some storage systems have a front panel that covers the drive front panel. On these storage systems, the hard disk drive status lights are located on the lower right-hand corner of the front panel. Refer to the storage system user's manual for the location of the drive status light on these storage systems.

Hard Disk Drive

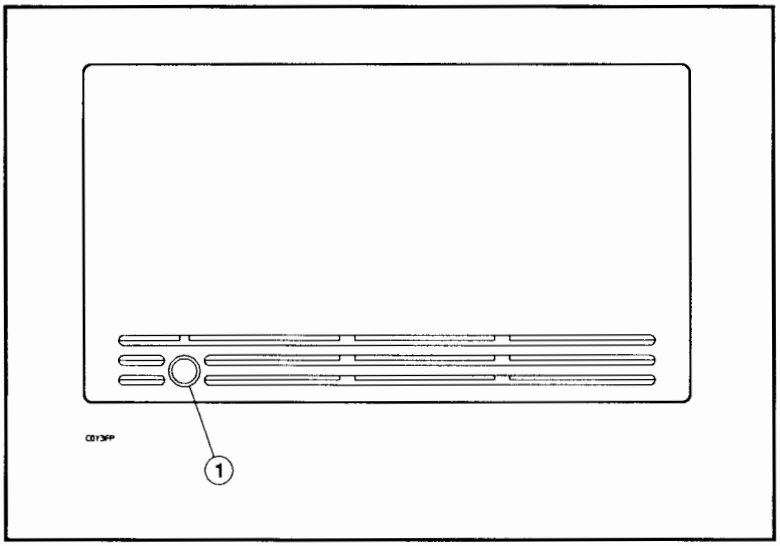

Figure 1-1. Hard Disk Drive (5.25-inch Model)

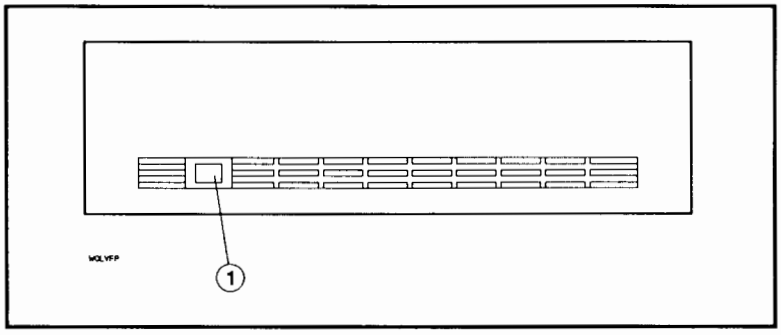

Figure 1-2. Hard Disk Drive (3.5-inch Model)

1—Drive Status Light — This light indicates the results of the drive power-on self-test, and host activity. See Table 1-1 for information about drive status light indications during normal operation and fault conditions.

Table 1-1. Drive Status Light Indications

Status	Explanation
OFF	Drive power is off, self-test passed, or no activity with the host.
ON	Drive is spinning up or performing a self-test. If the light stays on more than 20 seconds after the drive begins spinning up for a 5.25-inch model (15 seconds for a 3.5-inch model), a drive fault occurred. Call your service center.
FLASHING (1 Hz)	If the light continues flashing at a rate of 1 Hz more than 20 seconds after the drive begins spinning up for a 5.25-inch model (15 seconds for a 3.5-inch model), the self-test failed. Call your service center.
FLASHING (intermittent)	Activity with the host.

Switching On Power

Caution

If the drive has been exposed to temperature extremes, allow two hours for it to stabilize at room temperature and humidity before operating it. Operating a drive that is very cold or very hot may damage it (refer to "Environmental Requirements" in Appendix A).

Note

The drive does not supply termination power to the SCSI bus. This may cause erroneous self-test results when the storage system is connected to the host system. To prevent an erroneous self-test failure, you should perform one of the following procedures:

- Disconnect the SCSI cable and SCSI terminator from the storage system, then switch on storage system power,

  or

- With the SCSI cable and SCSI terminator connected to the storage system, switch on host system power, then switch on storage system power.

1. Switch on drive power by setting the (LINE~) switch on the storage system cabinet to the 1 (ON) position.

2. Wait 20 seconds for the drive to complete the self-test.

Note

If the drive is in a storage system that contains other hard disk drives, the self-test may be delayed 20 seconds due to a sequential spin-up routine for hard disk drives.

3. Check the drive status light to ensure the self-test passed. The drive status light should be off.

Note

If the drive status light stays on more than 20 seconds after the drive begins spinning up, a drive fault occurred (see Table 1-1). If the drive status light continues flashing more than 20 seconds after the drive begins spinning up, the self-test failed (see Table 1-1). Call your service center.

Learning More About Your Drive

Now that you have learned how to operate your hard disk drive, read Chapter 2 for additional information about your drive.

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2

More About Your Hard Disk Drive

This chapter includes the following information about your hard disk drive:

- A description of the drive.
- Information about troubleshooting.
- Information about service.

Drive Description

The hard disk drive is a random access mass storage device that contains 3.5-inch or 5.25-inch nonremovable, magnetic disk media. Data is stored on and retrieved from the media using a series of movable data heads. A servo head is used to read position information from a dedicated servo surface. This position information allows the drive to locate data on the data surfaces. (Refer to Appendix A for information about the formatted capacity of the hard disk drive.)

The drive includes a Small Computer System Interface (SCSI) controller with built-in self-test diagnostic routines. Each time the drive is switched on, the self-test diagnostics ensure the drive is working properly.

Maintenance

Due to the design of your drive, regular maintenance is not required. However, the performance and reliability of your drive depend on the operating environment. Ensure your drive operates within the environmental limits in Appendix A.

Troubleshooting

Your drive does not supply termination power to the SCSI bus. This may cause misleading self-test results on some systems. If the hard disk drive self-test appears to fail, the self-test can be verified by one of the following methods:

- Disconnect all external data cables and terminators from the storage system, then switch on power, or
- With cables and terminators connected, switch on host system power *before* switching on power to the storage system.

If the hard disk drive still fails self-test, call your service center.

If a problem occurs, check the drive status light (see Table 1-1). Your operating system may include an on-line troubleshooting utility to aid in the diagnosis and repair of the drive. There may also be an off-line utility available for troubleshooting the drive. Refer to the documentation included with your storage system for more information about troubleshooting utilities.

If the drive has a problem you cannot solve, call your service center. Refer to the next section to prepare for a service call.

Service

Caution

There are no user-serviceable parts inside the drive. Service should only be performed by someone with the proper training. If you attempt to fix the problem, you may void the warranty and damage the drive.

If the drive requires service, there are a few things you can do to help your service center identify the problem and solve it quickly:

1. Record any information about the problem. This includes any error messages displayed by your computer, information accessed using troubleshooting utilities, details about the operation that was being performed, and the software application being used when the problem occurred.
2. Locate the serial number of the drive on either the storage system cabinet pull-out configuration card, or on the rear of the drive.
3. Call your service center for assistance in solving the problem.

Warranty

If you have any questions about the warranty for your drive, contact your dealer or Hewlett-Packard sales representative.

Repacking the Drive

Before the drive is moved to a new site or sent to a repair facility, it must be repacked in the original type of shipping container and packing material. If the original container and packing material are not available, order a replacement container and packing material from your dealer or your service center.

Note

Hewlett-Packard reserves the right to reject a warranty claim for a product that was improperly repacked before shipment.

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A

Hard Disk Drive Technical Information

This appendix contains the technical specifications of and environmental requirements for hard disk drives. The data capacity (in megabytes) and model (5.25-inch or 3.5-inch) of your drive are listed with each specification to help you find information for your drive.

Note

The environmental requirements for your storage system are a composite of the environmental requirements for the mass storage devices within your storage system. The environmental requirements for this drive may be more stringent than those for your storage system. Consequently, the environmental requirements for this drive may determine the environmental requirements for your storage system. Refer to your storage system user's manual for the environmental requirements for your storage system.

Technical Specifications

WEIGHT

Net:	
677/1355 MB, 5.25-inch:	4.1 kg (9.0 lbs)
422 MB, 3.5-inch:	2.1 kg (4.6 lbs)
Shipping:	
677/1355 MB, 5.25-inch:	5.2 kg (11.5 lbs)
422 MB, 3.5-inch:	2.6 kg (5.7 lbs)

FORMATTED CAPACITY

Data Surfaces:	
677 MB, 5.25-inch:	11
1355 MB, 5.25-inch:	19
422 MB, 3.5-inch:	9
Bytes/Sector:	
677/1355 MB, 5.25-inch:	512
422 MB, 3.5-inch:	512
Drive Capacity (Bytes):	
677 MB, 5.25-inch:	677,191,680
1355 MB, 5.25-inch:	1,367,212,032
422 MB, 3.5-inch:	422,295,552

Environmental Requirements

TEMPERATURE

Operating:	
677/1355 MB, 5.25-inch:	0°C to 50°C (32°F to 122°F)
422 MB, 3.5-inch:	5°C to 50°C (41°F to 122°F)
Nonoperating:	
677/1355 MB, 5.25-inch:	-40°C to 65°C (-40°F to 149°F)
422 MB, 3.5-inch:	-40°C to 65°C (-40°F to 149°F)
Maximum Rate of Change:	
677/1355 MB, 5.25-inch:	10°C/hr (50°F/hr)
422 MB, 3.5-inch:	10°C/hr (50°F/hr)

HUMIDITY

Operating:	
677/1355 MB, 5.25-inch:	8% to 80% RH (noncondensing)
422 MB, 3.5-inch:	8% to 80% RH (noncondensing)
Nonoperating:	
677/1355 MB, 5.25-inch:	5% to 80% RH (noncondensing)
422 MB, 3.5-inch:	5% to 90% RH (noncondensing)
Maximum Wetbulb Temperature:	
677/1355 MB, 5.25-inch:	28°C (82°F)
422 MB, 3.5-inch:	28°C (82°F)

ALTITUDE

Operating:	
677/1355 MB, 5.25-inch:	-61 m to 3,048 m (-200 ft to 10,000 ft)
422 MB, 3.5-inch:	-305 m to 3,048 m (-1,000 ft to 10,000 ft)
Nonoperating:	
677/1355 MB, 5.25-inch:	-305 m to 15,240 m (-1,000 ft to 50,000 ft)
422 MB, 3.5-inch:	-305 m to 15,240 m (-1,000 ft to 50,000 ft)

Index

A

altitude specifications, A-4

C

capacity. *See* formatted capacity

D

drive
  description, 2-1
  fault, 1-3, 1-5
  formatted capacity, A-2
  interface, 2-1
  media, 2-1
  models, 1-1
drive status light
  description, 1-3
  indications, 1-3
  location, 1-1, 1-2

E

environmental requirements
  altitude, A-4
  humidity, A-3
  temperature, A-3

F

failure
  self-test, 1-3, 1-4, 1-5
fault, 1-3
formatted capacity, A-2
front panel
  3.5-inch model, 1-2
  5.25-inch model, 1-2

H

hard disk drive. *See* drive
humidity specifications, A-3

I

indicator. *See* drive status light
interface, 2-1

L

light
  drive status, 1-1, 1-2, 1-3

M

maintenance, 2-2
model
  3.5-inch, 1-2
  5.25-inch, 1-2

O

operating, 1-4, 1-5

P

power
  switching on, 1-4

R

repacking, 2-5
repairing, 2-4

S

SCSI interface, 2-1
self-test
  delay, 1-5
  duration, 1-5
  failure, 1-3, 1-4, 1-5
serial number, 2-4
service, 2-4
specifications
  altitude, A-4
  formatted capacity, A-2
  humidity, A-3
  temperature, A-3
  weight, A-2
switching on power, 1-4

T

temperature specifications, A-3
troubleshooting, 2-2

W

warranty, 2-5
weight specifications, A-2