

HEWLETT-PACKARD



HP 7963B Winchester Disc Drive

Data Sheet

Features

New disc subsystem offers high capacity and easy upgrade feature

- HP designed and manufactured 5.25-inch Winchester disc mechanism
- Initial capacity of 304 megabytes
- Additional capacity can be placed in original package at a later date
- Package houses up to three mechanisms for a total of 912 megabytes

Because of its compact size and tolerance over a range of operating environments, the HP 7963B is well-suited for office or workstation settings. Users of HP 1000, 9000 and 3000 computers will be attracted to the HP 7963B for its compact size and capacity potential; up to 912 megabytes can be enclosed in the original package.

HP Designed and Built Winchester

The foundation of this new midrange disc drive is HP's own 5.25-inch Winchester disc mechanism. Designed and built by HP, this mechanism provides high reliability and hallmark performance—performance traditionally found only in high capacity disc drives.

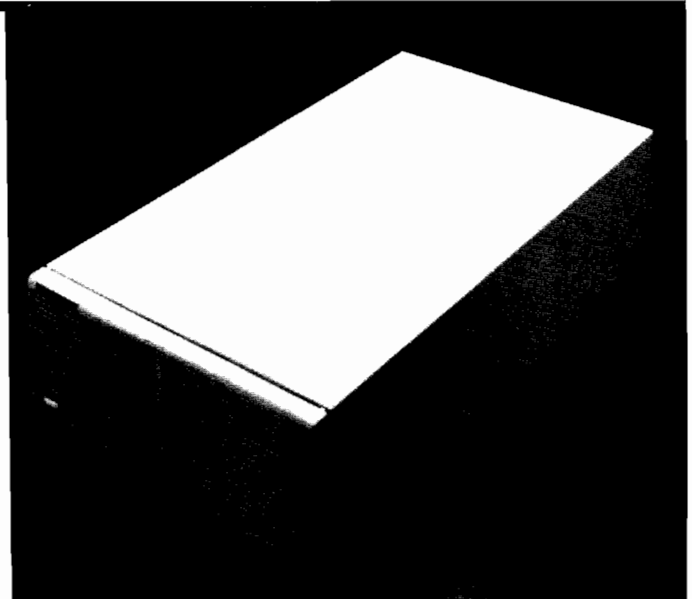
HP's Winchester boasts an impressive 17 ms seek time and average data transfer rate of approximately 700 kbytes/second.

Capacity Configurations

Available in an initial configuration of 304 megabytes, the HP 7963B offers lasting value at an affordable price.

The efficient design of the disc drive allows placement of up to three Winchester mechanisms in one compact package. A fourth "slot" encloses the subsystem's power supply. Users initially purchasing the HP 7963B with one disc mechanism can later install as many as two additional stand-alone mechanisms in the original package.

The stand-alone mechanism (HP 97963B) is available as a 304 megabyte upgrade kit. This upgrade kit is attractively



priced to provide a growth path lower in price than separately packaged disc drive subsystems of equal capacity. This innovative feature offers a new value of upgradeability for future cost savings and inexpensive multiple spindle solutions. Each mechanism in the HP 7963B package has its own controller and is recognized as a separate HP-IB device.

Optimized Performance

A specially designed track positioning system using embedded servo code is a key feature of this product. The servo code essentially eliminates seek errors and provides greater read/write accuracy over the entire operating range.

Channel optimization is another important feature. Similar to rotation position sensing (RPS), channel optimization increases performance by allowing multiple discs to better utilize a single HP-IB channel. This feature was previously available only on high capacity disc drive subsystems.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

High Reliability and Ease of Support

The HP 7963B is designed to offer Hewlett-Packard customers superior reliability and ease of support. The disc drive features automatic sparing which reduces required maintenance. Self-test capabilities and error logging optimize serviceability. And the simple package design allows quick and easy access to replaceable assemblies.

HP 7963B and HP 97963B Specifications

Performance Specifications

Formatted capacity	304 Mbytes
Average seek time	17 ms
Average rotational delay	8.96 ms
Average time to transfer 1 kbyte	1.4 ms
Average controller overhead	< 1 ms
Total average transaction time	28.4 ms
Disc performance index	35.3 I/Os per sec
Data transfer rate	
Instantaneous	1.25 Mbytes per sec
Average sustained (full volume)	~ 700 kbytes per sec
Track average	875 kbytes per sec

Recording Characteristics

Bits per inch (maximum)	20,500
Tracks per inch	1,590
Bytes per sector	256
Sectors per track	63
Tracks per data head	1,572
Number of discs	6

Service Characteristics

Mean time to repair	30 minutes
Preventive maintenance frequency	None required
Service life	10 years

Overall Characteristics

Electromagnetic emissions

Radiated and magnetic interference

- For U.S., complies with FCC docket 20780 for Class B computing peripheral devices.
- For Europe, designed to meet EMI level FTZ 1046/84 and provides a Manufacturer's Declaration. Refer to your local sales representative for more information.

Safety

The HP 7963B disc drive meets all applicable safety standards of the following (the HP 97963B upgrade kit meets the same standards when installed in the HP 7963B):

- IEC 380 and IEC 435 compliant
- UL listed 114 and 478
- CSA certified 22.2 No. 154

Racking Alternatives

The HP 7963B neatly fits into the HP 92211R mini-rack cabinet or can be placed on a desktop. It can also be mounted in a standard 19-inch EIA equipment rack by using the HP 19560B rack mount kit.

The HP 7963B comes equipped with all the necessary accessories and operates after simply being plugged into an AC power source and the HP-IB channel of any supporting system.

Power Requirements

120V setting: 100V, 115V, 120V, single phase (inclusive tolerance range is 90V to 132V)

240V setting: 220V, 240V, single phase (inclusive tolerance range is 198V to 264V)

Frequency: 47.5 to 63 Hz

Phase: Single

Power (typical):

120V setting: 65W (1 disc mechanism)
88W (2 disc mechanisms)
118W (3 disc mechanisms)
(120V, 60 Hz)

240V setting: 65W (1 disc mechanism)
87W (2 disc mechanisms)
116W (3 disc mechanisms)
(240V, 60 Hz)

Current:

120V setting: 1.00A (1 disc mechanism)
1.47A (2 disc mechanisms)
1.96A (3 disc mechanisms)

240V setting: 0.60A (1 disc mechanism)
0.82A (2 disc mechanisms)
1.09A (3 disc mechanisms)

Heat dissipation (typical):

65W (222 Btu/hr, 56 Kcals/hr for 1 disc mechanism)
88.2W (300 Btu/hr, 75 Kcals/hr for 2 disc mechanisms)
118W (401 Btu/hr, 100 Kcals/hr for 3 disc mechanisms)

Heat dissipation (maximum):

73.5W (251 Btu/hr, 63 Kcals/hr for 1 disc mechanism)
110.3W (376 Btu/hr, 95 Kcals/hr for 2 disc mechanisms)
147W (502 Btu/hr, 126 Kcals/hr for 3 disc mechanisms)

Environmental Requirements

Temperature:

Operating: 5 to 40°C (maximum rate of change 20°C per hour)

Nonoperating: -40 to 65°C

Humidity:

Operating: 8 to 80% noncondensing

Nonoperating: 5 to 80% noncondensing

Shock:

Operating: 2 G @ 11 ms, half sine waveform

Nonoperating: 20 G @ 266 inch/sec velocity change, trapezoidal waveform; 40 inch/sec velocity change @ < 3 ms, half sine waveform

Vibration:

Operating: Random vibration with power spectral density (PSD) of 0.0001 g²/Hz from 5 to 350 Hz; -6 dB/octave from 350 to 500 Hz; PSD of 0.00005 g²/Hz at 500 Hz.

Nonoperating: Random vibration with power spectral density (PSD) of 0.015 g²/Hz from 5 to 100 Hz; -6 dB/octave from 100 to 137 Hz; PSD of 0.008 g²/Hz from 137 to 350 Hz; -6 dB/octave from 350 to 500 Hz; PSD of 0.0039 g²/Hz at 500 Hz.

Altitude:

Operating: Maximum 4,572 m (15,000 ft)*

Nonoperating: Maximum 15,240 m (50,000 ft)*

*Slew rate less than 5,000 ft/minute.

Acoustic Emissions:

Average sound pressure level ~ 41 dB(A)

Sound power level < 54 dB(A) 1 drive

57 dB(A) worst case (3 drives, each performing random seeks)

Physical Characteristics

Dimensions

Height: 132 mm (5.2 in.) with feet
129 mm (5.1 in.) without feet

Width: 325 mm (12.8 in.)

Depth: 554 mm (21.7 in.)

Weight

Net: 14.8 kg (32.7 lb) (1 disc mechanism)
3.6 kg (7.9 lb) (each additional mechanism)

Shipping: 19.1 kg (42.2 lb) (1 disc mechanism)

Ordering Information

The HP 7963B includes a 304 megabyte hard disc drive, integral controller, power supply and 1-metre HP-IB cable. Warranty is standard one-year return-to-HP.

Options Available

015 - Voltage selector switch is set for 230V operation for non-U.S.A. shipments.

550 - Deletes 1-metre HP-IB cable.

W03 - Converts one-year return-to-HP warranty to 90-day on-site warranty.

Upgrade Kits

HP 97963B 304 megabyte hard disc drive and integral controller for placement in original HP 7963B package. Includes internal cables, hardware and installation materials.

Options Available

W03 - Converts one-year return-to-HP warranty to 90-day on-site warranty.

D02 - Deletes HP installation.

Accessories

Available through the HP supply organization:

HP 19560B Rack slide kit for mounting into 19-inch EIA cabinet (HP 12679C rack rails required).

HP 92211R Mini-rack cabinet.

For more information, call your local HP sales office listed in your telephone directory or an HP regional office listed below for the location of your nearest sales office.

United States:

Hewlett-Packard Company
4 Choke Cherry Road
Rockville, MD 20850
(301) 670-4300

Hewlett-Packard Company
5201 Tollview Drive
Rolling Meadows, IL 60008
(312) 255-9800

Hewlett-Packard Company
5161 Lankershim Blvd.
No. Hollywood, CA 91601
(818) 505-5600

Hewlett-Packard Company
2000 South Park Place
Atlanta, GA 30339
(404) 955-1500

Canada:

Hewlett-Packard Ltd.
6877 Goreway Drive
Mississauga, Ontario L4V1M8
(416) 678-9430

Australia/New Zealand:

Hewlett-Packard Australia Ltd.
31-41 Joseph Street,
Blackburn, Victoria 3130
Melbourne, Australia
(03) 895-2895

Europe/Africa/Middle East:

Hewlett-Packard Company
Central Mailing Department
P.O. Box 999
1180 AZ Amstelveens
The Netherlands
(31) 20/5479999

Far East:

Hewlett-Packard Asia Ltd.
47/F China Resources Building
26 Harbour Road, Hong Kong
(5) 833-0833

Japan:

Yokogawa-Hewlett-Packard Ltd.
29-21, Takaide-Higashi 3-chome
Suginami-ku, Tokyo 168
(03) 331-6111

Latin America:

Hewlett-Packard de Mexico,
Sp.A. de C.V.
Monte Pelvux No. 111
Lomas de Chapultepec
11000 Mexico D.F., Mexico
(905) 596-7933

United Kingdom:

Hewlett-Packard Ltd.
Miller House—The Ring
Bracknell
Berkshire RG12 1XN, England
(4) 344/424898

Technical information in this document is subject to change without notice.

Copyright © 1988 Hewlett-Packard Co.

Printed in U.S.A. 0388
5953-3689

