# The HP Family of Personal Mass Storage Systems



**★Technical Data** October, 1983

Hewlett-Packard provides a family of low-cost, random access disc drives, designed to match the power of HP's wide range of computers and your varying application needs.

Featuring HP-IB\*\* interfacing, the HP Family of low-cost  $3\frac{1}{2}$ ",  $5\frac{1}{4}$ " and 8" flexible disc drives, and the  $5\frac{1}{4}$ " Winchester disc drives, provide fast random access to volumes of information on HP personal, desktop and micro-computers.

The range of disc drives covers the various price, capacity and performance needs of personal, heavy-usage and data exchange mass storage applications.

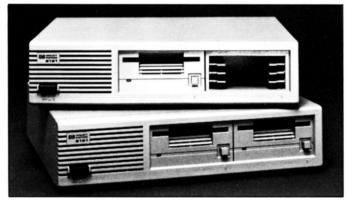
\*\*Hewlett-Packard Interface Bus

#### **MODULAR MASS STORAGE**

HP's modular mass storage systems are designed to efficiently use desk space by stacking them directly under HP's small footprint computer systems. When stacked the system looks like a totally integrated unit but allows you the flexibility to mix and match capacity and performance without losing the integrated look. All of the modular disc drives occupy only 1 square foot of desk space; about the same amount of space as an open looseleaf notebook.

#### 31/2" MICROFLOPPY DISC DRIVES

### 9121D DUAL-DRIVE—540 KBYTES FORMATTED 9121S SINGLE-DRIVE—270 KBYTES FORMATTED



For use with:

\*Personal Computers—Series 80, Series 100

\*Personal Technical Computers—Series 200 (9816, 9826, 9836)

\*Micro-computers—HP 1000 Series A&L

The 3½" microfloppy disc drives combine the speed of random access with low-cost, removable media in a compact package. These features are ideal for applications which require low-cost, reliable, on-line access, including small business and professional applications such as spread sheets, graphics presentations and word processing.

The 3½" microfloppy is available in both single and dual configurations; the 9121D provides you with 540 Kbytes of formatted capacity and the 9121S provides you with 270 Kbytes of formatted capacity. The micro-floppy rotates at 600 RPM and is capable of a sustained transfer rate of 17 Kbytes/sec (system dependent).

The 9121D/S offers a unique "Media Protection System" which includes a protective hard cover housing, an auto shutter contamination shield over the read/write gap, a hard centered disc for precise head placement, and a Media Monitor for tracking disc life.

The Media Monitor helps eliminate data loss by tracking the disc's age and telling you when to replace it.

#### 51/4" Winchester Disc Drives

9133 Combination Mass Storage System 9134 Winchester Stand-alone



9133V—4.8 Mbytes (formatted as one 4.8 Mbyte volume) plus a 3½" microfloppy with 270 Kbytes of removable storage.

For use with HP:

\*Personal Computers—HP 85B, 86, 87

\*Personal Technical Computers—Series 200(9816, 9826, 9836) (requires Basic Extensions 2.0 or Pascal 2.0)

9133V Opt. 004—4.6 Mbytes (formatted as four 1.15 Mbyte volumes) plus a 3½" microfloppy with 270 Kbytes of removable storage.

For use with HP:

\*Personal Computers—Series 80, Series 100

\*Personal Technical Computers—Series 200 (9816, 9826, 9836)

\*Micro-computers—HP 1000 Series A & L.

9133XV—14.5 Mbytes (formatted as one 14.5 Mbyte volume).plus a 3½" microfloppy with 270 Kbytes of removable storage.

For use with:

\*Personal Computers—HP 150\*

\*Personal Technical Computers—Series 200 (requires Pascal 2.0 or Basic Extensions 2.1 plus additional binary)

9134XV—14.5 Mbytes (formatted as one 14.5 Mbyte volume)

For use with HP:

\*Personal Computers—HP 150\*

\*Personal Technical Computers—Series 200 (requires Pascal 2.0 or Basic Extensions 2.1 plus additional binary)

\* U.S. only

The new Winchester Systems are HP's most recent addition to their Modular Mass Storage Family. They provide 4.8 Mbytes or 14.5 Mbytes of formatted capacity to HP computer systems, along with transfer rates of up to 50 Kbytes per second (computer dependent), a drive that is sealed from most contaminants and a product design that can survive noisy line voltages. In addition to business applications, the HP 5¼" Winchesters can satisfy the mass storage needs often found in manufacturing, production and other industrial applications. On-line, heavy usage applications need the high-speed transfer rates, fast random access and large capacities of the HP 5¼" Winchester Mass Storage Systems.

The 9133V and 9133XV combine the performance of the 5¼" Winchesters with a 3½" microfloppy. The Winchester provides high speed, large capacity, heavy usage while the microfloppy provides removable storage for loading operating systems, exchanging data among computers and selective file back-up.

The increased capacity of the 9133XV and 9134XV (stand-alone Winchester) allows you to keep entire software libraries resident on disc; this not only eliminates the time and trouble of re-loading often used programs but actually increases the speed with which most programs will run.

#### **OTHER WINCHESTER PRODUCTS**

#### 9133A Combination Mass Storage System 9134A Winchester



9133A—4.6 Mbytes (formatted as four 1.15 volumes) plus a 3½" microfloppy with 270 Kbytes of removable storage.

For use with HP:

- \*Personal Computers—Series 80, Series 100
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836)
- \*Micro-computers—HP 1000 Series A & L
- 9133A Opt. 010—4.8 Mbytes (formatted as one 4.8 Mbyte volume) plus a 3½" microfloppy with 270 Kbytes of removable storage.

For use with HP:

- \*Personal Computers—HP 85B, 86, 87
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836) (requires Basic Extensions 2.0 or Pascal 2.0)

9133B—9.6 Mbytes (formatted as one 9.6 Mbyte volume) plus a 3½" microfloppy with 270 Kbytes of removable storage.

For use with HP:

- \*Personal Computers—Series 80 (85B, 86A/B, 87), Series 100
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836) (requires Basic Extensions 2.0 or Pascal 2.0)
- 9134A—4.6 Mbytes (formatted as four 1.15 Mbytes volumes)

For use with HP:

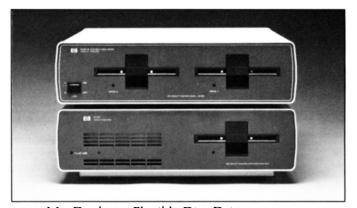
- \*Personal Computers—Series 80, Series 100
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836)
- \*Desktop Computers—9825T, 9835, 9845B/C
- \*Micro-computers—HP 1000 Series A & L
- 9134A Opt. 010—4.8 Mbytes (formatted as one 4.8 Mbyte volume)

For use with HP:

- \*Personal Computers—HP 85B, 86, 87
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836) (requires Basic Extensions 2.0 or Pascal 2.0)
- 9134B—9.6 Mbytes (formatted as one 9.6 Mbyte volume)
  - \*For use with HP:
  - \*Personal Computers—Series 80 (85B, 86A/B, 87), Series 100
  - \*Personal Technical Computers—Series 200 (9816, 9826, 9836) (requires Basic Extensions 2.0 or Pascal 2.0)

HP's existing line of 4.8 and 9.6 Mbyte Winchesters are also available. The 9134A/B Winchester Drives provide large capacity, high performance and heavy duty usage to the broad range of HP's Personal, Technical and Micro computers. The 9133A/B Mass Storage Systems combine the convenience of the microfloppy with the performance of the Winchester.

# PROGRAM & DATA INTERCHANGE 5¼" FLEXIBLE DISCS



82901M—Dual 51/4" Flexible Disc Drive, 540 Kbytes formatted

82902M—Single 5¼" Flexible Disc Drive,

270 Kbytes formatted

For use with HP:

- \*Personal Computers—Series 80, Series 100
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836)

9135A—4.6 Mbytes (formatted as four 1.15 Mbyte volumes) plus a 5¼" floppy with 270 Kbytes of removable storage.

For use with:

- \*Personal Computers—Series 80, Series 100
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836)

9135A Opt. 010—4.8 Mbytes (formatted as one 4.8 Mbyte volume) plus a 51/4" floppy with 270 Kbytes of removable storage.

For use with:

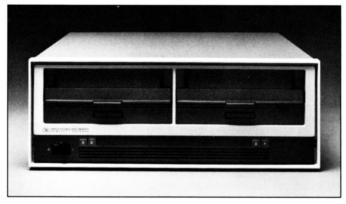
- \*Personal Computers—HP 86, 87
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836) (requires Basic Extensions 2.0 or Pascal 2.0)

The 82901M and 82902M, 5¼" mass memory unit is the answer for 5¼" HP format compatibility. The capacity is identical to the 9121, with the 82902M (single-drive) providing 270 Kbytes of storage and the 82901M (dual-drive) providing 540 Kbytes of storage.

The 9135A Combination Mass Storage Systems combine the high performance and large capacity of the 9134A Winchester with a  $5\frac{1}{4}$ " floppy to provide removable media that is compatible with other HP  $5\frac{1}{4}$ " floppy drives.

#### 8" FLEXIBLE DISCS

9895A DUAL-DRIVE, 2.3 MBYTES FORMATTED 9895A OPT. 010, SINGLE-DRIVE, 1.15 MBYTES FORMATTED



For use with HP:

- \*Personal Computers—Series 80, Series 100
- \*Personal Technical Computers—Series 200 (9816, 9826, 9836)
- \*Desktop Computers—9825T, 9835, 9845B/C
- \*Micro-computers—HP 1000 Series A,L,E,F

The HP 8" flexible disc drives, available in single and dual drives, provide 8" flexible disc media for large file back-up or data exchange, CP/M® standard software or other media-format specific needs.

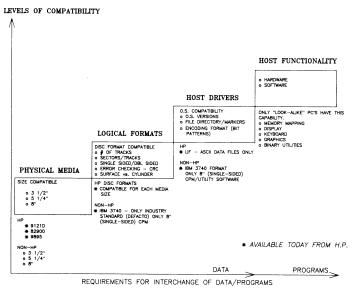
Data exchange with other HP and non-HP systems is possible through the 9895A as it can read and write industry-standard IBM 3740 single-sided, single-density format when used with the appropriate mainframe utility software.

® CP/M is a registered trademark of Digital Research Inc.

#### PROGRAM/DATA INTERCHANGE

#### **SYSTEM INTERCHANGE:**

The need to interchange programs and data between host computers (HP as well as non-HP) is growing. The following diagram illustrates the complexity of achieving levels of compatibility. Each block denotes a level of compatibility and is dependent on physical, logical, O.S. and functional constraints.



As you can see from this diagram, total compatibility is not likely because of vendors deliberately designing unique hardware features and/or O.S. implementation. Operating System compatibility can allow for simplicity in software conversion. Data exchange is also impossible unless vendors implement disc drives using the same logical formats. This has not happened in the 5¼" disc, therefore, there is no 5¼" universal or standard data interchange format.

#### SYSTEM/DISC CONFIGURATION GUIDE

COMPUTER SYSTEM		DISC DRIVE (Order from Distribution Center)				HOST	
Host	Disc Drive*	Maximum No. of Mass Storage Systems	Type of Interface	Cables Sent with Disc	Interface and/or Cable Required	ROM, Driver or System Required	Notes
Series 80, 9915	82901M 82902M 9121D/S 9133A <sup>1</sup>	2/HP-IB Interface	HP-IB	None	HP 83/85/86A; 82937 A HP-IB Interface	HP 83/85/9915; 00085-150001 Mass Storage ROM	HP 86/87 CP/M only supports 913XA or 9133V Opt. 004 Winchester.
	9134A <sup>1</sup> 9135A <sup>1</sup> 9895A 9133V <sup>1</sup> 9133B <sup>2</sup> 9134B <sup>2</sup>		111 -13	Noic	HP 87/86B: 45529 HP-IB cable (or 10833) (one HP-IB comes with each 86B and 87)	HP86A/87 require electronic disc ROM (pn 00087-15012) for 10 Mbyte support.	2. HP 85B/86B support 10 Mbyte.
Series 100	82901M 82902M 9121D/S 9133A'/B³ 9134A'/B³ 9135A 9895A 9133V' 9133XV² 9134XV²	2 Maximum	нр-ів	None	45229 HP-IB Cable (or 10833) Note: One HP-IB cable is sup- plied with Series 100.	In Operating System  Note: Winchesters supported only in Operating Systems supplied after 2/15/82; (A.01.20 or later).	These units are logically two mass storage devices; thus only one of them can be installed on each 120/125 computer.     HP 150 only, U.S. only.     Requires HP 120/125 OP SYS (A.02.00) and Boot ROM (P/N 1818-3221). The 5 Mb, 4 volume Winchester is better for most 120/125 applications.
1000's E,F Series	9895A	2/HP-IB Interface	HP-IB	None	12821A; HP-IB Cable included	Disc Driver: DVA 32 (included with: RTE-IVB, RTE-IVE, RTE-6VM)	
1000's A,L Series	9121D/S 9133A 9134A 9895A	2/HP-IB Interface	HP-IB	None	12009A; HP-IB Cable Included	Interface Driver ID.37 Device Driver DD.30 Included with: RTE-XL (L-Series) or RTE-A.1 (A-Series)	
3000 Series 30,44,64	9895A Opt. 010	1 Maximum	HP-IB	9895A Opt. 333 contains interface cable.	GIC	MPE	
9825 A/B/ or S	9885	1 Master/ Interface	9885; parallel	None	98032A Opt. 185	98217A ROM	9885M Opt. 025 contains the 98032A Opt. 185 Interface; order Mass Storage ROM separately.
9825T	9885M/S¹ 9134A 9895A	9885; 1 Master/ Interface All Others; 2/HP-IB Interface	9885; parallel All others; HP-IB	None	9885M; 98032A Opt. 185 All Others: 98034A Revised or later HP-IB In- terface. (98034A Revised card is not certified by FCC for Class A Regulations.)	98228A ROM	9885M Opt. 025 contains the 98032A Opt. 185 Interface. Order 98228A ROM separ ately.
Series 200	82901M 82902M	9885; 1 Master/ Interface	All others;		9885M; 98622A Opt. 002 Parallel I/O with cable.	9885M; Basic 2.0 Extensions, HPL 1.0. Pascal 1.0 or later versions. 9121D/S, 8290X, 9133A, 9133V Opt. 004, 9135A; Basic 1.0 with Enhancement Binary, HPL, Pascal	1. 9885M; 98620A DMA desirable
	9121D/S 9133A/B/V/XV 9134A/B/XV 9135A 9885M/S <sup>1</sup>	All Others; 2/HP-IB Interface	HP-IB	None	All Others; 10833 HP-IB Cable Note: Each Series 200 shipped with one HP-IB cable.	2.0 or later versions. 9134A, 9895A; same as above including Pascal 1.0. 9133B, 9134B, 913XA Opt. 010, 9133V; Basic Extensions 2.0, Pas- cal 2.0 or later versions.	CP/M68K only supports 913XA or 9133V Opt. 004 Winchesters.
	9895A		9885; parallel			9133XV, 9134XV; Pascal 2.0 or later versions, Basic Extensions 2.1 with additional binary driver. Note: When using Basic Extensions 2.0 or 2.1, the Series 200 works better with 768 Kbytes of RAM.	
9835A 9845B/C	9134A² 9885M/S¹ 9895A²	9885; 1 Master/ Interface	9885; parallel	None	9885M 9835; 98032 Opt. 385 9845; 98032 Opt. 486	9835; 98331B ROM	1. 9885M Opt. 035 contains the 98032A Opt. 385 Interface. Order 98338B ROM separately.
	82901 <sup>3</sup> 82902 <sup>3</sup> 9121S <sup>3</sup> 9121D <sup>3</sup> 9133A/B/V/XV <sup>3</sup>	All Others; 2/HP-IB Interface	HP-IB	140116	All Others; 98034A Revised or later HP-IB In- terface, (98034A Revised card is not certified by FCC for Class A Regulations.)	9845; 98413B/C ROM	9885M Opt. 045 contains the 98032A Opt. 485 Interface. Order 98413C ROM separ- ately.
	9134A/B/XV <sup>3</sup> 9135A <sup>3</sup>						9845/35 require a separate HP- Interface for each disc.     9845P/C cally using third party.
9000	8290X 9885M	2/HP-IB Interface	HP-IB	None	27110A One shipped with each Host	Drivers are in RAM Basic or HP-UX.	9845B/C only using third party ROM.      Cannot be system boot disc.

<sup>\*</sup>See numbered notes in far right column pertaining to each series of computers.

NOTE: The 9133A (4 volume) Winchester is functionally identical to 9133V Opt. 004 (4 volume) Winchester. The 9133A Opt. 010 (1 Volume) Winchester is functionally identical to the 9133V (1 volume) Winchester.

#### **Unit Specifications**

	9121S/D	9133V/XV	9134XV	9133A/B	9134A/B	82901M 82902M	9135A	9895A
Power Requirements Source (selected by rear panel switch)	86-127 Vac (115 Vac Line) 200-254 Vac (230 Vac Line)	90-125 Vac 180-250 Vac	90-125 Vac 180-250 Vac	100 Vac ± 10% 120 Vac ± 10% 220 Vac ± 10% 240 Vac ± 10%	100 Vac <sup>±</sup> 10% 120 Vac <sup>±</sup> 10% 220 Vac <sup>±</sup> 10% 240 Vac <sup>±</sup> 10%	90-127 Vac (115 Vac Line) 200-254 Vac (230 Vac Line)	100 Vac ± 10% 120 Vac ± 10% 220 Vac ± 10% 240 Vac ± 10%	100 Vac <sup>±</sup> 10% 120 Vac <sup>±</sup> 10% 220 Vac <sup>±</sup> 10% 240 Vac <sup>±</sup> 10%
Line Frequency (±2%)	48-66 Hz	48-66 Hz	48-66 Hz	48-66 Hz	48-66 Hz	48-66 Hz	48-66 Hz	50/60 Hz <sup>+</sup> 2%
Power Consumption (max)	67W (9121D)	125W	125W	140W	140W	80W (82901M) 55W (82902M)	140W	180W (dual) 130W (single)
<b>Environmental Range</b> Operating Temperature	10° to 45° C (41° to 113° F)	10° to 40° C	10° to 40° C	10° to 40° C (50° to 104° F)	10° to 40° C (50° to 104° F)	10° to 40° C (50° to 104° F)	10° to 40° C (50° to 104° F)	10° to 40° C (50° to 104° F)
Storage Temperature	-40° to 60° C (-40° to 140° F)	-40° to 60 C	-40° to 60° C	-40° to 60° C (-40° to 140° F)	-40° to 60° C (-40° to 140° F)	-40° to 60° C (-40° to 140° F)	-40° to 60° C (-40° to 140° F)	-40° to 60° C (-40° to 140° F)
Operating Humidity (non- condensing) 25.5 maximum wet bulb temperature	20% to 80%	20% to 80%	8% to 80%	20% to 80%	8% to 80%	20% to 80%	20% to 80%	20% to 80%
Storage Humidity (non-condensing)	5% to 95%	5% to 95%	5% to 95%	5% to 95%	5% to 95%	5% to 95%	5% to 95%	8% to 80%
Operating Altitude	0 to 4572 m 0 to 15000 ft	0 to 4572m 0 to 15000 ft	0 to 4572m 0 to 15000 ft	0 to 4572m 0 to 15000 ft	0 to 4572m 0 to 15000 ft	-304 to 4572m -1000 to 15000 ft	0 to 4572m 0 to 15000 ft	0 to 4572m 0 to 15000 ft
Storage Altitude	-304 to 15240m -1000 to 50000 ft	-304 to 15240m -1000 to 50000 ft	-304 to 15240m -1000 to 50000 ft	-304 to 15240m -1000 to 50000 ft	-304 to 15240m -1000 to 50000 ft	-304 to 15240m -1000 to 50000 ft	-304 to 15240m -1000 to 50000 ft	-304 to 15240m -1000 to 50000 ft
Size/Weight Height Width dual single	76mm (2.99 in) 325mm (12.8 in) 325mm (12.8 in)	125mm (5.0 in) 325mm (12.8 in)	125mm (5.0 in) 325mm (12.8 in)	130mm (5.1 in) 424mm (16.7 in)	130mm (5.1 in) 424mm (16.7 in)	109mm (4.31 in) 425mm (16.75 in) 279mm (11 in)	130mm (5.1 in) 424mm (16.7 in)	193mm (7.6 in) 483mm (19 in) 483mm (19 in)
Depth Net Weight dual single	285mm (11.2 in) 4.5 kg (10 lbs) 3.8 kg (8.4 lbs)	285mm (11.4 in) 9.9kg (22 lbs)	285mm (11.4 in) 8.6 kg (19 lbs)	475mm (18.7 in) 14.5 kg (32 lbs)	475mm (18.7 in) 13.4 kg (29.5 lbs)	9.07 kg (20 lbs) 7.71 kg (17 lbs)	475mm (18.7 in) 15.5 kg (34.1 lbs)	574mm (22.6 in) 28.8 kg (59 lbs) 20.9 kg (46 lbs)
Shipping Weight dual single	7.7 kg (17lbs) 6.9 kg (15.4 lbs)	13.1 kg (29 lbs)	11.8 kg (26 lbs)	21.3 kg (47 lbs)	19.9 kg (44 lbs)	12.7 kg (28 lbs) 9.98 kg (22 lbs)	20.8 kg (46 lbs)	31.8 kg (70 lbs) 25.9 kg (57 lbs)

#### **Drive Specifications**

	3½" Flexible Discs	5¼" Flexible Discs	8" Flexible Discs	5 Mbyte Winchester	10 Mbyte Winchester	15 Mbyte Winchester
Technical	9121D, 9121S 9133A/B	82901M,82902M 9130A,9135A	9895A	9134A,9135A 9133A/V	9133B,9134B	9133XV,9134XV
Formatted Capacity:	540K (dual)	540K (dual)	2.3M (dual)	4.6M	9.68M	14.5M
Bytes per Unit	270K (single)	270K (single)	1.15M (single)	4.8M (Opt. 010)	9.68M	14.5M
Bytes per Sector	256	256	256	256	256	256
Sectors per Track	16	16	30	30 (31 for Opt. 010)	31	31
Tracks per Surface	66	33	75	305 (152 for Opt. 010)	305	305
Recording Surfaces/disc	1	2	2	2	2 (4 surfaces per unit)	2 (6 surfaces)
Tracks per Inch	135/in	48/in	48/in	345/in	345/in	345/in
Recording Format	dbl density	dbl density	dbl density			and a second
Max Sustained Transfer Rate*	17.5 kb/sec	6.8 kb/sec	25.6 kb/sec	50 kb/sec	50 kb/sec	50 kb/sec
Average Access Time	415msec (on) 1415msec (off)	187msec (on) 435msec (off)	179msec (on)	85msec	85msec	85msec
Rotational Speed	600 rpm	300 rpm	360 rpm	3600 rpm	3600 rpm	3600 rpm
Media Part Number (10 pack)	92191A	HP 92190A	HP 92195A			

<sup>\*</sup>Mainframe dependent: These specifications are actual user data transfer rates that have been achieved in testing. For comparison to other manufacturers specifications, the following mechanism specifications are provided: 3\%"-500 kbit/sec; 5\%"-250 kbit/sec; 5\%" Winchester-5 Mbits/sec.

## **Ordering Information**

3½" FLEXIBLE DISCS	8" FLEXIBLE DISCS					
Dual-Drive Master, 540K bytes formatted9121DSingle-Drive Master, 270K bytes formatted9121SMedia, HP92191A, Box of 10 discs	Dual Disc Drive Master (with Control Board), 2.3M bytes formatted 9895A Must order appropriate option below for use with the following mainframes:					
Accessories Supplied	HP 9835A/B Opt.035					
9121D, 9121S Power cord, operator's manual, two fuses, two flexible discs.	HP 9845B/C Opt. 045 HP 3000 (30,33,40,44,64) Opt. 333					
51/4" WINCHESTER DISCS	Single Disc Drive Master (with Control Board), 1.15M bytes formatted					
4.6 Mbyte formatted Winchester (4-1.15 Mbyte volumes)						
9.6 Mbyte formatted Winchester (1-9.6 Mbyte volume) 9134B						
14.5 Mbyte formatted Winchester (1-14.5 Mbyte volume)						
9134XV	System Software					
4.6 Mbyte formatted Winchester (4-1.15 Mbyte volumes) with 3½" Microfloppy Combination 9133AV Opt. 004 1-4.8 Mbyte volume on Winchester	Utility Software for IBM 3740 Format data exchange with HP mainframes:  9835/9895					
9.6 Mbyte formatted Winchester (1-9.6 Mbyte volume) with 3½" Microfloppy Combination 9133B	HP 85/9895 Opt. 185					
14.5 Mbyte formatted Winchester (1-14.5 Mbyte volume) with 3½" Microfloppy Combination 9133XV	Accessories Supplied Power Cord (1) depends on origin of sale					
4.6 Mbyte formatted Winchester with 5¼" Flexible Disc Drive Combination	Users Manual (1)					
Accessories Supplied	Accessories Available					
9133A/B/V/XV, 9134A/B/XV, 9135A	HP-IB Interface Cable 2 m (1)					
Power cord, operator's manual, two fuses. 9133A/B/V/XV, 9135A	Drive Accessory (to upgrade a 1 drive unit to a 2 drive unit) 60Hz ††					
One flexible disc per drive.						
Accessories Available	Rack Mount Kit ‡ 09895-8802					
Rack Mount (9133A/B, 9134A/B, 9135A) ‡	Disc Kit containing 10 double-sided, double-density flexible discs 92195					
5¼" FLEXIBLE DISCS	†† In order to insure proper operating performance, these kits should be installed by a Hewlett-Packard Customer Engineer. For installation by					
Dual-Drive Master, 540K bytes formatted 82901M Single-Drive Master, 270K bytes formatted 82902M Media, HP 92190A, Box of 10 discs	<ul> <li>HP specify Opt. 101.</li> <li>For mounting in most HP rack systems also order 30" racking support rails—12679B. These rackmounts contain only front mounting hardware. Additional structural support is required.</li> </ul>					
Accessories Supplied						
82901M, 82902M	Purchase Plans					
Power cord, one flexible disc per drive, operator's manual, two fuses.	Contact one of the Hewlett-Packard worldwide sales and service offices for specific prices and plans in your area.					
Accessories Available						

 Padded Carrying Case
 1540-0685

 Rack Mount (82901M) ‡
 88136F

#### Warranty & Service

HP peripheral disc products are warranted against defects in material and workmanship for 90 days following date of delivery. HP will repair or replace products which prove to be defective during the warranty period either on-site or at the service center, depending on the computer system with which the product was sold. A copy of the complete warranty statement is available upon request.

HP offers complete service and maintenance worldwide. Maintenance agreements are available for all HP peripheral products. Advantages of these agreements to the customer include a fixed annual cost, individualized cost-effective contracts, a choice of response time, and the option of either on-site or service center repair. Currrent U.S. rates can be determined by contacting your local HP Sales Office.

The selection and use of media, supplies and consumables is the customer's responsibility. Hewlett Packard reserves the right to exclude from this agreement any repairs for damage to HP products which HP reasonably determines or believes was caused by use of non-HP media. Hewlett Packard will, upon request, repair such damage on a time and material basis.

\* The information and specification presented in this data sheet are subject to change without notice.

For assistance call the HP regional office nearest you: Eastern 301/258-2000, Midwest 312/255-9800, Southern 404/955-1500, Western 213/506-3700, Canadian 416/678-9430. Or write to Hewlett-Packard, 700 71st Ave., Greeley, Colorado 80634; in Europe, Hewlett-Packard, S.A., P.O. Box, 150, Route Du Nant D'Avril, CH-1217, MEYRIN 2 (Geneva) Switzerland; elsewhere in the world, Hewlett-Packard Intercontinental, 3495 Deer Creek Road, Palo Alto, California 94304.

