

# The HP Mass Storage Family of Low-Cost Disc Drives

 HEWLETT  
PACKARD



★TECHNICAL DATA JANUARY, 1982



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.

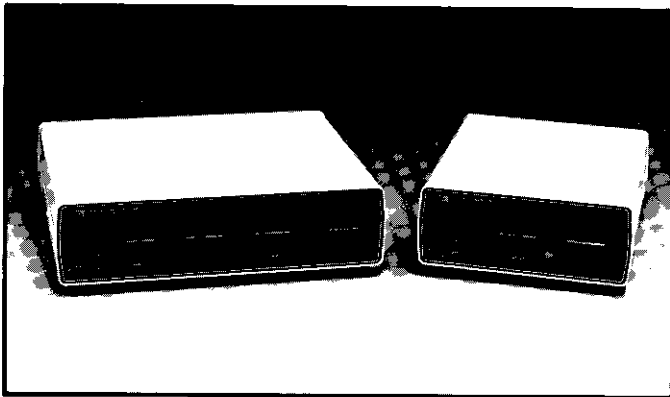
Featuring HP-IB\*\* interfacing, the HP Family of low-cost 5¼" and 8" flexible disc drives, and the 5¼" Winchester disc drives, provide fast random access to volumes of information on HP personal, desktop and micro-computers.

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

\*\* Hewlett-Packard Interface Bus: Not just IEEE-488, but the hardware, documentation and support that delivers the shortest path to a computer system.

## ENTRY-LEVEL

### 5¼" Flexible Disc Drives



**82901M DUAL-DRIVE, 540K BYTES**  
**82902M SINGLE-DRIVE, 270K BYTES**

For use with HP:

\* Personal Computers — HP 125, Series 80

The 5¼" flexible disc drives offer an entry-level solution with the single-drive providing 270K bytes and the dual-drive 540K bytes storage.

Flexible disc drives combine the speed of random access with low-cost, removable media. These features are ideal for applications which require low-cost, reliable, on-line access, including small business and professional applications such as VisiCalc™, Graphics Presentations or word processing.

These HP 5¼" drives read and write double-sided, double-density format, and provide 187 ms average access time.

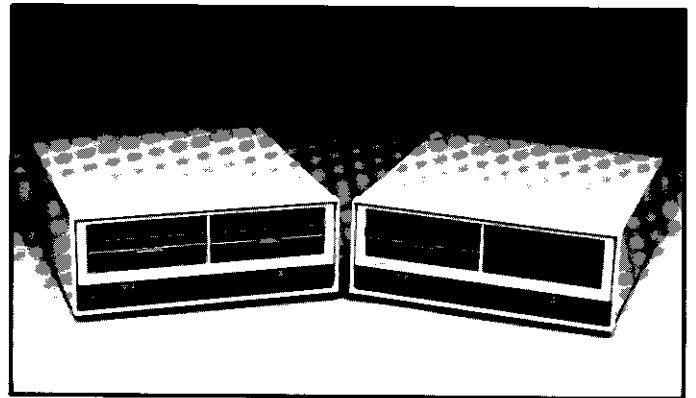
The 82901M dual-drive configuration provides vital back-up of critical data all in the same unit so you can easily copy discs without the expense of an additional back-up device.

HP provides a convenient source of approved, qualified media to bring out the best, most reliable performance in these HP disc drives.

™ VisiCalc™ is a trademark of Personal Software Inc.

## DATA EXCHANGE

### 8" Flexible Disc Drives



**9895A DUAL-DRIVE, 2.3M BYTES**  
**9895A OPT. 010, SINGLE-DRIVE, 1.15M BYTES**

For use with HP:

\* Personal Computers — HP 125, Series 80  
\* Desktop Computers — HP 9826, 9836, 9835, 9845B/C  
\* Micro-Computers — HP 1000 Series  
\* Business Computers — HP 3000

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.

The 9895A dual-drive provides 2.3M bytes of removable mass storage plus back-up capability all in the same unit. The single-drive, 9895A Opt. 010, is available with 1.15M byte capacity.

The 9895A reads and writes double-sided, double-density format on HP-qualified media. Fast access of 179 ms and transfer speeds up to 25K bytes/sec improve system performance in most applications.

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 for those mainframes with IBM utility software.

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

# Specifications



Specifications	5¼" Flexible Disc	8" Flexible Disc	5¼" Winchester	9135A Winchester/5¼" Flexible Disc		9138A Winchester/8" Flexible Disc	
	82901M Dual-Drive/ 82902M Single-Drive	9895A Dual Drive/ 9895A Opt. 010 Single-Drive	9134A	Combination Storage Unit 5¼" Winchester 5¼" Flexible Disc		Bundled Units 8" Single-Drive Flexible Disc	
<b>TECHNICAL</b>							
Formatted Capacity:	540K (dual)	2.3M (dual)					
Bytes per unit	270K (single)	1.15M (single)	4.6M	4.6M	270K Single	4.6M	1.15M (single)
Bytes per record	256	256	256	256	256	256	256
Records per track	16	30	30	30	16	30	30
Tracks per cylinder	2	2	4	4	2	4	2
Disc Transfer Rate	6.8K bytes/sec	25.6K bytes/sec	46K bytes/sec	46K bytes/sec	6.8K bytes/sec	46K bytes/sec	25.6K bytes/sec
Disc Access Time (cylinder to cylinder)	5 msec/cyl	3 msec/cyl	3 msec/cyl	3 msec/cyl	5 msec/cyl	3 msec/cyl	3 msec/cyl
Average Access Time	187 msec (motor on) 435 msec (motor off)	179 msec	173 msec	173 msec	187 msec (motor on) 435 msec (motor off)	173 msec	179 msec
within one volume			60 msec	60 msec		60 msec	
Unformatted Capacity	420K bytes (single)	1.6M bytes (single)	6.38M bytes	6.38M bytes	420K bytes	6.38M bytes	1.6M bytes
Rotational Speed	300 rpm	360 rpm	3600 rpm	3600 rpm	300 rpm	3600 rpm	360 rpm
Track Density	48/in	48/in	255/in	255/in	48/in	255/in	48/in
Tracks/Surface (after sparing)	33	75	150	150	33	150	75
Read/Write Heads	2/drive	2/drive	4/drive	4/drive	2/drive	4/drive	2/drive
Recording Surfaces	2	2	4	4	2	4	2
Recording Format	double-density	double-density	—	—	double-density	—	double-density
Media Part No.	HP 92190A	HP 92195A	—	—	HP 92190A	—	HP 92195A
<b>POWER REQUIREMENTS</b>							
Source (selected by rear panel switch)	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 ± 10% 120 Vac ± 10% 220 Vac ± 10% 240 Vac ± 10%	100 Vac ± 10% 120 Vac ± 10% 220 Vac ± 10% 240 vac ± 10%	100 Vac ± 10% 120 Vac ± 10% 220 Vac ± 10% 240 Vac ± 10%	100 Vac ± 10% 120 Vac ± 10% 220 Vac ± 10% 240 Vac ± 10%	100 Vac ± 10% 120 Vac ± 10% 220 Vac ± 10% 240 Vac ± 10%
Line Frequency (± 2%)	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz
Power Consumption (max)	80W (82901M) 55W (82902M)	180W (dual) 130W (single)	140W	140W	140W	140W	130W
<b>ENVIRONMENTAL RANGE</b>							
Operating Temp.	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)	10° to 40° C (50° to 104° F)	10° to 40° C (50° to 104° F)
Storage Temperature	-40° to 60° C (-40° to 158° F)	-40° to 60° C (-40° F to 140° F)	-40° to 60° C (-40° F to 140° F)	-40° to 60° C (-40° F to 140° F)	-40° to 60° C (-40° F to 140° F)	-40° to 60° C (-40° F to 140° F)	-40° to 60° C (-40° F to 140° F)
Operating Humidity (non-condensing) 25.5 C maximum wet bulb temperature	20% to 80%	20% to 80%	8% to 80%	20% to 80%	20% to 80%	8% to 80%	20% to 80%
Storage Humidity (non-condensing)	5% to 95%	8% to 80%	5% to 95%	5% to 95%	5% to 95%	5% to 95%	8% to 80%
Recommended Attitude	None	Horizontal	None	None	None	None	Horizontal
Operating Altitude	-300 to 4600 m; -1000 to 15,000 ft	0 to 4,752 m; 0 to 15,000 ft	-300 to -15,240 m; -1000 to 50,000 ft	-300 to -15,240 m; -1000 to 50,000 ft	-300 to 15,240 m; -1000 to 50,000 ft	-300 to 15,240 m; -1000 to 50,000 ft	0 to 4,752 m; 0 to 15,000 ft
Storage Altitude	-300 to 15,200 m; -1000 to 50,000 ft	-304.8 to 15,240 m; -1000 to 50,000 ft	—	—	—	—	-304.8 to 15,240 m; -1000 to 50,000 ft
<b>SIZE/WEIGHT</b>							
Height	109 mm (4.31 in)	192 mm (7.6 in)	130 mm (5.1 in)	130 mm (5.1 in)	130 mm (5.1 in)	130 mm (5.1 in)	192 mm (7.6 in)
Width			425 mm (16.7 in)	425 mm (16.7 in)	425 mm (16.7 in)	425 mm (16.7 in)	
dual	425 mm (16.75 in)	483 mm (19 in)					
single	275 mm (11 in)	483 mm (19 in)					
Depth	374 mm (14.74 in)	575 mm (22.6 in)	476 mm (18.7 in)	476 mm (18.7 in)	476 mm (18.7 in)	476 mm (18.7 in)	483 mm (19 in)
Net Weight			13.4kg (29.5 lbs)	13.4kg (29.5 lbs)	13.4kg (29.5 lbs)	13.4kg (29.5 lbs)	575 mm (22.6 in)
dual	9.07kg (20 lbs)	26.8kg (59 lbs)					
single	7.71kg (17 lbs)	20.9kg (46 lbs)					
Shipping Weight			18kg (39.6 lbs)	18kg (39.6 lbs)	18kg (39.6 lbs)	18kg (39.6 lbs)	20.9kg (46 lbs)
dual	13.61kg (30 lbs)	31.8kg (70 lbs)					
single	9.98kg (22 lbs)	25.9kg (57 lbs)					25.9kg (57 lbs)

## HP Mainframes Support Table

	82902M	82901M	9895A	9134A	9135A	9138A
	5¼" Single-Drive	5¼" Dual-Drive	8" Drive	5¼" Winchester	5¼" Winchester & 5¼" Flexible Disc	5¼" Winchester & 8" Flexible Disc Separate Units
<b>HP 125</b> Driver	In Operating System Note: Winchesters supported only on Operating Systems supplied after 2/15/82.					
Interface	45529A HP-IB Cable Note: One HP-IB cable is supplied with the 45500 CPU.					
<b>SERIES 80</b> ROM	HP 85/83 00085-15001 HP 87 In Operating System					
Interface	HP 85/83 82937A HP 45529A HP-IB Cable					
<b>9826</b> ROM	In Operating System Note: OP system supplied before 1/82 require the Basic Enhancement Binary to operate discs in BASIC.					
Interface	10833A HP-IB Cable Note: One 10833A HP-IB cable is shipped with the 9826A.					
<b>9836</b> ROM	In Operating System					
Interface	10833A HP-IB Cable					
<b>9835*</b> ROM	—	—	98331B	98331B	—	98331B
Interface	—	—	98034A Revised	98034A Revised	—	98034A Revised
<b>9845B/C*</b> ROM	—	—	98413B	98413B	—	98413B
Interface	—	—	98034A Revised	98034A Revised	—	98034A Revised
<b>1000 MODEL 5†</b> Interface Driver	—	—	id.37	id.37	—	id.37
Disc Driver	—	—	DD•30	DD•30	—	DD•30
Interface Card	—	—	HP-IB	HP-IB	—	HP-IB

\*Note: The 9835 and 9845B/C require that a separate HP-IB Interface be used with HP-IB discs drives.

†Note: RTE-XL operating system.

## HEAVY-USAGE

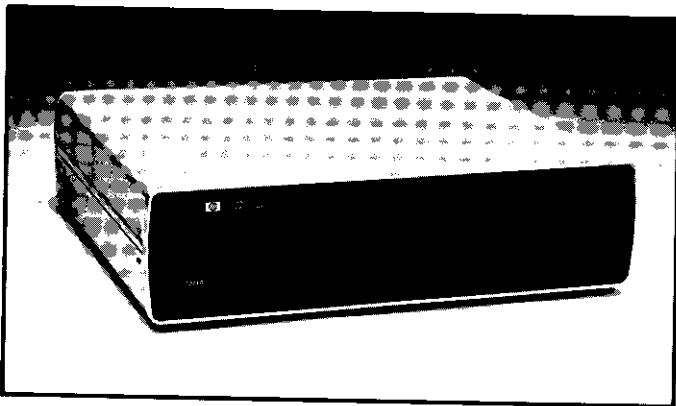
### 5¼" Winchester Disc Drives

On-line, heavy-usage applications are covered by the high-speed and large storage capacity of the HP 5¼" Winchester disc drives.

There are three models to choose from depending on your application needs: the Winchester alone; the combination Winchester/5¼" flexible disc drive; and the Winchester with a separate 8" flexible disc single drive.

The Winchesters offer 4.6 million bytes of formatted capacity and high-speed transfer rate of 46,000 bytes per second, plus a sealed, protected drive to satisfy stringent mass storage needs often found in manufacturing, production and lab environments.

The controller of the HP Winchester drive emulates an HP 9895A 8" Flexible Disc Master with three slaves so the several Mass Storage ROMs that support the 9895A can also drive the Winchester. Thus, all software currently using the HP 9895A 8" Flexible Disc Drive can be used on the Winchester without any change.



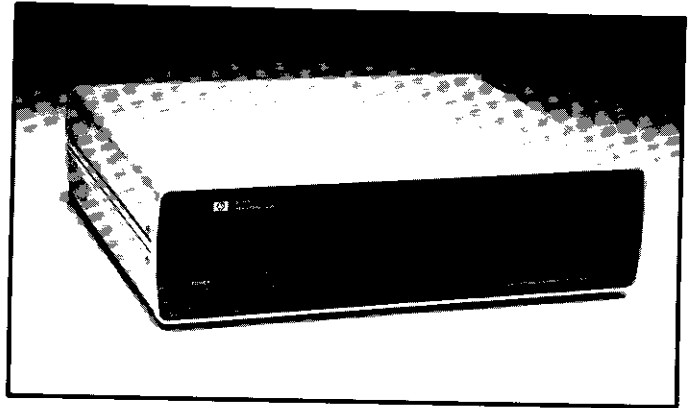
**9134A WINCHESTER, 4.6M BYTES**

For use with HP:

- \* Desktop Computers — HP 9826, 9836, 9835, 9845B/C
- \* Micro-Computers — HP 1000 "L" Series

The 9134A 5¼" Winchester Disc Drive adds 4.6M byte capacity, fast 60 ms average access time, and high-speed 46K byte/sec transfer rate to the HP line of high-powered desktop and micro-computers.

The built-in tape or flexible disc drive capability of the host computers are used for back-up when teamed with the 9134A Winchester.

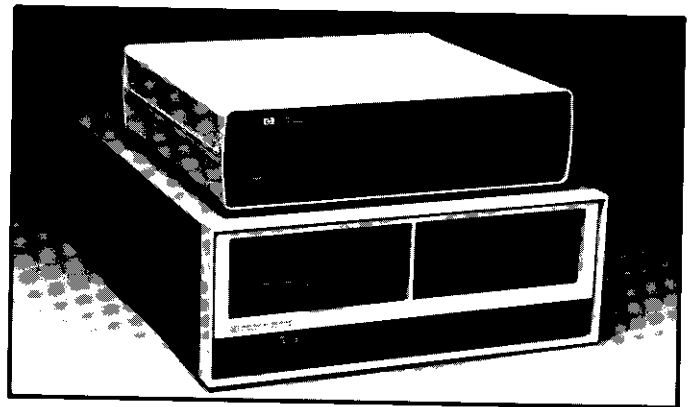


**9135A COMBINATION STORAGE UNIT**

For use with HP:

- \* Personal Computers — HP 125 and Series 80

The 9135A combination mass storage unit includes the 4.6M byte Winchester for heavy-duty usage, combined with the 5¼", 270K byte, flexible disc drive for back-up. This combination unit provides the high-speed, large capacity of the Winchester, plus the benefits of removable flexible disc media and back-up capability all in the same unit.



**9138A MASS STORAGE BUNDLED UNITS**

For use with HP:

- \* Personal Computers — HP 125, Series 80
- \* Desktop Computers — HP 9826, 9836, 9835, 9845B/C
- \* Micro-Computers — HP 1000 "L" Series

The 9134A 5¼" Winchester and single-drive 9895A, Opt. 010, Flexible Disc can be purchased together as the HP 9138A.

Together these two products provide the capacity and speed of the heavy-duty Winchester, plus the data exchange and large file back-up capability of the 8" flexible disc drive.



# Ordering Information

## 5¼" FLEXIBLE DISCS

Dual-Drive Master, 540K bytes ..... 82901M  
 Single-Drive Master, 270K bytes ..... 82902M  
 Media, HP-qualified ..... 92190A, Box of 10 discs

### Accessories Supplied

82901M, 82902M  
 Power cord, one flexible disc per drive, operator's manual,  
 two fuses.

### Accessories Available

Padded Carrying Case ..... 1540-0685

## 5¼" WINCHESTER DISCS

4.6M byte Winchester ..... 9134A  
 4.6M byte Winchester with 5¼" Flexible Disc Drive  
 Combination ..... 9135A  
 4.6M byte Winchester and single-drive 8" flexible disc as  
 separate units bundled together (60 Hz) ..... 9138A  
 50 Hz Line Frequency ..... Opt. 001  
 Rack Mount (eliminates outer case on  
 9895A, Opt. 010, only for mounting) ..... Opt. 002  
 Media (20 8" double-sided flexible discs) ..... Opt. 068  
 (For mounting in HP rack systems also order 30" racking  
 support rails — 12679B)

## 8" FLEXIBLE DISCS

Dual Disc Drive Master  
 (with Control Board), 2.3M bytes ..... 9895A  
 Must order appropriate option below for  
 use with the following mainframes:

HP 9825T	Opt. 025
HP 9826A	Opt. 026
HP 9835A/B	Opt. 035
HP 9845B/C	Opt. 045
HP 85	Opt. 085
HP 1000 (E, F&L)	Opt. 100
HP 125	Opt. 125
HP 3000 (30,33,44)	Opt. 333

Single Disc Drive Master  
 (with Control Board), 1.15M bytes ..... 9895A, Opt. 010  
 (Must order appropriate Mainframe Option above.)  
 50 Hz Line Frequency ..... Opt. 001  
 Rack Mount (eliminates outer case) ..... Opt. 002  
 (for mounting on HP rack systems, also  
 order 30" racking support rails) ..... 12679B  
 Media (20 8" double-sided flexible discs) ..... Opt. 068  
 System Software

Utility Software for IBM 3740 Format  
 data exchange with HP mainframes:

9835/9895	Opt. 135
9845/9895	Opt. 145
HP 85/9895	Opt. 185

## Accessories Supplied

Power Cord (1) ..... depends on origin of sale  
 Users Manual (1) ..... 09895-90000  
 Flexible Disc (2)  
 (1 ea — 9895A Opt. 010) see accessories available  
 Disc Protector Card (2)  
 (1 ea — 9895A Opt. 010) ..... 09895-90010

## Accessories Available

HP-IB Interface Cable 2 m (1) ..... 8120-2718  
 Drive Accessory (to upgrade a 1 drive  
 unit to a 2 drive unit) 60Hz †† ..... 98952A  
 Drive Accessory (to upgrade a 1 drive  
 unit to a 2 drive unit) 50Hz †† ..... 98952A Opt. 001  
 Rack Mount Kit ..... 09895-88022  
 (For mounting in HP rack systems also order 30" racking  
 support rails — 12679B)

Disc Kit containing 10 double-sided, double-density flexible  
 discs ..... 92195A

## Purchase Plans

Contact one of the Hewlett-Packard worldwide sales and  
 service offices for specific prices and plans in your area.

## 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. Current U.S. rates can be  
 determined by contacting your local HP Sales Office.

†† In order to insure proper operating performance, these kits should  
 be installed by a Hewlett-Packard Customer Engineer. For installation  
 by HP specify Opt. 101.

\* 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 213/877-1282, Canadian  
 416/678-9430. Or write to Hewlett-Packard 3404 East Harmony Road, Fort Col-  
 lins, Colorado 80525; in Europe, Hewlett-Packard, S.A. 7, Rue Du Bois-Du-Lan,  
 P.O. Box CH-1217 MEYRIN 2 (Geneva) Switzerland; elsewhere in the world,  
 Hewlett-Packard Intercontinental, 3495 Deer Creek Road, Palo Alto, California  
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