

780 MByte 5¼" Full-Height High Performance Disk Drives

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9780

- Vertically split, clamshell HDA
- Superior thermal, shock, and vibration performance
- ESDI, SCSI, and Custom interfaces
- 17 msec. average access time
- Balanced rotary voice coil actuator
- Hybrid Servo Positioning System
- Designed for automated robotic assembly
- Single surface mount PCBA electronics
- MTBF 50,000 POH

MiniScribe continues its high capacity, high performance family with the next member of the 9000 Series — the 9780 full-height rigid Winchester disk drive with an unformatted capacity of 795 MBytes. This uniquely designed 5¼-inch full-height drive represents the latest in MiniScribe's integration of state-of-the-art disk technology and automated manufacturing.

The distinguishing feature of MiniScribe's 9780 is the vertically split, clamshell HDA. This design allows for a stationary shaft actuator that supports up to 15 mini-composite data heads and an in-hub spindle motor supporting up to 8 sputtered disks. A Hybrid Servo Positioning System, which uses a dedicated center servo as well as embedded servo bursts that can be customer formatted at the head of each sector, allows the 9780 to further compensate for environmental elements. Sectors can be user defined to be between 256 and 4096 bytes, in one byte increments. This implementation gives the 9780 the ultimate in flexibility and performance, while maintaining data integrity with superior thermal, shock, and vibration characteristics.

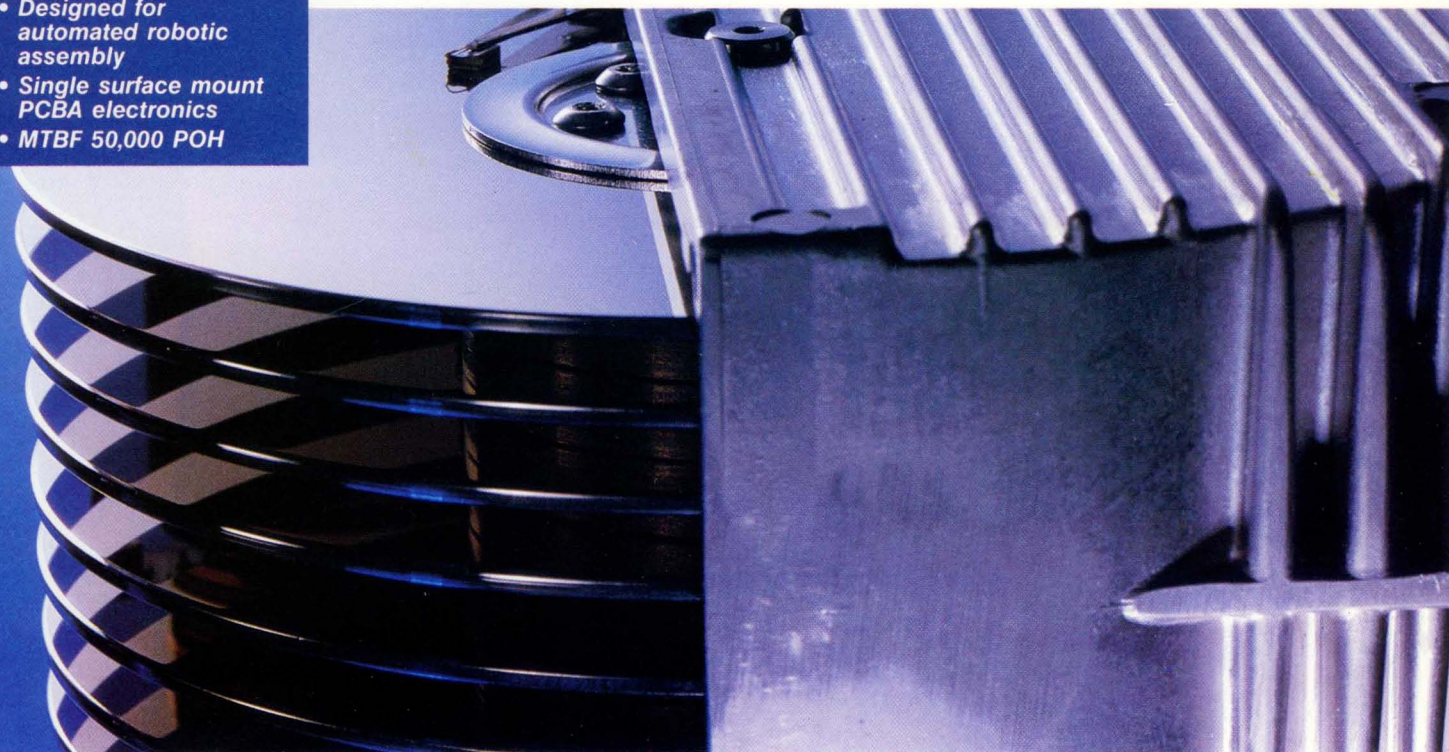
One of the fastest access times in the industry — 17 msec — is achieved through a rotary voice coil actuator. The low inertia of the actuator allows for fast access speeds

while having low power requirements.

The 9780 is available in three versions utilizing two industry standard interfaces. The two SCSI alternatives employ an embedded SCSI controller which supports all the required commands and optional commands in the Common Command Set (CCS). The 9780SE supports SCSI applications that require a single ended device, while the 9780SD covers those that need a differential unit. The 9780E is available with an ESDI interface which supports the industry-standard ESDI Command Set.

The 9780 is designed for automated robotic assembly for high quality and consistent yields. The drive thus contains fewer parts resulting in greater reliability. Automated assembly also allows for easy expansion of production simply through duplication of assembly lines.

The 9780 Series represents MiniScribe's ongoing dedication to providing a full range of high quality data storage solutions on the leading edge of technology. MiniScribe produces a complete line of 3½-inch and 5¼-inch Winchester disk drives which begins at 20 MBytes formatted, extends to high capacity/high performance models, and includes a variety of standard, intelligent and custom interfaces.



 **MiniScribe**
Solutions for Data Storage

9780 5 1/4" Full Height Winchester Disk Drive Specifications

9780

Capacity Unformatted

Per Drive (MBytes)	781
Per Track (Bytes)	31,906

Typical Formatted Capacities

Formatted Capacity (ESDI)	676MB
Sector Size (Bytes)	512
Sectors/Track	53
Number of Cylinders	1661
Formatted Capacity (SCSI)	668MB
Sector Size (Bytes)	1024
Sectors/Track	27
Number of Cylinders	1661

Functional

Disks	8
Recording Heads	15
Total Cylinders	1661
Data Tracks	24,915
Track Density (tpi)	1,495
Recording Density (bpi)	31,241
Data Encoding Method	1,7 RLL
Rotational Speed (RPM)	3,600

Data Transfer Rate

(Mbits per second)	15
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Access Time

(including settling)	
Average (msec.)	17
Track-to-track (msec.)	4.5
Maximum (msec.)	38
Latency (average, msec.)	8.33

Interface

ESDI	
SCSI, Single-Ended	
SCSI, Differential	
CUSTOM	

Reliability

MTBF	50,000 hrs.
PM	None
MTTR	30 minutes
Component Design Life	5 years

Error Rates

Soft Read Errors	1 per 10 ¹⁰ bits read
Hard Read Errors	1 per 10 ¹² bits read
Seek Errors	1 per 10 ⁶ seeks

DC Power Requirements

+ 5 VDC ±5%	.6 amps typical
+12 VDC ±5%	2.1 amps typical
	4.8 amps peak
Max. Starting (15 sec.)	4.0 amps

Power Dissipation

Idle	18 watts typical
Seeking	22 watts typical

Environmental Limits

Ambient Temperatures	
Operating	10°C to 50°C (50°F to 122°F)
Non-operating	-40°C to 60°C (-40°F to 140°F)
Thermal Gradient	10°C per hour max. (18°F per hour max.)
Relative Humidity	8% to 80% (non condensing)
Maximum Wet Bulb	26°C (79°F)

Acoustic Noise

Idle mode	43 dBA sound pressure level
Seeking mode	50 dBA sound pressure level

Physical

Height	3.25 in. (82.6 mm)
Width	5.75 in. (146 mm)
Length	8.0 in. (203 mm)
Weight	6.0 lbs. (2.7 kg)

Features and specifications subject to change without notice.

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