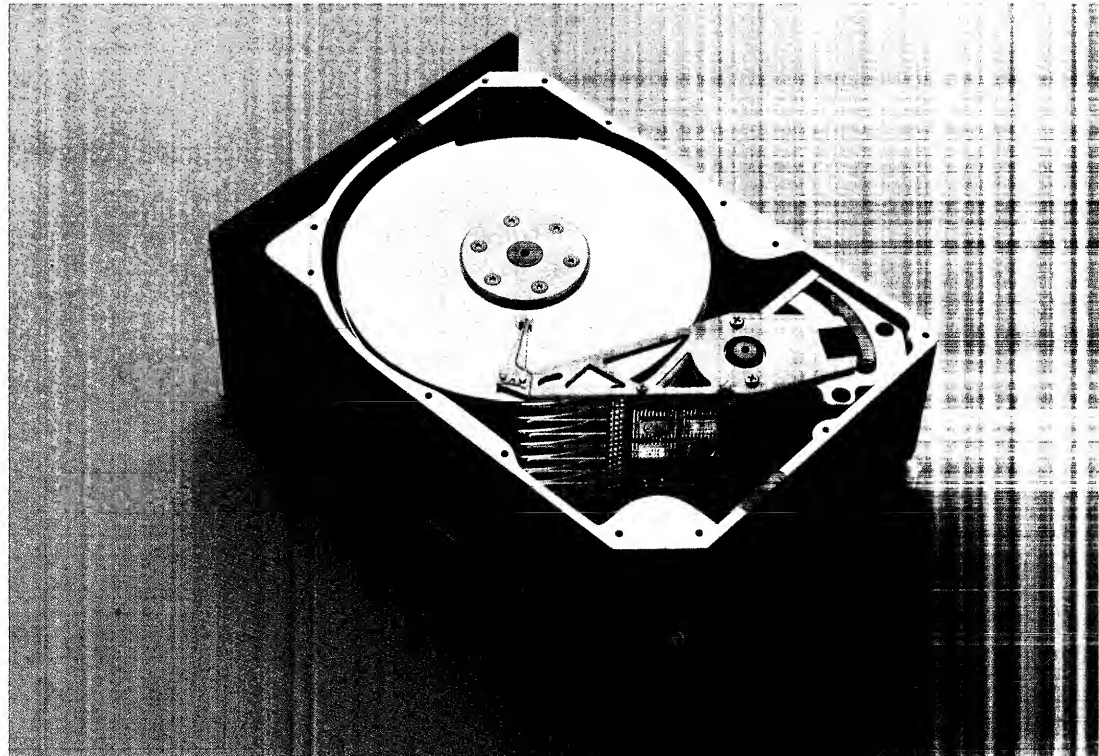


The Maxtor XT-1000 Family

65, 105 and 140-megabyte 5¼-inch fixed disk drives.



This reliable family of high performance Winchester disk drives not only provides OEMs with a low cost, high capacity and high performance upgrade from mini-floppy disk or other lower-capacity Winchester based systems, it also offers significant size and cost reduction opportunities for existing systems based on larger sized, high capacity drives.

The XT-1000™ family's high capacity, high performance and low cost are made possible through innovative applications of currently available technologies.

The unique, space-saving spindle motor inside the disk hub allows a deeper base casting than conventional drives thereby increasing the number of disks in the drive.

The use of ferrite recording heads with 3380 Whitney type sliders and flexures permit high density recording with greater stability and margins than with conventional Winchester recording heads.

In addition, the Whitney type head sliders and flexures allow a closer spacing between disks, thereby allowing an increased number of disks per drive.

The innovative MAXTORQ™ rotary voice coil actuator coupled with a conventional closed loop, track following servo system delivers an average access time of less than 30msec, while power consumption and size are kept to a minimum.

All drive electronics are contained on one MAXPAK™ printed circuit board through advanced circuit design and the use of miniature surface-mounted circuit components.

Interface, power supply and mounting requirements are fully compatible with the industry standard ST506/412 interface.

Drive control and data signals use the same pin assignments as the ST506/412 and other lower capacity drives, permitting daisy-chaining of multiple drives.

Key Features

- 65, 105 and 140 megabyte (unformatted) storage capacities.
- Full interface, format and power supply compatibility with the industry standard ST506/412 fixed disk drives.
- Physical dimensions and mounting holes identical to those of the ST506/412 and standard 5¼-inch floppy disk drives.
- Industry standard ST506/412 transfer rate of 5.0 megabits/second.
- Proven ferrite recording heads with Whitney head slider and flexure technology.
- Innovative MAXTORQ rotary voice coil actuator with a dedicated, closed loop, track following servo system.
- Faster access times than stepper motor drives.

- Dedicated head landing and shipping zone.
- Automatic actuator lock.
- Space saving miniature surface-mounted circuit components allow a single MAXPAK printed circuit board for improved reliability.
- Advanced 3380 Whitney type head sliders and flexures provide improved aerodynamic stability, superior head/disk compliance and higher signal-to-noise ratios than Winchester sliders and flexures.
- Space-saving, brushless DC spindle motor inside disk hub.
- Microprocessor control of spindle motor for precise speed control ($\pm 0.1\%$) under all load conditions.
- Dynamic braking during power-down cycle.

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The Maxtor XT-1000 Family

Recording Media

- Metallic film plated on a 130 mm diameter aluminum substrate.
- 9.57 megabytes of data per disk surface.
- 918 tracks per disk surface.

Read/Write Heads

- Whitney type (IBM 3380) ferrite heads.
- Low mass/low load force.
- Reliable contact start/stop.
- Dedicated landing/shipping zone at power off.

Air Filtration System

- Disks, heads and actuator fully sealed in clean air chamber.
- Recirculation air system with absolute filter.
- Absolute breather air filter permits pressure equalization with ambient air without contamination.

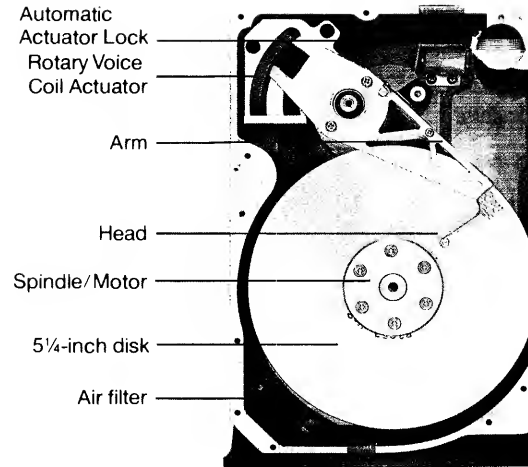
Rotary Voice Coil Actuator

- Highly efficient rotary voice coil actuator allows for low power consumption.

- Average access time several times faster than stepper motor drives.
- Simple, reliable construction:
 - Two-bearing structures
 - Low-cost magnet assembly
 - Highly efficient coil configuration
- Pre-programmed acceleration profile allows high performance for all length seeks.
- Statically balanced structure for high mechanical stability and maximum vibration resistance.
- Fully-automatic, positive actuator latch.

Closed Loop Track Following Servo System

- Provides precise thermal compensation and "on-track" stability.
- "Index" and "Track Zero" indicators recorded on the servo track eliminate the need for transducers and their adjustments.
- New high-volume servo track-writing techniques maximize manufacturability and repeatability.



SPECIFICATIONS

Performance Specifications

	<u>XT-1065</u>	<u>XT-1105</u>	<u>XT-1140</u>
Capacity, unformatted			
Per drive (MB)	66.99	105.27	143.55
Per Surface (MB)	9.57	9.57	9.57
Per Track (Bytes)	10,416	10,416	10,416
Capacity, formatted**			
Per drive (MB)	52.6	82.7	112.8
Per surface (MB)	7.5	7.5	7.5
Per track (Bytes)	8192	8192	8192
Per sector (Bytes)	256	256	256
Sectors/track	32	32	32
Transfer rate, Mbits/sec	5.0		
Access Time, msec	30		
Average*	5		
Track-to-track*	48		
Maximum*			

Functional Specifications

Rotational Speed (rpm)	3600		
Average latency (ms)	8.33		
Recording density (bpi)	9875		
Flux density (fci)	9875		
Track density (tpi)	980		
Cylinders	918		
Tracks	6426	10,098	13,770
Sectors**	205,632	323,136	440,640
Data heads	7	11	15
Servo heads	1	1	1
Disks	4	6	8

*Includes settling

**Formatted with ST506/412 compatible format (32 sectors/track)

Physical Specifications

Environmental limits (operating)
 Ambient temperature = 40° to 122° F
 (4° to 50° C)
 Relative humidity = 8% to 95%
 non-condensing
 Maximum wet bulb = 78.8° F (26° C)
 DC voltage requirements
 +12 VDC ± 5% 1.4A typical,
 4.5A maximum (at power-on)
 +5 VDC ± 5% 1.7A typical,
 1.9A maximum
 Mechanical dimensions
 Height = 3.25 in. (82.55 mm)
 Width = 5.75 in. (146.05 mm)
 Depth = 8.00 in. (203.20 mm)
 Weight = 6.3 lbs. (2.8 Kg)
 Heat dissipation = 25 watts typical,
 28 watts maximum

Reliability Specifications

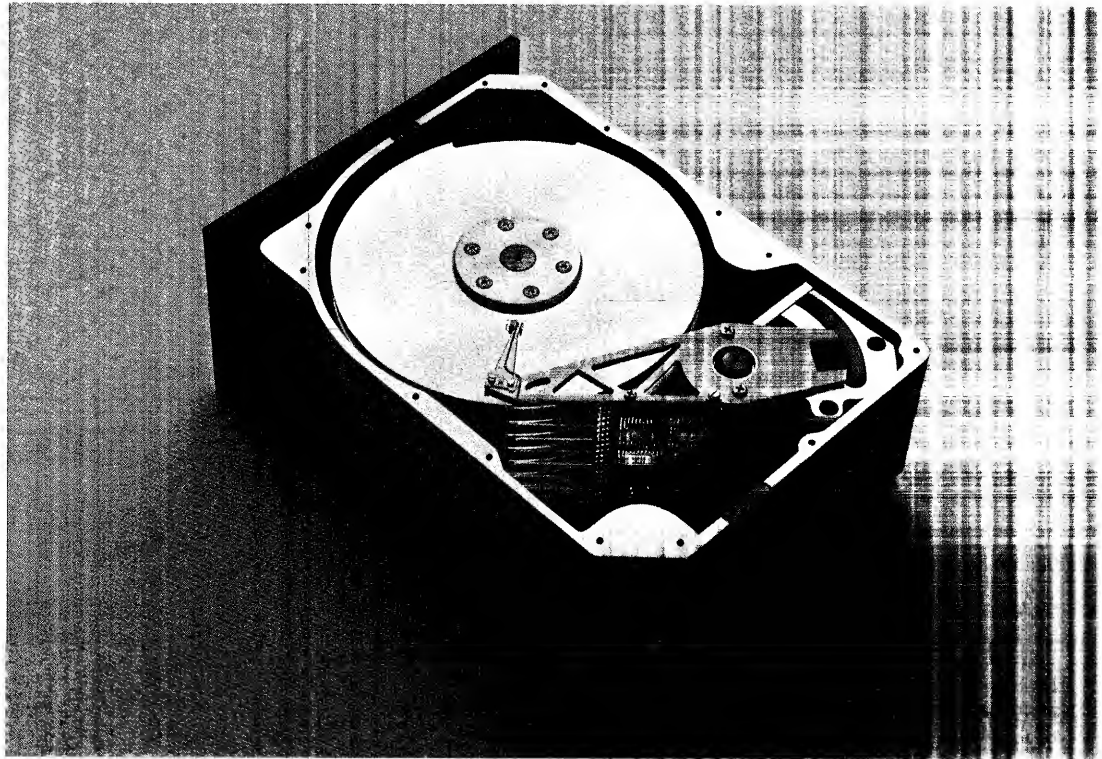
MTBF: 11,000 POH, typical usage
 PM: not required
 MTTR: 30 minutes
 Component design life: 5 years
 Error Rates:
 Soft read errors: 1 per 10¹⁰ bits read
 Hard read errors: 1 per 10¹² bits read
 Seek errors: 1 per 10⁶ seeks

Maxtor

Maxtor Corporation
 61 East Daggett Drive
 San Jose, CA 95134
 408 942-1700
 TELEX 171074

The Maxtor XT-2000 Family

85, 140 and 190-megabyte 5¼-inch fixed disk drives.



This reliable family of high performance Winchester disk drives not only provides OEMs with a low cost, high capacity and high performance upgrade from mini-floppy disk or lower capacity Winchester based systems, it also offers significant size and cost reduction opportunities for existing systems based on larger sized, high capacity drives.

Maxtor's XT-2000™ family provides OEMs with even lower cost, higher capacity and higher performance upgrade opportunities than the XT-1000™ line.

Increased capacity, performance and low cost of the XT-2000 family is achieved through innovative applications of currently available technologies.

Using Whitney type sliders, the XT-2000 family of highly reliable Winchesters achieves a full 33% increase in storage capacity over the XT-1000 family.

A unique, space-saving spindle motor inside the disk hub allows a deeper base casting than conventional drives and thereby allows an increased number of disks in the drive.

The use of Whitney type head sliders and flexures allows high density recording with greater stability and margins than with conventional Winchester recording heads.

In addition, the Whitney type head sliders and flexures permit closer spacing

between disks, thereby allowing an increased number of disks per drive.

The innovative MAXTORQ™ rotary voice coil actuator coupled with a conventional closed loop, track following servo system delivers average access times of less than 30msec, while power consumption and size are kept to a minimum.

All drive electronics are contained on one MAXPAK™ printed circuit board through advanced circuit design and the use of miniature surface-mounted components.

Interface, power supply and mounting requirements are fully compatible with the industry standard ST506/412 interface.

Drive control and data signals use the same pin assignments as the ST506/412 and other lower capacity drives, thus allowing daisy-chaining of multiple drives.

Key Features

- 85, 140 and 190 megabyte (unformatted) storage capacities.
- Full interface, format and power supply compatibility with the industry standard ST506/412 fixed disk drives.
- Physical dimensions and mounting holes identical to those of the ST506/412 and standard 5¼-inch floppy disk drives.
- Lowest-cost, highest capacity 5¼-inch disk drives on the market utilizing a ST506/412 compatible interface.
- Industry standard ST506/412 transfer rate of 5.0 megabits/second.

- Proven recording heads utilizing Whitney head slider and flexure technology.
- Innovative MAXTORQ rotary voice coil actuator with a dedicated, closed loop, track following servo system.
- Faster access times than stepper motor drives.
- Dedicated head landing and shipping zone.
- Automatic actuator lock.
- Space-saving, miniature surface-mounted circuit components allow a single MAXPAK printed circuit board for improved reliability.
- Advanced 3380 Whitney type head sliders and flexures provide improved aerodynamic stability, superior head/disk compliance and higher signal-to-noise ratios than Winchester sliders and flexures.
- Space-saving brushless DC spindle motor inside disk hub.
- Microprocessor controlled spindle motor for precise speed control ($\pm 0.1\%$) under all load conditions.
- Dynamic braking during power-down cycle.

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The Maxtor XT-2000 Family

Recording Media

- Metallic film plated on a 130 mm diameter aluminum substrate.
- 12.75 megabytes of data per disk surface.
- 1224 tracks per disk surface.

Read/Write Heads

- Whitney type (IBM 3380) heads.
- Low mass/low load force.
- Reliable contact start/stop.
- Dedicated landing/shipping zone at power off.

Air Filtration System

- Disks, heads and actuator fully sealed in clean air chamber.
- Recirculation air system with absolute filter.
- Absolute breather air filter permits pressure equalization with ambient air without contamination.

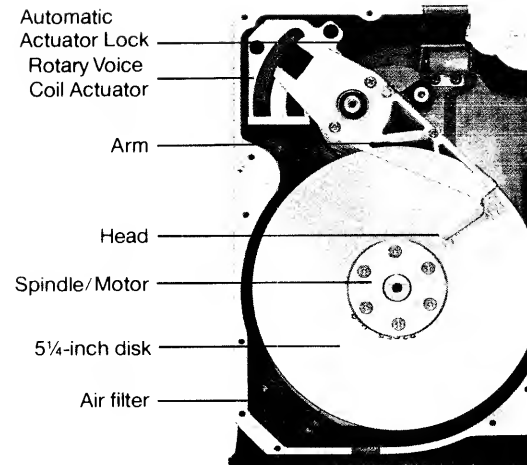
Rotary Voice Coil Actuator

- Highly efficient, rotary voice coil actuator allows for low power consumption.

- Average access time several times faster than stepper motor drives.
- Simple, reliable construction:
 - Two-bearing structures
 - Low cost magnet assembly
 - Highly efficient coil configuration
- Pre-programmed acceleration profile allows high performance for all length seeks.
- Statically balanced structure for high mechanical stability and maximum vibration resistance.
- Fully automatic, positive actuator latch.

Closed Loop Track Following Servo System

- Provides precise thermal compensation and "on-track" stability.
- "Index" and "Track Zero" indicators recorded on the servo track eliminates the need for transducers and their adjustments.
- New high-volume servo track-writing techniques maximize manufacturability and repeatability.



SPECIFICATIONS

Performance Specifications

	XT-2085	XT-2140	XT-2190
Capacity, unformatted			
Per drive (MB)	89.24	140.24	191.24
Per surface (MB)	12.75	12.75	12.75
Per track (Bytes)	10,416	10,416	10,416
Capacity, formatted**			
Per drive (MB)	70.2	110.3	150.4
Per surface (MB)	10.0	10.0	10.0
Per track (Bytes)	8192	8192	8192
Per sector (Bytes)	256	256	256
Sectors/track	32	32	32
Transfer rate, Mbits/sec	5.0		
Access Time, msec			
Average*	30		
Track-to-track*	5		
Maximum*	52		

Functional Specifications

Rotational Speed (rpm)	3600		
Average latency (ms)	8.33		
Recording density (bpi)	11,155		
Flux density (fci)	11,155		
Track density (tpi)	980		
Cylinders	1224		
Tracks	8568	13,464	18,360
Sectors**	274,176	430,848	587,520
Data heads	7	11	15
Servo heads	1	1	1
Disks	4	6	8

*Includes settling

**Formatted with ST506/412 compatible format (32 sectors/track)

Physical Specifications

- Environmental limits (operating)
 - Ambient temperature = 40° to 122°F (4° to 50° C)
 - Relative humidity = 8% to 95% non-condensing
 - Maximum wet bulb = 78.8° F (26° C)
- DC voltage requirements
 - +12 VDC ± 5% 1.4A typical, 4.5A maximum (at power-on)
 - +5 VDC ± 5% 1.7A typical, 1.9A maximum
- Mechanical dimensions
 - Height = 3.25 in. (82.55 mm)
 - Width = 5.75 in. (146.05 mm)
 - Depth = 8.00 in. (203.20 mm)
 - Weight = 6.3 lbs. (2.8 Kg)
- Heat dissipation = 25 watts typical, 28 watts maximum

Reliability Specifications

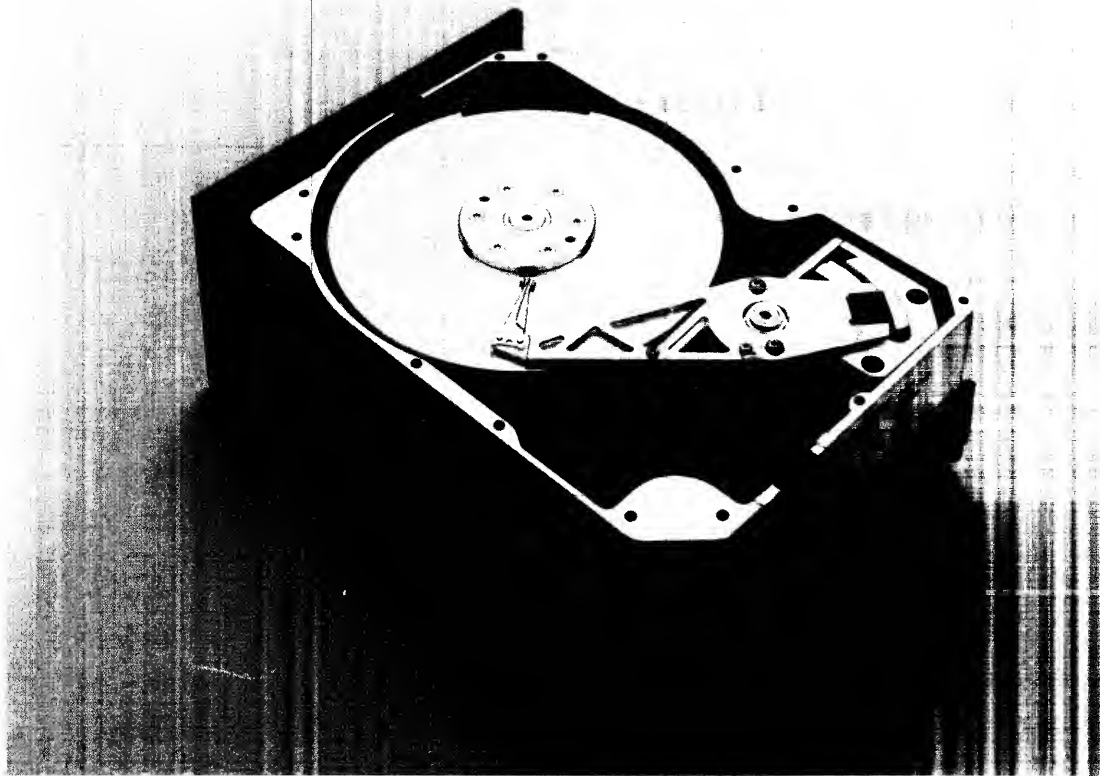
- MTBF: 11,000 POH, typical usage
- PM: not required
- MTTR: 30 minutes
- Component design life: 5 years
- Error rates:
 - Soft read errors: 1 per 10¹⁰ bits read
 - Hard read errors: 1 per 10¹² bits read
 - Seek errors: 1 per 10⁶ seeks

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Maxtor Corporation
61 East Daggett Drive
San Jose, CA 95134
(408) 942-1700
TELEX 171074

The Maxtor XT-3000 Family

170 and 280-megabyte 5¼-inch fixed disk drives
with embedded SCSI controller.



This reliable family of high capacity, high performance Winchester disk drives incorporates embedded SCSI controllers to provide OEMs with a truly intelligent peripheral family.

A SCSI controller is an integral part of the XT-3000™ family's disk drive electronics, eliminating the need for a separate disk drive controller, associated cables and power supply.

The XT-3000 family utilizes the Maxtor field-proven embedded spindle motor inside the disk hub, Whitney-type head sliders, and the innovative MAXTORQ™ rotary voice coil actuator.

All drive and controller electronics are contained on one MAXPAK™ printed circuit board. This is achieved through advanced circuit design and the use of miniature surface-mounted devices as well as proprietary VLSI components.

The disk drive power supply and mounting requirements are fully compatible with all 5¼-inch Winchester industry standards.

Since the controller is embedded in the drive, the drive control and data signals use the same cabling as any standard SCSI controller. Drive interchangeability is assured by the use of the SCSI Common Command Set (CCS).

Efficient, automatic error detection

and correction is accomplished by a powerful computer-generated 48-bit ECC code. Automatic retry on seek or read errors is provided for.

The XT-3000 family supports multiple host/multiple drives with disconnect/reconnect and arbitration capability.

It also supports bus transfer rates up to 1.5 MByte/sec, plus an interleave of 1:1, utilizing a multi-ported, 8K ram buffer.

Sector size is selectable (256, 512, 1024, or 2048 Bytes per sector).

Key Features-Disk Drive

- 170, 280 megabyte (unformatted) storage capacities.
- Power supply requirements compatible with industry standard 5¼-inch fixed disk drives.
- Physical dimensions and mounting holes identical to 5¼-inch Winchester and floppy disk drive industry standards.
- Highest capacity SCSI 5¼-inch disk drives on the market.
- Proven recording technology utilizing Whitney-type head suspension and thin film media.
- Dedicated closed loop, track following servo system.
- Dedicated head landing and shipping zone.

- Automatic actuator lock.
- High reliability achieved using a single MAXPAK printed circuit board with miniature surface-mounted circuit components.
- Microprocessor controlled spindle motor for precise speed control ($\pm 0.1\%$) under all conditions.
- Dynamic braking during power-down cycle.

Key Features—Controller

- Standard SCSI controller cabling.
- SCSI Common Command Set (CCS).
- Automatic ECC code (48 bit) generation.
- Automatic retry on seek or read errors.
- Defect handling at sector level.
- Full Disconnect/Rconnect and Arbitration capability.
- Bus transfer rates up to 1.5 MBytes/second.
- Interleave of 1:1 supported.
- Selectable sector size (256, 512, 1024, or 2048 Bytes per sector).

Maxtor

The Maxtor XT-3000 Family

Recording Media

- Thin film media.
- 19.12 megabytes of data per disk surface.
- 1224 tracks per disk surface.

Read/Write Heads

- Whitney suspension heads.
- Dedicated landing/shipping zones.

Air Filtration Systems

- Disks, head and actuator fully sealed in HDA.
- Recirculation air system with absolute filter.
- Absolute breather air filter permits pressure equalization with ambient air without contamination.

Rotary Voice Coil Actuator

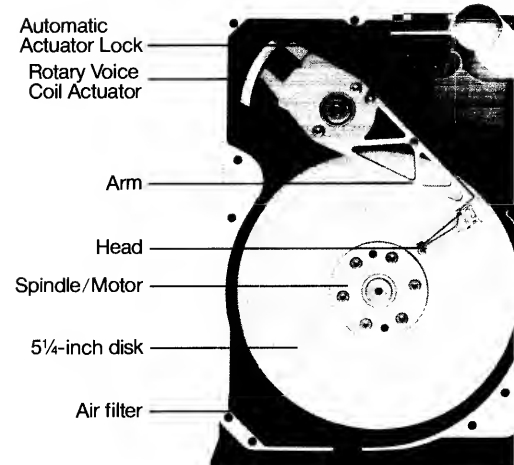
- Highly efficient, rotary voice coil actuator allows for high performance, yet low power consumption.
- Simple, reliable construction:
 - Two-bearing structure
 - Low-cost magnetic assembly
 - Highly efficient coil configuration
- Fully automatic, positive actuator latch.

Closed Loop, Track Following Servo System

- Provides precise thermal compensation and "on-track" stability.

SCSI Command Set

Test Unit Ready	Start/Stop Unit
Rezero Unit	Send Diagnostic
Request Sense	Copy
Format Unit	Read Capacity
Reassign Blocks	Read (Extended)
Read	Write (Extended)
Write	Seek (Extended)
Seek	Write and Verify
Inquiry	Verify
Mode Select	Read Defect Data
Reserve Unit	Write Data Buffer
Release Unit	Read Data Buffer
Mode Sense	Read Long
	Write Long



SPECIFICATIONS

Performance Specifications

	XT-3170	XT-3280
Capacity, unformatted		
Per drive (MB)	172.12	286.86
Per surface (MB)	19.12	19.12
Per track (Bytes)	15,624	15,624
Transfer rate, Mbits/sec	7.5	
Seek time, msec, maximum		
Average*	30	
Track-to-track*	4	
Maximum*	54	
Functional Specifications		
Rotational speed (rpm)	3600	
Average latency (ms)	8.33	
Recording density (bpi)	16,732	
Flux density (fci)	11,155	
Track density (tpi)	1070	
Cylinders	1224	
Data heads	9	15
Servo heads	1	1
Disks	5	8

Physical Specifications

- Environmental limits (operating)
 Ambient temperature = 50° to 113° F
 (10° to 45° C)
 Relative humidity = 8% to 95%
 non-condensing
- DC power requirements
 +12 VDC ± 5% 1.57A typical
 4.5A maximum (at power-on)
 +5 VDC ± 5% 1.7 typical
 1.9 maximum
- Mechanical dimensions
 Height = 3.25 in. (82.55 mm)
 Width = 5.75 in. (146.05 mm)
 Depth = 8.20 in. (208.28 mm)
 Weight = 6.3 lbs. (2.8 Kg)
- Heat dissipation = 30 watts typical,
 35 watts maximum

Reliability Specifications

- MTBF: 16,000 POH, typical usage
 PM: not required
 MTTR: 30 minutes
 Component design life: 5 years
 Error rates:*
- Soft read errors: 10 per 10¹¹ bits read
 - Hard read errors: 10 per 10¹³ bits read
 - Seek errors: 10 per 10⁷ seeks

*Exclusive of ECC

*Includes settling



Maxtor Corporation
 150 River Oaks Parkway
 San Jose, CA 95134
 (408) 942-1700
 TELEX 171074
 FAX (408) 433-0457

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