

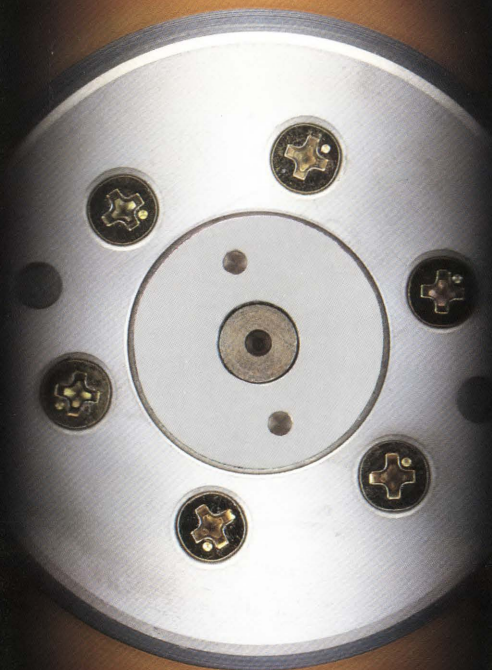
TEAC[®]

MAR 9 1986

SD-520

**Half-Height
5-1/4 Inch
Hard Disk Drive**

- Data storage capacity of 20 MBytes formatted, 25.52 MBytes unformatted
- At 41 mm (1.64 inches) half the height of conventional 5-1/4" hard disk drives
- 3 m sec track-to-track data access time
- New custom LSIs improve reliability
- Easy interfacing to a variety of equipment



TEAC Introduces 25 MBytes 5-1/4 in

20 MBytes of Formatted Data Capacity in a 41 mm Half-Height Drive

The SD-520 is the perfect answer to today's demand for equipment which can significantly upgrade the capabilities of personal computer systems. This slim 41 mm drive, half the height of existing drives, offers the highest capacity yet seen in a unit of its type anywhere. And its size means that two drives may be used in place of one conventionally-sized drive for a doubling of available data storage capacity. Storage capacity can be even further enhanced with the addition of the unique TEAC MT-2ST cassette streamer as a back-up memory, to expand the flexibility and the range of applications of your system. The SD-520 represents the fourth generation of TEAC hard disk drive technology to appear: TEAC has the experience to make sure you have the best.

Large 25.52 MBytes Memory

The SD-520 uses two 5-1/4" disks as the memory storage medium. Its unformatted data storage capacity is up to 25.52 MBytes, formatted, the SD-520 still provides a full 20 MB. With a system incorporating the MT-2ST, a vast capacity for expansion of your data storage capacity is available.

A Drive Mechanism You Can Always Count On

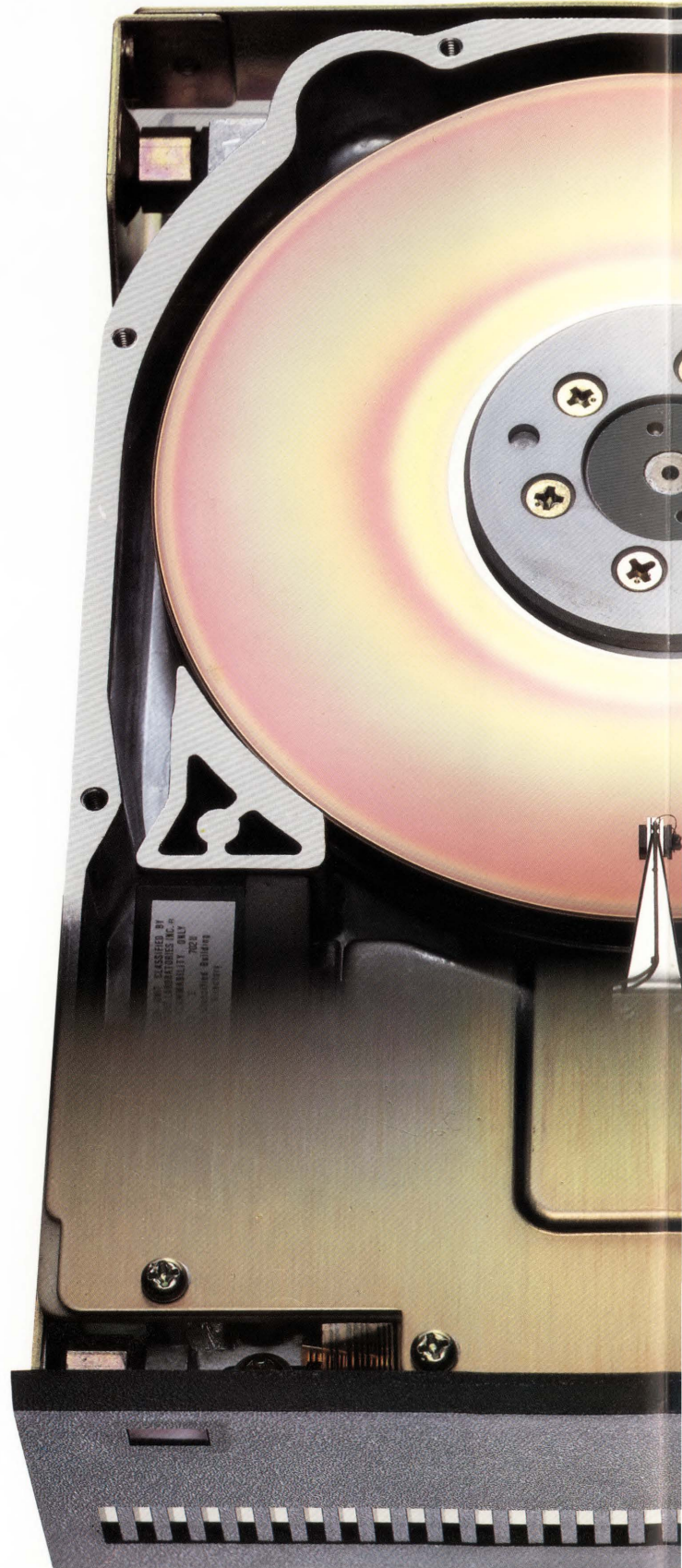
The SD-520's spindle motor — the heart of the rotating mechanism — is a slim brushless direct drive motor. Rotational accuracy is guaranteed with a PLL servo controlled by a quartz oscillator for consistently accurate rotation despite temperature or voltage fluctuations. This brushless motor is exceptionally durable as well, so maintenance or replacement are not necessary. The SD-520 offers you comforting long-term reliability even with continuous use.

High-Speed Access and Data Transfer

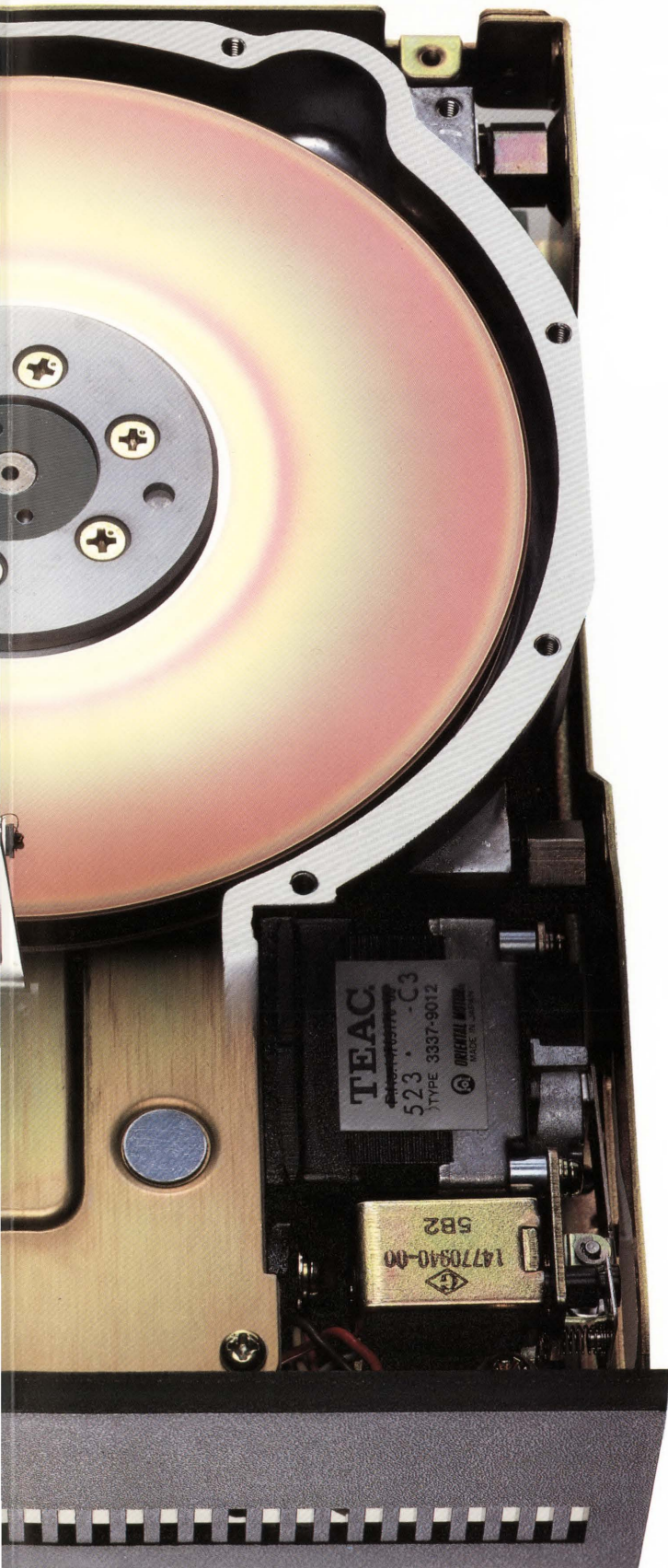
The SD-520 has a data transfer rate of 5 megabits/sec, 20 times or more the speed of a 5-1/4" floppy disk. Average access time in the fast seek mode is 85 msec. Data transfer between the drive and the cassette streamer is also fast, contributing to an overall capacity for rapid data transfer across a system.

Ultra-Clean Air Cooling

The heads and disks are mounted in a tightly-sealed diecast aluminum container to protect them against dust contamination. This container is fitted with a high-performance air filter which removes majority of dust particles. This provides a clean disk/head environment, virtually eliminating scratching of the disk, and read/write and seek errors. The air



es the first ever nch hard disk drive



filter also ensures that a normal flow of air is maintained, protecting the heads and disks against temperature fluctuations. The head and disk unit is also protected from heat radiated by the motor through a configuration which maintains a stable temperature within the drive. This leads to substantial reductions in tracking errors, and makes it possible to initiate read/write operations as soon as the power is turned on.

Fast, Accurate Repositioning

The head positioner uses a band actuator with a stepping motor. The band actuator is mounted inside the head/disk assembly to protect it from heat and dust, and positions the heads to extremely fine tolerances. Track-to-track access time is a rapid 3 msec. The SD-520 is also equipped with a high-speed seek mode, made possible by the exceptional speed of the head movement. The speed and accuracy of the seek mode are further enhanced by a built-in micro-processor which controls the input step pulse.

Smooth Start/Stop

The SD-520 has four movable read/write heads, one for each surface of the two disks. The two 130 mm aluminum disks are coated with magnetic oxide particles, and finished with binders and lubricants. This smooth surface is coupled with quality hard disk head technology, and a low load pressure low-inertia flying head. The result? Exceptionally smooth and reliable contact start/stop operation.

Vibration-proof, Shock-proof Shipping Lock

Protection against shocks and transport vibration which could result in damage to the heads or disks is built right into the SD-520. It incorporates an original TEAC automatic head locking system. When the power is turned off when the heads are in the shipping zone (686 cylinders separate from the data area), the read/write heads automatically lock safely in this zone and the disks are protected against shocks. When the power is turned on, the lock is automatically released.

Improved Circuit Reliability

The SD-520 now contains a number of custom TEAC chips, a development which offers strategic advantages over and above size reduction. Circuitry has been simplified and the number of parts reduced; this means gains in both reliability and cost efficiency, as the need for maintenance and parts replacement is virtually eliminated. The power unit is fitted with current remitter circuitry, so that only the minimum power necessary is used on powering up. This cuts power consumption, allows operation even when current is weak, and reduces heat radiation.

SPECIFICATIONS

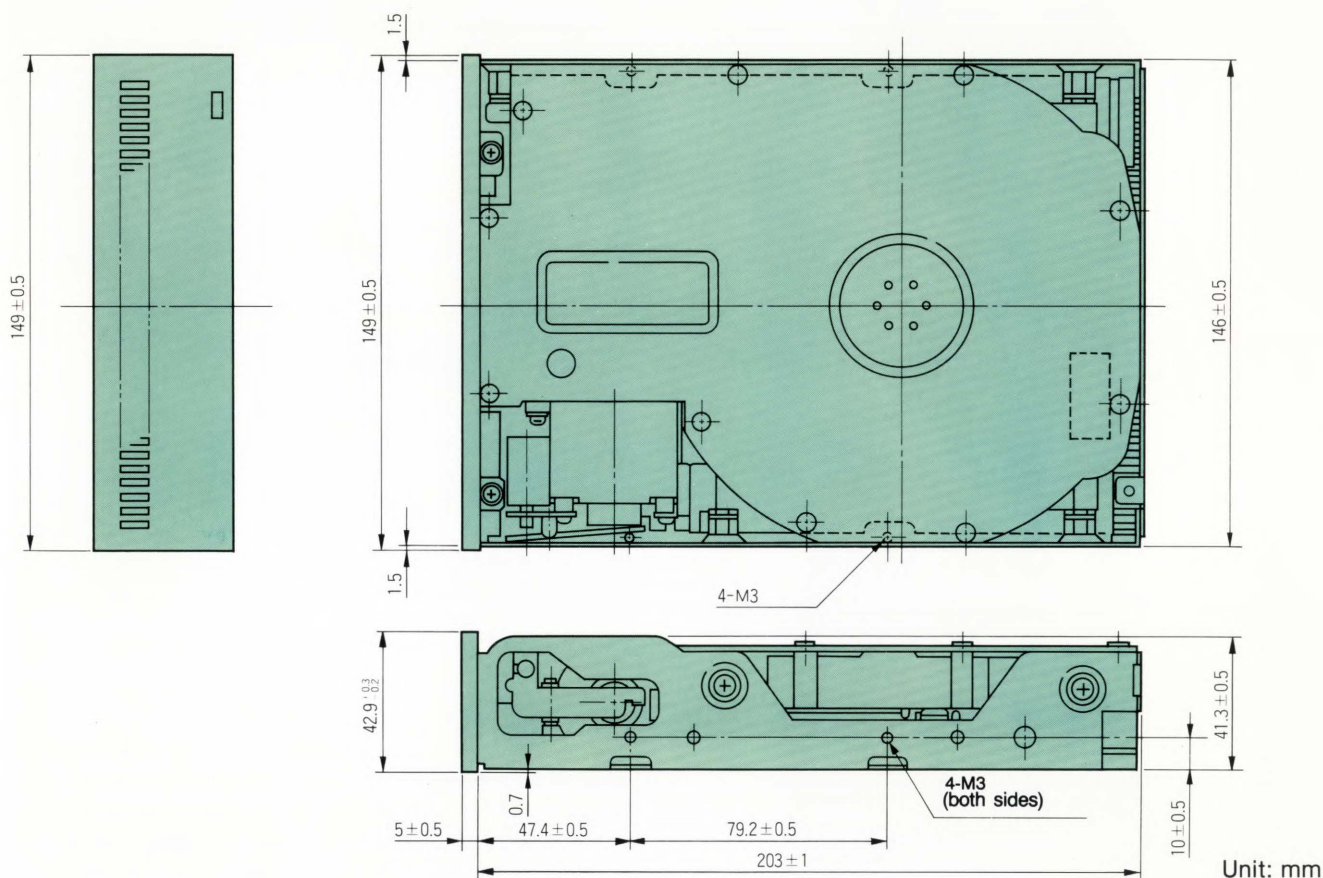
No. of Disks: 2
No. of Surfaces: 4
No. of Heads: 4
No. of Tracks: 2448
Track Density: 690
No. of Cylinders: 612
Recording Density: 9165 bpi max.
Data Transfer Rate: 5 megabits/sec.
Data Recording Capacity Unformatted
Per Track: 10,416 bytes
Per Surface: 6.38 megabytes
Per Drive: 25.52 megabytes

Formatted (32 sectors/track)
Per Sector: 256 bytes
Per Track: 8,192 bytes
Per Surface: 5.0 megabytes
Per Drive: 20.0 megabytes
Disk Rotational Speed: 3564 rpm $\pm 1\%$
Access Time
Track to Track: 3 msec
Average: 85 msec (fast seek mode)
Maximum: 190 msec (fast seek mode)
Settling Time: 15 msec
Average Latency: 8.41 msec

MTBF: 11,000 power-on hours, typical usage
Error Rates
Soft Errors: 1 per 10^{10} bits
Hard Errors: 1 per 10^{12} bits (16 retries)
Seek Errors: 1 per 10^6 seeks
Ambient Temperature
Operating: 4 ~ 45°C (40 ~ 113°F)
Non-Operating: -40 ~ 60°C (-40 ~ 140°F)
Relative Humidity: 8 ~ 80% noncondensing

Temperature Gradient: 10°C (40°F)/H
Power Requirements: +12V $\pm 5\%$, 1.0 A typ., 2.9 A max. (power-on) +5V $\pm 5\%$, 1.0 A typ.
Dimensions (W x H x D): 146 x 41.3 x 203mm (5-3/4" x 1-5/8" x 8")
Weight: 1.5 kg. (3 lbs. 5 oz.)
Safety Standard: Complying with UL and CSA

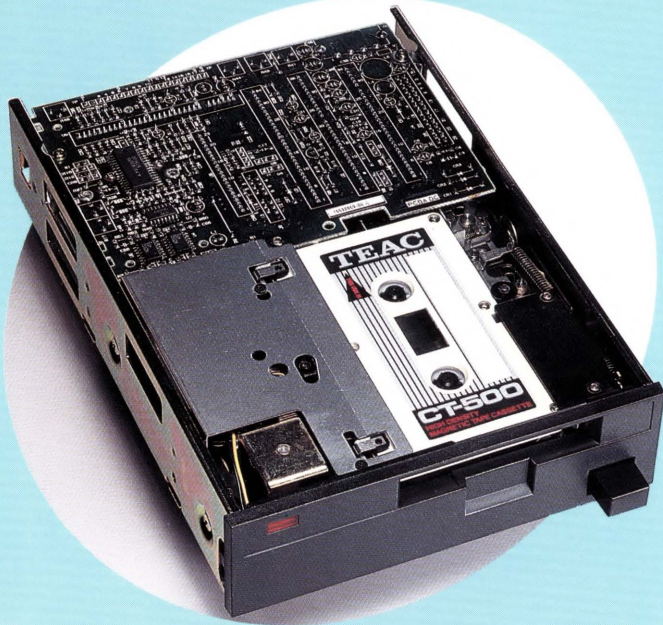
Features and specifications are subject to change without notice.



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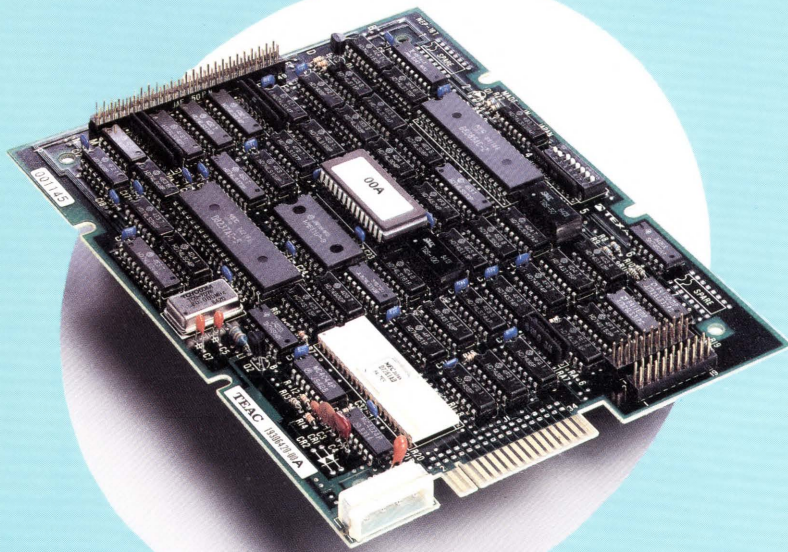
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MT-2_{ST} CASSETTE STREAMER



The SD-520 Hard Disk Drive's 20 MBytes of formatted data can be stored with the use of the TEAC MT-2_{ST} Cassette Streamer. The MT-2_{ST} is a high-performance magnetic cassette tape memory which is easy to use and easy to integrate into your system. It is no bigger than the normal 5-1/4 inch drive, yet includes its own built-in formatter. Data transfer takes a scant four minutes (with CT-500 150 m cassette tape). Data can be readily transferred to the MT-2_{ST} if your SD-520 memory capacity becomes exhausted, or alternatively, the MT-2_{ST} can be used to store backup copies of valuable data which you need to protect against accidental loss. Whatever the use you put it to, the MT-2_{ST} can transform your SD-520 based storage system into a full-scale, large-capacity data bank.

SC-200 CONTROLLER BOARD



The SC-200 Controller Board has the capacity to interface between your SD-520 Hard Disk Drive and any sort of host system. Each controller can handle two drive units.

- Reduces the burden on host system software — the SC-200 is an intelligent device capable of carrying out alternate processing and automatic correction using ECC (error retry and error correction codes)
- SASI/SCSI host system interfaces; ST-412 standard drive interface.
- Optimizes data transfer speed — a 1-sector data buffer is built into the SC-200 controller, enabling optimum data transfer speeds.
- Alternate track specification — a command is available for specifying alternate tracks or transferring to alternate tracks if a faulty track occurs.
- Multi-sector processing — capacity for multi-sector processing through automatic head and cylinder alternation.
- Select from 4 sector lengths — a switch mounted on the controller board allows you to choose from four sector lengths: 128, 256, 512, or 1024 bytes.

SC-200 SPECIFICATIONS

Data transfer speed:

Disk 625 KBytes/sec
Host 900 KBytes/sec

Disks operated: 25 -1/4" hard disks

Heads: Up to 8 heads can be specified

Tracks: Up to 1024 cylinders can be specified

Sector length: 128/256/512/1024

Data buffer: 1 sector buffer incorporated

Multi-sectors: Up to 256 sectors can be specified

Error check: CRC or ECC. With ECC, 11-bit burst error correction is possible.

Error rate:

Soft errors: 1 per 10¹⁰ bits
Hard errors: 1 per 10¹² bits

Average period between malfunctions: 100,000 poH

Average time for correction: Less than 30 minutes

Safety standard: UL standard

Power source: +5V ±5%
2.1A maximum