

MEMOREX

**3652 Disc Storage
Subsystem**



More Capacity. Faster Access. Higher Performance. The Memorex 3652 Disc Storage Module.

The 3652 is a high-speed direct-access, double-capacity version of the popular Memorex 3650 Disc Storage Module, which is functionally equivalent to the IBM 3350. The 3652 is attachable through the new 3676 Storage Control Unit, or its predecessor, the 3674, to the IBM System 370, Models 135 through 168, System 3031 through 3081, System 4341, and the Amdahl 470 and 580 Systems, as well as equivalent plug-compatible processors. Each 3652 contains two head disc assemblies of 635 megabytes each. With a data transfer rate of 1.198 megabytes per second, you can move and find data rapidly, with average seek time per logical volume of only 18 milliseconds. Large capacity, fast access and fast transfer—the perfect combination for use with today's high-performance processors.

Design Innovations for Maximum Data Availability, Improved Total System Performance.

Capacity and speed are only part of the story. The Memorex 3652 is designed to ensure data availability and to improve total system performance. Major innovations, designed by Memorex engineers, are responsible—*Intelligent Dual Interface (IDI)*, for instance. Two independent access paths are provided to every spindle on the 3652 string.

Total system performance is enhanced by providing a second access path to the string. Memorex's IDI reduces the unit of contention from the string level to the spindle level. IDI means improved job turnaround,

improved channel and CPU utilization, less degradation due to missed reconnections, and fewer interrupts from false device busies. IDI also means that the loss of one string controller does not mean loss of the entire string. The alternate string controller can assume the role of the primary controlling unit, ensuring a continuum of processing. And when you add IDI's ability to let you execute individual spindle diagnostics and repair without disabling the functional spindles on the same string, then you've got availability and performance you can count on.

Memorex disc media has been dramatically improved with the new Memorex M Formula coating, which represents a new performance standard for coating magnetic discs. M Formula discs, included in the 3652 Disc Storage Module, while being smoother and more durable, also provide a higher signal-to-noise ratio, with fewer errors, than any other available rigid media.

Along with the performance advantages of IDI and M Formula media, the 3652 has been designed to reduce average access time. Proprietary read/write heads, variable settling time circuitry, a proprietary dampened servo system, and advance mapping of data tracks all work together to give the 3652 its fast access, while improving data integrity and providing more reliable head positioning.

Finally, Memorex's optional fixed head feature, unlike competitive drives, provides zero-seek-time storage on *both* logical volumes.

Software Compatibility. Space and Energy Savings.

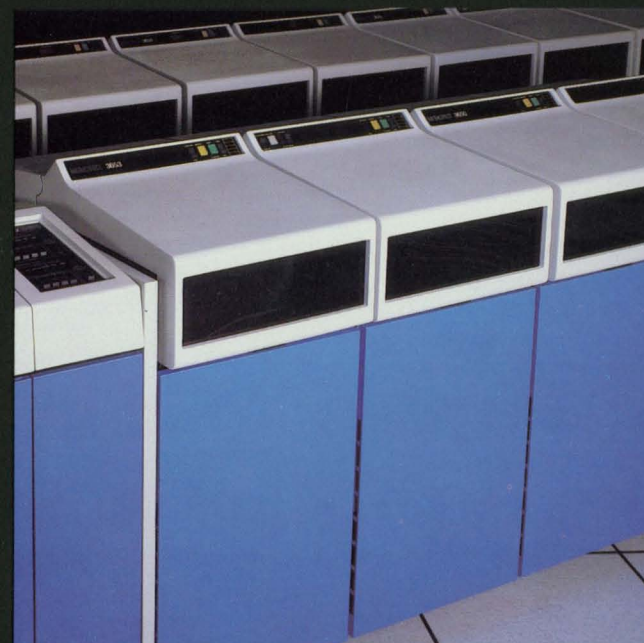
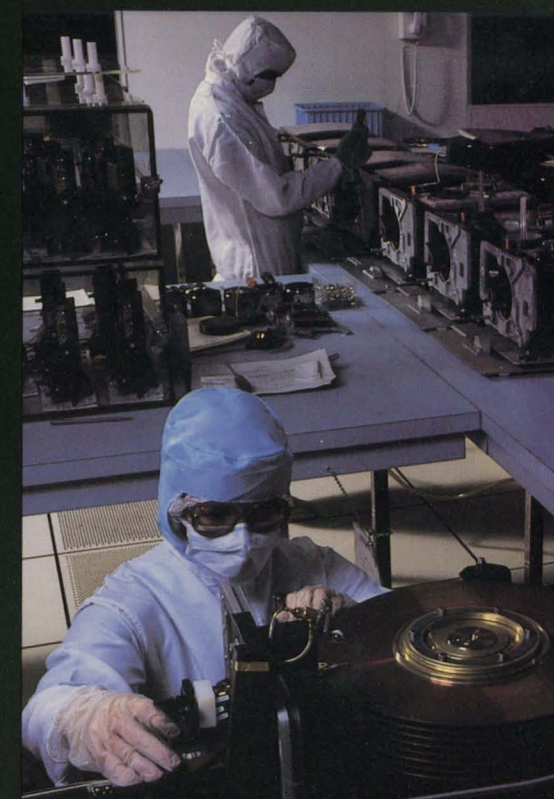
With the 3652 you can be sure that your software resources are preserved—because the 3652 is fully compatible with other Memorex products and with the IBM 3350. This means you can avoid expensive file conversions. And with software costs taking up nearly half of your data processing budget, this kind of compatibility not only makes the transition easier, but also far less costly.

In the same way, the 3652's double capacity means savings in floor space—instead of two 3650 drives you need only one 3652, doubling your capacity in the same space. And when the 3652 Subsystem is combined with the dual director 3676 Storage Control Unit, even more space efficiencies can be achieved.

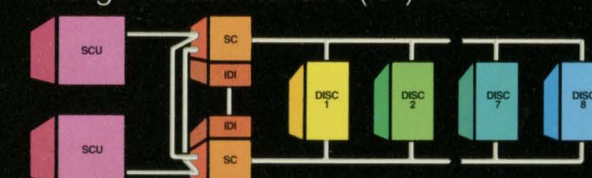
Finally, energy savings can also be realized with the 3652 Disc Storage Module. Compared to the competition, the 3652 demands less power and air conditioning, which also increases reliability.

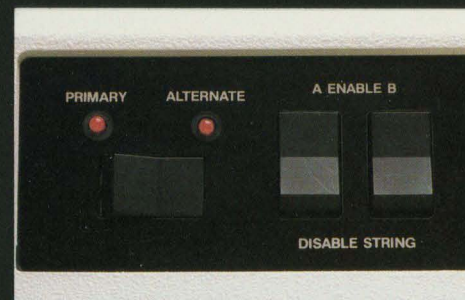
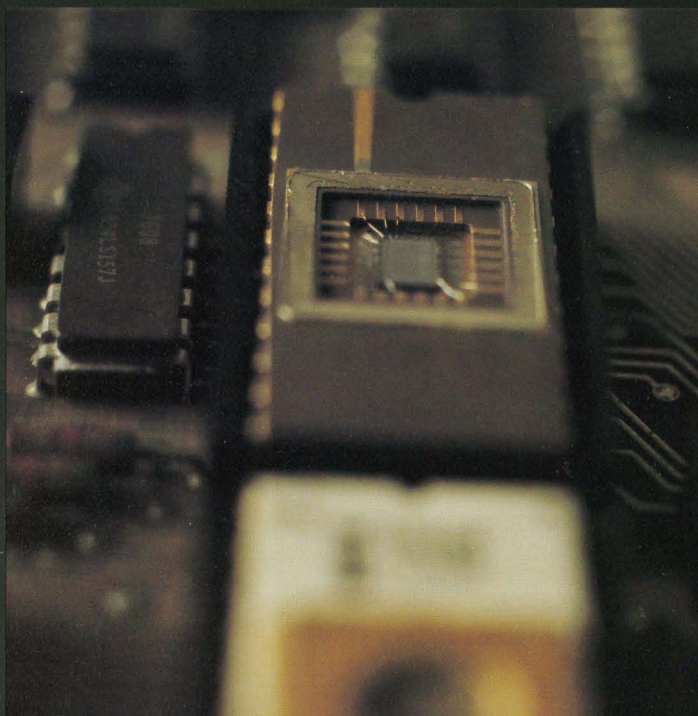
The Memorex 3650 Disc Storage Subsystem.

This single capacity version of the 3652, with its 635 megabytes per module of available data storage, also provides most of the same features found in the 3652, including Intelligent Dual Interface. For those users who do not require the large capacity of the 3652, but who want an advanced disc storage module, the 3650 is the perfect choice. You get Memorex engineering, performance and quality. And you get the benefits of Memorex's decade of experience in disc drive technology.



Intelligent Dual Interface (IDI)





Matching Performance and Data Availability. The Memorex 3676 Storage Control Unit.

The new Memorex 3676 Storage Control Unit is the perfect match for the 3652 Disc Storage Module. With dual independent storage directors housed in one low-profile cabinet, the 3676 offers full support for up to four strings of disc drives per storage director. The 3676 is functionally equivalent to the IBM 3880-1, two IBM 3830-2s, or two Memorex 3674 Storage Control Units.

The design of the 3676 achieves simplicity and efficiency—with fewer components, LSI circuitry, and a switching-type power supply. Power consumption and heat output are reduced. Totally redundant power supplies insure that your system can still operate when one director is powered down. Each director has an independent, dedicated flexible disc drive for loading the functional microcode and microdiagnostics.

Unmatched System Flexibility.

The 3676—a microprocessor-based controller attached to the block multiplexer channel—supports not only the 3652, but an intermix of a broad range of Memorex disc drive products—the 3650, 3670/75 and 3640, as well as the IBM 3350. It features 2-, 3-, or 4-channel switching on each storage director, providing multiple data paths for single processors or multiprocessor switching. With a maximum data transfer rate of 1.86 megabytes per second, the 3676 has the potential

for supporting DASD up to 55 percent faster than the IBM 3350 or Memorex 3650 and 3652. The 3652 and 3650 Disc Storage Subsystems can be operated in either native or 3330 emulation mode with the 3676 Storage Directors. Regardless of on-line capacity or product mix, the Memorex 3676 provides the versatility to configure many combinations of fixed and removable media storage devices.

Features That Mean Business.

The 3676 performance features will help your business take care of business—rapidly and reliably. Remote switching, for instance, which permits remote enable/disable of the channel interface. Multiple requesting, which allows each storage director to disconnect during delays in actuator positioning or disc rotational delays. And EER, Enhanced Error Recovery, provides advanced error recovery techniques. The EER microcode utilizes sophisticated microprogramming with circuitry in Memorex Disc Drives to recover errors in home address, count and key fields and uses the system's error recovery system (EREP) to aid recovery from previously uncorrectable data errors. In addition, the EER feature enables the 3676 to employ unique string controller circuitry in a Memorex 3652 or 3650 Disc Subsystem to recover previously unrecoverable data checks by repositioning heads. EER, another proprietary Memorex feature not available from any competitor.

The 3676 design features extend performance in other ways as well. Lower power requirements mean less air cooling needs. A three-phase line filter protects against input power line noise. Fewer components in each storage director help improve reliability. Each storage director has an independent power system and flexible disc drive. All contained in a lighter, more compact package.

Finally, the 3676 significantly reduces space requirements in your data processing installation, especially in combination with the space-saving 3652 double-capacity storage subsystem. The 3676 Storage Control Unit is small and compact—when you add in all service clearances, it requires up to 80 percent less space than competitive products. Since maintenance access is provided at front and back, 3676 units can be placed side by side. The 3676 has a low profile that enables placement near the host operating console without obscuring the view of the disc drives. Closer placement also enables some additional operating efficiencies.

The 3652 Storage Subsystem. The 3676 Storage Control Unit. Together they make up the Memorex 3652 Disc Storage System. Feature by feature, one of the most advanced disc storage systems available today for large-capacity, high-performance data processing.





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Memorex Corporation—Quality, Value, Service.

Founded in 1961, Memorex employs nearly 11,000 highly skilled people in more than 100 locations throughout the world. With modern headquarters and major manufacturing facilities in Santa Clara, California, Memorex also has production facilities in Liege, Belgium; Nogales, Mexico; Eau Claire, Wisconsin; Summerville, South Carolina; and Irvine, Santa Ana, and Anaheim, California. A joint manufacturing plant, with Teijin Ltd., Tokyo, Japan, and with Bell & Howell in Northbrook, Illinois plus a network of regional warehousing and distribution centers in the United States and Europe.

Memorex is a worldwide supplier of high technology equipment and magnetic recording media used in information storage and communications. The growing line of products today includes high-quality disc and tape storage systems; telecommunications processors, terminals, printers and software; computer tape, rigid and flexible discs; disc packs and data modules; word processing supplies; audio and video tapes and cassettes; and field engineering and facilities management services.

