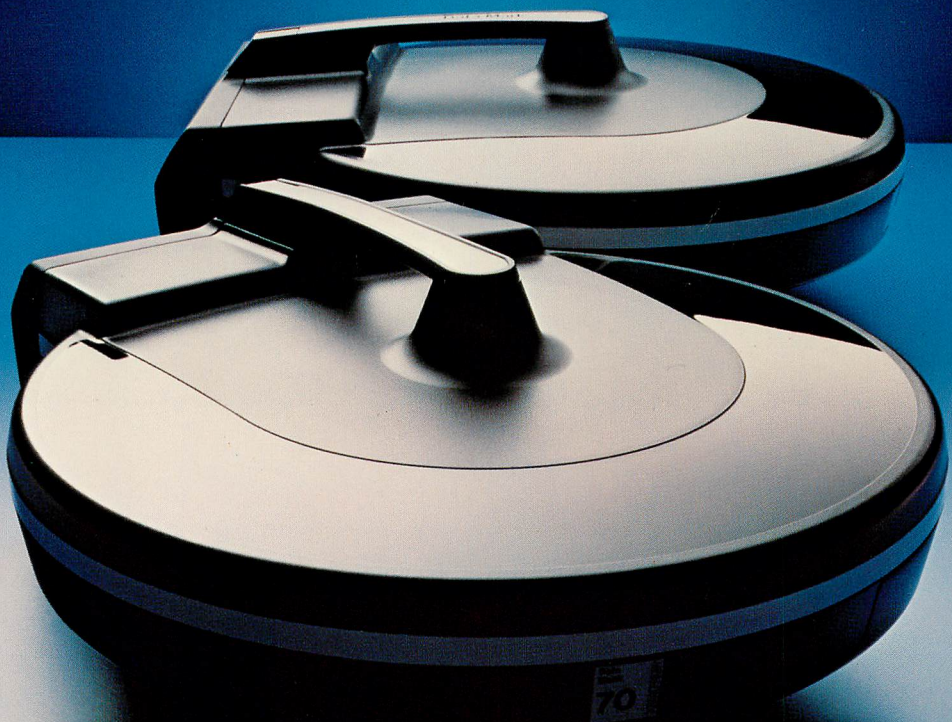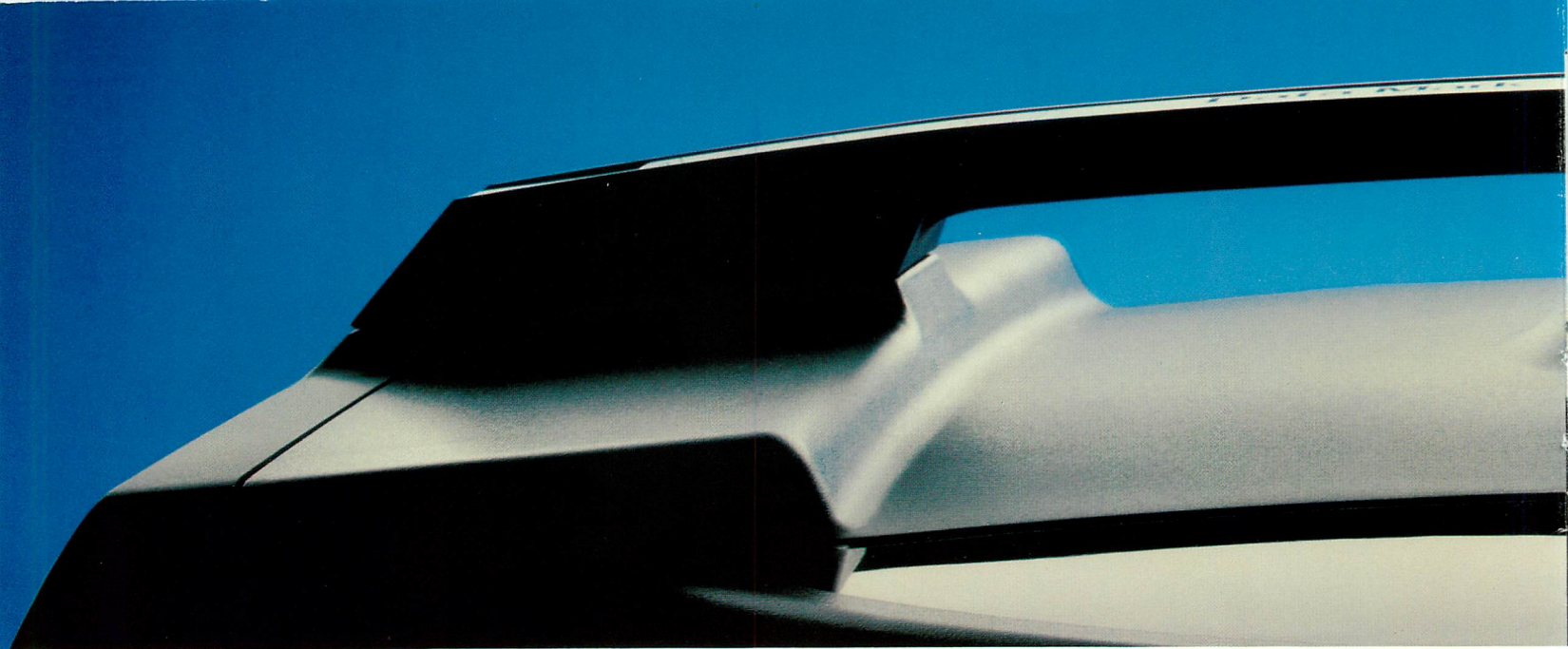# MEMOREX

Data Mark 70/70F
Data Modules

Data Mark 70/70F. Productivity that's the best because Memorex Customer Service is better.

What you want most from a data module is increased productivity for your computer center. More performance. Smoother-running operations. Less downtime. And lower operating costs.

That's just what our Data Mark™ data modules will provide— because of all the customer service and support we provide.

Maximum productivity. Optimum value.

Memorex is the industry's leading independent supplier and, as such, offers unmatched experience and leadership in response to the data processing industry's needs. Since midyear 1975, over 900 Data Mark modules have been installed each month worldwide—strong testimony to our data modules' performance and reliability.

Our worldwide force of sales representatives is highly trained and customer-responsive. They work to understand your needs, to see that Memorex fulfills them, to prove that your confidence is well-placed.

Our Regional Distribution Centers insure prompt delivery, fast service.

We maintain Regional Distribution Centers throughout the world to respond more quickly to your requests. This means faster delivery and better service.

Additionally, Memorex provides an array of additional services to its customers that many other manufacturers won't—or can't—offer.

Software Services: Computer Media customers receive free software packages. Software packages such as our Automated Tape Management System, RESOURCE—our program to evaluate computer operation productivity, and PROCSCAN—our conversion program of 2311/2314 to 3330 units. All designed to improve computer efficiency.

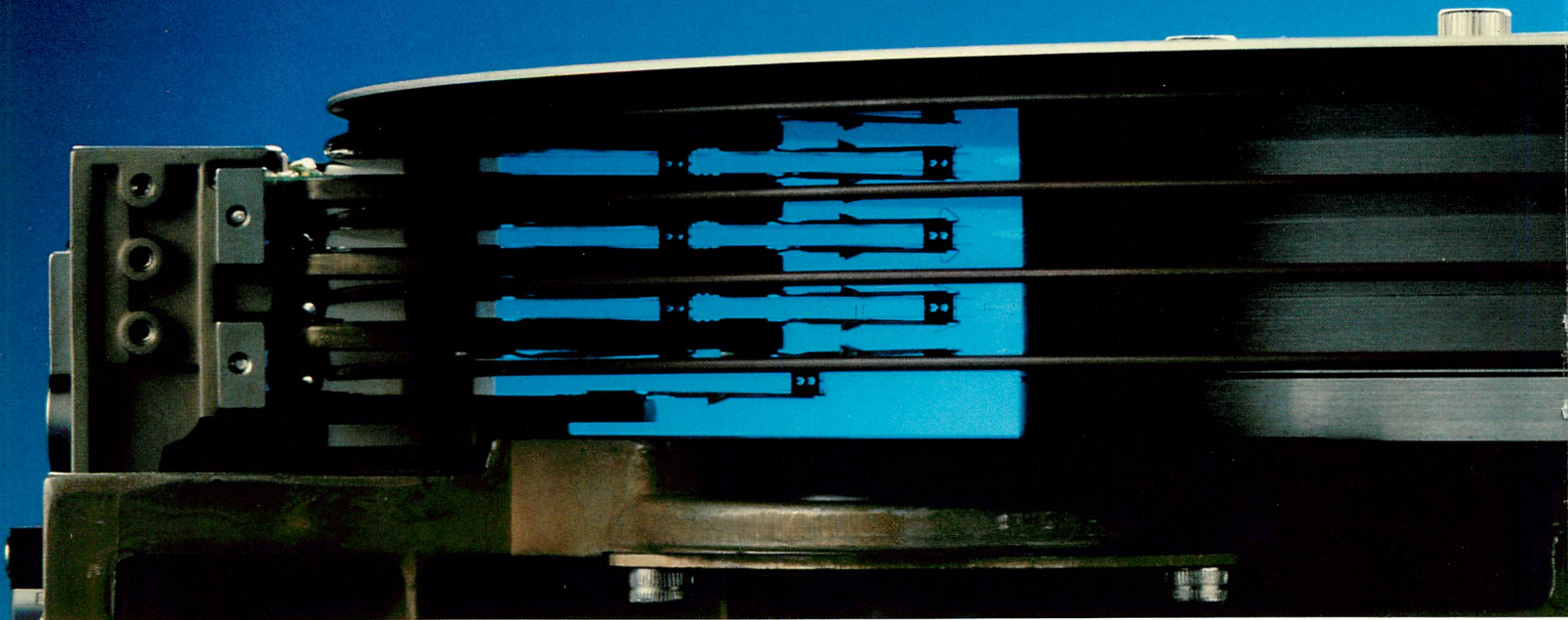**Training Programs:** Seminars at our Education Center, and in your operation, to instruct your people.

Data Recovery: A specialized procedure to help protect you against data loss.

Emergency Service: Fast response to meet emergencies, by phone or in person. Even free use of "customer service" modules.

Flexible Financing: Upgrades, trade-ins, leases, purchases. Memorex makes it easier to do business, because we want to be the company you do business with.

And finally, Memorex has the most extensive media field service organization of any of the industry's independent suppliers. Media specialists who are readily available to assist you. Engineers trained in the latest technology, and backed by the full facilities of our headquarters staff.

Memorex® Data Mark data modules. The industry's Standard of Value, because of the service and support standing behind them.

Data Mark 70/70F. Performance that's the best because Memorex Engineering is better.

Since day one in 1961, Memorex Corporation has pursued a consistent course of development. Developing new technologies, expanding services, to produce products that will produce for our customers.

Our experience spans both media and drives, encompassing seven generations of disc packs and six generations of disc drives.

It is the melding of these years of Memorex experience—the combining of disc pack technology and disc drive engineering—that makes possible a data module of unsurpassed performance and reliability.

The Data Mark 70/70F

Look at what the Memorex Data Mark offers:

Ease of Handling: Recording surfaces, heads, spindle, head carriage, base plate and all electronic circuitry are housed in a self-contained unit, reducing your data-handling time.

Greater Data Integrity: The head that writes the data is the same head that reads the data. Eliminates head/disc interface problems, insures alignment. Offers maximum accuracy.

Better Data Protection: Sealed module eliminates contamination. Special top coatings resist head crash. Provides you with virtual error-free performance.

Increased Performance: Higher storage capacities in reduced space requirements. Faster data access. Lower energy use. All to do more, at less cost.

Thin-Coated Discs

Memorex was the first independent to master thin-coating.

Thin-coating is a must in a data module. It accommodates higher bit-packing densities, making possible greater storage capacities. Errors due to signal interference between tracks are eliminated. And thin-coating must be done precisely as Memorex does it. Precisely.
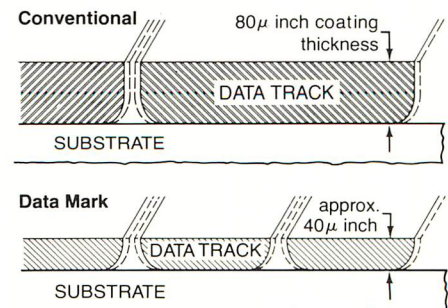
Our proprietary formulation is applied to micro-inch accuracy, using a sophisticated spin-coating technique. This same coating creates an "armor-tough" surface to extend disc durability and withstand headloading stress. All processing of Data Mark discs is done in environmentally controlled clean rooms to eliminate potential contamination problems. And all discs, after coating, are cured and polished to exacting standards, virtually achieving surface perfection.

Oriented Oxides

Memorex was also the first independent to orient oxide particles uniformly, insuring optimum signal output.

The oxide particles encapsulated within the extremely thin coating are circumferentially aligned on the disc by a proprietary process. Particle alignment provides the high output and data resolution that is essential for reliable performance with high bit-packing densities. Data Mark discs have greater resolution and less residual noise than conventionally coated discs. Additionally, particle alignment maximizes head-to-track stability and assures cleaner erasures and rewriting on all tracks.

Memorex was the first independent to master thinner oxide coatings that accommodate higher data densities.
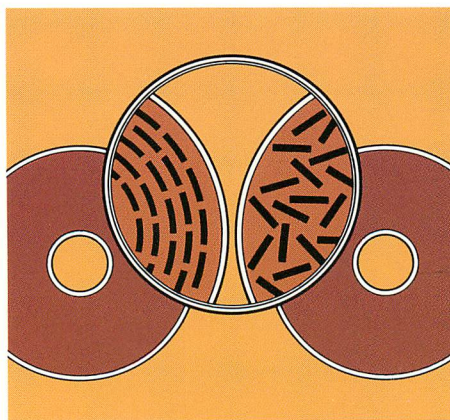
Unique "100X" Surface Shield

Because the recording heads are in contact with the discs during start/stop operations, Memorex developed a special surface shield to complement the "armor-tough" coating. This smooth and durable top shield was called "100X" because it protects the disc and data on it by extending the useful life of the data disc by one hundred times over any normal discs without the top shield coating used in similar applications. This combination of "armor-tough" coating and "100X" surface shield provides greater data integrity and longer lasting operational performance.

Improved Head Technology

Two recording heads per surface are sealed within the data module and are both lighter and closer-flying than any previous heads. This provides greater bit density capabilities, faster data access and improved performance characteristics.

Servo Track Writing

Recording tracks on the Data Mark disc are so narrow and close together that two of them could be contained on the edge of a data processing card. To control the head alignment accuracy, a specially written servo

surface is used. This servo is pre-recorded at the factory, using a special servo writer operated under strict environmental control. This assures true track-to-head alignment and cylinder location.

Final Testing and Assembly

Data Mark discs undergo complete surface testing by using special test heads in overlapping paths. Any potential irregularity or minute flaw is detected on specially designed test equipment. The modules are then hand assembled and sealed in clean rooms that adhere to the industry's most rigid standards (Class 100). After final assembly and exhaustive testing, the Data Mark modules are subjected to final testing,

TOP LEFT: The disc on the left, protected by Memorex "100X" surface shield, has undergone the equivalent of ten years' normal operation with no damage to the surface. The disc on the right, without Memorex "100X", shows extensive damage after the equivalent of only one year of normal operation.

LEFT: Oxide particles on ordinary data discs, depicted on the right, are dispersed in all directions. The oxide particles on the Data Mark data disc, on the left, are circumferentially aligned, improving signal output.

ABOVE: Memorex exacting quality control standards insure contamination-free Data Mark modules.

utilizing a system designed to assure 100% performance at less than ideal operating conditions.

Memorex Data Mark data modules. The industry's Standard of Value for the performance you'll get out of them, because of the excellence of engineering that goes into them.

Data Mark 70/70F. Performance and productivity at its best, because the Memorex commitment to "Memory Excellence" is total.

Two different Data Mark module configurations are available: the 70 and the 70F.

The Data Mark 70 offers 70 million bytes of storage. The 70F provides fixed head access to 502 thousand bytes of its 70 million byte capacity.

Both the Data Mark 70 and 70F are used on the Memorex 3640 disc drive and other compatible drives. Both are directly interchangeable with the IBM 3348 module and both can be used with Series 370 and System/3.

Both are the product of the most advanced technology. Both took shape from the finest materials, under the most rigid quality control procedures and exacting testing standards.

Both are backed by an extensive media field engineering and customer service force—the largest of any independent.
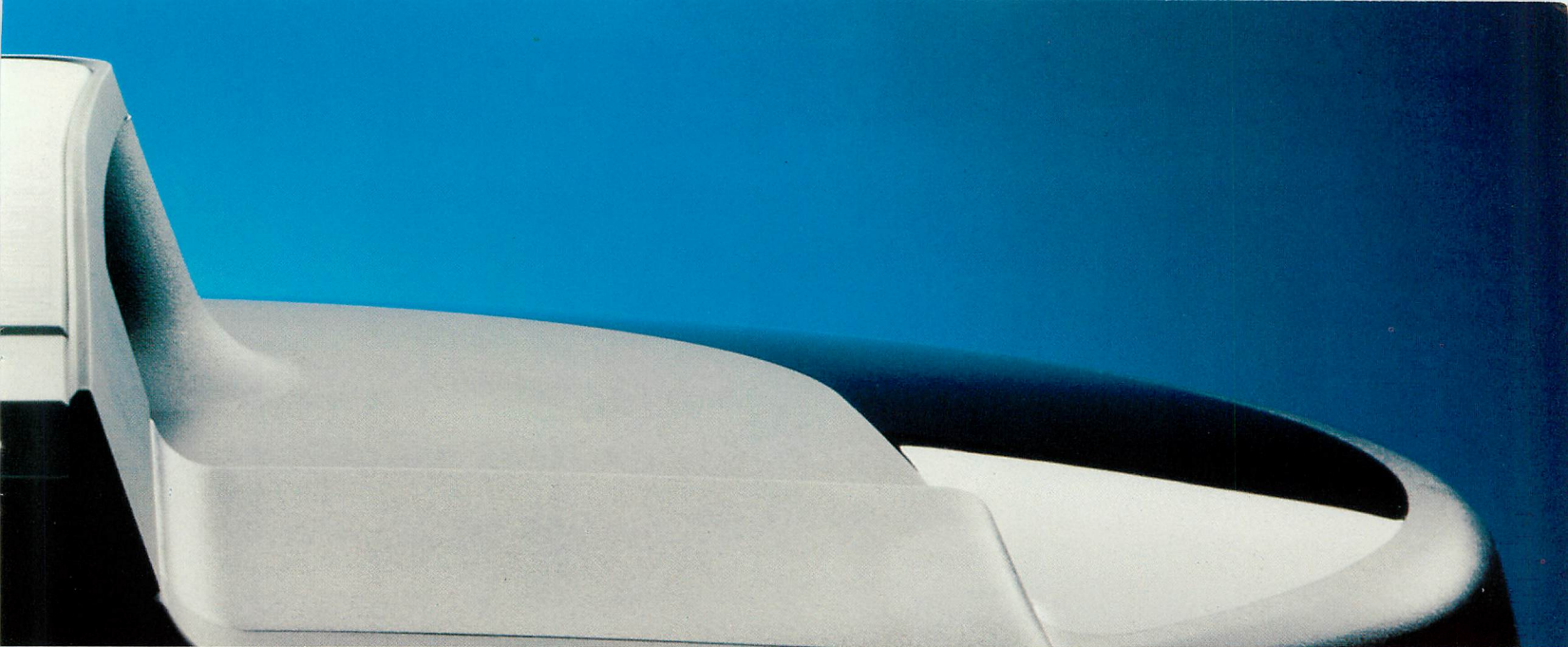
Data Mark 70 and 70F. Both are another proof of our commitment to Memory Excellence. A commitment so complete it's inherent in our name.

Memorex.

TOP: We offer in-depth training for customer personnel in your operation and in our Education Center.

BOTTOM: Memorex maintains an extensive, highly-trained field service force, worldwide. Each representative is a media specialist who is readily available to assist you in the smooth operation of your facility.

General Specifications
The Data Mark module will meet or exceed the specifications detailed in the IBM Document ZA26-1629-1

Physical Dimensions

	70	70F
Height	8"	8"
Width	16"	16"
Length	18"	18"
Shipping weight	23 lbs.	24 lbs.

Disc Information
Total disc per module
  4 each
Top protective disc
  1 each
Disc thickness-nominal
  0.075 inches
Coating thickness-nominal
  I.D. to O.D.
    35-50 microinches
Surface smoothness
  Less than 1.0 microinches
Surface shield
  "100X" wear coating

Recording Surfaces
Data surfaces
  6 each
Servo surface
  1 each
Fixed head storage:
  Servo surface of Model 70F only

Recording Heads
Data Head
  12 each (2 per data surface)
Servo head
  1 each
Fixed heads (Model 70F only)
  10 each (three data elements per fixed head)

Servo Tracks
Pre-recorded

Initialization
Standard home address and record zero are written prior to shipment

Transfer Rate
885,000 Bytes per second

Read Only
Lock out on Data Mark handle

Environmental Conditions
60°F to 90°F
20% to 80% relative humidity

Access Time

Model	70	70F	
Cylinders	0-695	1-5	0,6-695
Maximum	50 ms	0 ms	50 ms
Minimum	10 ms	0 ms	10 ms
Average	25 ms	0 ms	25 ms
Latency - Average	10.1 ms	10.1 ms	10.1 ms
Latency - Maximum	20.2 ms	20.2 ms	20.2 ms
Rotational speed	2964 rpm	2964 rpm	2964 rpm

Module Data Capacity
Data Mark 70
  69, 889, 536 bytes per module
Data Mark 70F
  69, 889, 536 bytes per module;
  502,080 of the above accessible by fixed heads (cylinders 1-5)
Bytes per track
  8368
Tracks per cylinder
  12
Cylinders per module
  696
Bytes per cylinder
  100,416
Bit per inch
  5636 nominal
Tracks per inch
  300
Alternate cylinders
  2
C.E. Cylinders
  2

Maintenance Requirements
None

Data Mark 70 in System/3 Applications
When a Data Mark 70 is used on a System/3 the following specifications apply:

Data Mark Capacity:
41,041,920 bytes of main data storage
9,830,400 bytes of program support
Bytes per track—12,288
Tracks per cylinder—20
Logical cylinders per module—210
Bytes per cylinder—245,760

Worldwide Sales Locations

United States

Alabama
Birmingham (205) 870-4240

Arizona
Phoenix (602) 254-5466

Arkansas
Little Rock (501) 374-0279

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Los Angeles (213) 478-3051
San Francisco (408) 987-1450
San Diego (714) 291-8440

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Hartford (203) 568-1370

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Dartmouth, Nova Scotia (902) 435-1813

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Lyon 26.64.12
Lille 57.34.34

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Padua 662986, 612754
Turin 011-547413/542504
Bologna 051-480555/6

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Fukuoka-shi (092) 451-2073
Hiroshima (0822) 28-1780, 1742

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Geneva 022/355221-360285

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Middlesex 01-570-7716

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Caracas 92-9198, 9998

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Munich 18-90-71
Cologne 23-87-63
Frankfurt/Main 417061-2
Hamburg 41-80-01
Stuttgart 28-10-06

Memorex Corporation-Quality, Value, Service

Founded in 1961, Memorex employs nearly 8,000 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; and Irvine, Santa Ana, and Anaheim, California plus a network of regional warehousing and distribution centers.

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