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3670 Disc Storage Subsystem General

The Memorex 3670 Disc Storage Subsystem is a plug-compatible replacement for the IBM 3330 Disc Storage Facility on the IBM System/370. With the optional 2860 Selector Channel Attachment feature, all of the performance and functional capability of the 3670 become available to large IBM System/360 systems running under OS MFT/MVT. New significant features, standard on the 3670, include Rotational Position Sensing, Multiple Requesting, and Command Retry.

The Memorex 3670 Disc Storage Subsystem is comprised of a 3671 Storage Control Unit and from one to four 3670 Disc Drive Modules. Each 3670 contains two drives providing a spindle capacity of 100,018,280 bytes; a module capacity of 200,036,560 bytes; and a maximum subsystem capacity of 800,146,240 bytes of high performance, on-line direct access storage.

With the optional Multiple Channel Switching, the 3670 Disc Storage Subsystem may be accessed by alternate channels from a single processor and/or shared by multiple processors, including mixed Systems/360 and Systems/370 with the optional 2860 Selector Channel Attachment.

3670 Disc Storage Module Description

The Memorex 3670 Disc Storage Module is a large capacity, high performance, direct access storage device. In conjunction with the Memorex 3671 Storage Control Unit, it provides in excess of 200 million bytes of on-line storage capacity. The 3670 Disc Storage Module is fully compatible with the IBM 3330 Disc Storage Facility.

The Memorex 3670 Disc Storage Module consists of two independent disc drives. Recording is pack and data compatible with the IBM 3330, employing Memorex Mark X or IBM 3336 disc packs. Packs are removable and may be freely interchanged between 3670's and IBM 3330's.

A linear "voice coil" mechanism provides access to any cylinder. A servo head is used to position and lock the carriage on the desired cylinder. Once this is achieved, any data head is electronically selected, and the data is recorded or retrieved from the data track.

3671 Storage Control Unit Description

The Memorex 3671 Storage Control Unit is an on-line device that controls the operation of the associated 3670 Disc Storage Module(s). The 3671 interfaces directly to the IBM System/370 and the IBM System/360 models 85 and 195 via the Block Multiplexer channels. The 3671 is both hardware and software compatible with the IBM 3830.

Optionally, the 3671 may interface to the 2860 Selector Channel on System/360 models 65, 67, 75, 91, and 95, with full functional capability. Support for selector channel attachment is Memorex provided . . . OS MFT/MVT. Optional Multiple Channel Switching permits sharing of the 3670 subsystem by two, three, or four processors . . . System/360 and/or System/370.

The 3671 is a microprogrammed controller with a read/write monolithic memory, having its program loaded during the power on sequence from a disc cartridge located within the 3671. This small cartridge is easily interchanged with another so that program updates are facilitated and controlled simply by changing the disc.



MEMOREX

3670 Disc Storage Subsystem

3670 Disc Storage Module Features

Two operator control panels, one per drive, provide detailed information on drive status and malfunctions.

Compact packaging allows for installation in significantly less floor space with a 13" lower height than equivalent storage devices.

Pack loading height is the same for both drives in the module (35"), which is optimum from a human engineering standpoint.

Each module in a multiple module subsystem may be placed in any location, and modules need not be adjacent. Any arrangement of modules in a subsystem is permissible.

All cabling between drives and the control unit may be permanently installed above or below the floor.

A removable device designation plug enables the user to change the logical device address of each drive in the storage subsystem.

Rotational Position Sensing allows the control unit and channel to disconnect during search time, thus increasing control unit and channel availability and system throughput.

3670 Disc Storage Module Highlights

Disc Pack Configuration

10 discs, 19 recording surfaces, 404 + 7 spare tracks per recording surface.

Storage Capacity

100,018,280 bytes/drive
200,036,560 bytes/module

Data Transfer Rate

806,000 bytes/second

Rotational Speed

3600 RPM

Access Time

50 ms — maximum
27 ms — average
7 ms — minimum

Start Time

20 seconds

Stop Time

20 seconds

Data Recording Format

Compatible with IBM 3330

System Interface

Attached to Memorex 3671 Storage Control Unit

Physical Dimensions

44" wide x 47" high x 32" deep (module)

Weight

1,100 pounds (module)

Operating Environment

60° - 90°F, 20% - 80% Relative Humidity

BTU Output

8,900 BTU/hour (module)

3671 Storage Control Unit Features

Microprograms are stored in a read/write monolithic memory loaded from a small disc cartridge in the 3671. The cartridge contains the operating microprogram, diagnostic programs, and other backup programs.

Operating programs are loaded from the disc cartridge during the power on sequence.

Comprehensive diagnostic programs are loaded from the disc cartridge under the control of a Field Engineering Console contained within the 3671.

Disconnected Command Chaining permits the 3671 to release the channel during mechanical movement within the 3670 module. Multiple Requesting allows up to eight channel programs (one per spindle) to be active in the 3671 at one time. These two complementary features greatly increase performance.

Command Retry, coupled with extensive error correction capability, allows the 3671 to correct the majority of errors without the intervention of the host processor.

3671 Storage Control Unit Optional Features

Multiple Channel Switching

Two, three, and four channel switching permit alternate channels from the same or multiple processors to share the 3670 Subsystem.

2860 Selector Channel Attachment

Permits full function 3670 attachment to IBM System/360 models 65, 67, 75, 91, 95 under OS MFT/MVT. Software and diagnostic support is provided for Rotational Position Sensing, Multiple Requesting, Disconnected Command Chaining, and Command Retry.

3671 Storage Control Unit Highlights

System Interface

System/370 and System/360 models 85 and 95: Attaches to Block Multiplexer Channel.

System/360 models 65, 67, 75, 91, 95 through optional 2860 Selector Channel Attachment feature: Attaches to 2860 Selector Channel.

Data Transfer Rate

806,000 bytes/second

System Limitation

Operates with System/370 or any other system compatible with the IBM 3330 with configuration limitations equivalent to the IBM 3330.

With optional 2860 Selector Channel Attachment Feature, operates with System/360 models 65, 67, 75, 91, 95, under OS MFT/MVT (Release 20.6 and up, single processor only).

Power Requirements

208/230 VAC, 60 ± ½ Hz, 3 Phase, 60 AMP
220/380 VAC, 50 ± ½ Hz, 3 Phase, 60 AMP
(modules powered from 3671)

Physical Dimensions

24" wide x 60" high x 60" deep

Weight

850 pounds

Operating Environment

60° - 90°F, 20% - 80% Relative Humidity

BTU Output

9,000 BTU/hour