



# 3490E Magnetic Tape Subsystem Enhanced Capability Models F00, F01, F11, FC0, and F1A

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## Highlights

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**Compact, full-featured tape subsystem for Scalable POWERparallel\* (SP), AS/400\*, S/390\*, and RS/6000\* systems**

**Improved mechanical and data reliability**

**Random access to over 24 GB (compacted) with the 10-cartridge Automatic Cartridge Facility (ACF)**

**36-track read/write and 18-track read**

**18- and 36-track reading and writing supported on the RS/6000 and AS/400**

**Enhanced performance and capacity in a smaller form factor**

**Self-functioning cleaning cartridge**

**Support for automation**

**Improved environmental**

## Reliable and efficient tape operations for F00, F01, F11, and F1A

The IBM 3490 Enhanced Capability (3490E) F Models are designed to provide outstanding tape subsystem performance, high cartridge capacity, high reliability, and operational efficiency while facilitating remote tape operations. Using a 36-track head while reading or writing 18 tracks bidirectionally, the 3490E F Models double the capacity of a base IBM Cartridge System Tape and virtually eliminate rewind time for a full cartridge. The 3490E F Models also are read-compatible with 3480-track tape. The RS/6000 and AS/400 exploit the new 3480 read interchange non-standard write function.

The 3490E F Models deliver vastly improved performance for S/390, SP, AS/400, and RS/6000 systems. Using the Improved Data Recording Capability (IDRC) and a SCSI interface, effective data throughput can be as high as 6.8 MB/sec. The fast and wide (16-bit) SCSI-2 differential interface and high-performance control unit buffering are key factors in the improved performance of the new models. The SCSI-2 attachment gives users the potential for higher effective throughput than what is currently provided by parallel channel attachment.

Major design enhancements for the 3490E F Models improve mechanical and data reliability. Tape path enhancements, advanced electronic packaging and circuit technology, along with enhanced control unit error recovery procedures, help make the 3490E F Models extremely



The IBM 3490E Model F00

reliable tape subsystems for the S/390, SP, AS/400, and RS/6000.

The F11 drive comes standard with a 10-cartridge autoloader, which holds a cleaning cartridge that provides on-demand cleaning.

## High capacity

The Fxx models support Enhanced Capacity cartridges and 36-track recording to provide the highest data capacity per cartridge of any 3480/3490 tape format cartridges. With IDRC compaction, capacity can be up to 2.4 GB—nearly three times higher than the uncompressed capacity of 3480/3490 cartridges. The increased capacity reduces both the number of cartridges needed and overall storage costs.

The long cartridge life of the Enhanced Capacity Cartridge System Tape and high quality of the 3490E F Models make them an excellent choice to support critical data.



The IBM 3490E Model F01



The IBM 3490E Model F11

### **3490E Enhanced Capability Model FC0**

The 3490E Model FC0 rack, FC0 rack controller features, and F11 tape drive enable you to configure a high-performance tape subsystem. The FC0, when ordered with the appropriate controller features, provides attachment to S/390, RS/6000, SP, and AS/400 systems via ESCON\* or SCSI adapters.

You can install F11 tape drives in the FC0 rack in one-drive increments, giving you more configuration flexibility than was previously available with 3490E A/B models. The F11 tape drives are native SCSI and, if attached to a SCSI host, require no controller features.

FC0 racks support four F11 tape drives, one control unit feature, and up to two ESCON channel adapters. The FC0 rack controller feature can support up to eight F11 tape drives. For an eight-drive configuration, a second FC0 is used as an expansion frame. You can create this configuration by ordering the FC0 rack without specifying the controller feature.

The FC0 rack, with appropriate controller feature codes, and the F11 tape drive significantly improve tape subsystem throughput. An ESCON-attached FC0 with four F11 tape drives has a subsystem throughput of 10 MB/sec compared to 4.7 MB/sec for an ESCON-attached 3490E A10/B40 configuration (with 3:1 data compression). The improved throughput is a result of the tape drives residing on a shared SCSI bus with a bandwidth of 20 MB/sec.

### **3490E Model F1A**

The F1A drive is designed for installation in the 3494 Magstar tape library. You can install one or two F1A drives in any new 3494 L10 or D10 frame on independent sliders that enable the drives to be serviced from the rear. This prevents disruption to the 3494 accessor when the drive is being serviced. (Note that the F1A cannot be installed in existing L10 frames due to the

current frame design. The autoloader feature is not available on the F1A.)

When configured with the appropriate controller feature codes, the F1A can attach to an S/390, SP, AS/400, or RS/6000 system. The F1A can attach to the S/390 through ESCON channels. The F1A can attach to the RS/6000 or SP through ESCON or SCSI, and to the AS/400 through SCSI. You can configure the F1A with up to two ESCON channel adapters. For SCSI attachment, no controller features are required and one SCSI attachment is provided.

### **S/390 and S/370 system support**

The 3490E FC0 is supported on all models of the S/390 and S/370\*. The minimum software levels that support the FC0 are:

- MVS\* SP 4.2.0 with DFP 3.3.0
- VM/ESA\* 1.1.1
- VSE/ESA\* 1.2.0

The 3490E F1A is supported on all models of the S/390 and S/370. The minimum software levels that support the F1A are:

- MVS SP 4.2.0 with DFP 3.3.0
- VM/ESA 1.1.1
- VSE/ESA 1.2.0

### **RS/6000 system support**

The 3490E Models F00, F01, F11, FC0, and F1A are supported on all RS/6000 models that support any of the following adapters:

- RS/6000 SCSI-2 Differential Fast/Wide Adapter/A (FC 2416)
- RS/6000 SCSI-2 Enhanced SCSI-2 Differential Fast/Wide Adapter/A (FC 2412)
- RS/6000 SCSI-2 Differential High Performance Controller (FC 2420)

- RS/6000 PCI Differential Fast/Wide Adapter (FC 2409)
- RS/6000 PCI Differential Fast/Wide Adapter (FC 6209)
- RS/6000 S/370 Channel Emulation/A (FC 2759)
- RS/6000 S/390 ESCON Channel Emulation (FC 2754)

A SCSI 4.5-meter cable is provided, but the correct interposer is required to connect a 3490E Model F00, F01, or F11 to the RS/6000 SCSI-2 adapters. You can daisy-chain multiple RS/6000 systems to each other with RS/6000 system cables. Multiple 3490E Model F00, F01, and F11 tape subsystems can be interconnected via their SCSI cables, but the maximum total cable length allowed on the RS/6000 2412 and 2416 adapters is 25 meters. RS/6000 adapter 2420 has a maximum cable length of 19 meters.

#### **AS/400 system support**

You can attach the 3490E Models F00, F01, F11, FC0, and F1A to all AS/400 Models Dxx, Exx, and Fxx by using the Magnetic Media Subsystem Controller (AS/400 FC 6501). A SCSI 4.5-meter cable is provided, but the 2895 interposer is required. One card slot is required on the 9402, 9404, or 9406 for each 6501 feature. Each 6501 controller has two ports, so two 3490E F00, F01, and F11 models can be attached to each card.

Users of OS/400\* Version 3 Release 1 (V3R1), V4R1, or later who want to utilize the Fxx random mode, 18-track write, and 256K block sizes should use drive code EC-C35099 or later and any appropriate OS/400 PTFs.

For additional information on open systems attachment, visit: [www.ibm.com/storage](http://www.ibm.com/storage).

#### **RS/6000 operating system support**

The IBM 3490E Models F00, F01, F11, FC0, and F1A are supported by AIX/6000\* 4.1.x and later versions. Specific AIX/6000 device support is shipped with the AIX device driver.

#### **AS/400 operating system support**

The IBM 3490E Models F00, F01, F11, FC0, and F1A are supported by OS/400 V3R1 and beyond under 3490 Model E emulation mode.

#### **Media**

Media for all 3490E Fxx Models can be ordered from IBM Media or Supplies Distribution or from authorized dealers. To order IBM media and supplies in the United States, call 1-888-IBM-MEDIA (1-888-426-6334) today. In Europe, call 00-31-433-502-756.

#### **Tell me more**

For more information, contact your IBM representative or your IBM Business Partner. In the United States or Canada, you can also call IBM Direct: 1-800-IBM-CALL (1-800-426-2255). Internet: [www.ibm.com/storage](http://www.ibm.com/storage)



*The IBM 3490E Model F1A*



*The IBM 3490E Model FC0 with four F11 tape drives*

**IBM 3490E Magnetic Tape Subsystem Enhanced Capability Models F00, F01, F11, FC0, and F1A at a glance**

<b>Models</b>	<b>F00</b>	<b>F01</b>	<b>F11</b>	<b>FC0</b>	<b>F1A</b>
<b>Characteristics</b>					
Model type	Tabletop	Stand-alone	Rack-mount	Stand-alone	Library
IDRC	Standard	Standard	Standard	Standard	Standard
Ten cartridges	NA	Standard	Standard	NA	NA
SCSI-2 differential interface	Standard	Standard	Standard	Standard	Standard
ESCON attachment	NA	NA	NA	Optional	Optional
Drive data rate (uncompacted)	3 MB/sec	3 MB/sec	3 MB/sec	3 MB/sec	3 MB/sec
Maximum throughput (compacted)	6.8 MB/sec	6.8 MB/sec	6.8 MB/sec	10.0 MB/sec	6.8 MB/sec
<b>Cartridge capacity</b>					
Per cartridge	Up to 0.8 GB	Up to 0.8 GB	Up to 0.8 GB	Up to 0.8 GB	Up to 0.8 GB
Per cartridge (compacted)	Up to 2.4 GB	Up to 2.4 GB x 10 cartridges	Up to 2.4 GB x 10 cartridges	Up to 2.4 GB x 40 cartridges	Up to 2.4 GB NA
Total capacity (compacted)	Up to 2.4 GB	Up to 24.0 GB	Up to 24.0 GB	Up to 96.0 GB	NA
<b>Physical characteristics</b>					
Width	22.2 cm (8.75 in.)	17.7 cm (7.0 in.)	43.2 cm (17.0 in.)	65.0 cm (25.6 in.)	171 cm (6.8 in.)
Height	25.9 cm (10.2 in.)	48.6 cm (19.1 in.)	171 cm (6.8 in.)	1.6 m (62.1 in.)	43.2 cm (17.0 in.)
Depth	43.2 cm (17.0 in.)	61.2 cm (24.1 in.)	61.1 cm (24.0 in.)	92.1 cm (36.3 in.)	61.1 cm (24.0 in.)
Weight	15.8 kg (34.8 lb.)	29.5 kg (65.0 lb.)	272 kg (60.0 lb.)	138.0 kg (303.0 lb.)	272 kg (60.0 lb.)
<b>Operating environment</b>					
Temperature	16.0° to 32.0° C (60.8° to 85.0° F)				
Relative humidity	15% to 80%				
Electrical voltage	85 to 295 volts at 47 to 63 Hz				
Electrical power	150 watts (nominal)				
Noise level	Less than 50 dB				



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