



# Tech Info Library

## Macintosh IIfx: Termination (4/95)

Revised: 4/13/95  
Security: Everyone

Macintosh IIfx: Termination (4/95)

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TOPIC -----

This article contains information about Macintosh IIfx termination and external terminators.

DISCUSSION -----

There have been 4 different external terminators distributed by Apple. Two are identical except for the part number.

Part Number	Description
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590-0304	The original terminator.
590-0695-A	Replaces 590-0304. This is the new PLATINUM terminator
590-0695-B	These are BLACK and are identical, except for the part number. Apple built approximately 10,000 having the part number 590-0695-B; later manufactured black terminators are numbered 590-0705. One black terminator ships with every revenue Macintosh IIfx, but can be ordered separately from Service using part number 590-0705.
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Note:

Only 1 black terminator is ever needed at a time; more details are below. These black terminators are officially called the Apple SCSI Cable Terminator II.

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The Other Two Macintosh IIfx SCSI Bus Components

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Internal SCSI Termination Block

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The Internal SCSI Termination Block provides internal termination resistance for Macintosh IIfx systems WITHOUT INTERNAL HARD DRIVES. All Macintosh IIfx computers that shipped without internal hard drives had the Internal SCSI Termination Block installed. This component plugs into the Internal SCSI Filter and it looks like a "T", with a 50-pin female connector on the bottom.

Internal SCSI Filter

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The Internal SCSI Filter provides termination capacitance for internal Macintosh IIfx hard drives that shipped prior to March 19, 1990 or any third-party hard drives. After that date, Apple hard disk drives shipping in the Macintosh IIfx contained the proper termination capacitance. The filter has a 50-pin female connector on one end and a 50-pin male connector on the other. When connected to an internal drive the drive cable should be connected directly into the logic board and plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive. When there is no hard drive the SCSI Filter is connected to the logic board, and the Internal SCSI Termination Block is connected to the filter.

All Macintosh IIfx computers that shipped without internal hard drives had the Internal SCSI Filter and the Internal SCSI Termination Block installed. When you add a third-party drive remove the Internal SCSI Termination Block, but leave the Internal SCSI Filter connected to the logic board. Termination needs to be provided by the resistors on the internal third-party drive.

Determining What Terminators to Use and When

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No External SCSI devices Connected

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Termination is provided by either the internal hard disk, or by the Internal SCSI Termination Block.

With a Third-party Internal Drive

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The third-party drive should be internally terminated. Plug the drive cable directly into the logic board and plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive (Cable and filter order is important for this to terminate correctly). The Internal SCSI Termination Block needs to be removed (it looks like a "T"). Plug the drive cable directly into the logic board and plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive.

With Any External SCSI Devices Connected

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Use only ONE black terminator at the end of the SCSI chain. Make sure that all built-in terminators are removed from external third-party SCSI devices (Apple's external SCSI devices do not contain internal terminators).

NOTE:

A flyer in the Macintosh IIfx Finished Goods box instructs customers to return self-terminating SCSI devices to the Service Provider to disable the termination. Removing the termination can be performed by the user in some circumstances--a user should refer to the owners manual or check with the manufacturer if they are uncertain.

WARNING:

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Under no circumstances should you use more than one black Apple SCSI Cable Terminator II on any external SCSI chain. This may damage the logic board or whatever device is providing termination power.

With An Internal Disk Drive And External SCSI Device

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Both the internal SCSI drive and the last SCSI device in the external SCSI chain need termination, and you need to plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive.

Why Is There A New Black Terminator For The Macintosh IIfx?

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One of the features of the Macintosh IIfx is a new SCSI chip that provides SCSI data transfer rates up to 3MB per second, faster than any earlier Macintosh systems. To achieve these transfer rates, components on the Macintosh IIfx logic board are smaller and faster, this makes them more susceptible to signal reflections on the cable. The new terminator adds the filter capacitors and changes the resistor values for some of the signals to reduce the reflections.

How Can Third-party Drives Take Advantage Of The Higher Scsi Throughput?

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Any SCSI hard drive that can sustain transfer rates above 1.25MBps will operate faster on a Macintosh IIfx. No Apple hard drive, including the HD160 SC, takes advantage of this higher transfer rate.

What To Do With Less Common System Configurations

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In some remote cases someone might remove the internal drive from a Macintosh IIfx they will not have the correct internal termination. In this situation, you should order and install a Internal SCSI Termination Block (Apple Service Part #590-4515) and Internal SCSI Filter (Apple Service Part #590-4516), and use the black terminator if you have any external drives; however, if you don't have access to an internal termination block, you can connect use the new platinum terminator (590-0695-A on the terminator) to the beginning of the SCSI chain and, as always, connect the black terminator at the end of the chain. Again, what is preferred is to order the Internal SCSI Filter from service.

Article Change History:

13 Apr 1995 - Added information on having internal and external drives.

Support Information Services

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