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SCSI Termination and Quadra 800 Performance (7/93)

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TOPIC -----

A Macintosh Quadra 800 with a single 500MB internal SCSI drive displays intermittent problems starting up and mounting.

DISCUSSION -----

Two anomalies can affect Macintosh Quadra 800 models, as well as other models which use the 53C96 SCSI chip, if proper SCSI cabling and termination specifications are not followed.

The first anomaly involves which internal SCSI cable connector on the Quadra 800 is used to attach to the internally terminated hard drive. Some units may have the drive connected to the second SCSI connector (the connector below the CD). This leaves the remaining SCSI cable in an unterminated state. The proper configuration is for the internal SCSI drive to be connected to the last connector on the internal SCSI Bus. If the Quadra refuses to boot or has trouble mounting the internal hard drive when no external drive is connected, simply reconnecting the internal drive to the last SCSI connector may solve the problem. Remember to re-initialize the drive after reattaching the cable, as the boot disk's directory may be damaged.

The second anomaly is related to the SCSI specification of the external cables, as well as the termination state of the external devices. If the Quadra 800 has a variety of different external SCSI cables attached, the performance of devices on the SCSI bus may be erratic and unreliable. All Macintosh systems should use cables with properly matched impedance (90 - 130 ohm), shielding, all data lines twisted and paired with ground, and a properly terminated SCSI bus.

If the Quadra at one time had mismatched external SCSI cables attached, future system problems may occur due to damage to the boot disk directory code. The Quadra may appear to work fine for some time and then fail with the same symptoms. Even though the cables have been replaced, the disk directory could

still possibly be damaged. Once the drive directory is damaged, the failures could periodically appear even though the root cause of the problem (defective or mismatched cables) has been removed .

To make troubleshooting these problems confusing, every piece of equipment, including the cables and termination (both Apple and third-party), may work fine when tested individually. But once the products are combined into a system, the problems appear.

In these higher performance systems, with SCSI speeds reaching 5MB per second, the overall configuration is much less forgiving of any deviation from the designed impedance and termination requirements of Apple SCSI cables and the SCSI bus.

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