CTT 8000
Internal SCSI
Minicartridge
Drive

FCC Notice

This equipment generates and uses radio frequency energy and, if not installed and used in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception which could void the user's authority to operate the equipment. It has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If interference does occur, try to correct it by taking one or more of the following measures:

- λ   Reorient or relocate the receiving antenna.

- λ   Increase the separation between the computer and the receiver.

- λ   Connect the computer into an outlet on a circuit different from that to which the receiver is connected.

- λ   Consult the dealer or an experienced radio/television technician for help.

Further, this equipment complies with the limits for Class B digital apparatus in accordance with Canadian Radio Interference Regulations.

Cet appareil numérique de la classe B est conforme au Règlement sur brouillage radioélectrique, C. R. C., ch. 1374.

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Introduction

The Seagate internal CTT8000 SCSI minicartridge drive is a fully integrated system that offers 4 Gigabytes (GB) of native storage capacity with up to 8 GB of storage using software data compression and the 3M Travan cartridge. The drive provides a backup rate of up to 30 megabytes/minute (MB/min) without data compression in a best case scenario with the system optimized[1]. Under less than optimum conditions, transfer rates might range from 18 to 28 MB/min. Given sufficient system resources and compressible data structures, nominal transfer rates of up to 60 MB/min can be observed using software data compression (assumes 2:1 compression ratio).

The CTT8000 drive reads and writes the QIC-3080MC and QIC-3095MC formats. The drive also provides a backward read capability by reading the QIC 80, QIC-3010, and QIC-3020 formats.

Seagate *FastSense*™ enables the drive to automatically sense the fastest supportable data transfer rate of the host system and then chooses a transfer speed of either 600, 450, or 300 kilobytes/second (KB/sec). The drive meets QIC-3080 and QIC-3095 specifications.

The drive unit installs internal to the computer in a one-inch height 3.5-inch or half-height 5.25-inch drive bay. Figures 1 and 2 illustrate the drive models.

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[1]Actual performance on your system might vary and is dependent on the system resources available and the structure and type of data compressed.

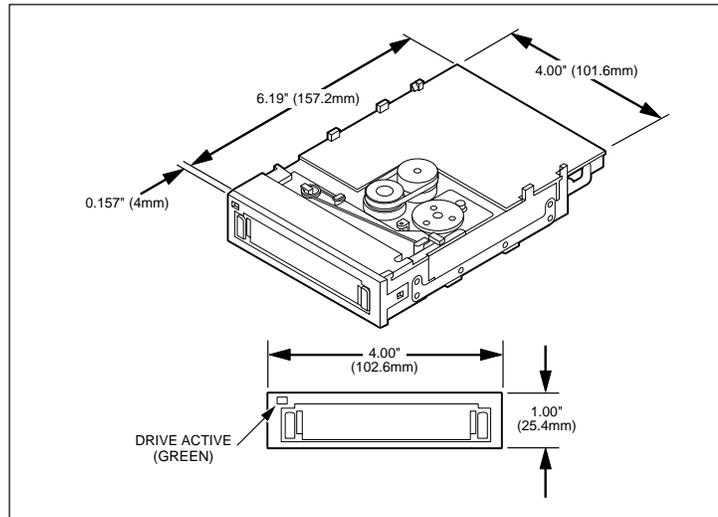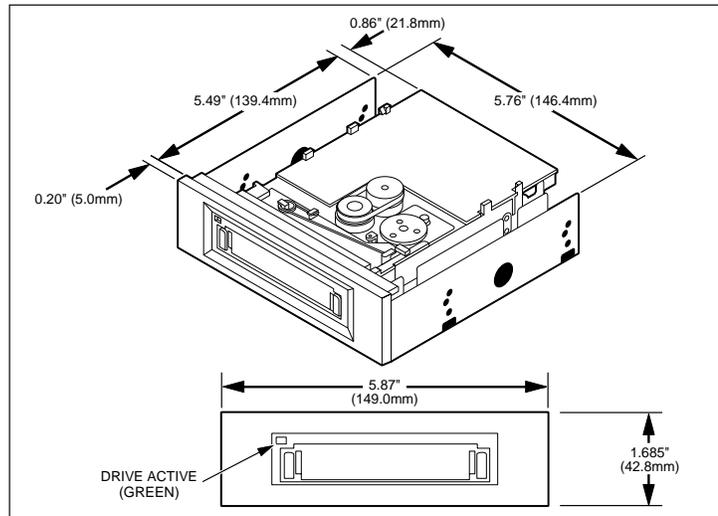*Figure 1*
SCSI Travan Minicartridge Drive (3.5-Inch Mount)

Figure 2
SCSI Travan Minicartridge Drive (5.25-Inch Mount)

Before You Begin

Keep the following guidelines in mind as you install the unit:

λ   To protect the drive from static electricity, DO NOT remove it from the anti-static bag until you are ready to install it.

λ   Before you remove the drive from the anti-static bag, touch a metal or grounded surface to discharge any static electricity buildup from your body.

> ⚠ **Caution:** If you touch static-sensitive parts of the drive, such as the printed circuit board, and discharge static electricity, the components may be damaged.

λ   Hold the drive by its edges only and avoid direct contact with any printed circuit board exposed.

λ   Lay the drive only on top of the anti-static bag or return it to the bag when you need to lay it down.

Cabling and Connectors

The drive provides standard, single-ended SCSI transmission. ANSI SCSI standards specify the technical requirements for correctly cabling and connecting single-ended devices.

Either 50-pin flat cable or 25-signal twisted-pair cable with a maximum length of 6 meters (19 feet) may be used to connect the drive to its SCSI host adapter output. If twisted-pair cabling is used, connect the twisted pairs to physically opposing contacts on the connector.

Single-Ended SCSI Connector

The internal drive provides a 50-pin, right-angle, dual-row connector on the main PCB at the rear of the unit.

Configuring the Drive

The drive mounts internal to the computer in either a 3.5-inch by one-inch space or in a 5.25-inch half-high space with the use of mounting rails and a surrounding bezel.

Three simple steps make up the installation procedure:

1. Configure jumpers.

2. Mount the drive unit.

3. Complete the power and interface connections.

The installation procedure is the same for both models except physically mounting the unit in the computer. After you configure the jumpers and decide whether or not you need to add terminators, follow the steps provided for the size of enclosure into which you are mounting the drive.

Configuring Jumpers and Terminators

Figure 3 illustrates the location of the jumpers on the bottom of the drive.

Figure 3
Location of Jumpers for Drive
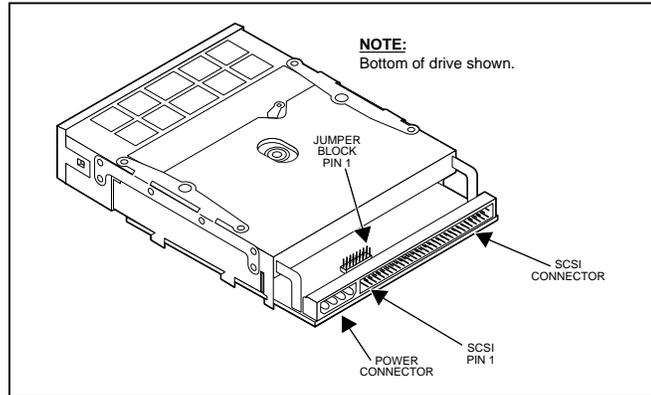
The following settings should be checked prior to installation:
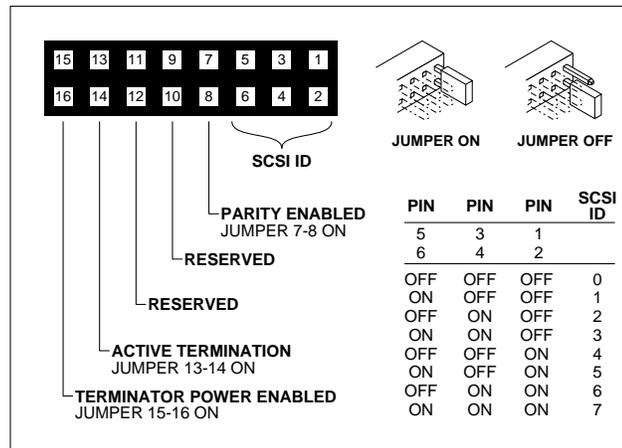
● SCSI ID

⌡ **Note:** Figure 4 shows the jumper configurations for the various SCSI device addresses (IDs) and for the other options.

● Parity

● Terminator power

● Termination

Use the jumpers to set the SCSI device address. You can also enable parity and enable terminator power by jumper placements. SCSI terminators must be installed for the last device on the SCSI bus.

Figure 4
Jumper Configurations

PIN	PIN	PIN	SCSI ID
5	3	1	
6	4	2	
OFF	OFF	OFF	0
ON	OFF	OFF	1
OFF	ON	OFF	2
ON	ON	OFF	3
OFF	OFF	ON	4
ON	OFF	ON	5
OFF	ON	ON	6
ON	ON	ON	7

⌡ **Notes:** In Figure 4, ON means that the jumper shunt is placed over the two vertical pins. OFF means that the jumper shunt is removed from the two vertical pins (or hanging over only one of the pins).

The drive must be turned OFF; then, ON in order for the jumper placements to take effect, or a SCSI Bus Reset must be received.

If the default address setting ID is correct for your system, and you do not choose to change any other options, go to the following section that explains how to install the drive unit.

If you need to change any default settings, refer to Figure 4 and the appropriate following section; make the changes and then go to the following section that explains how to install the drive unit.

SCSI Device Address Jumpers

Be sure that no other device on the SCSI bus has the same SCSI address.

Figure 4 shows the jumper placements for the various SCSI ID choices.
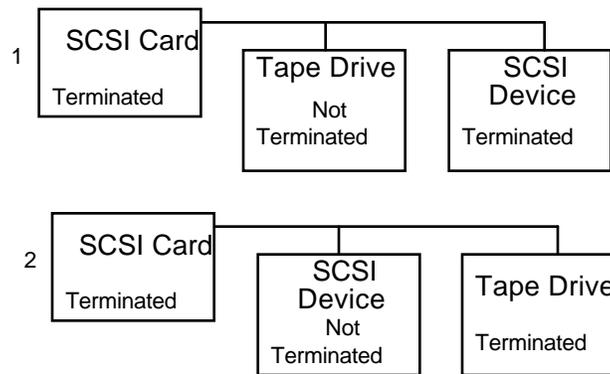
Parity

To enable parity, place a jumper shunt over the two pins—7 and 8—as shown in Figure 4. Be sure the jumper shunt is firmly in place.

SCSI Terminator Enable

The last device on the SCSI bus must have termination. Figure 5 illustrates the termination for two daisy-chain configurations.

Figure 5
Daisy-Chain Configurations

The CTT8000 supports active termination and does not require the use of terminating resistor packs.

Terminator Power Enabled

Terminator power (+5-volt) is enabled by default.

> ⚠ **Caution:** If the jumper is installed, be careful not to short the TERMPWR signal to ground.

The drive contains a terminator power fuse to prevent damage to drive components in case the terminator power is shorted. If terminator power is enabled and the SCSI cable is connected upside down for example, this fuse may blow to prevent damage to the drive itself. In that case, return the drive to an authorized repair facility.

Mounting the Drive Unit

The internal drive can be installed in a one-inch high by 3.5-inch form factor or in a half-high by 5.25-inch form factor (with rails). The drive can be installed in three different orientations: one horizontally (LED to the left) and two vertically (LED up and down).

The following section provides directions for mounting the drive in either a 3.5-inch enclosure or in a 5.25-inch enclosure.

Installing the Drive

The following steps guide you through installing the internal drive.

> ⚠ **Caution:** Turn off your computer before you begin the installation. Failure to do so might result in damage to your equipment or electrical shock to you.

⌡ **Note:** Because computer models vary between manufacturers, refer to your computer manual for specific installation instructions.

1. Write down the serial number and model number shown on the drive and put this information in a safe place. You need this information if you ever call for service.

2. Refer to the manual that you received with your computer for instructions about removing the computer cover and the face plate from the drive bay in which you plan to install the drive.

⌡   **Note:** If devices are installed in any drive bays adjacent to the one you are using for the internal drive, partially removing those devices might give you more working space.

3. Check that jumper settings and termination are correct for your installation. (Refer to the previous text under ***Configuring the Drive***.)

4. Attach any special mounting hardware to the drive that your system might require. Refer to the manual that you received with your computer for requirements.

5. Locate the mounting screw holes in the drive brackets. Each side contains two sets of holes. Use the set that aligns the drive properly within the drive bay.

6. Slide the tape drive into the computer so that the drive bezel and the computer face plate are flush. Then, align the mounting holes as shown in Figure 6.

Figure 6
Aligning the Drive in the Computer
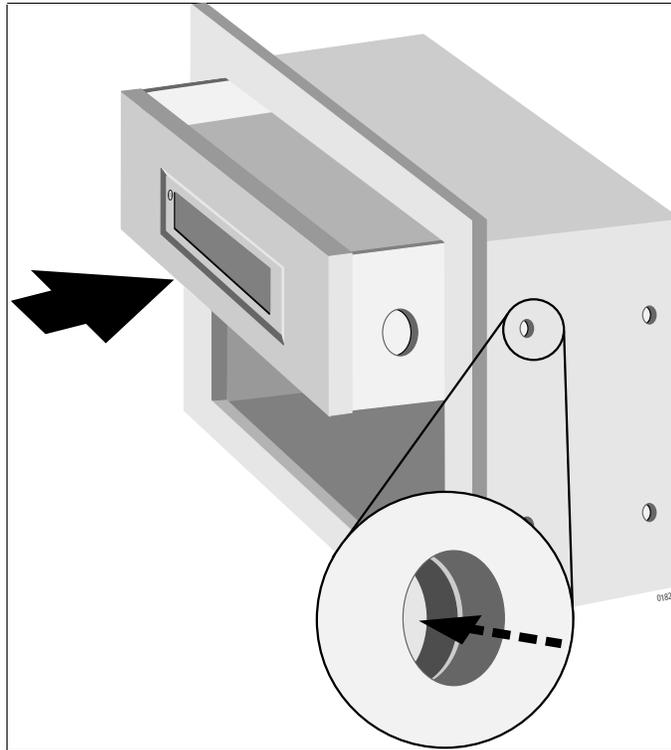
7. Secure the drive using the mounting screws. The threaded mounting holes are designed for M3.0 metric screws. The maximum length for the M3.0 metric screws is 4 mm. Use of longer length screws may damage the drive.

8. Connect an available power cable to the power connector on the drive. The recommended power mating connector requires an AMP 1-48024-0 housing with AMP 60617-1 pins or equivalent.

⌡ **Note:** Turn off all power before inserting connectors.

9. Connect the mating SCSI connector (the single-ended connector described previously in ***Cabling and Connectors***) with the SCSI connector on the

rear of the unit. When you make the connection, be sure pin 1 of the connector aligns with pin 1 on the SCSI connector.

⌡   **Note:** Pin 1 on the SCSI connector is to your right as you look at the back of the drive. (See Figure 3.) Your SCSI cable should have Pin 1 highlighted by a color strip. Be sure to mate Pin 1 on the cable to Pin 1 on the drive. Failure to do so could make the drive inoperative.

10. Replace the computer cover and reconnect any peripherals that you disconnected during the installation.

11. Plug the computer and any peripherals into an AC power outlet.

Using the Drive

The drive is simple to operate. The following information briefly explains drive operation.

Front Panel LED Operation

The front panel of the Travan drive contains the cartridge opening and one round, green light emitting diode (LED). This LED is lit when the tape is NOT at the beginning of the tape. Thus, the LED shows tape movement when lit.

Figure 7 shows the front panel of the drive.

Figure 7
Front Panel
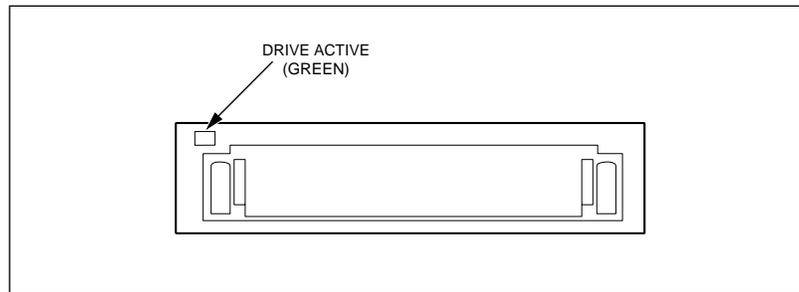
Software

The drive requires one of the following operating environments: DOS™ version 5.0 or later, Microsoft Windows™ 3.1 or later, OS/2, Novell, Microsoft NT™, Microsoft Windows '95™, or SCO UNIX/XENIX™ System V, version 3.2 or later. The drive operates with many of the popular backup software applications such as, Seagate's Backup Exec for DOS and Windows, Window 95, Netware, Windows NT.
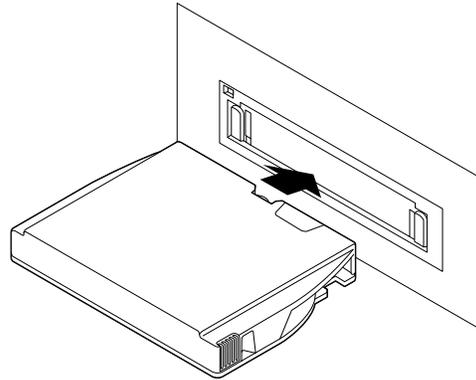
Loading and Unloading Cartridges

Your tape drive has a flip-up door that covers the cartridge opening when a tape cartridge is not installed in the drive. Once a cartridge is inserted, it is held firmly in place by the drive's positive locking mechanism.

> ⚠ **Caution: DO NOT** remove a tape cartridge while the drive is active. Complete any tape operations and wait until the green LED is OFF before removing the cartridge.

To load a cartridge, insert it with the metal base plate down and the tape access door facing into the drive. Figure 8 illustrates the loading of a cartridge.

Figure 8
Loading a Travan Cartridge

To unload a cartridge, wait until the drive activity LED is OFF and then pull the cartridge straight out. Figure 9 illustrates the unloading of a cartridge.

Figure 9
Unloading a Travan Cartridge
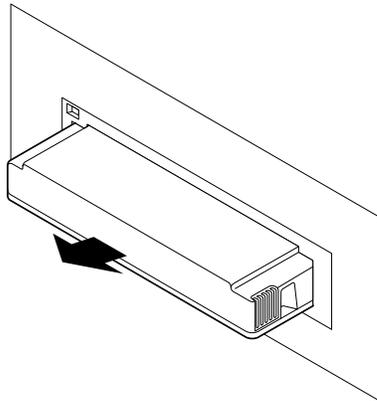
Recommended Tapes

The drive operates with the tapes listed in the following table.

Description	Seagate	Sony	3M
Travan (750 ft) • **4.0 GB capacity** • **8.0 GB capacity with data compression**	8000TR4	N/A	TR-4
QIC Wide 900 Oe(400 ft) • **2 GB capacity** • **4 GB capacity with data compression**	—	QW 3095XLF	—
Standard 900 Oe (400 ft) • **1.6 GB capacity** • **3.2 GB capacity with data compression**	—	—	miniMAGNUS^{TM} 3080
QIC Wide 900 Oe(400 ft) • **2 GB capacity** • **4 GB capacity with data compression**	4000QT	QW 3080XLF	—

Setting the Write–Protect Switch

Travan minicartridges feature a write-protect switch located in the upper left corner of the cartridge. You can set the switch to keep data from being written on the tape. Use this switch when you want to make sure that important data on the tape will not be overwritten.

Figure 10 shows the switch in the nonprotected (read/write) or unlocked position.

Figure 10
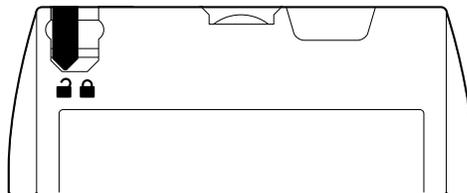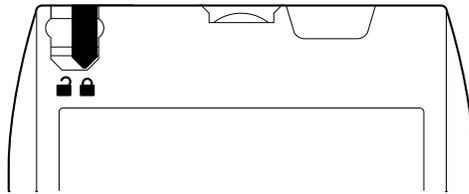*Travan Cartridge Read/Write Switch Position*

Figure 11 shows the switch in the protected (read only) or locked position.

Figure 11
Tape Cartridge Read-Only Switch Position

To return a cartridge to the "writable" state, push the switch toward the end of the cartridge or to the unlocked position..

Caring for Cartridges

Although minicartridges are ruggedly built, they must be handled with care to preserve the data that they contain. The following points are guidelines for storing and using minicartridges.

λ   Do not open the tape access door of the cartridge or touch the tape itself. One fingerprint can prevent the drive from reading the tape.

λ   Keep the cartridge away from sources of electromagnetic fields, such as telephones, dictation equipment, mechanical or printing calculators, motors, and bulk erasers. Do not lay cartridges on the computer monitor or on the base unit of the computer.

λ   Keep the cartridge away from direct sunlight and heat sources, such as radiators or warm air ducts.

λ   Keep the cartridge free of moisture. Do not wet or submerge a cartridge in any liquid.

λ   Do not expose the cartridge to temperature extremes. Allow the cartridge to assume room temperature slowly.

λ   Retention tape cartridges that have not been used for more than a month before restoring or backing up data. This retentioning removes unwanted tight spots that develop naturally on reeled media.

Cleaning the Tape Drive Head and Capstan

NEVER TOUCH THE READ/WRITE HEAD OF THE DRIVE WITH ANYTHING OTHER THAN A WET COTTON SWAB OR AN APPROVED CLEANING CARTRIDGE.

To properly maintain the tape drive, you should periodically clean the read/write head. No other periodic maintenance is required.

Follow these guidelines to help ensure that your drive provides long, reliable service:

λ   Operate the drive in a clean, dust-free environment.

λ   Never apply a lubricant to the drive.

λ   Clean the tape drive head every month or after each 8 hours of continuous read/write operations.

For new cartridges, clean the head after two hours of tape movement by one of two methods: using an approved cleaning cartridge or manually as described in the following steps.

The only cleaning cartridge tested and approved by Seagate for use with the SCSI Travan Minicartridge drive is the 3M cleaning cartridge DC051111 (Seagate Part Number 10001794-001). Follow the instructions included with the cleaning kit.

To manually to clean the drive head and capstan, follow these steps:

1. Moisten a clean, lint-free swab in 90% isopropyl alcohol so that it is wet but not dripping. (Never use a dry swab.)

2. Hold the drive access door open and wipe the head gently using a side-to-side motion. The upright rectangle with the stripe in Figure 12 is the head.

Figure 12
The Drive Head
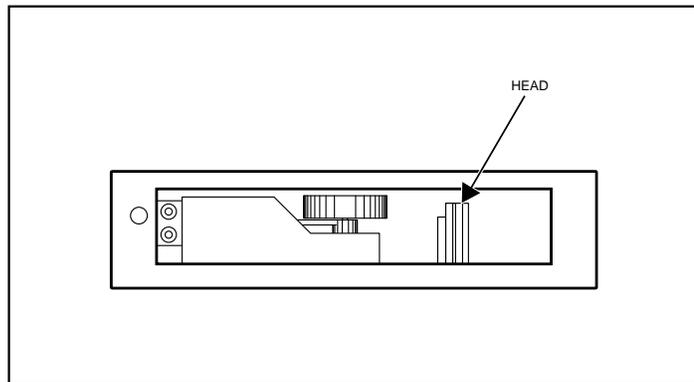
3. Use a new swab saturated with 90% isopropyl alcohol to wipe the capstan. the capstan is the flat, roller to the left of the head as shown in Figure 12. Rotate the capstan until its entire surface is clean.

4. Allow the drive to dry for 3 minutes before using.

Troubleshooting

If a power interruption occurs during a backup or restore operation, start over when the power is restored. If the drive appears to fail during a backup or restore operation, try the following steps:

1. Remove and replace the cartridge and try again. Make sure you are using the correct type of tape cartridge.

2. Turn off all power to the computer and drive. Wait for the computer to power down and then start over.

3. Try a different tape—preferably one that has never been used.

4. Check all cable connections for proper contact.

5. Clean the tape drive head as previously instructed. Then try the operation again.

If problems persist, contact your tape drive supplier or Seagate technical support at

(800) 526-6637   US and Canada

44-1628-477080   Outside US and Canada

Be sure that you have the documentation for your computer and all installed devices before you call technical support.

Also contact us at

Seagate web site: http://www.seagate.com

Seagate BBs: (408) 456-4415

Notes

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