

# **8505 8mm Cartridge Tape Drive**

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## **User's Guide**

Order Number: EK-STWCT-UG. E01

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Fifth Edition, December 1994

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# *Revision Record*

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*This Revision Record provides a concise publication history of this guide. It lists the manual revision levels, release dates, and reasons for the revisions. It also describes how the changes to affected pages are marked in the guide.*

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The following revision history lists all revisions of this publication and their effective dates. The publication part number is included in the *Revision Level* column, with the last entry denoting the latest revision.

<b>Revision Level</b>	<b>Date</b>	<b>Summary of Changes</b>
EK-STWCT-UG. A01	December 1993	Original release
EK-STWCT-UG. B01	March 1994	Cleaning cartridge and Appendix B added
EK-STWCT-UG. C01	August 1994	Appendix C added
EK-STWCT-UG. D01	October 1994	Appendix D added
EK-STWCT-UG. E01	December 1994	Appendix E added

# *About This Guide*

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*This section identifies the users of this guide and describes the contents and structure. In addition, it includes a list of conventions used in this guide.*

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## **StorageWorks 8505 8mm Cartridge Tape Drive User's Guide**

This guide provides operational and maintenance information for the StorageWorks 8505 8mm Cartridge Tape Drive.

### **Intended Audience**

This guide is intended for any user who is responsible for operating or maintaining the cartridge tape drive.

### **Document Structure**

This guide contains the following chapters:

#### **Chapter 1: Introduction**

**Introduction** gives an overview of the StorageWorks 8505 8mm Cartridge Tape Drive and describes the three packaging options for the drive: SWXTE-AA, SWXTE-AB, and SWXTE-AC. It also describes the formats the drive can read and write.

#### **Chapter 2: Installation and Initial Power On**

*Installation and Initial Power On* refers you to the appropriate installation information and provides information about the initial power on of the cartridge tape drive.

#### **Chapter 3 Operating the Cartridge Tape Drive**

*Operating the Cartridge Tape Drive* describes how to use the drive's controls and indicators; it also describes how to load and unload tapes.

#### **Chapter 4 Cleaning the Cartridge Tape Drive**

*Cleaning the Cartridge Tape Drive* describes how to clean the drive.

#### **Appendix A: Product Specifications**

*Product Specifications* provides physical and operating specifications.

### **Appendix B: Product Notes for Novell™ and MS-DOS™**

*Product Notes for Novell and MS-DOS* provides information for the system administrator. It must be read before installing and using the cartridge tape drive SBB with a host system operating with the Novell and MS-DOS, or MS-DOS/WINDOWS operating systems.

### **Appendix C: Product Notes for Sun™**

*Product Notes for Sun* provides information for the system administrator. It must be read before installing and using the cartridge tape drive SBB with a host system operating with the Sun and Solaris operating systems.

### **Appendix D: Product Notes for IBM™ RS/6000**

*Product Notes for IBM* provides information for the system administrator. It must be read before installing and using the cartridge tape drive SBB with a host system operating with the AIX 3.2.5 (or later) operating system.

### **Appendix E: Product Notes for HP™ 9000 Series 800**

*Product Notes for HP* provides information for the system administrator. It must be read before installing and using the cartridge tape drive SBB with a host system operating with the HP-UX 9.04 (or later) operating system.

## **Conventions**

This guide uses the following conventions:

### **Documentation Conventions**

<b>Style</b>	<b>Meaning</b>
<b>boldface type</b>	<b>For emphasis</b>
<i>italic type</i>	<i>For emphasis and manual titles</i>

## **Ordering Data and Cleaning Cartridges**

You can order data and cleaning cartridges from the following sources:

- The 8mm data cartridge, Digital part number TKZ8x, is recommended for use with the StorageWorks 8505 8mm Cartridge Tape Drive. You can order the data cartridge from authorized Digital VARs and distributors, or by calling DECdirect at 800-DIGITAL or 800-344-4825. In Canada, you can call DECdirect at 613-592-5111.
- Approved cleaning cartridges can be ordered from EXABYTE. These cleaning cartridges are the only cleaning device or material recommended for use with the StorageWorks 8505 8mm Cartridge Tape Drive. Both cleaning cartridges and data cartridges can be ordered from EXABYTE Corporation at 1685 38th Street, Boulder, Colorado, 80301. EXABYTE Direct Marketing is at 800-392-8273. The EXABYTE part numbers are:

Data cartridge . . . . . 180093

Cleaning cartridge, 3 cleaning passes . . . . . 727113  
Cleaning cartridge, 12 cleaning passes . . . . . 727386

## Introduction

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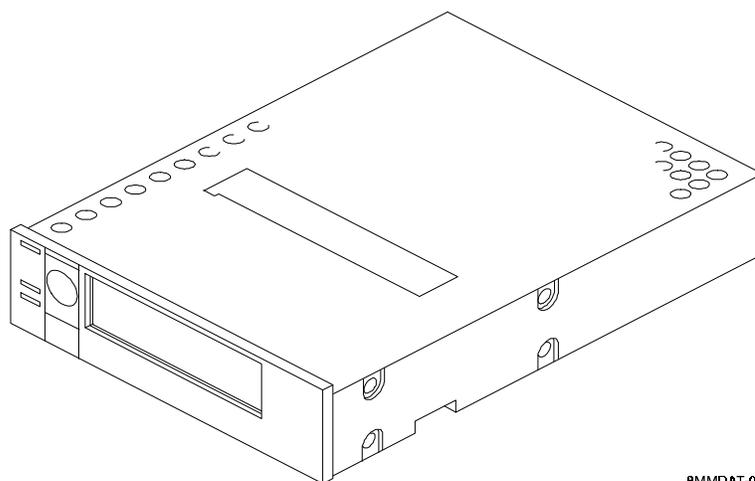
*This chapter provides a product overview of the StorageWorks 8505 8mm Cartridge Tape Drive, outlines its features, and describes the formats it can read and write.*

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### 1.1 Product Overview

The StorageWorks 8505 8mm Cartridge Tape Drive (Figure 1–1) is an enhanced 8mm digital helical-scan cartridge tape drive, which is packaged in an industry standard 5.25-inch half-height form factor. The half-height size allows for ease of integration across a multitude of platforms.

**Figure 1-1 StorageWorks 8505 8mm Cartridge Tape Drive**



BMMDAT-01

### 1.2 StorageWorks Packaging Options for the Cartridge Tape Drive

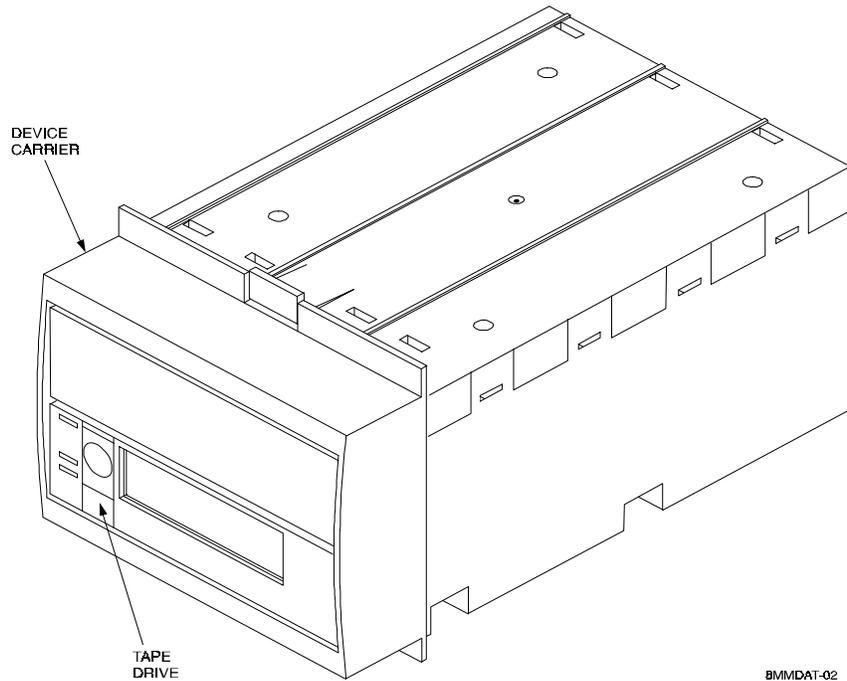
The StorageWorks 8505 8mm Cartridge Tape Drive is available as three packaging options as follows:

- SWXTE-AA (Figure 1–1)
- SWXTE-AB (Figure 1–2)
- SWXTE-AC (Figure 1–3)

Figures 1–1, 1–3, and 1–4 show the packaging options. (Chapter 2 provides information about installing and configuring the options.)

Option SWXTE-AA is a configuration in which one or two 8mm tape drives is installed in a device carrier, and the device is subsequently placed in a StorageWorks drive expansion unit. Figure 1–2 shows one tape drive installed in a device carrier.

**Figure 1–2 Option SWXTE-AA: One Tape Drive in a Device Carrier**

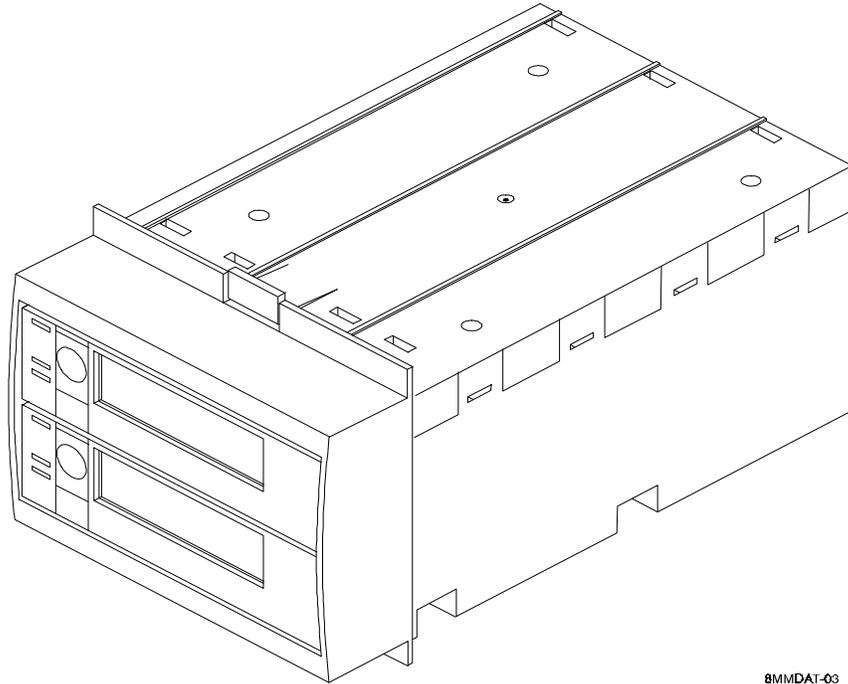


**NOTE**

The expression *StorageWorks Building Block*, or *SBB*, is used in StorageWorks documentation to refer to a device, such as tape or disk drive, that is installed in a device carrier.

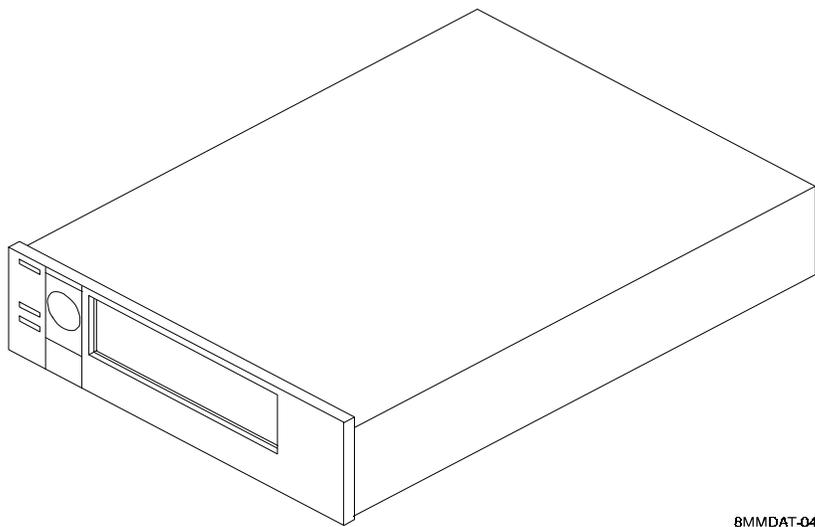
Option SWXTE-AB is a configuration in which a second 8mm tape drive is installed in a device carrier. Note that the device carrier is shipped to you with both drives already installed if options SWXTE-AA and SWXTE-AB are ordered at the same time. If option SWXTE-AB is ordered after you already have option SWXTE-AA, the second drive is installed in the top half of the device carrier as shown in Figure 1–3.

**Figure 1–3 Option SWXTE-AB: Two Tape Drives in a Device Carrier**



Option SWXTE-AC is a configuration in which an 8mm tape drive is installed in a desktop expansion unit. Figure 1–4 shows the tape drive as it is shipped to you.

**Figure 1–4 Option SWXTE-AC: For Installation in Desktop Expansion Unit**



### 1.3 Support for Four Data Formats

The StorageWorks 8505 8mm Cartridge Tape Drive can read and write data in four formats:

- EXB-8500c (compressed) format
- EXB-8500 format
- EXB-8200c (compressed) format
- EXB-8200 format

When writing in its **default EXB-8500c (compressed) format**, the 8mm tape drive implements a powerful algorithm that enables it to compress user data at ratios of 2:1 or greater. Assuming an average compression efficiency of 2:1, the tape can store up to 10 GBytes of data on a single 8mm data cartridge.

**NOTE**

The actual compression ratio achieved depends on the type of data to be compressed. This guide assumes an average compression efficiency of 2:1.

When writing in the **non-compressed EXB-8500 format**, the tape drive can store up to 5.0 GBytes of data on a single 8mm data cartridge.

When writing in the **EXB-8200c (compressed) format**, the tape drive can store up to 5.0 GBytes of data on a single 8mm data cartridge, assuming an average compression efficiency of 2:1

When writing in the **non-compressed EXB-8200 format**, the tape drive can store up to 2.5 GBytes of data on a single 8mm data cartridge. Refer to Appendix B and C of this guide for detailed data format information for your specific operating environment.

Table 1–1 lists the read and write compatibility of several data formats with several 8mm tape drives. Note that devices with names beginning "EXB" are produced by EXABYTE Corporation; devices with names beginning "TKZ" are produced by Digital Equipment Corporation. In the table, SWXTE represents all three packaging options of the StorageWorks 8mm Cartridge Tape Drive.

**Table 1–1 Read/Write Compatibility of 8mm Tape Drives and Data Formats**

Tape format	Can be written and read by an . . .					
	TKZ08 and EXB-8200	EXB-8200SX	EXB-8205	TKZ09 and EXB-8500	EXB-8500c	SWXTE and EXB-8505
EXB-8500c	–	–	–	–	Yes	Yes
EXB-8500	–	–	–	Yes	Yes	Yes
EXB-8200c	–	–	Yes	–	Yes	Yes
EXB-8200	Yes	Yes	Yes	Yes	Yes	Yes

## 1.4 Support for Partitioned Tapes

Some operating systems provide support for tape partitions. With these systems, the tape drive can read and write tapes containing either one or two partitions. Partitions provide an efficient way to maintain a directory on a tape without the risk of overwriting data when updating the directory. For additional information, refer to the operating manuals that support your system.

## 1.5 Enhanced Performance

Assuming an average 2:1 compression ratio, the tape drive can achieve a sustained transfer rate of approximately 1 MByte per second when writing in EXB-8500c format. The maximum SCSI data transfer rate is up to 5.0 MBytes/second for a synchronous burst and up to 2.5 MBytes/second for an asynchronous burst. (Achievement of these performance numbers is dependent on the system configuration into which this tape drive is installed).

Data interchange is maintained through full read and write compatibility with the EXB-8500c, EXB-8500, EXB-8205, EXB-8200, and EXB-8200SX 8mm Cartridge Tape Drives.

## 1.6 Intelligent Data Compression

When writing in its default EXB-8500c format, the tape drive uses the established Improved Data Recording Capability (IDRC) algorithm. Licensed from IBM, this algorithm is a *de facto* standard in mainframe environments. It uses the EXABYTE Compression Integrity Check™ feature to ensure that data is accurately compressed and decompressed into the original form sent by the host computer.

The compression algorithm is completely contained in an EXABYTE proprietary integrated circuit. When data compression is enabled by the user, the tape drive invokes the compression algorithm intelligently, constantly monitoring the compression ratio to determine whether compressing the data will actually decrease the size of the data set. When compression is turned on, the tape drive sends compressed data to tape only when it benefits the user's storage capacity and throughput.

## 1.7 Sophisticated Error Correction Procedures

The tape drive performs on-board error correction code (ECC) and error-recovery procedures, along with full read-after-write verification to ensure data integrity. The drive also contains a logical-block-CRC (cyclic redundancy check) feature. By adding two bytes of CRC data to every logical block on a compressed format tape, the drive can check that user data is compressed and decompressed accurately.

## 1.8 Additional Features

The tape drive contains a single-ended SCSI controller. Additional features include SCSI-2 compatibility, synchronous data transfer, an integrated 1-MByte speed-matching buffer, full disconnect/reconnect arbitration support, and logical block packing. The tape drive is an easily integrated solution to your journalizing, archiving, data interchange, software distribution, imaging, data acquisition, and backup/restore needs.

## *Installation and Initial Power ON*

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*This chapter refers you to the installation document you need. It also provides the steps you should follow for the initial power on of the StorageWorks 8505 8mm Cartridge Tape Drive.*

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### **2.1 Unpacking the StorageWorks 8505 8mm Cartridge Tape Drive**

#### **CAUTION**

If the current environment differs from the storage environment by 15° or more, allow the Cartridge Tape Drive to acclimate to the current environment for at least 12 hours.

The cartridge tape drive's packaging is designed to protect the drive from potentially damaging condensation. If the drive has not acclimated in its packaging for at least 12 hours, serious damage to the device can occur.

Unpack and inspect the contents of your shipment. In addition to this guide, it should contain the following items:

- One SWXTA-AA 10 GB, 8mm helical-scan cassette tape drive
- One 8mm cassette tape
- One head-cleaning cassette
- StorageWorks SBB user's guide

Also, check the contents for damaged components. Notify your vendor immediately if any items are damaged. Keep all boxes and packing material for reshipment.

### **2.2 Installation Documents**

The 8mm Cartridge Tape Drive is available as three different options. The following list shows the option numbers and gives the title of the documents that describe installation or configuration for that option.

- **SWXTE-AA:** This option number identifies a configuration in which one or two cartridge tape drives is installed in a device carrier, and the device carrier is subsequently placed in a StorageWorks desktside (or larger) storage expansion unit. For instructions on installing or replacing the drive in the device carrier, refer to the document titled *StorageWorks Building Blocks User's Guide*. For instructions on placing the device carrier in a desktside storage expansion unit, refer to the document titled *StorageWorks Expansion Storage Pedestal User's Guide*.

- SWXTE-AB: This option number identifies a configuration in which a second cartridge tape drive is installed in a device carrier. For installation instructions, refer to the same documents listed in the preceding bullet. In addition, this option is always shipped with the document *StorageWorks Family 5.25-inch SBB Half-Height Device Installation Guide*, which provides instructions on installing the second cartridge tape drive in a device carrier.
- SWXTE-AC: This option number identifies a configuration in which a cartridge tape drive is installed in a desktop expansion unit. For installation instructions, refer to the document titled *StorageWorks Desktop Expansion Unit User's Guide*.

### 2.3 Performing the Initial Power On

After you have installed the cartridge tape drive, you can perform the initial power on procedure. Power on is accomplished by installing the tape drive into its desktop expansion unit or expansion storage pedestal cabinet, and then applying power to the cabinet.

When you apply power, the drive performs its power-on initialization and self-test (POST). Assuming that no data cartridge is loaded and that the tape drive is connected correctly, POST takes about 30 seconds as follows:

- During the first part of POST, all three LEDs will be lit.
- During the second part of POST, the top amber LED will be lit and the middle and bottom LEDs may flash depending on whether the tape drive is connected to the SCSI bus and a data cartridge is loaded.

#### NOTES

Do not insert a data cartridge into the tape drive while POST is in progress because the drive will automatically eject it.

If the top amber LED does not go out after POST, an error has occurred. Contact your vendor.

When POST completes (top amber LED off), the tape drive is ready for normal operation. After POST completes, you should refer to Table 3–1 in Chapter 3 if the state of the LEDs differs from the state described in this procedure. The table shows how to determine the drive's operating state by the behavior of the LEDs.

## Operating the Cartridge Tape Drive

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*This chapter describes how to operate the 8505 8mm Cartridge Tape Drive. It also includes information about using a data cartridge.*

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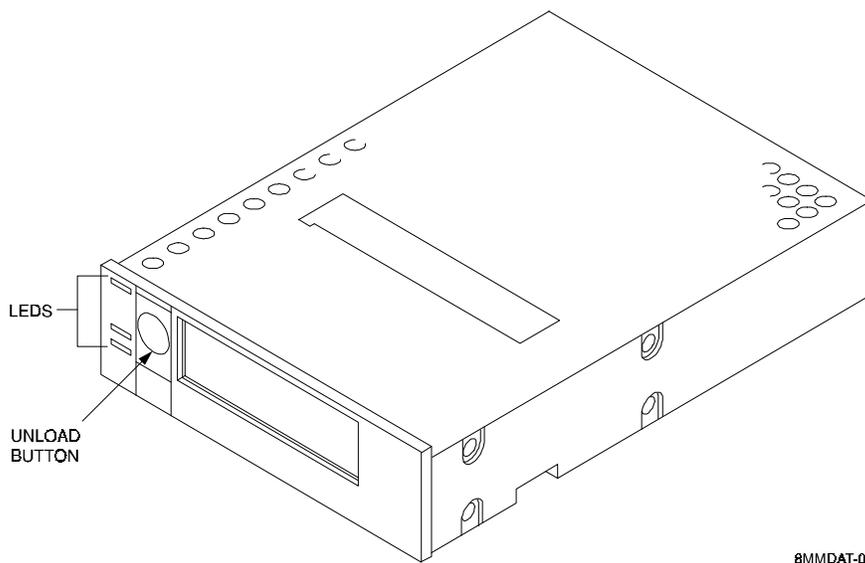
This chapter includes information about the following topics:

- How to use the tape drive operator controls and indicators, including a table showing how the LEDs represent the drive's operating states
- How to set the write-protect switch on the data cartridge
- How to load and unload data cartridges

### 3.1 Location of Controls and Indicators

Figure 3–1 shows the controls and indicators on the front panel of the StorageWorks 8505 8mm Cartridge Tape Drive.

**Figure 3–1 Front Panel Controls and Indicators**



### 3.1.1 Unload Button

The *unload* button is the only operator control on the cartridge tape drive.

**NOTE**

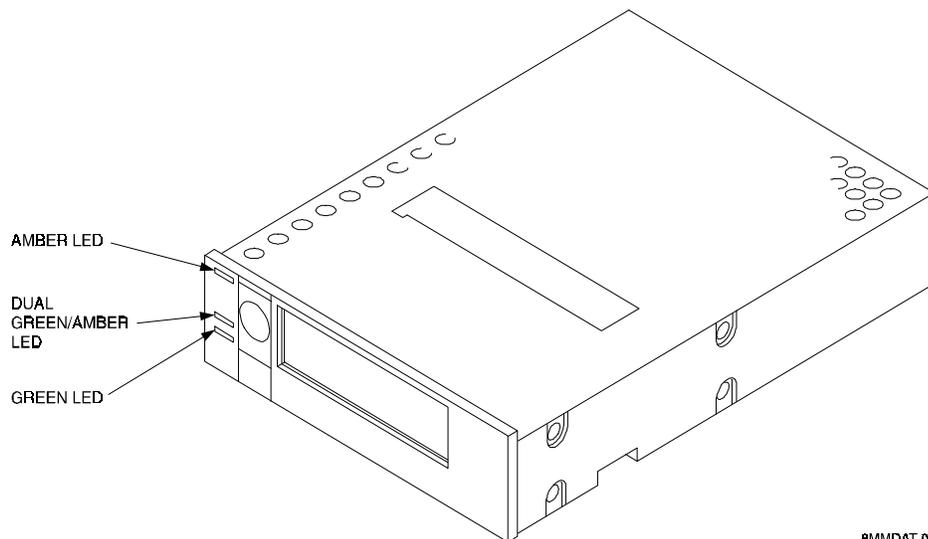
The *unload* button can be used to clear hardware errors. If a hardware error occurs, press the *unload* button to reset the tape drive. If necessary, wait a few seconds and press the button again to eject the tape.

### 3.1.2 LEDs

The cartridge tape drive uses three LEDs to indicate its various operating states. The location of these LEDs is shown in Figure 3–2. Table 3–1 shows the combinations of LEDs that may occur during tape drive operation. You can use these LED combinations to determine the drive’s operating state as follows:

- When the top (amber) LED is *on* or *flashing*, the drive has an error or needs to be cleaned
- When the middle LED is *on* or *flashing*, SCSI bus activity is occurring. The middle LED can be green or amber as follows:
  - Amber** – When the LED is amber, the tape loaded in the drive is in compressed format (EXB-8500c or EXB-8200c).
  - Green** – When the LED is green, the tape loaded in the drive is in uncompressed format (EXB-8500 or EXB-8200).
- When the bottom (green) LED is *on*, a data cartridge is loaded in the drive. When this LED is *flashing*, tape motion is occurring.

**Figure 3–2 Front Panel LEDs**



8MMDAT-06

**Table 3–1 States Indicated by LEDs**

Drive State	Top LED (errors)	Middle LED (SCSI)*	Bottom LED (motion)
POST (1st part)	On	On green	On
POST (to completion)	On	Flash irregular**	Off***
Failed POST	Flash fast	Flash irregular	Off
Ready (no tape loaded)	Off	Flash irregular	Off
Ready (tape loaded)	Off	Flash irregular	On
Normal tape motion	Off	Flash irregular	Flash slow
High-speed tape motion	Off	Flash irregular	Flash fast
SCSI bus reset	On	Flash irregular	On
Error	Flash slow	Flash irregular	Off
Time to clean	Flash fast	Flash irregular	Flash fast
Cleaning tape loaded	Off	Flash irregular	Flash slow

\* Green indicates EXB-8500 or EXB-8200 uncompressed format.  
Amber indicates EXB-8500c or EXB-8200c compressed format.

\*\* The LED flash rates are defined as follows:

**flash slow** = 1 flash/second

**flash fast** = 4 flashes/second

**irregular** = Rate of flash varies depending on SCSI bus activity. If the 8mm tape drive is not connected to the SCSI bus, the LED will be off.

\*\*\* If a tape is loaded, the bottom LED will flash slow and then fast during the second part of the power-on self-test (POST)

#### NOTE

You may occasionally observe LED combinations and sequences not described in Table 3–1. These other combinations represent special or unusual conditions that are beyond the scope of this table.

### 3.2 Recommended Data Cartridge

The 8mm cartridge tape drive uses 8mm data cartridges, Digital part number TKZ8x. This data cartridge provides approximately 10 GBytes of EXB-8500c formatted data capacity, assuming an average compression ratio of 2:1.

Additional data cartridges can be ordered. For details, see page viii in the "About This Guide" section of this document.

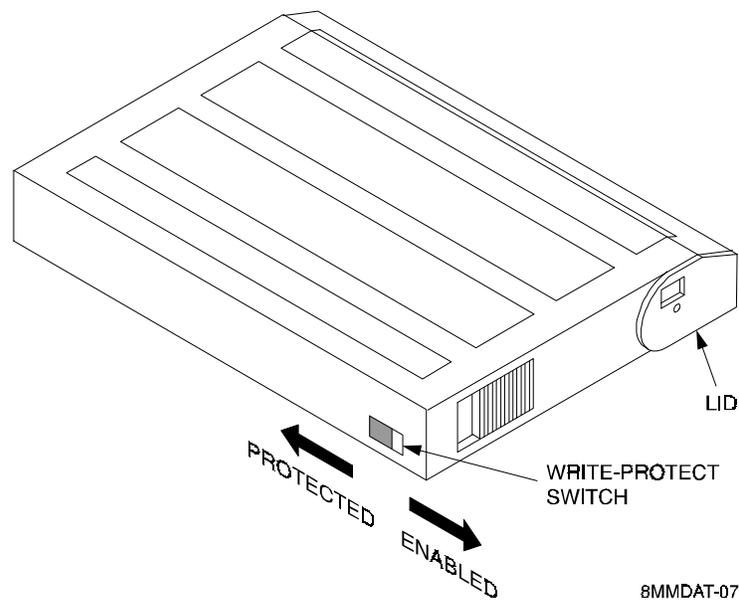
### 3.3 Setting the Write-Protect Switch

The tape drive uses 8mm data cartridges, part number TKZ8X. These data cartridges are equipped with a *write-protect* switch to prevent the tape from being unintentionally written to.

Before loading a data cartridge into the drive, ensure that the *write-protect* switch is set correctly for the desired operation. You can use a ball-point pen or similar instrument to set the *write-protect* switch.

- To **write protect** the data cartridge, move the *write-protect* switch away from the edge of the data cartridge, as shown in Figure 3–3. If the red tab is visible, the cartridge is write-protected and cannot be written to or erased.
- To **write enable** the data cartridge, move the *write-protect* switch toward the edge of the data cartridge, as shown in Figure 3–3. If only the edge of the red tab is visible, the data cartridge is write-enabled and can be written to or erased.

**Figure 3–3 Write-Protect Switch on 8mm Data Cartridge**



### 3.4 Loading a Data Cartridge

To load a data cartridge into the tape drive, follow these steps:

1. Ensure that the *write protect* switch has been set correctly for the desired operation (see Section 3.3 above).
2. If you have just powered on the drive, be sure that the bottom green LED and the top amber LED on the front panel are *off*, indicating that the drive has passed its power on self-test and is ready to load the data cartridge.
3. Insert the data cartridge into the drive with the label side up and the *write-protect* switch facing you.
4. The drive automatically loads the data cartridge. All three LEDs are *off* for the first 8 seconds of the load operation. Then, the bottom LED flashes to indicate tape motion. When the bottom LED is *on* continuously, the drive is ready.

### 3.5 Load Time

Once a data cartridge has been inserted, the drive requires approximately 35 seconds to load the data cartridge and position the tape (assuming that the data cartridge has been rewound). During this 35-second load time, the drive determines the following:

- The tape format (blank, EXB-8500c, EXB-8500, EXB-8200c, EXB-8200, or other format).
- The adaptive tape-reading parameters. This process enables the drive to read tapes produced by different manufacturers, tapes that are aged or worn, and tapes written by other 8mm cartridge tape drives.

### 3.6 Unload Cartridge Procedure

The following actions occur when you press the *unload* button. (These steps assume that a data cartridge is loaded and that the drive is ready.)

**NOTE**

Approximately 10 seconds will elapse after you press the *unload* button before the bottom LED begins to flash.

1. Any command or operation currently in progress is completed.
2. Any buffered information is written to tape, and an EOD mark is written to indicate the end of data (EXB-8500c, and EXB-8500, and EXB-8200c format tapes only).
3. The tape is rewound to the physical beginning of tape (PBOT).
4. The tape is unloaded from the tape path.
5. The data cartridge is ejected.

### 3.7 Error During Unload Procedure

If an error exists before or during the unload procedure, the unload sequence will be suspended and the top amber LED will flash. If the *unload* button is pressed again, the unload sequence will be re-attempted; however, unwritten data in the buffer will not be written to tape. The buffer and errors will be cleared.

## *Cleaning the Cartridge Tape Drive*

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*This chapter describes how to use the cleaning cartridge to clean the tape heads and tape path of the StorageWorks 8505 8mm Cartridge Tape Drive .*

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The heads and tape path of the StorageWorks 8505 8mm Cartridge Tape Drive should be cleaned on a regular basis. The only cleaning material recommended for use with the tape drive is an approved 8mm cleaning cartridge. (Additional cleaning cartridges can be ordered as described on page **viii**, in the "About This Guide" section of this document.)

Except for cleaning, as described in Section 4.1 and 4.2, the tape drive needs no preventive maintenance or user serviceable adjustments. If an excessive number of errors begin occurring, however, you may find the procedure described in Section 4.3 useful.

### **CAUTION**

Using cloth swabs, cotton swabs, cleaning agents, or cleaning cartridges is not recommended and will void the warranty on the tape drive.

#### **4.1 Determining When the Tape Drive Needs Cleaning**

You should clean the tape drive's heads and tape path after every 30 hours of tape motion. This cleaning frequency does not depend on the format in which you write and read data. However, if you are using the tape drive in a particularly dirty environment, or if you operate it infrequently, you may want to clean the tape drive more often than every 30 hours of tape motion. Cleaning the tape drive helps ensure that it will perform according to its specifications.

The tape drive keeps track of tape motion hours internally. When 30 hours of tape motion have elapsed, the top and bottom LEDs will flash rapidly and the middle LED will flash irregularly, depending on SCSI bus activity. For best results, clean the tape drive as soon as possible after the LEDs begin flashing.

## 4.2 Using the 8mm Cleaning Cartridge

### CAUTION

To prevent contamination of the tape drive and damage to the heads, do not use the cleaning cartridge for more than the number of cleaning cycles specified on the cartridge label. Discard the cleaning cartridge after you have used it for the specified number of cleaning cycles. Do not attempt to rewind the material in the cleaning cartridge and re-use it.

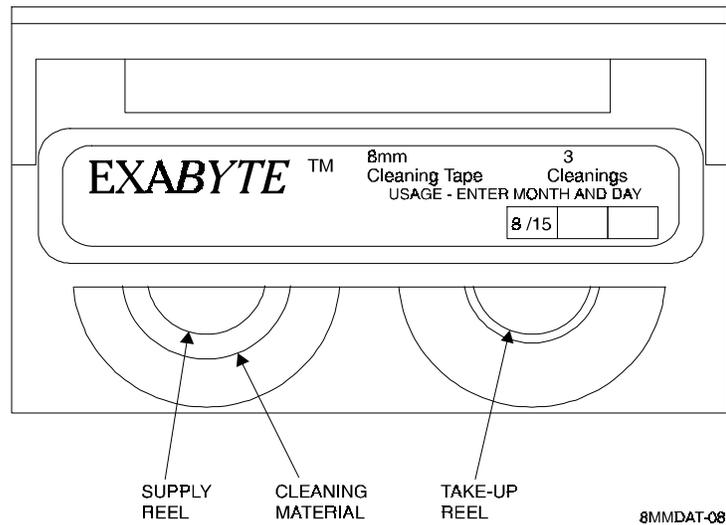
To use the 8mm cleaning cartridge, proceed as follows:

1. Ensure the tape drive is powered on. Remove any tape cartridge from the drive.
2. Check the usage record on the label of the cleaning cartridge to make sure there is at least one cleaning cycle remaining (see Figure 4–1). If there are no cleaning cycles remaining, discard the cleaning cartridge and use a new one.
3. Insert the cleaning cartridge in the tape drive. The remainder of the cleaning cycle is performed automatically by the tape drive. When the cleaning cycle is complete, the cartridge is unloaded and ejected from the tape drive. The cleaning cycle may range from 2 to 3 minutes.
4. To confirm that a cleaning was done, look at the LEDs on the front panel. If the cleaning cycle was successful, the top and bottom LEDs will be off. If the cleaning cycle was not performed, the LEDs will continue to flash.
5. If the cleaning cycle was successful, record the date the cleaning was performed on the cleaning cartridge label, as shown in Figure 4–1. Store the cleaning cartridge for future use if it still has cycles remaining.

### NOTE

If there are no more cleaning cycles remaining for the cleaning cartridge, it will be ejected when you load it.

Figure 4–1 Cleaning Cartridge



### 4.3 Exercising the Cartridge Tape Drive

You might find it useful to perform the procedure described in this section if either of the following two situations exists:

- Application software is reporting abnormal data errors when reading or writing to the cartridge tape drive with a known good tape cartridge.
- The cartridge tape drive has been stored for six months or more, and you get a large number of data errors when you begin using the drive.

This procedure thoroughly exercises the tape drive and thus ensures that the drive's internal lubrication is properly distributed:

1. Apply power to the tape drive. This is accomplished by applying power to the storage subsystem that houses the drive (i.e., drive expansion pedestal or desktop expansion unit). The drive performs its power-on initialization and self-test (POST). Assuming that no data cartridge is loaded and that the tape drive is connected correctly, POST takes about 30 seconds as follows:
  - During the first part of POST, all three LEDs will be lit.
  - During the second part of POST, the top amber LED will be lit and the middle and bottom LEDs may flash, depending on whether the drive is connected to the SCSI bus and a data cartridge is loaded.

#### NOTES

Do not insert a data cartridge into the tape drive while POST is occurring because the drive will automatically eject it.

If the top amber LED does not go out after the power-on initialization and self-test are complete, an error has occurred. Contact your vendor.

2. Locate a data cartridge and ensure that its *write-protect* switch has been set correctly for the desired operation.
3. Insert the data cartridge into the tape drive with the label side up and the *write-protect* switch facing you.
4. Wait while the drive loads the tape and positions it at LBOT (Logical Beginning of Tape). This takes about 35 seconds.

**NOTE**

All three LEDs will be *off* for the first 8 seconds. Then, the bottom LED will *flash* to indicate that the tape is being loaded. When the bottom LED is *on* continuously, the drive is ready.

5. Perform a write operation to write approximately 500 MBytes of data to the tape. You can perform the write operation with a system command or utility, or with your back-up software. If you use your back-up software, be sure you write to a hard drive scratch area.
6. Rewind the tape and then read the data written on the tape in step 5.
7. Repeat steps 5 and 6 at least two times or for two hours, whichever is greater.

**NOTE**

If the tape has been stored for a long period, errors may occur during the break-in period. If an error occurs, reset the drive and repeat steps 5 and 6 as appropriate.

When you have completed step 7, the tape drive is ready for normal operation. If errors persist, please contact your vendor.



## *Product Specifications*

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*This appendix lists the product specifications for the StorageWorks 8505 8mm Cartridge Tape Drive.*

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### **Read & Write Format**

Recording Format — 8mm Helical-Scan Digital Computer Tape

Head Configuration — Read-after-write head pairs with separate full-width erase head

Linear Density

8500 mode — 45434 bpi

8200 mode — 43271 bpi

Track Density

8500 mode — 1638 tracks per inch

8200 mode — 819 tracks per inch

Area Density

8500 mode — 74 million bits/sq. inch

8200 mode — 35 million bits/sq. inch

### **Formatted Capacity with a TKZ8x (112 meter tape)**

5000 MBytes (native)

10,000 MBytes (compressed)<sup>1</sup>

### **Controller Features**

Integrated SCSI Controller and Formatter

Standard SCSI Interface Connection (single-ended)

Onboard Error Correction Code (ECC) — (ECC: Reed-Solomon Product Code)

Error Recovery Procedures (ERP)

### **Transfer rate (peak):**

5.0 MBytes/sec. synchronous

2.5 MBytes/sec. asynchronous

---

<sup>1</sup> Compression capacity and throughput ratios will vary dependent upon type of data.

**Transfer rate (sustained):**

500 KBytes/sec. (native)

1 MBytes/sec. (compressed)<sup>1</sup>

Power on diagnostics: approximately 30 seconds

Buffer size: 1 MByte

Max. search speed: 7.5 MBytes/sec. (native): a search speed increase of up to 5x may be realized<sup>1</sup>

**Reliability**

Non-recoverable error rate: Less than one in 10<sup>17</sup> bits read

MTBF: 80,000 hours

MTTR: < 30 minutes

**Tape Motion**

Tape speed: 0.436 ips

Effective head-to-tape speed: 150 ips

Max. rewind speed: 75 times nominal

**Media**

8mm data cartridge (Digital part number TKZ8x)

ANSI/ISO/IEC 11319-1992 and ECMA-145

8mm wide magnetic tape cartridge for information exchange

**Cleaning Cartridge**

Exabyte-approved 8mm cleaning cartridge

**SCSI Command Set**

Test Unit Ready

Rewind

Request Sense

Read Block Limits

Read

Write

Write Filemarks

Inquiry

Space

Recover Buffered Data

Mode Select

Reserve Unit

Release Unit

Erase

**SCSI Command Set (Cont'd)**

Mode Sense

Load/Unload

Receive Diagnostic Results

Send Diagnostics

Prevent/Allow Medium Removal

Verify

Locate

Read Position

Log Sense/Log Select

**Environment**

Operating temperature: +5°C to +40°C (+41°F to 104°F)

Non-operating temperature: -40°C to +60°C (-40°F to +140°F)

Relative humidity (noncondensing): 20% to 80%

**SCSI Characteristics**

SCSI-2 Specification — ANSI X3.131-1990

Sequential Access Device

SCSI Bus Parity — Configurable

Full Disconnect, Arbitration, Reconnect

Asynchronous and Synchronous Data Transfer Supported

Connector Type — Standard StorageWorks Connector

Termination — None

Single-Ended

**Physical Dimensions (Tape Device)**

Standard 5.25-inch half-high form factor

Height: 1.625 inch

Width: 5.750 inch

Depth: 8.0 inch

Weight: 2.57 pounds

**Power (For One Tape Device)**

+5/ +12 volts plus or minus 5%

15 watts

## *Product Notes for Novell,<sup>™</sup> MS-DOS,<sup>™</sup> and Windows NT<sup>™</sup>*

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*This appendix provides information for the system administrator. It should be read before installing and using the SWXTE tape drive SBB with a host system operating under the Novell, MS-DOS, MS-DOS/Windows or Windows NT operating systems.*

---

The StorageWorks 8505 8mm Cartridge Tape Drive is available as three packaging options: SWXTE-AA, SWXTE-AB, and SWXTE-AC. These options are referred to collectively in this appendix by the name *SWXTE*. (Section 1.2 of this guide summarizes these packaging options and defines SBB.)

The SWXTE tape drive SBB utilizes the standard SCSI-2 command set to interface to the PC-based host system. Thus, the host system must be equipped with a SCSI adapter to properly interface the tape drive with the host. For example, the host SCSI adapter might interface the computer's EISA bus to the SCSI-2 port of the SBB.

A host PC SCSI adapter is normally supplied with a compatible software driver for use with its operating system. When operating under the Novell and MS-DOS or MS-DOS/Windows operating systems, the software driver must be pre-loaded according to the SCSI adapter manufacturer's installation procedure to ensure a proper interface between the tape drive SBB and the host. In addition, a user-level tape read/write software program may be required to implement tape support under the Novell, MS-DOS, MS-DOS/Windows, or Windows NT environments. There are many commercial software products available that provide host or network-based data backup and restore, archiving, data logging, etc. functionality for these operating systems.

Before purchasing a user-level software product, ensure that the tape drive SBB is supported by that product (see note below). Commercial software vendors usually publish a supported hardware list, or have telephone technical support personnel that will answer questions regarding compatibility of a particular tape drive or other storage devices. When choosing a software product suitable for your application, follow the software vendor's installation procedure to implement support for your tape drive SBB.

This product is supported under Windows NT, versions 3.1 and 3.5, by adding the "Exabyte 8500 series (SCSI-2)" tape device option. Follow the Windows NT "Add/Remove Tape Devices" procedure to add this support.

Finally, if your host is operating under Novell Netware, Novell, Inc. provides a software product called "Server Backup" with some of its operating system products. This program has been found to work well with the SWXTE tape drive SBB.

### **NOTE**

The SWXTE-AA, SWXTE-AB, and SWXTE-AC tape drive packaging options are functionally equivalent to the EXABYTE model 8505 10 GB 8mm tape drive. Commercial software products that support the 8505 will usually work with the SWXTE.



## Product Notes for Sun™

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This appendix describes how to include cartridge tape drive SWXTE in a SUN SPARC system running Solaris 2.3 (or later) and SunOS 4.1.x. The information covers the installation of the SWXTE tape drive hardware and configuring the system to communicate with the drive.

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### C.1 Modifications Required for SunOS 4.1.x

#### C.1.1 Installation Procedure

##### NOTES

1. The SWXTE designation in the following procedure is the StorageWorks product name for "Exabyte EXB-8505".
2. In order to support the addition of this device, drive information must be supplied in the `/sys/scsi/targets/st_conf.c` file. For additional information, read the man pages for "st".

- 1 Perform the following steps to modify the system to communicate with the SWXTE tape drive:

- From the command line, type:

```
cd /sys/scsi/targets
```

- Edit the "`st_conf.c`" file and *carefully* add the following structure before the entry for "`/* Exabyte 8mm 5GB cartridge */`":

```
/* DEC EXB-8505 8mm /w Compression Cartridge tape drive */
{
  "DEC EXB-8505 8mm Helical Scan /w Compression", 16 , "EXABYTE EXB-8505",
  ST_TYPE_EXB8500, 1024,
  (ST_BSF | ST_VARIABLE | ST_BSR | ST_LONG_ERASE),
  5000, 5000,
  { 0x14, 0x90, 0x15, 0x8C },
  { 0, 0, 0, 0 }
},
```

- Verify that the above entry is added to the `st_conf.c` file correctly.

where:

- the first string (DEC EXB-8505 8mm Helical Scan /w Compression) is the name given to the drive.
  - the second string (16) is the length of the vendor ID provided by the SCSI "inquiry" command.
  - the third string (ST\_TYPE\_EXB8500) is the drive type for the driver.
  - the fourth string (1024) is the block size in bytes.
  - the fifth string ((ST\_BSF . . .)) is drive options.
  - the sixth string (5000) is the maximum read retries.
  - the seventh string (5000) is the maximum write retries.
  - the eighth string (0x14, 0x90, 0x15, 0x8C) is the density codes (low → hi) as defined below:
    - 0x14 is the vendor-unique density code for the EXB-8200 in the *uncompressed* mode.
    - 0x90 is the vendor-unique density code for EXB-8200c in the *compressed* mode.
    - 0x15 is the vendor-unique density code for the EXB-8500 in the *uncompressed* mode.
    - 0x8C is the density code for the EXB-8500c in the *compressed* mode.
  - the ninth string (0,0 . . .) is the speed code (not used).
- ② After you have edited the "**st\_conf.c**" file and added the above entry, rebuild the kernel using the standard procedure (for further help, refer to the man pages of `config`).
  - ③ Install the tape SBB into the StorageWorks enclosure and power on the system. We recommend that the SWXTE SCSI device address be set to ID 4 or 5.

**NOTE**

If your SCSI host adapter is supported by the "probe-scsi" command, then it may be used to verify at the boot prompt that the connected device is correctly attached to the system.

- ④ Reboot the system using the following command at the boot prompt:

```
>boot
```

The system reboots with the newly compiled kernel and creates special files in **/dev** so that it can communicate with the SWXTE. Verify that "DEC EXB-8505 8mm Helical Scan /w Compression" is displayed as a target when the system is booting.

At this time the tape is configured in the `/dev` directory with `"rst"` (rewind on close) and `"nrst"` (no rewind on close) format. For example, if the target SCSI ID for the SWXTE is 4, then `"rst"` will be `"rst4, rst12, rst20, rst28"`; `nrst` will be `"nrst4, nrst12, nrst20, and nrst28"`.

- `rst4` and `nrst4` correspond to the 0x14 density mode (8200, *uncompressed* format)
- `rst12` and `nrst12` correspond to the 0x90 density mode (8200c, *compressed* format)
- `rst20` and `nrst20` correspond to the 0x15 density mode (8500, *uncompressed* format)
- `rst28` and `nrst28` correspond to the 0x8C density mode (8500c, *compressed* format)

- ⑤ To test the SWXTE drive, back-up the file `"passwd"` file to tape using the `"tar"` command as follows:

```
tar cvf /dev/rst4 /etc/passwd
```

The system responds with:

```
a /etc/passwd 1 blocks
```

Note that depending on the size of the file, a different number of blocks may be reported.

- ⑥ Verify that the `"passwd"` file was saved to tape using the following command:

```
tar tvf /dev/rst4
```

The system responds with:

```
/etc/passwd
```

The installation and verification procedure is now complete.

## C.2.2 Information

### C.2.2.1 Operation with SPARC Server 4/470 and 4/490

The tape drive will operate normally on SPARCserver™ 4/470 and 4/490 running SunOS 4.1.2 with the following limitations:

- There is no way to mode-select the drive to write in low-density (2.0 GB format) mode.
- The tape drive will automatically write in high-density (5.0 format) mode from any position on new media or media previously written in low-density mode.
- The tape drive will automatically write in low-density mode from anywhere other than the beginning of tape or media that has been previously written in low-density mode.

### C.2.2.2 Dump Parameters for the Tape Drive

The parameters that should be used when running the dump utility with the SWXTE tape drive are:

density = 54000 (BPI)  
size = 6000 (112 meter tape) in 8200 mode  
size = 13000 (112 meter tape) in 8500 or 8500c mode  
blocking factor = 126

#### *Example 1*

The following example shows backing-up the entire disk partition onto the SWXTE tape drive:

```
dump 0dsbf 54000 13000 126 /dev/rst20 /dev/sd0g
```

#### *Example 2*

The following example shows backing-up the "/usr" partition on disk **sd2g** onto the SWXTE tape drive assigned as "**rst4**", in the low-density mode. The following would be useful if you want to read the tape in an EXB-8200 drive which uses the size (s) of 6000.

```
dump 0dsbf 54000 6000 126 /dev/rst4 /dev/sd2g
```

For further help, refer to the man pages of dump.

## C.2 Modifications Required for Solaris™ 2.3 (or later)

### C.2.1 Installation Procedure

#### NOTES

1. The "SWXTE" designation in the following procedure is the StorageWorks product name for Exabyte EXB-8505.
2. In order to support the addition of this device, drive information must be supplied in the `/kernel/drv/st.conf` file as global properties that apply to each of the targets, or as properties that are applicable to one target only. The "st driver" looks for the property called "tape-config-list". For additional information, read the man page "st". We recommend here the use of the global properties approach.

- ① Perform the following steps to modify the system to communicate with the SWXTE tape drive:

- From the command line, type:

```
cd /kernel/drv
```

- Edit the "**st.conf**" file by adding the following before the first occurrence of "name=":

```
# entry for 8505 tape drive

tape-config-list = "EXABYTE EXB-8505", "DEC EXB-8505 8mm Helical Scan /w Compression",
"swxte-data";

swxte-data = 1,0x35,1024,0x1639,4,0x14,0x90,0x15,0x8C,3;
```

where:

In the "**tape-config-list**" string:

- The first string (EXABYTE EXB-8505) is the string returned by the SWXTE on a SCSI inquiry command.
- The second string (DEC EXB-8505 8mm Helical Scan /w compression) is the *nick name* for the SWXTE drive. This string will be displayed on the console during boot.
- The third string is defined as follows:

In the "**swxte-data**" string:

- The first parameter (1) is the revision level of the software and is set to 1 (limitation on Sun operating systems).
- The second parameter (0x35) is the **tape type**, specifying 8mm tape drive. This is defined in `/usr/include/sys/mtio.h`.

- The third parameter (1024) is the block size in bytes.
- The fourth parameter (0x1639) defines the options selected. 0x1639 represents the following options:

ST_VARIABLE	=	0x0001
ST_BSF	=	0x0008
ST_BSR	=	0x0010
ST_LONG_ERASE	=	0x0020
ST_KNOWS_EOD	=	0x0200
ST_UNLOADABLE	=	0x0400
ST_LONG TIMEOUTS	=	0x1000

These options are equal to the fourth parameter, 0x1639.

- The fifth parameter (4) defines the number of densities. The maximum definable number of densities is 4 (limitation on Sun operating systems).
- The sixth parameter (0x14) is the vendor-unique density code for EXB-8200 in the *uncompressed* mode.
- The seventh parameter (0x90) is the vendor-unique density code for EXB-8200c in the *compressed* mode.
- The eight parameter (0x15) is the vendor-unique density code for the EXB-8500 (*uncompressed* mode).
- The ninth parameter (0x8C) is the default density code for the EXB-8500c in the *compressed* mode.
- The last parameter in the **swxte-data** string is the default density 3, EXB-8500c in the *compressed* mode.

- 2 After you have edited the “**st.conf**” file, shut down the system as follows:

```
cd /  
shutdown -i0 -g0 -y0
```

- 3 Install the tape SBB into the StorageWorks enclosure and power on the system. We recommend that the SWXTE SCSI device address be set to ID 4 or 5.

**NOTE**

If your SCSI host adapter is supported by the “`probe-scsi`” command, then it may be used to verify that the connected device is correctly attached to the system.

- 4 Reboot the system using the following command at the boot prompt:

```
>boot -rv
```

Note that the switch “**r**” forces the kernel to be re-configured, and switch “**v**” enables a display of the system configuration at boot time.

The system compiles the kernel and creates special files in **/dev** so that it can communicate with the SWXTE. Since you booted the system using the verbose switch, the system displays all of its SCSI targets. Verify that “DEC EXB-8505 8mm Helical Scan /w Compression” is displayed as a target when the system is booting.

At this time, the tape drive is configured in the **/dev** directory in two ways: **rmt** format, and **rst** format.

### **“rmt” format**

In this format, the drive is configured with various options. For further explanations, see the man pages on “st” (the modes are *x*, *xl*, *xm*, *xh*, *xc*, and *xu*, where *x* is the **rmt** number).

- Options *x*, *xu*, and *xc*, correspond to the 0x8C, (EXB-8500c, *compressed*) density mode.
- Option *xl*, corresponds to the 0x14 (EXB 8200, *uncompressed*) density mode.
- Option *xm* corresponds to 0x90 (EXB-8200c, *compressed*) density mode.
- Option *xh* corresponds to 0x15 (EXB-8500, *uncompressed*) density mode.
- Option *b* associates with the BSD behavior and is for backward compatibility on all of the above options. For further information, refer to the man pages of “mtio”.
- The *n* option provides access to the device with **no rewind**, similar to **nrst** (below), and is also applicable to all of the above options.

### **“rst” format**

Special files “**rst**” (rewind on close) and “**nrst**” (no rewind on close) are also built and reside in the **/dev** directory. For example, if the SCSI target ID for the SWXTE is 4, then “**rst**” will be “*rst4*, *rst12*, *rst20*, and *rst28*,”; **nrst** will be “*nrst4*, *nrst12*, *nrst20*, and *nrst28*”.

- *rst4* and *nrst4* correspond to the 0x14 density mode (EXB-8200, *uncompressed* format)
- *rst12* and *nrst12* correspond to the 0x90 density mode (EXB-8200c, *compressed* format)
- *rst20* and *nrst20* correspond to the 0x15 density mode (EXB-8500, *uncompressed* format)
- *rst28* and *nrst28* correspond to the 0x8C density mode (EXB-8500c, *compressed* format)

- 5 To test the SWXTE drive, back-up the file “**passwd**” to tape using the “tar” command as follows:

```
tar cvf /dev/rst4 /etc/passwd
```

The system responds with:

```
a /etc/passwd 1 blocks
```

Note that depending on the size of the file, a different number of blocks may be reported.

- ⑥ Verify that the “**passwd**” file was saved to tape using the following command:

```
tar tvf /dev/rst4
```

The system responds with

```
/etc/passwd
```

The installation and verification procedure is now complete.

### C.2.2 Running SUN Diagnostics (Optional)

The diagnostic exerciser provided by the Sun operating system (“sundiag”) does not support the generic 8mm tape device configuration. In order to run “sundiag”, you must modify the `st.conf` file in the `/kernel/drv` directory. Change the “**tape type**” in the `swxte-data` string from 0x35 (generic 8mm tape drive) to 0x29 (Exabyte 8500 8mm cartridge) and re-boot the system with the “`boot -r`” option. You can now run “sundiag” when the system is up and running.

#### CAUTION

Remember to change the “**tape type**” back to 0x35 and re-boot the system with the “`boot -r`” option after running “sundiag”.

### C.2.3 Dump Parameters for the Tape Drive

The parameters that should be used when running the “`ufsdump`” utility with the SWXTE tape drive are as follows:

density (d) = 54000 (BPI)

size (s) = 13000 (112 m tape)

*Example,*

The following string is an example of how to back-up the entire disk partition onto the SWXTE tape drive:

```
ufsdump 0dsf 54000 13000 /dev/rst20 /dev/sd0g
```

## Product Notes for IBM™ RS/6000

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*This appendix provides information for the system administrator. It should be read before installing and using the SWXTE tape drive SBB with a host system with the AIX 3.2.5 (or later) operating system.*

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### D.1 Modifications Required to Operate the SWXTE with AIX 3.2.5 (or later)

After the SWXTE tape drive has been properly attached to the SCSI bus, install the device using "smit" or by executing specific commands while logged into the root account. Section D.1.1 below describes how to install the tape drive using the fast-path command (`smit dev`). Section D.1.2 describes how to install the device using the command-line interface.

#### D.1.1 Installing the SWXTE Using the SMIT Command

- ❶ From the command line, type:  

```
# smit dev
```
- ❷ Select menu entry "Configure the devices you have added after the IPL".
- ❸ Select menu entry "Change/show the characteristics".
  - a) Select the entry that matches the controller and target ID of your installation.  
*Example:* `rmt1 available 00-03-00-50 other SCSI tape drive`  
where **3** is the SCSI controller number and **5** is the SCSI target ID
  - b) On the menu, change the settings of the "BLOCK size", "DENSITY setting #1", and "DENSITY setting #2". Density codes are listed in Section D.1.2 below. For IBM compatibility, set the block size to "1024".
  - c) Accept the changes.

#### D.1.2 Installing the SWXTE Using Command-Line Interface

- ❶ From the command line, type:  

```
# cfmgr
```
- ❷ To determine which *rmt* has been added, type:  

```
# lsdev -Cc tape
```

*Example:*

```
# lsdev -Cc tape
Name      Status      Location      Description
rmt0     Available  00-03-00-50  Other SCSI Tape Drive
```

③ Next, type:

```
# chdev -l <rmt*> -a density_set_1=<DENSITY_1> -a density_set_2=<DENSITY_2>
```

*Example:*

```
# chdev -l rmt0 -a density_set_1=140 -a density_set_2=20
rmt0 changed
```

④ Finally, type the following:

```
# chdev -l <rmt*> -a block_size=<SIZE>
```

*Example:*

```
# chdev -l rmt0 -a block_size=1024
rmt0 changed
```

where,

<rmt\*> is the tape drive added as shown by the `lsdev` command.

<SIZE> is the fixed block size (0 = variable, 1024 is suggested).

<DENSITY\_1> (140 suggested) and DENSITY\_2 (20 suggested).

Code	Density Code Meanings
0	for EXB-8500, compression on, suppress density error checking.
20	for EXB-8200, density error checking enabled.
21	for EXB-8500, density error checking enabled.
127	for current density, suppress density error checking.
140	for EXB-8500, compression on, density error checking enabled.
144	for EXB-8200, compression on, density error checking enabled.

The files that are created are:

Tape Drive Special File Characteristics			
Special File Name	Rewind-on-Close	Retention-on Open	Bytes-per-Inch
/dev/rmt*	Yes	No	Density Setting # 1
/dev/rmt*.1	No	No	Density Setting # 1
/dev/rmt*.2	Yes	Yes	Density Setting # 1
/dev/rmt*.3	No	Yes	Density Setting # 1
/dev/rmt*.4	Yes	No	Density Setting # 2
/dev/rmt*.5	No	No	Density Setting # 2
/dev/rmt*.6	Yes	Yes	Density Setting # 2
/dev/rmt*.7	No	Yes	Density Setting # 2

**NOTES**

1. The values of density setting # 1 and # 2 are derived from tape drive attributes that can be set using SMIT. Typically, density setting # 1 is set to the highest possible density for the tape drive, while density setting # 2 is set to a lower density. However, density settings are not required to follow this pattern.
2. The *density value* is ignored when using a magnetic tape device that does not support multiple densities. For tape drives that support multiple densities, the *density value* only applies when writing to the tape. When reading a tape, the drive defaults to the density at which the tape is written.
3. Most tape drives use 512-byte block size. The 8mm tape drive uses a minimum block size of 1024 bytes. Using SMIT to lower the block size will waste space.

**D.1.3 Using the SWXTE 8mm Tape Drive to Install AIX**

- ❶ Perform the installation procedure as described in *AIX, version 3.2, Installation Guide (SC23-2341)*, Chapter 1, ending after completing step F.5.c of the procedure.
- ❷ If the tape device is displayed as "defined" instead of "available", then enter the following:

```
# mkdev -l <rmt*>
```

*Example:*

```
# mkdev -l rmt0
rmt0 Available
```

- ❸ Continue with step F.5.d until the installation is completed.

**NOTE**

Always use an approved 8mm EXABYTE cleaning cartridge to clean the tape heads and tape path of the SWXTE tape drive. An IBM cleaning cartridge will not function properly with the SWXTE. Refer to page *viii* of the "About This Guide" section of this document for EXABYTE 8mm cleaning cartridge ordering information.



# Product Notes for Hewlett-Packard

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*This appendix describes how to include the tape drive SBB in an HP 9000 Series 700 system running **HP-UX 9.05** (or later) and Series 800 system running **HP-UX 9.04** (or later). The information covers configuration of the host system to communicate with the tape drive.*

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## E.1 General Information

If the necessary drivers are not already built into your existing kernel, you will need to rebuild your kernel.

When using the **dump** utility under **HP-UX**, you must supply the correct density code and tape length size for **dump** to use in its calculations. Refer to Section E.2.2 for details. We recommend a value of 126 for the blocking factor parameter.

Compression can be enabled/disabled at any time by selecting the appropriate device file name. See Section E.2.1.3 and E.2.1.4 for device names.

## E.2 Modifications Required for HP-UX 9.05 on Series 700 Systems and HP-UX 9.04 on Series 800 Systems

### E.2.1 Installation Procedure

#### NOTES

The "EXB-85058SQANXR1" designation returned in response to SCSI inquiry during performance of the following procedure is the StorageWorks internal name for the tape drive, as incorporated in and used by the firmware.

#### E.2.1.1 Installation of Tape Drive

After ensuring that the address of the tape drive does not conflict with the address of any other device on that SCSI bus, install the tape drive into the StorageWorks enclosure and power-on the workstation.

#### E.2.1.2 System Modification

Enter the System Administration Manager (SAM) as superuser. From the first-level menu, choose **Peripheral Devices**. From the second-level menu, choose **Tape Drives**. The system's hardware will be scanned, and the available tape drives window will identify the tape drive SBB as a SCSI tape drive with the appropriate hardware path. Highlight that selection and then pull down the **Actions** menu and select the **Add** function. The program at

this time will check the kernel to determine if the necessary drivers are built in, displaying the results.

If necessary, the program will rebuild the kernel. If this occurs, you will have to reboot the system in order to use the tape drive.

For further information on adding tape devices, refer to Hewlett-Packard's *Installing Peripherals* manual, P/N B2355-40041.

### E.2.1.3 Device Files (Series 700)

The System Administration Manager program automatically creates the appropriate device files and places them in the `/dev/rmt` directory.

The following naming convention is used on Series 700 computers for the EXB-8505 Cartridge Tape System SBB, as shown in the examples listed below:

`/dev/rmt/c#d#[hlmc][n][b]`

where:

**c#** specifies the controller designation, which may contain either two or three characters, specifies the following:

where **#** is **sc[f]**, in accordance with the following:

**s** is the system bus module:

**2** = core I/O (the default)

**4** = EISA

**c** is the slot number:

**0** for core I/O

**4** for EISA

**f** is the function number. This value identifies the location on the core I/O bus. For the single-ended SCSI interface, the value is **1**. If you are using the EISA bus, omit the **f** value.

**d#** designates the SCSI address of the tape drive, where **#** here identifies a number value.

**h/l/m/c** indicates density, with **h** meaning high density (EXB8200c format), **l** meaning low density (EXB8200 format), **m** meaning standard DDS format (EXB8500 format), and **c** meaning data compression (EXB8500c format).

**n** indicates no rewind.

**b** specifies Berkeley behavior.

**Example:**

If you were to install a tape drive SBB on the main (core) SCSI bus and in slot location 4 of the StorageWorks SWXSE-02 expansion enclosure, the following device files would be produced in `/dev/rmt` for a Series 700 computer:

<code>c201d4c</code>	<code>c201d4l</code>	<code>c201d4cb</code>	<code>c201d4lb</code>
<code>c201d4cn</code>	<code>c201d4ln</code>	<code>c201d4cnb</code>	<code>c201d4lnb</code>
<code>c201d4h</code>	<code>c201d4m</code>	<code>c201d4hb</code>	<code>c201d4mb</code>
<code>c201d4hn</code>	<code>c201d4mn</code>	<code>c201d4hnb</code>	<code>c201d4mnb</code>

**E.2.1.4 Device Files (Series 800)**

The System Administration Manager program automatically creates the appropriate device files and places them in the `/dev/rmt` directory.

The following naming convention is used on Series 800 computers for the EXB-8505 Cartridge Tape Subsystem SBB, as shown in the examples listed below:

```
/dev/rmt/lu#_8mm{8200/8500}[n][c][b]
```

where:

<b>lu#</b>	specifies the logical unit number of the tape drive as reported from the <code>iocan-f</code> command
<b>n</b>	indicates no rewind
<b>c</b>	indicates compressed data
<b>b</b>	specifies Berkeley behavior

**Example**

If you were to install a tape drive SBB on the main (core) SCSI bus and in slot location 4 of the StorageWorks SWXSE-02 expansion enclosure, the following device files would be produced in `/dev/rmt`, assuming a logical unit number of 8:

<code>8_8mm8200</code>	<code>8_8mm8200n</code>	<code>8_8mm8500</code>	<code>8_8mm8500n</code>
<code>8_8mm8200b</code>	<code>8_8mm8200nb</code>	<code>8_8mm8500b</code>	<code>8_8mm8500nb</code>
<code>8_8mm8200c</code>	<code>8_8mm8200nc</code>	<code>8_8mm8500c</code>	<code>8_8mm8500nc</code>
<code>8_8mm8200cb</code>	<code>8_8mm8200ncb</code>	<code>8_8mm8500cb</code>	<code>8_8mm8500ncb</code>

**E.2.1.5 Testing the Tape Drive**

To test the tape drive, back up the “passwd” file to tape using the “tar” command, as follows (assuming that you installed the drive in accordance with the preceding example):

```
tar cvf /dev/rmt/c201d4h /etc/passwd
```

*or*

```
tar cvf /dev/rmt/8_8mm8500c /etc/passwd
```

The system responds with something similar to the following:

```
a /etc/passwd 2 blocks
```

Note that depending on the size of the file, a different number of blocks may be reported.

### E.2.1.6 Verification

Use the following command to verify that the “passwd” file was written to tape:

```
tar tvf /dev/rmt/c201d4h
```

*or*

```
tar tvf /dev/rmt/8_8mm8500c
```

The system responds with something similar to the following:

```
rw-r--r-- 0/10 535 Jan 14 16:31 1995 /etc/passwd
```

The installation and verification procedure is now complete.

### E.2.2 Dump Parameters for the Tape Drive

The parameters that should be used when running the dump utility with the tape drive are:

density = 54000

size = choose from table

	15 m	54 m	112 m
8200(c)	804	2893	6000
8500(c)	1741	6268	13000

blocking factor = 126 (recommended)

#### *Example*

The following example shows the command for backing up an entire disk partition onto the tape drive, using a 112-meter tape:

```
dump 0dsbf 54000 13000 126 /dev/rmt/c201d4h /dev/dsk/c201d5s0
```

*or*

```
dump 0dsbf 54000 13000 126 /dev/rmt/8_8mm8500c /dev/vg00/rlvol5
```

For further help, refer to man pages of the **dump** command.



# Reader's Comments

**Manual Order Number:**

EK-STWCT-UG. E01

## 8505 8mm Cartridge Tape Drive User's Guide

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### Least-Liked Features

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### Suggestions for Improvement

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