SWXTL-BL 50/100 GB, 5-Cartridge DLT Tape Drive Mini-Library

User's Guide

Order Number EK-SM1TC-UG. A01


StorageWorks™

02-17-94: Dick Desjardins asked me to work out a convenient way to establish the correct title placement for the StorageWorks covers, which will have a diecut aperture in the cover, with the title showing through.

Dick says that Al Mayer's design specs call for the title to be set in 42-point Palatino. At the same time, however, the design specs provided by the printing department indicate the text is to fit in a space that is designed to be 2.17" high by 5.33" wide, with the bottom edge being 6.5" from the bottom of the page and the left edge being 2.25" from the left edge of the page, with the aperture having slightly rounded corners.

The obvious approach should be to create that page (via a template) either as a separate document or as a separate section, with the Page Setup values adjusted to leave only the actual space available. The writer then must make his/her title fit within that space—which can be encouraged by supplying a "dummy" text string with the desired font and font size, with the writer then simply replacing that text with his/her title—which will be displaced to the next page of the work document if it is too long. The need to include any other text on the page (such as a repetition of the StorageWorks log at the top and/or the Digital address at the bottom) can be taken care of simply by preprinting a stock of such pages, to obtain the unchanging information, and then using the preprinted page when it is time to print a cover.

The cover setup is relatively straightforward. To compensate for the rounded corners, I simply added 0.05" to the applicable measurements, finding that the Page Setup utility will accept some values but round others off. At the moment, for example, the cover aperture, shown in Section 1 of this file, is set to be 2.4" below the top of the page, 2.4" from the left edge (2.33" rounded off), 6.55" from the bottom, and 1.0" (0.97" rounded off) from the right side. This leaves a printable "hole" that measures 2.05" high by 5.1" wide.

As should be patently obvious, however, this space restriction severely limits how much text can be fit into that space ... which becomes a problem to us, because the engineering minds that create these titles like Germanic constructions full of semi-informative adjectives.

Since a "point" equals 0.01384 inch, and since WinWord presumably adds a standard 2-point (or more) gutter spacing between lines, this means that each line of text will consume 44 x 0.01384 = 0.609 inches, which means that three lines (1.827") will fit comfortably within the 2.05"-high aperture—but that those lines will be limited to a length of approximately 30 picas each, meaning that there will not be space for more than two or three words per line (four if they are fairly short words).

Experimentation indicates that this all changes with different fonts, however. I find that I can get three lines of Times New Roman at 42 points and four lines at 31 points ... but that Palatino (on my home system) requires reduction to 41 points (as currently shown here) in order to get three lines, meaning that restricting the title to 42 points will limit the title to two lines of text, containing between four and eight words!

02-18-94: All of that went out the window with the further clarification that the aperture also had to include a line under the title, followed by the publication category (User Manual, etc.), followed—with an appreciable space—by the order number ... with the additional news that the coversheet font was Arial (which is a TrueType font that gets translated into Helvetica in our print setup, anyway).

So—I've incorporated those into the template setup, finding that the title is restricted to two lines for a total of three or four words at 42 points ... and works down from there.

02-18-94: While I was typing that, it changed again. The semiofficial word currently is that the title will be 24-point Palatino, while the category will be 14-point Helvetica and the order number will be 9-point Helvetica.

I've also set up the second page of this template to print the StorageWorks logo, currently set up at a size that met Carl Peterson's approval, which will be preprinted on the sheet used for the title page. For the record, the preprinted page has to be put in the 4M machine upside down (logo image on bottom), bottom end first into the paper tray.

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Revision Record

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.

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. This publication supports the StorageWorks SWXTL-BL five-cartridge tape drive mini-library.

Revision Level	**Date**	**Summary of Changes**
EK-SM1TC-UG. A01	April 1994	Original release

About This Guide

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.

StorageWorks 50/100 GB, 5-Cartridge, DLT Tape Drive Mini-Library User's Guide

This guide provides product overview, installation, operation, and maintenance information for the 50/100 GB, 5-Cartridge, DLT Tape Drive Mini-Library.

Intended Audience

This guide is intended for people who will install, operate, and maintain the tape drive mini-library.

Document Structure

This guide contains the following chapters:

Chapter 1: Introduction

Introduction gives an overview of the SWXTL-BL 50/100 GB, tape drive mini-library, describes its components, and discusses the drive features.

Chapter 2: Installing and Operating the Mini-Library

Installing and operating the mini-library describes unpacking, cable connections, configuring and installing the mini-library, setting the SCSI ID address, and the mini-library POST test. It also describes all of the functions of the mini-library operator control panel and the tape cartridge cassette.

Chapter 3 Code Update (From Tape)

Code Update (From Tape) describes the code-update procedure for updating the code of the drive controller module in the mini-library.

Chapter 4 Troubleshooting

Troubleshooting provides a troubleshooting table to help diagnose common problems with the mini-library.

Appendix A: Specifications

Specifications lists the technical specifications for the mini-library and the DLT2000 tape drive, and defines the SCSI command signal set.

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

Product Notes for Novell™ and MS-DOS™ provides information that should be read by the system administrator before installing the mini-library when it will be used with a host operating under the Novell, MS-DOS, or MS-DOS/WINDOWS operating systems.

Conventions

This guide uses the following conventions:

Documentation Conventions

Style	Meaning
boldface type	**For emphasis**
italic type	*For emphasis and manual titles*

1

Introduction

This chapter introduces and describes the product features of the SWXTL-BL Tape Mini-Library.

1.1 Product Overview

The SWXTL-BL tape mini-library (Figure 1-1) is a high performance, streaming cartridge tape product designed for use on mid-range, and high-end computing systems. As a mini-library that performs automatic tape operations, the SWXTL-BL contains a high-capacity DLT tape drive and a five-cartridge, SCSI-2 medium changer device (loader). With a typical load /unload cycle time of 20 seconds, the mini-library can provide unattended back-up of 100 GB (compressed) in about 11 hours.

The half inch tape drive uses data compression and compaction. The drive features a formatted capacity of 20 GB per cartridge (compressed) and a sustained user data transfer rate of 2.5 Mbytes/second (assumes a 2:1 data compression factor). The drive has a dual-channel read/write head and Digital Lempel-Ziv (DLZ) high-efficiency data compression. The drive tape mark directory maximizes data throughput and minimizes data access time. The mini-library is housed in a tabletop enclosure and includes single-ended or differential driver/receivers.

1.1.1 Fast Data Transfer Rate

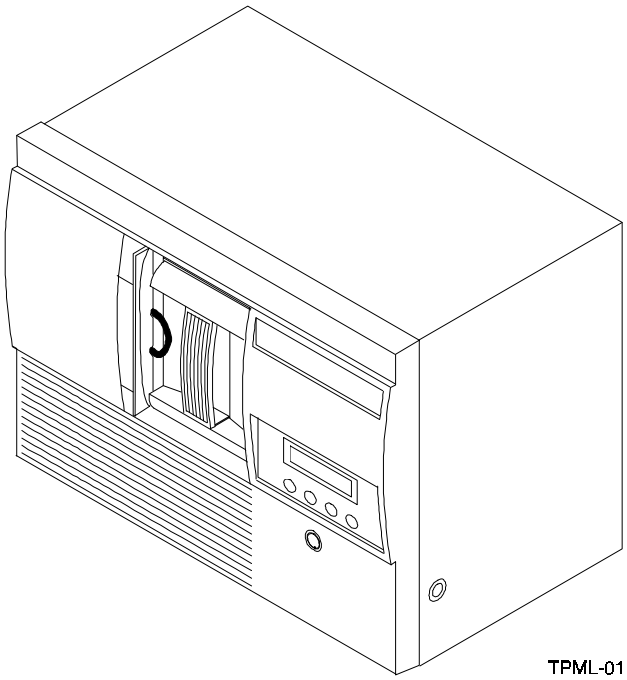
Used for unattended backups or archiving, the mini-library allows you to back-up a high data capacity at a high speed. When the SWXTL-BL operates in a non-compressed mode, the mini-library drive has a maximum transfer rate of 1.25 Mbytes/second. When operating in the compressed mode, the maximum transfer rate is 2.5 Mbytes/second write and 3 Mbytes/second read.

1.1.2 High Capacity

The amount of data you can store on a tape cartridge can be 10 GB native capacity (uncompressed), or if you select the compression mode, 20 GB compressed. Built-in data compression increases the cartridge capacity and transfer rate 2 to 2.5 times.

The removable magazine in the mini-library has the capacity for five cartridges, providing a total capacity of 100 Mbytes *compressed*, or 50 Mbytes *uncompressed*. You can select compression on the mini-library front panel or through the host by using the SCSI MODE SELECT command.

Figure 1-1. SWXTL-BL Tape Mini-Library



1.1.3 Compaction

The compaction feature of the mini-library tape drive helps you store data efficiently. A read/write data cache of 2.0 Mbytes allows working space for the compaction, enabling maximum use of available tape space.

1.1.4 Media Durability

The tape cartridge media, which provides superior media durability and data reliability, can endure 500,000 passes and has a shelf life of 20 years.

1.1.5 Compatibility

Digital Equipment Corp. is committed to maintaining compatibility within the DLT family of tape products. The SWXTL-BL, the second generation of the mini-library family, offers users a smaller form factor and low cost alternative to the first generation mini-library, the TZ877 (Digital Part No.). This device features an LCD display that shows the operation of the mini-library with abbreviated messages.

The mini-library drive's default density is 10 Gbytes (TZ87 format) compressed. The mini-library drive can write 2.6 (TK85 format), 6.0 (TK86 format), and 10 Gbytes (TZ87) tape formats for 100% interchange compatibility with earlier TZ8x drives. On a write from BOT, the mini-library reformats the cartridge if a different density is selected.

Older data cartridges can be loaded for read or read/write purposes into the SWXTL-BL mini-library. Any cartridges recorded in 2.6, 6.0, 10, or 20 Gbyte (assumes 2:1 data compression) can be read and written by the drive in the SWXTL-BL. Refer to Table 1-1 to determine cartridge compatibility with the SWXTL-BL mini-library.

Table 1-1. Read/Write Cartridge Compatibility with the SWXTL-BL Mini-Library

Cartridge Type/Format (Capacity)	Read/Write Ability in the SWXTL-BL
CompacTape/TK50 (95 MBF)	Read only
CompacTape III/TK70 (296 MBF)	Read only
CompacTape III/TK85 (2.6 GBF)	Read/write in 2.6 GB mode[1, 2]
CompacTape III/TK86 (6.0 GBF)	Read/write in 6.0 GB mode[1, 2]
CompacTape III/TK87 (10 GBF or 20 GBF (assumes 2:1 compression)	Read/write in 10 GB mode or 10C (compressed) GB mode[1, 2].
CompacTape III/blank	Read/write in 2.6[1], 6.0[1], 10, or 10C (20.0 GBF, assumes 2:1 data compression) GB mode, as selected

[1] Read/write, backward compatible with drive of selected density.

[2] Recording format can be changed to 2.6, 6.0, 10, or 10C (compressed) GB mode on a write from BOT (beginning of tape).

The SWXTL-BL complies with the ANSI standard for SCSI-2. The tape media format follows applicable ECMA approved and ANSI proposed standards.

1.1.6 Code Update Capability

The mini-library drive includes Flash EEPROM technology that allows easy on-site installation of code updates from tape or over the SCSI bus.

1.1.7 Embedded Diagnostics

The mini-library has embedded power-on self-test (POST) and diagnostics that run automatically when you turn on the power.

2

Installing and Operating the Mini-Library

This chapter describes the unpacking, installation, general configuration rules, POST test, and operation for the tape drive mini-library. It also describes the tape cartridge and magazine, and when to insert a cleaning tape cartridge.

2.1 Unpacking the Mini-Library

Before unpacking the mini-library, check the packing slip to ensure that the correct equipment has been shipped. Inspect the shipping carton for damage (crushed corners, punctures, etc.). The carton and packing material should be retained at the installation site for reshipment.

Unpack the mini-library and inventory the contents of the shipment. It should contain the following components:

Table 2-1. Mini-Library Components

Item	Digital Part Number	Quantity
5-cartridge mini-library	SWXTL-BL	1
Single tape cartridge unit	TK85K-01	5
Head cleaning cartridge	TK85-HC	1
SCSI terminator connector	12-30552-01	1
User's guide	EK-SM1TC-UG. A01	1

Also, confirm that you have received, either as a separate shipment or as part of the same order (depending on your reseller), an appropriate SCSI-bus interface cable. Table 2-2 lists the SCSI cables corresponding to the type of SCSI interface controller mounted in your computer system.

Table 2-2. Mini-Library SCSI Interface Cables

Application	Drive-end Connector	Host-end Connector	Digital SCSI Cable Part Number
Low-Density to-Low-Density Cable[1]	Low-Density (50-pin)	Low-Density (50-pin)	BC19J-1E (18 inches) BC19J-06 (6.0 feet)
Low-Density to-How-Density Cable[2]	Low-Density (50-pin)	How-Density (50-pin)	BC09D-03 (3.0 feet)) BC09D-06 (6.0 feet)

[1] The 50-pin low-to low-density cable is compatible with most ISA-type SCSI-bus adapters.

[2] The 50-pin high-dendsity is compatible with either of:

a. Most EISA-bus SCSI adapters.
b. Daisy-chain connection to DEC BA350 (Pedestal) or DEC BA353 (Desktop) SCSI storage expansion cabinets.

NOTE

If you are connecting the mini-library to a fast, single-ended SCSI bus, the interface cable cannot exceed three meters (9.8 feet). If you are connecting the mini-library to a slow, single-ended SCSI bus, the interface cable can be up to six meters (19.7 feet) in length. Table 2-2 provides the part-number identifications for ordering the appropriate cables.

2.2 Power and SCSI Bus Terminator Connections

NOTE

The purpose of the shipping screw is to secure the mini-library elevator mechanism during shipment. Ensure the power switch is set to ***off*** whenever loosening or tightening the shipping screw. Also, always remove the tape cartridges from the magazine before shipping the mini-library.

After unpacking the mini-library, be sure to:

1. Loosen the shipping screw (Figure 2-1) by turning it counter clockwise before turning on the power.
2. Ensure the power switch on the rear panel of the mini-library is set to off (Figure 2-2).
3. Connect the power cord to the rear panel of the mini-library (Figure 2-2).
4. Connect the other end of the cord to a nearby ac outlet.

Figure 2-1. Shipping Screw under the Mini-Library

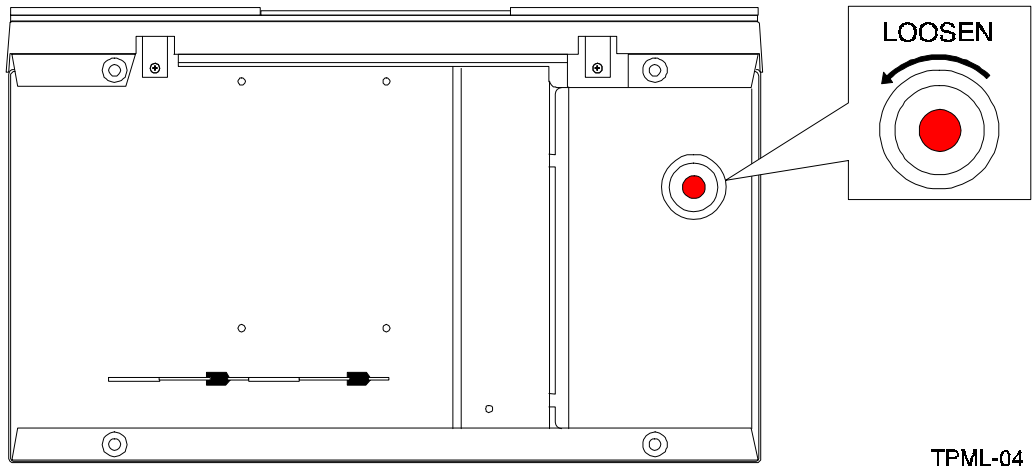


Figure 2-2. Mini-Library Rear Panel

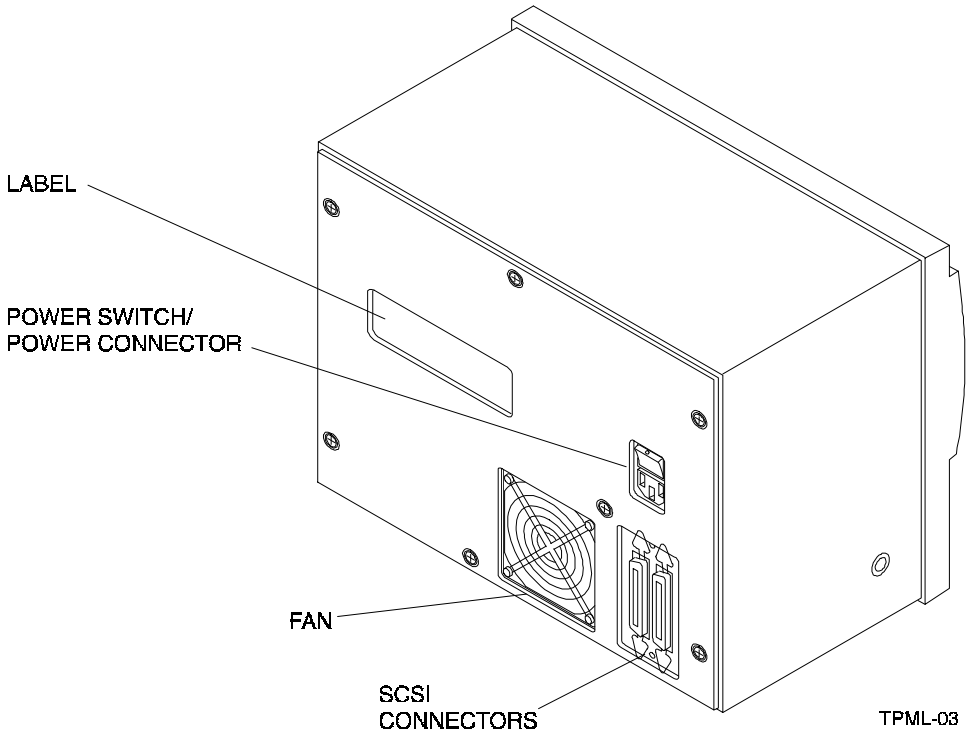
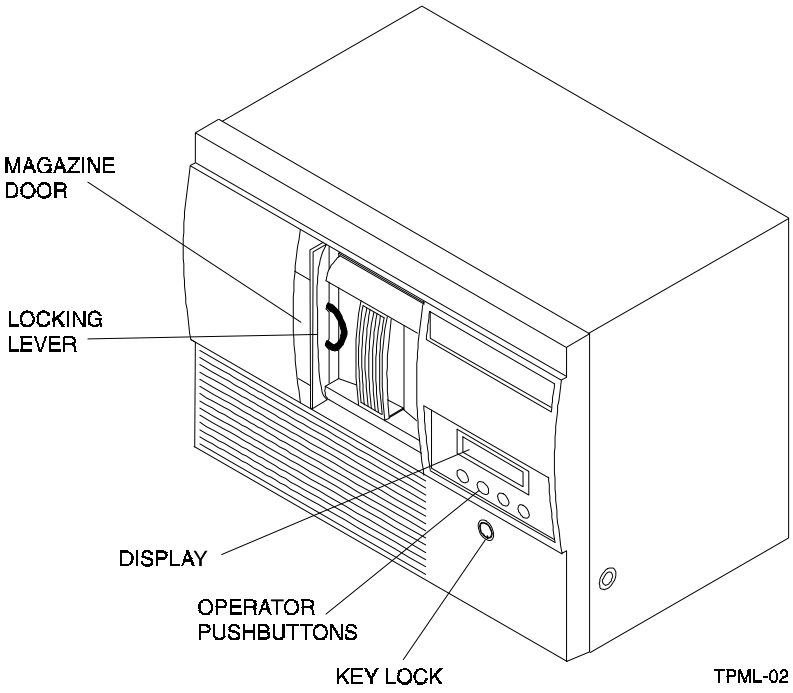


Figure 2-3. Mini-Library Front Panel



NOTE

The mini-library uses an auto-ranging power supply and will accept a voltage range of 100 to 240 Vac and a frequency range from 50 to 60 Hz.

5. Terminate the SCSI bus as described in Table 2-3 below.

NOTE

The SCSI bus must be terminated at both ends of the bus, and at least one device must supply terminator power.

Table 2-3. Adding a SCSI Bus Terminator

If the mini-library is . . .	Then . . .
The last or only device on the bus and you are going to terminate the cables externally	1. Connect the SCSI terminator to the right SCSI connector on the mini-library rear panel (Figure 2-2) 2. Snap the wire cable clamps into place to secure the terminator.
Not the last or only device on the SCSI bus	Ensure to install the terminator at the end of the SCSI bus.

6. Power on the mini-library by setting the power switch on the rear panel to on (1) (Figure 2-2) and observe the **LDR RDY** (loader ready) message in the mini-library display (Figure 2-3).
7. Unlock (enable) the operator control panel by turning the key in the keylock towards the unlock icon on the mini-library (Figure 2-3).
8. To open the magazine door, press the **Open** push-button on the front panel (Figure 2-4).

> **CAUTION**
>
> Never force or try to open the magazine door manually. Always use the **OPEN** push-button on the operator control panel which opens it electronically.

9. Turn the locking lever counter clockwise at the front of the mini-library (Figure 2-3) to rotate the magazine locking mechanism. This allows you to remove the magazine from the mini-library.

2.3 Introduction to the Mini-Library

The mini-library includes a DLT2000 tape drive, a media loader, and a five-cartridge removable magazine. The same SCSI target controller controls the tape drive and the media loader. If the controller detects the loader's presence when the system is turned on, the loader is presented as a SCSI-2 medium changer device on LUN (Logical Unit) 1. If you issue the SCSI-2 medium changer commands to the SWXTL-BL:

- *Random access is enabled to the media stored in the magazine slots*
- *Sequential access is disabled to the media supported automatically in the auto-loading mode*

If you do not issue the SCSI-2 medium changer commands, the default mode of operation is sequential access to the media supported in the auto-loading mode. Auto loading is implemented as a side effect of the SCSI UNLOAD command (Table 2-4).

Table 2-4. SCSI-2 Command Conditions

IF. . .	Then . . .
An unload is specified.	After winding the tape back into the cartridge and moving the cartridge from the drive to the magazine slot from which it came, the cartridge in the next slot is moved from the magazine into the drive and made ready.
The next slot is empty, or the cartridge unloaded was for the last slot in the magazine.	No cartridge is loaded into the drive.

2.4 Configuring and Installing the Mini-Library

This section describes the configuration rules and SCSI cable connections for the mini-library.

NOTE
Unless otherwise specified, the mini-library is set to SCSI ID **0** at the library.

2.4.1 Configuration Guidelines

Your system uses the SCSI ID to identify, or address, the mini-library. Follow these guidelines when configuring (Table 2-5) the mini-library for use on your system.

Table 2-5. Configuration Guidelines

If you are installing the mini-library as . . .	**Then . . .**
The only SCSI device on the bus or one of multiple SCSI devices on the bus.	Be sure to use a SCSI ID that is unique from any other device or system ID on the SCSI bus.
The last or only device on the SCSI bus.	You must terminate the bus by installing a terminator.

2.4.2 SCSI Cable Connection

Make the SCSI cable connection between the mini-library and the host system as follows:

1. Ensure the power switch on the mini-library is turned off.
2. Connect one end of the SCSI cable to the left most connector on the rear panel of the mini-library (see Figure 2-2) and snap the wire cable clamps into place to secure the cable.
3. Connect the other end of the SCSI cable to the SCSI connector on the host system, or for daisy-chained configurations, another SCSI device.
4. If the mini-library is the last SCSI device on the bus, ensure a SCSI bus terminator is connected to the other SCSI connector on the rear panel of the mini-library.

2.5 POST Test

The POST (Power On Self Test) test runs automatically when the mini-library is turned on. The POST test checks the integrity of the installation to ensure it is wired and functioning properly. Perform the POST test as follows:

1. Set the power switch on the rear panel of the mini-library to on (1).
2. Observe the sequence of events on the front panel display of the mini-library. They should be as defined in Table 2-6.
3. If any of the display messages in the sequence of events did not occur, refer to Table 2-7 for a POST test analysis.

Table 2-6. POST Display Messages

Event	Display Message
1	**LDR RST** (loader reset)
2	**LDR ACT** (loader active)
3	Series of numbers displayed while mini-library elevator goes up and down (audible).
4	**LDR RDY** (loader ready)

Table 2-7. POST Test Analysis

If ...	Then ...
All events in the Table occurred.	POST succeeded. The mini-library is ready for operation.
All events in the Table did not occur.	POST failed. You should see the display message LDR RST (loader reset). Verify the following: 1. SCSI bus is terminated properly. 2. Set the mini-library power switch to off and then back on. If the POST test fails again, call your service representative.

2.6 Mini-Library Operator Control Panel

The operator control panel contains four push-button switches as shown in Figure 2-4. Table 2-8 identifies the switches and defines their functions.

Figure 2-4. Mini-Library Operator Control Panel

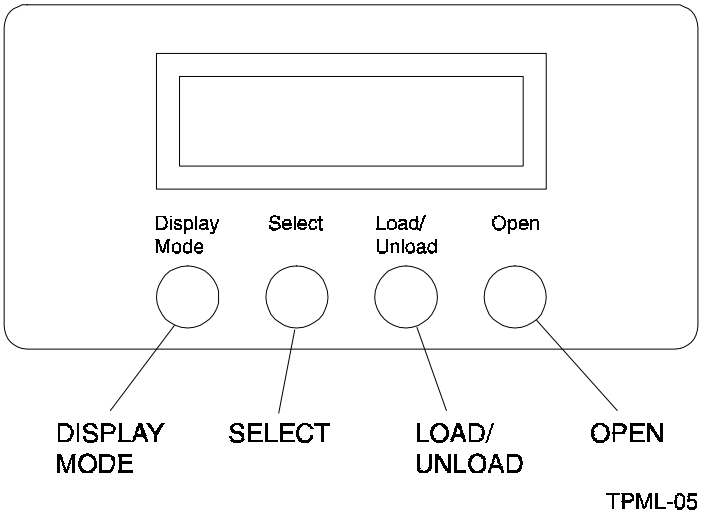


Table 2-8. Operator Control Panel Functions

Push-button	Function
Display Mode	Puts the mini-library in the **Normal**, **Density Select**, or **SCSI ID Select** mode.
Select	• Selects SCSI ID and density. • Moves, in increments, the current slot number on the display to the next slot number.
Load/Unload	• Loads the cartridge currently selected into the tape drive. • Unloads the cartridge currently in the drive. • Resets the mini-library if a loader error has occurred. When the **ERR LDR** message displays, press the Load/Unload button to reset the mini-library
Open	• Opens the magazine door allowing access to the magazine for loading and unloading cartridges.

Table 2-9 lists and describes the possible display messages which may be seen on the operator control panel during normal operation.

Table 2-9. Operator Control Panel Display Messages

Display Message	Description
WP	The cartridge in the drive is write-protected by one of the following: • The write-protect switch on the cartridge is set to the write protect position • Host software write-protect qualifiers
DRIVE ACT	Tape is reading or writing.
DRIVE RDY	A cartridge is in the drive and the tape is not moving.
DRIVE REW	Tape is rewinding.
HC	The read/write head needs cleaning.
LDR RDY	Power is on and no cartridge is in drive.
LDR ACT	Loader is moving a cartridge.
ERR MAG	The status of cartridges reported by the loader and drive is inconsistent.
ERR LDR	A loader transfer assembly error has occurred.
ERR DRV	A drive error has occurred.
ERR CTL	A controller error has occurred.
ERR UNK	An error of unknown origin has occurred.
SLOT 0 SLOT 1 SLOT 2 SLOT 3 SLOT 4	The current slot containing the cartridge. Each current slot number flashes on the display when its corresponding cartridge moves to or from the drive. Also used with the **ERR MAG** or **ERR LDR** message to show error type.
DNS SEL	The mini-library is in the Density Select mode.

Table 2-9. Operator Control Panel Display Messages (Con't)

OVR	Tape drive activity is as follows: • *On* continuously indicates "density" on front panel • *Off* (default) indicates "density" selected automatically • *Flashing* indicates mini-library is in "density selection" mode
2.6	Tape drive activity is as follows: • *On* continuously indicates tape is recorded in 2.6 format • *Flashing* indicates the tape is recorded in another density. You have selected this density for a write from BOT
6	Tape drive activity is as follows: • *On* continuously indicates tape is recorded in 6 GB format • *Flashing* indicates the tape is recorded in another density. You have selected this density for a write from BOT
10	Tape drive activity is as follows: • *On* continuously indicates tape is recorded in 10 GB format • *Flashing* indicates the tape is recorded in another density. You have selected this density for a write from BOT
10C	Tape drive activity is as follows: • *On* indicates Compression mode enabled (10 GB density only) • *Off* indicates Compression mode disabled

2.7 Key Lock

The key lock on the front panel of the mini-library (Figure 2-3) enables the operator control panel. The key lock prevents unauthorized removal of the magazine or cartridges, providing a measure of data security. To *unlock* (or enable) the operator control panel, insert and turn the key toward the opened lock icon next to the key lock (Figure 2-3). To *lock* (or disable) the operator control panel, insert and turn the key to the locked icon next to the key lock.

CAUTION

Never force or try to open the magazine door manually. Always use the **OPEN** push-button on the operator control panel which opens it electronically.

2.8 Operator Control Panel Locked (Disabled)

When the magazine is inserted into the mini-library and the door is closed, the elevator scans the magazine. The first cartridge in the magazine automatically loads into the drive. When you are copying data to the tape, mini-library operations stop if one of the following conditions occurs:

- The storage capacity of the last tape cartridge is exceeded
- No tape cartridge is in the next sequential slot in the magazine
- The operator control panel pushbuttons are disabled

2.9 Operator Control Panel Unlocked (Enabled)

The operator control panel push-buttons are unlocked or enabled, it allows the operator intervene. This enables the mini-library to load or unload cartridges as needed during backup procedures. When you are copying data to the tape, operations stop if one of the following conditions occurs:

- The storage capacity of the last tape cartridge is exceeded
- No tape cartridge is in the next sequential slot in the magazine

2.10 Setting the SCSI ID of the Mini-Library

To set the SCSI ID of the mini-library, you must first choose an unused SCSI ID between 0 and 7. Then set the SCSI ID from the operator control panel as follows:

1. Press and hold the **Display Mode** push-button (about five seconds) until the **SCSI ID SEL** message is displayed including the factory set SCSI ID.

Example:

SCSI ID SEL SCSI ID 0

2. Press the Select push-button with quick presses until you see the ID number you want in the display (Figure 2-4).
3. Press the **Display Mode** push-button again. When the display message **LDR RDY** appears, the mini-library drive cannot recognize the SCSI ID yet.
4. Issue a “bus reset” or turn the mini-library power off and on again for the drive to recognize the new SCSI ID.

2.11 Select Density

This section describes the mini-library’s density select feature. You can select density by using any of the following steps:

NOTE

You can do a front panel density selection at any time, but the selection takes effect only on the next write from BOT.

1. On a Write from BOT, the tape density is selected by one of the following:

- Front panel **Density Select** mode
- Programmable host selection via your operating system
- Native default density 10 GB and compress (assuming you did not use the **Select Mode** or the host selection)

2. On all read operations and all write append operations, the recorded density is the density to be used.

CAUTION

Executing any "Write from BOT" operations destroys existing data on tape.

2.11.1 Front Panel Density Select Mode

To select density via the front panel:

1. If a tape is loaded in the drive, the display shows the tape's pre-recorded density.
2. You can use the mini-library operator control panel at various times, not just after loading a tape. Density selection is inactive until the write from BOT command is issued. The controller remembers the density selection state until you do one of the following:

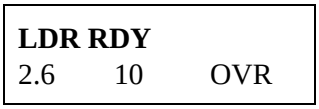
- Change the density selection
- Press the **Open** push-button to open the door

3. Enter the **Density Select** mode by pressing the **Display Mode** push-button and then the **Select** push-button on the operator control panel. Using the **Density Select** mode always overrides a host selection.

Example:

If you have loaded a tape with a pre-recorded density of 2.6 and you use the **Density Select** mode to select a density of 10:

Before a "Write from BOT" occurs, you should see the 2.6 continuously displayed, and the **10** and **OVR** flashing in the display, as shown:



After a "Write from BOT" occurs, you should see the selected density of **10** and the **OVR** should be continuously displayed as shown below

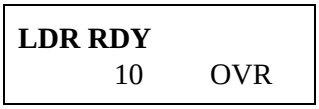


Table 2-10 shows the results.

Table 2-10. Results of not Using or Using Density Select Mode

If . . .	Then . . .
You did not use the **Density Select** mode	The display shows the actual density when the tape is reading and writing.
You used the **Density Select** mode and the actual tape density is the same as the density you selected.	The display shows the actual density and **OVR** on continuously.
You used the **Density Select** mode and the actual tape density differs from the density you selected.	On operation before "Write from BOT", the display shows: • Actual tape density on continuously • Selected density flashing • **OVR** flashing On operation after "Write from BOT", the display shows: • Selected density on continuously • **OVR** on continuously

2.11.2 Programmable Host Selection via Your Operating System

To select density via the SCSI bus:

1. Do a SCSI MODE SELECT with the density you want. For more details, see the *DLT2000 Series Magnetic Tape Product Manual, (EK-TH4XX-IM).*
2. Write data to the tape from BOT.

2.11.3 Native Default Density 10 GB and Compress

If you did not use the front panel **Density Select** mode or **Programmable Host** selection, the selection becomes the **native default density of 10 GB and Compress.**

2.12 Default Operating Modes

The mini-library operates in four modes: **Normal, Density Select, SCSI ID Select**, and **Code Select**.

2.12.1 Normal Mode

The **Normal** mode is used by default after you turn on or reset the mini-library. The information displayed during this mode depends on the state of the mini-library as follows:

Table 2-11. Normal Mode Definitions

If the display says . . .	It means the . . .
LDR ACT	Loader is active
LDR RDY	Loader is inactive and no cartridge is in drive.
DRV RDY	Drive is ready
DRV ACT	Drive is active
DRV REW	Tape is rewinding
HC	Use cleaning tape
WP	Drive is in write-protect status

The push-button switch functions while in the **Normal** mode operates as follows:

- When you press and release the **Display Mode** push-button, the mini-library enters the **Density Select** mode of operation
- When you press and hold the **Display Mode** push-button for about 5 seconds, the mini-library enters the **SCSI ID Select** mode of operation

2.12.2 Density Select Mode

The **Density Select** mode allows you to select the drive density. The information displayed during this mode depends on the state of the mini-library as follows:

Table 2-12. Density Select Definitions

If the display says . . .	It means the . . .
DNS SEL	Mini-library is in the **Density Select** mode.
OVR	Front panel selection overrides host selection
DRV RDY	Drive is ready
DRV ACT	Drive is active
DRV REW	Tape is rewinding
HC	Use cleaning tape
WP	Drive is in write-protect status

When you press and release the **Display Mode** push-button switch once in the **Density Select** mode, the mini-library enters the **Normal** mode of operation.

2.12.3 SCSI ID Select Mode

The **SCSI ID Select** mode allows you to select the SCSI ID for the tape drive and to enter the **Code Update** mode of operation. If you turn off and turn on the power again or reset the mini-library, the SCSI ID you chose reappears after being stored. The information displayed during this mode depends on the state of the mini-library as follows:

Table 2-13. SCSI ID Select Mode

If the display says . . .	It means the . . .
SCSI ID SEL	Mini-library is in the **SCSI ID Select** mode.
SCSI ID 0	SCSI ID is set to 0
SCSI ID 1	SCSI ID is set to 1
SCSI ID 2	SCSI ID is set to 2
SCSI ID 3	SCSI ID is set to 3
SCSI ID 4	SCSI ID is set to 4
SCSI ID 5	SCSI ID is set to 5
SCSI ID 6	SCSI ID is set to 6
SCSI ID 7	SCSI ID is set to 7

If you press the **Select** push-button while in the **SCSI ID Select** mode, the stored SCSI ID you chose moves by one increment. If you press the **Select** push-button when the stored SCSI ID is 7, then the SCSI ID moves to 0.

If you press and release the **Display Mode** push-button in the **Density Select** mode, the mini-library enters the **Normal** mode of operation.

2.12.4 Code Update Mode

Refer to Chapter 3 to place the mini-library in the **Code Update** mode.

2.13 Tape Cartridge Description

The tape cartridge is a four-inch, gray, plastic cartridge containing 1,100 feet of 1/2 inch magnetic metal particle tape.

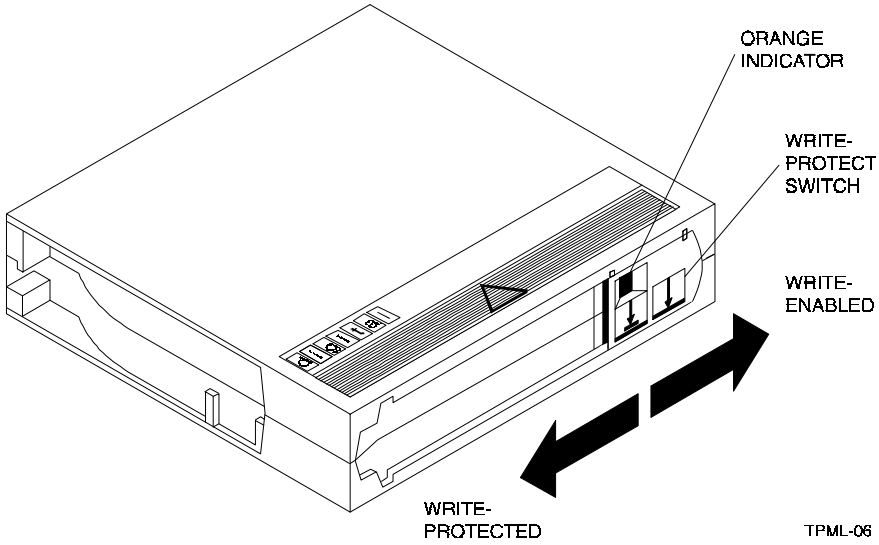
2.13.1 Cartridge Write-Protect Switch

The tape cartridge has a write-protect switch to prevent accidental erasure of data. Before loading the tape cartridge into the drive, position the write-protect switch on the front of the cartridge (Figure 2-5). When the switch is moved to the *left*, the cartridge is write-protected. When the switch is moved to the *right*, the cartridge is write enabled.

When you slide the switch to the left, the small orange rectangle is visible, which means data cannot be written to the tape. The arrow (beneath the orange rectangle and over the two lines on the write-protect switch) indicates that data cannot be written to the tape.

On the right side of the write-protect switch is another symbol: an arrow over one line. This symbol indicates that if you slide the write-protect switch to the right, data can be written to the tape.

Figure 2-5 Tape Cartridge Write-Protect Switch



2.13.2 Data Protection

If you move the cartridge write-protect switch to the left, and then load the tape, the **WP** (write protect) message displays. Table 2-14 describes what happens to data protection when you move the write-protect switch before loading the cartridge.

Table 2-14 Before Loading the Cartridge

If you move the write-protect switch . . .	Then . . .
To the left, the tape is write-protected, with the orange indicator showing	You cannot write data to the tape.
To the right, the tape is write-enabled	You cannot write data to the tape (if it is not software write-protected).

2.13.3 Ordering Cartridges

Table 2-15 lists the cartridges with order numbers for the SWXTL-BL mini-library.

Table 2-15. Cartridge Order Numbers

Order Number	Description
TK85-01	CompacTape III cartridge. Five cartridges shipped with the mini-library.
TK85-HC	CleaningTape III cartridge. One cartridge ships with the mini-library.

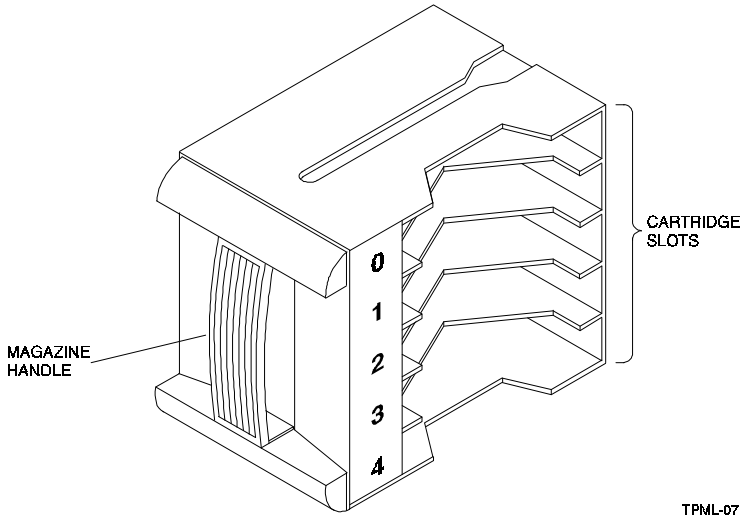
2.14 Description of the Magazine

The front of the magazine has numbers 0 through 4 marked, indicating each slot number (Figure 2-6).

NOTE

Insert and remove all cartridges at the front of the magazine.

Figure 2-6. SWXTL-BL Magazine



2.14.1 Inserting a Cartridge into the Front of the Magazine

Before you insert a cartridge:

1. Grasp the cartridge with the write-protect switch facing you.
2. Set the cartridge's write-protect switch to the desired position as follows:

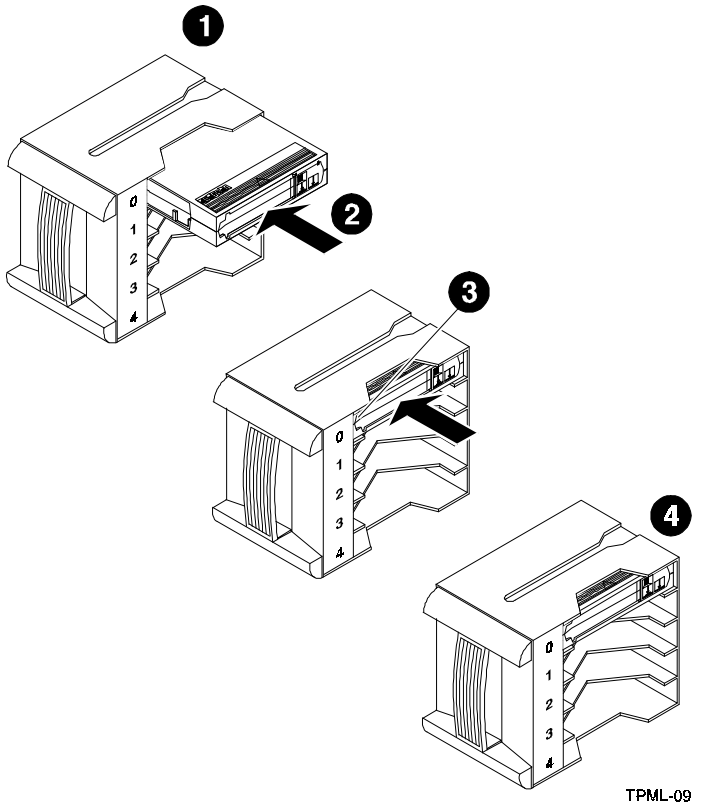
Table 2-16. Setting the Write-Protect Switch

If you want to . . .	Then . . .
Write to the tape	Slide the switch to the right (orange indicator is not visible).
Write-protect the tape	Slide the switch to the left (orange indicator is visible).

To insert a cartridge into the magazine (Figure 2-7):

1. Place the magazine on a flat surface with the slots facing you. Each slot is numbered to ensure you are inserting the cartridge correctly into the front of the magazine. Usually, cartridges are inserted into consecutive slots.
2. Insert the cartridge by pushing it into the slot until you hear a click.
3. Notice a small metal tab.
4. This holds the cartridge in place.

Figure 2-7. Inserting a Cartridge into the Magazine.



2.15 When to Use the Cleaning Tape Cartridge

Use Table 2-17 to determine when to use the cleaning cartridge.

Table 2-17. When to Use the Cleaning Cartridge

If . . .	It means . . .	And you should . . .
1. The **HC** message displays.	The drive head needs cleaning or the tape is bad. (See item 3)	Use the cleaning cartridge. Follow the instructions in this chapter to insert a cartridge into the magazine and load into the drive. When cleaning is complete, the cleaning cartridge unloads from the drive and returns to the magazine. The **LDR RDY** message displays.
2. A data cartridge causes the **HC** message to display frequently.	The data cartridge may be damaged.	Backup this data on another cartridge. Discard the old cartridge, which may be damaged. A damaged cartridge may cause unnecessary use of the cleaning cartridge.

Table 2-17. When to Use the Cleaning Cartridge (Con't)

3. The **HC** message still displays after you clean the drive head.	Your data cartridge may be causing the problem.	Try another cartridge.
4. The **HC** message displays after you load the cleaning cartridge.	Cleaning has not been done and the cartridge is expired.	Replace the cleaning cartridge.

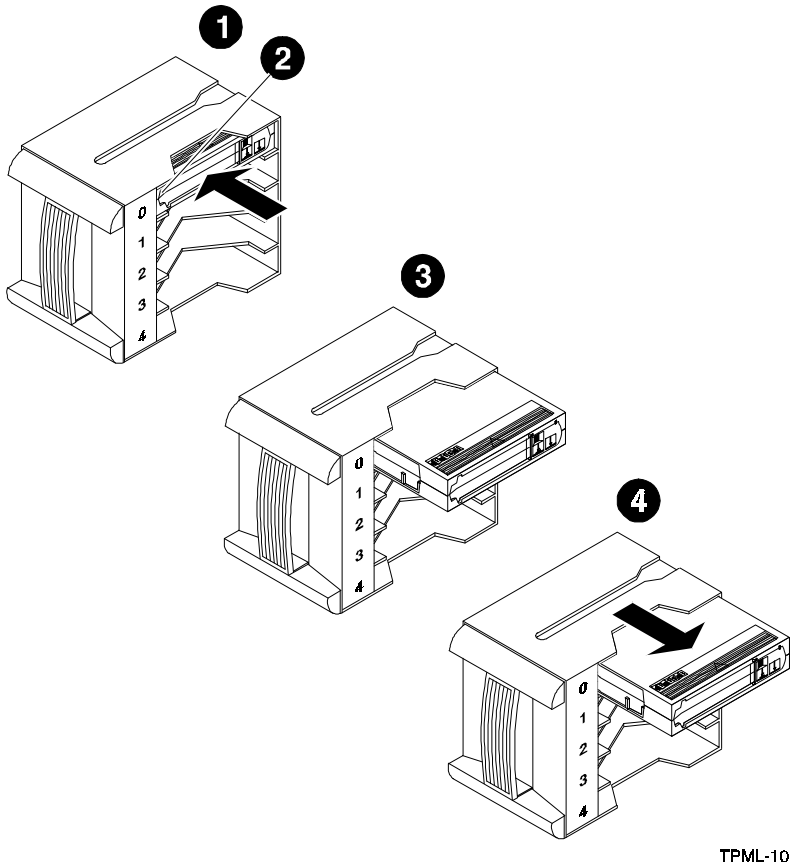
NOTE

The cleaning cartridge expires after approximately 20 uses.

2.16 Removing a Cartridge from the Magazine

To remove a cartridge from the magazine (Figure 2-8) press in on the cartridge where you can see the metal tab next to the slot number until it stops and you hear a click, then release. The slot has a spring-release action causing the cartridge to snap out.

Figure 2-8. Removing a Cartridge from the Magazine



CAUTION

To prevent cartridge jams in the mini-library, never apply labels to the top or bottom of tape cartridges. Always use the space on the front of the cartridge for labels.

2.17 Removing the Magazine from the Mini-Library

To remove the magazine from the mini-library, first ensure the operator control panel is enabled or unlocked via the key lock (Figure 2-3). Then perform the following:

1. If a tape is loaded in the drive, press the **Load/Unload** push-button to unload the tape from the drive and load into the magazine. Press the **Open** push-button to open the door of the mini-library.
2. Slide the door all the way to the left.
3. Grasp the magazine's handle and pull the magazine out of the mini-library.

2.18 Installing the Magazine into the Mini-Library

CAUTION

Do not force the magazine door open manually. Always use the operator control panel **Open** push-button, which opens the door electronically.

To install the magazine, perform the following:

1. Ensure the door has moved all the way to the left.
2. Slide the magazine into the mini-library doorway while holding the magazine by the handle (Figure 2-6). Since the magazine is slotted, you can insert the magazine in the correct orientation only.
3. Slide the door to the right until it closes.

2.19 Selecting a Cartridge from the Magazine

After a successful initialization, the mini-library automatically selects the first slot containing a cartridge and the **Select** push-button is enabled. To select a cartridge, press the **Select** push-button to advance to the next slot containing a cartridge.

2.20 Loading the Cartridge

To load the cartridge from the magazine into the drive, press the **Load/Unload** push-button and observe the loading sequence as described in Table 2-18.

Table 2-18. Cartridge Loading Sequence

Stage	Event
1	The elevator moves to the selected slot.
2	The cartridge is then removed from the magazine and placed in the elevator.
3	The elevator moves to the drive position and inserts the cartridge into the drive.
4	The display reads **LDR ACT** until the tape has loaded to the beginning of the tape (BOT).
5	After the cartridge is loaded into the drive, the display reads **DRV ACT**.
6	After the cartridge is fully loaded and at BOT, the display reads **DRV RDY**.

2.21 Unloading the Cartridge

CAUTION

Do not press the **Load/Unload** push-button until backup or other tape operations are stopped at the terminal. Doing so can result in operation failure and drive unavailability.

Table 2-19. Unloading the Cartridge

If . . .	Then . . .
You want to unload the cartridge from the drive.	Press the Load/Unload push-button and observe the following: • The **DRV REW** message displays • The cartridge unloads from the drive and the display reads **LDR ACT** • When the cartridge returns to the magazine, the display reads **LDR RDY**
The **ERR LDR** message displays, showing a malfunction.	Press the **Load/Unload** push-button to reset the mini-library and try to clear the error.

2.22 Opening the Magazine Door

The **Open** push-button opens the magazine door for insertion or removal of the magazine. The push-button is disabled when the key lock is in the locked or disabled position. Table 2-20 describes magazine door operations.

Table 2-20. Opening the Magazine Door

When . . .	Then . . .	You should . . .
A cartridge is not in the drive	The **LDR RDY** message displays before any operation begins.	Press the **Open** push-button. The door opens.
A cartridge is in the drive.	The **DRV RDY** message displays before the operation begins.	Press the **Open** push-button so the cartridge unloads from the drive and moves back into the magazine. The door opens.

In both situations described in Table 2-20, once you close the door again, a magazine scan begins and the **LDR ACT** message is displayed. When the scan completes, the **LDR RDY** message is displayed.

3

Code Update (From Tape)

This chapter describes the Code Update overview and operating procedure.

3.1 Code Update Overview

The SWXTL-BL Cartridge Tape Mini-Library can automatically update the controller board firmware directly from a tape containing the appropriate information. The user places the mini-library into code (firmware) update mode via the operator control panel, and loads the tape cartridge containing the SWXTL-BL code image file. Then, the mini-library automatically reads and verifies the tape information as a valid SWXTL-BL code image. If the image data passes all the verifications, the image data installed into the controller's non-volatile code memory. This chapter describes how to perform the code-update procedure.

CAUTION

During the code update, when the new image is actually being programmed into the FLASH EEPROMs, a power fail (but not BUS RESET) causes the controller module to be unusable. When doing a code update, take reasonable precautions to prevent a power failure.

3.1.1 Updating Code on a Standalone SWXTL-BL

You can update the mini-library code even when the mini-library is not attached to a SCSI bus. That is, you can update a standalone SWXTL-BL. However, to do an update, the power-on self-test (POST) must pass first. To pass, POST needs a properly terminated bus.

3.2 Code Update Procedure

To do the code update, you must have a CompacTape cartridge with a copy of the code image. This section describes the procedure for updating the code of the drive controller module in the mini-library. The update is done from a cartridge that stores the code image. Code update from the host is also supported. For details, see the section on the SCSI WRITE BUFFER command in the *DLT2000 Series Magnetic Tape Product Manual*, (EK-TH4XX-IM).

3.2.1 Updating the Code on the SWXTL-BL

Update the code on the SWXTL-BL as follows:

1. Obtain or make a CompacTape with the code image of the specified revision level copied to it.
2. Put the mini-library into the code update mode as follows:

- With the **LDR RDY** message displayed, press the operator control panel **Open** push-button to open the door and remove the magazine. Then close the door.
- Remove all cartridges from the magazine and install the code update cartridge into the magazine,
- Press the **Display Mode** push-button until the **SCSI IS SEL** message is displayed.
- Press and hold the **Load/Unload** push-button until the **SCSI ID SEL** message starts to flash, immediately release the push-button and press the **Load/Unload** push-button again. The **CODE UPDATE MODE** message is displayed.

3. Press the **Open** push-button two times to open the magazine door. Load the magazine with the code update tape into the mini-library and close the door.
4. Wait until the elevator stops scanning the magazine and then press the **Load/Unload** push-button to load the code update tape into the tape drive and observe the following:

If . . .	**Then . . .**
The drive code revision is the same revision as that of the update tape.	The drive code does not go through an update.
The drive code revision is not the same revision as that of the update tape.	The drive code goes through an update, taking about 5 minutes.

5. During a drive code update, the drive:

- Automatically reads the tape (calibration and directory processing cause the tape to move for a few minutes before data is actually read)
- Examines the data
- Verifies the data is a valid SWXTL-BL code image
- When the drive code update completes, the controller’s flash EEPROM memory is updated with the code image
- Resets and goes through POST, and the code update tape cartridge returns to the magazine and the **LDR RDY** message displays

6. If the code update succeeds, the mini-library resets itself and a magazine scan takes place.

3.2.2 Interpreting the Results

Table 3-1 lists the conditional results of updating the code on the SWXTL-BL.

Table 3-1. Code Update Results

If . . .	This means . . .	And you should . . .
The code update cartridge unloads from the drive and loads into the magazine slot from which it came	The update succeeded. The controller's flash EEPROM memory is updated with the new firmware image.	Begin operating the mini-library
The code update cartridge does not unload from the drive and load into the magazine.	The update failed. The drive may reset and the **ERR UNK** message may display. The mini-library should still be usable, but this depends on why the update failed. The reasons for failure could be: • The code update cartridge contains a corrupted image file or the file is built improperly.	1. Press the **Unload** button to unload the tape cartridge from the drive. 2. Press the **Open** button to open the magazine door. 3. Remove the magazine and close the door. The mini-library does an elevator scan. 4. Open the door again. The message **LDR RDY** displays. 5. Verify you have the valid image for your drive type (variant) in the magazine. Ensure the image copied to the tape cartridge is using a block size of 4096 bytes. If you still cannot do the update, call your service representative.
	• The tape cartridge with the valid update image is not readable.	1. Press the **Unload** button to unload the tape cartridge from the drive. 2. Press the **Open** button to open the magazine door. 3. Remove the magazine and close door. The mini-library does an elevator scan. 4. Open the door again. The message **LDR RDY** displays. 5. Rebuild the valid image on a good cartridge. 6. Try the code update procedure again using the valid tape image. If you still cannot do the update, call your service representative.

Table 3-1. Code Update Results (Con't)

If . . .	This means . . .	And you should . . .
	• A power failure occurs during the code update. The drive may be unusable	Try unloading the cartridge from the drive (as described in this table) to do the code update again. If you still cannot do the update, call your service representative.
	• A controller failure occurs. The drive is most likely unusable and needs to be replaced.	Turn off mini-library power and turn power back on again. If you still have a drive controller failure, call your service representative.

4

Troubleshooting

This chapter provides troubleshooting tips for the mini-library.

4.1 Mini-Library Push-button Conditions

Review the information in the previous chapters to ensure you are correctly operating the SWXTL-BL mini-library.

Before pressing the **Display Mode, Select, Load/Unload**, or **Open** push-buttons on the operator control panel, check for the conditions listed in Table 4-1 and ensure the following:

- Mini-library power is turned on
- Magazine door is closed
- Key lock is not set to lock (disable) on the operator control panel

Table 4-1 lists the operating conditions of the push-buttons on the operator control panel.

> **NOTE**
>
> Do not press the **Load/Unload** push-button to abort any function of the mini-library. Consult your applications user's guide for abort instructions.

Table 4-1. Mini-Library Push-button Conditions

If you want to . . .	First, ensure the . . .	Then you can press this push-button . . .
Select another slot in the magazine	• Magazine contains at least two cartridges • **LDR RDY** displays	**Select**
Load the selected cartridge into the tape drive	• Magazine contains at least one cartridge • **LDR RDY** displays	**Load/Unload**
Return the selected cartridge to its original slot in the magazine.	**DRV RDY** displays	**Load/Unload**
Clear a magazine or loader error.	**ERR MAG** or **ERR LDR** displays	**Load/Unload**
Open the door or unload the cartridge from the drive and open the door.	**LDR RDY** displays	**Open**

4.2 Backup Operation Failures

The following manual operations can cause back-up operations to fail during BACKUP:

- Loading write-protected CompacTape III cartridges when executing write operations
- Selecting the incorrect cartridge slot from which to initialize operations

4.3 Avoiding Basic Problems

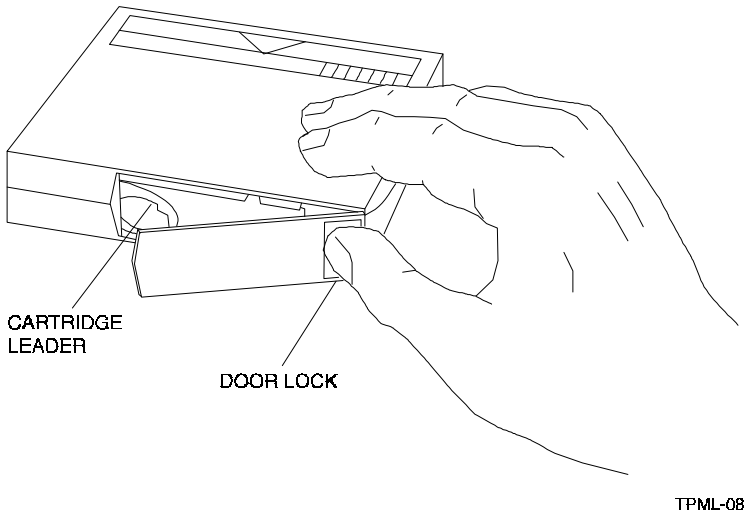
To avoid basic problems, follow these guidelines when operating the mini-library:

CAUTION

Do not touch the exposed magnetic tape. If the tape leader is not in the correct position, use a new cartridge.

- Use CompacTape III cartridges
- Check the tape leader in the cartridge by lifting the cartridge latch that opens the door to expose the leader. Release the door lock by lifting the lock with the thumb (Figure 4-1). Be sure the leader is in the same position as the one shown in Figure 4-1
- Ensure the magazine door is fully closed and the current slot is displayed for the starting cartridge
- Ensure *no* slots in the magazine are empty between the starting cartridge and the expected completion cartridge

Figure 4-1. Opening the Cartridge Door to Check the Tape Leader



4.4 Error Conditions

Error conditions fall into these main categories:

- **Magazine Error** - In most cases, this error is an operator-correctable condition indicated when the **ERR MAG** message displays. If you cannot resolve the error, call your service representative.
- **Loader Error** - This a condition that most likely requires service from a service representative. It is indicated when the **ERR LDR** message displays.
- **Drive Error**
- **Controller Error**
- **Unknown Error**

4.4.1 Magazine Error Description Cases

A magazine error can occur during any of the following cases:

Case 1 A cartridge was removed from the magazine incorrectly.

Case 2 A cartridge was manually unloaded from the drive.

Case 3 A cartridge that was loaded into the drive by the loader was manually unloaded and put back into the magazine.

Case 4 A cartridge was manually inserted into the drive. This can occur only if the loader has been opened, requiring service intervention. It cannot occur under normal operation.

When the conditions listed above are present, the **ERR MAG** message displays, showing a situation that can be corrected by the operator. The only function available at this time is the **Open** push-button to open the door and remove the magazine.

4.4.2 Loader Error Description

The **ERR LDR** message tells you the mini-library has detected a fatal error in the loader transfer assembly. In some loader transfer assembly errors, the mini-library retries the error three times before showing an failure. All loader errors cause the **ERR LDR** message to display.

4.4.3 Clearing the Loader Error

When you press the **Load/Unload** push-button, the mini-library attempts to clear the error. When you press the **Open** push-button, the door opens to let you access the magazine.

4.4.4 Drive Error Description

The **ERR DRV** message tells you the mini-library has detected a fatal error in the tape drive. In some drive errors, the mini-library retries the error three times before showing a failure. All drive errors cause the **ERR DRV** message to display.

4.4.5 Clearing a Drive Error

When you press the **Load/Unload** push-button, the mini-library attempts to clear the error. When you press the **Open** push-button, the door opens to let you access the magazine.

4.4.6 Controller Error Description

The **ERR CTL** message tells you the mini-library has detected a fatal error in the controller. In some controller errors, the mini-library retries the error three times before showing a failure. All controller errors cause the **ERR CTL** message to display.

4.4.7 Clearing the Controller Error

When you press the **Load/Unload** push-button, the mini-library attempts to clear the error. When you press the **Open** push-button, the door opens to let you access the magazine.

4.5 Power Problems

If the mini-library fan does not turn on, you don’t see a display message, or your system does not recognize the mini-library:

- Check power plug to ensure it is secure
- Contact your service manager and verify that the mini-library configuration is correct
- If power problems still exist, contact your service representative

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Richard:

The foregoing is a tentative attempt at an automatically generated index.

I believe that I have now worked out the setups and procedures such that this sort of an index could be created (for the size of book you have) in two to three hours. One of the problems, however, is that the automatic index can only be generated after the final format of the document has been completed. The codes themselves could be introduced at any time during the process, but the index itself cannot be generated until we know that you are not going to be moving anything from one page to another. I don't have that guarantee with the files that you gave me, because they clearly require some editing, and any changes may move the end of one or more pages.

One of the problems that I noticed in the process was a continuing inconsistency of nomenclature. In Chapter 1, for example, your abstract refers to the "Expanded Storage Pedestal" and the very next sentence, opening that chapter, refers to the "StorageWorks Expansion Storage Pedestal." Similarly, we have storage device carriers, device carriers, carriers, drive carriers, 3.5-inch drive carriers, 3.5-inch device carriers, 5.25-inch drive carriers, 5.25-inch device carriers, etc. If the index had used more universal entries, that would have been a serious problem, but I didn't see any need to use such entries, so it has been minimal.

However--we now know how to do it, and it's a lot faster than reading the text, writing down the entries, and then typing them into another file.

The basic secrets are as follows, if the intent is to produce an index that identifies entries in different chapters stored in different WinWord files:

1. At the beginning of each such file (i.e., ahead of the chapter number), press SHIFT+F9 to insert a field (appearing on your screen as two braces.
2. In that field (i.e., between the braces), type in **seq chapter \rn \h**, where the **n** after the **\r** switch is the number of the applicable chapter.
3. Press F9 to update the field—which will make it disappear [presuming that the Field Codes setting on the Options menu accessed from your Tools menu is blank, as it normally is].
4. Pull down the Tools menu, select the Options function, select the "hidden Text" (or "All") option (putting a cross in it) and press the OK button.
5. Go through your finished text file looking for things you think should be in the index (e.g., paragraph heading subjects, such as "Device Addresses"; special terms, such as "hot swap"; abbreviations & acronyms, such as SCSI & BBU; operations, such as "removal of rear bezel"; etc.) If you see the desired wording already typed in, simply highlight the applicable

character string and then pull down the Insert menu and select the Index Entry function and press the OK button in its dialog box.

6. If you don't quite see the wording you want, call up that Index Entry dialog box anyway and then type into the available space (up to 64 characters allowed) whatever wording you think should appear in the index, and then press the OK button.

7. If the thing that you type in is to include a subentry, type in the primary entry followed by a colon and then the subentry (i.e., since there are many things to be said about the pedestal, you can presume that pedestal will be a primary entry; to enter a subentry for the indicators, you type in "pedestal: indicators" ... or, in the case of the already existing "Pedestal Description," you simply insert a colon after the first word).

A

Specifications

This appendix contains the technical specifications for the mini-library and the internal DLT2000 tape drive, and the definitions of the SCSI command signal set.

Table A-1. Mini-Library Specifications.

Characteristic	Specification(s)
Height	11.8 in. (300 mm)
Width	16.3 in. (414 mm)
Depth	10.5 in. (267 mm)
Weight	31 lbs. (14 kg)
Noise Level	35 dB
Maximum number of cartridges	Five
Communications interface	SCSI-2 bus (single-ended or differential) with a separate SCSI LUN ID for the mini-library and tape drive
Mechanical load/unload cycle time	20 sec. (typical)
Power requirements (auto ranging)	
Voltage	100 to 240 Vac
Frequency	50 to 60 Hz
Power consumption	100 W, max.
Certification	
EMI	FCC class A, CE Mark Level 1 and VCCI Level 1
Safety (Qualified to:)	• UL 1950 Information Technology Inc., Electrical Business Systems • CSA C22.2 950-M89-Information Technology Inc. Electrical Business Systems • TUV EN60950, IEC 950, DIN VDE 0805 AS 05.92 DIN VDE 0805 AC 05.92
Operating temperature	50° to 104° F (10° to 40° C)
Non operating temperature	-40° to 150.8° F (-40° to 66° C) excluding media
Operating humidity	20 to 80% RH, maximum, non condensing
Non operating humidity	10 to 95% RH maximum, non condensing
Operating altitude	0 to 8,000 ft. (0 to 2438 m)
Non-operating altitude	0 to 12,000 ft. (0 to 3658 m)

Table A-2. DLT2000 Tape Drive Specifications.

Characteristic	Specification(s)
Mode of operation	Streaming
Media	12.7 mm (1/2 in.) unformatted magnetic tape
Track density	256 tracks/in.
Bit density	62,500 bits/in.
Number of tracks	128
Transfer rate, raw native	1.71 MB/sec.
Transfer rate, user native	1.25 MB/sec.
Transfer rate, user compressed[1]	2.50 MB/sec., maximum write 3.00 MB/sec., maximum read
Tape speed	110 in./sec.
Track format	Two-track, parallel serpentine recording
Cartridge capacity	10.0 GB formatted, native 20.0 GB formatted, compressed
Mini-library capacity	100 GB[1]
Mini-library backup time	About 11 hrs. (100 GB)
Reliability	
Subsystem MTBF (10% duty cycle)	30,000 hrs.[2]
Mechanical	500,000 cycles

[1] Assumes a 2:1 compression ratio. However, actual compression ratio may vary as a function of data type.

[2] Digital Equipment Corp. does not warrant that the predicted figure represents any particular unit installed for customer use. The actual figure can vary from unit to unit.

Table A-3. SCSI Command Set.

SCSI Command Signal Definitions
Initialize Element Status
Inquiry
Mode Select
Mode Sense
Move Medium[1]
Request Sense
Read Element Status
Reserve
Receive Diagnostic Results
Send Diagnostic
Release
Test Unit Ready

[1] Random cartridge access is implemented as a SCSI Move Medium command on LUN 1. Implicit sequential cartridge access can be done using the UNLOAD command on LUN 0 or 1.

B

Product Notes for Novell™ and MS-DOS™

This appendix provides information for the system administrator. It should be read before installing and using the SWXTL-BL tape drive mini-library with a host system operating under the Novell, MS-DOS, or MS-DOS/WINDOWS operating systems.

B.1 Host SCSI Interface

The SWXTL-BL tape drive mini-library 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 mini-library.

A host PC SCSI adapter will normally be supplied with a compatible software driver for use with its operating system. When operating under Novell and MS-DOS or MS-DOS/WINDOWS operating systems, the software driver must be pre-loaded according to the SCSI adapter's manufacturers installation procedure to ensure a proper interface between the mini-library 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, or MS-DOS/WINDOWS 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 mini-library 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 mini-library.

NOTE

The SWXTL-BL tape drive mini-library is functionally equivalent to the TZ875 (DEC part no.) tape drive. Commercial software products that support the TZ875 will also support the SWXTL-BL.

Reader's Comments

Manual Order Number:

EK-SM1TC-UG. A01

SWXTL-BL 50/100 GB, 5-Cartridge DLT Tape Drive Mini-Library

Digital is committed to providing the best possible products and services. Since our manuals are important components of our products, we value your comments, corrections, and suggestions for improvements. Please take a few minutes to fill out and return this form, attaching additional sheets, if needed. Thank you.

Manual Rating	**Excellent**	**Good**	**Fair**	**Poor**
Accuracy (correct presentation of facts)	[ ]	[ ]	[ ]	[ ]
Completeness (adequate information)	[ ]	[ ]	[ ]	[ ]
Clarity (easy to understand)	[ ]	[ ]	[ ]	[ ]
Organization (logical sequence of information)	[ ]	[ ]	[ ]	[ ]
Layout (easy to follow subject matter)	[ ]	[ ]	[ ]	[ ]
Indexing (easy to locate desired information)	[ ]	[ ]	[ ]	[ ]

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