

**TL81X Automated Tape Library
for DLT Cartridges**

Operator's Guide

EK-TL810-OG

Revision B01

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FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CISPR-22 WARNING!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

ACHTUNG!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmassnahmen verantwortlich ist.

ATTENTION!

Ceci est un produit de classe A. Dans un environnement domestique, ce produit peut causer des interférences radio lectriques. Il appartient alors a l'utilisateur de prendre les mesures appropriées.

NOTICE FOR USA AND CANADA ONLY

If shipped to USA, use the UL LISTED power cord specified below for 100-120 V operation. If shipped to CANADA, use the CSA CERTIFIED power cord specified below for 100-120V operation.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P Configuration)
Cord	Type: SJT, three 16 or 18 AWG wires
Length	Maximum 15 feet
Rating	Minimum 10 A, 125 V

ATTENTION

LIRE LA REMARQUE DANS LE MODE D'EMPLOI

REMARQUE

CETTE REMARQUE NE CONCERNE QUE LES ÉTATS-UNIS ET LE CANADA.

En cas d'envoi aux États-Unis, utiliser le cordon d'alimentation certifié UL et convenant pour 100-120 V.

En cas d'envoi au CANADA, utiliser le cordon d'alimentation CERTIFIÉ CSA et convenant pour 100-120 V.

Fiche	Broches paralléus avec une broche de mise à la terre (configuration NEMA 5-15P)
Cordon	Type: SJT, trifilaire 16 ou 18 AWG
Longeur	Maximum 15 pieds
Capacité	Minimum 10 A, 125 V

ZU IHRER SICHERHEIT

Vorsicht

Um Feuergefahr und die Gefahr eines elektrischen Schlages zu vermeiden. Darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

Achtung

Da der interne Laserstrahl in Ihre Augen eindringen und Verletzungen verursachen kann, darf das Gehäuse nicht selbst geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

Die Verwendung von Brillen, Kontaktlinsen usw. vergrößert die Gefahr.

Zur besonderen Beachtung

Zur Sicherheit

Sollte ein fester Gegenstand oder Flüssigkeit in das Geräteinnere gelangen, trennen Sie das Gerät von der Wandsteckdose ab und lassen Sie es von einem Fachmann überprüfen, bevor Sie es weiter verwenden.

Zum Abziehen des Kabels fassen Sie stets am Stecker und niemals am Kabel selbst an.

Zur Aufstellung

Stellen Sie das Gerät weder auf einer weichen Unterlage (z. B. Decke, Teppich) noch in der Nähe von Vorhängen, Tapeten usw. auf, da hierdurch die Ventilationsöffnungen blockiert werden können.

Zur Reinigung

Verwenden Sie zur Reinigung des Gehäuses, des Bedienungspultes und der Bedienelemente ein trockenes, weiches Tuch oder ein weiches, leicht mit mildem Haushaltsreiniger angefeuchtetes Tuch. Lösemittel wie Alkohol oder Benzin dürfen nicht verwendet werden, da diese die Gehäuseoberfläche ungreifen.

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Introduction

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Purpose


This document was written for operators of the TL810 or TL812 tape library. It contains a brief description of the library, discussions of the operator accessible components, operating instructions and troubleshooting procedures. The document is divided into the following sections:

- Chapter 1, "Introduction," describes the purpose of this manual, provides a list of its contents and a list of related documentation.
- Chapter 2, "Library Overview," contains a brief description of the library and detailed discussions of the operator accessible components.
- Chapter 3, "Operating Procedures," provides procedures for applying/removing library power, inserting/removing tapes through the load port, manually removing a tape drive and procedures for all functions associated with the Control Panel Menu Mode.
- Chapter 4, "Operator Troubleshooting," provides explanations of status messages shown in the Control Panel Status Display Area as well as the associated action necessary (if any) to rectify specific problems. This section allows you to diagnose problems and determine the extent of repair necessary.

Note *This manual does not contain information on how to use the host software that controls the library.*

Conventions Used in this Guide

 **WARNING** *When the warning icon accompanies text, it indicates that a potential hazard to your personal safety exists and is included to help prevent injuries.*

 **CAUTION** *When the caution icon accompanies text, it indicates that a potential hazard to equipment or data exists and is included to help prevent damage.*

Related Documentation

Table 1 is a list of all manuals associated with the TL810 or TL812 Tape Library. To obtain further information and/or copies of documentation on this product, contact:

U.S. Software Supply Business
Digital Equipment Corporation
10 Cotton Road
Nashua, New Hampshire 03063-1260

The part number of each document will be required at the time of order.

Table 1: Related Documentation

Document Number	Document Title	Document Description
EK-TL810-IG	TL81X Facilities Planning and Installation Guide	This guide describes facility preparation and provides the procedures for first-time installation of the library.
EK-TL810-SV	TL81X Field Service Manual	This document contains periodic maintenance, fault isolation and removal/replacement procedures.
EK-TL810-UM	TL81X Diagnostic Software User's Manual	This manual provides procedures for installing and using the Diagnostic Software.
EK-TL810-SG	TL81X Software Interface Guide	This guide is for software engineers developing the application and hierarchical mass storage software that accesses the TL810.
EK-TZ87N-OM (For TL810 Tape Library)	TZ87N Series Cartridge Tape Subsystem Owner's Manual	This document describes the TZ87N Tape Drive and provides operating instructions and troubleshooting procedures.
EK-TZ88X-OM (For TL812 Tape Library)	TZ88 Series Cartridge Tape Subsystem Owner's Manual	This document describes the TZ88N Tape Drive and provides operating instructions and troubleshooting procedures.

Library Overview

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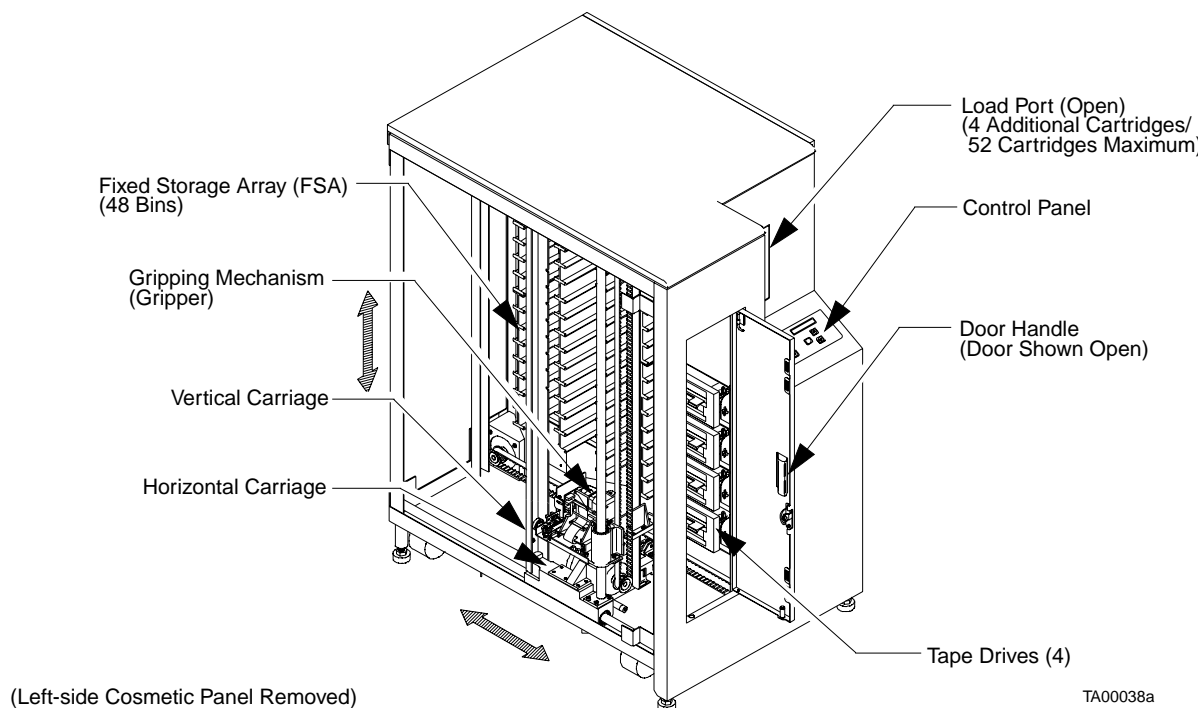
Chapter Overview

This section contains a brief description of the library and a discussion of each of the operator accessible components.

Library Description

Your TL810 or TL812 library (Figure 1) is the automated storage and retrieval component of an automated tape library system. The TL810 contains four TZ87N series tape drives and the TL812 contains four TZ88N series tape drives. Otherwise, the two models are exactly the same. Both are capable of storing a maximum of 48 Digital Linear Tape cartridges in a Fixed Storage Array (FSA). An operator-accessible load port at the front of the library can hold an additional four tape cartridges for a total of 52. A host computer communicates with the library through a SCSI interface using the SCSI 2 medium changer command set. In a typical operation, the host commands the robotics to transfer tape cartridges between storage bins (in the FSA), tape drives or the load port. Each time a tape cartridge is transferred, a gripping mechanism is moved to the tape cartridge location where it “picks” the tape cartridge, moves it to the designated (new) location and then “places” it.

Figure 1: TL810 or TL812
Library



Operator Accessible Components

The operator of the TL810 or TL812 library will need access to the following:

- Control panel
- Load port
- Front door
- Rear panel
- TZ87N or TZ88N tape drive status/control panel

Additionally, the control panel allows you to perform several types of functions (operational and diagnostic) using the menu mode. The menu mode functions and the items listed above are discussed in the following paragraphs.

Control Panel

The control panel (Figure 2 on page 2-5) is located on the right-front of the library. Its features are described in Table 2 on page 2-6.

Figure 2: Control Panel

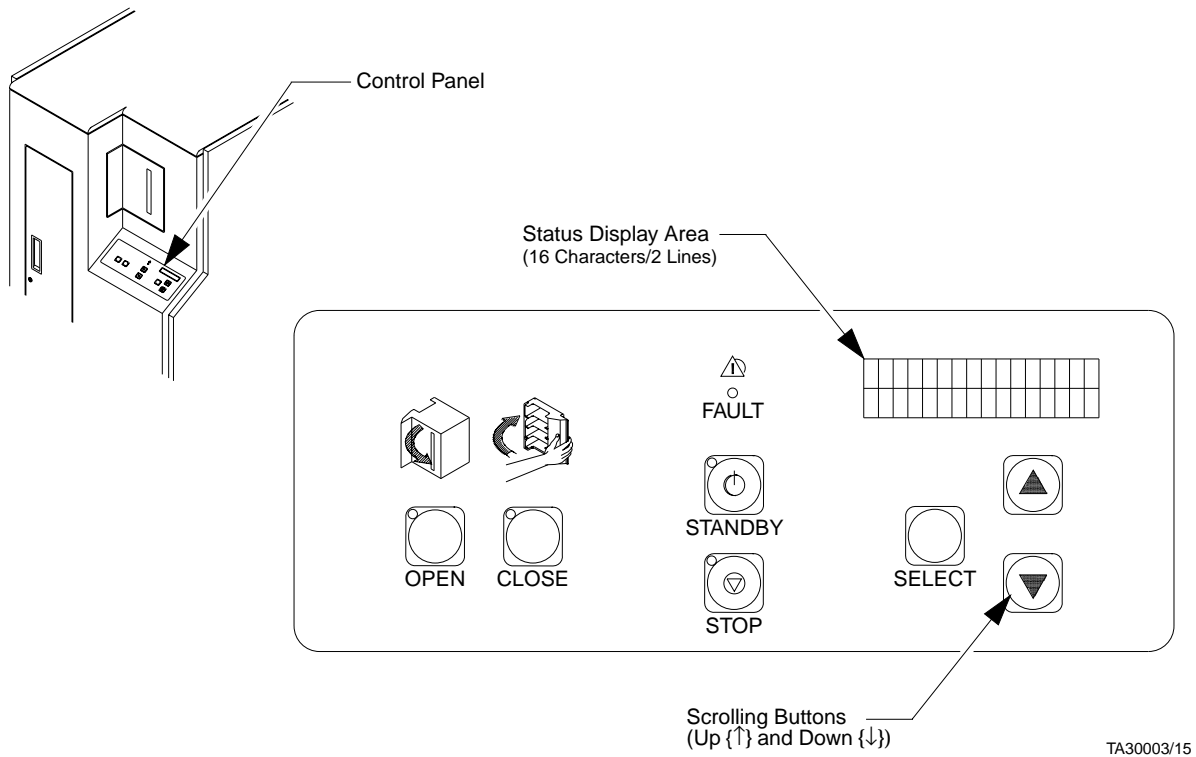


Table 2: Control Panel Functions

Feature	Function
(load port) OPEN (button/ indicator)	The (load port) OPEN button is used to unlock the load port door for the purpose of inserting or removing tape cartridges. Pressing the OPEN button causes the library to: <ul style="list-style-type: none"> • park the robotics (the green indicator blinks until the robotics are parked) • unlock and open the load port door (the indicator is steadily lit), and then • re-lock the load port door in the open position (the indicator is off). (Once the door is opened, you can insert/remove tape cartridges into/out of the four bins.)
(load port) CLOSE (button/ indicator)	When the load port door is in the open position, the (load port) CLOSE button is used to unlock the door before closing it. Pressing the CLOSE button causes the library to: <ul style="list-style-type: none"> • park the robotics (the red indicator blinks until the robotics are parked) and then • unlock the door (the indicator is steadily lit). (Once the indicator is steadily lit, you can close the door. The library will lock it in the closed position.)
STANDBY (button/ indicator)	You can set the state of the library (on-line or off-line) with this button. With the library in the on-line mode, pressing this button toggles the library to the off-line state (indicator on). While in STANDBY, host communications are disabled, the control panel menu mode is available and the diagnostic port on the rear panel (DIAG) is active. Pressing the button again toggles the library to the on-line state. The indicator functions as follows: <ul style="list-style-type: none"> • Off (solid) - STANDBY is not selected. The library is on-line. • On (solid) - STANDBY is selected. The library is off-line. • Blinking - Waiting for the current on-line operation to complete.
STOP (button/ indicator)	You can stop the robotic equipment by pressing the STOP button. When pressed, it removes power to the robotic equipment and illuminates the (red) indicator. Pressing the button again restores the power to the robotics and extinguishes the indicator.


Feature	Function
SELECT ↑ (scroll-up), and ↓ (scroll-down) (buttons)	With the library in the STANDBY state, pressing the SELECT button activates the menu mode. While in the menu mode, SELECT allows you to choose menus and options, shown in the second line of the status display area (SDA), for execution. The ↑ and ↓ buttons are used in conjunction with the SELECT button. While in the menu mode, these buttons are used for navigating through the menu options. (For detailed procedures on using the menu mode, see Chapter 3, Operating Procedures.)
FAULT (indicator)	When illuminated (red), it indicates the library is in an error condition. Observe the SDA for a specific message. (For a listing and detailed description of all status messages shown in the SDA, see Chapter 4, Operator Troubleshooting.)
Status Display Area	This is a 16-character (5x7 dot-matrix Liquid Crystal Display {LCD}) /2-line display. It shows status messages that describe the operating state of the library. It is also used for displaying menu options while the library is in the menu mode.

Load Port

The load port (Figure 3 on page 2-9) is located at the front of the library above and to the left of the control panel. Under library control and in conjunction with the load port OPEN and CLOSE buttons, it allows the operator to insert and/or remove up to four tape cartridges. (See Table 2 on page 2-6 for a description of the load port buttons.)

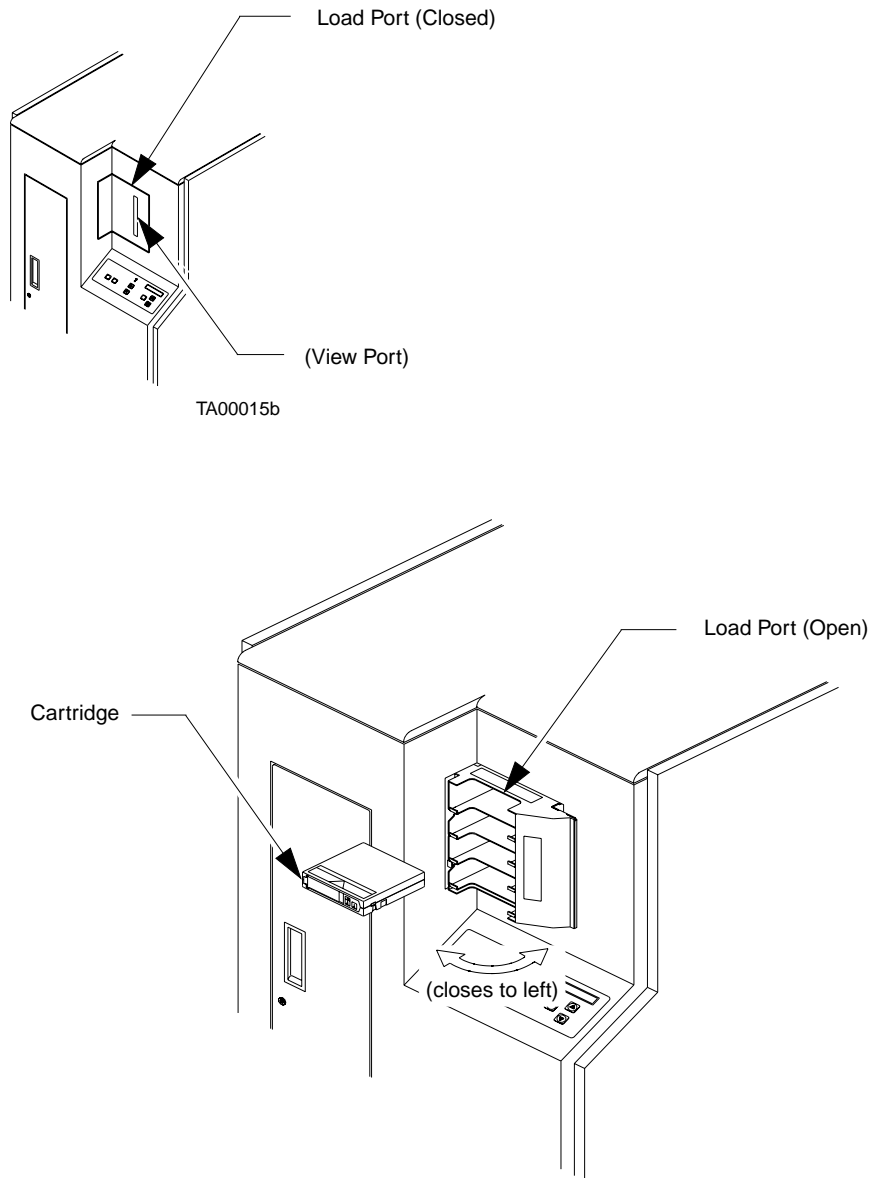
For a load operation, press the load port OPEN button. When the indicator stops blinking, the load port door *automatically* opens (and *locks* in the open position) allowing the operator to insert tape cartridges.

After the operator presses the CLOSE button and closes the door, the tape cartridge(s) is (are) made available to the library.

 **CAUTION** *You must release the CLOSE button before pushing the load port door closed.*

For the unload operation, the gripper places tape cartridges in the load port bins. Looking through the view port, the operator will be able to decide if an unload operation is necessary. Pressing the OPEN button automatically opens the door allowing the operator to remove the tape cartridge(s).

Figure 3: Load Port



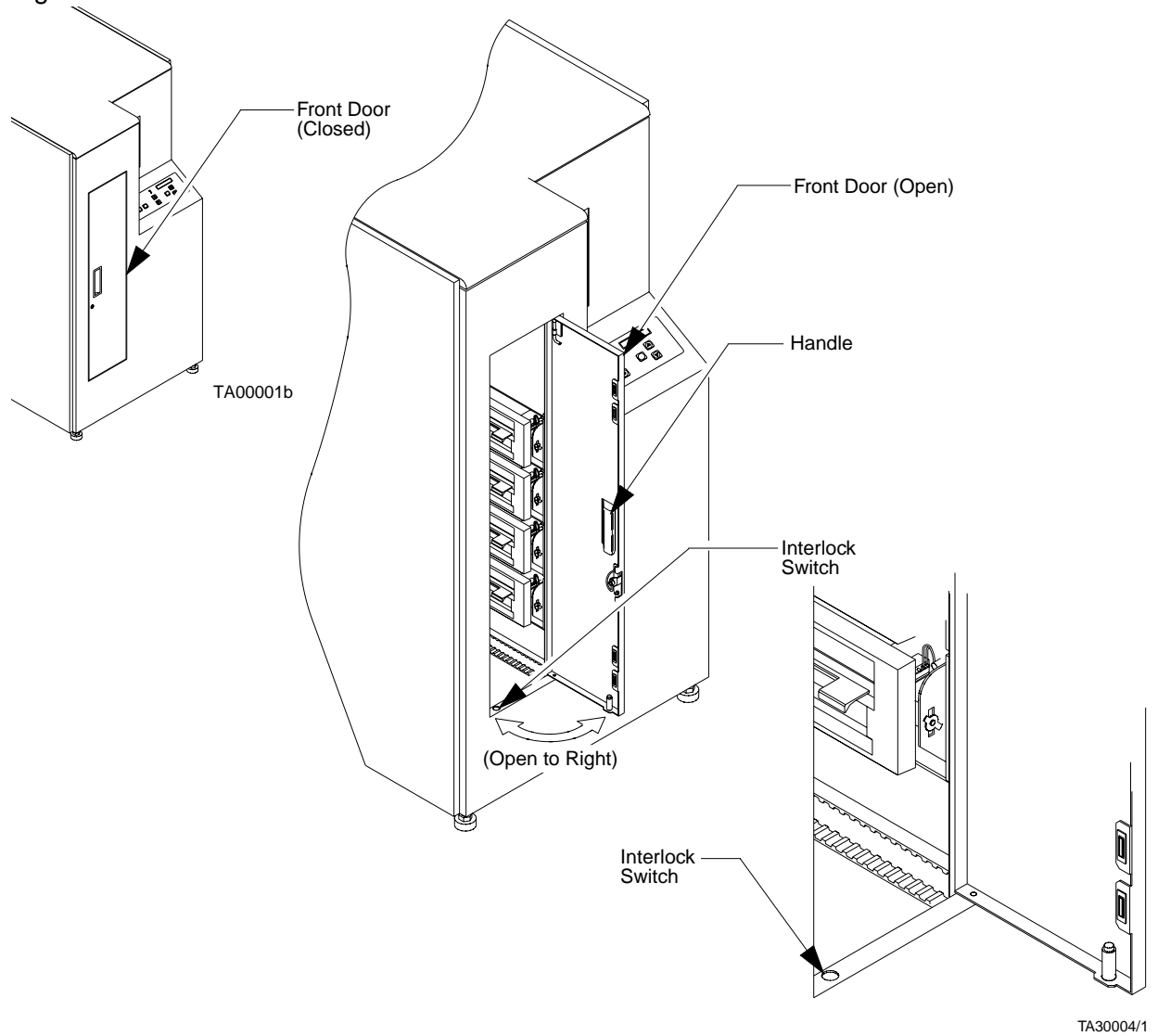
Front Door (with Interlock Switch)

The library door is shown in Figure 4 on page 2-11. This door can be used to access the tape drive status/control panels for manually unloading, ejecting and removing a tape cartridge from the drives.

For safety purposes, an interlock switch (shown in Figure 4) removes power from the robotics equipment when the door is opened. Typically, the front door will be used by FSEs during maintenance procedures.

 **WARNING** *To prevent injury from moving components, always press the control panel STOP button before opening the library door.*

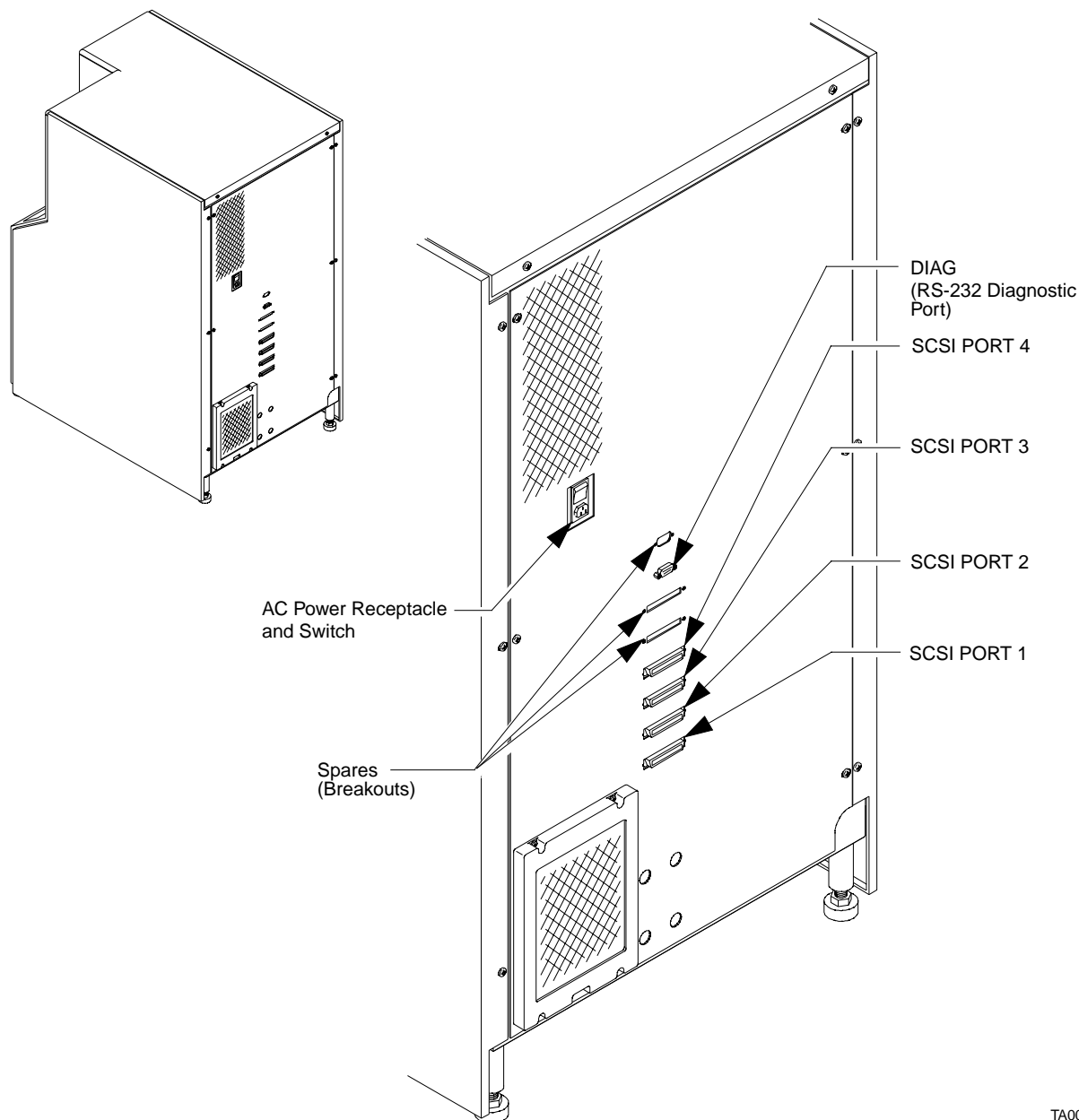
Figure 4: Front Door



Rear Panel

The rear panel of the library is shown in Figure 5. It contains the AC power switch, AC power receptacle and the communication ports for the host, tape drives and diagnostic PC. The operator's only responsibility concerning the rear panel is verifying the cables are properly connected and applying/removing power to/from the library through the AC power switch.

Figure 5: Rear Panel



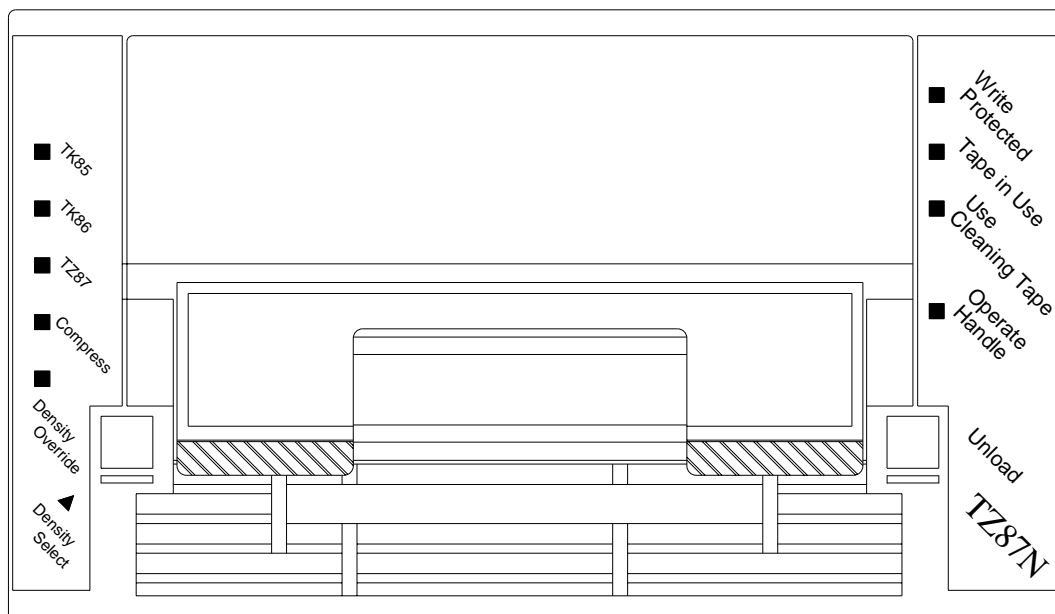
TA00032

TZ87N or TZ88N Tape Drive Status/Control Panel

A status/control panel is located on each TZ87N or TZ88N tape drive (Figure 7). The location of the tape drives is shown in Figure 1 on page 2-4. The features of the status/control panel are described in Table 3 on page 2-15. For detailed discussions of the TZ87N tape drive or the TZ88N tape drive, refer to the respective tape drive owner's manual.

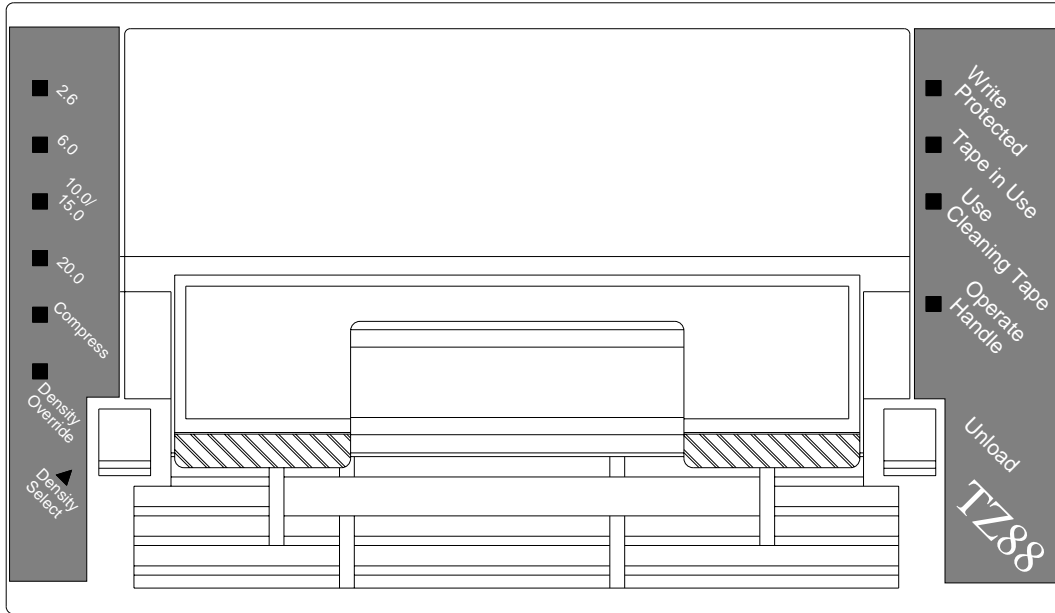
CAUTION *The TZ87N or TZ88N DLT tape drives in your system are not backward compatible to the TK50/70 series drives. DO NOT USE any CompacTape I™ or CompacTape II™ tape cartridges in this library.*

Figure 6: TZ87N Tape Drive Status/Control Panel



TA00039a

Figure 7: TZ88N Tape
Drive Status/Control
Pane



TB00004a

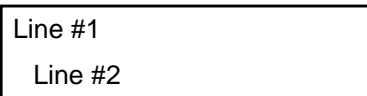
Table 3: TZ87N or
 TZ88N Tape Drive
 Status/ Control Panel
 Functions

Feature	Function
Unload (button)	<p>This button is used to unload the tape from the drive and prepare it for ejecting and removal. When this button is pressed, the drive rewinds the tape and unloads the tape from the drive back into the cartridge.</p> <p style="text-align: center;">Note <i>The tape cartridge must be completely rewound and unloaded before ejecting and removing the tape cartridge from the drive. Depending on tape position, this operation takes 10 to 120 seconds.</i></p>
Operate Handle (indicator)	This green indicator lights when the insert/release handle is ready to operate.
Use Cleaning Tape (indicator)	This yellow indicator lights when the drive head needs cleaning or the current cleaning tape is bad. After unloading the cleaning tape cartridge, the indicator remains lit if the cleaning operation was not completed or the cleaning tape cartridge was bad.
Tape in Use (indicator)	This yellow indicator blinks while the tape cartridge loads and calibrates. After calibration, it remains lit.
Write Protect (indicator)	This orange indicator lights when the loaded tape cartridge is write-protected.

Menu Mode Structure

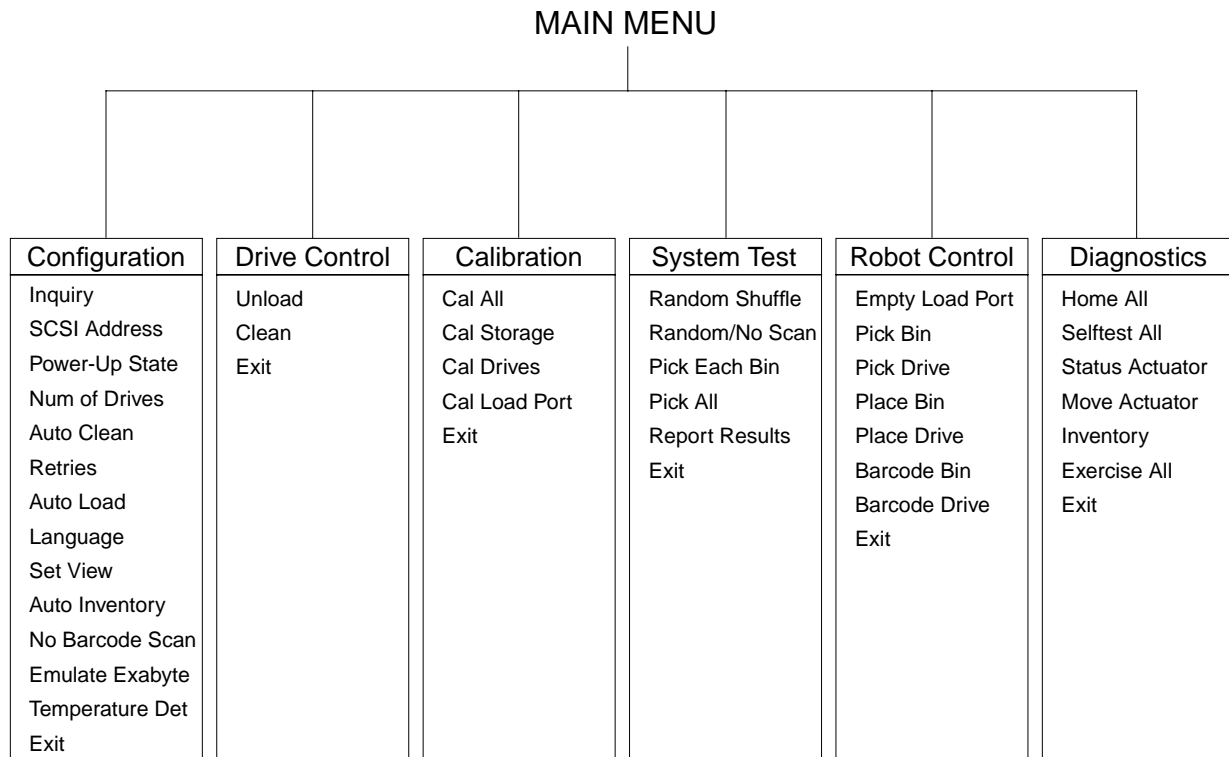
Some of the operator's responsibilities include using the control panel menu mode. The menu mode is entered by placing the library in the standby mode and then pressing the SELECT button on the control panel. Once the menu mode is entered, the ↑ and ↓ buttons are used for navigating through the menu and the SELECT button allows the operator to choose menus and/or execute options. When in the menu mode, the Status Display Area (SDA) displays two lines of the menu:

- The upper line (line #1) of the display is passive. It simply shows the name of the current menu or sub-menu.
- The lower line (line #2) is the active line. When the operator releases the SELECT button, the sub-menu or function displayed on the lower line is the option selected or executed.



The overall structure and capabilities of the menu mode are shown in Figure 8 on page 2-17. The functions for which the operator will be responsible, and a discussion of navigating through the menus, is provided in the paragraphs that follow.

Figure 8: Menu Structure



Menu Navigation

After placing the library in the standby mode and pressing the SELECT button on the control panel, the menu mode is activated.

To navigate through the menu, press the “Up-Arrow” (↑) or “Down-Arrow” (↓) buttons until the name of the desired main menu is displayed on line #2 of the SDA, then press and release the SELECT button.

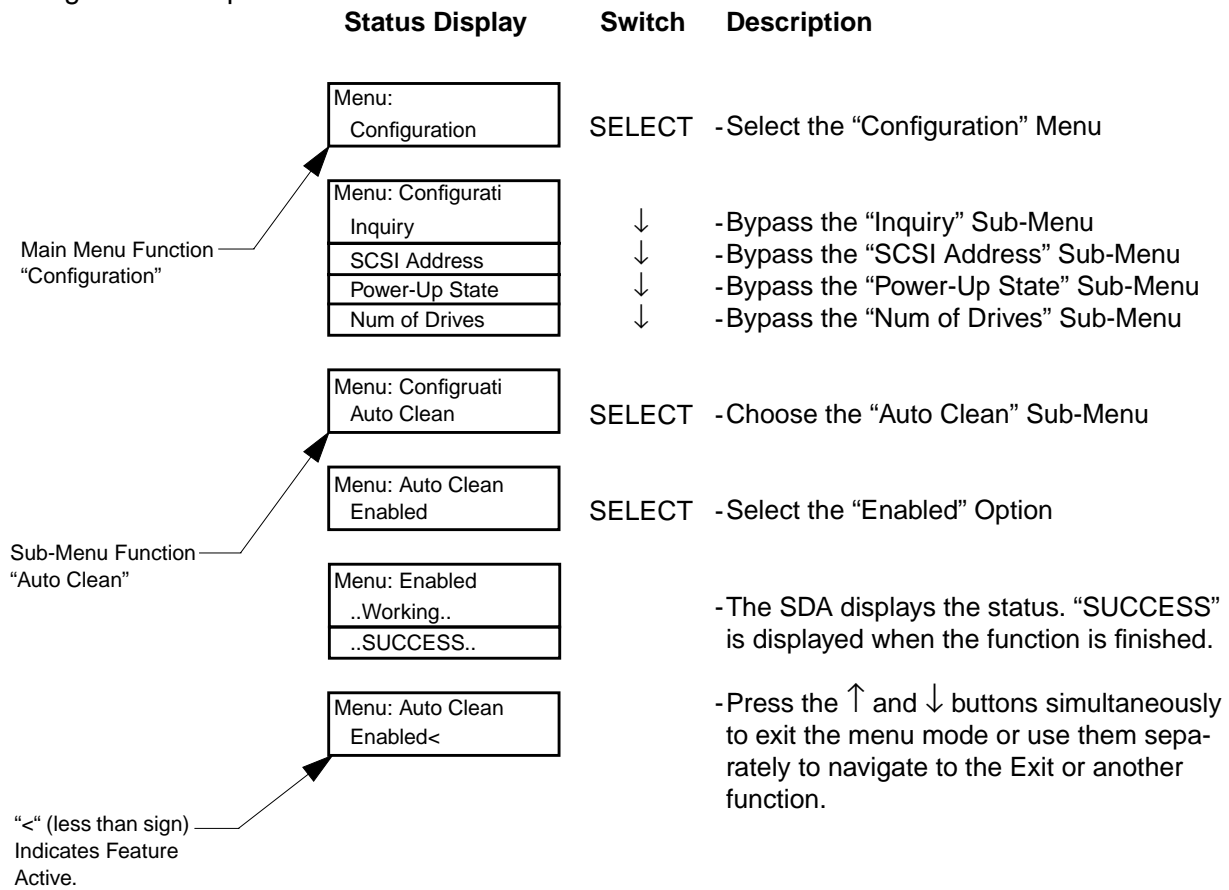
Line #1 changes to the main menu selection and line #2 shows the first sub-menu. Press the SELECT button for the first sub-menu, or continue pressing the ↑ or ↓ buttons until the sub-menu desired is displayed. Pressing SELECT chooses the sub-menu and displays the first option in line #2. Again, the operator must scroll through the options list until the desired option is displayed. The operator selects the option and it is executed.

An Exit option is provided at the end of each menu, sub-menu and option list. When the operator chooses Exit, he/she is returned to the previous menu. At that point, another procedure can be performed, or the operator can scroll to the next Exit until completely exiting the menu mode.

Note *The quickest way to exit the menu mode is to press the ↑ and ↓ buttons simultaneously.*

Figure 9 on page 2-19 is an example of menu navigation. It shows the commands and associated SDA displays involved in changing the “Auto Clean” option from “Disabled” (factory default) to “Enabled.”

Figure 9: Menu Navigation Example



Operator Tasks (using the Menu Mode)

As an operator, you may need to use the configuration, drive control and diagnostics menus.

Configuration Menu Functions

The Configuration menu allows you to:

- Set or change the library's SCSI address
- Set or change the tape drive SCSI addresses
- Define the state of the library after the power-up sequence has completed
- Enable or disable the automatic drive cleaning option
- Enable or disable the retry operation option
- Enable or disable the automatic loading feature
- Set or change the language displayed in the SDA

Setting/Changing the Library's SCSI Address

The SCSI address (0...7) of the library can be set using the SCSI Address/Robotics sub-menus.

Setting/Changing the Drive SCSI Addresses

This function is used to set the SCSI address (0...7) of each tape drive in the library. This can be done through the SCSI Address/ Drive n sub-menus.

Defining the Library's Power-Up State

You have the option of defining the starting condition of the library, either on-line or standby (off-line), after power-up, self-tests and initialization has occurred. The default is on-line. You can change it by using the Power-Up State sub-menu.

Enabling/Disabling Automatic Drive Cleaning

The automatic drive cleaning feature has two modes of drive cleaning support: Host Initiated and Fully Automatic.

In *Host Initiated Cleaning Mode*, drive cleaning is enabled by your System Administrator at the host computer. Although the library unit will internally track cleaning tape cartridge movement and use, the library unit provides no cleaning support in this mode. The host is responsible for all cleaning functions such as detecting when a drive requires cleaning, tracking and selecting cleaning tape cartridges, initiating media movement of the cleaning tape cartridge to the drive and determining when a cleaning tape cartridge has been “used up”.

Drive cleaning in the *Fully Automatic Cleaning Mode* is also enabled by your System Administrator at the host computer. However, in this mode, the library unit monitors each drive’s status to determine when a drive requires cleaning and initiates action when that determination is made. In this case, the library unit selects an available cleaning tape cartridge, handles media movement of the cleaning tape cartridge to and from the drive and supervises the cleaning operation in the drive. The library unit tracks cleaning tape cartridges within the library, monitors cleaning tape cartridge use and determines when a cleaning tape cartridge has been “used up”. A “used up” cleaning tape cartridge is exported from the library to the load port under control of the library.

The library is shipped with automatic drive cleaning disabled. If you want this feature enabled, you can use the Auto Clean sub-menu.

Enabling/Disabling the Retry Option

If a failure occurs during a movement command and this option is enabled, the library will attempt to recover and retry the operation. If this option is disabled, no retries are made and the error is reported the first time. The default is to have retries enabled. If you want this feature disabled, you can use the Retries sub-menu.

Setting/Changing the Library’s Language

This function allows you to change the language displayed in the SDA. The default language is English. If you want to change the language, you can use the Language sub-menu. The options are: English, Francais, Deutsch, Espanol and Italiano.

Drive Control Menu Functions

You can use the Drive Control menu to:

- Unload a tape cartridge from a specific drive
- Clean a specific drive

Unloading a Tape

This feature allows you to unload the tape (preparing to eject and remove the tape cartridge) in a drive that you specify. To perform this function, use the Unload sub-menu. The options are: Drive 0, Drive 1, Drive 2, Drive 3, where:

Menu Mode	Physical Location
Drive 0	= Top Drive
Drive 1	= Second Drive
Drive 2	= Third Drive
Drive 3	= Bottom Drive

Cleaning a Drive

This feature allows you to direct a cleaning tape cartridge to a tape drive that you specify. To perform this function, use the Clean sub-menu. The options are: Drive 0, Drive 1, Drive 2, Drive 3, where:

Menu Mode	Physical Location
Drive 0	= Top Drive
Drive 1	= Second Drive
Drive 2	= Third Drive
Drive 3	= Bottom Drive

Diagnostics Menu Functions

You can use the Diagnostics menu to:

- Display the status of the library
- Perform an inventory of the library

Displaying the Library's Status

There are two options for reviewing the status of the library. They allow you to display the current position (horizontal, vertical, extension and gripper) of the four actuators (Status Actuator). To display this information in the SDA, use the Status Actuator sub-menu with the ↑ and ↓ buttons to scroll through the information.

Performing an Inventory

This feature simply allows you to perform an inventory of the library. The inventory information is then written to nonvolatile RAM. To perform this function, use the Inventory sub-menu.

Note *Currently, all other menu options are reserved for FSEs and are not discussed here.*

For detailed instructions on using the control panel in the menu mode, see Chapter 3, "Operating Procedures."

Operating Procedures **3**

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Chapter Overview

This chapter provides procedures for applying/removing power, inserting/removing tape cartridges through the load port, manually unloading a cartridge from a tape drive and procedures for all functions associated with the control panel menu mode.

Operating Procedures

This section contains procedures for executing the following operator tasks:

- Applying and removing power
- Placing the library on-line or taking it off-line
- Inserting and removing tape cartridges using the load port, and
- Manually unloading a tape cartridge from a TZ87N or TZ88N tape drive

Applying Power to the Library

1. Verify the following:
 - Front door and load port closed
 - All outer skins attached
 - All rear panel connections secured
2. At the rear panel, set the AC power switch to the | (on) position.
3. After several seconds, verify that SDA shows System On-line.

Note System On-line *is only displayed if the library power-up state is configured for On-line. Otherwise, System Off-line is displayed in the SDA. (See Chapter 2, "Operating Procedures.")*

Placing the Library On-Line

1. With the library power applied and the SDA showing System Off-line, press the control panel STANDBY button.
2. Verify that System On-line is displayed in the SDA.


Taking the Library Off-Line

1. With the library power applied and the SDA showing System On-line, press the control panel STANDBY button.
2. Verify that System Off-line is displayed in the SDA.


Removing Power from the Library

1. Press the control panel STOP button.
2. Press the control panel STANDBY button and verify that System Off-line is displayed in the SDA.
3. At the rear panel, set the AC power switch to the O (off) position.

Inserting Tape Cartridges

 **CAUTION** *The TZ87N DLT and TZ88N DLT tape drives in your system are not backward compatible to the TK50/70 series drives. DO NOT USE CompacTape I™ or CompacTape II™ tape cartridges in this library.*

1. Press the load port OPEN button and verify the indicator begins blinking. (It may require several seconds for the load port door to automatically open.)

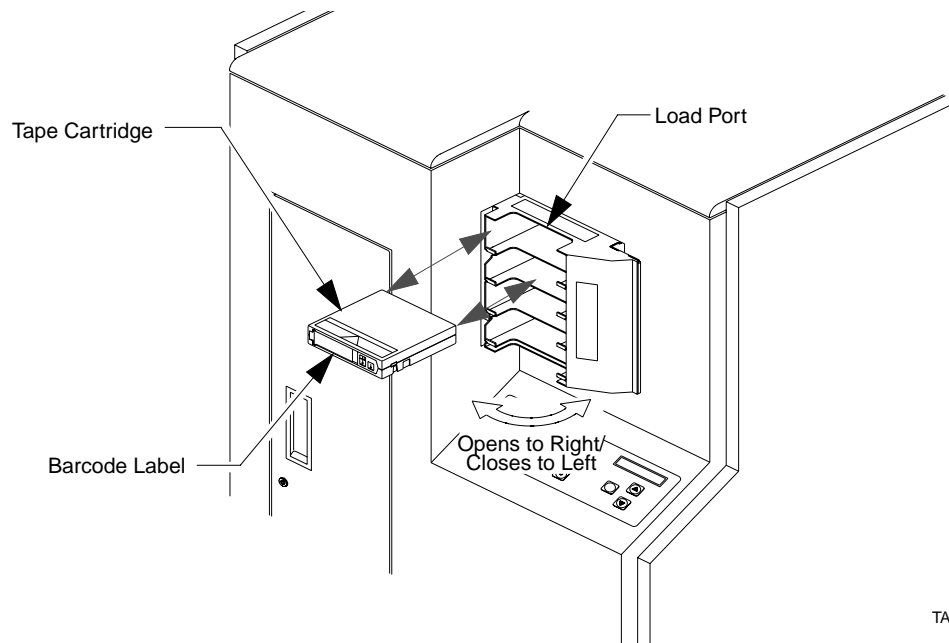
 **WARNING** *Mechanical hazards could be exposed when the load port is partially open or closed. Do not attempt to insert hands or fingers into the load port opening at any time.*

2. With the load port door open, place the tape cartridge(s) in any available bin. (The proper orientation for tape cartridge insertion is shown in Figure 10 on page 3-5.)
3. Press the load port CLOSE button.

 **CAUTION** *The load port door is locked in the open position. You must press the CLOSE button before attempting to close the load port door.*

4. When the CLOSE indicator is steadily lit, push the load port door closed. (The library will lock the door.)

Figure 10: Inserting/
Removing Tapes



Removing Tape Cartridges

Note *You can use the view port to determine whether or not the load port contains tape cartridges to be removed.*

1. When tape cartridges are ready to be removed, press the load port OPEN button and verify the indicator begins blinking. (It may require several seconds for the load port door to automatically open.)

WARNING *Mechanical hazards could be exposed when the load port is partially open or closed. Do not attempt to insert hands or fingers into the load port opening at any time.*

2. Remove the tape cartridge(s) from the load port bin(s).
3. Press the load port CLOSE button.

CAUTION *The load port door is locked in the open position. You must press the CLOSE button before attempting to close the load port door.*

4. When the CLOSE indicator is steadily lit, push the load port door closed. (The library will lock the door.)

Manually Unloading the Tape Drive

1. Press the control panel STOP button.
2. Press the control panel STANDBY button and verify that System Off-line is displayed in the SDA.

 **WARNING** *To prevent injury from moving components, always press the control panel STOP button before opening the front door.*


3. Open the front door by pulling the door towards you. (The door opens to your right.)

 **WARNING** *The front door is the only location for manually removing tape cartridges from the interior of the tape library.*

4. On the drive to be unloaded, press the Unload button (Figure 12) and verify the Operator Handle indicator is lit.

Note *When you press Unload, the tape cartridge will completely rewind. Depending on the tape cartridge position, it will take 10 to 120 seconds before the Operator Handle indicator lights.*

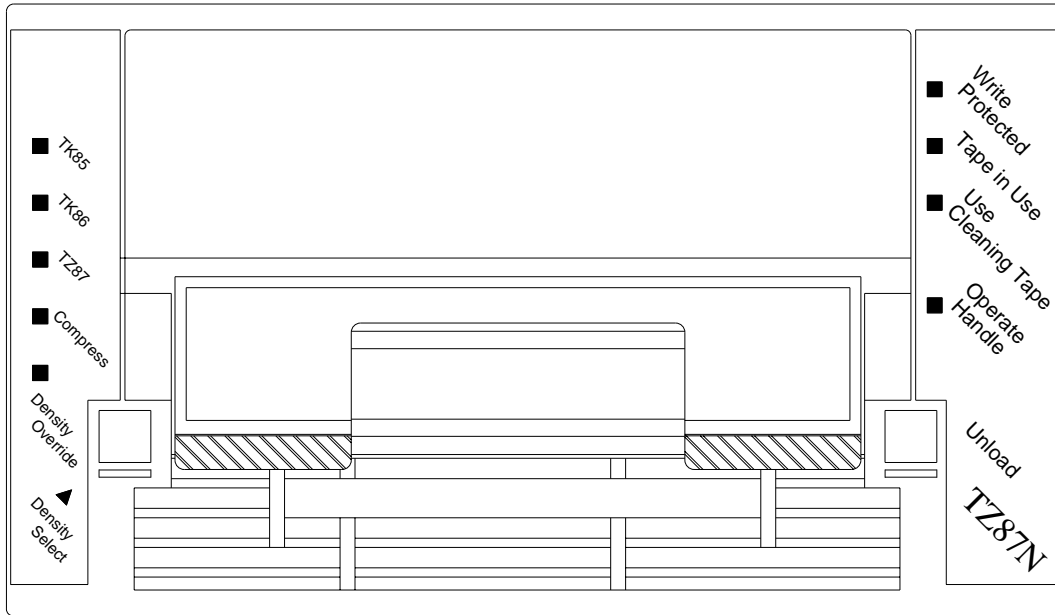
5. With the Operator Handle indicator lit, raise the insert/release handle to eject the TZ87N or TZ88N tape cartridge.
6. Pause for two seconds, then grasp the tape cartridge and slowly pull it one-half way out of the drive mouth.

 **CAUTION** *If the tape cartridge leader is buckled to the take-up leader, push the tape cartridge all of the way back into the drive mouth, press down the insert/release handle, and return to step #4. Otherwise, continue to step #7.*

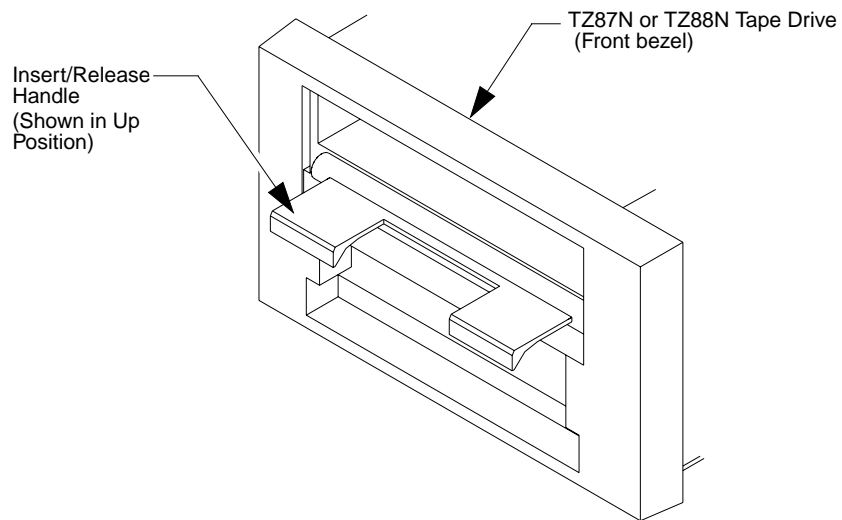
7. Pull the tape cartridge completely out of the drive.
8. Close the library door.
9. Press the control panel STOP button.
10. Press the control panel STANDBY button and verify that System On-line is displayed in the SDA.

sharon

Figure 11: Manually
Unloading the TZ87N
Tape Drive

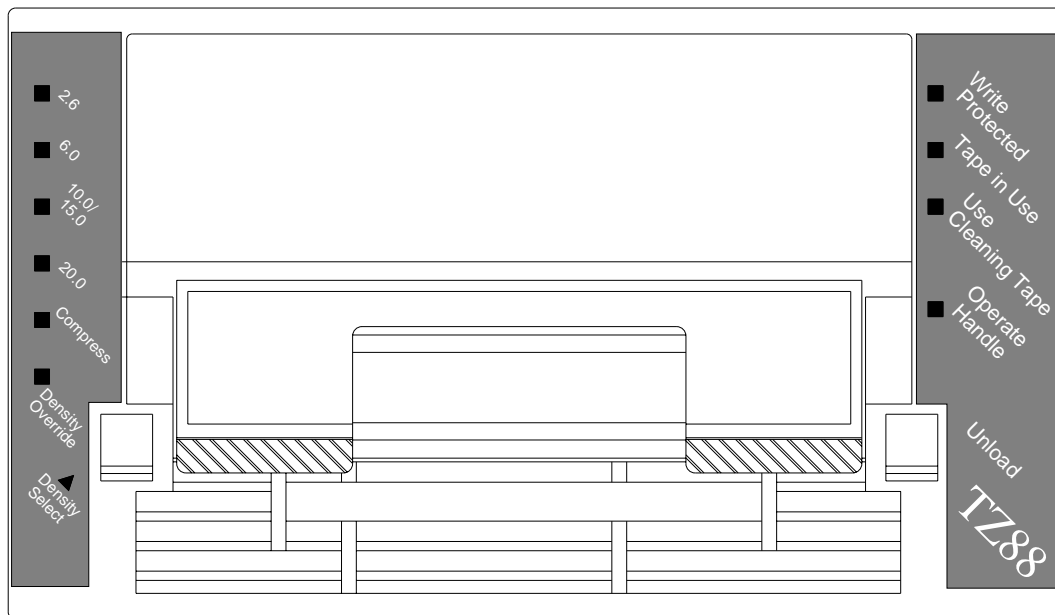


TA00039a

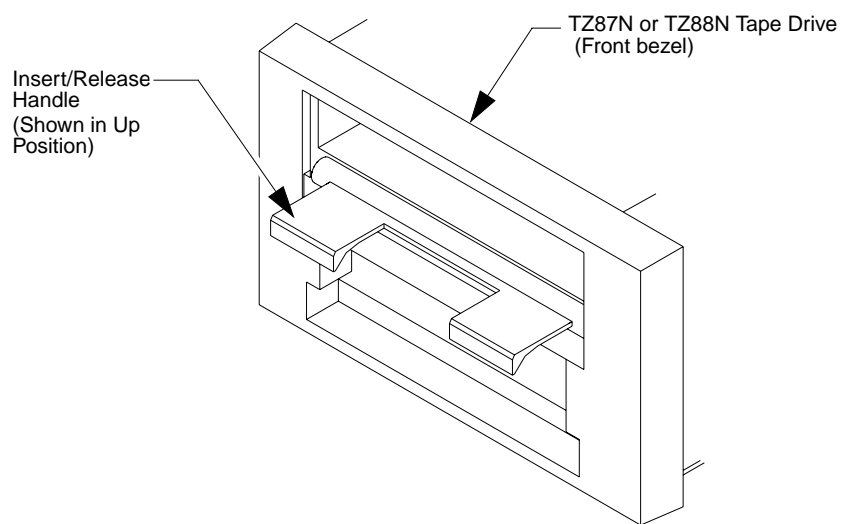


TA00014a

Figure 12: Manually
Unloading the TZ88N
Tape Drive



TB00004a



TA00014a

Operating Procedures Using the Menu Mode

This section contains procedures for entering and exiting the control panel menu mode and instructions for executing the operator tasks listed below:

- Setting or changing the library or tape drive SCSI addresses
- Defining the state of the library after the power-up sequence has completed
- Enabling or disabling the automatic drive cleaning option
- Enabling or disabling the retry operation option
- Setting or changing the language displayed in the SDA
- Unloading a tape cartridge from a specific drive
- Directing cleaning tape cartridges to specific drives for cleaning
- Performing the initial loading of the library
- Displaying the status of the library
- Performing an inventory of the library

Entering the Menu Mode

1. Press the control panel STANDBY button and verify the SDA shows System Off-line.
2. Press the SELECT button to enter the menu mode.
3. Verify the following is displayed in the SDA:

Menu: Configuration

Exiting the Menu Mode

1. From anywhere in the menu, press the ↑ and ↓ buttons, simultaneously and verify that System Off-line is displayed in the SDA.

OR
1. Use the ↑ and ↓ buttons to navigate to an Exit option, then press the SELECT button. (This method will take you one-level up in the menu each time that you perform it.)

2. Continue to perform step #1 until the following is displayed in the SDA, then press SELECT one final time to exit the menu mode.

Menu: Exit

Setting/Changing the Library SCSI Address

1. Enter the menu mode.
2. Press the SELECT button to choose the Configuration menu.
3. Verify the following is displayed in the SDA:

```
Menu: Configurati
      SCSI Address
```

4. Press the SELECT button again to choose SCSI Address and verify the following is displayed in the SDA:

```
Menu: SCSI Addres
      Robotics
```

5. Press the SELECT button to choose the Robotics sub-menu and verify the following is displayed in the SDA:

```
Menu: Robotics
      SCSI ID 0
```

6. Use the ↑ and ↓ buttons to navigate to the SCSI ID number for the library (SCSI ID 0, SCSI ID 1...SCSI ID 7).
7. With the proper SCSI ID number displayed on line #2, press the SELECT button.
8. Exit the menu mode.

Note *After changing the SCSI address of the library, the host controller must issue a “SCSI Bus Reset” in order for the new SCSI ID to be set, or the library must be powered off and on again in order to reset the SCSI bus.*

Setting/Changing a Tape Drive SCSI Address

1. Enter the menu mode.
2. Press the SELECT button to choose the Configuration menu.
3. Verify the following is displayed in the SDA:

```
Menu: Configurati
      SCSI Address
```

4. Press the SELECT button again to choose SCSI Address and verify the following is displayed in the SDA:

```
Menu: SCSI Adres
Robotics
```

5. Use the ↓ button to bypass the Robotics sub-menu and verify the following is displayed in the SDA:

```
Menu: SCSI Adres
Drive 0
```

6. Use the ↑ and ↓ buttons to navigate to the proper drive number (Drive 0, Drive 1, Drive 2, Drive 3), where:

Menu Mode	Physical Location
Drive 0	= Top Drive
Drive 1	= Second Drive
Drive 2	= Third Drive
Drive 3	= Bottom Drive

7. With the proper drive number displayed on line #2, press the SELECT button and verify the following is displayed in the SDA:

```
Menu: Drive 0
SCSI ID 0
```

8. Use the ↑ and ↓ buttons to navigate to the SCSI ID number for the selected drive (SCSI ID 0, SCSI ID 1...SCSI ID 7).
9. With the proper SCSI ID number displayed on line #2, press the SELECT button.
10. Exit the menu mode.

Note *The Reset Drives command must be performed from the Diagnostic Software Package for the new drive SCSI IDs to be set. Alternately, the host controller must issue a “SCSI Bus Reset” in order for the new SCSI ID to be set, or the library must be powered off and on again in order to reset the SCSI bus.*

Defining the Library Power-Up State

1. Enter the menu mode
2. Press the SELECT button to choose the Configuration menu.
3. Verify the following is displayed in the SDA:

```
Menu: Configurati
SCSI Address
```

4. Use the ↓ button to bypass the SCSI Address menu and verify the following is displayed in the SDA:

```
Menu: Configurati
Power-Up State
```

5. Press the SELECT button to choose the Power-Up State menu and verify the following is displayed in the SDA:

```
Menu: Power-Up St
On-line<
```

Note System On-line *is the default. If you want to change the power-up state to standby, proceed to step 6. Otherwise, exit the menu mode.*

6. Use the ↓ button to bypass the System On-line option and verify the following is displayed in the SDA:

```
Menu: Power-Up St
Standby
```

7. With the desired option displayed on line #2, press the SELECT button.
8. Exit the menu mode.

Enabling/Disabling the Auto-Clean Option

1. Enter the menu mode.
2. Press the SELECT button to choose the Configuration menu.
3. Verify the following is displayed in the SDA:

```
Menu: Configurati
SCSI Address
```

4. Press the ↓ button twice to bypass the SCSI Address and Power-Up State menus. Then verify the following is displayed in the SDA:

```
Menu: Configurati
Auto Clean
```

5. With Auto Clean displayed on line #2 of the SDA, press the SELECT button and verify the following is displayed in the SDA:

```
Menu: Auto Clean
Enabled
```

Note *Auto clean disabled is the default. If you want to enable the automatic cleaning, proceed to step 6. Otherwise, exit the menu mode.*

6. With the desired option displayed on line #2, press the SELECT button.
7. Exit the menu mode.

Enabling/Disabling the Retry Option

1. Enter the menu mode.
2. Press the SELECT button to choose the Configuration menu.
3. Verify the following is displayed in the SDA:

```
Menu: Configurati
SCSI Address
```

4. Press the ↓ button three (3) times to bypass the SCSI Address, Power-Up State and the Auto Clean menus. Then verify the following is displayed in the SDA:

```
Menu: Configurati
Retries
```

5. With Retries displayed on line #2 of the SDA, press the SELECT button and verify the following is displayed in the SDA:

```
Menu: Retries
Enabled<
```

Note *Retries enabled is the default. If you want to disable this feature, proceed to step 6. Otherwise, exit the menu mode.*

6. Use the ↓ button to bypass the Enabled option and verify the following is displayed in the SDA:

```
Menu: Retries
Disabled
```

7. With the desired option displayed on line #2, press the SELECT button.
8. Exit the menu mode.

Enabling/Disabling the Auto Load Feature

1. Enter the menu mode.
2. Press the SELECT button to choose the Configuration menu.
3. Verify the following is displayed in the SDA:

```
Menu: Configurati
      SCSI Address
```

4. Press the ↓ button four (4) times to bypass the SCSI Address, Power-Up State, Auto Clean and Retries menus. Then verify the following is displayed in the SDA:

```
Menu: Configurati
      Auto Load
```

5. With Auto Load displayed on line #2 of the SDA, press the SELECT button and verify the following is displayed in the SDA:

```
Menu: Auto Load
      Enabled<
```

Note *Auto load enabled is the default. If you want to disable this feature, proceed to step 6. Otherwise, exit the menu mode.*

6. Use the ↓ button to bypass the Enabled option and verify the following is displayed in the SDA:

```
Menu: Auto Load
      Disabled
```

7. With the desired option displayed on line #2, press the SELECT button.
8. Exit the menu mode.

Setting/Changing the Status Display Area Language

1. Enter the menu mode.
2. Press the SELECT button to choose the Configuration menu.
3. Verify the following is displayed in the SDA:

```
Menu: Configurati
      SCSI Address
```

4. Press the ↓ button five (5) times to bypass the SCSI Address, Power-Up State, Auto Clean, Retries and Auto Load sub-menus. Then verify the following is displayed in the SDA:

```
Menu: Configurati
      Language
```

5. With Language displayed on line #2 of the SDA, press the SELECT button and verify the following is displayed in the SDA:

```
Menu: Language
      English<
```

Note *English is the default. If you want to change the language, proceed to step 6. Otherwise, exit the menu mode.*

6. Use the ↑ and ↓ buttons to navigate to the desired language.
English
Francais
Deutsch
Espanol
Italiano
7. With the desired language displayed on line #2, press the SELECT button.
8. Exit the menu mode.

Unloading a Drive

1. Enter the menu mode.
2. Use the ↓ button to bypass the Configuration menu and verify the following is displayed in the SDA:

```
Menu:  
Drive Control
```

3. Press the SELECT button to choose the Drive Control menu.
4. Verify the following is displayed in the SDA:

```
Menu: Drive Contr  
Unload
```

5. Press the SELECT button to choose the Unload sub-menu and verify the following is displayed in the SDA:

```
Menu: Unload  
Drive 1
```

6. Use the ↑ and ↓ buttons to navigate to the proper drive number.

Drive 0 = **Top Drive**
Drive 1 = **Second Drive**
Drive 2 = **Third Drive**
Drive 3 = **Bottom Drive**

7. With the proper drive number displayed on line #2, press the SELECT button and verify the following is displayed in the SDA:

```
Menu: Drive n  
..Working..
```

Where “n” = the number of the drive that you selected.

8. When the following is displayed in the SDA, exit the menu mode.

```
Menu: Unload  
Drive n
```


Cleaning a Drive

1. Enter the menu mode.
2. Use the ↓ button to bypass the Configuration menu and verify the following is displayed in the SDA:

```
Menu:  
Drive Control
```

3. Press the SELECT button to choose the Drive Control menu.
4. Verify the following is displayed in the SDA:

```
Menu: Drive Contr  
Unload
```

5. Use the ↓ button to bypass the Unload sub-menu and verify the following is displayed in the SDA:

```
Menu: Drive Contr  
Clean
```

6. Press the SELECT button to choose the Clean sub-menu and verify the following is displayed in the SDA:

```
Menu: Clean  
Drive 1
```

7. Use the ↑ and ↓ buttons to navigate to the proper drive number.

Drive 0 = **Top Drive**
Drive 1 = **Second Drive**
Drive 2 = **Third Drive**
Drive 3 = **Bottom Drive**

8. With the proper drive number displayed on line #2, press the SELECT button and verify the following is displayed:

```
Menu: Drive n  
..Working..
```

Where "n" = the number of the drive that you selected.

9. When the following is displayed in the SDA, exit the menu mode.

```
Menu: Clean  
Drive n
```

Displaying the Library's Actuator

1. Enter the menu mode.
2. Press the ↓ button five (5) times to bypass the Configuration, Drive Control, Calibration, System Test and Robot Control menus. Then verify the following is displayed in the SDA:

```
Menu:
Diagnostics
```

3. Press the SELECT button to choose the Diagnostics menu and verify the following is displayed in the SDA:

```
Menu: Diagnostics
Home All
```

4. Press the ↓ button two (2) times to bypass the Home All and Selftest All sub-menus. Then verify the following is displayed in the SDA:

```
Menu: Diagnostics
Status Actuator
```

5. Use the ↑ and ↓ buttons to scroll to the function that you want to display (Status Actuator or Status Sensor).

Note Status Sensor *is not currently supported*.

6. With the selection displayed on line #2, press the SELECT button.
7. Use the ↑ and ↓ buttons to scroll through the (SDA line #2) displays to review the information returned.

Examples are shown below.

Status Actuator Example

```
Menu: Status Actu
1.51 11.8 3.25 C
```

1.51 = **Horizontal position**
11.8 = **Vertical position**
3.25 = **Extension position**
C = **Gripper state (Closed, Open and Unknown)**

8. When you have finished viewing the status of the library sensors or actuators, exit the menu mode.

Performing an Inventory

1. Enter the menu mode.
2. Press the ↓ button five (5) times to bypass the Configuration, Drive Control, Calibration, System Test and Robot Control menus. Then verify the following is displayed in the SDA:

```
Menu:  
Diagnostics
```

3. Press the SELECT button to choose the Diagnostics menu and verify the following is displayed in the SDA:

```
Menu: Diagnostics  
Home All
```

4. Press the ↓ button five (5) times to bypass the Home All, Selftest All, Status Actuator, Status Sensor and Move Actuator sub-menus. Then verify the following is displayed in the SDA:

```
Menu: Diagnostics  
Inventory
```

5. With Inventory displayed on line #2, press the SELECT button.

Note *With a full library, the inventory will take approximately three minutes if all of the tape cartridges are properly barcode labeled. The actual inventory time can take longer if the library is not completely full or if any of the tape cartridges are not properly labeled.*

6. When the SDA returns to the previous menu as shown below (i.e., inventory is complete), exit the menu mode:

```
Menu: Inventory  
Success
```


Operator Troubleshooting

4

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Chapter Overview

This chapter provides explanations of status messages displayed in the Control Panel Status Display Area (SDA) as well as the associated action necessary (if any) to rectify specific problems.

Operator Troubleshooting

Table 4 is a listing of all status messages displayed in the SDA. Column #1, "Status Message," shows the two lines of the SDA. (If there is only one line of text in the message, it is displayed on line #1.) The "Description/Action" column provides a brief explanation of the message and, where necessary, steps that you can take to resolve any problem associated with the message.

Table 4: Status Messages

Status Message	Description/Action
System On-line.	The library is on-line and ready to communicate with the host computer.
System Off-line.	The library is ready to accept commands from the diagnostic PC (DIAG port) or enter the control panel menu mode.
Going On-line... Please Wait.	The library is transitioning from off-line to on-line but must complete a command that is (currently) executing. When finished, System On-line is displayed in the SDA.
Going Off-line... Please Wait.	The library is transitioning from on-line to off-line but must complete a command that is (currently) executing. When finished, System Off-line is displayed in the SDA.
System Power-Up.	This is the first message displayed in the SDA when the library power is cycled from off to on.
Initializing... Wait for On-line.	This is the second message displayed in the SDA, after System Power-Up, when the library power is cycled from off to on. (When the library successfully completes initialization, System On-line is displayed.)

Status Message	Description/Action
<div data-bbox="224 380 531 474" style="border: 1px solid black; padding: 5px; text-align: center;">On-line Init Fail</div>	In the event of an initialization failure (library power has been cycled from off to on), this message is displayed in the SDA following the Initializing...Wait for On-line message. (When the library successfully completes initialization, System On-line is displayed in the SDA.)
<div data-bbox="224 531 531 625" style="border: 1px solid black; padding: 5px; text-align: center;">System Stopped</div>	The control panel STOP button was pressed.
<div data-bbox="224 682 531 777" style="border: 1px solid black; padding: 5px; text-align: center;">System DoorOpen.</div>	The library front door is open.

Other Problems

In addition to the status messages described in the previous section, there are other problems that may occur. Table 4 lists two of these problems and the steps to take to resolve them.

Note *Coordinate your efforts with the System Administrator.*

Table 5: Other Problems

Problem	Resolution
A tape drive is not ejecting the cartridges properly.	<ol style="list-style-type: none">1) Use the procedure “Manually Unloading the Tape Drive” on page 3-6 to remove the cartridge.2) If the problem persists, notify your FSE.
One or more cables are disconnected from the rear panel.	<ol style="list-style-type: none">1) Perform the procedure “Removing Power from the Library” on page 3-4.2) Reconnect the cables referencing “Figure 5: Rear Panel” on page 2-12.3) Perform the procedure “Applying Power to the Library” on page 3-3.

Note *For any other problem not listed, notify your FSEs.*

Glossary

TL810 library	The automated storage and retrieval component of an automated tape library system used for storing and handling DLT cartridges. TZ87N cartridges are used with the TL810 tape library.
TL812 library	The automated storage and retrieval component of an automated tape library system used for storing and handling DLT cartridges. TZ88N cartridges are used with the TL812 tape library.
actuators	Robotic components that move inside the library to manipulate cartridges. These include the gripper, extension axis, vertical and horizontal axes.
automated tape library	A robotic storage and retrieval system for DLT™ tape cartridges.
bar code label	The identification label on tape cartridges.
bar code scanner	A device that is mounted on the extension axis that reads the cartridge barcode labels.
calibration	The software measurements and configuration required for successful operation of the library.
DLT™	Digital Linear Tape
control panel	The panel on the front of the library that contains the Status Display Area, as well as indicators and control buttons.
EIA/TIA-574	A serial communications cabling and protocol standard for nine pin connectors, sometimes referred to as RS-232. The diagnostic port (DIAG), on the rear of the library, uses this protocol.
extension axis assembly	Mounted onto the vertical axis, the extension axis assembly consists of the gripper assembly and the horizontal axis on which the gripper assembly is mounted.
extension axis belt	The drive belt connecting the extension motor/gearbox to the gripper.
FCC Class A	Standard established by the U.S. Federal Communications Commission governing electromagnetic emissions.
FSA	Fixed Storage Array. This is a 3 column-by-16 row fixture mounted inside the library. Its purpose is to store up to 48

	cartridges in the library.
FSE	Field Service Engineer
gripper assembly	The assembly that mounts on the extension axis and grips cartridges; referred to as the gripper.
horizontal belt	The drive belt connecting the horizontal motor to the horizontal axis assembly.
host	Host Computer
host computer	The computer that issues SCSI commands to control the library robotics.
LCD	Liquid Crystal Display
Load Port	The operator accessible component of the library that allows up to four cartridges to be import/export loaded and unloaded into/from the library.
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NVRAM	Non-Volatile RAM
on-line	Ready for communications with a host.
PC	Personal Computer
pick	The act of removing a cartridge from one location in preparation for placing it in another location.
place	The act of placing a cartridge in a location after it has been picked from another location.
PROM	Programmable Read-Only Memory
RAM	Random Access Memory
rear panel	The rear cosmetic panel of the library that contains the AC power switch, AC power receptacle and connectors for attaching external cabling to the library.
SCSI	Small Computer System Interface communications standard for attaching peripheral equipment to computers.
SDA	Status Display Area. This is a 16-character (5x7 dot-matrix Liquid Crystal Display {LCD}) /2-line display. It shows status messages that describe the operating state of the library. It is also used for displaying menu options while the library is in the Menu Mode.
tape drive	The mechanism that reads and writes data from and to a tape

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