TL81X/TL894 Automated Tape Library for DLT™ Cartridges

Facilities Planning and Installation Guide

EK-TL810-IG

Revision C01

EK-TL810-IG, Revision C01, February 4, 1997, Made in USA.

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.

INDUSTRY CANADA (DIGITAL APARATUS)
Interference-Causing Equipment Standard
ICES-003 Issue 2

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cer apparcil numerique de la classe A respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

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 environement domestique, ce produit peat causer des interférences radio lectriques. Il appartienl 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 vormeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

Achtung

Da der interne Laserstrahl in lhre Augen eindringen und Verletzungen verursachen kann, darf das Gehäuse nicht selbst geöffnet werden. Überlassen Sie Wartungearbeiten 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 überprufen, 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 Nahe von Vorhangen, Tapeten usw, auf, da hierdurch die Ventilationsöffnungen blockiert werden können.

Zur Reiningung

Verwenden Sie zur Reiningung des Gehäuses, des Bedienungspultes und der Bedienungselemente 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

1

Purpose

This document describes facility preparation and provides the procedures for first-time installation of the TL810, TL812, or TL894 automated tape library. These libraries are identical except for the model of tape drives installed. In this document the term TL81X/TL894 is used to represent all three models of libraries.

This 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 Specifications and Site Requirements," provides the specifications of the library and discusses site flooring, environmental and electrical requirements.

- Chapter 3, "Unpacking and Moving the Library," describes how to unpack and move the library to its final installation area.

- Chapter 4, "Installing the Library," list the tools required and provides the procedures for installing and testing 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 lists all the manuals associated with the TL81X/TL894 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-OG	TL81X/TL894 Operator's Guide	This guide describes the operator accessible components of the library and provides both operating and troubleshooting procedures.
EK-TL810-SV	TL81X/TL894 Field Service Manual	This manual contains fault isolation, removal/replacement and periodic maintenance procedures.
EK-TL810-UM	TL81X/TL894 Diagnostic Software User's Manual	This manual provides procedures for installing and using the TL81X/TL894 Diagnostic Software.
EK-TL810-SG	TL81X/TL894 Software Interface Guide	This guide is for software engineers developing applications that control the TL81X/TL894 library.
EK-OTZ87-OM (For the TL810 Tape Library)	TZ87 Series Cartridge Tape Subsystem Owner's Manual	This document describes the TZ87 tape drive and provides operating instructions and troubleshooting procedures.
EK-TZ88X-OM (For the TL812 Tape Library)	TZ88 Series Cartridge Tape Subsystem Owner's Manual	This document describes the TZ88 tape drive and provides operating instructions and troubleshooting procedures.
EK-TZ89N-UG (For the TL894 Tape Library)	TZ89 DLT™ Series Tape Drive User's Guide	This document describes the TZ89 tape drive and provides operating instructions and troubleshooting procedures.

Library Specifications and Site Requirements 2

Chapter Overview

This section provides the library physical specifications and describes the floor and electrical requirements of the site.

Library Specifications

The following tables give the specifications for the TL81X/TL894 automated tape library.

Table 2: Library
Mechanical
Specifications

Height	44 inches (111.76 cm)
Width	21.5 inches (54.61 cm)
Depth	31.12 inches (79.04 cm)
Weight	361 lbs. (164 kg) with 52 DLT™ cartridges and 4 DLT™ tape drives installed.

Table 3: Library Power
Specifications

AC Power Rating	100-120V/200-240V, 4A/2A 50/60 Hz
AC Voltage Range	90-132 VAC or 180-264 VAC
Frequency Range	47-63 Hz

Table 4: Library
Environmental
Specifications

Temperature:	Storage - Short-Term (< 60 Days)	-40 to 151°F (-40 to 66°C)
	Storage - Long-Term (>60 Days)	41 to 122°F (5 to 50°C)
	Transport	-40 to 151°F (-40 to 66°C)
	Operating	59 to 90°F (15 to 32°C)
Relative Humidity:	Non-Operating (Storage)	95% (Wet bulb temp = 90°F/32°C)
	Non-Operating (Transport)	95% (Wet bulb temp = 115°F/46°C)
	Operating	20-80% (Wet bulb temp = 77°F/25°C)
Altitude:	Short-Term (<60 days storage)	12,000 ft. (3.658 km)
	Long-Term (>60 days storage)	12,000 ft. (3.658 km)
	Operating	6,562 ft. (2.0 km) @ 76°F Max. & 589 mmHg

Site Requirements

The following paragraphs specify the floor space, leveling, floor type and loading requirements for the floor of the installation site.

Floor Space

Figure 1 on page 2-5 shows the floor space required by the TL81X/TL894 library, including the off-load and maintenance access area.

Figure 1: Library Floor
Space Requirements
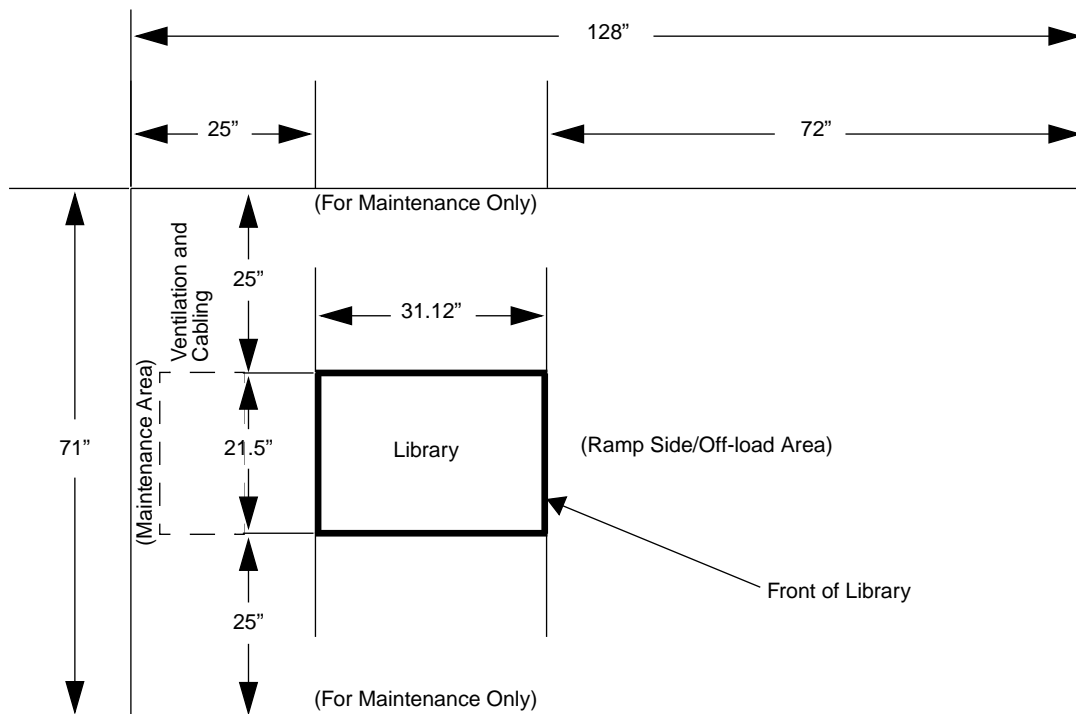
Floor Leveling

The floor must be level to within 1/4" over a 6' x 6' area.

Floor Loading

A standard raised computer floor rated at 250 lb/ft^2 is sufficient to support a fully loaded TL81X/TL894 library.

Floor Clearance

The cabinet has a nominal floor clearance of 0.75" (1.9cm).

Power

The library's auto-ranging motor and logic power supplies will accept single phase, 90-130VAC or 180- 264VAC input power at 47 to 63 Hz.

The power inlet connector is a IEC-320 connector. For international applications, you must replace the power cord set with a harmonized $3x2.0mm^2$ power cord set that is approved by the country where used.

Figure 2: Library AC Power Receptacle

~100-120V / ~200 - 240V
4A / 2A   50/60 Hz
IEC-320 Type

Ground

Line

Neutral
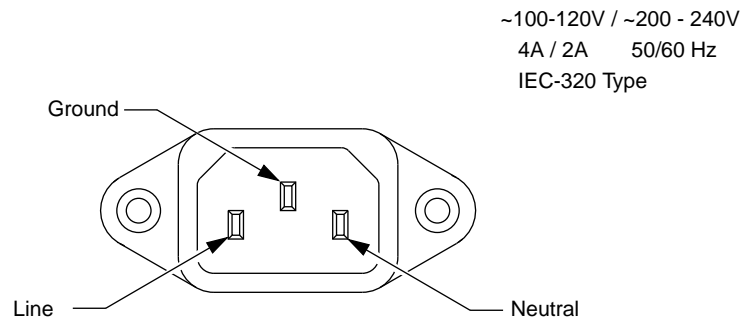
Grounding

The installation site must provide an earth ground cable for the TL81X/TL894 library.

Unpacking and Moving the Library 3

Chapter Overview

This section describes how to unpack and move the TL81X/TL894 library to the final installation area.

Receiving the Library

When you receive the crated library, unload it as close to the final installation area as possible and allow approximately ten (10) feet in front of the off-load side of the pallet. This ensures that there is enough space to lower the ramp before removing the library from the pallet. Also, make sure that the room has a minimum ceiling height of eight (8) feet to provide clearance for removal of the box from the pallet.

Figure 3: Library Unloading Space Requirements
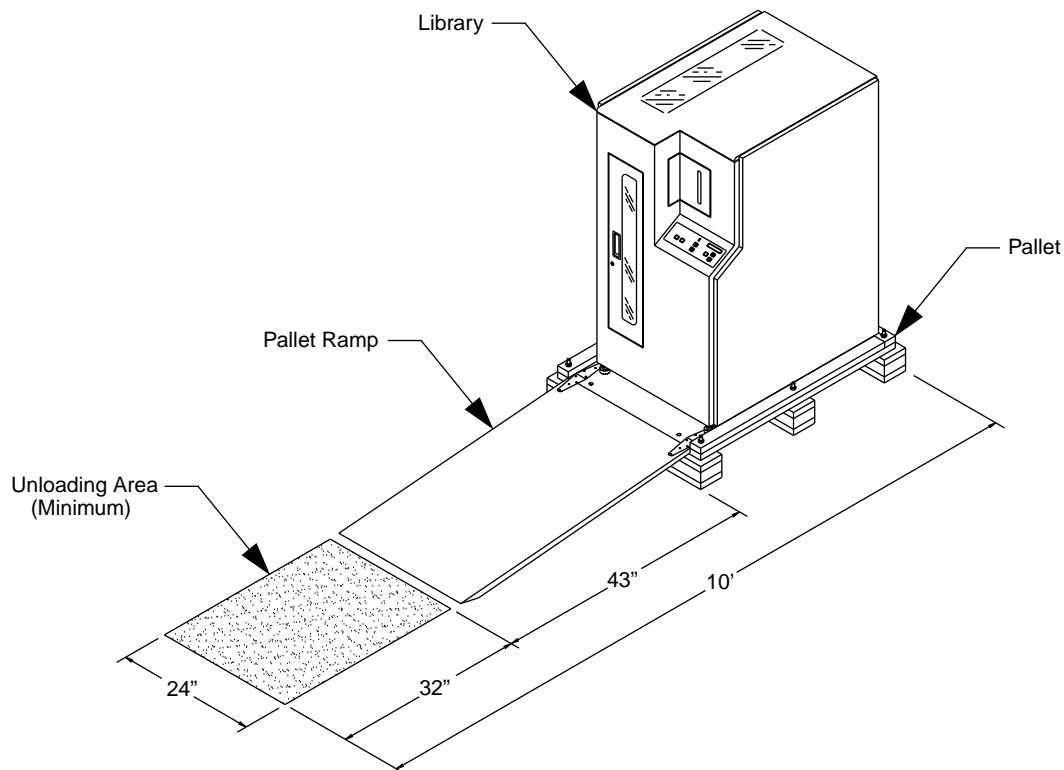
TA00045b

Inspect the crating material for any damage that may have occurred during shipment. Report any damage found to the shipper immediately.

⚠ **CAUTION**   ***The procedures listed below must be performed in the order in which they appear in this document.***

Table 5 is a list of items shipped with a TL810 library, Table 6 is a list of items shipped with a TL812 library, and Table 7 is a list of items shipped with a TL894 library.

Table 5: TL810 Shipping List

Digital PN	ATL PN	Qty	Item
n/a	6210040	1	TL810 library base unit (crated with ramp)
n/a	6210112	1	Accessories Kit with the following items:
EK-TL810-IG	6211151	1	- TL81X Facilities Planning and Installation Guide
EK-TL810-OG	6211152	1	- TL81X Operator's Guide
EK-OTZ87-OM	0805000	1	- TZ87 Series Cartridge Tape Subsystem Owner's Manual
EK-TL810-UM	6211154	1	- TL81X Diagnostic Software User's Manual
n/a	6207311	1	- 3.5" Diagnostic Software Diskette
n/a	0495033	1	- AC Power Cord (US)
n/a	0425003	1	- RS-232 Cable
n/a	6210201-01	99	- Data Cartridge Labels (in AAnnnn Format)
n/a	6210201-03	33	- Cleaning Cartridge Labels (in CLNnnn Format)
TK85HC	0525005	1	- DLT™ Cleaning Cartridge
TK85K-01	0525001	1	- DLT™ Data Cartridge
n/a	0725082	1	- Tube of Lubricant
n/a	0715022	1	- Bag of Cotton Swabs
n/a	6210567	1	- SCSI Jumper Cables
n/a	0415619	2	- Differential SCSI Terminators

Table 6: TL812 Shipping
List

Digital PN	ATL PN	Qty	Item
n/a	6210060	1	TL812 library base unit (crated with ramp)
n/a	6210130	1	Accessories Kit with the following items:
EK-TL810-IG	6211151	1	- TL81X/TL894 Facilities Planning and Installation Guide
EK-TL810-OG	6211152	1	- TL81X/TL894 Operator's Guide
EK-TZ88X-OM	0805003	1	- TZ88 Series Cartridge Tape Subsystem Owner's Manual
EK-TL810-UM	6211154	1	- TL81X/TL894 Diagnostic Software User's Manual
n/a	6207311	1	- 3.5" Diagnostic Software Diskette
n/a	0495033	1	- AC Power Cord (US)
n/a	0425003	1	- RS-232 Cable
n/a	6210201-01	99	- Data Cartridge Labels (in AAnnnn Format)
n/a	6210201-03	33	- Cleaning Cartridge Labels (in CLNnnn Format)
TK85HC	0525005	1	- DLT™ Cleaning Cartridge
TZ88K-01	0525006	1	- DLT™ Data Cartridge
n/a	0725082	1	- Tube of Lubricant
n/a	0715022	1	- Bag of Cotton Swabs
n/a	6210567	3	- SCSI Jumper Cables
QB-50TAA-SA	0525007	1	- Media Robot Drive Kit

Table 7: TL894 Shipping
List

Digital PN	ATL PN	Qty	Item
n/a	6210080	1	TL894 library base unit (crated with ramp)
n/a	6210131	1	Accessories Kit with the following items:
EK-TL810-IG	6211151	1	- TL81X/TL894 Facilities Planning and Installation Guide
EK-TL810-OG	6211152	1	- TL81X/TL894 Operator's Guide
EK-TZ89N-UG	0805004	1	- TZ89 DLT™ Series Tape Drive User's Guide
EK-TL810-UM	6211154	1	- TL81X/TL894 Diagnostic Software User's Manual
n/a	6207311	1	- 3.5" Diagnostic Software Diskette
n/a	0495033	1	- AC Power Cord (US)
n/a	0425003	1	- RS-232 Cable
n/a	6210201-01	99	- Data Cartridge Labels (in AAnnnn Format)
n/a	6210201-03	33	- Cleaning Cartridge Labels (in CLNnnn Format)
TK85HC	0525005	1	- DLT™ Cleaning Cartridge
TZ88K-01	0525006	1	- DLT™ Data Cartridge
n/a	0725082	1	- Tube of Lubricant
n/a	0715022	1	- Bag of Cotton Swabs
n/a	6210567	3	- SCSI Jumper Cables
QB-50TAA-SA	0525007	1	- Media Robot Drive Kit
FE-ZZZAV-02	n/a	1	- SCSI Test Software

Unpacking the Library

To uncrate the TL81X/TL894 library, use the procedure below referencing Figure 4, Figure 5, and Figure 6 on the pages that follow.

⚠ WARNING *Exercise care when cutting the steel bands that secure the library and packing material to the pallet. These bands are under tension and will snap away when cut.*

1. Cut the two steel bands that secure the library and packing material to the pallet. Refer to Figure 4 below.

2. Lift the cardboard box straight up and off of the pallet.

Note *Removal of the box requires a minimum ceiling height of eight (8) feet. It is recommended that two people are present for this step since the size and weight of the box can make it difficult to handle.*

Figure 4: Removing the Box from the Pallet
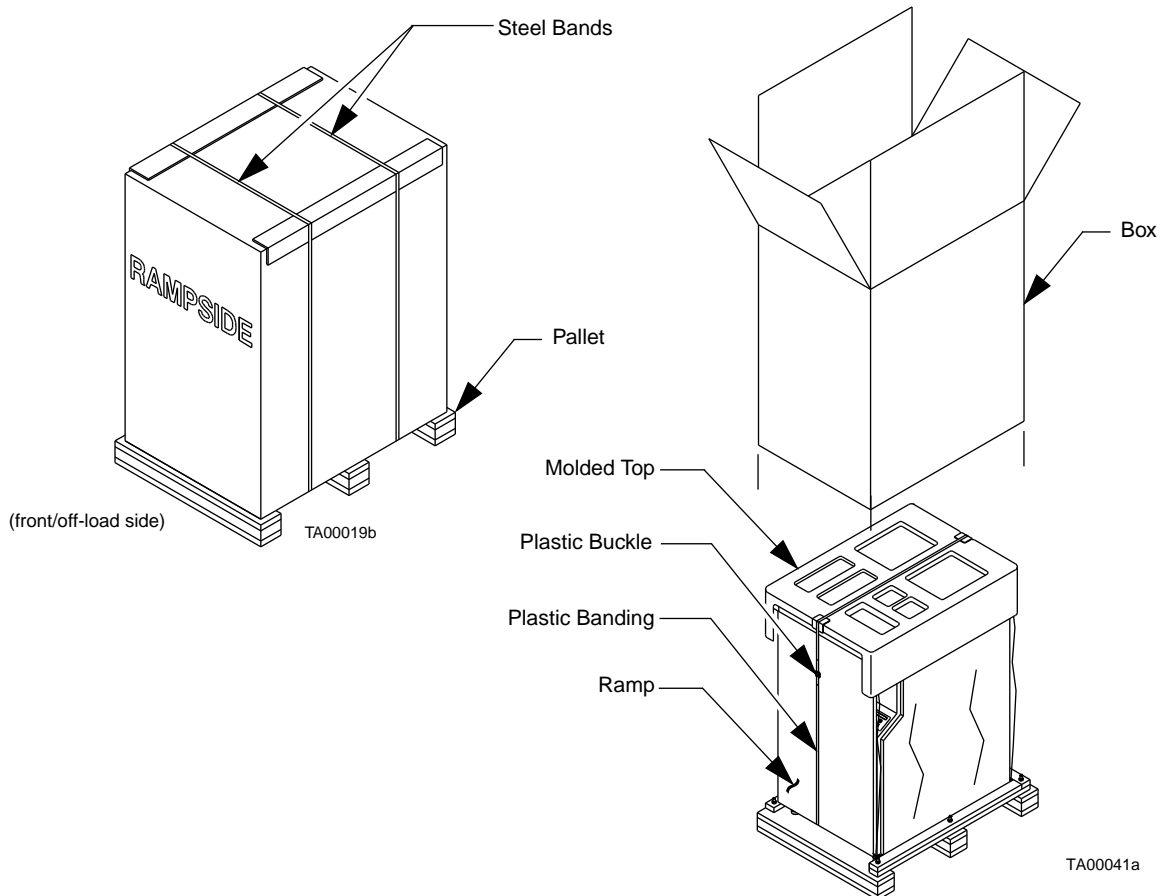
3. Remove the accessories from the molded top of the packaging material.

4. Loosen the plastic buckle securing the molded top and ramp to the pallet. Do not cut the plastic strap. Refer to Figure 5 below.

5. Remove the plastic banding from the library.

Figure 5: Loosening the Plastic Buckle

Loose End

Plastic Buckle

Plastic Banding Around Library

TA00042a
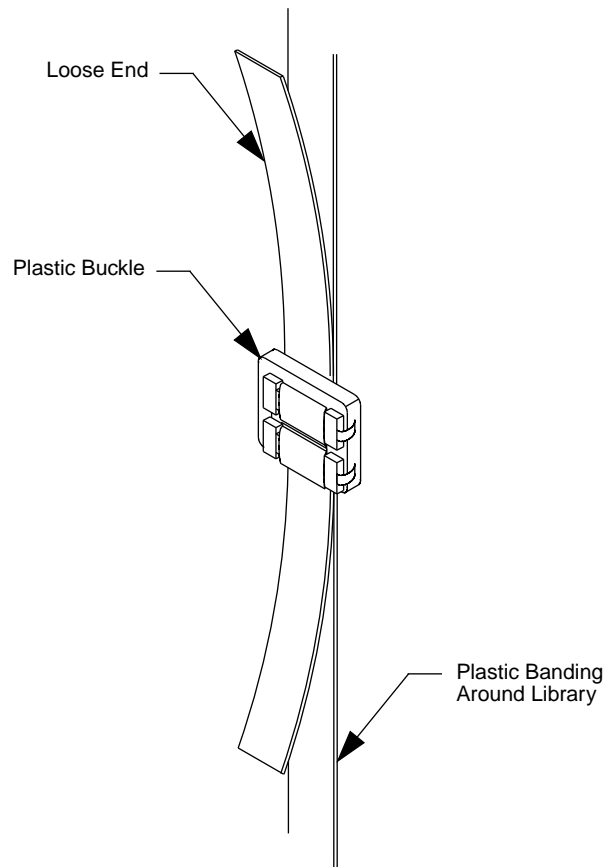
6. The ramp is attached at the bottom of the pallet with hinges, and is folded up and secured inside the molded top. Lift the molded top a few inches to release the ramp, then lower the ramp to the floor.

7. Lift the molded top up and off of the top of the library.

8. Remove the two screws that secure the stop block (located underneath the library in front of the front casters) and then remove the stop block. Refer to Figure 6 on page 3-8.

9. Inspect the library for any damage that may have occurred during shipment.

10. Check the accessories kit to verify that you have received all of the items listed in Table 5, Table 6, or Table 7 on page 3-5.

Figure 6: Unpacking the Library

Accessory Pockets

Molded Top

Shipping Bag

Stop Block
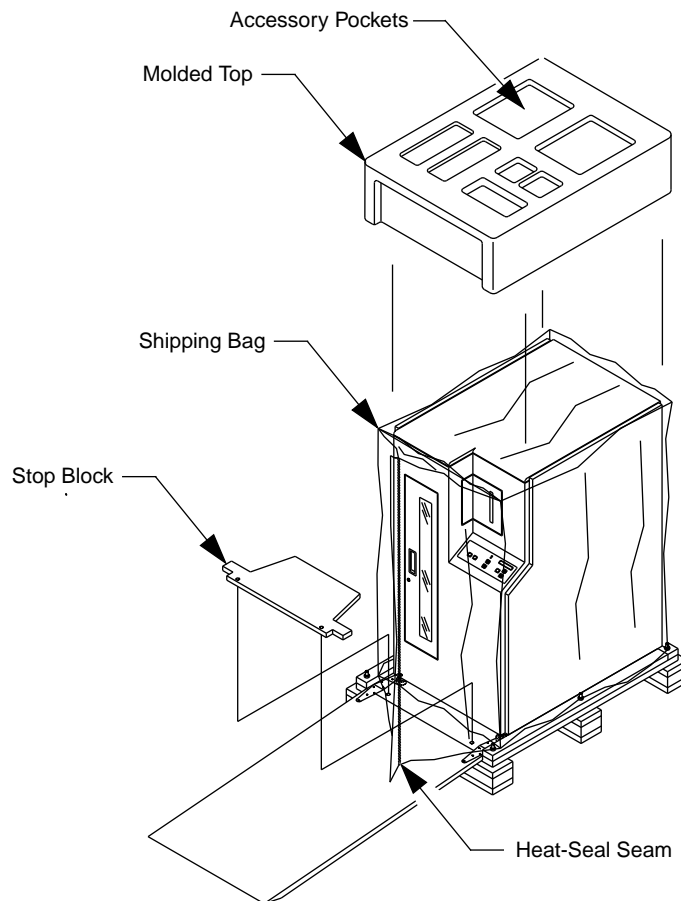
Heat-Seal Seam

TA00018d

11. Carefully cut the shipping bag vertically along the heat-seal seam. Refer to Figure 6 above.

Removing the Library from the Pallet

To remove the TL81X/TL894 library from the pallet, use the procedure below and Figure 6 on page 3-8.

WARNING *The library weighs approximately 335 lbs. It is suggested that two people perform the following procedure.*

Note *The library has casters and leveling feet located on the underside of the library at the four corners.*

1. Verify that all leveling feet are fully retracted to the up position. If not, rotate each of the four feet clockwise until fully retracted.

Note *If only one person is performing this procedure, it is recommended to pull the library out of the shipping bag while guiding the library down the ramp.*

2. With one person guiding the library at the off-load side of the pallet, gently push the library down the ramp and onto the floor.

Note *Carefully fold and save the shipping bag for reuse. It will be required if it become necessary to repackage the library for shipment.*

Moving the Library to the Final Installation Area

WARNING   *The library weighs approximately 335 lbs. It is recommended that two people perform the following procedures.*

Note   *When moving the cabinet, one person should guide the library from the rear while the other person pushes from the front. Do not push the library up or down a ramp with an incline greater than 10 degrees.*

CAUTION   *The library has a nominal floor clearance of 0.75" (1.9cm). Place stiff plastic or rubber mats on top of carpeting that depresses more than the nominal clearance and over floor cracks and door jambs prior to rolling the library over them.*

Any side of the library can be used to push the library to the final installation area. However, the preferred side to push from is the front of the library. When pushing from the front, DO NOT push on the following non-structural portions:

> Load port door
>
> Control panel
>
> Front door
>
> Front door handle

To move the TL81X/TL894 library to the final installation area, use the procedure below.

1. Prepare the path to the final installation area based on the information listed above.

2. Verify that all leveling feet are fully retracted to the up position. If not, rotate each of the four feet clockwise until fully retracted.

3. Roll the library to the final installation area.

Removing the Cosmetic Panels

You have to remove the top and left cosmetic panels before proceeding to the next operation. To do this, use the procedures below along with Figure 7 on page 3-12.

Top Panel

1. At the rear of the library, remove the two screws that secure the top panel to the rear of the library frame.

2. Pull the panel towards the rear of the library (to disengage the retention tabs from the frame top) and then up and off of the library frame.

3. Set the panel aside.

Left Side Panel

⚠ <u>CAUTION</u>   *You must remove the top panel before removing the left side panel.*

4. At the rear of the library, remove the three screws that secure the left side panel to the rear of the library frame.

5. Pull the panel towards the rear of the library (to disengage the retention tabs on the left side of the library frame) and then move the panel out and off of the library frame.

6. Set the panel aside.

Figure 7: Removing the
Top and Left Side Panels

Top Panel

Top Panel Retention
Tabs Attach Here

Left Side Panel
Retention Tabs

Left Side Panel
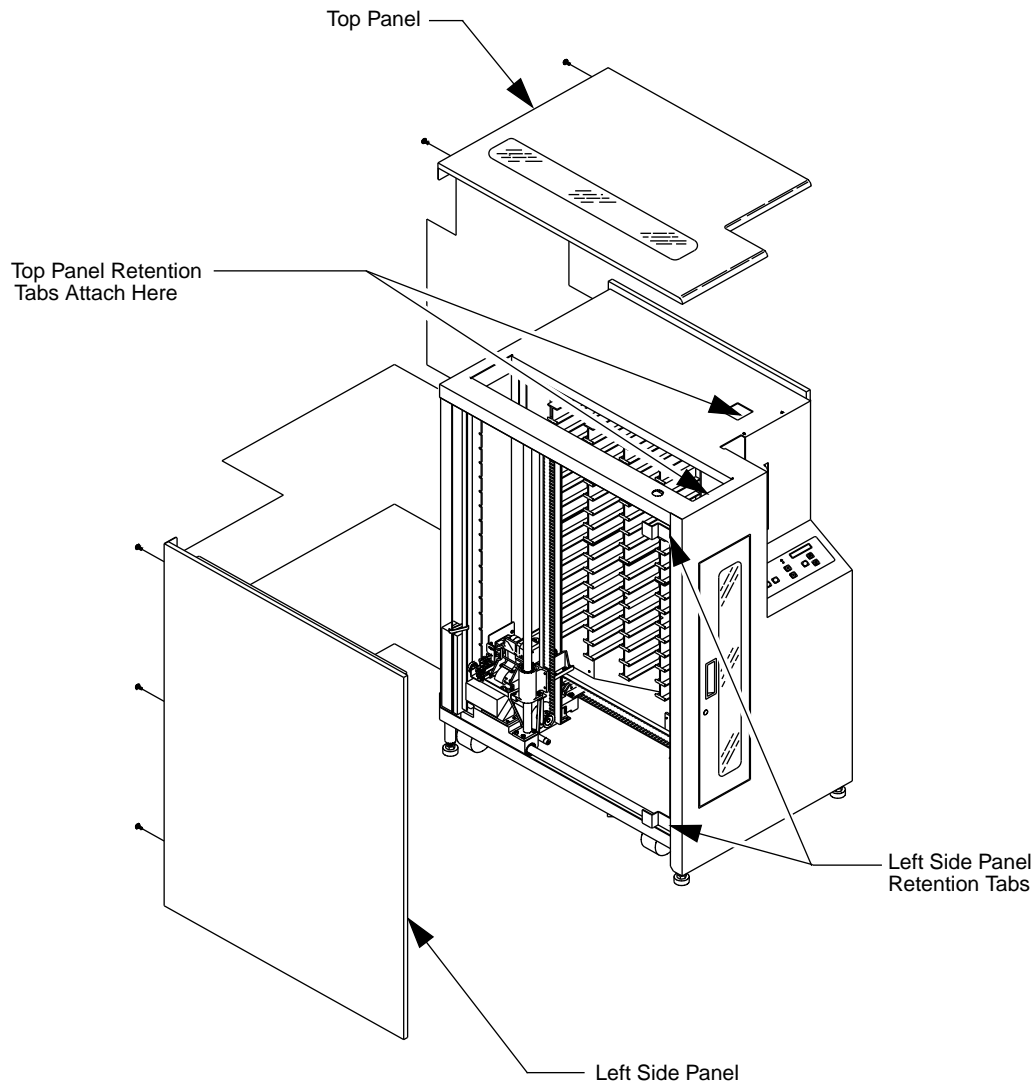
TA00023e

Removing the Protective Packaging Material

The library's vertical carriage, horizontal carriage, and extension axis are secured with tie-wraps and foam blocks for shipment. To remove the tie-wraps and foam blocks, use the procedure below:

⚠️ CAUTION   *Observe proper ESD protective measures when handling the library robotics. ESD ground jacks have been provided on the frame for connecting wrist straps and grounding mats.*

Refer to Figure 8 below.

1.   Remove the horizontal carriage tie-wrap.

2.   Remove the vertical carriage tie-wrap.

3.   Remove the extension axis tie-wrap.

Figure 8: Removing
Tie-Wraps
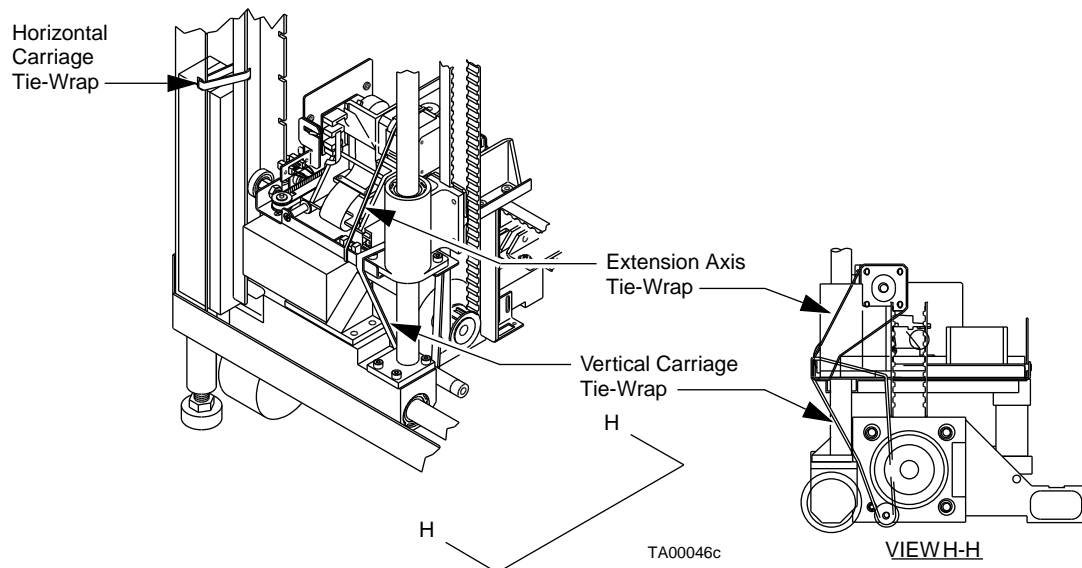
Refer to Figure 9.

4. Gently slide the horizontal carriage toward the front on the library.

5. Remove the top and bottom horizontal carriage foam blocks.

6. Gently raise the vertical carriage.

7. Remove the vertical carriage foam block.

⚠ **CAUTION**   *Do not force the load port open before raising the load port solenoid.*

8. Reach inside, behind the load port and manually raise the load port solenoid.

9. Open the load port door and remove the foam packing.

10. Again manually raise the load port solenoid and close the load port.

Figure 9: Packing
Material Locations

TA00024d
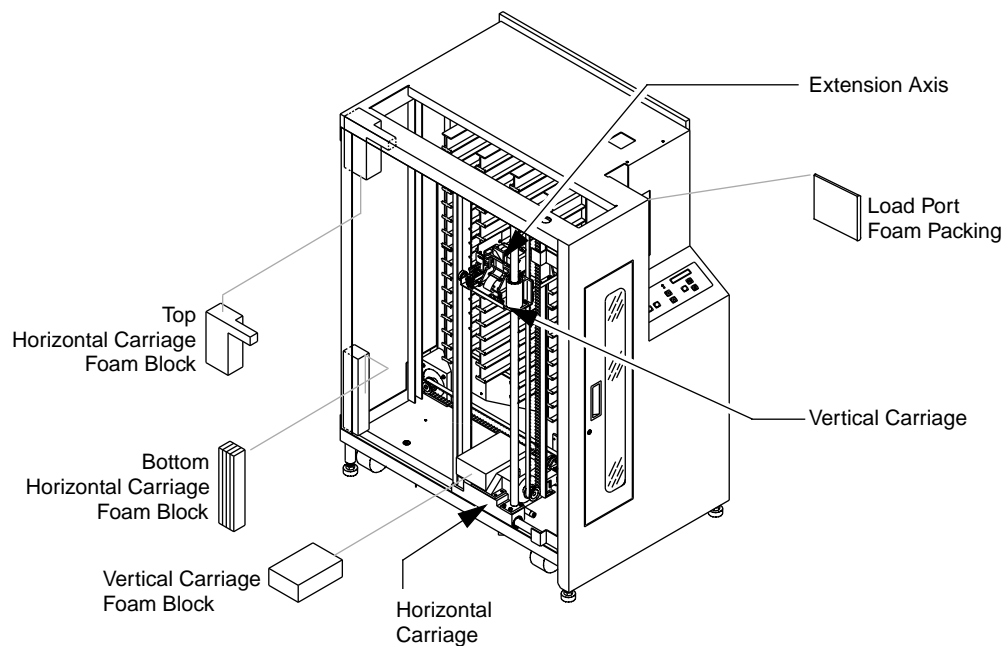
Storing the Packaging Material

1. Raise the ramp and rest it on top of the pallet.

2. Collapse the cardboard box.

3. Store the box, molded top, pallet, and all packing material for future use.

Packaging the Library for Reshipment

If it becomes necessary to crate the TL81X/TL894 library for shipment, use the procedure below with Figure 6, Figure 7 and Figure 9 (above).

Note *This procedure assumes that all cartridges have been removed, power is off and cables are disconnected.*

⚠ **CAUTION** *Observe proper ESD protective measures to prevent damage to the library.*

1. Perform the procedure "Removing the Cosmetic Panels" listed above.

2. Gently lift the extension axis up and place the vertical axis foam block in position as shown in Figure 9, then lower the extension axis to the bottom position.

3. Install both the top and bottom horizontal axis foam blocks.

4. Gently slide the robotic mechanism towards the rear of the library so that is up against the horizontal axis foam blocks.

5. Install the tie-wraps securing the extension axis, vertical carriage, and horizontal carriage for shipment. Refer to Figure 8.

6. Replace the left side panel as follows:

   Rest the top lip of the left side panel on the top of the library frame. Refer to Figure 7 on page 3-12.

   Push the panel towards the front of the library and insert the frame buckles into the retention tabs.

   At the rear of the library, insert and tighten the three screws to secure the left side panel to the rear of the library frame.

7. Replace the top panel as follows:

   Place the panel on top of the library.

   Push the panel towards the front of the library and insert the retention tab into the points indicated in Figure 7.

   At the rear of the library, insert and tighten the two screws to secure the top panel to the library frame.

8. Raise the leveling feet by rotating each foot clockwise until they are fully retracted.

9. Move the library to the crating area observing all guidelines in the procedure "Moving the Library to the Final Installation Area" listed above.

10. Lower the pallet ramp.

11. Unfold the shipping bag and align the white tape to the pallet bottom where the library casters will roll onto the pallet.

12. Roll the library onto the pallet and into the shipping bag.

13. Seal the shipping bag by folding the seam over and taping the edge.

14. Install the stop block in front of library front casters (Refer to Figure 6 on page 3-8).

15. Install the molded top on the library and raise the ramp up to fit into the retaining slot.

16. Install the plastic band around the library, pallet, and ramp. Refer to Figure 4 on page 3-6. Tighten the buckle on the plastic band until the corners of the molded top are deformed 1/4 to 3/4 inch.

17. Slide the box over the library and pallet.

⚠ **CAUTION**   *It is recommended that the steel bands be tightened to approximately 200 lbs of tension prior to shipment.*

18. Install steel banding to secure the library and packing material to the pallet.

Installing the Library   *4*

Chapter Overview

This section provides the procedures necessary to install the TL81X/TL894 library.

Library Description

The TL81X/TL894 library (Figure 10) is the automated storage and retrieval component of an automated tape library system. It contains four Digital Linear Tape (DLT™) series tape drives and is capable of storing a maximum of 48 DLT™ 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.

Figure 10: TL81X/TL894 Library

Load Port (Open)
(4 Additional Cartridges/
 52 Cartridges Maximum)

Fixed Storage Array (FSA)
(3x16 {48 Cartridges} Bins)

Control Panel

Gripping Mechanism
(Gripper)

Door Handle
(Door Shown Open)

Vertical Carriage

Horizontal Carriage

Tape Drives (4)

(Left Side Cosmetic Panel Removed)

(Front)

TA00038c
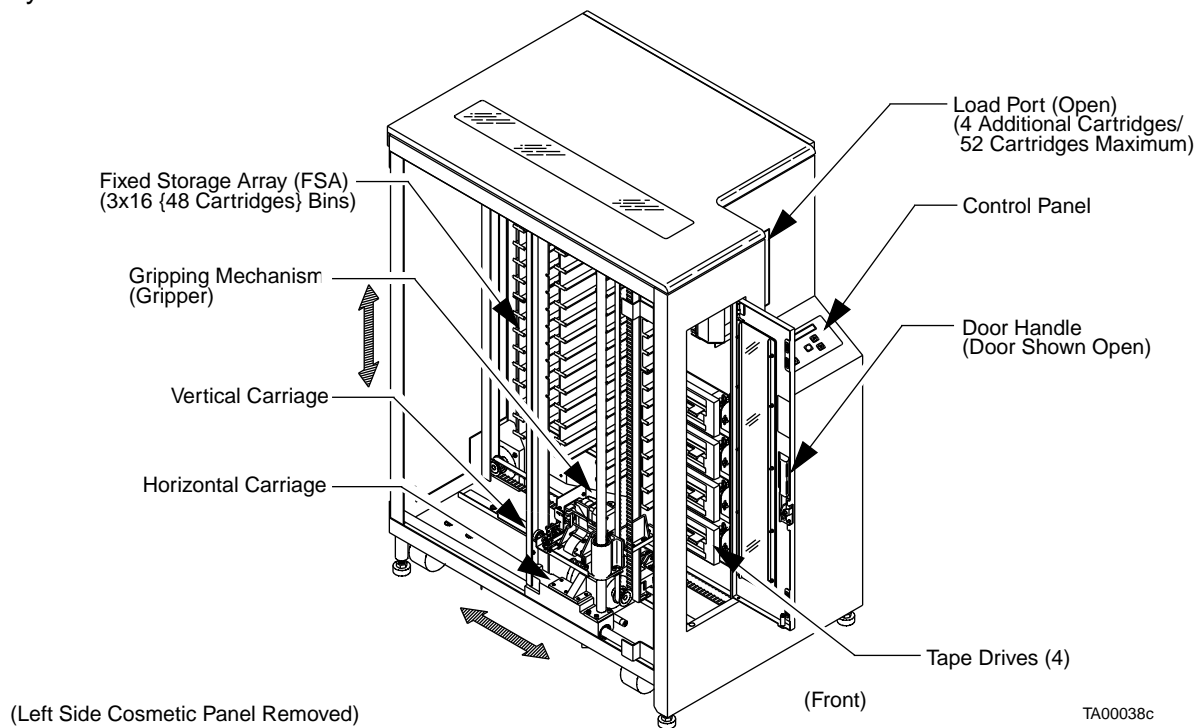
The TL810, TL812, and TL894 automated tape libraries are identical except for the model of DLT™ tape drives installed. Table 8 shows the tape drive model number associated with each library. Table 9 describes the differences between each model of DLT™ tape drive.

Table 8: Library/Tape Drive Matrix

Library Model #	# of Tape Drives	Tape Drive Model #
TL810	4	TZ87
TL812	4	TZ88
TL894	4	TZ89

Table 9: Tape Drive Specifications

Model Number	Native Mode		With 2:1 Compression	
	Transfer Rate	**Capacity**	**Transfer Rate**	**Capacity**
TZ87	1.25 Mbytes/s	10 Gbytes	2.5 Mbytes/s	20 Gbytes
TZ88	1.5 Mbytes/s	20 Gbytes	3.0 Mbytes/s	40 Gbytes
TZ89	5 Mbytes/s	35 Gbytes	10 Mbytes/s	70 Gbytes

Figure 11 shows the storage bin, load port bin, and tape drive numbering conventions used for the TL81X/TL894 libraries.

Figure 11: TL81X/TL894
Library Bin
Configuration

FSA Bins   Load Port Bins

| Bin 0 | Bin 16 | Bin 32 |

Bin 0

| Bin 1 | Bin 17 | Bin 33 |

Bin 1

| Bin 2 | Bin 18 | Bin 34 |

Bin 2

| Bin 3 | Bin 19 | Bin 35 |

Bin 3

| Bin 4 | Bin 20 | Bin 36 |

DLT™ Tape Drives

Bin 5	Bin 21	Bin 37
Bin 6	Bin 22	Bin 38
Bin 7	Bin 23	Bin 39

Drive 0

Bin 8	Bin 24	Bin 40
Bin 9	Bin 25	Bin 41
Bin 10	Bin 26	Bin 42

Drive 1

| Bin 11 | Bin 27 | Bin 43 |
| Bin 12 | Bin 28 | Bin 44 |

Drive 2

| Bin 13 | Bin 29 | Bin 45 |
| Bin 14 | Bin 30 | Bin 46 |

Drive 3

| Bin 15 | Bin 31 | Bin 47 |

TA00053b

Required Tools for Library Installation

Ensure that you have all necessary tools (Table 10) before beginning the installation.

Table 10: Required Tools*

Quantity	Item
1	#2 Phillips Screwdriver
1	Wire Cutters
1	Carpenter's Level
1	1 - $^3/_8$ inch Open-Ended Wrench
1	Digital Voltmeter (DVM)
1	ESD Protection Kit

* not supplied with the library

Replacing the Cosmetic Panels

Use the procedures below along with Figure 12 on page 4-7 to replace the cosmetic panels.

Left Side Panel

⚠ **CAUTION**   *You must replace the left side panel before replacing the top panel.*

1. Rest the top lip of the left side panel on the top of the library frame.

2. Push the panel towards the front of the library and insert the frame buckles into the retention tabs.

3. At the rear of the library, insert and tighten the three screws to secure the left side panel to the rear of the library frame.

Top Panel

1. Place the panel on top of the library.

2. Push the panel towards the front of the library and insert the retention tab into the points indicated in Figure 12.

3. At the rear of the library, insert and tighten the two screws to secure the top panel to the library frame.

Figure 12: Installing the Cosmetic Panels

Top Panel

Top Panel Retention Tabs Attach Here

Left Side Panel Retention Tabs

Left Side Panel
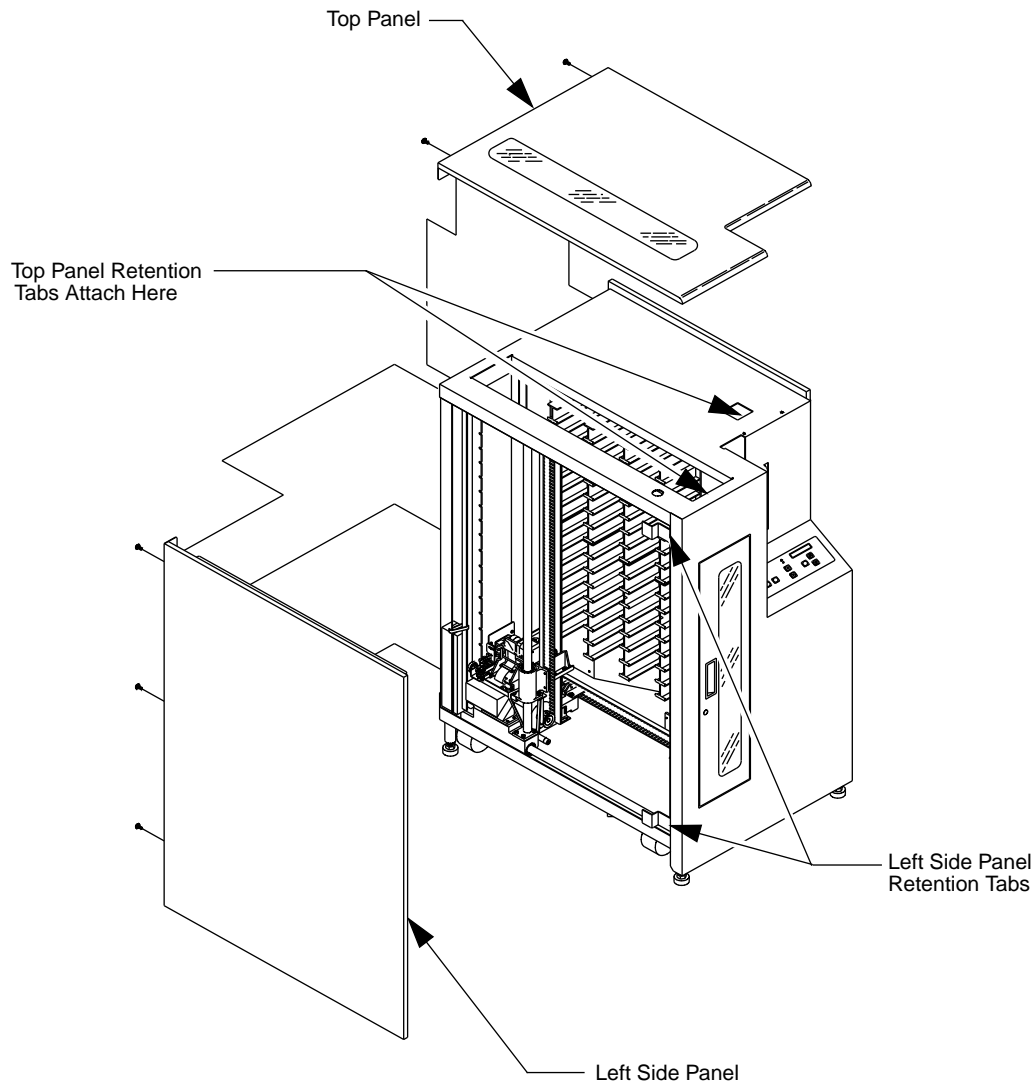
TA00023e

Leveling the Library

To level the library, use the procedure below.

Note *Completing this task involves leveling one side of the library at a time, moving in a clockwise direction starting at the front and ending with the right side of the library.*

1. Move the library onto its designated footprint in the final installation area.

2. Lower each foot of the library until it makes contact with the floor.

⚠ <u>**CAUTION**</u> *When adjusting the feet for leveling purposes, DO NOT raise any foot so high that excess weight is transferred to any single caster.*

3. Moving in a clockwise direction from the library front, rotate each foot counterclockwise so that each caster is raised approximately 1/4" off of the floor.

4. Center a carpenter's level on the top front edge of the library.

5. Check the gauge on the level. If the front of the library is level, proceed to Step #6. If it is not level:

   • Determine the tilt of the library and adjust the appropriate front foot with the wrench, checking the gauge each time that a foot is rotated 1/4 turn.

   • Repeat Step #5 until the front is level, then continue to the next step.

6. Center the carpenter's level on the top left edge of the library.

7. Check the gauge on the level. If the left side of the library is level, proceed to Step #8. If it is not level:

   • Determine the tilt of the library and adjust the appropriate left side foot with the wrench, checking the gauge each time that a foot is rotated 1/4 turn.

   • Repeat Step #7 until the left side is level, then continue to the next step.

8. Center the carpenter's level on the top rear edge of the library.

9. Check the gauge on the level. If the rear of the library is level, proceed to Step #10. If it is not level:

- Determine the tilt of the library and adjust the appropriate rear foot with the wrench, checking the gauge each time that a foot is rotated 1/4 turn.

- Repeat Step #9 until the rear is level, then continue to the next step.

10. Center a carpenter's level on the top right edge of the library.

11. Check the gauge on the level. If the right side of the library is level, proceed to Step #12. If it is not level perform the following:

    - Determine the tilt of the library and adjust the appropriate right side foot with the wrench, checking the gauge each time that a foot is rotated 1/4 turn.

    - Repeat Step #11 until the right side is level, then continue to the next step.

12. After individually leveling each side, return to the front of the library. Center the level on the top front edge and check the gauge. Make any minor adjustments necessary to the feet and then move in a clockwise fashion around the library, repeating this step, until the library is level.

Operational Setup/Checkout

The purpose of the following procedures is to verify the proper operation of your library before placing it on-line.

Applying Power to the Library

1. Verify the following:

    • Actuators move freely in the horizontal and vertical directions

    • Front door and load port door are closed

    • All cosmetic panels are attached

    • Power switch in the "**O**" (off) position

⚠ **CAUTION**   *Using a digital voltmeter (DVM), verify that the facility power is 90-132VAC or 180-264 VAC before connecting the AC power cord.*

2. Connect the AC power cord to the rear panel and facility power.

3. On the rear panel, set the POWER switch to the " | " (on) position.

4. After several seconds, verify that the Status Display Area (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.*

Figure 13: Rear Panel

DIAG
(RS-232 Diagnostic Port)

SCSI PORT 4

SCSI PORT 3

SCSI PORT 2

SCSI PORT 1

AC Power Receptacle
and Power Switch
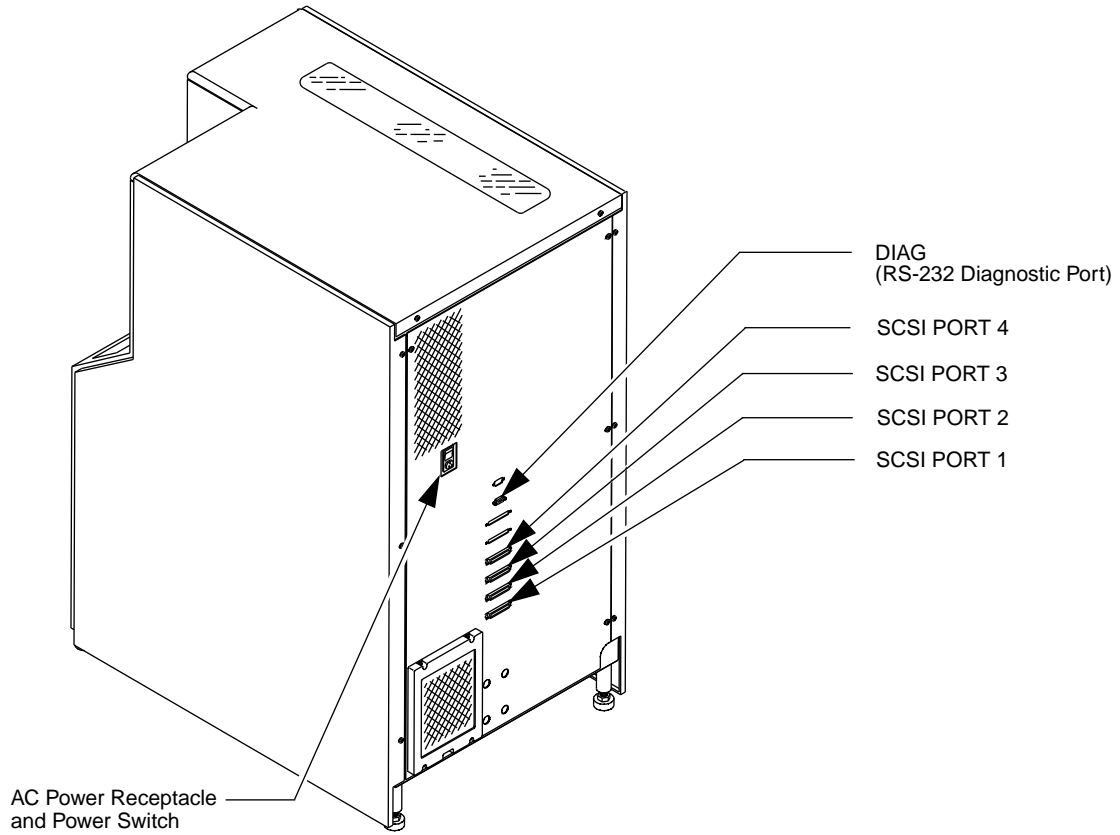
TA00044c

Menu Mode Structure

Installation of the your library requires using the control panel menu mode to configure the library for operation. 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 "Up-Arrow" ($\uparrow$) and "Down-Arrow" ($\downarrow$) 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.

```
Line #1
 Line #2
```

The overall structure and capabilities of the menu mode are shown in Figure 14.

Figure 14: Menu
Structure

MAIN MENU

Configuration	Drive Control	Calibration	System Test	Robot Control	Diagnostics
Inquiry	Unload	Cal All	Random Shuffle	Empty Load Port	Home All
SCSI Address	Clean	Cal Storage	Random /No Scan	Pick Bin	Selftest All
Power-Up State	Exit Menu	Cal Drives	Pick Each Bin	Pick Drive	Status Actuator
Num of Drives		Cal Load Port	Pick All	Place Bin	Move Actuator
Auto Clean		Exit Menu	Report Results	Place Drive	Inventory
Retries			Exit Menu	Barcode Bin	Exercise All
Auto Load				Barcode Drive	Exit Menu
Language				Exit Menu	
Set View					
Auto Inventory					
No Barcode Scan					
Emulate Exabyte					
Temperature Det					
Exit Menu					

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 ↑or ↓ 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 desired sub-menu 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. The quickest way to exit the menu mode is to press the ↑ and ↓ buttons simultaneously.

Note   *After an operation is executed, the results displayed in the SDA, must be cleared before the quick method of exiting will be available. To clear the results of an operation from the SDA, press the ↑ or ↓ button.*

Figure 15 on page 4-15 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 15: Menu
Navigation Example

| | **Status Display** | **Switch** | **Description** |

Main Menu Function
"Configuration"

Sub-Menu Function
"Auto Clean"

"<" (less than sign)
Indicates Feature
Active.

```
Menu:
  Configuration
```
SELECT - Select the "Configuration" Menu

```
Menu: Configurati
  Inquiry
    SCSI Address..
      Power-Up State
        Num of Drives..
```
↓   - Bypass the "Inquiry" Sub-Menu
↓   - Bypass the "SCSI Address" Sub-Menu
↓   - Bypass the "Power-Up State" Sub-Menu
↓   - Bypass the "Num of Drives" Sub-Menu

```
Menu: Configurati
  Auto Clean..
```
SELECT - Choose the "Auto Clean" Sub-Menu

```
Menu: Auto Clean
  Enabled
```
SELECT - Select the "Enabled" Option

```
Menu: Enabled
  ..Working..
    SUCCESS
```
- The SDA displays the status "SUCCESS"
  when the function is finished.

```
Menu: Auto Clean
  Enabled<
```
- Press the ↑ or↓ button and the SELECT
  button simultaneously to exit the menu
  mode or use them separately to navigate
  to the Exit or another function.

Setting the Library SCSI Address

The SCSI address (0...7) of the library can be set using the SCSI Address/Robotics sub-menus. If applicable, use the following procedure to set or change the library's SCSI address.

Note   *The default SCSI address for the library is "0" (zero).*

1. Press and release the Control Panel STANDBY button and verify that the SDA shows System Off-line.

2. Press and release SELECT to enter the menu mode.

3. Verify that the following is displayed in the SDA:

   ```
   Menu:
      Configuration..
   ```

4. Press and release SELECT to choose the Configuration menu.

5. Verify that the following is displayed in the SDA:

   ```
   Menu: Configuration
      Inquiry
   ```

6. Press and release the ↑ or ↓ buttons to locate the SCSI Address sub-menu and verify that the following is displayed in the SDA:

   ```
   Menu: Configuration
      SCSI Address..
   ```

7. Press and release the SELECT button to choose the SCSI Address sub-menu and verify that the following is displayed in the SDA:

   ```
   Menu: Configuration
      Robotics..
   ```

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

   ```
   Menu: SCSI Address
      SCSI ID 0
   ```

9. Use the ↑ and ↓ buttons to navigate to the desired SCSI ID number for the library (SCSI ID 0, SCSI ID 1...SCSI ID 7).

10. With the proper SCSI ID number displayed on Line #2, press and release the SELECT button.

11. Press and release the ↑ or ↓ button to clear the resulting display from the command.

12. Press and release the ↑ or ↓ button and the SELECT button simultaneously and verify that System On-line or Off-Line is displayed in the SDA.

Setting Tape Drive SCSI Addresses

This function is used to set the SCSI address (0...7 for libraries with TZ87N or TZ88N tape drives and 0...15 for libraries with TZ89N tape drives) of each tape drive in the library. This can be done through the SCSI Address/ Drive n sub-menus. Your library ships with the drives configured as shown in Table 11.

Table 11: Tape Drive SCSI
Address (Default) Settings

SCSI Address	Drive Number
2	0 (Top Drive)
3	1 (Second Drive)
4	2 (Third Drive)
5	3 (Bottom Drive)

The SCSI addresses of the TZ87, TZ88 or TZ89 tape drives are set by library firmware through an RS-422 interface to the drives. Check with the customer's System Administrator to ensure that the default SCSI settings are correct for the application. If necessary, the tape drive SCSI addresses can be changed from the library control panel by following the procedure below.

1. Press and release the Control Panel STANDBY button and verify that the SDA shows System Off-line

2. Enter the menu mode.

3. Press the SELECT button to choose the Configuration menu.

4. Verify the following is displayed in the SDA:

    ```
    Menu: Configurati
      SCSI Address
    ```

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

    ```
    Menu: SCSI Addres
      Robotics
    ```

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

```
Menu: SCSI Addres
  Drive 0
```

7. 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**

8. 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
```

9. Use the ↑ and ↓ buttons to navigate to the SCSI ID number for the selected drive (0...7 for libraries with TZ87N or TZ88N tape drives and 0...15 for libraries with TZ89N tape drives).

10. With the proper SCSI ID number displayed on line #2, press the SELECT button.

11. Repeat this procedure to set or change all other tape drive SCSI addresses.

12. Press and release the ↑ or ↓ button to clear the resulting display from the command.

13. Press and release the ↑or ↓ button and SELECT simultaneously, and verify that System On-line or Off-Line is displayed in the SDA.

Note   *The new tape drive SCSI addresses will not take effect until the SCSI bus is reset. There are three ways to reset the SCSI bus:*

*   Power-cycle the library

*   Issue a Reset Drives command from the Diagnostic Software Program

*   Issue a SCSI Bus Reset from the host controller

Performing Library Diagnostics

The Diagostics menu of the TL81X/TL894 libraries have sub-menu options available to:

- Home all actuators in the library (Home All)

- Command the library to perform a selftest (Selftest All)

- Display the library actuator status (Status Actuators)

- Display the library sensor status (Status Sensor)

- Command a robotic actuator to move (Move Actuator)

- Perform a library inventory (Inventory)

- Exercise the library robotic actuators (Exercise All)

For the purposes of completing the installation of the library, this section will only cover the Diagnostics menu commands that are required to verify proper configuration and operation of the TL81X/TL894 library. For a complete discussion of menu options not covered in this section, refer to *Document No. EK-TL810-SV, TL81X/TL894 Field Service Manual*.

Performing a Library Selftest

This sub-menu option of the Diagnostics menu will perform a complete self test of the library.

1. Press and release the Control Panel STANDBY button and verify that the SDA shows Off-line.

2. To enter the Menu Mode, press and release the SELECT button and verify that the following is displayed in the SDA:

   ```
   Menu:
     Configuration
   ```

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

   ```
   Menu:
     Diagnostics
   ```

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

```
Menu: Diagnostic
  Home All
```

5. Press the ↓ button to bypass the Home All sub-menu. Then verify that the following is displayed in the SDA:

```
Menu: Diagnostic
  Selftest All
```

6. With Selftest All displayed on Line #2, press and release the SELECT button and verify that the following is displayed in the SDA:

```
Menu: Selftest All
  ..WORKING..
```

7. After several seconds, verify that the SDA shows the following:

```
Menu: Selftest All
  ..SUCCESSFUL..
```

8. Press and release the ↑ and ↓ buttons simultaneously and verify that System On-line is displayed in the SDA.

Note   *As an alternate method of testing the library, use the Diagnostic Software Package (DSP). If you choose to use this method, refer to Document EK-TL810-UM, TL81X/TL894 Diagnostic Software User's Manual and perform the procedure "Self-Testing or Homing All Library Actuators."*

Connecting the Library to the Host Controller

This section explains how to connect the host cables to the TL81X/TL894 library. The library is shipped with the internal cabling configured for separate host SCSI connections; two-wire for the TL810, and four-wire for the TL812 and TL894. SCSI bus cabling configurations are shown in *Appendix B* of this manual.

Note   *SCSI jumper cables are provided in the accessories kit shipped with the library to reconfigure the internal SCSI cabling if necessary to meet the customer's requirements. I*
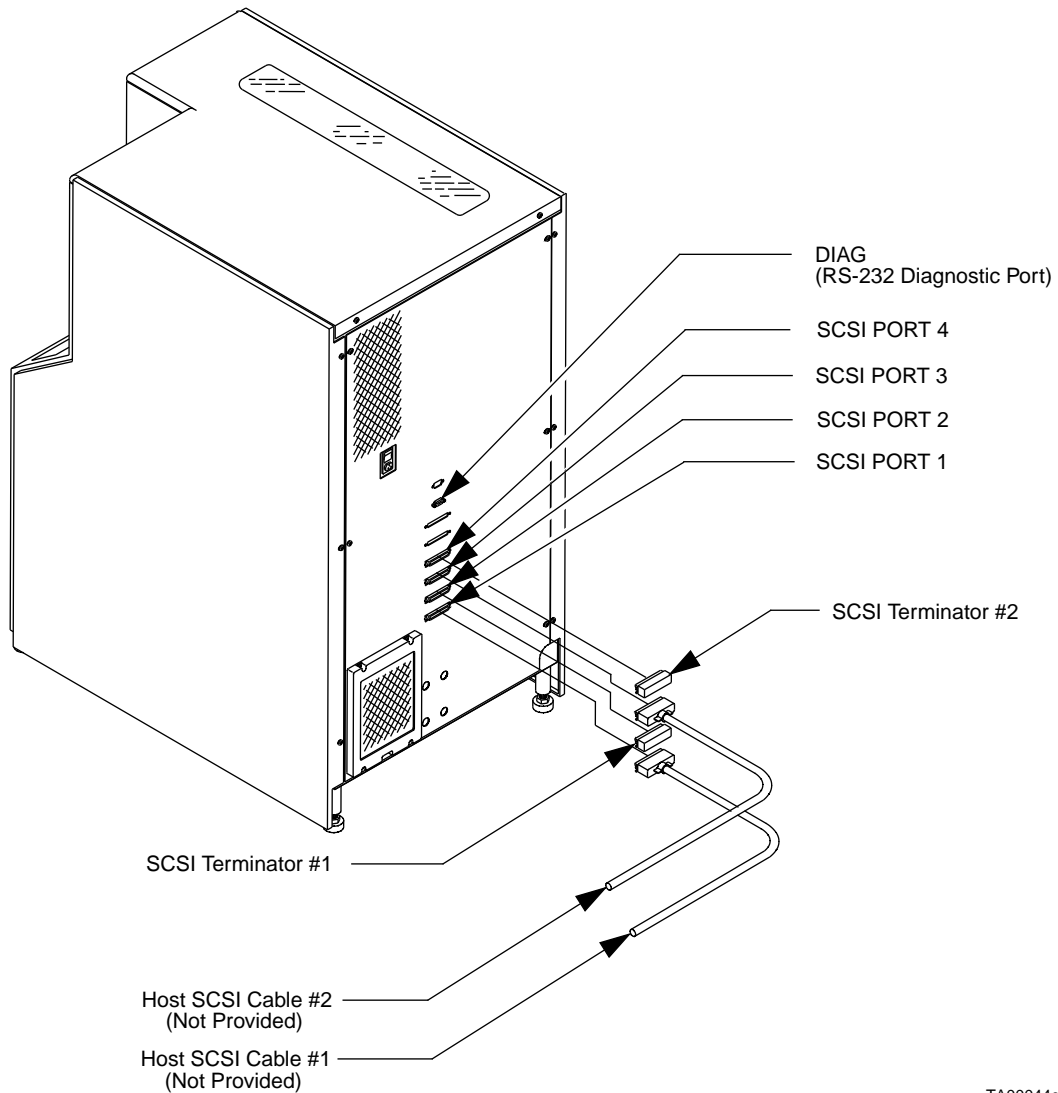
The customer's System Administrator may request that you perform several procedures prior to, or after, connecting the library to the host. The procedures listed in Appendix A are included in anticipation of this request.

1. Remove power from the library as follows:

    *   Press and release the Control Panel STANDBY button and verify that System Off-line is displayed in the SDA.

    *   Press and release the Control Panel STOP button.

    *   At the rear panel, set the POWER button to the "0" (off) position.

2. Power down all SCSI devices that will be connected on the same bus as the library.

⚠ **CAUTION**   *The library uses Differential (Diff) SCSI. If your host adapter is Single-Ended (SE) SCSI, you must use a SE-to-Diff Converter (such as a DWZZA or equivalent) for proper communications.*

3. Connect the (four) library-to-host SCSI cables to the host adapters.

4. Connect one library-to-host SCSI cable to the library rear panel (Figure 16) at SCSI port 1.

Figure 16: Connecting
Host Cables to the
Library (TL810 Shown)

DIAG
(RS-232 Diagnostic Port)

SCSI PORT 4

SCSI PORT 3

SCSI PORT 2

SCSI PORT 1

SCSI Terminator #2

SCSI Terminator #1

Host SCSI Cable #2
(Not Provided)

Host SCSI Cable #1
(Not Provided)

TA00044c

5. Connect the next library-to-host SCSI cable to the library rear panel at SCSI port 1.

6. Connect the next library-to-host SCSI cable to the library rear panel at SCSI port 3.

7. Connect the last library-to-host SCSI cable to the library rear panel at SCSI port 4.

8. On the library rear panel, set the POWER switch to the "|" (on) position.

9. After several seconds, verify that the SDA shows System On-line.

10. Apply power to all other SCSI targets.

11. Apply power to the host.

12. The library is ready for use by the customer.

Note *For the TL810, use the 2-wire SCSI configuration. See Appendix B.*

Appendix *A*

Supplemental Installation Procedures

Chapter Overview

The procedures contained in this appendix are provided for the Field Service Engineer's convenience during the installation of the library. If there are additional tasks that you are asked to perform by the customer's System Administrator, refer to Document *EK-TL810-OG, TL81X/TL894 Operator's Guide*.

The following procedures are contained in this appendix:

- Defining the library power-up state

- Enabling/disabling the auto clean option

- Enabling/Disabling the "auto load" feature

- Loading the library with cartridges (through the load port)

- Performing an inventory

- Turning the interior light on/off

Note *The following procedures require familiarity with the library menu mode. For a description of menu mode navigation, refer to "Menu Navigation" on page 4-14.*

Defining the Library 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 as follows:

1. Press and release the Control Panel STANDBY button and verify that the SDA shows System Off-line.

2. Press and release the SELECT button to enter the Menu Mode.

3. Verify that the following is displayed in the SDA:

    ```
    Menu:
      Configuration
    ```

4. Press and release the SELECT button to choose the Configuration menu.

5. Verify that the following is displayed in the SDA:

    ```
    Menu: Configuration
      SCSI Address
    ```

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

    ```
    Menu: Configuration
      Power-Up State
    ```

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

    ```
    Menu: Power-Up
      On-Line<
    ```

Note   System On-line *is the default. If you want to change the power-up state to standby mode (*System Off-line*), proceed to Step 8. Otherwise, exit the menu mode.*

8. Use the ↓ button to bypass the On-Line option and verify that the following is displayed in the SDA:

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

9. With the desired option displayed on Line #2, press and release the SELECT button.

10. Press and release the ↑ and ↓ buttons, simultaneously and verify that System On-line is displayed in the SDA.

Enabling/Disabling the Auto Clean Option

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 as follows.

1. Press and release the Control Panel STANDBY button and verify that the SDA shows System Off-line.

2. Press and release the SELECT button to enter the Menu Mode.

3. Verify that the following is displayed in the SDA:

```
Menu:
   Configuration..
```

4. Press and release the SELECT button to choose the Configuration menu.

5.   Verify that the following is displayed in the SDA:

```
Menu: Configuration
    SCSI Address
```

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

```
Menu: Configuration
    Auto Clean
```

7.   With Auto Clean displayed on Line #2 of the SDA, press and release the SELECT button and verify that the following is displayed in the SDA:

```
Menu: Auto Clean
    Enabled
```

Note   *"Disabled" is the default. If you want to change the automatic cleaning state to "Enabled," proceed to Step 8. Otherwise, exit the Menu Mode.*

8.   With the desired option displayed on Line #2, press and release the SELECT button.

9.   Press and release the ↑ or ↓ button to clear the resulting message.

10. Press and release the ↑ or ↓ button and the SELECT button simultaneously to exit the menu mode and verify that System On-line is displayed in the SDA.

Enabling/Disabling the Auto Load Feature

This feature enables the operator to load cartridges into the fixed storage array (FSA) without any intervention from the host controller. When this feature is Enabled, the library will automatically find bins in the FSA for cartridges that are placed in the load port. If no bin locations are available in the FSA, the cartridges will be left in the load port bin and an error message will be displayed on the control panel SDA.

The default configuration for this feature is Disabled. To enable this feature on the library, perform the following procedures:

1.   Press and release the Control Panel STANDBY button and verify that the SDA shows System Off-line.

2.   Press and release the SELECT button to enter the Menu Mode.

3. Verify that the following is displayed in the SDA:

```
Menu:
   Configuration
```

4. Press and release the SELECT button to choose the Configuration menu.

5. Verify that the following is displayed in the SDA:

```
Menu: Configuration
   Inquiry
```

6. Press the ↓ button six (6) times to bypass the Inquiry, SCSI Address, Power-Up State, Number of Drives, Auto Clean, and Retries menus. Then verify that the following is displayed in the SDA:

```
Menu: Configuration
   Auto Load
```

7. With Auto Load displayed on Line #2 of the SDA, press and release the SELECT button and verify that the following is displayed in the SDA:

```
Menu: Auto Load
   Disabled
```

Note   *"Disabled" is the default state for the auto load option. If you want to change this feature to "Enabled," proceed to Step 8. Otherwise, exit the menu mode.*

8. Use the ↓ button to bypass the Disabled option and verify that the following is displayed in the SDA:

```
Menu: Auto Load
   Enabled
```

9. With the desired option displayed on Line #2, press and release the SELECT button.

10. Press and release the ↑ or ↓ button and the SELECT button simultaneously and verify that System On-line is displayed in the SDA.

Cartridge/Tape Drive Compatibility

The TL81X/TL894 library is capable of supporting the TZ87N, TZ88N, and TZ89N tape drives. The library is also capable of supporting the CompacTape III™ and CompacTape IV™ cartridges, which are dark gray and black, respectively. When loading the library with cartridges, observe the compatibility of cartridges and tape drives as defined in Table 1.

Table A-1: Cartridge /
Tape Drive Compatibility

Cartridge Type	TZ87N Tape Drive	TZ88N Tape Drive	TZ89N Tape Drive
CompacTape III™ Cartridge	Compatible	Compatible	Compatible
CompacTape IV™ Cartridge	Not Compatible	Compatible	Compatible

⚠ CAUTION *DO NOT USE CompacTape I™ or CompacTape II™ tape cartridges in this library.*

Loading the Library with Cartridges

Note   *The "Auto Load" feature must be "Enabled" before performing this procedure. If this feature is not currently Enabled, refer to the previous section on "Enabling/Disabling the Auto Load Option."*

1.   To speed the library inventory process, install supplied bar code labels on all tape cartridges before placing the tape cartridges in the library. The inventory process takes approximately two minutes with bar code labels installed and over twenty-seven minutes without bar code labels installed.

Note   *Bar code labels will speed up the inventory process even if the bar code information is not used by the application software driving the library.*

Note   *Use only the supplied non-glossy bar code labels. Use of other labels may result in bar code read failures.*

2.   With the SDA displaying System On-line, press and release the LOAD PORT OPEN button and verify that the indicator begins blinking. (After several seconds, the Load Port door will 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.*

3. With the Load Port door open, place up to four cartridges in the available bins. (The proper orientation for cartridge insertion is shown in Figure A-1.)

4. Press and release the LOAD PORT CLOSE button.

CAUTION *The Load Port Door is LOCKED in the "open" position. You must press and release the CLOSE button and wait until the CLOSE indicator is on solid before attempting to close the Load Port Door.*

5. When the CLOSE Indicator (LED that is at the upper left portion of CLOSE button) is steadily lit, push the Load Port door closed. (The library will lock the door.)

6. Repeat Steps 2 through 5 until you have loaded a maximum of 48 DLT™ cartridges into the library.

Figure A-1: Loading Cartridges Through the Load Port
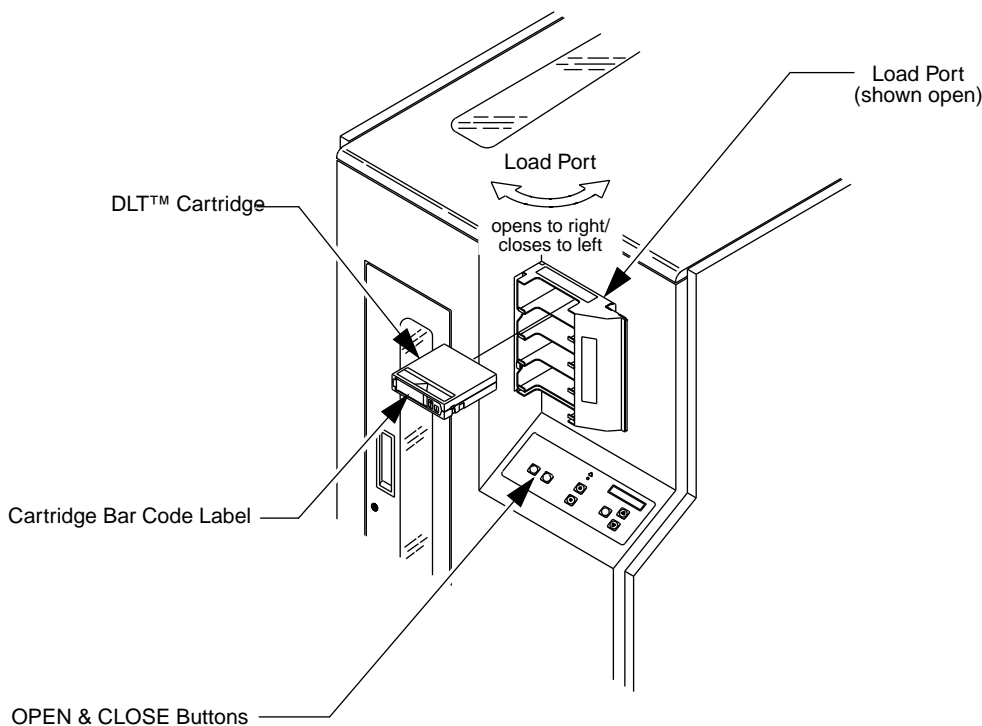
Performing an Inventory

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

1. Press and release the Control Panel STANDBY button and verify that the SDA shows System Off-line.

2. Press and release the SELECT button to enter the Menu Mode.

3. Verify that the following is displayed in the SDA:

    ```
    Menu:
        Configuration
    ```

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

    ```
    Menu:
        Diagnostics
    ```

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

    ```
    Menu: Diagnostic
        Home All
    ```

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

    ```
    Menu: Diagnostic
        Inventory
    ```

7. With Inventory displayed on Line #2, press and release the SELECT button.

Note   *With a full library, the inventory will take less than three minutes if all of the cartridges are properly bar code labeled. The actual inventory time can take longer if the library is not completely full or if any of the cartridges are not properly labeled. When the library is full of unlabeled cartridges the inventory will take over twenty-seven minutes.*

8. When the SDA returns to the previous menu as shown below, the inventory is complete.

> Menu: Diagnostic
>   Inventory

9. Press and release the ↑ and ↓ buttons simultaneously and verify that System On-line is displayed in the SDA.

Turning the Interior Light On/Off

Note   *The Interior light bulb is a not an operator-replaceable item. If the light bulb needs to be replaced, please notify your Field Service Engineer.*

The library is normally shipped with the interior light set to the "On" position. Use the following procedure to turn the interior light "On" or "Off." Refer to Figure A-2.

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

2. Press the control panel STOP button.

⚠ 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.)

Note   *The front door is the only access for manually turning the interior light On or Off.*

4. Reach through the front door and set the light switch (located on the far side of the light) to the desired position. Refer to Figure A-2.

5. Close and latch the library front door.

6. Press the control panel STOP button.

Note   *If the library does not display "System Stopped," verify that the front door is completely closed.*

7. Press the control panel STANDBY button and verify that "System On-line" is displayed in the SDA.

Figure A-2: Turning the
Interior Light On/Off

Power Switch
(Shown in Off Position)

Interior Light

(Opens to Right)
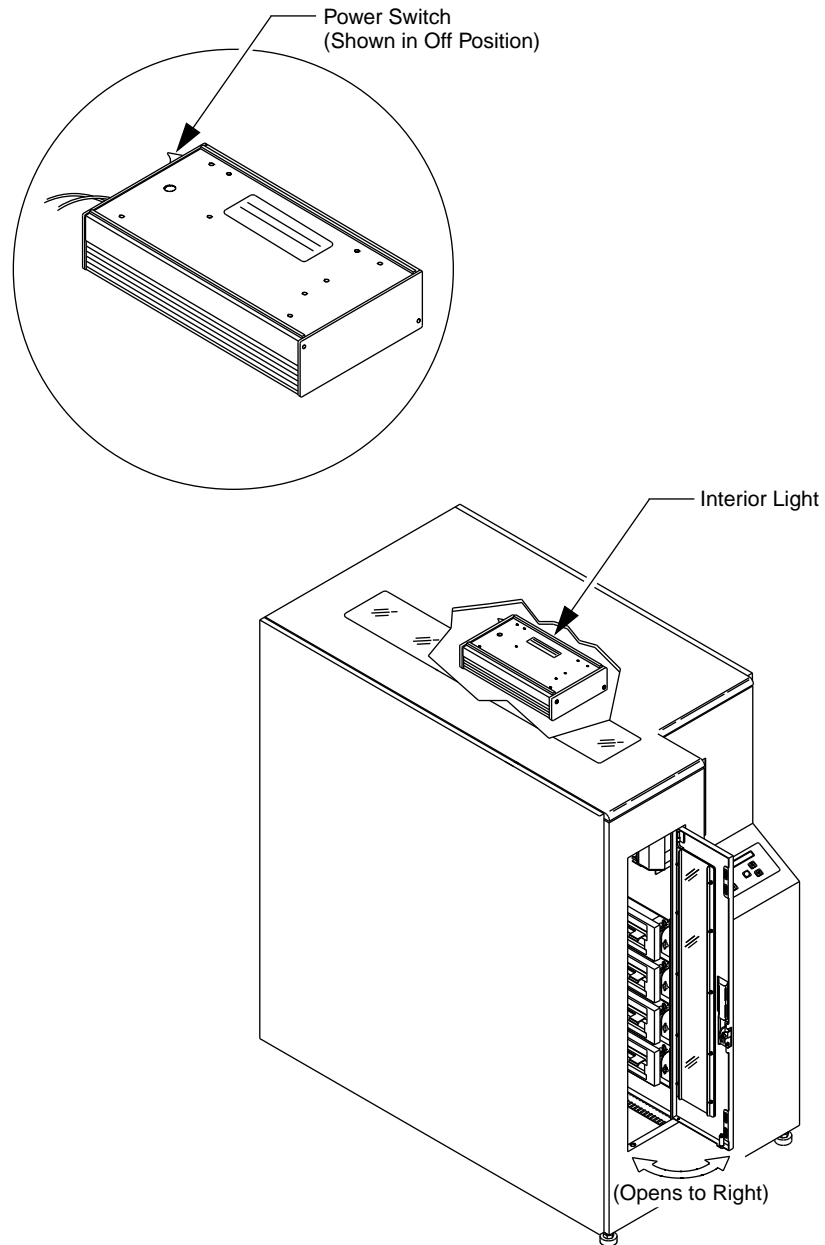
TA00122A

Appendix B

SCSI Cabling Options

SCSI Communications with the Library and Tape Drives

Your TL81X/TL894 library has four 68-pin Micro-D SCSI connectors on the rear of the unit labeled: SCSI PORT 1, SCSI PORT 2, SCSI PORT 3 and SCSI PORT 4. Refer to Figure B-1 on page B-4.

Note   ***None of the host-to-library SCSI cabling is supplied with the library.***

Table B-1: Library SCSI Addresses (Default)

SCSI Device	SCSI Address[a]
Robotics Controller	0
Tape Drive 0	2
Tape Drive 1	3
Tape Drive 2	4
Tape Drive 3	5

a. Typically SCSI address 1 is reserved for the disk in the host computer.

SCSI Configurations

The default configuration of the internal SCSI cabling for the TL810 library is a two-wire configuration, with the robotics controller, drive 0, and drive 1 connected to one SCSI bus. Drive 2 and drive 3 are connected to the second SCSI bus. See Figure B-3 on page B-6.

The default configuration of the internal SCSI cabling for the TL812 and TL894 libraries is a four-wire configuration, with the robotics controller and drive 0 on the first SCSI bus, and drives 1, 2, and 3 each on a separate SCSI bus. See Figure B-5 on page B-8.

The library internal SCSI cabling can be reconfigured to meet the customer's needs by using the SCSI jumper cables (part no. 6210567) provided in the accessories kit shipped with each unit. See Table 5, Table 6, or Table 7 on page 3-5.

See Figure B-2 through Figure B-5 on page B-8 for all available SCSI cabling configurations.

Figure B-1: Library Rear
Panel Connections
(TL812 Shown)

DIAG
(RS-232 Diagnostic Port)

SCSI PORT 4

SCSI PORT 3

SCSI PORT 2

SCSI PORT 1

Host SCSI Cable #4
(Not Provided)

Host SCSI Cable #3
(Not Provided)

Host SCSI Cable #2
(Not Provided)

Host SCSI Cable #1
(Not Provided)

TA00106c
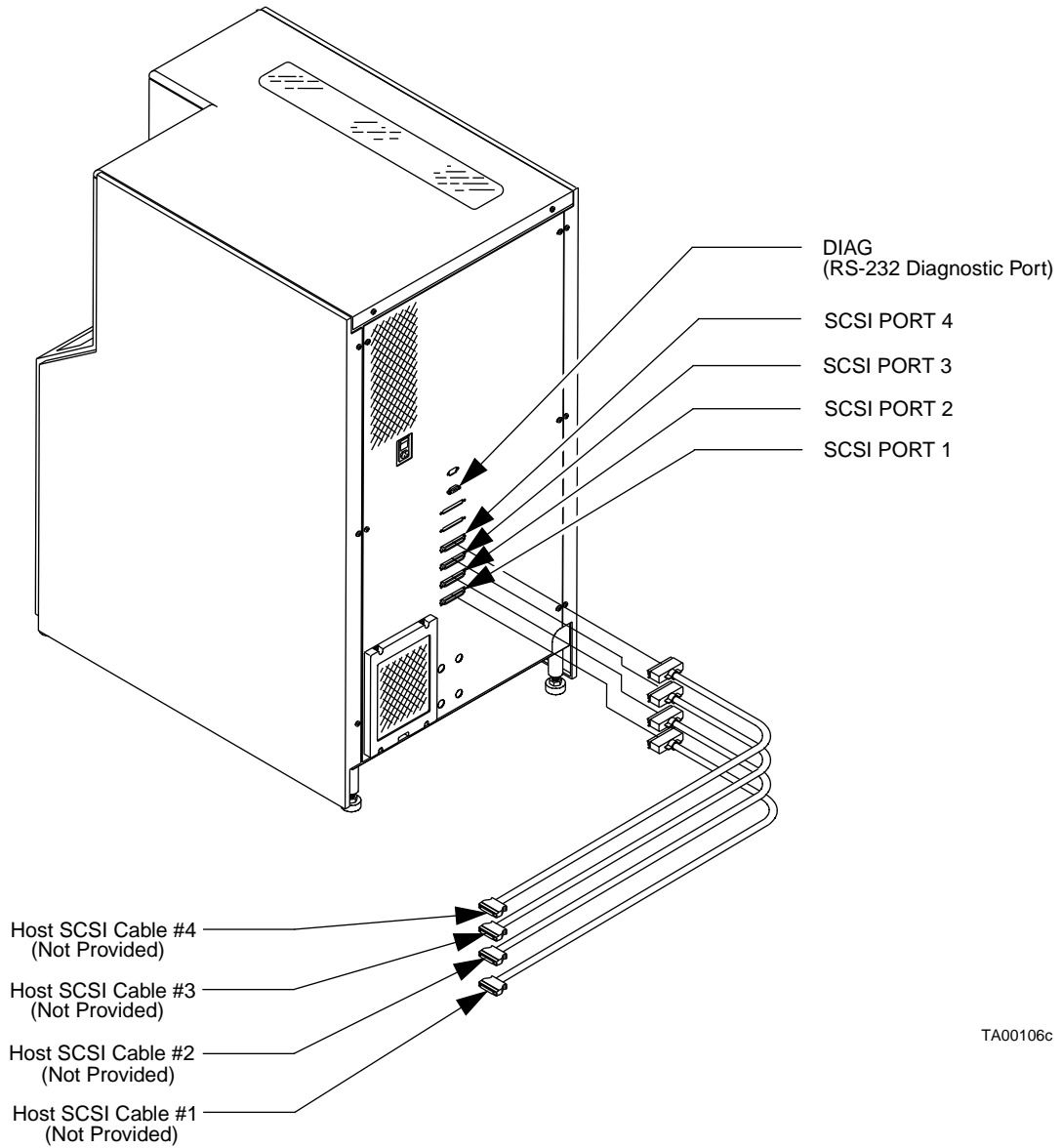
Single-Wire Configuration

This configuration of the TL81X/TL894 library has all of the SCSI devices on a single SCSI bus from the host controller. The host SCSI bus connects to the rear panel connector labeled SCSI PORT 1 and is externally terminated at the connector labeled SCSI PORT 4. Refer to Figure B-2 below for specific internal cabling connections required for this configuration. The rear panel connectors labeled SCSI PORT 2 and SCSI PORT 3 are not used in this configuration.

Note *The SCSI jumper cables from the accessories kit will be required to configure the library in a single-wire configuration.*
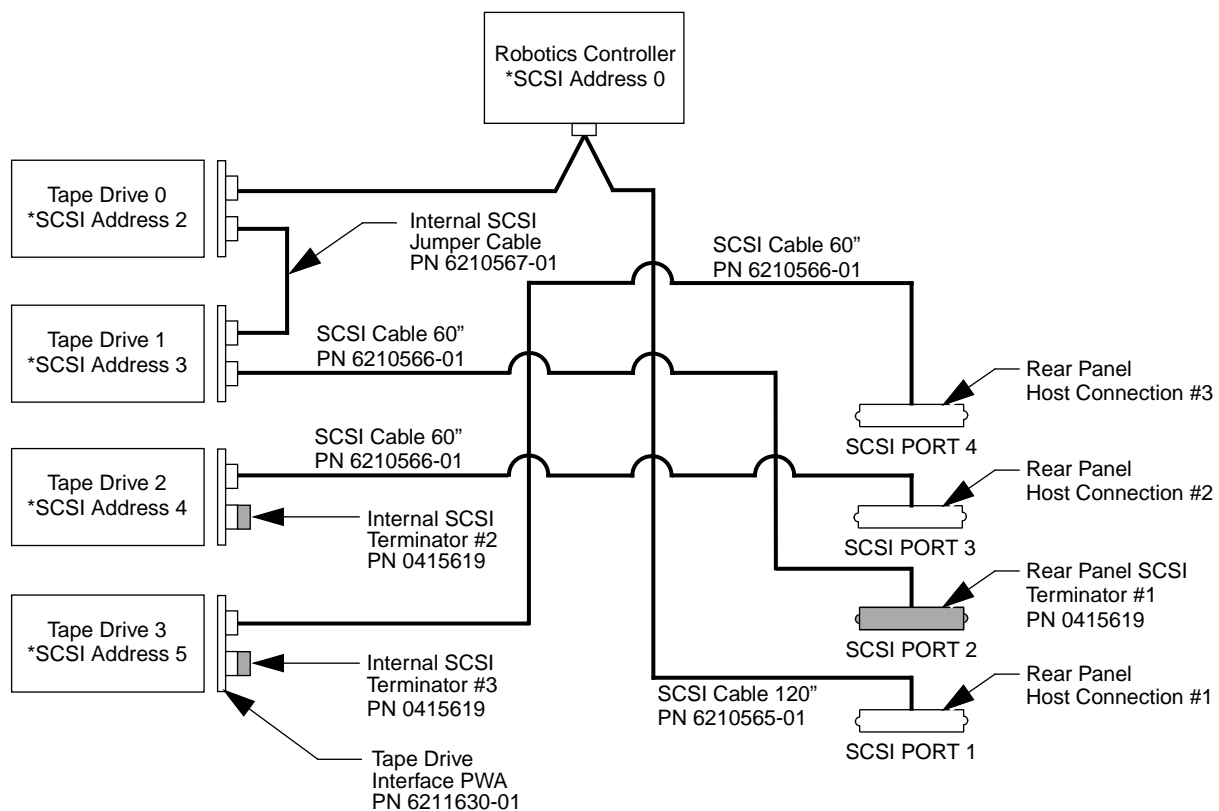
Figure B-2: Single-Wire SCSI Configuration
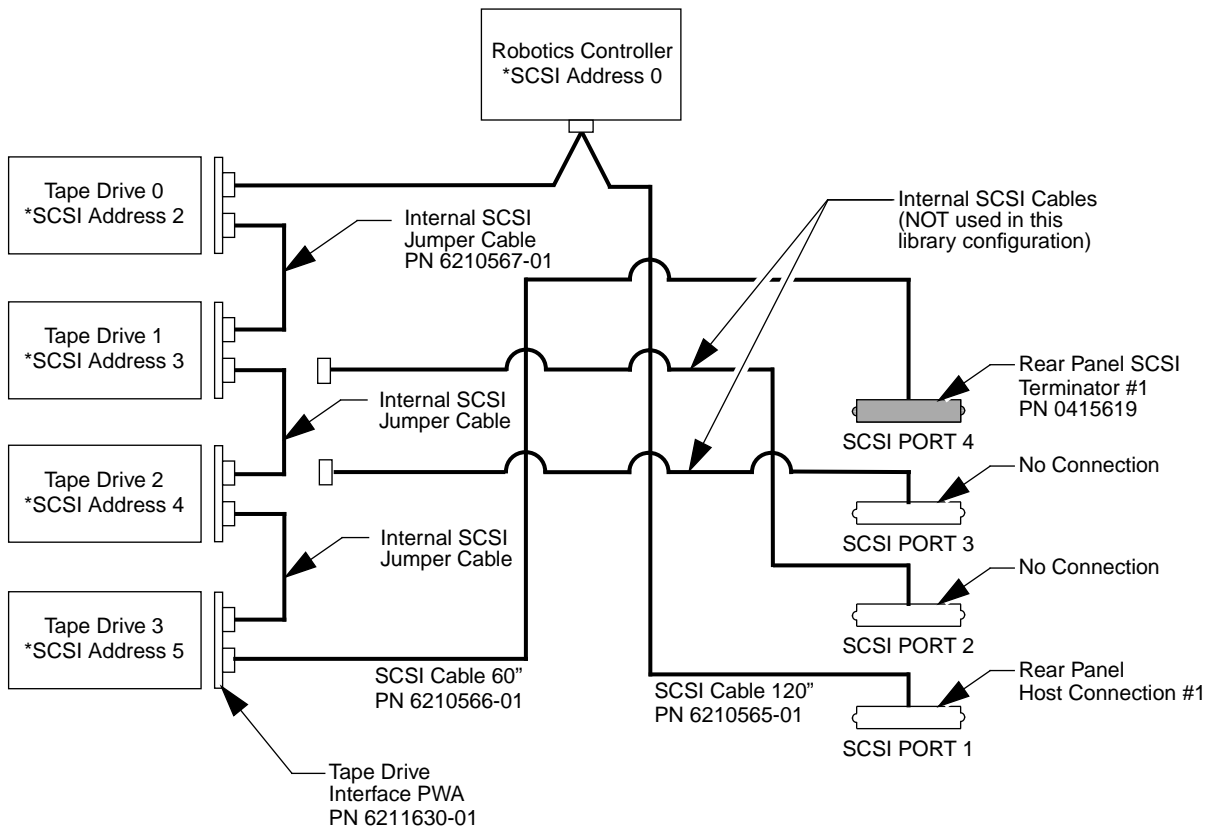
* - Indicates the "default" SCSI ID of the installed devices

Two-Wire SCSI Configuration

This configuration of the TL81X/TL894 library connects the robotics controller, Drive 0, and Drive 1 on one SCSI bus. The second SCSI bus is configured for Drive 2 and Drive 3. The first bus from the host controller connects to the rear panel connector labeled SCSI PORT 1 on the back of the unit and externally terminates at the connection labeled SCSI PORT 2. The second SCSI bus from the host connects to the connector labeled SCSI PORT 3 and externally terminates at the rear panel connector labeled SCSI PORT 4.

Note *This is the default configuration of the TL810 library. The external SCSI terminators are provided in the library accessories kit and must be installed when the library is installed.*

Figure B-3: Two-Wire
SCSI Configuration
(Default for the TL810)
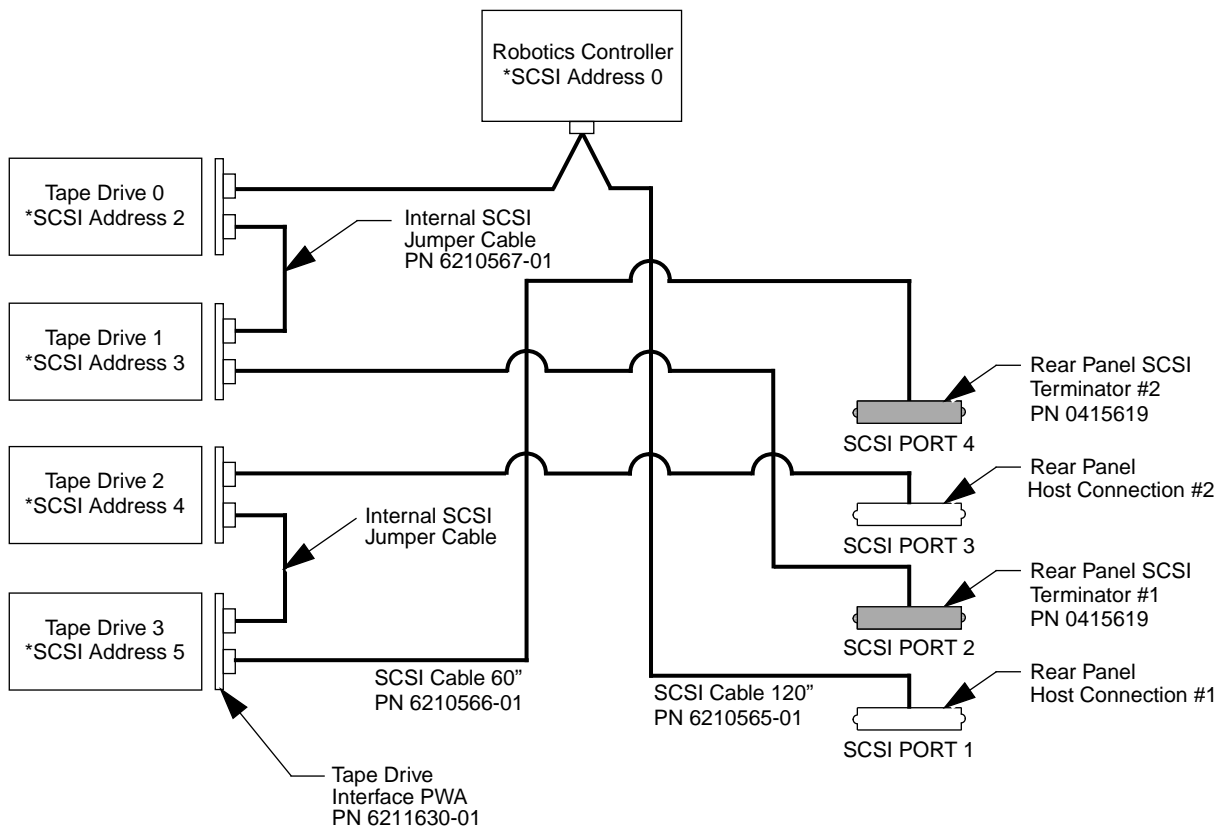
* - Indicates the "default" SCSI ID of the installed devices

Three-Wire SCSI Configuration

This configuration of the TL81X/TL894 library connects the robotics controller, Drive 0, and Drive 1 on the first SCSI bus from the host controller and Drive 2 and Drive 3 are individually connected to separate SCSI busses to the host. The first bus from the host connects to the rear panel connector labeled SCSI PORT 1 and terminates at the rear panel connector labeled SCSI PORT 2. The second bus from host controller connects to the connector labeled SCSI PORT 3 and terminates internally at the drive interface PWA for Drive 2. The third bus from the host controller connects to the connector labeled SCSI PORT 4 and terminates internally at the drive interface PWA for Drive 3.

Note *This configuration requires one additional SCSI terminator. The TL810 accessories kit includes two terminators. The TL812 and TL894 libraries are shipped with a terminator installed on each tape drive interface board.*

Figure B-4: Three-Wire
SCSI Configuration

* - Indicates the "default" SCSI ID of the installed devices

Four-Wire SCSI Configuration

This configuration of the TL81X/TL894 library connects the robotics controller and Drive 0 on one SCSI bus from the host controller. The remaining drives in the system are individually connected to separate SCSI busses to the host. The first bus from the host connects to the rear panel connector labeled SCSI PORT 1 and terminates internally at the drive interface PWA for Drive 0**.** The second bus from host controller connects to the rear panel connector labeled SCSI PORT 2 and terminates internally at the drive interface PWA for Drive 1. The third bus from the host controller connects to the connector labeled SCSI PORT 3 and terminates internally at the drive interface PWA for Drive 2. The fourth bus from the host controller connects to the connector labeled SCSI PORT 4 and terminates internally at the drive interface PWA for Drive 3. Refer to Figure B-5 below.

Note   ***This is the default configuration for the TL812 and TL894 libraries. The TL810 accessories kit includes two extra terminators that are required for the four-wire configuration.***

Figure B-5: Four-Wire Configuration (Default for the TL812 & TL894)
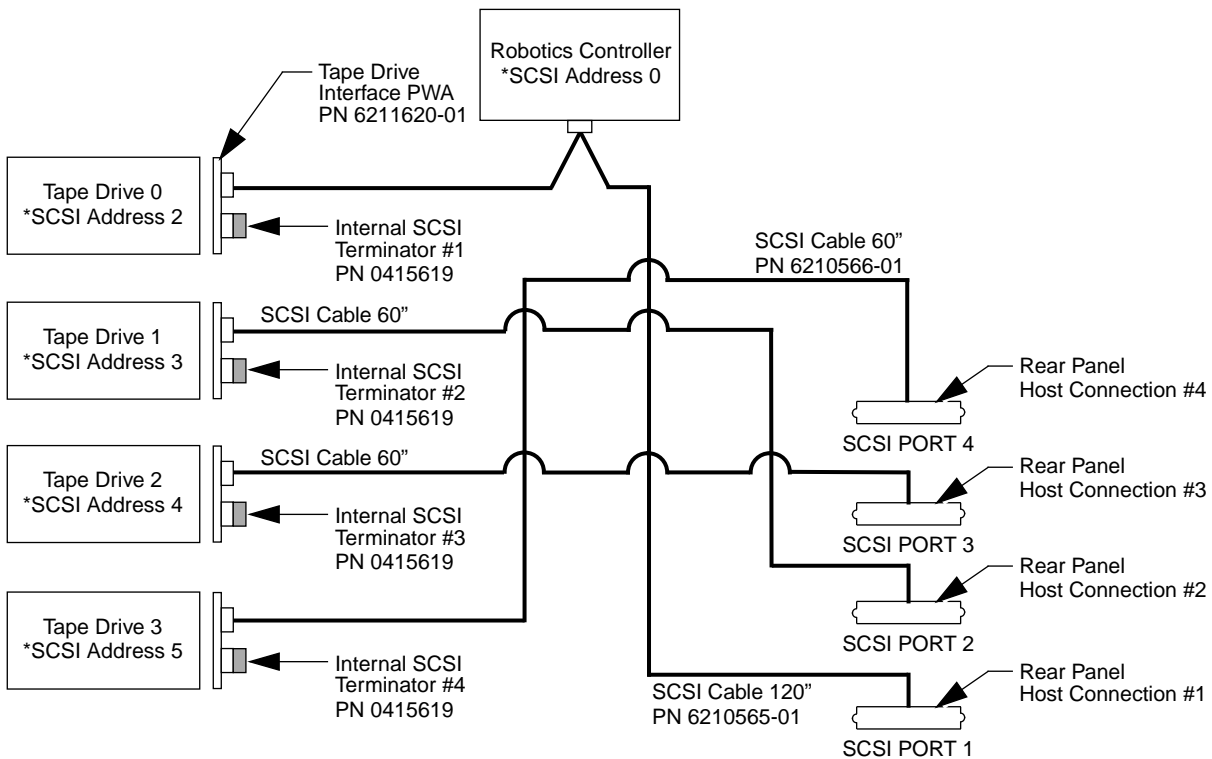
* - Indicates the "default" SCSI ID of the installed devices

Glossary

TL810 library	The automated storage and retrieval component of an automated tape library system used for storing and handling DLT™ cartridges. TZ87N tape drives 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 tape drives are used with the TL812 tape library.
TL894 library	The automated storage and retrieval component of an automated tape library system used for storing and handling DLT™ cartridges. TZ89N tape drives are used with the TL894 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™ cartridges.
bar code label	The identification label on DLT™ cartridges.
bar code scanner	A device that is mounted on the extension axis that reads the cartridge bar code labels.
calibration	The software measurements and configuration required for successful operation of the library.
control panel	The panel on the front of the library that contains the Status Display Area, as well as indicators and control switches.
DLT™	Digital Linear Tape
EIA/TIA-574	A serial communications cabling and protocol standard for nine-pin connectors, sometimes referred to as RS-232.
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.

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 component of the library that allows cartridges to be loaded and unloaded.
MSBF	Mean Swaps Between Failures
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NVRAM	Non-Volatile RAM
on-line	Ready for communications with a host.
off-line	System is not available for communications to 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 power switch 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
tape drive	The mechanism that reads and writes data from and to a tape.
UL	Underwriters Laboratories

vertical belt	The drive belt connecting the vertical motor to the vertical axis assembly.
vertical carriage assembly	The crossbar and linear bearings mounted on the vertical rails and all components mounted on the crossbar.
ZIF connector	Zero Insertion Force connector

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