

DEC 4000 AXP

Options Guide

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Update 2 (TIMA only), September 1993
Update 3 (TIMA only), January 1993

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S2390

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Preface

This guide provides reference, configuration, and maintenance information for options supported by DEC 4000 AXP systems.

Intended Audience

This document is intended for Digital service representatives and qualified self-maintenance customers.

Organization

This guide contains an alphabetical listing of all DEC 4000 AXP system-bus modules, storage options, and Futurebus+ modules. Information on configuration is included where applicable.

- Page xiii contains a quick reference table to all system-bus modules and options supported by DEC 4000 systems.
- The last section of the book contains storage tray information.
- The option sections are arranged alphabetically, and each section starts on page 1.
- Each section contains (when applicable):
 - Overview information
 - Product and accessory part numbers
 - Documentation part numbers
 - Indicator light summaries
 - Labeled illustrations of the option
 - Option configuration information
 - Option handling information

Updates

This document is periodically updated for TIMA. The following information has been added or changed for update 3 (January 1994):

- TZ87
- RZ26L hard disk drive uses the documentation for the RZ-Series

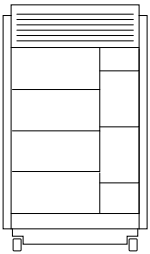
Conventions

This book uses the following conventions.

Convention	Meaning
RZxx	The letters RZxx indicate any RZ series SCSI disk.
Tx	The letters Tx indicate a TK, TZ, or TF tape device.
Caution	Provides information to prevent damage to equipment or software.
Note	Provides general information about the current topic.

System Drawing

In some illustrations, small drawings of the DEC 4000 AXP system appear in the left margin. Shaded areas help you locate components on the front or back of the system. A sample drawing is shown below.



Ordering

Use the *System and Options Catalog* for information about ordering options.

Errors

Use platform-specific tools to examine errors.

Caution

Static electricity can damage integrated circuits. An antistatic wrist strap (12-36175-01) is packaged in the DEC 4000 AXP accessories envelope. Wear the antistatic strap when you work with internal parts of a system or option.

List of Options

The following table lists all options supported by DEC 4000 AXP systems and lists some device characteristics.

System-Bus Module	CPU Speed	CPU Cache	Transfer Rate	Memory Capacity	I/O Speed
B2001-BA (CPU)	160 MHz	1 MB	—	—	—
B2012-AA (CPU)	190 MHz	4 MB	—	—	—
B2002-CA (Mem)	—	—	—	64 MB	—
B2002-DA (Mem)	—	—	—	128 MB	—
B2101-AA (I/O)	—	—	160 MB	—	DSSI 5 MB/s Std. SCSI 5 MB/s.
B2101-BA (I/O)	—	—	160 MB	—	Fast SCSI 10 MB/s Std. SCSI 5 MB/s.

Futurebus+ Module	FDDI Speed	Processor Capacity	Flash EEPROM
B2006 (FDDI)	50 MHz	68 K	256 Kword

Storage Option	Capacity	Form Factor	Seek Time	Transfer Rate	Interface
RF35	852 MB	3 1/2 in	9.5 ms	4 MB/s	DSSI
RF36	1600 MB	3 1/2 in	9.7 ms	3.13 MB/s– 6.25 MB/s	DSSI
RF73	2.0 GB	5 1/4 in	12.9 ms	2.2 MB/s	DSSI
RF74	3.5 GB	5 1/4 in	12.5 ms	4.6 MB/s– 6.95 MB/s	DSSI
RRD42	600 MB	5 1/4 in	300 ms	150 KB/s	SCSI
RZ26	1.0 GB	3 1/2 in	9.5 ms	3.3 MB/s	Fast SCSI/ SCSI
RZ28	2.1 GB	3 1/2 in	9.7 ms	4.9 MB/s	Fast SCSI/ SCSI
RZ73	2.0 GB	5 1/4 in	12 ms	2.2 MB/s	SCSI
RZ74	3.5 GB	5 1/4 in	12 ms	4.6 MB/s– 6.95 MB/s	SCSI
TKZ09	4944 MB	—	—	5 MB/s	SCSI
TLZ06	4.0 GB	5 1/4 in	—	366 KB/s	SCSI
TLZ6L	16.0 GB	—	—	366 KB/s	SCSI
TSZ07	160 MB	—	—	4.0 MB/s	SCSI
TZ30	95 MB	5 1/4 in	—	1.5 MB/s	SCSI
TZ85	2.6 GB	5 1/4 in	—	800 KB/s	SCSI
TZ86	6.0 GB	5 1/4 in	—	800 KB/s	SCSI
TZ87	10.0 GB	5 1/4 in	—	1.25 MB/s	SCSI
TZ857	18.2 GB	—	—	800 KB/s	SCSI
TZ867	42.0 GB	—	—	800 KB/s	SCSI

FDDI Futurebus+ Controller

B2006 Overview

Description	FDDI to Futurebus+ Profile B adapter
Voltage	+5 V
Current	(SAS) 6.3 A and (DAS) 7.0 A
Temperature	10°C (50°F)–45°C (115°F) (operational)
Relative Humidity	10%–90% (operational)
Power	6.3 A = 31.5 W and 7.0 A = 35 W

Module Order Number

B2006-AA	DEFAA-AA — One FDDI module with single attachment station (SAS) controller with multimode optics for one ANSI MIC connector (port 1)
B2006-DA	DEFAA-DA — One FDDI module with dual attachment station (DAS) controller with multimode optics for two ANSI MIC connectors.
B2006-YA	DEFAA-YA — One FDDI module with no connectors installed. Add the single-mode physical media dependent (PMD) card to this module.

Physical Media Dependent (PMD)

Order Number

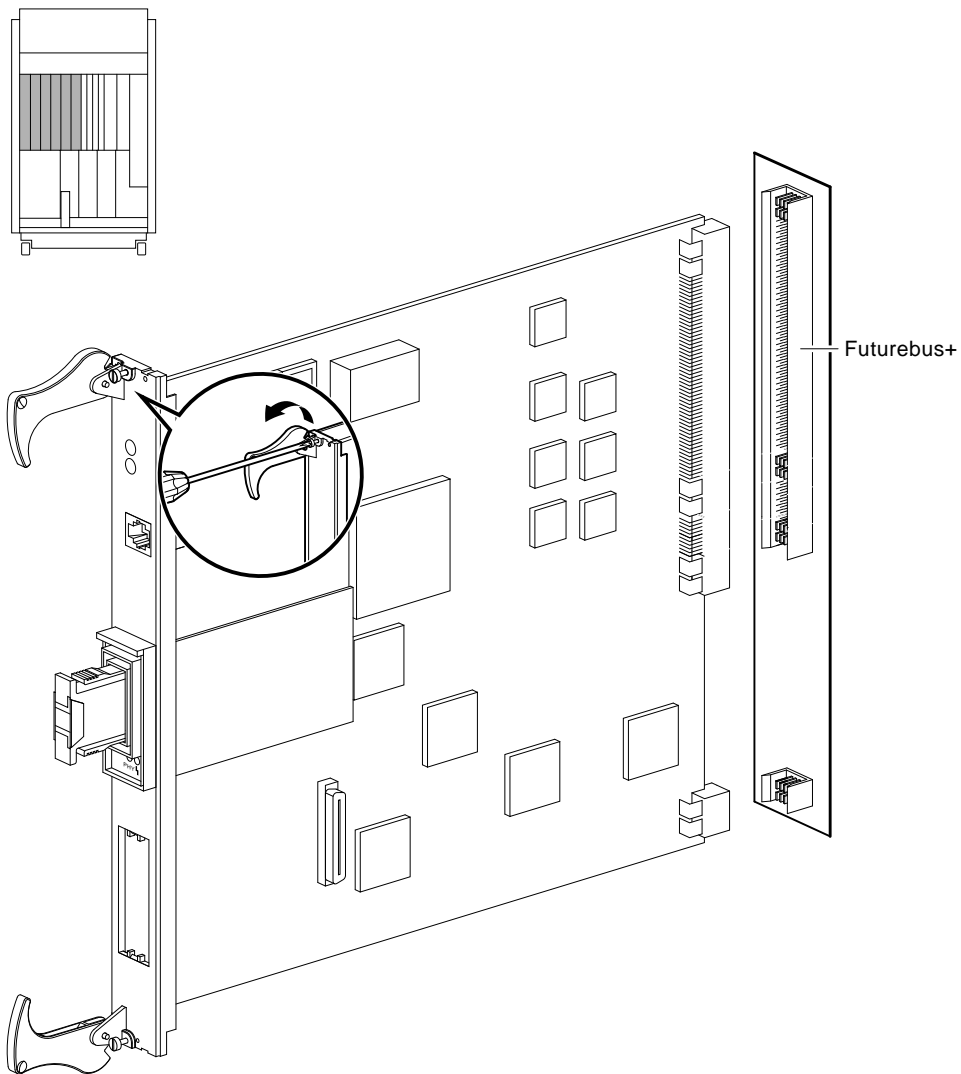
Multimode PMD card	DEFXM-AA
Single-mode PMD card	DEFXS-AA

Documentation

<i>DEC FDDI controller /Futurebus+</i>	EK-DEFAA-IN
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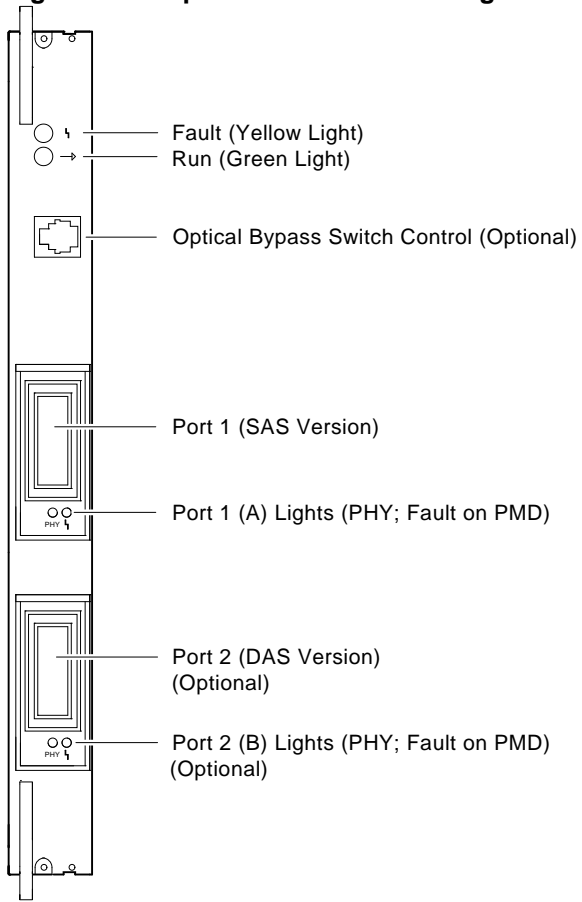
B2006

Figure 1 FDDI Futurebus+ Adapter Module



MLO-010624

Figure 2 Adapter Connectors and Lights



Key: PHY (Physical Layer)
PMD (Physical Media Dependent)
MLO-010874

B2006

FDDI Light Summary

Table 1 Controller Fault and Run Light Summary

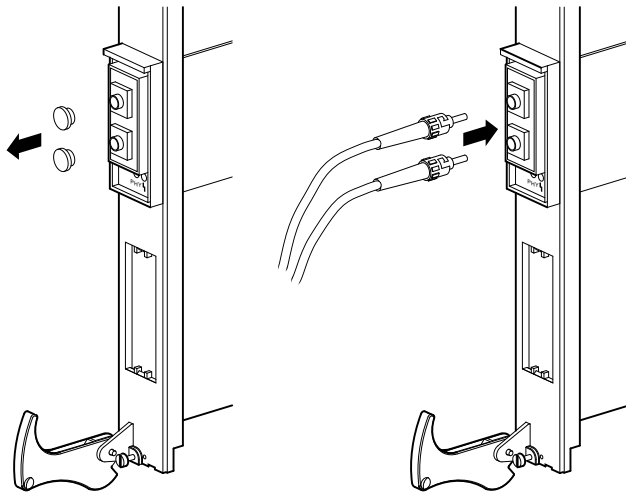
Run Light Green	Fault Light Yellow	State Description	Correction
Off	Off	Power not on.	Check cable connections.
On	On	Soft reset by driver.	None
On	Off	Normal operation.	None
Off	On	A problem exists with the controller.	Rerun self-test.

Table 2 PMD PHY Light Displays (After System Boot)

PHY Light State	State Description	Correction
Off	Port not available.	None
On (Yellow)	Broken port or LCT ¹ failure	Run self-test.
On (Green)	PMD is working properly.	None Connection established.
On (Blinks Yellow)	Illegal topology.	Cables not installed correctly.
On (Blinks Green)	Connection in progress or link available but cannot make a connection.	Wait for connection. Check cable connections. Port not being used.

¹Link Confidence Test

Figure 3 Connecting FDDI Single-Mode Cables



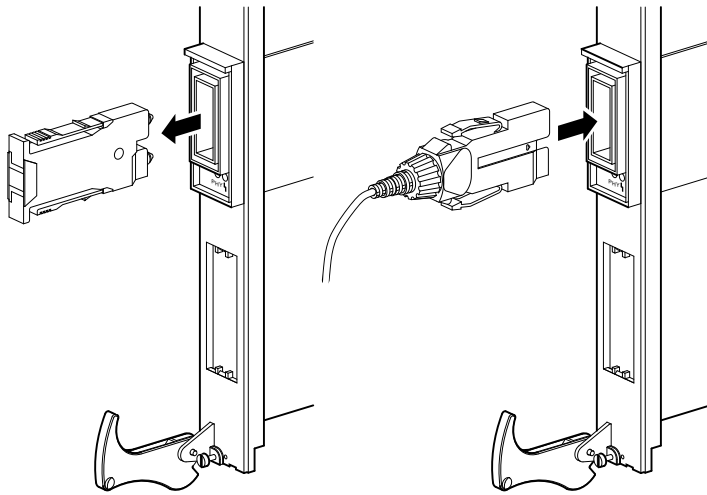
1 Unscrew and remove the two protective caps.

2 Connect the fiber optic cables.

MLO-010881

B2006

Figure 4 Connecting FDDI Multimode Cables



1 Remove protective dust cap.

2 Insert the FDDI cable.

MLO-010882

B2001 CPU Module

B2001 Overview

Description	The DEC 4000 AXP CPU is based on the DECchip 21064 microprocessor, a CMOS-4 superscalar, superpipelined implementation of the Alpha AXP architecture. DEC 4000 backup-cache is a 1-MB direct-mapping physical write-back cache. The CPU supports the “snooping” protocol to allow for a dual-processor implementation.
Voltage	+5 V and +3.3 V
Current	+5 V: 8.5 A and +3.3 V: 13.5 A
Clock Speed	160 MHZ
Temperature	5°C (41°F)–35°C (98°F) (operational)
Relative humidity	10%–90%
Power	44.5 W (max)

Order number

B2001-AA CPU Module	KN430-BA
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Documentation

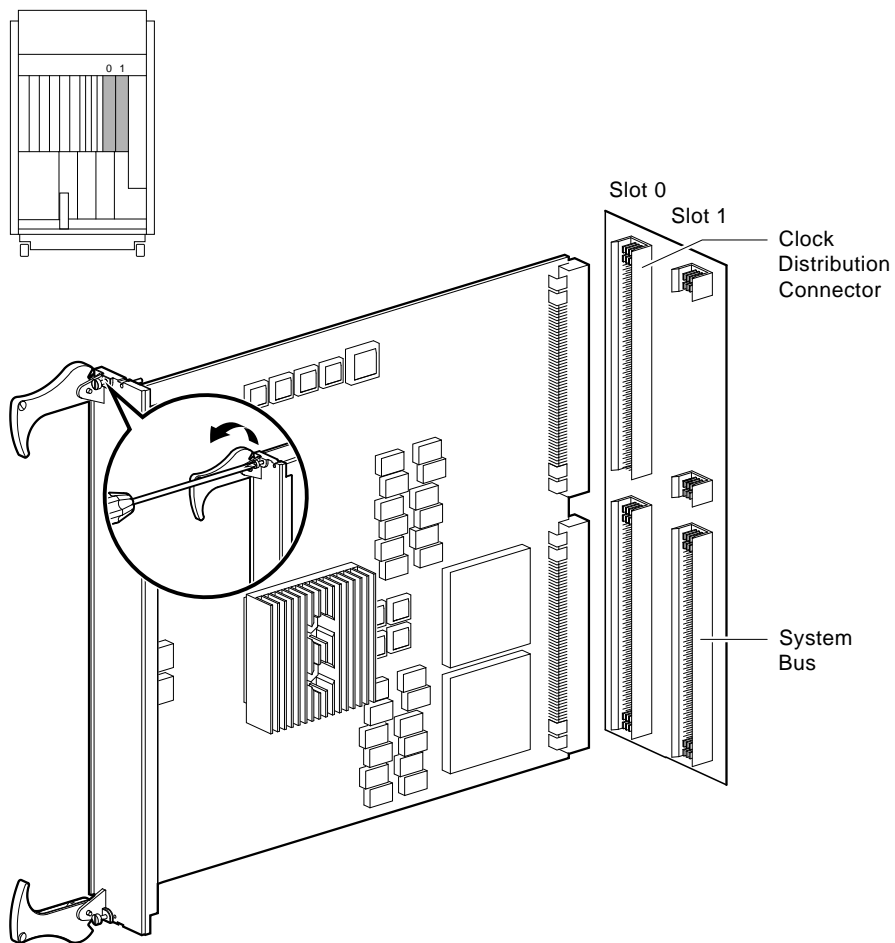
<i>DEC 4000 AXP Technical Manual</i>	EK-KN430-TM
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Note

If you upgrade to a dual-processor system, both CPUs must have an identical clock speed rating.

B2001

Figure 1 B2001 CPU Module



1 Insert first CPU into slot 0.

2 For SMP (symmetric multiprocessing) insert second CPU into slot 1.

MLO-010880

B2012 CPU Module

B2012 Overview

Description	The DEC 4000 AXP CPU is based on the DECchip 21064 microprocessor, a CMOS-4 superscalar, superpipelined implementation of the Alpha AXP architecture. DEC 4000 backup cache is a 4-MB direct-mapping physical write-back cache. The CPU supports the “snooping” protocol to allow for a dual-processor implementation.
Voltage	+5 V and +3.3 V
Current	+5 V: 13 A and +3.3 V: 14.5 A
Clock Speed	190 MHZ
Temperature	5°C (41°F)–35°C (98°F) (operational)
Relative humidity	10%–90%
Power	47.8 W (max)

Order number

B2012 CPU module	KN431-AA
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Documentation

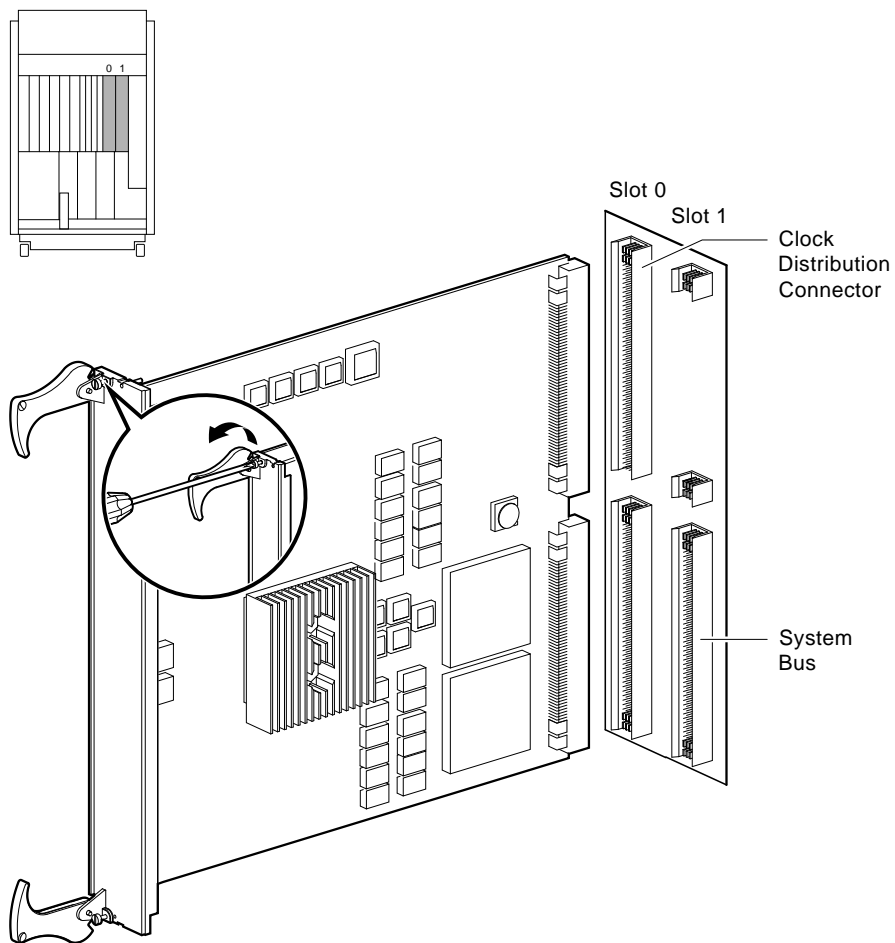
<i>DEC 4000 AXP Technical Manual</i>	EK-KN430-TM
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Note

If you upgrade to a dual-processor system, both CPUs must have an identical clock speed rating.

B2012

Figure 1 B2012 CPU Module



1 Insert first CPU into slot 0.

2 For SMP (symmetric multiprocessing) insert second CPU into slot 1.

MLO-010079

B2002 Memory Module

B2002 Overview

Description	Provides 64 MB–128 MB of high-performance memory
Voltage	+5 V
Current	+5 V: 2.99 A
Temperature	5°C (41°F)–35°C (98°F) (operational)
Relative humidity	10%–90%
Power	14.95 W (max)

Order Number

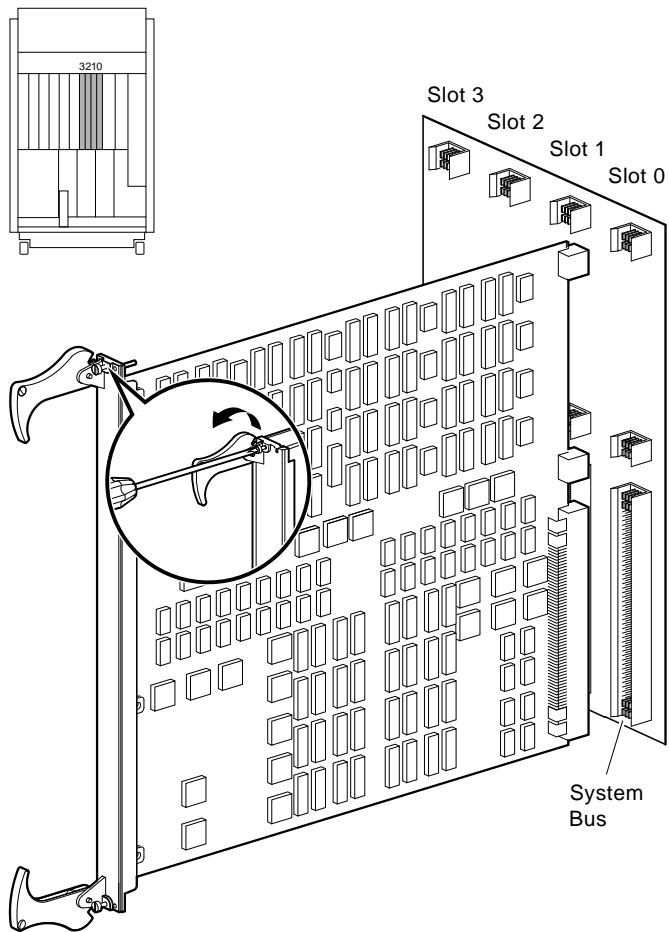
B2002–CA 64 MB memory module with 4-Mb DRAM	MS430–CA (field installed)
B2002–DA 128 MB memory module with 4-Mb DRAM	MS430–DA (field installed)

Documentation

<i>DEC 4000 AXP Technical Manual</i>	EK–KN430–TM
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B2002

Figure 1 B2002 Memory Module



- 1** Memory modules can be installed in any slot, however it is suggested to install them in incremental order, beginning with slot 0.

MLO-010875

B2013 NVRAM Module

Overview

Description	The 2-MB NVRAM module is an NFS server accelerator. It is a write cache for synchronous disk I/O on a server.
Voltage	+5 V (normal operation) and +3 V (battery backup)
Current (system power on)	+5 V: 6.5 ma
Current (system power off)	+3 V: 82.6 μ a @ 25°C
Recharge time	24 hours
Minimum data retention	14 days
Temperature	5°C (41°F)–35°C (98°F) (operational)
Relative humidity	10%–90%
Power	34 W

Order Number

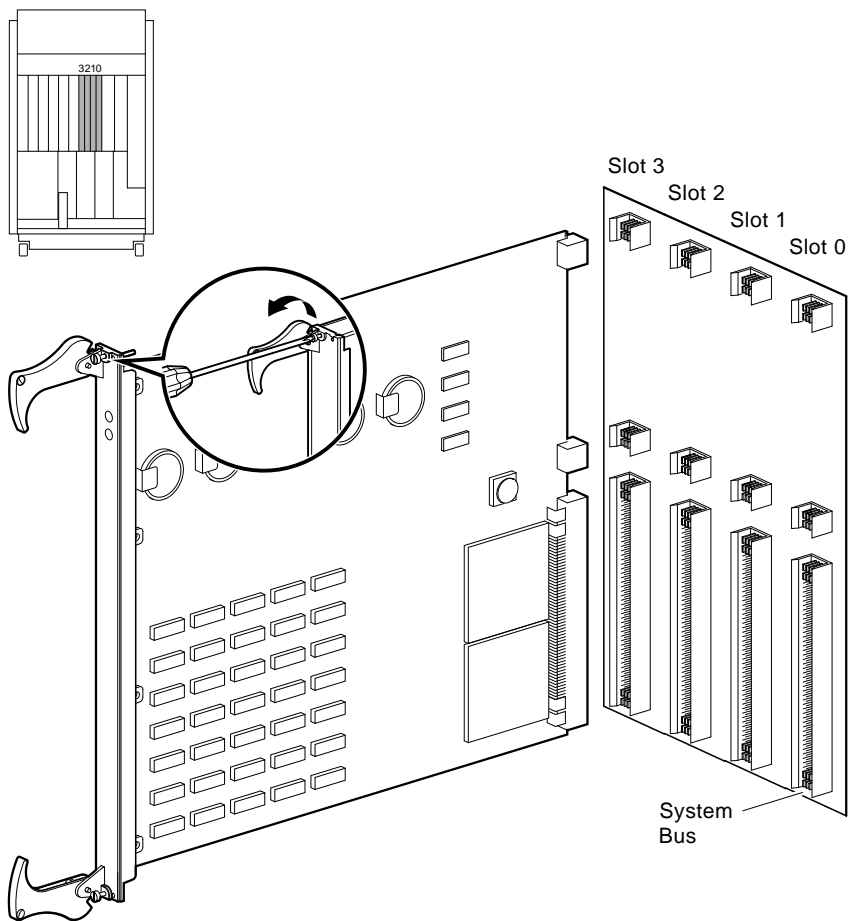
B2013 NVRAM module MS432 and software	MS432-AA (includes module and packaging) DJ-40APS-AA
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Documentation

DEC 4000 AXP Service Guide	EK-KN430-SV
DEC 4000 AXP Owner's Guide	EK-KN430-OP

B2013

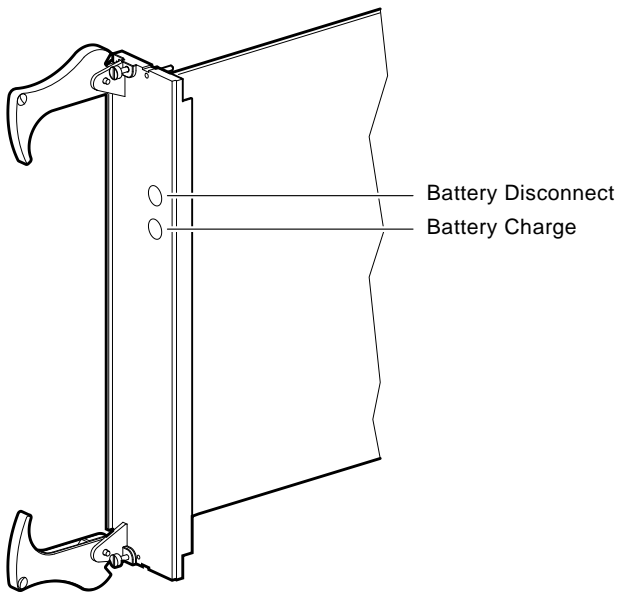
Figure 1 B2013 NVRAM Module Installation



- 1** Turn the system power off.
- 2** Install the NVRAM module into memory slot 3.
- 3** Turn the system power on.

MLO-010876

Figure 2 NVRAM Module Battery Lights



MLO-011982

Table 1 NVRAM Battery Lights

Light	On	Off
Battery disconnect	Disconnected	Connected
Battery charge	Charged	Not charged

B2013

Manipulating the NVRAM Disk Cache

The `prcache` command allows you to manipulate the NVRAM disk cache. The following are examples:

Check for Proper Installation

- Enter the `show memory` command to verify that the NVRAM module is installed and configured.

```
>>> show memory
```

Module	Size	Base Addr	Intlv Mode	Intlv Unit
0	64MB	00000000	1-Way	0
1		Not Installed		
2		Not Installed		
3	2MB	04000000	1-Way	NVRAM - not valid

Total Bad Pages 0

- Enter the `prcache` command to determine if the NVRAM disk cache is installed. In the following example, a system with NVRAM installed is displayed.

```
>>> prcache  
Disk Cache installed
```

- Use the `help prcache` command to view command options.

```
>>> help prcache
```

```
NAME  
prcache  
FUNCTION  
Manipulate an optional NVRAM disk cache.  
SYNOPSIS  
prcache [-Z] [-f] [-u]
```

- Use the `prcache -f` command to display the NVRAM status. The following is an example. Table 2 explains test status shown in the example.

```
>>> prcache -f
NVRAM Disk Cache: passed
Size: 2MB
Base Address: 04000000
System ID: cccccc0
State: - not valid
Battery Status: good
Battery Disconnect Circuit Status: enabled
```

Table 2 Test Status Descriptions

Test Status	Description
NVRAM Disk Cache:	Power-up diagnostic state
Size:	Size of NVRAM disk cache
Base Address:	Base address of NVRAM disk cache
System ID:	System serial number encrypted
State:	NVRAM data state
Battery Status:	Battery functionality status
Battery Disconnect Circuit Status:	Battery connection status

Optional Command Information

- Use the `prcache -u` command to enable the battery and the `prcache -f` command to determine the NVRAM status. An enabled battery will back up the disk cache if a power loss occurs. The operating system will enable the battery when the data is valid in the NVRAM disk cache.

```
>>> prcache -u
>>> prcache -f
NVRAM Disk Cache: passed
Size: 2MB
Base Address: 04000000
System ID: cccccc0
State: - not valid
Battery Status: good
Battery Disconnect Circuit Status: disabled
```

B2013

- Use the `prcache -z` command to clear the NVRAM disk cache and the `prcache -f` command to determine the NVRAM status. The following is an example.

Caution

Using the `prcache -z` command clears out existing NVRAM cache data. Clearing NVRAM data may cause a loss of disk data.

```
>>> prcache -z
This command will clear the NVRAM disk cache
Do you really want to continue [Y/N] ? : Y
clearing disk cache
>>> prcache -f
NVRAM Disk Cache: passed
Size: 2MB
Base Address: 04000000
System ID: ccccccd0
State: - not valid
Battery Status: good
Battery Disconnect Circuit Status: disabled
>>>
```

B2101 I/O Module

B2101 I/O Overview

Description	Contains complete I/O subsystem including Futurebus+, Ethernet interface, and five SCSI/DSSI channels
Voltage	+5 V and +12 V
Current	+5 V: 13.71 A and +12 V: 1.68 A
Temperature	5°C (41°F)–35°C (98°F) (operational)
Relative humidity	10%–90%
Power	68.6 W (max)

Order Number

B2101-AA I/O module DSSI/standard SCSI	KFA40-AA
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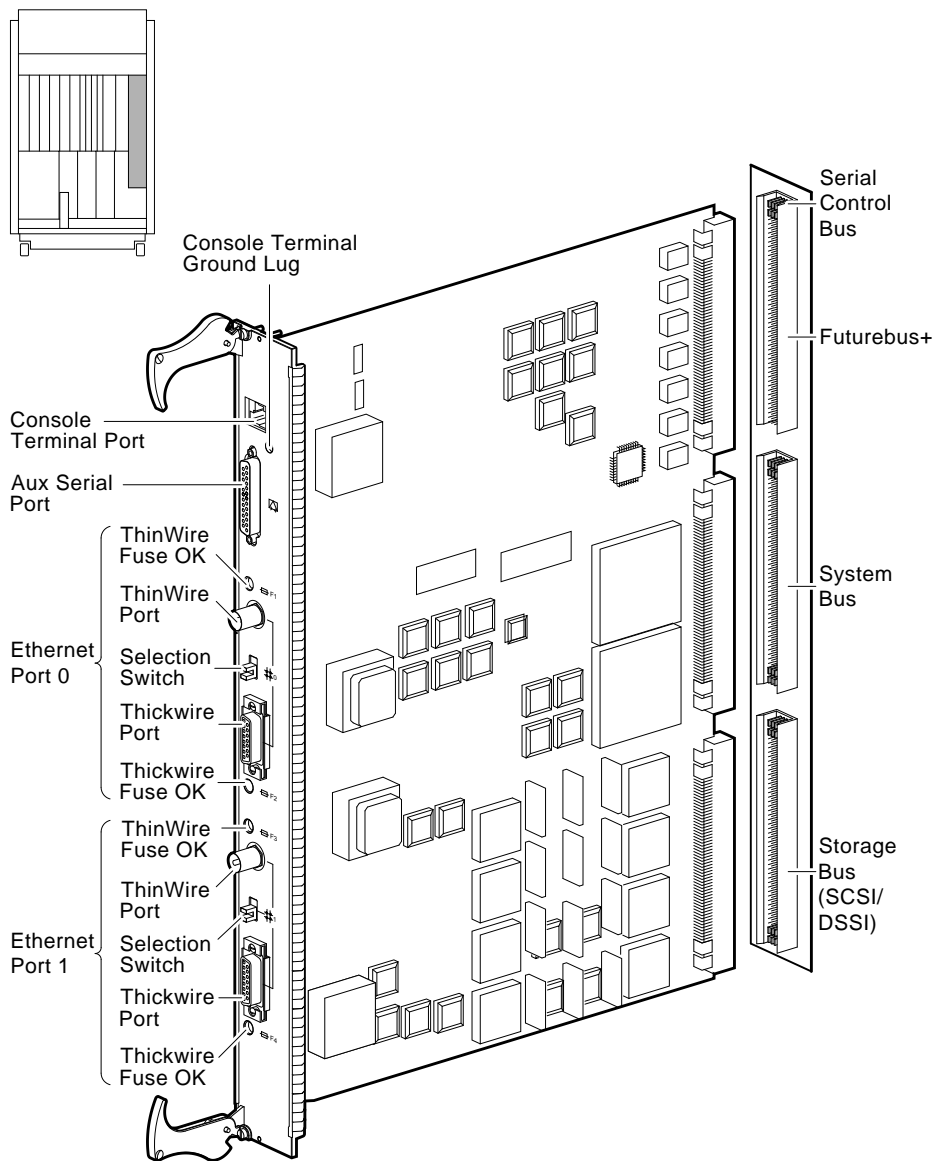
B2101-BA I/O module Fast SCSI/standard SCSI	KFA40-BA
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Documentation

<i>DEC 4000 AXP Technical Manual</i>	EK-KN430-TM
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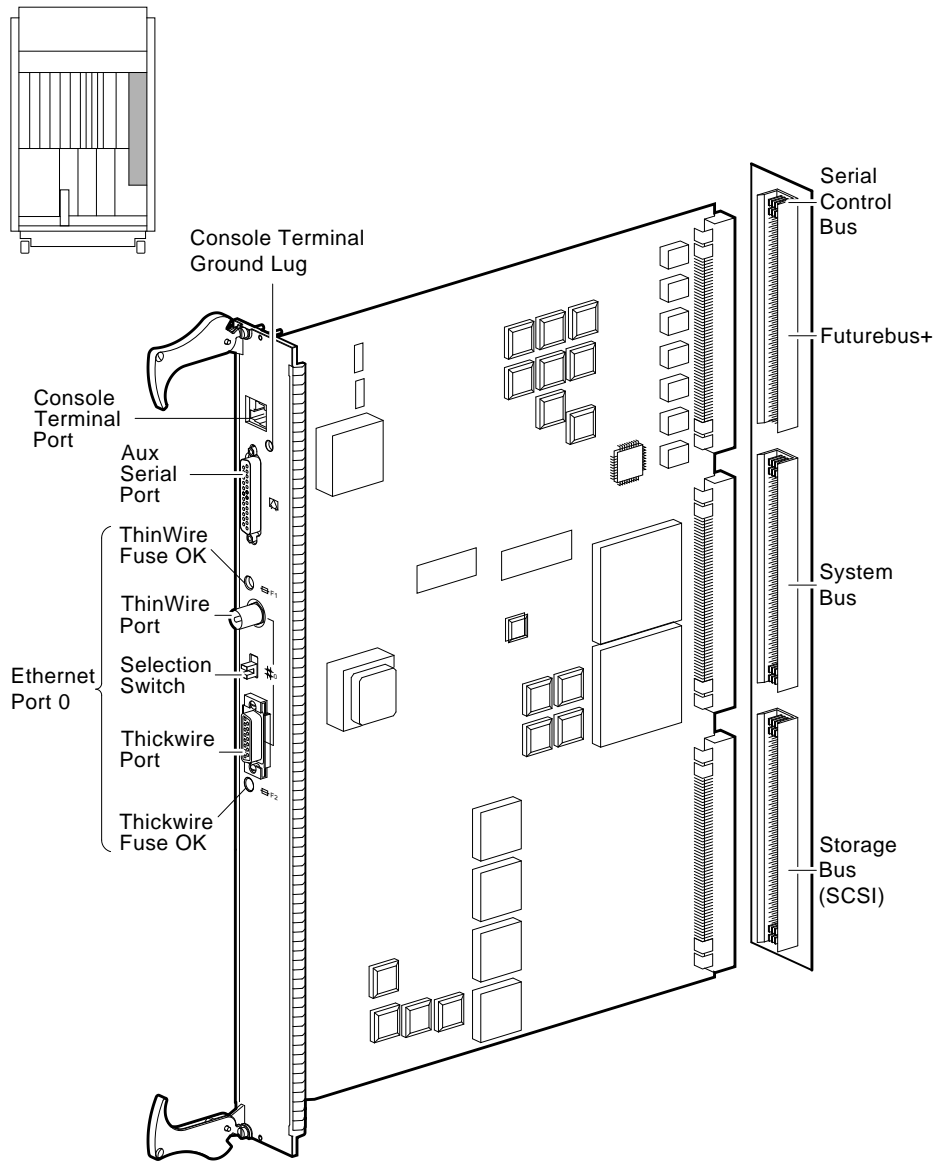
B2101

Figure 1 B2101-AA I/O Module



MLO-008229

Figure 2 B2101-BA I/O Module



MLO-008788

RF 3 1/2-Inch Disks

RF-Series 3 1/2-Inch Fixed Disks

RF35 Overview

Description	High-density fixed disk
Capacity	852 MB
Form factor	3 1/2 in
Seek time	9.5 ms
Transfer rate	4 MB/s
Rotational speed	5363
Temperature	10°C (50°F)–50°C (122°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%–90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: .85 A (max) and +12 V: 1.56 A (peak)
Power	13.8 W (continuous random seeks)

Add-On Option Part Number

RF35 fixed disk (3 1/2 in)	RF35–MY
----------------------------	---------

Field Service Orderable Parts and Options

FRU	RF35–EA (whole unit replacement)
-----	----------------------------------

RF 3 1/2-Inch Disks

Documentation

<i>RF Series User Guide</i>	EK-RF72D-UG
<i>DEC 4000 AXP</i>	EK-KN430-OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK-SFFIS-UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

RF 3 1/2-Inch Disks

RF36 Overview

Description	High-density fixed disk
Capacity	1600 MB
Form factor	3 1/2 in
Seek time	9.7 ms
Transfer rate	3.13 MB–6.25 MB
Rotational speed	5400
Temperature	10°C (50°F)–50°C (122°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%-90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: .86 A (max) and +12 V: 1.7 A (peak)
Power	14.88 W (continuous random seek)

Add-On Option Part Number

RF36 fixed disk (3 1/2 in)	RF36–MY
----------------------------	---------

Field Service Orderable Parts and Options

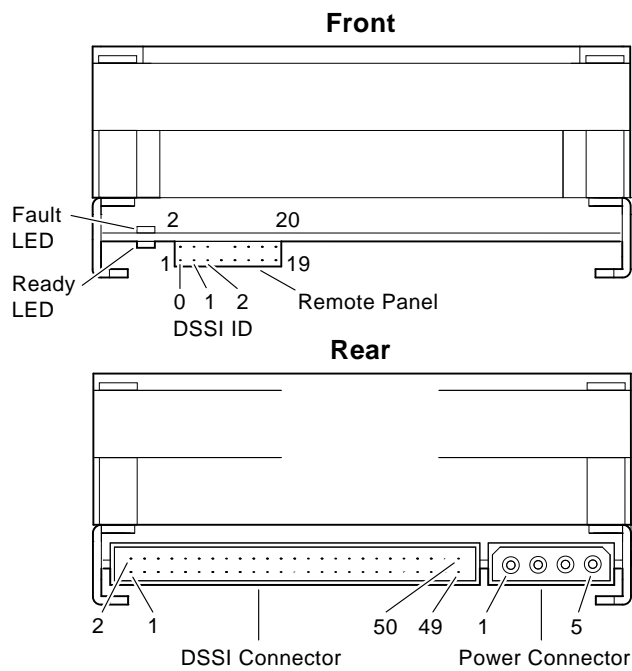
FRU	RF36–EA (whole unit replacement)
-----	----------------------------------

Documentation

<i>RF Series User Guide</i>	EK–RF72D–UG
<i>DEC 4000 AXP</i>	EK–KN430–OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK–SFFIS–UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

RF 3 1/2-Inch Disks

Figure 1 RF-Series 3 1/2-Inch Disk Drive



RF-Series ID Jumpers 0-2

ID SELECT Jumper Settings¹

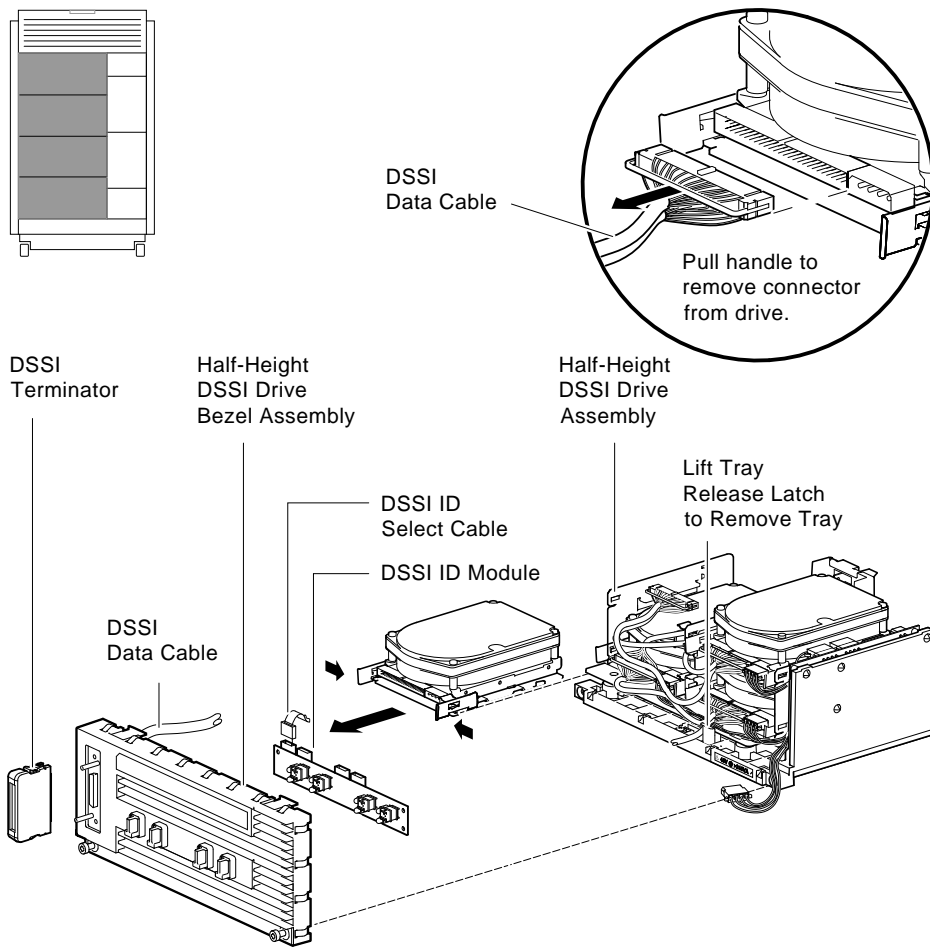
ID	0	1	2
0	Out	Out	Out
1	In	Out	Out
2	Out	In	Out
3	In	In	Out
4	Out	Out	In
5	In	Out	In
6	Out	In	In
7 ²	In	In	In

¹ In = inserted, Out = removed

² DSSI address 7 is normally assigned to a host adapter.

RF 3 1/2-Inch Disks

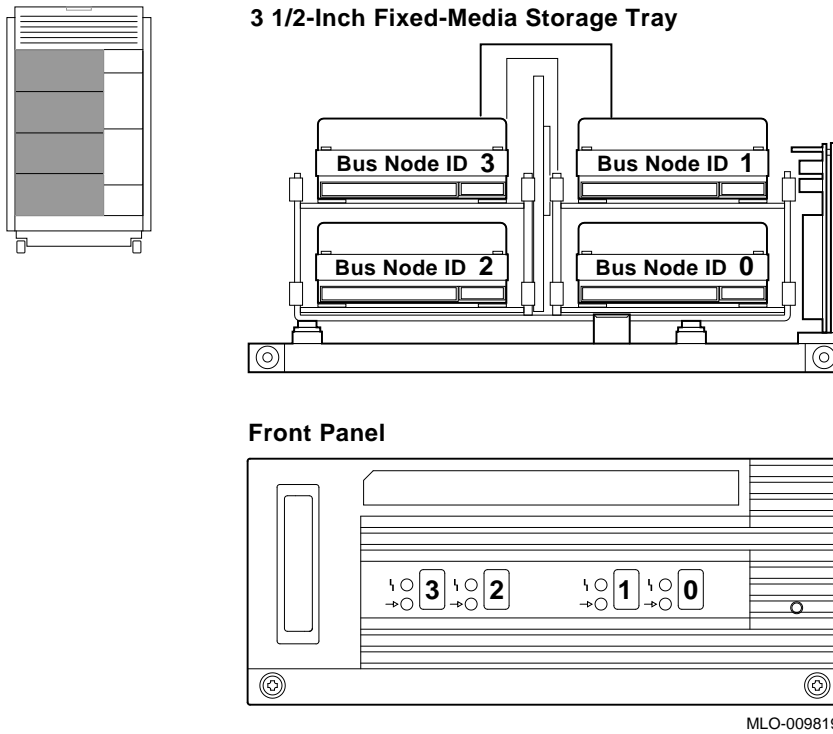
Figure 2 RF-Series 3 1/2-Inch Storage Assembly



MLO-009822

RF 3 1/2-Inch Disks

Figure 3 RF-Series 3 1/2-Inch Drive ID Selection



RF 5 1/4-Inch Disks

RF-Series 5 1/4-Inch Fixed Disks

RF73 Overview

Description	High-density fixed disk
Capacity	2.0 GB
Form factor	5 1/4 in
Seek time	12.9 ms
Transfer rate	2.2 MB/s
Rotational speed	3600 rpm
Temperature	10°C (50°F)–50°C (122°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%–90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: 1.2 A and +12 V: 1.2 A
Power	21.42 W (maximum)

Add-On Option Part Number

RF73 fixed disk (5 1/4 in)	RF73–MX
----------------------------	---------

Field Service Orderable Parts and Options

FRU	Two FRUs (drive module and mechanical assembly)
Drive module	54–19119–01
Mechanical assembly	70–28814–01

RF 5 1/4-Inch Disks

Documentation

<i>RF Series User Guide</i>	EK-RF72D-UG
<i>DEC 4000 AXP</i>	EK-KN430-OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK-SFFIS-UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

RF 5 1/4-Inch Disks

RF74 Overview

Description	High-density fixed disk (full-height)
Capacity	3.5 GB
Form factor	5 1/4 in
Seek time	12.5 ms
Transfer rate	4.6 MB–6.95 MB
Rotational speed	5400 rpm
Temperature	10°C (50°F)–50°C (122°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%–90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V:1.0 A and +12 V:2.5 A
Power	40.8 W (maximum)

Add-On Options

Part Number	
-------------	--

RF74 fixed disk (5 1/4 in)	RF74–MX
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Field Service Orderable Parts and Options

FRU	RF74–EA (whole unit replacement)
-----	----------------------------------

Documentation

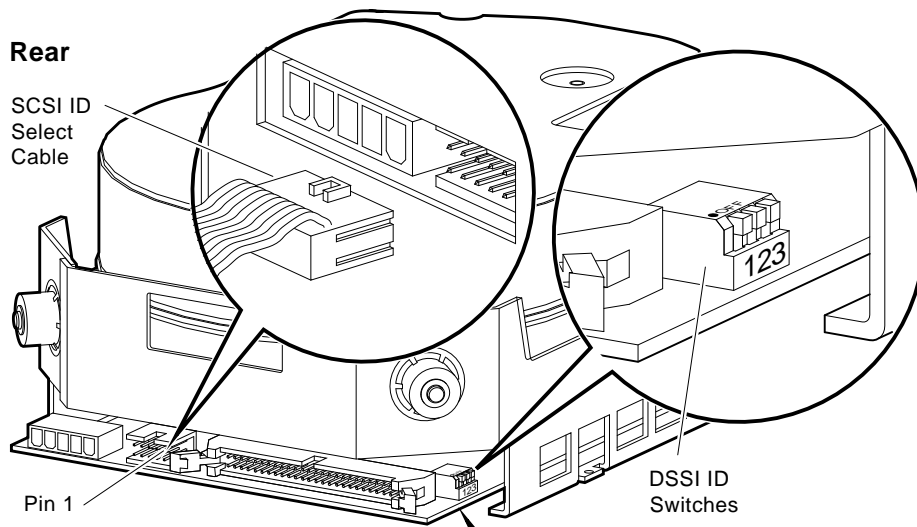
<i>RF Series User Guide</i>	EK–RF72D–UG
<i>DEC 4000 AXP</i>	EK–KN430–OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK–SFFIS–UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

Note

The DSSI ID select cable overrides the DSSI switches.

RF 5 1/4-Inch Disks

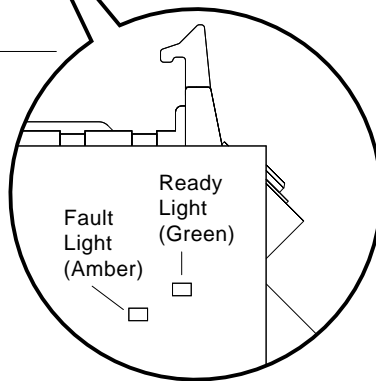
Figure 1 RF-Series Disk Drive



RF-Series DSSI ID Selection

DSSI ID Switch Settings¹

DSSI ID	1	2	3
0	Down	Down	Down
1	Down	Down	Up
2	Down	Up	Down
3	Down	Up	Up
4	Up	Down	Down
5	Up	Down	Up
6	Up	Up	Down
7	Up	Up	Up



Jumper 13 and 14

Down	Spin-up on power-up
Up	Spin-up on DSSI command

¹DSSI address 7 is normally assigned to a system adapter.

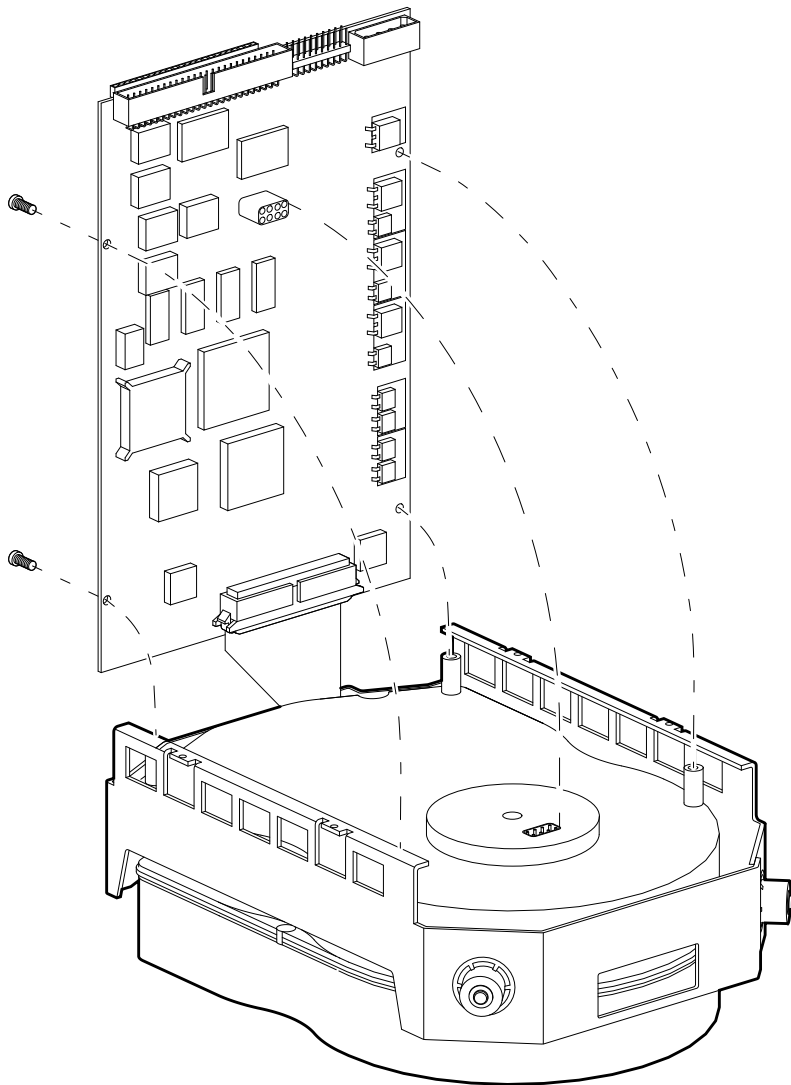
RF 5 1/4-Inch Disks

RF 5 1/4-Inch Disk Light Summary

Green	Amber	Condition
On	On	Drive is first powered up
Off	Off	POST has run successfully
On	Off	The read/write heads are on-cylinder and ready
Blinks	Off	Drive active
Off	On	Read/write or serious physical error is detected

RF 5 1/4-Inch Disks

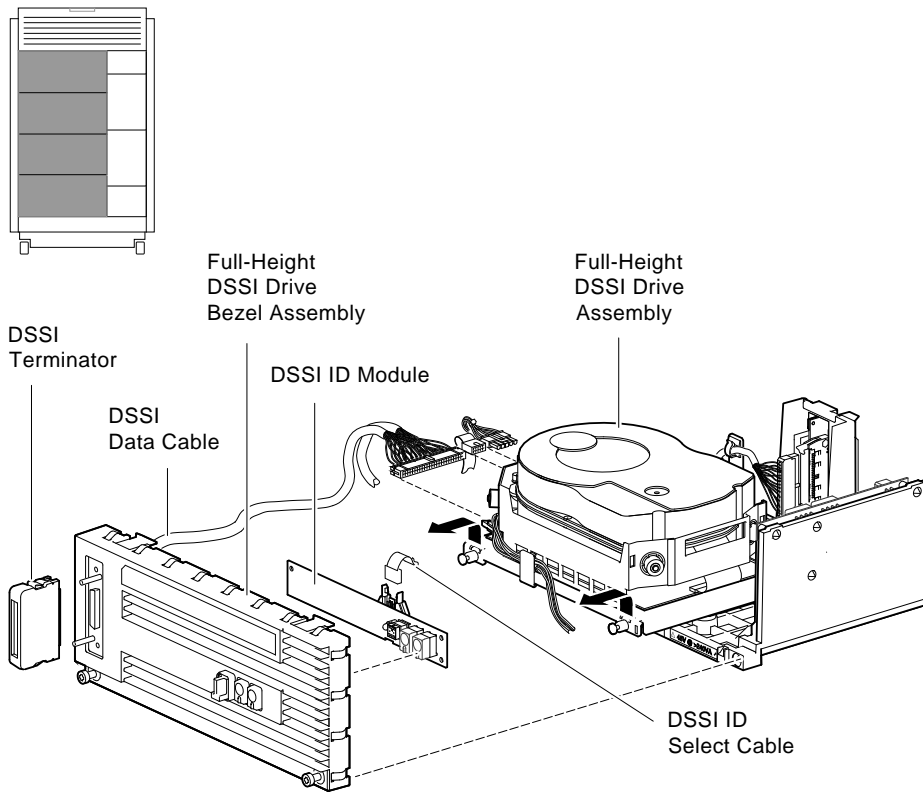
Figure 2 RF73 FRU



MLO-008214

RF 5 1/4-Inch Disks

Figure 3 RF-Series 5 1/4-Inch Storage Assembly



MLO-009816

RRD42 Disc Drive

RRD42 Overview

Description	Half-height optical compact disc (ROM)
Accessories	Audio playback/ audio line outputs/ headphone jack
Media	Removable 5 1/4-inch compact disc in self-loading caddy
Capacity	600 MB
Form factor	5 1/4 in
Seek time	300 ms
Transfer rate	150 KB
Rotational speed	Inner track = 530 rpm/Outer track = 200 rpm
Temperature	-30°C (-22°F)–55°C (131°F) (nonoperating)
Relative humidity	10%–90%
Voltage	+5 VDC \pm 5% and +12 VDC \pm 10%
Current	+5 V: 250 mA (except for the terminator power supply) +12 V: 800 mA at read/hold track, and 1500 mA at spin-up and seek (for 300 ms)
Power	18 W @ 12 V (maximum)

Add-On Option Part Number

RRD42 disc drive (embedded)	RRD42–MX (first device in removable-media slot)
RRD42 disc drive (embedded)	RRD42–MY (second device in removable-media slot)
RRD42 disc drive (tabletop)	RRD42–DA

RRD42

Field Service Orderable Parts and Options

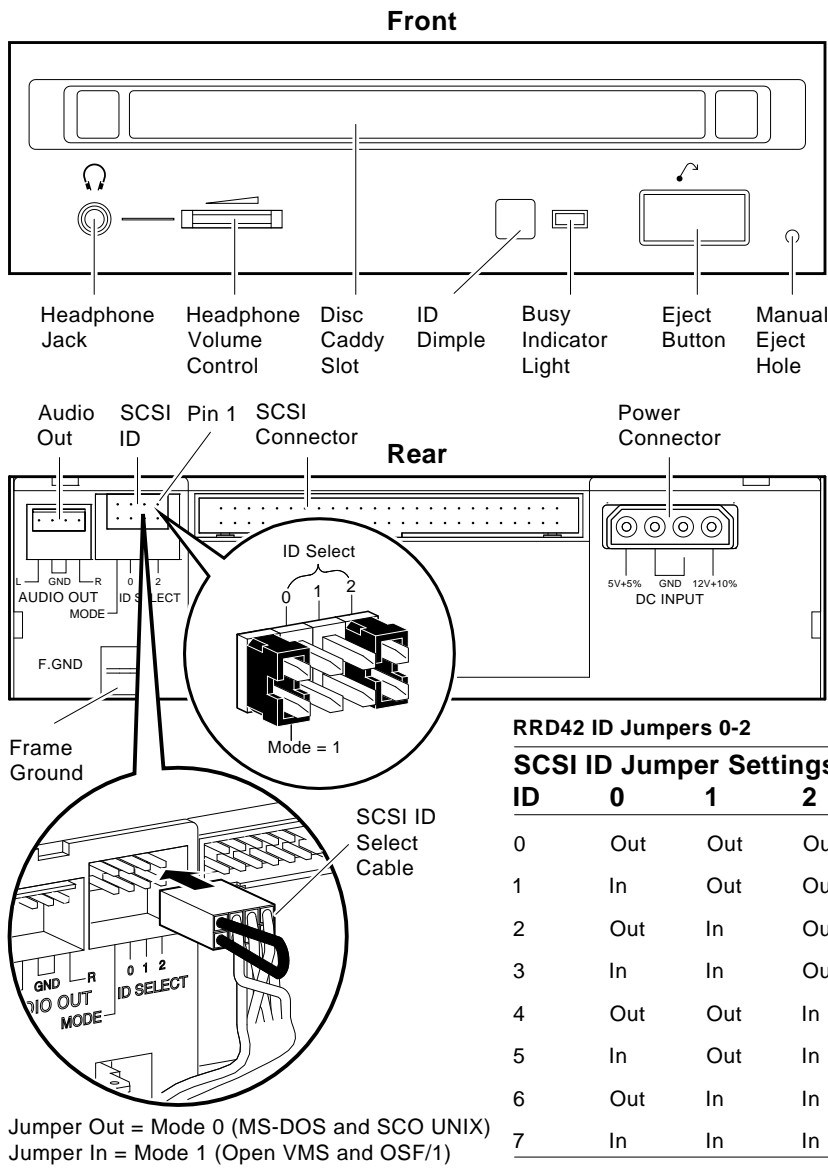
FRU	Whole unit replacement (RRD42-AA)
Disc caddy	30-34512-01 (600 MB)
Test disc	30-23507-03

Documentation

<i>RRD42 Disc Drive Owners Manual</i>	EK-RRD42-OM
<i>DEC 4000 AXP Owner's Guide (VMS Ops)</i>	EK-KN430-OP
<i>DEC OSF/1 AXP Factory Installed Software User Guide</i>	EK-SFFIS-UG

RRD42

Figure 1 RRD42 Disc Drive



MLO-007737

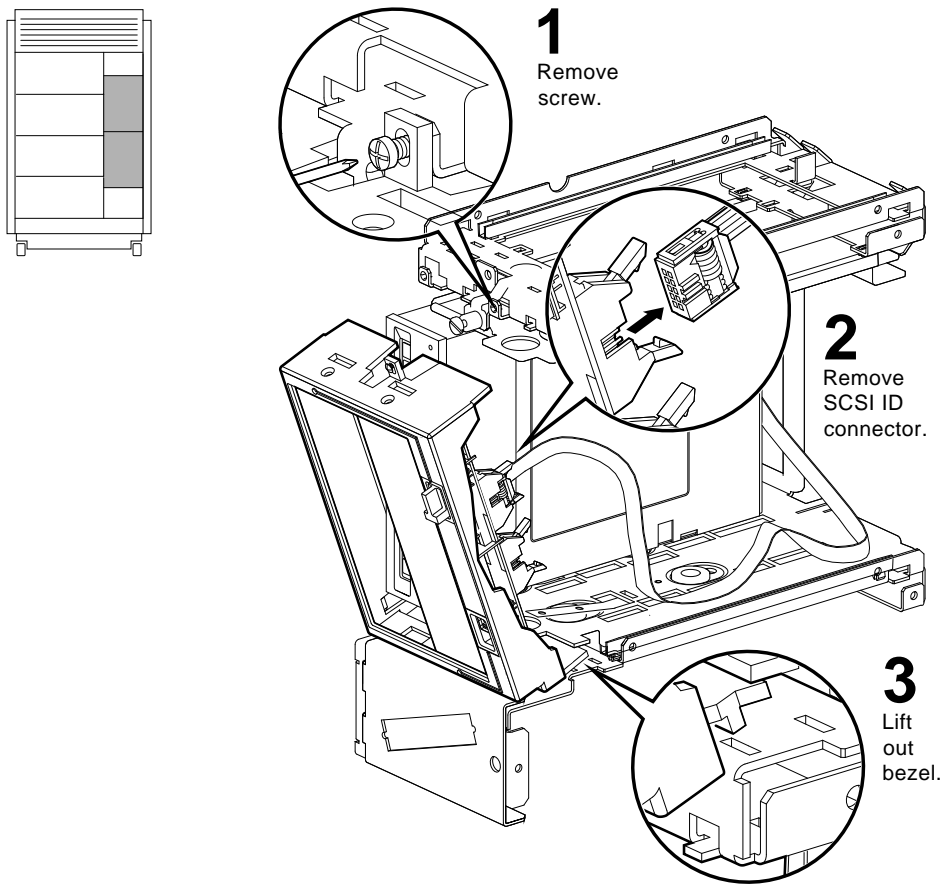
RRD42

Note

The SCSI ID select cable overrides the SCSI ID jumpers.

RRD42

Figure 2 RRD42 Assembly

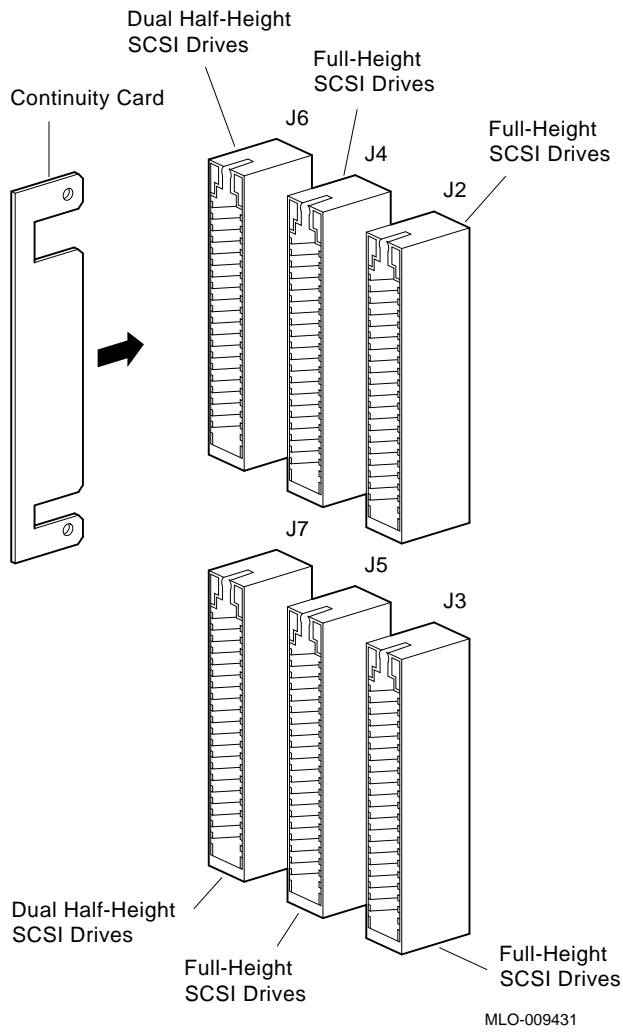


Note

When a removable-media compartment is empty, install blank bezels to maintain maximum air flow. See Storage Tray Information for part numbers and illustrations.

RRD42

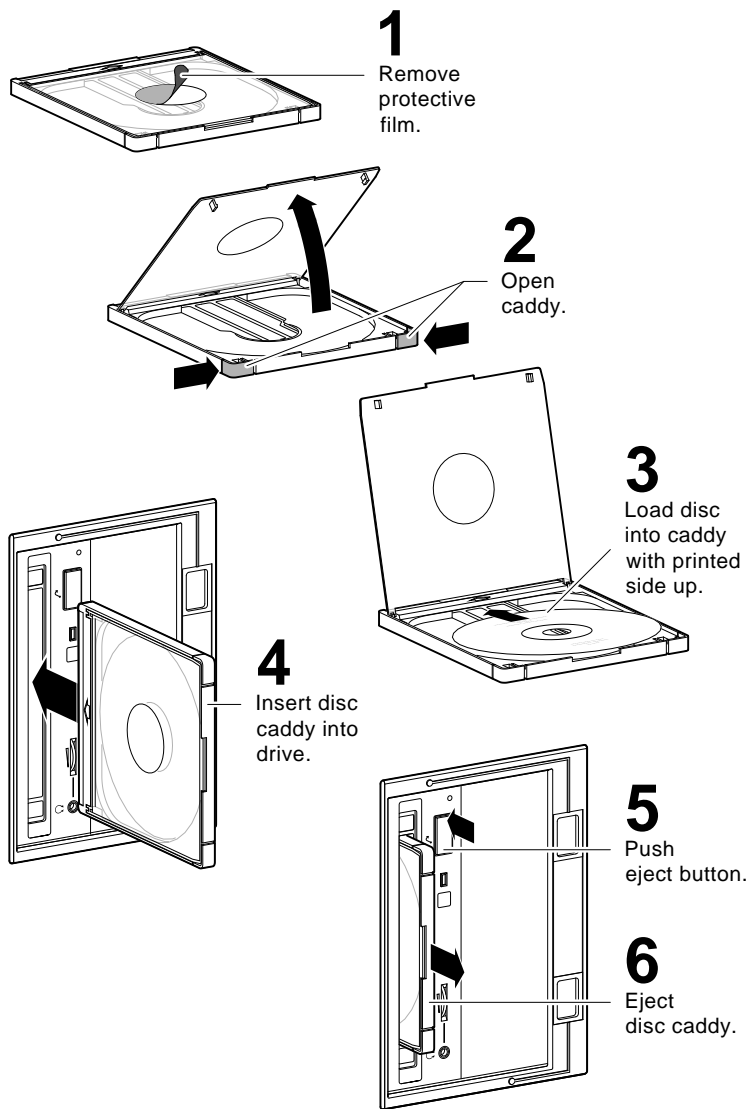
Figure 3 Bus Continuity Card



Note

When either the J6 or J7 backplane connector is not used, insert a bus continuity card into those slots to maintain bus continuity. There are two bus continuity cards already installed in the backplane.

Figure 4 Inserting and Removing RRD42 Disc



MLO-008661

RZ 3 1/2-Inch Disks

RZ-Series 3 1/2-Inch Fixed Disks

RZ26 Overview

Description	High-density fixed disk
Capacity	1.0 GB
Form factor	3 1/2 in
Seek time	9.5 ms
Transfer rate	3.3 MB (peak)
Rotational speed	5363 rpm
Temperature	10°C (50°F)–50°C (122°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%–90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: .85 A and +12 V: .74 A (idle mode)
Power	13.73 W (maximum)

Add-On Option Part Number

RZ26 fixed disk (3 1/2 in)	RZ26–MY
----------------------------	---------

Field Service Orderable Parts and Options

FRU	RZ26–E (whole unit replacement)
-----	---------------------------------

Documentation

<i>RZxx Pocket Service Guide</i>	EK–RZXXD–PS
<i>RZ Series Reference Manual</i>	EK–RZXXD–RM
<i>DEC 4000 AXP Owner's Guide (VMS Ops)</i>	EK–KN430–OP
<i>DEC OSF/1 AXP Factory Installed Software User Guide</i>	EK–SFFIS–UG

RZ 3 1/2-Inch Disks

RZ28 Overview

Description	High-density fixed disk
Capacity	2.1 GB
Form factor	3 1/2 in
Seek time	9.7 ms
Transfer rate	4.9 MB (peak)
Rotational speed	5400 rpm
Temperature	5°C (41°F)–55°C (131°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%–90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: .86 A and +12 V: .69 A
Power	14.9 W (typical)

Add-On Option Part Number

RZ28 fixed disk (3 1/2 in)	RZ28–MY
----------------------------	---------

Field Service Orderable Parts and Options

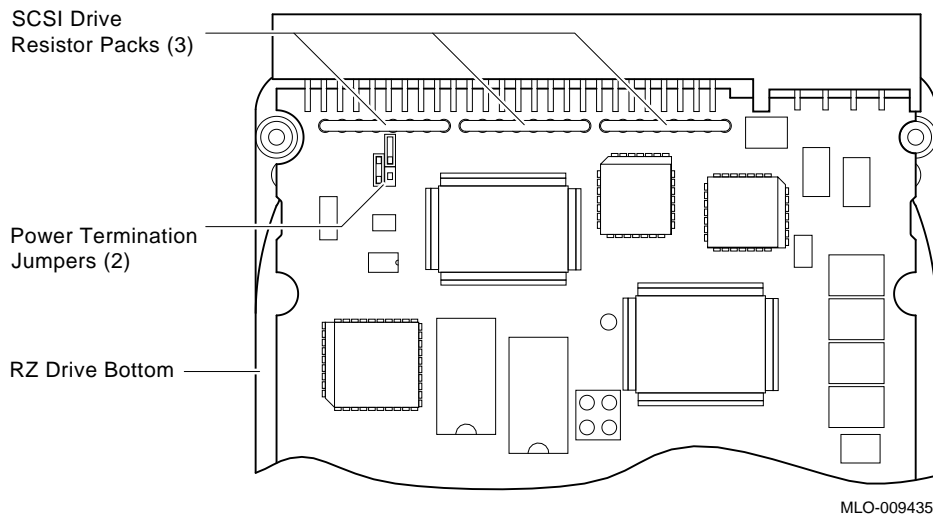
FRU	RZ28–E (Whole unit replacement)
-----	---------------------------------

Documentation

<i>RZxx Pocket Service Guide</i>	EK–RZXXD–PS
<i>RZ Series Reference Manual</i>	EK–RZXXD–RM
<i>DEC 4000 AXP</i>	EK–KN430–OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK–SFFIS–UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

RZ 3 1/2-Inch Disks

Figure 1 SCSI Terminators and Resistor Packs for 3 1/2-Inch Drives

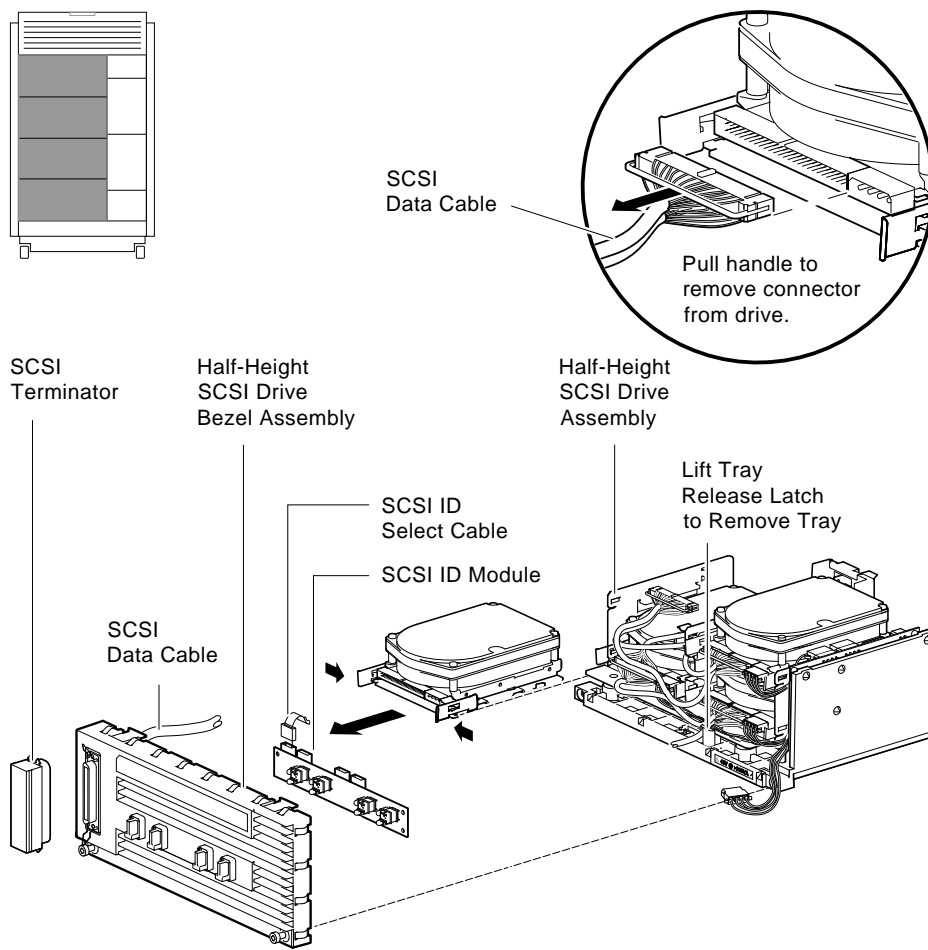


Caution

When adding a SCSI 3 1/2-inch disk drive to the DEC 4000 AXP system, remove the three resistor packs and two terminator jumpers shown in Figure 1 to avoid bus problems.

RZ 3 1/2-Inch Disks

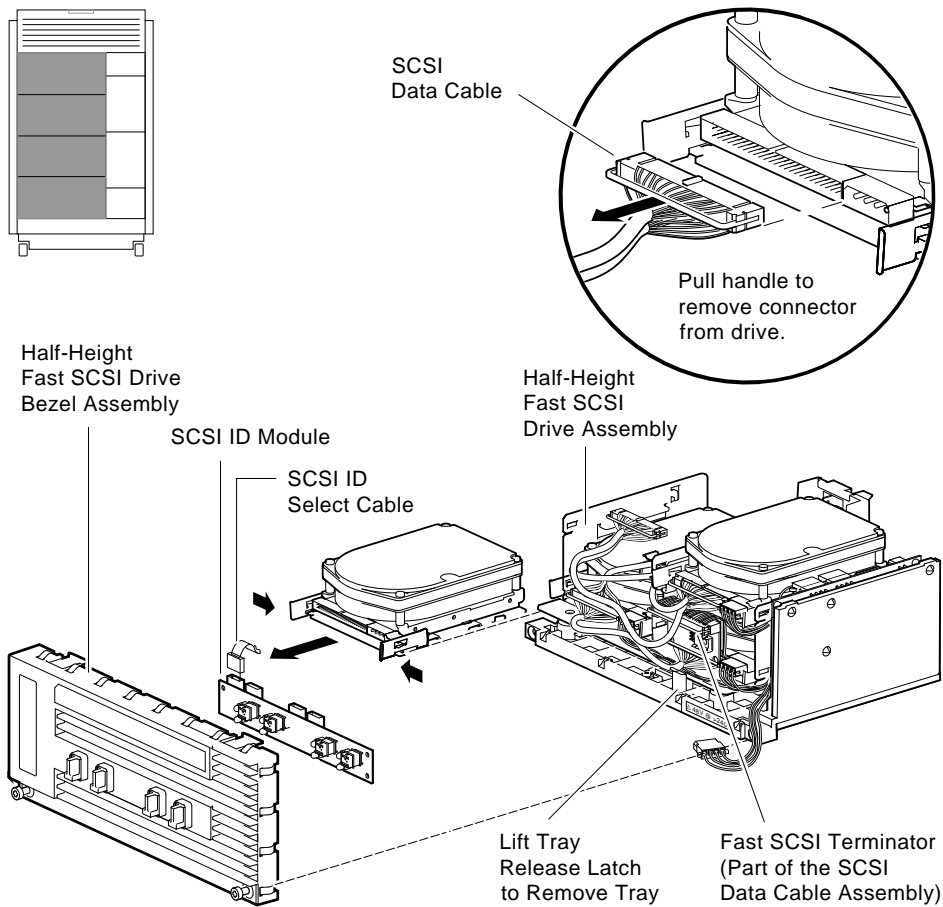
Figure 2 RZ-Series 3 1/2-Inch Storage Assembly



MLO-009817

RZ 3 1/2-Inch Disks

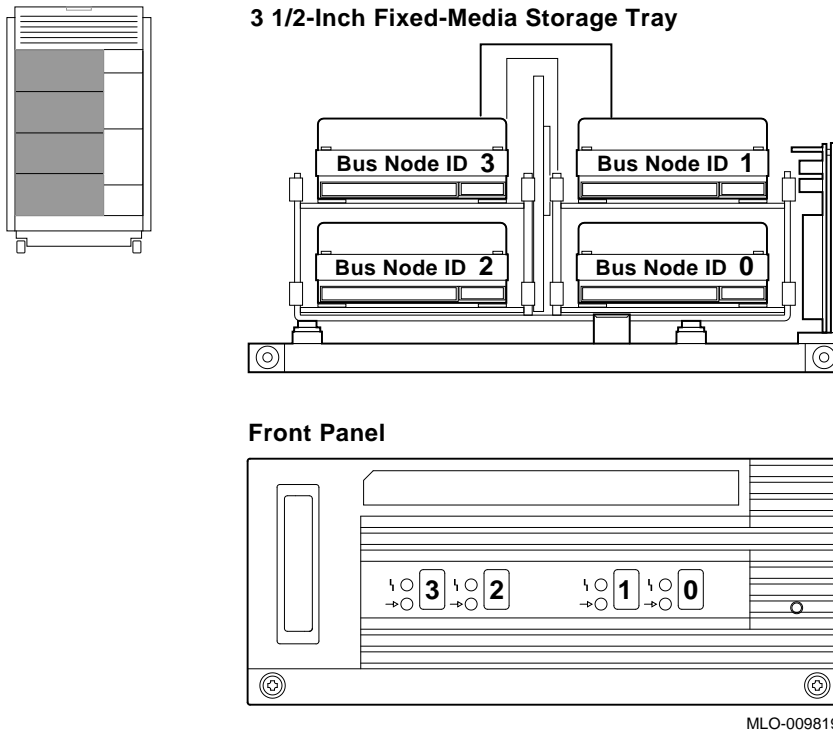
Figure 3 RZ-Series 3 1/2-Inch Fast SCSI Storage Assembly



MLO-009428

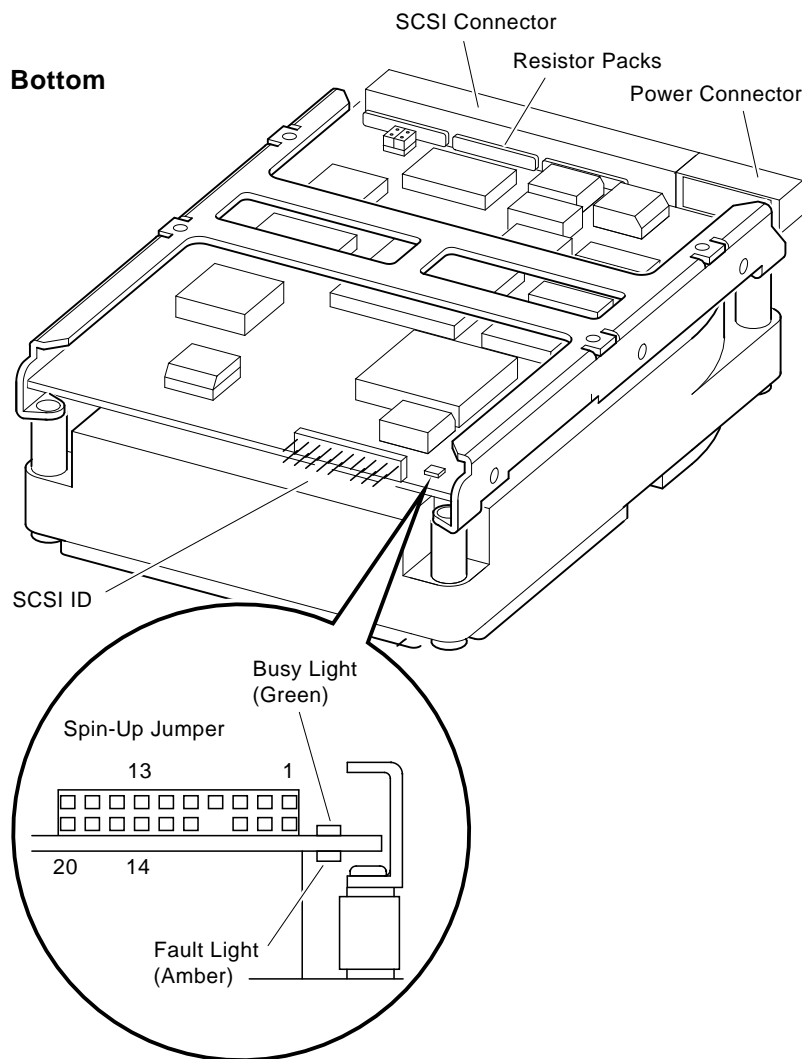
RZ 3 1/2-Inch Disks

Figure 4 RZ-Series 3 1/2-Inch Drive Selection



RZ 3 1/2-Inch Disks

Figure 5 RZ-Series 3 1/2-Inch Light Location



MLO-008213

Table 1 Spin-Up Jumper

Jumper Status	Spin-Up Condition
Installed	Spins up on power up.
Not installed	Spins up on MOUNT command.

RZ 5 1/4-Inch Disks

RZ-Series 5 1/4-Inch Fixed Disks

RZ73 Overview

Description	High-density fixed disk (full-height)
Capacity	2.0 GB
Form factor	5 1/4 in
Seek time	12 ms
Transfer rate	2.2 MB
Rotational speed	3600 rpm
Temperature	10°C (50°F)–50°C (122°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%–90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: 1.2 A and +12 V: 1.2 A
Power	21.42 W (maximum)

Add-On Option Part Number

RZ73 fixed disk (5 1/4 in)	RZ73–MX
----------------------------	---------

Field Service Orderable Parts and Options

FRU	Two FRUs (drive module and mechanical assembly)
Drive module (single-ended)	54–19110–01
Mechanical assembly	70–28814–01

Documentation

<i>RZ Series Reference Manual</i>	EK–RZXXD–RM
<i>RZxx Pocket Service Guide</i>	EK–RZXXD–PS

RZ 5 1/4-Inch Disks

RZ74 Overview

Description	High-density fixed disk (full-height)
Capacity	3.5 GB
Form factor	5 1/4 in
Seek time	12 ms
Transfer rate	4.6 MB–6.95 MB
Rotational speed	5400 rpm
Temperature	10°C (50°F)–50°C (122°F) (operating) 10°C (50°F)–40°C (104°F) (in BA640 enclosure)
Relative humidity	10%–90%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: 1.0 A and +12V: 2.5 A
Power	40.8 W (maximum)

Add-On Options Part Number

RZ74 fixed disk (5 1/4 in)	RZ74–MX
----------------------------	---------

Field Service Orderable Parts and Options

FRU	RZ74–E (whole unit replacement)
-----	---------------------------------

Documentation

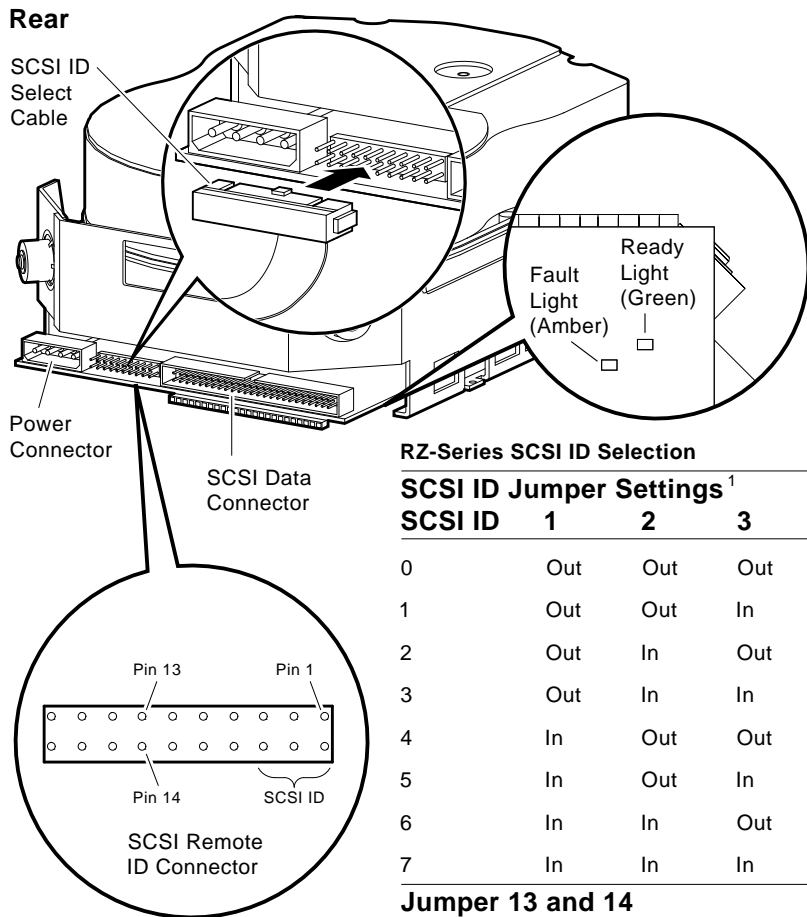
<i>RZ Series Reference Manual</i>	EK–RZXXD–RM
<i>RZxx Pocket Service Guide</i>	EK–RZXXD–PS
<i>DEC 4000 AXP</i>	EK–KN430–OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK–SFFIS–UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

Note

The SCSI ID select cable overrides the SCSI ID jumpers.

RZ 5 1/4-Inch Disks

Figure 1 RZ-Series Disk Drive



RZ-Series SCSI ID Selection

SCSI ID Jumper Settings¹

SCSI ID	1	2	3
0	Out	Out	Out
1	Out	Out	In
2	Out	In	Out
3	Out	In	In
4	In	Out	Out
5	In	Out	In
6	In	In	Out
7	In	In	In

Jumper 13 and 14

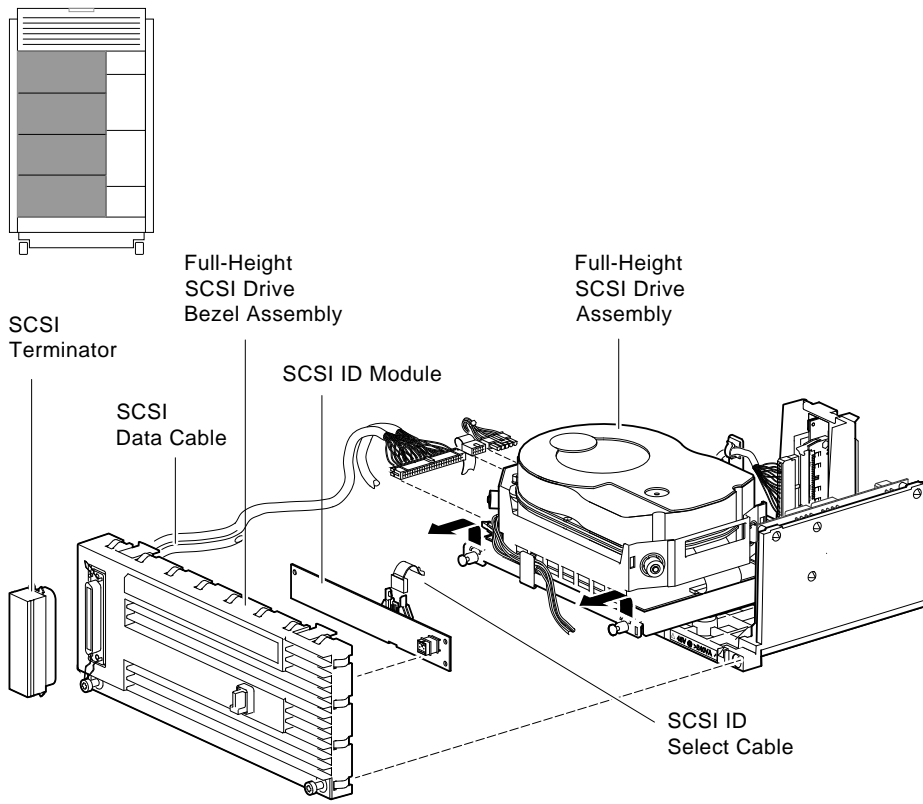
Out	Spin-up on power-up
In	Spin-up on SCSI command

¹ SCSI address 7 is normally assigned to a system adapter.

MLO-010861

RZ 5 1/4-Inch Disks

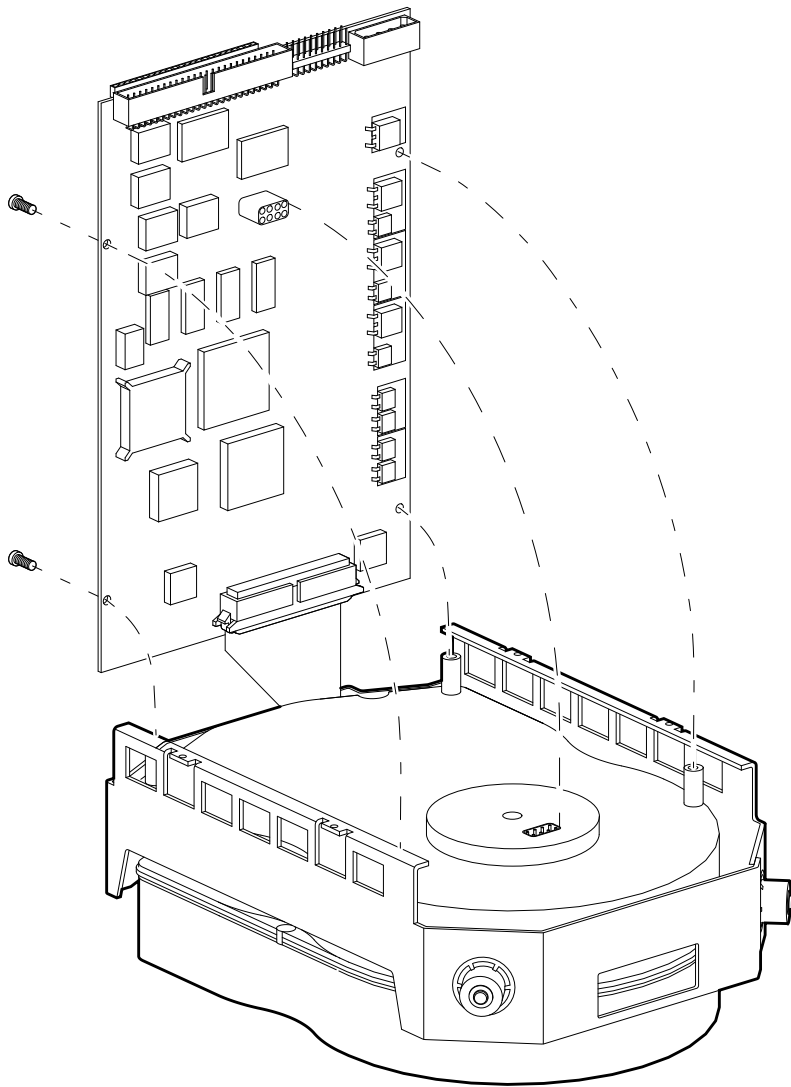
Figure 2 RZ-Series 5 1/4-Inch Storage Assembly



MLO-009815

RZ 5 1/4-Inch Disks

Figure 3 RZ73 FRU



MLO-008214

TKZ09 Cassette Table-Top Tape Drive

TKZ09 Overview

Description	High-performance, high-capacity 8-mm cartridge tape subsystem
Media size	8 mm
Cartridge type	EXATAPE data cartridges
Capacity	4944 MB (with EXB-8500 format)
Form factor	5 1/4 in
Transfer rate	1/5 MB/s
Temperature	5°C (41°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	100–240 VAC
Current	115 VAC: 3 A and 230 VAC: 1.6 A
Power	18 W (max)

Add-on Option Part Number

Table Top Drive	TKZ09–AF
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Field Service Orderable Parts and Options

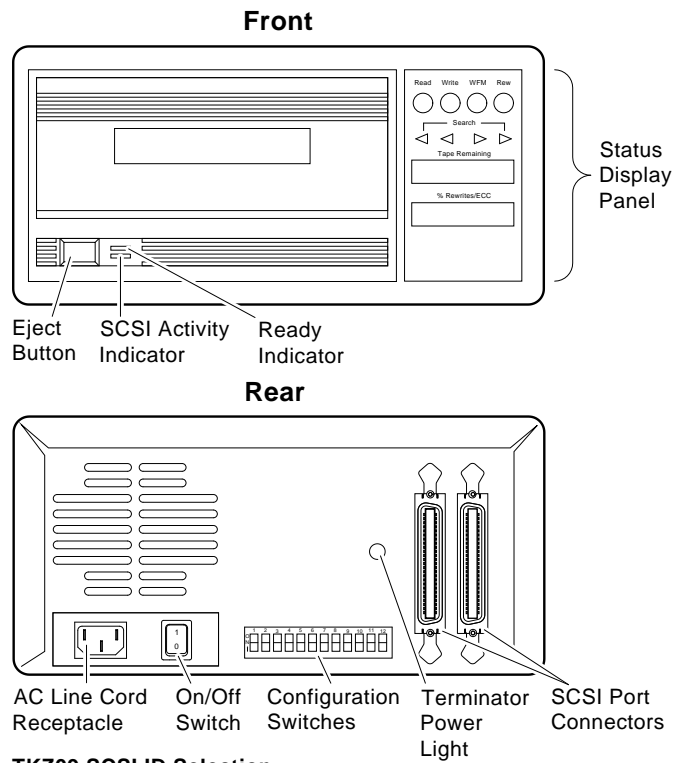
FRUs	TKZ09–DA (whole unit replacement)
Data cartridges	TKZ8X–CB (box of 5) (TTI part number)

Documentation

<i>TKZ09 Workstation Compatible /8 mm 5 GB High Performance Backup Owners Manual</i>	90097X07 (TTI part number)
--	----------------------------

TKZ09

Figure 1 TKZ09 Cassette Tape Drive



TKZ09 SCSI ID Selection

SCSI ID Switch Settings

SCSI ID	10	11	12
0	Down	Down	Down
1	Down	Down	Up
2	Down	Up	Down
3	Down	Up	Up
4	Up	Down	Down
5	Up	Down	Up
6	Up	Up	Down
7	Up	Up	Up

MLO-009904

TLZ06 Tape Drive

TLZ06 Overview

Description	Digital audio tape (RDAT drive)
Media size	DAT
Cartridge type	TLZ04/TLZ06
Capacity	4.0 GB
Form factor	5 1/4 in
Transfer rate	366 KB
Temperature	10°C (50°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: .89 A and +12 V: 0.2 A
Power	9 W

Add-On Option Part Number

3 1/2-inch embedded tape drive	TLZ06–MX (first device in removable-media slot)
3 1/2-inch embedded tape drive	TLZ06–MY (second device in removable-media slot)
Tabletop drive	TLZ06–DA

Field Service Orderable Parts and Options

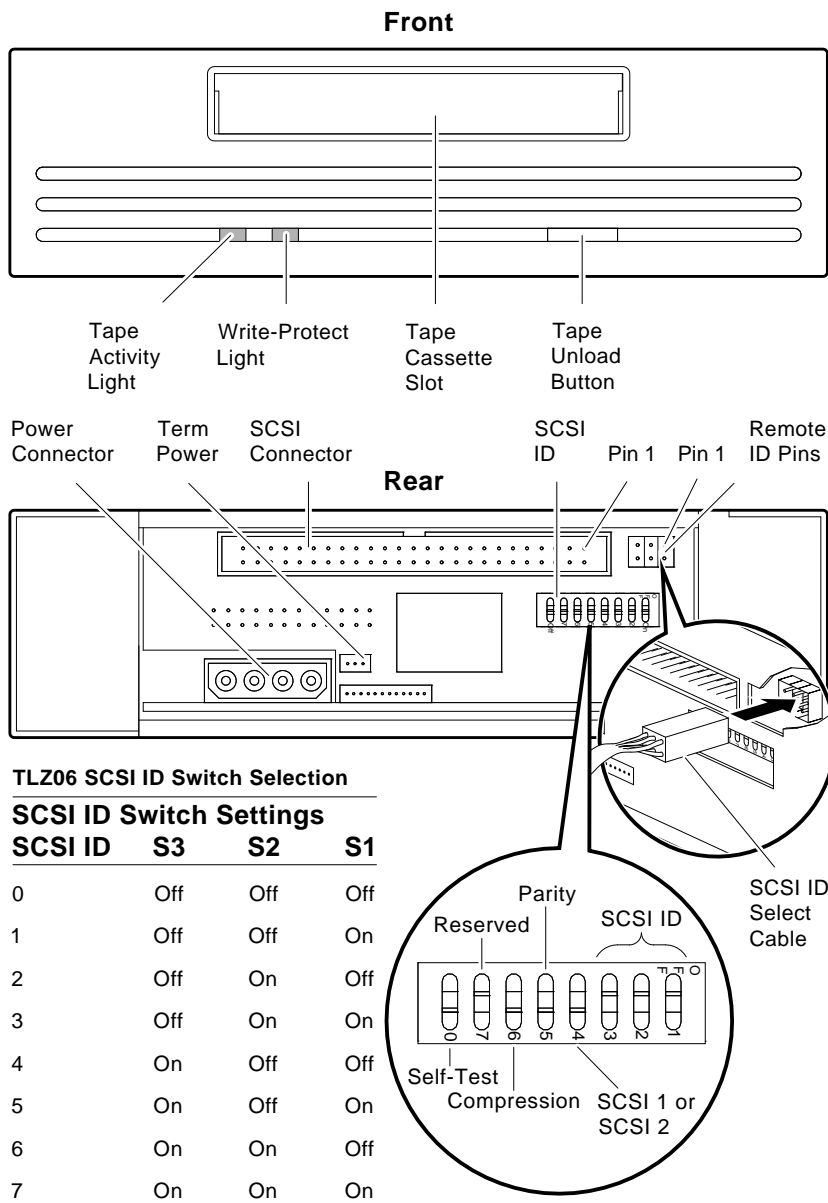
FRUs	TLZ06–AA (whole unit replacement)
Cassette tape	TLZ04–CA (60 m = 2.6 GB) noncompressed mode only
Cassette tape	TLZ06–CA (90 m = 4.0 GB)
Head cleaning cassette	TLZ04–HA

TLZ06

Documentation

<i>TLZ06 Owners Manual</i>	EK-TLZ06-OM
<i>DEC 4000 AXP Owner's Guide (VMS Ops)</i>	EK-KN430-OP
<i>DEC OSF/1 AXP Factory Installed Software User Guide</i>	EK-SFFIS-UG

Figure 1 TLZ06 Cassette Tape Drive



MLO-008215

TLZ06

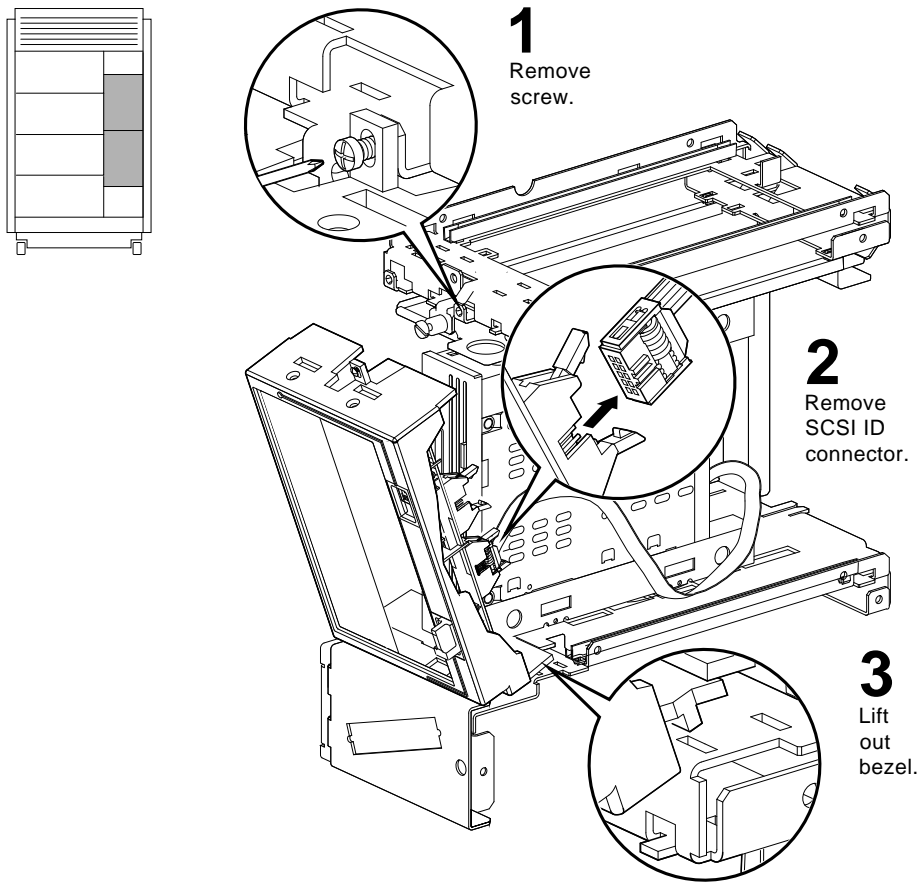
Note

The SCSI ID select cable overrides the SCSI ID switches.

Table 1 SCSI ID / Option Selection Switch

Switch	Setting
S4 SCSI-1 or 2	(On = SCSI 2)
S5 Parity	(On = Enabled)
S6 Compression	(On = Disabled)
S7	(Off= Reserved for future use)
S8 Self-test	(On = Enabled)

Figure 2 TLZ06 Assembly

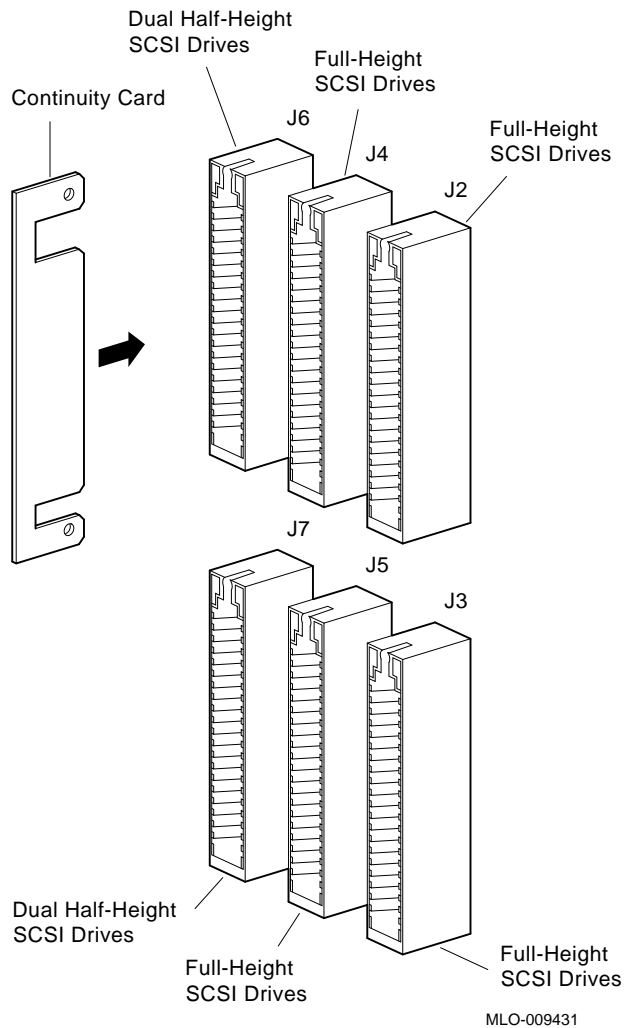


MLO-008878

Note

When a removable-media compartment is empty, install blank bezels to maintain maximum air flow. See Storage Tray Information for part numbers and illustrations.

Figure 3 Bus Continuity Card



Note

When either the J6 or J7 backplane connector is not used, insert a bus continuity card into those slots to maintain bus continuity. There are two bus continuity cards already installed in the backplane.

TLZ06 Light Summary

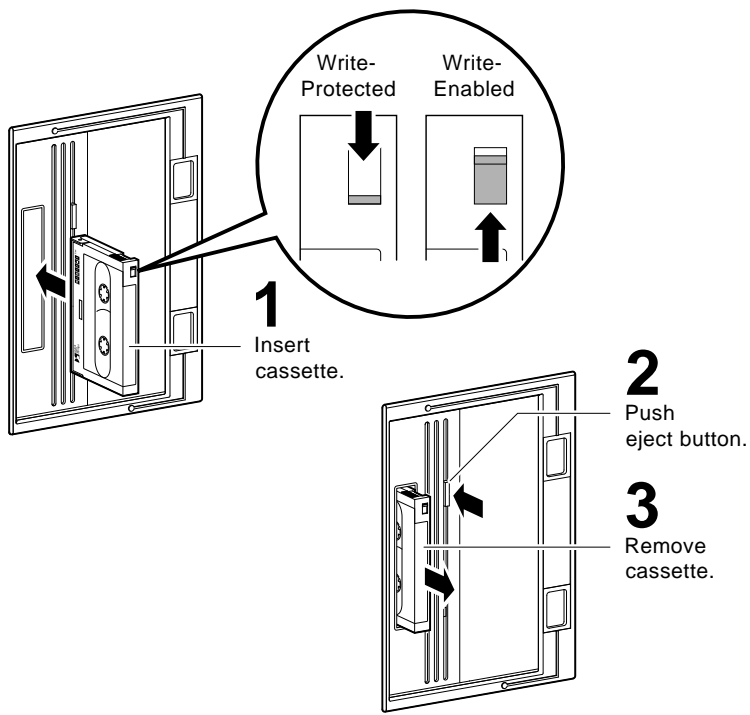
Write-Protect Light	Tape/Activity Light	Condition
Off	Off	No tape loaded.
Off	Green	Tape loaded and write-enabled. No SCSI activity
Off	Blinks	SCSI drive activity and write-enabled.
Amber	Green	Tape loaded and write-protected. No SCSI drive activity
Amber	Blinks green	SCSI drive activity. Tape write-protected
Off to write-protect status	Blinks green, 1 Hz, 25% on. Goes to solid green when done. Indicates drive activity.	Load sequence
From status to off	Blinks green, 1 Hz, 25% on. Goes to off when done. Indicates drive activity.	Unload sequence
Amber 1–2 sec., then off	Green for 1–2 seconds. Green blinks for remainder of power-on self-test. When (POST) successfully completed, normal indications. ¹	Power-on/ reset sequence
Amber	Blinks green until test complete (1–4 minutes). When test successfully completed, normal indications. ¹	POST:Self-test:lvl 1 (Basic self-test) and Lvl 2 (Extended self-test)
Blinks amber	Blinks green, 2 Hz for both.	Test failure Drive fault.

¹Normal indications:
Both lights off when tape not inserted.
Both lights on when tape inserted and write-protected.
Amber off and green on when tape is loaded and write-enabled.

TLZ06

Write-Protect Light	Tape/Activity Light	Condition
Write-protect status	Blinks green	Cleaning tape

Figure 4 Inserting and Removing a TLZ06 Cassette



TLZ6L Auto Loader

TLZ6L Overview

Description	Digital audio tape auto loader
Media size	DAT
Cartridge type	TLZ04/TLZ06
Capacity	16.0 GB
Form factor	Tabletop
Transfer rate	366 KB/s
Temperature	10°C (50°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	100 VAC to 240 VAC
Current	0.3 A
Power	12 W

Add-On Option Part Number

Tabletop drive	TLZ06–DA
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Field Service Orderable Parts and Options

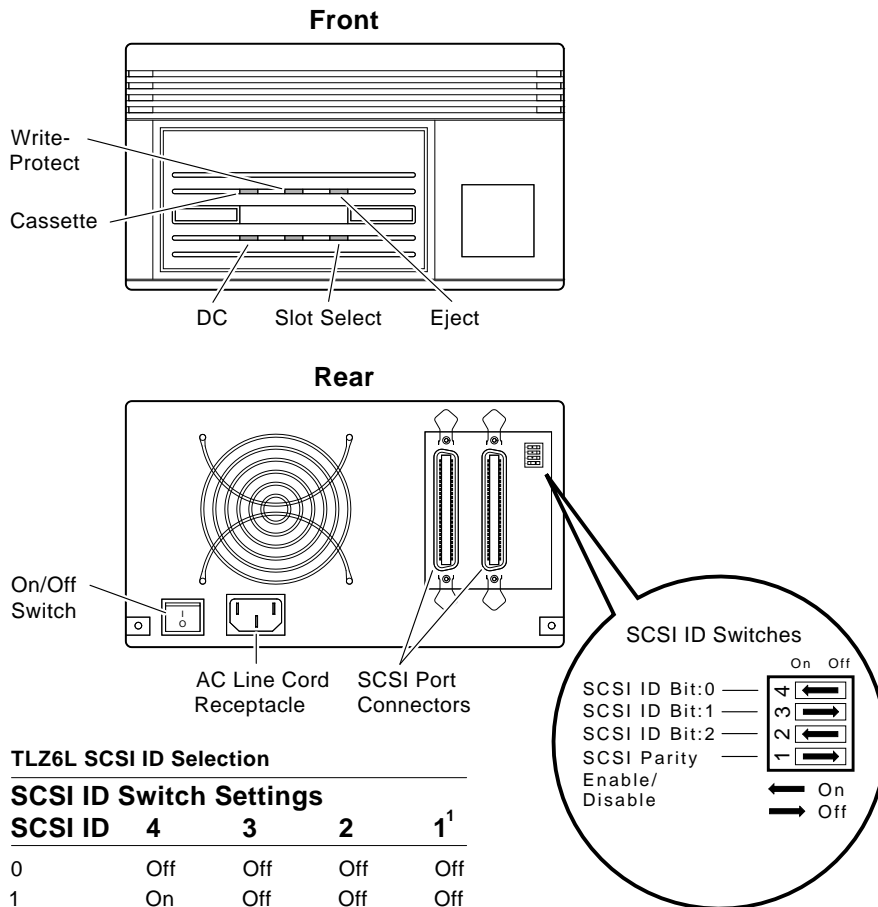
FRUs	TLZ06–DA (whole unit replacement)
Cassette tape	TLZ04–CA (60 m = 2.6 GB) noncompressed mode only
Cassette tape	TLZ06–CA (90 m = 4.0 GB)
Head cleaning cassette	TLZ04–HA

TLZ6L

Documentation

<i>TLZ06 Owners Manual</i>	EK-TLZ06-OM
<i>DEC 4000 AXP</i>	EK-KN430-OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK-SFFIS-UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

Figure 1 TLZ6L Auto Loader



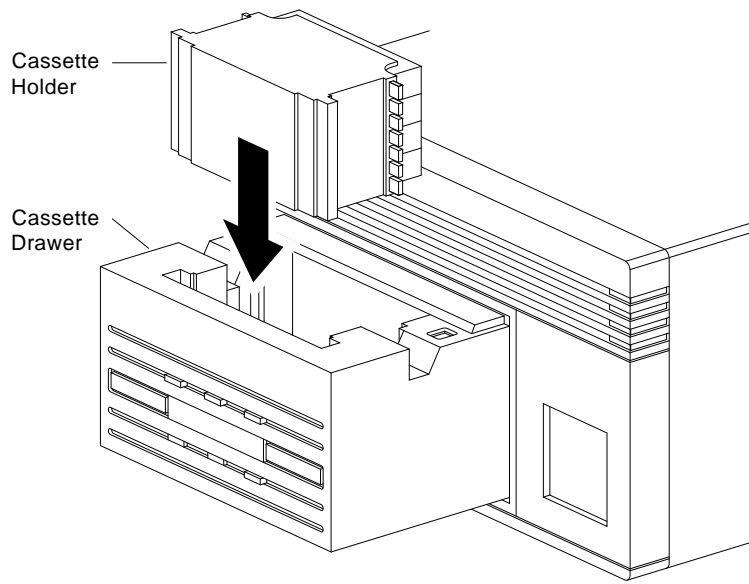
TLZ6L SCSI ID Selection

SCSI ID Switch Settings				
SCSI ID	4	3	2	1 ¹
0	Off	Off	Off	Off
1	On	Off	Off	Off
2	Off	On	Off	Off
3	On	On	Off	Off
4	Off	Off	On	Off
5	On	Off	On	Off
6	Off	On	On	Off
7	On	On	On	Off

¹ Parity bit. This bit is always off (parity disabled).

TLZ6L

Figure 2 Loading Cassette Holder



MLO-011313

TSZ07 Tape Drive

TSZ07 Overview

Description	High-capacity, streaming, reel-to-reel magnetic tape drive
Media size	1/2 in
Capacity	1600 bits/in / 43 MB / 6250 bpi/160 MB @ 732 m (2400 ft)
Reel size	15.3 cm (6 in) / 17.8 cm (7 in) / 21.6 cm (8.5 in) / 26.7 cm (10.5 in)
Transfer rate	1.5 MB (asynchronous) / 4 MB (synchronous)
Temperature	15° C (59° F)–32°C (90° F) (operating)
Relative humidity	20%–80%
Voltage	88–140 VAC and 176–259 VAC (operating)
Power	250 W (nominal) and 400 W (maximum)

Add-On Option Part Number

Table-top unit	TSZ07-CA
Rackmount unit	TSZ07-AA
Cabinet unit	TSZ07-BA and -BB

Field Service Orderable Parts and Options

Interface SCSI PWB assembly	29-28477-01
Head PWB assembly	29-28478-01
Servo PWB	29-28479-01
Read/write formatter PWB assembly	29-28480-01

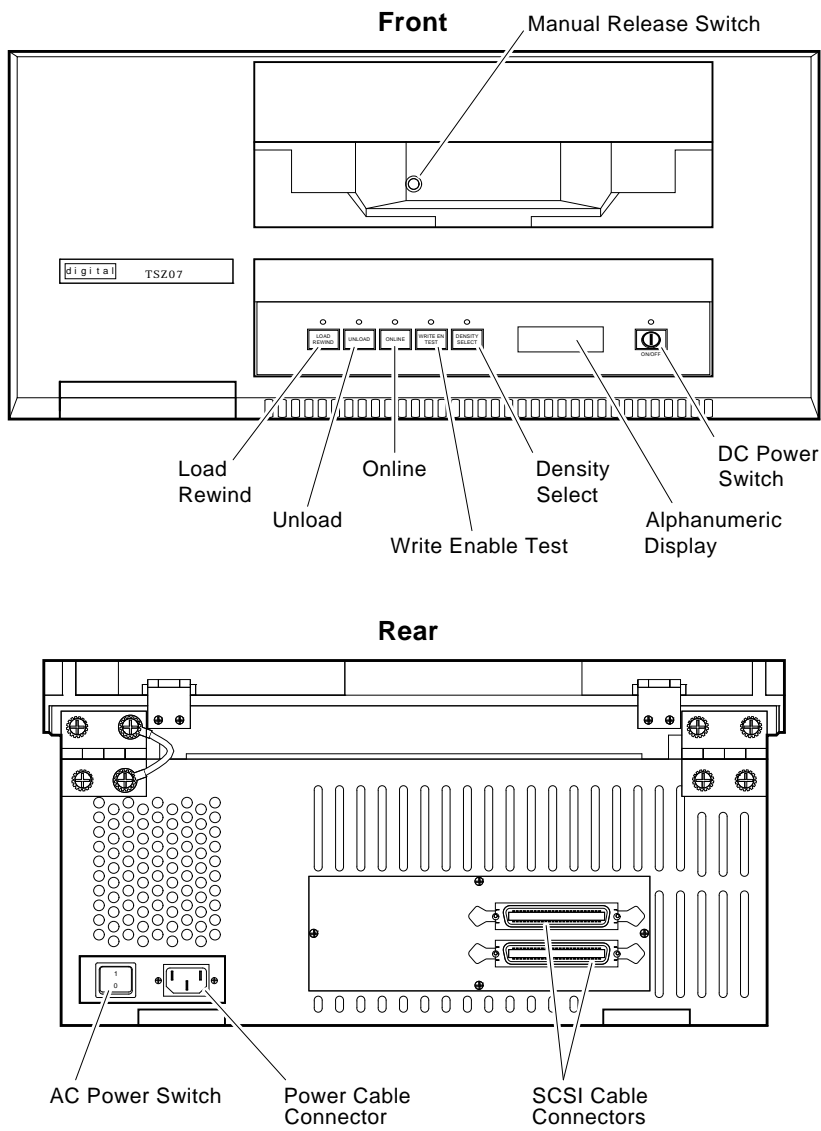
TSZ07

Documentation

TSZ07 Pocket Service Guide EK-TSZ07-PG
TSZ07 Technical Manual EK-TSZ07-TM

TSZ07

Figure 1 TSZ07 Front and Rear Views



MLO-008219

TZ30 Tape Drive

TZ30 Overview

Description	Streaming tape drive
Media size	1/2 in
Cartridge type	CompacTape (used with TK30 and TK50)
Capacity	95 MB
Form factor	5 1/4 in
Transfer rate	1.5 MB
Temperature	10°C (50°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	+5 VDC ±5% and +12 VDC ±5%
Current	+5 V: 1.0 A and +12 V: 1.2 A
Power	20 W (nominal) 33 W (peak)

Add-On Option Part Number

TZ30 Tape drive	TZ30–MX (first device in removable media-slot)
TZ30 Tape drive	TZ30–MY (second device in removable media-slot)
Field installable with CompacTape cartridge	TZ30–EE
Factory installable with CompacTape cartridge	TZ30–EG

Field Service Orderable Parts and Options

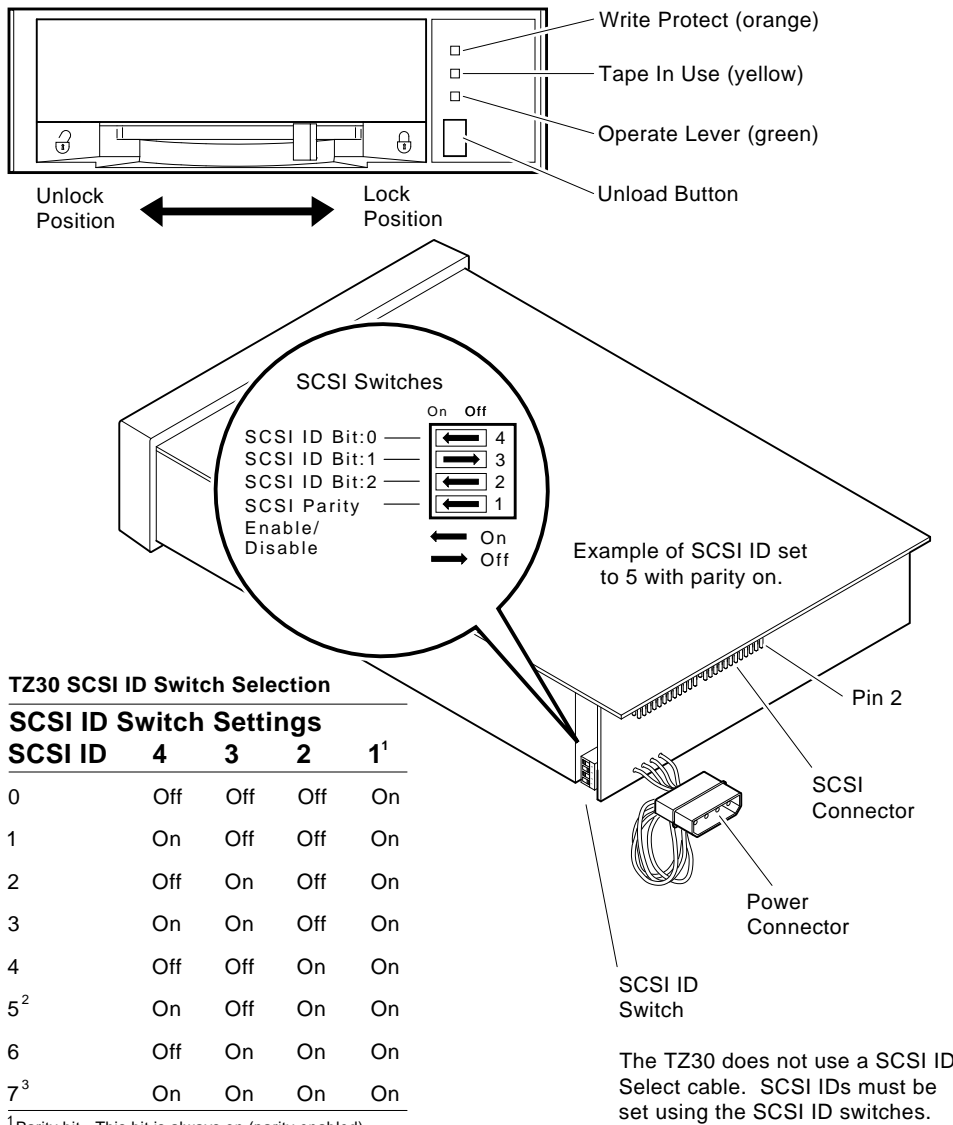
FRUs	Whole unit replacement (TZ30–AX)
CompacTape	30–20515–01 (95 MB)
Tape drive leader	74–34273–01

TZ30

Documentation

<i>TZ30 Technical Manual</i>	EK-OTZ30-TM
<i>TZ30 Owners Manual</i>	EK-OTZ30-OM
<i>TZ30 Reference Card</i>	EK-OTZ30-RC
<i>TZ30 Service Manual Errata Sheet</i>	EK-OTZ30-SV
<i>DEC 4000 AXP</i>	EK-KN430-OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK-SFFIS-UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

Figure 1 TZ30 Tape Drive



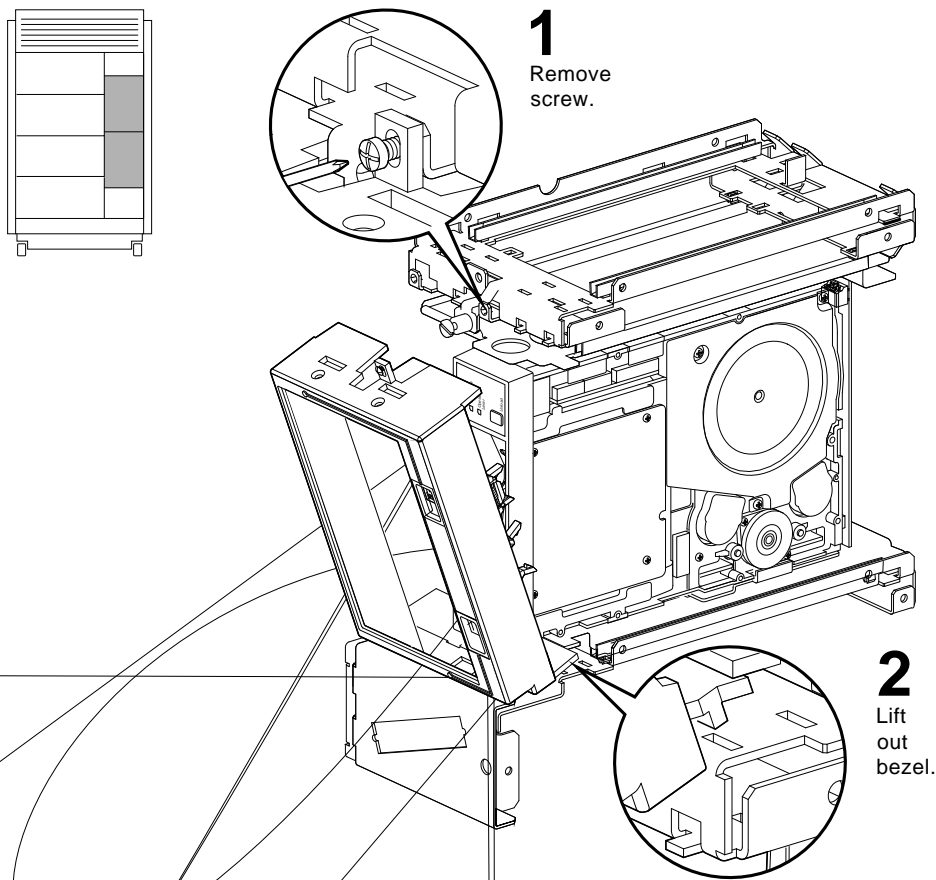
TZ30 SCSI ID Switch Selection

SCSI ID Switch Settings				
SCSI ID	4	3	2	1 ¹
0	Off	Off	Off	On
1	On	Off	Off	On
2	Off	On	Off	On
3	On	On	Off	On
4	Off	Off	On	On
5 ²	On	Off	On	On
6	Off	On	On	On
7 ³	On	On	On	On

¹Parity bit - This bit is always on (parity enabled)
²Factory Setting
³SCSI address 7 is normally assigned to a system adapter

TZ30

Figure 2 TZ30 Assembly

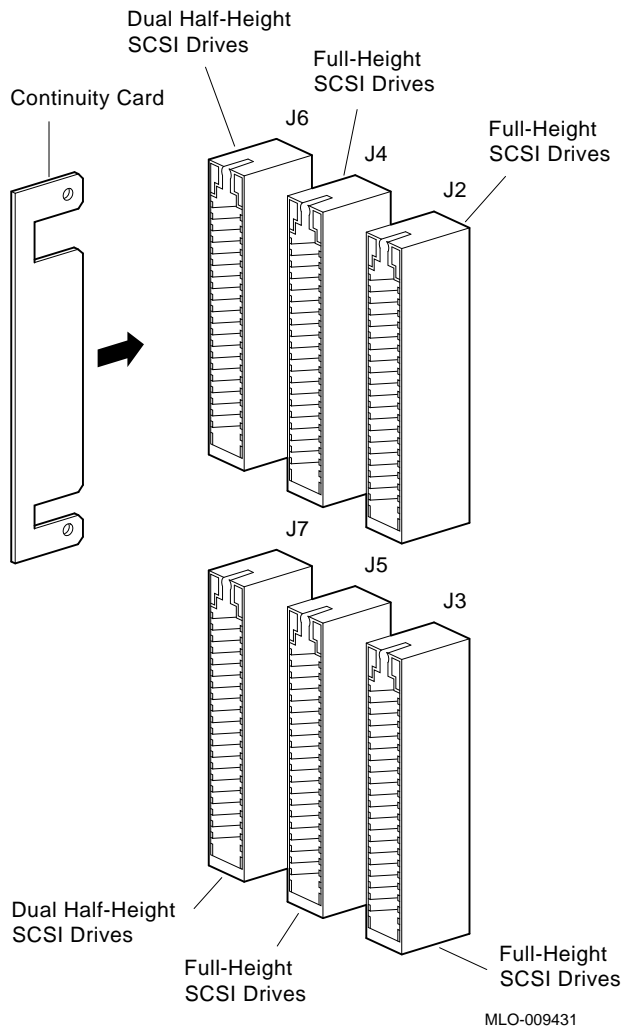


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Note

When a removable-media compartment is empty, install blank bezels to maintain maximum air flow. See Storage Tray Information for part numbers and illustrations. When you have a second half-height drive installed, you may need to unplug its SCSI ID select cable in order to remove the bezel. If you are installing a second device that is not a TZ30, remove the corresponding flat blank plug from the remote front panel module. For removal of blank flat plugs, see Removal of Blank Flat Plugs from Removable Media Bezel in Storage Tray Information.

Figure 3 Bus Continuity Card



Note

When either the J6 or J7 backplane connector is not used, insert a bus continuity card into those slots to maintain bus continuity. There are two bus continuity cards already installed in the backplane.

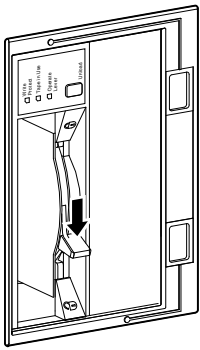
TZ30

TZ30 Light Summary

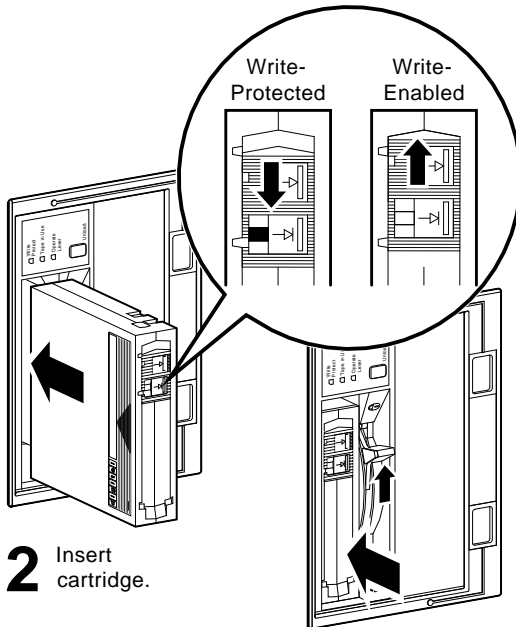
Light	State	Condition
Green	On	Okay to operate the cartridge lever.
	Off	Do not operate the cartridge lever.
	Blinks	The drive detected a cartridge or calibration error.
Yellow	Blinks fast intermittently	Data is being written to the tape.
	Blinks fast continuously	Data is being read from the tape.
	Blinks slowly	Tape is initializing, loading, unloading, or rewinding.
	Blinks slowly, after the power-up diagnostic has run	Tape is initializing.
	On	Tape is loaded and ready for use.
Orange	On	Tape is write-protected.
	Off	Tape is write-enabled.
All three lights	On	The power-up diagnostic is in progress.
	Blinks	Drive fault occurred.

Figure 4 Inserting and Removing a TZ30 CompactTape

Inserting a CompactTape



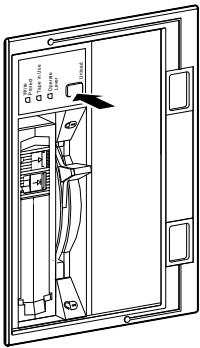
1 Move cartridge lever down.



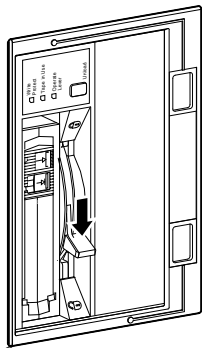
2 Insert cartridge.

3 Move cartridge lever up to lock.

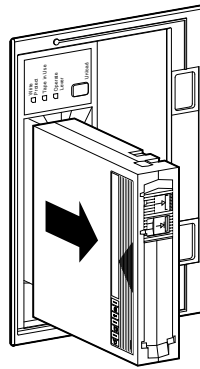
Removing a CompactTape



1 Press unload button and wait for operate lever LED to light.



2 Move cartridge lever down to unlock.



3 Remove cartridge.

MLO-008667

TZ8x Tape Drives

TZ85 Overview

Description	Streaming tape drive
Cartridge type	CompacTape III
Capacity	2.6 GB
Form factor	5 1/4 in
Media size	1/2 in
Transfer rate	800 KB
Temperature	10°C (50°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	+5 VDC ± 5% and +12 VDC ± 5%
Current	+5 V: 3.5 A and +12 V: .5 A
Power	40 W

Add-On Option Part Number

TZ85 embedded tape drive	TZ85E-MX
--------------------------	----------

Field Service Orderable Parts and Options

FRUs	TK85-AX (whole unit replacement)
CompacTape III cartridge	TK85K-01
CompacTape III cartridge (quantity of 7)	TK85K-07
CompacTape III cartridge (quantity of 1008)	TK85K-A0
CleaningTape III cartridge	TK85-HC
TZ85 controller module	54-19122-01
TZ85 drive module	54-19074-02
SCSI cable	17-02613-01

TZ8x

Documentation

<i>Tx85 Operator's Reference Card</i>	EK-OTK85-RC
<i>Tx85 Cartridge Tape Subsystem</i>	EK-OTF85-OM
<i>DEC 4000 AXP</i>	EK-KN430-OP
<i>Owner's Guide (VMS Ops)</i>	
<i>DEC OSF/1 AXP</i>	EK-SFFIS-UG
<i>Factory Installed</i>	
<i>Software User Guide</i>	

TZ8x

TZ86 Overview

Description	Streaming tape drive
Cartridge type	CompacTape III
Capacity	6.0 GB
Formfactor	5 1/4 in
Media size	1/2 in
Transfer rate	800 KB
Temperature	10°C (20°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	+5 VDC ± 5% and +12 VDC ± 5%
Current	+5 V: 3.5 A and +12 V: .5 A
Power	40 W

Add-On Option Part Number

TZ86 embedded tape drive	TZ86E–MX
--------------------------	----------

Field Service Orderable Parts and Options

FRUs	TK86–AX (whole unit replacement)
CompacTape III cartridge	TK85K–01
CompacTape III cartridge (quantity of 7)	TK85K–07
CompacTape III cartridge (quantity of 1008)	TK85K–A0
Cleaning Tape III cartridge	TK85–HC
TZ86 controller module	54–19122–01
TZ86 drive module	54–19074–02
SCSI cable	17–02613–01

TZ8x

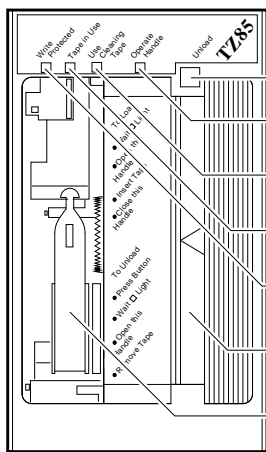
Documentation

<i>Tx86 Tape Drive Operator's Reference Card</i>	EK-OTK86-RC
<i>Tx86 Series Cartridge Tape Subsystem Owner's Manual</i>	EK-OTX86-OM
<i>Tx867 Series Magazine Tape Subsystem Owner's Manual</i>	EK-TX867-OM
<i>DEC 4000 AXP Owner's Guide (VMS Ops)</i>	EK-KN430-OP
<i>DEC OSF/1 AXP Factory Installed Software User Guide</i>	EK-SFFIS-UG

TZ8x

Figure 1 TZ8x Cassette Tape Drive

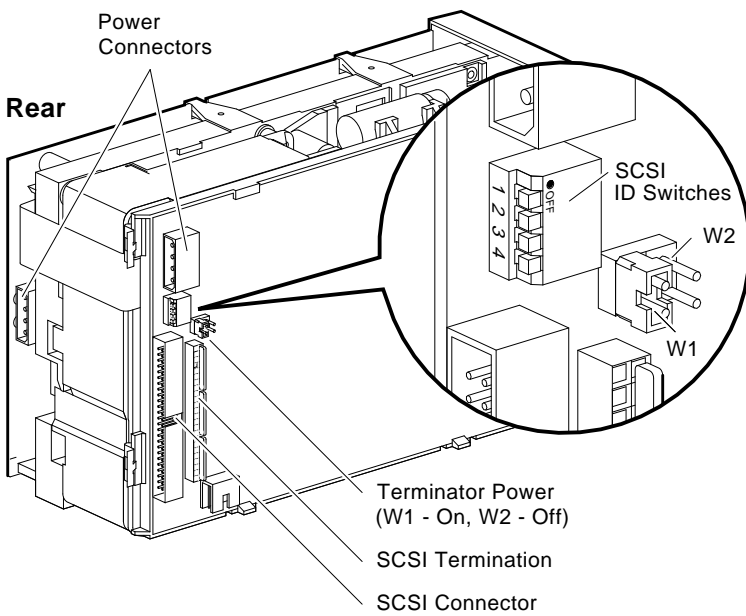
Front



TZ8x SCSI ID Switch Selection

SCSI ID Switch Settings			
SCSI ID	2	3	4
0	Off	Off	Off
1	Off	Off	On
2	Off	On	Off
3	Off	On	On
4	On	Off	Off
5	On	Off	On
6	On	On	Off
7	On	On	On

Rear



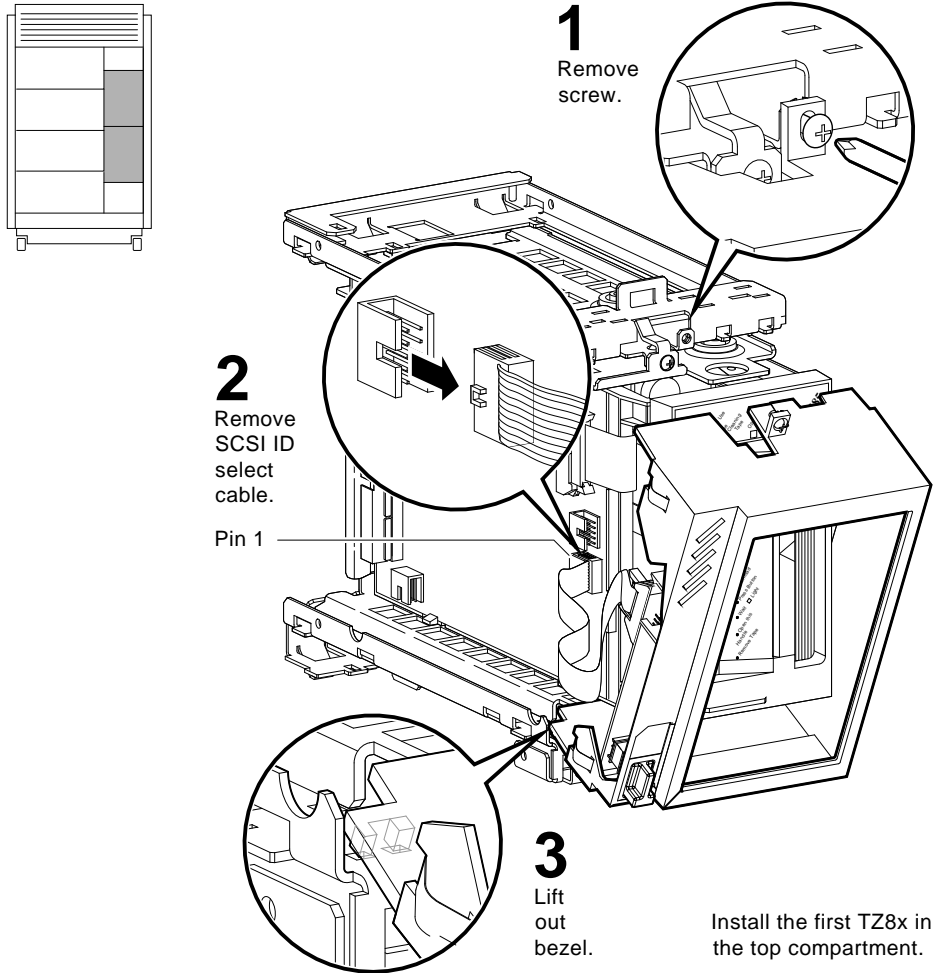
MLO-008223

TZ8x

Note

The SCSI ID select cable overrides the SCSI ID switches.

Figure 2 TZ8x Assembly



MLO-011323

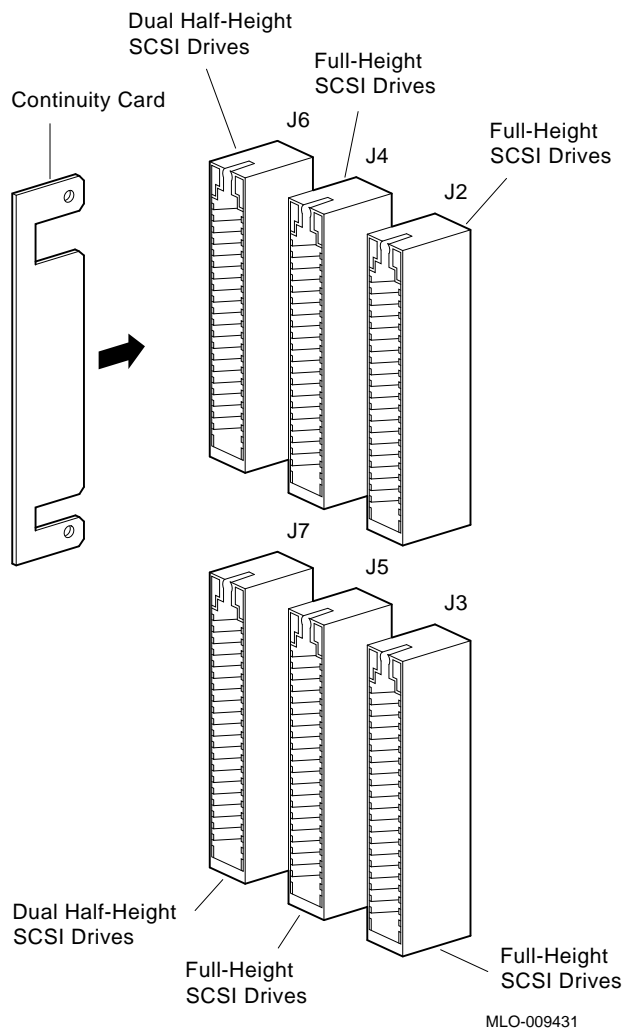
TZ8x

Note

When a removable-media compartment is empty, install blank bezels to maintain maximum airflow. See Storage Tray Information for part numbers and illustrations.

TZ8x

Figure 3 Bus Continuity Card



Note

When either the J6 or J7 backplane connector is not used, insert the bus continuity card into those slots to maintain bus continuity. There are two bus continuity cards already installed in the backplane.

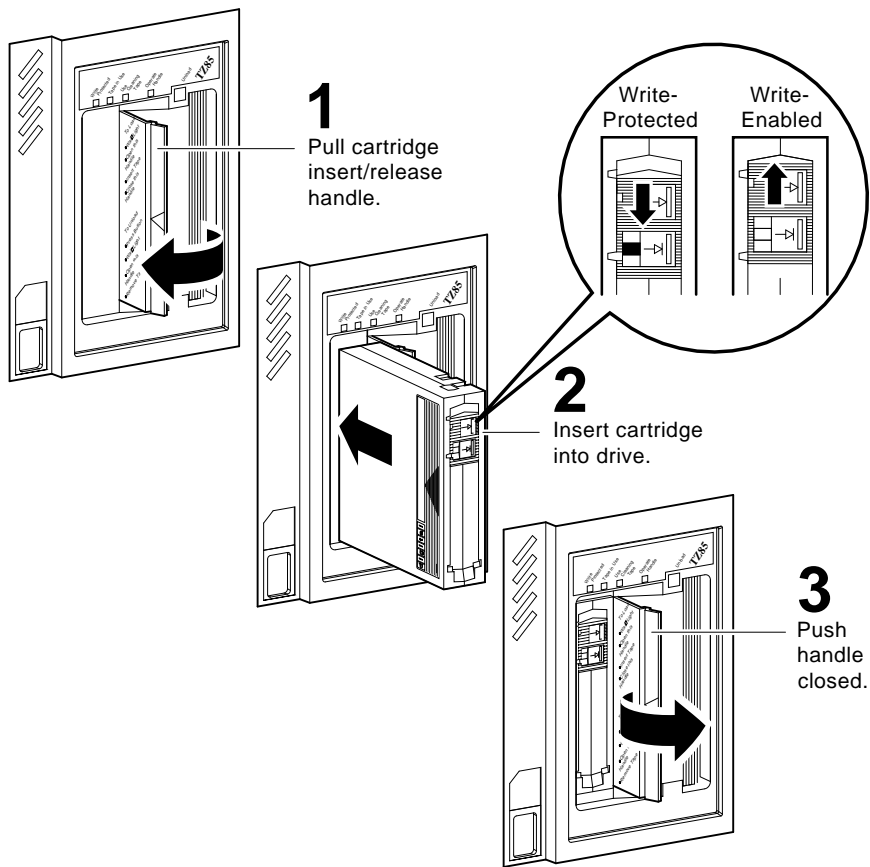
TZ8x

TZ8x Light Summary

Light	State	Condition
Operate handle (green)	On	Okay to operate the cartridge insert/release handle.
	Off	Do not operate the cartridge insert/release handle.
Tape in use (yellow)	Blinks	Tape is moving.
	On	Tape is loaded (ready for use).
Write-protected (orange)	On	Tape is write-protected.
	Off	Tape is write-enabled.
Use cleaning tape (orange)	On	Load a CleaningTape III
	off	Cleaning not required.
All four lights	On	Power-On Self-Test is in progress.
	Blinks	Drive fault occurred. (Press Unload button to clear.)

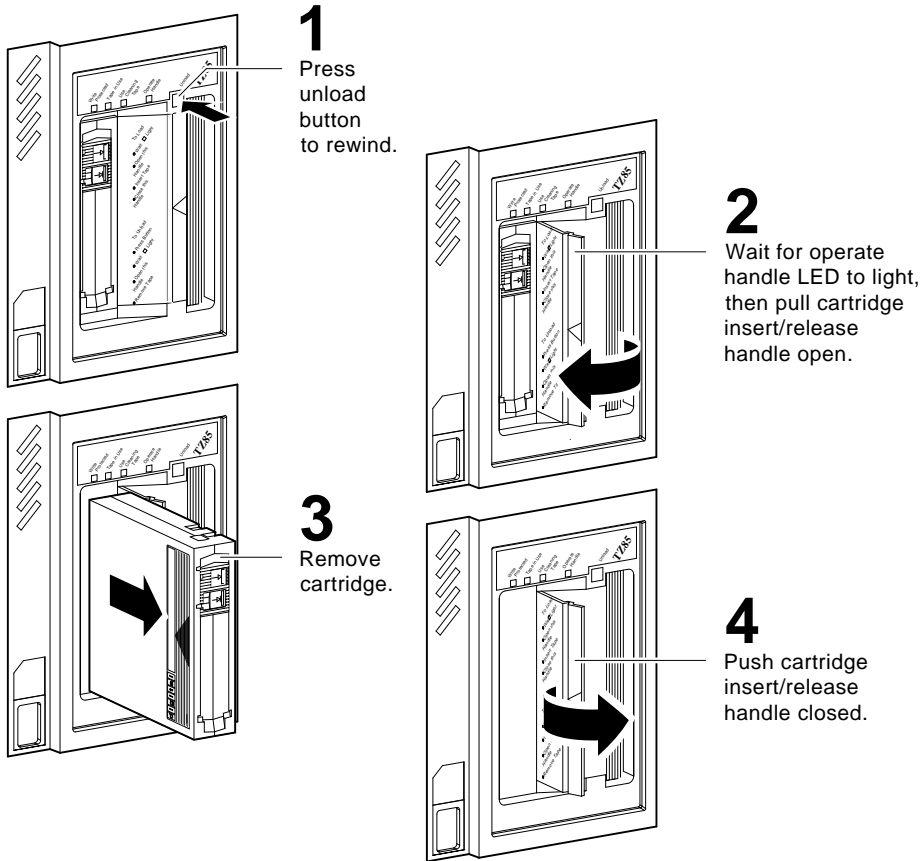
TZ8x

Figure 4 TZ8x: Inserting a Tape



MLO-008664

Figure 5 TZ8x: Removing a Tape



MLO-008787

TZ87 Tape Drive

TZ87 Overview

Description	Streaming tape drive
Cartridge type	CompacTape III
Capacity	10 GB (uncompressed) 20 GB (compressed)
Form factor	5 1/4 in
Media size	1/2 in
Transfer rate	1.25 MB/s (uncompressed)
Temperature	10°C (50°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	+5 VDC ± 5% and +12 VDC ± 5%
Current	+5 V: 2.5 A and +12 V: .8 A
Power	22.1 W maximum

Add-On Option Part Number

TZ87 embedded tape drive	TZ87E-MX
--------------------------	----------

Field Service Orderable Parts and Options

FRUs	TK87-BA (whole unit replacement)
CompacTape III cartridge	TK85K-01
CompacTape III cartridge (quantity of 7)	TK85K-07
CompacTape III cartridge (quantity of 1008)	TK85K-A0
Cleaning Tape III cartridge	TK85-HC
TZ87 electronic controller module	54-21259-01
SCSI ID Select cable	17-01936-01

TZ87

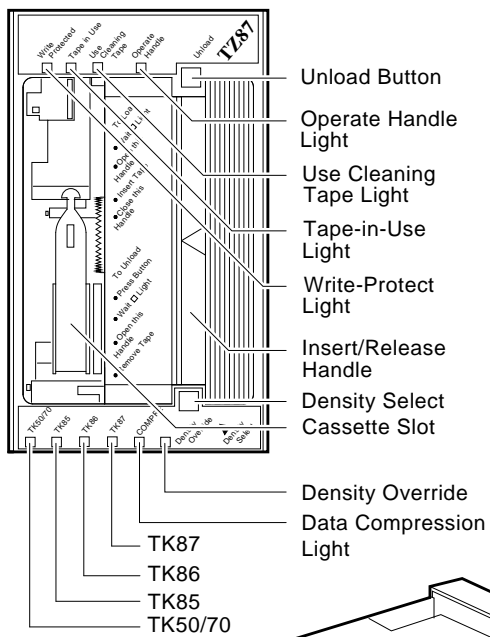
Documentation

<i>TZ87 Series Cartridge Tape Subsystem Owner's Manual</i>	EK-OTZ87-OM
<i>TZ87 Tape Drive Operator's Reference Card</i>	EK-OTZ87-RC

TZ87

Figure 1 TZ87 Cassette Tape Drive

Front

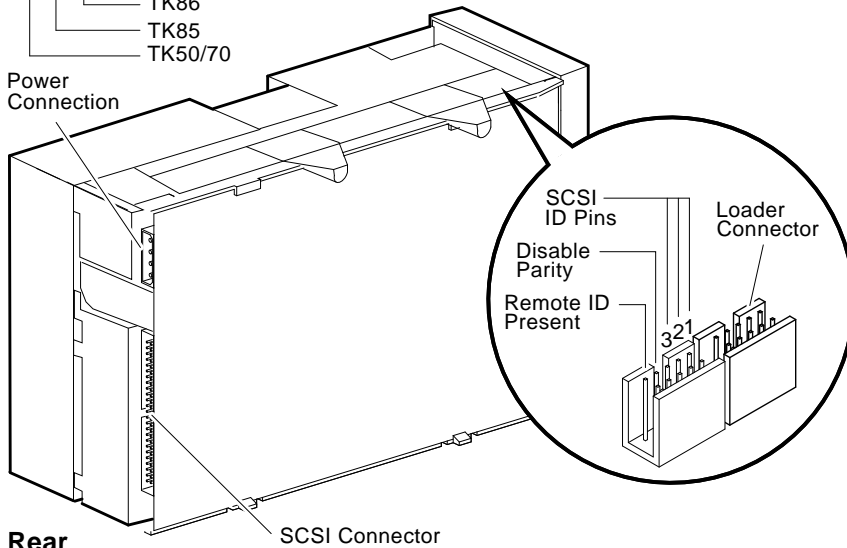


TZ87 SCSI ID Jumper Selection

SCSI ID Jumper Settings			
SCSI ID	3	2	1
0	Out	Out	Out
1	Out	Out	In
2	Out	In	Out
3	Out	In	In
4	In	Out	Out
5	In	Out	In
6	In	In	Out
7	In	In	In

Note: Remote ID present must be selected to enable selection jumpers

Power Connection



Rear

MLO-012202

TZ87

Table 1 TZ87 Top Side Light Summary

Light	State	Condition
Operate Handle (green)	On	Okay to operate the cartridge insert/release handle.
	Off	Do not operate the cartridge insert/release handle.
Tape in Use (yellow)	Blinks	Tape is moving.
	On	Tape is loaded and ready for use.
Use Cleaning Tape (yellow)	On	Drive head needs cleaning, or the current data cartridge is faulty.
	Remains on after you unload the cleaning tape.	Cleaning was not done. Replace cleaning cartridge.
	After cleaning, turns on again when you reload the data cartridge.	Faulty data cartridge. Try another cartridge.
	Off	Cleaning is complete or is unnecessary.
Write-Protect (orange)	On	Tape is write-protected.
	Off	Tape is write-enabled.
All indicators on one side of panel	On	Power-on self-test is starting.
	Blinks	An error has occurred. Press the Unload button or turn drive power off and then on again to clear the error.

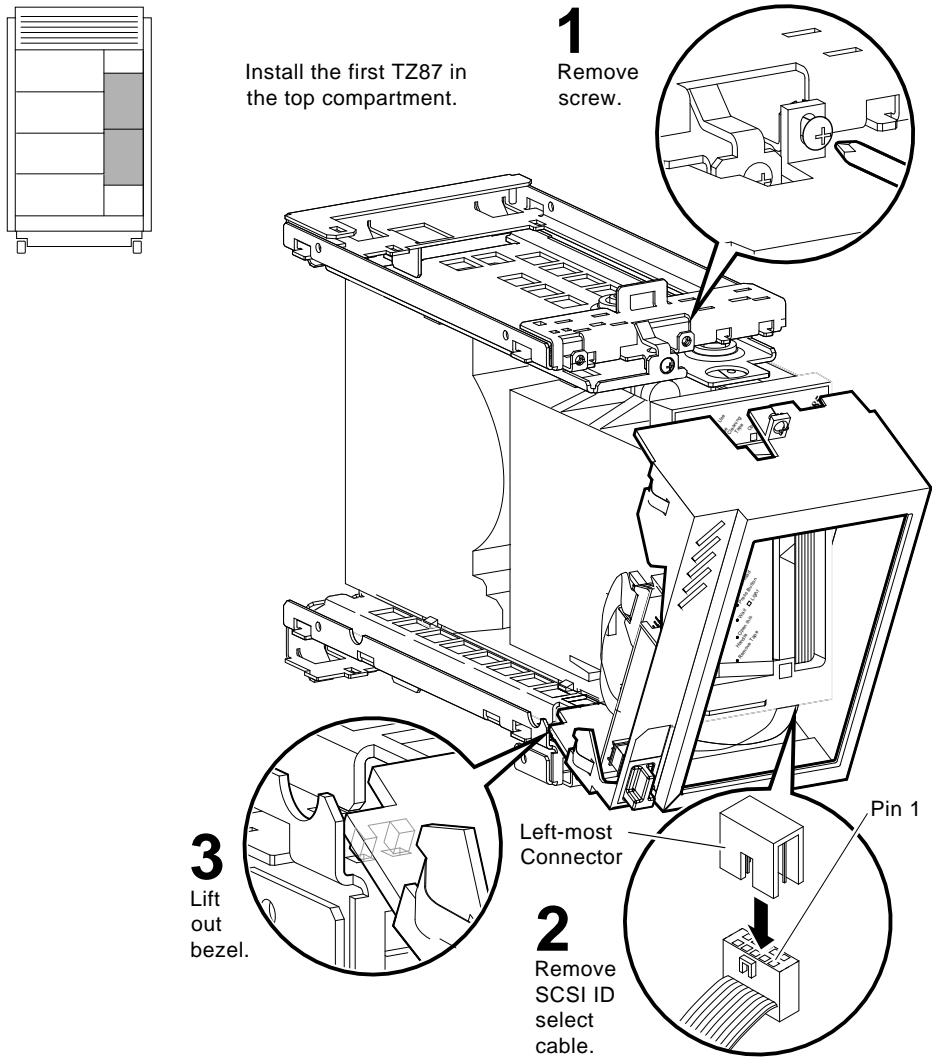
Table 2 Bottom Front Panel Light Summary

Light	State	Condition
All lights are yellow		
TK50/70	On	Indicates tape is recorded in TK50 or TK70 format.
TK85	On	Indicates tape is recorded in TK85 format.
	Blinks	Indicates tape is recorded in another density. This density was selected for a write from BOT. ¹
TK86	On	Indicates tape is recorded in TK86 format.
	Blinks	Indicates tape is recorded in another density. This density was selected for a write from BOT. ¹
TZ87	On (default)	Indicates tape is recorded in TZ87 format.
	Blinks	Indicates tape is recorded in another density. This density was selected for a write from BOT. ¹
Data Compression	On	Compression mode enabled. (Compression can be done in TZ87 density only.)
	Off	Compression mode disabled.
Density Override	On	A density selection has been set from the drive's front panel.
	Off (default)	Density selection is under host control or automatic.
	Blinks	Drive is in density selection mode.

¹Density override by Density Select Switch on OCP

TZ87

Figure 2 TZ87 Installation

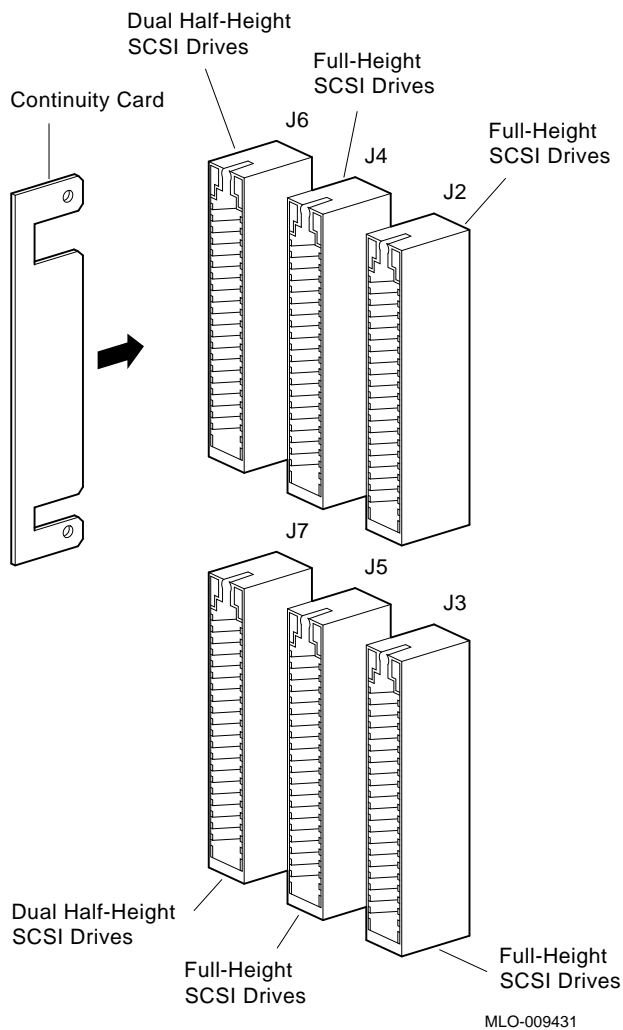


MLO-012201

Note

When a removable-media compartment is empty, install blank bezels to maintain maximum airflow. See Storage Tray Information in the *DEC 4000 AXP Options Guide* for part numbers and illustrations.

Figure 3 Bus Continuity Card

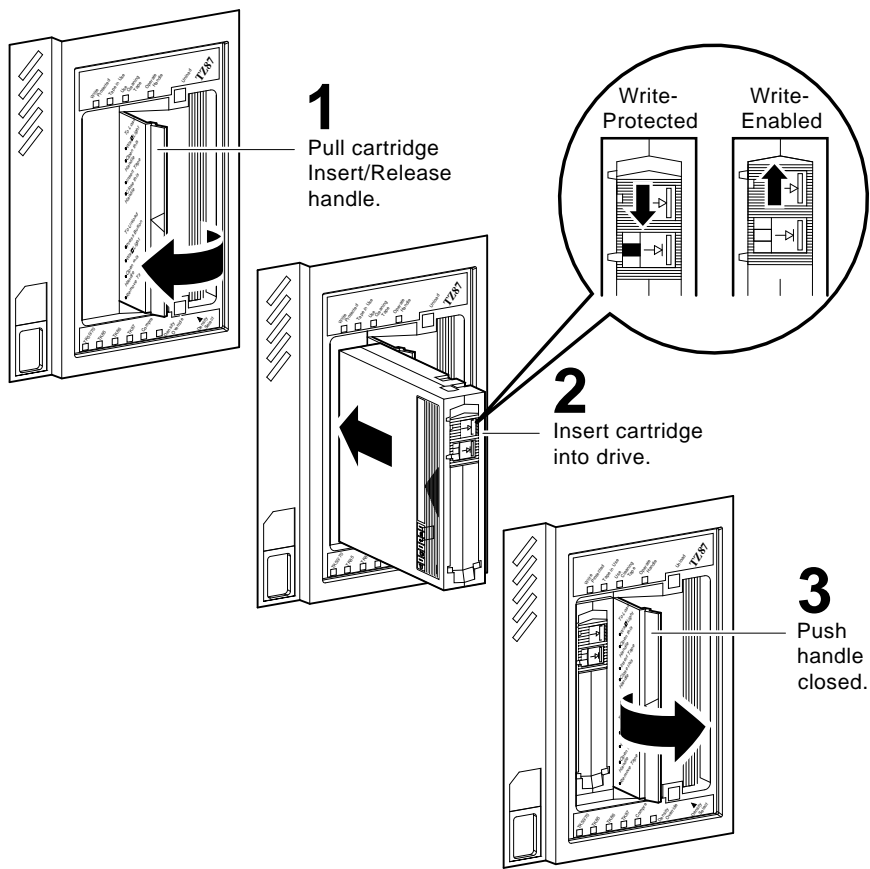


Note

When either the J6 or J7 backplane connector is not used, insert the bus continuity card into those slots to maintain bus continuity. There are two bus continuity cards already installed in the backplane.

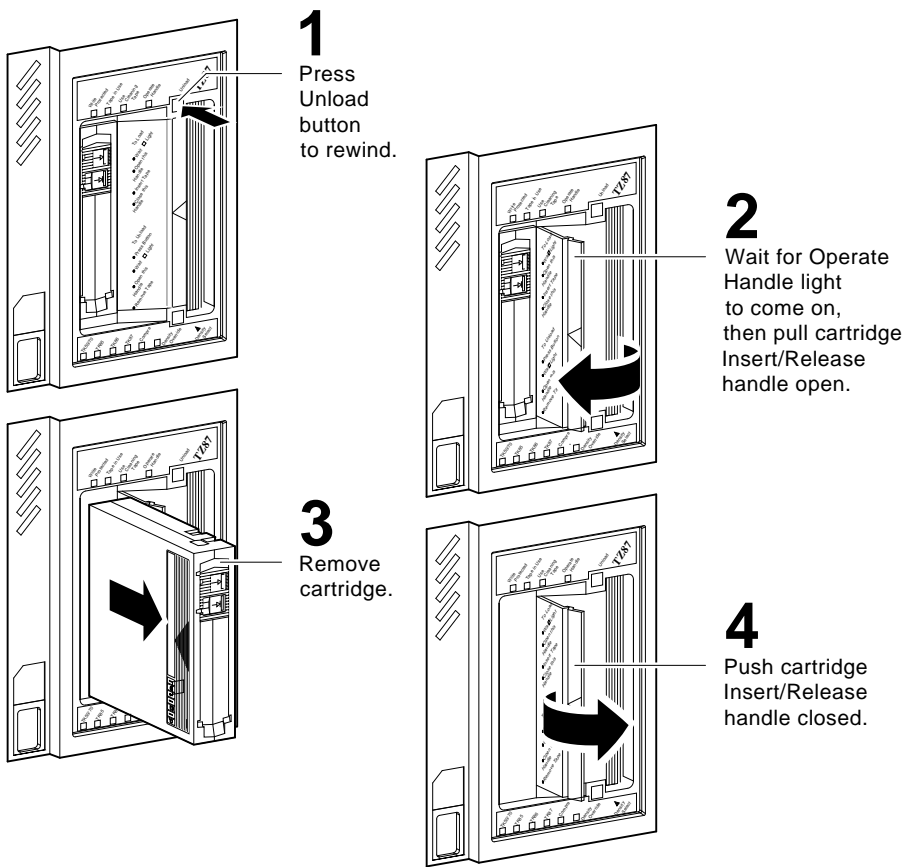
TZ87

Figure 4 TZ87: Inserting a Tape



MLO-011149

Figure 5 TZ87: Removing a Tape



MLO-011150

TZ8x7 Magazine Tape Subsystems

TZ857 Overview

Description	Electromechanical magazine tape subsystem
Media size	1/2 in
Cartridge type	CompacTape III (TK85) (2.6 GB)
Capacity	18.2 GB
Transfer rate	800 KB/s
Temperature	10°C (50°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	100 VAC–120 VAC / 220 VAC–240 VAC
Current	110 VAC: 2.0 A / 220 VAC: 1.0 A
Power	113 W (maximum)

Add-On Option Part Number

TZ857 Magazine Tape Subsystem	TZ857-AA
-------------------------------	----------

Field Service Orderable Parts and Options

FRUs	TZ857-AA (whole unit replacement)
CompacTape III cartridge (read/write)	TK85K-01
CleaningTape III cartridge	TK85-HC
Magazine	TK85-M

TZ8x7

Documentation

<i>Tx857 Series Magazine</i>	EK-TF857-OM
<i>Tape Subsystem Owners Manual</i>	
<i>Tx85 Tape Drive Operator's Reference Card</i>	EK-OTK85-RC
<i>DEC 4000 AXP Owner's Guide (VMS Ops)</i>	EK-KN430-OP
<i>DEC OSF/1 AXP Factory Installed Software User Guide</i>	EK-SFFIS-UG

TZ867 Overview

Description	Electromechanical magazine tape subsystem
Media size	1/2 in
Cartridge type	CompacTape III (TK86) (6.0 GB)
Capacity	42.0 GB
Transfer rate	800 KB/s
Temperature	10°C (50°F)–40°C (104°F) (operating)
Relative humidity	20%–80%
Voltage	100 VAC–120 VAC/220 VAC–240 VAC
Current	110 VAC: 2.0 A/220 VAC: 1.0 A
Power	113 W (maximum)

Add-On Option Part Number

TZ867 Magazine Tape Subsystem	TZ867-AA
-------------------------------	----------

Field Service Orderable Parts and Options

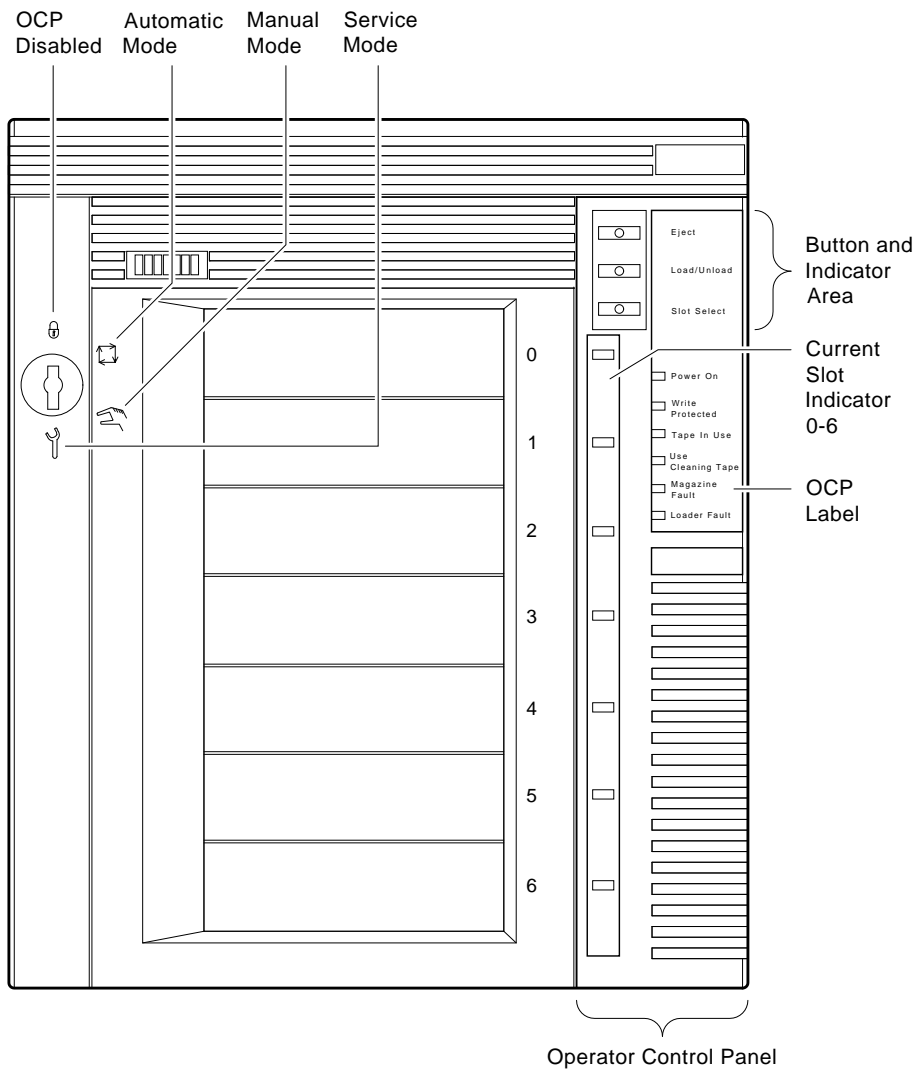
FRUs	TZ867-AA (whole unit replacement)
CompacTape III cartridge (read/write)	TK85K-01
CleaningTape III cartridge	TK85-HC
Magazine	TK86-M

TZ8x7

Documentation

<i>Tx867 Series Magazine</i>	EK-TX867-OM
<i>Tape Subsystem Owners Manual</i>	
<i>Tx86 Tape Drive Operator's Reference Card</i>	EK-OTK86-OM
<i>Tx86 Series Cartridge Tape Subsystem Owner's Manual</i>	EK-TX867-OM
<i>DEC 4000 AXP Owner's Guide (VMS OPS)</i>	EK-KN430-OP
<i>DEC OSF/1 AXP Factory Installed Software User Guide</i>	EK-SFFIS-UG

Figure 1 TZ8x7 Magazine Tape Subsystem



MLO-011322

TZ8x7

TZ8x7 Light Summary

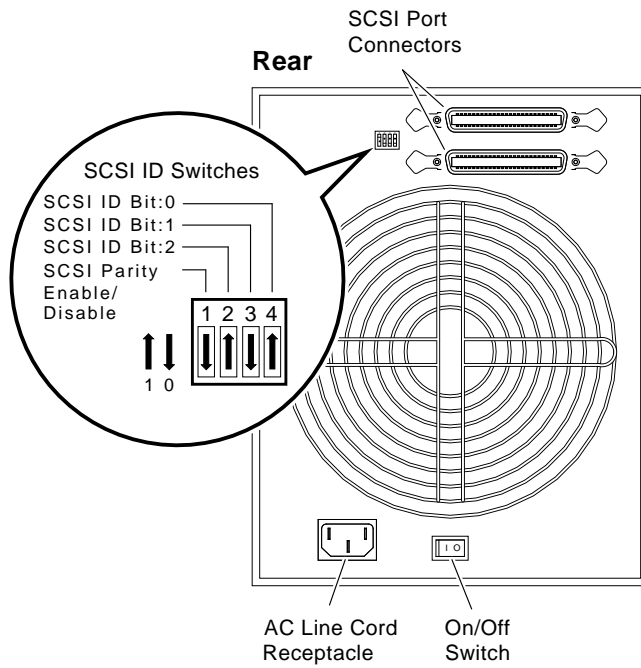
Light	Indicator	Condition
Green	Eject	Indicates magazine fault. Press Eject button to unload cartridges from drive to magazine, then open receiver door.
Green	Load/Unload	Indicates okay to press Load/Unload button.
Green	Slot Select	Indicates okay to press Slot Select button. Pressing this button moves the current slot indicator to the next slot.
Green	Power On	Indicates TZ8x7 magazine tape subsystem is powered on and ready to operate.
Orange	Write-Protected	On indicates that cartridge currently in drive is write-protected.
Yellow	Tape in Use	Indicates tape drive activity as follows: <ul style="list-style-type: none">• Blinking slow indicates tape is rewinding.• Blinking rapidly indicates tape is reading or writing.• On steady indicates cartridge is in drive and tape is not moving.• Off indicates no cartridge in drive.
Orange	Use Cleaning Tape	Read/write heads need cleaning.
Red	Magazine Fault	Indicates magazine failure.
Red	Loader Fault	Loader transfer assembly error or drive error.
Green	Current slot	Indicates current slot. (Blinks when corresponding cartridge moves to or from the drive.)

OCP Button Operation

Button	Function
Eject	Opens receiver to allow access to magazine for removal and insertion of cartridges. Also can be used to unload tape from drive to magazine.
Load/Unload	Loads current selected cartridge into tape drive. Unloads current cartridge out of tape drive. Resets subsystem if there is a loader fault.
Slot Select	Increments current slot indicator to next slot.

TZ8x7

Figure 2 Locating and Setting the SCSI ID Switches



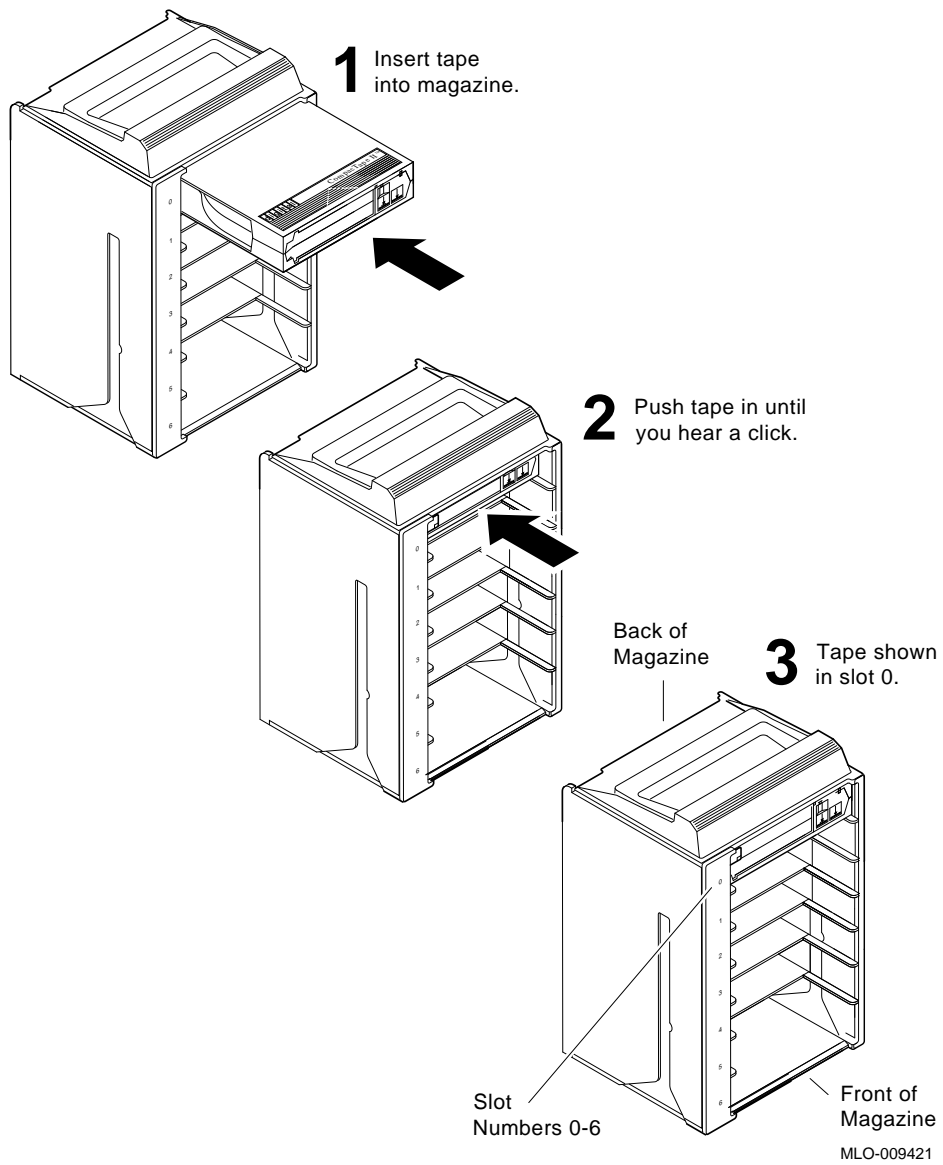
TLZ6L SCSI ID Selection

SCSI ID Switch Settings

SCSI ID	1 ¹	2	3	4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1

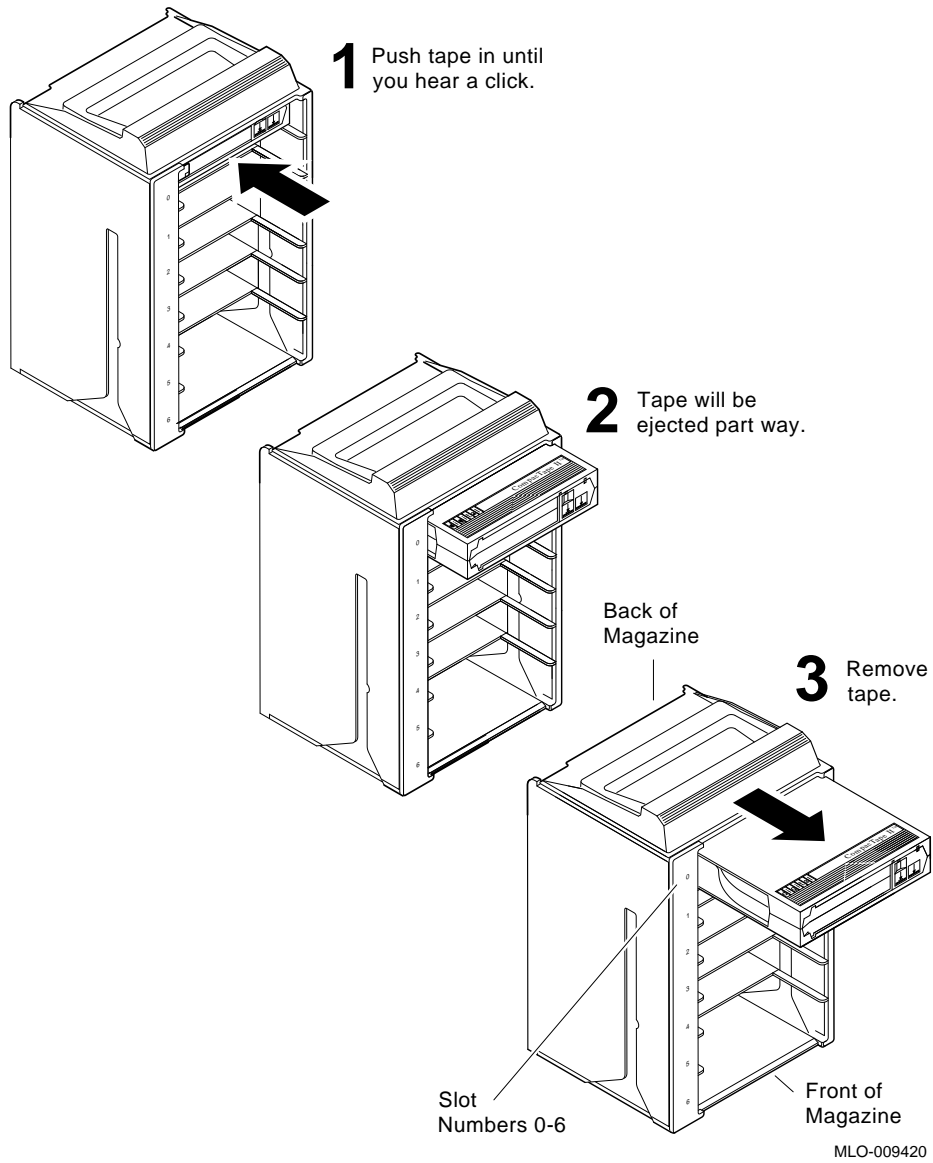
¹ Parity bit. This bit is always off (parity disabled).

Figure 3 Inserting Cartridge Tape into Magazine



TZ8x7

Figure 4 Removing Cartridge Tape from Magazine



Storage Tray Information

Storage Tray Information

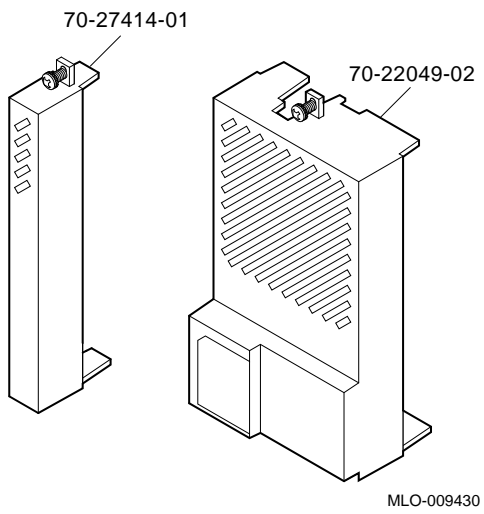
This section contains information on the following topics:

- Blank Bezels for Removable Media Compartments
- Removal of Blank Panel from Removable Media Bezel
- Removal of Blank Flat Plugs from Removable Media Bezel
- Removable Media Selection
- Fixed Disk and Storage Tray Information
- Disk Mounting Hardware Kit
- External Storage Expansion
- External Storage Expansion from Empty Storage Tray
- Termination

Storage Tray Information

Blank Bezels for Removable Media Compartments

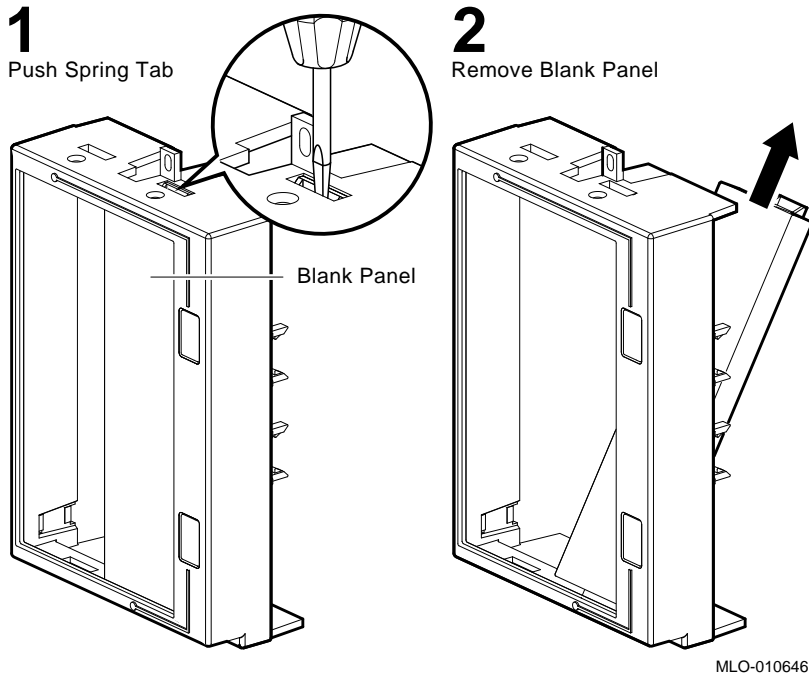
Figure 1 Blank Bezels



Storage Tray Information

Removal of Blank Panel from Removable Media Bezel

Figure 2 Removal of Blank Panel

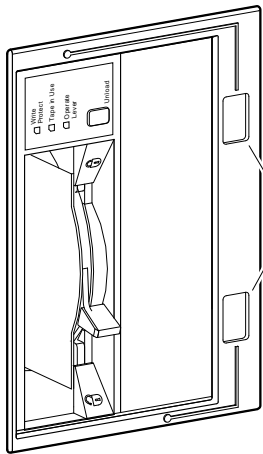


Storage Tray Information

Removal of Blank Flat Plugs from Removable Media Bezel

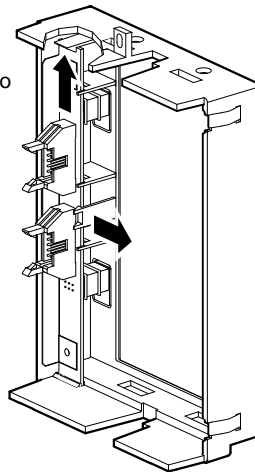
Figure 3 Removal of Blank Flat Plugs

Front



Blank
Flat Plugs

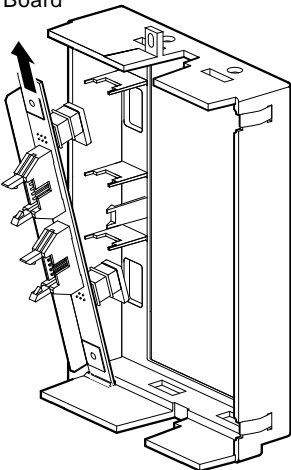
Rear



1
Push Back Two
Spring Tabs

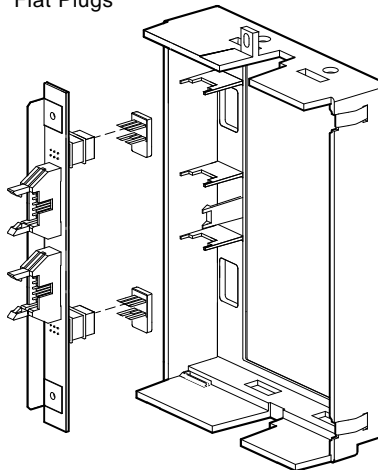
2

Lift Out
Board



3

Remove Blank
Flat Plugs



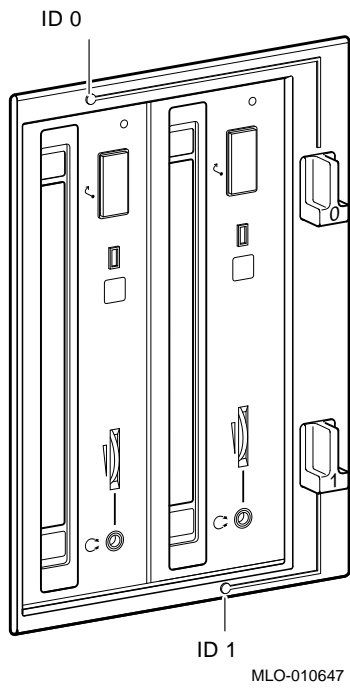
Note: Re-install board and then insert standard ID plugs.

MLO-010648

Storage Tray Information

Removable Media Selection

Figure 4 Selection



Storage Tray Information

Fixed Disk and Storage Tray Information

Table 1 3 1/2-Inch Drive/Tray Information

Part Number	Bus	Tray Limit	Expansion	
			Port	Storage Tray
RZ26-MY	SCSI	4	Yes	BA6ZE-MY
RZ28-MY	SCSI	4	yes	BA6ZE-MY
RZ26-MY	Fast SCSI	4	No	BA6ZB-MY
RZ28-MY	Fast SCSI	4	No	BA6ZB-MY
RF35-MY	DSSI	4	Yes	BA6FE-MY
RF36-MY	DSSI	4	Yes	BA6FE-MY

Note

You may select from 1–4 of the 3 1/2-inch disk drives in the List of Options table located in the front of this guide. You cannot mix RF and RZ drives within a tray.

Table 2 5 1/4-Inch Drive/Tray Information

Part Number	Bus	Tray Limit	Expansion	
			Port	Storage Tray
RF73-MX	DSSI	1	Yes	BA6ZE-MX
RZ73-MX	DSSI	1	Yes	BA6ZE-MX
RF74-MX	DSSI	1	Yes	BA6FE-MX
RZ74-MX	DSSI	1	Yes	BA6FE-MX

Storage Tray Information

Disk Mounting Hardware Kit

Note

The following mounting hardware is used for third-party disks and for embedded field upgrades.

Part Number	Description	BA6AA-MX Kit (5 1/4) Contents	BA6AA-MY Kit (3 1/2) Contents
74-42571-01	Storage bracket (upper half)	1	—
90-09984-07	Screw (6-32 pan)	4	—
70-30283-01	Drive plate assembly	—	1
90-00039-28	Screw (6-32 flt)	—	4

Note

RFP cables are not included in the kits. The RFP cable is unique to each drive variation and is included with the add-on option shipment.

Storage Tray Information

External Storage Expansion

Note

External expansion trays are not intended to house internal disks and do not contain mounting hardware or a power supply for internal disks.

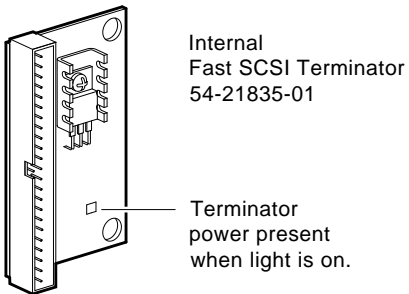
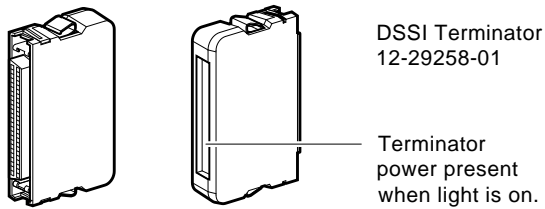
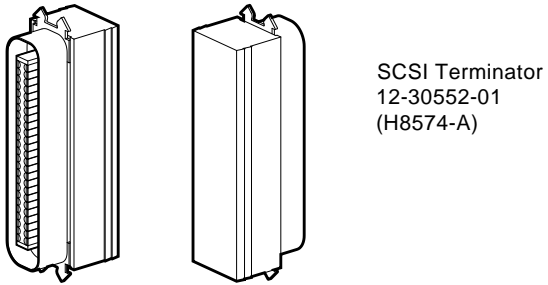
Table 3 External Storage Expansion

Order Number	Bus	Maximum Drives
BA6FE-MA	SCSI	7
BA6ZE-MA	DSSI	7

Storage Tray Information

Termination

Figure 5 Termination for Storage Options



MLO-009818

