Educational Services

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Tx85 Series
Cartridge Tape Subsystem
Owner's Manual
EK–OTF85–OM–002

Digital Equipment Corporation

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TF85 FCC NOTICE

The equipment described in this manual generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his own expense may be required to take measures to correct the interference.

TZ85 FCC NOTICE

The equipment described in this manual has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etcetera) certified to comply with the Class B limits may be attached to this computer. Operation with noncertified peripherals may result in interference to radio and television reception. This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient the receiving antenna.

— Move the computer away from the receiver.

— Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio-TV Interference Problems*. This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004–000–00398–5.

TZ85 USER NOTICE — CLASS B — DEUTSCHLAND

Bescheinigung des Herstellers/Importeurs:

Hiermit wird bescheinigt, das dieses Geraet in Uebereinstimmung mit den Bestimmungen der DBP-Verfuegung 1046/84, Amtsblatt Nr. 163/84, funkentstoert ist.

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Betreiberhinweis:

Wir sind verpflichtet, Sie auf folgende Fakten hinzuweisen (DBP-Verfuegung 1046/84, Paragraf 2, Abschnitt 5):

Das Geraet wurde funktechnisch sorgfaeltig entstoert und geprueft.

Beim Zusammenschalten mit anderen EDV-Geraeten koennen im unguenstigsten Fall Funkstoerungen entstehen, die dann im Einzelnen zusaetzliche Funkentstoerungs-Massnahmen erfordern.

About This Manual

Purpose

This manual introduces the Tx85 series of cartridge tape subsystems and describes the operating procedures.

Intended Audience

This manual is intended for the TF85 or TZ85 subsystem owner.

Chapter 1

"About the Tx85 Cartridge Tape Subsystem" briefly describes the TF85 and TZ85 cartridge tape subsystems. This chapter describes the CompacTape III and CleaningTape III cartridges, and lists supplies and related documents.

Chapter 2

"Operating the Tx85 Subsystem" shows the indicators and controls on the Tx85 subsystem and explains their use. This chapter provides a step-by-step explanation of how to operate and clean a TK85 drive.

Chapter 3

"Solving Problems" explains how to identify and resolve problems with your subsystem. This chapter provides symptoms and lists the most likely causes of problems.

About This Manual, Continued

Chapter 4

"Running Local Programs on the TF85 Subsystem" describes how to access and run the PARAMS, DIRECT, and HISTRY local programs on the TF85 subsystem.

Appendix A

"Tx85 Subsystem Specifications" provides a specification listing for the TF85 and the TZ85.

Appendix B

"Standard VMS Commands" describes how to use standard VMS operating system commands with your Tx85 cartridge tape subsystem for optimum operating efficiency.

Appendix C

"Digital Services" lists the services Digital Equipment Corporation provides its customers.

Convention

The term *Tx85* refers to the TF85 and TZ85 series of cartridge tape subsystems.

Chapter 1
About the Tx85 Cartridge Tape Subsystem

In This Chapter

Tx85 Cartridge Tape Subsystem

Tx85 Description

The Tx85 series of cartridge tape subsystems are used primarily as backup storage devices and as devices for loading software onto Digital computer systems.

The Tx85 comes embedded in a system enclosure or in a tabletop enclosure with its own power supply. The Tx85 is available in these variations:

- TF85, for systems using the DSSI bus
- TZ85, for systems using the SCSI bus

Basic Components

The Tx85 subsystem consists of the following basic components:

TF85 Subsystem	TZ85 Subsystem
TK85 tape drive	TK85 tape drive
DSSI controller module	SCSI controller module

The TK85 drive is a streaming tape drive that can store up to 2.6 gigabytes of data on a CompacTape III cartridge.

The Tx85 subsystem connects to the computer system through the controller module, which is responsible for initiating commands to the TK85 drive.

Tx85 Cartridge Tape Subsystem, Continued

Basic Components (continued)

Depending on your host system configuration, the SCSI controller module comes as one of the following two options:

This controller option. . .	For this SCSI cable. . .
Single-ended	6-meter (19-foot) single-ended cable (ANSI SCSI standard)
Differential	Longer differential SCSI cables with better noise immunity

Performance Consideration

The VMS backup performance rate of your Tx85 subsystem can depend on your system processor. For example:

- Connecting directly to an embedded bus adapter on such systems as the VAX 4000, VAX 6000, or InfoServer 150 (TZ85 only) provides optimum performance.
- Connecting to a MicroVAX/VAXserver 3xxx (Q–bus) system can reduce the rate of performance but does not limit the high capacity of data storage that your Tx85 has.

Required Load Device

The TF85, when connected to a KFQSA adapter installed in a MicroVAX II or MicroVAX/VAXserver 3xxx system, does not support booting of VMS or MicroVAX Diagnostic Monitor (MDM) software. An additional load device is needed to boot this software.

Tx85 Cartridge Tape Subsystem, Continued

Decals

The Tx85 subsystem ships with decals including the appropriate language of the country to which the subsystem has been shipped. The decals adhere to the cartridge insert /release handle and the indicator panel (see Tx85 Front Panel). The tabletop TZ85 also has a decal for the switchpack on the rear panel.

Tx85 Front Panel

The following diagram shows the front panel of the Tx85 cartridge tape subsystem:

CARTRIDGE INSERT/RELEASE HANDLE
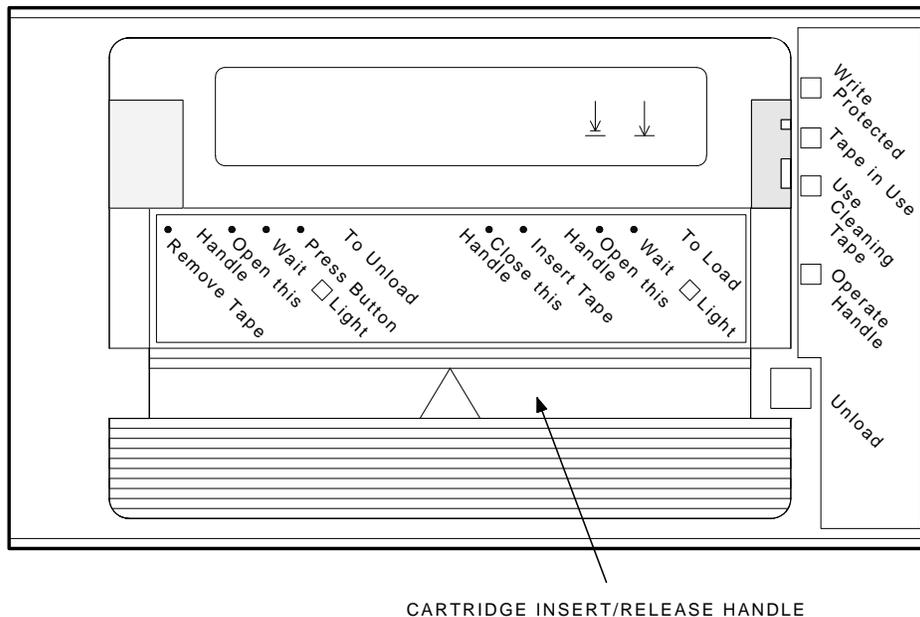
SHR-X0056G-91

Data Tape

CompacTape III Description

The CompacTape III is a 4-1/8-inch square, dark gray, plastic cartridge containing 1200 feet of 1/2-inch magnetic, metal particle (MP) tape.

Cartridge Packaging

Your CompacTape III is supplied with a:

- Set of slide-in labels for cartridges
- Cartridge handling information sheet

Reading and Writing Data

The TK85 drive writes 24 pairs of tracks—48 tracks in all—on the CompacTape III. The drive reads and writes data in a two-track parallel, serpentine fashion, traveling the entire length of tape on two tracks (at about 100 inches per second). The drive then steps the head and reverses tape direction and continues to read/write on the next two tracks.

Write-Protecting Data

The CompacTape III cartridge has a write-protect switch to prevent accidental erasure of data (see CompacTape III Diagram). When the switch is moved to the left and the small orange rectangle is visible, data cannot be written to the tape. Beneath the orange rectangle is an arrow over two lines on the write-protect switch. The arrow over the two lines symbolizes data cannot be written to the tape.

Data Tape, Continued

Write-Protecting Data (continued)

On the right side of the write-protect switch is another symbol, an arrow over one line. The symbol indicates if the write-protect switch is moved to the right, data can be written to the tape.

CompacTape III Diagram

The following diagram shows the CompacTape III cartridge and its write-protect switch:
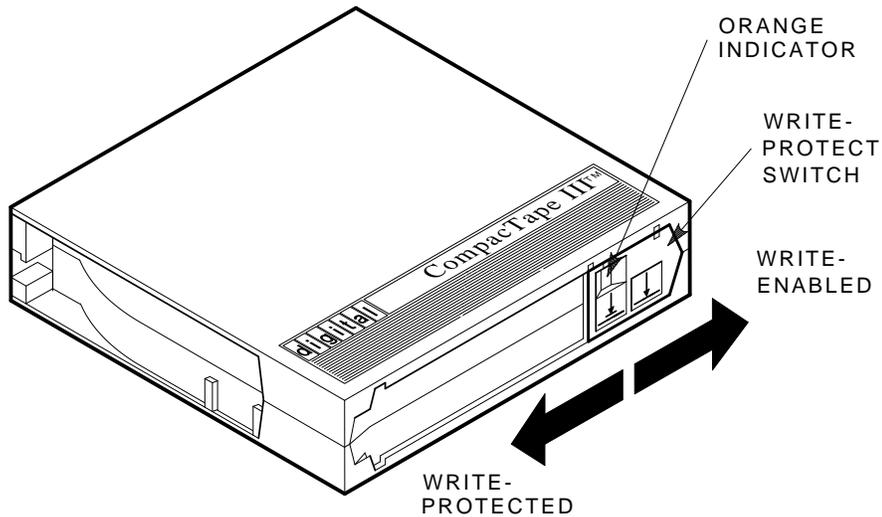
SHR_X1020C_89

Cartridge Compatibility

**Read-Only
Cartridges**

Older CompacTape cartridges can be loaded for read-only
purposes into the TK85 tape drive. Any cartridges recorded by
the TK50, TK70, or TZ30 tape drive can be read by the TK85
drive.

**Comparison
of Read/Write
Ability**

The following table shows cartridge compatibility with the
TK85 drive:

Cartridge Type	Read/Write Ability in the TK85 Drive
CompacTape (TK50/TZ30)	Read-only
CompacTape II (TK70)	Read-only
CompacTape III (TK85)	Read/write

Cleaning Tape

CleaningTape III Description

The CleaningTape III is a 41/8-inch square, light yellow, plastic cartridge containing 1200 feet of 1/2-inch, cleaning tape. See Chapter 2 for information on using the CleaningTape III.

Cartridge Packaging

Your CleaningTape III is supplied with a:

- Slide-in label that has 20 boxes, each for marking a check after cartridge use (see Cartridge Expiration)
- Cartridge handling information sheet

Cartridge Expiration

You can use the CleaningTape III cartridge approximately 20 times before it expires. The word *expire* does not pertain to an expiration date. *Expire* means no cleaning area is left on the tape.

To record the number of uses, mark a check in one box on the cartridge label after each cleaning. After the final use, discard the cleaning tape cartridge.

Cleaning Tape, Continued

CleaningTape III Diagram

The following diagram shows the CleaningTape III:
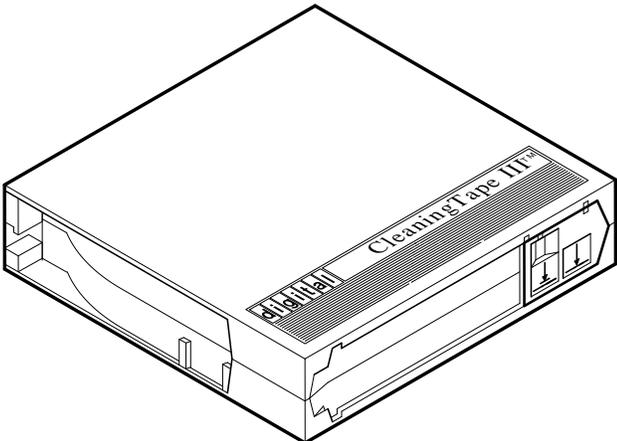
SHR_X1020E_89

Supplies

Cartridges Provided

One CompacTape III cartridge and one CleaningTape III cartridge ship with the Tx85 subsystem.

How To Order

You can order additional cartridges by contacting your Digital sales representative or by calling Digital's DECdirect ordering service at 1–800–DIGITAL.

The following table lists cartridges with order numbers for the Tx85 subsystem:

Order Number	Description
TK85–HC	CleaningTape III cleaning cartridge
TK85K–01	CompacTape III data cartridge

Related Documents

For More Information

The following documents provide more information on the Tx85 subsystem:

Order Number	Title
AA–Z407B–TE	*VAX/VMS Backup Utility Reference Manual*
AI–Y506B–TE	*Guide to VAX/VMS Disk and Magnetic Tape Operations*
AA–Z424A–TE	*VAX/VMS Mount Utility Reference Manual*
EK–TF857–OM	*Tx857 Series Magazine Tape Subsystem Owner's Manual*
EK–OTK85–RC	*Tx85 Tape Drive Operator's Reference Card*

Chapter 2
Operating the Tx85 Subsystem

In This Chapter

Introduction

This chapter describes operating procedures for the Tx85 subsystem.

Contents

Chapter 2 includes the following topics:

Indicators and Controls

Description of Indicators and Controls

The Tx85 subsystem has the following indicators and controls for operating the subsystem (see Diagram of Indicators and Controls):

Indicators

Write Protected indicator

Tape in Use indicator

Use Cleaning Tape indicator

Operate Handle indicator

Beeper

Controls

Unload button

Cartridge insert/release handle

Indicators and Controls, Continued

Diagram of Indicators and Controls

The following diagram shows the Tx85 controls and indicators:

ORANGE
YELLOW
ORANGE
GREEN

Write Protected
Tape in Use
Use Cleaning Tape
Operate Handle

Unload

Remove Tape
Open this Handle
Wait
Press this Light
Button
To Unload
Close this Handle
Insert Tape
Open this Handle
Wait
To Load
Light

CARTRIDGE INSERT/RELEASE HANDLE
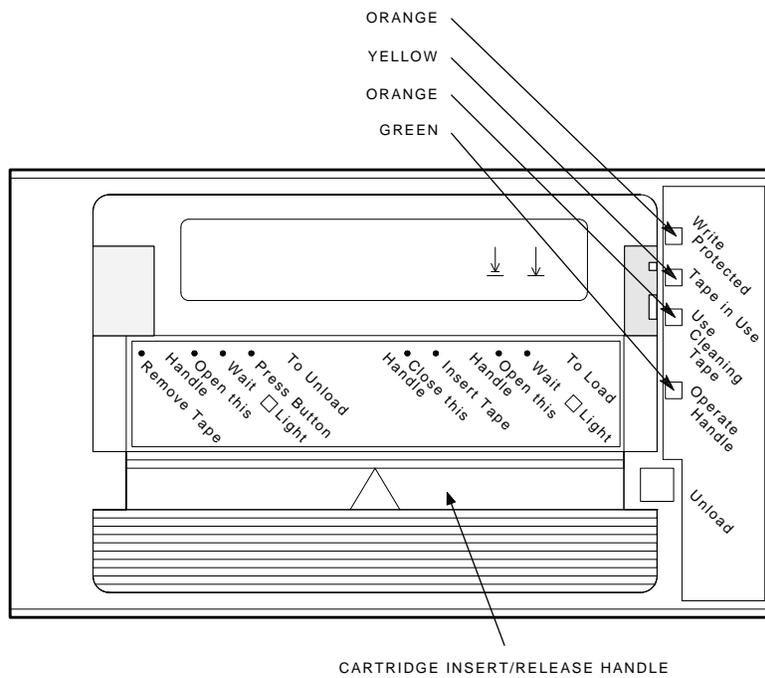
SHR-X0056H-91

Indicators and Controls, Continued

Interpreting the Indicators

Use this table to determine the subsystem's operating condition:

Indicator

Label	Color	State	Operating Condition
Write Protected	Orange	On Off	Tape is write-protected. Tape is write-enabled.
Tape in Use	Yellow	Blinking On	Tape is moving. Tape is loaded; ready for use.
Use Cleaning Tape	Orange	On	Drive head needs cleaning, or the tape is bad. See Using the CleaningTape III in this chapter.
		Remains on after you unload the cleaning tape	Cleaning tape attempted to clean the drive head, but the tape expired, so cleaning was not done.
		After cleaning, turns on again when you reload the data cartridge	Problem data cartridge. Try another cartridge.
		Off	Cleaning is complete, or cleaning is unnecessary.
Operate Handle	Green	On Off	Okay to operate the cartridge/insert release handle. Do not operate the cartridge insert/release handle.
All four indicators	–	On	Power-on self-test is in progress.
		Blinking	An error has occurred. See Chapter 3, Solving Problems.

Indicators and Controls, Continued

Beeper

A beeper sounds when you can operate the cartridge insert /release handle. When you hear the beep, the green light is on.

Unload Button

The Unload button rewinds the tape and unloads the tape from the drive back into the cartridge. The tape must be completely rewound and unloaded into the cartridge before you remove the cartridge from the drive. Depending on tape position, an unload operation may take from 10 seconds to 4 minutes.

Cartridge Insert/Release Handle

Operate the cartridge insert/release handle to load a cartridge or to eject a cartridge only when the Operate Handle indicator is on, and after the momentary beep sounds. The handle lifts to the open position and lowers to the closed position. See Loading a Cartridge and Unloading a Cartridge for the operating procedures.

Cartridge Write-Protect Switch

Positioning the Switch

Before loading the CompacTape III into the drive, position the write-protect switch on the front of the cartridge. The switch can move to the left so that the cartridge is write-protected, or to the right so that the cartridge is write-enabled (see Diagram of the Switch).

Diagram of the Switch

The following diagram shows the write-protect switch on the CompacTape III:
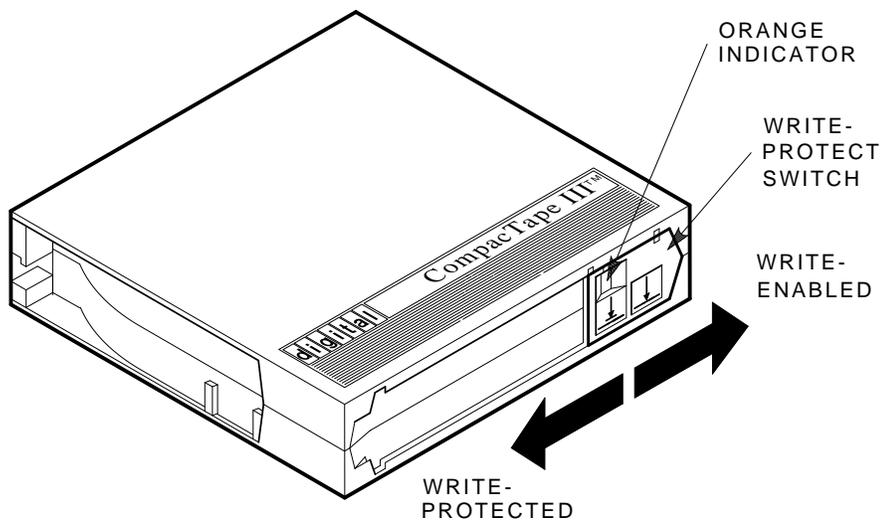
SHR_X1020C_89

Cartridge Write-Protect Switch, Continued

Data Protection

The following table describes what happens to data protection when you move the write-protect switch:

If you move the write-protect switch before loading the cartridge. . .	Then. . .
To the left on the cartridge, the tape is write-protected, with the orange indicator showing	You cannot write data to the tape.
To the right on the cartridge, the tape is write-enabled	You can write data to the tape (if it is not software write-protected).
If you move the write-protect switch during operation. . .	**Then. . .**
From the write-protected position to the write-enabled position	The tape becomes write-enabled after a variable amount of time (on order of seconds).
From the write-enabled position to the write-protected position	The tape becomes write-protected after a variable amount of time (on order of seconds).

Loading a Cartridge

Steps To Follow

The directions for loading a cartridge into and unloading a cartridge from the drive are printed on the front of the drive.

The following are more detailed steps for loading a cartridge (see Diagram of Cartridge Loading):

1. When the green light is on steadily, pull the cartridge insert /release handle open.

2. Insert the cartridge.

3. Push the cartridge into the drive.

4. Push the handle closed.

The green light turns off and the yellow light blinks to show that the tape is loading. When the tape is at the beginning-of-tape (BOT) marker, the yellow indicator turns on steadily. The tape is now ready for use.

Loading a Cartridge, Continued

Diagram of Cartridge Loading

The following diagram shows how to load a cartridge into the drive:
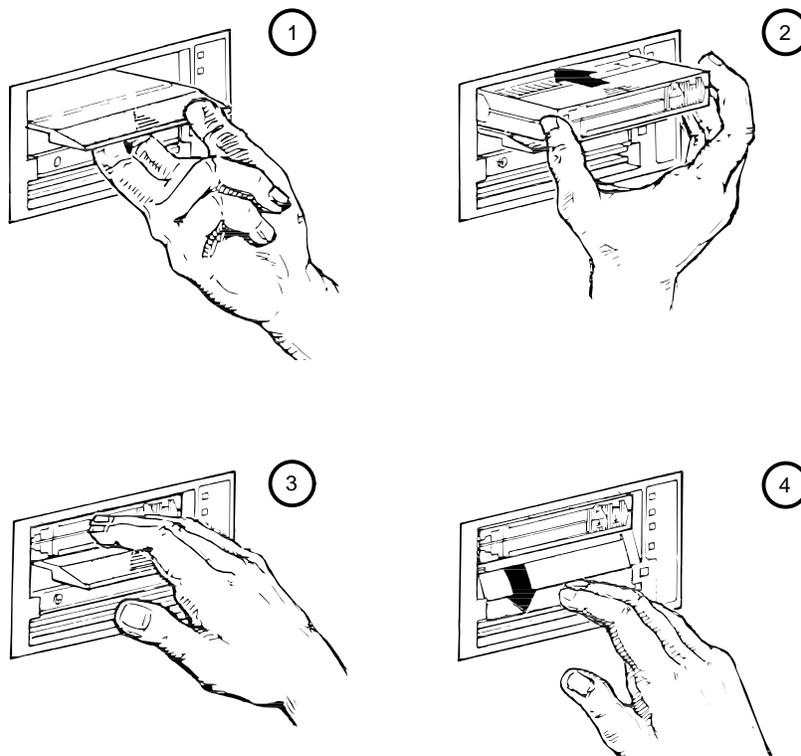
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SHR_X1093_89_CPG

Using a Cartridge

Tape in Use

Whenever the yellow light is on steadily, the tape is ready to use. When the tape is being read, written, or rewound, the yellow light blinks.

Things To Note During Cartridge Use

Use the following table to determine what is happening during cartridge use:

If. . .	Then. . .
The yellow light is on steadily	A cartridge is loaded, but the tape is not moving. This condition can mean that no application is communicating with the controller, or that the application is communicating but is not delivering commands for tape motion.
The yellow light blinks irregularly	A read or write is in progress.
The yellow light blinks regularly	The tape is loading, unloading, or rewinding.
The green light turns on and the beeper sounds	The tape is unloaded.
All four lights blink	An error has occurred during operation. See Chapter 3, Solving Problems.

Using the CleaningTape III

When To Use

If the Use Cleaning Tape indicator turns on (see Diagram of Indicators and Controls), the drive head needs cleaning or the tape is bad (see Problem Data Cartridge). Use the CleaningTape III. Follow the instructions in this chapter for loading a cartridge into the drive. When cleaning is complete, the beeper sounds for you to remove the CleaningTape III.

If you use the CleaningTape III when the Use Cleaning Tape indicator is off, the CleaningTape III will load and clean the drive.

Problem Data Cartridge

If the Use Cleaning Tape indicator turns on after you clean the drive head and reload your data cartridge, your data cartridge may be causing the problem. Try another data cartridge, and if the Use Cleaning Tape indicator turns on again, call Digital Services.

Expired Cleaning Tape

If the Use Cleaning Tape indicator is on after you load the CleaningTape III, then cleaning has not been done and the cartridge is expired. Replace the cleaning cartridge.

The CleaningTape III expires after approximately 20 uses.

Unloading a Cartridge

Steps To Follow

Follow these steps to unload a cartridge from the drive (see Diagram of Cartridge Unloading):

1. Press the Unload button (or issue the appropriate system software command).

2. When the green light turns on (the beeper also sounds), pull the cartridge insert/release handle open to eject the cartridge.

3. Remove the cartridge.

4. Push the handle closed.

CAUTIONS
Cartridges must be removed from the drive before host system power is turned off. Failure to remove a cartridge can result in cartridge and drive damage.

To prolong the life of your cartridge, return the cartridge to its plastic case when you remove the cartridge from the drive.

Unloading a Cartridge, Continued

**Diagram of
Cartridge
Unloading**

The following diagram shows how to unload a cartridge from the drive:
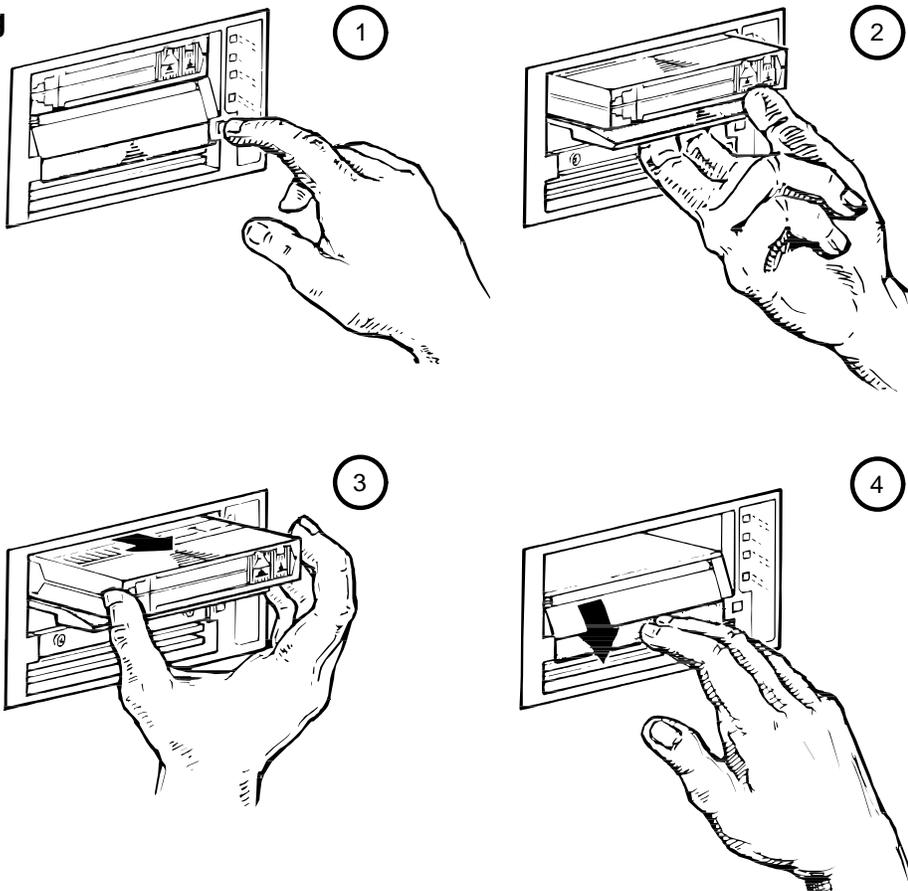
SHR-0257-87
SHR_X1049_89_CPG

Preserving Cartridges

Guidelines

For longer life of recorded or unrecorded cartridges, store cartridges in a clean environment with the following conditions:

- Do not drop or bang the cartridge. Doing so can displace the tape leader, making the cartridge unusable and possibly damaging the drive.

- Keep tape cartridges out of direct sunlight and away from heaters and other heat sources.

- Store tape cartridges in temperatures between 10°C and 40°C (50°F to 104°F). For longer cartridge life, always store the cartridge in its plastic container and in room environment conditions of 72°F ± 7°F (22°C± 4°C).

- If the tape cartridge has been exposed to heat or cold extremes, stabilize the cartridge at room temperature for the same amount of time it was exposed—up to 24 hours.

- Do not place cartridges near electromagnetic interference sources, such as terminals, motors, and video or X-ray equipment. Data on the tape can be altered.

- Store tape cartridges in a dust-free environment where the relative humidity is between 20% and 80%. For longer cartridge life, store the cartridge at 40% ± 20% relative humidity.

- Place an identification label only in the slide-in slot on the front of the cartridge.

Chapter 3
Solving Problems

In This Chapter

Introduction

This chapter describes what to do if you have drive or tape problems.

Contents

Chapter 3 describes the following topics:

Topic	Page
Common Errors	3–2
Inspections	3–4

Common Errors

Avoiding Basic Problems

You can avoid some errors by following these guidelines:

- Use the correct cartridge type. See Cartridge Compatibility in Chapter 1.
- Care for your cartridges according to the guidelines in Preserving Cartridges , Chapter 2.
- Make sure the cartridge leader and the drive leader are in their correct positions. See Inspections in this chapter.
- Unload the cartridge before powering down the system.

Error Influences

If an error does occur during subsystem operation, you may be able to correct the error yourself. Factors influencing errors include:

- Defective media
- Dirty drive head
- Operator or user errors
- Incorrect backup commands

See Finding Solutions in this chapter for information on detecting and correcting these errors.

Common Errors, Continued

Finding Solutions

Use the following table to interpret error symptoms, determine their causes, and take corrective action:

Symptom	Probable Cause	Possible Correction
Failure to mount or read/write with new or used cartridge	Bad cartridge	Retry with another cartridge.
	Dirty drive head	Use CleaningTape III.
VMS INITIALIZE command fails with parity error	Tape calibration failed	Try another cartridge.
Green light is on and tape does not move (yellow light stays on, does not blink)	Cartridge load error	Inspect the cartridge for a mispositioned leader (see Diagram of Cartridge Leader in this chapter). Replace the cartridge if its leader is mispositioned.
		Inspect the drive for a damaged, misplaced, or unhooked leader (see Diagrams of Drive Leader in this chapter). Call Digital Services if the drive leader is not in the correct location.
All four lights blinking	Drive failed self-test or detected a hard error during operation	Try to clear the error by pressing the Unload button. If the error does not clear (the tape does not rewind and unload and the four lights blink), you have a hardware failure. Call Digital Services.

Inspections

**Checking the
Cartridge
Leader**

Before you use a tape cartridge, be sure the tape leader is in
the same position as the one in Diagram of Cartridge Leader.
Lift the door lock with your thumb and open the small door to
expose the leader.

CAUTIONS
Do not touch the exposed magnetic tape.

**If the tape leader is not in the correct position, do
not try to fix it. Use another cartridge instead.**

**Diagram of
Cartridge
Leader**

The following diagram shows the correct position of the
cartridge leader:

CARTRIDGE
LEADER

DOOR LOCK
(RELEASE BY LIFTING
DOOR LOCK WITH THUMB)
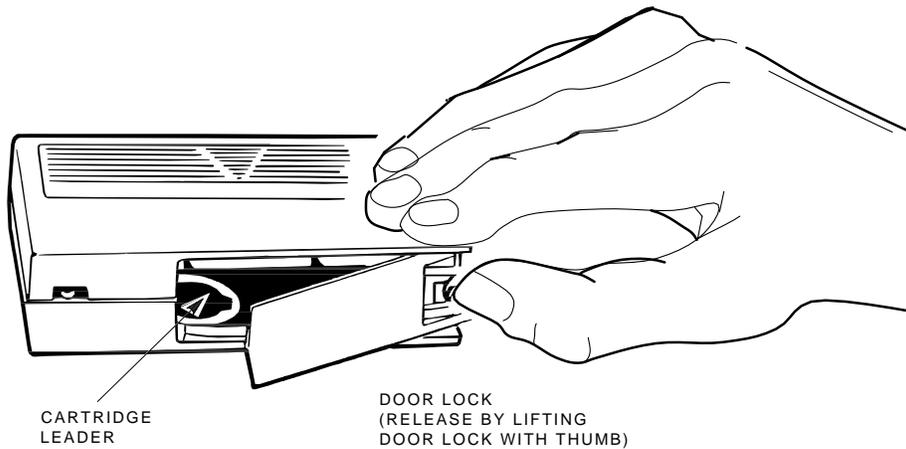
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**Checking the
Drive Leader**

Compare the leader inside your drive with those shown in
Diagrams of Drive Leader. If the leader is unhooked, misplaced,
or damaged, call Digital Services. Do not try to fix the leader.

**Diagrams of
Drive Leader**

The following diagram shows the location of the leader inside
the drive:

TAKEUP
LEADER

NOTCH IN
LEADER

BUCKLING
LINK

Write
Protected

Tape in Use

Use
Cleaning
Tape

Operate
Handle

Unload

CARTRIDGE INSERT/RELEASE
HANDLE (DOWN)
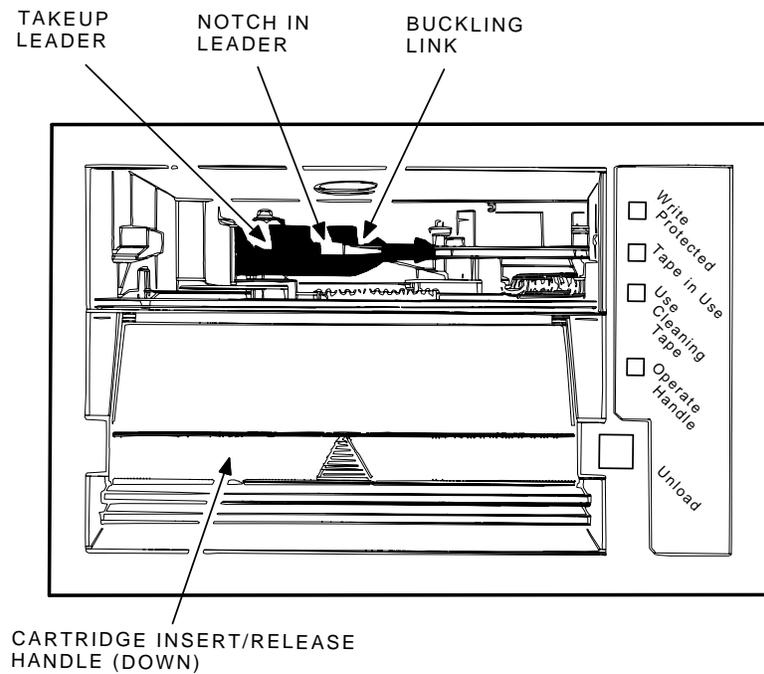
SHR-0249-87
SHR_X1028G_91_CPG

Inspections, Continued

Diagrams of Drive Leader (continued)

The following diagram shows the correct and incorrect locations of the drive leader:

TAKEUP LEADER

BUCKLING LINK

CORRECT LOCATION OF LEADER

ACCEPTABLE

LEADER UNHOOKED

UNACCEPTABLE

TAKEUP LEADER NOTCH

LEADER DISPLACED ABOVE LINK
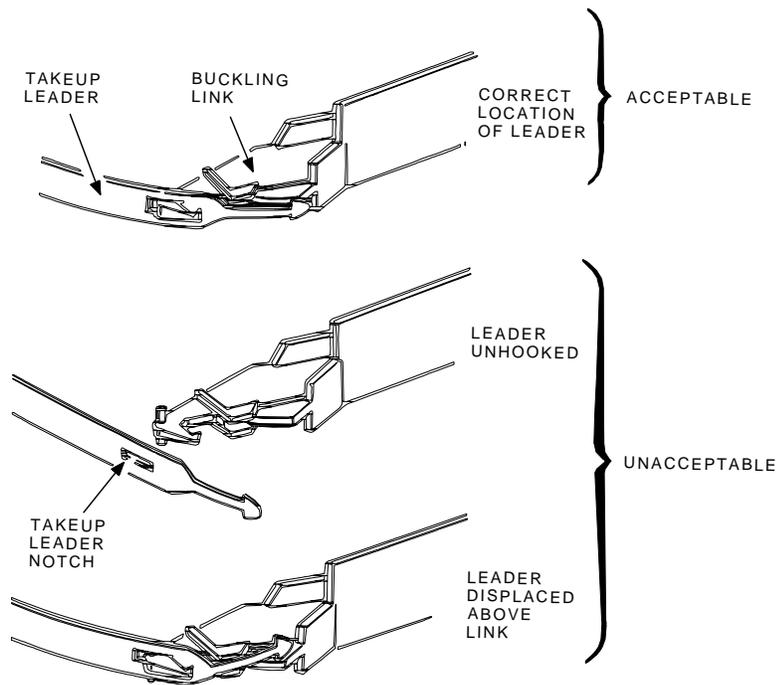
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SHR_X1028F_91_CPG

Chapter 4
Running Local Programs
on the TF85 Subsystem

In This Chapter

Introduction

This chapter shows you how to use the following local programs that reside in read-only memory (ROM) on the TF85 subsystem:

- **PARAMS** allows you to modify parameters for your TF85.
- **DIRECT** provides a directory of available local programs.
- **HISTRY** displays information about the TF85.

Contents

Chapter 4 includes the following topics:

Using the TF85 PARAMS Program

About PARAMS

PARAMS can be executed while the tape is controlled by another application. PARAMS is used only to access and change controller parameters.

When you execute PARAMS, communications between the host system and the TF85 subsystem are through the diagnostic utilities protocol (DUP). When you exit PARAMS, control is returned to the operating system.

Starting PARAMS

After defining a symbol node name to be the node name parameter for your drive, access PARAMS with the DCL command. The following example shows the sequence of commands to start PARAMS. These commands are for the VMS operating system, version 5.4 or later.

```
$ SHOW CLUSTER

View of Cluster from system ID 18582 node: DROVIM 7-OCT-1991 11:47:03
```

SYSTEMS		MEMBERS
NODE	SOFTWARE	STATUS
DROVIM	VMS V5.3	MEMBER
GEAR	RFX V103	
LIBRY	RFX V103	
TF85	TFX V002	
CANDY	VMS V5.3	MEMBER
BOLTS	VMS V5.3	MEMBER

```
$ SET HOST/DUP/SERVER=MSCP$DUP/TASK=PARAMS TF85
```

Continued on next page

Starting PARAMS (continued)

Note that you can determine the node name by executing the SHOW CLUSTER command. Also note that, after TASK=, you append PARAMS to execute the PARAMS program.

NOTE
The node name is the name of the tape device. The node name is derived from the subsystem's serial number, unless you already reassigned the node name through PARAMS. A drive received from the factory has a unique drive serial number and, therefore, a unique node name.

Once you invoke PARAMS through the SET HOST/DUP command, the screen displays the following prompt:

```
PARAMS>
```

The PARAMS> prompt indicates that you have accessed the PARAMS program.

Unit Off-Line Message

If, when using the SET HOST/DUP command, you receive the error message:

```
Unit offline
```

you might have forgotten to load the FYDRIVER program. (Loading FYDRIVER a second time will not cause any problem.)

Load FYDRIVER as follows:

```
$ MCR SYSGEN              (to access SYSGEN)

$ SYSGEN> LOAD FYDRIVER   (to load FYDRIVER, prerequisite
                             to using diagnostics)

$ SYSGEN> CON FYA0/NOADAP (to configure FYDRIVER)

$ SYSGEN> EXIT
```

Changing the Node Name

You may want to change the default node name to something you can recognize more easily than the node name the system created. If you decide to change the node name, you should be aware of the following:

- It is preferable to change the node name only once—when the device is first installed into your VMS system. Digital Services representatives know how to change the node name and avoid the error and additional system reboot described in this section.

- If you change the node name after the subsystem has been correctly recognized by VMS, VMS will not recognize the new subsystem node name when you exit PARAMS.

  That is, if you execute the DCL command, SHOW CLUSTER, you will not see the subsystem's old or new node name in your table. If you try to use the subsystem, all applications will get errors indicating the subsystem is not present. To avoid problems, reboot VMS. Then, you can use the subsystem with its new node name.

PARAMS Functions

At the PARAMS> prompt, you can use the following commands:

Use. . .	To. . .
HELP	Display a list of available commands and usage format
SHOW /ALL	Display all subsystem parameters
SHOW parameter	Display a specific parameter
SET parameter	Set a parameter
WRITE	Save changes permanently in EEROM
EXIT	Exit from PARAMS

Continued on next page

Using the TF85 PARAMS Program, Continued

SHOW Command

Use the **SHOW** command to display the settings of the subsystem parameters. The SHOW command has two formats:

SHOW /ALL
SHOW parameter

To list all parameters, type:

```
PARAMS> SHOW /ALL
```

The list of parameters is long but includes five that you might want to change. In the following example, each row shows the parameter's name, the parameter's current value, the factory-set default value, the acceptable minimum and maximum values, and the format for representing the values:

```
Parameter        Current    Default    Minimum    Maximum    Radix

UNITNUM                0          0          0        255    Decimal
FORCEUNIT              1          1          0          1    Decimal
NODENAME          T8DBBB       TF85                          Ascii
FORCENAME              0          0          0          1    Decimal
SYSTEMID     420000F00002                                    Quad
```

To display a specific parameter, type:

```
PARAMS> SHOW systemid

Parameter        Current    Default    Minimum    Maximum    Radix

SYSTEMID     420000F00002                                    Quad
```

Continued on next page

Using the TF85 PARAMS Program, Continued

SHOW Command (continued)	The following table defines the five parameters:

Parameter	Definition
UNITNUM	TMSCP unit number.
FORCEUNIT	Determines whether the UNITNUM value or DSSI node ID is used to identify the TMSCP unit. If you set FORCEUNIT, then you should also assign UNITNUM to the desired value. UNITNUM means nothing when FORCEUNIT = 0. 1 — Uses the DSSI node ID. 0 — Uses the TMSCP unit number.
NODENAME	Node name for the TF85 subsystem.[1] Enter a 6-character name. (The factory setting is a unique string derived from the subsystem serial number.)
FORCENAME	1 — Uses a "canned" node name: TF85x, where x = A through H, depending on the DSSI node number value (0 through 7, respectively).[1] 0 — Uses the value set in NODENAME.
SYSTEMID	DSSI controller module's 48-bit (hex) system ID. It is recommended that you never change this value; it uniquely identifies your drive.

[1]If you intend to change either NODENAME or FORCENAME, the system will not recognize the drive as available until you boot the VMS operation system.

SET Command

Use the **SET** command to change parameters that you can list with the SHOW command.

Syntax for the SET command is:

SET parameter value

In this example, **parameter** is the name of the parameter to be set and **value** is the value you want assigned to the parameter.

> **CAUTION**
> **The controller module does range validation checking on each parameter. However, it is not guaranteed all combinations of settings will result in correct controller module operation.**

Parameters changed are not actually effective until you execute a WRITE command, described in the next section. If you forget to issue a WRITE command and try to EXIT, a warning message displays, telling you the parameter was modified but not written.

> **NOTE**
> **If you request changing some parameters, the system will warn you that it must reset the controller to accept the changes. Details are in the EXIT Command section of this chapter.**

WRITE Command

Use the **WRITE** command to save, in nonvolatile memory, the changes you made using the SET command. The WRITE command is similar to the VMS SYSGEN WRITE command. The syntax is WRITE at the PARAMS> prompt. The program's response depends on which parameters you changed. If the change is allowed without resetting the controller, the response is merely the PARAMS> prompt.

In the following example, the response requires user action:

```
PARAMS> SET NODENAME TAPE1
PARAMS> SET UNITNUM 18
PARAMS> WRITE
```

Changing NODENAME and UNITNUM each requires a reset (initialization) of the controller. PARAMS asks:

```
Changes require controller initialization, ok? [Y/(N)] Y
```

> **CAUTION**
> **Answering YES aborts the controller's current application, if any, and saves the parameters. Your changes take effect immediately and program control returns to the DCL command prompt.**
>
> **To avoid aborting the current application, answer NO. If you answer NO, all parameters changed using SET since the previous successfully completed WRITE command are ignored. You are returned to the PARAMS> prompt. See the next section, EXIT Command.**

The above example sets the TF85 subsystem's node name to TAPE1, and the TMSCP unit number to 18. Executing WRITE and answering YES to the controller initialization question saves the node name and unit number in EEROM and resets the controller.

Using the TF85 PARAMS Program, Continued

EXIT Command

Typing the **EXIT** command, at the PARAMS> prompt, ends the PARAMS program, and the word `Completed` appears on your screen.

NOTE
To exit from questions during the local program dialogue, type `Ctrl/C`, `Ctrl/Z`, or `Ctrl/Y`. In this case, your latest changes will be ignored.

The following table describes what happens when you use the EXIT command:

If you. . .	Then the. . .
Did not SET a parameter	EXIT succeeds immediately.
SET parameters and forgot to execute WRITE	EXIT is ignored and you are advised: `Parameter modified but not written. Still Exit?` If you answer YES, the system EXITS and returns to the DCL prompt. Your modifications are not saved. If you answer NO, the system returns to the PARAMS> prompt. To save your modifications, enter WRITE at the prompt, and then EXIT.
SET parameters and executed WRITE	System EXITS and returns to the DCL prompt.

Using the TF85 DIRECT and HISTRY Utilities

Starting DIRECT and HISTRY

To start DIRECT or HISTRY, use the same procedure for starting PARAMS, but alter the value of /TASK in the SET HOST/DUP command:

```
/TASK=DIRECT
```

or

```
/TASK=HISTRY
```

The following example shows the SET HOST/DUP command with DIRECT or HISTRY as the task:

```
$ SET HOST/DUP/SERVER=MSCP$DUP/TASK=DIRECT nodename
```

```
$ SET HOST/DUP/SERVER=MSCP$DUP/TASK=HISTRY nodename
```

Using DIRECT AND HISTRY requires no further user interaction.

About DIRECT

The **DIRECT** utility provides a directory of the diagnostic and utility programs resident in the TF85 subsystem. An example of a DIRECT display follows:

```
DIRECT V1.0  D
HISTRY V1.0  D
PARAMS V1.0  D

Completed
```

Continued on next page

Using the TF85 DIRECT and HISTRY Utilities, Continued

About HISTRY

The **HISTRY** utility displays information about the history of the TF85 subsystem. An example of the HISTRY display follows:

```
TF85
❶ DSSI:  T8MB3Q  /3 (DIPs)
   Controller:
❷  S#: EN03000170
    HW: 000/PCB-rev:A000
    Bt: 121/96626CC9 ( 8-APR-1991 21:10:48)
❸ Cd: 001/0F1AA48E (22-MAR-1991 16:06:35)
    EE: 086.011  TD: 002
Drive:
❹  S#: EN04500464
    HW: 000/A000
    Cd: 033/E9DF
    EE: 020/6300
 Loader (S/H/M): 000/000/000
 Power on Hours:  1499
 Power Cycles:      68
 Completed
```

Using the example above, the following list describes some of the information you see when you run HISTRY:

❶ Reflects your device's node name. The DSSI node name is encoded from the controller serial number. The `/3 (DIPs)` indicates that the DSSI node ID for this device is 3.

❷ The serial number for the controller board.

❸ The revision number of the controller software.

❹ The serial number for the tape drive.

Appendix A
Tx85 Subsystem Specifications

Mode of Operation

The Tx85 subsytem operates in a streaming mode with a maximum transfer rate (at tape) of 800 kilobytes/s, formatted.

Media

The specified media for the TF85 subsystem is 12.77 mm (1/2 in) unformatted magnetic tape with the following characteristics:

- Track density = 96 tracks/in (48 tracks)
- Bit density = 42,500 bits/in
- Number of tracks = 48
- Tape speed = 100 in/s
- Track format = Two-track parallel, serpentine recording
- Cartridge capacity = Up to 2.6 gigabytes, formatted

Power Consumption

The TF85 subsystem consumes 56 W maximum.

The TZ85 subsystem consumes 40 W maximum.

Power Requirements

The TF85 subsystem has the following power requirements:

- 12 V ±5% @ 1.6 A (2.6 A surge), 75 mV ripple peak-to-peak
- +5 V ±5% @ 4.5 A, 75 mV ripple peak-to-peak

The TZ85 subsystem has the following power requirements:

- 12 V ±5% @ 1.2 A (1.5 A surge), 75 mV ripple peak-to-peak
- +5 V ±5% @ 3.5 A, 75 mV ripple peak-to-peak

Appendix B
Standard VMS Commands

Using the Subsystem Efficiently

Introduction

This section identifies guidelines that you should follow to use the Tx85 subsystem effectively with your host application. To take best advantage of the subsystem's efficient processing abilities, you must use certain qualifiers with the MOUNT and BACKUP commands. This appendix describes those qualifiers and their appropriate values.

Guidelines

For efficient operation of the TF85 or the TZ85 subsystem:

- Choose a large record size when mounting a tape. The maximum value, 65534, is recommended.

- Do not use the COPY command to save more than 9,999 files onto the tape.

The TF85 subsystem has an additional consideration for operating efficiency:

- Be aware that the TF85 subsytem uses a default FORCECACHING parameter that enables the DSSI controller to cache write data to the drive. (See the discussion in TF85 FORCECACHING with the MOUNT Command.)

Tape Commands

Introduction

The Tx85 cartridge tape subsystem uses most of the standard magnetic tape commands that can be invoked under VMS operating system, version 5.4 or later.

This section discusses the following VMS commands used to operate the Tx85 subsystem:

For this command. . .	See page. . .
ALLOCATE	B–3
INITIALIZE	B–3
MOUNT	B–4
BACKUP	B–5
COPY	B–6
DISMOUNT	B–6
DEALLOCATE	B–6

For More Information

This appendix is a reference only; it does not include all the details that may be involved in using VMS commands.

For more information about VMS commands and command files, see the *VAX/VMS Guide to Using Command Procedures* (AA–H782B–TE), *VAX/VMS Command Language User's Guide* (AA–DO23C–TE), or the *VMS System Manager's Guide*.

**Using the
ALLOCATE
Command**

The **ALLOCATE** command provides exclusive access to a
device and optionally establishes a logical name for that device.
Once you have allocated a device, other users cannot access that
device until you explicitly DEALLOCATE it, or until you log
out. Use the following format to allocate the Tx85 subsystem:

```
$ ALLOCATE device_name: [logical name]
```

For example, to allocate the Tx85 subsystem for your use and
assign it to the logical name *TAPE1*, do the following:

```
$ ALLOCATE MIA0: TAPE1
```

**Using the
INITIALIZE
Command**

CAUTION
Be sure to use a scratch tape before initializing;
otherwise, any data on the tape will be destroyed.

Use the **INITIALIZE** command to specify the device name, and
write a volume name to the magnetic tape volume loaded into
the Tx85 tape drive. The tape must be write-enabled for the
initializing operation. Use the following format:

```
$ INITIALIZE device_name: [volume label]
```

As an example, to initialize the device *TAPE1* and assign the
volume name *GMB001*, type the following:

```
$ INITIALIZE MIA0: GMB001
```

For the initialization to succeed, the cartridge must not have
been mounted (with the MOUNT command).

For detailed information regarding volume names and magnetic
tape operations, see the *Guide to VAX/VMS Disk and Magnetic
Tape Operations* (AA–M539A–TE).

**Using the
MOUNT
Command**

The **MOUNT** command lets you make a magnetic tape volume
available for processing. It loads the tape with the protection
set according to the write-protect switch on the cartridge.

Use the following format to mount a tape with the Tx85
subsystem:

```
$ MOUNT/FOREIGN/CACHE=TAPE_DATA device_name: [volume label]
  [logical name]
```

As an example, to make *TAPE1* available for processing, type
the following:

```
$ MOUNT/FOREIGN/CACHE=TAPE_DATA MIA0: GMB001 TAPE1
```

The screen displays a message:

```
%MOUNT-I-MOUNTED, GMB001 mounted on MIA0:
```

You must use the /FOREIGN qualifier when you are performing
BACKUP commands. Do not use it when you are performing
COPY commands.

Tape Commands, Continued

**TF85
FORCECACHING
with the
MOUNT
Command**

The TF85 DSSI controller has a parameter, accessible through
the DUP PARAMS utility, that controls whether tape caching is
done. This parameter is called FORCECACHING. Its default
value is 1, which means that the controller always caches—even
if you specify /NOCACHE with the MOUNT command, unless
you also specify /READ_CHECK or /WRITE_CHECK.

You can modify FORCECACHING to value 0, which allows the
subsystem to honor the various means the application program
has to specify that commands not be cached.

> **CAUTION**
> **Setting FORCECACHING to 0 and specifying
> /NOCACHE with the MOUNT command can result in
> significant subsystem performance degredation.**

For more information, see the *VAX/VMS Mount Utility
Reference Manual* (AA–Z424A–TE).

**Using the
BACKUP
Command**

The **BACKUP** command provides protection against file volume
corruption by creating backup copies.

Use the following format to back up a file:

```
$ BACKUP/BLOCK=65534/ignore=(label) source:*.* tape:file.name
```

You can also back up lists of files and entire volumes.

See your system manuals before deciding on qualifiers for use
with the BACKUP command. For detailed information about
BACKUP and other VMS tape commands, see the *VAX/VMS
Backup Utility Reference Manual* (AA–Z407B–TE).

Using the COPY Command

Use the **COPY** command, with the Tx85 subsystem, to copy files from tape.

In the following example, the MOUNT command requests that the volume labeled *GMB001* be mounted on the drive at *MIA0* and assigns the logical name *TAPE1*.

The COPY command uses the logical name *TAPE1* for the input file specification. All files on *MIA0* are copied to the current default disk and directory. The files keep their original file names and file types.

```
$ MOUNT MIA0: GMB001 TAPE1:
$ COPY TAPE1:*.* *.*
```

NOTE
Using the COPY command to move multiple files may not achieve optimum performance. Check with your system manager for more information.

Using the DISMOUNT Command

The **DISMOUNT** command cancels the previous MOUNT command, makes the unit unavailable for processing, and unloads the tape:

```
$ DISMOUNT logical_name or device_name:
```

Using the DEALLOCATE Command

The **DEALLOCATE** command cancels the previous ALLOCATE command and makes the unit available for other users. The following is an example of the command:

```
$ DEALLOCATE MIA0: or TAPE1
```

Appendix C
Digital Services

Service Plans

Introduction

Digital Equipment Corporation offers a range of flexible service plans.

On-Site Service

On-site service offers the convenience of service at your site and insurance against unplanned repair bills. For a monthly fee, you receive personal service from our service specialists. Within a few hours, the specialist is dispatched to your site with equipment and parts to give you fast and dependable maintenance.

BASIC Service

BASIC service offers full coverage from 8 a.m. to 5 p.m., Monday through Friday. Options are available to extend your coverage to 12-, 16-, or 24-hour periods, and to include Saturdays, Sundays, and holidays. Under the basic service plan, all parts, materials, and labor are covered in full.

Service Plans, Continued

DECservice Plan

The DECservice plan offers a premium, on-site service for producing committed response to remedial service requests made during contracted hours of coverage. Remedial maintenance will be performed continuously until the problem is resolved, which makes this service ideal for customers requiring maximum service performance. Under the DECservice plan, all parts, materials, and labor are covered in full.

Carry-In Service

Carry-in service offers fast, personalized response, and the ability to plan your maintenance costs for a smaller monthly fee than on-site service. When you bring your unit to one of 160 Digital SERVICenters worldwide, factory-trained personnel repair your unit within 2 days. This service is available on selected terminals and systems. Digital SERVICenters are open during normal business hours, Monday through Friday.

DECmailer Service

DECmailer service offers expert repair at a per use charge. This service is designed for users who have the technical resources to troubleshoot, identify, and isolate the module causing the problem. Mail the faulty module to our Customer Returns Center where the module is repaired and mailed back to you within 5 days.

Per Call Service

Per call service offers a maintenance program on a noncontractual, time-and-materials-cost basis. It is appropriate for customers who have to perform first-line maintenance, but may occasionally need in-depth support from Digital Services.

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