

HP 9000
Series 800

HP 3000
Series 900

HP A3183A DDS-2 Tape Drive User's Guide

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Safety Considerations

The product and related documentation must be reviewed for familiarization with safety markings and instructions before installation and operation.

Safety Symbols



Instruction manual symbol. If the product is marked with this symbol, refer to the product manuals to protect the product against damage.

WARNING A **WARNING** denotes a hazard that can cause personal injury.

CAUTION A **CAUTION** denotes a hazard that can damage equipment.

Do not proceed beyond a **WARNING** or **CAUTION** notice until you have understood the hazardous conditions and have taken appropriate steps.

Grounding

The computer in which this product is installed is a safety class I product and has a protective earthing terminal. There must be an uninterruptible safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

Servicing

Any servicing, adjustment, maintenance, or repair must be performed only by authorized service-trained personnel.

Warranty

If you have any questions about the warranty for your tape drive, contact your dealer or your local Hewlett-Packard sales representative.

Regulatory Statements

FCC Statement (for USA only)

Federal Communications Commission Radio Frequency Interference Statement

Warning: This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

VCCI Class 1 (for Japan only)

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

In this book

This book is the installation, operations, and service manual for the Hewlett-Packard A3183A tape drive. The manual contains the following:

- Chapter 1, Installation, describes installing the device in the HP 9000 Models E25/E35/E45 system unit.
- Chapter 2, Operations, tells how to operate the device.
- Chapter 3, Service, shows basic troubleshooting procedures for the device.



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Chapter 1 - Installation



Installation

This chapter describes installation and configuration of the A3183A DDS-2 tape drive, including the following:

1. Preparing to install the device.
2. Peripheral upgrade rules.
3. Setting the configuration switches.
4. Setting the SCSI address.
5. Installing the device.
 - HP 3000/9x9KS and HP 9000 Models K100/K200/K400
 - HP 9000 Models E25/E35/E45
6. Configuring and verifying the device.
 - HP-UX
 - MPE/iX

To install the device in the HP 3000/9x9KS and HP 9000/Kx00 system units, use this book in conjunction with the *HP 3000/9x9KS and HP 9000/Kx00 Internal Peripherals Upgrade Guide* (Part No. A2375-90008), which describes the physical installation of various peripherals. Read steps 1-4 in this chapter before installing the device. In particular, it is essential to set the configuration switches and the SCSI address before inserting the device in the system.

To install the device in the HP 9000 Models E25/E35/E45 system unit, follow the steps in this chapter for system installation.

1. Preparing to install the device

- A. **Observe antistatic precautions.** The device contains electronic components which can easily be damaged by small amounts of static electricity. To avoid damage, use a grounding wrist strap during installation.
- B. **Verify product contents.** Remove all contents from the shipping container. Confirm the following items are present:

Tape drive	C1533-67203, or C1533-69203 (exchange)
Mounting screws (qty. 4)	0515-0430
Antistatic precautions note	5957-4369
User's Guide	A3183-90001
Grounding wrist strap	9300-1408
Conductive Sheet	07961-80021
Antistatic foam pad	07961-80022
Data grade media caution	A3183-90002
Data cartridge	(no part no.)
Cleaning cartridge	92283K
Power cable (K-series systems only)	A2375-63003

Inspect the items for physical damage. If any items are missing, contact your Hewlett-Packard representative.

- C. **Record information.** Record the device's serial number. Record the SCSI bus and SCSI address to be used during installation.

HP S/N:

SCSI Bus and Address:

- D. **Gather tools and accessories.** The system installation requires a Torx 10 screwdriver, antistatic foam pad, and grounding wrist strap. The screwdriver is not supplied with the device.

2. Peripheral Upgrade Rules

Follow these rules when installing the device:

HP 9000 Models E25/E35/E45 system installation

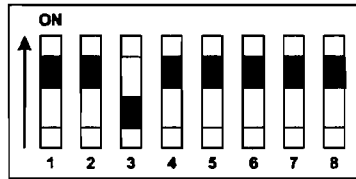
- Install the device in the upper slot of the peripheral bay.

HP 3000/9x9KS and HP 9000 Models K100/K200/K400 system installation

- Install the device in either of the two vertical slots in the system unit's peripheral bay, orienting the device's top surface **to the right**.

3. Setting the configuration switches for data compression and MRS

There is an eight-switch DIP switch on the bottom of the tape drive. Use switches 1, 2, and 3 to set the drive's data compression and Media Recognition System (MRS) characteristics.



- Use switches 1 and 2 to configure the drive's data compression mode:

Switch 1	Switch 2	Meaning
OFF	OFF	Compression disabled. No host control.
OFF	ON	Compression disabled. Host is allowed to control compression.
ON	OFF	Compression enabled. No host control.
ON	ON	Compression enabled, with host control.

With switch 1 ON, data written to the tape will be compressed without the knowledge of the host.

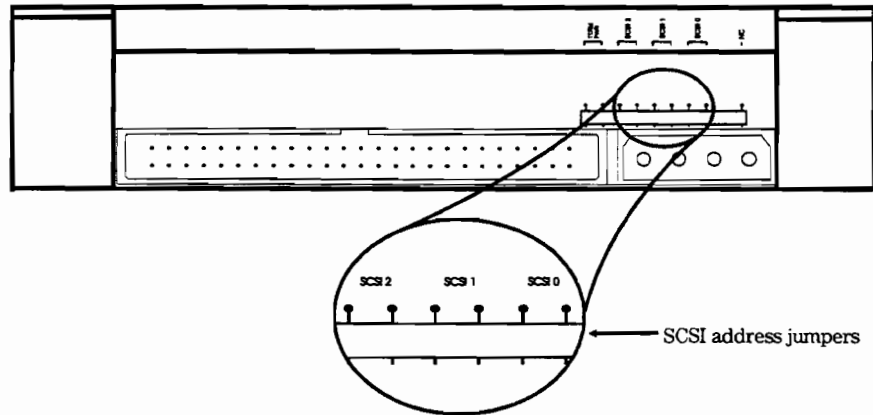
- Use switch 3 to configure the drive's response to DDS MRS tapes.

Switch 3	Meaning
ON	The Media Recognition System is disabled. All DDS tapes will be treated the same, whether they possess media recognition stripes or not.
OFF	The Media Recognition System is enabled. Non-MRS tapes are treated as if they were write-protected.

- Leave switches 4-8 in their default positions (ON).

4. Setting the SCSI address

There are three bits in the SCSI address, which can be set to give a value of 0 through 7 inclusive.



Back of tape drive

The SCSI address jumpers are shown below.

	SCSI 2 (VALUE 4)	SCSI 1 (VALUE 2)	SCSI 0 (VALUE 1)		SCSI 2 (VALUE 4)	SCSI 1 (VALUE 2)	SCSI 0 (VALUE 1)
0	● ●	● ●	● ●	4	■ ●	● ●	● ●
1	● ●	● ●	■ ●	5	■ ●	● ●	■ ●
2	● ●	■ ●	● ●	6	■ ●	■ ●	● ●
3	● ●	■ ●	■ ●				

Jumper positioning

Set the jumpers for one of the values shown below. Do not use SCSI address 7, as it is reserved for the host.

5. Installing the device

HP 3000/9x9KS and HP 9000 Models K100/K200/K400

Use the manual *HP 3000/9x9KS and HP 9000/Kx00 Internal Peripherals Upgrade Guide* (Part No. A2375-90008) to install the device in the system unit.

HP 9000 Models E24/E35/E45

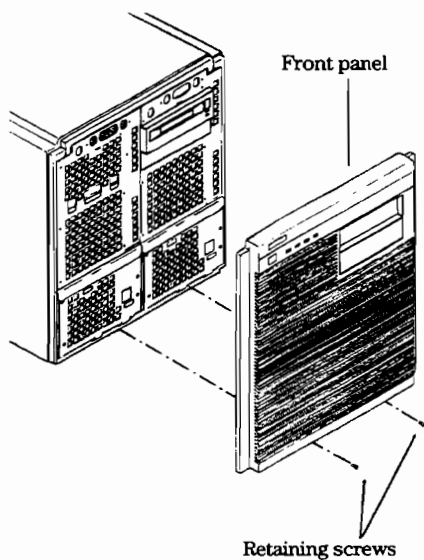
Follow the instructions on the next page to install the device in the system unit.

E25/E35/E45 system installation

WARNING Before beginning the installation, follow the shutdown procedure described in the Owner's Guide. Power off and **unplug** the system. Put on the grounding wrist strap and place the antistatic foam pad in front of the unit.

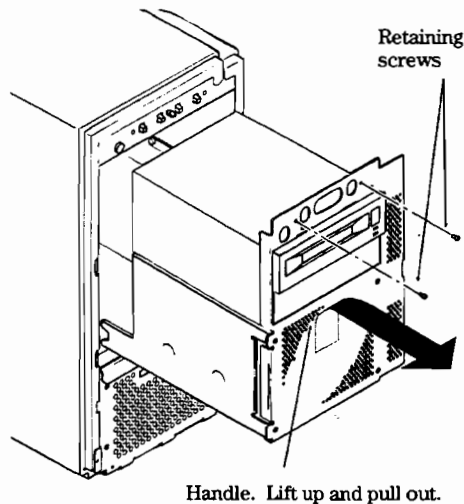
1. Remove the front panel.

- Remove the two retaining screws at the bottom.
- Lift the panel up and out.



2. Remove the peripheral drawer.

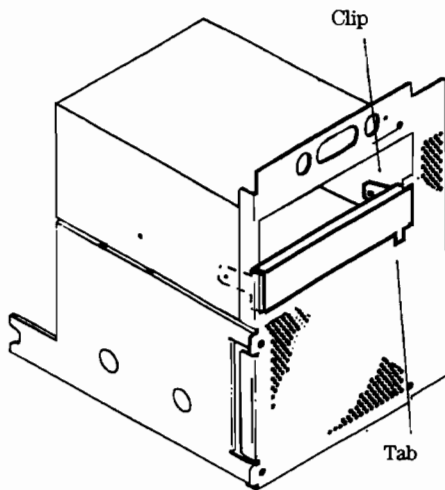
- Remove the two retaining screws at the top.
- Grasp the handle located in the center of the drawer, **lift**, and then pull the drawer out completely.
- Unplug the SCSI cable and power cable.



E25/E35/E45 system installation (continued)

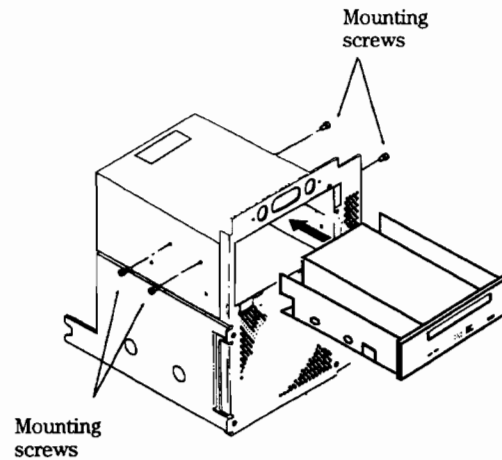
3. Remove the RFI filler panel.

- a. To remove the top filler panel, push the clip on the left side in and pull the tab out.
- b. To remove the lower filler panel, push the clip on the right side in and pull the tab out.



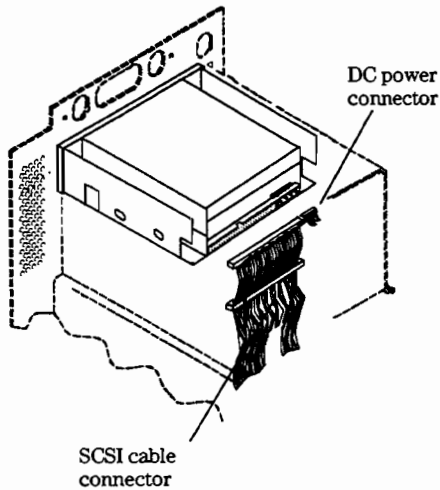
4. Install the drive into the peripheral drawer.

- a. Slide the drive into the lower slot.
- b. Secure with the mounting screws.



E25/E35/E45 system installation (continued)

5. Connect the SCSI and power cables. To avoid damaging the connector pins, make sure the SCSI cable meets the connector straight on, not at an angle.



6. Before reassembling the system, remove plastic filler panel from the appropriate slot on the front panel. The filler panel is held in place by a clip on one side. This ensures access to the drive after re-installing the front panel.

7. Reassemble the system and restore power connections.

6. Configuring and verifying the drive

Configuring and verifying for HP-UX

References:

- *System Administration Tasks* manual for HP 9000 Series 800 Computers (B2437-90006)
- *Installing Peripherals* manual (B2437-90005)

The tape drive will auto-configure on HP-UX systems, version 9.04 or later. When the operating system reboots, it determines that the DDS-2 tape drive has been installed, and installs the correct software device file to communicate with the tape drive. For more information refer to the manuals referenced above. Once the system finishes rebooting, use the `ioscan` command to list all tape devices.

Configuring and verifying for MPE/iX

Reference:

- *System Startup, Configuration and Shutdown* reference manual for HP 3000 Series 900 Computers (32650-90042)

After installing the device, configure the system to recognize it. The HP 3000 Series 900 system must be using MPE version 5.0 or later. Refer to the MPE/iX manuals.

The following procedure includes adding paths. Prior to adding any paths, run IOMAP or MAPPER from the ISL prompt to display the paths of all configured devices.

Run the IO Configurator from SYSGEN

Log on as MANAGER.SYS by entering:

```
:HELLO MANAGER[/userpass].SYS[/acctpass]
```

Activate the SYSGEN global module by entering:

```
:SYSGEN
```

or by entering:

```
RUN SYSGEN.PUB.SYS
```

At the sysgen prompt, start the IO configurator by entering:

```
sysgen>IO
```

Add the transparent manager

Using the SCSI address of the tape drive, enter the following to add the transparent manager to the path. Use the SCSI address the tape drive was set to during installation.

This example assumes the SCSI address is 0.

```
io>APATH PATH=52.0 ID=PSEUDO
```

Add the tape device LUN

To add the device to the configuration the Logical Unit Number (LUN) is used. The example assumes the LUN address is 0 and the MPE/iX ldev number is 8.

```
io>ADEV PATH=52.2.0 LDEV=8 ID=HPC1533A
```

Save the configuration

Hold the changes by entering:

```
io>HOLD
```

Exit the IO configurator by entering:

```
io>EXIT  
sysgen>
```

Save the changes in the permanent file by entering:

```
sysgen>KEEP
```

Save the changes made in the IO configurator to the default configuration group. Respond with Y when SYSGEN asks whether or not to overwrite this group.

Create a System Load Tape (SLT)

This is an optional procedure. Mount a write-enabled tape on the system tape drive (DAT or 1/2" tape). Ensure the tape is online.

Generate a customized SLT that includes the new configuration by entering the `TAPE` command:

```
sysgen>TAPE
```

Reply to the tape request.

The system responds when it has finished generating the SLT by displaying the following message:

```
** Boot tape is successfully built **
```

Exit SYSGEN by entering:

```
sysgen>EXIT  
:
```

Reboot with the new configuration

Shut down the system.

Reboot the system, using `START NORECOVERY`.



Chapter 2 - Operations



Operations

This chapter describes the features and operations of the DDS-2 tape drive, including the following:

- Features
- Front panel
- Operating the device
 - Power on
 - Tape LED and Clean/Attention LED
 - Loading tape cartridges
 - Unloading tape cartridges
 - Forcing a tape cartridge to eject
- Write-protecting tape cartridges
- Handling and storing tape cartridges

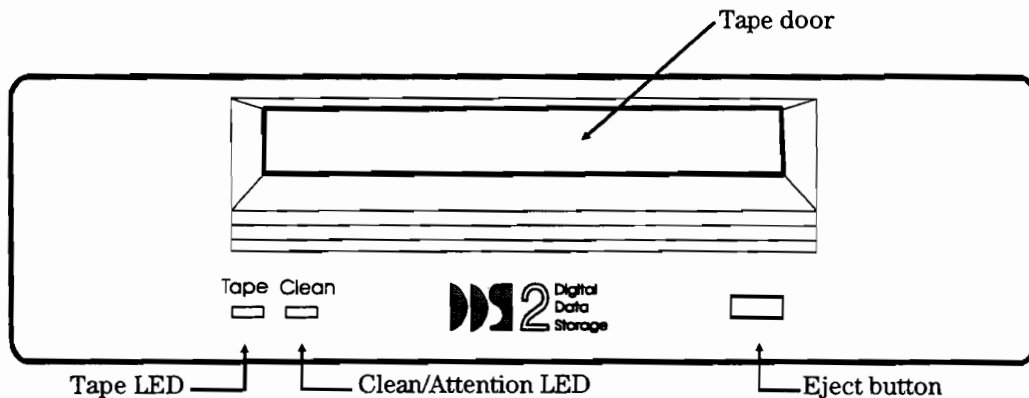
Features

The HP A3183A DDS-2 tape drive is a storage device which uses 4mm cartridge tapes. Some features include:

- Up to 4 gigabytes storage capacity (uncompressed mode)
- Read and write compatibility with DDS-1 tapes
- 5 1/4 inch, half-height form factor
- Excellent performance and reliability
- Built-in self-test diagnostic routine

Front panel

The tape drive front panel has the following components:



- Tape LED** The Tape LED is green. When lit, it indicates normal activity.
- Clean/Attention LED** The Clean/Attention LED is amber. When lit, it indicates a fault. When flashing, it indicates a caution condition, usually that the tape drive's read/write heads need cleaning.
- Tape door** The door flips in and up to allow insertion of a tape cartridge into the drive.
- Eject button** Press this button to eject a tape cartridge from the drive.

Operating the device

Once the system is powered on, normal tape drive operation consists of loading and unloading tape cartridges.

Power On

- The device is powered on when the host system is powered on.
- The drive begins a self-test. The Tape LED flashes slowly during the test.
- If the Clean/Attention LED light shows steady amber, a problem has occurred. See the troubleshooting section in the next chapter.
- When the self-test is over, normal tape operations can begin.

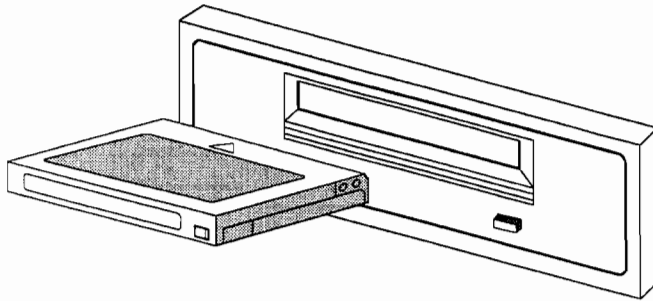
Tape LED and Clean/Attention LED

The drive's two LEDs indicate that the drive is busy, not busy, or has a problem.

Tape LED (Green)	Clean/Attention LED (Amber)	Explanation
FLASHING SLOW		Self-test in progress, OR loading or unloading a tape.
STEADY		Cartridge loaded, drive on line.
FLASHING FAST		Read or write activity.
	FLASHING SLOW	Caution. Head cleaning needed, or cartridge is nearing the end of its useful life.
	STEADY	Fault. See the troubleshooting section in the next chapter.

Loading tape cartridges

- To write to the tape, set the write-enable tab.
- Hold the tape cartridge with the label side up and the arrow pointing toward the drive.
- Gently insert the tape cartridge until the drive's loading mechanism takes the cartridge and pulls it into the drive. **Do not slide the tape past the front bezel**, or the drive can be damaged.
- The drive threads the tape and performs a short test. This takes about 25 seconds. When the Tape LED is a steady green, the tape is ready for use.



Unloading tape cartridges

- Wait for tape drive activity to stop.
- Press the Eject button. The Tape LED will flash slowly as the tape rewinds.
- The tape drive will open and eject the tape. Remove the tape from the drive.
- If the tape is not to be written over, set the write-protect tab.
- Put the tape cartridge in its box and store it in a safe place.

Note Some application software can be configured to prevent unloading a tape until the program ends. If the cartridge will not eject, check the software.

Forcing a tape cartridge to eject

CAUTION Data may be irretrievably lost if a tape is forced to eject.

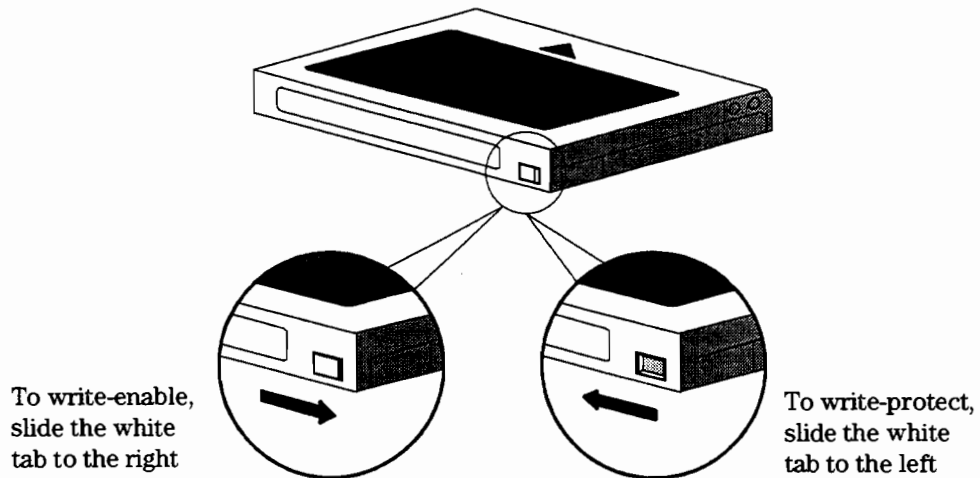
There may be a need to unload a tape cartridge immediately, even if data is lost. To do this, force the tape cartridge to eject.

- Press the Eject button three times within a five-minute period , OR
- Hold the Eject button down for at least five seconds.

The tape unthreads and the drive ejects the tape cartridge, regardless of the operation the drive was performing. The drive then resets.

Write-protecting tape cartridges

Protect the data on a tape cartridge from accidental erasure by setting the write-protect tab. This prevents the data on the tape from being written over.



Handling and storing tape cartridges

Tape Cartridge Do's

- Store the cartridge in its protective case.
- Rewind the tape before removing the cartridge for storage.
- Operate the cartridge at temperatures between +5° and +45° C (41° to +104° F).
- After moving the cartridge from one temperature extreme to another, allow it to stabilize for a minimum of two hours a before using.
- Keep the cartridge away from magnetic sources.
- Replace damaged or contaminated cartridges.
- Use data grade cartridges, marked DDS-2, DDS-1, or DDS.

Tape Cartridge Don'ts

- Don't drop the cartridge.
- Don't expose the cartridge to dirt, moisture, or high humidity.
- Don't place the cartridge in direct sunlight.
- Don't use excessive force in inserting or removing the cartridge from the drive.
- Don't use DAT cartridges; they are intended for audio, not data.

Chapter 3 - Service

Service information

This chapter describes service and troubleshooting procedures for the DDS-2 tape drive, including the following:

- Maintaining the device
- Troubleshooting
- Preparing for a service call
- Reshipment guidelines
- Media specifications
- Technical specifications

Maintaining the device

The device is designed to give years of trouble-free service. With regular maintenance, the drive should produce consistent results with minimal errors.

Environmental limits

The performance and reliability of the drive depend on the operating environment. Be sure to operate the drive within the environmental limits listed in the table of technical specifications located at the end of this chapter.

Tape life

A tape cartridge should be reliable for about 300 insertions for writing. When using the tape drive for backups, it's valuable to keep a record of how many times the backup tapes are overwritten.

As the backup set reaches about 300 uses, replace the tapes with new tapes. The old tapes can still be used reliably for read-only operations, but they should no longer be used for writing.

Preventive maintenance

The tape drive requires regular preventive maintenance, which consists of cleaning the tape drive's read/write heads with a cleaning cartridge. Clean the heads regularly and also any time the Clean/Attention LED is flashing.

The frequency of cleaning varies according to how much the tape drive is used, as seen from the following examples:

Usage	Characteristics	Cleaning Interval
Light	1 cartridge/day backup	Weekly
Moderate	2-3 cartridges/day backup	Twice per week
Heavy	4 or more cartridges/day backup	Daily

Note

It is better to clean the tape heads regularly than to wait for the Clean/Attention LED to flash amber. By the time the signal appears, the performance of the tape drive may already be diminished.

Cleaning the read/write heads

The read/write heads must be free of contamination for proper tape-to-head contact. Clean the heads when the data errors or retries increase in number.

Use only a Hewlett-Packard Cleaning Cartridge (part number HP92283K). Do not use liquids, swabs, or any other method.

1. Insert the cleaning cartridge into the drive.
2. The tape drive loads the cartridge automatically and cleans the heads. Cleaning takes about 30 seconds.
3. At the end of the cycle, the drive ejects the cleaning cartridge.
4. Write the date on the cartridge label. Discard the cleaning cartridge after using it 25 times.

Note

If the cleaning cartridge ejects in less than 20 seconds, it has probably expired. Replace the cleaning cartridge. **Do not rewind and resuse a cleaning cartridge.**

Troubleshooting

The first indication of a problem with the tape drive will probably be in the form a message from the application using the tape drive. If a problem occurs, check the tape drive's status LEDs.

Condition	Probable Cause	Action
No LEDs on	No tape in drive.	Insert a tape in the drive.
	No power to drive.	Be sure the system is powered on.
	SCSI cable not connected.	Check the SCSI cable connection.
Tape LED is steady green	Indicates normal activity. A tape cartridge is loaded and the drive is on line.	None.
Tape LED is flashing green	Indicates loading, unloading, reading, writing, or performing a self-test.	None.
Clean/Attention LED is flashing amber	Caution condition. The tape drive heads may require cleaning, or the cartridge is nearing the end of its useful life.	Clean the tape drive heads and try the operation again. If the signal reappears, copy the data on the tape cartridge to a new cartridge and discard the old cartridge.
Clean/Attention LED is steady amber	Fault condition. The tape cartridge may be damaged or incorrectly loaded. The drive may have failed its self-test.	Eject the tape cartridge. Reload the tape cartridge and try again. If the message appears again, try the operation again with a new tape cartridge.

SupportWave and other troubleshooting software

The computer may be supplied with a tool called SupportWave, which a system administrator can use to troubleshoot problems. Find out more about using SupportWave in the manual *Support Tools Manager User's Guide*.

The system may also include other on-line or off-line troubleshooting utilities to aid in the diagnosis of the drive. For more information about troubleshooting utilities in general, refer to the documentation included with the computer system.

If the drive has a problem which cannot be solved

If the drive has a problem which cannot be solved, contact the Hewlett-Packard service provider. See the following sections for information about preparing for a service call and repackaging the drive for shipment.

Preparing for a service call

If the tape drive requires service, there are several things to do to help the Hewlett-Packard service provider identify and solve a problem quickly. Do the following before calling for assistance:

- Locate the drive's serial number. Check the serial number written in the front of this manual when the drive was installed. If the serial number was not previously recorded, open the system or peripheral enclosure to find the serial number.
- Record any error messages displayed by the operating system or the software application in use when the trouble occurred.
- Record any details about the operation which was being performed when the problem occurred.
- Record the condition of the Tape LED and Clean/Attention LED. Are the LEDs off, flashing, or lit steadily?
- Contact the Hewlett-Packard service provider for assistance in solving the problem.

Reshipment Guidelines

To send the drive to a repair facility, follow these repackaging instructions:

- Contact the HP Sales and Support Office or HP service provider to coordinate the return.
- Attach a tag to the drive, identifying the owner and indicating the reason for the return. Record the drive's part number and serial number on the tag.
- Repack the drive in its original shipping container, anti-static bag, and packing material.
- If the original container and packing material are not available, order a replacement container and packing material from Hewlett-Packard.
- Hewlett-Packard reserves the right to reject a warranty claim for a product improperly repacked before shipment.

Media Specifications

Data cartridges	Capacity (uncompressed)	HP Part Number
	60m (approx 1.3 GB)	HP92283A (box of 5 tapes)
	90m (approx 2.0 GB)	HP92283B (box of 5 tapes)
	120m (approx 4.0 GB)	HP92300A (box of 5 tapes)
Cleaning cartridges	N/A	HP92283K (box of 2 cartridges)
Lockable tape storage box - stackable - includes clips for attachment to file cabinet rails	12 cartridges	HP92283L

Technical Specifications

General	Supported Systems	HP 9000 Series 800 systems, HP-UX 9.04 HP 3000 Series 900 systems, MPE/iX 5.0
	Capacity	4 GB (native)
	Connector	50-pin single-ended SCSI type
Transfer rates	Sustained Asynchronous Burst Synchronous Burst	510 Kbytes/sec 3 Mbytes/sec 7.5 Mbytes/sec
Electrical	Voltage and current	+5V, 1.2 amps +12V, 0.2 amps
	Power Dissipation	8.5 watts operating
Physical	Form factor	5.25 in wide x 1.625 in high
	Height	41 mm (1.625 in)
	Width	102 mm (4.0 in)
	Depth	150 mm (5.9 in)
	Weight	1.1 kg (2.4 lbs)
Environmental	Temperature	+5° to +40° C (41° to +104° F) operating -40° to +70° C (-40° to +140° F) storage
	Relative humidity	20% to 80% non-condensing, operating 5% to 95% non-condensing, storage
	Wet bulb	26° C (79° F) max
	Altitude	0 ft to +15,000 ft operating
Electromagnetic Compatibility	USA	FCC Class A
	Europe	CISPR 22 / EN 55022 - Class A EN 50082-1 -ESD: IEC 801-2/pr EN 55024-2 (3kV CD, 8kV AD) -RE: IEC 801-3/pr EN 55024-3 (3 V/m) -FT: IEC 801-4/pr EN 55024-4 (0.5 kV SL, 1 kV PL)

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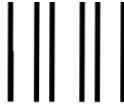
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