COMPAQ

Compaq AIT 35 LVD Tape Drive Reference Guide

Reference Guide

First Edition (November 2000)
Part Number 219638-001
Compaq Computer Corporation

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About This Guide

This guide is designed to be used as step-by-step instructions for installation and as a reference for operation, troubleshooting, and future upgrades.

Text Conventions

This document uses the following conventions to distinguish elements of text:

Keys	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase.
FILENAMES	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements appear in uppercase.
Type	When you are instructed to *type* information, type the information **without** pressing the **Enter** key.
Enter	When you are instructed to *enter* information, type the information and then press the **Enter** key.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Symbols on Equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions:

This symbol in conjunction with any of the following symbols indicates the presence of a potential hazard. The potential for injury exists if warnings are not observed. Consult your documentation for specific details.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol on an RJ-45 receptacle indicates a Network Interface Connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

These symbols on power supplies or systems indicate the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

Weight in kg
Weight in lb

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Important Safety Information

Before installing this product, read the *Important Safety Information* document provided.

Rack Stability

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are attached to the rack if it is a single rack installation.
- The racks are coupled in multiple rack installations.
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations

Compaq Technical Support

In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for worldwide Technical Support Centers are listed on the Compaq website. Access the Compaq website at

http://www.compaq.com

Be sure to have the following information available before you call Compaq:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

Compaq Website

The Compaq website has information on this product as well as the latest drivers and firmware upgrades. You can access the Compaq website at

http://www.compaq.com

Compaq Authorized Reseller

For the name of your nearest Compaq authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers.

Chapter **1**

Overview

This chapter provides information on system and controller requirements, tape specifications, and data compression for the Compaq *Advanced Intelligent Tape (AIT)™* 35 LVD drive.

Requirements

Compaq recommends equipping the computer with a 32-bit Fast SCSI-2 Controller or higher. Any of these controllers fully support the AIT 35 LVD tape drive. Install the controller before beginning the drive installation, using the documentation included with the controller.

IMPORTANT: All SCSI devices on the same bus must either be internal (within the computer) or in an external storage device, but not both. The exception is a CD-ROM drive, which may be internal when other devices are external or vice versa.

Tape Specifications

The data tapes must meet these requirements:

- Only Standard AIT 35 GB tapes, Advanced Metal Evaporate
- Must be one of the following sizes: 170 m (557 ft) or 230 m (754 ft)

NOTE: The AIT 35 LVD drive does not support the DDS and EXABYTE formatted tapes.

IMPORTANT: Compaq recommends that only tapes purchased from qualified vendors be used.

Data Compression

The AIT 35 LVD tape drive ships from the factory with data compression enabled for writing. The drive is equipped with Adaptive Lossless Data Compression (ALDC) algorithm. In this mode, data is always compressed when writing to the tape, but the drive is capable of reading both compressed and uncompressed tapes. For the drive to write uncompressed data, you must change the data compression hardware setting. This can be changed by software or using the DIP switches. Consult your backup application software documentation for the data compression enabling and disabling procedure.

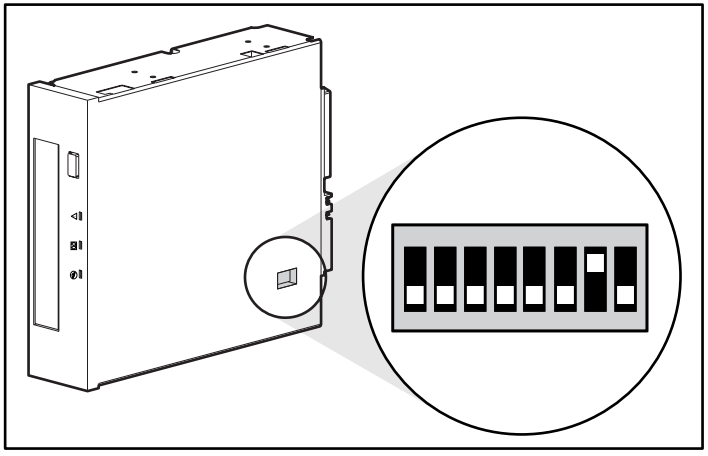

Figure 1-1. DIP switch settings

Table 1-1
Dip Switch Descriptions

Switches	Description	Default position
1	Reserved	OFF
2	Reserved	OFF
3	Reserved	OFF
4	Reserved	OFF
5	Not Connected	OFF
6	Not Connected	OFF
7	Data Compression Control-1	ON
8	Reserved	OFF

NOTE: Compaq does not recommend changing the factory set DIP switches.

Table 1-2
Data Compression ON Switch

DC Control-1 (Position 7)	Definition
OFF	Compression disabled at power-on.
ON	Compression enabled at power-on.

Chapter 2

Installing an Internal AIT 35 LVD Drive

This chapter describes the procedure to install an internal AIT 35 LVD drive in a Compaq computer.

Installation involves the following steps:

1. Setting the SCSI ID
2. Preparing the computer
3. Installing the AIT 35 LVD Drive
4. Reassembling the computer
5. Completing the installation

Software and Tool Requirements

The following items are required for AIT 35 LVD drive installations:

- Torx T-10 or T-15 screwdriver
- Compaq SmartStart and Support Software CD, version 4.9 or greater
- Compaq Tape Drive Supplemental Driver CD

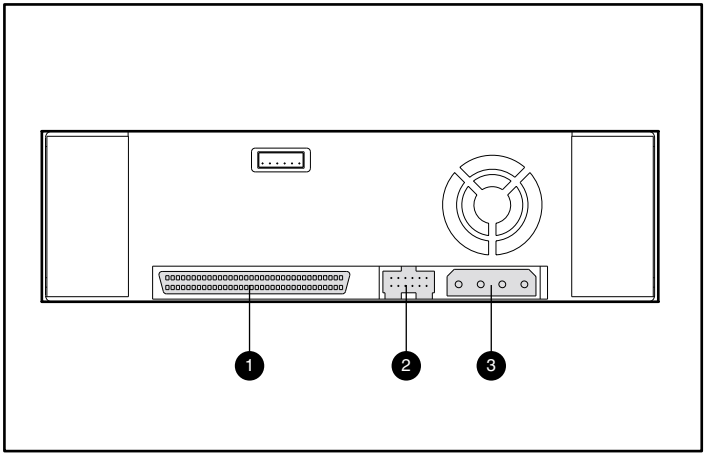

Figure 2-1. Rear view of an internal AIT 35 LVD drive

Callout	Feature
❶	SCSI 68-pin connector
❷	SCSI jumper block
❸	Power connector

Setting the SCSI ID

Before beginning the installation process, you will need to set the SCSI ID. Each SCSI device on the same SCSI bus must have a unique SCSI ID. Use the jumper block located on the back of the tape drive, see Figure 2-2. The default SCSI ID is 6.

IMPORTANT: SCSI ID 7 is reserved for the SCSI controller.

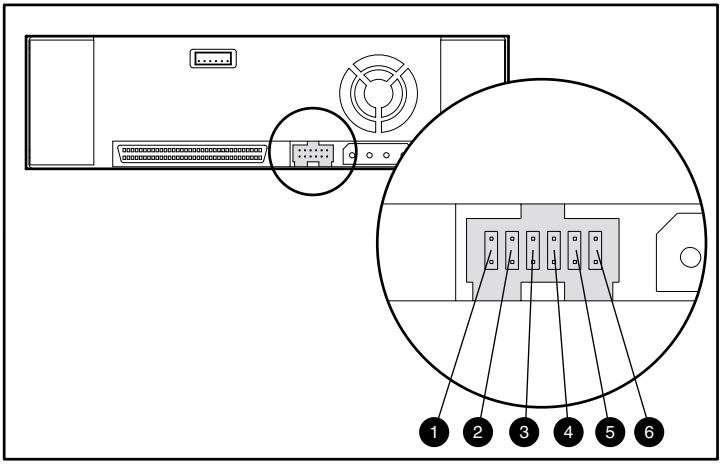

Figure 2-2. SCSI ID jumper block

Callout	Function
❶	Parity Disable
❷	No Connection
❸	SCSI Bit 3
❹	SCSI Bit 2
❺	SCSI Bit 1
❻	SCSI Bit 0

The SCSI ID settings are shown in Figure 2-3.

To set the SCSI ID, position the jumpers as shown in Figure 2-3.

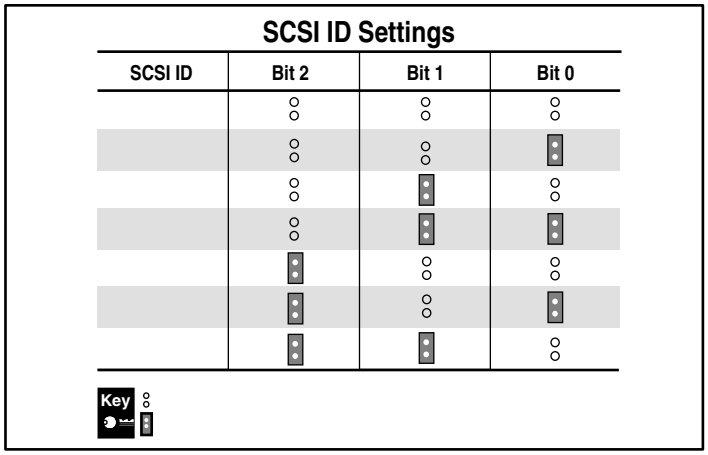

Figure 2-3. Setting the SCSI ID jumpers on an internal AIT 35 LVD drive

Preparing the Computer

To prepare the computer:

CAUTION: Electrostatic discharge (ESD) can damage electronic components. Be sure you are properly grounded before beginning this procedure. See Appendix B, "Electrostatic Discharge" for further information.

1. Perform a normal system shutdown.
2. Power OFF the computer and all peripheral devices.
3. Disconnect the AC main power cord from the outlet, then from the computer and from all peripheral devices.
4. Disassemble the system to expose the drive bay. Refer to the user manual that came with your computer.

Installing the Internal AIT 35 LVD Drive

Your computer may differ slightly from the following illustrations, refer to the documentation included with it.

To install the AIT 35 LVD tape drive with drive rails:

1. Slide the tape drive in an available removable media bay.

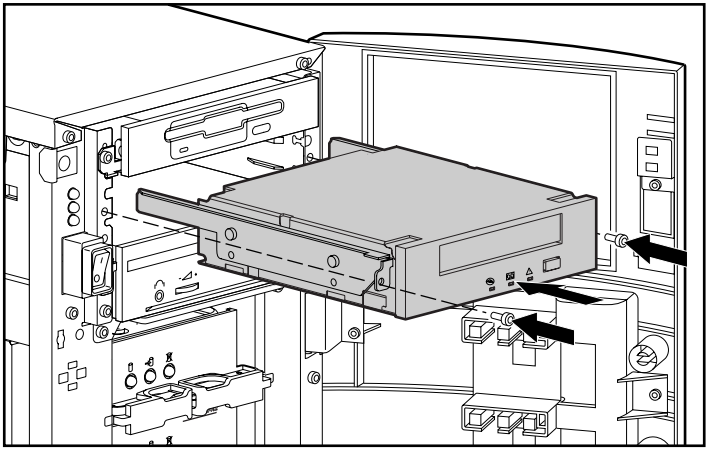

Figure 2-4. Installing an AIT 35 LVD drive with drive rails

2. Insert 2 screws in the front plate using a Torx T-15 screwdriver.
3. Connect an available power cable and the SCSI signal cable.

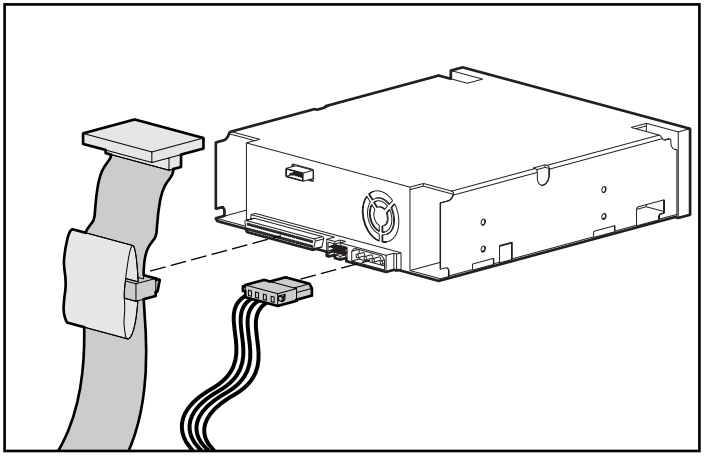

Figure 2-5. Connecting power and signal cables

To install an AIT 35 LVD tape drive without drive rails:

1. Remove all screws from drive rails using a Torx T-10 screwdriver.
2. Slide the tape drive in an available removable media bay.

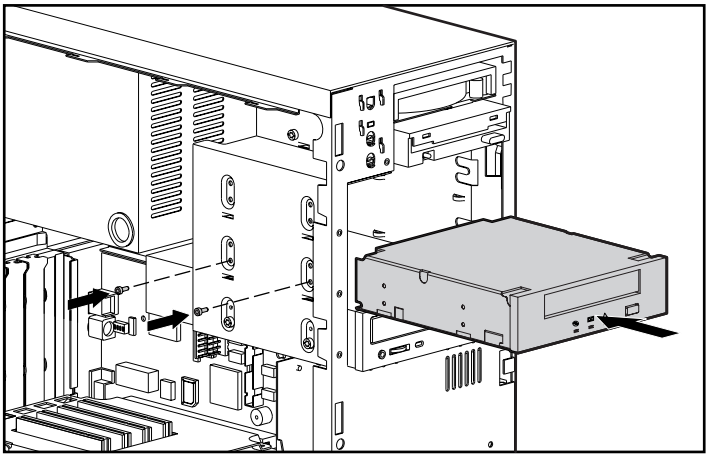

Figure 2-6. Installing an AIT 35 LVD drive without drive rails

3. Use the screws that were removed from the drive rails and insert two of them into the threaded mounting holes on each side.

NOTE: Some computers may not be accessible on both sides. Secure the side(s) that are accessible.

4. Connect an available power cable and the SCSI signal cable.

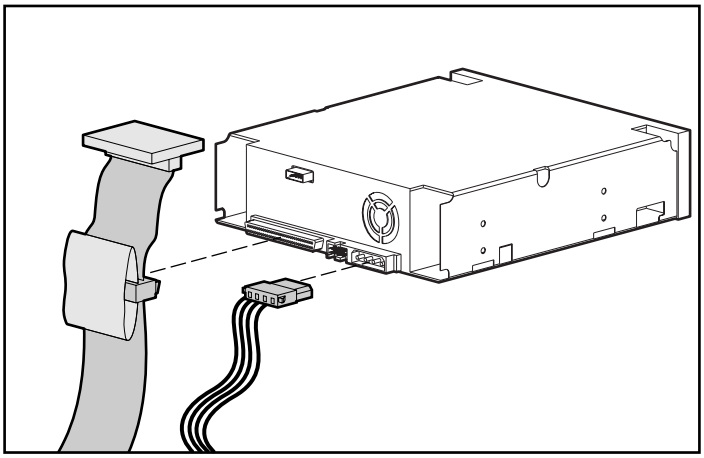

Figure 2-7. Connecting power and signal cables

Reassembling the Computer

To reassemble the computer:

1. Replace the access panel.
2. Reconnect the peripheral devices to the computer.

WARNING: To reduce the risk of electric shock or damage to your equipment, do not disable the power cord grounding feature. This equipment is designed for connection to a grounded (earthed) power outlet. The grounding plug is an important safety feature.

3. Plug the AC main power cord into the computer, then plug the cord into a grounded AC outlet.
4. Plug the AC main power cords from the peripheral devices into grounded AC outlets.
5. Power ON all peripheral devices.
6. Power ON the computer.

Completing the Installation

Install the device drivers to complete the installation of the AIT 35 LVD tape drive. See Chapter 4, “Installing the Software Drivers,” for specific driver installation information.

Chapter **3**

Connecting an External AIT 35 LVD Drive

This section describes the procedure to connect an external AIT 35 LVD drive to a SCSI controller. When installing be sure to place the AIT 35 LVD drive on a flat, sturdy surface such as a desk or tabletop.

NOTE: Do not place the unit on the floor. Allow enough space for proper ventilation and easy access to the front and rear of the AIT 35 LVD drive. Allow at least 3 inches (7.6 cm) between the rear of the unit and the wall.

WARNING: Risk of electrical shock. Do not attempt to open this product. There are no user-serviceable parts inside. Refer all service to a Compaq Authorized Service Provider.

Connecting the drive involves the following steps:

1. Shutting down the computer and all peripheral devices
2. Setting the SCSI ID
3. Connecting the drive
4. Powering on the peripherals
5. Powering on the computer

Software and Tool Requirements

The Compaq SmartStart and Support Software CD, version 4.9 or greater, and the Compaq Tape Drive Supplemental Driver CD are the only items required for AIT 35 LVD drive installations.

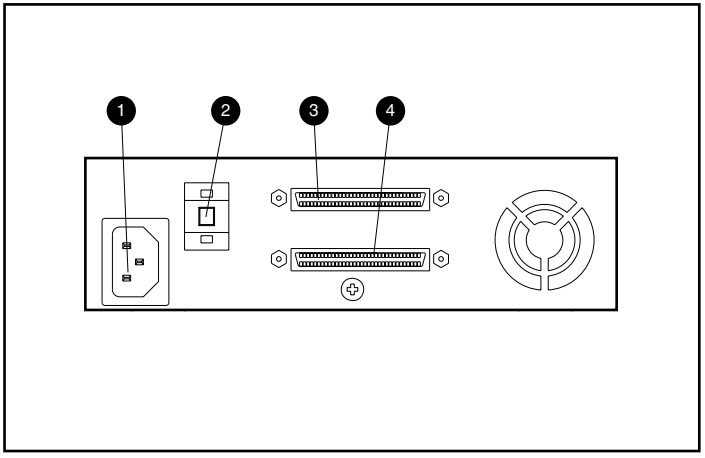

Figure 3-1. Rear view of an external AIT 35 LVD drive

Callout	Feature
❶	AC power connector
❷	SCSI ID switch
❸	SCSI connector
❹	SCSI connector

Setting the SCSI ID

Each SCSI device on the same SCSI bus must have a unique SCSI ID. Avoid duplicating the SCSI ID when assigning it to the AIT 35 LVD drive. Use the factory-set default SCSI ID 6.

To change the SCSI ID, press the switch on the rear panel of the drive above or below the number display to set the desired number.

NOTE: The SCSI ID can be set up to 15 (9 and above is displayed as A to F) but a SCSI ID above 6 is not recommended.

IMPORTANT: SCSI ID 7 is reserved for the controller.

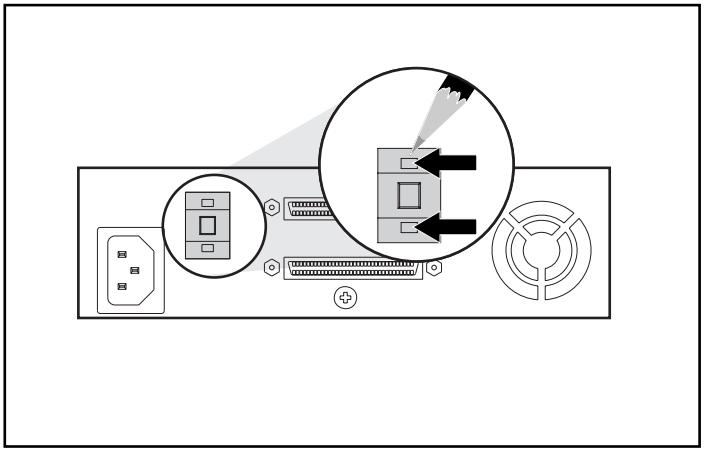

Figure 3-2. Setting the SCSI ID jumpers on an external AIT 35 LVD drive

NOTE: During installation, SCO UinxWare requires that all SCSI devices be attached to the same SCSI bus and that only one SCSI controller be active.

Connecting a Single Drive

1. Power OFF the computer and any peripheral devices.
2. Locate the external SCSI-2 port on the rear of the computer.

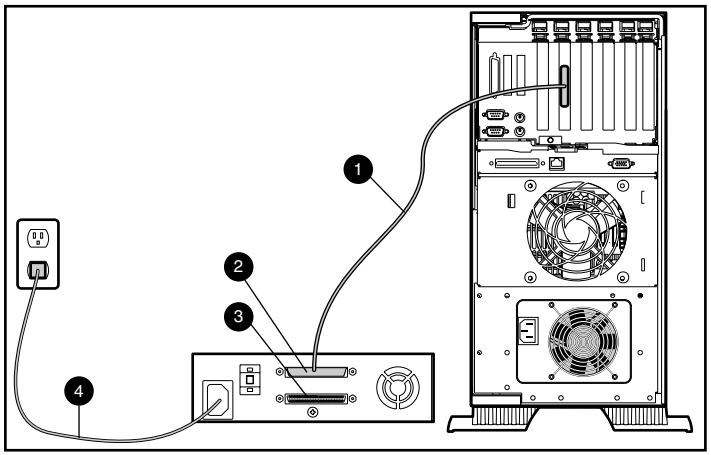

Figure 3-3. Connecting a single external AIT 35 LVD drive

3. Attach the SCSI signal cable ❶ to the SCSI connector ❷ located on the rear panel of the AIT 35 LVD drive and then to the external SCSI-2 port on the computer.
4. Attach the terminator (not shown) to the SCSI connector ❸.
5. Turn thumbscrews into place to secure the cable to the connector.

WARNING: To reduce the risk of electric shock or damage to your equipment, do not disable the power cord grounding feature. This equipment is designed for connection to a grounded (earthed) power outlet. The grounding plug is an important safety feature.

---

6. First plug the drive AC power cord ❹ into the drive and then into a grounded AC outlet.
7. Power ON all peripheral devices.
8. Power ON the computer.

Connecting Multiple Drives

Two AIT 35 LVD drives can be connected to the same SCSI channel at the same time. Do not connect more than 2 units per SCSI controller. Compaq recommends that no longer than a 6-ft cable is used to attach the initial unit, then use no longer than a 3-ft cable to daisy chain the additional unit.

Daisy-Chaining Storage Devices Together

1. If the first drive unit has a terminator on the SCSI connector ❶, remove it.
2. Connect the tape drives together by placing a SCSI cable between the SCSI connector ❷ of the first drive to the SCSI connector ❸ of the second drive.

NOTE: Each drive must have a unique SCSI ID. See "Setting the SCSI ID" for more information.

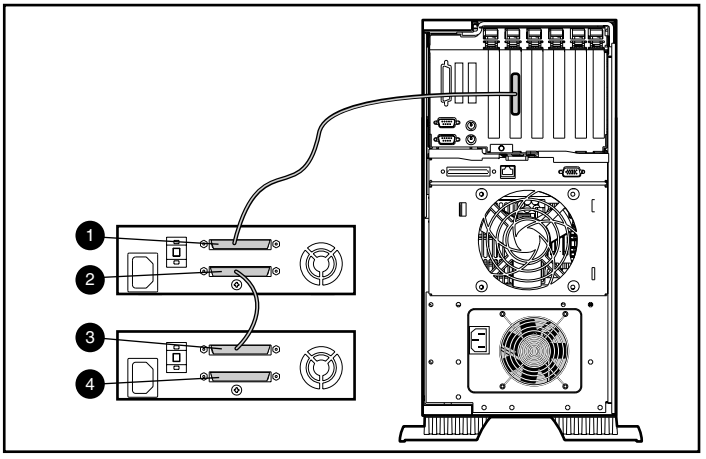

Figure 3-4. Daisy-chaining SCSI storage devices

3. Place the terminator (not shown) on the SCSI connector ❹ of the second drive.
4. Power ON all peripheral devices.
5. Power ON the computer.

Chapter **4**

Installing the Software Drivers

The following operating environments support the AIT tape drives:

- Microsoft Windows NT
- Microsoft Windows 2000
- Novell NetWare
- Compaq Tru64 UNIX
- OpenVMS
- SCO OpenServer
- SCO UnixWare
- Solaris Intel Platform Edition
- Banyan VINES

Device Drivers

Drivers are located on the Support Software Diskettes, the Compaq Tape Drive Supplemental Driver CD, and on the Compaq SmartStart and Support Software CD. You can also download them from the Compaq website at www.Compaq.com. The drivers on the Support Software Diskettes may be newer versions with new functionality and upgraded utilities. You can use SmartStart to create Support Software Diskettes for specific operating systems.

Windows NT

Drivers for the SCSI controllers and tape drive hardware are located on Support Software Diskettes, Compaq Tape Drive Supplemental Driver CD, and on the Compaq SmartStart and Support Software CD. The Support Software ships with each computer or can be downloaded from the Compaq website. The software tape device driver is located either with your tape backup software, with the operating system, or on the supplemental driver CD. Refer to your backup application installation guide for more information regarding additional software that might be needed.

Table 4-1
Windows NT

Controller	Software Driver Information
32-Bit Fast SCSI-2 Controllers or 32-Bit Fast-Wide SCSI-2 Controllers or Wide-Ultra SCSI Controllers	Refer to "Compaq SCSI Controller Support" in the *NTREADME.HLP* file on the Compaq Support Software for Microsoft Windows NT diskette, Version 1.21 or later.

IMPORTANT: If the SCSI controller to which your drive is attached was not present during your initial Windows NT installation, install the SCSI device driver for the controller **before** installing the tape class driver.

Refer to “Compaq Tape Support” in the *NTREADME.HLP* file on the Compaq Support Software for Microsoft Windows NT diskette.

Windows 2000

Drivers for the SCSI controllers and tape drive hardware are located on Support Software Diskettes, Compaq Tape Drive Supplemental Driver CD, and on the Compaq SmartStart and Support Software CD. The Support Software ships with each computer or can be downloaded from the Compaq website. The software tape device driver is located either with your tape backup software, with the operating system, or on the supplemental driver CD. Refer to your backup application installation guide for more information regarding additional software that might be needed.

To install the controller drivers:

1. Log on as Administrator.
2. Insert Compaq SmartStart and Support Software CD, version 4.9 or greater into the CD-ROM drive.

3. When the license agreement screen appears, click I Agree, and then **OK** to continue. The System Utility Screen appears.
4. Click the Compaq Support Paq icon once to highlight, then click **OK**. The Compaq Remote Deployment Utility appears.
5. Click on the checkboxes to select or deselect the desired items, then click **Install** on the tool bar.
6. All selected items are installed and the Installation Results screen displays, showing which drivers were loaded successfully.

Novell NetWare

Drivers for the SCSI controller and tape drive hardware are located on Support Software Diskettes and on the Compaq SmartStart and Support Software CD. The Support Software ships with each computer or can be downloaded from the Compaq website. The software tape device driver is located either with your tape backup software or with the operating system. Refer to your backup software application installation guide for more information regarding additional software that might be needed.

Table 4-2
Novell NetWare

Controller	Software Driver Information
32-Bit Fast SCSI-2 Controllers or 32-Bit Fast-Wide SCSI-2 Controllers or Wide-Ultra SCSI Controllers	Run the *README.COM* file on any of the Novell Software Support Diskettes (NSSD) for driver installation instructions.

Be sure to load the drivers in accordance with the Compaq controller being used.

There are additional driver issues if you wish to use applications requiring the Advanced SCSI Programming Interface (ASPI) support. For more information see the following section.

ASPI Support

The *README.COM* on the Novell Software Support Diskette (NSSD) outlines the specific drivers you need to support ASPI tape backup applications.

If you are using a tape backup application that uses the ASPI, such as ARCserve from Compaq or Seagate BackupExec, refer to the information provided with your application NLM to determine whether it uses ASPI.

The Compaq ASPI drivers, *CPQSASPI.NLM* Device Driver Functional Specification (DDFS) and *NWASPI.NLM* NetWare Peripheral Architecture (NWPA), provide ASPI support for the Compaq SCSI architecture for applications that require this interface.

All of the required drivers for ASPI tape support are provided on the Novell Software Support Diskette (NSSD). The Support Software ships with each computer or can be downloaded from the Compaq website.

The *SCSI.RDM* file on the NSSD diskette gives complete instructions on how to load these drivers and troubleshoot any problems.

COMPAQ TRU64 UNIX

Drivers for the SCSI controller and tape drive hardware are located on Support Software Diskettes and on the Compaq SmartStart and Support Software CD. The Support Software ships with each computer or can be downloaded from the Compaq website.

The Compaq Tru64 UNIX operating system uses Dynamic Device Recognition (DDR) which allows the operating system to recognize the AIT drive without a software tape device driver.

If the following message is seen on any version of Compaq Tru64 UNIX, it should be considered an informational message only. No action is required.

```
ctape_ioctl: unmapped scsi density code (0x30)-DDR entry needed
```

OpenVMS

Drivers for the SCSI controller and tape drive hardware are located on Support Software Diskettes and on the Compaq SmartStart and Support Software CD. The Support Software ships with each computer or can be downloaded from the Compaq website.

The OpenVMS operating system uses Dynamic Device Recognition (DDR) which allows the operating system to recognize the AIT drive without a software tape device driver.

SCO OpenServer

The drivers required to support the AIT tape drive under SCO OpenServer are:

- The SCO SCSI tape (**stp**) driver which is built into SCO OpenServer; see the SCO System Administrator's Guide for information on how to configure the driver.
- An appropriate SCSI controller driver.

Drivers for the SCSI controllers and tape drive hardware are located on the Support Software Diskettes and on the Compaq SmartStart and Support Software CD. The Support Software ships with each computer or can be downloaded from the Compaq website. The software tape device driver is located either with your tape backup software or with the operating system. Refer to your backup application installation guide for more information regarding additional software that might be needed.

Table 4-3
SCO OpenServer

Controller	Software Driver Information
32-Bit Fast SCSI-2 Controllers or 32-Bit Fast-Wide SCSI-2 Controllers or Wide-Ultra SCSI Controllers	Refer to the appropriate *README* on the Compaq Support Software CD. The name of the driver is CHA.

In addition, the appropriate version of the Compaq Extended Feature Supplement (EFS) for SCO OpenServer is required:

- For SCO OpenServer 5, use Compaq EFS version 5.16 or higher.

EFS for SCO OpenServer is available on both the Compaq SmartStart and Support Software CD and is installed and configured automatically during a SmartStart installation.

Configuring the SCSI ID for SCO OpenServer

In the pre-configured kernel used to install SCO OpenServer, the following SCSI IDs are automatically set:

- Disk = 0
- Tape = 2
- CD-ROM = 5

To determine the SCSI ID of the new tape drive (if not known):

1. Run System Configuration and look under "Review or Modify Hardware Settings," then "View and Edit Details." The values reported for controller number, target ID, LUN, and bus number will be used during mkdev tape.
2. Boot the computer to single user mode and run the mkdev tape command.
3. Remove the default tape device from controller O, ID 2.
4. Add the new tape drive to the configuration.
5. Relink the kernel and reboot the computer to multi-user mode.
6. Run the hwconfig command to ensure the new tape configuration is correct. The information will appear in a line such as:

   %tape - - - type= S ha=0 id=2 lun=0 ht= ...

In the above example, "id=2" indicates that the SCSI ID is 2.

See the section "Setting the SCSI ID" in Chapter 2 for more information on setting the SCSI ID.

IMPORTANT: SCO OpenServer's install kernel will only communicate with the first SCSI controller in the system. Remove the generic tape at ID2, then add the correct tape driver using correct ID, bus, and LUN values.

SCO UnixWare

The drivers required to support Compaq SCSI tape drives under SCO UNIX are the SCO SCSI tape (**stp**) driver and an appropriate SCSI controller driver. The **stp** driver is built into SCO UNIX. Consult the SCO System Administrator's Guide for directions on how to configure the SCSI tape driver.

The table below describes the drivers required to support current Compaq SCSI controllers.

Table 4-4
SCO UnixWare

Controller	Software Driver Information
32-Bit Fast SCSI-2 Controllers or 32-Bit Fast-Wide SCSI-2 Controllers or Wide-Ultra SCSI Controllers	Refer to the documentation accompanying the Compaq Support Software for SCO UnixWare. Versions 2.x to 7.x. or Compaq EFS 2.2x for UnixWare 2.1 or Compaq EFS 7.2x for UnixWare 7.x. The required driver is CPQSC.

EFS for SCO UnixWare is available on the Compaq Support Software CD and on Compaq SmartStart. The Compaq EFS for SCO UNIX is installed and configured automatically during a SmartStart installation.

Compaq SmartStart and Support Software ships with each computer, or the components can be downloaded from the Compaq website.

Solaris Intel Platform Edition

The table below provides information on identifying appropriate drivers for SCSI controllers.

Table 4-5
SunSoft Solaris

Controller	Software Driver Information
32-Bit Fast SCSI-2 Controllers 32-Bit Fast-Wide SCSI-2 Controllers Wide-Ultra SCSI Controllers Wide-Ultra SCSI-3 Adapter 64-Bit Dual Channel Wide Ultra2 SCSI Adapter 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter 64-Bit/66 MHz Dual Channel Wide Ultra3 Adapter	For Solaris 2.6, 2.7, and 2.8, please refer to the Solaris documentation. The Compaq Solaris driver updates can be downloaded from the Compaq website. The required driver is CPQNCR.

Banyan VINES

The table below provides information on identifying appropriate drivers for Compaq SCSI controllers.

Table 4-6
Banyan VINES

Controller	Software Driver Information
32-Bit Fast SCSI-2 Controllers or 32-Bit Fast-Wide SCSI-2 Controllers	Refer to the documentation from Banyan regarding the "Compaq Fast SCSI-2 / 53C710 EISA SCSI" driver.
Wide-Ultra SCSI Controllers	To ensure proper controller support, the Compaq Peripheral Adapter Support Software for Banyan VINES 6.x, 7.x, and 8.x, version 3.05 or newer is required. Refer to the SSD documentation file, *README.SSD* regarding the "Compaq Wide-Ultra SCSI Controller" driver.

Chapter **5**

Operating the AIT 35 LVD Drive

This section describes the AIT 35 LVD drive and its operation.

Front Panel

The front panel of the AIT 35 LVD drive contains Power ❶, Busy ❷, Tape ❸, and Status ❹ Light Emitting Diode (LED) indicators as described in Table 5-1 and an eject button ❺.

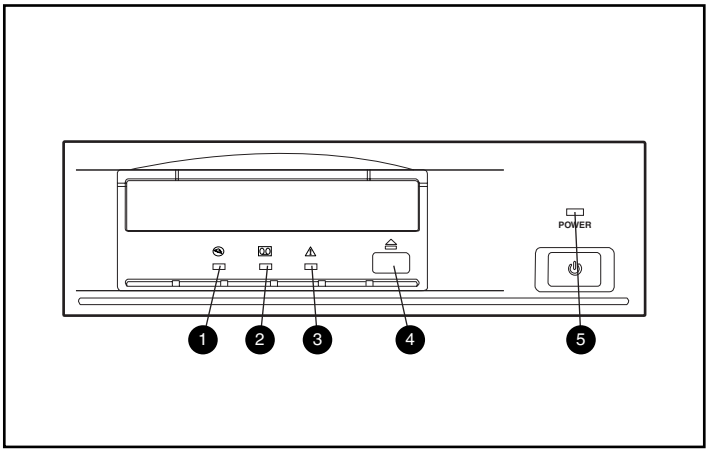

Figure 5-1. Identifying the front panel

Table 5-1
Front Panel

Callout	Icons	Description
❶		Busy LED
❷		Tape LED
❸		Status LED
❹		Eject Button
❺	None	Power LED

NOTE: Power LED is not on the internal unit.

Front Panel Indicators

The following table describes and explains the front panel indicators:

Table 5-2
Front Panel Indicators

LED			STATE
			No activity, no tape loaded
			SCSI activity, no tape loaded
			Tape loading/unloading
			Tape loading/unloading, write-protected
			Tape loaded, end of cleaning
			Tape loaded
			SCSI activity, tape loaded
			SCSI/Drive activity, tape loaded
—			Tape loaded, write-protected
—		—	Tape loaded, error rate warning
—	—		Cleaning request
—	—		Self-test failure
	—	—	Waiting for reset
—		—	Waiting for eject

Legend:	LED Flash Symbol	LED Display
		Off
		On
		Quick Flashes
		Quick flash with a long pause in between
		Long flash with a short pause in between
		Two quick flashes with a long pause in between
	—	Status irrelevant

NOTE: The AIT 35 LVD external drive has a power LED.

Loading and Unloading a Tape

Loading a Tape

Insert a tape into the slot on the front panel of the drive. As the tape is inserted, the drive takes it and automatically loads it into the drive mechanism.

Unloading a Tape

The tape can be removed from the drive either via software or the eject button. By pressing the eject button, the tape will rewind and the drive ejects the tape from the slot.

Forcing the Ejection of a Tape

CAUTION: You may lose data if you force the ejection of a tape. The tape may also end up invalidly formatted, because End of Data (EOD) may not have been written. Force an ejection only as a last resort; never use it as a quick way to eject the tape.

By pressing the eject button when the drive is busy, it may take a while for the drive to respond to the request, because the drive will finish the task it is engaged in before it responds. This ensures that the task is terminated in a controlled manner and no data is lost.

However, there may be occasions when unloading a tape is urgently needed, **even** at the risk of losing data. Forcing the ejection of the tape must be performed. To do this, hold the eject button down for at least 5 seconds. The tape is immediately unthreaded and the tape is ejected, regardless of what operation the drive was performing.

WARNING: Risk of electrical shock. If tape is jammed inside the drive do not attempt to open this product. Refer all service to a Compaq Authorized Service Provider.

Write-Protecting a Tape

The tape has a write-protect switch ❷ to prevent accidental erasure of data. Before loading the tape into the drive, position the write-protect switch on the front of the tape. By moving the switch to the right, the tape is write-protected and by moving the switch to the left, the tape is write-enabled.

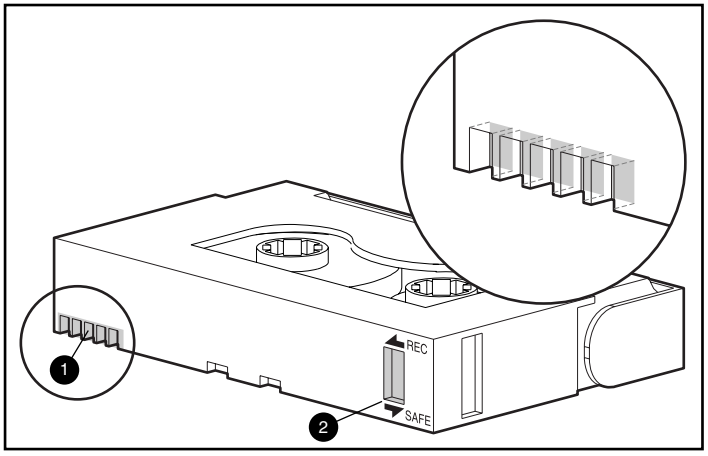

Figure 5-2. Tape write-protect switch

Memory In Cassette

AIT tapes provided by Compaq support Memory in Cassette (MIC) . This feature enables the tapes to store important tape information in memory, which allows faster access to data. MIC tapes can be easily identified by the gold connector pins ❶ located left of the write-protect switch.

NOTE: Not all AIT 35 LVD tapes have this feature.

Tape Handling and Storage

For longer life of recorded or unrecorded tapes, store tapes in a clean environment with these conditions:

- Keep the tape out of direct sunlight and away from heaters and other heat sources.
- Use the tape in temperatures between 15° C and 35° C (59°F to 95°F).
- If the tape has been exposed to extreme heat or cold, stabilize it at room temperature for the same amount of time it was exposed – up to 24 hours.
- Do not place the tape near electromagnetic interference sources, such as video monitors, motors, and video or X-ray equipment. Data on the tape can be altered.
- Store the tape in a dust-free environment where the relative humidity is between 20% and 80%. For longer cartridge life, store the tape at 20% to 40% relative humidity.

Chapter 6

Tape Drive Cleaning

Reliable backup of your system is the product of at least four components:

- A reliable tape drive
- Quality tape cassettes
- Regular backup schedule with backup media stored offsite
- Routine tape drive maintenance

Compaq tape drives are designed to operate reliably under worst case conditions; however, they require simple routine maintenance to operate efficiently. Regular cleaning is the most essential step in properly maintaining a tape drive and preventing errors.

Reliability of Backup Devices

The reliability of any backup device is directly related to its duty cycle (the number of hours per day that the device is in use). For example, if a tape drive designed for 1-GB backups is being used to back up a 10-GB computer, the result on that drive will be premature aging and reliability problems.

Importance of Routine Cleaning

The tape drive has a cleaning roller built in which prevents and recovers from head contamination. This feature minimizes buildup on the read/write heads so fewer cleaning cycles with a cleaning tape are required. However, Compaq recommends a routine cleaning schedule every 100 hours of use to keep the tape drive in good working order. The drive will also need cleaning when the drive Status LED displays long flashes with short pauses (See Table 5-2).

IMPORTANT: Regular cleaning is vital to trouble-free operation of any tape device. Failure to follow recommended cleaning procedures could result in serious damage to the tape drive.

When a drive is cleaned according to a regular schedule, one cleaning cycle typically removes accumulated dirt and particle deposits. However, in a dusty environment, or if a regular cleaning routine has not been followed, one cleaning cycle may not fully clean the AIT 35 LVD drive read/write heads.

Errors Resulting from Cleaning Neglect

Following are some of the errors that can result from failure to observe routine maintenance and cleaning of tape drives:

- **Dropouts**
  Caused by weak signal strength from dirty read/write heads, a dropout can result in reduced tape capacity and backup performance.
- **Media errors**
  The backup tapes can be jammed, torn, or otherwise damaged by a dirty read/write head.
- **Read or write errors**
  Because of a dirty read/write head, data may not have been recorded on the tape during backup. Even if the data is on the backup tape, retrieval may not be possible if the dirty head cannot read the data.
- **Format failures**
  During backup, data is laid on the tape in a certain format for easy retrieval. A dirty write head can cause format failures, which means that data can be lost or impossible to retrieve.
- **Bad blocks**
  Because of media damage (see media errors above), the tape may not accept backup data. Also, the read/write head may be unable to retrieve data from bad blocks.

Importance of Compaq Approved Tapes

Compaq approved tapes are thoroughly tested to meet high-quality standards. Before Compaq recommends a tape, the quality and reliability of the magnetic media and the tape are evaluated. Do not use an unapproved tape as it may not be compatible with Compaq tape drives.

The data tapes must meet these requirements:

- Only Standard AIT 35 GB tapes, Advanced Metal Evaporate
- Must be one of the following sizes: 170 m (557 ft) or 230 m (754 ft)

NOTE: The AIT 35 LVD drive does not support the DDS and EXABYTE formatted tapes.

IMPORTANT: Compaq recommends that only tapes purchased from qualified vendors be used.

Tape Drive Cleaning Procedures

CAUTION: Do not use alcohol or cleaning solution to clean AIT drives. **Do not** clean read/write heads with a cotton swab. Fibers from a cotton swab can cause permanent damage to the head.

1. Insert the cleaning tape into the drive. The drive automatically takes the tape, loads it, and cleans the heads.
2. When the tape is done cleaning, the drive ejects it.
3. If the drive does not eject the tape and the Status LED is flashing (see Table 5-2), press the eject button, discard the tape, and insert a new cleaning tape.

NOTE: This indicates the cleaning tape is exhausted. Throw away the used cleaning tape.

Take the tape out of the drive and write the cleaning date on the tape label. This provides a record of how many times the cleaning tape has been used. The cleaning tape typically has a life of 35 cleaning cycles.

Chapter 7

Troubleshooting Intel-based Computers

Eliminating Resource Conflicts

Many of the problems associated with tape drive installation are a result of resource conflicts between the tape drive components and the other components in your computer.

Before following the troubleshooting procedures in this guide, complete the system configuration worksheet on the next page. Use the worksheet to identify and correct resource conflicts.

Completing the System Configuration Worksheet

1. Run the Compaq System Configuration Utility and select Step 4.
2. Record the switch settings for all option boards on the worksheet in the system configuration section.
3. Remove the computer cover and record the actual switch settings from all option boards in the option board section of the worksheet.
4. Compare the settings recorded on the worksheet. If there are any differences, set the board switches as recommended by the Compaq System Configuration Utility.

Table 7-1
System Configuration Worksheet

Item			Notes		
Operating System					
Operating System Version					
Software Available Base Memory					
Tape Software Vendor					
Tape Software Version					
Compaq System Configuration Utility Version (EISA-based Compaq computers only)					
Recommended Switch Settings			**Actual Option Board Switch Settings**		
ADDR	**IRQ**	**DMA**	**ADDR**	**IRQ**	**DMA**

Installation Troubleshooting

Follow the procedures in this section if the tape drive has not been operational since it was installed in the computer. Turn on the computer and insert the tape.

Table 7-2
Installation Troubleshooting

Problem	Try This
Tape light on the tape drive does not turn on.	■ Make sure the tape drive power cable is connected. ■ Remove the signal cable from the tape drive. If the light starts working, check for a defective cable, an incorrectly installed cable, or a defective controller. ■ Replace the tape drive.
Tape light on the tape drive turns on, but drive does not respond to commands.	Run the Compaq System Configuration Utility from the hard drive or from diskette and restart the computer. Configure all boards in the system, then check the following: ■ Verify that all installed boards appear in the slot diagram. Add any missing boards. ■ Verify that the switch settings shown by the Compaq System Configuration Utility match the physical settings used on the boards. Ensure that the board settings match the settings shown by the utility.
System Configuration Utility does not recognize the tape drive.	■ Check the connections of the signal cable. ■ Check the seating of the controller. ■ Ensure tape drive power cable is oriented correctly and inserted completely. ■ If multiple SCSI devices are used, ensure that each device has a unique SCSI ID. ■ Your drive should be shipped from the factory with all terminators removed. Verify that all terminators have been removed. ■ If none of these steps solve the problem, then remove, replace, and test each of the following components separately: signal cable, tape drive, and finally the controller.

Quick Checklist

Listed below are some hardware and software related items that potentially could cause tape drive failures. These items are covered in more detail under Eliminating Resource Conflicts, Installation, and Resolving Operating Problems.

Hardware

Make sure the following tasks have been properly completed:

- The Compaq System Configuration Utility has been checked for conflicts
- The tape drive switches and jumpers have been set correctly
- The power and signal cables are connected correctly and the controller is seated properly
- For all Compaq computers with multiple devices on a SCSI bus, each device has a unique SCSI ID

Software

Make sure the software is properly functioning:

- The tape drive passes the Compaq Diagnostics test
- The controller has been configured using the Compaq System Configuration Utility
- The correct software drivers are being used. (Make sure that the operating system driver for the tape drive matches the drive type.)
- The version of the backup software supports the tape hardware you are using.

If none of these software problems above apply, try reinstalling the tape drive software.

Resolving Operating Problems

If the AIT 35 LVD drive worked previously but now does not, try the following:

1. Clean the drive heads.
2. Run the tape drive option of Compaq Diagnostics.
3. Replace the tape.
4. If multiple tape drives are used, ensure that each tape drive has a unique SCSI ID.
5. Your drive should be shipped from the factory with all terminators removed. Verify that all terminators have been removed.
6. Determine what has changed in the system since the last tape backup.
    a. If the system configuration has been changed, try removing the change to see if it affects the tape backup system.
    b. If a board or option has been added, check its DMA, IRQ, and port address settings for conflicts. Try removing the board or option.
    c. If a SCSI device has been added, check for SCSI ID conflicts and proper termination.
7. Check the controller, signal cable, and power cable connections to ensure that they are properly seated.
8. Replace the cables, tape drive, and finally, the controller.

Correcting Intermittent Failures

If the AIT 35 LVD drive works only intermittently:

1. Clean the tape drive heads.
2. Run the Compaq Diagnostics Utility and the tape drive Diagnostics Utility. Follow the steps listed in the Installation section of this chapter for the Compaq and tape diagnostics programs.
3. If the tape backup procedure starts correctly but then stops with an error:
    a. Use TEST to check the tape drive firmware revision level.
    b. If the error occurs on the same file or directory each time, correct any errors that you find with the file system by running a file system utility such as SCANDISK.EXE. If the problem continues with a particular file or directory, remove that file or directory from the backup list.

4. If the tape backup procedure starts correctly, but stops intermittently:
   a. Check the DMA, IRQ, and port address settings for conflicts. If there is a conflict, change the setting or remove the conflicting board.
   b. Try using a new tape cassette.
5. Check the Compaq website to be sure the drive has the latest firmware upgrade. If not, upgrade by using one of the methods listed below.

Upgrading the Firmware Using the Tape Storage Management Console

The Tape Storage Management Console (TSMC) keeps track of all available firmware versions for specific Compaq products.

TSMC has two options to get firmware or application updates from the Web. You can use the Download command available in the TSMC program, or use the *FDU.EXE* program located in the TSMC directory.

File Retrieval (*FDU.exe*)

FDU.EXE is a separate program that can be run from outside of TSMC. This program can be run from any Microsoft Windows NT or Microsoft Windows 2000 system to get firmware or application updates. *FDU.EXE* can be found in the parent directory of TSMC.

NOTE: The *FDU.EXE* program appears in the Start Menu as File Retrieval.

Download Command

To update using the Download command:

1. Selecting the Download command. You are asked if you want to use the firmware database. Click **Yes** if you want to use Compaq recommended firmware updates. Click **No** if you have a specific firmware file that you want to use.
2. If you clicked **Yes**, several dialogs appear and disappear. TSMC opens the database and compares the list of available updates to the specific information for your device. It then produces a list of firmware versions that you can use for your device. If you have Internet access, the firmware file you select is automatically downloaded. If you do not have Internet access, click on the Use Local Media button and then click **OK** to browse for the firmware file from a local source.

3. If no firmware versions are available for download, click **Skip**. TSMC will go straight to the download dialog, where you can manually specify a file for download.

CAUTION: Make your selection carefully -- firmware dictates the behavior of your device, and different firmware versions will each make your device behave differently.

4. You will reach the download dialog if you answered No to the 'use database' prompt or if you did not cancel the Available Updates dialog. As the download dialog starts, it communicates with your device to determine the optimal download parameters.

5. Before proceeding be sure to read the following cautions:

CAUTION: Do not interrupt the download process or eliminate power to the device while the download process is running. Doing so may render your device unusable.

CAUTION: ESL9000 and TL895 libraries use serial port downloads. Make sure a serial cable is attached to the device and your host computer. If a download fails to succeed, TSMC enforces a “forced re-download”. Follow the directions on your screen to complete the procedure.

IMPORTANT: The default parameters might be the ones that TSMC selects. You should not change these settings.

NOTE: If selecting a firmware file from other than the Internet, it is recommended that you put the file on a hard disk instead of reading it from a floppy.

TSMC determines download parameters for you when you select a firmware file. If you must change download parameters, consult with Compaq support personnel.

Your tape device may need to be in a specific state to receive new firmware. For example, the media may need to be ejected prior to the firmware download. Check your tape device documentation for specific instructions.

6. After specifying a file or arriving to this dialog after using the firmware database click on **Download**. Do not interrupt the download process or eliminate power to the device while the download process is running. Doing so may render your device unusable.

NOTE: After firmware updates are made to devices, you should close and exit TSMC then re-open it. This will properly update the device (library or drive) information, reflecting the firmware update.

Upgrading the Firmware by Tape

IMPORTANT: For a Firmware upgrade tape, contact a Compaq Authorized Service Provider.

The Compaq AIT 35 LVD drive allows you to upgrade the firmware, should you need to, using a Firmware Upgrade Tape. Follow the steps below. The process will take at least 3 minutes to complete.

CAUTION: Do not disconnect power at any time during the upgrade. Disconnecting power during an upgrade may corrupt the firmware and make the drive unusable.

1. Exit all tape applications before proceeding with firmware upgrade.
2. Verify that the drive is not engaged in any SCSI activity, by ensuring that the Busy and Tape LEDs are off and that the host is not accessing the drive.
3. Insert the Firmware Upgrade tape into the drive.
4. The upgrade process automatically takes place. When the process is complete, the tape will be ejected. Remove it and replace it in its box.

Upgrading the Firmware Using the Options ROMPaq

The Compaq AIT 35 LVD Drive firmware can be upgraded by downloading the Options ROMPaq from the Compaq website at www.compaq.com or by creating a diskette from the Compaq SmartStart and Support Software CD, version 4.9 or greater.

IMPORTANT: Make sure that you select Options ROMPaq if you are downloading or creating a diskette from the SmartStart and Support CD. Do not use ROMPaq for this procedure. ROMPaq is for upgrading Compaq servers and workstation firmware.

The ROMPaq utilities must be run from diskette. If you download the utilities from the Compaq website, follow the directions given during the download process to create the diskette. If you use the Compaq SmartStart and Support Software CD, follow these directions to create the diskette:

1. Boot the computer from the Compaq SmartStart and Support Software CD.
2. From the Compaq System Utilities screen, select Create Support Software.
3. At the Diskette Builder screen, select the appropriate option for your computer model.
4. Follow the instructions on the screen to create the ROMPaq diskette.

Once you have created an Options ROMPaq diskette, follow the steps below to upgrade the firmware.

1. Shut down the computer.
2. Insert the Options ROMPaq diskette into the computer diskette drive.
3. Power ON the computer.
4. Press **Enter** at the Welcome screen.
5. At the Select a Device screen, select the tape drive from the list of programmable devices. This may be the only item in the list. Press **Enter**.
6. At the Select An Image screen, you will see information describing your tape drive, the date of the existing ROM version, and the date of the latest ROM version. Press **Enter**.
7. Review the information on the Caution screen. Press **Enter** to reprogram the option ROM or **Esc** to discontinue reprogramming and return to the Select An Image screen.
8. A message that says:

   Reprogramming Firmware

   indicates that the option ROM is being reprogrammed. Do Not Interrupt ROM reprogramming.

   CAUTION: Do not interrupt this cycle. Interrupting the ROM reprogramming will leave the firmware in an unknown state and may render the tape drive unusable. You will be notified when reprogramming is completed.

9. When the Options ROMPaq is finished reprogramming the option ROM, press **Esc** to exit the Options ROMPaq utility.
10. Remove the Options ROMPaq diskette and reboot the computer.

Appendix ***A***

Regulatory Compliance Notices

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, your AIT 35 LVD Tape Drive is assigned a Compaq series number. The Compaq series number for the internal tape drive product is: Series EOD008. The Compaq series number for the external tape drive product is: Series EO2008. The AIT 35 LVD Tape Drive series number can be found on the product label, along with the required approval markings and information. When requesting certification information for this product, always refer to this series number. This series number should not be confused with the marketing name or model number for your AIT 35 LVD Tape Drive.

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or ID on the label. After the class of the device is determined, refer to the corresponding statement in the sections below.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Declaration of Conformity for Products Marked with the FCC Logo—United States Only

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

For questions regarding your product, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000

Or call 1-800-652-6672 (1-800-OK COMPAQ). (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000

Or call 281-514-3333.

To identify this product, refer to the part, series, or model number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian Notice (Avis Canadien)

Class A Equipment

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

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

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

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (the equivalent international standards are in parenthesis):

- EN55022 (CISPR 22)—Electromagnetic Interference
- EN50082-1 (IEC801-2, IEC801-3, IEC801-4)—Electromagnetic Immunity
- EN60950 (IEC950)—Product Safety

Japanese Notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です　この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Taiwanese Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Appendix ***B***

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always make sure you are properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an Authorized Compaq Reseller install the part.

NOTE: For more information on static electricity, or assistance with product installation, contact your Authorized Compaq Reseller.

Appendix **C**

Specifications

Dimensions and Weight

Table C-1
Dimensions and Weight For All Models

Dimension	Internal Drive without rails		External Drive	
Height	41.2 mm	1.62 in	58.0 mm	2.28 in
Width	149.0 mm	5.87 in	189.0 mm	7.44 in
Depth	169.6 mm	6.68 in	262.0 mm	10.31 in
Weight	1.02 kg	1.60 lbs	2.2 kg	4.90 lbs

Acoustic Noise

Table C-2
Acoustic Noise For All Models

Actions	Decibels
Streaming Write/Read	40 dB
Insert/Eject	60 dB

Altitude

Table C-3
Altitude For All Models

Action	Feet
Operating	0 to 10,000 feet

Temperature and Humidity Range

Table C-4
Temperature and Humidity For All Models

Actions	Temperature	Humidity
Operating	5°C to 40°C ($\Delta T < 10^{o}C/h$)	20 to 60% RH, non-condensing Maximum wet bulb temperature = 26°C
Non-Operating (mech.)	-40°C to 70°C ($\Delta T < 20^{o}C/h$)	5 to 95% RH ($\Delta RH <$ 30%/h)

CAUTION: Do not cover the fan. The tape drive can malfunction if the internal temperature rises too high.

Power Requirements

Table C-5
Power Requirements For All Models

Voltage	Max Ripple	Current	
		Typical	Maximum
5V +/- 5%	100 mVp-p	1.55A	2.5A
12V +/- 10%	100 mVp-p	0.35A	1.2A

Air-Cooling Requirement

Table C-6
Air-Cooling Requirement For All Models

Ambient temperature	< 40ºC

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