User's Guide

hp StorageWorks 1000ux/1900ux/2300ux Optical Jukebox

First Edition (May 2004)

Part Number: AA966-90901

This guide describes procedures for operating and troubleshooting the HP StorageWorks 1000ux/1900ux/2300ux Optical Jukebox.

Printed in the U.S.A.

HP StorageWorks 1000ux/1900ux/2300ux Optical Jukebox User's Guide
First Edition (May 2004)
Part Number: AA966-90901
Regulatory Model Number: N3620N3Z

Contents

About This Guide

This user guide provides information to help you:

- Operate the jukebox
- Troubleshoot the jukebox

“About This Guide” topics include:

Related documentation

In addition to this guide, HP provides corresponding information:

- *HP StorageWorks Optical 1000ux/1900ux/2300ux Jukebox Setup Guide*
- *HP StorageWorks Optical 1000ux/1900ux/2300ux Jukebox Getting Started Poster*

Conventions

Conventions consist of the following:

- Document conventions
- Text symbols

Document conventions

This document follows the conventions in Table 1.

Table 1: Document conventions

Element	Convention
Cross-reference links	Blue text: Figure 1
Key and field names, menu items, buttons, and dialogue box titles	Bold
File names, application names, and text emphasis	*Italics*
User input, commands and directory names, and system responses (output and messages)	`Monospace font` `COMMAND NAMES` are uppercase monospace font unless they are case sensitive
Variables	*<monospace, italic font>*
Web site addresses	Blue underlined sans serif font text (http://www.hp.com)

Text symbols

The following 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 death.

AVERTISEMENT : le non-respect de ces instructions expose l'utilisateur à des risques potentiellement très graves.

AVVERTENZA: La mancata osservanza delle indicazioni fornite in un messaggio così evidenziato, può provocare lesioni personali o mettere in pericolo la vita dell'utente.

VORSICHT: In dieser Form hervorgehobener Text weist darauf hin, dass die Nichtbeachtung der Anleitungen zu Verletzungen oder zum Tod führen kann.

ADVERTENCIA: el texto con esta marca indica que si no se siguen las instrucciones, pueden producirse lesiones corporales o incluso la muerte.

警告：その指示に従わないと、人体への傷害や生命の危険を引き起こす恐れがある警告事項を表します。

警告： 以这种方式显示的文本表示：如果不按警告中的指导信息操作，可能会导致人身伤亡。

Caution: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

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

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our web site: http://www.hp.com.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP web site: http://www.hp.com/support/.

Note: For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

- Technical support registration or contract number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions
- HP StorageWorks Library and Tape Tools (L&TT) Support Ticket (if applicable)

HP storage web site

The HP web site has the latest information on this product. Access storage at: http://www.hp.com/country/us/eng/prodserv/storage.html. From this web site, select the appropriate product or solution. You can also visit http://www.hp.com/go/udo.

HP authorized reseller

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518
- In Canada, call 1-800-263-5868
- Elsewhere, see the HP web site for locations and telephone numbers: http://www.hp.com.

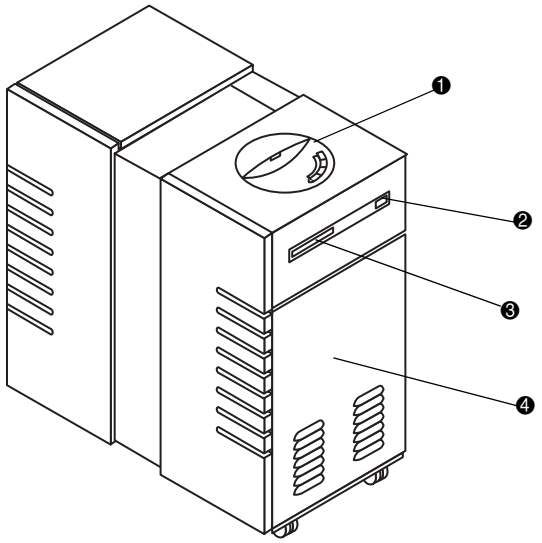
Operations

This chapter describes the following:

Identifying panel features

Identify the following panel features before you install the jukebox (see Figure 1 and Figure 2 on page 15).

Front panel features and descriptions

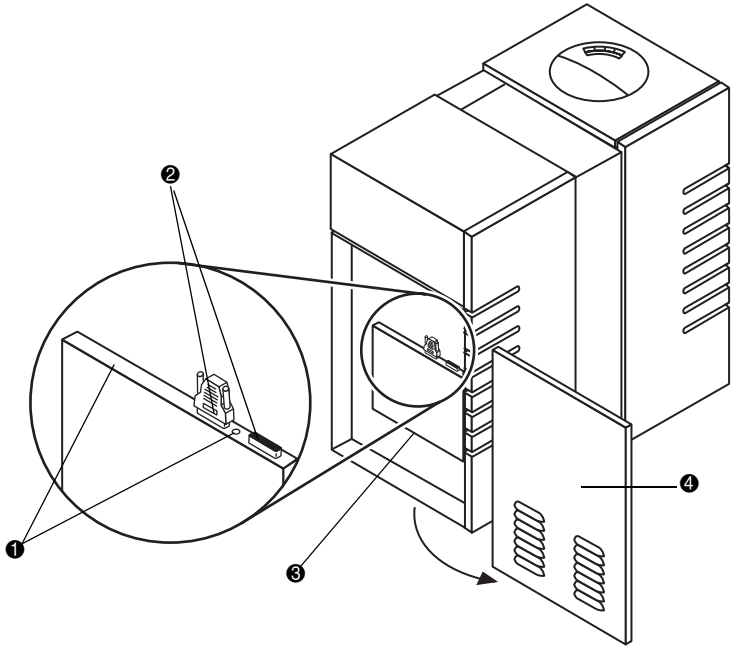


❶ Control panel
❷ Power switch
❸ Mailslot
❹ Front service access panel

Figure 1: Front panel features

- Control panel—Used to manually control and monitor operation of the jukebox. See the user's guide for information on using the control panel.
- Power switch—Turns power to the jukebox on and off. Located under the panel through an access hole.
- Mailslot—Used to insert and remove disks from the jukebox.
- Front service access panel—A panel for service access that should only be removed by qualified personnel.

Back panel features and descriptions



❶ Active bus indicator
❷ SCSI ports
❸ Power receptacle
❹ Back access panel

Figure 2: Back panel features

- Active bus indicator—Lit when the SCSI bus is active.
- SCSI ports—68-pin high-density SCSI connectors (Micro D-type). Used for attaching the SCSI cable from the jukebox to the host computer. One port must have a SCSI cable connected, and the other must have a SCSI terminator connected to it.
- Power receptacle—Used for connecting the power cord to the jukebox. Located on the bottom of the power distribution assembly.
- Back access panel—Covers the interface aseembly (❶, ❷ and ❸ in Figure 2). This panel is removed by pushing up on the panel (from the bottom) and then pulling the panel out and away from the jukebox.

WARNING: TThis product can only be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) noncompliance with individual, country-specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) a fractured power cord, which could cause the internal contacts to be exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability when HP-approved power cords are not used.

AVERTISEMENT : ce produit ne peut être utilisé qu'avec un cordon d'alimentation approuvé par HP pour votre zone géographique. L'utilisation d'un cordon d'alimentation non approuvé par HP vous expose à ce qui suit : 1) non-conformité aux spécifications de sécurité du pays concerné ; 2) intensité admissible du conducteur insuffisante pouvant provoquer une surchauffe créant un risque de blessure ou d'endommagement du produit ; et 3) rupture de cordon pouvant exposer les contacts internes et créer un risque d'électrocution pour l'utilisateur. HP décline toute responsabilité en cas d'utilisation d'un cordon d'alimentation non approuvé.

AVVERTENZA: È possibile utilizzare questo prodotto solo con un cavo di alimentazione approvato da HP specifico per il paese di utilizzo. L'utilizzo di cavi di alimentazione non approvati da HP può produrre: 1) non conformità ai requisiti di sicurezza specifici del paese di utilizzo; 2) amperaggio del conduttore insufficiente con conseguente surriscaldamento e potenziale rischio di lesioni a persone e/o cose; 3) rottura del cavo di alimentazione con conseguente esposizione dei contatti interni e potenziale rischio di scosse elettriche per l'utente. HP declina qualsiasi responsabilità in caso di utilizzo di cavi di alimentazione non approvati da HP.

VORSICHT: Dieses Produkt darf ausschließlich mit einem von HP für die Verwendung in Ihrem Land zugelassenen Netzkabel verwendet werden. Die Verwendung eines nicht von HP zugelassenen Netzkabels kann folgende Konsequenzen haben: 1) Nichteinhaltung spezifischer, nationaler Sicherheitsbestimmungen; 2) Überschreiten der Strombelastbarkeit des Netzkabels, was zu einer Überhitzung und in der Folge zu Verletzungen und/oder Sachschäden führen kann; 3) Stromschlaggefahr durch offen liegende Adern bei Kabelbruch. Für den Fall, dass nicht von HP zugelassene Netzkabel verwendet werden, übernimmt HP keinerlei Haftung.

ADVERTENCIA: este producto sólo puede utilizarse con un cable de alimentación aprobado por HP para su región geográfica específica. El uso de un cable de alimentación no aprobado por HP puede provocar lo siguiente: 1) el incumplimiento de requisitos de seguridad individuales y específicos del país; 2) insuficiente corriente permanente admisible de conductor que puede provocar un sobrecalentamiento y posibles lesiones personales o daños a la propiedad; y 3) un cable de alimentación puede romperse y exponer los contactos internos, lo que supone un peligro potencial de descarga eléctrica para el usuario. HP renuncia a toda responsabilidad en caso de utilizarse cables de alimentación no aprobados por HP.

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HP 認定の電源コードが使用されない場合、HP はー切の責任を負いかねます。

警告: 使用本产品时仅可采用经 HP 批准的适用于您所在地域的电源线。使用未经 HP 批准的电源线可能会导致: 1) 不符合某个国家或地区的特定安全要求; 2) 导体因安培容量过低而过热，造成潜在的人身伤害和 / 或财产损失; 3) 绽裂的电源线可能导致内部触点外露，给用户带来潜在的电击危险。对于因使用未获 HP 批准的电源线而导致的任何后果, HP 概不负责。

Using Ultra Density Optical (UDO) disks

UDO media is an integral part of the storage process. This section describes the following:

Note: For UDO media specifications, see "Media specifications" on page 63.

Choosing a disk type

Two disk types can be used in the jukebox.

Table 2: UDO disk types

Disk Type	Description	HP Part Number
Rewritable	Designed for virtually unlimited read and write cycles	Q2031A
Write once, ready many times (WORM)	Designed for permanent storage of data that cannot be altered or erased	Q2030A

To order HP UDO media, contact your local HP Authorized Reseller or buy online from http://www.hp.com/go/storagemedia.

Labeling a disk cartridge

Make it a practice to label your UDO disk cartridges. Adhesive labels come with each UDO disk for this purpose (see Figure 3).

Caution: In order to avoid damaging the drives and media:

Only apply labels to the areas designated in Figure 3. Never place labels over the disk cartridge shutter or open the shutter for any reason.

Make sure the media is free of moisture and that all label corners are securely fastened to the media shell.

Do not use disks with loosely attached labels.

Do not use disks with multiple labels applied. Always remove old labels before applying new ones.

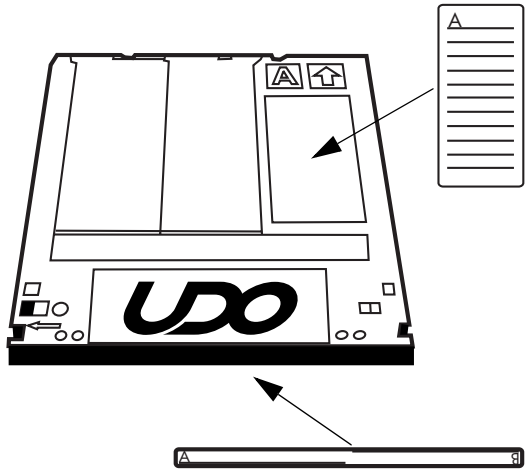


Figure 3: Labeling an UDO disk

Write-protecting an UDO disk

Each side of an UDO disk can be write-protected.

With *rewritable disks*, this prevents existing files from being altered or erased, and new files from being written to the disk.

With *WORM disks*, existing files cannot be altered or erased regardless of whether or not the disks have been write-protected. However, write-protecting a WORM disk prevents additional files from being written to the disk.

To write-protect an UDO disk, slide the red write-protect switch to the left, as indicated by the arrow on the cartridge (see Figure 4).

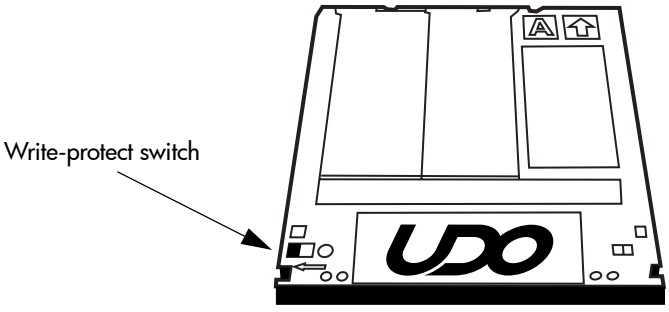


Figure 4: Write-protecting an UDO disk

Loading a disk into the drive

Note: Label all disks before loading them into the jukebox. Some application software packages require that you load and eject disks by using instructions in the software. If you use a software application to manage files in the jukebox, check the software documentation before proceeding with these steps.

1. Start with READY, or LOAD *displaying on the control panel.
2. Load UDO media into the drive by inserting the disk gently but firmly into the mailslot, shutter end first, and with the side you want to access facing up (A or B). See Figure 5.

   An incorrectly inserted disk will be rejected with CART IN WRONG displaying briefly.

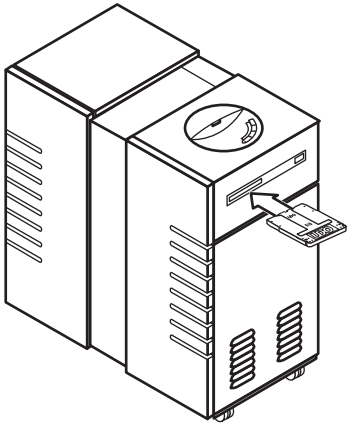


Figure 5: Loading media

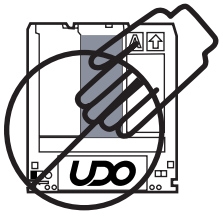
3. LOAD SLOT # will display, with # flashing to indicate the number of the first available storage slot in the jukebox. To select this storage slot number, press **LOAD** or **ENTER**. To choose a different storage slot, press **NEXT** or **PREV** until the desired slot number displays, and then press **ENTER**.
4. LOADING displays as the jukebox moves the disk to a slot. After the disk is loaded into the storage slot, LOAD * displays. You can now load additional disks by inserting them into the mailslot and repeating step 3 until you are finished loading disks.

5. Press **CANCEL** to return to the READY state.

Maintaining UDO media

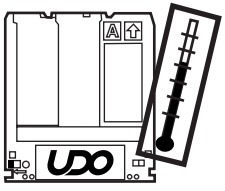
Follow these guidelines to ensure that your UDO disks remain in good condition.

- Do not open the disk's shutter and touch the disk surface.

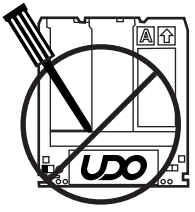


- Do not store the disk in a dusty location.

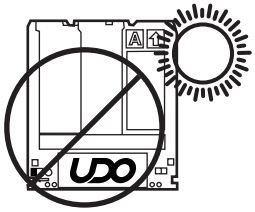
- Do not store the disk in temperatures outside of 5°C to 55°C (41°F to 122°F).



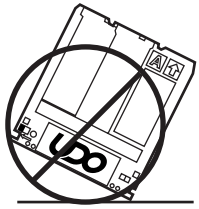
- Do not disassemble the disk.



- Do not expose the disk to direct sunlight.



- Do not drop the disk.



Using mixed media

Mixed media refers to the option to backup to more than one drive type, such as MO and UDO, within the same physical jukebox.

General considerations when using mixed media are as follows:

- Some independent software vendor application packages do not support mixed media. Consult your software provider to verify that your configuration is supported.
- The proper version of HP StorageWorks Library and Tape Tools (L&TT) is required for diagnostic support. Please see the online quick specs of HP L&TT for the most up to date information. They can be found at the following web address.

  http://www.hp.com/support/lttcompatibility

- When loading media into a mixed media unit, the media will first be moved to a media test station, where its drive compatibility can be determined, then it will be moved to its final destination. This drive compatibility information is reported over SCSI to the application software to identify which disks are compatible with the installed drives.
- In the `TEST*` control panel menu, an additional test called `MEDIA TEST` is available that will move all of the disks in the unit (except those in drives) to the media test station, then back to their original locations. This test can take about 15 minutes in a fully loaded unit. This test can be used to establish the drive compatibility of all of the disks in the unit if this information is thought to be incorrect. This should only be necessary if disks have been moved around by hand (during service, for example). During normal operation the jukebox will automatically keep track of this information.
- When a disk inventory occurs (by selecting the `INIT ELEM STATUS` front panel command, or through a SCSI command) any disks that are found in the unit that have an unknown type will be moved into the media test station, then back to their original location to determine their drive compatibility. Again, this should only occur if disks are inserted by hand (during service) rather than through the mailslot. When firmware is downloaded into the jukebox controller, an initial inventory will occur automatically, and all of the disks will be checked for their drive compatibility type.

- Some of the front panel tests will work differently and have different initial requirements in a mixed media unit. For example, the `DRIVE IO` test will require disks of both types in the unit and will only be able to load disks into drives of the same type.
- MO drives can only accept a SCSI address from 0 to 7.

Using application software

Note: While HP-UX does provide native file system support for UDO media, this support is only for rewritable UDO media. Refer to the "Configuration" chapter in the *HP StorageWorks 1000ux/1900ux/2300ux Jukebox Setup Guide* that shipped with this product for more information.

The HP StorageWorks 1000ux/1900ux/2300ux Jukebox supports a variety of off-the-shelf software packages to manage your storage operations. For the latest information on which application software packages are compatible with this product, visit http://www.hp.com/go/udo.

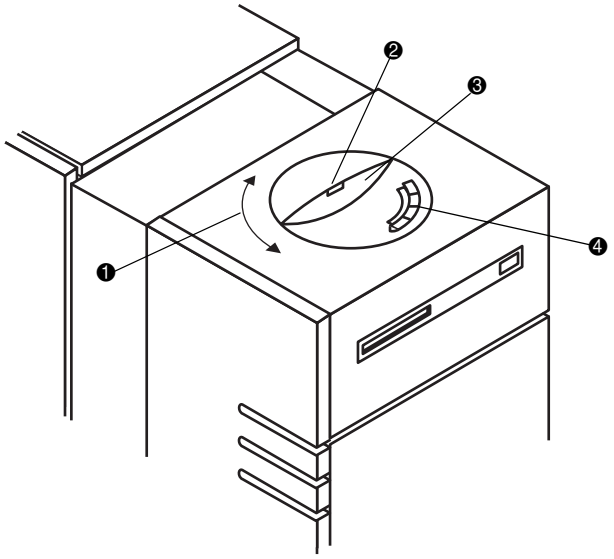
Navigation

2

This chapter describes the following:

Control panel features and descriptions

The control panel enables manual control of all jukebox operations using four buttons and an LED display. The SCSI IDs of the jukebox and its optical drives can be set and changed, disks may be loaded and ejected, configurations can be monitored and changed, performance information can be viewed, internal tests can be run, and the jukebox can be secured from unauthorized use. See Figure 6



❶ Swivel feature
❷ Activity light
❸ 16-character display
❹ Selection buttons

Figure 6: Control panel features

- Swivel feature—The control panel assembly can be rotated either right or left.
- Activity light—Lights up differently to indicate status:
  - Steady green—Power is on.
  - Flashing green—A drive is being accessed.
  - Amber—A fault occurred.
- 16-character display—Shows information about the current operation.

- Selection buttons—Press to perform the operations:
  - **CANCEL** cancels the current operation or menu selection.
  - **PREV** scrolls the display choice backwards by one.
  - **NEXT** scrolls the display choice forward by one.
  - **ENTER** selects the displayed choice.

Using selection buttons

Use the **CANCEL**, **PREV**, **NEXT**, and **ENTER** buttons to select tasks you want the jukebox to perform. Each time you push the **NEXT** or **PREV** button, a task choice appears. An "*****" indicates that there is a menu beneath that choice, which you can access by pressing the **ENTER** button.

Tip: To scroll through the menu options more quickly, push and hold the **NEXT** or **PREV** button.

You can return to **READY** at any time by pressing **CANCEL**. In some cases, you may need to press **CANCEL** more than once.

Jukebox menu tree

Figure 7 provides an overview of the jukebox menu tree.

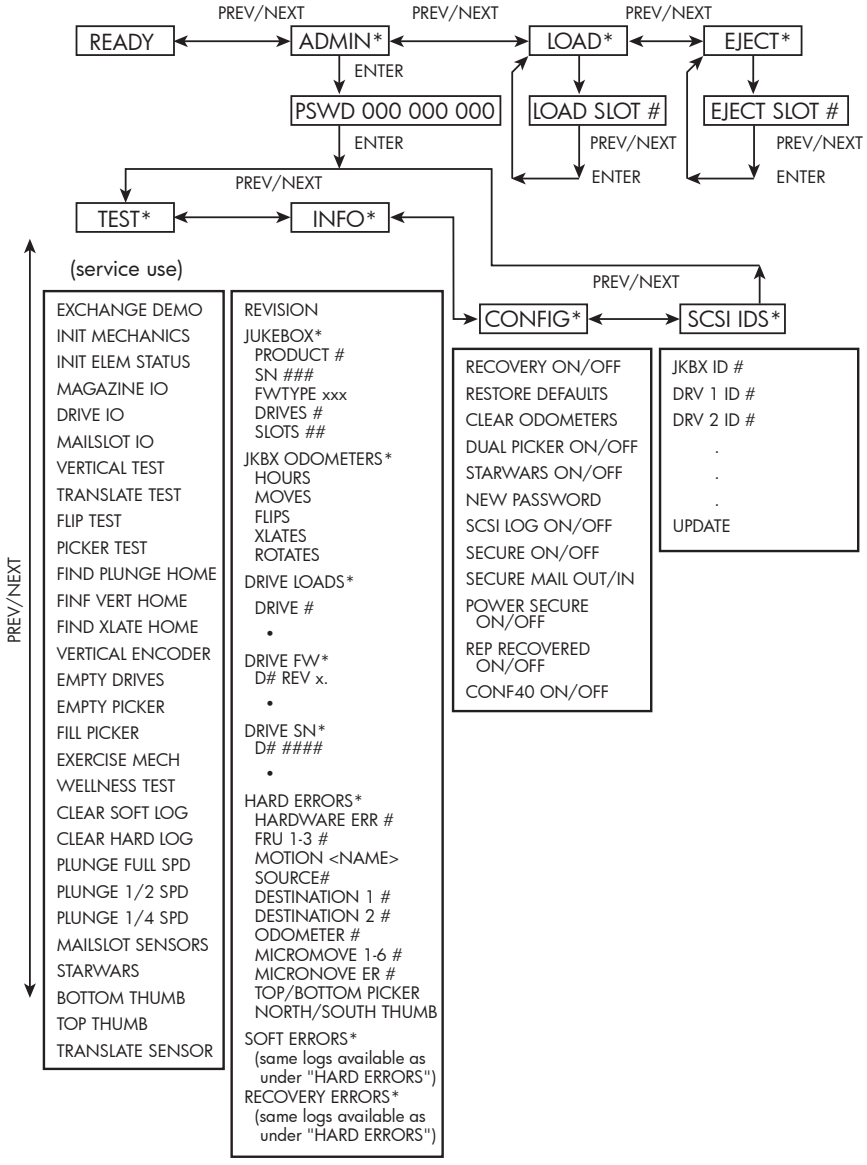


Figure 7: Jukebox menu tree

Top-level menus

The jukebox has four top-level menus.

`READY`	Indicates that jukebox is ready for operation.
`ADMIN *`	Provides access to second-level menu choices. A password is needed to access these choices.
	Note: A default password of "000 000 000" is set at the factory.
`LOAD *`	Used to load disks into the jukebox mailslot.
`EJECT *`	Used to eject disks from the jukebox mailslot.

Note: An "*" indicates that there are multiple choices available for the displayed menu item. When an item is flashing, press **ENTER** to select it, or **PREV** or **NEXT** to display additional choices.

Second-level menus

The jukebox has four second-level menus.

`TEST *`	Runs internal tests.
	Note: Internal tests should primarily be run by service personnel. Only run a test when your service representative requests that you do.
`INFO *`	Retrieves performance information stored in the jukebox logs.
`CONFIG *`	Customizes the way the jukebox functions.
`SCSI IDs *`	Displays SCSI IDs and allows you to change them.

Note: An "*" indicates that there are multiple choices available for the displayed menu item. When an item is flashing, press **ENTER** to select it, or **PREV** or **NEXT** to display additional choices.

Control panel operations

The following operations can be performed from the jukebox control panel:

Note: For information on loading a disk, see "Loading a disk into the drive" on page 21.

Ejecting a disk

Note: Some application software packages require that you load and eject disks by following the instructions in the software. If you use application software to manage files in the jukebox, check the software documentation before proceeding with these steps.

1. With `READY` displaying on the control panel, press **NEXT** until `EJECT *` displays, and then press **ENTER**.
2. `EJECT SLOT #` displays, with the "#" flashing to indicate the first storage slot in the jukebox that contains a disk.
   - To select the storage slot number that shows in the display, press **ENTER**.
   - To choose a different storage slot, press **NEXT** or **PREV** until the desired slot number displays, and then press **ENTER**.

   `EJECTING` displays as the jukebox moves the disk to the mailslot. When the disk is in the mailslot, the display returns to `EJECT SLOT #`.

3. Remove the disk from the mailslot.

   You can now eject additional disks by pressing **ENTER** and then following step 1 through step 3 until you are finished ejecting the disks.

Note: When the last disk is ejected, EMPTY displays briefly before returning to EJECT *.

---

4. Press **CANCEL** to return to the READY state.

Entering the administration menu password

READY > ADMIN* > PSWD 000 000 000

A nine digit numeric password is required to access menu choices beneath the ADMIN* menu of the jukebox. The jukebox ships with a factory default password setting of 000 000 000.

Note: To change the administration menu password, see "Changing the administration menu password" on page 35.

To access administration menu options using the factory default password:

1. With READY displaying on the control panel, press **NEXT** until ADMIN* displays.
2. Press **ENTER**. PSWD 000 000 000 displays and the first set of three zeros flashes.
   - If the default password 000 000 000 is still in effect, you can accept this password by pressing **ENTER** three times (once for each set of three zeros). TEST* displays, indicating that the password was accepted. You are now in the menu tree below ADMIN*.
   - If you have already changed the password from the factory setting, then continue with the following steps.
3. Press **NEXT** or **PREV** until the first number of your password displays and then press **ENTER**. The middle set of three zeros flashes.
4. Press **NEXT** or **PREV** until the second number of your password displays and then press **ENTER**. The third set of three zeros flashes.

5. Press **NEXT** or **PREV** until the third number of your password displays and then press **ENTER**. TEST * displays, indicating that the password was accepted. You are now in the menu tree below ADMIN*.

Changing the administration menu password

READY > ADMIN* > PSWD 000 000 000 >CONFIG*

To protect the system from unauthorized access, change the password from the factory default setting:

1. With READY displaying on the control panel, press **NEXT** until ADMIN* displays, then press **ENTER** and enter the password.
2. TEST * displays, indicating that the password was accepted. Press **NEXT** until CONFIG * displays and then press **ENTER**.
3. Press **NEXT** or **PREV** or until NEW PASSWORD displays and then press **ENTER**.
4. NEW 000 000 000 displays and the first set of three zeros flashes. Press **NEXT** or **PREV** until the new number you want to assign to the first part of the password displays and then press **ENTER**. The second set of three zeros flashes.
5. Press **NEXT** or **PREV** until the new number you want to assign to the second part of the password displays and then press **ENTER**. The third set of three zeros flashes.
6. Press **NEXT** or **PREV** until the new number you want to assign to the third part of the password displays and then press **ENTER**.
7. PASSWORD CHANGED displays. Press **CANCEL** three times to return to READY.
8. Power off the jukebox, then power it back on to save the password to the jukebox flash ROM.

Note: Be sure to document your new password. If you forget it, contact your service representative to reset the security code to the factory default.

Viewing the current SCSI IDs

```
READY > ADMIN* > SCSI IDS > VIEW IDS >
```

To view current SCSI IDs:

1. With READY displaying on the control panel, press **NEXT** until ADMIN* displays and then press **ENTER**.
2. Enter the administration password (see "Entering the administration menu password" on page 34).
3. Press **NEXT** until SCSI IDS displays and then press **ENTER**.
4. JKBX ID yy or DRIVE xx ID yy is displayed. Press **NEXT** or **PREV** to scroll through the current SCSI IDs.
5. Press **CANCEL** to exit.

Default SCSI IDs

Table 3 lists the default SCSI IDs for the jukebox and drives

Table 3: Default SCSI IDs

Bus 1	ID
Jukebox	6
Drive 1	5
Drive 2	4
Drive 3	3
Drive 4	2

Changing the current SCSI IDs

`READY > ADMIN* > SCSI IDS >`

To change the SCSI IDs:

1. Follow the instruction in "Viewing the current SCSI IDs" on page 36 until the list of SCSI IDs is displayed.
2. Press **NEXT** until the setting you want to change displays, and then press **ENTER**. The ID begins flashing.
3. Press **NEXT** or **PREV** until the new ID that you want displays and then press **ENTER**.
4. Repeat step 2 and step 3 until you have changed all the IDs that need to be updated.
5. Press **NEXT** until `UPDATE` displays, and then press **ENTER**.
6. `UPDATE` or `WAIT FOR UPDATE` and then `IDS SAVED` displays briefly.
   - If the new settings do not conflict with other SCSI IDs on the bus, `SCSI IDS` displays.
   - If the new settings conflict with other IDs on the SCSI bus, `CONFLICT-ABORTED` displays briefly and then `VIEW IDS` displays. Any changes entered are lost, and you must repeat the above steps to set a new ID.
7. Press **CANCEL** until `READY` displays.
8. Power off the jukebox and then power it back on to save the IDs to the jukebox flash ROM.

Configuring the jukebox

You can set configurations to customize the way the jukebox operates. Table 5 lists the jukebox configuration options.

Table 5: Configuration options

Configuration Name	Description	Default
RECOVERY ON/OFF	Toggles between ON and OFF. If the configuration is set to ON, the jukebox attempts to recover from errors; if the configuration is set to OFF, the jukebox immediately stops moving if an error condition occurs. The default configuration is RECOVERY ON, and recovery should remain ON under normal conditions.	RECOVERY ON
RESTORE DEFAULTS	Sets all jukebox configurations to default settings.	NA
CLEAR ODOMETERS	Sets all jukebox odometers to zero. **Note:** Used by service personnel only.	NA
DUAL PICKER ON/OFF	Toggles between ON and OFF. (The default setting is DUAL PICKER ON, and dual picker mode should remain ON under normal conditions.) If the configuration is set to ON, the jukebox runs with dual picker (disk transport) addressing ON; if the configuration is set to OFF, the jukebox runs with dual picker (disk transport) addressing OFF.	DUAL PICKER ON
STARWARS ON/OFF	Should be set to ON during normal operation. Toggles between ON and OFF. The ON configuration enables the vertical sensors; the OFF configuration disables the vertical sensors. **Note:** Used by service personnel only.	STARWARS ON
NEW PASSWORD	Allows you to change the numerical password required to access the menu choices under the ADMIN* menu on the jukebox control panel.	000-000-000
SCSI LOG ON/OFF	Should be set to OFF during normal operation. Toggles between ON and OFF. Tracks internal SCSI states and saves the information to a log. **Note:** Used by service personnel only.	SCSI LOG OFF
SECURE MS ON/OFF	Toggles between ON and OFF. The ON configuration *disables* loading and ejecting disks. The OFF configuration *enables* loading and ejecting disks.	SECURE MS OFF

Configuration Name	Description	Default
SECURE MAIL OUT/IN	Toggles between OUT and IN. Determines the orientation of the mailslot when the SECURE configuration is set to IN. When set to OUT, the mailslot remains in its normal orientation. When set to IN, the mailslot rotates in, making it inaccessible.	OUT
POWER SECURE ON/OFF	Toggles between ON and OFF. The ON configuration retains your selection of the SECURE MS configuration through power cycling (or power outage). The OFF configuration allows the jukebox to return to the default setting of this configuration after a power cycling.	POWER SECURE OFF
REP RECOVERED ON/OFF	Toggles between ON and OFF. When set to ON, recovered errors are reported; when set to OFF, recovered errors are not reported.	REP RECOVERED ON
CONF40 ON/OFF	**Caution:** Changing this configuration may result in a service call. Used by service personnel only.	NA

Setting an operating configuration

READY > ADMIN* > CONFIG*

To set an operating configuration:

1. With READY displaying on the control panel, press **NEXT** until ADMIN* displays.
2. Enter the administration password (see "Entering the administration menu password" on page 34).
3. TEST* displays. Press **NEXT** until CONFIG* displays and then press **ENTER**.
4. Press **NEXT** or **PREV** until the name of the configuration you want to set displays and then press **ENTER**.

   If the configuration has multiple settings, the current setting flashes. Proceed to step 5. Otherwise, the configuration is set and a confirmation message displays.

5. If the current configuration setting is flashing, press **NEXT** or **PREV** until the desired setting displays, and then press **ENTER**. `OPTION SAVED` displays and then the configuration's name and setting displays, indicating that the configuration is set.
6. Press **CANCEL** to return to `READY`.
7. Power off the jukebox and then power it back on to save the configuration to the jukebox flash ROM.

Retrieving log history

`READY > ADMIN* > INFO*`

To display information stored in the jukebox operating logs:

1. With `READY` displaying on the control panel, press **NEXT** until `ADMIN*` displays.
2. Enter the administration password (see "Entering the administration menu password" on page 34).
3. `TEST*` displays. Press **NEXT** until `INFO*` displays, and then press `ENTER`.
4. Press **NEXT** until the name of the log you want to access displays and then press **ENTER**.
5. After you are finished viewing log information, press **CANCEL** to return to `READY`.

Information logs are described in Table 6.

Table 6: Information logs

Log name	Description
REVISION	Jukebox firmware version number.
JUKEBOX*	Pressing **ENTER** allows you to select from the following:
■ PRODUCT #	Product identification string
■ SN #	Serial number of the unit.
■ FW TYPE ##	*For factory use only.* Code that identifies the type of firmware used in the unit.
■ DRIVES #	Number of drives in the unit.
■ SLOTS #	Number of storage slots in the unit.
JKBX ODOMETERS*	Pressing **ENTER** allows you to select from the following:
■ HOURS	Number of operation hours (time the power was on). Some of the time may be while in power reduction mode.
■ MOVES	Total moves and move attempts by the disk transport mechanism.
■ FLIPS	Total disk transport mechanism flips.
■ XLATES	Total disk transport mechanism horizontal moves.
■ ROTATES	Total mailslot rotations.
DRIVE LOADS*	Pressing **ENTER** allows you to select from the following:
■ DRIVE #	Total disk loads for the drive numbered "#."
■ DRIVE FW*	Press **ENTER** to select the logs under this selection.
■ DRIVE SN*	Press **ENTER** to select the logs under this selection.

Table 6: Information logs (Continued)

Log name	Description
HARD ERROR*	Log of unrecoverable errors (commands that did not successfully complete). Returns either NO HARD ENTRIES or ENTRY #. (There may be multiple hard error numbers.) Press **ENTER** to view the log for the currently displayed error, or press **NEXT** to select the next error.
SOFT ERROR*	Log of recovered errors (commands that did not complete successfully). Returns either NO SOFT ENTRIES or ENTRY #. (There may be multiple soft error numbers.) Press **ENTER** to view the log for the currently displayed error, or press **NEXT** to select the next error.
RECOVERY ERROR*	Log of errors during the most recent move. Returns either NO ENTRIES or the number of recovery errors. Press **ENTER** to view the log for the currently displayed error, or press **NEXT** to select the next error.
■ *HARDWARE ERR #	Internal diagnostics error number for the failure.
Note: FRUs are listed to show where to focus the troubleshooting efforts. The FRUs are not listed to suggest that the components need replacement.	
— *FRU 1 #	Field replaceable unit most likely to be at fault.
— *FRU 2 #	Field replaceable unit second most likely to be at fault.
— *FRU 3 #	Field replaceable unit third most likely to be at fault.

Table 6: Information logs (Continued)

Log name	Description
— MOTION <name>	<name> indicates one of the following types of movements taking place in the jukebox at the time of the failure: ■ EXCHANGE ■ MOVE ■ POSITION ■ INIT ELEM ■ REZERO ■ ROTATE ■ DIAGNOSTIC ■ RESTORE
— SOURCE #	SCSI element number to which the source refers. (This information is valid for MOVE, EXCHANGE, and POSITION movements only.)
— DESTINATION 1 #	SCSI element to which the first destination refers. (This information is valid for MOVE and EXCHANGE movements only.)
— DESTINATION 2 #	SCSI element to which the second destination refers. (This information is valid for the EXCHANGE movement only.)
— ODOMETER #	Move number in which the error occurred.
— *MICROMOVE 1 #	First jukebox micro-move for the original move command issued prior to the failure.
— *MICROMOVE 2 #	Second jukebox micro-move for the original move command issued prior to the failure.
— *MICROMOVE 3 #	Third jukebox micro-move for the original move command issued prior to the failure.
— *MICROMOVE 4 #	Fourth jukebox micro-move for the original move command issued prior to the failure.
— *MICROMOVE 5 #	Fifth jukebox micro-move for the original move command issued prior to the failure.

Table 6: Information logs (Continued)

Log name	Description
— *MICROMOVE 6 #	Sixth jukebox micro-move for the original move command issued prior to the failure. (This is the last to be logged.)
■ *MICROMOVE ER #	Micro-move error that occurred.
■ TOP or BOTTOM PICKER	Displays either TOP or BOTTOM indicating which side of the disk transport mechanism was active at the time of the error.
■ NORTH or SOUTH THUMB	Displays either NORTH or SOUTH indicating which thumb on the transport mechanism was active at the time of the error.

Running an internal test

READY > ADMIN* >TEST*

This section describes self-diagnostic tests that are available on the jukebox.

Caution: Diagnostic tests should be run only by an authorized service representative. Descriptions of the self-diagnostic tests are included in this manual *for information purposes only*. If not properly completed, some of the internal diagnostic tests can corrupt your file system. In some rare instances, your service representative may request that you run specific tests to provide information before they come to your site, or you may receive a control panel message to run a specific test.

1. With READY displaying on the control panel, press **NEXT** until ADMIN* displays.
2. Enter the administration password (see "Entering the administration menu password" on page 44).
3. TEST* displays. Press **ENTER**.
4. Press **NEXT** until the name of the test you want to run displays and then press **ENTER** to start the test.

Note: You may press **CANCEL** at any time to abort a test. A delay may occur while the current test loop completes.

Table 7: Internal tests

Test Name	Description
EXCHANGE DEMO	*Used by service personnel only. Do not run this test if the jukebox contains disks with file system data on them.* This test moves randomly-chosen optical disks to random storage slot locations. This test displays `FAIL` if there are no disks in the jukebox or if all storage slots are full. For best results, the jukebox should contain as many disks as there are drives, plus two additional disks. The transport and mailslot must be empty. For mixed media jukeboxes, this test requires two disks of each media type (MO and UDO).
INIT MECHANICS	Runs the `FIND PLUNGE HOME`, `FIND VERTICAL HOME`, `FIND XLATE HOME`, and `INIT ELEM STATUS` tests. Each test is run one time per test loop.
INIT ELEM STATUS	Physically scans the entire unit to determine which storage slots contain disks and if the drives contain disks. This test appears as `ISTAT TEST` in all control panel error messages.
MAGAZINE IO	Makes a combination of moves with a `PASS/FAIL` result. It moves an optical disk from a randomly-chosen full slot to a randomly-chosen empty slot with a random flip. It then moves the disk back to its original storage slot with its original orientation. This test displays `FAIL` if there are no disks in the jukebox or if all storage slots are full. The drives and mailslot must be empty.
DRIVE IO	Makes a combination of moves with a `PASS/FAIL` result. It moves an optical disk from a randomly-chosen full slot to a randomly-chosen drive with a random flip. It then moves the cartridge back to its original slot with its original orientation. This test displays `FAIL` if there are no disks in the jukebox or if all storage slots are full. The drives and mailslot must be empty. For mixed media jukeboxes, this test requires one disk of each media type (MO and UDO).

Table 7: Internal tests (Continued)

Test Name	Description
MAILSLOT IO	Makes a combination of moves with a PASS/FAIL result. It moves an optical disk from the lowest-numbered full slot to the mailslot with a random flip. It then moves the cartridge back to its original slot with its original orientation. This test displays FAIL if there are no disks in the jukebox or if all storage slots are full. The drives and mailslot must be empty.
VERTICAL TEST	Moves the disk transport mechanism up and down the full length of the rail. Returns PASS/FAIL. No disks are required.
TRANSLATE TEST	Moves the disk transport mechanism from side to side. No disks are required.
FLIP TEST	Makes a combination of moves with a PASS/FAIL result. Flips the disk transport mechanism at various locations. No disks are required.
PICKER TEST	Flips the disk transport mechanism and switches active thumbs. No disks are required.
FIND PLUNGE HOME	Calibrates the disk transport mechanism, establishes the mechanism's orientation, and determines the reference points in the picker travel path. Assumes that the mechanics and servo system are functional. No disks are required.
FIND VERT HOME	Recalibrates the vertical position of the disk transport mechanism and verifies that the vertical path is clear. No disks are required.
FIND XLATE HOME	Calibrates the reference points for the side-to-side motion of the disk transport mechanism. No disks are required.
VERTICAL ENCODER	Moves the disk transport mechanism down to the lower stop, moves it back up a short distance, and then moves it back down. On the second downward motion the number of digital pulses is counted and verified. Returns PASS/FAIL. No disks are required.
EMPTY DRIVES	*Used by service personnel only. Do not run this test if the jukebox contains disks with file system data on them.* Moves disks out of the drive mechanism(s) and returns them to their home storage slot locations if the locations are known. If the home storage location is not known, the jukebox moves the disks into the first available empty storage slot.
EMPTY PICKER	Moves a disk from the disk transport mechanism to its home storage slot location if that location is known, otherwise the disk is placed into the first available empty storage slot.

Table 7: Internal tests (Continued)

Test Name	Description
FILL PICKER	*Used by service personnel only. Do not run this test if the jukebox contains disks with file system data on them.* Moves a disk into the disk transport mechanism from the first storage slot containing a disk. This test must be run twice to fill both containers in the disk transport mechanism.
EXERCISE MECH	Runs the `VERTICAL TEST`, `TRANSLATE TEST`, `FLIP TEST`, `MAGAZINE IO`, `DRIVE IO`, and `MAILSLOT IO` tests. Each test runs one time per test loop.
WELLNESS TEST	Checks the general capability of the jukebox. Requires one loaded disk. The drives, transport, and mailslot must be empty. Runs `INIT MECHANICS` and `EXERCISE MECHANICS`. Each test runs one time per test loop.
CLEAR SOFT LOG	*Used by service personnel only.* Sets the soft error log to zero.
CLEAR HARD LOG	*Used by service personnel only.* Sets the hard error log to zero.
PLUNGE FULL SPD	Allows the disk transport mechanics to run at full speed. This setting should always be used in normal jukebox operation.
PLUNGE 1/2 SPD	*Used by service personnel only.* Allows the disk transport mechanics to run at half speed.
PLUNGE 1/4 SPD	*Used by service personnel only.* Allows the disk transport mechanics to run at quarter speed.
MAILSLOT SENSORS	Displays the current state of the mailslot sensors. If a sensor is not blocked, a “0” is displayed. If a sensor is blocked, an “*” is displayed. The display automatically updates when the status changes.
STARWARS	The display shows 0 0 0. Each “0" indicates one of the paths that the disk transport mechanism follows in front of each stack of optical disks. If the path is clear, a “0” displays; if the path is blocked (because of an optical disk that is not inserted fully into its storage slot for example), an “*” will be displayed. This display is automatically updated if the status changes.

Table 7: Internal tests (Continued)

Test Name	Description
BOTTOM THUMB	*Used by service personnel only.* Reports `THUMB A`, `THUMB B`, or `NO THUMB`. Looks at the top and bottom thumb sensors and reports whether the thumbs on the disk transport mechanism are in the forward or back position. If `THUMB A` or `THUMB B` is returned, the specified thumb is the forward position. If `NO THUMB` is returned, both thumbs are in the back position.
TOP THUMB	*Used by service personnel only.* Reports `ON` or `OFF`. Looks at the top thumb sensor which reports whether or not the thumb that is currently on the top side of the disk transport mechanism is in the forward position. If `ON` is reported the thumb is in the back position; if `OFF` is reported the thumb is in the forward position.
TRANSLATE SENSOR	Reports `ON` or `OFF` after looking at the translate calibration sensor. Display automatically updates if the status changes.
MEDIA TYPE	This is available only in a mixed-media (MO and UDO) unit. Moves all of the disks in the jukebox, except those in drives, to the media test station, then back to their original positions to determine the drive compatibility of all of the disks.

Troubleshooting

3

This chapter describes the following:

Troubleshooting common problems

If the procedures in Table 8 do not address or resolve your problem, visit http://www.hp.com/go/udo for additional assistance, or contact HP technical support (see "Getting help" on page 10).

Table 8: Troubleshooting installation

Problem	Solution
Power	
Jukebox will not power on	■ Check that the power indicator light on the control panel is on. If it is not, make sure the power switch on the front panel is on. ■ Replace the power cord.
Host computer system does not recognize the jukebox or the drives	■ Ensure the jukebox is not in an error or failed state. If so, troubleshoot the error before continuing. ■ Ensure the jukebox is connected and powered on. The jukebox must be on when booting the host computer for the jukebox to be recognized. ■ If the jukebox is the last device on the SCSI bus, check that it has been terminated and that the maximum cable length has not been exceeded. ■ Check SCSI ID assignments and resolve any conflicts. ■ Ensure you are connected to the correct SCSI bus type. UDO jukeboxes are LVDS devices. ■ If using a narrow (8-bit) HBA, make sure that all addresses are in the range 0 through 7. ■ For Windows operating systems, use the device manager to rediscover the jukebox. ■ For HP-UX, use `ioscan` to verify that the HBA and attached devices are claimed. ■ For other operating systems, refer to the system administrators guide for diagnosing missing peripherals.

Table 8: Troubleshooting installation (Continued)

Problem	Solution
	■ Check that the application software is compatible with the jukebox. ■ Check that the device is present on the system using HP StorageWorks Library & Tape Tools, available from http://www.hp.com/support/tapetools. ■ Power cycle the jukebox and power down the host. Wait until the jukebox completes its power cycle before powering up the host.
The power-on selftest failed and `DEVICE FAILED` displays	■ Power cycle the jukebox. ■ If the power-on test continues to fail, press **ENTER**, write down the displayed error code and a micro move error, and contact your support representative.
Power to the jukebox failed while a disk was in the drive and the display did not return to READY after the power came back on	■ Power cycle the jukebox. ■ If READY does not display (power-on test is unsuccessful), switch off the power and contact your support representative. **Caution:** Do not move the unit! Moving the unit risks damaging the optical drive.
No display messages appear	■ Ensure that the power cord is connected. ■ Ensure that the power switch is on. ■ Power cycle the jukebox.

Table 8: Troubleshooting installation (Continued)

Problem	Solution
Connection	
Other SCSI devices no longer work when the jukebox is installed	■ Check SCSI ID assignments and resolve any conflicts. ■ Ensure that the SCSI ID for the HBA is different from that of the jukebox. ■ Check for proper SCSI cabling and termination. ■ Ensure the maximum cable length for the bus has not been exceeded (12 meters for LVDS and 3 meters for SE).
Media	
A disk is stuck in a drive	■ See "Ejecting a disk" on page 33. ■ Attempt to unload the disk using your application software. ■ If unsuccessful, contact your service representative.
Cannot write to a disk	■ Check the host file system access permissions. ■ Eject the disk and check that the write-protect tab on each side of the disk is in the write-enabled position (see "Write-protecting an UDO disk" on page 20). ■ If unsuccessful, contact your service representative.
`LOAD ERROR` or `FAILED` displays when a disk is inserted into the mailslot	■ Press **CANCEL**. Insert the disk into the mailslot again. ■ If the light bar on the control panel is amber, cycle power to the jukebox. When `READY` displays, try loading the disk again. ■ If unsuccessful, contact your service representative.
`INCOMPATIBLE` displays when a disk is loaded.	An attempt was made to load an incompatible disk into the drive. Ensure that you use UDO disks in UDO drives, and MO disks in MO drives.

Table 8: Troubleshooting installation (Continued)

Problem	Solution
RESERVED displays when a disk is inserted into the mailslot	The SECURE MS configuration is set. Disks cannot be loaded. To change this setting, see "Setting an operating configuration" on page 39.
MAILSLOT EMPTY displays when a disk is inserted into the mailslot	■ Remove and then replace the disk fully into the mailslot. ■ If the same error reappears, then the mailslot sensors are not detecting a disk and may be defective. Contact your service representative.
DEST NOW FULL displays when a disk is inserted into the mailslot	The jukebox moved a disk into the slot you chose before your load command executed. ■ Press CANCEL, select another slot for the disk, and then reattempt a load. ■ Initiate an INIT ELEM STATUS test (see"Internal tests" on page 45).
TRANSPORT FULL displays when a disk is inserted into the mailslot	■ The disk transport mechanism already contains a disk. Refer to your host and application software documentation for recovery procedures. ■ Attempt an EMPTY PICKER test (see "Internal tests" on page 45). ■ If unsuccessful, contact your support representative.
MAILSLOT SENSOR displays when a disk is inserted into the mailslot	■ Remove and then re-insert the disk. ■ If unsuccessful, the jukebox mailslot sensors may have failed. Contact your service representative.
EJECT ERROR displays when a disk eject is attempted	■ Press CANCEL. Attempt to eject the disk again. ■ If the light bar on the control panel is amber, cycle power to the jukebox and try to eject the disk again when READY displays. ■ If there is no disk in the mailslot and this error message repeats, contact your service representative.

Table 8: Troubleshooting installation (Continued)

Problem	Solution
RESERVED displays when a disk eject is attempted	The application software reserved the element for its use or a security configuration was set to prevent disk ejection. ■ See "Setting an operating configuration" on page 39. ■ Attempt the operation using your application software.
EMPTY * displays when a disk eject is attempted	This is not an error. There are no disks in the jukebox.
TRANSPORT FULL displays when a disk eject is attempted	■ The disk transport mechanism already contains a disk. Refer to your host and application software documentation for recovery procedures. ■ Attempt an EMPTY PICKER test (see "Internal tests" on page 45). ■ If unsuccessful, contact your service representative.
SOURCE NOW EMPTY displays when a disk eject is attempted	The application software moved the disk from the slot you chose before your eject command executed. ■ Press **CANCEL**. You may have to wait for the application software to replace the disk into the slot before attempting another eject. ■ Initiate an INIT ELEM STATUS test (see"Internal tests" on page 45).
MAILSLOT FULL displays when a disk eject is attempted	A disk is in the mailslot. To remove the disk, select EJECT *, select the slot you want the disk ejected from again, and eject the disk.
Operation	
Forgot the password	■ Enter the default password (000 000 000). ■ If unsuccessful, contact your service representative.

Table 8: Troubleshooting installation (Continued)

Problem	Solution
You want to stop a test that is running	Press CANCEL. The current test loop continues until finished, then the test stops.

Retrieving log history

In addition to the procedures listed in the previous sections, the jukebox log history may assist in the troubleshooting process. See “Retrieving log history” on page 40 for more information on how to access the log using the jukebox control panel.

Running an internal test

If your service representative requests that you run an internal test, see “Running an internal test” on page 44 for more information on how to access the test options using the jukebox control panel.

Using HP StorageWorks Library and Tape Tools

HP StorageWorks Library and Tape Tools (L&TT) is a robust diagnostic tool for tape mechanisms, tape automation, magneto-optical and UDO products. L&TT provides functionality for firmware downloads, verification of device operation, maintenance procedures, failure analysis, corrective service actions and some utility functions. Seamless integration is provided with HP's hardware support organization through generating and emailing support tickets. The support ticket delivers a snapshot, or an in-depth view, of the storage system.

L&TT is a free download from the web and deploys in less than five minutes. It is ideal for customers who want ensured product reliability, self-diagnostics and faster resolution of device issues.

For more information, visit http://www.hp.com/support/tapetools.

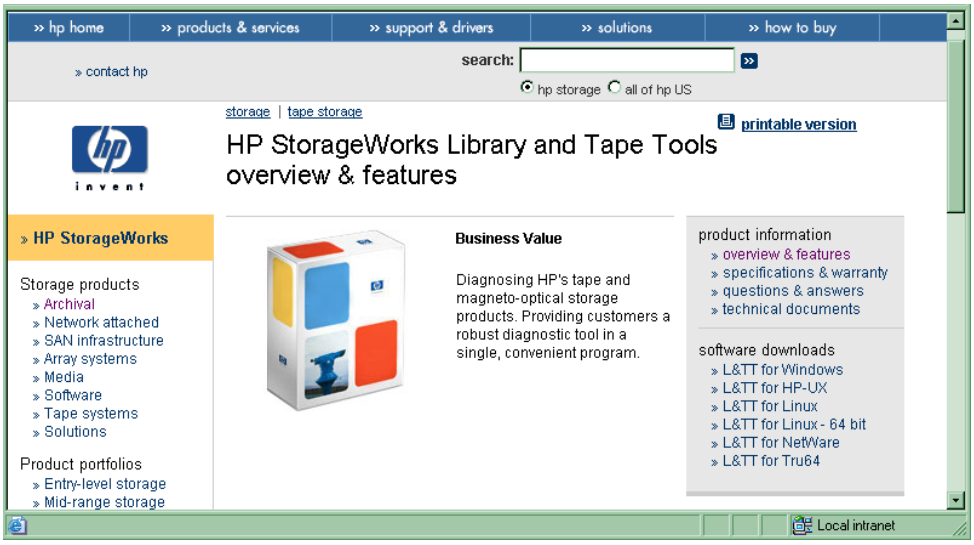


Figure 8: HP StorageWorks L&TT

Specifications

This appendix describes the following:

Environmental specifications

Table 9: Environmental specifications

Characteristic	Specification
Temperature	
Operating	10°C to 32°C (50°F to 90°F)
Non-operating (without media)	-40°C to 60°C (-40°F to 140°F)
Gradient	10°C (50°F) per hour
Transportation (<14 consecutive days)	-30°C to 60°C (-22°F to 140°F)
Humidity	
Operating	10% to 80% RH
Non-operating (without media)	5% to 90% RH
Shock	
Non-operating (without media)	10 cm tilt, drop test
Vibration (5 to 500 Hz)	
Operating	0.21 g rms
Non-operating (random)	2.1 g rms
Non-operating (swept-sine)	0.5 g (0 to peak)
Power Requirements	
Line voltage	100 to 240 VAC
Line frequency	50 to 60 Hz
Power consumption	50 W maximum
Energy-saving mode	Power savings when robotics are inactive

Jukebox specifications

Table 10: Jukebox specifications

Characteristic	Specification
General	
Average disk exchange time	6.5 seconds
MSBF (robotics)	2,000,000 swaps
Physical	
Height	914 mm (36.0 in)
Width	869 mm (33.9 in)
Depth	482 mm (19.0 in)
Weight (net)	100 kg (220 lb)
Weight (shipping)	127 kg (280 lb)
Interface	
SCSI interface	Low-voltage differential SCSI (LVDS), 68 pin
Certification	
Safety	UL 60950, CSA 60950, EN 60950, IEC 60950
Emissions	FCC Class A, CISPR 22, Class A
Laser	EN 60825-1, CDRH

Drive specifications

Table 11: Drive specifications

Characteristic	Specification
Disk capacity	30 GB
Average seek	35 msec
Rotational speed	■ 2100 RPM +/- 0.5% WORM ■ 1950 RPM +/- 0.5% Rewritable
Data transfer rate (software and system dependent)	■ Reads (max. sustained): — WORM, 7.96 MB/sec — Rewritable, 7.99 MB/sec ■ Writes (max. sustained): — WORM, 3.98 MB/sec — Rewritable, 3.99 MB/sec ■ Burst (synchronous): 40 MG/sec ■ Burst (asynchronous, data in): 6.7 MB/sec ■ Burst (asynchronous, data out): 40 MB/sec
Disk load time	5 sec typical/
Disk unload time	3 sec typical
Read/write compatibility	Read/write UDO 1st generation format only
Interface type	SCSI LVD (68 pin)
MSBF	750,000 load/unload cycles
Read/write error rate (uncorrectable)	< 1 per 10^{20} bytes read
Seek error rates	■ Recoverable: < 1 per 100,000 seeks ■ Hard error seeks: <1 per 10,000 seeks

Note: This product supports mixed drives. The supported configuration includes two MO drives and two UDO drives only.

Media specifications

Table 12: Media specifications

Characteristic	WORM Specification	Rewritable Specification
General		
Recording capacity	30 GB	30 GB
Archival life (recorded)	50 years	50 years
Shelf life (unrecorded)	50 years	50 years
Warranty	Limited Lifetime Warranty	Limited Lifetime Warranty
Physical		
Disk thickness	2.4mm (.1in)	2.4mm (.1in)
Outer diameter	130mm (5.12in)	130mm (5.12in)
Bytes per sector	8192 bytes	8192 bytes
Recording layer	Phase change	Phase change
Performance		
Load-unload lifetime	20,000 cycles per side	20,000 cycles per side
Overwrite capability	No	Yes
Operating Environment		
Operating humidity range	5°C to 55°C, 3% to 85% RH	5°C to 55°C, 3% to 85% RH
Non-operating (storage) humidity range	-10°C to 55°C, 3% to 90% RH	-10°C to 55°C, 3% to 90% RH

Note: This product supports mixed media. The supported configuration includes two MO drives and two UDO drives only.

Safety and regulatory specifications

Table 13: Safety and regulatory specifications

Description	Specification
UL Listed Mark	UL 60950 (standard for safety of information technology equipment)
TUV GS Mark (Germany)	EN60950, IEC950 (standard for safety of information technology equipment, third edition)
CE Marking (European Union)	Low Voltage Directive, 73/23/EEC, European Union
CUL Mark (Canadian UL)	CAN/CSA 22.2 No. 950 (standard for safety of information technology equipment)
Regulatory Series ID Number	N3620N3Z, Class A

Safety and Regulatory

B

This appendix describes the following safety and regulatory information for the United States, Finland, Sweden, Germany, United Kingdom, European Union, and Japan:

Note: In addition to the safety information in this appendix, also refer to the *HP Safety Guide* that shipped with your product.

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 (that is, 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 which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

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.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company 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.

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 this FCC declaration, contact:

Hewlett-Packard Company
Regulatory Engineer, MS E-200
825 14th Street S.W.
Loveland, CO 80537

Or, call

(970) 898-1738

To identify this product, refer to the Part, Series, or Model number found on the product.

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.

European Union Notice

Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

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

- EN 55022 (CISPR 22) - Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) - Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2) - Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3) - Power Line Flicker
- EN 60950 (IEC 60950) - Product Safety

EC radio frequency interference statement (Europe only)

WARNING: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

AVERTISEMENT : matériel de classe A. L'utilisation de ce matériel en zone résidentielle est susceptible de générer des interférences nuisibles, auquel cas l'utilisateur sera tenu d'y remédier à ses propres frais.

AVVERTENZA: Questo è un prodotto di Classe A. In un ambiente residenziale, questo prodotto può causare interferenze radio. In tal caso, l'utente è tenuto ad adottare opportune misure per eliminare il problema.

VORSICHT: Dies ist ein Produkt der Klasse A. Bei Betrieb in Wohnräumen kann dieses Produkt Störungen im Radio- und Fernsehempfang verursachen. In diesem Fall ist der Benutzer dazu verpflichtet, geeignete Abhilfemaßnahmen zu treffen.

ADVERTENCIA: este es un producto de clase A. En un entorno doméstico este producto podría causar interferencias de radio, por lo que el usuario debe tomar las medidas oportunas.

警告：この装置は、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。

警告：这是 A 类产品。在室内环境中使用本产品可能会产生射频干扰，这种情况下，用户需要进行一些适当的测量。

United Kingdom Telecommunications Act 1984

The Hewlett-Packard UDO products are approved under Approval Number NS/G/1234/J/100003 for indirect connection to Public Telecommunication Systems within the United Kingdom.

Herstellerbescheinigung

Diese Information steht im Zusammenhang mit den Anforderungen der Maschinenlärn information sverordnung vom 18 Januar 1991.

Schalldruckpegel Lp < 70 dB(A)

- am arbeitsplatz
- normaler betrieb
- nach ISO 7779:1988/EN 27779:1991 (Typprüfung)

English translation of German sound emission directive

This statement is provided to comply with the requirements of the German Sound Emission Directive, from 18 January 1991.

Sound pressure Lp < 70 dB(A)

- at operator position
- normal operation
- according to ISO 7779: 1988/EN 27779: 1991 (type test)

Turvallisuusyhteenveto

Laserturvallisuus

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

Hewlett-Packard optiset levymuistiasemat ovat käyttäjän kannalta turvallisia luokan 1 laserlaitteita. Normaalissa käytössä levymuistiaseman kotelointi estää lasersäteen pääsyn laitteen ulkopuolelle.

Laitteen turvallisuusluokka on määritetty standardin EN 60825 mukaisesti.

VAROITUS !

Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle lasersäteilylle.

VARNING !

Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för laserstrålning, som överskrider gränsen för laserklass 1.

Huolto

Hewlett-Packard levymuistiasemien sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan sen huoltamiseen koulutettu henkilö. Levymuistiaseman sisälle asennettujen luku-/kirjoitusyksiköiden suojakoteloa ei tule avata huoltotoimenpiteiden yhteydessä.

VARO !

Mikäli luku-/kirjoitusyksikön suojakotelo avataan ja suojalukitus ohitetaan, olet alttiina lasersäteilylle laitteen ollessa toiminnassa. Älä katso säteeseen.

VARNING !

Om skyddshöljet av den optiska drivmodulen öppnas och spärren urkopplas då apparaten är i funktion, utsättas användaren för laserstrålning. Betrakta ej strålen.

Tiedot luku-/kirjoitusyksikössä käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 660 nm

Teho 60 mW

Turvallisuusluokka 3B

English translation of Finland regulatory information

LASER SAFETY SUMMARY

LASER SAFETY

CLASS 1 LASER PRODUCT

Hewlett-Packard jukeboxes are for user safe class 1 laser products. In normal use the enclosure of the optical drives prevents the laser beam from escaping outside of the product.

The jukebox was type approved in Finland for laser safety by the National Board of Labour Protection. The safety class of the products was defined according to the resolution No 472/1985 of the Council of State and the standard EN 60825.

WARNING: The use of the product otherwise than specified in the user's manual may expose the user to laser radiation exceeding safety class 1.

AVERTISEMENT : l'utilisation de ce produit de façon non conforme à ce qui est indiqué dans le manuel de l'utilisateur peut exposer l'utilisateur à des rayonnements laser dangereux excédant les normes de sécurité établies pour les matériels appartenant à la Classe 1.

AVVERTENZA: Il mancato rispetto delle indicazioni sull'utilizzo del prodotto riportate nel manuale dell'utente, potrebbe esporre l'utente a radiazioni laser superiori alla Classe 1 di sicurezza.

VORSICHT: Bei unsachgemäßer Nutzung des Produkts (nicht gemäß der Ausführungen im Benutzerhandbuch) kann der Benutzer Laserstrahlung ausgesetzt werden, die die Grenzwerte der Laserschutzklasseklasse 1 übersteigt.

ADVERTENCIA: un uso del producto distinto de los especificados en la guía de usuario puede producir una exposición peligrosa del usuario a las radiaciones superando el nivel de seguridad 1.

警告: ユーザーマニュアルの記載内容と異なる製品の使用により、クラス１ の安全基準を超えるレーザー放射にさらされるおそれがあります。

警告：如果没有按照用户手册中的规定使用本产品，用户可能会受到超过 1 级安全的激光辐射。

SERVICE

There are no user serviceable parts inside the jukebox. The jukebox products can be serviced only by qualified service personnel. The optical drive mechanism(s) installed inside the library system shall not be opened or disassembled during service.

WARNING: If the enclosure of the optical drive mechanism is opened and the safety interlock disabled, you may be exposed to the laser radiation when the drive is operating. Avoid exposure to the beam.

AVERTISEMENT : si le boîtier du mécasnime d'entraînement optique s'ouvre et que le verrou de sécurité est désactivé, vous risquerez d'être exposé aux rayons laser lors du fonctionnement de l'unité. Évitez de vous exposer au faisceau.

AVVERTENZA: Se il contenitore del meccanismo dell'unità ottica è aperto e il meccanismo di blocco di sicurezza è disabilitato, è possibile che l'utente sia esposto a radiazioni laser durante il funzionamento dell'unità. Evitare l'esposizione al raggio.

VORSICHT: Wenn das Gehäuse des optischen Laufwerks geöffnet wird und die Sicherheitssperre deaktiviert ist, können Sie bei Betrieb des Laufwerks Laserstrahlung ausgesetzt werden. Vermeiden Sie es, sich dem Laserstrahl auszusetzen.

ADVERTENCIA: si el receptáculo del mecanismo de la unidad óptica se abre y se desactiva el interbloqueo de seguridad, es posible que se exponga a la radiación de láser cuando la unidad esté funcionando. Evite la exposición al rayo.

警告：オプティカルドライブ装置のエンクロージャを開き、安全インターロック機構を解除した場合、ドライブの動作中にレーザー放射にさらされるおそれがあります。ビームに当たらないようにして下さい。

警告：如果打开了光驱装置，并且安全互锁失去作用，则用户在使用光驱时可能会受到激光辐射。请避免身体的任何部位暴露在激光光束之下。

The information about the radiation characteristics of the laser diode used in the optical drive mechanism:

Wavelength 680 nm

Power 60 mW

Class 3B laser

BSMI notice

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。

Laser Device

All HP systems equipped with a laser device comply with safety standards, including International Electrotechnical Commission (IEC) 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. The product does not emit hazardous light; the beam is totally enclosed during all modes of customer operation and maintenance.

Laser Safety Warnings

WARNING: To reduce the risk of exposure to hazardous radiation:

Do not try to open the laser device enclosure. There are no user-serviceable components inside.

Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.

Allow only HP authorized service technicians to repair the laser device.

CDRH regulations (USA only)

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The labels and artwork shown below indicate compliance with CDRH regulations and must be attached to laser products marketed in the United States.

WARNING: Use of controls or adjustments, or performing procedures other than those specified in this manual may result in hazardous laser radiation exposure.

Note: Complies with 21 CFR Chapter 1 Subchapter J.

Laser Class Information: A black on yellow label which reads, “Class 1 Laser Product” printed in English, French, German, Finnish, Japanese, and Spanish.

Compliance with International Regulations

All HP systems equipped with laser devices comply with appropriate safety standards, including IEC825.

Glossary

This glossary defines terms used in this guide or related to this product and is not a comprehensive glossary of computer terms.

cartridge
A plastic enclosure that contains an optical disk. The cartridge is labeled “A” or “B” to denote separate sides of the optical disk. The optical disk is never removed from the cartridge.

driver
A program that allows the operating system to communicate with a peripheral device.

element
A SCSI term for any one of the autochanger components — drive, mailslot, storage slots, or picker.

jukebox
A term synonymous with optical disk library or autochanger. This type of optical storage device is often referred to as a “jukebox” because when a file is requested, the disk containing the file is found, inserted into the drive, and the requested information is sent to the host computer system, similar to the way a musical jukebox finds a record and moves it to the turntable when a song is requested.

jukebox controller
The part of the jukebox that controls the sending and receiving of SCSI commands, and controls the disk transport mechanism.

LAN
Local area network. A group of computers and peripherals physically connected so users can share hardware and software resources.

mailslot
The area where disks are inserted and removed from the jukebox.

multifunction drive
An optical disk drive that supports both rewritable and WORM optical disks. The drive detects the disk type by reading a factory-stamped code on the disk, and automatically determines whether to operate in rewritable or WORM mode.

optical disk
A term synonymous with the 5.25-inch optical disk. There are two types of optical disks: rewritable and WORM.

optical disk library
See jukebox.

rewritable optical
An optical disk technology in which data can be repeatedly written using optical reading and writing technology.

SCSI
An acronym for the Small Computer Systems Interface.

storage slot
An autochanger element that holds cartridges when the cartridges are not in a drive or not being ejected through the mailslot.

terminator
A resistor array device used for electrically terminating a SCSI bus. A SCSI bus must be terminated at its two physical ends. A peripheral device uses a terminator only if it is at the end of the bus.

ultra density optical
UDO (Ultra Density Optical), like HP's DVD+RW, uses Phase Change technology in order to achieve increased data density on a 130mm disk. Phase Change technology uses a laser to read and write from the active layer on the disk. The recording process uses the laser to heat each data bit to a specific temperature. One temperature allows the bit to form a crystalline (reflective) mark and a different temperature allows the bit to form an amorphous (less reflective) mark. Data is read by using a low power laser beam to detect the difference in the levels of reflectivity recorded on the disk.

write-once or WORM
An additional operating mode available with multifunction drives. When a write-once (WORM) disk is inserted, the drive will write data, but will not write over data that has been previously written. This feature is useful for applications that need permanent data security and audit trails.

write-protect
A feature that prevents data from being written to a disk. A write-protect tab is located on both sides of the optical disk cartridge to enable write-protection on one or both surfaces of the disk.

Index