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HP SureStore
660ex / 1200ex
Optical Jukebox

User's Guide

Edition 1



HP Part No. C1104-90015

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Typographical Conventions

The following typographical conventions are used in this manual:

Emphasis: Denotes important information.

Keycap: Keys on the library.

`Computer Output`: Information displayed in the display window and screen menu items that you can select.

WARNING **Warnings call attention to a procedure or practice that could result in personal injury if not correctly performed. Do not proceed until you fully understand an meet the required conditions.**

CAUTION Cautions call attention to an operating procedure or practice that could damage the product if not correctly performed. Do not proceed until understanding and meeting these required conditions.

NOTE Notes provide information that can be helpful in understanding the operation of the product.

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In This Manual

This user's guide includes:

Chapter 1	set-up information for the HP SureStore Optical 80ex optical jukebox
Chapter 2	information about choosing and using optical disks
Chapter 3	features description, operating instructions, and troubleshooting information
Appendix A	supplies and customer support
Appendix B	operating this jukebox on a SCSI bus
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1 Setting Up the Jukebox

Overview of This Chapter

This chapter gives information about the following topics:

- right side panel features

  connecting SCSI and power cords
- moving or shipping the jukebox
- connecting SCSI and power cords

What you need to set up the jukebox

Items included with the jukebox:

- power cord
- single-ended and differential SCSI terminators

  - one of each included in a 4- or 6-drive jukebox

  - two of each included in a 10-drive jukebox

  - this guide

Items needed but not included with the jukebox:

- SCSI cable with either a high-density 50-pin (Micro D) or high-density 68-pin (Micro D) connector depending on whether a single-ended or differential interface is used
- single-ended or differential SCSI host adapter with at least one available address. If you have a 10-drive jukebox you may choose to use two adapters.
- application software that supports this type of jukebox

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System Components Needed for Operation of This Jukebox

This jukebox requires application software to operate it as a single storage device composed of multiple SCSI devices. Consult with your sales representative to chose the application software you need.

Standard Configuration

The following list is a hierarchy of the system components needed to operate this jukebox in a standard configuration.

- Host computer CPU
- Operating system
- Optical jukebox application software
- Jukebox SCSI drivers (may be included in optical jukebox application software above)
- Jukebox

High-Availability Configuration

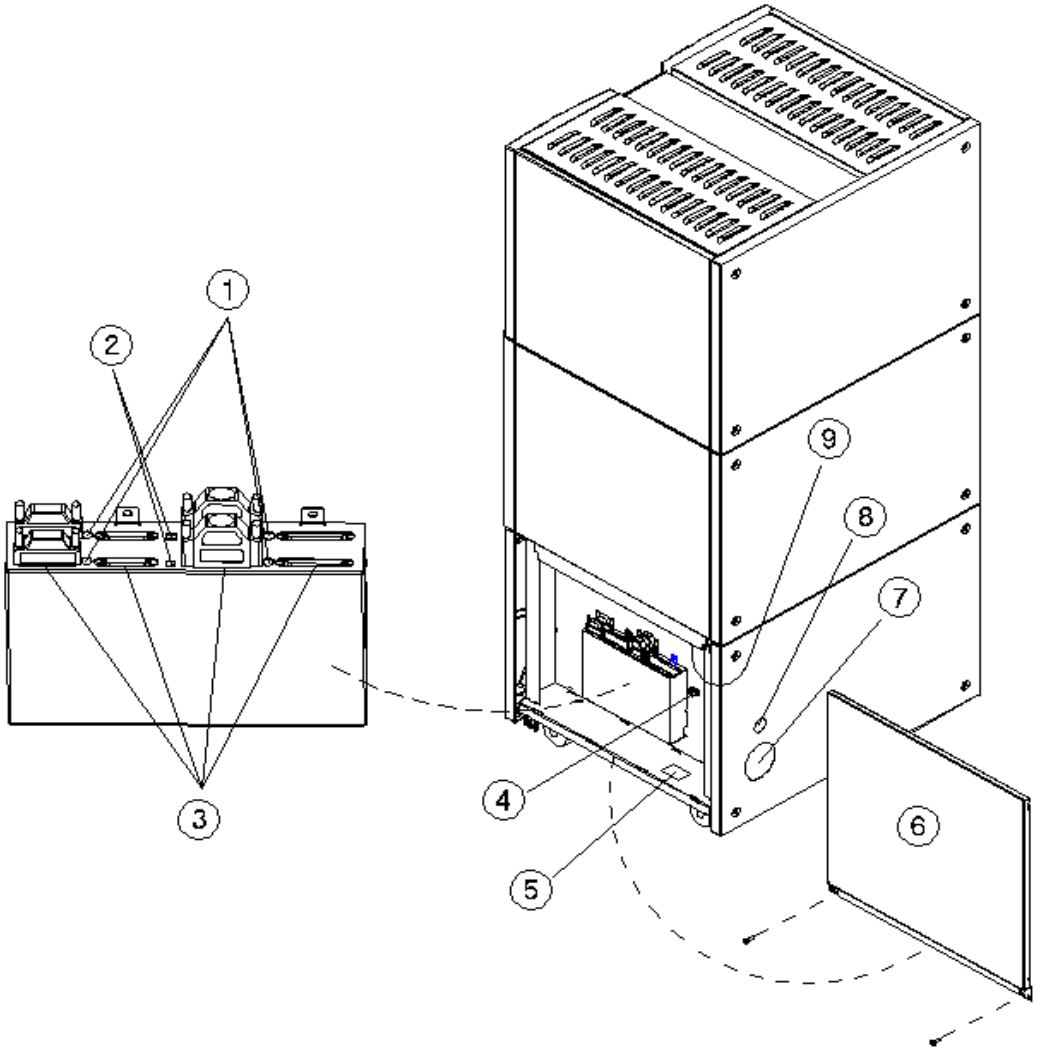
The following list is a hierarchy of the system components needed to operate this jukebox in a high-availability configuration. Consult with your high-availability vendor for installation and configuration.

- Host computer CPUs (two host computers)
- Operating systems (on two host computers)
- High-availability application software (links both host computers)
- Optical jukebox application software (on both host computers)
- Jukebox SCSI drivers (may be included in optical jukebox application software above)
- Jukebox

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Identifying Right-Side Panel Features

Figure 1-1 **Right-Side Panel Features — 10-Drive Jukebox Shown**



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The numbers below correspond to the numbers in Figure 1-1 on the previous page

1	Active bus indicator	Lit when the SCSI bus is active. There is an indicator for each single-ended and each differential interface in the jukebox.
2	SCSI interface selection switch	Used to select either a single-ended or differential SCSI interface on the SCSI interface board. In 4- or 6-drive jukeboxes, there is one interface board. In 10-drive jukeboxes, there are two interface boards, designated Bus 1 and Bus 2. The interface selection switch must be set individually for each board
3	SCSI ports	Used for connecting SCSI cables to the interface board. The interface board has two *types* of interface; single-ended and differential. Each *type* of interface has two ports
4	Power cord strain relief clip	Used to route the power cord away from other connectors and provide strain relief for the power cord connection.
5	Product serial number label	Needed for service calls. Write down your jukebox serial number before you call your service representative.
6	Access panel and mounting screws	Panel that covers the interface and power connection components. The panel is secured by two screws on the lower corners. (See the following note.)

Continued on the next page

7	Cable access hole	Used to pass SCSI and power cables through to the inside of the jukebox.
8	Power switch	The power switch is under the panel but can be operated through the hole in the panel. Turns power ON and OFF to the jukebox.
9	Power receptacle	Receptacle for the jukebox power cord. Located on the bottom of the power distribution assembly.

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NOTE

Two screws secure the customer access panel to the side of jukebox during shipment from the factory. These screws are removed during unpacking but should be replaced after installation is complete. If the jukebox is ever reshipped, these screws must be in place to properly secure the access panel.

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Connecting the SCSI Cables to the Jukebox

In all configurations, the following cabling capabilities apply:

Interface types available	Single-ended or differential SCSI, selected by the interface selection switch on each interface card
Number of interface cards available	One card in 4- and 6-drive models, two cards in 10-drive models
Number of hosts	*This jukebox may be used in high availability environments. High availability environments can be complex and are not described in this guide. Consult with your high-availability vendor for installation and configuration*.

The maximum cable length you have available for connection to your host computer system or other devices depends on which interface type you select. The following table lists the maximum SCSI bus lengths available to you.

Table 1-1 **Maximum SCSI External Cable Lengths (Assuming no devices internal to the host computer)**

Interface Type	Maximum External Cable Length
Single-Ended SCSI (50-pin high-density connector)	3 meters (9.8 feet)
Differential SCSI (68-pin high-density connector)	25 meters (82.0 feet)

NOTE Hewlett-Packard recommends that you use SCSI cables with thumbscrew connectors. Clip type cables may be used if you first remove the mounted thumbscrew studs with a flat blade screwdriver. If the thumbscrew studs are not removed, interference between the cable and the studs may result.

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Choosing Your cabling Configuration

Pick the configuration that applies to your plans below. You will be shown the page for the proper procedures.

	See page
Standard Configuration	
• The only peripheral on a bus	
... and the jukebox has 4 or 6 drives	1-9
... and the jukebox has 10 drives and you are using two host adapters	1-12
... and the jukebox has 10 drives and you are using one host adapter	1-14
• The jukebox will share a bus with other devices	1-16
High Availability configuration	
• Consult with your high-availability vendor	—

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Connecting a 4- or 6-Drive Jukebox

CAUTION

Make sure that all peripheral devices connected to the host computer have been properly shut down. If the host computer is connected to a network, check with the system administrator before switching off power.

Removing the Customer Access Panel

1. Switch off power to the host computer before you connect the jukebox

NOTE

The jukebox ships from the factory with two screws securing the bottom of the customer access panel to the side of the jukebox. These screws are removed during the process of unpacking and removing the jukebox from the shipping pallet.

These screws may not have been replaced.

It is a good idea to use the screws to secure the access panel to the jukebox since they must be in place if the jukebox is ever reshipped.

If you have to replace these screws, they are 6/32 x .437.

2. Remove the customer access panel by pulling on the bottom of the panel and then lifting it off (see Figure 1-1). (If screws are installed, use a flatblade screwdriver or T-15 Torx driver.)

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Refer to the following diagram in the next steps.

3. Select single-ended (“A”) or differential (“B”) interface using the SCSI interface selection switch (see the arrow on the diagram).

   The diagram shows connecting a cable to the differential (“B”) interface.

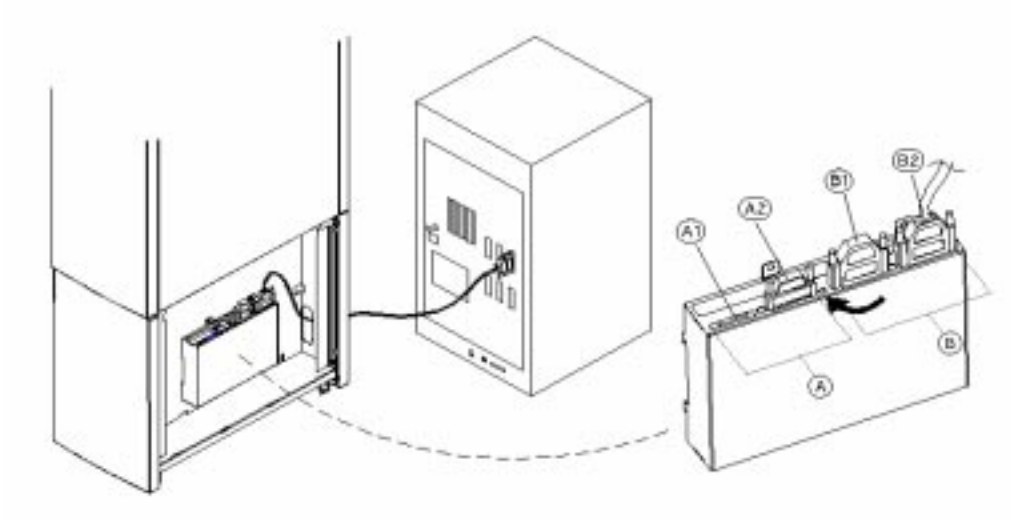
4. Connect a cable between your host computer and either port of the jukebox SCSI connectors of your selected interface type (the example diagram shows using the “B2” port on the differential interface).

   Route the cable through the slot at the bottom of the right side (“C”).

5. Plug a SCSI terminator into the unused SCSI port of interface type you chose (the example diagram shows the terminator at “B1” because “B2” was used for the cable).

   If you are using the differential interface, use a 68-pin high-density terminator. If you are using the single-ended interface, use a 50-pin high-density active terminator.

Figure 1-2 Connecting a 4- or 6-Drive Jukebox



6. Plug a SCSI terminator into one of the SCSI ports on the unused interface. Only one terminator is necessary on an unused interface.

   The example diagram shows the terminator on the single-ended interface connector “A2” but the terminator could have been placed on “A1”.

   Use an active terminator if you are terminating a single-ended interface.

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If you are terminating a differential interface, use a 68-pin high-density terminator. If you are terminating a single-ended interface, use a 50-pin high-density active terminator.

7. To continue with the installation, go to “Connecting Power” in this Chapter.

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Connecting a 10-Drive Jukebox as the Only Peripheral, Two Host Adapters, Basic SCSI Addressing

CAUTION

Make sure that all peripheral devices connected to the host computer have been properly shut down. If the host computer is connected to a network, check with the system administrator before switching off power.

Removing the Customer Access Panel

1. Switch off power to the host computer before you connect the jukebox.

NOTE

The jukebox ships from the factory with two screws securing the bottom of the customer access panel to the side of the jukebox. These screws are removed during the process of unpacking and removing the jukebox from the shipping pallet.

These screws may not have been replaced.

It is a good idea to use the screws to secure the access panel to the jukebox since they must be in place if the jukebox is ever reshipped.

If you have to replace these screws, they are 6/32 x .437.

Refer to the following diagram in the next steps.

2. Select single-ended (“A”) or differential (“B”) interface using the SCSI interface selection switch (see the arrow on the diagram).

   The diagram shows connecting a cable to the differential (“B”) interface.

3. Connect cables between the two host adapters on your host computer and two SCSI interfaces on the interface module.

   You can connect the two cables to two interfaces of the same type of different types (single-ended or differential). If you use two different types of interface, check that your jukebox application software supports this.

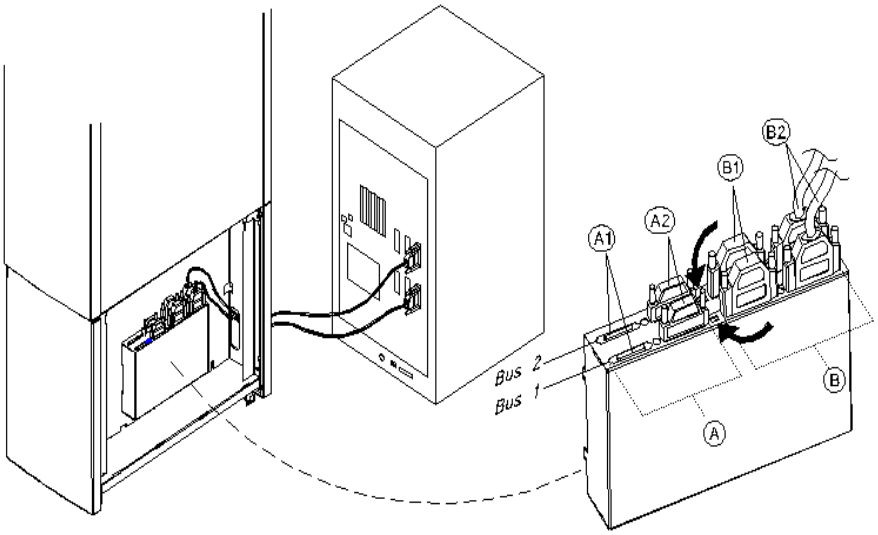
   The diagram shows cable connections to the differential SCSI interface on both interface cards at “B2.” One cable is connected to Bus 1 and the other cable is connected to Bus 2.

   Route the cables through the slot at the bottom of the right side (C).

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4. Remove the customer access panel by pulling on the bottom of the panel and then lifting it off (see Figure 1-1). (If screws are installed, use a flatblade screwdriver or T-15 Torx driver.)

Figure 1-3 Connecting a 10-Drive Jukebox, Two Host Adapters, Basic SCSI Addressing



5. Plug a SCSI terminator into the unused SCSI connector of interface type you chose (the example diagram shows terminators for the two differential interfaces placed on the “B1” port for each interface).

   If you are using the differential interface, use a 68-pin high-density terminator. If you are using the single-ended interface, use a 50-pin high-density terminator.

6. Plug a SCSI terminator into one of SCSI ports on each unused interface (the example diagram shows the terminators on the single-ended port at “A2” for both interfaces). The terminators can be placed on either port of the unused interface.

   Use a 50-pin high-density terminator for the single-ended interface or a 68-pin terminator for the differential interface.

7. To continue with the installation, go to “Connecting Power” in this Chapter.

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Connecting a 10-Drive Jukebox, One Host Adapter, Bus 1 and 2 Daisy-Chained, LUN Addressing

CAUTION

Make sure that all peripheral devices connected to the host computer have been properly shut down. If the host computer is connected to a network, check with the system administrator before switching off power.

Removing the Customer Access Panel

1. Switch off power to the host computer before you connect the jukebox.

NOTE

The jukebox ships from the factory with two screws securing the bottom of the customer access panel to the side of the jukebox. These screws are removed during the process of unpacking and removing the jukebox from the shipping pallet.

These screws may not have been replaced.

It is a good idea to use the screws to secure the access panel to the jukebox since they must be in place if the jukebox is ever reshipped.

If you have to replace these screws, they are 6/32 x .437.

2. Remove the customer access panel by pulling on the bottom of the panel and then lifting it off (see Figure 1-1). (If screws are installed, use a flatblade screwdriver or T-15 Torx driver.)

Refer to the following diagram in the notes steps.

3. Select single-ended (“A”) or differential (“B”) interface using the SCSI interface selection switch (see the arrow on the diagram).

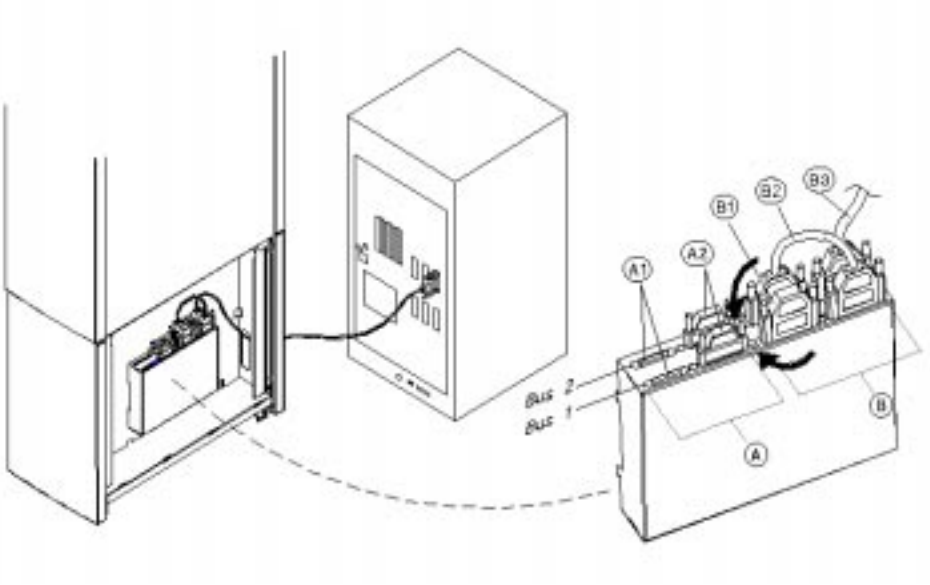
   The diagram shows connecting the host computer cable to a differential interface port (“B3”). This connection is on the rear interface card so it is Bus 2.

   Route the cable through the slot at the bottom of the right side.

4. Connect a short cable between the interface card you have chosen to the other Bus (the example diagram shows a cable (“B2”) between the second Bus 2 port over to a differential port on Bus 1).

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Figure 1-4 **Connecting a 10-Drive Jukebox, One Host Adapter, Bus 1 and 2 Daisy-Chained, LUN Addressing**



5. Terminate the daisy-chained bus by plugging a terminator into the unused port of the second interface (the diagram show the terminator in port “B1”). In this example you would use a 68-pin differential terminator in “B1.”

   A differential interface port uses a 68-pin high-density terminator. A single-ended interface port uses a 50-pin high-density terminator.

   The same cabling can be done using the single-ended ports.

CAUTION Do not daisy-chain between single-ended and differential interfaces.

6. Plug a SCSI terminator into one of SCSI ports on each *unused interface* (the example diagram shows the terminators on the single-ended port at “A2” for both interfaces). The terminators can be placed on *either* port of the unused interface.

   Use a 50-pin high-density active terminator for the single-ended interface or a 68-pin terminator for the differential interface.

7. To continue with the installation, go to “Connecting Power” in this Chapter.

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Connecting the Jukebox With Other SCSI Peripherals

NOTE Operating this jukebox with other peripherals on the same bus is supported, but not recommended.

In most circumstances, the recommended configuration for this jukebox is as the only device on a SCSI bus. However, your use of the jukebox may be such that other devices could be connected to the bus without a loss of performance.

It is possible to connect this jukebox on a bus with additional peripherals in many different ways (depending on your model):

- a 4- or 6-drive jukebox using basic SCSI addressing or Logical Unit Numbering (LUN) addressing
- a 10-drive jukebox with *one* host adapter and with *LUN* addressing, *daisy-chaining Bus 1 and Bus 2* together or a 10-drive jukebox using *two* host adapters, *LUN* addressing, and using *both BUS 1 and Bus 2* interfaces
- a 10-drive jukebox with two host adapters and using LUN addressing

There are many issues that must be considered when connecting other devices on a bus with this jukebox, including the following:

- how the jukebox is used; archiving, backup, near-line storage. What performance must be maintained
- how the additional peripheral will be used. How much demand will it place on the bus
- whether you will be mixing “wide” and “narrow” devices on the bus.
- whether you are using both internal and external segments on your SCSI host adapter
- whether your bus is single-ended or differential

NOTE Appendix B provides a brief overview of SCSI and the issues you must consider when placing other peripherals on the same bus with this jukebox. More extensive information and frequently asked questions are at the web site: www.hp.com/isgsupport/optical/index.html

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Connecting Power

1. Ensure that the power switch on the jukebox is OFF (“5” on Figure 1-1)

NOTE Use the power cord shipped with the jukebox.

2. Route the power cord through the strain relief clip (“4” on Figure 1-1) and close the clip snugly around the cord.
3. Plug the socket end of the power cord into the power port on bottom of the power distribution assembly (“9” on Figure 1-1).
4. Continue to route the power cable down, through the long cable slot at the bottom of the jukebox right side panel, and out through the cable access hole at the lower left rear of the jukebox (“7” on Figure 1-1).
5. Plug the other end of the power cord into a three-hole grounded outlet.
6. Press the power switch ON (“8” on Figure 1-1)

   When power is applied, TESTING and NOT READY alternately display. Once the poweron test completes (approximately 1.5 minutes), READY displays.

NOTE If `DEVICE FAILED` displays. See “Troubleshooting” in Chapter 3 for troubleshooting procedures.

7. Refer to Chapter 3, “Operating the Jukebox” for instructions on setting the SCSI addresses, loading optical disks into the jukebox, setting a password, etc.

NOTE Continue on to “Configuring Write Verify” on the next page.

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Configuring Write Verify

The write verify configuration ensures that data is written reliably to an optical disk. The jukebox ships with write verify enabled. Many software applications also default to this method of writing.

Writing data on a magneto-optical disk requires two passes. The first pass erases the data in the sector to which data will be written. The second pass writes new data to that sector.

When write verify is configured to ON, an additional pass is made over the sector. This third pass verifies that all data is written correctly to the sector. To add to the reliability of your data, Hewlett-Packard recommends that you maintain the default ON setting for write verify. Note that when write verify is ON, write operations take more time.

If you choose to change the write verify configuration to OFF, refer to “Configuring Operating Configurations” in Chapter 3.

NOTE

Continue on to “Installing the Wheel Chocks ” on the next page..

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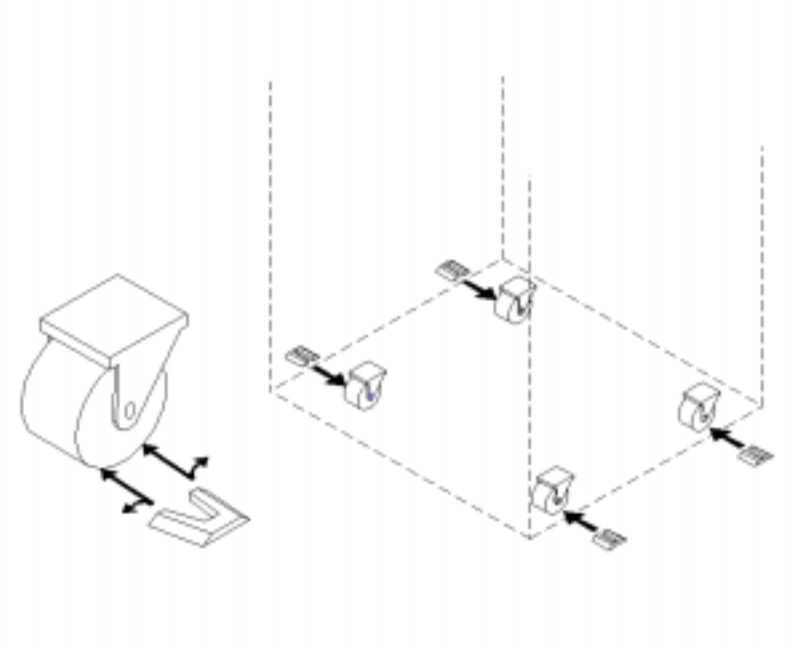
Installing the Wheel Chocks

WARNING

This jukebox rolls easily and could cause injury or damage if allowed to move unintentionally.

Four wheel chocks are provided to stabilize the jukebox in position. Install the wheel chocks after the jukebox is moved to its operating position and all cables are in place.

Figure 1-5 **Installing the Wheel Chocks**



1. After all cables and panels are mounted, roll the unit to its final position.
2. Spread the chock apart slightly and slide it around the bottom of the wheel as shown on the left side of the figure above.
3. Repeat Step 2 for the remaining three wheels.

NOTE

This is the last step in the physical installation.

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Moving or Shipping the Jukebox

Refer to the following two sections if you want to move or ship the optical jukebox. If you want to move the jukebox a short distance, such as to another office or to another floor in your building, see "Moving the Jukebox a Short Distance." If you want to ship the jukebox to another location, see "Shipping the Jukebox."

Moving the Jukebox a Short Distance

1. If you will be removing the disks from the jukebox, follow your jukebox application software instructions for unmounting, ejecting, and labeling disks to ensure that the jukebox can be brought online again easily.

   Ensure that there are no disks in the drives.

   If you will be manually ejecting disks, refer to "Ejecting an Optical Disk From the Jukebox" in Chapter 3.

CAUTION Failure to eject a disk from the optical drive prior to moving the jukebox could result in damage to the optical drive mechanism.

CAUTION Turning off the jukebox in the next step could cause data loss if not done correctly.

Do not turn off power to the jukebox until you are sure the SCSI bus is inactive. Removing power from a SCSI peripheral when the bus is active can result in data loss and/or indeterminate bus states. Check your host system manuals for information about checking the SCSI bus status. If your computer is connected to a LAN, be sure to check with your system administrator before turning off power to the jukebox.

2. Switch jukebox power OFF ("8" on Figure 1-1).
3. Remove the right side lower access panel by pulling on the bottom of the panel and then lifting it off (see "6" Figure 1-1).

   If screws are installed on the bottom corners of the panel, use a flatblade screwdriver or T-15 Torx driver to remove the screws.
4. Remove the power cord and the SCSI cable connections.
5. Loosen the 1/2-inch nut securing the leveler feet and screw the feet up to raise them away from the floor.

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6. Remove the chocks from the four castor wheels on the bottom of the jukebox (Figure 1-5).

WARNING

Push the jukebox only from the right or left sides (see Figure 1-1). Pushing the jukebox from either the front or back sides could result in the jukebox tipping over if a wheel catches on an obstacle.

7. Carefully move the jukebox to its new destination.
8. Set up the jukebox at its new location. Refer to the cabling and addressing information in the beginning of this chapter if necessary.
9. Lower the leveler feet and tighten the 1/2-inch nut on each foot.
10. Place the wheel chocks around the four caster wheels (Figure 1-5).
11. Bring the jukebox online according to your system's requirements.

Shipping the Jukebox

1. Follow your jukebox application software instructions for unmounting and ejecting disks.

   Ensure that there are no disks in the drives.

   If you will be manually ejecting disks, refer to "Ejecting a Disk From the Jukebox in Chapter 3.

CAUTION

Failure to eject a disk from the optical drive prior to moving the jukebox could result in damage to the optical drive mechanism.

Failure to remove all disks from the storage slots in the jukebox could result in damage to the jukebox.

2. Follow your jukebox application's instructions for labeling the disks according to what you will be doing with the disks (example: archiving, moving them to another jukebox, etc.).

CAUTION

Turning off the jukebox in the next step could cause data loss if not done correctly.

Do not turn off power to the jukebox until you are sure the SCSI bus is inactive. Removing power from a SCSI peripheral when the bus is active can result in data loss and/or indeterminate bus states. Check your host system manuals for information about checking the SCSI bus status. If your computer is connected to a LAN, be sure to check with your system administrator before turning off power to the jukebox.

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3. Switch jukebox power OFF (“8” on Figure 1-1).
4. Remove the right side lower access panel by pulling on the bottom of the panel and then lifting it off (“6” Figure 1-1).

   If screws are installed on the bottom corners of the panel, use a flatblade screwdriver or T-15 Torx driver to remove the screws.
5. Remove the power cord and the SCSI cable connections.
6. Loosen the 1/2-inch nut securing each leveler foot and screw the four feet up to raise them away from the floor.
7. Remove the chocks from the four caster wheels on the bottom of the jukebox.

WARNING

Push the jukebox only from the right or left sides (see Figure 1-1). Pushing the jukebox from either the front or back sides could result in the jukebox tipping over if a wheel catches on an obstacle.

8. Repackage the jukebox in the same way it was received

NOTE

Your service representative can provide assistance or advise you on how to best repackage and ship your jukebox

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2 Using Optical Disks

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Overview of This Chapter

Using Optical Disks

The optical disks that you use with your jukebox are an integral part of the storage process. This chapter provides information on the following topics:

- choosing an optical disk type
- labeling optical disks
- write-protecting optical disks
- caring for optical disks

NOTE

The optical cartridges used in this jukebox are a critical part of reliable data storage.

Optical cartridges consist of an opto-magnetic medium and mechanical components. Consistent quality of opto-magnetic media ensures correct “writes” and “reads.” The quality and fit of the mechanical components of the cartridge affect accurate, smooth handling of the cartridge by jukebox robotics. A failure of the mechanical components of a cartridge could damage the mechanism of an optical drive.

CAUTION

Use only HP-qualified media cartridges in this jukebox. Use of non-HP-qualified optical cartridges could damage an optical drive and void the warranty of that drive.

NOTE

A list of Hewlett-Packard optical media cartridges is in Table A-1 of Appendix A.

If you are not using HP media, please refer to the list of HP-qualified manufacturers on the website:

www.hp.com/isgsupport/optical/index.html

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Choosing an Optical Disk Type

Two disk types are available for use in the jukebox: rewritable disks and write-once disks.

To choose which type of disks to use, consider these points:

- Rewritable optical disks--data can be repeatedly written and erased.
- Write-Once optical disks--data can be written only once, and the data cannot be altered or erased. If you have a need for data security and audit trails, write-once disks may be a good disk choice.
- Both rewritable and write-once disks come in three sector sizes: 2,048 bytes/sector, 1,024 bytes/sector, and 512 bytes/sector. The sector size you choose depends upon what type of operating system you have in your host computer and which software package you use to manage files stored on the jukebox.

NOTE

Do not use write-once disks in a computer system that does not support write-once disks. Check that your jukebox application software supports write-once disks.

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Labeling an Optical Disk Cartridge

Make it a practice to label your optical disk cartridges. You are provided adhesive labels with each disk for this purpose. Here are some suggestions for labeling:

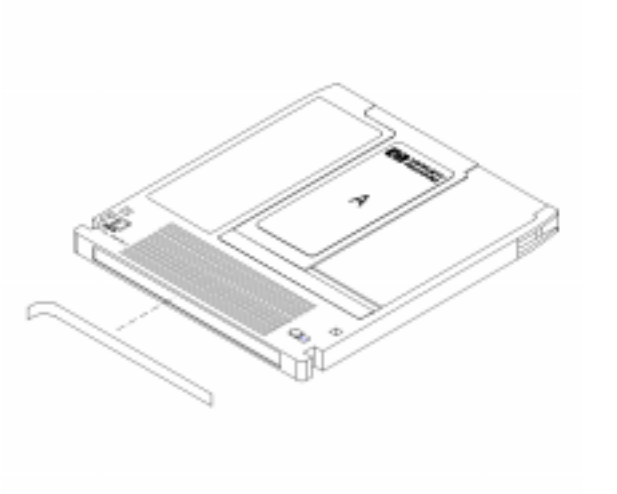
NOTE Your jukebox application software may label your optical disk slot locations differently. Use your application to check disk locations prior to labeling the disks.

- storage slot location (1, 2, 3, ...)
- date of format or initialization
- disk owner (group, department, etc.)
- storage purpose (backup, old version of operating system, etc.)

HP recommends using end labels as shown in Figure 2-1. End labels reduce the chance of label material interfering with the cartridge shutter and causing a drive to jam.

CAUTION Labels used in the vicinity of the shutter may cause the drive to jam if the label is installed incorrectly or if portions of the label lift off because of wear. If a drive jams because the label interferes with the shutter, a service call may be necessary.

Figure 2-1 Recommended Placement of Cartridge Labels



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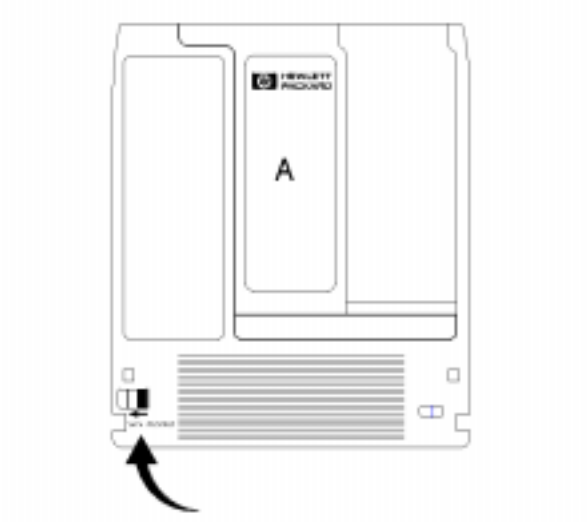
Write-Protecting an Optical Disk

Each side of an optical disk can be write-protected by sliding the write-protect button in the direction of the arrow on the cartridge (see Figure 2-2).

With rewritable optical disks, write-protecting the disk prevents overwriting existing files and prevents any additional file being written to the disk.

With write-once optical disks, existing files cannot be altered or erased regardless of whether or not the write-protect button has been set. However, setting the button to write-protect prevents writing additional files to the disk.

Figure 2-2 **Write-Protect Button Location**



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Caring for Optical Disks

Follow these guidelines to ensure that your optical disks remain in good condition:

- Do not expose disks to extreme magnetic fields.
- Do not expose disks to dust particles.
- Do not expose disks to extreme temperatures or extreme humidity.
- Do not drop the disks.
- Do not open a disk's metal shutter and touch the disk surface.
- Do not take disks apart.
- Do not insert disks with loosely-attached labels into the jukebox.
- Remove old disk labels before applying new ones especially if you choose to place labels on the sides of the cartridge (near the shutter) rather than on the end of the cartridge.
- Store disks in a clean, safe place when they are not in use.

Cleaning Disks

Normally, an optical disk does not require cleaning when used in a computer room or clean office environment. If you are in an extremely dusty environment and are experiencing difficulties reading and/or writing to a particular disk you may want to clean the disk to see if this corrects the problem.

CAUTION

Be very careful when cleaning an optical disk. Abrasive particles dragged across the disk surface can damage the disk and prevent recovery of some or all of the data on the disk.

Clean a disk only with a disk cleaning kit. Follow the disk cleaning kit instructions exactly.

The order numbers for manual and automated disk cleaning kits are in Table A-1, Appendix A.

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3 Operating the Jukebox

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Overview of This Chapter

This chapter gives information on the following topics:

- operating the control panel
- using the selection buttons
- interpreting messages which appear in the display window
- loading optical disks into the jukebox
- ejecting optical disks from the jukebox
- entering the administration menu password
- changing the administration menu password
- setting SCSI IDs or logical unit numbers (LUNs)
- setting configurations
- retrieving performance information
- running tests (for service use)
- using online repair (for service use only)
- troubleshooting

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Operating the Control Panel

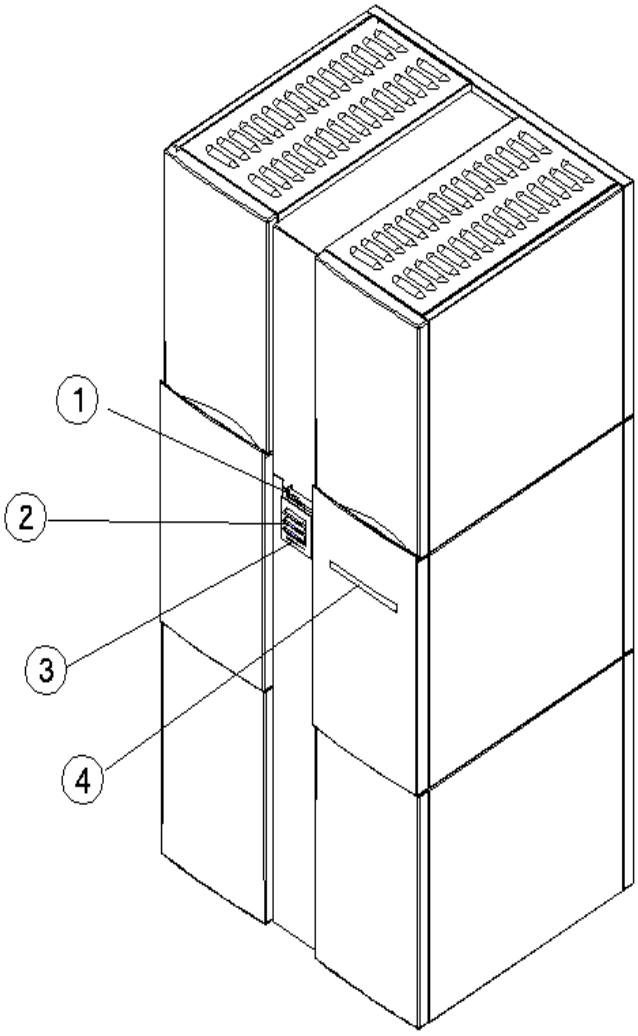
The control panel enables manual control of all jukebox operations using six buttons and an LED display.

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.

The figure and text on the next two pages show the user controls and mailslot. The rest of the chapter describes all manual procedures available to the operator.

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Figure 3-1 **The Jukebox Control Panel**



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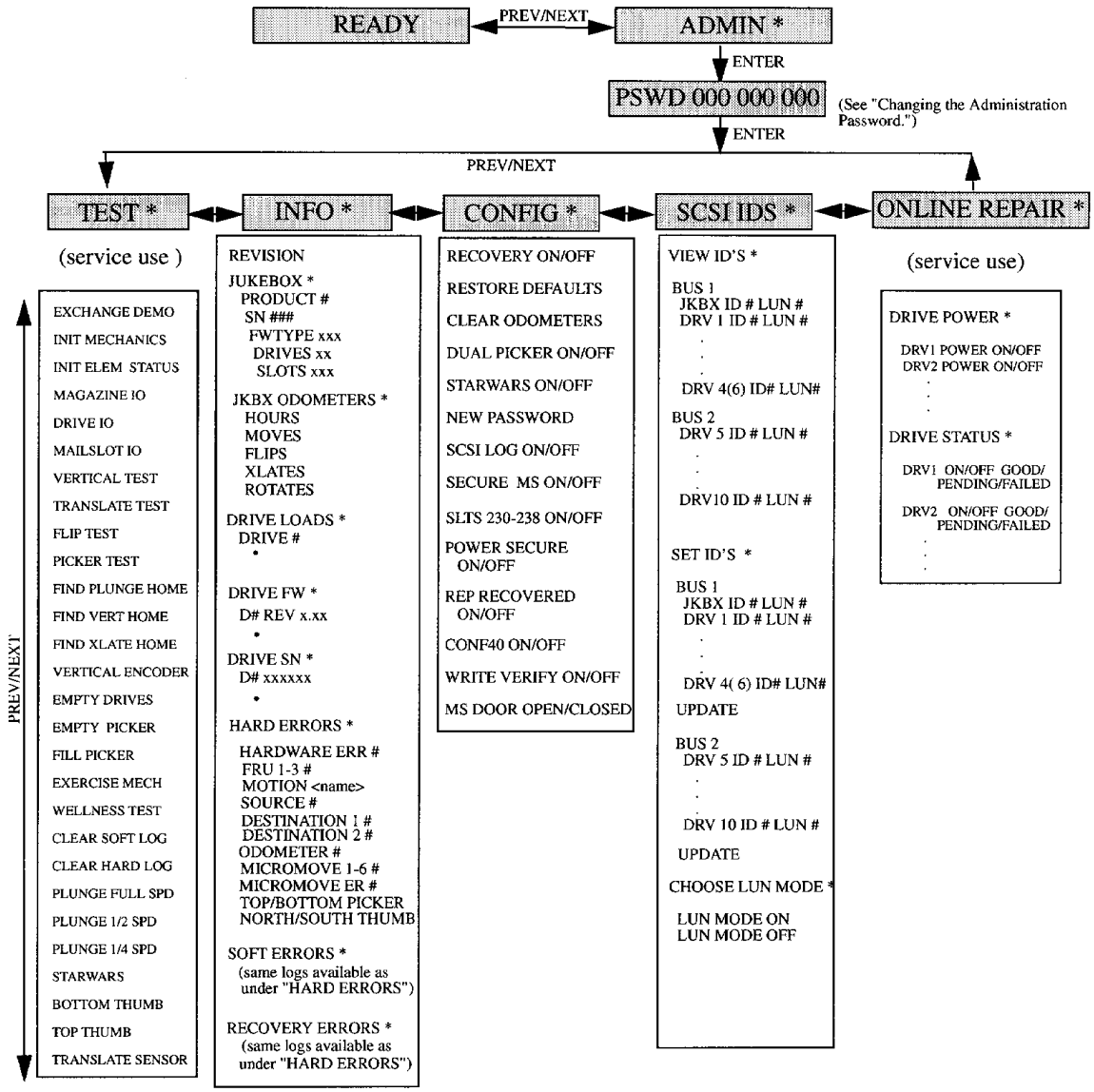
The numbers below refer to the numbers in Figure 3-1 on the previous page.

1	16-Character Display	Displays status information and control panel information
2	Selection buttons	Pressed to perform the following operations: **LOAD** used to load disks into the jukebox mailslot **EJECT** used to eject disks from the jukebox mailslot **PREV** scrolls the display choice backward by one **NEXT** scrolls the display choice forward by one **CANCEL** cancels the current operation or choice **ENTER** selects the displayed choice
3	Activity light	Lit differently to indicate the following: • Steady Green - power is on • Flashing Green - an optical drive is being accessed • Amber - a fault occurred
4	Mailslot	Used to load and eject optical disks

NOTE Figure 3-2 shows the jukebox menus available using the control panel selection buttons.

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Figure 3-2 Jukebox Display Menu Tree



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Using Selection Buttons

Use the LOAD, EJECT, NEXT, PREV, CANCEL, and ENTER buttons to select tasks you want the jukebox to perform. When you push these buttons, the message in the display window changes. See the next section for a list of messages.

Each time you push the **NEXT** or **PREV** button, a task choice appears. (If you see an "*" as part of the message, it indicates there is a menu beneath that choice, which you can access by pressing the **ENTER** key. To display additional choices, press the **NEXT** or **PREV** key. Holding the **NEXT** or **PREV** or button down scrolls the display faster.)

NOTE

You can get back to READY at any time by pressing **CANCEL**. (You may have to press **CANCEL** more than once in some cases.)

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Understanding Display Window Messages

The display window shows the operations you may select. Instructions for selecting or changing choices follows the explanation of the messages.

Top Level Menus

`READY`	The jukebox is ready for operation.
`ADMIN *`	Select to access second-level choices. You must enter a security code to access these choices.

NOTE

A `*` indicates that there are multiple selections available for that choice currently displayed. When a choice is flashing, press **ENTER** to select it or **PREV** or **NEXT** to display other choices.

Second Level Menus

You must enter a security code before accessing these functions. See “Entering the Administration Menu Password” later in this chapter. A default password of `000 000 000` is set at the factory. You may want to change this default code to a private code to prevent unauthorized access to the jukebox. See “Changing the Administration Menu Password” in this chapter.

`TEST *`	Select to run internal tests (normally, these are run by service).
`INFO *`	Select to retrieve performance information stored in the jukebox logs.
`CONFIG *`	Select to customize the way the jukebox functions.
`SCSI IDs *`	Select to view and/or change the SCSI IDs and logical unit numbers (LUNs).
`ONLINE REPAIR *`	Select to view and change drive settings for online drive replacement (used by service *only*)

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NOTE

An "*" indicates there are multiple selections available for the displayed choice.

When a menu selection is flashing, press **ENTER** to choose that selection, or press **PREV** or **NEXT** to display other choices that available in that part of the menu.

In Figure 3-2, you can display the selections listed in boxes below the *shaded* choices by pressing **ENTER** when one of the shaded choices displays. Press **PREV** or **NEXT** to scroll through the list. To perform the displayed operation, press **ENTER**.

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Loading a Disk into the Jukebox

NOTE

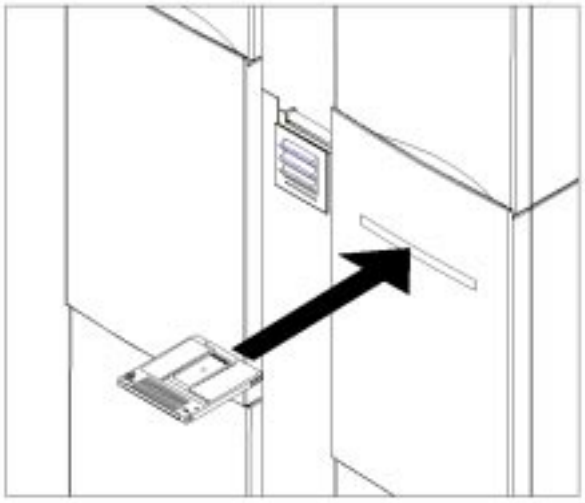
Label all disks before loading them into the jukebox. (See "Labeling an Optical Disk Cartridge" in Chapter 2 for instructions.)

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

Start with READY, LOAD * or EJECT * *in the display*.

1. Press **LOAD** on the jukebox control panel. (If none of these messages displays, press **CANCEL** until READY displays.)

Figure 3-3 Loading a Disk



2. When the mailslot opens, insert a disk into the mailslot with Side A of the disk facing up. The shutter end of the disk goes in the mailslot first.

   When the disk is inserted, it is automatically pulled into the mailslot. An incorrectly inserted disk is rejected, CART IN WRONG displays briefly, and then LOAD SLOT # displays. ("#" is flashing and is the number of the first available storage slot in the jukebox.)

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3. If you want to select the storage slot number that shows in the display, press **LOAD** or **ENTER**. If you want 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 the slot. After the disk is loaded into the selected storage slot, the display returns to LOAD *. You may now load additional disks by inserting the disks into the mailslot and repeating step 3 until you are finished loading disks.
5. Press **CANCEL** to return to the READY state.

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Ejecting a Disk From the Jukebox

NOTE

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

Start with READY, LOAD * or EJECT * *in the display*.

1. Press **EJECT** on the jukebox control panel.
2. EJECT SLOT # displays. ("#" is flashing and the number of the first storage slot in the jukebox that contains an optical disk.)
3. If you want to select the storage slot number that shows in the display, press **EJECT** or **ENTER**. If you want to choose a different storage slot, press **NEXT** or **PREV** until the desired slot number displays and then press **ENTER**. (See the note on the following page.)

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

   You may now eject additional disks by pressing the **EJECT** or **ENTER** key and then following steps 2 through 4 until you are finished ejecting disks. When the last disk is ejected, EMPTY displays briefly before returning to EJECT *.
5. Press **CANCEL** to return to the READY state.

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Entering the Administration Menu Password

`READY > ADMIN * > PSWD 000 000 000`

A numeric password is required to access menu choices beneath the `ADMIN *` menu of the jukebox (see Figure 3-2). A three-part password of 000-000-000 was set at the factory. Consider changing the password so that only authorized persons can access the choices under the `ADMIN *` menu.

NOTE

Don't forget your password. If you forget it, only your service representative can reset the security code to the factory setting which enables you to set a new password.

Follow these steps to enter the password. If you want to change the password, go to the next section, "Changing the Administration Menu Password."

Start with `READY` *in the display*.

1. Press **NEXT** until **ADMIN *** displays.
2. Press **ENTER**. `PSWD 000 000 000` displays and the first set of three zeros flashes.

NOTE

If the default password, `000 000 000`, is still in effect, accept this password by pressing **ENTER** three times (once for each set of three zeros). `TEST *` displays which indicates you are in the menu tree below `ADMIN *`.

If you have set your own password into the jukebox, continue with Steps 3 to 5 below.

3. Press **NEXT** or **PREV** until the first number of your password displays. Press **ENTER**. The middle set of three zeros flashes.
4. Press **NEXT** or **PREV** until the second number of your password displays. Press **ENTER**. The third set of three zeros flashes.
5. Press **NEXT** or **PREV** until the third number of your password displays. Press **ENTER**. `TEST *` displays.

To access menu choices under the `ADMIN *` menu press **NEXT** or **PREV** or until the desired choice displays, and then press **ENTER**.

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Changing the Administration Menu Password

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

1. Follow the steps on the previous page to enter your password (or the default, factory-set password `000 000 000`).
2. `TEST *` displays. 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 wish 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 wish 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 wish 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`

CAUTION

Turning off the jukebox in the next step could cause data loss if not done correctly.

Do not turn off power to the jukebox until you are sure the SCSI bus is inactive. Removing power from a SCSI device when the bus is active can result in data loss and/or indeterminate bus states. Check your host system manuals for information about checking the SCSI bus status. If your computer is connected to a LAN, be sure to check with your system administrator before turning off power to the jukebox.

8. Turn the jukebox OFF, then ON to save the password to the jukebox flash ROM.

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Setting the SCSI IDs

NOTE If you are unfamiliar with basic SCSI addressing or LUN addressing, refer to Appendix B. A web site is also available for more extensive information at: www.hp.com/isgsupport/optical/index.html

First, determine if you are using basic SCSI addressing or logical unit numbering (LUN). Setting the LUN mode is explained below.

Next, either view the current SCSI IDs or proceed directly to setting IDs. The next two procedures are "Viewing the Current SCSI IDs" and "Changing the Current SCSI IDs."

Tables showing default SCSI IDs for basic SCSI addressing and LUN addressing are in Appendix B.

Setting the LUN Mode

`READY > ADMIN * > SCSI ID'S * > CHOOSE LUN MODE *`

NOTE If you are unfamiliar with basic SCSI addressing or LUN addressing, refer to Appendix B. A web site is also available for more extensive information at www.hp.com/isgsupport/optical/index.html.

NOTE Check your host system documentation and jukebox application software documentation to verify that the use of LUNs is supported.

Start with `READY` *in the display.*

1. Press **NEXT** until `ADMIN *` displays and then press **ENTER**.
2. Enter the administration password.

   Instructions for entering this password are in "Entering the Administration Menu Password" previously in this chapter.
3. Press **NEXT** until `SCSI ID'S` displays, and then press **ENTER**.
4. `VIEW ID'S` displays. Press **NEXT** until `CHOOSE LUN MODE *` displays and then press **ENTER**. `LUN MODE ON` or `LUN MODE OFF` displays and `ON` or `OFF` is blinking.

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5. Press **NEXT** to change the setting and then press **ENTER**. `WAIT FOR UPDATE` and then `TURNED OFF` or `TURNED ON` display briefly. Then `SCSI ID'S` displays.

   You may now view the SCSI ID and LUN numbers using `VIEW ID'S`, or set a new SCSI ID number using `SET ID'S`. (See the following two sections.)

Viewing the Current SCSI IDs

```
READY > ADMIN * > SCSI ID'S * > VIEW ID'S >
                                BUS 1*
                                BUS 2*
```

NOTE If you are unfamiliar with basic SCSI addressing or LUN addressing, refer to Appendix B. A web site is also available for more extensive information at www.hp.com/isgsupport/optical/index.html.

Start with `READY` *in the display*.

1. Press **NEXT** until `ADMIN *` displays, and then press **ENTER**.
2. Enter the administration password.

   Instructions for entering this password are in "Entering the Administration Menu Password" previously in this chapter.
3. Press **NEXT** until `SCSI ID'S` displays, and then press **ENTER**.
4. `VIEW ID'S` displays. Press **ENTER**.
5. `BUS 1 *` displays. If you want to view the IDs on Bus 1, press **ENTER**.

   If you want to view the IDs on Bus 2, press **NEXT** until `BUS 2 *` displays and then press **ENTER**.
6. `JKBX ID # LUN #` or `DRV # ID # LUN #` displays. (`JKBX ID #` stands for the current ID of the jukebox controller, `DRV # ID #` is the current ID setting of the displayed drive number, and "`LUN #`" is the current logical unit number.)

   Press **NEXT** or **PREV** to scroll through the current SCSI IDs and LUNs.

NOTE Tables in Appendix B show the default SCSI IDs and LUNs when LUN mode is turned on.

7. Press **CANCEL** twice to exit `VIEW ID'S`.

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Changing the Current SCSI IDs

`READY > ADMIN * > SCSI ID'S * > SET ID'S *`

NOTE

If you are unfamiliar with basic SCSI addressing or LUN addressing, refer to Appendix B. A web site is also available for more extensive information at: www.hp.com/isgsupport/optical/index.html.

Start with `READY` *in the display.*

1. Press **NEXT** until `ADMIN *` displays, and then press **ENTER**.
2. Enter the administration password.

   Instructions for entering this password are in "Entering the Administration Menu Password" previously in this chapter.
3. Press **NEXT** until `SCSI ID'S` displays, and then press **ENTER**.
4. `VIEW ID'S` displays. Press **NEXT** until `SET ID'S` displays and then press **ENTER**.

   `BUS 1 *` displays. If you want to change the IDs on Bus 1, press **ENTER**.

   If you want to change the IDs on Bus 2, press **NEXT** until `BUS 2 *` displays and then press **ENTER**.

   If you are using basic SCSI addressing (LUN mode OFF):

   `JKBX ID # LUN #` or `DRV # ID # LUN #` displays. (`JKBX ID #` stands for the current ID of the jukebox controller, `LUN #` is the current logical unit number, and `DRV # ID #` is the current ID setting for the displayed drive number.) When using basic SCSI addressing, the `LUN #` is always `0`.

   If you are using LUN addressing (LUN mode ON):

   `JKBX BUS 1 #` or `DRVs BUS 1 #` displays on Bus 1, or `DRVs BUS 2 #` displays on Bus 2. ("#" is the current ID for the jukebox controller and drives when LUN mode is ON.)
5. Press **NEXT** until the setting you wish to change displays, and then press **ENTER**. The # (current ID) begins flashing.

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NOTE

In the next step you will choose a new ID. Review this note.

This jukebox, by default, assigns ID 6 to the jukebox controller. When in LUN mode, the jukebox controller ID uses LUN 0 for itself and assigns the drives on Bus 1 to LUNs 1 to 4 or LUNs 1 to 6 (depending on whether you have four or six drives on Bus 1 in your model of the jukebox).The result is that there are two types of devices (controller and drives) at ID 6.

Some host computer systems do not allow you to assign different device types to the same ID. If your host computer system does not support multiple types at the same ID and you want to use LUN mode, you must select *different* IDs for the jukebox controller (`JKBX ID #`) and the drives (`DRV #`).

Tables in Appendix B show jukebox default settings and an example of setting the jukebox controller and drives to different IDs (one digit apart).

If another device ID is placed between the jukebox controller and the drives, problems can result. For this reason, the jukebox *will not accept* IDs for the jukebox controller and drives that are more than one digit apart. You will receive a `CONFLICT` message.

6. Press **NEXT** or **PREV** until the new ID that you want displays and then press **ENTER**.

   If the jukebox is set to `LUN MODE ON`, go to Step 8. Only one ID can be changed and the ID automatically updates when you press **ENTER**.

7. (If using basic SCSI addressing - LUN mode OFF) Press **NEXT** until `UPDATE` displays, and then press **ENTER**.

8. `UPDATE` or `WAIT FOR UPDATE` and then `ID'S SAVED` displays briefly.

   - If the new settings do not conflict with other SCSI IDs on the bus, `SCSI ID'S` displays.
   - If the new settings conflict with other IDs on the SCSI bus, `CONFLICT-ABORTED` displays briefly and then `VIEW ID'S` displays. Any changes entered are lost, and you must repeat steps 3 through 6 to set a new ID.

NOTE

When in LUN mode:
If the new ID you choose results in the IDs for the jukebox controller and the drives being more than one digit apart, the jukebox displays `CONFLICT` and rejects the ID.

9. Press **CANCEL** until `READY` displays.

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CAUTION

Turning off the jukebox in the next step could cause data loss if not done correctly.

Do not turn off power to the jukebox until you are sure the SCSI bus is inactive. Removing power from a SCSI device when the bus is active can result in data loss and/or indeterminate bus states. Check your host system manuals for information about checking the SCSI bus status. If your computer is connected to a LAN, be sure to check with your system administrator before turning off power to the jukebox.

10. Turn the jukebox OFF, then ON to save the IDs to the jukebox flash ROM.

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Setting an Operating Configuration

READY > ADMIN * > CONFIG *

You can set configurations to customize the way the jukebox operates.

Start with READY *in the display*.

1. Press **NEXT** until ADMIN * displays.
2. Enter the administration password.

   Instructions for entering this password are in "Entering the Administration Menu Password" previously in this chapter.
3. TEST * displays. Press **NEXT** until CONFIG * displays, and then press **ENTER**.
4. Press **NEXT** or **PREV** until the name of the configuration you wish to set displays and then press **ENTER**. (Configurations are described on the following pages.)

   If the configuration has multiple settings, the current setting flashes. 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.
6. Press **CANCEL** to return to READY.

CAUTION

Turning off the jukebox in the next step could cause data loss if not done correctly.

Do not turn off power to the jukebox until you are sure the SCSI bus is inactive. Removing power from a SCSI device when the bus is active can result in data loss and/or indeterminate bus states. Check your host system manuals for information about checking the SCSI bus status. If your computer is connected to a LAN, be sure to check with your system administrator before turning off power to the jukebox.

7. Turn the jukebox OFF, then ON to save the configuration to the jukebox flash ROM.

   Configurations are described in the following table.

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Table 3-1 Configuration Choices

Configuration Name	Description
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.
RESTORE DEFAULTS	Sets all jukebox configurations to default settings.
CLEAR ODOMETERS	*Used by service personnel only.* Sets all jukebox odometers to zero.
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.
STARWARS ON/OFF	*Used by service personnel only.* 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.
NEW PASSWORD	Allows you to change the numerical password required to access the menu choices under the ADMIN * menu on the jukebox control panel. These choices include configurations, tests, and information logs. To change the security code, see "Changing the Administration Menu Password" in this chapter.
SCSI LOG ON/OFF	*Used by service personnel only.* Should be set to OFF during normal operation. Toggles between ON and OFF. Tracks internal SCSI states and saves the information to a log.

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Configuration Name	Description
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 (the default state of the jukebox).
SLTS 230-238 ON/OFF	Slots 230 to 238 may not be supported by some jukebox application software. The ON configuration allows access to these slots. The OFF configuration prevents access to these slots, making slot 229 the last available slot.
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 (default setting is 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.
CONF40 ON/OFF	*Used by service personnel only. Changing this configuration may result in a service call.*
WRITE VERIFY ON/OFF	Toggles between ON and OFF. When set to ON (default), write verify is forced. When set to OFF, the drives may write verify or not, depending on how they are manually configured or how they are configured by the jukebox application software.
MS DOOR OPEN/CLOSED	Toggles between OPEN and CLOSED. When set to OPEN, the mailslot door always remains open; when set to CLOSED, the mailslot door remains open for ten seconds after disks are loaded or ejected, automatically closes when the mailslot is empty, and does not reopen until you press the **LOAD** button.

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Retrieving Log History

`READY > ADMIN * > INFO *`

You can display information stored in the jukebox operating logs by using the `INFO *` menu.

Start with `READY` *in the display.*

1. Press **NEXT** until `ADMIN *` displays.
2. Enter the administration password.

   Instructions for entering this password are in "Entering the Administration Menu Password" in this chapter.
3. `TEST *` displays. Press **NEXT** until `INFO *` displays, and then press **ENTER**.
4. Press **NEXT** until the name of the log you wish to access displays and then press **ENTER**. (A "`*`" indicates that there are more selections beneath the displayed choice.)
5. After you are finished viewing log information, press **CANCEL** to return to `READY`.

   Information logs are described in the following table.

Table 3-2 Information Logs

Log Name	Description
`REVISION`	Jukebox firmware version number.
`JUKEBOX *`	Press **ENTER** to select the information described in the next five rows.
`product #`	Product identification string
`SN #`	Serial number of the unit.
`FW TYPE ##`	Code that identifies the type of firmware used in the unit.
`DRIVES #`	Number of drives in the unit.
`SLOTS #`	Number of available storage slots in the unit.

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Log Name	Description
JKBX ODOMETERS *	Press **ENTER** to select the odometer logs described in the next five rows.
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 *	Press **ENTER** to select the logs under this selection.
DRIVE #	Total disk loads for the drive numbered "#."
DRIVE FW *	Press **ENTER** to select the logs under this selection.
D# REV x.xx	Drive firmware revision code. "D#" is the drive number and x.xx is the code. Press **NEXT** or **PREV** to select drive numbers.
DRIVE SN *	Press **ENTER** to select the logs under this selection.
D# xxxxxxx	Serial number of the drive where "#" is the drive number. Press **NEXT** or **PREV** to select drive numbers.
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. (Log entries are described in the rows following RECOVERY ERROR * in this table.)

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Log Name	Description
SOFT ERROR *	Log of recovered errors (commands that 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. (Log entries are described in the rows following RECOVERY ERROR * in this table.)
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. (Log entries are described in the following rows.
*HARDWARE ERR #	Internal diagnostics error number of the cause of the failure.
*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.

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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 #	Element number to which the source refers. (This information is valid for MOVE, EXCHANGE, and POSITION movements only.)
DESTINATION 1 #	Element to which the first destination refers. (This information is valid for MOVE and EXCHANGE movements only.)
DESTINATION 2 #	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.

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Log Name	Description
*MICROMOVE 5 #	Fifth jukebox micro-move for the original move command issued prior to the failure.
*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.

* Press **ENTER** to display more information

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Running an Internal Test

`READY > ADMIN * >TEST *`

The optical jukebox can run self-diagnostic tests. *See the Caution note below.*

CAUTION

Some of the internal diagnostic tests of this jukebox can corrupt your file system if not properly completed (for example, disks can be placed in unexpected locations).

In almost all cases, these tests should be run only by authorized service personnel. Service, however, may request that you run specific tests to provide information before they come to your site. The descriptions of these tests are included in this manual only for your information.

Instructions for running internal tests are included in this guide to help you run tests if requested by service. There is a possibility you may run one test as a result of troubleshooting; this test is "`INIT ELEM STATUS`."

Start with `READY` *in the display.*

1. Press **NEXT** until `ADMIN *` displays.
2. Enter the administration password.

   Instructions for entering this password are in "Entering the Administration Menu Password" previously in this chapter.
3. `TEST *` displays. Press **ENTER**.
4. Press **NEXT** until the name of the test you wish 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.

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Table 3-3 Internal Tests

Test Name	Description
Internal Tests are normally for service use only. Some of the following tests can corrupt your data if not completed properly. Those tests are noted with a "Used by service..." alert. Do not run these tests. If you are in contact with your service representative, you may be requested to run one or more of the remaining tests as part of the early phases of a diagnostic procedure. Also, you may receive a control panel message to "`RUN ISTAT TEST`" which, the troubleshooting table explains, means to run the `INIT ELEM STATUS` test. It is for these two, limited situations that the instructions for running internal tests is included in this user guide and why the tests are described.	
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.
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. NOTE: This test appears as "`ISTAT TEST`" in all control panel error messages.

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Test Name	Description
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.
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.

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Test Name	Description
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	*Used by service personnel only. Do not run this test if the jukebox contains disks with file system data on them*. 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.
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.

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Test Name	Description
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	Sets the soft error log to zero.
CLEAR HARD LOG	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.
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.

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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.)

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Using Online Repair

The online repair selection allows an authorized service representative to replace a faulty drive while the jukebox remains online and active. *This feature is available only if enabled by your jukebox application software*.

CAUTION

Selecting online repair should be done only by an authorized service representative. This procedure could cause the jukebox optical drives to become inactive.

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Troubleshooting

This section provides steps you can take when problems occur during operation. To troubleshoot problems, first refer to the procedures in this troubleshooting section. If these procedures do not correct the problem, check the HP web site at www.hp.com/isgsupport/optical/index.html and the other support services listed in Appendix A.

NOTE

If a service call is necessary, gather the following information before calling:

- model of your jukebox
- serial number (location noted in Figure 1-1)
- brand and model of your host computer
- brand and model of your host computer SCSI adapter
- jukebox application software you are using and its version
- any jukebox driver separate from your jukebox application software and the version of this driver

For problems that may be related to your host computer system or jukebox application software, refer to that documentation for guidance.

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Table 3-4 Troubleshooting

Problem	What to do
Jukebox won't power on.	• Ensure that power cord connections are tight. • Ensure that the power switch is ON (located on the lower right side of the jukebox rear panel). • Ensure that the power outlet is operating. • Replace the power cord with a known good one. • If steps above are unsuccessful, call your service representative.
Poweron selftest failed and `DEVICE FAILED` displays	• Power cycle the jukebox.* • If the poweron test continues to fail, press **ENTER**, write down the displayed error code, and call your service representative.
`DEVICE FAILED` displays. Hardware Error #61 (External SCSI cables) is reported.	• Ensure that only one SCSI device type (single-ended OR differential) exists on the SCSI bus. • Verify that the SCSI interface selection switch is set correctly (either single-ended or differential). • Verify that the terminator is the correct type (single-ended or differential). • If steps above are unsuccessful, call your service 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 (poweron test is unsuccessful), switch off the power. Do not move the unit! Moving the unit risks damaging the optical drive. Call your service representative.
*Ensure that the SCSI bus is inactive before removing power to the jukebox. Removing power to a device on an active SCSI bus can cause data loss and/or problems with the SCSI interface.	

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Problem	What to do
No display messages.	• Ensure that the power cord is connected. • Ensure that the power switch is ON. • Power cycle the jukebox.* • If steps above are unsuccessful, call your service representative.
Changed the drive ID but the new ID isn't recognized.	Some computers require a restart to recognize new SCSI IDs. • Ensure the SCSI bus is inactive and restart your host computer.
Forgot your password.	• Enter the default password (`000 000 000`). • If the default password is not accepted, call your service representative.
Disk inserted in the mailslot but `LOAD ERROR` or `FAILED` displays.	• Press **CANCEL**. Insert the disk in the mailslot again. See "Loading an Optical Disk into the Jukebox" in this chapter for the correct disk loading orientation. • If the light bar on the front panel is orange, cycle power to the jukebox.* Try to load the disk again when `READY` displays. • If the disk is in the mailslot correctly and these error messages repeat, call your service representative.
Disk inserted in the mailslot but `RESERVED` displays	The `SECURE MS` configuration is set. Disks cannot be loaded. • If appropriate, change this setting. See "Setting an Operating Configuration" in this chapter. The current administration password is required.
*Ensure that the SCSI bus is inactive before removing power to the jukebox. Removing power to a device on an active SCSI bus can cause data loss and/or problems with the SCSI interface.	

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Problem	What to do
Disk inserted in the mailslot but `MAILSLOT EMPTY` displays	The mailslot sensors do not detect a disk in the mailslot. • Remove and then replace the disk fully into the mailslot. If the same error reappears, the mailslot sensors may be defective. Contact your service representative.
Disk inserted in the mailslot but `DEST NOW FULL` displays	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.
Disk inserted in the mailslot but `TRANSPORT FULL` displays	The disk transport mechanism already contains a disk. • Refer to your host and application documentation for recovery procedures. If no procedures are available, call your service representative.
Disk inserted in the mailslot but `MAILSLOT SENSOR` displays	The jukebox mailslot sensors may have failed. • Remove and then re-insert the disk. If this does not correct the problem, call your service representative.
Disk eject attempted but an `EJECT ERROR` message displays.	• Press **CANCEL**. Attempt to eject the disk again. • If the light bar on the front panel is orange, 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, call your service representative.
*Ensure that the SCSI bus is inactive before removing power to the jukebox. Removing power to a device on an active SCSI bus can cause data loss and/or problems with the SCSI interface.	

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Problem	What to do
Disk eject attempted but `RESERVED` displays.	The jukebox application software reserved the element for its use or a security configuration was set to prevent disk ejection. • If appropriate, change this setting See "Setting an Operating Configuration" in this chapter. The current administration password is required.
Disk eject attempted but empty and then `EJECT *` displays.	This is not an error. There are no disks in the jukebox.
Disk eject attempted but `TRANSPORT FULL` displays.	The disk transport mechanism already contains a disk. • Refer to your host and application documentation for recovery procedures. If no procedures are available, call your service representative.
Disk eject attempted but `SOURCE NOW EMPTY` displays.	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 to replace the disk into the slot before attempting another eject.
Disk eject attempted but `MAILSLOT FULL` displays.	A disk is in the mailslot. • Remove the disk from the mailslot. Select `EJECT *`, select the slot you want the disk ejected from again, and eject the disk.
You want to stop a test that is running.	Press **CANCEL**. The current test loop continues until finished, then the test stops.
*Ensure that the SCSI bus is inactive before removing power to the jukebox. Removing power to a device on an active SCSI bus can cause data loss and/or problems with the SCSI interface.	

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Problem	What to do
`RUN ISTAT TEST` displays (this initializes the element status)	• Power cycle the jukebox.* • Run the `INIT ELEM STATUS` test under the `TEST *` menu • If steps above do not result in a READY display, call your service representative.
Can't write to the 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. • Check your application software. • If steps above are unsuccessful, call your service representative.
*Ensure that the SCSI bus is inactive before removing power to the jukebox. Removing power to a device on an active SCSI bus can cause data loss and/or problems with the SCSI interface.	

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A Supplies and Customer Support

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Overview of This Appendix

This appendix provides information on the following topics:

- supplies and accessories
- shipping screw specifications
- HP customer support

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Supplies and Accessories

A full range of computer supplies may be ordered through a Hewlett-Packard authorized dealer or sales office, or by phoning or writing HP Direct.

Call 1-800-752-0900 for the location of your nearest authorized Hewlett-Packard dealer.

To contact a Hewlett-Packard sales representative, see Table A-2 for a list of addresses and phone numbers of HP sales offices.

To phone HP Direct call 1-800-538-8787.

To write to HP Direct use the following address:

HP Direct

Hewlett-Packard

P.O. Box 58195

Santa Clara, California 95052

USA

See Table A-1 for a list of basic supplies and accessories.

Table A-1 Basic Supplies and Accessories

Item	HP Part Number
5.2- and 4.7-Gbyte Optical Disks	
Rewritable optical disk (2,048 bytes/sector, 5.2 Gbytes, single disk)	88147J
Rewritable optical disk (2,048 bytes/sector, 5.2 Gbytes, 8-pack)	C6299J
Write-once optical disk (2,048 bytes/sector, 5.2 Gbytes, single disk)	88146J
Write-once optical disk (2,048 bytes/sector, 5.2 Gbytes, 8-pack)	C6298J

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Item	HP Part Number
Rewritable optical disk (1,024 bytes/sector, 4.7 Gbytes, single disk)	88143J
Rewritable optical disk (1,024 bytes/sector, 4.7 Gbytes, 8-pack)	C2589J
Write-once optical disk (1,024 bytes/sector, 4.7 Gbytes, single disk)	88145J
Write-once optical disk (1,024 bytes/sector, 4.7 Gbytes, 8-pack)	C2591J
2.6- and 2.3-Gbyte Optical Disks	
Rewritable optical disk (1,024 bytes/sector, 2.6 Gbytes, single disk)	92280F
Rewritable optical disk (1,024 bytes/sector, 2.6 Gbytes, 8-pack)	C2589F
Write-once optical disk (1,024 bytes/sector, 2.6 Gbytes, single disk)	92290F
Write-once optical disk (1,024 bytes/sector, 2.6 Gbytes, 8-pack)	C2591F
Rewritable optical disk (512 bytes/sector, 2.3 Gbytes, single disk)	92279F
Rewritable optical disk (512 bytes/sector, 2.3 Gbytes, 8-pack)	C2588F
Write-once optical disk (512 bytes/sector, 2.3 Gbytes, single disk)	92289F
Write-once optical disk (512 bytes/sector,2.3 Gbytes, 8-pack)	C2590F
SCSI Cables	
50-Pin Low-Density to 50-Pin High-Density	
1.0 m (3.3 ft) clip latch to thumb screw	K2296
1.5 m (4.9 ft) clip latch to thumb screw	K2297

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Item	HP Part Number
0.9 m (2.9 ft) thumb screw to thumb screw	K2294
1.5 m (4.9 ft) thumb screw to thumb screw	K2295
50-Pin High-Density to 50-PinHigh-Density	
0.5 m (1.6 ft) thumb screw to thumb screw	C2955A
1.0 m (3.3 ft) thumb screw to thumb screw	C2908A
1.5 m (4.9 ft) thumb screw to thumb screw	C2956A
2.0 m (6.5 ft) thumb screw to thumb screw	C2957A
5.0 m (16.5 ft) thumb screw to thumb screw	C2958A
68-Pin High-Density to 50-Pin Low-Density	
1.0 (3.3 ft) clip latch to thumb screw	C2915A
2.0 m (6.5 ft) thumb screw to thumb screw	C2906A
5.0 m (16.5 ft) thumb screw to thumb screw	C2907A
20.0 m (65.6 ft) thumb screw to thumb screw	C2916A
68-Pin High-Density to 68-Pin High-Density	
0.9 m (2.9 ft) thumb screw to thumb screw	C2911A
2.5m (8.2 ft) thumb screw to thumb screw	C2924A
10.0 m (32.8 ft) thumb screw to thumb screw	C2925A
20.0 m (65.6 ft) thumb screw to thumb screw	C2926A
SCSI Terminators	
50-pin active high-density (molded)	C2904A
68-pin differential high-density (molded)	C2905A

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Supplies and Accessories

Item	HP Part Number
Disk Cleaners	
RA-2 Manual Disk Cleaner ProDisk Corporation US Tel.(612) 439-6202 Fax (612) 439-5946 (approximately US$30)	N/A
KA-1 Automatic Disk Cleaner ProDisk (see above) (approximately US$559)	N/A
Documentation	
User's Guide (replacement/additional)	C1104-90015

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Hewlett-Packard Customer Support

If your jukebox fails *during* the warranty period, and the suggestions in this user's guide and accompanying documentation do not solve your problem:

- Consult the Quick FAX or HP FIRST (FAX information Retrieval Support Technology) facsimile assistance services.The phone numbers are under "Faxback Services" on the next page.
- Consult one of the computer/modem connectivity services available, such as America Online or CompuServe. The phone numbers are under "Electronic Support Services" later in this appendix.
- Contact your authorized HP dealer distributor

NOTE

Before calling, please record the following information and have it ready when you contact your service representative:

- model number of your jukebox
- serial number
- brand and model of your host computer
- brand and model of your host computer SCSI adapter
- jukebox application software you are using and its version
- any jukebox driver you may be using that is separate from your jukebox application software and the version of this driver

Should you need additional support, call the Customer Support Center in your region. FAX, electronic services and support center numbers are given on the following pages.

If your jukebox fails *after* the warranty period, contact your authorized HP dealer/distributor or the nearest HP sales and service office. Customers in the US and Europe can use a credit card for phone assistance. For details, see "Telephone Support After Warranty" in this appendix.

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Faxback Services

Quick FAX and HP FIRST are automated systems that FAX requested product information and/or technical support documents to you. These faxback services are available 24 hours.

Simply dial the FAX number from a touch tone telephone or Group 3 facsimile machine and follow the voice prompts that guide you to select an index of available support an product documents.

Asia-Pacific	
Australia	(03) 9272 2627
China	(8610)-6505 5280
Hong Kong	2506 2422
India	+91 11 682 6041
Indonesia	(21) 352 2044
Japan	(3) 3335-8622
Korea	(02) 769-0543
Malaysia	(03) 290 2478
Netherlands	0800 22 2420
New Zealand	(09) 356 6642
Singapore	(65) 291-7951
Taiwan	(02) 719 5589
Thailand	(02) 661 3511
Europe	
Austria	0660 8128
Belgium	
Dutch	0800 11906
French	800 17043

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Denmark	800 10453
Finland	0800 13134
France	05 905900
Germany	0130 810 061
Italy	1678 59020
Netherlands	06 022 2420
Norway	800 11319
Spain	900 993123
Sweden	020 795743
Switzerland	
German	0800 55 1526
French	0800 55 1527
United Kingdom	0800 960271
Other locations in Europe (toll line)	+31 20 681 5792
North and South America and Canada	(800) 368-9673 or (970) 635-1510
All other countries (to the US)	(970) 635-1510

Electronic Support Services

For 24-hour access to information over your modem, refer to the following listings.

On-line Service Providers

Technical information is available on CompuServe and America Online. (Compuserve and America Online are not operated by Hewlett-Packard.)

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CompuServe	HP systems Forum, Go HPSYS
America Online	HP forum, Go HPSTOR

AccessHP and Support on the World Wide Web

Product and support information is available on the Hewlett-Packard web site:

Product information - www.hp.com
Support - www.hp.com/isgsupport/optical/index.html

Telephone Support During Warranty

To speak with someone for technical assistance within the hardware warranty of your product, call a support representative at the location appropriate to your location as listed below.

NOTE

Before calling, please record the following information and have it ready when you contact your support center representative:

- model number of your jukebox
- serial number
- brand and model of your host computer
- brand and model of your host computer SCSI adapter
- jukebox application software you are using and its version
- any jukebox driver you may be using that is separate from your jukebox application software and the version of this driver

US - America's Customer Support Center

Monday - Friday, 7am - 5pm Mountain Time (970) 635-1000

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Europe - European Customer Support Center

Monday - Friday, 8:30am - 5pm Netherlands Time

Austria	0660 6386	Germany	0180 5 25 81 43
Belgium		Netherland	020 606 8751
Dutch	02 626 8806	Norway	22 11 6299
French	02 626 8807	Portugal	01 441 7199
Denmark	3929 4099	Spain	902 321 123
Finland	0203 47288	Sweden	08 619 2170
France	04 50 43 9853	Switzerland	0848 80 11 11
Ireland	01 622 5525	United Kingdom	0171 512 5202
Italy	02 26410350		

English language support from other European countries:

+44 171 512 5202

Asia-Pacific - HP Customer Support Center

Australia	8:30 - 17:30 Mon-Fri	(03) 9272-8000
China	8:30 - 17:30 Mon-Fri	(8610) 62625666 x5602, 5609, 5611, 5612 (8610) 62 61 4174 (8610) 62 61 4175 (8610) 62 61 4176
Japan	9:00 - 1200 13:00 - 17:00 Mon-Fri	(3) 3335-8338
Korea	8:30 - 1900 Mon-Fri	(02) 3270-0700/ 080-999-0700 (toll free)

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New Zealand	8:30 - 16:00 Wed AEST	(09) 356-6640
Singapore	9:00 - 17:00 Mon - Fri	(65) 271-7233
Taiwan	8:30 - 17:30 Mon - Fri	(02)717-9609

Elsewhere in the World to the US

Contact your authorized HP dealer/distributor or the nearest HP sales and service office.

Telephone Support After Warranty

NOTE

Before calling, please record the following information and have it ready when you contact your support center representative:

- model number of your jukebox
- serial number
- brand and model of your host computer
- brand and model of your host computer SCSI adapter
- jukebox application software you are using and its version
- any jukebox driver you may be using that is separate from your jukebox application software and the version of this driver

North and South America and Canada

Using your VISA, MasterCard, or American Express call:

(800) 810-0130 - Per incident fee of $25.00 charged to your credit card.

(900) 555-1800 - $2.50 per minute up to a maximum of $25.00 per incident. You must be 18 years of age or have parental permission to call this number.

Prices are subject to change without notice.

Europe

Call the numbers listed in the “Telephone Support Under Warranty” section. A per incident fee will be charged for after warranty support. Please have a credit card, PO number, or billing address ready.

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Elsewhere in the World

Contact your authorized HP dealer/distributor or the nearest HP sales and service office.

Additional Telephone Support

Singapore Customer Care-Line for End-Users	(65) 272-5300

HP Reseller Locator Numbers

US	(800) 752-0900
Canada	(800) 387-3867
Mexico and South America	(305) 267-4220

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Warranty

HP PRODUCT	DURATION OF WARRANTY
C1104J/C1105J/C1106J/C1107J/C1110J	One Year

1. HP warrants HP hardware, accessories and supplies against defects in materials and workmanship for the period specified above. If HP receives notice of such defects during the warranty period, HP will, at its option, either repair or replace products which prove to be defective. Replacement products may be either new or like-new.

2. HP warrants that HP software will not fail to execute its programming instructions, for the period specified above, due to defects in material and workmanship when properly installed and used. If HP receives notice of such defects during the warranty period, HP will replace software media which does not execute its programming instructions due to such defects.

3. HP does not warrant that the operation of HP products will be uninterrupted or error free. If HP is unable, within a reasonable time, to repair or replace any product to a condition as warranted, customer will be entitled to a refund of the purchase price upon prompt return of the product.

4. HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.

5. The warranty period begins on the date of delivery or on the date of installation if installed by HP. If customer schedules or delays HP installation more than 30 days after delivery, warranty begins on the 31st day from delivery.

6. Warranty does not apply to defects resulting from (a) improper or inadequate maintenance or calibration, (b) software, interfacing, parts or supplies not supplied by HP, (c) unauthorized modification or misuse, (d) operation outside of the published environmental specifications for the product, or (e) improper site preparation or maintenance.

7. TO THE EXTENT ALLOWED BY LOCAL LAW, THE ABOVE WARRANTIES ARE EXCLUSIVE AND NO OTHER WARRANTY OR CONDITION, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED AND HP SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE.

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8. HP will be liable for damage to tangible property per incident up to the greater of $300,000 or the actual amount paid for the product that is the subject of the claim, and for damages for bodily injury or death, to the extent that all such damages are determined by a court of competent jurisdiction to have been directly caused by a defective HP product.

9. TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES. EXCEPT AS INDICATED ABOVE, IN NO EVENT WILL HP OR ITS SUPPLIERS BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFIT OR DATA), OR OTHER DAMAGE, WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE.

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B Operating This Jukebox on a SCSI Bus

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A Brief Overview of SCSI

General

The Small Computer System Interface (SCSI), is a contention-based bus that accommodates different speed devices without impacting the devices with faster transfer speeds. This specification was defined by the American National Standards Institute (ANSI) in 1986. The specification defines both the physical medium and the command set used to transfer information. Later developments are known under the newer specifications, SCSI-2 and SCSI-3.

The SCSI Bus

The common SCSI buses are 50-pin and 68-pin. The 50-pin bus, which uses eight of its lines for data transmission, is called a "narrow" bus. The narrow bus can support eight devices. The 68-pin bus, which uses 16 lines for data transmission is called a "wide" bus. The wide bus can support 16 devices.

Initiators and Targets

SCSI devices on the bus are either “initiators” or “targets.” An initiator (usually the host computer) originates a transaction and the target (usually a peripheral device) fulfills the request.

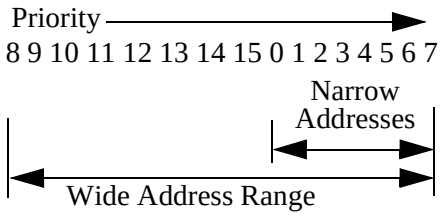
Initiators and targets identify themselves on the bus by a SCSI ID. The ID is designated by the user and is set electronically or manually depending on the device. In addition to identifying a device on the bus, the ID also determines the priority of the device during contention among the devices for use of the bus.

The narrow SCSI bus, with its eight data lines, can communicate with eight devices that have IDs from 0 to 7. The wide SCSI bus, with its 16 data lines, can communicate with 16 devices that have addresses from 0 to 15. The host adapter, which links the host computer to the SCSI bus, is also a SCSI device (initiator), and is usually assigned an ID of 7.

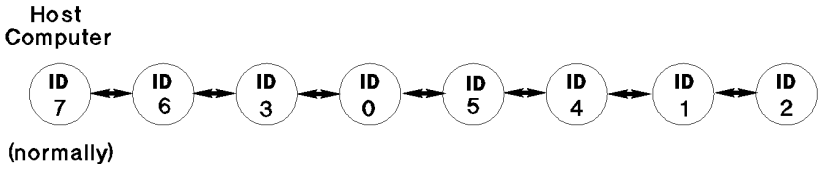
Priority of IDs ascends from lowest to highest but this ascending priority, however, is *in blocks of eight IDs*, and the block from 8 to 15 is actually defined to be at a *lower* priority than ID 0, the lowest address on the "narrow" portion of the bus. This is done so that if a narrow device is placed on a wide bus, the wide devices, which can "see" the lower addresses, will always defer to the lower addresses when they contend for the bus. Otherwise, a narrow device, which cannot "see" any device at

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an ID greater than 7, would always assume it won the contention and would attempt to talk, perhaps at the same time as a device with an ID above 7 that was contending for the bus. The following diagram shows the priority scale of IDs when the priority of the two blocks of eight are reversed.



The diagram below shows the linear addressing of a simple, narrow bus with the host adapter set at a SCSI ID of 7. The device ID does not determine where the device is physically placed on the bus.



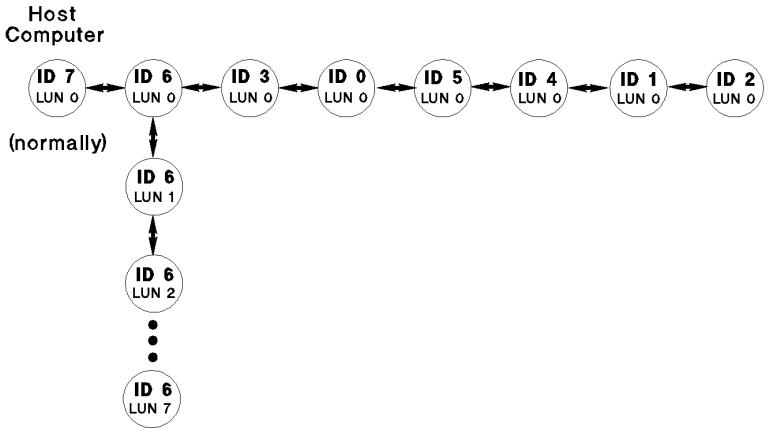
LUN Addressing

SCSI IDs are the top-level method of addressing devices on the bus. Another method of addressing is also available; logical unit numbering (LUN). This method enables a complex device, such as a jukebox, to group its internal SCSI devices to a single SCSI ID.

The complex device is identified by a SCSI ID, but this complex device assigns logical unit numbers (LUNs) to each device within it. Up to eight LUNs may be assigned under a single SCSI ID. The LUNs that can be assigned are from 0 to 7 (LUN 0 is usually retained by the complex device).

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To use this form of addressing, however, the jukebox application software, the SCSI bus drivers and the host adapter firmware all have to support this mode of addressing. The following diagram shows LUNs assigned to devices within the device at ID 6.



Transfer Rates on the Bus

Initially, the SCSI specification defined a 5 MB/s synchronous data transfer rate on the narrow bus. SCSI now also defines "Fast" which is 10 MB/s on a narrow bus and 20 MB/s on a wide bus. Another definition is "Ultra," also known as "Fast-20" which is 20 MB/s transfer rate on a narrow bus and 40 MB/s on a wide bus.

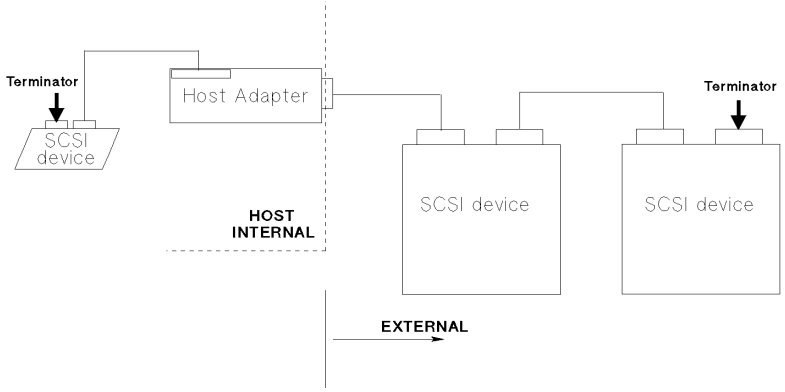
Termination

To keep signals on the SCSI bus from being reflected, “terminators” must be placed at each end of the physical bus. These terminators may be either active or passive. Passive termination is a resistor network. Active termination uses a voltage regulator (the active component) to regulate the power of the resistor network to provide more stable termination. Active termination is always preferred over passive termination.

Depending on your SCSI device, termination is supplied by a using a physical connector, by flipping a dipswitch, or by selecting the termination setting in software.

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Termination is always at both physical ends of the bus.



Single-ended and Differential Interfaces

The SCSI bus is electrically implemented in two ways: single-ended and differential. These terms come from the way the signals are asserted on the bus. Single-ended buses use a 5-volt signal that is referenced to ground. This method makes the bus somewhat susceptible to noise and loss of signal quality over distance. The maximum allowable length of a single-ended SCSI bus was initially 6 meters (19.7 feet). Fast SCSI required the maximum length of the bus to be reduced to 3 meters (9.8 feet).

The differential bus uses two lines for each signal and measures the voltage difference between the two signals. Differential retains more signal quality than single-ended and is not as sensitive to noise, allowing for a longer cable length. The maximum allowable length of a differential bus is 25 meters (82 feet) for all types buses (narrow, wide, fast, Fast-20).

Connectors

Narrow devices (50-pin) use the following connectors:

- 50-pin low-density clip Centronics-type (external)

  This is a large connector that is similar to a printer cable. This type of connector is gradually being replaced by the Micro D connector, described below.

- 50-pin high density Micro D (using thumbscrews or small clips) (external)

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- This connector is similar to a D-type connector, but smaller and with smaller pin holes placed closer together.
- 50-pin low-density ribbon (usually internal to the host)

Wide devices (68- pin) use the following connectors:

- 68-pin high density Micro D connector (external)

  This connector is similar to a D-type connector, but longer and slimmer and with smaller pin holes placed closer together. This connector is becoming the most common.
- 68-pin high density ribbon (usually internal to the host)

NOTE

For more complete information on the theory and operation of the SCSI bus, you may want to go to:

Adaptec - major supplier in SCSI buses
www.adaptec.com
Symbios Logic - Working drafts of SCSI specifications
www.symbios.com/x3t10

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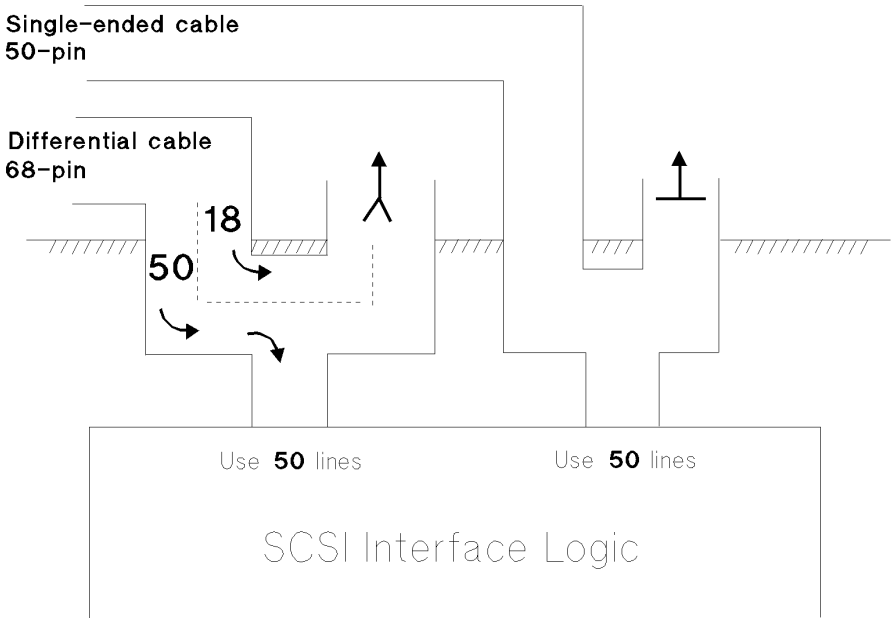
The SCSI Bus and This Jukebox

This jukebox is a “fast and narrow” SCSI device with the capability to connect to either a narrow single-ended bus or a wide differential bus.

In the diagram below, note that the single-ended (50-line) bus is brought directly onto the jukebox internal narrow bus. The differential interface accepts a wide bus in its 68-pin connector, but only *uses the 50 data and control lines* that comprise the "*narrow*" portion of the bus. The other 18 lines that provide the upper IDs and data of the wide bus are ignored. Note that all lines of the wide bus pass through the two 68-pin differential connectors. The wide bus is maintained as a wide bus.

The *single-ended* connectors are 50-pin and can accept only a narrow bus. The *differential* ports use 68-pin connectors and can accept (and pass through) a wide bus.

Figure B-1 **Single-ended and Differential Interfaces on This Jukebox**



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Adding Devices to the Bus

When considering adding other devices to the jukebox bus, you should consider the following:

- Will adding a device onto a bus with this jukebox interfere or degrade the performance of the jukebox or the device that is added?
- If the decision is made to add other devices to the jukebox bus, what SCSI requirements must be observed to make sure the bus will work?

Before addressing some questions involved in deciding whether to place another device on the jukebox bus, we can say that, as a general rule, HP recommends that this jukebox be the only device on a bus. The recommendation is the same whether the bus is single-ended or differential. One reason for the recommendation is that interactions on a SCSI bus can be complicated. The more devices on the bus, the more chance for problems. Another reason is that this jukebox, when fully utilized, is capable of using up the full bandwidth of the bus. Performance of one or all of the devices on the bus can be affected.

Consider the quantity of data that the bus will have to carry, the frequency of data transfer, and the priority of this data transfer in your business. If you are using the jukebox as a backup or archive device, the demands on the jukebox will be different than if the jukebox is used for near-online storage where requests for data are more random in both frequency and amount. If you expect to be using the jukebox at the same time as the other device, or devices, you should expect to experience a drop in performance.

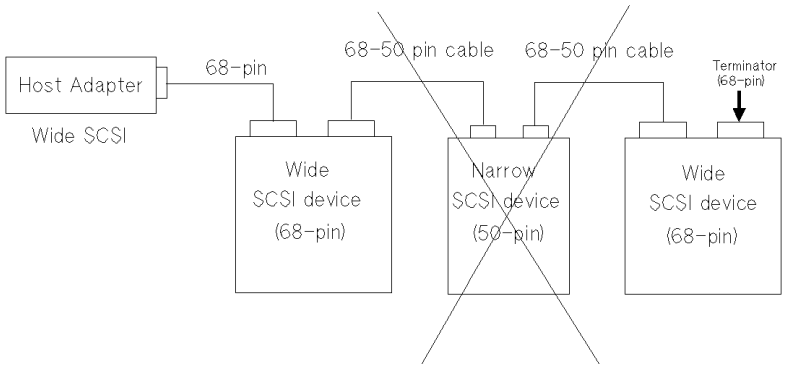
Mixing Wide and Narrow Devices

As a preliminary note to this discussion, HP highly recommends that you do NOT mix wide and narrow buses.

Connecting devices of the same bus width, such as all narrow (50-pin) is a simple process of daisy-chaining the devices, and terminating both ends of the bus. However, mixing narrow and wide devices invites problems.

This method should only be implemented by an experienced systems integrator who is highly knowledgeable about SCSI. Since the wide (68-pin) buses need more data lines on the bus for their data transfer, it's necessary that the cables connecting the devices are 68 pin. The data would be lost if the devices were set up as depicted in the figure below.

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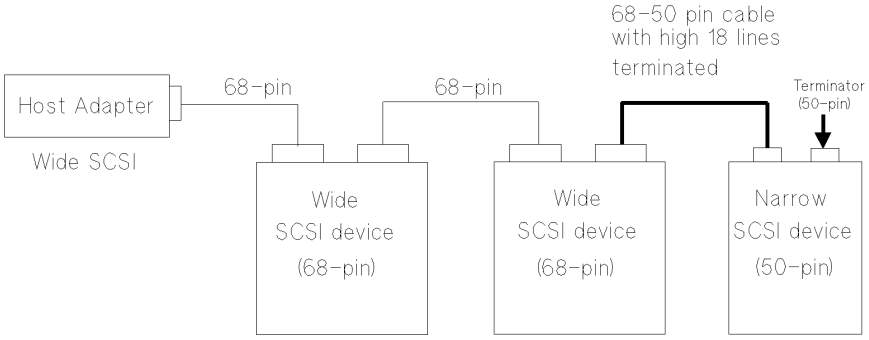
Because a narrow device only has a 50-pin connector, it will not transmit the eight extra bits of data needed for the wide device on the end of the bus. Using only 50 lines also prevents the narrow device from passing along the IDs of devices at 8 or above.

The lower eight data lines transfer commands and messages, allowing all devices, regardless of size, to co-exist on the bus. However, data transfers and device addressing occur on the higher bits. Since a narrow device can't "see" the upper 8 data bits, that translates to it not being able to "see" wide devices with a SCSI ID above 8. Remember the host adapter is a device, so if you're mixing wide and narrow devices on the bus, your host adapter must be at an ID that all devices can address.

If mixing narrow and wide devices is unavoidable, use the configuration described below:

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The SCSI Bus and This Jukebox



It is very important that the 68-pin to 50-pin cable is properly configured to assure that the eighteen truncated lines are properly terminated.

Cable Lengths

Observe SCSI cable maximum lengths;

- 3 meters (9.8 feet) for the single-ended bus (remember, this is a fast device)

- 25 meters (82 feet) for the differential bus.

Termination

- Refer to the documentation that comes with your particular adapter to see how to apply termination.
- Use active terminators to reduce noise sensitivity.
- Never terminate the bus at any place except the physical ends. Terminating the bus in the middle will probably cause the bus to become inoperable or operate in a state that could cause data loss.
- If devices are on both sides of the host computer adapter (such as hard drives internal to the host computer and a jukebox external to the host computer) make sure that there is no termination on the host computer adapter. Termination must be only on the device inside the computer that is farthest from the host adapter and the physical device inside the computer, and the last physical device external to the computer.

General

- Do not connect a single-ended bus to a differential bus. Damage can occur.

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NOTE

For current information on issues relating to installation, operation, and support of jukeboxes, you may want to go to:

HP Optical Storage
www.hp.com/isgsupport/optical/index.html

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Default SCSI IDs in the Jukebox When Using Basic SCSI Addressing and When Using LUN Mode

Table B-1 **Default SCSI and LUN Setings in 4- and 6-Drive Jukeboxes**

BUS 1	LUN Mode OFF		LUN Mode ON	
	ID	LUN	ID	LUN
JKBX ID	6	0	6	0
DRV 1 ID	5	0	6	1
DRV 2 ID	4	0	6	2
DRV 3 ID	3	0	6	3
DRV 4 ID	2	0	6	4
DRV 5 ID*	1*	0*	6*	5*
DRV 6 ID*	0*	0*	6*	6*

* if installed

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Table B-2 Default SCSI and LUN Settings in the 10-Drive Jukebox

BUS 1	LUN Mode OFF		LUN Mode ON	
	ID	LUN	ID	LUN
JKBX ID	6	0	6	0
DRV 1 ID	5	0	6	1
DRV 2 ID	4	0	6	2
DRV 3 ID	3	0	6	3
DRV 4 ID	2	0	6	4
BUS 2	**LUN Mode OFF**		**LUN Mode ON**	
	ID	**LUN**	**ID**	**LUN**
DRV 5ID	5	0	5	0
DRV 6 ID	4	0	5	1
DRV 7 ID	3	0	5	2
DRV 8 ID	2	0	5	3
DRV 9 ID	1	0	5	4
DRV 10 ID	0	0	5	5

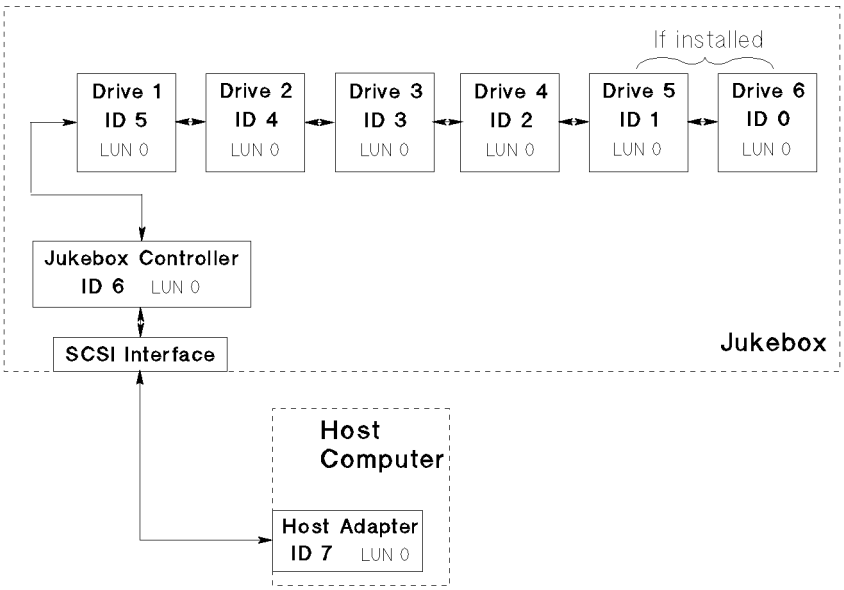
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Table B-3 LUN Mapping of a 10-Drive Jukebox if "DRVs BUS 1" ID is Changed to an ID Different Than the Jukebox Controller (IDs used are examples)

BUS 1	LUN Mode ON		BUS 2	LUN Mode ON	
	ID	LUN		ID	LUN
JKBX ID	6	0			
DRV 1 ID	5	0	DRV 5ID	4	0
DRV 2 ID	5	1	DRV 6 ID	4	1
DRV 3 ID	5	2	DRV 7 ID	4	2
DRV 4 ID	5	3	DRV 8 ID	4	3
			DRV 9 ID	4	4
			DRV 10 ID	4	5

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Figure B-2 **Four or Six Drives, One Host Adapter, Basic SCSI Addressing**



Displays on the Control Panel

Under `CHOOSE LUN MODE *` menu >> `LUN MODE OFF`

Under `SCSI IDs * > VIEW IDs * >`

BUS 1 * >> `JXBX ID 6 LUN 0`

`DRV 1 ID 5 LUN 0`

`DRV 2 ID 4 LUN 0`

`DRV 3 ID 3 LUN 0`

`DRV 4 ID 2 LUN 0`

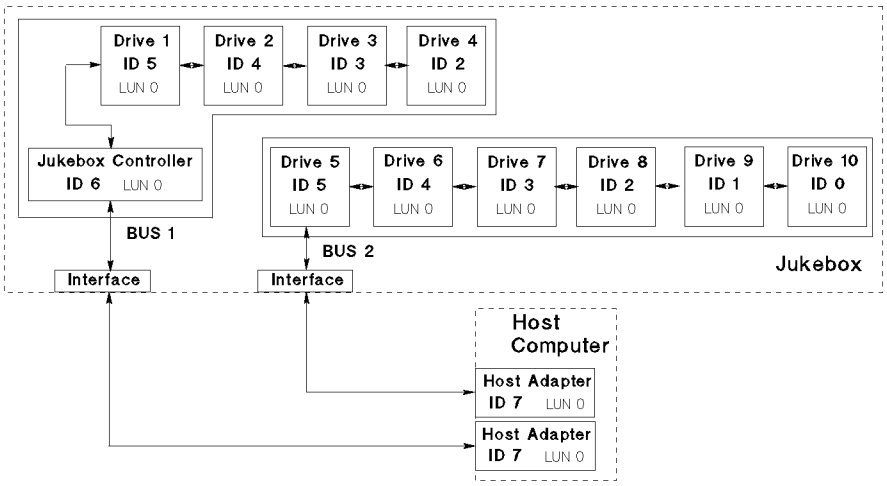
`DRV 5 ID 1 LUN 0` (if installed)

`DRV 6 ID 0 LUN 0` (if installed)

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Default SCSI IDs in the Jukebox When Using Basic SCSI Addressing and When Using LUN Mode

Figure B-3 **10 Drives, Two Host Adapters, Basic SCSI Addressing**



Displays on the Control Panel

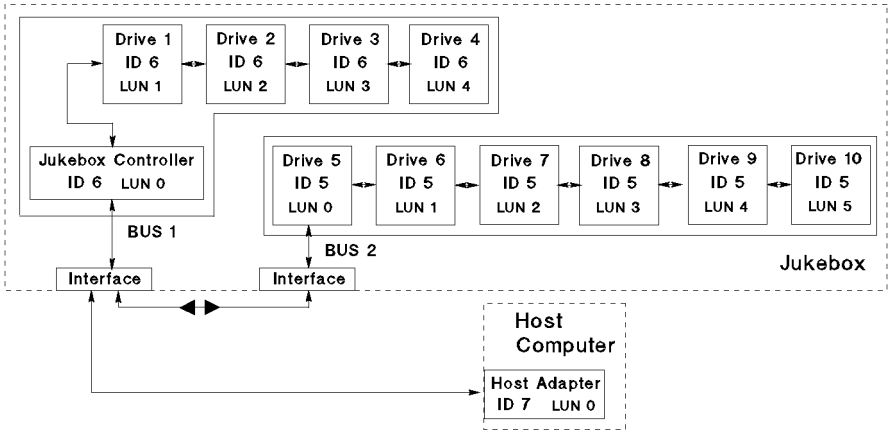
Under `CHOOSE LUN MODE *` menu >> `LUN MODE OFF`

Under `SCSI IDs *` > `VIEW IDs *` >

```
                    BUS 1 * >>  JXBX ID 6 LUN 0
                                DRV 1 ID 5 LUN 0
                                DRV 2 ID 4 LUN 0
                                DRV 3 ID 3 LUN 0
                                DRV 4 ID 2 LUN 0
                    BUS 2 * >>  DRV 5 ID 5 LUN 0
                                DRV 6 ID 4 LUN 0
                                DRV 7 ID 3 LUN 0
                                DRV 8 ID 2 LUN 0
                                DRV 9 ID 1 LUN 0
                                DRV 10 ID 0 LUN 0
```


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Figure B-4 **Ten Drives, One Host Adapter, LUN Addressing, Controller/Drives Use Same IDs**



Displays on the Control Panel

Under `CHOOSE LUN MODE *` menu >> `LUN MODE ON`

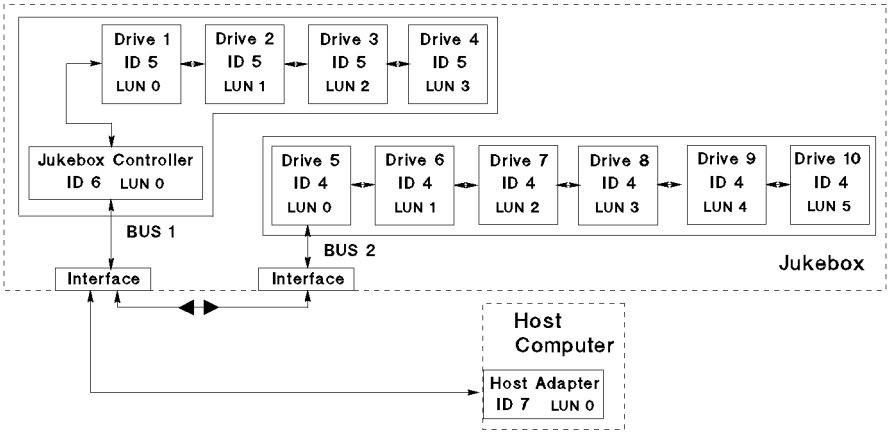
Under `SCSI IDs *` > `VIEW IDs *` >

```
BUS 1 * >>  JXBX ID 6 LUN 0
            DRV 1 ID 6 LUN 10
            DRV 2 ID 6 LUN 2
            DRV 3 ID 6 LUN 3
            DRV 4 ID 6 LUN 4
BUS 2 *  >> DRV 5 ID 5 LUN 0
            DRV 6 ID 5 LUN 1
            DRV 7 ID 5 LUN 2
            DRV 8 ID 5 LUN 3
            DRV 9 ID 5 LUN 4
            DRV 10 ID 5 LUN 5
```


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Default SCSI IDs in the Jukebox When Using Basic SCSI Addressing and When Using LUN Mode

Figure B-5 **Ten Drives, One Host Adapter, LUN Addressing, Controller/Drives Use Different IDs**



Displays on the Control Panel

Under `CHOOSE LUN MODE *` menu >> `LUN MODE ON`

Under `SCSI IDs *` > `VIEW IDs *` >

```
                    BUS 1 *  >  JXBX ID 6 LUN 0
                               DRV 1 ID 5 LUN 0
                               DRV 2 ID 5 LUN 1
                               DRV 3 ID 5 LUN 2
                               DRV 4 ID 5 LUN 3
                    BUS 2 *  >> DRV 5 ID 4 LUN 0
                               DRV 6 ID 4 LUN 1
                               DRV 7 ID 4 LUN 2
                               DRV 8 ID 4 LUN 3
                               DRV 9 ID 4 LUN 4
                               DRV 10 ID 4 LUN 5
```


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Table B-4 Possible Additional SCSI Addresses Available

No. of Drives	LUN Mode OFF (basic SCSI addressing)	LUN Mode ON - (drives and jukebox controller use the same ID)[a]	LUN Mode ON - (drives and jukebox controller use different IDs)
4	Two SCSI addresses are available for connecting other devices.	Six SCSI addresses are available for connecting other devices to Bus 1.	Five SCSI addresses are available for connecting other devices to Bus 1.
6	No additional devices can be connected.		
10	Two SCSI addresses are available on Bus 1 and 1 SCSI address is available on Bus 2 for connecting other devices. (In a 10 drive jukebox, four drives are mounted on Bus 1 and 6 drives are mounted on Bus 2.)	If Bus 1 and Bus 2 are daisy-chained, five SCSI addresses are available for other devices. If Bus 1 and Bus 2 are NOT daisy-chained, six SCSI addresses are available on Bus 1 and six SCSI addresses are available on Bus 2.	If Bus 1 and Bus 2 are daisy-chained, four SCSI addresses are available for other devices. If Bus 1 and Bus 2 are NOT daisy-chained, five SCSI addresses are available on Bus 1 and six SCSI addresses are available on Bus 2.

a. Not recommended. This configuration may cause a negotiated slower rate of data transfer.

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C Safety and Regulatory Information

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Overview of this Appendix

This appendix contains important safety and regulatory information for the United States, Finland, Sweden, Germany, United Kingdom, European Union, and Japan.

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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, 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.

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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.**

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United Kingdom Telecommunications Act 1984

The HP SureStore Optical 660ex and 1200ex jukeboxes are approved under Approval Number NS/G/1234/J/100003 for indirect connection to Public Telecommunication Systems within the United Kingdom.

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Declaration of Conformity

Declaration of Conformity

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Co.

Manufacturer's Address: Storage Systems Division
700 71st Avenue
Greeley, CO 80634 USA

declares, that the product

Product Name: Optical Disk Library

Model Numbers: C1104x,C1105x,C1106x,C1107x,C1108x,C1109x,C1110x,C1111x,C1112x
(x is any alpha, except z, with or without suffixes)

Product Options: All Options

conforms to the following Product Specifications:

Safety: EN 60950: 1992+A1+A2:1993+A3:1995/IEC950(1991)+A1+A2+A3
EN 60825-1 (1994) / IEC825-1 (1993), Laser Class 1

EMC: EN 55022 (1994) / CISPR 22 (1993), Class A
EN 50082-1 (1992)
prEN 55024-2 (1992) / IEC 1000-4-2 (1995), 4 kV CD, 8 kV AD
prEN 55024-3 (1991) / IEC 1000-4-3 (1995), 3 V/m
prEN 55024-4 (1993) / IEC 801-4-4 (1988), 1 kV Peak Power Lines
0,5 kV Signal Lines
EN 61000-3-2 (1995) / IEC 1000-3-2 (1995), Harmonics
EN 61000-3-3 (1995) / IEC 1000-3-3 (1994), Flicker

Supplementary Information:

The product herewith complies with the requirements of the following Directives and carries the CE marking accordingly: the EMC Directive 89/336/EEC -the Low Voltage Directive 73/23/EEC (including 93/68EEC)

The Manufacturer listed above declares that this product has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of 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 instruction manual, 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: a) Reorient or relocate the receiving antenna, b) Increase the separation between the equipment and receiver, c) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected, or d) Consult the dealer or an experienced radio/TV technician for help.

Change or modification of this equipment not expressly approved by Hewlett-Packard could void the user's authority to operate this equipment. Only use the cables, connectors, power cords, and accessories supplied with this equipment or expressly approved by Hewlett-Packard.

Storage Systems Division March, 1998 Greeley, Colorado, USA

For Regulatory Compliance Information ONLY, contact:

Australian: Product Regulations Manager, Hewlett-Packard, Australia Ltd., 31-41 Joseph Street, Blackburn, Victoria 3130, Australia

European: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department TRE, Herrenberger Strasse 130, D-71304 Boblingen (FAX:+49-7031-14 3143

USA: Product Regulations Manager, Hewlett-Packard Company, 700 71st Avenue, Greeley, CO 80634 USA, (Phone: 970-350-5600).

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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)

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Turvallisuusyhteenveto

Laserturvallisuus

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP SureStore Optical 660ex ja 1200ex 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

HP SureStore Optical 660ex ja 1200ex 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	680 nm
Teho	60 mW
Turvallisuusluokka	3B

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English Translation of Finland Regulatory Information

LASER SAFETY SUMMARY

LASER SAFETY

CLASS 1 LASER PRODUCT (The same in Swedish.)

HP SureStore Optical 660ex and 1200ex 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.

(The same warning in Swedish.)

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.

(The same warning in Swedish.)

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

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Japanese VCCI Statement

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。

This equipment is in the Class A category information technology equipment based on the rules of Voluntary Control Council For Interference by Information Technology Equipment (VCCI). When used in a residential area, radio interference may be caused. In this case, user may be required to take appropriate corrective actions.

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Glossary

C-D

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.

disk See optical disk.

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

E-L

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.

M-O

magneto-optical A type of optical technology which uses a laser to read from and write to a magnetic layer on an optical disk. To write, a spot on the magnetic layer is heated by a laser to a point where it can be magnetically altered by the write magnetic head. To read, a light from the laser is reflected from the spot. The magnetic alteration causes the reflected light to be polarized in one direction (interpreted as a "1") or the opposite direction (interpreted as a "0").

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

multifunction drive An optical disk drive that supports both rewritable and write-once 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 write-once mode.

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optical disk A term synonymous with the 5.25-inch magneto-optical disk. There are two types of optical disks used in jukeboxes: rewritable and write-once.

optical disk library See jukebox.

R-T

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

SCSI An acronym for the Small Computer Systems Interface. See Appendix B for a more detailed explanation of SCSI and SCSI buses.

storage slot An are of the autochanger 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.

W

write-once An additional operating mode available with multifunction drives. When a write-once 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.

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