

OptiPac 7698NH User's Manual

Manual No. 11-17698-01
Revision A

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Bering Engineering LLC
www.bering.com

OVERVIEW

Important Notice

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The information contained in this document is subject to change without notice. Every reasonable precaution has been taken in the preparation of this manual to insure its accuracy. However, Bering Engineering LLC assumes no liability resulting from any errors or omissions in this manual, or from the use of the information contained herein, nor does it make a commitment to update the information contained herein.

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HP 7906H is a trademark of Hewlett Packard Corp.

Important FCC Information

This peripheral device generates and uses radio frequency energy and if it is not installed and used properly, that is, in strict accordance with this manual, it may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class-A computing device in accordance with the specifications in subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. However, there is no guarantee that interference will not occur in a particular installation. Operation of this equipment in a residential area is likely to cause interference and is up to the user, at his own expense, to take whatever measures may be required to correct the interference. You can test to see whether this equipment does cause interference with radio or television reception by turning the disk drive off and on. If it is causing interference, try to correct the problem by one or more of the following measures:

Be sure you're using shielded interconnect cables.

Reorient the receiving antenna.

Relocate the drive with respect to the receiver.

Move the receiver away from the disk drive, or vice versa.

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

If necessary, consult your dealer or an experienced radio/television technician for additional suggestions. You may also find a booklet prepared

by the Federal Communications Commission helpful. It is entitled How to Identify and Resolve Radio-TV Interference Problems. Request Stock No. 004-000-00345-4, from the U.S. Government Printing, Washington, D.C., 20402.

- ▲ **Warning** To prevent fire or shock hazard, do not expose the unit to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Printing History

If the Revision level of the manual does not change from one printing to the next, this indicates that the newer printing is a maintenance upgrade, i.e. typographic errors, page references, etc.

New revision levels of the manual indicate a new rewrite of the manual. This may include new ROM Version of the OptiPac subsystem. If the new revision is because of a difference in the operating procedures for the system, the ROM Version associated with the manual Rev letter will be listed in the ROM Ver column. You can determine the ROM Version of your OptiPac by using the front panel LCD controls. See chapter 4 for details.

If you have upgraded your OptiPac to a later version than the last one listed in the following table, you should contact Bering Customer Service to determine the proper revision of the OptiPac 7698NH User's Manual required for your OptiPac subsystem.

Date = Date this manual was printed

Rev = Revision level of this manual

ROM Ver = Applicable subsystem ROM level

Date	Rev	Rom Ver	Changes to manual
February 2017	A	D.24	

Warranty Statement

OptiPac products sold in the U.S.A. and Canada carry a standard one year warranty against defects in materials and workmanship.* During the warranty period, Bering will, at its option, repair or replace equipment which proves to be defective.

OptiPac CF Card media is warranted against defects for one year from the date of purchase. If the media becomes defective, Bering will replace it upon receipt of the defective media from the customer.

All repairs will be performed at the factory. Any other arrangement, such as on-site service, will be at your expense. Before any product is returned for repair, a Return Materials Authorization number (RMA#) must first be obtained from a Customer Service representative.

Customer Service
Bering Engineering LLC

The selection and use of media, supplies, and consumables is the customer's responsibility. Bering reserves the right to exclude from the warranty any damage caused by misuse of the product, unauthorized modification, shipping damage, non-Bering-approved media, interface, software, or cleaning supplies.

NO OTHER WARRANTY IS EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. BERING SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES, DIRECTLY OR INDIRECTLY RELATED TO THE USE OR PERFORMANCE OF BERING PRODUCTS.

For products sold outside the U.S.A. and Canada, contact your local Bering distributor, representative, or dealer for warranty terms.

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Congratulations on purchasing what we think is the finest removable media system on the market. Bering OptiPac drives are built for years of reliable service. We're sure you'll agree as you begin to work with your drive.

Features

The Bering OptiPac 7698NH subsystem is a removable Compact Flash Card (CF Card) drive with a 1GB fixed disk. In this manual we refer to the Bering OptiPac disk drive as OptiPac and all HP systems as *computer* unless otherwise indicated. Serving a wide range of storage needs, the OptiPac series come in the following configurations with HP7906H emulation. This provides a plug and play solution to the aging inventory of HP7906H disk drives.

CF Card

- 7698NH – a CF Card drive with a 1.0GB fixed disk. The CF Card which can store up to 1.3GB of data. This means:
 - Your storage capacity is limited only by the number of cards you use.
 - Your data is portable and secure. Just remove the card from the drive and take it with you, or store it in a safe place.
 - Your data card is protected in a durable plastic case.
 - Your OptiPac can be used to back up the data on fixed disks if your backup software supports that option.
 - Each CF Card contains multiple rings, so physical removal is not required to change to another ring. Each ring emulates a 10MB HP 7906H cartridge.
- Security erase functions provide secure erasure of individual rings, groups of rings or entire CF Cards.
- Local backup and restore functions provide image backups of any ring or group of rings to any location on the subsystem.
- LCD display provides information on local functions.

The OptiPac provides fast, reliable storage that's always on hand. The installation procedure is almost identical for all models. No software or hardware modifications are required. All OptiPacs support the latest HP disk command sets.

The fixed disk and each CF Card is split into 10.1 MB Rings, which emulate a 10MB cartridge in the HP 7906H. The fixed disk has 99 (H00–H98) rings and each CF Card has up to 99 (00–98) rings. Selecting a ring from the front panel of the OptiPac is equivalent to changing the cartridge in the 7906H. The first ring on the fixed disk (H00) emulates the fixed disk in the 7906H.

The rings on the fixed disk will all have an ID on the LCD display beginning with “H.” Each ring on the CF Card is just a number. So ring 23 on the hard drive will be displayed as “H23,” while ring 23 on the CF Card will be displayed as “23.”

- ▲ **DANGER:** Use of the OptiPac other than as prescribed in this manual may result in exposure to hazardous invisible laser radiation if the case is open during operation. Avoid direct exposure to laser radiation. Do not operate the OptiPac while the cover is removed.

Compatibility

The OptiPac 7698NH drives support CF Cards with maximum 8GB. However, only a maximum of 99 rings is available.

Only the 2GB CF Card is recommended by Bering. For capacities and specifications of CF Cards refer to Appendix A “Specifications.”

Conventions in this Manual

We'll use the following conventions to make the information in this manual more clear and predictable:

- The buttons on the OptiPac are indicated by underlined capital letters alone followed by the word *button*, e.g., ENTER button.
- A bold font, **LIKE THIS**, indicates text you should see on the LCD.

Unpacking

Carefully unpack your OptiPac near the spot where you want to set it up, noting the packing method as you go. Save the packing materials, they'll come in handy if you ever want to ship the unit.

Besides this manual, you'll find:

- The OptiPac
- A CF Card
- An HP-IB cable
- A power cable

If any item is missing, please contact your dealer or Bering Customer Service at support@bering.com.

Installing the Disk Drive

This chapter describes the installation procedure for the OptiPac and is divided into two sections. The “Quick-Start Procedure” section enables experienced users to begin operation right away. The “Connecting the OptiPac Drive” section helps new users connect the disk drive before going on to the next chapter for additional operating instructions.

Quick-Start Procedure

This section describes the quick-start procedure to set up the OptiPac for use on a Harris system. Most of the parameters are already set at the factory. There may be some adjustments necessary before the OptiPac can operate in your particular environment. Refer to Chapter 4 for detailed instructions.

The default parameter settings are as follows:

Time: Pacific time
Date: current date
HP-IB address: 0

1. Turn off your computer and connect the OptiPac.
If necessary, refer to the next section in this chapter.
2. Turn on the OptiPac and wait for the self-test to end.
3. When the test ends without incident, the date and time should be displayed on the front panel LCD along with the current ring.
4. Check the time and date. Adjust the clock if required.
5. Check the HP-IB address in the configuration function. Make sure all devices on the HP-IB have a unique address.
6. Load a CF Card.
7. Format the CF Card from the Removable Utilities Menu. This step is not necessary if the CF Card was previously formatted.
8. Format the fixed disk from the Fixed Disk Utilities.
9. Turn on your computer.
10. Begin using the OptiPac.

Connecting the OptiPac Drive

These instructions are for connecting an OptiPac 7698NH model to an HP-IB based computer with the OptiPac HP-IB connector.

- ▲ **Caution** *Turn off your computer and unplug the power cord from the wall outlet. Disconnect any other cables attached to the back panel of your computer that may be in your way.*

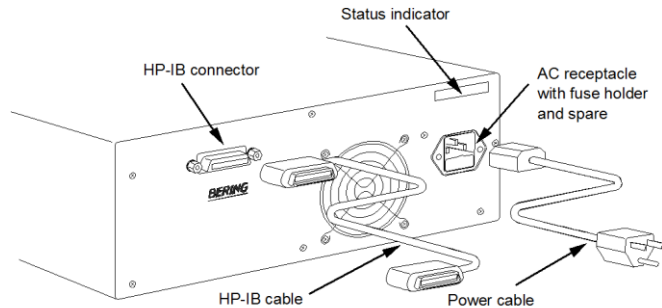


Figure 2-1: Connecting the OptiPac to an HP-IB computer

1. Turn off your computer and the OptiPac drive.
2. Connect one end of the HP-IB cable to the HP-IB connector on the back of the computer and the other end to the HP-IB connector on the back panel of the OptiPac. Tighten the thumb screws by hand.
3. Connect the power cable to the back of the OptiPac. Make sure there is at least one inch of space around the sides and two inches at the back of the drive.
4. Plug the OptiPac and the computer into three-pronged (grounded) electrical outlets or a surge protector.

Be sure that the outlets actually are grounded — that the third prong really is connected to a ground. The OptiPac should be on the same circuit as your computer.

- ▲ **Caution** *Make sure that other equipment or appliances which might generate electrical noise or a power surge (such as electric heaters) are on separate circuits.*

Operating the Disk Drive

5. Turn on the OptiPac, the computer, and any other peripherals.

7698NH Controls

Figure 3-1 illustrates all controls and indicators required for operating the OptiPac 7698NH.

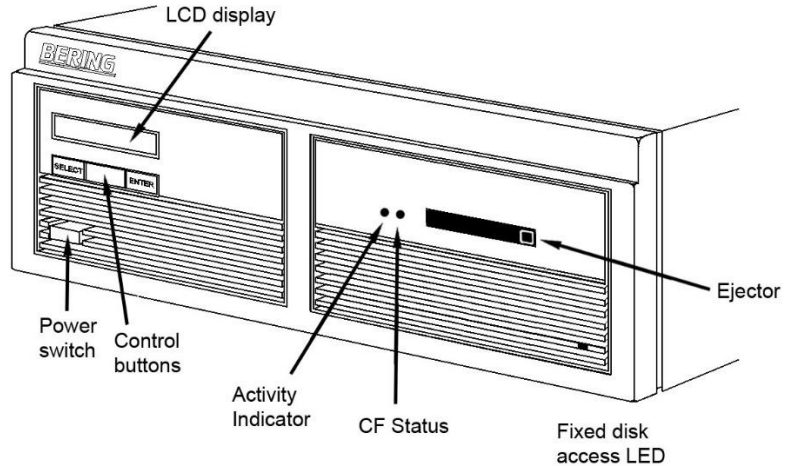


Figure 3-1: OptiPac 7698NH front panel

CF Card Status	The status LED flashes when CF drive is not ready. When the CF Card is loaded and ready, the status LED remains off.
Activity Indicator	The activity LED remains lit anytime the drive is being accessed.
Ejector	For easy removal of CF Card.
Fixed Disk Access Indicator	The fixed disk access indicator is on the lower right side of the front panel. Whenever the fixed disk is accessed the indicator will flash on and off.

Loading a CF Card

1. Remove the CF Card from the plastic storage case.
2. Insert the CF Card into the drive with the label side up.
3. Push the CF Card in until seated. The CF Card Status will stop blinking when it is ready.

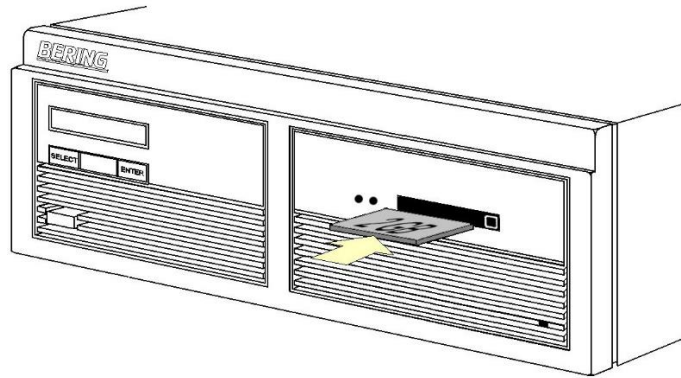


Figure 3-2: Loading a CF Card in the OptiPac

If the OptiPac shows Off-line on the LCD, you must use the Change Ring function to change to an On-line ring.

New CF Cards

The first time a CF Card is used it may require a format from the Removable Disk Utilities. Using an unformatted CF Card can cause loss of data. Most CF Cards are preformatted at the factory and do not require formatting. The LCD will indicate when an unformatted CF Card has been inserted into the drive.

Unloading a CF Card

1. Push the Ejector in to unload the CF Card.

The CF Card will pop out part way and the CF Card Status starts blinking.

2. Remove the CF Card carefully and place it in the protective plastic storage case immediately.

OptiPac System Functions

This chapter describes the OptiPac configuration and operating procedures. The OptiPac 7698NH features a push-button operation for performing configuration and operating procedures. This procedure is based on a hierarchical structure of system functions displayed on the disk drive's LCD. All procedures can be performed using the two front panel push-button controls: SELECT and ENTER.

These instructions should be used in conjunction with your specific computer's configuration procedure in your computer's user manual.

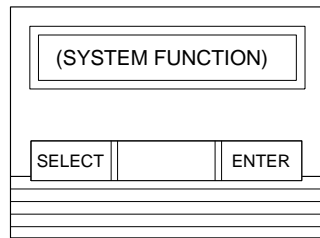


Figure 4-1: Front panel LCD and push-button controls

All system operations are performed by first selecting a function and then entering it for execution. The SELECT button enables you to scroll through all the available system functions and select desired choices. The ENTER button enables you to execute the chosen function.

- To select a system function, press the SELECT button until the desired function appears on the LCD.
- To execute the chosen function or display its options, press the ENTER button.
- If you want to abort the current operation, press the SELECT and ENTER buttons simultaneously.

The abort function is allowed only during certain operations.

- To scroll or step backward in a menu, press and hold the SELECT button first and then the ENTER button.

System Menu

This section contains a menu structure of the commands which can be accessed from the front panel LCD display and controls.

Time / Date

- Change ring

Configurations

- Change HPIB address

- Change format switch

- Use 12/24 hour clock

- Set time

- Set date

- Return to main

Utilities

- Bering Model

- ROM Version

- Serial Number

Ring Utilities

- Change Ring

- Label Ring

- Copy Ring

- Compare Ring

- Backup Rings

- Restore Rings

- Clear Ring

- Clear Rings

- Erase Ring

- Erase Rings

- Previous menu

Fixed Disk Utilities

- Show Disk Information

- Spin down/up disk

- Verify Disk

- Format Disk

- Erase Disk

- Previous menu

Removable Disk Utilities

- Show CF Card Information

- Verify CF Card

- Format CF Card

- Erase CF Card

- Previous menu

Tests

- Test LCD display

- Show command trace

- Return to main

Display time and date

Main Menu

The default display on the front panel LCD is the time/date. When the SELECT button is pressed, the first choice of the Main Menu will be displayed. You can scroll the Main Menu by repeatedly pressing the SELECT button. To execute the selected function or to enter the menu, press the ENTER button. The time/date display will look appear similar to the following display when the system is first powered on and when the unit is on-line:

**4:15:12PM H34
LABEL ...**

Note Attempting to perform any function on an unformatted CF Card will cause the following message to display:

**Media not or CF Card not
initialized! Initialized!**

The CF Card must be formatted from the Removable Utilities Menu before it can be used. The following options are available from the Main Menu:

**Change Ring
Configurations
Utilities
Display time and messages**

Change Ring

This function allows you to change the current ring. When you return to the Main Menu, the current ring will be displayed. Rings that begin with 'H' indicate a ring on the hard disk. Ring H00 emulates the hard disk in a 7906H, and is not accessible from the front panel controls, except when copying to or from it. All other rings emulate removable disks.

The fixed disk contains 99 rings, and 2GB CF Card contains 99 rings.

1. Press the SELECT button until the **Change Ring** function is displayed on the Main Menu.
2. Press ENTER to select this option. You will see a display similar to this.

Change ring H02 LABEL ...

3. Use the SELECT button to scroll through the ring selections until you see the desired ring, then press the ENTER button.

Off-line

When a CF Card is removed from the drive, the OptiPac will go Off-line as indicated by the front panel LCD. When a CF Card is inserted in the drive, you must use the Change Ring function to put the drive back Online.

Configurations

This function sets the HP-IB address, changes format switch, selects the 24 hour clock format, and sets the date and time. See the "Configurations Menu" section for detailed information.

Utilities

This function shows CF Card/disk information; verifies, and formats the CF Card, formats the fixed disk; erases CF Card data; performs ring functions, and performs test functions. Refer to the "Utilities Menu" section for detailed information.

Display Time and Messages

This function exits the Main Menu and displays the current time, the current ring, and ring label.

Configurations Menu

This function sets the HP-IB address, changes the format switch, and sets the date and time.

1. Press the ENTER button when the **Configurations** function is displayed on the Main Menu.

The Configurations menu will offer these functions:

Change HP-IB address
Change format switch
Use 24 / 12 hour clock
Set time
Set date

2. Press the SELECT button to scroll through the functions.
3. To return to the Main Menu, press the ENTER button when you see Return to main.

Change HP-IB Address

This function sets the HP-IB address of the OptiPac. The values range from 0 to 7. When selecting the HP-IB address, make sure each device on the same HP-IB chain has a unique address.

1. Press the ENTER button to execute this function.

The following message will appear:

HP-IB address = 0

2. Press the SELECT button to scroll through all the choices, then press the ENTER button to select the correct address.

The OptiPac will reset to the new value.

Change Format Switch

This emulates the switch on the front panel of a HP 7906H disk drive. Setting the switch to on enables formatting of the current ring from the computer.

To change the setting of the format switch between on and off follow these instructions:

1. Press the ENTER button when the **Configurations** function is displayed on the Main Menu.
2. Use the SELECT button to scroll through the selections until you see **Change format switch**.

3. Press the ENTER button to select this option. The LCD display will now show the following message:

**Change format
switch (on)**

4. Press the ENTER button to select this option or the SELECT button to scroll between off and on and then press ENTER at the desired setting.

Use 12 / 24 Hour Clock

This function changes the clock display on the front panel LCD from a 12 hour clock to a 24 hour clock or vice versa.

1. Press the ENTER button until the **Use 12 / 24 hour clock** function is displayed on the Configurations Menu.
2. Press ENTER to select this option.
3. Use the SELECT button to toggle between 12 and 24. Then press the ENTER button when the desired option is displayed.

Set Time

This function allows you to change the time.

1. With the **Set time** function displayed, press the ENTER button. You'll see:

**Set time
3:15:27 PM**

2. The actual time displayed will vary. The hour field will be blinking.
3. Press the SELECT button to increment the hour.
4. Holding the SELECT button will cause the hour to increment (through twelve hours) continuously. If you continue to hold down the SELECT button, incrementing will speed up.
5. To decrement the hour, press and hold the SELECT button, and then press the ENTER button. Again, decrementing will be continuous and speeds up if you hold the buttons down.
6. When the correct hour is displayed, press the ENTER button.
7. SELECT and ENTER the correct minute setting just as you did the Hour.

8. SELECT and ENTER the correct setting for seconds.

6. SELECT and ENTER the correct AM/PM setting.

You will now be returned to the **Set time** option.

Set Date

This function allows you to change the date. Although the current date is not displayed, it is written to the CF Card and fixed disk whenever they are formatted or written to from the front panel controls. This information can be displayed in the Show Disk Information and Show CF Card Information functions.

1. With the **Set date** function displayed, press the ENTER button. You'll see:

Set date
Wed Feb 12, 1992

The actual date displayed will vary. The day field will be blinking.

2. Press the SELECT button to increment the day.

Holding the SELECT button will cause the day to increment (through twelve hours) continuously. If you continue to hold down the SELECT button, incrementing will speed up.

To decrement the day, press and hold the SELECT button, and then press the ENTER button. Again, decrementing will be continuous and speeds up if you hold the buttons down.

3. When the correct day is displayed, press the ENTER button. The month field will start to blink.

4. SELECT and ENTER the correct month setting just as you did the day.

5. SELECT and ENTER the correct date setting.

6. SELECT and ENTER the correct year setting.

After you have made this setting, you'll be returned to the **Set date** option.

Utilities Menu

This function shows CF Card information, verifies, and formats the CF Card, one side at a time; copies and erases CF Card data; formats and verifies the fixed disk; and performs test functions via these options:

- **MODEL NUMBER** — Displays the model number of the OptiPac.
- **ROM VERSION** — Displays the firmware version and release date.
- **SERIAL NUMBER** — Displays the serial number of the OptiPac.
- **RING UTILITIES** — Changes rings; labels rings, copies rings, compares rings, backs up and restores rings, and clears rings. Refer to the “Ring Utilities” section for detailed information.
- **FIXED DISK UTILITIES** — Shows disk information; verifies, erases, and formats the disk. Refer to the “Fixed Disk Utilities” section for detailed information.
- **REMOVABLE DISK UTILITIES** — Shows information; unloads, verifies, erases and formats the CF Card.
- **TESTS** — Tests the LCD, verifies, and certifies media. Refer to the “Tests Menu” section for detailed information.

To access and exit these utilities ...

1. Press the ENTER button when the **Utilities** function is displayed on the Main Menu.

The Utilities menu appears and displays the following functions:

Bering Model
ROM Version
Serial Number
Ring Utilities
Fixed Disk Utilities
Removable Disk Utilities
Tests
Return to main

2. Press the SELECT button to scroll through the information or functions.
3. When you see **Return to main**, press the ENTER button to return to the Main Menu.

Ring Utilities

This function changes rings; labels rings; copies rings, compares, backs up, and restores groups of rings; and clears rings.

1. Press the ENTER button when the **Ring Utilities** function is displayed on the Utilities menu.

The Ring Utilities menu then appears displaying these functions:

Change Ring
Label Ring
Copy Ring
Compare ring
Backup Rings
Restore Rings
Clear Ring
Clear Rings
Erase Ring
Erase Rings
Previous menu

2. Press the SELECT button to scroll through the information or functions.
3. You can return to the Utilities Menu by pressing the ENTER button when you see Previous menu.

Note Ring H00 can be erased or overwritten with the following functions:
 Copy Ring, Backup rings, Restore Rings, Clear rings, and Erase rings

Change Ring

This function allows you to change the current ring. When you return to the Main Menu the current ring will be displayed. Rings that begin with 'H' indicate a ring on the hard disk. Ring H00 emulates the hard disk in a 7906H, and is not accessible from the front panel controls.

All other rings emulate removable disks.

1. Press the SELECT button until the **Change Ring** function is displayed.
2. Press ENTER to select this option. You will see a display similar to this.

**Change ring H02
LABEL ...**

3. Use the SELECT button to scroll through the ring selections until you see the desired ring, then press the ENTER button.

Label Ring

This function allows you to change the label of the current ring. The Main Menu will display the current ring label. The label can be up to 13 characters in length.

1. Press the SELECT button until the **Label Ring** function is displayed on the Ring Utilities menu.
2. Press the ENTER button to select this option.
3. The current label will display
4. Press the SELECT key to scroll through the characters (A-Z, 0-9, and other miscellaneous characters) for the desired digit. A space is represented by an underscore character.
5. Press the ENTER key to select a letter and go to the next digit.

Copy Ring

This function allows you to copy any ring to any other ring. The label of the source ring will also be copied to the target ring.

1. Press the SELECT button until the **Copy Ring** function is displayed on the Ring Utilities menu.
2. Press ENTER to select this option.
3. Use the SELECT button to scroll through the copy from ring selections until you see the desired source ring, then press the ENTER button.
4. Use the SELECT button to scroll through the copy to ring selections until you see the desired target ring, then press the ENTER button.

You will see a display similar to this:

**H02 LABEL ...
to 03 No**

5. Press the SELECT button to change **No** to **Yes** and press the ENTER button to start the copy process.

Compare Ring

This function allows you to compare any ring to any other ring.

1. Press the SELECT button until the **Compare** function is displayed on the Ring Utilities menu.
2. Press ENTER to select this option.
3. Use the SELECT button to scroll through the “from” ring selections until you see the desired source ring, then press the ENTER button.
4. Use the SELECT button to scroll through the “to” ring selections until you see the desired ring, then press the ENTER button.

You will see a display similar to this:

**H62 LABEL ...
to 063 No**

5. Press the SELECT button to change **No** to **Yes** and press the ENTER button to start the compare process.

A successful compare will display the following message:

**Compare equal at
1:52:45PM**

An unsuccessful compare will show the following message:

**Data not same
on verify**

Backup Rings

This function allows you to back up a group of rings from one location to another. The destination can be from one drive to the other or from one area of a drive to another area of the same drive. This function begins by asking for the beginning, or first ring, of the group to be backed up, then asks for the beginning, or first ring, where the

group of rings is to be backed up to, and then asks for the number of rings to be backed up.

The default values backup the highest numbered rings on the fixed disk equivalent to the number of rings on the CF Card (99 on the 1.3GB CF Card), so rings H35 through H98 will be backed up.

1. Press the SELECT button until the **Backup Rings** function is displayed on the Ring Utilities menu.
2. Press ENTER to select this option

You will see the following display:

**From ring
H00**

3. Press the SELECT button to scroll through all of the rings and press ENTER when the desired beginning or first source ring is displayed.

You will see a display similar to the following:

**To ring
00**

4. Use the SELECT button to scroll through the rings and press ENTER when the desired beginning or first target ring is displayed.

You will see a display similar to the following:

**H00 to
00 99 rings NO**

5. Press the SELECT button to toggle between **Yes** and **No** on the display and press ENTER when the correct selection is displayed.

If you selected Yes, the selected number of rings will be backed up from the source rings to the target rings.

Restore Rings

This function allows you to restore a group of rings from one location to another. The destination can be from one drive to the other or from one area of a drive to another area of the same drive. This function begins by asking for the beginning ring of the group to be restored, then asks for the beginning, or first ring, where the group of

rings is to be restored to, and then asks for the number of rings to be restored.

The default values will restore all rings on the 1.3GB CF Card (99) to the all 99 rings of fixed disk.

1. Press the SELECT button until the **Restore Rings** function is displayed on the Ring Utilities menu.
2. Press ENTER to select this option

You will see the following display:

```
From ring
00
```

3. Press the SELECT button to scroll through all of the rings and press ENTER when the desired beginning or first source ring is displayed.

You will see a display similar to the following:

```
To ring
H00
```

4. Use the SELECT button to scroll through the rings and press ENTER when the desired beginning or first target ring is displayed.

You will see a display similar to the following:

```
00 to
H00 99 rings NO
```

5. Press the SELECT button to toggle between **Yes** and **No** on the display and press ENTER when the correct selection is displayed.

If you selected Yes, the selected number of rings will be restored from the source rings to the target rings.

Clear Ring

This function will clear the current ring by writing 0's over every sector of the ring. This function also clears the label.

1. Press the SELECT button until the **Clear Ring** function is displayed on the Ring Utilities menu and press ENTER to select this option.

2. Press the SELECT button to toggle between **Yes** and **No** and press the ENTER button when your selection is displayed.

After confirming your selection the clear function will begin. A display similar to the following will display.

Clearing ring 25
nnnnnn

When the clear function is complete, the label of the cleared ring will be blank.

Clear Rings

This function is identical to the Clear ring function, except it will clear a sequential range of rings. You will be asked for a beginning ring and the number of rings to be cleared.

1. Press the SELECT button until the **Clear Rings** function is displayed and press ENTER to select this option.
2. Use the SELECT button to scroll through the clear from ring selections until you see the desired beginning ring, then press the ENTER button.
3. Use the SELECT button to scroll through the number of rings selections until you see the desired number of rings to be cleared, then press the ENTER button. The value will default to the number of rings between the current ring and the end of the drive you are currently on.

▲ **Caution**

Remember to count the first ring as one of the rings to be cleared. So, to clear rings 25 through 30 will be a total of six rings—not five.

You will see a display similar to this:

Clear 06 rings
25: LABEL No

4. Press the SELECT button to change **No** to **Yes** and press the ENTER button to start the erase process.

A display similar to the one in the Clear ring function above will display the progress of the Clear Rings function and the current pattern.

Erase Ring

This function will erase the current ring by performing a wipe delete.

This wiping of data is done by first filling the sectors with the hexadecimal characters 00 then FF, and finally, a random hexadecimal number. Then a verification is performed on the fourth pass. This method prevents any traces of data from being read, even with sophisticated techniques.

1. Press the SELECT button until the **Erase Ring** function is displayed on the Ring Utilities menu.
2. Press ENTER to select this option.
3. Press the SELECT button to toggle between **Yes** and **No** and press the ENTER button when your selection is displayed.

A display similar to the following will display.

Erasing ring 25
nnnnnnn

The time of completion will be displayed when the erasure is complete.

Erase Rings

This function is identical to the Erase Ring function, except it will erase a sequential range of rings. You will be asked for a beginning ring and the number of rings to be erased.

1. Press the SELECT button until the **Erase Rings** function is displayed on the Ring Utilities menu.
2. Press ENTER to select this option.

You will see a display similar to this:

From ring 22:
LABEL

3. Use the SELECT button to scroll through the erase from ring selections until you see the desired beginning ring, then press the ENTER button.

The following message will display:

Number of rings
= 42

4. Use the SELECT button to scroll through the number of rings selections until you see the desired number of rings to be erased, then press the ENTER button. The value will default to the number of rings between the current ring and the end of the drive you are currently on.

▲ **Caution**

Remember to count the first ring as one of the rings to be erased. So, to erase rings 25 through 30 will be a total of six rings—not five.

You will see a display similar to this:

Erase 42 rings
22: LABEL ..?No

5. Press the SELECT button to change **No** to **Yes** and press the ENTER button to start the erase process.
6. A display similar to the one in the Erase Ring function above will display the progress of the Erase Rings function.

Erasing ring 22
nnnnnn

Fixed Disk Utilities

This function shows disk information; verifies, and formats the fixed disk, and spins the disk down or up.

1. Press the ENTER button when the **Fixed Disk Utilities** function is displayed on the Utilities menu.

The Fixed Disk Utilities menu then appears displaying the following functions:

Show Disk Information
Spin down/up disk
Verify Disk
Format Disk
Erase Disk
Previous menu

2. Press the SELECT button to scroll through the information or functions.
3. You can return to the Utilities Menu by pressing the ENTER button when you see Previous menu.

Show Disk Information

This function displays information similar to the following list about the fixed disk.

Number of rings
Ring capacity
Ring size (cylinders)
Ring cylinder size (tracks)
Ring track size in sectors
Total sectors in ring
Total capacity of drive (Kbytes)
Logical sector size
Physical sector size
Date disk last formatted*
Date disk last written*
Date disk last accessed*

* Only if disk is formatted.

1. Press the ENTER button to scroll through each field.

Spin Down / Up Disk

This function will spin the fixed disk drive down or up. Using this function will help prevent wear on a drive which is constantly powered on.

1. Press the ENTER button to execute this function.

If the drive is already spun down, you will see the following message:

**Spin up
Disk**

2. Press the ENTER button to spin the drive up.

The drive will spin up at the first sign of activity on the HP-IB bus, or when the LCD front panel controls access the drive.

▲ Caution

If the computer system attempts to access the OptiPac while it is spun down, the drive will automatically spin up, but the computer system may time-out before the drive is ready, causing a system error.

Verify Disk

This function scans every sector on the fixed disk for defects. If a bad sector is found, this function will terminate with the LCD showing the error.

1. Press the ENTER button to start.

As the verification progresses, the record address is updated. The following message will appear:

**Verify Disk
record *nnnnnn***

2. To abort the function at any time, press and hold both the SELECT and ENTER buttons simultaneously until the following message appears:

**Abort received.
wait ...**

Release the buttons. The function will abort at the appropriate time and you'll see:

User abort

3. Press the ENTER button to exit.

When you've exited the function, the following message will appear:

**n complete
verifies done**

4. Press the ENTER button to return to the Fixed Disk Utilities menu.

Format Disk

This function is used to format the fixed disk if the FORMAT utility is not available in your host system. The time required is approximately 0.5 hours.

▲ **Caution** *The Format Disk function will erase all data on the fixed disk.*

1. Press the ENTER button when the **Format Disk** function is displayed on the Fixed Disk Utilities menu.

The Format Disk menu then appears displaying the following message:

**Erase entire
media? NO**

2. Press the SELECT button to toggle between **YES** and **NO**.
3. Select **YES** and press the ENTER button to continue.

The following message will appear:

**1 vol 256 bps
continue? No**

If you choose **No** the **FORMAT** option will quit and you'll be returned to the Removable Disk Utilities menu.

4. Use the SELECT button to select **Yes** and press the ENTER button to start the format process. The following message will appear:

**Formatting
DISK**

Formatting will take up to 2 hours. When the process is complete, the following message will appear:

**DISK
Formatted**

5. Press the ENTER button to return to the Fixed Disk Utilities menu.

Erase Disk

This function will erase the entire fixed disk by performing a wipe delete. This wiping of data is done by filling the sectors with hexadecimal characters in sequential passes. This wiping of data is done by first filling the sectors with the hexadecimal characters 00 then FF, and finally, a random hexadecimal number. Then a verification is performed on the fourth pass. This method prevents any traces of data from being read, even with sophisticated techniques.

▲ **Caution** *The erased fixed disk will be unreadable and must be formatted again to be usable.*

1. Press the ENTER button when the **Erase Disk** function is displayed on the Fixed Disk Utilities menu.

The Erase Disk menu will appear and ask:

**Erase entire
media? NO**

2. Use the SELECT button to select **YES** and press the ENTER button to continue.

Upon successful completion, the following message will appear:

**DISK erased
04:35:12PM**

3. Press the ENTER button to return to the Fixed disk utilities menu.

Removable Disk Utilities

This function shows CF Card information, verifies, formats, and erases the CF Card.

1. Press the ENTER button when the **Removable Disk Utilities** function is displayed on the Utilities menu.

The Removable Disk Utilities menu then appears displaying the following functions:

Show CF Card Information
Unload CF Card
Verify CF Card
Format CF Card
Erase CF Card
Previous menu

2. Press the SELECT button to scroll through the information or functions.
3. You can return to the Utilities Menu by pressing the ENTER button when you see Previous menu.

Show CF Card Information

This function displays information similar to the following list about one side of the CF Card.

Total rings
Ring capacity
Ring size (cylinders)
Ring cylinder size (tracks)
Ring track size in sectors
Sectors in ring
Total capacity of drive (Kbytes)
Logical sector size
Physical sector size
Date CF Card last formatted*
Date CF Card last written*
Date CF Card last accessed*

* Not displayed for unformatted CF Cards.

1. Press the ENTER button to scroll through each field.

Verify CF Card

This function scans every sector on the CF Card for defects. If a bad sector is found, this function will terminate with the LCD showing the error.

1. Press the ENTER button to start.

As the verification progresses, the record address is updated. The following message will appear:

Verify CF Card
record nnnnnn

2. To abort the function at any time, press and hold both the SELECT and ENTER buttons simultaneously until the following message appears:

Abort received.
Wait ...

3. Release the buttons.
The function will abort at the appropriate time and you'll see:

User abort

4. Press the ENTER button to exit.

When you've exited the function, the following message will appear:

n complete
verifies done

5. Press the ENTER button to return to the Removable Disk Utilities menu.

Format CF Card

All new CF Cards must be formatted with this utility before using on the computer system. This function is used to format the CF Card if the FORMAT utility is not available in your host system.

1. Press the ENTER button when the **Format CF Card** function is displayed on the Removable Disk Utilities menu.

The Format CF Card menu then appears displaying the following message:

Erase entire
media? **NO**

2. Press the SELECT button to toggle between **YES** and **NO**.
3. Select **YES** and press the ENTER button to continue.

The following message will appear showing the number of volumes (vols) and the sector size (bps = bytes per sector):

1 vol 256 bps
continue? **NO**

4. Use the SELECT button to select **YES** and press the ENTER button to start the format process.

The following message will appear:

Formatting
CF Card

Formatting will take up to 2 hours. When the process is complete, the following message will appear:

CF Card
Formatted

5. Press the ENTER button to return to the Removable Disk Utilities menu.

Erase CF Card

This function will erase the entire CF Card by performing a wipe delete. This wiping of data is done by first filling the sectors with the hexadecimal characters 00 then FF, and finally, a random hexadecimal number. Then a verification is performed on the fourth pass. This method prevents any traces of data from being read, even with sophisticated techniques.

▲ **Caution** *The erased side of the CF Card will be unreadable and must be formatted again to be usable.*

1. Press the ENTER button when the **Erase CF Card** function is displayed on the Removable Disk Utilities menu.

The Erase CF Card menu will appear and ask:

Erase entire
media? **NO**

2. Use the SELECT button to select **YES** and press the ENTER button to continue.

Upon successful completion, the following message will appear:

**CF Card
erased**

3. Press the ENTER button to return to the Removable Disk Utilities menu.

Tests Menu

This function shows statistics, tests the LCD, and certifies media.

1. Press the ENTER button when the **Tests** function is displayed on the Utilities menu.

The Tests menu will appear displaying the following functions:

Test LCD display

Show command trace

2. Press the SELECT button to scroll through the information or functions.
3. To return to the Utilities Menu, press the ENTER button when you see Previous menu.

Test LCD Display

This function is used to make sure the LCD is working properly.

1. Press the ENTER button to start the test.

All of the dots on the LCD will be turned on. If there are any missing dots (except the last character with an *), contact the Bering Technical Support Department for a replacement.

2. Press the ENTER button again to exit.

Show Command Trace

This function is for troubleshooting purposes by Technical support personnel. It displays the last sequence of commands sent to the drive.

Caring for the Disk Drive & CF Card

This chapter describes how to care for your OptiPac and CF Cards. It is divided into two sections. The “General Safeguards” section tells you what to look out for. The “CF Card Care” section explains how to handle removable CF Cards. The “Preventive Maintenance” section will explain user maintenance procedures. As long as you protect your OptiPac from hazards, it will provide you with years of service.

General Safeguards

To protect the OptiPac:

- Always format a new CF Card before using. Even if it is labelled as "Formatted," it may not be formatted at the correct sector size. Use the Format CF Card function in the Removable Disk Utilities menu to format the CF Card.
- To avoid overheating, place it where the air can circulate around it. Be particularly careful to avoid blocking the cooling vent at the rear of the unit.
- Make sure it is plugged into a grounded electrical outlet. Verify that the outlet actually is grounded—that the third prong really is connected to a ground. The OptiPac should be on the same circuit as your computer.
- Make sure that other equipment or appliances which might generate electrical noise or a power surge (such as heaters) are on separate circuits.
- Do not expose your OptiPac to extreme heat or cold. Prolonged exposure to excessive heat, direct sunlight, or freezing conditions will harm the drive.
- Keep it away from moisture, dirt, and contaminants such as spilled liquids, steam, or excessive dust. Do not smoke near the OptiPac.
- Do not apply cleaners or lubricants to any part of the drive.
- Avoid exposure to magnetic fields such as those emitted by magnets, telephones, televisions, speakers, or large electric motors.
- Never bump the OptiPac when it's running.

- Always set the OptiPac upright on a flat surface.

▲ **Caution** *Never transport the OptiPac with a CF Card in the drive. This could damage the media.*

You don't need to worry about leaving the OptiPac on for a long time — it doesn't use much power. It's normal for the drive to feel warm (but not hot) after it's been running for a while.

If the OptiPac does get hot, make sure the fan is running properly, the vent at the rear is not blocked, and that the unit is placed where air can circulate around it.

CF Card Care

Removable CF Cards are highly reliable and have a very long service life if you care for them properly.

- Store them properly. Remove the CF Card from the drive when you are not using it and store it in its protective case in a cool, dry, safe location.
- Do not leave the CF Card in the OptiPac after it is powered down.
- Keep your CF Cards clean and dry and out of harm's way. Protect CF Cards from dirt, spills, and smoke.
- Do not disassemble the CF Card.
- Use them at the correct temperature. Avoid using CF Cards at temperatures above 104° F (40° C) or below 41° F (5° C). To avoid permanently damaging data, the drive, CF Card, and room should all be about the same temperature within the above operating range when you insert the CF Card into the drive.
- Do not move the drive with a CF Card loaded.

Preventive Maintenance

Bering subsystems will provide extended and reliable service as long as the drives are properly maintained. The Bering OptiPac subsystems require no preventive maintenance. If you have questions concerning the proper preventive maintenance procedures please contact Bering Customer Support personnel

Troubleshooting & Service

This chapter describes basic trouble-shooting procedures. It is divided into three sections: “Before You Do Anything Else,” “Error Codes and LCD Messages,” and “If You're Still Having Problems.”

Before You Do Anything Else

Often, problems you're having can be resolved by verifying that:

- The CF Card has been formatted from the Removable Disk Utilities menu.
- The power cord is securely connected to the OptiPac and a wall outlet.
- The power is switched on, and the AC fuse in the back of the drive is not blown.
- To check the fuse, use a screwdriver to open the fuse compartment on the back of the OptiPac. If the fuse is blown, replace it with the spare in the compartment, or buy a replacement. The proper replacement is a “slow blow” 1.6 Amp, 250 Volt fuse.
- None of the pins on the cable connectors are loose, broken, or shorted.
- All cables are installed correctly.
- A CF Card is properly loaded in the OptiPac and the drive is ready before you start your computer. If you try to start up or otherwise access an OptiPac without a CF Card, the computer may not recognize the drive.
- Each peripheral connected to your computer has a unique HP-IB address.

Error Codes and LCD Messages

Occasionally, after installing an OptiPac, the system will display a disk initialization error code upon start up. It is sometimes possible to solve the problem by following the LCD instructions. Sometimes the LCD will display an error code in the form of a number. This error code indicates a problem that may be associated with another hardware device other than the OptiPac. If this occurs, shut down

your system and restart it again. If the problem still occurs, contact Bering Technical Support at support@bering.com.

If You're Still Having Problems

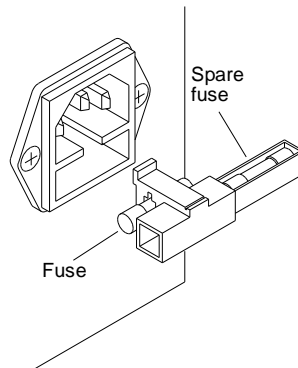
START-UP PROBLEMS

If you are able to start up your system from other disk drive but not the OptiPac, the system files on the OptiPac may be damaged.

If you're unable to start up from an OptiPac, try starting up the computer with another disk. If you're still unable to start up, the problem is with the computer rather than the OptiPac. Refer to the troubleshooting section in your computer manual for more information.

Fuse Replacement

If the drive fails to power on the AC fuse may be blown. The fuse is located in the AC input jack.



WHEN ALL ELSE FAILS...

If you still have problems after following the procedures in this chapter, contact Bering Technical Support. When you call be ready to tell the service representative:

- The model number and serial number of the OptiPac, the type of computer you're using, the operating system, and the software version.
- Any error messages that have appeared.
- A description of the problem(s) and the steps you've taken to correct it.

▲ Caution *Never remove the cover of the OptiPac box. This voids the warranty.*

Specifications

CF Card Drive

The specifications listed in the table are for a 2GB CF Card.

<i>CAPACITY</i>	Rings	99	max
	Ring capacity	10.1	MB
	Minimum CF Capacity	128	MB
	Maximum CF Capacity	8	GB
<i>RELIABILITY</i>	MTBF	500,000	POH
<i>ENVIRONMENTAL (operating)</i>	Temperature	0 to 65	°C
		32 to 149	°F
	Relative humidity	5 to 90	% non-condensing
	Vibration	0.3	G, 5 to 500Hz sine
	Shock pulse	10	G, 11 ms half sine
	Altitude	0 ~ 5,000	meters
		0 ~ 16,000	feet
<i>(non-operating)</i>	Temperature	-40 to 90	°C
		-40 to 194	°F
	Shock	90	G, 3 ms
	Altitude	0 ~ 18,000	meters
0 ~ 60,000		feet	

1 GB Fixed Disk

<i>CAPACITY</i>	Rings	99	
	Ring capacity	10.1	MB
<i>PERFORMANCE</i>	Rotation speed	4500	rpm
	Average latency	5.5	ms
	Minimum seek time	3	ms
	Average seek time	10	ms
	Maximum seek time	20	ms
	HP-IB burst transfer rate	1	MB/sec
	HP-IB average transfer rate	940	KB/sec
	SCSI average transfer rate	4.1	MB/sec
	SCSI maximum transfer rate	5	MB/sec
<i>RELIABILITY</i>	MTBF	500,000	POH
<i>ENVIRONMENTAL (operating)</i>	Temperature	0 to 50	°C
		32 to 122	°F
	Temperature gradient	20	°C/hour
		36	°F/hour
	Relative humidity	8 to 85	% non-condensing
	Vibration	0.5	G, 5 to 500Hz sine
	Shock pulse	10	G, 11 ms half sine
	Altitude	-60 ~ 3,000	meters
		-200 ~ 10,000	feet
<i>(non-operating)</i>	Temperature	-40 to 65	°C
		-40 to 149	°F
	Relative Humidity	5 to 95	%
	Vibration	2.0	G, 22 to 400 Hz sine
	Shock pulse	60	G, 11 ms half sine
	Altitude	-60 ~ 12,200	meters
-200 ~ 40,000		feet	

GENERAL

<i>Power Requirements</i>	Line voltage	96 - 240	volts
	Line frequency	47 - 63	Hz
	Current	0.5	Amps
	Fuse	1.6A, 250V	"Slow blow"
<i>Interface</i>	Interface HP-IB	Amigo command set	
	Transfer Rate	1	MB/sec
<i>Dimensions & Weight</i>	Dimension	5"x 12.8"x 11"	
		12.7 x 32.5 x 27.9	cm
	Shipping weight	30	lbs.
		13.6	Kg
<i>Environmental (Operating)</i>	Temperature	5 to 40	°C
		41 to 104	°F
	Temperature gradient	10	°C/hour
	Relative humidity	5 to 90	% non-condensing
	Vibration	0.5	G rms
	Shock	10	G, 11 ms half sine
	Altitude	3,000	meters
	10,000	feet	
<i>(non-operating)</i>	Temperature	-40 to 60	°C
		-40 to 140	°F
	Relative Humidity	5 to 95	% non-condensing
	Vibration	3	G rms random
		1	G 0-peak
	Shock	25	G no damage
	Altitude	-60 ~ 15,300	meters
		-200 ~ 50,000	feet
<i>Accessories</i>	CF Card, 2G		ACCS-3092
	HP-IB Cable 1.0m (3.3 ft.)		ACCS-7110
	HP-IB Cable 2.0m (6.7 ft.)		ACCS-7115
	Rack Mount Kit - 19" x 5.25" EIA		ACCS-7204
	Rack Mount Kit - 19" x 7.00" EIA		ACCS-7204HN

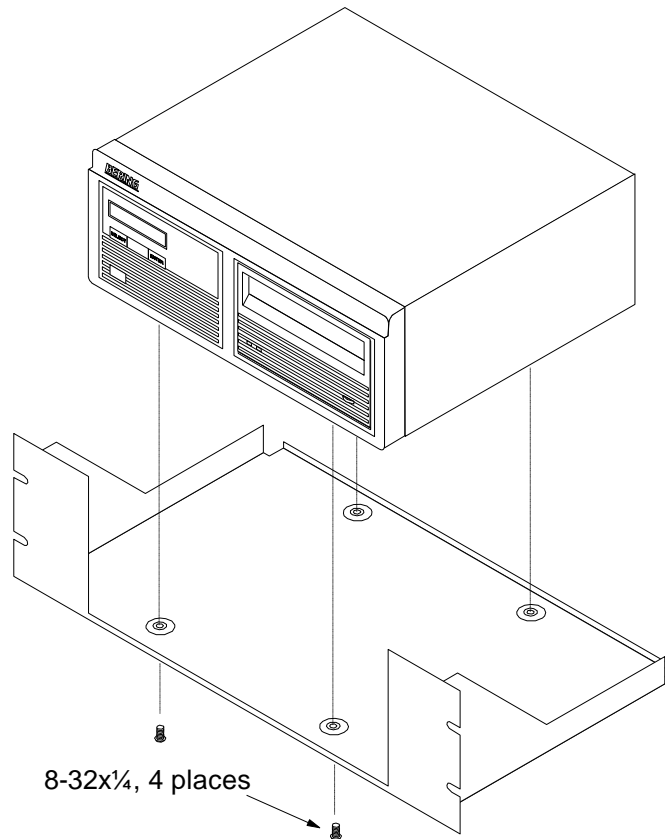
Rack Mount

B

Installation

If you purchased the rack mount kit, ACCS-7204 from Bering, these instructions will show the installation procedures. It fits in a standard 19" rack cabinet with 2.25 in. vertically centered mounting holes.

1. Remove the front feet from the Bering drive by removing two screws in each foot. Each foot can be turned around, front to rear, and reinstalled.
2. Mount the Bering drive to the rack mount shelf with four 8-32x1/4 screws inserted from the bottom through the shelf into the bottom of the drive.



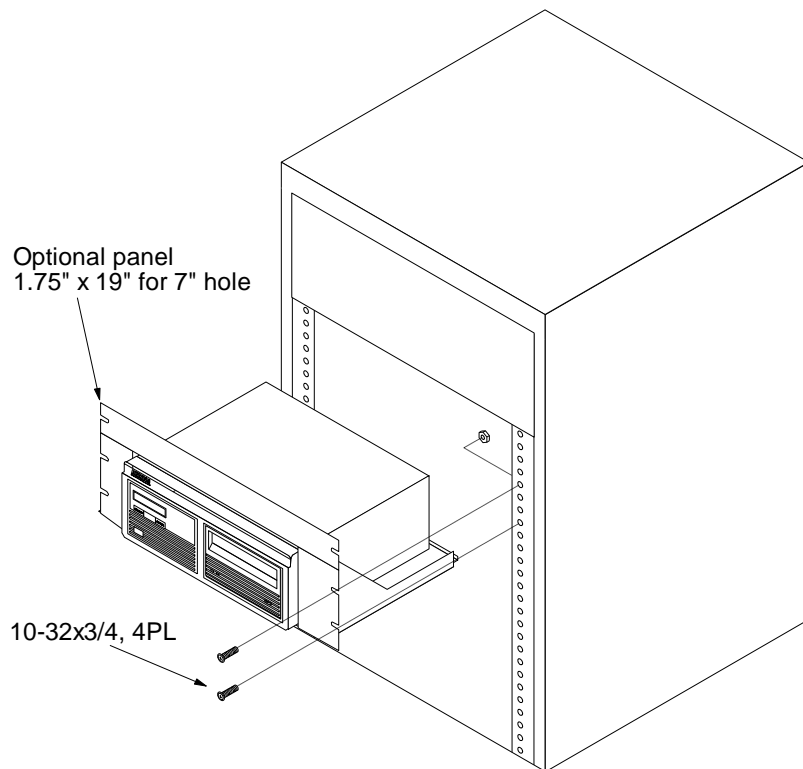
This step may be performed by turning the drive upside down and placing the shelf on the drive while aligning the screw holes.

▲ Caution

The following steps require two people to install the unit in a cabinet.

The rack requires 5.25 inches of vertical clearance. The optional 1.75" x 19.0" panel increases the vertical clearance to 7.0".

3. Insert the shelf with the Bering drive into the cabinet and hold it in place.
4. Insert the four 10-32x3/4 screws from the front through the holes in the cabinet. Screw the 10-32 nuts on the screws from the rear of the cabinet and tighten.
5. If you have the optional 1.75" x 19.0" panel, insert it above the rack mount assembly and attach it to the rack with two 10-32x3/4 screws.



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