Getting Started with Your HP 9153C Disk Drive

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Printing History

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update; the edition does not change when an update is incorporated.

Many product updates do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one-to-one correspondence between product updates and manual updates.

Edition 1 . . . . November 1987

Update 1 . . . . January 1989

Edition 2 . . . . May 1989

Edition 3 . . . . May 1990

Safety Symbols

The following safety symbols are used in this manual:

Caution

This symbol calls attention to a condition or situation that could damage the product.

Warning

This symbol calls attention to a condition or situation that could cause injury to the user.

FCC Statement

FOR U.S.A. ONLY

The Federal Communications Commission (in 47 CFR 15.838) has specified that the following notice be brought to the attention of the users of this product.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B 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 in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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:

- Re-orient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different branch circuit.

If necessary, the user should consult the dealer or authorized field service representative for additional suggestions. The Federal Communications Commission has prepared a booklet entitled *Interference Handbook* which may be helpful to you. This booklet (stock number 004-000-004505-7) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

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This apparatus is a class 2 ITE (information apparatus
which may be used in residential and adjacent areas)
which meets the VCCI standards to prevent radio
interference in residential and adjacent areas. However,
this apparatus may become a source of radio interference
if used within close range of radio or television receivers.
To ensure compliance, this apparatus must be operated
according to instructions included with the product.

Contents

1

About Your Disk Drive

Introduction

The HP 9153C Disk Drive is a random access data storage device designed for engineering, industrial, and business applications. The HP 9153C Disk Drive includes a hard disk mechanism and an optional flexible disk mechanism that uses high-density, 2-megabyte flexible disks. The HP 9153C Disk Drive also includes a Hewlett-Packard Interface Bus (HP-IB) controller that uses Subset 80 (SS/80) device protocol.

Disk Drives and Disks

A disk drive is an electromechanical device that stores computer data on a disk and retrieves computer data from a disk. Depending on the option you ordered, your disk drive may include a hard disk mechanism and a flexible disk mechanism, or only a hard disk mechanism.

A **hard disk mechanism** contains electronic and mechanical parts to spin a hard disk, write data on a hard disk, and read data from a hard disk. A **flexible disk mechanism** contains electronic and mechanical parts to spin a flexible disk, write data on a flexible disk, and read data from a flexible disk.

A **disk** looks like a small phonograph record, but can be flexible or hard. The surface of a disk is coated with a magnetic layer that enables data to be stored in digital format.

A flexible disk is made from flexible plastic, and can be removed from the flexible disk drive. There are three types of flexible disks: single-sided, double-sided low density, and double-sided high density. Data can be stored on only one side of a single-sided disk, or on both sides of a double-sided disk.

A hard disk is made from rigid aluminum and cannot be removed from the disk drive. A hard disk is often called a fixed disk or a Winchester disk.

HP 9153C Options

The HP 9153C Option 010 includes a 10-megabyte hard disk mechanism and a 3.5-inch, double-sided, flexible disk mechanism. Option 011 includes a 10-megabyte hard disk mechanism only.

The HP 9153C Option 020 includes a 20-megabyte hard disk mechanism and a 3.5-inch, double-sided, flexible disk mechanism. Option 021 includes a 20-megabyte hard disk mechanism only.

The HP 9153C Option 040 includes 40 megabytes of hard disk capacity and a 3.5-inch, double-sided, flexible disk mechanism. Option 041 includes 40 megabytes of hard disk capacity only.

The HP 9153M upgrade kit is available to add 20 megabytes of hard disk capacity to options 010, 011, 020 and 021 disk drives. Contact your dealer or the nearest HP Sales Office for details.

Caution

Prior to installing an HP 9153M upgrade kit, you must back up your disk drive to prevent data loss during the installation process.

Getting Started

This manual will help you set up your HP 9153C
Disk Drive for use on your computer system. The
following steps will help you get started. When you
have completed these steps, put this manual into a
three-hole book such as your system binder and keep it
as a reference.

1. Follow the steps in chapters 2 through 4.

2. If you need to order additional supplies for your disk
   drive, refer to chapter 5.

3. If you need technical information about your disk
   drive, refer to appendix A.

4. If an error message appears on your system monitor
   while operating your disk drive on your computer
   system, refer to appendix B.

5. If you need more specific information about using
   your disk drive with your computer, refer to one of
   the appendixes C through G.

- One flexible disk and label (not included with options 011, 021 and 041).

- *Getting Started With Your HP 9153C Disk Drive* manual.

3. Inspect your disk drive for any physical damage that may have occurred during shipment.

4. If you find any damage, notify your dealer or the nearest HP Sales Office and file a claim with the carrier.

Caution

Do not turn on your disk drive with the plastic shipping disk in the flexible disk port. Damage to the flexible disk mechanism will result.
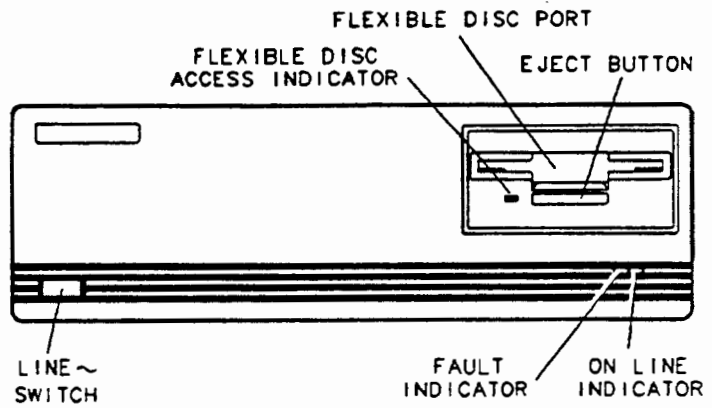
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5. If your disk drive has a flexible disk port, slide the locking tab on the plastic shipping disk to the right, press the eject button, and remove the plastic shipping disk from the flexible disk port.
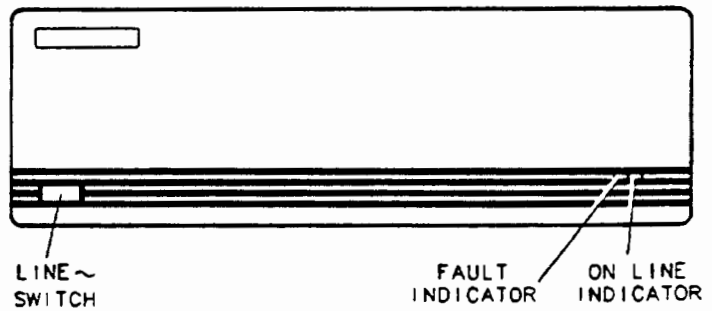

Caution

Do not throw away the plastic shipping disk. The shipping disk is designed to protect the read/write heads in the flexible disk mechanism against excessive shock and vibration. The shipping disk must be inserted into the flexible disk port *any time* you move your disk drive. Before you move your disk drive, insert the plastic shipping disk into the flexible disk port and slide the locking tab to the left.

A Look at Your Disk Drive

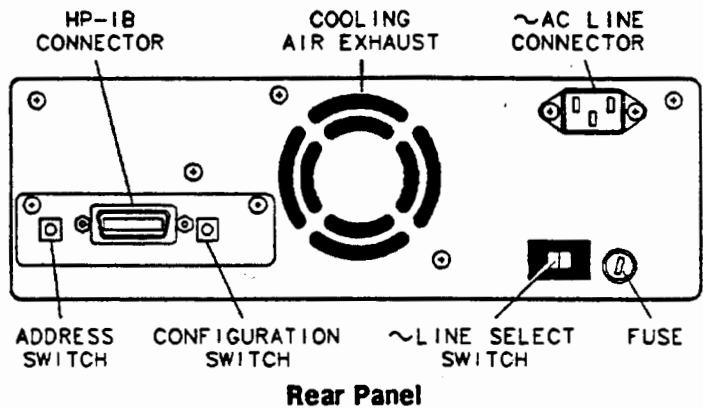FLEXIBLE DISC PORT

FLEXIBLE DISC
ACCESS INDICATOR

EJECT BUTTON

LINE ~
SWITCH

FAULT
INDICATOR

ON LINE
INDICATOR

Front Panel (Options 010, 020, 040)

LINE ~
SWITCH

FAULT
INDICATOR

ON LINE
INDICATOR

Front Panel (Options 011, 021, 041)

```
        HP-IB                  COOLING              ~AC LINE
      CONNECTOR             AIR EXHAUST            CONNECTOR
```

Rear Panel

Caution	■ *Do not* block the cooling air exhaust vent on the rear panel of your disk drive. Excessive heat will build up inside your disk drive and damage to your disk drive will result.
	■ *Do not* operate your disk drive in a dirty or dusty environment. Please follow the environmental limits in appendix A.

Checking the ~LINE SELECT Switch

Note 👆 Your HP 9153C should have been shipped with the ~LINE SELECT switch at the correct voltage setting, and with the correct fuse for the line voltage in your country. If the ~LINE SELECT switch is not at the correct voltage setting, you must set it to the correct voltage and you must replace the fuse with the correct fuse.

1. Locate the ~LINE SELECT switch on the rear panel of your disk drive.

2. Ensure the ~LINE SELECT switch is at the correct voltage setting. The following table shows the correct voltage setting for the line voltage in your country.

Line Voltages and Voltage Settings

Countries	Voltage Setting	Line Voltage
U.S., Mexico, Canada, Japan, Most South American Countries	115V~	100–120 V
Most European Countries	220V~	200–240 V

If the ˜LINE SELECT switch is not set to the correct voltage setting, you must perform the following steps:

Caution ✋ Before setting the ˜LINE SELECT switch, make sure the power cord is disconnected and the LINE˜ switch on the front panel is *out*. The disk drive is *on* when the LINE˜ switch is *in* and *off* when the LINE˜ switch is *out*. Operating the disk drive at an incorrect voltage may affect performance or damage the disk drive.

1. Insert a screwdriver into the slot on the ˜LINE SELECT switch.

2. Slide the ˜LINE SELECT switch left or right to the correct voltage setting.

3. Replace the fuse (follow the steps under "Changing the Fuse" in chapter 5).

Setting the CONFIGURATION Switch
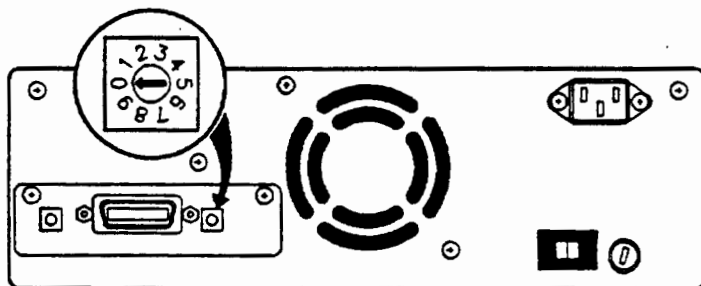
CONFIGURATION Switch

The CONFIGURATION switch has three basic functions:

■ Partitions your hard disk into easily-managed sections called volumes.

■ Initializes (formats) the hard disk or re-initializes existing volumes.

■ Prevents accidental writing to and re-initializing of the hard disk.

The CONFIGURATION switch has ten settings: 0 through 9. The functions of these settings are described in the following table:

CONFIGURATION Switch Settings

Setting	Function
0	Initialize Enable. This setting allows you to initialize (format) the hard disk or to re-initialize existing volumes.
1-7	Volume Select. These settings allow you to select the number and sizes of volumes.
8	Write-Protect. This setting prevents you from writing data to the first volume of the disk. It also prevents accidental re-initializing of the entire disk.
9	Initialize-Protect. This setting prevents initialization (formatting).

Caution

Not all computers support the switch functions listed in the table above. You may lose data if you set the CONFIGURATION switch to an unsupported function.

The CONFIGURATION switch is set to 0 at the factory.
If you leave the switch at 0 or set the switch to 1, your
hard disk will be initialized as one volume, and it will be
difficult for you to manage your files and application
software.

Select one of the switch settings 2 through 7 to create
a volume configuration that will accommodate your
application software and the number and size of your
files. If you have an HP 9153C Option 020 or 021, for
example, you may want to follow these guidelines:

- If you want to organize your files or applications into
  equal sections, use settings 2, 4, or 6.

- If you are using large applications like EGS, use
  settings 3, 5, and 7 for optimal performance.

Note

- Series 200/300 and Pascal:

  A Pascal operating system will split volumes created
  by the CONFIGURATION switch setting. However,
  if you set the CONFIGURATION switch to 8 to
  write-protect volume 0, Pascal will *only* split the other
  volumes and will leave volume 0 write-protected.

- **HP 150 PC:**

  The HP 150 PC *does not* support multiple volumes.
  Leave the CONFIGURATION switch at 0.

- Other Computers:

  Refer to appendix G for information about other
  computers. If your computer supports multiple
  volumes, refer to the "Volume Configuration" tables
  in this chapter to set the CONFIGURATION switch.
  If your computer does not support multiple volumes,
  leave the CONFIGURATION switch at 0.

The volume configurations for each CONFIGURATION switch setting are listed for 10-, 20-, 30-, and 40-megabyte disk drives on the following two pages. If you have a 20-megabyte disk drive and you set the CONFIGURATION switch to 5, for example, your hard disk will be divided into two volumes: the first volume (volume 0) will be 5.03 megabytes and the second volume (volume 1) will be 15.09 megabytes.

Set the CONFIGURATION switch as follows:

1. Insert a small screwdriver into the slot on the CONFIGURATION switch.

2. Rotate the switch to the desired setting.

Note

You must initialize the hard disk to partition it into the volume configuration you selected. Perform all the steps in this chapter *first*, read chapter 3 if your disk drive has a flexible disk port, then follow the steps in chapter 4 to initialize the hard disk.

Setting	Number of Volumes	Volume Size (Mbytes/Vol)					
0	Allows re-initializing of existing volumes. At first, if you leave the switch at the factory setting of 0, the hard disk is initialized as one volume (it defaults to setting 1).						
1	One	10.0					
2	Two	5.0			5.0		
3	Three	3.32		3.32		3.32	
4	Four	2.49		2.49		2.49	2.49
5	Five	2.0	2.0	2.0	2.0	2.0	
6	Six	1.66	1.66	1.66	1.66	1.66	1.66
7	Two	3.01		7.02			
8	Prevents writing to the *first* volume of the hard disk. Prevents accidental re-initializing of the hard disk.						
9	Prevents accidental re-initializing of the hard disk.						

Volume Configuration (10-Megabyte)

Setting	Number of Volumes	Volume Size (Mbytes/Vol)					
0	Allows re-initializing of existing volumes. At first, if you leave the switch at the factory setting of 0, the hard disk is initialized as one volume (it defaults to setting 1).						
1	One	20.0					
2	Two	10.06			10.06		
3	Three	3.01	3.01	14.1			
4	Four	5.03		5.03		5.03	5.03
5	Two	5.03		15.09			
6	Six	3.35	3.35	3.35	3.35	3.35	3.35
7	Two	3.01		17.11			
8	Prevents writing to the *first* volume of the hard disk. Prevents accidental re-initializing of the hard disk.						
9	Prevents accidental re-initializing of the hard disk.						

Volume Configuration (20-Megabyte)

Setting	Number of Volumes	Volume Size (Mbytes/Vol)					
0	Allows re-initializing of existing volumes. At first, if you leave the switch ot the factory setting of 0, the hord disk is initialized os one volume (it defaults to setting 1).						
1	One	30.0					
2	Two	15.0			15.0		
3	Three	5.0	5.0	20.0			
4	Four	7.5		7.5		7.5	7.5
5	Two	10.0		20.0			
6	Six	5.0	5.0	5.0	5.0	5.0	5.0
7	Two	5.0	25.0				
8	Prevents writing to the *first* volume of the hord disk. Prevents occidental re-initializing of the hord disk.						
9	Prevents occidentol re-initializing of the hord disk.						

Volume Configuration (30-Megabyte)

Setting	Number of Volumes	Volume Size (Mbytes/Vol)					
0	Allows re-initializing of existing volumes. At first, if you leave the switch ot the factory setting of 0, the hord disk is initialized os one volume (it defaults to setting 1).						
1	One	40.0					
2	Two	20.0			20.0		
3	Three	6.0	6.0	28.0			
4	Four	10.0		10.0		10.0	10.0
5	Two	10.0		30.0			
6	Six	6.6	6.6	6.6	6.6	6.6	6.6
7	Two	6.0	34.0				
8	Prevents writing to the *first* volume of the hord disk. Prevents occidental re-initializing of the hord disk.						
9	Prevents occidentol re-initializing of the hord disk.						

Volume Configuration (40-Megabyte)

Setting the ADDRESS Switch
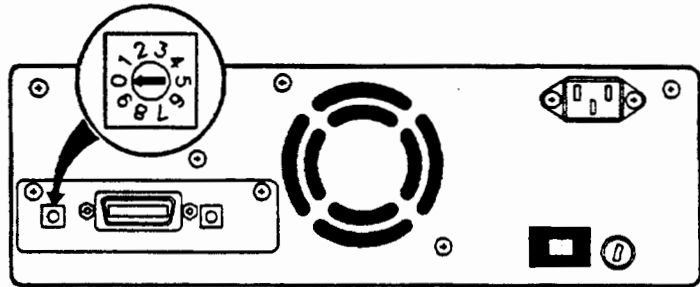
ADDRESS Switch

Each peripheral connected to the Hewlett-Packard Interface Bus (HP-IB) on your computer must have a unique address, just as each house on a block must have a unique address. Your computer uses addresses to communicate with the peripherals on your system.

The ADDRESS switch enables you to select a unique address for your disk drive. Address settings 0 through 7 are available for any computer, except the HP 150 PC.

Note 👉 Address settings 8 and 9 are reserved for the HP 150 PC. If you have an HP 9153C Option 010, 020, or 040 with an HP 150 PC, address settings 8 and 9 will enable you to load the operating system from a flexible disk until you copy the operating system to the hard disk. If you have an HP 9153C Option 011, 021, or 041 with an HP 150 PC, address setting 2 will enable you to load the operating system from a flexible disk until you copy the operating system to the hard disk.

The ADDRESS switch is set to 9 at the factory. If you want to change the ADDRESS switch setting, perform the following steps:

1. Insert a small screwdriver into the slot on the ADDRESS switch.

2. Rotate the ADDRESS switch to the desired setting.

Note

Do not select an address used by another peripheral connected to your computer.

If you want to change the address of your disk drive after it has been turned on, perform the following steps:

1. Turn off your disk drive.

2. Rotate the ADDRESS switch to the desired setting.

3. Turn on your disk drive.

Note

Whenever you change the ADDRESS switch setting, you must turn off the disk drive, then turn it on again so your computer recognizes the new setting.

Connecting the
HP-IB Cable
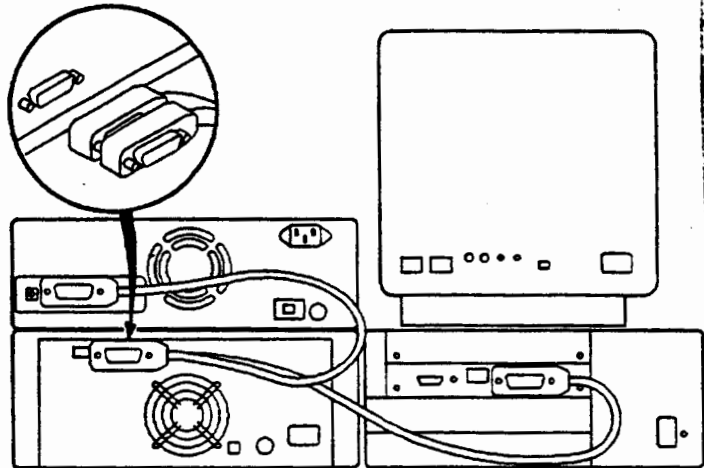
HP-IB Cable Connections

Note 👆 Refer to appendix A for restrictions on HP-IB cable lengths for your disk drive.

Connect the Hewlett-Packard Interface Bus (HP-IB) cable to your disk drive as follows:

1. Turn off your disk drive and your computer.

2. Connect one end of the HP-IB cable to the HP-IB connector on the rear panel of your disk drive. Tighten the connector screws with your fingers.

3. Connect the other end of the HP-IB cable to the HP-IB connector on your computer, or to the back of an HP-IB cable connector attached to a peripheral on your system (see the inset in the figure above). Tighten the connector screws with your fingers.

Caution ✋ *Do not* connect more than three HP-IB cables to the HP-IB connector on your disk drive. The resulting weight could damage the connector mounting.

Connecting the Power Cord
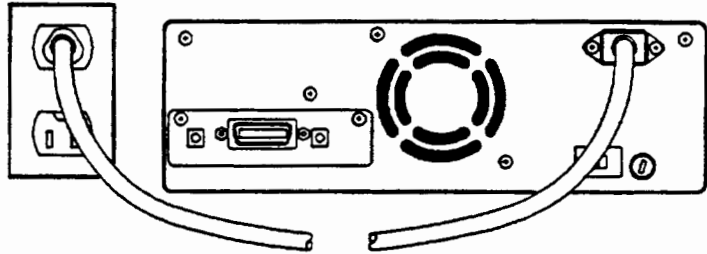
Power Cord Connection

Warning ⚡ This product is equipped with a power cord and plug designed for your safety. Connect the power cord to a properly grounded receptacle to avoid possible electrical shock.

Connect the power cord as follows:

1. Connect one end of the power cord to the ¯AC LINE connector on the rear panel of your disk drive.

2. Plug the other end of the power cord into an electrical outlet.

Starting the
Self-test

FLEXIBLE DISC PORT

FLEXIBLE DISC
ACCESS INDICATOR

EJECT BUTTON

LINE ~
SWITCH

FAULT
INDICATOR

ON LINE
INDICATOR
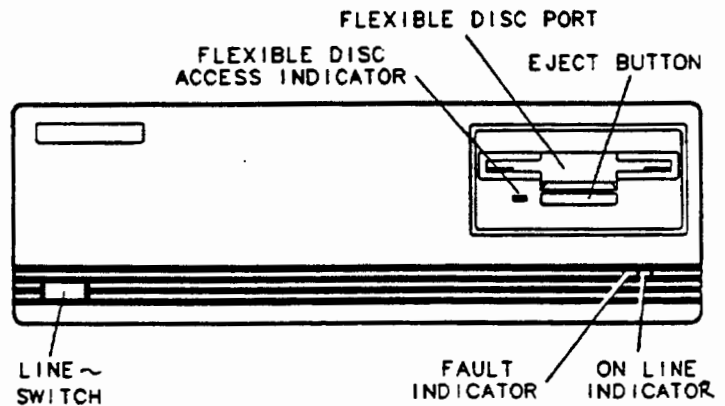
Front Panel (Options 010, 020, 040)

Caution

■ *Do not* turn on your disk drive with the plastic
shipping disk in the flexible disk port. Damage to the
flexible disk mechanism will result.

■ *Do not* turn on your disk drive if it has experienced
any abrupt change in temperature or humidity. Your
disk drive may fail the self-test. An abrupt change in
temperature or humidity may occur when you take
your disk drive out of an air-conditioned office, take
it to a warm automobile, then set it up in another
air-conditioned office. You must allow your disk drive
to stabilize to the temperature and humidity values in
appendix A for two hours before you turn it on.

Whenever you turn on your disk drive, it will perform a short self-test on its internal circuitry and mechanics. To start the self-test, push in the LINE⁻ switch on the front panel of your disk drive.

Note 👆 | You will hear motor noise when you turn on your disk drive. This sound is normal and does not indicate a problem with the disk drive.

Your disk drive will perform a self-test as follows:

1. The ON LINE indicator will flash on and off.

2. The FAULT indicator on the front panel will light.

3. The self-test is performed for 30 to 55 seconds, depending on your disk drive option number.

4. The FAULT indicator will extinguish when your disk drive passes the self-test.

If the FAULT indicator stays on or flashes after the self-test completes, perform the following steps:

1. Check the temperature and humidity of the environment surrounding your disk drive and ensure that it meets the environmental specifications in appendix A.

2. If your disk drive meets the environmental specifications in appendix A, turn it off, turn it on again, and wait for your disk drive to complete the self-test.

3. If your disk drive fails the self-test again, contact your dealer or the nearest HP Sales Office.

Caution

- *Do not* turn off your disk drive when the ON LINE indicator on the front panel is illuminated. Loss of data may occur. The ON LINE indicator is illuminated when your computer is storing data to, or retrieving data from, the hard disk.

- If your disk drive has a flexible disk port, *do not* press the eject button or turn off the disk drive when the flexible disk access indicator is illuminated. Loss of data or damage to the flexible disk mechanism may occur. The flexible disk access indicator is illuminated when your computer is storing data to, or retrieving data from, the flexible disk.

Using Flexible Disks

This chapter provides information about using flexible disks. Skip this chapter if your disk drive does not have a flexible disk port.

Flexible Disk Products

Caution

The performance and reliability of your HP 9153C Disk Drive is ensured *only* when using HP flexible disk products. The use of non-HP flexible disk products may cause reliability problems or damage to the flexible disk mechanism. HP reserves the right to exclude from warranty and maintenance coverage any repairs which HP reasonably determines or believes were caused by the use of non-HP flexible disk products.

The following table lists flexible disk products that can be ordered from HP:

HP Flexible Disk Products

Product	Description
92192X	Box of 10, 3.5-inch, autoshutter, double-sided, 2-Mbyte unformatted, (1.4-Mbyte formatted)
92192A	Box of 10, 3.5-inch, autoshutter, double-sided, 1-Mbyte unformatted (710-kbyte formatted)
92191A*	Box of 10, 3.5-inch, autoshutter, single-sided, 0.5-Mbyte unformatted (270-kbyte formatted)

For data exchange only; not intended for continual use.

Flexible Disk Terminology

Single-sided disk drive: a disk drive that contains a flexible disk mechanism with one read/write head that records data on only one side of a flexible disk.

Double-sided disk drive: a disk drive that contains a flexible disk mechanism with two read/write heads that record data on both sides of a flexible disk. There are two types of double-sided disk drives:

- 1-megabyte disk drives
- 2-megabyte disk drives

The following table lists HP single- and double-sided disk drive products:

HP Single- and Double-sided Disk Drives

Single-sided	Double-sided	
0.5-Mbyte	1-Mbyte	2-Mbyte
HP 9121D/S	HP 9114A/B	HP 9122C
HP 9133A/B	HP 9122D/S	HP 9153C
HP 9133V/XV	HP 9123D	
	HP 9133D/H/L	
	HP 9153A/B	

Single-sided disk: a flexible disk that has only one side upon which data can be recorded. HP single-sided disks are *blue*, have a 0.5-megabyte data capacity, and are labeled "single-sided."

Double-sided disk: a flexible disk that has two sides upon which data can be recorded. There are two types of double-sided disks:

- *Gray* disks have a 1-megabyte data capacity.

- *Black* disks have a 2-megabyte data capacity and can be identified by the symbol "HD" (high density) printed near the shutter.

Single-sided formatting: prepares a disk for one-sided recording of data. Single-sided formatting can be done on 0.5-megabyte single-sided disks and on 1-megabyte double-sided disks in single- or double-sided disk drives.

Double-sided formatting: prepares a disk for two-sided recording of data. Double-sided formatting can be done *only* on double-sided disks in double-sided disk drives.

Flexible Disk
Compatibility

Caution

Observe the following precautions when using flexible disks:

- *Never* use a single-sided flexible disk with a manual shutter in your HP 9153C Disk Drive. Damage to the flexible disk mechanism may result if a disk with a manual shutter is forced into the flexible disk port. All HP single-sided disks have blue cases, but single-sided disks with manual shutters do not have the words "AUTO SHUTTER" on the shutter.

- Use 2-megabyte, double-sided flexible disks *only* in HP 9122C and 9153C disk drives. Two-megabyte flexible disks will not activate the "disk-in" switch in other disk drives, causing all read/write functions to be disabled.

- Continual use of single-sided disks in a double-sided disk drive will result in *wear* and eventual *failure* of the lower read/write head. The unused side of a single-sided disk is not polished, and will scratch the surface of the lower head.

The table below lists the recommended use of flexible disks in your HP 9153C Disk Drive. Terms used in the table are defined as follows:

EXCHANGE ONLY means that the disks should be used only for exchanging data and programs with single-sided disk drives and should not be used on a daily basis.

COMPATIBLE means that the disks may be used on a daily basis.

HP 9153C Flexible Disk Usage

Single-sided, 0.5-megabyte, HP flexible disks	EXCHANGE ONLY (operates at half speed)
Double-sided, 1-megabyte, HP flexible disks	COMPATIBLE (operates at half speed)
Double-sided, 2-megabyte, HP flexible disks	COMPATIBLE
HP software	COMPATIBLE

Note

Older model flexible disk drives contain media monitors that check 1-megabyte and 0.5-megabyte flexible disks for wear. Advances in technology have eliminated the need for monitoring wear on the new 2-megabyte flexible disks. If you use one of the older 1-megabyte or 0.5-megabyte flexible disks in your disk drive, media wear is not monitored or indicated in any manner.

A Look at the Flexible Disk

PLASTIC CASE — SHUTTER — PLASTIC CASE
— WINDOW —
*

HD

LABEL

DISK-IN PIN HOLE
(2-MBYTE DISKS ONLY)

CENTERING HUB

WRITE-PROTECT TAB

Denotes High Density flexible disk
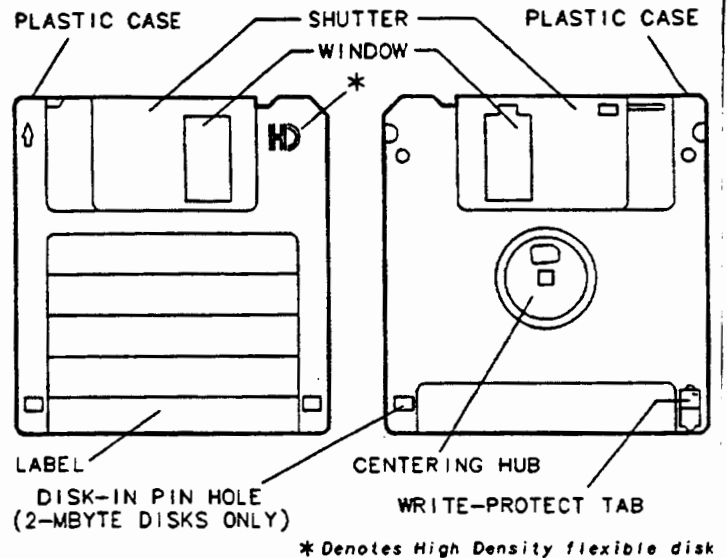
Flexible Disk Parts

Window and Shutter

Your disk drive writes data on the disk and reads data from the disk in the space beneath the window. The window is covered by a metal shutter.

When you insert a flexible disk, the shutter automatically opens to expose the disk surface. When you remove a flexible disk, the shutter closes to protect the disk surface.

Caution

If you open the window manually, do not touch the disk surface or expose it to dust. Follow the guidelines in the "Handling Disks" section to prolong the life of your flexible disks.

Centering Hub   On the back of the plastic case is a round, metal center called the centering hub. The centering hub ensures accurate positioning when the flexible disk is inserted into the flexible disk port.

Write-Protect Tab   A sliding tab on the flexible disk allows you to write-protect the disk. Write-protecting ensures that the data on your flexible disk will not be written over. You should write-protect flexible disks that contain valuable programs and data.

CENTERING HUB

SEE DETAILS

TO WRITE PROTECT THE DISK, SLIDE THE TAB DOWN

TO WRITE DATA TO THE DISK, SLIDE THE TAB UP
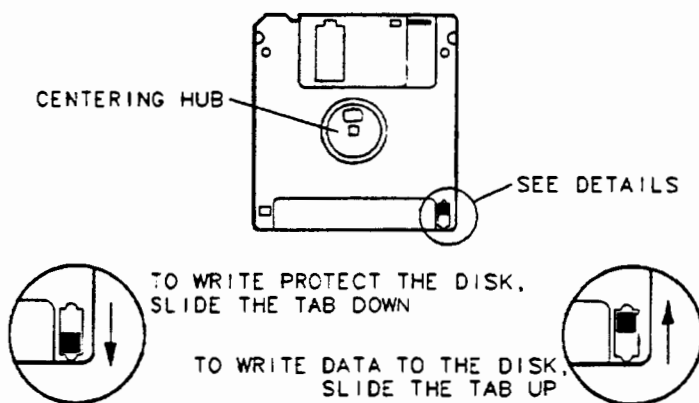
Write-Protect Tab (Double-Sided Disks)

Write-protect a flexible disk as follows:

1. Place the tip of a pen in the small hole at the top of the write-protect tab.

2. Slide the tab downward until it locks into place.

3. If you no longer wish to write-protect the disk, slide the tab up.

Note 👆 When the write-protect tab is in the write-protect (down) position, a square hole will be exposed above the tab.

Handling Disks

The plastic case and metal shutter make HP's 3.5-inch flexible disks more reliable than comparable 5.25-inch products. However, because your flexible disks contain valuable data and programs, you should treat them with care. Follow these guidelines to avoid data loss and prolong the life of your flexible disks and your disk drive.

- Use your disks in a clean environment to prevent dust or dirt particles from scratching the surface of the disk.

- Avoid magnetic fields, such as appliances with motors to prevent magnetically erasing the data on your disk

- Insert a disk all the way into the flexible disk port.

- Store disks in a cool, dry place to prevent moisture and heat damage.

- Do not touch the surface of a disk. Fingerprints contaminate the disk, which shortens disk life and causes data loss.

- Do not try to clean a disk. The plastic case contains a mechanism for cleaning the disk surface. Other cleaning methods may damage the disk.

Inserting and Removing Flexible Disks
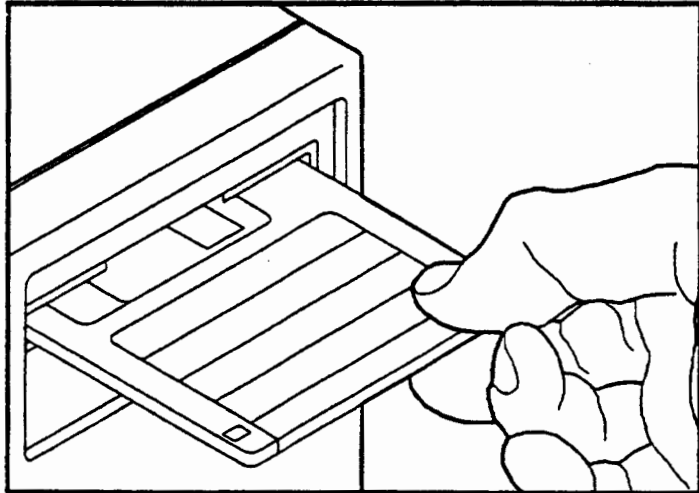
Installing a Flexible Disk

1. To insert a flexible disk, grasp the labeled edge of the disk with the centering hub down and carefully slide the disk all the way into the flexible disk port until the disk drops into place (see the figure above).

2. To remove a flexible disk, press the flexible disk eject button and pull the disk straight out of the flexible disk port.

Labeling Disks

When you order a box of disks, you also receive a packet of labels in a variety of colors. Position a label on the plastic case as shown in the figure below. Write the name of the disk on the lines below the colored edge of the label.

A disk used on a Series 200 or Series 300 computer system can be formatted with different sector sizes. We recommend that you write the sector size on the label to remind you of the correct format option for your system.

You may wish to establish a color-coded system for cataloging your disks. For example, disks containing memos may have red labels, while disks containing personnel files may have blue labels.

Store your disks upright in a container so that the colored edge of the labels are visible. You may then use the colors to select the category of disks you desire, and then read the labels to select the specific disk needed.
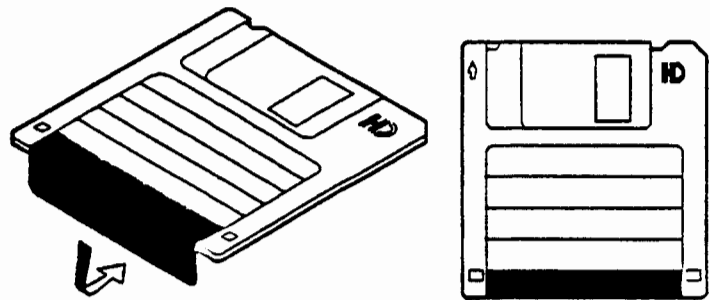
Positioning the Label

4

Initializing Disks and Protecting Data

This chapter provides information about initializing (formatting) the hard disk and flexible disks, and protecting data stored on disks.

Initializing the Hard Disk

The hard disk must be initialized before you can record data on it. Initializing prepares a blank disk to receive information and ensures the disk will record information reliably. When you initialize the hard disk, it is partitioned into the volumes specified by the CONFIGURATION switch setting (refer to chapter 2).

The interleave factor determines the order the computer reads sectors on the hard disk. An interleave factor of 1 optimizes system performance with your HP 9153C hard disk. The hard disk always defaults to an interleave factor of 1, so you do not need to specify an interleave factor when you initialize the hard disk.

If you want to re-initialize the hard disk with a different volume configuration, perform the following steps:

1. Back up your data to prevent data loss.

2. Turn off your disk drive.

3. Remove the HP-IB cable from the HP-IB connector on the rear panel of your disk drive.

4. Rotate the CONFIGURATION switch to the desired setting.

5. Connect the HP-IB cable to the HP-IB connector on the rear panel of your disk drive.

6. Turn on your disk drive.

7. Initialize the hard disk.

Note

- Appendix.B provides information on steps you can take if a system error occurs when initializing, writing data to, or reading data from the hard disk.

- Appendixes C through G provide information on how to initialize the hard disk on different computer systems. Refer to the appendix that applies to your computer system for specific information on initializing the hard disk.

Protecting Hard Disk Data

If you want to erase the data on the hard disk frequently leave the CONFIGURATION switch at the same setting. You can then re-initialize the hard disk with the same volume configuration. Re-initializing will erase any data that is on the hard disk.

However, if you want to protect the data on the hard disk, you have two choices:

- If you want to prevent yourself from accidentally writing over important data on the first volume (volume 0), and prevent accidental initialization of any volume on the hard disk, set the CONFIGURATION switch to 8. If the hard disk has been initialized as one volume, the entire disk will be write-protected and protected against initialization.

- If you want to prevent accidental initialization of any volume on the hard disk, set the CONFIGURATION switch to 9.

To protect data on the hard disk from accidental initialization, perform the following steps:

1. Turn off your disk drive.

2. Remove the HP-IB cable from the HP-IB connector on the rear panel of the disk drive.

3. Record the present switch setting for future reference.

4. Rotate the CONFIGURATION switch to 8 or 9.

5. Connect the HP-IB cable to the HP-IB connector on the rear panel of your disk drive. .

6. Turn on your disk drive.

Note ☝ Whenever you change the CONFIGURATION switch setting, you must turn off the disk drive, then turn it on again so your computer recognizes the new setting.

Formatting
a Flexible Disk

When you format (initialize) a flexible disk, you must select a formatting option and an interleave factor for the flexible disk.

Selecting a
Formatting
Option

When you format a flexible disk, you have several formatting options to choose from. You must remember two important things when selecting a format option:

1. Single-sided formatting can be done on 0.5-megabyte single-sided disks and on 1-megabyte double-sided disks in single- or double-sided disk drives.

2. Double-sided formatting can be done *only* on double-sided disks in double-sided disk drives.

Refer to the tables on the following page to select the proper formatting option. The default formatting option is 0.

Note

Format options 2 and 16 (512-byte formats) do not work on systems with BASIC and Pascal.

Flexible Disk Formatting Options

Media	Format Option	Bytes/ Sector	Sectors/ Track	Tracks/ Surface	Surfaces/ Disk	Total Sectors	Capacity (bytes)
0.5-Mbyte	4	256	16	66	1	1,056	270,336
1-Mbyte	0	256	16	77	2	2,464	630,784
	1*	256	16	77	2	2,464	630,784
	2	512	9	77	2	1,386	709,632
	3	1,024	5	77	2	770	788,480
	4	256	16	66	1	1,056	270,336
	16	512	9	80	2	1,440	737,280
2-Mbyte	0	256	32	77	2	4,928	1,261,568
	1**	256	32	77	2	4,928	1,261,568
	2	512	18	77	2	2,772	1,419,264
	3	1,024	10	77	2	1,540	1,576,960
	4**	256	32	77	2	4,928	1,261,568
	16	512	18	80	2	2,880	1,474,560

Same as Option 0 (default) when using 1-Mbyte media.
**Same as Option 0 (default) when using 2-Mbyte media.*

Formatting Options and Media Usage

Format Option	0.5-Mbyte Media	1-Mbyte Media	2-Mbyte Media
0	Do not use	Normal usage	Normal usage
1	Do not use	Normal usage	Normal usage
2	Do not use	512-byte sectors	512-byte sectors
3	Do not use	1024-byte sectors	1024-byte sectors
4	Compatible with HP single-sided disk drives	Compatible with HP single-sided disk drives	Defaults to Format Option 0
16	Do not use	IBM compatible	IBM compatible

After you have selected a formatting option and an
interleave factor, you can format the flexible disk.
When the computer starts formatting the flexible disk,
the flexible disk access indicator will light. When the
formatting is complete, the flexible disk access indicator
will extinguish.

Note	■ Appendix B provides information on steps you can take if a system error occurs when formatting, writing data to, or reading data from a flexible disk. ■ Appendixes C through G provide information on how to format a flexible disk on different computer systems. Refer to the appendix that applies to your computer system for specific information on formatting a flexible disk.

Protecting
Flexible Disk Data

Use the write-protect tab to protect data on a flexible
disk. Refer to chapter 3 for more information on the
write-protect tab.

5

Maintaining Your Disk Drive

Your disk drive does not require routine maintenance
other than cleaning the case. However, the performance
and life of your disk drive depend on how carefully it is
handled.

Cleaning the Case

1. Before cleaning the case, disconnect the power cord
   and HP-IB cables and make sure there is no flexible
   disk in the flexible disk port.

2. Dampen a clean, soft, lint-free cloth in a solution of
   clean water and mild soap.

Caution

Chemical spray-on cleaners used for appliances and other
household and industrial applications may damage the
case finish. Do not use cleaners that contain ammonia,
benzenes, chlorides, or abrasives.

3. Wipe the soiled areas of the case, making sure that
   no cleaning solution gets inside the case. For cleaning
   more heavily soiled areas, use a solution of 80% clean
   water and 20% isopropyl alcohol.

4. Dampen another clean, soft, lint-free cloth with
   cleaning solution and wipe the areas just cleaned.
   Remove pen and pencil marks with a nonabrasive
   eraser.

Changing the Fuse

The fuse protects your disk drive from a line voltage overload. A new fuse was installed in your disk drive at the factory. You do not need to replace the fuse unless it is blown. If the fuse is blown, follow these steps and guidelines to replace the fuse:

Warning

To avoid electrical shock, disconnect the power cord before changing the fuse. For continued protection against fire hazard, replace the fuse only with one of the same type and rating.

Voltages and Fuses

Countries	Voltage Setting	Line Voltage	Fuse Type/ HP Part No.	Fuse Holder
U.S., Mexico, Canada, Japan, Most South American Countries	115V~	100–120 V	3 A, 250 V 2110-0003	Gray
Most European Countries	220V~	200–240 V	1.6 A, 250 V 2110-0787	Black

Replace the FUSE as follows:

1. Turn off your disk drive and disconnect the power cord from the ~AC LINE connector.

2. Verify that the voltage setting is correct for your local power. (Refer to table above.)

3. Insert a screwdriver into the slot on the fuse holder, gently push in the fuse holder, then turn the screwdriver counter-clockwise until the fuse holder springs out.

4. Remove the fuse holder from the FUSE receptacle and remove the old fuse from the fuse holder.

5. Select the correct fuse for your local power and voltage setting.

Warning

Do not hold the metal portion of the fuse holder when you insert the fuse holder into the FUSE receptacle.

6. Put the new fuse into the fuse holder, then insert the fuse holder into the FUSE receptacle.

7. Insert a screwdriver into the slot on the fuse holder, gently push in the fuse holder, then gently turn the screwdriver in a clockwise direction until the fuse holder is fully engaged in the FUSE receptacle.

8. Turn on your disk drive.

Note

If the FAULT indicator does not illuminate when you turn on your disk drive, the fuse may be blown again. Contact your dealer or the nearest HP Sales Office to repair your disk drive.

Warning

Only qualified service personnel should repair your disk drive. Hazardous voltages are present when the top cover is removed.

Ordering Supplies

The following table lists supplies you can order for your HP 9153C:

DESCRIPTION	HP PART NO.
Black Double-Sided 2-Megabyte Flexible Disks (10 disks/box)	92192X
Fuse, 3.0 A, 250 V (115V˜ setting)	2110-0003
Fuse, 1.6 A, 250 V (230V˜ setting)	2110-0787
Power Cord*	(see footnote)
HP-IB Cable, 0.3-meter, right-angle connector	92220R
HP-IB Cable, 0.5-meter	10833D
HP-IB Cable, 1-meter	10833A
HP-IB Cable, 1-meter, right-angle connector	82977A
HP-IB Cable, 2-meter	10833B
HP-IB Cable, 2-meter, right-angle connector	82977B
HP-IB Cable, 4-meter	10833C
Shipping Disk Kit	5061-2819
HP 9153C Manual Kit	09153-90199

The type of power cord you order depends on your location. Please consult your dealer or HP Sales Office for the correct part number.

A

Technical Data

HP 9153C
Specifications

Performance   **Average access time:**

Flexible disk:	200 ms
Hard disk:	75 ms

Average rotational delay:

Flexible disk:	100 ms
Hard disk:	10 ms

Data transfer rate (maximum sustained):

Flexible disk:	32 kilobytes/s
Hard disk:	185 kilobytes/s

Recording   **Rotational speed:**

Flexible disk:	300 rpm
Hard disk:	3000 rpm

Formatted capacity:

Flexible disk:	1.42 megabytes
Hard disk:	10, 20, 40 megabytes

Tracks per inch:	
Flexible disk:	135
Hard disk:	1,800

Bits per inch:	
Flexible disk:	17,434
Hard disk:	12,700

Electromagnetic

Electromagnetic emissions:

< 1 gauss on top, sides, front, rear.

Radiated and magnetic interference:

The HP 9153C is certified by FCC subpart J, part 15, level B, and VDE-FTZ 1046/84 level B.

Power

Line voltage:

115V~ setting:	100–120 V
230V~ setting:	200–240 V

Operating voltage:

115V~ setting:	86–127 V
230V~ setting:	195–253 V
Line frequency:	50–60 Hz
Operating frequency:	48–66 Hz
Maximum power:	50 Watts

Safety

The HP 9153C meets all applicable safety standard of the following:

- UL 478 fifth edition
- CSA C22.2 No. 220
- IEC 380 and 435

Environmental	**Temperature:**	
	Operating:	10°C to 40°C (50°F to 104°F)
	Nonoperating:	-40°C to 60°C (-40°F to 140°F)
	Humidity:	
	Operating:	20% to 80% RH (noncondensing)
	Nonoperating:	5% to 95% RH (noncondensing)
	Altitude:	
	Operating:	0 to 4 572 m (0 to 15,000 ft)
	Nonoperating:	-304 m to 15 240 m (-1000 ft to 50,000 ft)
	Shock:	
	Operating:	2 g, 11 ms half sine ($\triangle V = 0.14$ m/s)
	Nonoperating:	70 g, 3 ms half sine ($\triangle V = 1.31$ m/s)
	Packaged transportation:	30 g, 26 ms trapezoidal ($\triangle V = 4.87$ m/s)
	Vibration:	
	Operating:	0.30 g_{rms}, random
	Nonoperating:	0.75 g_{rms}, random
	Acoustic emissions:	
	Sound power level:	< 49 dB(A)

Percent Relative Humidity (Non-condensing)

Acceptable Environment for HP 9153C

Air temperature in degrees Fahrenheit
(Celsius shown in parenthesis)
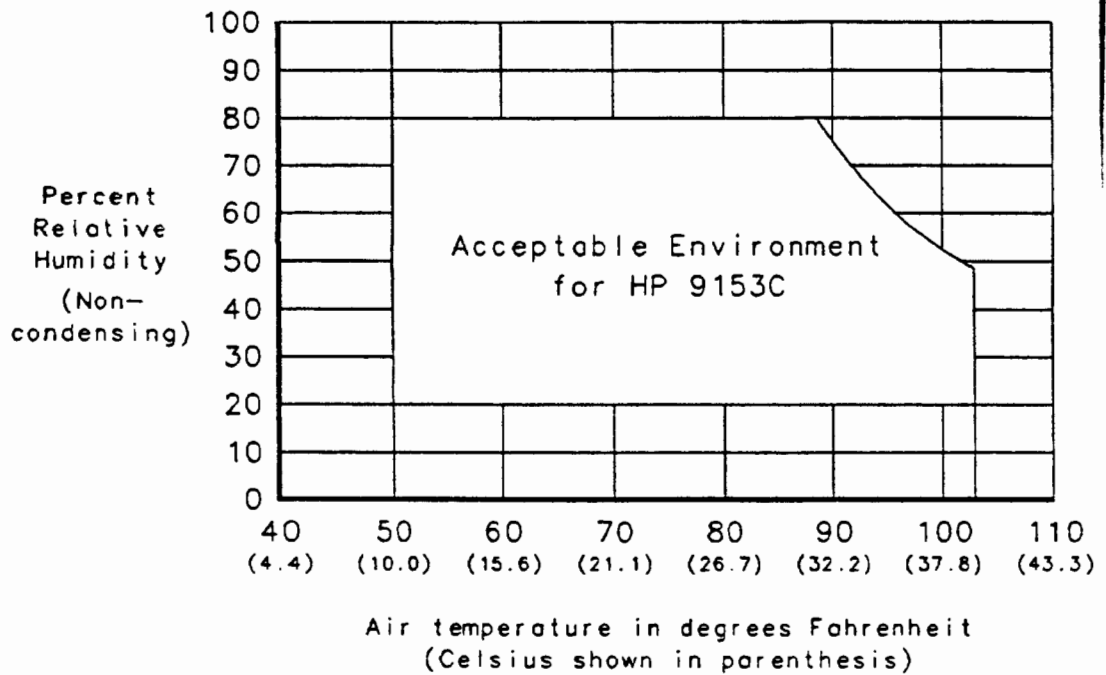
Physical   Dimensions:

Height:	106 mm (4.2 in.)
Width:	325 mm (12.8 in.)
Depth:	285 mm (11.2 in.)
Net weight:	
Options 010, 020:	7.7 kg (17 lb)
Option 040:	8.6 kg (19 lb)
Options 011, 021:	7.1 kg (16 lb)
Option 041:	8.0 kg (18 lb)

Shipping weight:

Options 010, 020:	9.7 kg (21 lb)
Option 040:	10.7 kg (24 lb)
Options 011, 021:	9.1 kg (20 lb)
Option 041:	10.1 kg (22 lb)

HP-IB Restrictions

- HP-IB cables may be connected in any configuration as long as there is an unbroken path between each device and your computer.

- The maximum number of devices you can connect to one HP-IB port on your computer is eight. (Additional restrictions apply to HP 64000 computers. Refer to the *Installation and Configuration Reference Manual* for your HP 64000 computer.)

- The maximum length of cabling you can connect between two devices on an HP-IB bus is two meters.

- The maximum length of cabling you can connect between your computer and the nearest device on an HP-IB bus is 7 meters.

- The total length of cabling on an HP-IB bus is limited to 20 meters.

- All HP-IB cables should be properly shielded and terminated to minimize interference to radio and television reception.

Caution

Do not connect more than three HP-IB cables to the HP-IB connector on your disk drive. The resulting weight could damage the connector mounting.

B

System Error Messages

This appendix provides information on steps you can take if a system error occurs when initializing, writing data, or reading data. The error messages that appear on your system monitor are dependent on the type of computer system you have and whether the error was caused by the hard disk or a flexible disk.

Hard Disk Error Messages

The following error messages refer to the hard disk.

- If an error message appears that says the disk is write-protected, perform the following steps:

  1. You may have tried to initialize the hard disk with the CONFIGURATION switch set to 9. If you wish to initialize the hard disk, set the switch to 0.

  2. You may have tried to re-initialize any volume, or write to the first volume with the CONFIGURATION switch set to 8. If you want to initialize or write to the first volume, set the switch to 0.

- If the error message Disk Not Present or No Disks Were Found appears, perform the following steps:

  1. Make sure your disk drive is turned on.

  2. Make sure all cables are securely connected.

3. Make sure that the hard disk has been initialized.

4. Make sure your disk drive is addressed correctly.

5. Make sure your computer is configured properly. (Refer to your computer manual for details.)

6. If you get the same error message again, contact your dealer or HP Sales Office.

■ If the error message Disk Error Reading Drive 0 appears, perform the following steps:

1. Try to copy the files from your hard disk to some flexible disks or another backup device. (You may not be able to copy all the files because of this error.)

2. Initialize the hard disk. Remember that initializing destroys any data already stored on the disk. Make sure you have copied all of the files you can to flexible disks or to a tape backup before you initialize the disk.

3. Re-install your operating system, software, and file from the flexible disks or from the tape backup.

4. If you cannot initialize the hard disk or if you still get the same error message, contact your dealer or HP Sales Office.

■ If the error message Disk drive empty, off, or undefined appears, perform the following steps:

1. Make sure your disk drive is turned on.

2. Make sure all cables are securely connected.

3. Make sure the hard disk has been initialized (formatted).

4. Make sure your disk drive is addressed correctly.

5. Make sure your computer is configured properly. (Refer to your computer documentation for details.) BASIC users should make sure the Mass Storage Volume Specifier (MSVS) is correct.

6. If you still get the same error message, contact your dealer or the nearest HP Sales Office.

Flexible Disk Error Messages

The following error messages refer to the flexible disk.

- If an error message appears that says the disk is write-protected, perform the following steps:

  1. You may be using a flexible disk that is write-protected. If you want to write information on the disk, reverse the write-protect tab on the disk (refer to chapter 3). If you want to keep the disk write-protected, insert another disk.

  2. If you get another write-protect error after you reversed the write-protect tab, try another flexible disk. If you get a write-protect error on several disks in a row, your disk drive may not be operating properly. Contact your dealer or HP Sales Office.

- If the error message Disk Not Present or No Disks Were Found appears, perform the following steps:

  1. Make sure your disk drive is turned on.

  2. Make sure all cables are securely connected.

  3. Make sure there is a flexible disk in the flexible disk port, and the flexible disk is formatted.

  4. Make sure your disk drive is addressed correctly.

  5. Make sure your computer is configured properly. (Refer to your computer documentation for details.)

6. If you get the same error message again, you may have a bad flexible disk. Try another flexible disk. If you still get the same error message, contact your dealer or HP Sales Office.

■ If the error message **Disk Error Reading Drive 1** appears, perform the following steps:

1. Your flexible disk may be worn or damaged. Try using other disks to see if you get the same error message.

2. If you get the error message on only one flexible disk, copy the disk immediately and discard it.

Note If the disk is worn or damaged, the copy may not work.

---

3. If you get the same error message on several flexible disks, contact your dealer or HP Sales Office.

■ If the error message **Disk drive empty, off, or undefined** appears, perform the following steps:

1. Make sure your disk drive is turned on.

2. Make sure all cables are securely connected.

3. Make sure there is a flexible disk in the flexible disk port.

4. Make sure your disk drive is addressed correctly.

5. Make sure your computer is configured properly. (Refer to your computer documentation for details.) BASIC users should make sure the Mass Storage Volume Specifier (MSVS) is correct.

6. If you get the same error message again, you may have a bad flexible disk. Try another disk. If you still get the same error message, contact your dealer or HP Sales Office.

C

HP 9153C with Series 200/300 and BASIC

Note	Before you follow the steps in this appendix, be sure you have performed all the steps in chapter 2.

The HP 9153C is supported on BASIC 5.1 or later versions with Series 200 and Series 300 computers.

This appendix provides information on how to use your HP 9153C with your Series 200/300 computer and BASIC. Please refer to the following Series 200/300 and BASIC manuals for more information:

BASIC Programming Techniques
BASIC 5.1 Language Reference Manual
Peripheral Installation Guide
Installing, Using, and Maintaining the BASIC 5.1 System

Note	☝	Hewlett-Packard does *not* recommend using the HP 9153C with LIF or HFS file systems in heavy data logging applications with real-time data logging requirements. The hard disk mechanism will perform a recalibration if certain internal conditions exist. If your HP 9153C is used with an HFS file system, your system may experience occasional recalibration delays for periods of approximately ten seconds. If your HP 9153C is used with an LIF file system, your system may experience less frequent delays than with an HFS file system using the same applications.

Understanding MSVS

Before you initialize disks or use other BASIC commands, you must understand the Mass Storage Volume Specifier (MSVS). The MSVS is what the computer uses to communicate with your disk drive.

The following is an example of an MSVS:

```
":,700,0,0"
```

```
                        ────────────volume ID
                     ───────────────unit number
                  ──────────────────device selector
```
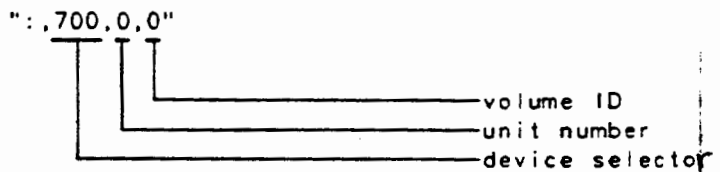
The MSVS is composed of three parts:

The *device selector* specifies the HP-IB address of your disk drive. The first number specifies the number of the internal HP-IB port, which is always 7. The last two numbers specify the HP-IB address setting of your HP 9153C, which can be any value from 00 to 07. In this example, the HP-IB address is 00.

The *unit number* specifies the disk mechanism you wish to access. For disk drives with HP-IB address 00 through 07, unit 0 is the hard disk mechanism and unit 1 is the flexible disk mechanism. For disk drives with HP-IB address 08 or 09, unit 0 is the flexible disk mechanism and unit 1 is the hard disk mechanism. In this example, the hard disk mechanism will be accessed.

The *volume identification (ID)* specifies the volume you wish to access. If the volume CONFIGURATION switch is set for one volume, you do not have to specify a volume ID. However, if your CONFIGURATION switch is set for multiple volumes, you must specify a volume ID, because each volume of your hard disk must be initialized separately.

Note

Volumes on your fixed disk are numbered consecutively from 0. For example, if your hard disk is partitioned into four volumes, the volume IDs are 0, 1, 2, and 3. (You do not need to specify a volume ID when referring to the flexible disk mechanism.)

Booting
Your System

Note 👉 If you have an HP 9153C Option 011, 021, or 041, you cannot "boot" (load the operating system and utilities) from the hard disk until you copy BASIC to the hard disk.

"Booting" loads the operating system and utilities. Boot your system using the following steps:

1. Turn on your disk drive, and wait for it to complete self-test. Make sure your computer is turned off.

2. Insert the BASIC System Disk into the flexible disk port.

3. Turn on your computer. Follow the instructions on your screen. When the prompt BASIC Ready X.X appears on the screen, the operating system is loaded Loading the operating system takes 30 to 50 seconds. (Refer to your *Installing, Using, and Maintaining the BASIC 5.1 System* manual for detailed instructions.)

4. Remove the BASIC System Disk and insert the BASIC Language Extension Disk into the flexible disk port. Follow the instructions provided on the screen.

Note 👉 If you are using BASIC 5.1 (or later), your System Disk contains an AUTOST program which completes the next steps for you. You need only follow the instructions provided on the screen.

5. Remove the BASIC Language Extension disk and insert the BASIC Drivers Disk. Follow the instructions provided on the screen. (Refer to your *Installing, Using, and Maintaining the BASIC 5.1 System* manual for detailed instructions.)

6. When the BASIC Drivers Disk completes, the system is ready for use with BASIC.

The next steps describe INITIALIZE and other frequently used BASIC commands.

Initializing the Hard Disk

Caution   Initializing erases any data stored on the hard disk.

To initialize the hard disk, type a command similar to the following example, and press (Enter):

```
INITIALIZE ":,700,0,0",1
           MSVS ─┘ │ │ └──── interleave factor
                   │ └────── volume ID
                   └──────── unit number
```

The preceding command tells the computer to initialize volume 0 of unit 0 at HP-IB address 0 with an interleave factor of 1.

Note ☝ Each volume on your hard disk must be initialized separately. We recommend that you initialize all volumes consecutively. Initializing the disk does not create file systems on MS-DOS.

Initializing Flexible Disks

Caution ☝ Initializing erases any data stored on the flexible disk.

To initialize (format) a flexible disk, type a command similar to the following example and press (Enter):

```
INITIALIZE ":,700,1",2,3
```
format option*
interleave factor**
MSVS (Mass Storage
Volume Specifier)

Note ☝ Initializing the flexible disk does not create file systems on MS-DOS.

D

HP 9153C with Series 200/300 and Pascal

Note	*Before* you follow the steps in this appendix, be sure you have performed all the steps in chapter 2.

The HP 9153C is supported on Pascal 3.2 or later with Series 200 and Series 300 computers.

This appendix provides information on how to use your HP 9153C with your Series 200/300 computer and Pascal. Please refer to the following Series 200/300 and Pascal manuals for more information:

Peripheral Installation Guide
Pascal User's Guide
Pascal Workstation System Manual
Programming and Configuration Topics

Booting Your System

Note	If your disk drive is an option 011, 021, or 041, you cannot "boot" (load the operating system and utilities) from the disk drive until you copy Pascal to the hard disk.

"Booting" loads the operating system and utilities. Boot your system as follows:

1. Insert the *Boot* disk (Series 200) or the *Boot2* disk (Series 300) into the flexible disk port.

2. The computer will load utilities from the *Boot* or *Boot2* disk and the screen will prompt:

   Please put SYSVOL in unit #3 and press the X key ...

   Insert the *SYSVOL* disk into the flexible disk port and press (X).

3. The screen will prompt:

   New clock time [zone]?

   Type the time and press (Enter).

4. The screen will display the following command line:

   Command: Compiler Editor Filer Initialize Librarian Run eXecute Version?

   When the command line appears, remove the *SYSVOL* disk and insert the *Access* disk into the flexible disk port.

Initializing the Hard Disk

Caution	Initializing erases any data stored on the hard disk.

Initialize the hard disk as follows:

1. Turn on your disk drive and wait for it to complete self-test. Make sure your computer is turned off.

2. Turn on your computer system and wait for it to complete self-test. The computer now searches for an operating system.

3. Press the ⓧ key for eXecute.

4. The screen will prompt:

   Execute what file?

   Type ACCESS:MEDIAINIT and press [Enter].

5. The screen will prompt:

   Volume ID?

   Type #11 and press [Enter].

6. Remove the *Access* disk.

7. The screen will prompt:

   Are you sure you want to proceed?   (Y/N)

   If you want to continue initializing the hard disk, press ⓨ and go to the next step. .

   If you want to stop initializing the hard disk, press ⓝ.

8. The screen will prompt:

   Interleave factor (defaults to 1)

   The default interleave factor for the hard disk is 1. Press [Enter] to select an interleave factor of 1.

9. After the interleave factor is selected, the screen will display:

   Medium initialization in progress.

4. The screen will prompt:

   Volume ID?

   Type #3 and press [Enter].

5. Remove the *Access* disk.

6. Insert the flexible disk you want to initialize into the flexible disk port.

7. The screen will prompt:

   Are you sure you want to proceed?   (Y/N)

   Press [Y] if you wish to continue with the initialization procedure.

   Press [N] if you wish to stop the initialization procedure.

8. The screen will prompt:

   Formatting option? (defaults to 0)

9. Press [Enter] if you want to select the default format option 0. Otherwise, type the number of the format option that you want to select, and press [Enter]. (Refer to chapter 4 to select the proper formatting option.)

   If you are initializing a flexible disk, the screen will prompt:

   Interleave factor [1..27] (defaults to 1)

   An interleave factor of 1 optimizes system performance with your HP 9153C. To select the default interleave factor of 1, press [Enter].

Note 👉 If you intend to use the flexible disk to interchange data with disk drives other than your HP 9153C, enter an interleave factor of 2. (Refer to chapter 4, "Selecting an Interleave Factor".)

10. After the interleave factor is selected, the screen will display:

    `Medium initialization in progress.`

11. At the end of the initialization process, the screen will display another line:

    `Medium initialization in progress`
    `Medium initialization completed`

    About ten seconds later, the screen will display:

    `Volume zeroing in progress`
    `Volume zeroing completed`

12. The disk has been successfully initialized.

E

HP 9153C with Series 300 and HP-UX

Note	Before you follow the steps in this appendix, be sure you have performed all the steps in chapter 2.

The HP 9153C is supported on HP-UX 5.5 or later versions with Series 300 computers.

This appendix provides information on how to use your HP 9153C with your Series 300 computer and HP-UX. Please refer to the following Series 300 and HP-UX manuals for more information:

HP-UX User's Guide
HP-UX Reference Manual
HP-UX System Administrator Manual
Peripheral Installation Guide

Initializing and Mounting the Hard Disk

The following steps show you how to create device files for your HP 9153C hard disk, initialize the hard disk, and mount the hard disk to your HP-UX system:

Note ☝ These steps show you how to mount one volume only, and are valid only if the CONFIGURATION switch is set to 0 or 1. If your CONFIGURATION switch is set for multiple volumes, you must create a file system and mount directory for each volume.

1. Login as root.

2. Create a block device file (example is for a hard disk with select code 7, address 2):

   mknod /dev/dsk/1s0 b 0 0x070200

3. Create a character device file (example is for a hard disk with select code 7, address 2):

   mknod /dev/rdsk/1s0 c 4 0x070200

4. Initialize the hard disk with an interleave factor of 1 (-i1) to optimize system performance:

   mediainit -v -i1 /dev/rdsk/1s0

   When initialization is complete, the screen will display:

   mediainit:initialization process completed

5. Create a file system:

   newfs -n -v /dev/rdsk/1s0 hp9153C_noswap

6. Create a mount directory (user is the name of the mount directory in this example):

   mkdir /user

7. If your HP 9153C hard disk is a permanent part of your system, add the following lines (on a single line) to /etc/checklist (the hard disk will automatically be mounted each time the system is booted):

```
/dev/dsk/1s0      1s0/user   /hfs
rw  0  2      #9153C file system
```

Initializing and Mounting a Flexible Disk

Copy a file to the flexible disk using the HFS filesystem as follows:

1. Login as root.

2. Create a block device file (example is for a 9153C with select code 7, address 2):

   ```
   mknod /dev/dsk/2s0 b 0 0x070210
   ```

3. Create a character device file (example is for a 9153C with select code 7, address 2):

   ```
   mknod /dev/rdsk/2s0 c 4 0x070210
   ```

4. Insert the flexible disk into the flexible disk port.

5. Initialize the flexible disk with an interleave factor of 1 (-i1) to optimize system performance:

   ```
   mediainit -v -i1 -f3 /dev/rdsk/2s0
   ```

6. If you want to use the flexible disk to transport files from your hard disk to a hard disk on another system or for miscellaneous file storage, use the cpio or backupf command.

7. If you want to use the flexible disk as file system space, perform the following steps:

   a. Create a file system on the flexible disk:

      ```
      newfs -v -n /dev/rdsk/2s0 hp9153C_noswap
      ```

b. Create a mount directory (user is the name of the mount directory in this example):

   mkdir /user

c. Mount the flexible disk to the mount directory:

   mount /dev/dsk/2s0 /user

Note	Since flexible disks are removable, do not make them part of your automatically mounted file systems by adding them to /etc/checklist.

F

HP 9153C with the HP 150 PC

Note | *Before* you follow the steps in this appendix, be sure you have performed all the steps in chapter 2.

The HP 9153C is supported on MS-DOS 3.2, Rev E.01.02, or later versions with the HP 150 II PC.

This appendix provides information on how to use your HP 9153C with your HP 150 II PC (also referred to as HP 150C or HP Touchscreen II PC). Refer to your HP 150 computer documentation for more information.

Note | If you have an HP 9153C Option 011, 021, or 041, you can connect your HP 9153C to your HP 150 *only* if you already have a flexible disk mechanism connected to your HP 150. Options 011, 021, and 041 have no flexible disk mechanism, and are supported only as add-on devices.

Loading the Operating System and P.A.M.

Load P.A.M. (Personal Applications Manager) and the operating system as follows:

1. Insert the System Master Disk into the flexible disk port.

2. Turn on your HP 150. In approximately 30 seconds, the following label will appear on the screen:

   Personal Applications Manager

Configuring Your Flexible Disk Mechanism

Note

If your HP 9153C has a hard disk mechanism only (Option 011, 021, or 041), you do not need to configure the hard disk mechanism into your HP 150. The hard disk mechanism is automatically configured into your HP 150.

If your HP 9153C has a flexible disk mechanism (Option 010, 020, or 040), perform the following steps to configure the flexible disk mechanism into your HP 150:

```
┌─────────────────────────────────────────────────────────────────┐
│ MS-DOS Device Configuration      Main                           │
└─────────────────────────────────────────────────────────────────┘

System Devices
                                      Print
            Interface   Address   Model  Wheel            Interface   Address
   PRN:  [HP-IB]        [1]      [B2906A]        PLT:  [Port2]
   LST:  [Port2]                 [2602A] [USASCII]   COM1: [Remote]
   AUX:  [Remote]                                 COM2: [Port2]



Disc Drives    Maximum Sector Size [1024] bytes   RAM Disc Size [ 0 ] K bytes

       Interface  Addr  Drive       Interface Addr Drive       Interface Addr Drive
   A:  HP-IB       0     0      E:  [No Device]          I:  [No Device]
   B:  [HP-IB]    [0]   [1]     F:  [No Device]          J:  [No Device]
   C:  [No Device]             G:  [No Device]          K:  [No Device]
   D:  [No Device]             H:  [No Device]          L:  [No Device]


   [      ] [Previous] [Next  ] [Save  ]³  ¹[Default] [Active] [      ] [Exit  ]
            [Choice  ] [Choice] [Config]   [Values ] [Values]          [Config]

                         Num Pad   10:59
```

Device Configuration Screen

1. From the P.A.M. screen, highlight DEVICE CONFIG using the (Tab) key or arrow key.

2. Press (F1) (Start Applic).

3. Press the (Tab) key to move the cursor to the Interface field after B: on the Device Configuration screen, then press (F2) (Previous Choice) or (F3) (Next Choice) to change the field to HP-IB.

4. Press the (Tab) key to move the cursor to the Addr field after B: on the Device Configuration screen, then press (F2) (Previous Choice) or (F3) (Next Choice) to change the field to 0.

5. Press the (Tab) key to move the cursor to the Drive field after B: on the Device Configuration screen, then press (F2) (Previous Choice) or (F3) (Next Choice) to change the field to 1.

Note

For option 040 and 041 disk drives, the Maximum Sector Size field must be set to 1024 bytes.

---

6. Press (F4) (Save Config). The following message will appear:

   Device Configuration has been saved.

7. Press (F8) (Exit Config).

8. You must "boot" your computer system so the new configuration data is entered into your operating system. ("Booting" loads the operating system and P.A.M..) To boot your system, press (Shift), (CTRL), and (Reset). The P.A.M. screen will appear.

Formatting the Hard Disk

To format your hard disk (drive B in this example), perform the following steps:

Caution

Formatting (initializing) erases any data stored on the hard disk.

1. Insert the HP 150 System Master Disk into the flexible disk port and press [F4] (Reread Discs).

2. When P.A.M. appears on your screen, highlight FORMAT.

3. Press [F1] (Start Applic).

4. The screen will display a list of disk drives. Since you want to format the hard disk, use the [Tab] (or arrow) keys to point to Drive B.

5. Press the [Select] key.

6. The following prompt will appear:

   Type the disc label (11 characters or less) and press Return.

   Type a name for the disk or press [F8] (No Disc Label).

7. If you want to copy the operating system and P.A.M. when you format your hard disk, press [F4] (Copy System). An asterisk (*) in the Copy System block indicates that the operating system will be copied to the hard disk during the formatting process.

8. Press [F5] (Start Format). The following message may appear:

> This disc has files. Do you want to destroy them? Select Yes or No.

If your HP 9153C has never been formatted:

a. Make sure the HP 150 System Master Disk in your flexible disk port is write-protected if you do not want to format the System Master Disk accidentally.

b. Select "Yes" to format the hard disk.

If your HP 9153C has been formatted and you have stored data on the hard disk:

a. Make sure the disk drive highlighted on your screen is the one you want to format.

b. If you want to destroy the data on the hard disk select "Yes" to format the hard disk.

c. If you *do not* want to destroy the data on the hard disk, select "No".

Caution ✊ When you select "Yes" to begin formatting, your disk drive waits about 30 seconds. If you decide that you do not want to format the hard disk, *turn off the disk drive* to save the data stored on your disk. If you turn off the disk drive after 30 seconds, the data will be lost.

9. If you are copying the operating system, the HP 150 reads all operating system files from the flexible disk. (During formatting, the flexible disk access indicator is illuminated.)

The following message will appear:

All system files have been read. Insert disc(s) to be formatted.

Since you are formatting the hard disk, simply press [Return].

10. The **Formatting** screen will appear with the hard disk highlighted. Formatting takes one to two minutes per megabyte. The ON LINE indicator on the front panel is illuminated while the hard disk is formatted.

11. After the hard disk is formatted, the following message will appear:

Press Start Over or Exit Format.

Press [F8] (**Exit Format**) to return to P.A.M.

Booting from the Hard Disk

If you copied the operating system to your hard disk, you need to make some changes so the operating system loads or "boots" from the hard disk instead of the flexible disk.

If your 9153C has a flexible disk mechanism (Option 010 020, or 040):

1. Turn off your computer and your disk drive.

2. Reset the ADDRESS switch on the rear panel of the disk drive to 0. This tells your computer that the hard disk is *Drive A* (your system boots from *Drive A*) and the flexible disk is *Drive B*.

3. Turn on the disk drive and wait for it to complete the self-test.

4. Turn on your computer. When the operating system and P.A.M. have been loaded, the P.A.M. screen will appear.

If your 9153C does not have a flexible disk mechanism (Option 011, 021, or 041), and you copied the operating system to your hard disk from a dual flexible disk drive which will remain as part of the system:

1. Turn off your disk drive.

2. From P.A.M., select Device Config.

3. Press F1 (Start Applic). The Device Configuration screen will appear.

4. Press the red System key. System function keys will appear at the bottom of the screen.

5. Press F8 (Config Keys).

6. Press F1 (Global Config).

7. Using the Tab key, move the cursor to Op Sys Dev.

8. Press F3 (Previous Choice) or F2 (Next Choice) until HP-IB 0 appears.

9. Press F1 (Save Config). The Device Configuration screen will reappear.

10. Press **Previous Choice** or **Next Choice** for each field after B: and C: until the fields appear as follows:

B:	HP-IB	1	0
C:	HP-IB	1	1

    These changes signal your HP 150 that the hard disk is *Drive A* (your system boots from *Drive A*) and that the flexible disks are *Drive B* and *Drive C*).

11. Press `F7` (**Save Config**).

12. Turn on the disk drive and wait for the self-test to complete.

13. Turn off your computer, then turn it on again to automatically load the operating system and P.A.M..

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HP 9153C with Other Computers

This appendix provides information on using your HP 9153C with computers other than those in appendixes C through F. If your computer is not listed in this appendix, consult your HP sales representative.

Note   If you are connecting this drive to any non-HP, IBM-compatible computer, you must also order an HP 88500A Interface. The interface package includes a manual with installation and operating information.

HP 260   The HP 9153C is supported on B.09 or later versions with the HP 260 Computer. Please refer to the following manuals:

Operating and Managing Your HP 260
HP 260 Configuration Guide

HP 1000

The HP 9153C is supported on RTE-A 5.0 or later versions with the HP 1000 A-Series Computer. Please refer to the following manuals:

RTE-A System Generation and Installation Manual
RTE-A User's Manual
RTE-A Utilities Manual
RTE-A Driver Reference Manual

HP 64000

The HP 9153C is supported on Rev. 2.09 or later versions with the HP 64000 Computer. Please refer to *Installation and Configuration Reference Manual.*

Note

The flexible disk in HP 9153C Option 010, 020, or 040 disk drives is not supported on HP 64000 Computers. You must use an HP 9153C Option 011, 021, or 041 on HP 64000 computers.

IBM Compatibles

Please refer to *Using Your HP Disk Drive or Tape Drive*

Glossary

Address

A number that identifies each peripheral on a computer system. The computer uses the address to communicate with each peripheral.

ADDRESS Switch

A rotary switch located on the back panel of the disk drive used to set an address for the disk drive.

Application

A software package that enables a user to perform a task with a computer.

Backup

A duplicate copy of the data on a disk, stored on another disk or magnetic tape.

Booting

The process of loading the operating system and utilities into your computer's memory.

Bus

A group of signal lines over which devices on a computer system communicate. The bus is similar to a telephone line shared by several telephones with different numbers.

Byte

Eight consecutive data bits.

Capacity

The total amount of data storage on a disk measured in bytes or megabytes.

CONFIGURATION Switch

A rotary switch located on the back panel of the disk drive used to partition the hard disk into one volume, multiple volumes, or to prevent accidental initialization of existing volumes.

Disk

A circular plate coated with magnetic material used to store programs and data in digital format. A disk may be flexible or hard.

Disk Drive

An electromechanical device that enables a computer to store and retrieve data.

Double-sided Disk

A flexible disk that has two sides on which data may be recorded.

Double-sided Disk Drive

A disk drive that contains a flexible disk mechanism with two read/write heads that record data on both sides of a flexible disk.

Double-sided Formatting

Prepares a flexible disk for recording data on two sides (see "Formatting").

Fault Indicator

An indicator on the front panel of the unit that illuminates during the self-test and remains illuminated if there is a disk fault.

Fixed Disk

A disk that cannot be removed from your disk drive. Also called "hard" or "Winchester" disk.

Flexible Disk

A disk made from a plastic material.

Flexible Disk Access Indicator

An indicator that illuminates when the computer is sending data to or receiving data from the flexible disk drive.

Flexible Disk Mechanism

A device that contains electronic and mechanical parts to spin a flexible disk, write data on a flexible disk, and read data from a flexible disk.

Formatting

The process that prepares a disk to receive and store data. Also known as "initializing." Formatting first checks a disk for damaged surfaces where data cannot be stored, then sets up a directory on the disk so that the computer knows where to store and retrieve data.

Hard Disk

Also called a "fixed" or "Winchester" disk. A hard disk is called hard because it is made of aluminum.

Hard Disk Mechanism

A device that contains electronic and mechanical parts to spin a hard disk, write data on a hard disk, and read data from a hard disk.

Head

A disk drive part that reads data from the disk and writes data to the disk.

HP-IB

An acronym for Hewlett-Packard Interface Bus. The HP-IB is a group of signal lines that enables a computer and periperals to communicate.

HP-IB Cable

Provides the connection between a computer and peripherals (printers, plotters, scanners, and disk drives).

Initializing

The process that prepares a disk to receive and store data (see "Formatting").

Interleave Factor

The interleave factor determines the order your computer reads sectors on a disk, and affects system performance.

Mbyte

Abbreviation for "megabyte", a unit of measurement for memory storage. One megabyte is equal to one million bytes.

Media

A word that means the same as disk. Media also refers to the magnetic material on the surface of a disk (see "Disk").

ON LINE Indicator

An indicator that illuminates when the disk drive is enabled to receive data from or send data to the computer.

Peripheral

A device external to the computer that is controlled by the computer (e.g., tape drives, disk drives, printers, and plotters).

Program

A set of instructions or steps telling the computer how to handle a problem or task.

Read/Write Head
See "Head".

Sector
The smallest addressable data storage area on the surface of a disk.

Self-test
A series of internal routines performed by the disk drive when it is turned on. The routines ensure the disk drive is functioning correctly (see Fault Indicator).

Single-sided Disk
A flexible disk that has only one side on which data may be recorded.

Single-sided Disk Drive
A disk drive that contains a flexible disk mechanism with one read/write head that records data on only one side of a flexible disk.

Single-sided Formatting
Prepares a flexible disk for recording data on one side (see "Formatting").

Software
A computer program or a set of computer programs.

Track
A ring of sectors on the surface of a disk. Tracks form concentric rings on the surface of a disk where data can be recorded.

Volume
A section of tracks on the surface of a disk.

Winchester
Another name for *fixed* or *hard* disk.

Write-protect

A method of protecting against data being erased or
overwritten on a disk.

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Computer
Museum

Attention

To avoid damaging the disk drive, please follow these instructions!

1. Push the tab attached to the disk to the RIGHT.

2. Press the disk eject button FULLY before removing the disk.

If the shipping disk is only partially ejected, press the eject button before removing or inserting the disk.

ATTENTION

Pour éviter d'endommager l'unité de disque suivez ces conseils:

1. Poussez la languette du disque vers la DROITE.

2. Poussez à FOND sur le bouton d'éjection du disque avant d'enlever le disque.

Si le disque utilisé pour l'emballage n'est éjecté que partiellement, poussez le bouton d'éjection avant d'enlever ou de mettre le disque.

ATTENZIONE

Per evitare di danneggiare l'unitá disco, seguire le seguenti istruzioni:

1. Spingere verso DESTRA la linguetta attaccata al disco.

2. Premere fino FONDO il tasto di espulsione prima di estrarre il disco.

Se il disco di spedizione appare espulso solo parzialmente, premere ancora il tasto di espulsione prima di estrarre o di inserire il disco.

ATENCION

Para no dañar el tocadiscos, siga estas instrucciones!

1. Mueva el marbete del disco hacia la DERECHA.

2. Oprima a FONDO la tecla de expulsión antes de sacar el disco.

Si el disco usado para el embarque no está afuera del todo, oprima el botón de expulsión antes de sacarlo o de introducir un disco.

VORSICHT

Bitte beachten Sie die folgenden Hinweise, um das Beschädigen des Diskettenlaufwerks zu vermeiden.

1. Schieben Sie den sich an der Diskette befindenden Riege nach RECHTS.

2. Drücken Sie die Diskettenauswurftaste bis zum ANSCHLAG, bevor Sie die Disketten entnehmen.

Falls Sie die zum Versand verwendete Diskette nicht vollständig eingeschoben vorfinden, drücken Sie die Auswurftaste, bevor Sie die Diskette entweder entnehmen order einschieben.

OBSERVERA

För att undvika skada på skivenheten, följ dessa instruktioner!

1. Skjut fliken som finns på disketten till HÖGER.

2. Tryck ned utkastarknappen HELT innan disketten tas ut

Om leveransdisketten endast är utkastad till hälften, tryck ned utkastarknappen innan disketten tas ut eller sätts in igen.