



HP 9133V/XV & 9134XV Disc Memory User's Manual

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Chapter 1

General Description

- Introduction
- About This Manual
- Technical Specifications

Introduction

The HP 9133V, 9133XV, and 9134XV disc memories (Figure 1-1) are random access data storage devices. The 9133V and 9133XV each contain a 5 1/4-inch Winchester disc and a 3 1/2-inch flexible disc drive, and the 9134XV contains a 5 1/4-inch Winchester disc drive only.

The 9133V is available with the Winchester disc configured as a single volume with a formatted capacity of 4.8 Mbytes, or as four volumes with a formatted capacity of 1.15 Mbytes per volume as option 004. The four volume configuration emulates an HP 9895A 8-inch flexible disc drive master with three slave drives, and can be operated by any computer which supports the 9895A.

The 3 1/2-inch flexible disc drive in the 9133V and 9133XV emulates an HP 9121S flexible disc drive and can be operated by any computer which supports the 9121S or 82902M flexible disc drives.

The 9133XV and the 9134XV are available with the Winchester disc configured as a single volume with a formatted capacity of 14.5Mbytes only.

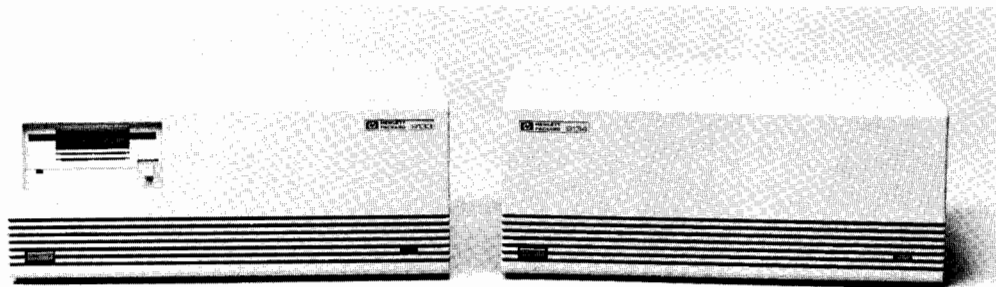


Figure 1-1. HP 9133V/XV and HP 9134XV Disc Memories

About This Manual

This manual is designed to help you install your disc memory in your system and assure that it is functioning correctly. It also provides information to help you in handling your flexible discs properly to assure reliable operation.

Appendix A contains the most current information available at the time this manual was printed to help you get started using your disc memory with your Series 80, Series 100, or Series 200 computer system. This information is only to help you get started. Refer to the manuals for your system for detailed information.

Technical Specifications

Listed below are the physical, electrical, and environmental specifications for the HP 9133V/XV and 9134XV disc memories.

Unit Specifications		
	9133V/XV	9134XV
Power Requirements:		
Source(selected by rear panel switch)	90-125Vac 180-250Vac	90-125Vac 180-250Vac
Line Frequency	48-66 Hz	48-66 Hz
Power Consumption (max)	125W	125W
Environmental Range:		
Operating Temperature	10° to 40°C (50° to 104°F)	10° to 40°C (50° to 104°F)
Storage Temperature	-40° to 60°C (-40° to 140°F)	-40° to 60°C (-40° to 140°F)
Operating Humidity (non-condensing) 25°C max wet bulb temperature	20% to 80%	8% to 80%
Storage Humidity (non-condensing)	5% to 95%	5% to 95%
Operating Altitude	0 to 4572m (0 to 15000 ft)	0 to 4572m (0 to 15000 ft)
Storage Altitude	-304 to 1524m (-1000 to 50000ft)	-304 to 1524m (-1000 to 50000ft)
Size/Weight:		
Height	125mm(4.9 in)	125mm(4.9 in)
Width	325mm(12.8 in)	325mm(12.8 in)
Depth	285mm(11.2 in)	285mm(11.2 in)
Net Weight	10kg(22 lb)	8.64kg(19 lb)
Shipping Weight	16.8kg(37 lb)	15.5kg(34 lb)

Drive Specifications

	3 1/2" Flexible Disc	5 Mbyte Winchester	15 Mbyte Winchester
Technical	9133V/XV	9133V	9133XV, 9134XV
Formatted Capacity:			
Bytes per Unit	270K	4.8M (4.6M opt 004)	14.5M
Bytes per Sector	256	256	256
Sectors per Track	16	31 (30 opt. 004)	31
Tracks per Surface	66	305	305
Surfaces per disc	1	2	6
Tracks per inch	135	345	345
Recording Format	dbl density	----	----
Max Sustained Transfer Rate*	17.8kb/sec	50kb/sec	50kb/sec
Average Access Time	415msec(on) 1415msec(off)	85msec	85msec
Rotational Speed	600rpm	3600rpm	3600rpm
Media Part Number (10 pack)	HP 92191A		

*Mainframe dependent

NOTE

The flexible disc drive in the 9133V/XV disc memories is designed for operation in a typical office environment. Use of the equipment in an environment containing dust, dirt, or corrosive substances will cause the flexible disc drive and media life to be drastically reduced.



Chapter 2 Installation

- **Equipment Supplied**
- **Unpacking Your Disc Memory**
- **Configuring Power**
- **Interfacing the Disc Memory to Your System**

Equipment Supplied

Please check to insure that you have received all of the standard equipment. If any items are incorrect or missing, please contact the dealer or HP Sales Office from whom you purchased the unit.

Description	Quantity	HP Part Number
Power Cable	1	Dependent on location
User's Manual	1	09133-90010
Fuse	1	3A,250VAC or 2A,250VAC (The correct fuse for your area was installed at the factory)
		2110-0003 2110-0002
Flexible Disc Media	1	

A package of ten 3 1/2-inch flexible discs can be ordered for your 9133V/XV using the 92191A product number.

Unpacking Your Disc Memory

Your disc memory was carefully inspected before shipment. Remove the unit from the shipping carton and carefully inspect the unit for any physical damage that may have occurred during shipment. If you find any damage, you should immediately notify your dealer or HP Sales Office from whom you purchased the unit and file a claim with any carriers involved.

CAUTION

THE DISC MEMORY IS A PRECISION INSTRUMENT. MECHANICAL SHOCK WHICH OCCURS AS A RESULT OF THE DISC MEMORY BEING DROPPED MAY MISALIGN THE READ/WRITE HEADS AND DAMAGE THE DISC. DAMAGE MAY OCCUR WHETHER THE DISC MEMORY IS OPERATING OR NOT, AND IT IS MOST SUSCEPTIBLE TO BEING DAMAGED WHEN IT IS NOT OPERATING. IF THE DISC MEMORY IS MOVED, BE CAREFUL WHEN PICKING IT UP AND SETTING IT DOWN.

Carefully repack the disc memory in the original shipping carton before transporting it to another site.

Configuring Power

The following information should be used to ensure that your disc memory is set up to operate from the line voltage available in your area.

Setting the Line VOLTAGE SELECT Switch

The VOLTAGE SELECT switch on the rear panel was set to the line voltage for the original destination when shipped from the factory. Verify that the setting is correct for your line voltage before connecting to your power source.

Figure 2-1 shows the setting of the VOLTAGE SELECT switch for the two ranges of line voltage.

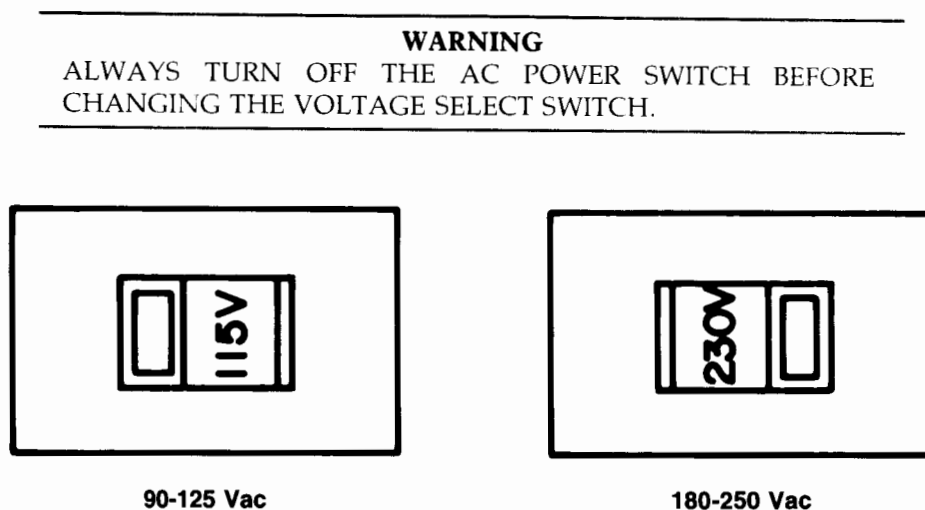


Figure 2-1. Line VOLTAGE SELECT Switch

Fuses

A different fuse is required for each of the two voltage ranges of 90-125 and 180-250 VAC. The correct fuse for the original destination was installed before shipment from the factory and a spare fuse was included.

Table 2-1 gives the correct fuse ratings and fuse part numbers.

Table 2-1. Fuses

Switch Setting	Voltage Range	Fuse Rating	HP Part Number
115V	90-125VAC	3 A 250 VAC Normal Blow	2110-0003
230V	180-250VAC	2 A 250 VAC-Normal Blow	2110-0002

WARNING

ALWAYS DISCONNECT THE DISC MEMORY FROM THE AC SOURCE BEFORE CHANGING FUSES.

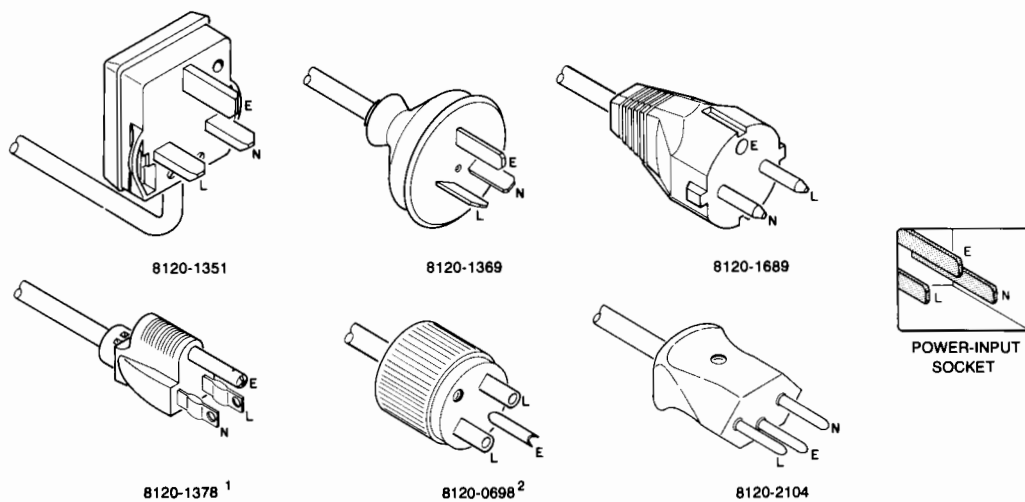
Power Cords

Power cords supplied by HP have polarities matched to the power input socket on the equipment (Figure 2-2).

L = Line or active conductor (also called "live" or "hot")

N = Neutral or identified conductor

E = Earth or safety ground



¹UL and CSA approved for use in the United States of America and Canada with equipment set for either 100 or 120 Vac operation.

²UL and CSA approved for use in the United States of America and Canada with equipment set for either 200 or 240 Vac operation.

Figure 2-2. Available Power Cords

WARNING

IF IT IS NECESSARY TO REPLACE THE POWER CORD, THE REPLACEMENT CORD MUST HAVE THE SAME POLARITY AS THE ORIGINAL. OTHERWISE, A SAFETY HAZARD MIGHT EXIST IF AN INTERNAL FAILURE OCCURS.

The cord packaged with the equipment depends upon where the equipment is to be delivered.

Interfacing the Disc Memory to Your System

The disc memory is connected to the computer via the Hewlett Packard Interface Bus (HP-IB).

Selecting the Device Address

Each device in an HP-IB system must be set to a unique device address. The 9134XV disc memory contains one device, and the 9133V/XV disc memories contain two devices. A device address switch is provided for each device. See Figure 2-3 for switch locations.

Prior to setting the device address switches, turn the disc memory LINE switch OFF.

The switches can be set to any one of eight device addresses, ranging from decimal 0 through 7. Refer to Figure 2-3 to set these switches to the desired device address.

Switch Setting					
Address	*TEST	4	2	1	
0	**	DOWN	DOWN	DOWN	(Factory setting for Winchester)
1	**	DOWN	DOWN	UP	
2	**	DOWN	UP	DOWN	(Factory setting for flexible disc)
3	**	DOWN	UP	UP	
4	**	UP	DOWN	DOWN	
5	**	UP	DOWN	UP	
6	**	UP	UP	DOWN	
7	**	UP	UP	UP	

* The TEST switch for the flexible disc is on the 9133V/XV only. Refer to Chapter 3 for test information.

** The TEST switch on the flexible disc device switch must be up for normal operation. The position of this switch on the fixed disc device address switch does not affect operation.

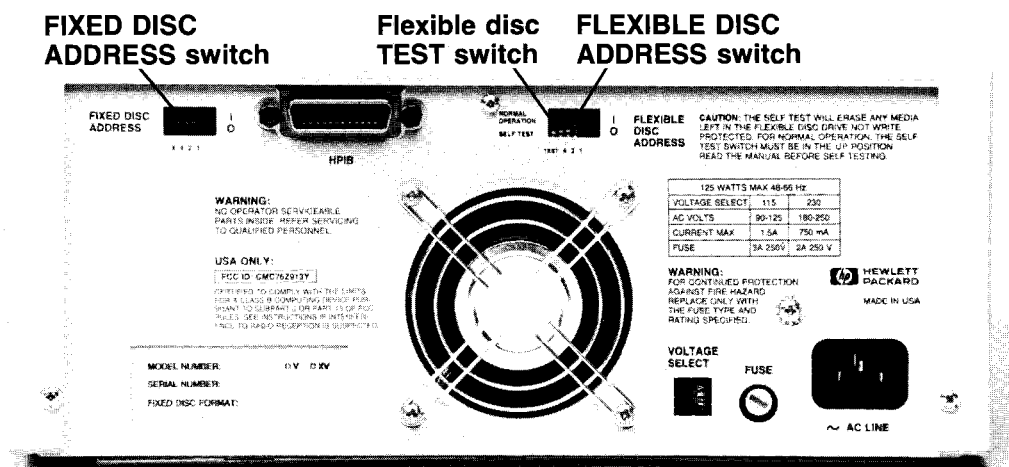


Figure 2-3. Device Address Switch Location

NOTE

If the TEST switch on the flexible disc device switch is in the DOWN position, the computer will not be able to communicate with the disc drive and will probably indicate that the disc drive is not present.

CAUTION

ALWAYS SET THE AC LINE SWITCHES TO "OFF" (0) FOR THE COMPUTER AND THE DISC DRIVES WHEN INSERTING OR REMOVING THE INTERFACE CABLES. USE ONLY CABLES DESIGNED BY HEWLETT-PACKARD FOR YOUR EQUIPMENT. FAILURE TO DO SO COULD DAMAGE THE DISC DRIVE OR THE CONTROLLING COMPUTER.

Refer to Figure 2-4 for a list of the HP-IB interface cables used with HP computers.

Length	Accessory Number
1 metre	10833A
2 metres	10833B
4 metres	10833C
.5 metre	10833D

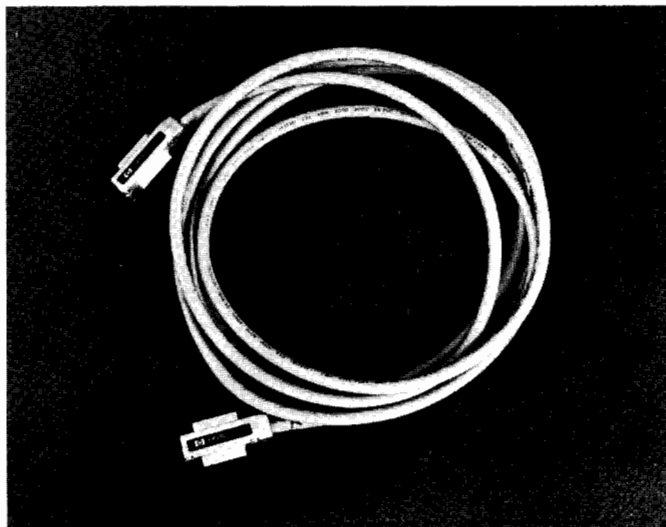


Figure 2-4. HP-IB Interface Cables

HP-IB Interface Restrictions

1. All the AC line switches must be turned "OFF" when connecting (and disconnecting) devices to your system.
2. The total length of cable permitted in one bus system must be less than or equal to two metres times the number of devices connected together (the interface card is counted as one device).
3. The total length of the cable must not exceed 20 metres. For example, a system containing six devices can be connected together with cables that have a total length less than or equal to 12 metres (six devices x 2m/device = 12 metres). The individual lengths of cable can be distributed in any manner desired as long as the total length does not exceed the allowed maximum. If more than 10 devices are to be connected together, cables shorter than two metres must be used between some of the devices to keep the total cable length less than 20 metres.

4. The maximum number of devices that can be connected together in one bus system is 15. There are no restrictions to the way cables may be connected together; however, it is recommended that no more than four piggyback connectors be stacked together on one device. The resulting structure could exert enough force on the connector mounting to damage it.

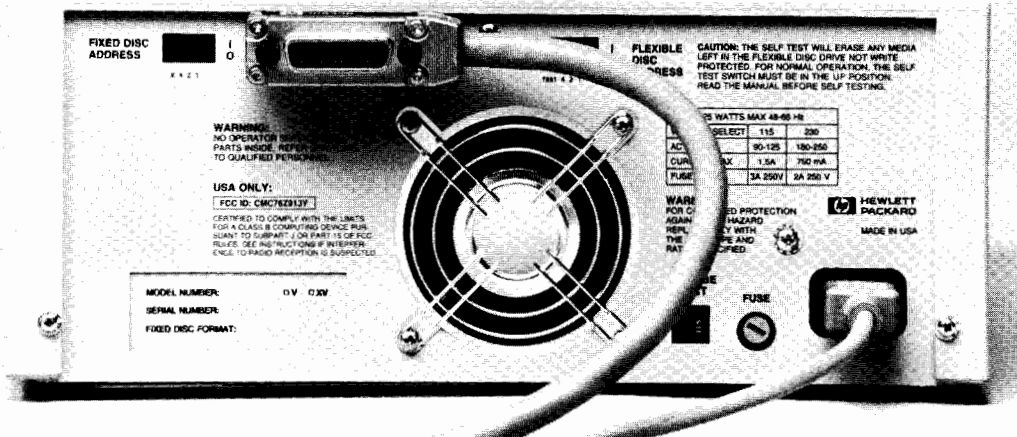


Figure 2-5. Interface Connection

CAUTION

USERS OF THE 9133V/XV OR 9134XV ON A 86B COMPUTER SHOULD PLACE THE DISC MEMORY TO THE SIDE OF THE COMPUTER. LOCATING THE DISC MEMORY IN A VERTICAL STACK IN BETWEEN THE MONITOR AND THE COMPUTER WILL RESULT IN NON-COMPLIANCE WITH REGULATIONS ON RFI. FAILURE TO FOLLOW THIS INSTALLATION INSTRUCTION MAY RESULT IN INTERFERENCE WITH TV AND RADIO RECEPTION.

Chapter 3

Basic Operation

HP 9133V/XV Basic Operation

- Introduction
- Flexible Disc Usage and Handling
- Flexible Disc Description and Write Protection
- Write Protect Error on Initialization
- Inserting and Removing the Flexible Disc
- Media Life
- Operating Controls and Indicators
- Operating Procedure
- Initial Checkout
- System Operation

HP 9134XV Basic Operation

- Operating Controls and Indicators
- Operating Procedure
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HP 9133V/XV Basic Operation

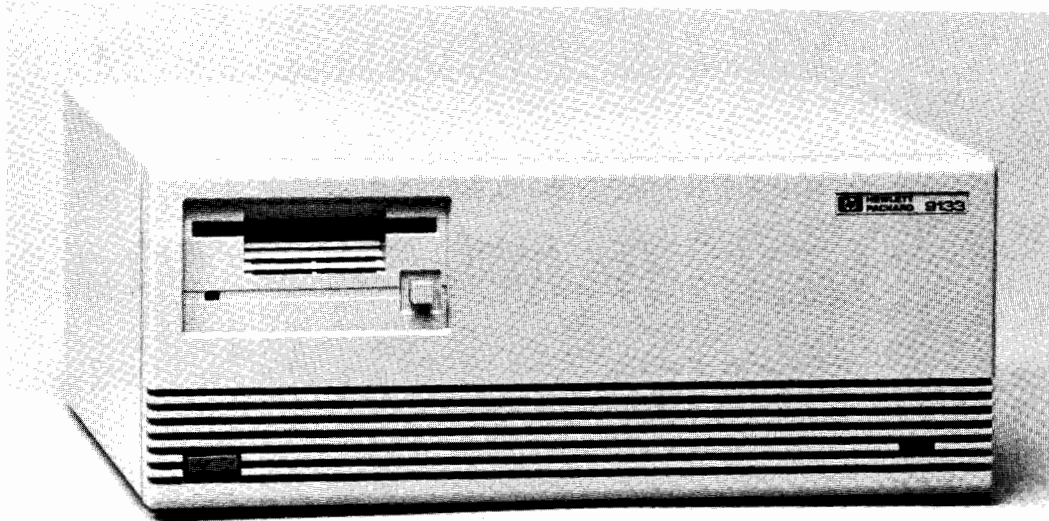


Figure 3-1. The HP 9133V/XV Disc Memory

Introduction

This section of the manual is designed to help you assure that your disc memory is functioning correctly. It also contains information to help you care for your flexible disc properly. Please read the sections describing care and handling of the flexible disc carefully and follow the recommended procedures to assure reliable operation.

Flexible Disc Usage and Handling

Flexible Disc Media

The removable storage medium used in the HP 9133V/XV is a flexible mylar disc coated with a thin layer of magnetic oxide. The disc is enclosed in a protective plastic jacket with a slot for head access to the recording surface.

Each flexible disc must be initialized before it can be used for data storage. The initialization procedure marks each disc sector, checks for defective tracks, and establishes file directories.

Initialization procedures for Series 80, Series 100, and Series 200 computers are included in Appendix A. Refer to your computer programming or mass storage manual for the correct initialization procedure for other computers.

CAUTION

DISC DRIVE PERFORMANCE AND RELIABILITY ARE DEPENDENT ON THE TYPE OF MEDIA USED. DISC DRIVE SPECIFICATIONS CAN BE ASSURED ONLY WHEN USING HP MEDIA. THE USE OF IMPROPER MEDIA CAN RESULT IN PREMATURE DISC FAILURE OR DAMAGE TO THE DISC DRIVE.

ON SOME DISC PRODUCTS HP MAY QUALIFY OTHER NON-HP MEDIA. WHEN TESTED, THIS MEDIA MET HP SPECIFICATIONS. HOWEVER, HP DOES NOT WARRANT OR SUPPORT THIS MEDIA AND CANNOT CONTROL CHANGES IN ITS SPECIFICATIONS OR QUALITY. THE SELECTION AND USE OF SUCH PRODUCTS IS THE CUSTOMER'S RESPONSIBILITY. HP RESERVES THE RIGHT TO EXCLUDE FROM WARRANTY AND MAINTENANCE AGREEMENT COVERAGE ANY REPAIRS WHICH HP REASONABLY DETERMINES OR BELIEVES WERE CAUSED BY THE USE OF MEDIA NOT DISTRIBUTED BY HP. HP WILL UPON REQUEST PROVIDE SUCH REPAIRS ON A TIME AND MATERIAL BASIS.

WARRANTY AND MAINTENANCE AGREEMENT COVERAGE OF REPAIRS NOT CAUSED BY THE USE OF NON-HP MEDIA IS UNAFFECTED.

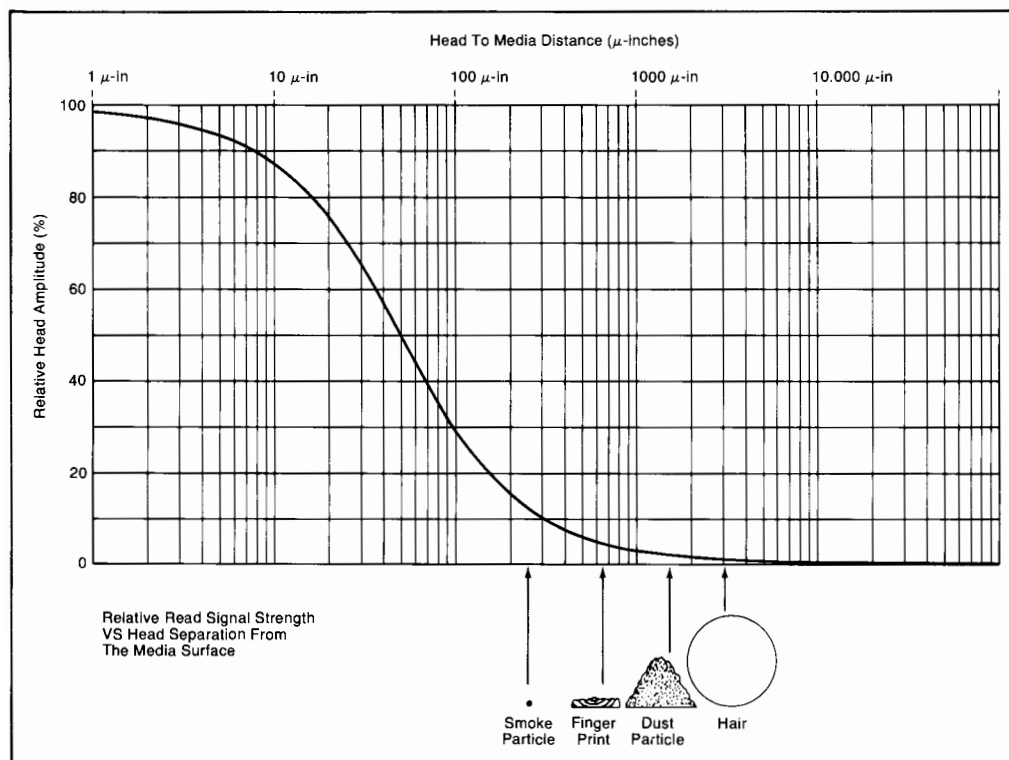


Figure 3-2. Flexible Disc Head/Media Contaminants

Operating Cleanliness

The read/write head must maintain contact with the disc during read and write operations. Figure 3-2 shows various types of contaminants and their size relationships. A contaminant particle hard enough and of the right size may scratch the media oxide coating or the head surface. Even if not hard enough to scratch, it may be large enough to lift the head from the surface, causing data errors or damage to the media.

Handling Flexible Disc Media

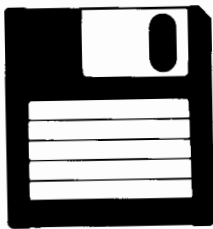
The flexible disc is basically maintenance free, but it **MUST BE HANDLED CAREFULLY**. Remember, the disc contains your valuable data and programs, and should be treated accordingly. A good rule of thumb is to treat your disc as you would a valuable record album. Here are some specific Do's and Don'ts to avoid loss of data or damage to your discs.

Do

Back Up Discs Frequently

There is always a chance of losing data when mass storage devices are accessed. There are many causes in any computer system - a programming bug, operator error, power failure, or hardware failure. In the case of flexible discs, media failure from contamination or wearout is possible. **YOUR BEST PROTECTION AGAINST DATA LOSS IS FREQUENT BACKUP OF YOUR FILES.**

Keep the Disc Guard Over The Head Window When Not In Use



This is the single most important thing to remember about handling your disc because it prolongs disc life by protecting it from dust and scratches. **NEVER ATTEMPT TO BLOW DUST FROM THE DISC SURFACE.** Between uses discs should be stored upright in a dust free container. The box in which the discs are shipped in, or a similar container, is a good choice.

Operate Your System In A Clean Environment



Airborne contaminants and particles accidentally dropped onto the disc will cause your disc to wear out prematurely and may cause unreliable data storage and retrieval operations. Some of the most common contaminants are **DUST, SMOKE, ASHES, ERASER CRUMBS, and BREADCRUMBS**. Chemical vapors may also cause premature wearout. **NEVER ATTEMPT TO BLOW SMALL PARTICLES FROM THE DISC SURFACE.**

Maintain Proper Temperature And Humidity



The proper operating range is 10°C (50°F) to 40°C (104°F) and 20% to 80% relative humidity. While temperature is usually easy to control, it may be necessary to make special provisions to keep the humidity in the proper range. Although the disc will continue to operate outside the normal humidity range, it will wear out more quickly and will have a higher error rate.

Avoid Magnetic Fields



The data is stored on the disc magnetically, and can be erased by an external magnetic field. Avoid placing a disc near power transformers, magnets or large disc memories or motors.

Remove Disc From Drive When Not In Use



Remove the disc completely from the drive when access is not needed for an extended period of time.

Use A Felt Tip Pen To Label Your Disc



Use a soft felt tip pen to label your disc, and be careful to write only in the label area.

Don't Do Not Touch The Surface Of The Disc



The thickness of a fingerprint is enough to lift the head off the disc and cause errors. The oils in a fingerprint will also collect dust which can cause a disc to wear out sooner than normal.

Do Not Try To Clean A Disc

The inside surface of the disc jacket is covered with a special material that cleans the disc as it rotates. Any other method of cleaning may cause solvent damage to the media or scratch the disc, causing loss of data. If a disc becomes dirty or scratched, immediately transfer the data to a new disc and dispose of the old disc.

Flexible Disc Description and Write Protection

The 3 1/2-inch flexible disc is enclosed in a rigid plastic shell for extra protection and reduced disc-to-case friction (see Figure 3-3). A metal centering hub ensures rapid and accurate positioning when the disc is inserted in the drive. The disc shutter, which automatically opens the head access window when the disc is in the drive and then closes the window when the disc is removed from the drive, protects the recording surface from foreign object contamination.

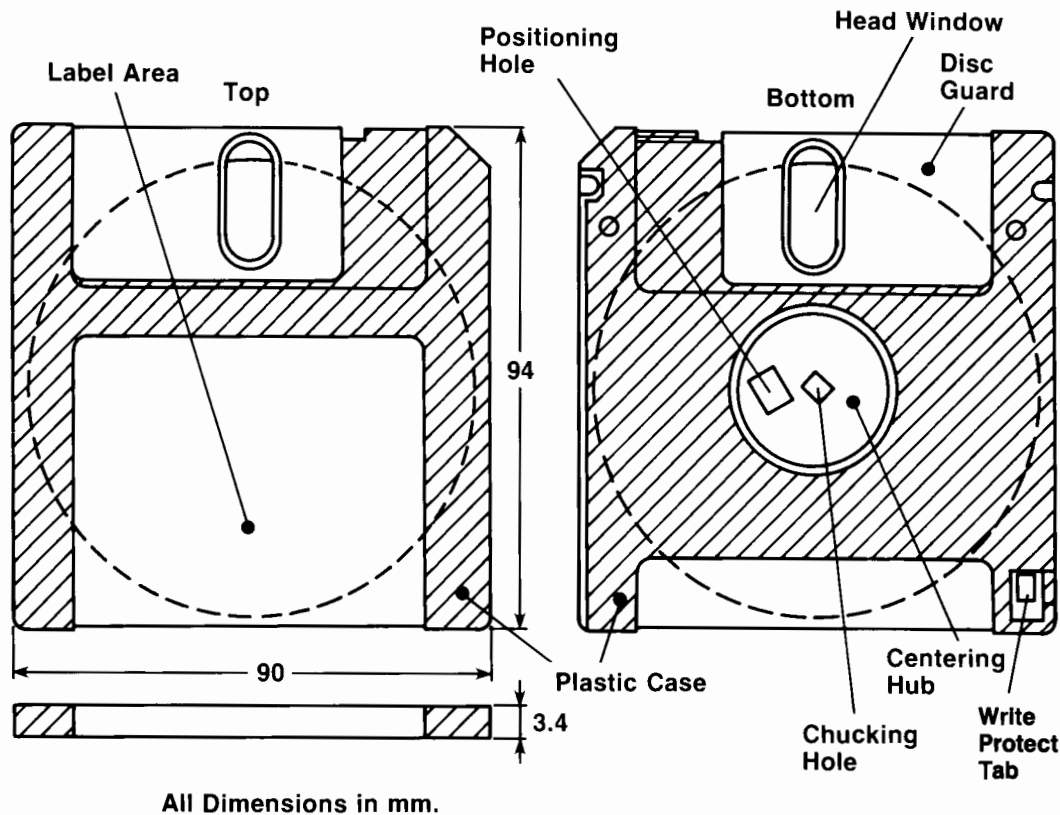


Figure 3-3. The 3 1/2-inch Flexible Disc

The micro-flexible disc is write unprotected when you receive it. To prepare the disc for write protected operation do the following (see Figure 3-4):

1. Lift the free end of the write protect tab and break it off.
2. Align the protrusion on the tab with the slot in the disc.
3. Depress the tab into the groove - tab should fit snugly.

Write protection is accomplished by sliding the tab away from the center of the disc.

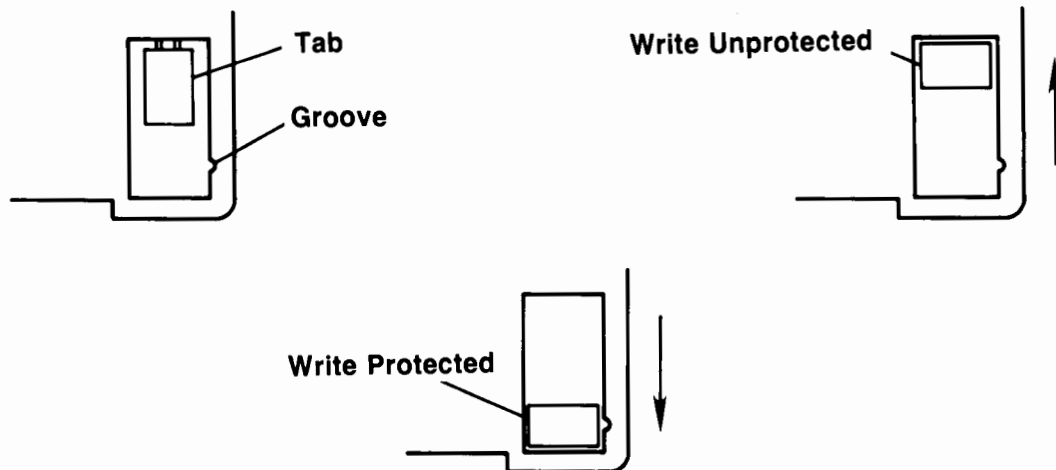


Figure 3-4. 3 1/2-inch Flexible Disc Write Protection

Write Protect Error on Initialization

A motor speed check is performed when a disc is inserted to be initialized. If the motor speed is on either side of the tolerance allowed, a Write Protect Error is generated and the disc is not initialized. If this error should occur, check the flexible disc to ensure that it is not write protected. (See the preceding section). If the disc is not write protected, then try to initialize another flexible disc which is not write protected. If the second disc initializes correctly, the first disc was defective and should be discarded. If the second disc also fails to initialize, perform the user confidence selftest as described in the Initial Checkout section of this manual to check the disc drive.

Inserting and Removing the Flexible Disc

1. Do not insert the disc into the drive without power applied.
2. Insert the disc with the metal shutter toward the drive and the metal centering hub down. Carefully slide the disc into the drive until you feel it contact the rear of the drive.
Continue pressing the disc until it is pulled down into the drive.
3. Remove the disc by depressing the disc eject button and pulling the disc straight out. Make sure the shutter is closed before storing the disc.

Refer to Figure 3-5 for proper insertion of the flexible disc.

NOTE

There is no write protect capability on the Winchester drive. Caution must be used to avoid writing over data stored on the Winchester disc.

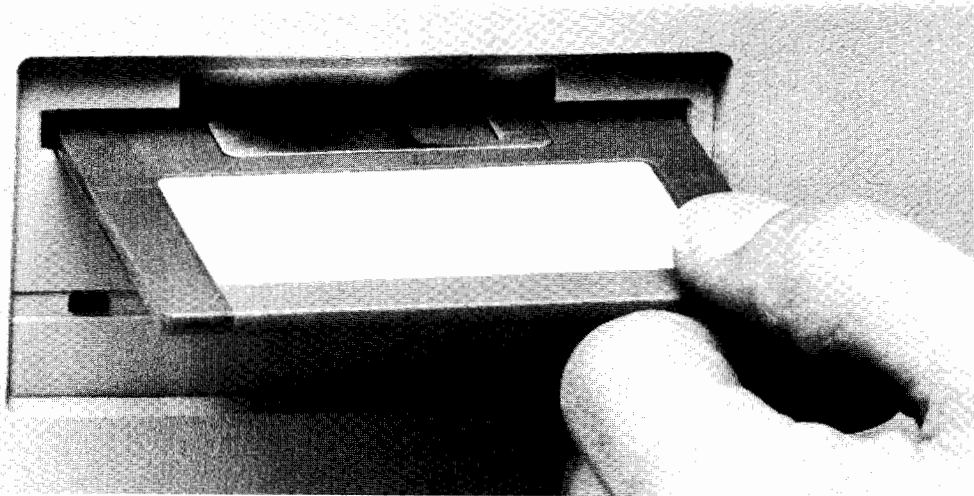


Figure 3-5. 3 1/2-inch Flexible Disc Insertion

Media Life

The flexible disc technology is such that the read/write head must contact the media. As a result, the flexible disc media does wear out. The Media Monitor indication and frequent visual inspections to detect unusual wear as described below should assure reliable operation with your flexible disc.

Media Monitor

The proper time to discard each disc which you have been using is normally indicated by the Media Monitor in the flexible disc memory. When the disc is approaching the end of its useful life but before becoming so badly worn that data is actually lost the Media Monitor will continuously blink the flexible disc access light and click. This warning indication will continue until you remove the disc from the drive and reinsert it, or your computer sends a command to the drive. If the disc is removed and reinserted, the warning indication will resume again when another 2 1/2 minutes of head loaded operation has occurred. If a command is received from your computer the drive will accept and perform the command and then immediately resume the warning indication.

You should immediately copy everything on your disc to a new disc and discard the old one when the Media Monitor warning occurs. Continued use of the old disc after the initial warning will result in eventual automatic write protection of the disc by the drive controller.

Media Wear Indication

Checking for wear is a simple visual inspection of the disc surface before you insert the disc into the drive. When viewing the disc surface you should look for any signs of deep circular scratches. This is done by sliding open the disc guard revealing the disc surface. If you see any sign of deep circular scratches on either side of the exposed surface, the disc should be immediately copied and discarded. Circular scratches on the upper (label side) surface of the disc indicate load pad wear. The load pad should be checked and replaced if necessary by a qualified service person.

Operating Controls and Indicators

The location of all controls and indicators on the disc memory is shown in Figure 3-6. Front panel controls and indicators are a primary power LINE switch, a FAULT indicator, an ON LINE indicator for the Winchester disc drive, and a disc access indicator for the 3 1/2-inch flexible disc drive. Rear panel controls and indicators include the device address switches for the flexible disc and the fixed disc and the VOLTAGE SELECT switch which were discussed in Chapter 2, the TEST switch adjacent to the FLEXIBLE DISC ADDRESS switches, and the selftest indicators for the flexible disc and the Winchester disc.

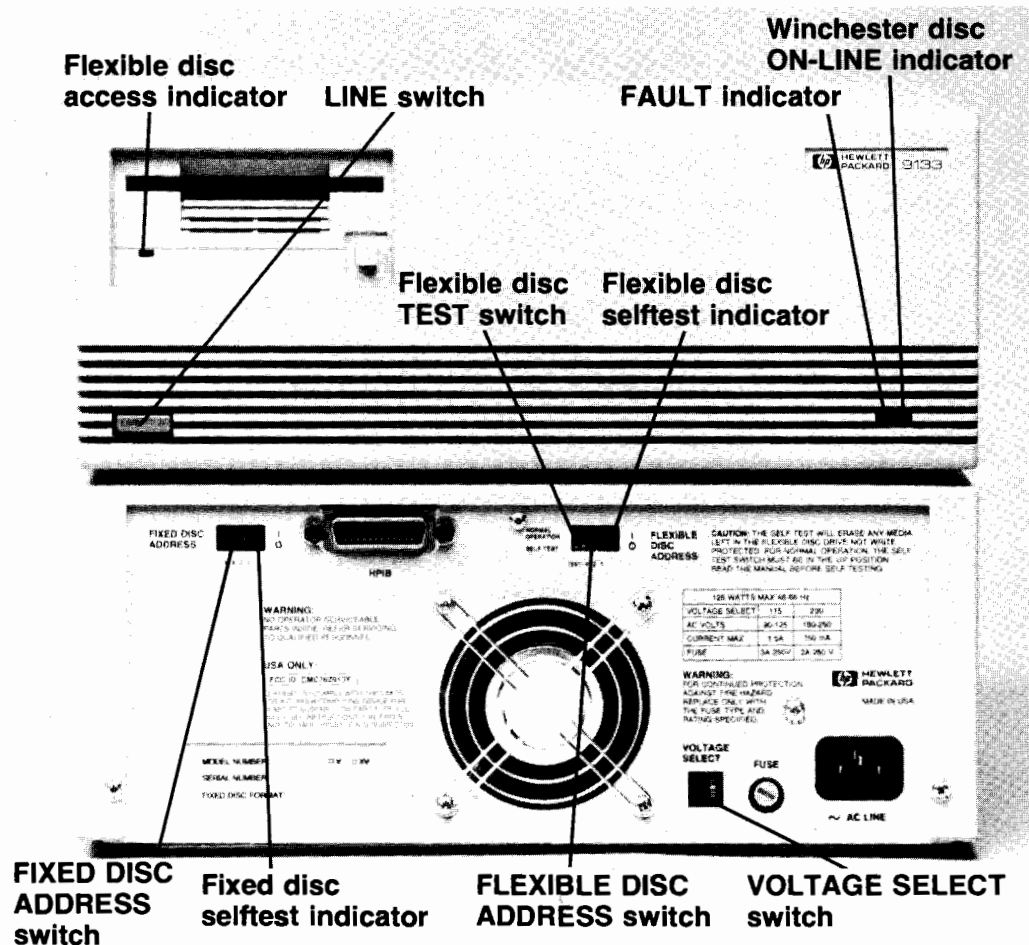


Figure 3-6. 9133V/XV Controls and Indicators

The LINE switch controls the application of AC power to the disc memory. It is depressed to apply power, and depressed again to remove power.

The FAULT indicator is on whenever the selftest indicator of either disc drive is on. It is normally on during the power-up selftest, selftest initiated by a command from the computer, when a fault exists in either disc drive, and also indicates the results of the user-confidence selftest which may be initiated by the TEST switch on the rear panel of the

disc memory. If this indicator is on or flashing after completion of a selftest or at any other time, a fault has been detected in one of the disc drives.

The ON LINE indicator is on whenever the Winchester disc is accessed for data storage or retrieval, and momentarily when the drive is powered up.

The flexible disc access indicator is on whenever the flexible disc is accessed for data storage or retrieval and momentarily when the drive is powered up.

The selftest indicators for the flexible disc drive and the Winchester disc drive are visible through the device address holes on the rear panel, and can be checked to determine which drive is defective if the FAULT indicator is on or flashing.

Power-On Selftest

A selftest is performed on both the flexible disc drive and the Winchester disc drive when power is applied to the disc memory. The FAULT indicator combines the indication from the flexible disc selftest indicator and the Winchester disc selftest indicator. It will be on continuously during the time the selftests are being performed. If the FAULT indicator is not on after the selftest is completed (about 30 seconds) the test has been completed successfully. The FAULT indicator will remain on or be flashing if the tests have detected a failure in either drive.

User Confidence Flexible Disc Selftest

The extent of this test depends upon whether there is a disc in the flexible disc drive, and whether a disc is write protected if it is in the drive. If there is no disc in the drive, the controller electronics is tested. If there is a disc in the drive but it is write protected, the controller, read electronics, and drive are tested. If the disc is not write protected, the controller, read and write electronics, and drive are tested.

Selftest is initiated by placing the TEST switch on the rear panel in the SELFTEST (down) position for five seconds and then returning it to the NORMAL OPERATION (up) position. BE SURE TO RETURN THIS SWITCH TO THE "NORMAL OPERATION" (up) POSITION BEFORE ATTEMPTING TO USE THE DISC DRIVE IN YOUR SYSTEM. YOUR COMPUTER WILL NOT BE ABLE TO COMMUNICATE WITH THE DISC DRIVE IF THIS SWITCH IS IN THE "SELFTEST" POSITION AND WILL PROBABLY INDICATE THAT THE DISC DRIVE IS NOT PRESENT. It is necessary to remove all HP-IB cables from the disc drive before performing this selftest.

CAUTION

ALL DATA ON THE DISC WILL BE DESTROYED WHEN SELF-TEST IS PERFORMED WITH A DISC WHICH IS NOT WRITE PROTECTED.

A successful test is indicated by the fault indicator flashing ten times and then remaining off. The fault indicator will remain on for five seconds and then go off if the test detected a failure.

Additional Flexible Disc FAULT Indications

Two other conditions associated with the flexible disc cause the FAULT indicator to come on and stay on until the condition disappears. These conditions are a command sequence error over the HP-IB (from the host controller) and a data error from the disc. Whenever these conditions occur it is best to retry the last operation. If a retry is successful, the error and error indication are cleared. If the condition remains after several retries remove the flexible disc from the drive and check the disc surface on both sides of the disc for scratches. If any scratches are found, backup the disc immediately. If no scratches are found, the user confidence selftest should be run as described in the Initial Checkout section.

CAUTION

THE FLEXIBLE DISC ACCESS LIGHT ON THE FRONT OF THE DRIVE INDICATES USAGE OF THAT DRIVE. DO NOT DEPRESS THE DISC EJECT BUTTON OR REMOVE POWER FROM THE DRIVE WHEN THE ACTIVITY LIGHT IS ON AS THIS MAY CAUSE DATA TO BE LOST.

Operating Procedure



CAUTION

KEEP THE FRONT AND BACK OF THE DISC MEMORY FREE FROM OBSTRUCTIONS TO AVOID RESTRICTING THE AIR FLOW. FAILURE TO DO SO COULD CAUSE THE UNIT TO OVERHEAT AND RESULT IN DAMAGE TO THE DISC MEMORY.

Before turning the disc memory power on, be sure to check the setting of the VOLTAGE SELECT switch on the rear panel (see Chapter 2) to ensure that it is correct for your line voltage. If this is the first time the drive has been turned on, you should make sure the HP-IB cable is not connected and perform the procedures under Initial Checkout. Otherwise, connect the HP-IB cable from your computer to the disc memory and proceed as follows, but omit the Initial Checkout section.

Set the LINE switch on the front panel to the "ON" or "1" position. The FAULT indicator will come on during the power-up selftest and then go off about 30 seconds after the application of power if the selftest of both drives is successful. The FAULT indicator will remain on or be flashing if either drive fails the selftest.

Initial Checkout

If this is the first time the disc has been turned on, perform the following checks to assure that the disc has not been damaged in shipment.

User Confidence Selftest

1. Make sure all HP-IB cables are removed from your disc memory
2. Insert a flexible disc which is not write protected into the flexible disc drive. The disc may be initialized but it is not necessary.

CAUTION

ALL DATA ON THE DISC WILL BE DESTROYED WHEN SELF-TEST IS PERFORMED WITH A DISC WHICH IS NOT WRITE PROTECTED.

3. Locate the TEST switch on the rear panel (Figure 3-6) and move the switch to the SELFTEST (down) position for five seconds and then back to the NORMAL OPERATION (up) position. It is essential that the switch be returned to the NORMAL OPERATION position before attempting to use the disc memory in your system.
4. Results of the test are indicated on the FAULT indicator on the front panel and on the flexible disc selftest indicator visible through the cutout in the rear panel for the FLEXIBLE DISC ADDRESS switches. Successful completion of the test is indicated if the FAULT indicator on the front panel and/or the flexible disc selftest indicator flash 10 times and then remain off. Failure of the selftest is indicated if the indicators turn on for 5 seconds and then turn off again.
5. If the unit fails the test, notify the dealer or HP Sales Office from whom the disc was purchased.

Winchester Disc Test

The Winchester disc must be initialized before being used with your system. The initialization process will also detect any damage to the disc which may have occurred during shipment.

1. Turn the power off by pressing the LINE switch on the front panel and connect the HP-IB cable to your computer.
2. Turn the power on by pressing the LINE switch on the front panel.
3. Initialize your disc following the procedure given in Appendix A for Series 80, Series 100, and Series 200. Refer to your computer documentation for initialization instructions for other computers.

The first initialization of the four volume 5 Mbyte Winchester should immediately initialize all four volumes in the sequence of volume 0,1,2,3. (Later initializations do not require that the complete disc be initialized at the same time nor any particular sequence.)

4. If the disc does not initialize properly notify the dealer or HP Sales Office from whom you purchased the disc memory.

System Operation

The 9133V/XV is now ready to be used in your system. Appendix A includes information about basic operations with Series 80, Series 100, and Series 200 computers. It will be necessary for you to refer to your computer system mass storage documentation if you have another type of computer, and also for additional information about using the disc memory with these computers.

9134XV Basic Operation

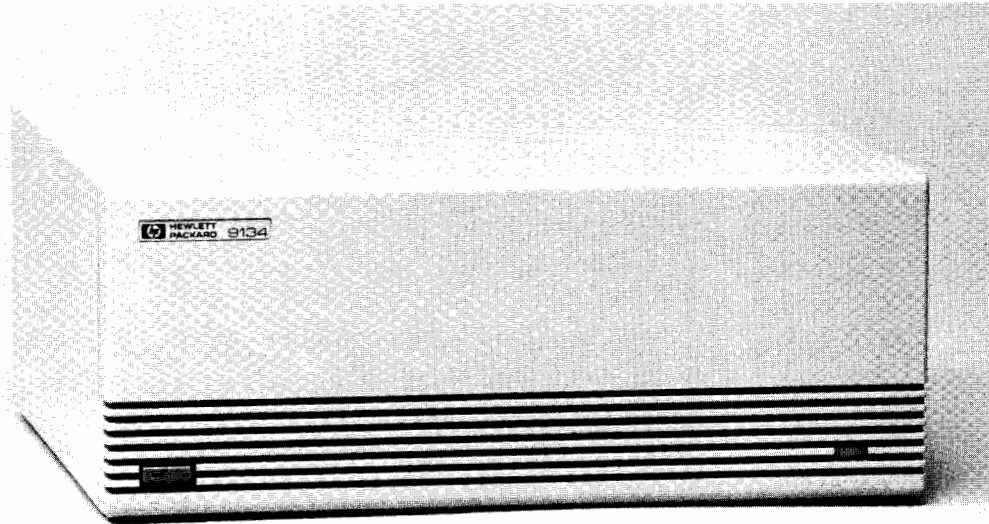


Figure 3-7. The HP 9134XV Disc Memory

NOTE

There is no write protect capability on the Winchester drive. Caution must be used to avoid writing over data stored on the Winchester disc.

Operating Controls and Indicators

The location of all controls and indicators on the disc memory is indicated in Figure 3-8. Front panel controls and indicators are a primary power LINE switch, a FAULT indicator, and an ON LINE indicator for the Winchester disc drive. Rear panel controls and indicators include the device address switches and VOLTAGE SELECT switch which were discussed in Chapter 2, and the selftest indicator for the Winchester disc.

The LINE switch controls the application of AC power to the disc memory. It is depressed to apply power, and depressed again to remove power.

The FAULT indicator is on whenever the selftest indicator of the Winchester disc drive is on. This occurs during the power-up selftest, selftest initiated by a command from the computer, and when a fault exists in the Winchester disc drive. The FAULT indicator will be on during the time a selftest is being executed, and then go off upon the successful completion of a selftest. If this indicator is on or flashing after completion of a selftest or at any other time, a fault has been detected in the Winchester disc drive.

The ON LINE indicator is on whenever the Winchester disc is accessed for data storage or retrieval, and momentarily when the drive is powered up.

The selftest indicator for the Winchester disc drive is visible through the FIXED DISC device address cutout on the rear panel. The indication of this indicator should be identical to that of the FAULT indicator.

Power-On Selftest

A selftest is performed on the Winchester disc drive when power is applied to the disc memory. The FAULT indicator will be on continuously during the time the selftest is being performed. If the FAULT indicator is not on after the selftest is completed (about 30 seconds) the test has been completed successfully. The FAULT indicator will remain on or be flashing if the tests have detected a failure.

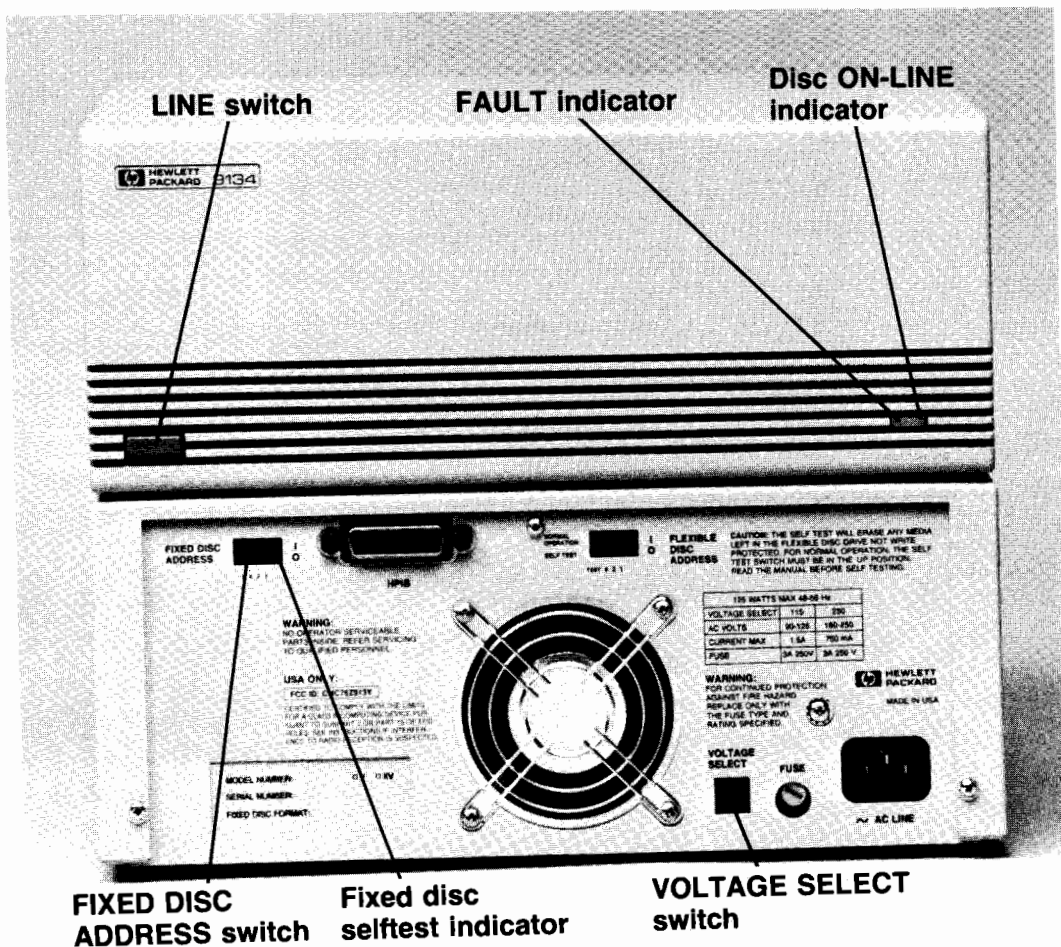


Figure 3-8. 9134XV Controls and Indicators



Operating Procedure

CAUTION

KEEP THE FRONT AND BACK OF THE DISC MEMORY FREE FROM OBSTRUCTIONS TO AVOID RESTRICTING THE AIR FLOW. FAILURE TO DO SO COULD CAUSE THE UNIT TO OVERHEAT AND RESULT IN DAMAGE TO THE DISC MEMORY.

Before turning the disc memory power on, be sure to check the setting of the VOLTAGE SELECT switch on the rear panel (see Chapter 2) to ensure that it is correct for your line voltage. If this is the first time the drive has been turned on, you should make sure the HP-IB cable is not connected and perform the procedures under Initial Checkout. Otherwise, connect the HP-IB cable from your computer to the disc memory and proceed as follows, but omit the Initial Checkout section.

Set the LINE switch on the front panel to the "ON" or "1" position. The FAULT indicator will come on during the power-up selftest and then go off about 30 seconds after the application of power if the selftest is successful. The FAULT indicator will remain on or be flashing if the drive fails the selftest.

Initial Checkout

If this is the first time the disc has been turned on, perform the following checks to assure that the disc has not been damaged in shipment.

Winchester Disc Test

The Winchester disc must be initialized before being used with your system. The initialization process will also detect any damage to the disc which may have occurred during shipment.

1. Turn the power off by pressing the LINE switch on the front panel and connect the HP-IB cable to your computer.
2. Turn the power on by pressing the LINE switch on the front panel.
3. Initialize your disc following the procedure give in Appendix A for Series 80, Series 100, and Series 200. Refer to your computer documentation for initialization instructions for other computers.

The first initialization of the four volume 5 Mbyte Winchester should immediately initialize all four volumes in the sequence of volume 0,1,2,3. (Later initializations do not require that the complete disc be initialized at the same time nor any particular sequence.)

4. If the disc does not initialize properly notify the dealer or HP Sales Office from whom you purchased the disc memory.

System Operation

The 9134XV is now ready to be used in your system. Appendix A includes information about basic operations with Series 80, Series 100, and Series 200 computers. It will be necessary for you to refer to your computer system mass storage documentation if you have another type of computer, and also for additional information about using the disc memory with these computers.

Chapter 4

Maintenance and Service

- **Maintenance**
- **Service**
- **Warranty**
- **Cleaning the Case**

Maintenance

The disc memories in this family of products do not require regular maintenance.

9133V/XV- The load pad on the 3 1/2 inch flexible disc drive will wear out over a period of time and must be replaced. Replacing this pad is a complicated process and should only be attempted by a trained service person.

The maintenance schedule for the load pad depends on the use of the drive. The interval for a drive in normal use (disc access light lit less than 20 minutes per day) is 5 years. A heavily-used drive (disc access light lit more than 2 hours per day) should have its head load pad replaced every 1 to 2 years.

The performance and life of the flexible disc heads and the flexible disc media depend directly on how carefully they are handled. Be sure to follow the disc care and handling guidelines presented in Chapter 3 and the environmental restrictions presented in the Specifications Table in Chapter 1.

Service

There are no operator serviceable parts in this family of discs. If you suspect that your disc memory is malfunctioning, call the HP Sales Office or dealer from which you purchased the unit.

Warranty

The complete warranty statement for the U.S. and Canada is included inside the front cover of this manual. For other countries, contact your local HP Sales Office or dealer from which you purchased your unit to determine warranty terms. On-site warranty may apply to this product if it is purchased with other HP products or a Service Agreement is purchased.

If you have questions concerning the warranty, please contact an authorized dealer or the HP Sales and Service Office nearest you (see the back of this manual for nearest office).

Cleaning the Case

The disc memory case has been painted with a long lasting, non-toxic, water-based paint. This paint will preserve the appearance of the unit for many years. To clean the case, use the following instructions to insure that you maintain the quality finish. If the case finish becomes damaged, consult the nearest HP Sales and Service Office for touchup paints that are available.



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.



Dampen a clean, soft, lint-free cloth in a solution of clean water and mild soap. Wipe the soiled areas of the case, ensuring that no cleaning solution gets inside the unit. For cleaning more heavily soiled areas, a solution of 80 % clean water and 20 % isopropyl alcohol may be used. Wipe the areas that had cleaning solution applied with another clean, soft, lint-free cloth. A non-abrasive eraser may be used to remove pen and pencil marks.



Appendix A

Getting Started

- Series 80
- Series 100
- Series 200

About this Appendix

The purpose of this Appendix is to provide some basic information to help you get started using your 9133V/XV or 9134XV disc memory with HP Series 80, Series 100, or Series 200 computers. The procedures for addressing and initializing these discs with the different computers are explained and examples of the procedures are provided, as well as an explanation of how to configure and start up your particular computer/mass storage system. This information is not intended to replace the operating manual for your computer which should always be your primary source of information.

Basic Operation

Before programs or data can be stored on a Winchester disc or a flexible disc, the disc must first be initialized, or formatted. This process checks the disc for defective tracks (areas where information cannot be stored), marks sectors, and creates a file directory. The directory contains the name, location on the disc, and other information about each file. The directory size, which may be different for different systems, limits the maximum number of files which can be stored on that disc. It may be a preset number for a particular disc size, as with Series 200 computers, or it may be declared at initialization as on Series 80 computers. In any case, what is important to remember is that initialization/formatting is system dependent, so if a disc is initialized on one system it will not necessarily work on another. Also, once the disc is initialized, the directory size on most systems becomes fixed and the only way to change it is to reinitialize the disc.

CAUTION

DISC INITIALIZATION/FORMATting WILL DESTROY ALL INFORMATION PREVIOUSLY STORED ON THE DISC. A NEW DRIVE MUST BE INITIALIZED BY THE TYPE OF COMPUTER (SERIES 80, 100, 200) WITH WHICH IT IS TO BE USED BEFORE ATTEMPTING TO STORE PROGRAMS AND DATA ON IT.

The following sections contain examples of how to prepare and configure 9133V/XV and 9134XV disc memories for use on the Series 80, 100 and 200 computers as well as a table of some of the different addressing schemes. While this is not an all inclusive listing it does provide some examples of the use of these systems. In all cases, it is assumed that the disc address settings are as the disc memory was shipped from the factory with the fixed disc at address "0" and the flexible disc at address "2".

Initialization

When a new disc is received from Hewlett-Packard, it must be initialized before it can be used. Initialization of the hard disc takes approximately 2 minutes/Mbyte. This length of time is required because initialization not only formats the disc, but also checks the disc for any damage it might have sustained during shipment. The 30 minutes necessary to initialize a 15 Mbyte hard disc is an excellent investment of time because it ensures performance and data reliability on the drive.

Series 80

Series 80 computers support only the 9133V and the 9133V option 004.

The HP BASIC operating system for Series 80 is in read only memory (ROM) and is available for use as soon as the computer is powered up. The Winchester disc memory requires approximately 30 seconds after the power is turned on before it is ready for use.

To address the 9133V drive (w/ factory set address "0", "2") type in the following statement and press ENDLINE:

MASS STORAGE IS ":msus" where the msus (mass storage unit specifier) is "D720" for the flexible disc and "D700" for the 9133V or the first volume of the 9133V option 004.

To determine if a disc or volume has already been initialized, type in CAT ":msus" and press ENDLINE. If "ERROR 130:DISC" appears it means disc has not yet been initialized.

Initializing the Disc

The syntax for the INITIALIZE statement with an explanation of its semantics is shown below.

INITIALIZE("new label" (, "msus" or ".old label" (, directory size (, interleave)))

- new volume label is a six-character name assigned to the disc. The period (.), colon (:), and quotation marks (") are the only characters that cannot be used inside the quotes.
- msus or the .old volume label is the mass storage unit specifier or existing old volume label.
- interleave factor specifies how the physical records on the flexible disc medium are to be numbered. This command allows you to control the efficiency of accessing the information on the flexible disc. The default value on the flexible disc is 6. The Winchester disc is always fixed at an interleave of 9.
- directory size is the number of records to be allocated to the directory . Each record holds 8 file entries with the total being user selectable. If not declared it will default to 14 records or 112 files (8 files/record). It is important to estimate your future file needs prior to initialization, because the only way to change this later on is through reinitialization.

Since the INITIALIZE command is programmable, the following short example program can be used to initialize the four Winchester disc volumes and the flexible disc of the 9133V option 004 disc drive:

```
10 INITIALIZE "DISC_0", ":D700"
20 INITIALIZE "DISC_1", ":D701"
30 INITIALIZE "DISC_2", ":D702"
40 INITIALIZE "DISC_3", ":D703"
50 INITIALIZE "DISC_4", ":D720"
60 END
```

It will take about 2 minutes to initialize the flexible disc and about 12 minutes (3 minutes per volume) to initialize the Winchester disc.

The following example program will initialize the one volume Winchester disc and the flexible disc of the 9133V with other than default values:

```
10 INITIALIZE "DISC_0", ":D700",100
20 INITIALIZE "DISC_1", ":D720",10,8
30 END
```

This program will initialize the Winchester disc with 100 records allocated for the directory, which will allow 800 file entries, and the flexible disc with 10 records for the directory, which will allow 80 file entries, and an interleave of 8.

Installing Applications Programs

Performance of most application programs can be substantially improved if run/stored on the fixed disc. To install your programs onto the Winchester disc or to backup your individual files from a Winchester disc such as the 9133V, a simple copy command can be used.

1. Type COPY "file name:msus" TO "file name:msus"
2. Press ENDLINE

Example:

To load VZCALC from a flexible disc onto the Winchester disc:

1. Type in COPY "VZCALC:D720" TO "VZCALC:D700"
2. Press ENDLINE

Series 100

HP 120/125

The HP 120 and the HP 125 both use the CP/M[™] Operating System. The A.01.20 version of the operating system supports only the 9133V option 004, and is limited to two disc unit controllers at any one time. (The 9133V has 2 disc unit controllers, one for the Winchester disc drive and one for the flexible disc drive.) Four devices or volumes can be supported on each address: Devices A,B,C,D at address "0", and Devices E,F,G, and H at address "2"

In the case of the 9133V opt. 004 with four Winchester volumes at address "0" and the flexible disc at address "2", the naming scheme thus becomes:

Winchester Volume 0 : Device A
 Volume 1 : Device B
 Volume 2 : Device C
 Volume 3 : Device D
 Flexible disc : Device E

Initializing (Formatting) A New Disc/Volume

The Series 100 operating system must be loaded from Device A every time power is turned ON. Since the operating system is supplied on a flexible disc initially, the address of the flexible disc must be changed to "0" (Device A) and the address of the Winchester disc to "2" (Device E). (Factory setting is for a normal operation where the operating system is loaded from the first volume of the fixed disc, Device A. Refer to Chapter 2 for setting the address.)

The following procedure is used to load the operating system onto the Winchester disc from the flexible disc:

1. Insert the operating system disc into the flexible disc drive (now Device A).
2. Press the disc power switch ON and wait 30 seconds until the disc memory is ready for operation, then turn ON your computer.
3. Wait 15 seconds for a row of softkey labels to appear on the screen. Press:

LOCAL OP SYS (f3)
 LOAD OP SYS (f6)

Initialization Routine

Initialization will format your Winchester disc/flexible disc to prepare it for use. Perform the following steps to format all four volumes of the Winchester disc, and remember **INITIALIZATION/FORMATting WILL DESTROY ALL PREVIOUS INFORMATION STORED ON THE DISC.**

4. Press UTILITY (f1)
5. Press DISC FORMAT (f2)
6. Using the NEXT CHOICE Key (f2) turn OFF the B disc selection and turn ON Discs E,F,G,H.
7. Press START PROGRAM (f3)
 This will initialize all four volumes of your Winchester disc drive with its address setting at "2". The stagger (or the interleave) will always be fixed on the Winchester disc, but can be set on the 3.5-inch flexible disc. (The optimum stagger is 6 for the flexible disc.).
8. Press EXIT (f8) when the four volumes have all been formatted.

Installing the Operating System on the Fixed Disc

9. With the operating system on the flexible disc in Drive A, press: DISC COPY (f1).



10. Using the CHANGE DESTINATION key (f2), change your destination Drive (Device) name to E.
11. Press START COPYING (f5).
PROCEED W/COPY (f6).
12. After the copy is complete, press EXIT (f8).
13. Remove your flexible disc, and turn the LINE switch on your disc memory to OFF.
14. Change the address switches on the rear panel of the disc memory back to the original setting of "0" on the Winchester disc and "2" on the flexible disc. The first volume of the Winchester disc (or Drive A) will now have the operating system on it, which can be loaded into your computer.

Installing Applications Programs

You should not use your master application program disc for everyday program execution. Instead, use it to install the application onto a fixed disc. Since most of your applications programs can be copied only from the master disc, file your master discs in a secure place for future use.

To install your application program onto a fixed disc (for example Drive A):

1. Turn ON the power and place your application program disc into the flexible disc drive (Drive E).
2. Press LOAD OP SYS (f6)
3. Press INSTALL MODE (f7)
4. Use the softkeys to change the SOURCE NAME to E and DESTINATION to A.
5. Press START INSTALL (f5)

HP 150 Configuring the System

In order to run your HP150, you must first load the Operating System from drive A with the address set at "0". Since the Operating System comes on a flexible disc, you must set the address of the flexible disc to "0".

Turn the system off. On the back of the disc drive, set the flexible disc address to "0" and the fixed (hard) disc address to "2". For assistance, see the section in Chapter 2 of this manual entitled, "Selecting the Device Address." (These address settings may be opposite the factory setting for normal operation where the flexible disc is set at "2" and the hard disc is set at "0".) After you set the address switches, turn the system on again.

Complete the configuration as follows:

1. To load P.A.M. (Personal Applications Manager) and the operating system, insert the HP150-SYS_MASTER disc into the flexible drive and turn on your disc drive and computer. (The disc drive goes through a self test at which time both the on-line and fault lights on the front panel are illuminated.)
2. When the P.A.M. menu appears on the screen, touch:

DEVICE CONFIG
SYS_MASTER-A

3. Next, touch START APPLIC.
4. The default configuration is for a dual flexible disc and a stand-alone hard disc system, such as a 9121D and a 9134XV. If you are using either a 9133V or 9133XV, you need to reconfigure the device configuration table on the HP150 screen so that it appears as follows:

DISC DRIVE			
	Interface	Addr.	Drive
A:	HP-IB	0	0
B:	HP-IB	2	0
C:	NO DEVICE		

Figure A-1. Device Configuration Table

Complete the reconfiguration of this table as follows:

- A. Touch the address or drive block that you wish to change. The desired block will be illuminated.
- B. Touch the NEXT CHOICE block until the desired number appears in the illuminated address or device block.
- C. Continue this process until all address and device blocks contain the desired configuration.
- D. Touch SAVE CONFIG.
- E. Touch EXIT CONFIG to return to the P.A.M. screen.

NOTE

If you are using the four volume 9133V option 004 drive, each volume must be addressed and formatted as a separate drive under the same address. The drives should be C, D, F, and G with respective addresses of 2-0, 2-1, 2-2, and 2-3.

Disc Formatting

Before a disc can be used for the first time, it must be formatted in order to ensure data reliability and performance of the drive. The following steps format your disc:

1. The FORMAT utility resides on the same disc as the Operating System. Load the FORMAT utility by touching:
 FORMAT
 SYS__MASTER-A
2. Touch START APPLIC.

3. Select the disc you wish to format. Since you wish to format the hard disc, touch DRIVE B.
4. If you wish to label your disc so the computer can read the label, you may do so now by typing in the name you wish to give the disc. Otherwise touch NO DISC LABEL.
5. Format in HP FORMAT by touching the HP FORMAT block so that an asterisk (*) appears in the block.
6. Now is also the time to copy the operating system (MS-DOS) and P.A.M. to the hard disc. In order to do this copying, touch the COPY SYSTEM block so that an asterisk (*) appears in the block.

NOTE

The Operating System can only be copied at the time of disc formatting. Since operating off the hard disc is not only convenient, but also improves system performance, you want to copy the operating system onto the hard disc.

CAUTION

Formatting will destroy all previous data on the disc.

7. Touch START FORMAT.
8. If you are copying the operating system, the HP150 goes out and reads all system files. When all the necessary files are read and ready for transfer, press the [RETURN] key. When you press [RETURN], formatting and operating system copying begins, and the message Formatting Disc appears on the screen.

NOTE

Formatting takes approximately 2 minutes/Mbyte of storage. Thus, if you are formatting the 15 Mbyte hard disc, this initialization will take approximately 30 minutes.

9. When formatting is complete, the "Operation Complete message appears on the screen. Your disc is now checked, formatted, and ready for use. Touch EXIT FORMAT on the screen to get back into the P.A.M. screen.

Configuration for Normal Operation

Normally you will be operating off the hard disc. Not only will the overall system performance be better, but it is also more convenient to have your operating system and all applications and files in one location.

Since the operating system must be loaded from drive A, it is necessary to reconfigure your disc drive so that the hard disc is drive A. Turn off your disc drive. Complete this reconfiguration by changing the address setting of the hard disc to "0" and of the flexible disc to "2". (The switches are normally set to these addresses upon shipment from the

factory.) Thus, in a normal operation, the hard disc (drive A) will be your primary disc drive, and the flexible disc drive (drive B) will be your personal I/O and backup device.

Installing Applications

All HP APPLICATION Programs are distributed by HP on flexible discs labeled "MASTER". While you can use your MASTER discs just as they are, we strongly recommend that you install them onto a new working disc, such as the hard disc. Store your MASTER discs in a safe location so that you can make new working discs if something happens to the current working discs.

APPLICATION programs are always copied from the MASTER disc using the INSTALL utility.

To install your APPLICATION programs, make sure that your disc drive is configured for normal operation with the hard disc being drive A set at an address of "0". Install your APPLICATION programs as follows:

1. With the Operating System loaded, insert the disc with the INSTALL utility on it and touch REREAD DISCS.
2. Touch INSTALL
3. Touch START APPLIC.
4. After the program loads, touch INSTALL APPLIC.
5. The screen prompt states, *"Select the correct disc(s) below. Press show applics."* Since you are going to install applications from flexible disc drive B to the hard disc drive A, select a source disc of drive "B" and a destination disc of drive "A".
6. Insert the MASTER disc you wish to copy into the flexible disc drive.
7. Touch SHOW APPLIC in order to list the APPLICATION programs available for copying. Touch each APPLICATION program that you wish to copy so that the application is highlighted. Touch START INSTALL.
8. When the transfer is complete, first touch EXIT SELECT and then EXIT INSTALL in order to return to P.A.M.

Points to Remember When Copying Discs

1. The operating system can only be copied at the time of disc formatting.
2. APPLICATION programs are copied from their MASTER discs via the INSTALL utility.
3. Most other files that are not SYSTEM or APPLICATION program files can be copied using the COPY/BACKUP utility.
4. Write protect all MASTER discs to guard against accidental erasure. See directions for write protecting your discs in Chapter 3 of this manual.

Running Computer Tutor 150

Look at the two Computer Tutor discs you received with your HP 150. Four lines from

the bottom of the label, the discs should have the number 1.2. If your discs are labelled with this 1.2, use the following directions to run Computer-Tutor 150. However, if your discs are labelled 1.0 or 1.1, you need to order the final version of Computer-tutor, the 1.2 version. You can receive this version free by mailing your old version of Computer-Tutor or 2 blank discs to:

Personal Software Division
3410 Central Expressway
Santa Clara, California 95051
Attn: TUTOR



The Computer-Tutor 150 program supplied with the HP 150 is written for a dual drive system (such as the 9121D). In order to run Computer-Tutor 150 on your fixed disc drive, you must copy disc A of Computer-Tutor 150, version 1.2 to your fixed disc. Use the following steps to complete this copying;

1. Make sure your disc drive is configured for normal operation with the flexible disc address at "2" and the fixed disc address at "0".
2. Bring P.A.M. to the screen.
3. Touch MSDOS COMMANDS on the screen.
4. Touch START APPLIC.
5. Place Computer-Tutor disc A in the flexible disc drive.
6. After the A> prompt on the screen, type B:PRETUTOR and press the Return key. Computer Tutor disc A is now copied to your fixed disc. This copying takes 3-5 minutes. **DO NOT REMOVE COMPUTER TUTOR DISC A FROM THE FLEXIBLE DISC DRIVE UNTIL YOU SEE THE A>. Operation Completed MESSAGE ON YOUR SCREEN.**
7. When the A>. *Operation Completed* message appears on the screen, remove disc A from the flexible disc drive.
8. Insert Computer Tutor disc B in the flexible disc drive.
9. After the A> prompt on the screen, type A: and press the Return key.
10. When the A> prompt appears again, type B:TUTOR and press the Return key.
11. Within 1 minute, the introduction to the Computer Tutor program will appear on your screen. Try Computer Tutor now!

When you are finished running Computer Tutor:

1. Touch
 MAIN
 MENU
 This touch will return you to the screen labelled MAIN MENU at the top.
2. Press the ESC key.
3. Remove Computer Tutor disc B.

Later, if you want to run Computer Tutor again, use the following steps:

1. Bring P.A.M. to the screen.
2. Touch MSDOS COMMANDS.
3. Touch START APPLIC.
4. Insert Computer Tutor disc B in the flexible disc drive.
5. After the A> prompt on the screen, type B:TUTOR. After about 1 minute, the introduction to Computer Tutor will again appear on your screen.
6. When you are finished running Computer Tutor, touch:
 MAIN
 MENU
7. Press the ESC key and remove Computer Tutor disc B from the flexible disc drive.

If for some reason in the future you wish to remove Computer Tutor disc A from your fixed disc, the following steps should be used:

1. Bring P.A.M. to the screen.
2. Insert Computer tutor disc B in the flexible disc drive.
3. Touch MSDOS COMMANDS.
4. Touch START APPLIC.
5. After the A> prompt on the screen, type B:TUTOROUT. Press the Return key.
6. When the A> prompt appears again without any words after the prompt, type EXIT.
7. When P.A.M. appears on your screen, remove Computer Tutor disc B from the flexible disc drive.

Series 200

To use your 9133XV or 9134XV with the BASIC Language system, you must have BASIC Extensions 2.1 PLUS the Series 200XV Winchester Binary. This binary file is included on the BASIC Extensions 2.1 Rev. B disc.

If you have the BASIC Extensions 2.1 Rev. A disc, the Series 200XV Winchester Binary is available from Computer Supplies Operation under part-number 92238A for 3 1/2" media or 92238B for 5 1/4" media for \$42.00 U.S. List. Use the following phone numbers for ordering within the United States. For orders outside the United States, contact your local sales office.

California (408) 738-4133
Outside California (800) 538-8787

As indicated in Table A-1, Series 200 computers support only the 9133V option 004 in BASIC 2.0, and the 9133V in BASIC 2.1 (BASIC 2.0 with AP 2.0 Binary). (All four products are supported by PASCAL 2.0 or greater).

Initializing the Winchester Disc and Flexible Disc

The 9133V option 004 was designed such that each of the four volumes of the Winchester disc emulates a 1.15 Mbyte 9895A disc drive, and the 3 1/2" flexible disc emulates a 270 Kbyte 82901M disc drive. This allows computers which were produced before the 9133V became available to support the 9133V without a new operating system.

BASIC 2.0 Operating System

The situation described above is the case for the BASIC 2.0 Operating System, where the 9133V option 004 drive is addressed using the MSUS for the 9895A and the 82901.

The following short example program can be used to initialize the Winchester disc and the flexible disc of the 9133V opt. 004 disc drive with the BASIC 2.0 Operating System. (You must be in the EDIT mode to enter this program; otherwise just execute each line as a command statement.)

```
10 INITIALIZE ":HP9895,700,0"
20 INITIALIZE ":HP9895,700,1"
30 INITIALIZE ":HP9895,700,2"
40 INITIALIZE ":HP9895,700,3"
50 INITIALIZE ":HP82901,702,0",2
60 END
```

BASIC 2.1 Operating System

BASIC 2.1 supports both the 9133V and the 9133V option 004 disc memories with a MSUS of 9133. This operating system comes on two separate discs. The AP2.0 Binary resides on top of BASIC 2.0 when it is loaded into memory after BASIC 2.0 is loaded. The AP2.0 Binary can be loaded using the following statement. (All these instructions are based on the assumption that the hard disc and the flexible disc addresses are set at "0" and "2".)

```
LOAD BIN "AP2__0:HP9133,702,0"
```

The following command is then used to initialize the 9133V:

```
INITIALIZE ":HP9133,700,X"
(X = the volume number 0,1,2, or 3)
```

A flexible disc is initialized as follows:

1. Insert a blank disc in the flexible disc drive.
2. Type in and execute: INITIALIZE ":HP9133,702,0",2

The flexible disc will be initialized with an optimum interleave of 2.

Installing Operating Systems and Applications Programs

To maximize your system performance, install all the operating systems as well as any application program onto the fixed disc via the COPY command. With BASIC 2.1, the following command is used:

COPY "file name:HP9133,702,0" TO, "file name:HP9133,700,0"

For more details on loading Operating Systems and running the autostart program off the Winchester disc please refer to your " Loader Utility " manual for the Series 200 Computers.

NOTE

When copying between discs which have different capacities, do not do an image copy (a whole disc to disc copy). Copy file by file or program by program. An image copy to a smaller disc will not work, and an image copy to a larger disc will limit the larger disc's directory size and capacity, to that of the smaller disc.

Several operating systems can reside on any one disc/volume at the same time. To load the one you want into the computer follow these steps.

1. Power on your disc drive, wait 30 seconds and power on your system.
2. A few seconds after the systems begins its RAM check, press the space bar. This will disable AUTO BOOT and send the system looking to identify all the operating systems that are available on all the mass storage devices on line.
3. All available OP SYSTEMS will then be listed on the screen with their location code (example 1B, 1P, etc...).
4. Type in the desired two digit location code that precedes each operating system (example 1B, 1P, etc..). The number will be displayed in the inverse video area at the bottom of the screen, and the selected operating system will be booted.

As always, refer to your system's manuals for detailed information. This appendix is not meant to replace your system manual, but just to provide few examples/explanations on how to configure your system and use the 9133/34 mass storage device.

TABLE A-2
MASS STORAGE UNIT SPECIFIERS (MSUS)
(Assuming Winchester address set @ "0" and
flexible disc drive address set @ "2")

MASS STORAGE DEVICE	SERIES 80		SERIES 100			SERIES 200	
	HP 85/86/87 WITH HP BASIC		HP 120/125 W/CPM A.02.00	HP 150 W/MS DOS 2.0	DRIVE #	9816/26/36 W/BASIC 2.1	
	DIRECTORY SIZE	MSUS	DIRECTORY SIZE	DIRECTORY SIZE		DIRECTORY SIZE	MSUS
9133V • 4.8 Mbyte Winchester single volume @ 4.8 Mbyte • Flexible disc @ .27 Mbyte	User Specified Default to 112 files per disc/volume	Winchester: "D700" Flexible: "D720"	225 files	1024 files	Winchester: 1 Vol - Drive A	752 files	"HP9133,700,0"
			128 files	128 files	Flexible: 1 Vol - Drive E	112 files	"HP9133,702,0"
9133V OPT. 004 • 4.8 Mbyte Winchester 4 vol. @ 1.15 Mbyte ea. • Flexible disc @ .27 Mbyte.	User Specified Default to 112 files per disc/volume	Winchester: Vol 0 - "D700" Vol 1 - "D701" Vol 2 - "D702" Vol 3 - "D703" Flexible - "D720"	128 files per volume	128 files	Winchester: Vol 0 - Drive A Vol 1 - Drive B Vol 2 - Drive C Vol 3 - Drive D	464 files per volume	"HP9133,700,X" where X=0,1,2,3/volume *("HP9895,700,X")
			128 files	128 files	Flexible: 1 Vol - Drive E	112 files	"HP9133,702,0" *("HP82901,702,0")
9133XV • 14.5 Mbyte Winchester single volume • Flexible disc @ .27 Mbyte	Not Supported		Not Supported	1024 files	Winchester: 1 Vol - Drive A		Not Supported in BASIC 2.0/2.1, will be in BASIC 3.0.
				128 files	Flexible: 1 Vol - Drive E		
9134XV • 14.5 Mbyte Winchester single volume	Not Supported		Not Supported	1024 files	Winchester: 1 Vol - Drive A		Not Supported in BASIC 2.0/2.1, will be in BASIC 3.0
NOTE: The 9133V is func- tionally identical to the 9133A opt. 010. The 9133V opt. 004 is functionally identical to the 9133A.	EXAMPLE: Mass Storage is "D701" D - Disc Peripheral 7 - HP/B Address @ 7 0 - Mass Storage Controller address 1 - Disc Drive Address @ 1 (HP85A does not support 9133V)		HP120/125 Op System can only support two controller addresses, 0 and 2, with 4 drives on each.			PASCAL 2.0 or greater supports the full line of the 9133/34 disc drives.	
			HP150 can support three controller addresses at 0,2,4 with 4 drives on each.			*AP2_0 Binary is not necessary, each volume will emulate the 9895A disc drive and must be stated in the MSUS. Same applies to the flexible disc drive as it emulates the 82901M.	

SALES & SUPPORT OFFICES

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1



Product Line Sales / Support Key

Key	Product Line
A	Analytical
CM	Components
C	Computer Systems Sales only
CH	Computer Systems Hardware Sales and Services
CS	Computer Systems Software Sales and Services
E	Electronic Instruments & Measurement Systems
M	Medical Products
MP	Medical Products Primary SRO
MS	Medical Products Secondary SRO
P	Personal Computation Products
*	Sales only for specific product line
**	Support only for specific product line

IMPORTANT: These symbols designate general product line capability. They do not insure sales or support availability for all products within a line, at all locations. Contact your local sales office for information regarding locations where HP support is available for specific products.

HP distributors are printed in italics.

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See United Kingdom

GREECE

Kostas Karayannis S.A.
8 Omirou Street
ATHENS 133
Tel: 32 30 303, 32 37 371
Telex: 215962 RKAR GR
A,CH,CM,CS,E,MP

PLAISIO S.A.
G. Gerardos
24 Stournara Street
ATHENS
Tel: 36-11-160
Telex: 221871
P

GUATEMALA

IPESA
Avenida Reforma 3-48, Zona 9
GUATEMALA CITY
Tel: 316627, 314786
Telex: 4192 TELTRO GU
A,CH,CM,CS,E,MP

HONG KONG

Hewlett-Packard Hong Kong, Ltd.
G.P.O. Box 795
5th Floor, Sun Hung Kai Centre
30 Harbour Road
HONG KONG
Tel: 5-8323211
Telex: 66678 HEWPA HX
Cable: HEWPACK HONG KONG
E,CH,CS,P

CET Ltd.
1402 Tung Way Mansion
199-203 Hennessy Rd.
Wanchia, **HONG KONG**
Tel: 5-729376
Telex: 85148 CET HX
CM
Schmidt & Co. (Hong Kong) Ltd.
Wing On Centre, 28th Floor
Connaught Road, C.
HONG KONG
Tel: 5-455644
Telex: 74766 SCHMX HX
A,M

Blue Star Ltd.
Bhandari House, 7th/8th Floors
91 Nehru Place
NEW DELHI 110 024
Tel: 682547
Telex: 031-2463
Cable: BLUESTAR
A,CH*,CM,CS*,E,M

Blue Star Ltd.
15/16-C Wellesley Rd.
PUNE 411 011
Tel: 22775
Cable: BLUE STAR
A

Blue Star Ltd.
T.C. 7/603 Poornima
Maruthankuzhi
TRIVANDRUM 695 013
Tel: 65799
Telex: 0884-259
Cable: BLUESTAR
E

Computer Maintenance Corporation
Ltd.
115, Sarojini Devi Road
SECUNDERABAD 500 003
Tel: 310-184, 345-774
Telex: 031-2960
CH**

Computer Maintenance Corporation
Ltd.
115, Sarojini Devi Road
SECUNDERABAD 500 003
Tel: 310-184, 345-774
Telex: 031-2960
CH**

INDIA

Computer products are sold through
Blue Star Ltd. All computer repairs
and maintenance service is done
through Computer Maintenance
Corp.

Blue Star Ltd.
Sabri Complex II Floor
24 Residency Rd.
BANGALORE 560 025
Tel: 55660
Telex: 0845-430
Cable: BLUESTAR
A,CH*,CM,CS*,E

Blue Star Ltd.
Band Box House
Prabhadevi
BOMBAY 400 025
Tel: 422-3101
Telex: 011-3751
Cable: BLUESTAR
A,M

Blue Star Ltd.
Sahas
414/2 Vir Savarkar Marg
Prabhadevi
BOMBAY 400 025
Tel: 422-6155
Telex: 011-4093
Cable: FROSTBLUE
A,CH*,CM,CS*,E,M

Blue Star Ltd.
Kalyan, 19 Vishwas Colony
Alkapuri, **BORDA**, 390 005
Tel: 65235
Cable: BLUE STAR
A

Blue Star Ltd.
7 Hare Street
CALCUTTA 700 001
Tel: 12-01-31
Telex: 021-7655
Cable: BLUESTAR
A,M

Blue Star Ltd.
Kalyan, 19 Vishwas Colony
Alkapuri, **BORDA**, 390 005
Tel: 65235
Cable: BLUE STAR
A

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Kalyan, 19 Vishwas Colony
Alkapuri, **BORDA**, 390 005
Tel: 65235
Cable: BLUE STAR
A

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Alkapuri, **BORDA**, 390 005
Tel: 65235
Cable: BLUE STAR
A

Blue Star Ltd.
Kalyan, 19 Vishwas Colony
Alkapuri, **BORDA**, 390 005
Tel: 65235
Cable: BLUE STAR
A

Blue Star Ltd.
133 Kodambakkam High Road
MADRAS 600 034
Tel: 82057
Telex: 041-379
Cable: BLUESTAR
A,M

Blue Star Ltd.
Bhandari House, 7th/8th Floors
91 Nehru Place
NEW DELHI 110 024
Tel: 682547
Telex: 031-2463
Cable: BLUESTAR
A,CH*,CM,CS*,E,M

Blue Star Ltd.
15/16-C Wellesley Rd.
PUNE 411 011
Tel: 22775
Cable: BLUE STAR
A

Blue Star Ltd.
T.C. 7/603 Poornima
Maruthankuzhi
TRIVANDRUM 695 013
Tel: 65799
Telex: 0884-259
Cable: BLUESTAR
E

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Ltd.
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SECUNDERABAD 500 003
Tel: 310-184, 345-774
Telex: 031-2960
CH**



SALES & SUPPORT OFFICES

Arranged alphabetically by country

3



IRELAND

Hewlett-Packard Ireland Ltd.
82/83 Lower Leeson Street
DUBLIN 2
Tel: (1) 60 88 00
Telex: 30439
A,CH,CM,CS,E,M,P

Cardiac Services Ltd.
Kilmore Road
Artane
DUBLIN 5
Tel: (01) 35 1820
Telex: 30439
M

ISRAEL

Eldan Electronic Instrument Ltd.
P.O. Box 1270
JERUSALEM 91000
16, Ohaliav St.
JERUSALEM 94467
Tel: 533 221, 553 242
Telex: 25231 AB/PAKRD IL
A

Electronics Engineering Division
Motorola Israel Ltd.
16 Kremenetski Street
P.O. Box 25016
TEL-AVIV 67899
Tel: 3-338973
Telex: 33569 Motil IL
Cable: BASTEL Tel-Aviv
CH,CM,CS,E,M,P

ITALY

Hewlett-Packard Italiana S.p.A.
Traversa 99C
Via Giulio Petroni, 19
I-70124 **BARI**
Tel: (080) 41-07-44
M

Hewlett-Packard Italiana S.p.A.
Via Martin Luther King, 38/111
I-40132 **BOLOGNA**
Tel: (051) 402394
Telex: 511630
CH,E,MS

Hewlett-Packard Italiana S.p.A.
Via Principe Nicola 43G/C
I-95126 **CATANIA**
Tel: (095) 37-10-87
Telex: 970291
C,P

Hewlett-Packard Italiana S.p.A.
Via G. Di Vittorio 9
I-20063 **CERNUSCO SUL NAVIGLIO**
Tel: (2) 903691
Telex: 334632
A,CH,CM,CS,E,MP,P

Hewlett-Packard Italiana S.p.A.
Via Nuova San Rocco a
Capodimonte, 62/A
I-80131 **NAPLES**
Tel: (081) 7413544
Telex: 710698
A,CH,E

Hewlett-Packard Italiana S.p.A.
Viale G. Modugno 33
I-16156 **GENOVA PEGLI**
Tel: (010) 68-37-07
Telex: 215238
E,C

Hewlett-Packard Italiana S.p.A.
Via Turazza 14
I-35100 **PADOVA**
Tel: (049) 664888
Telex: 430315
A,CH,E,MS

Hewlett-Packard Italiana S.p.A.
Viale C. Pavese 340
I-00144 **ROMA**
Tel: (06) 54831
Telex: 610514
A,CH,CM,CS,E,MS,P*

Hewlett-Packard Italiana S.p.A.
Corso Svizzera, 184
I-10149 **TORINO**
Tel: (011) 74 4044
Telex: 221079
CH,E

JAPAN

Yokogawa-Hewlett-Packard Ltd.
152-1, Onna
000 **ATSUGI**, Kanagawa, 243
Tel: (0462) 28-0451
CM,C*,E

Yokogawa-Hewlett-Packard Ltd.
Towa Building
2-3, Kaigan-dori, 2 Chome Chuo-ku
KOBE, 650
Tel: (078) 392-4791
C,E

Yokogawa-Hewlett-Packard Ltd.
Kumagaya Asahi 82 Bldg
3-4 Tsukuba
KUMAGAYA, Saitama 360
Tel: (0485) 24-6563
CH,CM,E

Yokogawa-Hewlett-Packard Ltd.
Asahi Shinbun Daiichi Seimei Bldg.
4-7, Hanabata-cho
KUMAMOTO, 860
Tel: (0963) 54-7311
CH,E

Yokogawa-Hewlett-Packard Ltd.
Shin-Kyoto Center Bldg.
614, Higashi-Shioji-cho
Karasuma-Nishiiru
Shioji-cho-dori, Shimogyo-ku
KYOTO, 600
Tel: 075-343-0921
CH,E

Yokogawa-Hewlett-Packard Ltd.
Mito Mitsui Bldg
4-73, Sannomaru, 1 Chome
MITO, Ibaragi 310
Tel: (0292) 25-7470
CH,CM,E

Yokogawa-Hewlett-Packard Ltd.
Sumitomo Seimei 14-9 Bldg.
Meieki-Minami, 2 Chome
Nakamura-ku
NAGOYA, 450
Tel: (052) 571-5171
CH,CM,CS,E,MS

Yokogawa-Hewlett-Packard Ltd.
Chuo Bldg.,
4-20 Nishinakajima, 5 Chome
Yodogawa-ku
OSAKA, 532
Tel: (06) 304-6021
Telex: YHPOSA 523-3624
A,CH,CM,CS,E,MP,P*

Yokogawa-Hewlett-Packard Ltd.
Daichi Seimei Bldg.
7-1, Nishi Shinjuku, 2 Chome
Shinjuku-ku, **TOKYO** 160
Tel: 03-348-4611-5
CH,E

Yokogawa-Hewlett-Packard Ltd.
29-21 Takaido-Higashi, 3 Chome
Suginami-ku **TOKYO** 168
Tel: (03) 331-6111
Telex: 232-2024 YHPTOK
A,CH,CM,CS,E,MP,P*

Yokogawa-Hewlett-Packard Ltd.
Daichi Asano Building
2-8, Odori, 5 Chome
UTSUNOMIYA, Tochigi 320
Tel: (0286) 25-7155
CH,CS,E

Yokogawa-Hewlett-Packard Ltd.
Yasuda Seimei Nishiguchi Bldg.
30-4 Tsuruya-cho, 3 Chome
YOKOHAMA 221
Tel: (045) 312-1252
CH,CM,E

JORDAN

Mouasher Cousins Company
P.O. Box 1387
AMMAN
Tel: 24907, 39907
Telex: 21456 SABCO JO
CH,E,M,P

KENYA

ADCOM Ltd., Inc., Kenya
P.O. Box 30070
NAIROBI
Tel: 331955
Telex: 22639
E,M

KOREA

Samsung Electronics Computer Division
76-561 Yeoksam-Dong
Kwangnam-Ku
C.P.O. Box 2775
SEOUL
Tel: 555-7555, 555-5447
Telex: K27364 SAMSAN
A,CH,CM,CS,E,M,P

KUWAIT

Al-Khaldiya Trading & Contracting
P.O. Box 830 Safal
KUWAIT
Tel: 42-4910, 41-1726
Telex: 22481 Areeg kl
CH,E,M

Pholo & Cine Equipment
P.O. Box 270 Safal
KUWAIT
Tel: 42-2846, 42-3801
Telex: 22247 Malin kl
P

LEBANON

G.M. Dolmajian
Achrafieh
P.O. Box 165.167
BEIRUT
Tel: 290293
MP**

LUXEMBOURG

Hewlett-Packard Belgium S.A./N.V.
Blvd de la Woluwe, 100
Woluwedal
B-1200 **BRUSSELS**
Tel: (02) 762-32-00
Telex: 23-494 paloben bru
A,CH,CM,CS,E,MP,P

MALAYSIA

Hewlett-Packard Sales (Malaysia)
Sdn. Bhd.
1st Floor, Bangunan British
American
Jalan Semantan, Damansara Heights
KUALA LUMPUR 23-03
Tel: 943022
Telex: MA31011
A,CH,E,M,P*

Protel Engineering
P.O. Box 1917
Lot 6624, Section 64
23/4 Pending Road
Kuching, **SARAWAK**
Tel: 36299
Telex: MA 70904 PROTEL
Cable: PROTELENG
A,E,M

MALTA

Philip Toledo Ltd.
Notabile Rd.
MRIEHEL
Tel: 447 47, 455 66
Telex: Media MW 649
P

MEXICO

Hewlett-Packard Mexicana, S.A.
de C.V.
Av. Periferico Sur No. 6501
Tepepan, Xochimilco
MEXICO D.F. 16020
Tel: 676-4600
Telex: 17-74-507 HEWPACK MEX
A,CH,CS,E,MS,P

Hewlett-Packard Mexicana, S.A.
de C.V.
Ave. Colonia del Valle #409
Col. del Valle
Municipio de Garza Garcia
MONTERREY, N.L.
Tel: 78 42 41
Telex: 038 410
CH

MOROCCO

Dolbeau
81 rue Karatchi
CASABLANCA
Tel: 3041-82, 3068-38
Telex: 23051, 22822
E

Gerep
2 rue d'Agadir
Boite Postale 156
CASABLANCA
Tel: 272093, 272095
Telex: 23 739
P

NETHERLANDS

Hewlett-Packard Nederland B.V.
Van Heuven Goedhartlaan 121
NL 1181KK **AMSTELVEEN**
P.O. Box 667
NL 1180 AR **AMSTELVEEN**
Tel: (020) 47-20-21
Telex: 13 216 HEPA NL
A,CH,CM,CS,E,MP,P

Hewlett-Packard Nederland B.V.
Bongerd 2
NL 2906VK **CAPELLE, A/D IJSSEL**
P.O. Box 41
NL 2900AA **CAPELLE, A/D IJSSEL**
Tel: (10) 51-64-44
Telex: 21261 HEPAC NL
A,CH,CS,E

NEW ZEALAND

Hewlett-Packard (N.Z.) Ltd.
169 Manukau Road
P.O. Box 26-189
Epsom, **AUCKLAND**
Tel: 687-159
Cable: HEWPACK Auckland
CH,CM,E,P*

Hewlett-Packard (N.Z.) Ltd.
4-12 Cruickshank Street
Kilbirnie, **WELLINGTON 3**
P.O. Box 9443
Courtenay Place, **WELLINGTON 3**
Tel: 877-199
Cable: HEWPACK Wellington
CH,CM,E,P

Northrop Instruments & Systems Ltd.
369 Khyber Pass Road
P.O. Box 8602
AUCKLAND
Tel: 794-091
Telex: 60605
A,M

Northrop Instruments & Systems Ltd.
110 Mandeville St.
P.O. Box 8388
CHRISTCHURCH
Tel: 486-928
Telex: 4203
A,M

Northrop Instruments & Systems Ltd.
Sturdee House
85-87 Ghuznee Street
P.O. Box 2406
WELLINGTON
Tel: 850-091
Telex: NZ 3380
A,M

NORTHERN IRELAND

See United Kingdom

NORWAY

Hewlett-Packard Norge A/S
Folke Bernadottes vei 50
P.O. Box 3558
N-5033 **FYLLINGSDALEN** (Bergen)
Tel: (05) 16-55-40
Telex: 16621 hpnas n
CH,CS,E,MS

Hewlett-Packard Norge A/S
Österdalen 18
P.O. Box 34
N-1345 **ÖSTERÅS**
Tel: (02) 17-11-80
Telex: 16621 hpnas n
A,CH,CM,CS,E,M,P

OMAN

Khimji Ramdas
P.O. Box 19
MUSCAT
Tel: 722225, 745601
Telex: 3289 BROKER MB MUSCAT
P

Suhail & Saud Bahwan
P.O. Box 169
MUSCAT
Tel: 734 201-3
Telex: 3274 BAHWAN MB

PAKISTAN

Mushko & Company Ltd.
1-B, Street 43
Sector F-8/1
ISLAMABAD
Tel: 26875
Cable: FEMUS Rawalpindi
A,E,M

Mushko & Company Ltd.
Osman Chambers
Abdullah Haroon Road
KARACHI 0302
Tel: 524131, 524132
Telex: 2894 MUSKO PK
Cable: COOPERATOR Karachi
A,E,M,P*

PANAMA

Electrónico Balboa, S.A.
Calle Samuel Lewis, Ed. Alta
Apartado 4929
PANAMA 5
Tel: 64-2700
Telex: 3483 ELECTRON PG
A,CM,E,M,P

SALES & SUPPORT OFFICES

Arranged alphabetically by country

PERU

Cia Electro Médica S.A.
Los Flamencos 145, San Isidro
Casilla 1030
LIMA 1
Tel: 41-4325, 41-3703
Telex: Pub. Booth 25306
CM,E,M,P

PHILIPPINES

The Online Advanced Systems
Corporation
Rico House, Amorsolo Cor. Herrera
Street
Legaspi Village, Makati
P.O. Box 1510
Metro MANILA
Tel: 85-35-81, 85-34-91, 85-32-21
Telex: 3274 ONLINE
A,CH,CS,E,M
Electronic Specialists and
Proponents Inc.
690-B Epifanio de los Santos
Avenue
Cubao, **QUEZON CITY**
P.O. Box 2649 Manila
Tel: 98-96-81, 98-96-82, 98-96-83
Telex: 40018, 42000 ITT GLOBE
MACKAY BOOTH
P

PORTUGAL

Mundinter
Intercambio Mundial de Comércio
S.A.R.L.
P.O. Box 2761
Avenida Antonio Augusto de Aguiar
138
P-LISBON
Tel: (19) 53-21-31, 53-21-37
Telex: 16691 munter p
M
Soquimica
Av. da Liberdade, 220-2
1298 LISBOA Codex
Tel: 56 21 81/2/3
Telex: 13316 SABASA
P
Telectra-Empresa Técnica de
Equipamentos Eléctricos S.A.R.L.
Rua Rodrigo da Fonseca 103
P.O. Box 2531
P-LISBON 1
Tel: (19) 68-60-72
Telex: 12598
CH,CS,E,P

PUERTO RICO

Hewlett-Packard Puerto Rico
P.O. Box 4407
CAROLINA, Puerto Rico 00628
Calle 272 Edificio 203
Urb. Country Club
RIO PIEDRAS, Puerto Rico
Tel: (809) 762-7255
A,CH,CS

QATAR

Computeabia
P.O. Box 2750
DOHA
Tel: 883555
Telex: 4806 CHPARB
P
Eastern Technical Services
P.O. Box 4747
DOHA
Tel: 329 993
Telex: 4156 EASTEC DH

Nasser Trading & Contracting
P.O. Box 1563
DOHA
Tel: 22170, 23539
Telex: 4439 NASSER DH
M

SAUDI ARABIA

Modern Electronic Establishment
Hewlett-Packard Division
P.O. Box 281
Thuobah
AL-KHOBAR
Tel: 864-46 78
Telex: 671 106 HPMEEK SJ
Cable: ELECTA AL-KHOBAR
CH,CS,E,M,P
Modern Electronic Establishment
Hewlett-Packard Division
P.O. Box 1228
Redec Plaza, 6th Floor
JEDDAH
Tel: 644 38 48
Telex: 4027 12 FARNAS SJ
Cable: ELECTA JEDDAH
CH,CS,E,M,P
Modern Electronic Establishment
Hewlett-Packard Division
P.O. Box 2728
RIYADH
Tel: 491-97 15, 491-63 87
Telex: 202049 MEERYD SJ
CH,CS,E,M,P

SCOTLAND

See United Kingdom

SINGAPORE

Hewlett-Packard Singapore (Sales)
Pte. Ltd.
P.O. Box 58 Alexandra Post Office
SINGAPORE, 9115
6th Floor, Inchcape House
450-452 Alexandra Road
SINGAPORE 0511
Tel: 631788
Telex: HPSGSO RS 34209
Cable: HEWPACK, Singapore
A,CH,CS,E,MS,P
Dynamar International Ltd.
Unit 05-11 Block 6
Kalam Ayer Industrial Estate
SINGAPORE 1334
Tel: 747-6188
Telex: RS 26283
CM

SOUTH AFRICA

Hewlett-Packard So Africa (Pty.)
Ltd.
P.O. Box 120
Howard Place **CAPE PROVINCE** 7450
Pine Park Center, Forest Drive,
Pinelands
CAPE PROVINCE 7405
Tel: 53-7954
Telex: 57-20006
A,CH,CM,E,MS,P
Hewlett-Packard So Africa (Pty.)
Ltd.
P.O. Box 37099
92 Overport Drive
DURBAN 4067
Tel: 28-4178, 28-4179, 28-4110
Telex: 6-22954
CH,CM

Hewlett-Packard So Africa (Pty.)
Ltd.
6 Linton Arcade
511 Cape Road
Linton Grange
PORT ELIZABETH 6001
Tel: 041-302148
CH

Hewlett-Packard So Africa (Pty.)
Ltd. P.O. Box 33345
Glenstantia 0010 **TRANSVAAL**
1st Floor East
Constantia Park Ridge Shopping
Centre
Constantia Park
PRETORIA
Tel: 982043
Telex: 32163
CH,E

Hewlett-Packard So Africa (Pty.)
Ltd.
Private Bag Wendywood
SANDTON 2144
Tel: 802-5111, 802-5125
Telex: 4-20877
Cable: HEWPACK Johannesburg
A,CH,CM,CS,E,MS,P

SPAIN

Hewlett-Packard Española S.A.
Calle Intenza, 321
E-BARCELONA 29
Tel: 322.24.51, 321.73.54
Telex: 52603 hpbce
A,CH,CS,E,MS,P

Hewlett-Packard Española S.A.
Calle San Vicente S/No
Edificio Albia II
E-BILBAO 1
Tel: 423.83.06
A,CH,E,MS

Hewlett-Packard Española S.A.
Ctra. de la Coruña, Km. 16, 400
Las Rozas
E-MADRID
Tel: (1) 637.00.11
CH,CS,M

Hewlett-Packard Española S.A.
Avda. S. Francisco Javier, S/no
Planta 10. Edificio Sevilla 2,
E-SEVILLA 5
Tel: 64.44.54
Telex: 72933
A,CS,MS,P

Hewlett-Packard Española S.A.
Calle Ramon Gorrillo, 1 (Entlo.3)
E-VALENCIA 10
Tel: 361-1354
CH,P

SWEDEN

Hewlett-Packard Sverige AB
Sunnanvagen 14K
S-22226 LUND
Tel: (046) 13-69-79
Telex: (854) 17886 (via Spånga
office)
CH
Hewlett-Packard Sverige AB
Vastra Vintergatan 9
S-70344 ÖREBRO
Tel: (19) 10-48-80
Telex: (854) 17886 (via Spånga
office)
CH

Hewlett-Packard Sverige AB
Skallholtsgratan 9, Kista
Box 19
S-16393 SPÅNGA
Tel: (08) 750-2000
Telex: (854) 17886
A,CH,CM,CS,E,MS,P
Hewlett-Packard Sverige AB
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