

Installation Reference

**HP 9000 Series 300 Computers
Model 375**

HP Part Number 98574-90604



Hewlett-Packard Company

3404 East Harmony Road, Fort Collins, Colorado 80525

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Installation Reference

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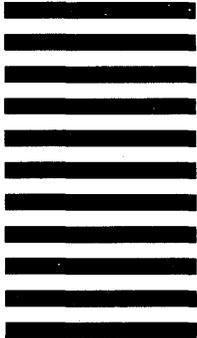
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The manual printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates which are incorporated at reprint do not cause the date to change.) The manual part number changes when extensive technical changes are incorporated.

May 1990...Edition 1

Notices

Radio Frequency Interference Statements

FCC Statement

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Introduction

This manual covers familiarization with the hardware aspects of the Model 375 computer, particularly the I/O interfaces. It also covers how to interpret the power-up self-test.

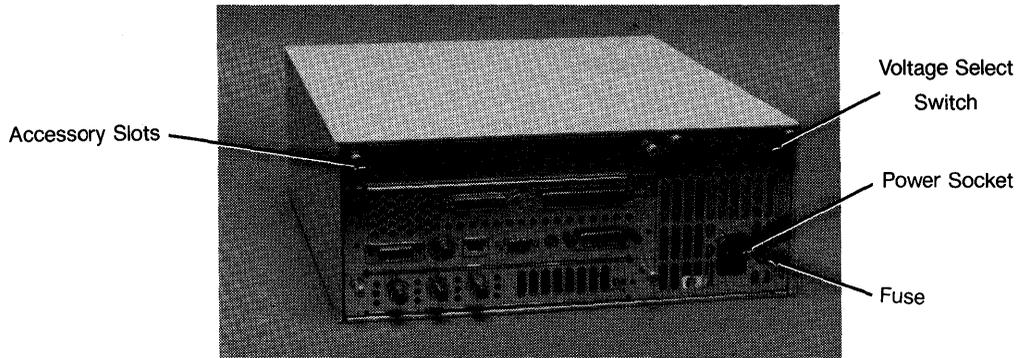
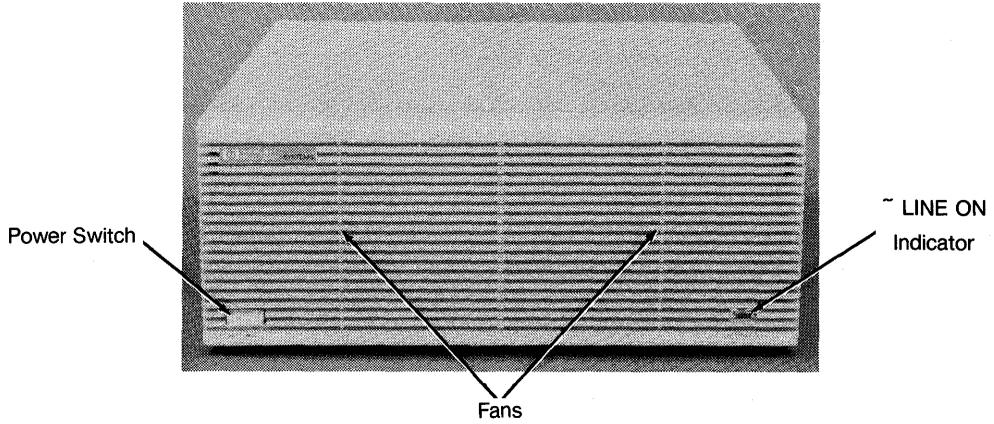
This manual is similar to the generic Series 300 Installation Reference which is also shipped with the Model 375, except that the generic manual contains a lot of material which is not applicable to the Model 375. Put this manual in the binder along with the Support Log, and discard the generic Series 300 pages.

How This Reference Is Organized

This reference has two chapters. It is organized such that you can read those sections which contain information which you need and skip the rest.

Chapter 1 – Familiarization. This chapter contains a brief familiarization with the hardware features of the computer. It also contains information which will help you connect and use the various interfaces. The rest of the chapter has useful information about aspects of your hardware, such as fuse access and how to change the operating voltage.

Chapter 2 – Reading The Self-Test. This chapter tells you how to turn on your computer workstation and read and interpret the self-test messages.



Your Computer's Parts

Your Computer's Parts

The Figures on the facing page show the various parts of the computer which you may need to access while using the computer. Note that due to the large number of different configurations, some of the items pointed out may be in a slightly different place than in these Figures. They will, however, look the same.

Power Switch - This is the switch you use to turn power on and off. When power is on, the switch is "in" or flush with the front of the computer; the switch is "out" when power is off.

LINE ON Indicator - This green indicator is lit when power is turned on. When power is off, the indicator is off.

Accessory Slots - Remove these covers to install memory cards, interface cards, and other accessories.

Fans - The computer has two small built-in fans to keep it cool. The fans should always be running when the computer is on. If either fan ever goes off while the computer is powered on, switch the computer off and call your HP Service Representative.

Power Socket - The three-pronged power socket is especially designed for an HP power cord. The power cord is shipped in the carton this reference came in.

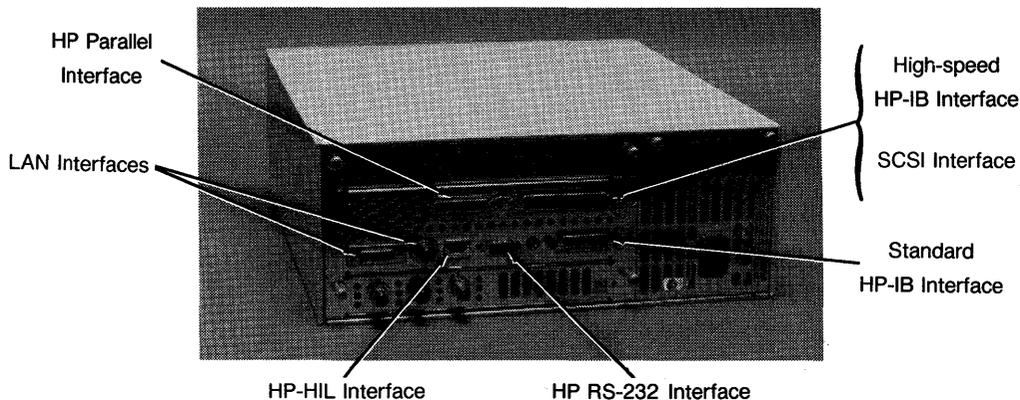
Voltage Select Switch - The computer is designed to run at either 85-129 Vac or 187-250 Vac. The line frequency range is 48-66 Hz. The voltage select switch sets the computer to run at the lower (120 Vac) or upper (240 Vac) range.

Fuse - A fuse rated at 250V, 8A, must be in place for your computer to run safely.

Interfaces

Your computer contains a variety of interfaces for different purposes. This section contains information which you may need to put them into operation.

Here is a Figure showing the location of all the interfaces available on the Model 375. Note that some of these interfaces are optional, and you may not have them on your particular computer.



Your Computer's Interfaces

HP-HIL Interface - You will plug your HP-HIL cable into this receptacle.

LAN Interfaces - Both a Thin-LAN interface and an AUI interface are included, but only one can be used at a time.

Standard HP-IB Interface - This HP-IB port is generally used for low-speed output devices such as printers and plotters.

High-speed HP-IB Interface - This HP-IB port is generally used for storage devices such as disk and tape drives. Note that it occupies the same spot as the SCSI interface.

SCSI Interface - This port conforms to the Small Computer Standard Interface for single-ended devices. Note that it occupies the same spot as the high-speed HP-IB interface.

HP RS-232 Interface - This port is generally used for a printer, modem or terminal.

HP Parallel Interface - This port is generally used for a printer.

The SCSI and high-speed HP-IB interfaces occupy the same location on the backplate. As a result, you can not have both of them installed. This is usually not a problem, since most people need only one or the other. If a particular installation needs both, the one not installed can be obtained by way of a DIO card in the backplane.

The backplate includes both a ThinLAN and an AUI connector. Only one can be used at a time. To select between them, you must move a jumper installed on the system board. Instructions for doing this are included below, in the section titled **LAN Interfaces**.

Interface Configuration

Interfaces usually have attributes which can be changed or configured. Although your interfaces have default settings which are correct for most situations, they may not be correct for yours. This section tells how to change them.

The interfaces in your computer are soft-configured. That is, configuration is accomplished through software rather than by way of hardware switches. The software is accessed through the boot ROM. It stores the configuration data in an Electrically-Erasable Programmable Read-Only Memory (EEPROM).

The software is quite easy to use. The process is covered in the *Boot ROM Configuration Mode Users Manual*. However, you don't need to plow through the entire manual since the process is quite friendly and self-explanatory once you get into it.

Here is how to access the configuration software:

1. Install your system.
2. Turn the computer on.
3. When you see the power-up display, type

4. A display similar to this one will be presented:

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BOOTROM Rev. D
Bit-Mapped Video
MC68030 Processor
MC68882 Coprocessor
Configuration EEPROM
HP-HLL.Keyboard
HP-IB
DMA-CO
RAM 4194080 Bytes
HP98644 (RS-232) at 9
HP98265 (SCSI S 32) at 14
HP98625 (HS HP-IB) at 15
HP98643 (LAN) at 21 080009AAAAAA
HP PARALLEL at 23

Configurable Interfaces
Keys Interface Select Code

1 HP-IB
2 RS-232 9
3 SCSI 14
4 HS HP-IB 15
5 LAN 21
6 HP PARALLEL 23

N store New values
D store Default values
(then cycle SPU power)
A Abort without changes

Type [key] RETURN ?

System Search Mode
RESET to Power-UP, SPACE to clear input

? C

Configuration Menu

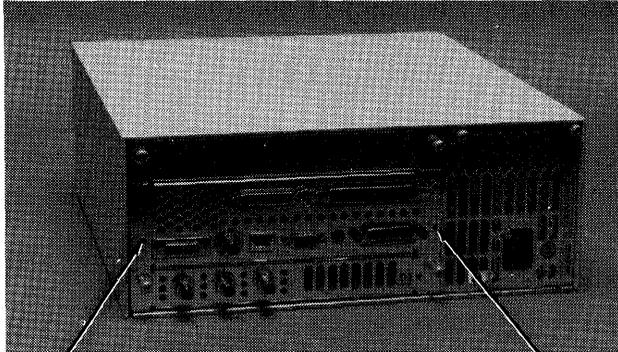
5. Now go ahead and select the interface which you want to configure.

LAN Interfaces

If you will be using LAN, you may need to change the position of the LAN configuration jumper. The computer has both ThinLAN and AUI capability. However, only one is available at a time. Selection between the two is made by a jumper located on the system board.

The computer is shipped with the jumper in the ThinLAN position. If you will be using ThinLAN (or won't be using LAN), leave the jumper where it is. If you will be using AUI, you will need to reposition the jumper. Follow this procedure:

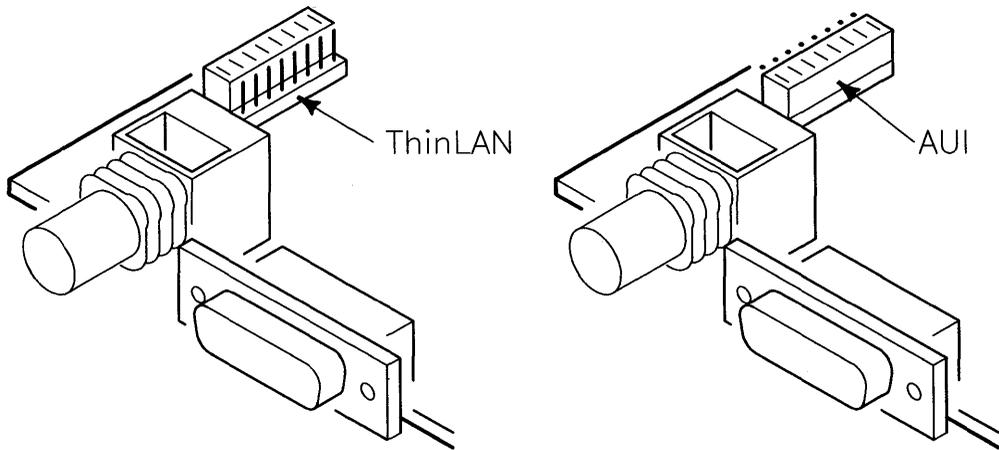
1. Ensure that the computer is turned off and remove the power cord.
2. Remove these screws in the rear panel:



Rear Panel Screws

3. Now slide the internal assembly about three inches out of the cover.

4. Locate the LAN jumper with this drawing:

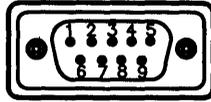


LAN Configuration Jumper

5. Move the jumper to the appropriate position. Use a needlenose pliers to move the jumper.
6. After changing the jumper position, slide the internal assembly back into the cover, re-install the rear panel screws and reconnect the power cord.

RS-232 Interface

Here is a pin-out of the RS-232 interface:



RS-232 Connector Pin-out

Pin	Function
1	CD
2	RXData
3	TXData
4	DTR
5	Logic Ground
6	DSR
7	RTS
8	CTS
9	RI

RS-232 Default Settings

Function	Default Setting
Baud Rate	9600
bits/character	8
Parity	disabled
Stop Bits	1
Handshaking	XON/XOFF enabled

Connecting a Terminal

A terminal may be connected to the Model 375 by way of the RS-232 port. Here is some helpful information on getting a terminal configured and running.

The RS-232 port can be configured for either Remote or Local operation. To support a terminal, the port must be in the Remote mode. Here's how to put it in Remote mode.

If the Model 375 was ordered without a monitor or keyboard, it will be configured in Remote mode at the factory. That's because it is assumed to be for a terminal.

Otherwise, the Model 375 is shipped in Local mode. To change to Remote mode, enter the Configuration mode and change the setting. Configuration mode is entered by powering the computer up and typing **C** **Return** after the power-up display becomes visible.

Before changing to Remote mode, the Model 375 should be configured for the remote terminal. Here are the default settings for the RS-232 port:

RS-232 Default Settings

Function	Default Setting
Baud Rate	9600
bits/character	8
Parity	disabled
Stop Bits	1
Handshaking	XON/XOFF enabled

To change any of these, go into Configuration mode. That is, power the computer up and type **C** **Return** after the power-up display becomes visible.

If the Model 375 is already in Remote mode, you can still change the configuration settings. Either hook up a terminal with the above default settings, or go back into Local mode and then change them. Here's how:

Hooking up a Default Terminal

Hook up a remote terminal with the default settings listed above. Then power the computer up and, from the terminal, enter Configuration mode and change the settings to the desired ones. Then turn the computer off and connect the desired remote terminal. When the computer is powered back up, it will be configured for the new terminal.

Configuring from Local Mode

Hook up a keyboard and monitor. Then turn the computer on, and when the power-up display becomes visible, type `[L] [Return]`. This puts it into Local mode, and you can immediately enter Configuration mode by typing `[C] [Return]`.

HP-HIL

If you are hooking up additional HP-HIL devices, remember:

- HP-HIL devices are connected in daisy-chain fashion.
- HP-HIL cables are not reversible. Connect the two-dot end (dark connectors) to the existing system and the one-dot end (light connectors) to the new device.
- Connect no more than seven devices, drawing no more than one amp of total current.

SCSI

If you are using the SCSI interface, remember:

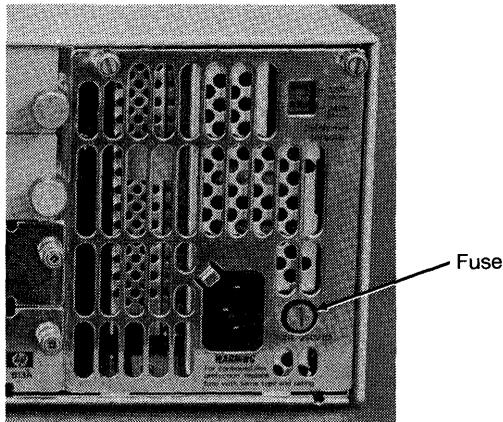
- SCSI peripherals are connected in daisy-chain fashion.
- The end peripheral must be terminated. Install a single-ended terminator in the unused connector on the end peripheral.
- Connect no more than seven peripheral devices.
- Each peripheral must be set at a unique SCSI address.
- The root device must be set at SCSI address 0.

Miscellaneous Model 375 Hardware Information

Replacing the Fuse

Here is how to replace the fuse in a Model 375 workstation. New fuses are available at Hewlett-Packard Sales and Service Centers.

1. Turn off the computer's power switch.
2. Unplug the power cord from the outlet and then unplug it from the power socket on the computer.
3. The fuse is located just beside the power cord.



Fuse Location

4. Open the fuse cover by turning it counter-clockwise with a screwdriver.
5. Remove the fuse cover. It should contain a 250V, 8A fuse. Remove the fuse.
6. Install the replacement fuse that was shipped with your computer into the fuse cover, and slide the cover into the computer.
7. Close the cover by turning it clockwise with a screwdriver.
8. Plug the power cord into the computer's power socket and into the power outlet.
9. Press in the power switch on the computer.

Voltage Select Switch

The Model 375 contains a switch for selecting between 110V and 220-240V input. If you wish to check the check the position of this switch or change it, follow these directions:

1. Turn off the computer's power switch.
2. Unplug the power cord from the outlet and then unplug it from the power socket on the computer.
3. The voltage selection switch is located on the rear panel. Position the computer so that you can easily see the rear panel.
4. The switch is located in the extreme upper right-hand corner of the rear panel.
5. The upper position is 110V; the lower position is 220-240V.

Booting a System in Attended Mode

Booting a system while in attended mode (i.e., after pressing a key to indicate that the computer is attended, and to prevent the automatic booting of the preferred system) is slightly different than it has been in previous Models.

In the Model 375, type the number-letter combination for the desired system, followed by the Return key.

Where to Go Next

You have completed the installation of your computer, keyboard and monitor. You are now ready to install peripheral devices, such as printers and mass storage devices. The *Installing Peripherals* is the place to go for this information. It is located in the carton containing your software or operating system.

Additional References

- *Installing Peripherals* (part number 09000-90002) describes installation of additional I/O cards and peripheral devices such as printers and mass storage devices. It is located in the carton containing your software or operating system.
- *Boot ROM Configuration Mode Users Manual* (part number 98574-90600) describes how to change the configuration of internal interfaces. This manual is supplied with the computer.
- *Use with Terminals and Monitors* (part number 98564-90610) describes relationship between Remote and Local modes, and using a terminal connected to the RS-232 port. This manual is supplied with the computer.
- *HP 9000 Workstation Configuration Guide* (part number 5954-8594) provides detailed configuration information. It is available from your local HP sales office.

Reading the Self-Test

Computers can be valuable time-savers, but only if they are operating reliably. If a problem goes undetected and your computer fails in the middle of a job, data can be lost and hours of your labor may be wasted.

Your computer minimizes this risk by performing a self-test every time you turn it on. In this way, most problems are caught before you start to work, sparing you the frustration of a mid-session failure.

In this chapter, we describe how to interpret the self-test messages and suggest what you should do in case of a failure.

Self-Test Messages

Turn your monitor on, and turn your computer on or press **Shift**—**Reset** if it is already on. If you have one or more operating systems on-line, tap the space bar a couple times after the word **Keyboard** appears. This inhibits the boot ROM from loading a system. Notice the messages appearing along the left-hand side of the screen. Compare your display to the appropriate one below. Adjust your monitor if necessary.

```
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BOOTROM Rev. D
Bit-Mapped Display
MC68030 Processor
MC68882 Coprocessor
Configuration EEPROM
HP-HIL Keyboard
HP-IB
DMA-CO
RAM xxxxxxx Bytes
HP98644 (RS232) at 9
HP98265 (SCSI S 32) at 14
HP98625 (HS HP-IB) at 15
HP98643 (LAN) at 21, 080009XXXXX
HP Parallel at 23

SEARCHING FOR A SYSTEM (Press RETURN To Pause)
RESET To Power-Up
```

Model 375 Display

The lines under the **BOOTROM Rev. D** message tell you that each major component in your computer has just been tested. If the component passed the test, a **status message** is displayed; if the component failed the test, an **error message** will appear.

Status Messages

Usually, each component will pass its test and only status messages will be displayed. The first status message, **Bit Mapped Display**, tells you that the video circuits have been checked. The next status message is either **MC68030** or **68040 Processor**, and tells you that the computer's central processor is functioning properly.

The next two status messages, **MC68882 Co-processor**, **Configuration EEPROM** and **HP-HIL Keyboard**, tell you that the floating-point coprocessor, configuration register and keyboard respectively, are working properly.

The next message reports that your computer's built-in **HP-IB** interface is functional. The message, **DMA-CO**, indicates that the direct memory access circuitry is functional.

The next status message in the self-test list (**RAM XXXXXX Bytes**) shows that memory has passed its test. This figure will be different for the various amounts of RAM memory.

While the memory test is in progress, the message:

TESTING MEMORY

appears at the bottom of the screen. Press **[Shift]—[Reset]** if you want to re-start the self-test and see this message. When the memory test is finished, the number of bytes of RAM is reported in the self-test list (e.g., **8388000 Bytes**).

Below that is the message **HP98644 (RS232) at 9**, which indicates that your built-in Data Communications interface is working. Next will appear either of two messages: **HP98265 (SCSI S 32) at 14** or **HP98625 (HS HP-IB) at 15**. The first indicates the condition of the Small Computer System Interface, and the second that of the high-speed HP-IB interface. Note that these interfaces are mutually exclusive, that is, only one or the other will be installed in your computer and be listed in this display. The message, **HP98643 (LAN) at 21**, indicates that your built-in Local Area Net interface is working. The final message, **IP Parallel at 23** indicates that your parallel interface is working. If you have another interface in your computer, its name and select code would be listed, also.

Where to Go Next

You have completed the installation of your computer, keyboard and monitor. You are now ready to install peripheral devices, such as printers and mass storage devices. The *Installing Peripherals* (part number 97005-90002) is the place to go for this information. It is located in the carton containing your software or operating system.

Error Messages

If a component fails its test, an error message is displayed in place of the usual status message. There are a few types of error messages; we'll discuss one of them here and list the rest in the Boot ROM Error Messages list which follows in this chapter.

You might get the message:

Keyboard Failed

This means that the computer found the keyboard's electronics, but it wasn't happy with what it found. This message indicates a problem that an HP Service Representative should look at.

After displaying an error message, the computer moves on to the next component in the self-test list. After all components are tested, the computer either looks for software to load, or displays the message:

WAITING 1 MINUTE (Press RETURN To Abort Wait)

This message tells you that the computer found at least one error and it's giving you a minute to read the error message(s) on the screen. You can press **Return** to terminate the waiting period.

Boot ROM Beeper

In addition to displaying an error and waiting a minute, the boot ROM sounds a pattern of beeps. The boot ROM is actually sending an error message to a service person. If this error pattern is sounded, check the display for an error message. Refer to the Boot ROM Error Messages list which follows in this chapter. If the message indicates something you cannot correct, or if the display is not working, you should call HP for service. Your service representative may ask you to restart the self-test so he can listen to the error code sounded.

After the error pattern has sounded, the boot ROM searches for a system to load. If you want to cancel the one-minute delay and the beeps, you can press **Return**. The boot ROM will then display any operating systems found and wait for you to specify which system you want loaded.

Boot ROM Errors

If the computer detects a problem with the boot ROM (that is, it failed checksum), it displays the message:

```
BOOTROM Rev. D Failed
```

instead of the **BOOTROM Rev. D** message displayed when powerup is successful. It also displays the message:

```
CONTINUE AT OWN RISK (Press RETURN To Continue)
```

The computer will do nothing further until you press the **Return** key. Your computer is somewhat unpredictable in this state and could alter the programs that you want to load from a disk. Therefore, if you decide to continue, make sure you have extra copies of any disks or programs that the boot ROM might access.

Running an Extended Memory Test

If you wish to run a more complete test of all RAM in the computer, turn on the computer or press **Shift**—**Reset**, and press these keys while the computer is self-testing:

CTRL—**C**

When the Self-test menu appears, press:

T **Return**

The boot ROM will restart the self-test and run a longer RAM test. This test may catch intermittent problems not seen by the power-up self-test.

What To Do When Errors Occur

Very few self-test errors are serious enough to require service. When an error is reported, always run the self-test again and see if the error is repeated.

If the same error is reported a second time, look up the message in the Boot ROM Error Messages list which follows. You can often correct the problem yourself. Make the recommended adjustment and run the self-test again. If the same error is reported, or if the error message you get doesn't appear in the Boot ROM Error Messages list, call your HP Service Representative for help.

Where To Get Help

When your computer develops a problem that you cannot correct yourself, call your HP Service Representative. A number of service contracts are available. Refer to the Sales and Support Offices list which was packed with your computer.

Boot ROM Error Messages

This section lists error messages sent by the boot ROM. The boot ROM stores instructions that tell the computer to test the computer, display status messages, and search for a system program. We have tried to anticipate some errors you might receive that indicate a hardware mis-configuration rather than a failure. If you still receive the error after making the recommended adjustment, it means that there is a real problem; call HP for service.

Error Message	Description and Recovery Action
WAITING 1 MINUTE	The self-test found a failure. After evaluating the message, either press [Return] to begin the booting process or call HP for service.
HP-IB Failed	Either more than half of the devices on the HP-IB interface are turned OFF or a device on the HP-IB has failed the self-test. First turn each device on or disconnect it. Then run the self-test again. If the message is repeated, call for service.
CONTINUE AT OWN RISK	Errors detected in the boot ROM. Press [Return] to continue the self-test. Ensure you have a copy of every file the boot ROM may access. If the error persists, call HP for service.
UNEXPECTED USE OF xxxxxx	Indicates a system failure. Call HP for service.



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