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# HP OmniBook Hardware Diagnostics

**—————** User's Guide

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## Who Should Read This Book

This manual is for anyone who wants to:

- Diagnose hardware problems on an OmniBook notebook PC
- Understand the purpose of OmniBook Hardware Diagnostics
- Learn how to use OmniBook Hardware Diagnostics
- Know what to do when a test fails
- Provide HP-dedicated support agents with more information for solving problems quickly and effectively
- Find out where to get more information and support.

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## What is OmniBook Hardware Diagnostics?

The first step in solving a problem with a PC is *diagnosis*.

HP's OmniBook Hardware Diagnostics (DiagTools) helps you diagnose hardware-related problems on an OmniBook PC. It is a series of tools designed to help you to:

- Verify the correct functioning of an OmniBook PC
- Diagnose hardware-related problems
- Prevent unneeded repair
- Provide precise information to HP-dedicated support agents so that they can solve any problem quickly and effectively.

OmniBook Hardware Diagnostics is not a repair tool.

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## Overview of OmniBook Hardware Diagnostics

The OmniBook Hardware Diagnostics utility has four parts:

- Hardware Detection, which automatically detects the hardware configuration of an OmniBook PC. Hardware detection is described in chapter 2.
- The Basic Tests, which determine the correct functioning of the PC as a whole. The basic test phase is described in chapter 3.
- The Advanced Tests. These provide complete, in-depth testing and diagnosis of the PC's individual components. The advanced test phase is described in chapter 4.
- The Support Ticket, which is a complete record of the test results and the PC's configuration. The support ticket can be used to communicate the test results to your local or HP-dedicated support agent. This is described in chapter 5.

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## Compatibility

OmniBook Hardware Diagnostics version 1.x can run on the following HP OmniBook PCs:

- OmniBook 800.
- OmniBook 2000.
- OmniBook 5500.
- OmniBook 5700.
- OmniBook 3000.
- OmniBook Sojourn.

For other OmniBook models, find the correct version of OmniBook diagnostics and documentation on the OmniBook web site, <http://www.hp.com/omnibook>.

You should verify you use the correct version of OmniBook Hardware Diagnostics for the OmniBook you are testing.

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## Where to Get the Diagnostics Software

Always use the latest version of OmniBook Hardware Diagnostics.

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**Note**

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Verify that you are using the correct version of OmniBook Hardware Diagnostics for the OmniBook you are testing.

You can download the latest version of the OmniBook Hardware Diagnostics utility from the OmniBook web site in the Support, Software area:

<http://www.hp.com/omnibook>

For more information about the OmniBook web site and for information about HP Electronic Information Services, refer to page 6-3.

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Starting OmniBook Hardware  
Diagnostics

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## Installing and Setting Up OmniBook Hardware Diagnostics

For OmniBook users, as well as network administrators, you must create an OmniBook Hardware Diagnostics floppy diskette before you can use OmniBook Hardware Diagnostics. Use one of the following methods:

- For any compatible OmniBook PC, you can create the OmniBook Hardware Diagnostics floppy diskette from a file downloaded from the World Wide Web.
- For OmniBook 3000 and OmniBook Sojourn PCs, you can create the OmniBook Hardware Diagnostics floppy diskette from TopTools, from the hard disk, or from the Recovery CD.

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**Note**

OmniBook Hardware Diagnostics must not be run directly from your operating system. OmniBook Hardware Diagnostics will function correctly only under the DOS operating system and once the correct drivers have been loaded.

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### Downloading the Latest Version from the Web

You can download the latest version of the OmniBook Hardware Diagnostics utility from the OmniBook web site in the Support, Software area:

<http://www.hp.com/omnibook>

For more information about the HP OmniBook website and for information about HP Electronic Information Services, refer to page 6-3.

There are two files available for downloading:

- The OmniBook Hardware Diagnostics utility. A compressed file (with the extension .EXE) which contains all the files necessary for running OmniBook Hardware Diagnostics.
- The User's Guide for OmniBook Hardware Diagnostics – the document you are reading. It is a PDF file which can be viewed and printed using Adobe's Acrobat Reader. (The Adobe Acrobat Reader can be downloaded free of charge from HP's World Wide Web site.)

After you have downloaded the diagnostics file, follow the instructions included with the file:



## Creating the OmniBook Hardware Diagnostics Floppy Diskette Locally

For an OmniBook 3000 or OmniBook Sojourn PC, you can create the OmniBook Hardware Diagnostics floppy diskette locally. After inserting a formatted floppy diskette in the floppy drive, do one of the following to create an OmniBook Hardware Diagnostics floppy diskette:

- On an OmniBook with a factory software installation, run **diaginst** from the \Dmi\Hpdiags directory on the hard disk. To do this in Windows, double-click the file.  
–or–  
For an OmniBook with TopTools installed, click Start, Programs, HP DMI, HP TopTools. Use the DiagTools tab to create the diskette.
- On any computer with a CD-ROM drive, run **diaginst** from the \Omnibook\Drivers\Hputils or \OmniBook\Dmi\Hpdiags directory on the Recovery CD that came with the OmniBook PC. To do this in Windows, double-click the file.

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## Updating the Hardware Diagnostics Files (For Network Administrators)

To know if you have TopTools in Windows 95 or Windows NT 4.0, click the Start button and look for HP DMI in the Programs menu.

If you are a network administrator, you can update the Hardware Diagnostics files on remote client PCs.

### **Using TopTools Integrated Manager Ver. 4.1**

To update the Diagnostics files on remote PCs, open the TopTools Integrated Device Manager in Internet Explorer (version 4.01 or above). Right-click on Devices, Device Types, and select Personal Computers in the window that appears. Use shift-click or control-click to select the DMI 2.x compliant PCs you want to update and right-click. Select Distribute Diagnostics from the menu that appears and follow the onscreen instructions.

For more information about using TopTools, refer to the TopTools online help in the Help menu and to HP's Web site at <http://www.hp.com/toptools>.

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## Before Running OmniBook Hardware Diagnostics

Before you run the Hardware Diagnostics, consider whether you need to make any changes in the HP BIOS Setup program (sometimes called SCU). Hardware devices that are disabled in Setup can not be tested by the Hardware Diagnostics.

- If you want to test the current hardware configuration, do not change any settings in the Setup program.
- If you want to perform a more complete test, you can run the Setup program and enable devices that you want to test.

### **More Information About the PC's Setup Program**

Setup is an integrated (ROM-based) program that displays the PC's configuration and allows you to change the configuration parameters.

Setup changes system behavior by modifying the power-on initialization parameters. Setting incorrect values may cause the PC to fail at start-up. If this occurs, enter the Setup program and use the Restore Defaults command to restore the Setup default values, allowing the PC to recover.

To enter the PC's Setup program, restart the PC and press F2 when the HP logo screen (or the Summary screen) appears.

## Starting OmniBook Hardware Diagnostics

Once you have created the diskette, you can start the Hardware Diagnostics. To do this:

1. Insert the diskette into the flexible disk drive.
2. Quit all applications, shut down the operating system, and restart your PC. To do this in Windows 95 or Windows NT 4.0, click the Start button then select Shut Down – Restart PC.
3. The PC will then start from the diskette. After loading the system files, it will decompress the necessary files. Then OmniBook Hardware Diagnostics will start automatically, displaying the Welcome screen (refer to page 1-7).

### **If There is a Problem**

You may experience one of the following problems:

#### **PC does not boot (start) from the diskette.**

This happens when the PC ignores the diskette and starts from the hard disk drive as normal, running your operating system. The problem could be:

- The BIOS Setup program of your PC may not be correctly configured. Ensure that the option to start from the flexible disk is enabled and that it is the first boot device. (Refer to “More Information About the PC’s Setup Program” on page 1-5.)
- There may be problem with the flexible disk drive or the internal cable connections. Contact your local or HP-dedicated support agent.

#### **A message such as “Non-System disk or disk error. Replace and press any key when ready” appears when the PC starts.**

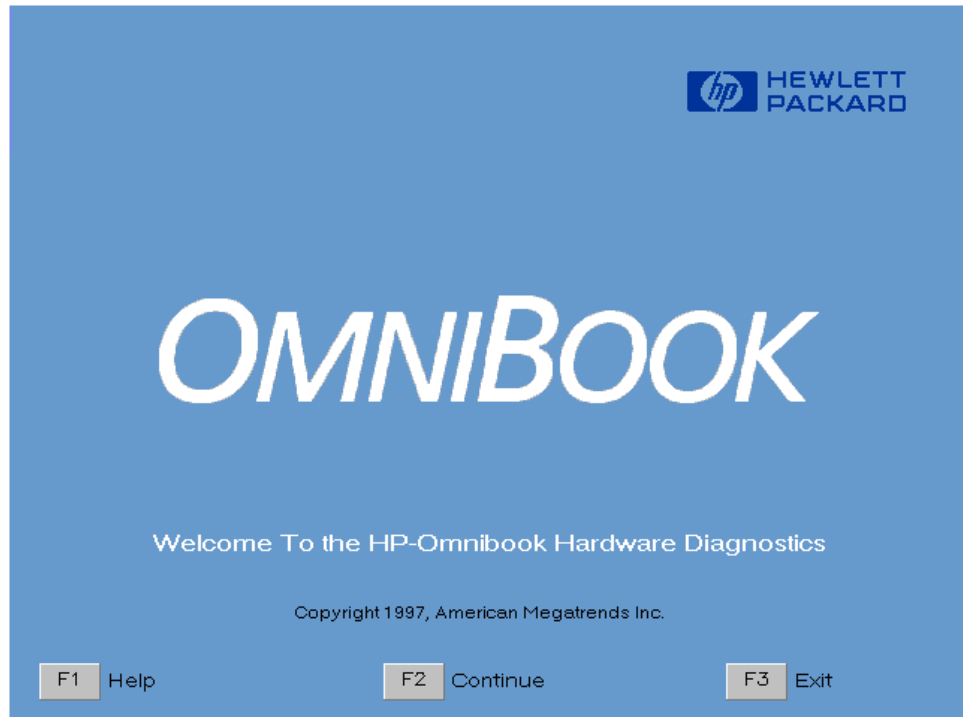
This means that the PC cannot find the system files on the diskette. The problem could be:

- The diskette may be damaged or corrupted. Select another diskette and create another Hardware Diagnostics diskette (refer to page 1-2).

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## The Welcome Screen

When you start the Hardware Diagnostics utility, you will see the following screen:



Press F2 to continue and follow the instructions on the screen to run the diagnostic tests. You can quit the diagnostic utility at any time, except during the execution of the basic system test which takes several minutes. In general, the progression of each test is displayed on the screen.



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## Hardware Detection

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## Overview of Hardware Detection

Hardware detection determines which tests are appropriate for your PC. For example, if your PC has an IDE or SCSI hard disk drive, the boot sector of the hard disk drive will be checked as part of the basic system test.

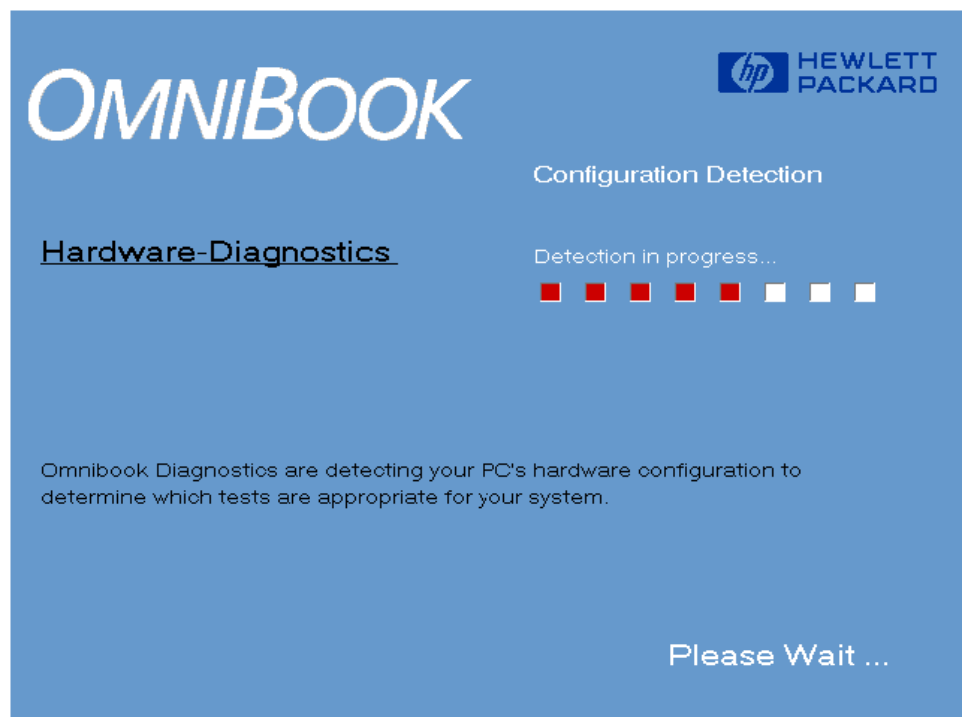
In the advanced tests, some functions will be disabled if they are not appropriate for your PC. For example, if you do not have a SCSI controller, the SCSI menu in the advanced tests will be disabled.



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## During Hardware Detection

The following screen appears during hardware detection:



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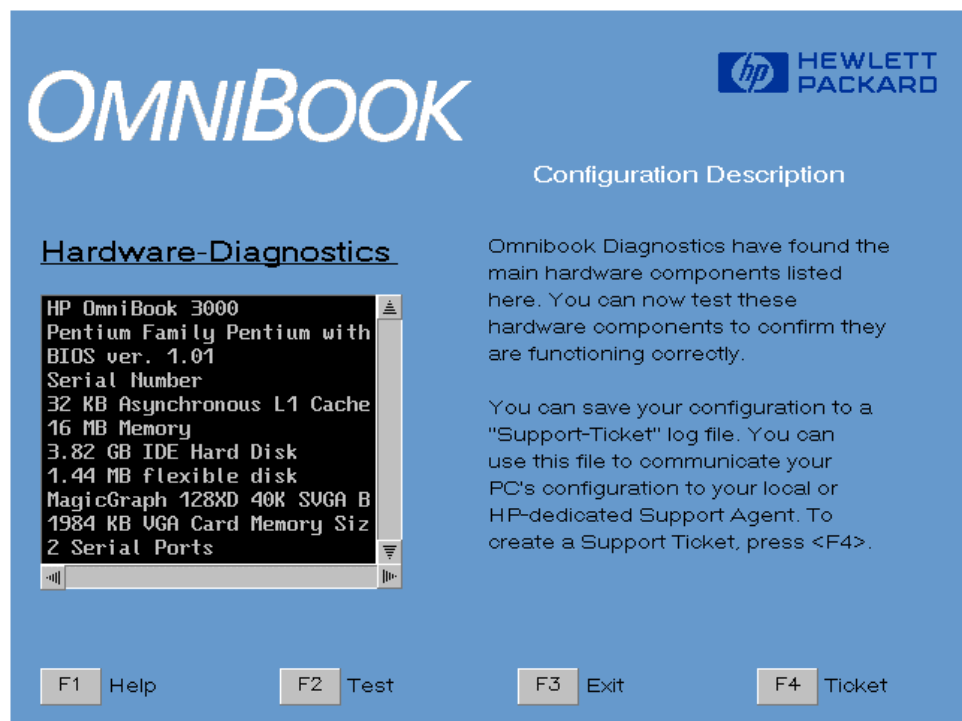
**Note**

Hardware detection may be so fast that this screen simply flickers on and off, without giving you time to read it. This is normal. The time required for hardware detection varies greatly between the different systems and different configurations.

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## Hardware Detection Results

The following is an example of a screen that will appear after the hardware detection phase:



You can use the mouse or the arrow keys to scroll through the list of detected components.

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## What is Detected

The following are typically detected in the hardware detection phase:

- Product name
- Serial number
- HP BIOS version
- Processor type
- Cache memory type and size
- Total main memory
- Graphics adapter
- Flexible disk drive and capacity
- IDE devices with device type and capacity
- SCSI devices with device type and capacity
- Audio board
- Keyboard
- Serial ports
- Parallel port
- USB port

If your PC has one or more of the above components and it is not detected by OmniBook Hardware Diagnostics, then refer to “If a PC Component is Not Detected” on page 2-6.

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## If a PC Component is Not Detected

If a component or device in your PC (such as a hard disk drive) is not detected, do the following:

1. Check the list of components that OmniBook Hardware Diagnostics typically detects (this is on page 2-5).  
If the non-detected component is not in this list, then there is no error and the situation is normal.  
If the non-detected component is in this list, continue to the next step.
2. Check that the PC is correctly configured in the PC's Setup program. (Refer to page 1-5 for more information about the PC's Setup program.)
3. Refer to the User's Guide that came with the PC for information about troubleshooting the PC.
4. Run the Hardware Diagnostics and proceed to the basic system test.

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**Note**

OmniBook Hardware Diagnostics does not test components that have not been detected. However, we recommend that you continue with the basic system test to verify that the underlying components are functioning correctly. For example: a PC has a CD-ROM drive installed. Even if the CD-ROM drive is not detected, running the basic system test will ensure the correct functioning of the IDE system that supports the drive. We also recommend running the advanced section to verify that the corresponding tests are enabled.

5. If the problem persists, contact your local or HP-dedicated support agent for assistance.

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Basic System Test

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## Overview of the Basic System Test

The basic system test is performed after hardware detection. The purpose of the basic system tests is to verify the correct operation of the PC's hardware. For each detected hardware component, the test will confirm that:

- The component is powered-on
- The component has been initialized for use
- The component is operating correctly under MS-DOS.

Unlike the advanced system tests, the basic system test is done automatically and no user input or guidance is needed. This test phase is suitable for all types of users, including novice and non-technical users.

Most of the PC's components are tested during the basic system test. To test all of the PC's components, use the advanced systems tests.

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## How to Run the Basic System Test

The basic system test is performed after the hardware detection phase. To do the basic system test, follow these steps:

1. Start OmniBook Hardware Diagnostics. To learn how to do this, refer to chapter 1, "Starting OmniBook Hardware Diagnostics."
2. Follow the instructions on the screen to proceed with hardware detection. Hardware detection is described in chapter 2.
3. You will then be invited to proceed with the basic system test. Press F2 twice to do the basic system test.

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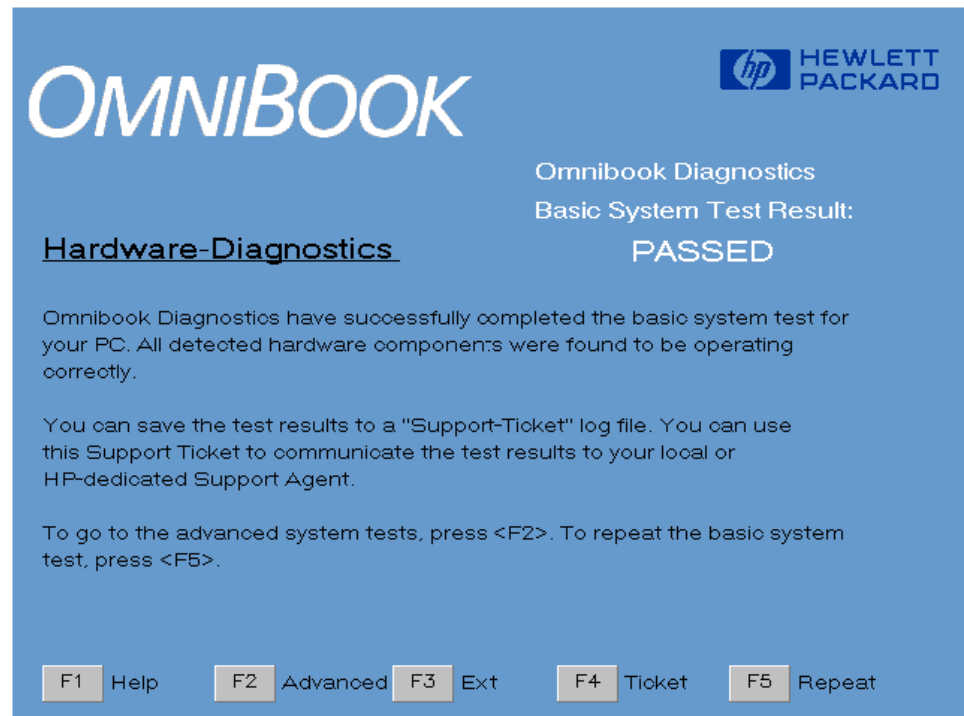
**Note**

The screen may flicker during the basic system test. This is normal.

---

## Test Result: PASS

If the basic system test is successful, a screen similar to the following will appear:



The following action is recommended:

- If you are not investigating a hardware problem, there is no need to continue with the advanced tests or to create a support ticket. Remove the diagnostic diskette from the floppy drive and press F3 to exit OmniBook DiagTools.

Basic System Test

**Test Result: PASS**

- If you are investigating a potential hardware problem, press F4 to create a support ticket. Although no failure was detected, the support ticket will be effective for communicating the test results and PC configuration to your local or HP-dedicated support agent. (To learn more about the support ticket, refer to chapter 5.)

Also, for a potential hardware problem, you can proceed to the advanced system tests, since no error was traced using the basic system test. However, if you want assistance finding the problem or running the advanced tests, contact your local or HP-dedicated support agent.

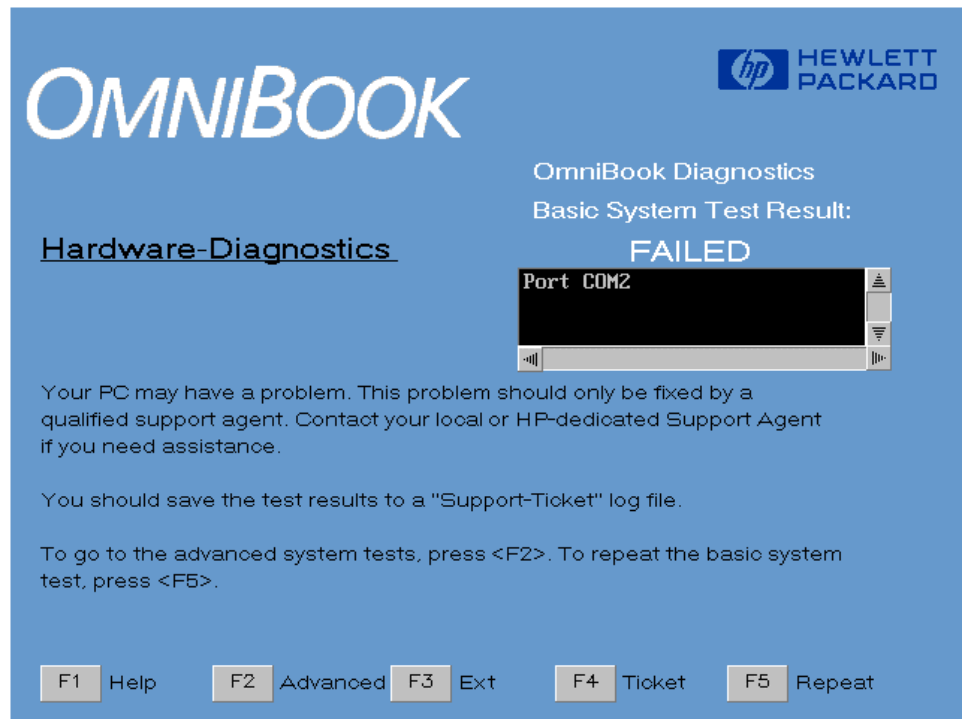
You can repeat the basic system test if desired. To do this, press F5.



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## Test Result: FAIL

If one or more of the basic tests failed, a screen similar to the following will appear:



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### Note

Test failure does not necessarily mean that a component needs replacement. For example, it may simply mean that there is a configuration error or that there is a loose connection.

### What to do if the Basic System Test Fails

The following actions are recommended:

- Create a support ticket now. The support ticket is a complete record of the test results. It is the most effective way to communicate the problem to your local or

Basic System Test

**Test Result: FAIL**

HP-dedicated support agent. (To learn more about the support ticket, refer to chapter 5.)

- Run the advanced tests (refer to chapter 4). This enables you to investigate the error in greater depth. However, if you want assistance investigating the error or running the advanced tests, contact your local or HP-dedicated support agent.

If you contact a support agent, you can e-mail or fax the support ticket. You can also add extra information and your own comments to the support ticket (to learn how to do this, refer to page 5-3).

At this point, you may have sufficient information to resolve the problem. If so, you can exit OmniBook Hardware Diagnostics after creating the support ticket.

You can repeat the basic system test if desired. To do this, press F5.

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## What is Tested

Although the following list varies slightly for different OmniBook products, the basic tests typically include the following:

- Basic Functionality Tests, to verify the correct functioning of the processor and subsystems:
  - Basic processor functionality
  - Processor speed
  - Coprocessor
  - DMA controller
  - Interrupt controller
  - Timer and real time clock
  - CMOS
  - PCI system
  - USB
- Memory Tests, to check the correct functioning of main and cache memory:
  - BIOS ROM
  - Pattern Test
  - Address
  - Refresh
  - Cache memory
- IDE hard disk drive, to check the basic functioning of any IDE hard disk drives:
  - Quick random read-verify/seek
  - Boot sector
- SCSI hard disk drive, to check the basic functioning of any SCSI hard disk drives:
  - Quick random read-verify/seek
  - Boot sector
- Keyboard tests:
  - Keyboard controller
  - Keyboard clock line
  - Keyboard data line
- Other tests:
  - Basic serial port test (does not include data transfer – this is an advanced test)
  - Basic parallel port test

## Basic System Test

### **What is Tested**

Each test listed above is performed only if it is appropriate for your PC configuration. For example, if your PC does not have a SCSI controller, no SCSI tests will be done.

Furthermore, a component test will be performed only if the component was correctly detected in the hardware detection phase. For example, if you have recently installed an IDE hard disk drive and it was not detected during the hardware detection phase, the hard disk drive will not be tested. (For more information about hardware detection, refer to chapter 2.)

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**Note**

OmniBook Hardware Diagnostics does not test components that have not been detected. However, we recommend that you continue with the basic system test to verify that the underlying components are functioning correctly.

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## Overview of the Advanced System Tests

The advanced system tests can be used to test each of the PC's components. These tests are more thorough and cover a wider range of functionality than the basic system tests.

The appearance and operation of this test phase is different from the other parts of the Hardware Diagnostics.

Unlike the basic system test, each advanced test must be selected and initiated by the user through the on-screen menus. Most of the tests are configurable and all can be repeated any number of times.

This advanced test phase is suitable for intermediate and advanced users.

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## How to Enter the Advanced System Tests

The advanced system tests can only be entered after the basic system tests have been completed. To enter the advanced system tests, do these steps:

1. Start OmniBook Hardware Diagnostics. To learn how to do this, refer to chapter 1, "Starting OmniBook Hardware Diagnostics."
2. Follow the instructions on the screen to proceed with hardware detection. Hardware detection is described in chapter 2.
3. Follow the instructions on the screen to complete the basic system test. The basic system test is described in chapter 3.
4. Press F2 twice to enter the advanced system tests.

## Help on Advanced Tests

You can get more information about each available test. There are two ways to get information about a test:

- At the bottom of the screen there is a one-line explanation of the test currently selected in the menu. To get help for any test, simply move the selection bar onto the corresponding menu item.
- Press F1 for more in-depth help on the test currently selected in the menu. To come back from the Help screen to the advanced test screen, press the “B” key.

To move the selection bar between menus and menu items, use the arrow keys.

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## How to Run an Advanced System Test

Each test must be selected and started by the user. There are two ways of running tests:

- Individually, by selecting the test in the menu
- In a batch, by using the Batch facility. Refer to “Batch Tests” on page 4-6.

To perform an advanced test, do these steps:

1. At the top menu bar, select the component to test. The following components are available:
  - System: processor and sub-system tests
  - Memory: BIOS, main memory, and cache memory tests
  - IDE: IDE device (such as an IDE hard disk drive) tests
  - FDD: flexible disk drive tests
  - SCSI: SCSI device (such as an SCSI hard disk drive) tests
  - KBD: keyboard tests
  - Video: graphics system tests
  - Misc: other tests, such as mouse and serial port tests.
  - User: special tests for unique OmniBook devices.

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**Note**

Some menus will be disabled if they are not appropriate for your PC or if devices are disabled in the PC's Setup program. For example, if you do not have a SCSI controller, the SCSI menu in the advanced tests will be disabled.

2. A sub-menu appears, showing the list of tests available for the selected component. Select the desired test by moving the selection bar and pressing ENTER.



## How to Run an Advanced System Test

3. Depending on the test selected, the test may start immediately. Alternatively, a window of test parameters is displayed.

To change a test parameter, select the parameter and press ENTER. You can then select between the available values for that parameter. We recommend that you change these configuration values only if you are familiar with their meaning and purpose.

To proceed with the test, select Continue.

Press ESC to abort the test while it is running. Some tests are critical and cannot be aborted. If you abort the test, the message "Test Aborted" is displayed.

Once the test has completed, a window appears indicating the result: Test Passed or Test Failed. The window also has several command options so that you can select your next action:

- Return to Main Menu: to return to the main screen, allowing you to run another test.
- Browse Current Test Errors: to browse the errors produced in the test you have just done.
- Browse All Test Errors: to browse all the errors that have arisen since you started the advanced system tests (or since you last erased the error list).
- Erase Error List: to delete the complete list of errors.

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**CAUTION**

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Do not use the Erase Error List command if you want to create a support ticket (test report). The error list is used to create the support ticket.

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## Batch Tests

You can use the batch test facility to run a pre-defined suite of advanced tests. Each test in the batch is initiated automatically.

### Help on Using Batch Tests

- For help on how to use the batch facility, select the command Batch Help in the Batch menu.
- For help on selecting tests, choose the Edit Batch – Test Selection commands in the Batch menu.

### How to Run a Batch Test

First, you must configure the batch test. To do this, use the Edit Batch submenu in the Batch menu. The Edit Batch submenu has these commands:

- Test Selection: for help on how to select the tests for the batch.
- Test Parameters: to configure the test parameters.
- Repeat Count: to set the number of times each test is run, from 0 (do not run test), to 1 (run test once), or more.

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**Hint**

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To select or deselect any test from the current batch test, use the spacebar or F5 to check or uncheck it.

To run the batch test you have configured, press F10 or select the Run Batch command in the Batch menu.

The Batch menu also contains these commands:

- Save Batch: to save the current batch test (with current settings).
- Load Batch: to load a previously saved batch test.
- Batch Help: for help on using the batch facility.

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**Note**

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You cannot change the order in which the tests are performed.

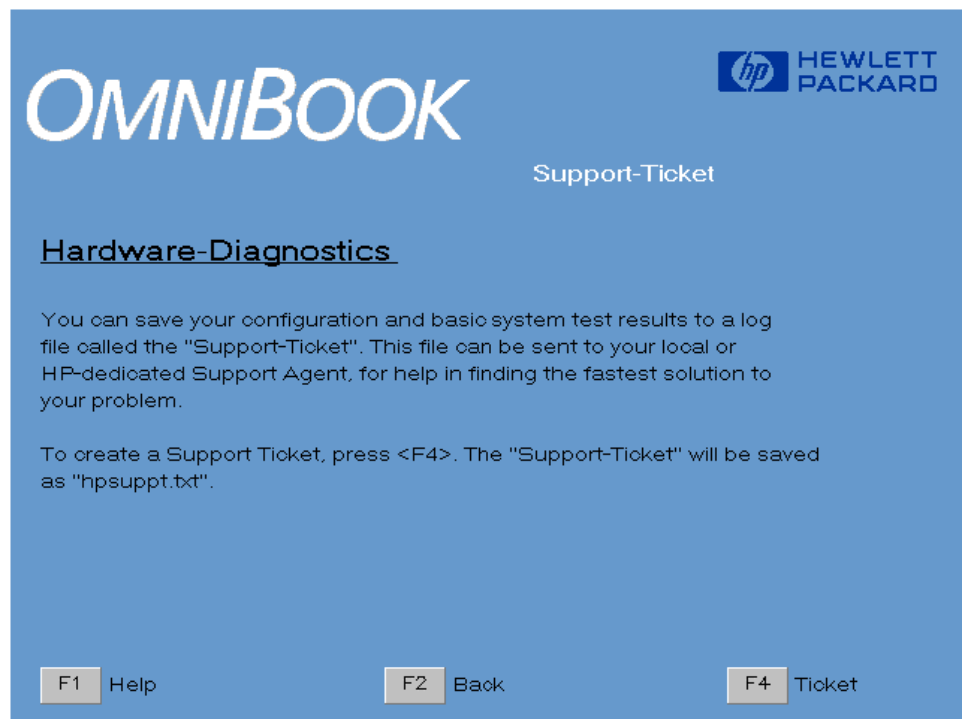
You can abort a batch test while it is running by pressing ESC.

---

## What to do if a Test Fails

The following actions are recommended:

1. Press ESC to exit the advanced system tests. A screen similar to the following will appear:



2. Press F4 to create a support ticket. The support ticket is a complete record of the test results. It is the most effective way to communicate the problem to your local or HP-dedicated support agent. (To learn more about the support ticket, refer to chapter 5.)
3. If you need assistance, contact your local or HP-dedicated support agent for assistance. You can e-mail or fax them the support ticket. You can also add extra information and your own comments to the support ticket (to learn how to do this, refer to page 5-3).

## Advanced System Tests

### **What to do if a Test Fails**

At this point, you may have sufficient information to resolve the problem. If so, you can remove the diagnostic diskette from the floppy drive and press F3 to exit OmniBook Hardware Diagnostics, or press F2 to return to the advanced system tests.

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## The Support Ticket

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## What is the Support Ticket?

The support ticket is a complete record of the test results and the PC's configuration. It is the most effective way of communicating this essential information to your local reseller or HP-dedicated support agent. If necessary, you can e-mail or fax the support ticket to your support agent. You should attach a copy of the support ticket if you send your computer for repair.

You can also add extra information and your own comments to the support ticket.

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## Creating a Support Ticket

The support ticket can be created:

- After the hardware detection phase (refer to chapter 2)
- After the basic system test (refer to chapter 3)
- After you exit the advanced system tests (refer to chapter 4).

The Hardware Diagnostics will ask if you want to create a support ticket. If you choose to create a support ticket, it will take several minutes to complete.

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### **CAUTION**

Whenever you create a support ticket, the previous one on the diskette will be overwritten.

If you want to keep a support ticket, ensure that you copy it to a safe place before creating the new one. You can do this by copying the support ticket file to another diskette or to a suitable directory on your hard disk drive.

Once the support ticket has been successfully created, you will be given the file name and location of the support ticket file.

To view the support ticket, open the file using a text editor such as Microsoft Windows Notepad.

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## Adding Comments to the Support Ticket

You can add extra information or your own comments to the support ticket. This can help your support agent solve the problem more quickly and effectively.

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### CAUTION

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Do not remove any information from the support ticket. The information may be essential to your support agent.

To add your comments to the support ticket, follow these steps:

1. Start up a text editor. We recommend you use text editor such as Microsoft Windows Notepad to preserve the support ticket's layout.
2. Open the support ticket file. (The filename and location of the support ticket is given directly after it is created.)
3. Go to the section entitled Your Comments at the end of the file.
4. Type in your comments, using the headings provided as a guideline. For example, under the heading Operating System, enter the name of your operating system, such as "Windows NT 4.0".
5. Save the file and exit the text editor.





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Hewlett-Packard Support and  
Information Services

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## Your HP Authorized Reseller

HP Authorized Resellers have been trained on HP OmniBook equipment and are familiar with its configuration and environment. Authorized Resellers can also answer questions regarding non-HP hardware, software and systems as well as answer queries about usage not intended for, or not commonly used with the HP OmniBook.

Authorized HP Resellers can also offer consulting services tailored to your specific needs regarding product development or custom installations, as well as third party support services, or the HP Customer Support organization in your country.

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## Hewlett-Packard Information Services

Hewlett-Packard Electronic Information Services ensure that the most up-to-date information is always available.

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### HP OmniBook World Wide Web

Access the HP OmniBook World Wide Web server for technical information, to download new drivers, utilities, and flash BIOS upgrades.

Point your WWW browser at <http://www.hp.com/omnibook>.

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### HP PC & Peripheral Self-Help and Direct-Help Tools

Visit the web at <http://www.hp.com/cps-support/guide/home.html>.

Choose Self-Help Tools to use a number of services that offer information and software that will help you make the most of your HP products.

- The HP FIRST Fax Retrieval System
- Bulletin Boards
- Commercial Online Services
- CD-ROM Subscriptions
- Service Parts Information

Choose Talk to HP Directly for information about how to contact HP for telephone assistance from our technical Customer Support Centers, or for receiving drivers and software by mail.

- Customer Support Centers
- Software Distribution

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