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Welcome to the Maintenance & Service Guide (MSG). This online guide is designed to serve the needs of those whose job it is to repair Compaq products. Many of the components of the hardcopy MSG are contained in this online guide. The Notice, contains the copyright and trademark information. The Preface shows symbol conventions, Technician Notes and Serial Number locations on the unit.

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Components](#)

This MSG will be periodically maintained and updated online as needed.

For content comments or questions, contact the [Editor](#).

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To report a technical problem, contact your Regional Support Center or IM Help Center.

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Notice

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Compaq Presario 1900 Series Portable Computers

First Edition (Oct. 1998)
Compaq Computer Corporation

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Preface

This *Maintenance and Service Guide* is a troubleshooting guide that can be used for reference when servicing the Compaq Presario 1900 Series Portable Computers.

Compaq Computer Corporation reserves the right to make changes to the Compaq Presario 1900 Series Portable Computers without notice.

Symbols

The following words and symbols mark special messages throughout this guide.



WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.



CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of data.

IMPORTANT:

Text set off in this manner presents clarifying information or specific instructions.

NOTE:

Text set off in this manner presents commentary, sidelights, or interesting points of information.

Technician Notes



WARNING: Only authorized technicians trained by Compaq should repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, the user should not attempt to make repairs at the component level or to make modifications to any printed circuit board. Improper repairs can create a safety hazard. Any indications of component replacement or printed circuit board modifications may void any warranty

Serial Number

When requesting information or ordering spare parts, the computer serial number should be provided to Compaq. The serial number is located on the bottom of the computer.

Locating Additional Information

The following documentation is available to support this product:

- Compaq Presario 1900 Series Portable Computer documentation set
- *Introducing Windows 98 Guide*
- Service Training Guides
- Compaq Service Advisories and Bulletins
- *Compaq QuickFind*
- *Compaq Service Quick Reference Guide*

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Compaq Presario 1900 Series Portable Computers are a new generation of multimedia portable computers with an ultimate thin and light-weight design, outstanding audio and video, advanced core features, and attractive styling.

The Removable Drive Wedge

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provides multimedia expansion capability with a DVD or CD-ROM Drive and a Diskette Drive or LS-120 Drive integrated into one removable component.

Compaq Presario 1900 Series Portable Computers also have an optional integrated 10/100BaseT Ethernet Port Replicator allowing the user to quickly and easily attach or detach the computer from peripheral devices. It contains a full array of ports, some which are accessible while the system is docked to the Port Replicator.

This full-

function
Intel Celeron
and Pentium
II - based
portable
computer
provides full
desktop
functionality.

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This section covers troubleshooting information for the Compaq Presario 1900 Series Portable Computers. The basic steps in troubleshooting include:

1. Follow the [Preliminary Steps](#).
2. Run the [Power-On Self-Test \(POST\)](#).
3. Follow the recommended actions described in the diagnostic tables, if you are unable to run POST or if POST displays an error message.

When following the recommended actions in the Sections on POST and [Diagnostic Error Codes](#) perform them in the order listed. Rerun POST after each recommended action until the problem is solved and no error message occurs. Once the problem is solved, do not complete the remaining recommended actions.

NOTE:

If the problem is intermittent, check the computer several times to verify that the problem is solved.

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Parts](#)[Documentation
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This section provides an illustrated parts breakdown and a reference for spare parts for the Presario 1900 Series Portable Computer.

The computer (1) serial number should be provided to Compaq whenever requesting information or ordering spare parts. The serial number is located on

bottom of
unit.

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Removal and Replacement Procedures

This section explains the removal and replacement procedures for the computer.

Serial Number

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Report the computer serial number to Compaq when requesting information or ordering spare parts. The serial number is located on bottom of unit.

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Specifications

This chapter covers the following specifications of Compaq Presario 1900 Series Portable Computers:

- [Physical and Environmental](#)
- [System Interrupts](#)
- [System DMA](#)
- [System I/O Addresses](#)
- [System Memory Catalog](#)
- [Display](#)
- [Diskette Drive or LS-120 Drive](#)
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Connector Pin Assignments

This appendix provides connector pin assignment tables for Compaq Presario 1900 Series Portable Computers. For more information on connectors, refer to the section on [Rear Connectors](#).

NOTE: The signals in all tables of this appendix are considered active high unless otherwise indicated by an asterisk (*).

Parallel Connector

Pin	Signal	Pin	Signal
1	Strobe*	10	Acknowledge*
2	Data Bit 0	11	Busy
3	Data Bit 1	12	Paper Out
4	Data Bit 2	13	Select
5	Data Bit 3	14	Auto Linefeed*
6	Data Bit 4	15	Error*
7	Data Bit 5	16	Initialize Printer*
8	Data Bit 6	17	Select In*
9	Data Bit 7	18-25	Signal Ground

* = Active low

Serial Connector

Connector	Pin	Signal
	1	Carrier Detect
	2	Receive Data
	3	Transmit Data
	4	Data Terminal Ready
	5	Signal Ground
	6	Data Set Ready
	7	Ready to Send
	8	Clear to Send
	9	Ring Indicator

Keyboard/Mouse Connector

Connector	Pin	Signal
	1	Data
	2	Not defined
	3	Ground
	4	+5 VDC
	5	Clock
	6	Not defined

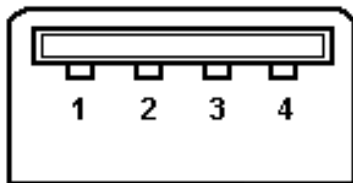
External VGA Monitor Connector

Connector	Pin	Signal
-----------	-----	--------

1	Red Analog
2	Green Analog
3	Blue Analog
4	Not connected
5	Ground
6	Ground Analog
7	Ground Analog
8	Ground Analog
9	Not connected
10	Ground
11	Monitor Detect
12	DDC2B Data
13	Horizontal Sync
14	Vertical Sync
15	DDC2B Clock

Universal Serial Bus Connector

Connector



Pin

Signal

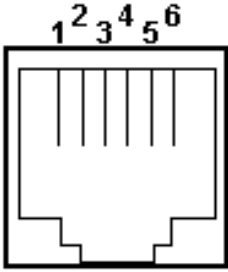
1 Ground

2 D+

3 D-

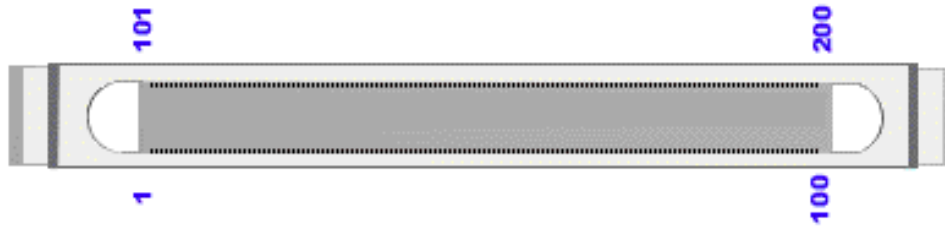
4 Power

Modem Connector

Connector	Pin	Signal
	1	Unused
	2	Unused
	3	Tip
	4	Ring
	5	Unused
	6	Unused

This information was not available at time of publication.

Port Replicator Connector



Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal

This information was not available at time of publication.

LAN Connector

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Battery Pack Operating Time

This section covers the following information concerning battery pack operating time:

- [Increasing battery pack operating time](#)
- [Conditioning a battery pack](#)
- [Disposing of a used battery pack](#)

Increasing Battery Pack Operating Time

Battery pack operating time differs depending on several variables. To avoid unnecessary replacement, consider the following variables when determining how long a charged battery pack should last:

- Power management settings
- Hardware configuration
- Software applications
- Installed options
- Display brightness
- Hard drive usage
- Changes in operating temperature

- Type and number of installed PC Cards

NOTE: The power consumption requirements for PC Cards vary widely. Some cards drain the battery pack very rapidly.

Battery pack operating time can be increased by as much as 50 percent by controlling the energy required by the computer and the energy stored in the battery pack.

Minimizing the Energy Required

To minimize the energy required by the computer, follow these steps:

- Set the power conservation levels in the Power Management utility to **Maximum** .
- Customize the timeout value to work more efficiently with the applications. The amount of battery life depends on the values selected.

Maximizing the Energy Stored

To maximize the energy stored in the battery pack, follow these guidelines:

- Condition the battery pack at least every 30 days to improve overall battery performance.
- Keep a battery pack in the computer when using it with AC power to supply the battery pack with a constant trickle charge.
- Store the battery pack in a cool, dry place when not in use.

Conditioning a Battery Pack



CAUTION: To avoid a loss of data, ensure that all data is saved before discharging a battery pack.

To condition a battery pack, complete the following steps:

1. Plug in the AC adapter and allow the battery to charge until the fast charge arrow on the display disappears. Your battery gauge may read 100 percent for a period of time before the arrow disappears. Do not unplug the AC adapter until the arrow disappears.
2. Unplug the AC adapter and allow the battery to drain until the computer reaches hibernation and turns itself off.



CAUTION: Do not plug the AC adapter during this process or you will need to restart with step number 1. You may use the computer while the battery is draining.

3. Your battery is re-conditioned.
4. Plug in the AC adapter and begin using the computer.

The table below shows battery pack charge times by model.

Battery Charge Time		
Computer	On Line	Off Line
Li ion Battery Pack	4.5 hours premature termination	2:50 hr

Disposing of a Used Battery Pack

In the interest of safeguarding our environment, Compaq Computer Corporation recommends that nickel metal hydride (NiMH) and lithium ion (Li ion) battery packs be recycled. Battery packs should be handled in accordance with country, state, province, or local regulations.



CAUTION: Never attempt to open or service a battery pack. Opening a battery pack not only damages the pack and makes it unusable, but also expose potentially harmful battery components.

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Compaq Discovery 1900 Series Portable Computer Models

	Model 1905	Model 1906
Display	12. 1" TFT	12. 1" TFT
Processor	Intel Celeron/266-MHz w/128K Cache	Intel Celeron/266-MHz w/128K Cache
Hard Drive	4.0-GB	4.0-GB
Modem	56.0 Kbps PCI Data/Fax	56.0 Kbps PCI Data/Fax
CD Drive	24X CD-ROM	24X CD-ROM

	Model 1910	Model 1915
Display	12.1" TFT or 13. 3" TFT	12. 1" TFT or 13.3" TFT
Processor	Intel Celeron/300-MHz w/128K Cache or PII/300-MHz w/512 Cache	Pentium II/266-MHz w/512K or 256K Cache or PII/300-MHz w/512 Cache
Hard Drive	6.4-GB or 4.8-GB	4.0-GB
Modem	56.0 Kbps PCI Data/Fax or 56.0 Kbps PCI Data/Fax I	56.0 Kbps PCI Data/Fax or 56.0 Kbps PCI Data/Fax (International)

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DVD or CD Drive	24X CD Drive or 4X DVD	DVD or 24X CD Drive
	Model 1919	Model 1920
Display	13. 3" TFT	13. 3" TFT
Processor	Intel Celeron/300-MHz w/128K Cache	Pentium II/300-MHz w/256K Cache
Hard Drive	6.4-GB	4.0-GB or 6.4-GB
Modem	K-56.0 Kbps PCI Data/ Fax	56.0 Kbps PCI Data/Fax or 56.0 Kbps PCI Data/Fax (International)
DVD Drive	DVD Drive	DVD Drive
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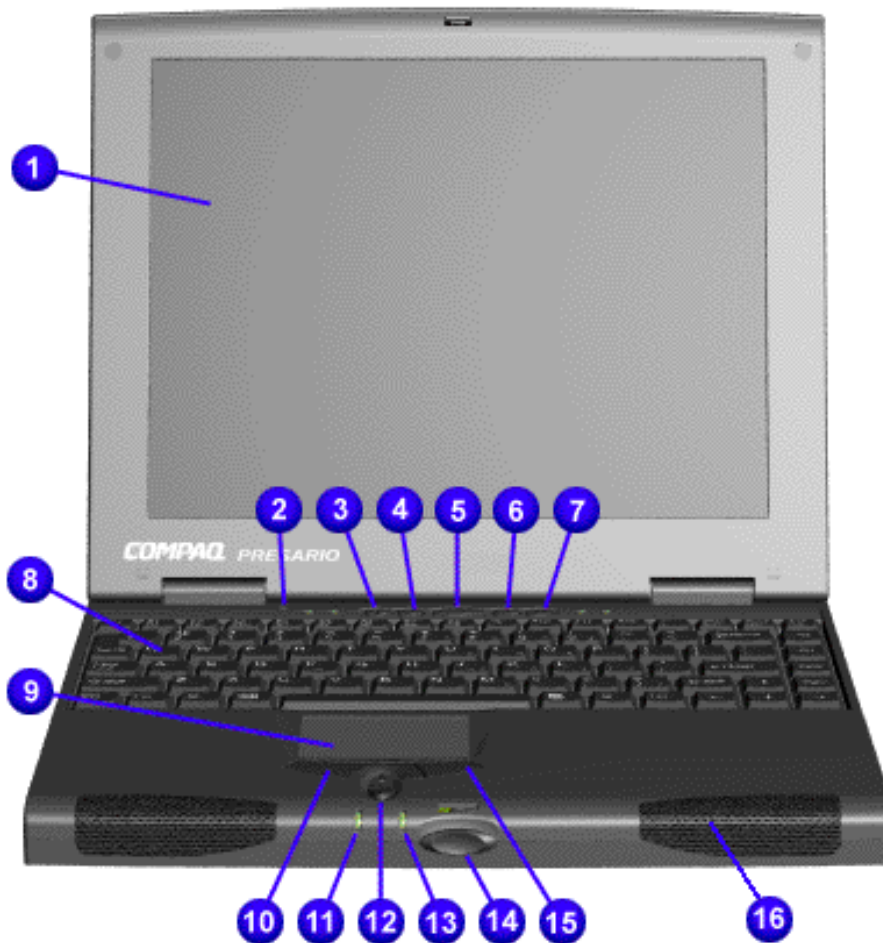
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Front of Unit

1. Display	9. TouchPad
2. Backlight Switch Button	10. Left TouchPad Button
3. Instant Internet Access Button	11. Power (On/Off) Light
4. Instant Search Button	12. Scroll (Up/Down) Button
5. Power (On/Off) Button	13. Battery Charge Light
6. Instant E-Commerce (or Favorite Website) Button	14. Display Panel Release Button
7. Instant E-Mail Button	15. Right TouchPad Button

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8.
Keyboard

16.
Integrated Speakers

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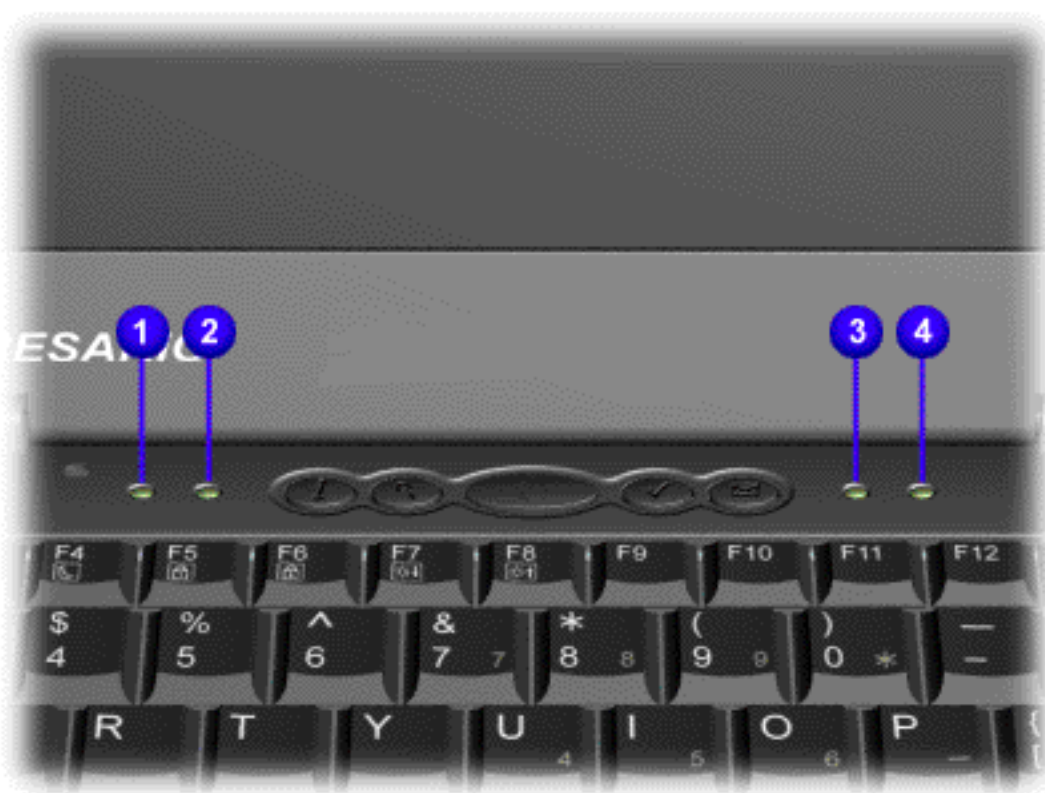
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Status Panel Lights

1. AC Adapter Light

2. Num Lock Light

3. Caps Lock Light

4. Scroll Lock Light

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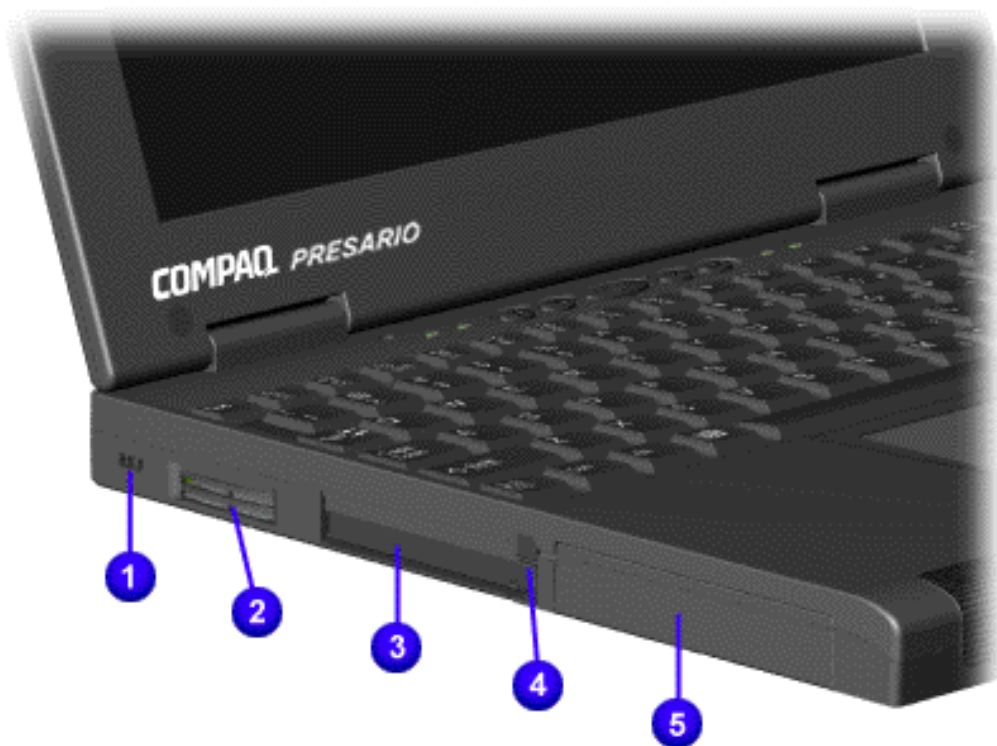
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Left Side Components

1. Security Lock

2. Air Vent

3. PC Card Slots

4. PC Card Eject Levers

5. Hard Drive

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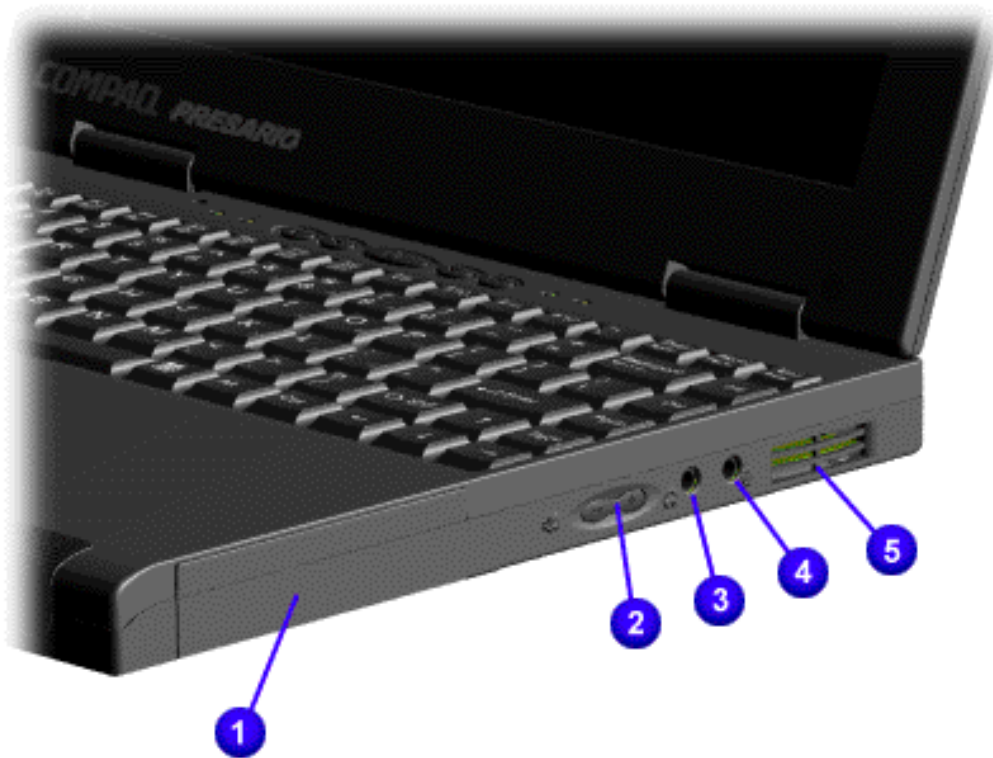
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Right Side Components

1. Battery Compartment
2. Volume Up/Down Button
3. Headphone Jack
4. Microphone Jack
5. Air Vent

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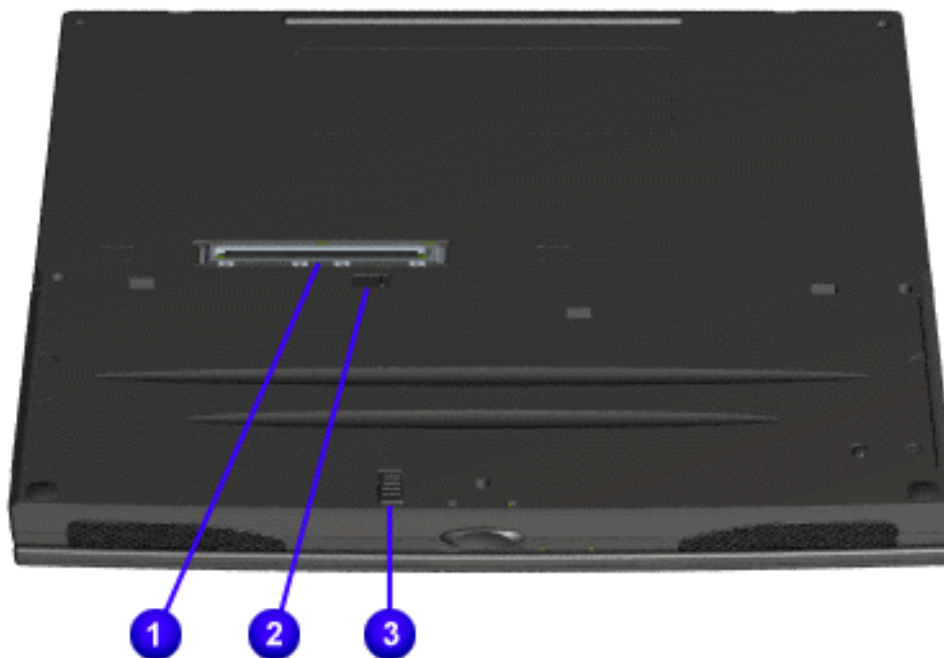
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Bottom of Unit

1. Wedge Interface Connector

2. Keyboard Eject Switch

3. Battery Release Lever

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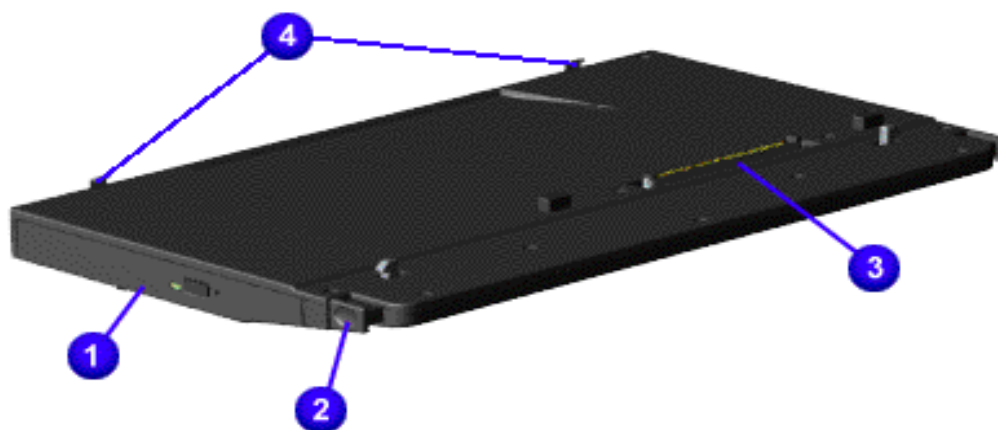
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Left Side and Top Components of the Removable Drive Wedge


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Left Side and Top Components of the Removable Drive Wedge

1. DVD Drive or CD ROM Drive

2. Wedge Release Button

3. System to Wedge Interface Connector

4. Alignment Pins

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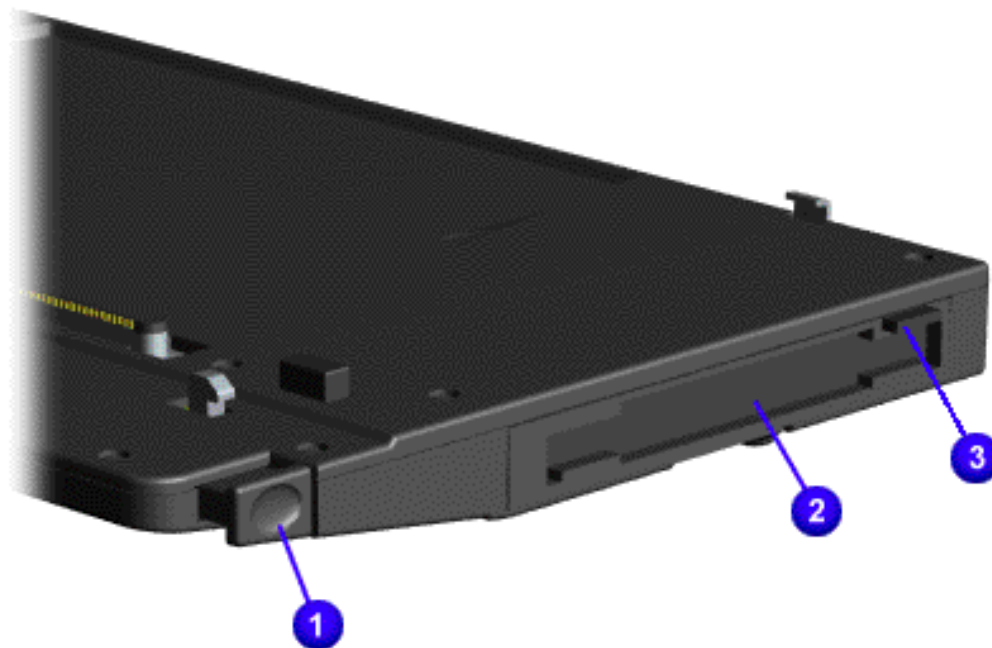
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Right Side Components of the Removable Drive Wedge

1. Wedge Release Button

2. Diskette Drive or LS-120 Drive Slot

3. Diskette Drive or LS-120 Drive Eject Button

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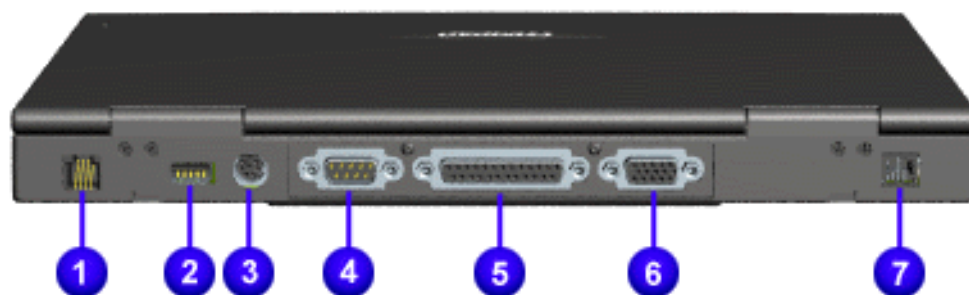
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Rear Connectors



Rear Connectors

1. Modem Jack
2. USB Port
3. Keyboard/Mouse Port
4. Serial Port
5. Parallel Port
6. External Monitor Port
7. AC Adapter

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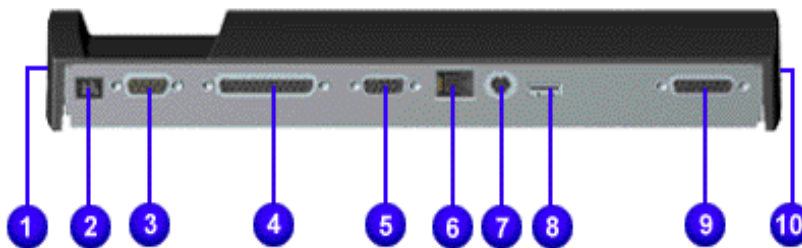
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Integrated 10/100BaseT Ethernet Port Replicator Connectors



Integrated 10/100BaseT Ethernet Port Replicator Connectors

- | |
|--------------------------------|
| 1. Keyboard/Mouse |
| 2. AC Adapter |
| 3. Serial Port |
| 4. Parallel Port |
| 5. External Monitor Port |
| 6. Local Area Network (LAN) |
| 7. Keyboard/Mouse |
| 8. USB Port |
| 9. MIDI/Game Pad/Joystick Port |
| 10. Security Lock |

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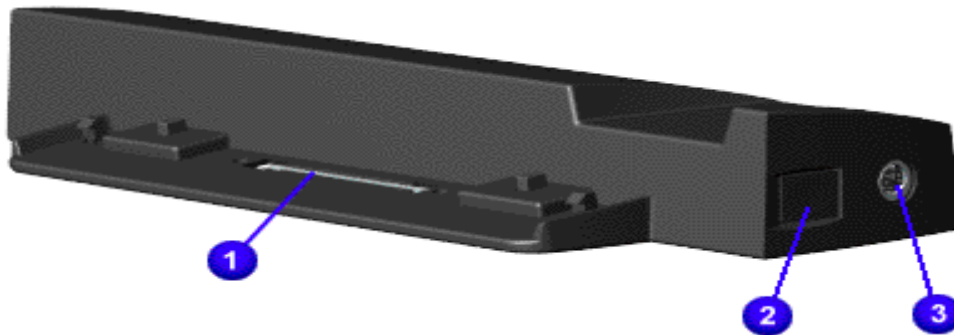
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Integrated 10/100BaseT Ethernet Port Replicator Components

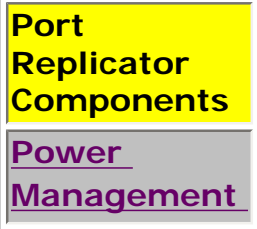
1. Port Replicator Interface Connector

2. Port Replicator Release Button

3. Keyboard/Mouse Connector



CAUTION: The computer power switch should be turned off before you connect or disconnect the port replicator. Damage may occur to the computer if it is "hot" plugged to the port replicator.



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Power Management

Compaq Presario 1900 Series Portable Computers are equipped with Advanced Power Management (APM). This management system allows you to conserve battery power and customize the power saving settings to suit your individual needs.

- [Power Management Settings](#)
- [Sleep](#)
- [Hibernation](#)
- [Rebooting After a Lockup](#)
- [Servicing Your Computer - Full Off Mode](#)

Power Management Settings

Depending on your patterns of computer use, you can set different conditions, or Power Schemes, under which the computer will go into Sleep mode. The optional settings are **Home/Office Desk**, **Portable/Laptop**, and **Always On**.

From the default settings, you can change the following settings.

- When the computer goes into Sleep (Standby) mode
- When the screen times out and goes blank
- When the hard drive slows down

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**Power
Management**

NOTE: The setting for the hard drive must be less than or equal to the setting for the computer.

IMPORTANT: If you are connected to a network, Compaq recommends you set **System Standby** to **Never**.

Sleep

Sleep mode is a low power mode, also referred to as Standby mode.



CAUTION: While in Sleep mode, your computer will maintain system information and open files. Unsaved information will be lost if you turn off your system prior to system wake-up, or if you lose power while using the AC adapter.

Hibernation Mode

Hibernation mode occurs by pressing the **Power** button once. Your computer saves the content of your computer memory to the hard drive. This is followed by the computer turning off.

The following table shows the conditions and indicators for getting in and out of the various power modes: Sleep, Hibernation, and Off.

Mode	To Start	To End	Indicators
Sleep	<u>Manual</u> - Fn+F4 key combination	Press any key or move the mouse	Flashing Power LED
	<u>Time-Out Default</u> - 15 minutes. If using battery power, system will not go to Sleep if on AC power		

Hibernate	<u>Manual</u> - Press Power Button once	Press Power button once	No Power LED, blank screen
	<u>Time Out Default</u> - if low battery or after 1 hour of Sleep (system will not Hibernate if on AC power)		
Off	Perform normal Windows shutdown using the Start button, or press and hold down the Power button for 4 seconds	Press Power button once	No Power LED, blank screen

Rebooting After a Lockup

Occasionally you may encounter a non-working keyboard or a locked screen. To restart your computer, press and hold down the **Power** button for at least four seconds. This will cause a manual shutdown. Press the **Power** button once to start the computer.

If the computer still does not restart, follow these steps:

1. Press the **Power** button and hold it for four seconds to shut the computer down.
2. Remove the battery and unplug the AC power for at least 30 seconds.
3. Reinsert the battery or reconnect AC power and press the **Power** button once to restart.

Full Off (Main Power Off) Mode

If you need to install or replace components in your computer, you must turn the computer off *completely*. Follow the instructions above for putting the computer into Standard Off mode. Unplug the computer electrical cord from the outlet and remove the battery if installed.

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Preliminary Steps

Before running [POST](#), complete the following preliminary steps:

1. If a power-on password has been established, type the password and press the **Enter** key. If the password is not known, [clear the password](#).
2. Run [Compaq diagnostics](#).
3. Turn off the computer and its external devices.
4. Disconnect any external devices that you do not want to test. Do not disconnect the printer if you want to test it or use it to log error messages.

IMPORTANT:

If the problem only occurs when an external device is connected to the computer, the problem may be related to the external device or its cable. Verify this by running POST with and without the external device connected.

5. Install loopback plugs in the serial and parallel connectors if you would like to test these ports.
6. Ensure the hard drive is installed in the computer.
7. Ensure that the battery pack is inserted in the computer and the computer is connected to an external AC power source.

When the preliminary steps are completed, you are ready to run [POST](#).

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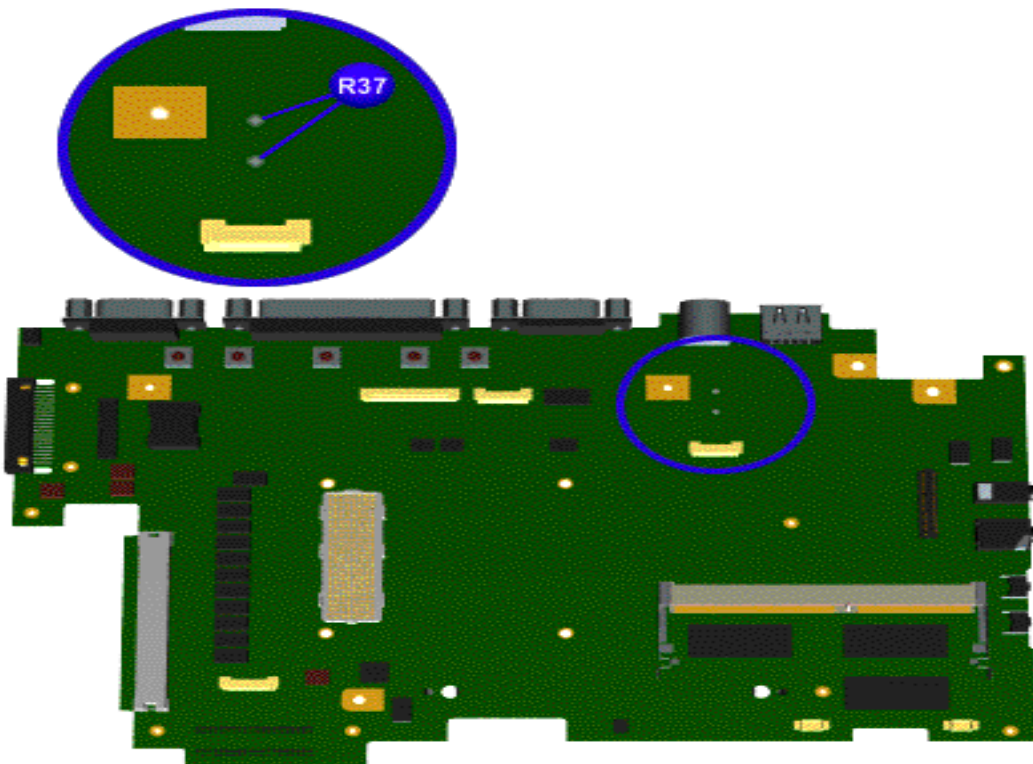
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Clearing the Power-on Password



Clearing the power-on password requires removing all Setup attributes that are programmed in the CMOS.

If the password is not known, clear it by performing the following steps:

1. Turn off the computer.
2. Disconnect the power cord.
3. [Remove the battery pack](#).
4. [Remove the keyboard](#).
5. [Disconnect the backlight cable from](#)

[the connector on the system board](#) .

6. Using a conductive piece of material (piece of wire or tool) simultaneously make contact with the two pads located at R37 on the system board or remove the RTC battery located under the [battery charger board](#) for 5 seconds. The password, together with other Setup attributes, will be cleared.
7. Reassemble the computer.
8. Turn on the computer to verify that the power-on password has been cleared. If it has not been cleared, repeat Steps 1 through 7.

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Power-On Self Test (POST)

Running POST

To run POST, complete the following steps:

Turn off the computer, then turn on the computer.

If POST does not detect any errors, the computer will not beep. This indicates successful completion of POST test. POST has run successfully and boots from the hard drive (or from a bootable diskette if one is installed in the diskette drive).

If POST detects errors, the errors are indicated by screen and/or audible messages. Refer to "Power-On Self-Test (POST) Codes" in the tables for a list of POST codes and their relevant descriptions.

NOTE: If the system is not functioning well enough to run POST, or if the display is not functioning well enough to show POST error messages, refer to the Troubleshooting tables.

Power-On Self-Test Messages

102-System Board Failure

Probable Cause	Recommended Action
DMA, timers, etc.	Replace the system board.

162-System Options Not Set

Probable Cause	Recommended Action
Configuration incorrect	Run Computer Setup.
CMOS reflects that an invalid configuration has been set.	Run Computer Setup.
RAM failure	<ol style="list-style-type: none"> 1. Replace the memory modules. 2. Replace the system board.
Memory test data error	<ol style="list-style-type: none"> 1. Replace the memory modules. 2. Replace the system board.
XX000YZZ RAM failure	Replace the system board.

XX000YZZ 201-Memory Error

Probable Cause	Recommended Action
----------------	--------------------

301-Keyboard Error

Probable Cause	Recommended Action
----------------	--------------------

Keyboard failure	<ol style="list-style-type: none"> 1. Ensure the keys are not depressed during POST. 2. Reconnect the keyboard with the computer off. 3. Replace the keyboard.
------------------	---

304-Keyboard or System Unit Error

Probable Cause	Recommended Action
----------------	--------------------

Keyboard or system board error	<ol style="list-style-type: none"> 1. Replace the keyboard. 2. Replace the TouchPad or mouse. 3. Replace the system board.
--------------------------------	---

601-Diskette Controller Error

Probable Cause	Recommended Action
----------------	--------------------

Mismatch in drive type or failure in the diskette controller	<ol style="list-style-type: none"> 1. Run Computer Checkup (TEST). 2. Check and/or replace cables. 3. Replace the system board.
--	--

605-Diskette Drive Error

Probable Cause	Recommended Action
----------------	--------------------

Mismatch in drive type	Run Computer Setup.
------------------------	---------------------

1780-Primary Hard Drive 0 Failure

Probable Cause	Recommended Action
----------------	--------------------

Disk 0 failed to respond	<ol style="list-style-type: none"> 1. Run Computer Checkup (TEST). 2. Replace the hard drive.
Hard drive format error	<ol style="list-style-type: none"> 1. Run Computer Checkup (TEST). 2. Replace the hard drive.

1782-Hard Drive Controller

Probable Cause	Recommended Action
----------------	--------------------

Hard drive controller failure	<ol style="list-style-type: none"> 1. Run Computer Setup. 2. Replace the hard drive.
-------------------------------	--

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Compaq Diagnostics

Compaq Diagnostics is installed on the hard drive of the computer. Run the Diagnostics utilities when you want to view or test system information and if you have installed or connected devices. If you run Compaq Diagnostics from a diskette, ensure that it is version 10.11 or later.

The Diagnostics menu includes the following utilities:

- [Computer Checkup \(TEST\)](#)
- [View System Information \(INSPECT\)](#)
- [Prepare Computer for a Compaq Service Call \(RemotePaq\)](#)

If you have a difficult problem that seems unsolvable, run the Diagnostics utilities before calling for support. Run Computer Checkup and select to save the device list to a file to print or to save the log of errors. Run the View System Information (INSPECT) utility and select to print or save that information. Have the files or the printed information available when you call for support.

Computer Checkup (TEST)

Computer Checkup (TEST) determines whether the various computer components and devices are recognized by the system and are functioning properly. You can display, print, or save the information generated by Computer Checkup.

Follow these steps to run Computer Checkup:

1. Plug the computer into an external power source. (A low battery condition could

interrupt the program.)

2. Turn on the external devices that you want to test. Connect the printer if you want to print a log of error messages.
3. Insert the Compaq Diagnostics diskette in drive A.
4. Turn on or restart the computer. The computer starts from drive A, and the **Diagnostics Welcome** screen appears.
5. Press **Enter** to continue. The **Diagnostics** menu appears.
6. Select Computer Checkup from the **Diagnostics** menu. A **Test Option** menu appears.
7. Select **View the Device List** from the **Test Option** menu. A list of the installed Compaq devices appears.
8. If the list of installed devices is correct, select **OK** . The **Test Option** menu appears.

NOTE: If the list is incorrect, ensure that any new devices are installed properly.

9. Select one of the following from the **Test Option** menu:
 - **Quick Check Diagnostics.** Runs a quick, general test on each device with a minimal number of prompts. If errors occur, they are displayed when the testing is complete. You cannot print or save the error messages.
 - **Automatic Diagnostics.** Runs unattended, maximum testing of each device with minimal prompts. You can choose the amount of times to run the tests, stop on errors, or print/save a log of errors.
 - **Prompted Diagnostics.** Allows maximum control over testing the devices. You can choose attended or unattended testing, decide to stop on errors, or choose to print/save a log of errors.
10. Follow the instructions on the screen as the devices are tested. When testing is complete, the **Test Option** menu appears.
11. Exit the **Test Option** menu.
12. Exit the **Diagnostics** menu.

View System Information (INSPECT)

The View System Information (INSPECT) utility provides information about the computer and installed or connected devices. You can display, print, or save the information.

Follow these steps to run View System Information (INSPECT) from the Compaq Diagnostics diskette:

1. Turn on the external devices that you want to test. Connect the printer if you want to print the information.
2. Insert the Compaq Diagnostics diskette in drive A.
3. Turn on or restart the computer. The computer starts from drive A, and the **Diagnostics Welcome** screen appears.
4. Press **Enter** to continue. The Diagnostics menu appears.
5. Select **View System Information (INSPECT)** from the **Diagnostics** menu.
6. Select the item you want to view from the following list:

System	Memory
ROM	Audio
Keyboard	Operating system
System ports	System files
System storage	Windows files
Graphics	

7. Follow the instructions on the screen to cycle through the screens, to return to the list and choose another item, or to print the information.

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Diagnostic Error Codes

Diagnostic error codes occur if the system recognizes a problem while running the Compaq Diagnostic program. These error codes help identify possibly defective subassemblies.

The following tables list error codes, a description of the error condition, and the action required to resolve the error condition.

IMPORTANT:

Retest the system after completing each step. If the problem is resolved, do not proceed with the remaining steps.

For the removal and replacement of a particular subassembly, see the section for [Removal and Replacement Procedures](#).

Select error codes by number or type:

[101 through 114](#)

[200 through 215](#)

[300 through 304](#)

[401 through 403](#)

[600 through 699](#)

[1101](#)

[1701 through 1736](#)

[501 through 516](#)

[Processor Test](#)

[Memory Test](#)

[Keyboard Test](#)

[Parallel Printer Test](#)

[Diskette Drive or LS-120 Test](#)

[Serial Test](#)

[Hard Drive Test](#)

[Video Test](#)

[2402 through 2456](#)[2458 through 2480](#)[3206](#)[8601 through 8602](#)[3301 through 6623](#)[Audio Test](#)[Touch Pad Pointing Device Test](#)[CD/DVD Test](#)**Processor Test Error Codes**

Error Code	Description	Recommended Action
101-xx	CPU test failed	Replace the processor and retest.
102-xx	Coprocessor or Weitek Error	1. Run the Configuration and Diagnostics Utilities. 2. Replace the processor board and retest.
103-xx	DMA page registers test failed	Replace the system board and retest.
104-xx	Interrupt controller master test failed	
105-xx	Port 61 error	
106-xx	Keyboard controller self-test failed	
107-xx	CMOS RAM test failed	
108-xx	CMOS interrupt test failed	
109-xx	CMOS clock test failed	
110-xx	Programmable timer load data test failed	
113-xx	Protected mode test failed	
114-01	Speaker test failed	

Memory Test Error Codes

200 -xx	Memory machine ID test failed	1. Flash the system ROM and retest. 2. Replace the system board and retest.
202-xx	Memory system ROM checksum failed	
203-xx	Write/Read test failed	1. Remove the memory module and retest. 2. Install a new memory module and retest.
204-xx	Address test failed	
211-xx	Random pattern test failed	
214-xx	Noise test failed	
215-xx	Random address test failed	

Keyboard Test Error Codes

300 -xx	Failed ID Test	1. Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard. 2. Replace the keyboard and retest. 3. Replace the system board and retest.
301-xx	Failed Selftest/Interface Test	
302-xx	Failed Individual Key Test	
304-xx	Failed Keyboard Repeat Test	

Parallel Printer Test Error Codes

401 -xx	Printer failed or not connected	1. Connect the printer. 2. Check power to the printer. 3. Install the loop-back connector and retest. 4. Check port and IRQ configuration. 5. Replace the system board and retest.
402-xx	Failed Port Test	
403-xx	Printer pattern test failed	

Diskette Drive Test

600 -xx	Diskette ID drive types test failed	1. Replace the diskette media and retest. 2. Check and/or replace the diskette power and signal cables and retest. 3. Replace the diskette drive and retest. 4. Replace the system board and retest.	
601-xx	Diskette format failed		
602-xx	Diskette read test failed		
603-xx	Diskette write, read, compare test failed		
604-xx	Diskette random read test failed		
605-xx	Diskette ID media failed		
606-xx	Diskette speed test failed		
609-xx	Diskette reset controller test failed		
610-xx	Diskette change line test failed		
697-xx	Diskette type error		
698-xx	Diskette drive speed not within limits		
699-xx	Diskette drive/media ID error		1. Replace media. 2. Run the Configuration and Diagnostics Utilities.

Serial Test Error Codes

1101-xx	Serial port test failed	1. Check port configuration 2. Replace the system board and retest.
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Hard Drive Test Error Codes

1701-xx	Hard drive format test failed	1. Run the Configuration and
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1702-xx	Hard drive read test failed
1703-xx	Hard drive write/read/compare test failed
1704-xx	Hard drive random seek test failed
1705-xx	Hard drive controller test failed
1706-xx	Hard drive ready test failed
1707-xx	Hard drive recalibration test failed
1708-xx	Hard drive format bad track test failed
1709-xx	Hard drive reset controller test failed
1710-xx	Hard drive park head test failed
1715-xx	Hard drive head select test failed
1716-xx	Hard drive conditional format test failed
1717-xx	Hard drive ECC* test failed
1719-xx	Hard drive power mode test failed
1724-xx	Network preparation test failed
1736-xx	Drive monitoring test failed

Diagnostics Utilities and verify drive type.
 2. Verify that all secondary drives have secondary drive capability.
 3. Replace the hard drive and retest.
 4. Replace the system board and retest.

* ECC = Error Correction Code

Video Test Error Codes

501-xx	Video controller test failed
502-xx	Video memory test failed
503-xx	Video attribute test failed
504-xx	Video character set test failed
505-xx	Video 80 × 25 mode 9 × 14 character cell test failed
506-xx	Video 80 × 25 mode 8 × 8 character cell test failed
507-xx	Video 40 × 25 mode test failed
508-xx	Video 320 × 200 mode color set 0 test failed
509-xx	Video 320 × 200 mode color set 1 test failed
510-xx	Video 640 × 200 mode test failed

The following apply to error codes 501-xx through 516-xx:

1. Disconnect external monitor and test with internal LCD display.
2. Replace the display assembly and retest.
3. Replace the system board and retest.

511-xx	Video screen memory page test failed	The following steps apply to error codes 2402-xx through 2456-xx: 1. Run the Configuration and Diagnostics Utilities. 2. Replace the display assembly and retest. 3. Replace the system board and retest.
512-xx	Video gray scale test failed	
514-xx	Video white screen test failed	
516-xx	Video noise pattern test failed	
2402 -xx	Video memory test failed	
2403-xx	Video attribute test failed	
2404-xx	Video character set test failed	
2405-xx	Video 80 × 25 mode 9 × 14 character cell test failed	
2406-xx	Video 80 × 25 mode 8 × 8 character cell test failed	
2408-xx	Video 320 × 200 mode color set 0 test failed	
2409-xx	Video 320 × 200 mode color set 1 test failed	
2410-xx	Video 640 × 200 mode test failed	
2411-xx	Video screen memory page test failed	
2412-xx	Video gray scale test failed	
2414-xx	Video white screen test failed	
2416-xx	Video noise pattern test failed	1. Run the Configuration and Diagnostics Utilities. 2. Disconnect external monitor and test with internal LCD display. 3. Replace the display assembly and retest. 4. Replace the system board and retest.
2418-xx	ECG/VGC memory test failed	
2419-xx	ECG/VGC ROM checksum test failed	
2421-xx	ECG/VGC 640 × 200 graphics mode test failed	
2422-xx	ECG/VGC 640 × 350 16 color set test failed	
2423-xx	ECG/VGC 640 × 350 64 color set test failed	
2424-xx	ECG/VGC monochrome text mode test failed	

2425-xx	ECG/VGC monochrome graphics mode test failed	
2431-xx	640 × 480 graphics test failure	
2432-xx	320 × 200 graphics (256 color mode) test failure	
2448-xx	Advanced VGA Controller test failed	
2451-xx	132-column Advanced VGA test failed	
2456-xx	Advanced VGA 256 Color test failed	
2458 -xx	Advanced VGA BitBLT test	The following step applies to error codes 2458-xx through 2480-xx: Replace the system board and retest.
2468-xx	Advanced VGA DAC test	
2477-xx	Advanced VGA data path test	
2478-xx	Advanced VGA BitBLT test	
2480-xx	Advanced VGA LineDraw test	

Audio Test Error Codes

3206 -xx	Audio System Internal Error	Replace the system board and retest.
----------	-----------------------------	--------------------------------------

TouchPad/Pointing Device Interface Test Error Codes

8601 -xx	Mouse test failed	1. Replace the TouchPad and retest. 2. Replace the system board and retest.
8602-xx	Interface test failed	

CD/DVD Drive Test Error Codes

3301 -xx	CD/DVD drive read test failed	1. Replace the CD/DVD and retest. 2. Verify that the speakers are connected. 3. Verify that drivers are loaded and properly installed.
3305-xx	CD/DVD drive seek test failed	

6600-xx	ID test failed	4. Replace the CD/DVD drive and retest. 5. Replace the system board and retest.
6605-xx	Read test failed	
6608-xx	Controller test failed	
6623-xx	Random read test failed	

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Troubleshooting Without Diagnostics

This section provides information about how to identify and correct some common hardware, memory, and software problems. It also explains several types of common messages that may be displayed on the screen. The following pages contain troubleshooting information on:

[Audio](#)[Battery/Battery gauge](#)[CD/DVD drive](#)[Diskette/Diskette drive](#)[Display](#)[Hard drive](#)[Hardware Installation](#)[Memory](#)[PC Card](#)[Power](#)[Printer](#)[Touch Pad](#)[Keyboard/Numeric keypad](#)

Since symptoms can appear to be similar, carefully match the symptoms of the computer malfunction against the problem description in the Troubleshooting tables to avoid a misdiagnosis.



WARNING: To avoid a potential shock hazard during troubleshooting procedures, disconnect all power sources before removing the keyboard cover or the display bezel.

Before Replacing Parts

Verify that cables are connected properly to the suspected defective parts.

- Run Computer Setup after connecting external devices.
- Verify that all required device drivers are installed.
- Verify that all required changes have been made to the *CONFIG.SYS* file.
- Verify that all required changes have been made to the *AUTOEXEC.BAT* file.
- Verify that all printer drivers have been installed for each application.

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Solving Minor Problems

Some minor problems and possible solutions are outlined in the following tables. If the problem appears related to a software application, check the documentation provided with the software.

Solving Audio Problems

Some common audio problems and solutions are listed in the following table.

Solving Audio Problems		
Problem	Probable Cause	Solution(s)
Computer does not beep after the Power-On Self-Test (POST).	This is typical; it indicates successful completion of the Power-On Self-Test (POST).	No action is required.

Solving Battery Pack and Battery Gauge Problems

Some common causes and solutions for battery pack problems are listed in the following table. The "Solving Power Problems" section in this chapter may also be applicable.

Solving Battery Pack and Battery Gauge Problems		
Problem	Probable Cause	Solution(s)
Computer won't turn on when battery pack is inserted and power cord is unplugged.	Battery pack is discharged.	Connect the computer to an external power source and charge the battery pack. Replace the battery pack with a fully charged battery pack.
		Check the battery connectors on the system board to verify they are evenly spaced and that they are not bent or broken.

Computer is beeping and battery LED icon is blinking.	Battery charge is low.	Immediately save any open file(s). Then do any one of the following: <ul style="list-style-type: none"> • Connect the computer to an external power source to charge the battery pack. • Turn off the computer or initiate Hibernation until you can find another power source or charge the battery pack.
Computer battery LED icon (front on the unit) blinks to indicate low battery condition, but computer does not beep.	Volume is turned down too low.	Adjust the volume.
Battery LED icon doesn't light and battery pack won't fast charge.	Battery pack is already charged.	No action is necessary.
	Battery pack was exposed to temperature extremes.	Allow time for the battery pack to return to room temperature.
	Battery pack is at end of its life.	Replace battery pack.
You have to set the date and time every time you turn on the computer.	RTC battery is dead.	Replace the RTC battery.

Battery charge does not last as long as expected.	Battery is being exposed to high temperatures or extremely cold temperatures.	Keep the battery pack within the recommended operating temperature range 50° F to 104° F (10° C to 40° C) or recommended storage range -4° F to 86° F (-20° C to 30° C). Recharge the battery pack.
	Battery has partially self-discharged.	Recharge the battery. Discharge the battery completely and then recharge it.
	Power management is disabled.	Set a power management level in Computer Setup.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.
Battery pack is warm to the touch after charging.	Normal warming has occurred due to charging.	No action is required.
Battery pack operating time is far less than the documented average operating time.	Power management is turned off or disabled.	Enable power management in Computer Setup and in Windows Power Properties.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.

Battery pack has partially self-discharged.	<p>Condition the battery pack by fully charging, fully discharging, then fully recharging it.</p> <p>To maintain the charge, leave battery packs in the computer when it is connected to external power.</p> <p>If the computer is disconnected from external power for more than two weeks, remove battery packs from the computer to reduce the discharge rate.</p>
Battery pack is being exposed to high temperatures or extremely cold temperatures.	<p>Keep the battery pack within the recommended temperature ranges. Operating: 50° F to 104° F (10° C to 40° C) Storage: -4° F to 86° F (-20° C to 30° C)</p> <p>Recharge the battery pack.</p>

Solving CD/DVD Drive Problems

Some common causes and solutions for CD/DVD drive problems are listed in the following table.

Solving CD/DVD Drive Problems		
Problem	Probable Cause	Solution(s)
CD/DVD drive cannot read a compact disc or digital versatile disc.	Compact disc or digital versatile disc is upside down or is improperly inserted in the CD/DVD drive.	Open the CD/DVD loading tray, lay the compact disc or digital versatile disc in it (label side up), then close the tray.
	CD is CD Plus or Pregap/Track 0 type.	Cannot read these type CDs in 24x. Remove the CD.

Solving Diskette and Diskette Drive Problems

Some common causes and solutions for diskette and diskette drive problems are listed in the following table.

Solving Diskette and Diskette Drive Problems		
Problem	Probable Cause	Solution(s)
Diskette drive cannot write to a diskette.	Diskette is write-protected.	Disable the diskette's write-protect feature or use a diskette that is not write-protected.
	Computer is writing to the wrong drive.	Check the drive letter in the path statement.
	Not enough space is left on the diskette.	Use another diskette.

	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Diskette drive cannot read a diskette.	The wrong type of diskette is being used.	Use the type of diskette required by the drive.
	Diskette has a bad sector.	Copy files to hard drive or another diskette. Reformat bad floppy.
	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Cannot boot from diskette.	Bootable diskette is not in drive A.	Put the bootable diskette in drive A.
	Diskette Boot has incorrect setting in Computer Setup.	Run Computer Setup and set diskette as first to boot.

Solving Display Problems



This section lists some common causes and solutions for computer display and external monitor problems.



You can perform a monitor self-test on an external VGA color or monochrome monitor by disconnecting the monitor from the computer. To do so, complete the following steps:

1. Turn off the monitor.
2. Turn off the computer.
3. Disconnect the monitor signal cable from the computer.
4. Turn on the monitor and allow it to warm up for one minute.

The display should be white. A narrow black border may also appear on the left and right sides of the display. Either of these displays indicates that the monitor is working properly.

Solving Display Problems

Problem	Probable Cause	Solution(s)
Screen is dim.	Control for brightness (if applicable) is not set properly.	Adjust the Brightness of the display by using Fn + F7 () or Fn + F8 ().
	Computer screen is in direct light.	Tilt display or move computer.
Screen is blank.	Screen save was initiated by Power Management due to lack of user activity.	Press any key or touch the Touch Pad.
	Display has overheated.	If computer is in direct sunlight, move it and allow it to cool off.


Display is blank and the Suspend icon is flashing.	System is in Suspend mode.	Press any key or touch the Touch Pad.
Internal display is blank and the screen on an external monitor displays information.	Display function was switched to the external monitor.	Use Fn + F2 to switch between LCD or CRT .
Internal display flashes or has garbled characters when computer is connected to external monitor.	Using 1024 × 768 or higher resolution on external monitor and have toggled back to internal display, which supports up to 800 × 600.	Restart the computer.
The light tubes on the edge of the display panel do not light up at all and Power-On Self-Test (POST) completes when the unit is powered up.**	Improper backlight or display cable connections	Replace the display assembly.
	Defective inverter board.	Replace the display assembly.
	Defective display cable.	Replace the display assembly.
	Defective display panel.	Replace the display assembly.
The light tubes on the edge of the display panel do not light up at all and Power-On Self-Test (POST) does not complete when the unit is powered up.**	Defective system board.	Replace the system board.
Backlight (brightness) cannot be adjusted with Fn + F7 () or Fn + F8 ().***	Improper display cable connections.	1. Reseat the display cable to the system board. 2. Replace the display assembly.
	Defective inverter board.	Replace the display assembly.
	Defective display cable.	Replace the display assembly.
	Defective system board.	Replace the system board.
	Defective inverter board.	Replace the display assembly.
	Defective display cable.	Replace the display assembly.
Defective system board.	Replace the system board.	
** This problem indicates that the backlight or its power circuitry has failed. Since you cannot observe the POST result on the display panel when the backlight is not functioning, connect the unit to an external monitor before powering the unit up. If an external monitor is not available, verify that POST completes by opening and closing the display, listening for the single or double beep, and watching for the LEDs turn on at the front of the computer.		
This display panel has a continuous pattern across it (e.g., a "jailbars" pattern), has a single color on it, or has garbled graphics across the entire panel. This failure is for patterns across the entire panel (not just on one section).	Improper display cable connections	Reseat the display cable to the following until the problem is solved: 1. System board 2. Display assembly

	Defective display cable.	Replace the display assembly.
	Defective inverter board.	Replace the display assembly.
	Defective system board.	Replace the system board.

NOTE: To perform a "self-test" on an external VGA color monitor, complete the following steps: The screen should be white. A narrow black border may also appear on the left and right sides of the display. Either of these displays indicates that the monitor is working properly.

Solving Hard Drive Problems

Some common causes and solutions for hard drive problems are listed in the following table.

	CAUTION: To prevent loss of information, always maintain an up-to-date backup of your hard drive at all times, in case of errors or failures.
--	--

Solving Hard Drive Problems		
Problem	Probable Cause	Solution(s)
Reading hard drive takes an unusually long time after restarting the computer.	System entered Hibernation due to low battery condition and is now exiting from it.	Give the system time to restore the previously saved data to its exact state before Hibernation.
Hard drive error occurs.	Hard drive has bad sectors or has failed.	Run Computer Checkup.
Hard drive does not work.	Hard drive is not seated properly.	Turn off and unplug the computer, remove the battery pack, and remove and then reinstall the hard drive.

Solving Hardware Installation Problems

Some common causes and solutions for hardware installation problems are listed in the following table.

Solving Hardware Installation Problems

Problem	Probable Cause	Solutions(s)
A new device is not recognized as part of the computer system.	Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected.
	Power switch of new external device is not turned on.	Turn off the computer, turn on the external device, then turn on the computer to integrate the device with the computer system.
	Device is not seated properly.	Turn off the computer and reinsert the device.

Solving Keyboard/Numeric Keypad Problems

Some common causes and solutions for keyboard/numeric keypad problems are listed in the following table.

Solving Keyboard/Numeric Keypad Problems

Problem	Probable Cause	Solution(s)
Embedded numeric keypad on computer keyboard is disabled.	Num Lock function is not enabled.	Press the Shift + NumLk keys to enable the Num Lock function and embedded numeric keypad. The Num Lock icon on the status panel turns on.
Embedded numeric keypad is disabled and Num Lock function is on.	External numeric keypad is connected to the computer.	Disconnect the external numeric keypad from the computer.

Solving Memory Problems

Some common causes and solutions for memory problems are listed in the following table.

Solving Memory Problems

Problem	Probable Cause	Solution(s)
Memory count during Power-On Self-Test (POST) is incorrect.	Optional memory expansion card is installed incorrectly, is incompatible with the computer, or is defective.	Ensure that the optional memory expansion card is installed correctly.
"Out of Memory" message is displayed on the screen or insufficient memory error occurs during operation.	System ran out of memory for the application.	Check the application documentation for memory requirements. Install additional memory.

Too many TSR (terminate-and stay-resident) applications are running.

Remove from memory any TSR applications that you do not need.

[Solving Minor Problems \(continued\)](#)

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Contacting Compaq Support

Obtain the following information before contacting Compaq Reseller Support:

- Product name
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Hardware configuration
- Type of printer connected
- Hardware/software being used
- Printed result of Computer Checkup (TEST)
- Printed copies of *CONFIG.SYS* and *AUTOEXEC.BAT* files, if possible

Shipping Preparation

To ship the computer, complete the following steps:

1. Back up the critical hard drive files. Ensure that backup tapes/diskette are not exposed to electrical or magnetic fields while stored in transit.
2. Turn off the computer and external devices.
3. Disconnect the external devices from their power sources, then from the computer.

IMPORTANT:

Ensure that there is no diskette in the diskette drive and that there are no PC Cards in the PC slots.

4. Close the display and all exterior doors of the computer.
5. Pack the computer with sufficient packing material to protect it. Use the original packing box or similar packaging.

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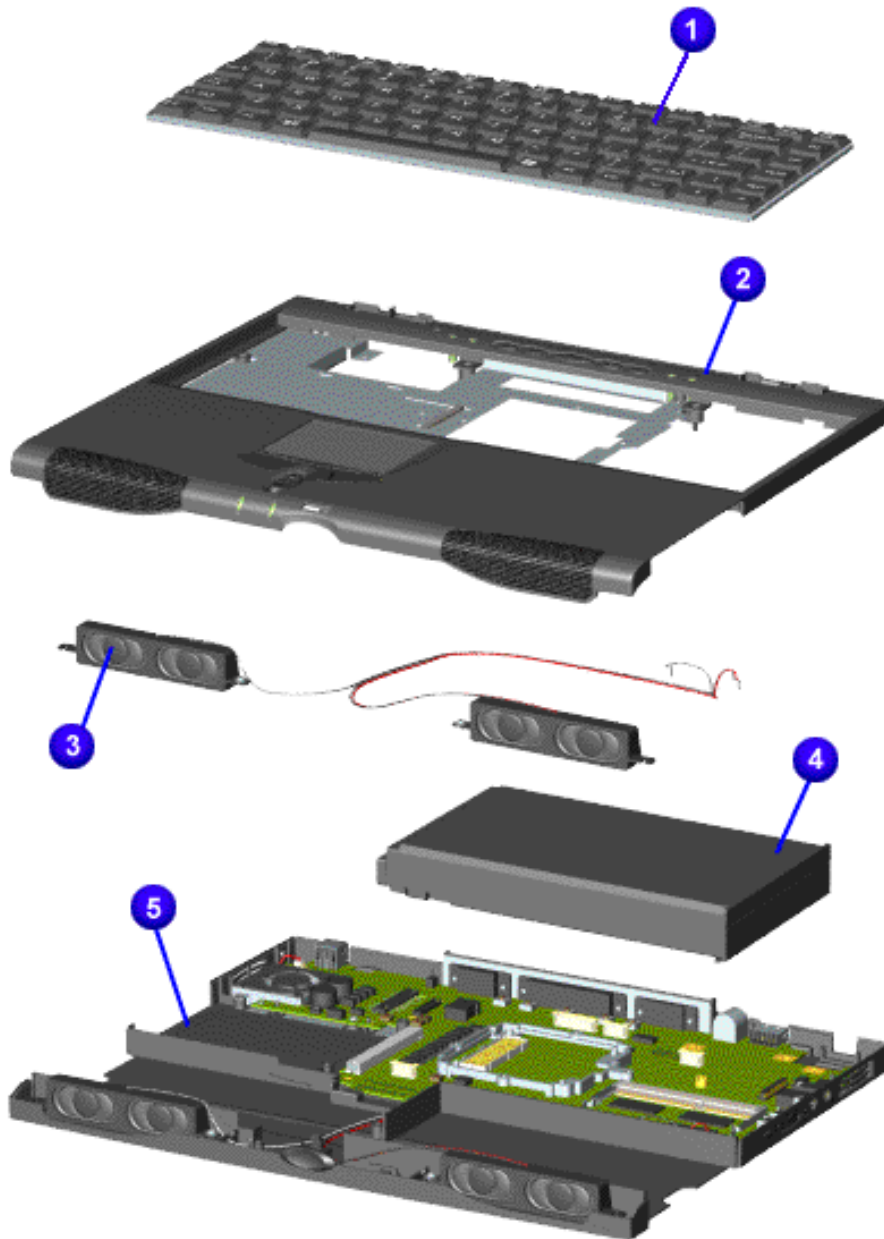
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Description	Spare Part Number
1. Keyboards	
2. Upper CPU Cover w/Palmrest and TouchPad	331423-001 or 140678-001
3. Speaker Assembly w/Cable	331420-001
4. Battery Pack - Li ion	386500-001 140664-001
5. CPU Base Assembly Enclosure with System Board and Speaker Assembly, (Bottom Plastics)	331414-001 140671-001



CPU Base Assembly Enclosure with Shield, (Bottom Plastics) (Not Shown)	331421- 001 140679- 001
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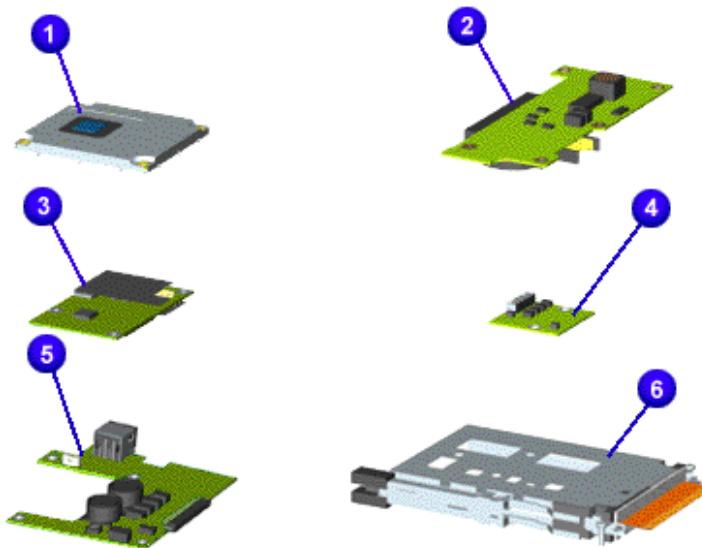
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Description	Spare Part Number
1. Processors	
2. Hard Drive/Battery Charger Board w/RTC Battery	331412-001
3. Modem w/Shield, 56.0 Kbps Data/Fax	331429-001
4. Low Voltage Differential Signal Board (For 13.3' Display Panel)	331411-001
5. Voltage Converter Board	331413-001
6. PC Card Assembly	102123-001
7. Fan Assembly (Not Shown)	331410-001

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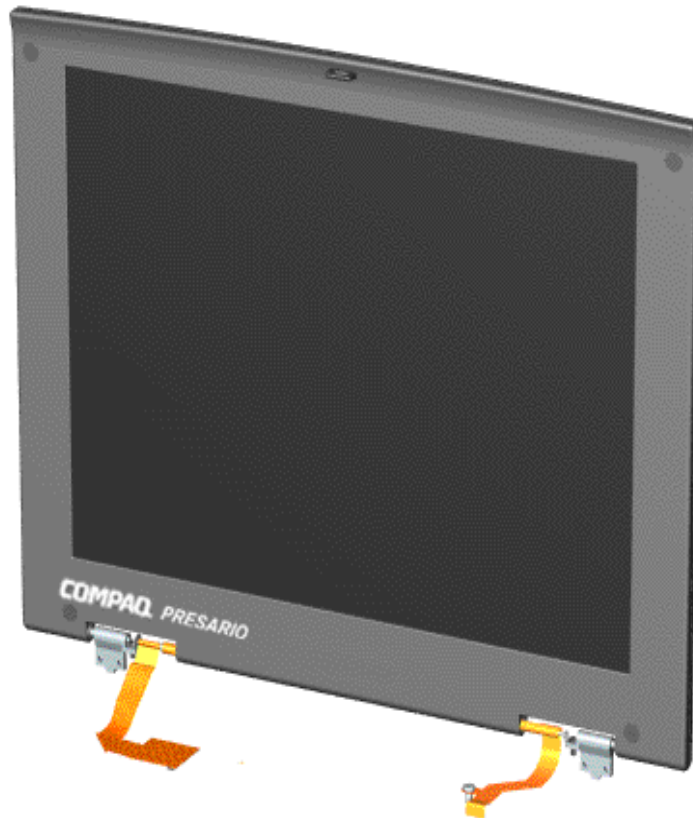
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Display Panel Assembly

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Description	Spare Part Number
Display Panel Assembly w/Cable 13.3 inch TFT	331409-001 or 140666-001
Display Panel Assembly w/Cable and Connector, 12.1 inch TFT	331408-001 or 140665-001

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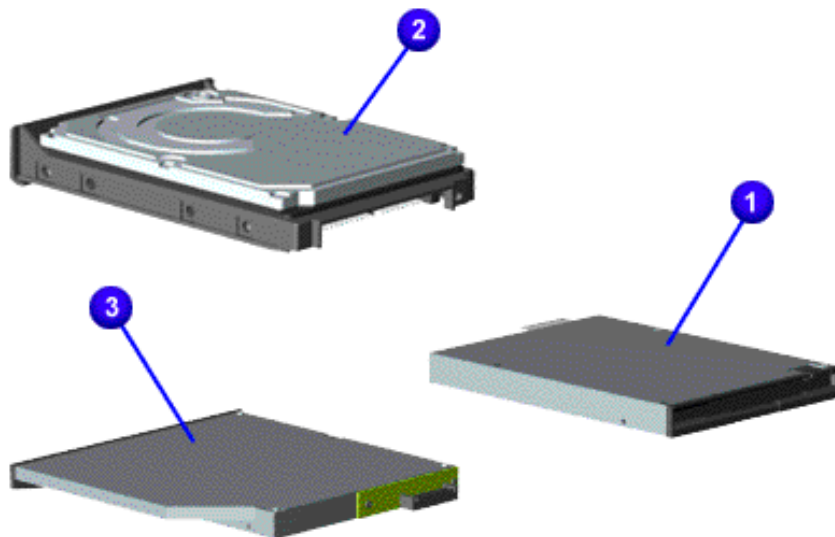
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Description	Model No.	Spare Part Number
1. Diskette Drive w/ cable 1.44 MB, 3.5 inch	1905, 1906, 1910, 1915, 1919 & 1920	331428-001
2. LS-120 Drive	1922 & 1925	TDB
3. Hard Drive	1905, 1906, 1910, 1915, 1919, & 1920	331415-001
4.8-GB		331416-001
6.4-GB		331416-001
4.0-GB	1905, 1906, 1910, 1915, 1919, & 1920	140672-001
6.4-GB		140672-001
10-GB	1922 & 1925	140673-001
	1922 & 1925	140674-001
	1922 & 1925	140674-001

DVD Drive w/ Interface Connector	1905, 1906, 1910, 1915, 1919, & 1920 1922 & 1925	331427- 001 140682-002
24X CD Drive w/cable	1905, 1906, 1910, 1915, 1919, & 1920 1922 & 1925	102122- 001 TBD

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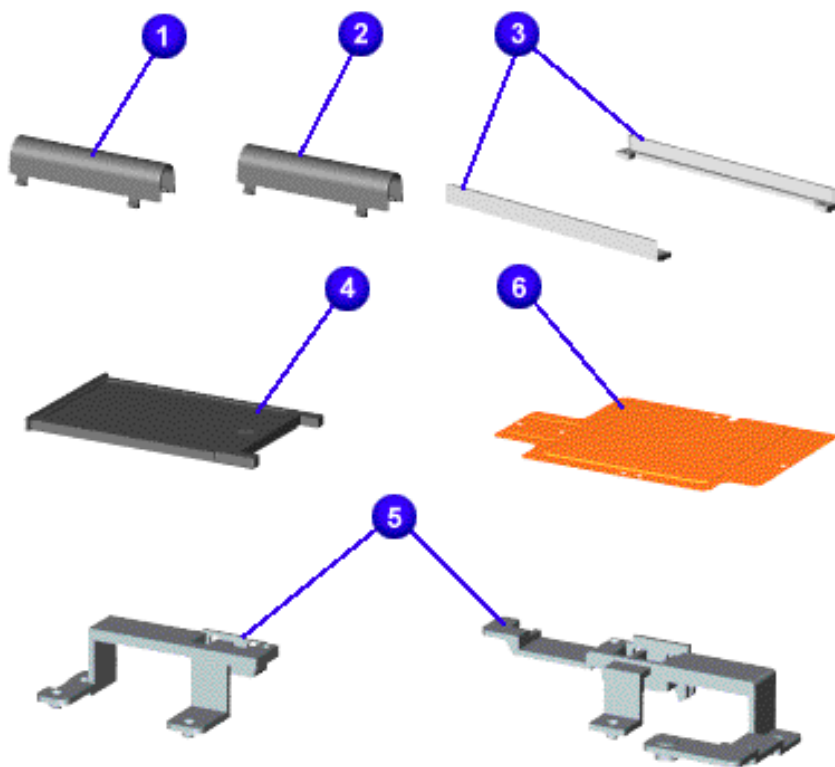
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Miscellaneous Hardware and Plastics Kit
Spare Part Number: 331418-001 (Models: 1905, 1906, 1910, 1915, 1919, & 1920)

Spare Part Number: 140675-001
(Models: 1922 & 1925)

Description	Quantity
1. Display Panel Assembly Hinge Cover, Left	1 each
2. Display Panel Assembly Hinge Cover, Right	1 each
3. CD/DVD Guide Rails	1 each
4. PC Card Placeholder	1 each
5. Display Panel Assembly Hinge Frame (Left and Right)	1 each
6. Heatspreader with Thermal Pad	2 each

12.1 inch FPC Support Bracket (Not Shown)	1 each
Keyboard Eject Latch (Not Shown)	1 each
TouchPad Switch (Not Shown)	1 each
Scroll Button Switch (Not Shown)	1 each
Battery Eject Latch (Not Shown)	1 each
Display Screw Hole Covers (Not Shown)	4 each
Battery Knob Spring Coil (Not Shown)	2 each
Volume Switch Knob (Not Shown)	1 each
Display Eject Latch (Not Shown)	1 each
RJ11 Jack Assembly (Not Shown)	1 each
Rubber Feet (Not Shown)	2 each

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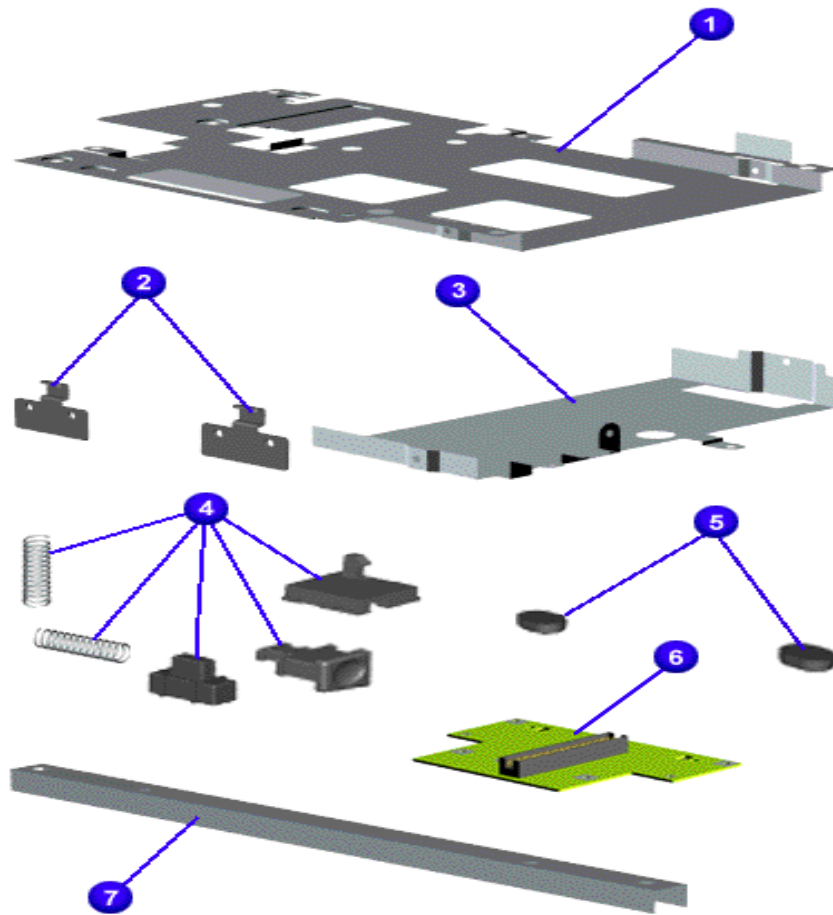
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Miscellaneous Hardware and Plastics Wedge Kit

Spare Part Number: 331424-001 (Models:
1905, 1906, 1910, 1915, 1919, & 1920)

Spare Part Number: 140680-001
(Models: 1922 & 1925)

Description	Quantity
1. Diskette Drive Shield	1 each
2. Alignment Pins (Left and Right)	2 each
3. DVD Drive Shield	1 each
4. Eject Mechanism Assembly w/Springs (Left and Right)	2 each
5. Rubber Feet	4 each



6. Wedge to Port Replicator Interface Board	1 each
7. Reinforcement Bracket	1 each
Top and Bottom Wedge Cover (Not Shown)	331425-001
System to Wedge Interface Board	1 each
Eject Plunger Knobs (Not Shown)	2 each
Plunger Spring Coil (Not Shown)	2 each

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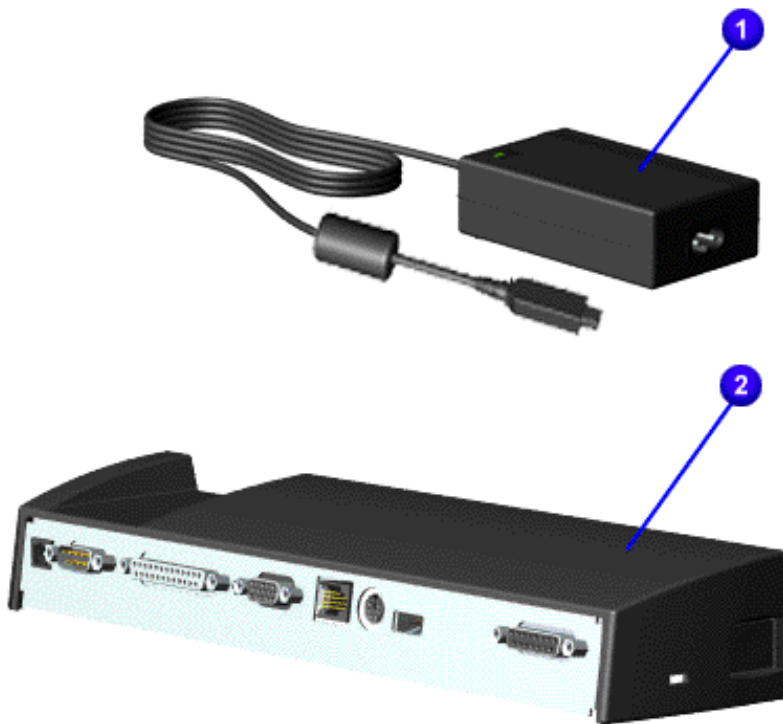
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[Miscellaneous Hardware and Plastics Kit](#)

[Miscellaneous Hardware and Plastics Wedge Kit](#)

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Description	Spare Part Number
1. AC 45W Adapter	358976-001
2. Integrated 10/100BaseT Ethernet Port Replicator	331407-001 or 140663-001
Miscellaneous Screw Kit (Not Shown)	331422-001
Y Cable Assembly (Not Shown)	102422-001

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Documentation and Software

System Unit	Description	Spare Part Number
Boards	Quick Restore CD 1	
Display Assembly		122314-001
Mass Storage Devices		122314-161
Miscellaneous Hardware and Plastics Kit		122314-371
Miscellaneous Hardware and Plastics Wedge Kit		US/PR 122314-AA1
Miscellaneous Parts		APD 122314-AD1
Documentation and Software		PRC 122314-AD1
		Korea 122314-371
		AUS 122314-371
		Japan 122314-291
		UK 122314-291
		France 122314-031
		Italy 122314-031
		Belgium 122314-051
		122314-061
		122314-AK1
	Quick Restore CD 2	
		Belgium 122314-KK1
	Reference Guide	
	Quick Reference Guide	Not Available
	QuickFind for Windows, North America, Latin America, Asia Pacific	Not Available
	QuickFind for Windows, Europe, Middle East, Africa	Not Available

- QuickFind is updated monthly. To complete the QuickFind part number, add the suffix from the table below for the desired month. If you do not specify the 3-digit suffix, the default is the current month in which the order is placed.

QuickFind Part Number Suffix			
Suffix	Month	Suffix	Month
-001	January	-007	July
-002	February	-008	August
-003	March	-009	September
-004	April	-010	October
-005	May	-011	November
-006	June	-012	December

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Electrostatic Discharge

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) may not be affected at all and will work perfectly throughout a normal cycle. Although, it may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.

Generating Static

The table shows how different activities generate static electricity and at different electrostatic voltage levels.

Typical Electrostatic Voltages

Event	Relative Humidity		
	10%	40%	55%
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tubes	2,000 V	700 V	400 V

Removing DIPS from vinyl trays	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCBs	26,000 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V
NOTE: 700 volts can degrade a product.			

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Service Considerations

Listed below are some of the considerations that you should keep in mind during the disassembly and assembly of the computer.

Tool and Software Requirements

To service the computer, you need the following:

- 5 millimeter nut drivers (for screwlocks and standoffs)
- Small, Phillips (P-Zero) screwdriver
- Small, standard screwdriver
- Small, pair of tweezers
- Diagnostics software

Screws

The screws used in the computer are not interchangeable. If an incorrect screw is used during the reassembly process, it can damage the unit. Compaq strongly recommends that all screws removed during disassembly be kept with the part that was removed, then returned to their proper locations.

IMPORTANT:

As each subassembly is removed from the computer, it should be placed away from the work area to prevent damage.

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Cables and Connectors

Most cables used throughout the unit are ribbon cables. Cables must be handled with extreme care to prevent damage. Apply only the tension required to seat or unseat the cables during insertion or removal from the connector. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing the cables, and ensure that the cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced.

Cables

Use the following precautions when handling cables to avoid damage to the cable or computer:

- Always handle cables by their connectors.
- Avoid bending, twisting, or pulling on the cables.
- Apply minimum required force when seating or unseating the cables from their connectors.
- Place the cables in such a manner that they cannot be caught or snagged by parts being removed or replaced.
- Handle flex cables with extreme care; they can tear easily.



CAUTION: When serving these computers, ensure that cables are placed in their proper location during the reassembly process. Improper cable placement can cause severe damage to the unit.

Select the desired illustration.

Removing a cable from a [ZIF Connector](#).

The cable position for the [speaker assembly](#).

Plastic Parts

Plastic parts can be damaged by the use of excessive force during disassembly and reassembly. When handling the plastic parts, use care. Apply pressure only at the points designated in the maintenance instructions.

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Before beginning removal and replacement procedures, complete the following procedures:

1. Disconnect AC power and any external devices.
2. Remove the battery pack.
3. Remove any PC Cards.
4. Remove the wedge.

IMPORTANT: The battery pack should be removed before performing any internal maintenance on the computer.



WARNING: Metal objects can damage the battery pack as well as the battery contacts in the battery compartment. To prevent damage, do not allow metal objects to touch the battery contacts. Place only the battery pack for the Compaq Presario 1900 Series Portable Computers into the battery compartment. Do not force the battery pack into the bay if insertion does not occur easily.

[Upper CPU Cover with Palmrest and TouchPad](#)

[Hard Drive/Battery Charger Board](#)

[Converter Board](#)

[Low Voltage Differential Signal Board](#)

[Fan Assembly](#)

[System Board](#)

[Speaker Assembly](#)

[Disassembling the Wedge](#)

[DVD or CD Drive](#)

[System to Wedge Interface Board](#)

[Diskette Drive](#)

[Wedge to Port Replicator Interface Board](#)



CAUTION: Do not crush, puncture, or incinerate the battery pack. Do not open a battery pack, as this damages the pack, makes it unusable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery pack.

NOTE:

The Compaq Presario 1900 Series Portable Computers have several screws of various sizes which are **not** interchangeable. Care must be taken during reassembly to ensure that the correct screws are used in their correct location. During removal please keep respective screws with their associate sub-assembly.

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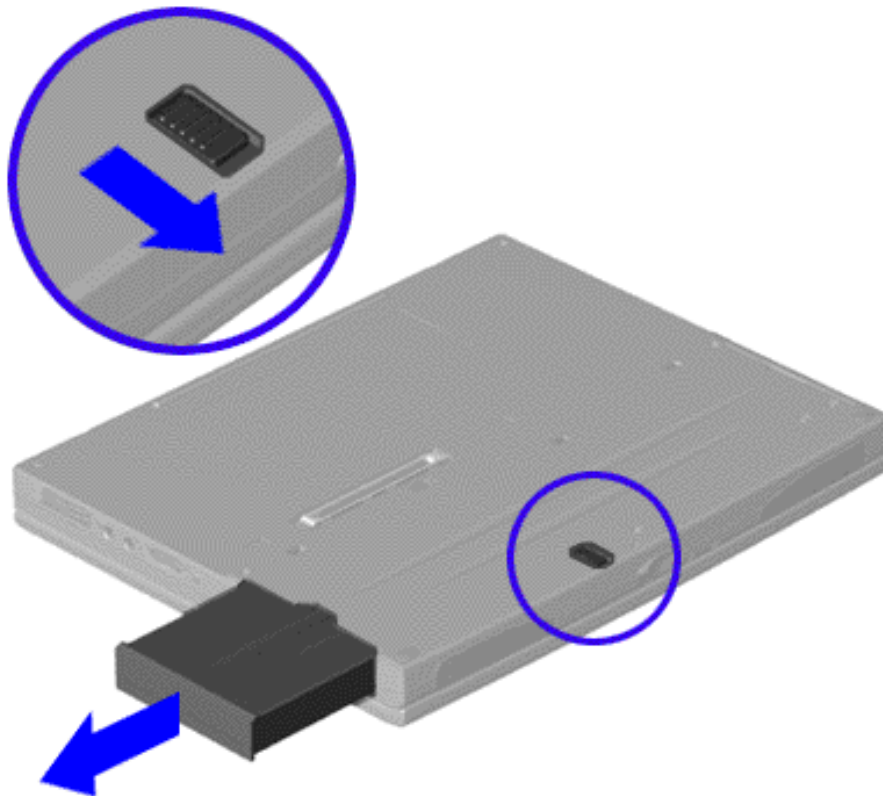
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Removing the Battery Pack

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Modem
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Upper CPU Cover with Palmrest and TouchPad
Hard Drive/Battery
Charger Board
Converter Board



To remove the battery pack, complete the following steps:

1. [Prepare the computer for disassembly](#).
2. Turn the unit over.
3. Slide the battery pack release button located in the center of the bottom of the unit.
4. Locate the battery pack on the right, place your thumb in the groove, and pull the battery pack forward from the unit.

To replace the battery pack, complete the following step.

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[System Board](#)

[Speaker
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[Disassembling
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[System to
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[Wedge to Port
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Insert the battery pack into the chassis slot located on the right side of the unit and push in.

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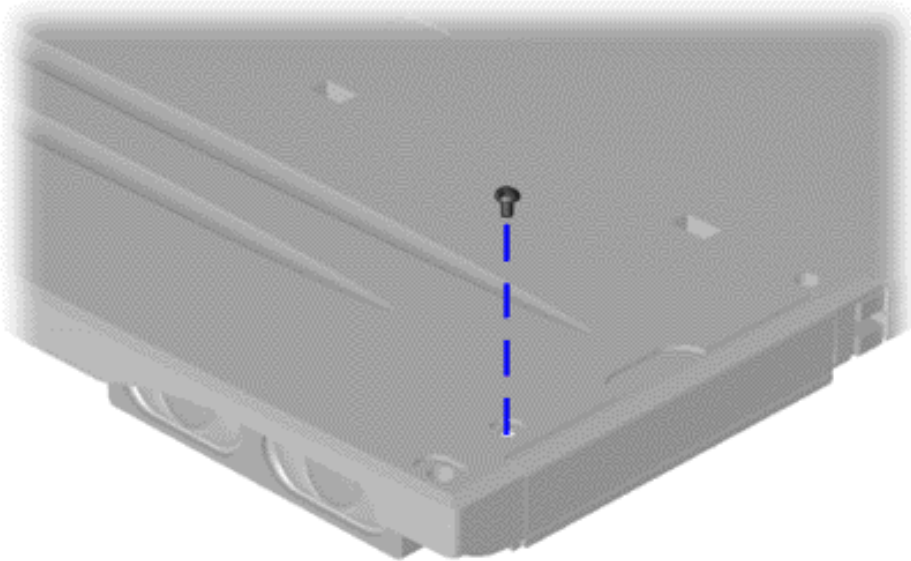
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Removing the 4.0-GB, 4.8-GB, or 6.4-GB Hard Drive

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[Display Panel Assembly](#)
[Upper CPU Cover with Palmrest and TouchPad](#)
[Hard Drive/Battery Charger Board](#)
[Converter Board](#)


To remove the hard drive, complete the following steps:

1. [Prepare the computer for disassembly](#).
2. Turn the unit over and remove the screw (located in the right corner) from the hard drive.
3. Pull the hard drive from the chassis slot.

To replace the hard drive, reverse the previous procedures.

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[Disassembling
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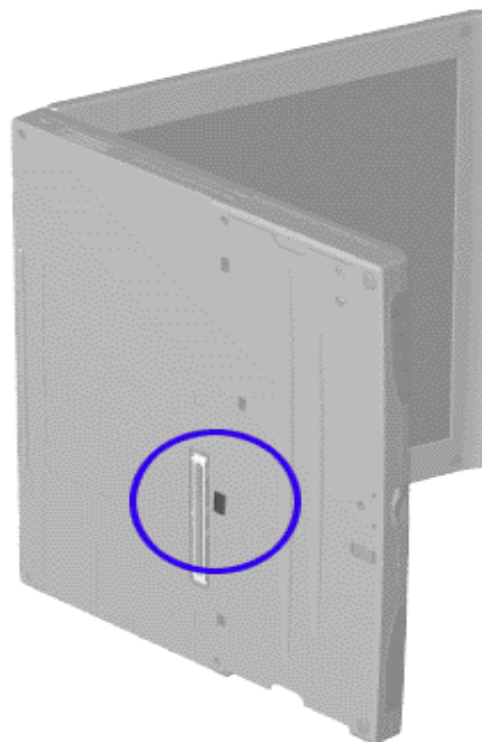
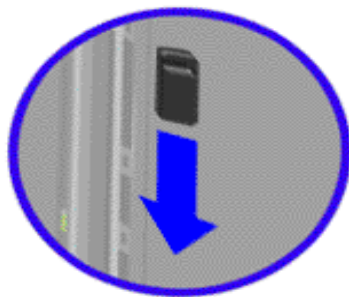
[Processor](#)

[Display Panel Assembly](#)

[Upper CPU Cover with Palmrest and TouchPad](#)

[Hard Drive/Battery Charger Board](#)

[Converter Board](#)



To remove the keyboard, complete the following steps:

1. Prepare the computer for disassembly.
2. Partially close the unit and place it on its side.
3. Slide the keyboard eject switch located in the center of the bottom of the unit to the right to release the keyboard.

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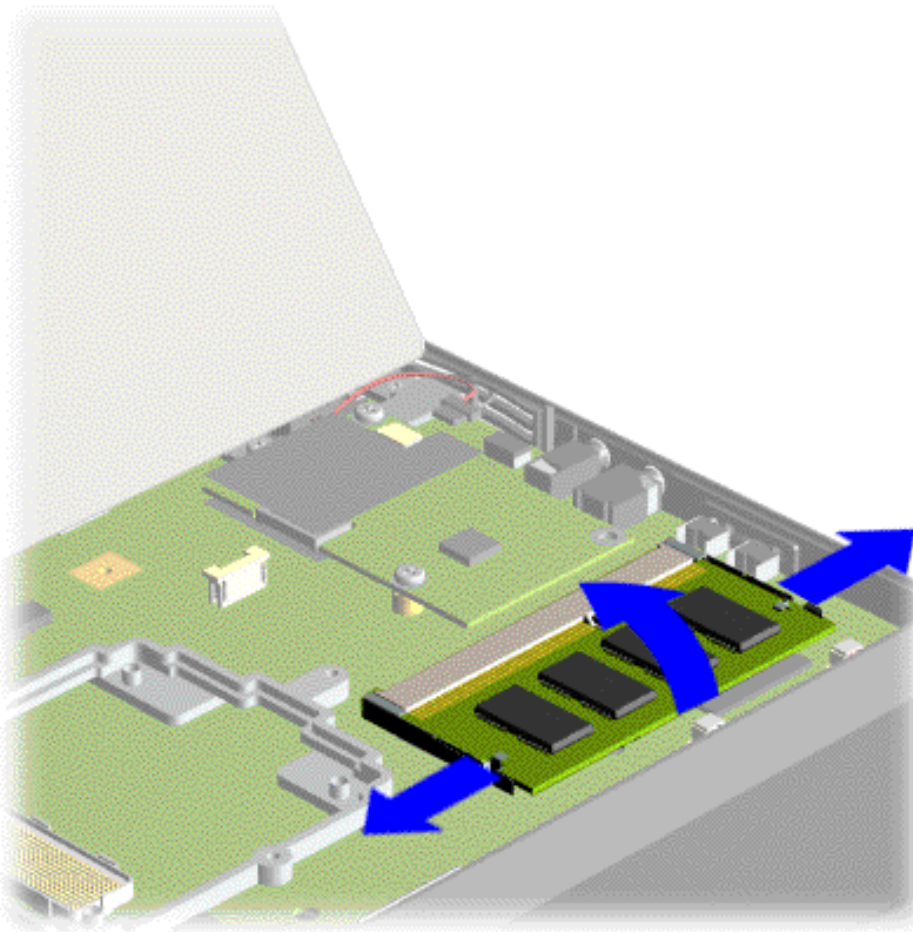
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To remove the memory module, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Release and lift up the keyboard.](#)
3. Pull side levers to release the memory module, then unplug the memory module from the system board.

To replace the memory module, reverse the previous procedures.

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[Low Voltage Differential Signal Board](#)

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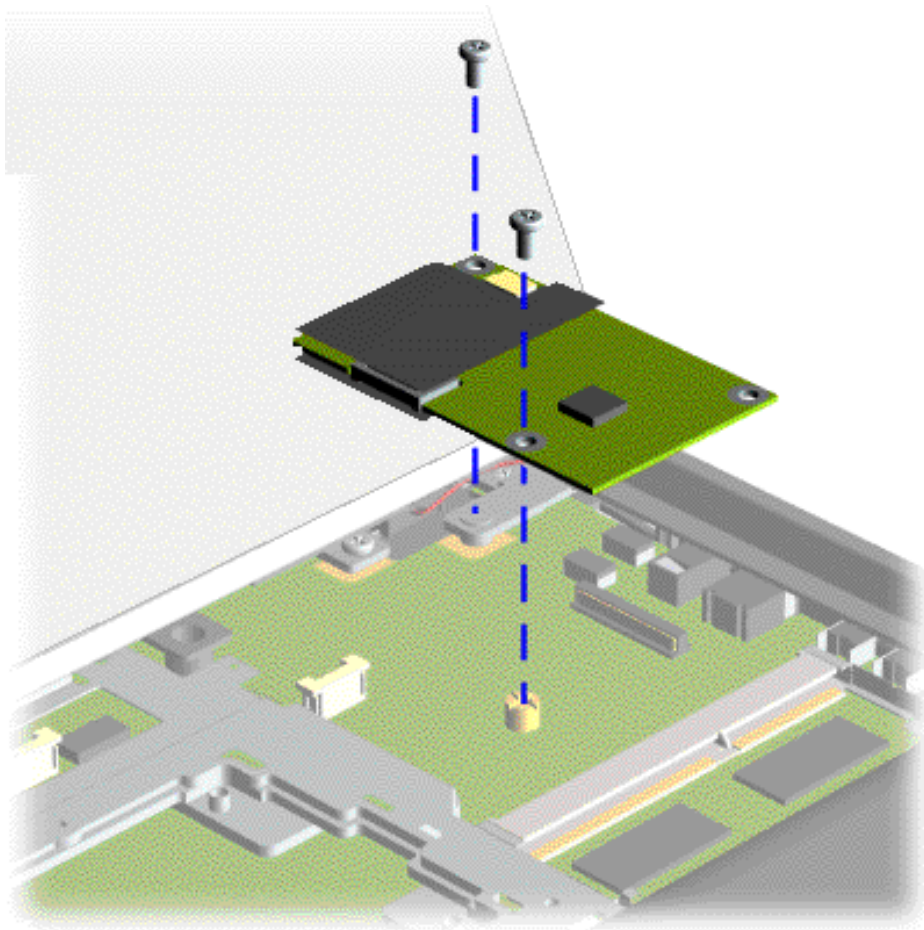
[Processor](#)

[Display Panel Assembly](#)

[Upper CPU Cover with Palmrest and TouchPad](#)

[Hard Drive/Battery Charger Board](#)

[Converter Board](#)



To remove the modem, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Release and lift up the keyboard.](#)
3. Remove two screws securing the modem and pull the modem off the connector on the system board.

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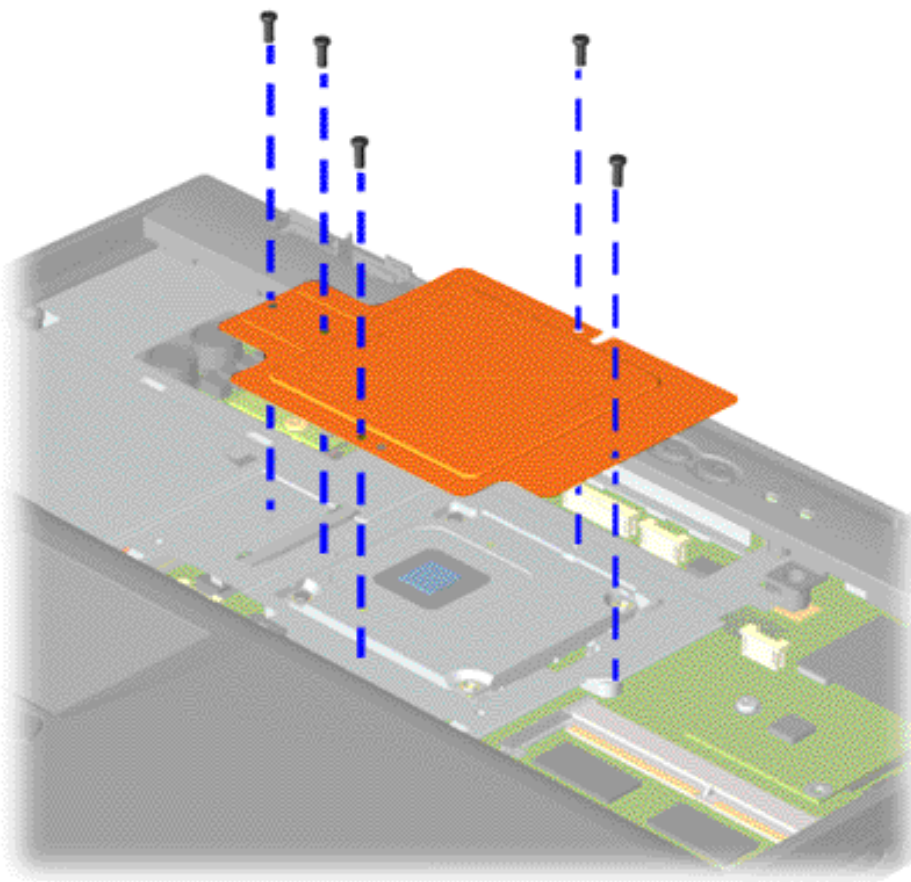
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[Display Panel Assembly](#)
[Upper CPU Cover with Palmrest and TouchPad](#)
[Hard Drive/Battery Charger Board](#)
[Converter Board](#)
[Low Voltage Differential Signal Board](#)


To remove the heatspreader with thermal pad, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Release and lift the keyboard.](#)
3. Remove five screws from the heatspreader with thermal pad and lift out of the chassis.

To replace the heatspreader with thermal pad, reverse the previous procedures.

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[System Board](#)

[Speaker
Assembly](#)

[Disassembling
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NOTE:

When replacing the heatspreader, ensure that the thermal pad under the heatspreader is properly replaced.

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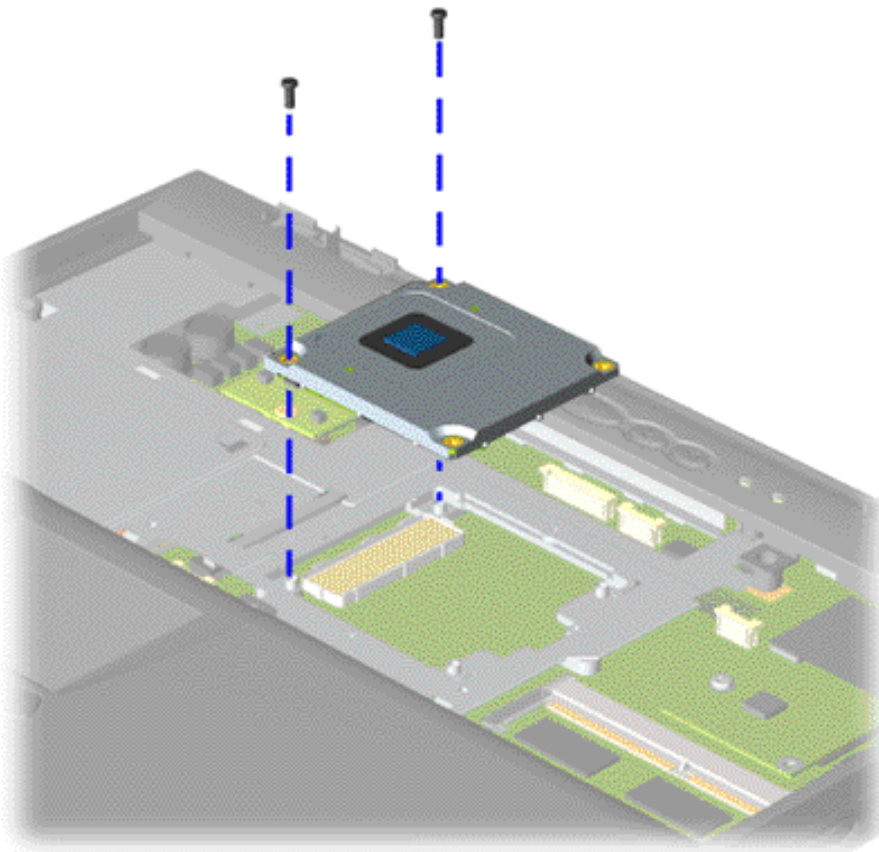
Processor

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[Upper CPU Cover with Palmrest and TouchPad](#)

[Hard Drive/Battery Charger Board](#)

[Converter Board](#)



To remove the processor, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Release and lift the keyboard.](#)
3. [Remove the heatspreader](#) with thermal pad.
4. Remove two screws that secure the processor to the system board.

IMPORTANT:

The bottom of the processor contains socket pins which can be easily damaged, if not properly removed.

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[Speaker
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[System to
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[Wedge to Port
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WARNING:
The Pentium II processor may be very hot when the unit has been running. Allow the processor to cool before handling it.

5. Insert a small blade screw driver under the right side of the processor. Gently lift up the left side of the processor while rocking up and down the right side, until the it releases from the socket. This is necessary to prevent damage to the socket pins.

To replace the processor complete the following steps:

1. Align the processor over the socket using the screw holes as a guide. Apply equal pressure on both sides of the processor over the socket (left side).
2. Replace two screws.
3. Replace the heatspreader with thermal pad.

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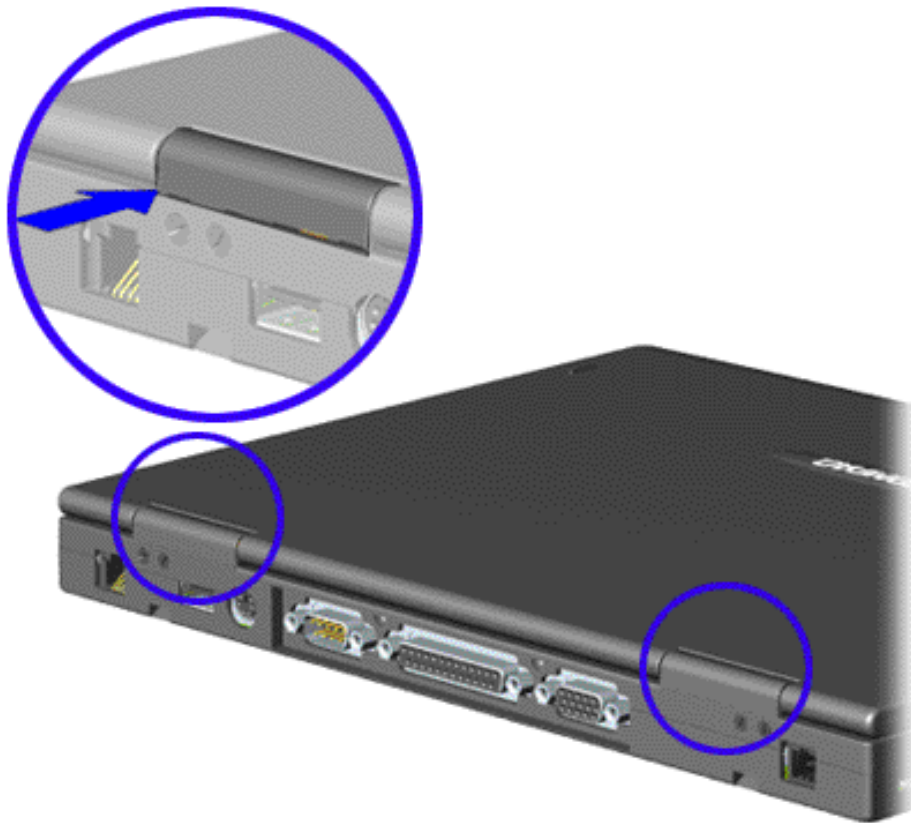
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Removing the 12.1 or 13.3 inch Display Panel Assembly

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To remove the 13.3" display panel assembly, refer to the section for [Removing the 13.3 inch Display Panel Assembly](#)

To remove the 12.1" display panel assembly, complete the following steps:

1. [Prepare the computer for disassembly](#).
2. [Remove the keyboard](#).
3. Close the display panel assembly to access the hinge covers from the rear of the unit, using tweezers, gently lift from the bottom edge of the hinge covers. Lift the hinge covers off the unit.

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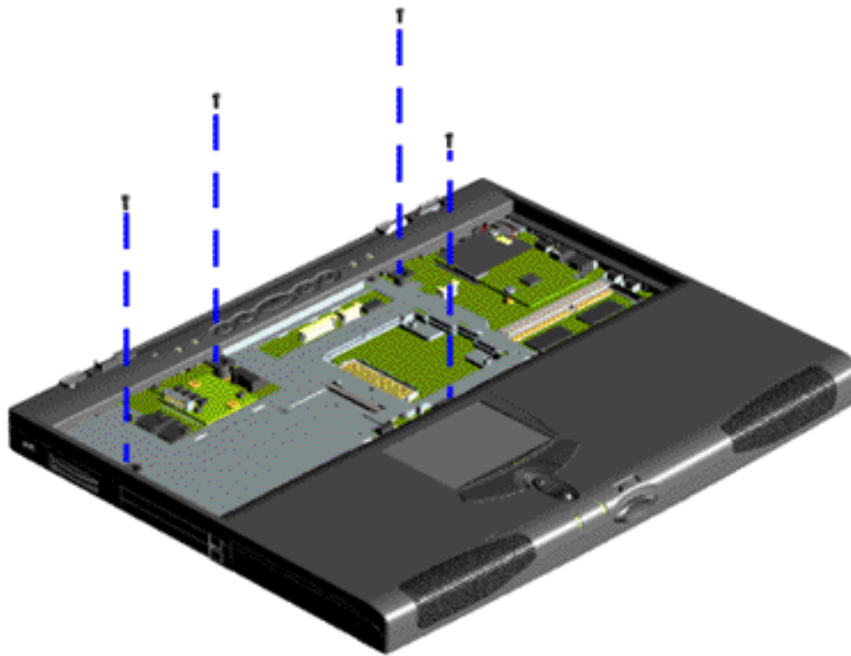
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Upper CPU Cover with Palmrest and TouchPad
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To remove the Upper CPU Cover with Palmrest and TouchPad, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Remove the keyboard.](#)
3. [Remove the Heatspreader.](#)
4. [Remove the display assembly with flex cables attached.](#)
5. Remove four screws located at the top of the Upper CPU Cover with Palmrest and TouchPad.
6. Remove a fifth screw located just to the top right of the fan.

(Not shown).

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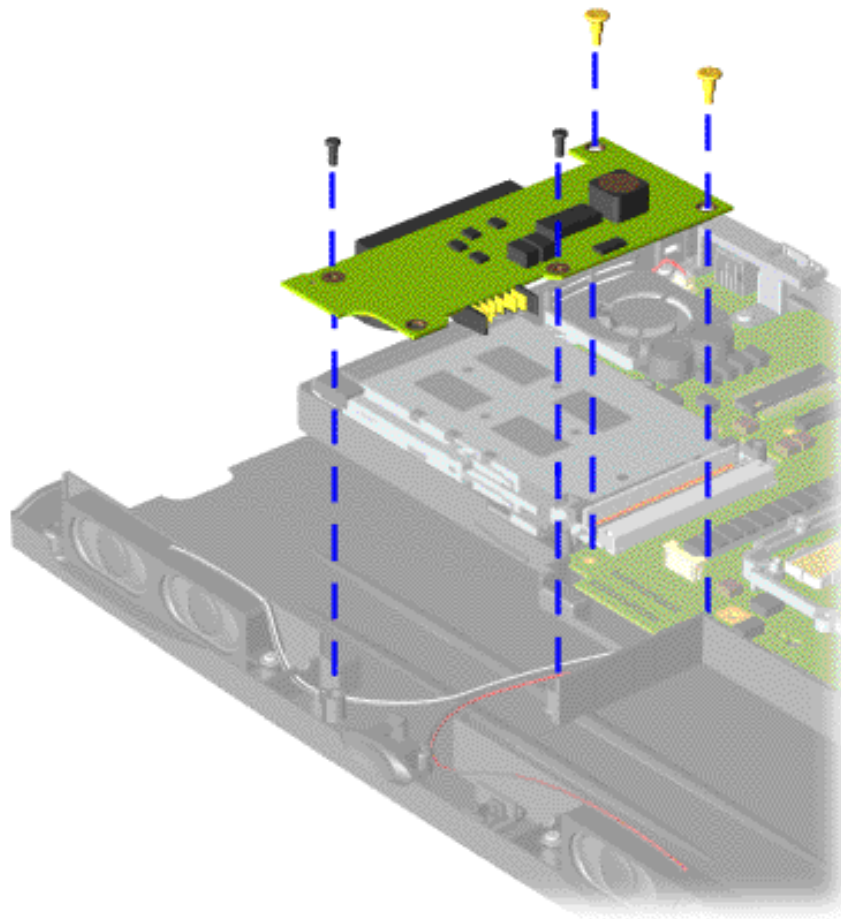
[Display Panel Assembly](#)

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To remove the hard drive/battery charger board, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Remove the keyboard.](#)
3. [Remove the heatspreader.](#)
4. [Remove the display assembly with flex cables attached.](#)
5. [Remove the Upper CPU Cover with Palmrest/TouchPad/Fan.](#)
6. Remove four screws from the hard drive/battery charger board located

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front center
portion of the
chassis.

To replace the hard
drive/battery charger
board reverse the
previous procedures.

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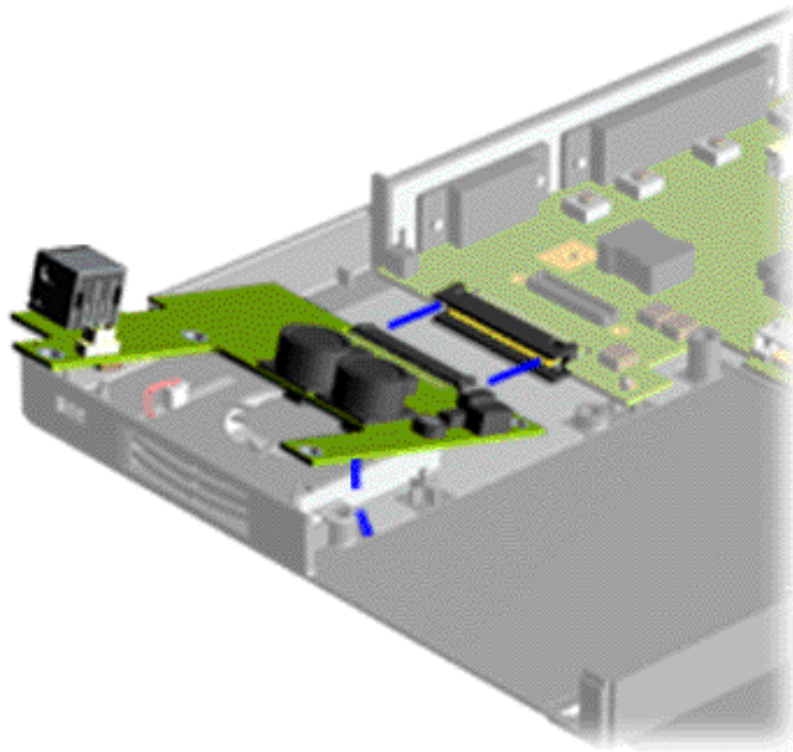
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To remove the converter board, complete the following steps:

1. [Prepare the computer for disassembly](#).
2. [Remove the keyboard](#).
3. [Remove the display panel assembly](#).
4. [Remove the Upper CPU cover with Palmrest Cover and TouchPad](#).
5. [Remove the hard drive](#).
6. [Remove the modem](#).
7. Pull and lift the converter board from the system.

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board connector
and remove
from the
chassis.

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converter board,
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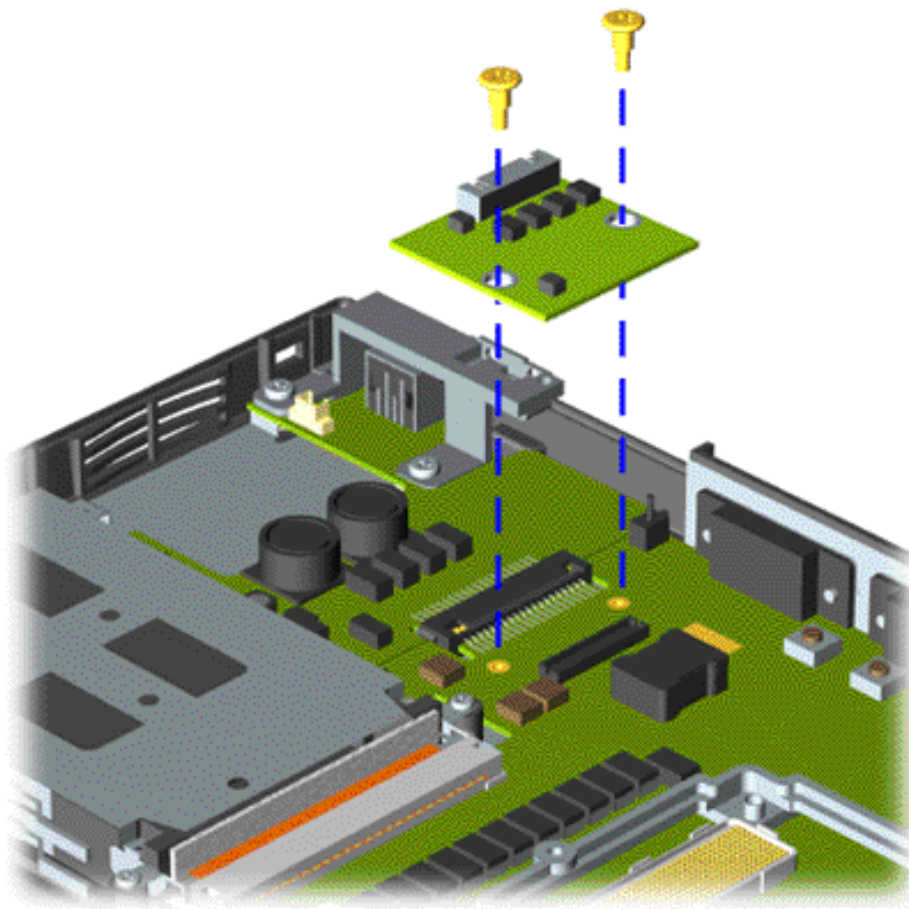
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To remove the LVDS Interface Board, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Remove the keyboard.](#)
3. [Remove the heatspreader.](#)
4. Remove the two screws from the LVDS Interface Board and lift from the chassis.

To replace the LVDS Interface Board reverse the previous procedures.

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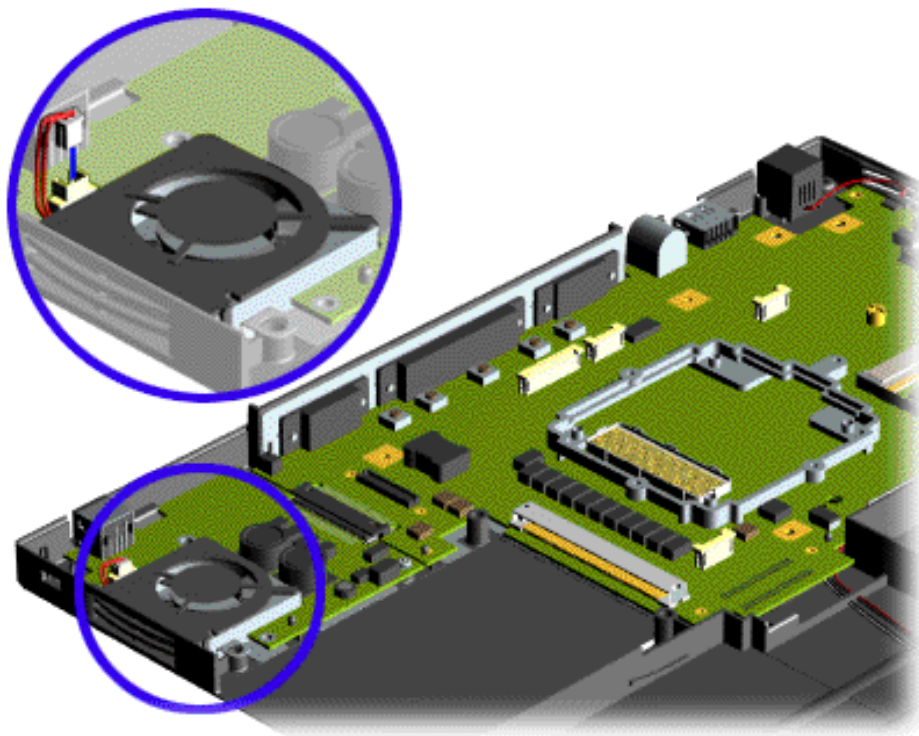
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To remove the fan assembly, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Remove the keyboard.](#)
3. [Remove the hard drive.](#)
4. [Remove the display panel assembly.](#)
5. [Remove the Upper CPU cover with Palmrest Cover and TouchPad.](#)
6. [Remove the modem.](#)
7. [Remove the system board.](#)

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8. Disconnect the fan cable and lift the fan assembly from the slot on the system board.

To replace the fan assembly, reverse the previous procedures.

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To remove the system board, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Remove the keyboard.](#)
3. [Remove the display panel assembly.](#)
4. [Remove the heatspreader.](#)
5. [Remove the processor.](#)

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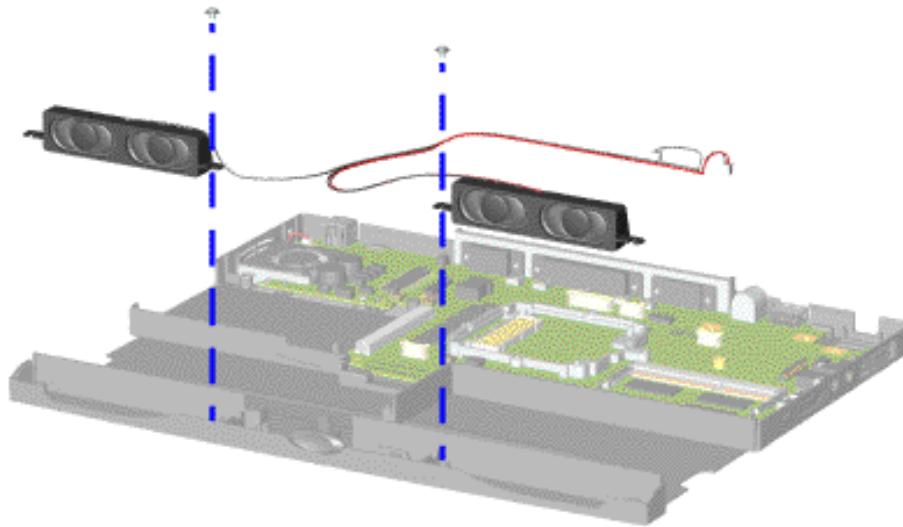
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Removing the Speaker Assembly



To remove the speaker assembly, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Remove the keyboard.](#)
3. [Remove the display panel assembly.](#)
4. [Remove the Upper CPU cover with Palmrest Cover and TouchPad.](#)
5. Remove two screws from the speaker assembly, disconnect the speaker cables from the system board, and lift out of the unit.

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To replace the speaker assembly, reverse the previous procedures.

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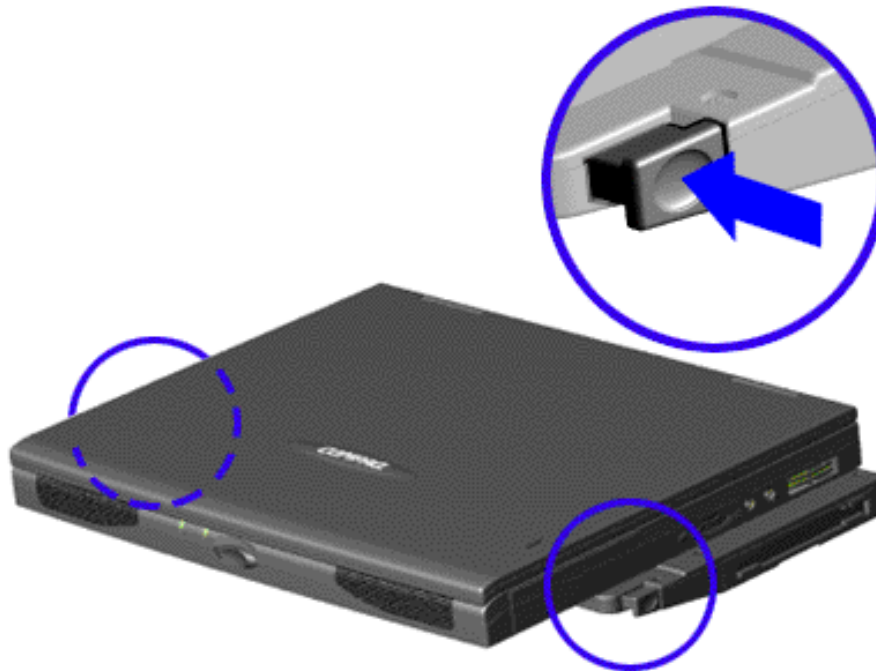
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1. [Prepare the computer for disassembly](#).
2. Push the levers located on each side of the wedge and lift the wedge off the connector on the bottom of the unit.

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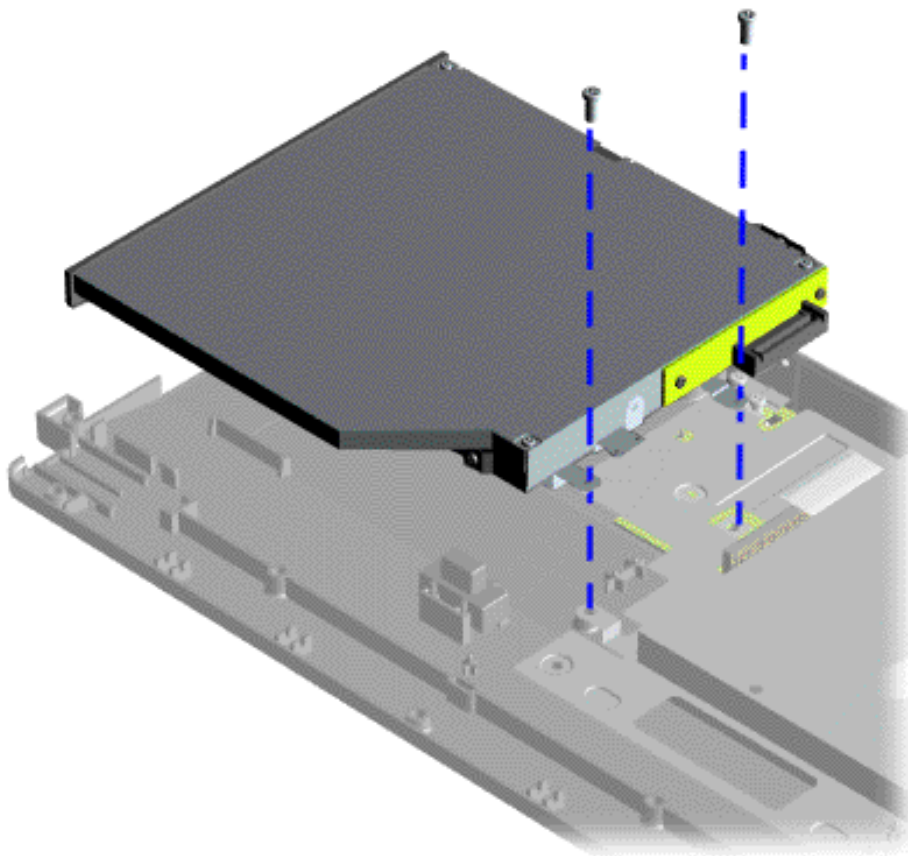
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To remove the CD-ROM or the DVD Drive with shield attached, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Disassemble the wedge.](#)
3. Remove two screws at the rear of the CD-ROM or DVD Drive and lift the CD-ROM or DVD Drive with shield attached off the connector wedge.

To replace the CD-ROM or DVD Drive with shield attached, reverse the previous procedures.

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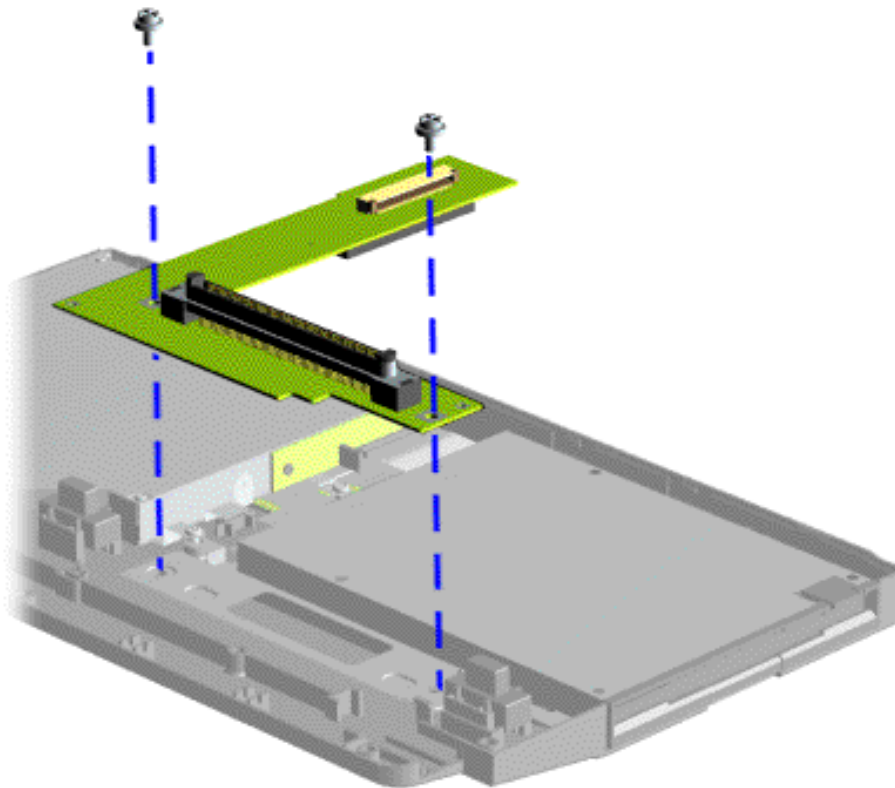
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To remove the System to Wedge Interface board , complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Disassemble the wedge.](#)
3. Remove two standoffs from the System to Wedge Interface board and lift the board from the wedge.

To replace the System to Wedge Interface board , reverse the previous procedures.

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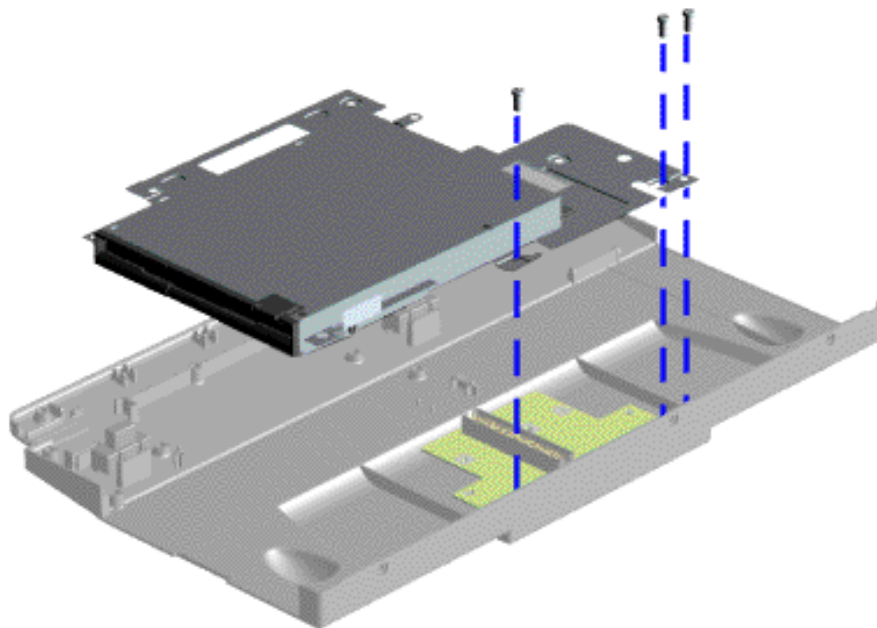
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To remove the Diskette Drive or the LS-120 Drive with shield attached, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Disassemble the wedge.](#)
3. Remove three screws which secure the Diskette Drive or LS-120 Drive with shield attached to the base enclosure of the wedge.
4. Lift the Diskette Drive or the LS-120 Drive with shield attached from the unit.

To replace the Diskette Drive or LS-120 Drive with shield

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attached, reverse the
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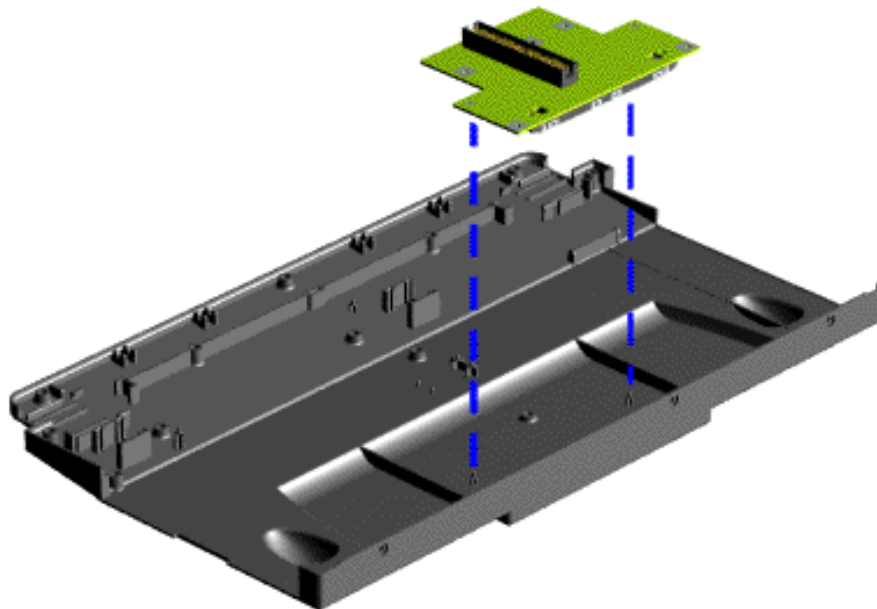
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To remove the Wedge to the Port Replicator Interface board, complete the following steps:

1. [Prepare the computer for disassembly.](#)
2. [Disassemble the wedge.](#)
3. [Remove the CD ROM Drive or the DVD Drive with shield attached from the unit.](#)
4. [Remove the Diskette Drive or the LS-120 Drive with shield attached from the unit.](#)
5. Remove two standoffs from the Wedge to the Port

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Replicator
Interface board
and lift the
board from the
unit.

To replace the Wedge
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Computer Specifications

	U.S.	Metric
12.1" TFT Dimensions		
Height	1.1"	234mm
Depth	11.6"	294.7mm
Width	9.2"	29mm
13.3" TFT Dimensions		
Height	1.2"	234mm
Depth	11.6"	294.7mm
Width	9.2"	30.5mm
Weight		
12.1" TFT	4.5 lbs	
13.3" TFT	5.0 lbs	
Wedge	1.8 lbs	
Stand-Alone (Battery Pack) Power Requirements		
	NiMH	Li-ion
Nominal Operating	W @ 9.6 V	W @ 14.4 V
Maximum Average	W @ 9.6 V	W @ 14.4 V
Peak Operating	W @ 9.6 V	W @ 14.4 V

AC Power Requirements		
Operating Voltage	100-240 V	
Operating Current	0.8/0.4 A RMS	
Operating Frequency	47-63 Hz	
Maximum Transient	Meets IEC 801-4 and IEC801-5 1kV for 50 ns	
Temperature		
Operating	50° to 95 °F	10° to 35 °C
Nonoperating	-4° to 140 °F	-20° to 60 °C
Relative Humidity (noncondensing)		
Operating	10 to 90%	35°C to 90%
Nonoperating (tw = 38.7°C max)	5 to 95%	60°C to 95%
Altitude		
Operating	0 to 10,000 ft	0 to 3.15 km
Nonoperating	0 to 30,000 ft	0 to 9.14 km
Shock		
Operating	10 G, 11 ms, half sine	
Non operating	240 G, 2 ms, half sine	
Vibration		
Operating	0.5 G	
Nonoperating	1.5 G	
<p>NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. Compaq Presario 1900 Series Portable Computers operate well within this range of temperatures.</p>		

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System Interrupts

IRQ	Device(s)
0	System timer
1	Standard 101/102-Key or Microsoft Natural Keyboard
2	Programmable interrupt controller
3	Ambit Modem
4	Communications Port (COM1)
5	NMA2 Audio Controller
6	Standard Floppy Disk Controller
7	Printer Port (LPT1)
8	System CMOS/real time clock
9	Intel 82371AB/EB PCI to USB Universal Host Controller
10	PCI Fast Ethernet DEC 21143 Based Adapter

11	Texas Instruments PCI-1225 CardBus Controller NeoMagic NMG5 Graphics Controller
12	PS/2 Compatible Mouse Port
13	Numeric data processor
14	Intel 82371AB/EB PCI Bus Master IDE Controller
15	Intel 82371AB/EB PCI Bus Master IDE Controller

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Maintenance & Service Guide

Presario 1900 Series

Models: 1905, 1906, 1910, 1915, 1919, 1920, 1922, and 1925

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System DMA

DMA	Device(s)
0	NMA2 Audio Controller
1	NMA2 Audio Controller
2	Floppy Disk Controller
3	Parallel Port (ECP Mode)
5	Free
6	Free
7	Free

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System I/O Address

I/O Address	System Function (Shipping Configuration)
0000 – 000F	Direct Memory Access Controller
0020 – 0021	Programmable interrupt controller
0040 – 0043	System timer
0060 – 0060	Standard 101/102-Key or Microsoft Natural Keyboard
0061 – 0061	System speaker
0064 – 0064	Standard 101/102-Key or Microsoft Natural Keyboard
0070 – 0071	System CMOS/real time clock
0081 – 008F	Direct memory access controller
00A0 – 00A1	Programmable interrupt controller
00C0 – 00DF	Direct memory access controller
00E0 – 00E1	Motherboard Resources
00F0 – 00FF	Numeric Data Processor
0170 – 0177	Intel 82371AB/EB PCI Bus Master IDE Controller
01F0 – 01F7	Intel 82371AB/EB PCI Bus Master IDE Controller
0201 – 0201	Gameport Joystick
0274 – 0277	IO read data port for ISA Plug and Play enumerator
0376 – 0376	Intel 82371AB/EB PCI Bus Master IDE Controller
0378 – 037F	Printer Port (LPT1)
03B0 – 03BB	NeoMagic NMG5 Graphics Controller
03C0 – 03DF	NeoMagic NMG5 Graphics Controller
03F0 – 03F5	Standard Floppy Disk Controller

03F6 – 03F6	Intel 82371AB/EB PCI Bus Master IDE Controller
03F7 – 03F7	Standard Floppy Disk Controller
03F8 – 03FF	Communications Port (COM1)
03D0 – 04D1	Motherboard resources
0CF8 – 0CFF	PCI bus
1000 – 103F	Motherboard resources
1040 – 104F	Motherboard resources
1050 – 105F	Intel 82371AB/EB PCI Bus Master IDE Controller
1060 – 107F	Intel 82371AB/EB PCI to USB Universal Host Controller
1080 – 10FF	PCI Fast Ethernet DEC 21143 Based Adapter
1400 – 14FF	PCI Communication Device
1800 – 1807	PCI Communication Device

[System Memory Catalog](#)

Memory Address	Device
00000000 – 0009FFFF	System board extension for PnP BIOS
000A0000 – 000AFFFF	NeoMagic NMG5 Graphics Controller
000B0000 – 000BFFFF	NeoMagic NMG5 Graphics Controller
000C0000 – 000CBFFF	NeoMagic NMG5 Graphics Controller
000E4000 – 000FFFFFF	System board extension for PnP BIOS
00100000 – 03FFFFFF	System board extension for PnP BIOS
04000000 – 04000FFF	Texas Instruments PCI-1225 CardBus Controller
04001000 – 04001FFF	Texas Instruments PCI-1225 CardBus Controller
F4000000 – F40000FF	PCI Communication Device
F4000400 – F40007FF	PCI Fast Ethernet DEC 21143 Based Adapter
F4100000 – F41FFFFFF	NeoMagic NMG5 Graphics Controller
F4100000 – F47FFFFFF	Intel 82443BX Pentium(r) II Processor to AGP controller
F4200000 – F42FFFFFF	PCI Multimedia Audio Device
F4400000 – F47FFFFFF	NeoMagic NMG5 Graphics Controller

Hard Drives			
Models	DBCA-20648	DBCA-206480	DCXA-21000
Capacity Per Drive	4.8-GB	6.4-GB	10.0-GB
Drive Type	U-DMA/33	U-DMA/33	U-DMA/33
Logical Configuration			
Cylinders	10068	13424	16383
Heads	3	4	6
Sectors per Track	63	63	63
Bytes per Sector	512	512	512
Seek Times			
(Typical, including settling in ms)	Read 13ms Write 14ms	Read 13ms Write 14ms	Read 12ms Write 14ms
Single Track	Read 2.5ms Write 3.0ms	Read 2.5ms Write 3.0ms	Read 2.5ms Write 3.0ms
Full Stroke	Read 23ms Write 24ms	Read 23ms Write 24ms	Read 23ms Write 24ms
Transfer Rate At interface	16.6MB/s	16.6MB/s	16.6MB/s
Hard Drives, continued			
Models	MHH20 48AT	MHH20 64AT	MHG2 102AT
Capacity Per Drive	4.8-GB	6.4-GB	10.0-GB
Drive Type	U-DMA/33	U-DMA/33	U-DMA/33
Logical Configuration			
Cylinders	Not Available	13424	16383
Heads	Not Available	4	6
Sectors per Track	Not Available	63	63
Bytes per Sector	Not Available	512	512
Seek Times			
(Typical, including settling in ms)	Read N/A Write N/A	Read 13ms Write 14ms	Read 13ms Write N/A
Single Track	Read N/A Write N/A	Read 2.5ms Write 3.0ms	Read 1.5ms Write N/A
Full Stroke	Read N/A Write N/A	Read 23ms Write 24ms	Read 23ms Write N/A
Transfer Rate At interface	15.8MB/s	16.6MB/s	15.8MB/s
Hard Drives, continued			
Models	DK238 A-43	DK228 A-65	DK239 A-65
Capacity Per Drive	4.3-GB	6.4-GB (12.7mm)	6.4-GB
Drive Type			U-DMA/33
Logical Configuration			
Cylinders	Not Available	13424	16383
Heads	Not Available	4	6
Sectors per Track	Not Available	63	63
Bytes per Sector	Not Available	512	512

Seek Times			
(Typical, including settling in ms)	Read N/A Write N/A	Read Write	Read Write N/A
Single Track	Read N/A Write N/A		Read Write N/A
Full Stroke	Read N/A Write N/A		Read Write N/A
Transfer Rate At interface			

CD ROM or DVD Drive

	CD ROM Drive (24X)		DVD Drive (4X)	
Models	CRN-8142B	CDR-U242Z	DRD-424	SD-C2202
Dimensions				
Width	128mm	Not Available	128mm	128mm
Height	12.7mm	Not Available	12.7mm	12.7mm
Depth	129mm	Not Available	129mm	129mm
Weight	300g	Not Available	280g	270g
Rotational Speed	5000RPM	Not Available	2300 RPM	2300RPM
Typical Transfer Rate	16.67MB/s	Not Available	16.6MB/s(PIO)	16.7MB/s(PIO)
Sustained Data Transfer Rate	3600KB/s	Not Available	5400KB/s	5400KB/s
Access Time				
Average Random Access Time	110ms	Not Available	150ms	140ms
Spin Up Time	5s	Not Available	< 15s*1	3.8s
Data Buffer Capacity	1Mbit	Not Available	128KB	128KB

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Models and Features

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[Left Side and Top Wedge Components](#)
[Right Side Wedge Components](#)
[Rear Connectors](#)

Compaq Discovery 1900 Series Portable Computer Models

	Model 1922	Model 1925
Display	12. 1" TFT	13. 3" TFT
Processor	Intel Celeron/300-MHz w/512K Cache	Intel PentiumII/333-MHz w/256K Cache Intel Celeron/333-MHz w/128K Cache w/DC Intel Celeron/400(128) w/DC
Hard Drive	4.8-GB	4.8-GB or 6.4-GB
Modem	56.0 Kbps PCI Data/Fax	56.0 Kbps PCI Data/Fax or International
CD Drive	24X CD-ROM	4X DVD

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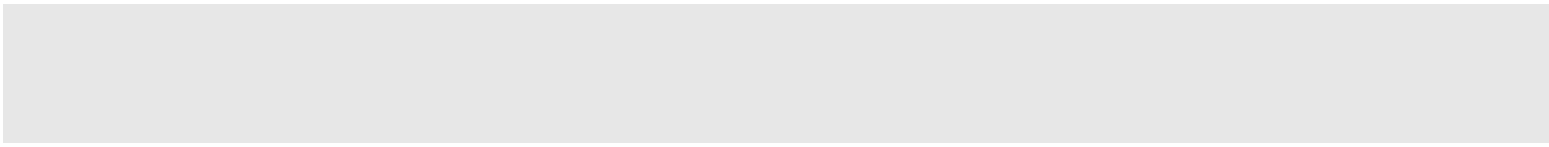
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4. How we use your information

HP uses your personal information to provide you with services and to help us better understand your needs and interests. Specifically, we use your information to help you complete a transaction or order, to communicate with you, to provide service and support, to update you on services and benefits, to personalize promotional offers and to personalize some HP websites. Occasionally we may also use your information to contact you for market research regarding HP products or services. We will give you the opportunity to choose your privacy preferences regarding such communications (see section 7, "Your privacy preferences and opting out"). Credit card information is used only for payment processing and fraud prevention. Sensitive personal information is collected only to facilitate our financial service providers' credit decisions and will be shared with them only with your permission. Credit card information and sensitive personal data are not used for any other purpose by our financial services providers or HP and will not be kept longer than necessary for providing the services, unless you ask us to retain your credit card information for future purchases.

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7. Your privacy preferences and opting out

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- Return to the Web page(s) where you originally registered your preferences and follow the opt-out instructions
- Write to the [HP Privacy Office](#) - be sure to provide your name, e-mail and postal address, and relevant information about your HP subscriptions and registrations

8. Your information and third-party companies

Certain HP services are linked with those from unrelated third-party companies, some which offer you the option to share with both HP and the third party personal data you provide. Examples include the ability to register software products from multiple vendors from a single HP Web page, to request communications from HP marketing or solution partners, or to enable order completion through a reseller. We will not share your personal information with those third-party companies unless you make that choice.

9. Access to and accuracy of your information

HP strives to keep your personal information accurate. We have implemented technology, management processes and policies to maintain customer data accuracy. We will provide you with access to your information, including making reasonable effort to provide you with online access and the opportunity to change your information. To protect your privacy and security, we will also take reasonable steps to verify your identity, such as a password and user ID, before granting access to your data. Certain areas of HP's websites may limit access to specific individuals through the use of passwords and other personal identifiers.

The most effective way to view and change your personal information is to return to the Web page where you originally submitted your data and follow the instructions on that Web page or use HP Passport.

10. Keeping your information secure

HP is committed to protecting the information you provide us. To prevent unauthorized access or disclosure, to maintain data accuracy, and to ensure the appropriate use of the information, HP has in place appropriate physical and managerial procedures to safeguard the information we collect.

We use Secure Sockets Layer (SSL) encryption when collecting or transferring sensitive data such as credit card information. SSL encryption is designed to make the information unreadable by anyone but us. This security measure is working when you see either the symbol of an unbroken key or closed lock (depending on your browser) on the bottom of your browser window.

Credit card numbers are used only for processing payment and are not used for other purposes. As part of real-time payment processing, HP subscribes to a fraud management service. This service gives you and HP an extra level of security to guard against credit card fraud to protect your financial data.

11. Changes to this Statement

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12. Contacting us

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Rev. December 2003

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²An IP address is an identifier for a computer or device on a Transmission Control Protocol/Internet Protocol (TCP/IP) network, such as the World Wide Web. Networks use the TCP/IP protocol to route information based on the IP address of the destination. In other words, an IP address is a number that is automatically assigned to your computer whenever you are surfing the Web, allowing Web servers to locate and identify your computer. Computers require IP addresses in order for users to communicate on the Internet, browse and shop.

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