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See the <u>Notice</u> for copyright and trademark information, and see the <u>Preface</u> for symbol conventions, Technician Notes and Serial Number locations on the unit.

<u>Download</u> a ZIP file of the complete MSG onto local hard drive.

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Maintenance and Service Guide

Compaq.com Compaq Presario Maintenance and Service Guide - 305

Compaq Presario 305 Model Portable Computers

First Edition (July 1999) Compaq Computer Corporation

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Preface

This *Maintenance and Service Guide* is a troubleshooting reference that can be used when servicing the Compaq Presario 305 Model Portable Computers. Compaq Computer Corporation reserves the right to make changes to the Compaq Presario 305 Model 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.



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



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.



WARNING: The computer is designed to be electrically grounded. To ensure proper operation, plug the AC power cord into a properly grounded electrical outlet only.



CAUTION: To properly ventilate the system, you must provide at least 3 inches (7.62 cm) of clearance on the left and right sides of the computer.

Serial Number

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

Locating Additional Information

The following documentation is available to support this product:

- Compaq Presario 305 Model Portable Computer documentation set
- Introducing Windows 98 Guide
- Compaq Service Training Guides
- Compaq Service Advisories and Bulletins
- Compaq QuickFind
- Compaq Service Quick Reference Guide
- Compaq Internet site at http://Compaq.com

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Power

Management

for Windows

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The Compag Presario 305 Computer provides industryleading features in a uniquely designed ultraportable. The ultralight 3.1 to 3.3 pound (1.4 to 1.5 kg) notebook (depending on configuration) allows users high mobility, provides a full set of system ports, and when paired with the Mobile Expansion Unit (MEU), can transform into an All-In-

One portable with CD-ROM or DVD and floppy functionality.

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Preliminary Steps

Clearing the Power-On

Password

Power-On Self Test (POST)

Compaq **Diagnostics**

Diagnostic Error Codes

Troubleshooting

Without **Diagnostics**

Solving Minor **Problems**

Contacting Compaq Support

This section covers troubleshooting information for the Compag Presario 305 Model Portable Computer. 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.



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

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Illustrated Parts Catalog

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Components
System Unit

External Cables

Miscellaneous
Plastics Kit

Screw Kit

Miscellaneous

Parts

Documentationand Software

This section provides illustrated parts and a reference for spare parts numbers for Compaq Presario 305 Series Personal Computers.

When requesting information or ordering spare parts, the computer <u>serial number</u> should be provided to Compaq.

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Removal and Replacement Procedures

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

Removal Sequence

Serial Number Location

Preparing for **Disassembly**

Electrostatic Discharge

Service

Considerations

Cables and Connectors

Multi-media Expansion Unit

Report the computer serial number, located on the bottom of the unit, when requesting information or ordering spare parts from Compag.



| Compaq.com Compaq Presario |
|----------------------------------------------------|
| Battery Pack |
| Hard Drive |
| Modem Card |
| RTC Battery |
| <u>Keyboard</u> |
| Memory Board |
| Switch Cover |
| |
| Display Panel |
| Display Panel Deck |
| |
| <u>Deck</u> |
| Deck Voltage |
| Deck Voltage Converter |
| Deck Voltage Converter Board |
| Deck Voltage Converter Board Modem |
| Deck Voltage Converter Board Modem Connector |
| Deck Voltage Converter Board Modem Connector Board |

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System Board

United States June 27, 2004

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Specifications

This section covers the following specifications of Compaq Presario 305 Model Portable Computers:

Physical and environmental System Interrupts System DMA

Battery pack

| | U.S. | Metric |
|--------------------------|------------------------------|-----------------------------|
| Dimensions | | |
| Height Depth Width | 0.89 in 8.5 in 10.4 in | 22.6 mm 216 mm 264 mm |
| Weight AC Adapter | 3.07 - 3.26 lb | 1.39 - 1.48 kg |

| Operating Voltage Operating Current Operating Frequency Range Maximum Transient | 1.1 A 47-63 | 90 to 260 VAC RMS 1.1 A RMS 47-63 Hz AC 4/50 kV | | |
|--------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|--|--|
| Temperature | | | | |
| Operating Nonoperating | 41° to 95 °F -22° to 140 °F | 5° to 35 °C -30° to 60 °C | | |
| Relative Humidity (noncondensing) | | | | |
| Operating Nonoperating (tw = 38.7°C max) | 10 to 90% 5 to 90% 101.6 °F | 10 to 90% 5 to 90% 38.7 °C | | |
| Altitude (nonpressurized environment |) | | | |
| Operating Nonoperating | 0 to 10,000 ft 0 to 30,000 ft | · II | | |
| Shock | | | | |
| Operating Non operating | - I | -10 G, 11 ms, half sine 60 G, 2 ms, half sine | | |
| Vibration | | | | |
| Operating | 0.25 G, 50 to 500 I Min sweep rate | 0.25 G, 50 to 500 Hz sine, 1/2 Oct/ Min sweep rate | | |
| Nonoperating | 1 G, 50 to 500 Hz s sweep rate | 1 G, 50 to 500 Hz sine, 1/2 Oct/Min sweep rate | | |
| NOTE: Applicable product safety standard The computer operates well within this ran | | plastic surfaces. | | |

| System Interrupts | | | |
|------------------------------|-------------------|--|--|
| Hardware IRQ System Function | | | |
| IRQ1 | Timer Interrupt | | |
| IRQ2 | Cascaded | | |
| IRQ3 | PCMCIA | | |
| IRQ4 | Modem (COM1) | | |
| IRQ5 | Audio (default) * | | |
| IRQ6 | Diskette Drive | | |
| IRQ7 | Parallel | | |

| IRQ8 | RTC |
|-------|-----------------------------------------------|
| IRQ9 | Infrared |
| IRQ10 | PCMCIA |
| IRQ12 | Internal Point Stick or External Mouse |
| IRQ13 | Coprocessor (Not available to any peripheral) |
| IRQ14 | IDE Interface (Hard Disk) |

NOTES:

PCMCIA cards may assert IRQ3,IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15. Either the infrared or the serial port may assert IRQ3 or IRQ4.

*Default configuration; audio possible configurations are: IRQ5, IRQ7, IRQ9, IRQ10 or none.

| System DMA | | | | |
|---------------------------------------------------------------|----------------------------------------------------------------|--|--|--|
| Hardware System Function DMA | | | | |
| 0 | Available for audio | | | |
| 1 | Entertainment Audio (Default; Alternate = DMAO, DMA3, None) | | | |
| 2 Diskette Drive | | | | |
| 3 ECP Parallel Port LPT1 (Default; Alternate = DMA0, None) | | | | |
| 4 | DMA Controller Cascading (Not available) | | | |
| 5 | Available for PC Card | | | |
| 6 | Not assigned | | | |
| 7 | Not assigned | | | |
| NOTE: PC Card controller can use DMA1, 2 or 5. | | | | |

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United States

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Connector Pin Assignments

This appendix provides connector pin assignment tables for Compaq Presario 305 Model 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 | | | | |
|----------------------------------------|------------|-------|------------------------|--|
| (3000000000000000000000000000000000000 | | | | |
| 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 | | | | |

| Connector Pin Signal Carrier Detect Receive Data Transmit Data Tourninal Ready Signal | | | |
|----------------------------------------------------------------------------------------|--|--|--|
| Detect Receive 4 Data Transmit 6 Data 7 Data 8 Terminal 9 Ready | | | |
| Ground Data Set Ready Ready to Send Clear to Send Ring Indicator | | | |
| Keyboard/Mouse | | | |
| Connector Pin Signal | | | |
| | | | |

| 6 | 1 2 3 4 | Data 1 Clock 2 Ground +5 V |
|---|------------------|-------------------------------------|
| | 4 5 6 | +5 V Clock 1 Data 2 |

| External VGA Monitor | | | |
|----------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Connector | Pin | Signal | |
| (5)4321) (9)876) (5)43211) | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | Red Analog Green Analog Blue Analog Not connected Ground Analog Ground Analog Ground Analog Ground Analog Ground Analog Not connected Ground Monitor Detect DDC2B Data Horizontal Sync Vertical Sync DDC2B Clock | |

| Modem | | | |
|-----------|----------------------------|-----------------------------------------------------|--|
| Connector | Pin | Signal | |
| 1234 | 1 2 3 4 5 6 | Unused Unused Tip Ring Unused Unused | |

| Universal Serial Bus | | | |
|----------------------|-----|-----------------------------------|--|
| Connector | Pin | Signal | |
| 1 2 3 4 | 3 | +5V Data - Data + Ground | |

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Battery Pack Operating Time

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

- Increase battery pack operating time
- Conditioning a battery pack
- Disposal 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



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. Allow the battery to drain until the computer reaches hibernation and turns itself off. **Do not plug in the AC adapter during this process.** Also, the system should not be allowed to sleep. To prevent sleep, you may either use the computer while the battery is draining, or you may disable power management.
- 2. Plug in the AC adapter and allow the battery to charge until the LED light on the display stops blinking. Your battery gauge may read 100 percent for a period of time before LED light on the display stops blinking. Do not unplug the AC adapter until the arrow disappears.

Your battery is now re-conditioned, and you may begin using the computer normally.

The battery pack charge time may vary greatly from 2 hours to 5 hours or more, depending on many factors (including whether it is charged on-line or off-line).

Disposal 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 Presario 305 Model Portable Computer | | |
|---------------------------------------------|-------------------------------------------------|--|
| Display | 11.3-inch Color TFT Display | |
| Processor | 333 MHz Celeron II (with 128k integrated cache) | |
| Hard Drive | 4.3 GB | |
| Total System Memory | 64 MB SDRAM 128 MB SDRAM Maximum | |
| CD Drive | 24x | |
| Modem | 56 Kbps, V.90 PCI | |
| Battery | High Capacity Li Ion | |
| Video Controller | 3D, ATI LT Pro 4 MB SGRAM | |

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Upper Unit Components





| 1 | Display Release Latch | |
|----|-----------------------------------|--|
| 2 | Display | |
| 3 | Hard Drive Light | |
| 4 | Diskette Drive Light | |
| 5 | Scroll Lock Light | |
| 6 | Caps Lock Light | |
| 7 | Num Lock Light | |
| 8 | Standby Button | |
| 9 | Instant Internet Access Button | |
| 10 | Instant Search Access Button | |
| 11 | E-Commerce Button | |
| 12 | Instant E-Mail Button | |

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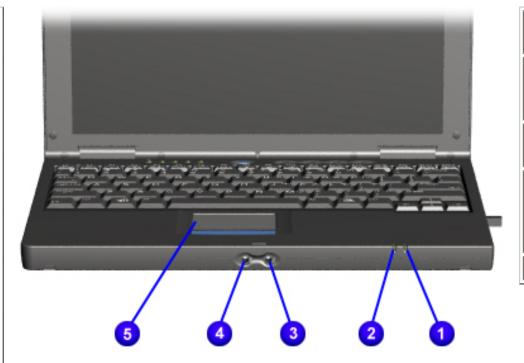
<u>Unit</u>

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- 1 Battery Light
- 2 Power/ Suspend Light
- 3 Microphone Jack
- 4 Stereo Speaker/ Headphone Jack
- 5 Touch Pad

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Left Side Components

| Mod | <u>eis</u> | and | | |
|----------|------------|-----|--|--|
| Features | | | | |

Upper Unit Components

Front

Components

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<u>Bottom</u>

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Multi-media

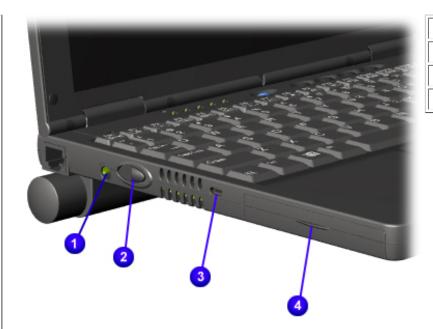
Expansion

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| 1 | Power | Connector |
|---|--------|-----------|
| | PUVVEI | COLLECTOR |

- 2 Power Button
- 3 Security Cable Slot
- 4 Hard Drive Bay

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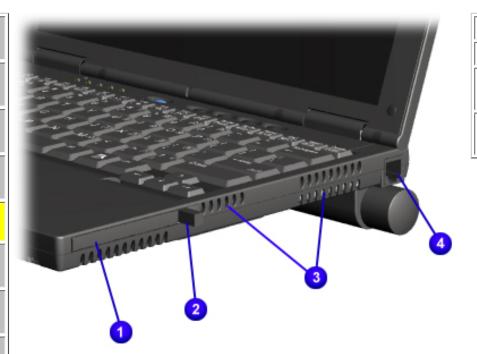
Unit

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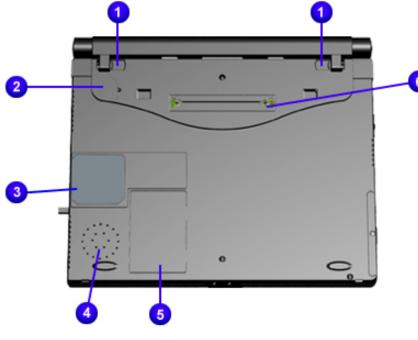
- 1 PC Card Slot
- 2 PC Card Eject Lever
- 3 Air Intake/Exhaust Vents
- 4 Modem Connector (RJ-11 jack)

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Bottom of Unit





- 1 Battery Latches
- 2 Real-time Clock Battery
- 3 Bottom of fan (Fan removable from inside only)
- 4 Speaker
- 5 Modem Compartment
- 6 220-pin Docking Connector

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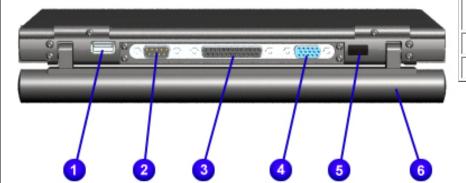
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- 1 USB Connector
- 2 Serial Connector
- 3 Parallel Connector
- 4 External Monitor Connector
- 5 Infrared Port
- 6 Battery Pack

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Multi-media Expansion Base

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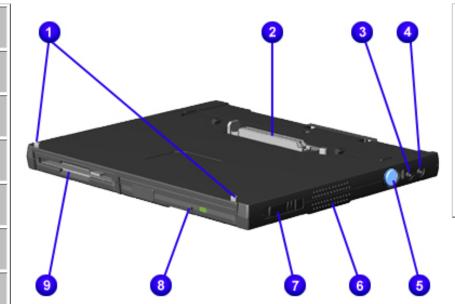
<u>Connectors</u>

Multi-media Expansion Unit

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Management for Windows



- 1 Docking Alignment Tabs
- 2 Docking Connector
- 3 Audio output
- 4 Audio input
- **5** Docking Release Button
- 6 Speaker
- **7** Multibay Eject Lever
- 8 CD or DVD
- **9** Diskette Drive

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Power Management for Windows 98

The following power management features are available for conserving AC power and extending battery operating time:

- Power Management Settings
- Sleep
- Hibernation
- Battery operating time
- Rebooting After a Lockup
- Servicing Your Computer Full Off Mode

Power Management Settings

Depending on your patterns of computer use, you can set different levels of power management. These different power management levels can be activated based on the amount of time passed since the last system activity. System activity examples include keyboard or mouse movement, CD or DVD playback (while under program control that monitors Sleep), and modem use.

Each of the following system components can be made to go to sleep after periods of inactivity:

- system (goes into Sleep (Standby) mode)
- screen (times out and goes blank)
- hard drive (spins down)

You can select different conditions or power schemes through Power Management. The optional settings are **Home/Office Desk**, **Portable/Laptop**, and **Always On**. From the default settings, you can change the delay time settings. Note: the setting for hard drive must be less than or equal to the setting for System.



There are five categories of power management settings under the Control Panel. The default setting for each feature is listed below in the tables.

Power Management Properties

Power Schemes: Plugged in Running on Batteries

Always on System Standby: Never 15 minutes

Turn OFF Monitor After 15 minutes After 10 minutes Always on System Standby: After 15 minutes After 10 minutes

ALARMS:

Low Battery Alarm: 10% Critical Battery Alarm: 0%

Alarm Actions: X Display Message Notification

Text Action No Action

POWER METER: Default ADVANCED: Default

Display Properties

Monitor: Laptop Display (Maximum resolution according to unit display size)

Sleep

You can select Sleep mode instead of turning off the computer when you have finished using it. This allows the computer to wake up faster than turning it completely off and saves power over the active (On) mode. Compaq Presario Notebook computers have two levels of sleep, Hibernation and Sleep.

Hibernation - by pushing the power button once your computer will perform a save to disk followed by a shut down of the computer into Off mode.

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



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 helps conserve battery life and protects your data. Hibernation can be a routine power saving event, or can be the result of a low battery condition. As it enters Hibernation your computer will display a progress screen, as it automatically saves the machine state before it shuts down and turns itself off. Your computer will automatically go into Hibernation, when the battery has little power left, or when the system (operating on battery power) has been in Sleep mode for more than an hour. You can also manually initiate Hibernation by pressing the power button once while the system is active. To restore the computer's previous state, simply press the power button once again. While waking up, the computer will display a progress screen.

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

| Mode | To Initiate | To End | Indicators |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------|
| Sleep | Manual keys Standby button | Standby button | Flashing green Power LED |
| | Time Out Default 15 minutes. If on Battery power (system will not go to Sleep if on AC power) | | |
| Hibernate | Manual - Slide Power Switch once Time Out Default If low battery or after 1 hour of sleep (system will not Hibernate if on AC power) | Slide Power Switch once | No Power LED, blank screen |
| Off | Perform normal Windows shutdown via the start button, or press and hold down the power button for 4 seconds | Slide Power Switch once | No Power LED, blank screen |

Servicing Your Computer - Full Off Mode

If you need to install or replace components in your system, you must turn the computer off *completely*. Follow the instructions above for properly putting the computer into Off mode, unplug from the outlet, and remove the battery (see battery section for instructions on removing battery).

Rebooting After a Lockup

Occasionally you may encounter a frozen keyboard or a locked screen. To reboot your computer (as if

from a cold start) slide and hold down the Power Switch for at least four seconds, which will cause a manual shutdown. Then, restart it with a single slide of the Power Switch. If it still doesn't recover, slide the Power Switch and hold it for four seconds to shut it down, then, remove the battery or unplug the AC power for at least 30 seconds. Reinsert the battery or reconnect AC power and slide the Power Switch once to reboot.

Battery Operating Time

Battery operating time is affected by variables, such as the following:

- Power conservation settings
- Hardware configuration
- Software applications
- Installed options
- Display brightness
- Hard drive usage
- Power button
- Changes in operating temperature
- Type and number of installed PC Cards

For more information on increasing battery pack operating time, conditioning the battery pack, and disposing of a used battery pack, refer to the <u>Battery Pack Operations</u>.

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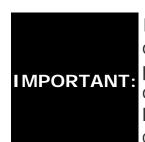
Preliminary Steps



Use AC power when running POST, Computer Setup, IMPORTANT: or Computer Checkup. A low battery condition could initiate Hibernation and interrupt the test.

Before running **POST**, complete the following steps:

- 1. If a power-on password has been established, type the password and press **Enter**. If the password is not known, clear the password.
- 2. Ensure the hard drive is installed in the computer.
- 3. Ensure that the battery pack is installed in the computer and the power cord is connected to the computer and plugged into an external AC power source.
- 4. Turn on the computer.
- 5. Run Computer Setup.
- 6. Turn off the computer and its external devices.
- 7. Disconnect any external devices that you do not want to test. If you want to use the printer to log error messages, leave it connected to the computer.



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.

8. Use Compaq Utilities and loopback plugs in the serial and parallel connectors if you plan to test these ports.

When the preliminary steps are completed, you are ready to run **POST**.

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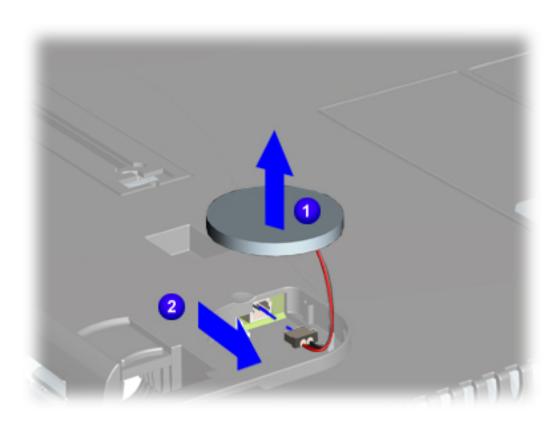
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Clearing the Power-on Password

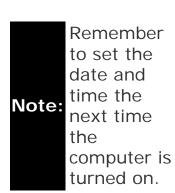


Clearing the power-on password requires removing all Setup attributes that are programmed in the CMOS.

If the password is not known, clear it by removing the RTC battery (located on the system board) as follows:

- 1. Turn off the computer.
- 2. Disconnect the AC Adapter.
- 3. Remove the Multimedia Expansion Unit.
- 4. Remove the battery pack.

- 5. Disconnect and remove the RTC battery.
- 6. Wait for five minutes.
- 7. Reconnect the RTC battery.
- 8. Reconnect the AC Adapter. Do <u>not</u> reinstall the battery pack yet.
- 9. Turn on the computer to verify that the power-on password has been cleared. If it has not been cleared, repeat all steps above.



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Power-On Self Test (POST)

Running POST

The Power-On Self Test (POST) is a series of tests that run every time the computer is turned on. POST verifies that the system is configured and functioning properly.

To run POST, complete the following steps:

- 1. Complete the **Preliminary steps**.
- 2. Turn on the computer.

If POST does not detect any errors, the computer beeps once or twice to indicate that POST has run successfully, and the computer boots from the hard drive (or from a bootable diskette if one is installed in the diskette drive).

If POST detects an error, it is indicated by screen and/or audible messages. Refer to the following tables for a list of POST codes and their relevant descriptions. If there is more than one recommended action, only try the later actions in the list if the first action recommended does not solve the problem.



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

102 <u>System board failure</u>

162 <u>System options not set</u>

XX000YZZ 201 Memory Error

301 <u>Keyboard Error</u>

304 <u>Keyboard or System Unit Error</u>

601 <u>Diskette Controller Error</u>

605 <u>Diskette Drive Error</u>

1780 Primary Hard Drive O Failure

1782 Hard Drive Controller

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. | |

| XX000YZZ 201-Memory Error | | |
|---------------------------|--------------------|--|
| Probable cause | Recommended action | |
| | | |

| RAM failure | Replace the memory module. Replace the system board. |
|------------------------|----------------------------------------------------------|
| Memory test data error | Replace the memory module. Replace the system board. |
| XX000YZZ RAM failure | Replace the system board. |

| 301-Keyboard Error | | |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Probable Recommended Action Cause | | |
| Keyboard failure | Ensure the keys are not depressed during POST. Reconnect the keyboard with the computer off. Replace the keyboard. | |

| 304-Keyboard or System Unit Error | | |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------|--|
| Probable Cause | Recommended Action | |
| Keyboard or system board error | Replace the keyboard. Replace the TouchPad or mouse. Replace the system board. | |

| 601-Diskette Controller Error | | |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--|
| Probable Cause | Recommended Action | |
| Mismatch in drive type or failure in the diskette controller | Run Computer Checkup (TEST). Check and/or replace cables. 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 | Run Computer Checkup (TEST). Replace the hard drive. |
| Hard drive format error | Run Computer Checkup (TEST). Replace the hard drive. |

| 1782-Hard Drive Controller | | |
|-------------------------------|--------------------------------------------------------------------------|--|
| Probable Cause | Recommended Action | |
| Hard drive controller failure | Run Computer Setup. 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 Setup
- Computer Checkup (TEST)
- View System Information (INSPECT)

If you have a problem you cannot solve, run the Diagnostics utilities before you call for support (see also <u>Preparing the Computer for a Compaq Service Call</u>). Run Computer Checkup and select to save the device list to a file and to print or to save the log of errors. Run the View System Information (INSPECT) utility and select to print or to save that information. Have the files or the printed information available when you call for support.

Computer Setup

The Computer Setup utility resides in a hidden partition on the hard drive. It gives you a snapshot of the computer's hardware and configuration, aids in troubleshooting, and allows you to set custom features.

Access Computer Setup when you want to:

- Modify settings for audio, storage, communications, and input devices
- Get an overall picture of the computer's hardware configuration
- Verify configuration parameters in determining problems

- Configure options
- Update time, date, or password information

To run Computer Setup:

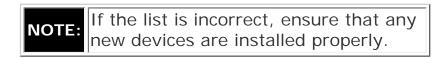
Go to the Compaq Utilities menu and select the Computer Setup option. Follow the on-screen instructions to complete your chosen task.

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.

To run Computer Checkup, follow these steps:

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



- 10. 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 display 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 how many times to run the tests, to stop on errors, or to print or 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 or save a log of errors.
- 11. Follow the instructions on the screen as the devices are tested. When testing is complete, the **Test Option** menu appears.
- 12. Exit the **Test Option** menu.
- 13. 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. Connect the printer if you want to print the INSPECT information.
- 2. Turn on the computer.
- 3. Access Compaq Utilities by pressing F10 when the cursor blinks in the upper-right corner of the display.
- 4. If prompted, select a language.
- 5. Click View System Information (INSPECT)
- 6. Click 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 Miscellaneous

Network (applicable only if computer is docked in the expansion base or convenience base)

- 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.
- 8. Select Exit Inspect.

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Diagnostic Error Codes

Diagnostic error codes occur if the system recognizes a problem while running the Compag 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.



Retest the system after completing each **IMPORTANT:** step. If the problem has been resolved, do not proceed with the remaining steps.

For the removal and replacement of a particular subassembly, see **Removal and** Replacement Procedures.

Select error codes by number or type:

| 101 through 114 | Processor Test |
|-----------------|-----------------------------|
| 200 through 215 | Memory Test |
| 300 through 304 | Keyboard Test |
| 401 through 403 | Parallel Printer Test |
| 600 through 699 | <u>Diskette Drive Tes</u> t |
| 1101 | Serial Test |

| 1701 through 1736 | Hard Drive Test |
|-------------------|--------------------------------|
| 501 through 516 | <u>Video Test</u> |
| 2402 through 2456 | |
| 2458 through 2480 | |
| <u>3206</u> | Audio Test |
| 8601 through 8602 | Touch Pad Pointing Device Test |
| 3301 through 3305 | CD or DVD Test |
| 6600 through 6623 | |

| Processor Test Error Codes | | | |
|----------------------------|------------------------------------------|-----------------------------------------------------------------------------|--|
| Error Code | Description | Recommended Action | |
| 101-xx | CPU test failed | 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 | | |
| Memory Test Error Codes | | | |
| 200-xx | Memory machine ID test failed | 1. Flash the system CMOS and retest. | |
| 202-xx | Memory system CMOS checksum failed | 2. Replace the system board and retest. | |
| 203-xx | Write/Read test failed | Remove and replace the memory board | |
| 204-xx | Address test failed | or system board (if memory board on the system board is faulty) and retest. | |
| 211-xx | Random pattern test failed | Time system board is radity) and retest. | |
| 214-xx | Noise test failed | | |
| 215-xx | Random address test failed | | |

| | Keyboard Test E | rror Codes | | |
|--------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------|--|--|
| 300-xx | Failed ID Test | 1. Check the keyboard connection. If disconnected, turn off the computer | | |
| 301-xx | Failed Selftest/Interface Test | and connect the keyboard. | | |
| 302-xx | Failed Individual Key Test | 2. Replace the keyboard and retest. | | |
| 304-xx | Failed Keyboard Repeat Test | 3. Replace the system board and retest. | | |
| | Parallel Printer Tes | st Error Codes | | |
| 401-xx | Printer failed or not connected | 1. Connect the printer. 2. Check power to the printer. | | |
| 402-xx | Failed Port Test | 3. Install the loop-back connector and retest. | | |
| 403-xx | Printer pattern test failed | 4. Check port and IRQ configuration.5. Replace the system board and retest. | | |
| | Diskette Drive Test | | | |
| 600-xx | Diskette ID drive types test failed | 1. Replace the diskette | | |
| 601-xx | Diskette format failed | 2. Replace the diskette drive and retest.3. Replace the system board and retest. | | |
| 602-xx | Diskette read test failed | 3. Replace the system board and retest. | | |
| 603-xx | Diskette write, read, compare test failed | | | |
| 604-xx | Diskette random read test failed | | | |
| 605-xx | Diskette ID media test 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 | Replace media. Run Compaq Utilities. | | |

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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 <u>following pages</u> contain troubleshooting information on these topics:

Audio Power Hard drive

Memory Diskette/Diskette drive Keyboard/Numeric keypad

Battery/Battery gauge Printer Hardware Installation

PC Card Display USB

CD or DVD drive Touch Pad Modem

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

When troubleshooting a problem, check the following items for possible solutions before replacing parts:

- Verify that cables are connected properly to the suspected defective parts.
- Verify that all required device drivers are installed.
- Verify that all printer drivers have been installed for each application.

Obtaining Update Information with Info Messenger

Compaq Info Messenger allows you to set a customized search of the Compaq Web site. By registering for this utility, you can stay up to date with software and hardware information specific to your system.

- To access Compaq Info Messenger, go to www.compaq.com and select Info Messenger.
- To register, follow the instructions on the Info Messenger page. When your registration is complete, you can
 - implement your customized search whenever you prefer from the Info Messenger page.
 - set Info Messenger to send you the information by email as it becomes available.

Info Messenger will also inform you if there are updates to the system ROM for your computer.



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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.

| <u>Audio</u> | Battery pack | Battery gauge | CD/DVD drive | <u>Diskette/diskette</u> <u>drive</u> |
|----------------|--------------|-----------------------|--------------------------|------------------------------------------|
| <u>Display</u> | Hard drive | Hardware installation | <u>Keyboard</u> | <u>Memory</u> |
| PC card | Power | <u>Printer</u> | Touchpad/pointing device | Infrared |
| <u>USB</u> | <u>Modem</u> | | | |

| | Audio Problems | |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Problem | Probable Cause | Solution(s) |
| Computer does not beep after the Power-On Self-Test (POST). | System beeps have been turned down. | Use the Fn+F5 hotkeys to turn up the system volume. |
| Internal speaker does not produce sound when an external audio source is connected to the stereo line-jack. | Volume may be turned off or set too low. | 1. Adjust the overall volume by pressing Fn + F5 hotkeys. 2. Adjusting the sliding mixer controls by double-clicking the speaker icon on the Windows taskbar. |
| | Line input may not be connected properly. | Check line input connection. |
| | Headphones or speakers are connected to the stereo speaker/headphone jack, which disables the internal speakers. | Disconnect the headphones or speakers to enable the internal speakers. |

| | Volume may be muted. | Uncheck the mute box in the volume properties. |
|------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| External microphone does not work. | Using the wrong type of microphone or microphone plug for the computer. | Check to see if you are using a monophonic electret condenser microphone with a 3.5 mm plug. |
| | The microphone may not be connected properly. | Ensure that the microphone plug is properly connected to the mono microphone jack. |
| | Sound source not selected. | Ensure that the microphone is selected as the recording source in Control Panel, Multimedia and the recording level is adjusted. |
| | Audio settings are not set correctly. | Check the audio settings for game programs. |
| | Volume control on the computer is turned down. | Adjust the computer volume with the Fn + F5 hotkeys. |
| No sound from headphones | Volume or mixing controls set incorrectly. | Adjust the overall volume with the Fn+F5 hotkeys. Use the mixing features available by double-clicking the speaker icon on the Windows taskbar. |
| | Sound source not selected. | Verify that the sound source is selected in Control Panel, Multimedia. |
| | The headphones are connected to the wrong jack. | Check the connection. |
| Volume too low or too loud. | Volume or mixing controls set incorrectly. | Adjust the overall volume with the Fn+F5 hotkeys. Check the mixing features available by double-clicking the speaker icon on the Windows taskbar. |

| Battery Pack and Battery Gauge Problems (see also Power 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. |
| | Battery connectors may be bent or broken. | 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 power light is blinking. | Battery pack charge is low. | Immediately save any open file(s). Then either: Connect the computer to an external power source to charge the battery pack. Replace the battery pack with another fully charged battery. Turn off the computer or initiate Hibernation until another power source or fully charged battery pack is available. |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computer battery charge light blinks to indicate low battery condition, but computer does not beep. | Volume is turned down too low. | Turn up the volume by using the Fn+F5 hotkeys. |
| Battery charge does not last very long. | Battery is exposed to high temperatures. | Put the computer in a cooler place and recharge the battery pack. |
| | Battery pack was exposed to extremely cold temperatures. | Put the computer in a warmer place and recharge the battery pack. |
| | | Keep the battery pack within the recommended temperature ranges: Operating: 50° F to 104° F (10° C to 40° C) Storage: 32° F to 86° F (0° C to 30° C) |
| | Battery conservation is disabled or set to drain. | Reset the battery conservation level. |
| | An external device is draining the battery. | Turn off or remove any external device or PC Cards when not in use. |
| | Battery gauge may be inaccurate and require recalibration. | Recalibrate the gauge. |
| Date and time must be set every time computer is turned on. | Real Time Clock (RTC) battery is has reached the end of its useful life. | Restore power, then turn on the computer with the power switch. |
| | | Contact your Compaq authorized service provider to replace the RTC battery. |
| Battery pack is warm after charging. | Normal warming occurs during charging. | No action is required. |
| Battery pack will not charge. | Battery pack was exposed to temperature extremes. | Allow time for the battery pack to return to room temperature. |
| | | Keep the battery pack within the recommended temperature ranges: Operating: 50° F to 104° F (10° C to 40° C) Storage: 32° F to 86° F (0° C to 30° C) |
| | | Recharge the battery pack. |
| | Battery pack is already charged. | No action required. |

| | Battery pack has exceeded its useful life cycle. | Use a different battery pack. |
|-------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------|
| Computer shut down and memory was lost when replacing the battery pack. | Hibernation was not initiated before removing the battery pack. | Work is lost. |
| Battery gauge seems inaccurate. | The battery pack may need calibration. | Recalibrate the battery. |
| | The battery pack has reached the end of its useful life. | Replace the battery pack. |

| CD/DVD Drive Problems | | | |
|--------------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Problem | Probable Cause | Solution(s) | |
| Drive cannot read a disc. | Disc is not properly seated in the drive. | Open loading tray, insert the disc, then close the tray. | |
| | Disc loaded in the loading tray upside down. | Open the loading tray, turn over the disc (label facing up), then close the tray. | |
| | Disc has a scratch on its surface. | Insert a different disc. | |
| CD-ROM drive or DVD- ROM drive is not detected by the computer. | Drive is not properly connected. | If you are running a version of Windows that was pre-installed by Compaq, remove the drive from the MultiBay and reinsert it. | |
| | | If you are running a version of Windows that was not pre-installed by Compaq, turn the computer off. Then remove the drive from the MultiBay and reinsert it. | |

| Diskette and Diskette Drive Problems | | | |
|--------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------|--|
| Problem | Probable Cause | Solution(s) | |
| Drive cannot write to a diskette. | Diskette is write-protected. | Disable the write-protect feature or use a diskette that is not write-protected. | |
| | Writing to the wrong drive. | Check the drive letter in the path statement. | |
| | Not enough space is left on the diskette. | Save the information to another diskette. | |
| | Drive error has occurred. | Run Computer Checkup from the Compaq Diagnostics diskette. | |
| | | | |
| | | | |

| | Diskette is not formatted. | Format the diskette: If you are using Windows 98: 1. From the Windows desktop, select My Computer. 2. Select 3.5-in Floppy (A). 3. Select File, then Format. 4. Fill in the appropriate information, then select Start. |
|-----------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Drive is disabled. | Enable the proper drive through Device Manager. |
| | Disable diskette write ability is turned on. | Run Computer Setup. Select the Storage icon. Make sure Disable diskette write ability is not checked. |
| Diskette drive cannot read a | Wrong type of diskette is being used. | Use the type of diskette required by the drive. |
| diskette. | Diskette has a bad sector. | Copy files to hard drive or another diskette. Reformat bad diskette. |
| | Drive error has occurred. | Run Computer Checkup from the Compaq Diagnostics diskette. |
| | Diskette is not formatted. | Format the diskette: If you are using Windows 98: 1. From the Windows desktop, select My Computer. 2. Select 3.5-in Floppy (A). 3. Select File, then Format. 4. Fill in the appropriate information, then select Start. |
| System cannot start up from diskette or | A bootable diskette is not in the drive. | Verify that a diskette with the necessary system files is in the drive. |
| SuperDisk LS- 120 drive. | Diskette bootability is disabled in Computer Setup. | Enable diskette bootability in Computer Setup, Security menu. |

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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.



Ensure that there is no diskette in the diskette IMPORTANT: 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.

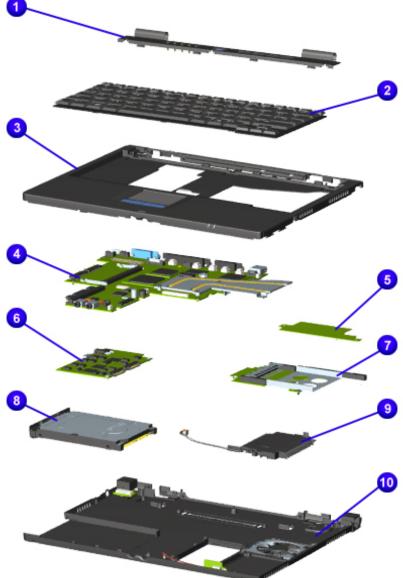
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Illustrated Parts Catalog





| Description | | Spare Part Number | |
|-------------|----------------------------------------------------------------|----------------------|--|
| 1 | Switch Cover (spared with miscellaneous plastics kit) | 146634-001 | |
| 2 | Keyboard | | |
| 3 | Top Cover with Touchpad | 146632-001 | |
| 4 | System Board with 333Mhz Celeron Processor | 152606-001 | |
| 5 | Modem Connector | 140385-001 | |
| 6 | Voltage Converter | 136251-001 | |
| 7 | PC Card Assembly | 140384-001 | |
| 8 | Hard Drive - 4.3 GB IDE | 152607-001 | |
| 9 | Fan (spared with base enclosure) | 146633-001 | |
| 10 | CPU Base Enclosure | 146633-001 | |

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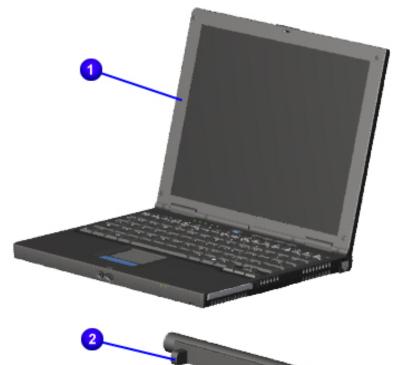
United States

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| System Components | |
|-------------------------------|--|
| System Unit | |
| External Cables | |
| Miscellaneous Plastics Kit | |
| Screw Kit | |
| Miscellaneous Parts | |
| <u>1 di t3</u> | |



| D | escription | Part Number |
|---|--------------------------------------|----------------|
| 1 | Display Panel | 146631- 001 |
| 2 | Battery Pack | 146630- 001 |
| 3 | Multi- media Expansion Base | 146635- 001 |
| 4 | AC Adapter | 101898- 001 |





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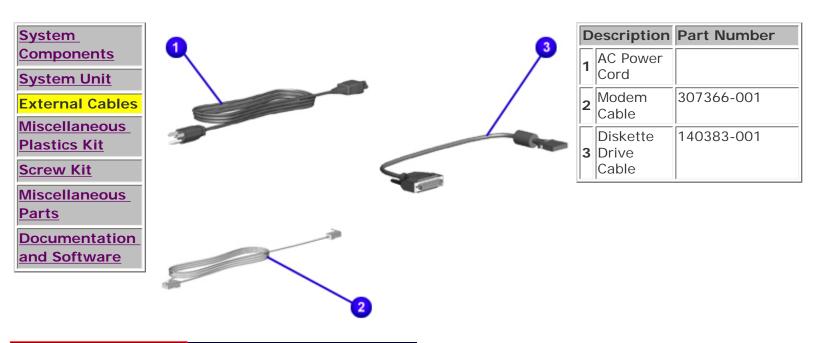
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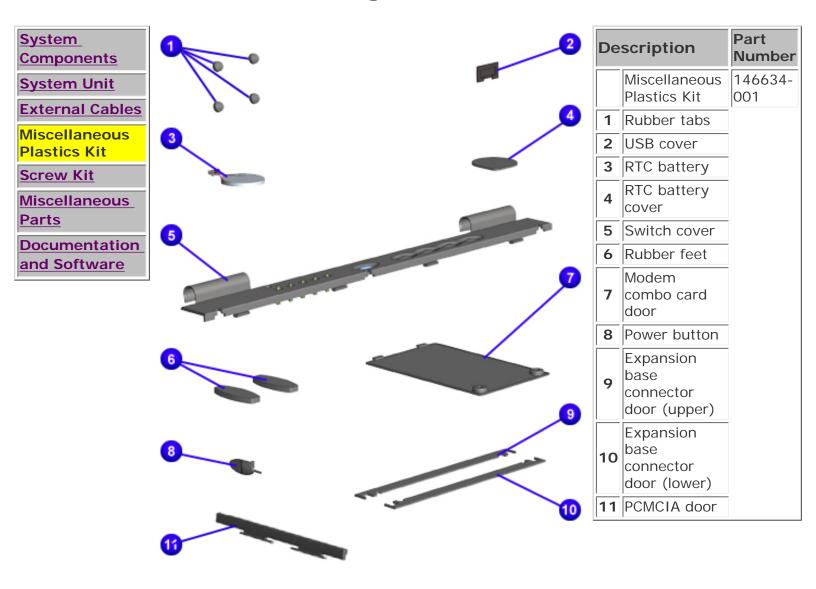
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| System Components |
|----------------------------|
| System Unit |
| External Cables |
| Miscellaneous Plastics Kit |
| Screw Kit |
| Miscellaneous Parts |
| Documentation and Software |

| Description | Part Number | |
|------------------|-------------|--|
| 1 Misc Screw Kit | 136255-001 | |

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| System Components |
|-----------------------------------|
| System Unit |
| External Cables |
| Miscellaneous Plastics Kit |
| Screw Kit |
| Miscellaneous Parts |
| Documentation and Software |

| Description | | Part Number |
|-----------------------------|------------------------|-------------|
| 1 Diskette Drive 140383-001 | | 140383-001 |
| 2 | Diskette Drive 1.44MB | 149372-001 |
| 3 | 24x CD-ROM | 152957-001 |
| 4 | 4xDVD | 152958-001 |
| 5 | 32MB Memory | 135242-001 |
| 6 | 64MB Memory | 135243-001 |
| 7 | 128MB Memory | 135244-001 |
| 8 | 56Kpbs, V.90 PCI Modem | 121896-001 |

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System

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Illustrated Parts Catalog

| <u>Components</u> |
|----------------------------|
| System Unit |
| External Cables |
| Miscellaneous Plastics Kit |
| Screw Kit |
| Miscellaneous Parts |
| Documentation and Software |

| Description | Part Number |
|-------------------------------------------------------------------------------------|-------------|
| Quick Restore CD | |
| Quick Reference Guide (single issue) Quick Reference Guide (quarterly subscription) | |
| QuickFind for Windows* | |
| Return Kit | 136257-00 |

*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 | | 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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Removal Sequence

Serial Number Location

Preparing for **Disassembly**

Electrostatic Discharge

Service

Considerations

Cables and

Connectors

Multi-media

Expansion

Unit

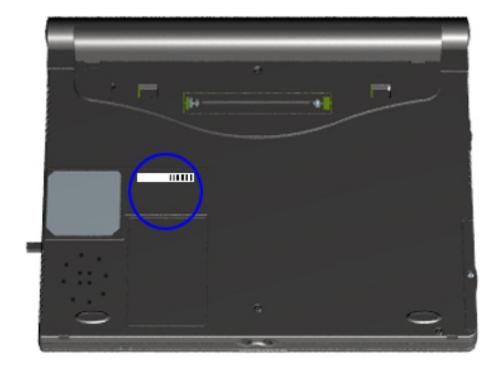
Battery Pack

Hard Drive

Modem Card

RTC Battery

Keyboard



Report the serial number to Compaq when requesting information on ordering spare parts, located on the underside of the unit.

| Compaq.com Compaq i resair |
|----------------------------|
| Memory Board |
| Switch Cover |
| Display Panel |
| <u>Deck</u> |
| <u>Voltage</u> |
| <u>Converter</u> |
| Board |
| <u>Modem</u> |
| Connector |
| Board |
| PC Card |
| PC Card |
| <u>Assembly</u> |

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System Board

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| Pin Assignments | Battery Pack Operations

Preparing for Disassembly

Removal Sequence

Serial Number Location

Preparing for Disassembly

Electrostatic Discharge

Service Considerations

Cables and Connectors

Multi-media Expansion Unit

Battery Pack

Hard Drive

Modem Card

RTC Battery

Keyboard

Before removing or replacing any components, the following procedures *must* be completed:

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



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 305 Model Portable Computers into the battery compartment. Do not force the battery pack into the bay if insertion does not occur easily.



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.

Memory Board Switch Cover Display Panel Deck Voltage Converter **Board** Modem Connector **Board PC Card PC Card Assembly**

System Board



CAUTION: Failure to disconnect the AC Adapter from the computer and remove the battery pack before removing and installing internal components can damage the equipment.



The Compaq Presario 305 Model Portable Computer has several screws of various sizes which are **not** interchangeable. Care must NOTE: be taken during reassembly to ensure that the correct screws are used in their appropriate locations. During removal please keep screws with their associated sub-assembly.

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Removal and Replacement Procedures

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 |
|---|--------------------------------|
| | Relative Humidity |
| ľ | |

| Event | 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 | 26,500 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. | | | |

| Static-Shielding Materials | | | |
|---------------------------------------|------------|--------------------------|--|
| Material Use Voltage Protection Level | | Voltage Protection Level | |
| Antistatic Plastic | Bags | 1,500 V | |
| Carbon-loaded plastic | Floor mats | 7,500 V | |
| Metallized laminate | Floor mats | 15,000 V | |

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Service Considerations

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

Tool and Software Requirements

To service the computer, you need the following:

- Compaq screwdriver kit
- Torx T-8 screwdriver
- 3/16-inch and 5mm nut drivers (for screwlocks and standoffs)
- Small, standard screwdriver
- Small, Phillips screwdriver
- 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.

Fan and RJ11

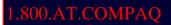
The Fan and RJ11 are spared with the base assembly. They are not available

separately, and may only be obtained by ordering the entire base assembly. This Maintenance and Service Guide contains no removal and replacement procedures for these components.



As each subassembly is removed from the computer, it IMPORTANT: 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 avoid 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.

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 servicing 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.

Removing a cable from a ZIF Connector

Display panel cable location

Inverter cable location

Audio cable location

Touchpad cable location

Fan cable location

Light board cable location

Speaker cable location

Battery cable location

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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Removing the Multi-media Expansion unit

Removal Sequence

Serial

Number

Location

Preparing for

Disassembly

Electrostatic

Discharge

Service

Considerations

Cables and

Connectors

Multi-media Expansion

Unit

Battery Pack

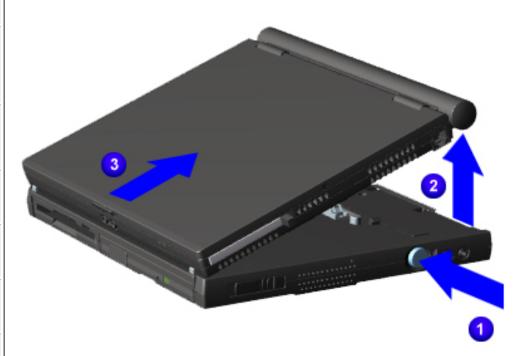
Hard Drive

Modem Card

RTC Battery

Keyboard

Memory Board



To remove the Multimedia Expansion Unit, complete the following steps:

- 1. Prepare the computer for disassembly.
- 2. Turn off and disconnect all external devices connected to the computer.
- 3. On the Multi-media Expansion Unit, press the docking release

| Compaq.com Compaq i resam |
|---------------------------|
| Switch Cover |
| Display Panel |
| <u>Deck</u> |
| <u>Voltage</u> |
| <u>Converter</u> |
| <u>Board</u> |
| <u>Modem</u> |
| <u>Connector</u> |
| <u>Board</u> |
| PC Card |
| PC Card |
| <u>Assembly</u> |

System Board

button 1 to release the expansion unit from the computer.

4. Lift the back end of the computer to disconnect it from the expansion unit 2.

5. Pull the computer away from the expansion unit 3.

To replace the Multi-media Expansion Unit, reverse the removal procedures.

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Removing the Battery Pack

Removal Sequence

Serial

Number Location

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Electrostatic

<u>Discharge</u>

<u>Service</u>

Considerations

Cables and

<u>Connectors</u>

Multi-media

Expansion

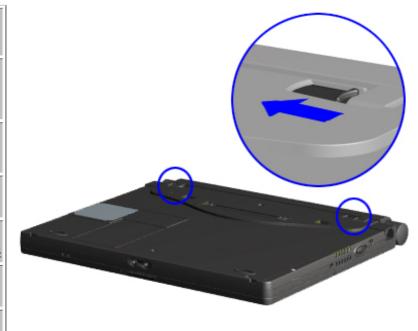
<u>Unit</u>

Battery Pack

Hard Drive

Modem Card

RTC Battery



To remove the battery pack, complete the following steps:



WARNING:To reduce the risk of injury or damage to the battery pack, do not crush, puncture, or incinerate the battery pack or short the metal contacts. Do not attempt to open or service the battery pack.

- 1. Remove the Multi-media Expansion Unit.
- 2. Turn the computer bottom side up and tilt the battery pack so it lies flat (covering all the ports on the back of the computer).
- 3. Slide the two battery latches toward the center of the computer.

Next Step

| npaq.com Compaq Presario Main |
|-------------------------------|
| <u>Keyboard</u> |
| Memory Board |
| Switch Cover |
| Display Panel |
| <u>Deck</u> |
| <u>Voltage</u> |
| <u>Converter</u> |
| Board |
| <u>Modem</u> |
| <u>Connector</u> |
| <u>Board</u> |
| PC Card |
| PC Card |
| <u>Assembly</u> |

System Board

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Removing the Hard Drive

Removal Sequence

<u>Serial</u>

Number Location

Preparing for Disassembly

Electrostatic
Discharge

<u>Discriary</u>

Service Considerations

Cables and Connectors

Multi-media

Expansion

<u>Unit</u>

Battery Pack

Hard Drive

Modem Card

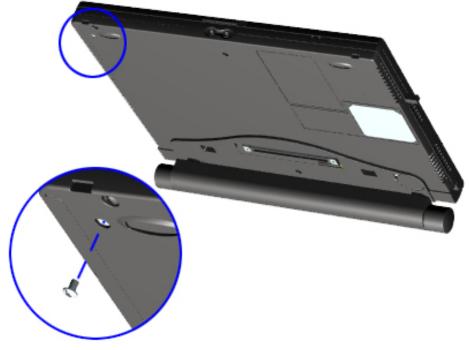
RTC Battery

Keyboard

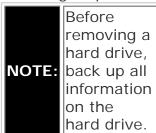
Memory Board

Switch Cover

Display Panel



To remove the hard drive, complete the following steps:



1. Remove the Multi-media Expansion Unit.

2. Turn the computer bottom side up and remove the hard drive screw.

Next Step

| <u>Deck</u> |
|-----------------|
| <u>Voltage</u> |
| Converter |
| Board |
| <u>Modem</u> |
| Connector |
| Board |
| PC Card |
| PC Card |
| <u>Assembly</u> |
| System Board |

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Removing the Modem Card

Removal Sequence

Serial

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Location

Preparing for

Disassembly

Electrostatic

<u>Discharge</u>

Service

Considerations

Cables and

Connectors

Multi-media

Expansion

Unit

Battery Pack

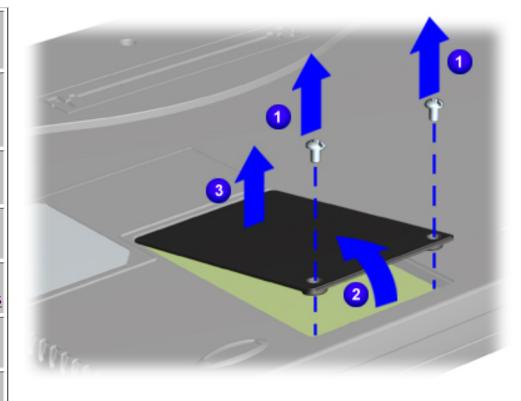
Hard Drive

Modem Card

RTC Battery

Keyboard

Memory Board



To remove the modem card, complete the following steps:

- 1. Remove the Multi-media Expansion Unit.
- 2. Turn the computer upside down, front facing forward.
- 3. Remove two screws (t8) from the modem cover 1.
- 4. Lift up the front edge of the

Switch Cover

Display Panel

Deck

Voltage
Converter
Board

Modem
Connector
Board

PC Card

Assembly

System Board

modem cover 2 and turn the cover back to remove 3.

Next Step

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Removing the RTC Battery

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Number

Location

Preparing for

Disassembly

Electrostatic

<u>Discharge</u>

Service

Considerations

Cables and

Connectors

Multi-media

Expansion

Unit

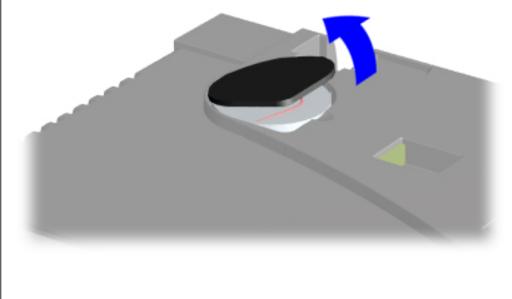
Battery Pack

Hard Drive

Modem Card

RTC Battery

Keyboard



To remove the RTC battery, complete the following steps:

- 1. Remove the Multi-media Expansion Unit.
- 2. Turn the computer upside down with the back of the computer facing forward.
- 3. Remove the RTC battery cover by lifting the cover at

Memory Board
Switch Cover
Display Panel
Deck
Voltage
Converter
Board
Modem
Connector
Board
PC Card
PC Card

Assembly

System Board

the indention.

4. Remove the RTC battery from the base enclosure.

5. Disconnect the RTC battery cable from the system board to remove the battery.

To replace the RTC battery, reverse the removal procedures.

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Removing the Keyboard

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<u>Serial</u>

Number Location

Preparing for Disassembly

Electrostatic
Discharge

<u>Service</u>

Considerations

Cables and

Connectors

Multi-media

Expansion

Base

Battery Pack

Hard Drive

Modem Card

RTC Battery



To remove the keyboard, complete the following steps:

1. Lift the display panel to open the computer.

2. Gently press down on each of the three tabs along the top edge of the keyboard.

Next Step Keyboard

Memory Board

Switch Cover

Display Panel

Deck

Voltage

Converter

Board

Modem

Connector

Board

PC Card

Assembly

System Board

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Removing the Memory Board

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Serial

Number Location

Preparing for Disassembly

Electrostatic

<u>Discharge</u>

Service

Considerations

Cables and

Connectors

Multi-media

Expansion

Unit

Battery Pack

Hard Drive

Modem Card

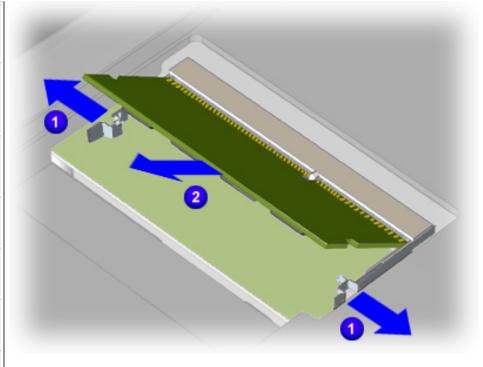
RTC Battery

Keyboard

Memory Board

Switch Cover

Display Panel



To remove the Memory Board, complete the following steps:

WARNING:

Failure to unplug the power cord and remove the battery pack before installing a memory expansion board can damage the equipment and expose you to the risk of electrical shock.

| <u>Deck</u> |
|------------------|
| <u>Voltage</u> |
| <u>Converter</u> |
| <u>Board</u> |
| Modem |
| Connector |
| <u>Board</u> |
| PC Card |
| PC Card |
| Assembly |

System Board



There is only one memory expansion slot in the computer. Before upgrade **NOTE:** memory, you must remove the memory board that came with the computer.

1. To remove the memory board, pull away the plastic retention clips on each side of the memory expansion board 1. The memory

- expansion board tilts upward.
- 2. Lift the edge of the memory expansion board and slide it gently out of the memory expansion slot at a 45-degree angle 2.
- 3. If applicable, turn back the memory insulator.
- 4. Place the removed memory expansion board in an electrostatic-safe container.

To replace the Memory Board, reverse the removal procedures.

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Removing the Switch Cover

Removal Sequence

Serial

Number Location

Preparing for Disassembly

Electrostatic

<u>Discharge</u>

<u>Service</u>

Considerations

Cables and Connectors

Multi-media

Expansion

<u>Unit</u>

Battery Pack

Hard Drive

Modem Card

RTC Battery

Keyboard

Memory Board

Switch Cover

Display Panel



When removing the switch cover, be careful not to lose the NOTE: keyboard retention spring tabs located on the top cover.

- 1. Remove the Multi-media Expansion Unit.
- 2. Remove the battery pack.
- 3. Remove the keyboard.
- 4. Position the computer so the back panel faces forward.
- 5. Remove the

Deck
Voltage
Converter
Board

Modem
Connector
Board

PC Card
PC Card
Assembly

System Board

two screws (t8) from the back panel of the computer that secure the switch cover to the base assembly.

Next Step

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Removing the Display Panel

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Serial

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Preparing for

Disassembly

Electrostatic

Discharge

Service

Considerations

Cables and

Connectors

Multi-media

Expansion

Unit

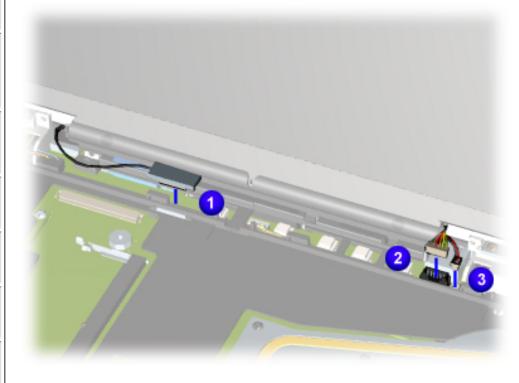
Battery Pack

Hard Drive

Modem Card

RTC Battery

Keyboard



- 1. Remove the battery pack.
- 2. Remove the keyboard.
- 3. Remove the switch cover.
- 4. Disconnect the display panel cable 1. inverter cable 2, and audio cable 3

Next Step

| Memory Board |
|-------------------------------|
| Switch Cover |
| Display Panel |
| <u>Deck</u> |
| Voltage |
| Converter |
| Board |
| |
| <u>Modem</u> |
| _ |
| <u>Modem</u> |
| Modem_ Connector_ |
| Modem Connector Board |
| Modem Connector Board PC Card |

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System Board

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Removing the Deck

Removal Sequence

Serial
Number
Location

Preparing for Disassembly

Electrostatic
Discharge

Service Considerations

Cables and Connectors

Multi-media Expansion Unit

Battery Pack

Hard Drive

Modem Card

RTC Battery

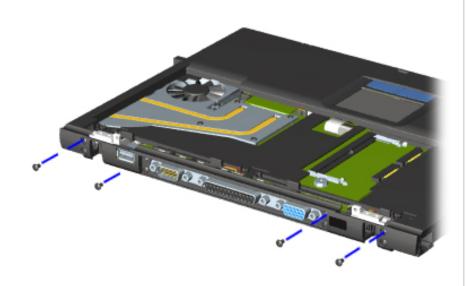
Keyboard

Memory Board

Switch Cover

Display Panel

Deck



The power switch and infrared lens are easily dislodged when the top cover is removed. Make note of their location and orientation before removing the top cover. The power switch and infrared lens are spared in the miscellaneous plastics kit.

NOTE:

- 1. Remove the keyboard.
- 2. Remove the switch cover.
- 3. Remove the display.
- 4. Remove the four screws (t8) located in the upper half of

Voltage
Converter
Board

Modem
Connector
Board

PC Card

PC Card

Assembly

System Board

the back of the unit that secure the top cover to the base assembly (as shown).

Next Step

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Removal Sequence

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Disassembly

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<u>Service</u>

Considerations

Cables and

<u>Connectors</u>

Multi-media

Expansion

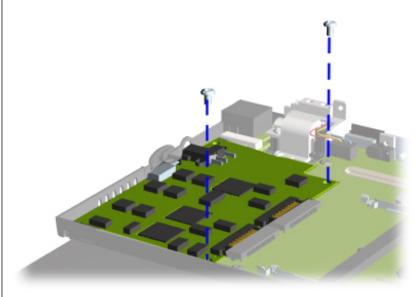
<u>Unit</u>

Battery Pack

Hard Drive

Modem Card

RTC Battery



- 1. Remove the keyboard.
- 2. Remove the switch cover.
- 3. Remove the display.
- 4. Remove the deck.
- 5. Remove the two screws that secure the voltage converter board to the system board.

Next step

Keyboard

Memory Board

Switch Cover

Display Panel

Deck

Voltage
Converter
Board

Modem
Connector
Board

PC Card

Assembly

System Board

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Removing the Modem Connector Board

Removal Sequence

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Number
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Discharge

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Cables and Connectors

Multi-media
Expansion
Unit

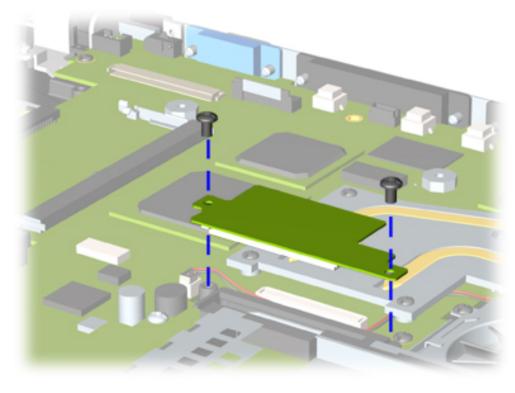
Battery Pack

Hard Drive

Modem Card

RTC Battery

Keyboard



To remove the modem connector board, complete the following steps:

1.
Remove
the
modem
card.

2.
Remove
the
keyboard.

3.
Remove
the
switch
cover.

4. **Remove**

Memory Board
Switch Cover
Display Panel
Deck
Voltage
Converter
Board
Modem
Connector
Board
PC Card
Assembly

System Board

the display.

5. Remove the deck.

6. Remove two screws from the modem connector board.

7. Lift up on the modem connector board to disconnect it from the system board.

To replace the modem board connector, reverse the removal procedures.

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Removing the PC Card

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Connectors

Multi-media

Expansion

Unit

Battery Pack

Hard Drive

Modem Card

RTC Battery

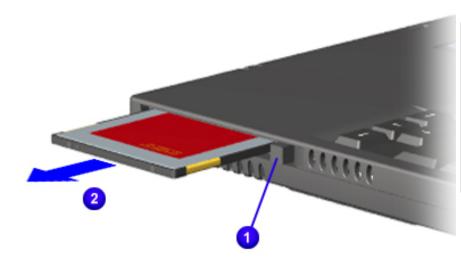
Keyboard

Memory Board

Switch Cover

Display Panel

Deck



To remove the PC Card, complete the following steps:



CAUTION: If the computer is on and running Windows 95, failure to stop a PC Card before removing it may cause loss of data.

- In Windows 95 or Windows 98 -If the computer is on, stop the PC Card before you remove it. To stop a PC Card, select the PC Card icon in the taskbar, then select the PC Card you want to stop. A message displays when the PC Card can be safely removed.
- In Windows NT 4.0 with CardWare from Compaq only - If

| <u>Voltage</u> |
|---------------------|
| <u>Converter</u> |
| Board |
| <u>Modem</u> |
| Connector |
| Board |
| PC Card |
| PC Card |
| <u>Assembly</u> |
| System Board |

the computer is on, you must shut it down before removing some PC Cards. Refer to the PC Card documentation for removal requirements.

- 1. Push the PC Card eject button 1.
- 2. Gently grasp the card and pull it out 2.

To replace the PC Card, reverse the removal procedures.

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Removing the PC Card Assembly

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Multi-media Expansion

Unit

Battery Pack

Hard Drive

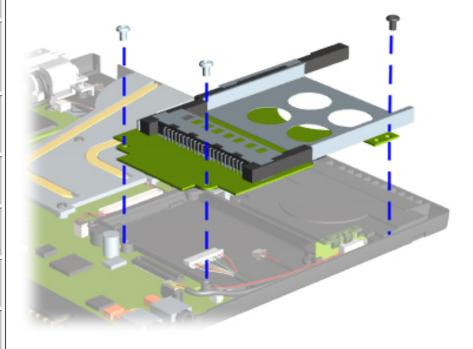
Modem Card

RTC Battery

Keyboard

Memory Board

Switch Cover



- 1. Remove the modem card.
- 2. Remove the keyboard.
- 3. Remove the switch cover.
- 4. Remove the display.
- 5. Remove the deck.
- 6. Remove the modem connector board.
- 7. Remove the two silver (t8) screws on the left side of the PC card assembly.
- 8. Remove the black (t8) screw that secures the

Display Panel

Deck

Voltage
Converter
Board

Modem
Connector
Board

PC Card

Assembly

System Board

front of the PC card assembly to the base assembly.

9. Lift up on the left side of the PC card assembly to disconnect the assembly from the system board.

Be sure to route the audio and light board cables between the PC NOTE: card assembly and the base plastic. Do not route near the heat sink.

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Connectors

Multi-media

Expansion Unit

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Hard Drive

Modem Card

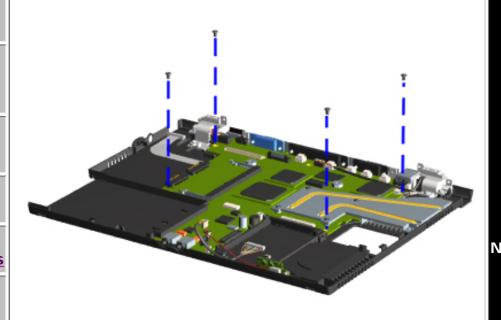
RTC Battery

Keyboard

Memory Board

Switch Cover

Display Panel



There are different sized screws securing the system board to the base enclosure. Make note of the location of these screws. **NOTE:** Also, when the system board is removed, components of the base

enclosure

tend to fall

loose. Note the location

orientation of all base

enclosure

components.

land

- 1. Remove the RTC battery.
- 2. Remove the keyboard.

| <u>Deck</u> |
|------------------|
| <u>Voltage</u> |
| <u>Converter</u> |
| <u>Board</u> |
| <u>Modem</u> |
| Connector |
| Board |
| PC Card |
| PC Card |
| <u>Assembly</u> |

System Board

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privacy and legal statement

- 3. Remove the switch cover.
- 4. Remove the display.
- 5. Remove the deck.
- 6. Remove the modem connector board.
- 7. Remove the PC card assembly.
- 8. Remove the four screws that secure the system board to the base assembly from the top.

Next Step

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Specifications (continued)

Physical and environmental System I/O Address

Diskette drive

System Interrupts
System Memory Catalog

Hard drive
Battery pack

System DMA

<u>Display</u> <u>CD drive</u>

| System I/O Address | | |
|-----------------------------------------------------------|--------------------------------------|--|
| I/O Address (Hex) System Function (Shipping Configuration | | |
| 000h-00Fh | Direct memory access controller | |
| 010h-01Fh | Unused | |
| 020h-021h | Programmable interrupt Controller | |
| 022h-024Fh | Opti Chipset Configuration registers | |
| 025h-03F | Unused | |
| 02E-02F | 87334 Super IO configuration for CPU | |
| 040h-043h | Counter/Timer Registers | |
| 044h-05Fh | Unused | |
| 060h-060h | Keyboard Controller | |
| 061h-061h | Port B | |
| 062h-063h | Unused | |
| 064h-064h | Keyboard Controller | |
| 065h-06Fh | Unused | |
| 070h-071h | NMI Enable/Real Time Clock | |
| 072h-07F | Unused | |
| 080h-08F | DMA Page Registers | |
| 090h-091 | Unused | |
| 092h-092h | Port A | |
| 093h-09F | Unused | |
| 0A0h-0A1h | Interrupt controller no. 2 | |

| 0A2h-0BFh | Unused | |
|-----------|----------------------------------------------|--|
| OCOh-ODFh | DMA Controller no. 2 | |
| 0E0h-0EFh | Unused | |
| 0F0h-0F1 | Coprocessor Busy Clear/Reset | |
| 0F2h-0FF | Unused | |
| 100h-16F | Unused | |
| 170h-177 | Secondary Fixed Disk Controller | |
| 178h-1EF | Unused | |
| 1F0h-1F7 | Primary Fixed Disk Controller | |
| 1F8h-200 | Unused | |
| 201h-201 | Joystick (Decoded in ESS 1688) | |
| 202h-21F | Unused | |
| 220h-22F | Entertainment Audio | |
| 230h-26D | Unused | |
| 278h-27F | Unused | |
| 280h-2AB | Unused | |
| 2A8h-2E7 | Unused | |
| 2E8h-2EF | Reserved Serial Port | |
| 2F0h-2F7 | Unused | |
| 2F8h-2FF | Infrared Port | |
| 320h-36F | Unused | |
| 378h-37F | Parallel Port (LPT1/Default) | |
| 380h-387 | Unused | |
| 388h-38B | FM Synthesizer - OPL3 | |
| 38Ch-3AF | Unused | |
| 3B0h-3BB | VGA | |
| 3BCh-3BF | Reserved (Parallel Port/No EPP Support) | |
| 3C0h-3DF | VGA | |
| 3E0h-3E1 | PC Card Controller in CPU | |
| 3E8h-3EF | Internal Modem | |
| 3F0h-3F7 | "A" Diskette Controller | |
| 3F8h-3FF | Serial Port (COM1/Default) | |
| CF8h-CFB | PCI Configuration Index Register (PCIDIVO-1) | |
| CFCh-CFF | PCI Configuration Index Register (PCIDIVO-1) | |

| System Memory Catalog | | |
|-----------------------|-------------------------|-----------------|
| Size | Memory Address | System Function |
| 640K | 00000000h- 0009FFFFh | Base Memory |
| 128K | 000A0000h- 000BFFFFh | Video Memory |
| 48K | 000C0000h- 000CBFFFh | Video BIOS |

| 160K | 000C8000h- 000E7FFFh | Unused |
|------|-------------------------|------------------------------|
| 64K | 000E8000h- 000FFFFFh | System BIOS |
| 15M | 00100000h- 00FFFFFh | Extended Memory |
| 58M | 00100000h- 047FFFFFh | Super Extended Memory |
| 58M | 04800000h- 07FFFFFFh | Unused |
| 2M | 08000000h- 080FFFFFh | Video Memory (Direct Access) |
| 4G | 08200000h- FFFEFFFFh | Unused |
| 64K | FFFF0000h- FFFFFFFh | System BIOS |

| 11.3-Inch Color TFT Display | | | | |
|---------------------------------------|--------------------------------------|--------------------------------|------------------------------|--------------------------------|
| Model | S | harp | Sanyo | |
| | U.S. | Metric | U.S. | Metric |
| Display Dimensions Height Width Depth | .22 in 9.93 in 7.32 in | 5.7 mm 252.4 mm 186.0 mm | .22 in 9.80 in 7.35 in | 5.7 mm 249.0 mm 186.7 mm |
| Weight | 0.61 lb | 307 g | .76 lb | 380 g |
| Contrast Ratio | <200 | | <. | 200 |
| Brightness | 120 to 130 nit AC only/80 on battery | | 120 to 130 nit AC | only/80 on battery |
| Total Power Consumption | 2.3 W | | 2. | 3 W |
| Refresh | 800 |) x 600 | 800 | x 600 |

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Physical and environmental

System I/O Address

Diskette drive

System Interrupts

System Memory Catalog

Hard drive

Battery pack

System DMA

Display

CD drive

| Diskette Drive | | |
|-----------------------------------------------------------------------------------------|----------------------------------------------|--|
| Diskette Size | 3.5 inch | |
| Light | On drive | |
| Height | 0.55 in (1.40 cm) | |
| Bytes per Sector | 512 | |
| Sectors per Track High Density Low Density | 18 (1.44 MB)/15 (1.2MB) 9 | |
| Tracks per Side High Density Low Density | 80 (1.44 MB)/80 (1.2MB) 80 | |
| Read/Write Heads | 2 | |
| Access Times Track-to-Track (high/low) Average (high/low) Settling Time Latency Average | 3 ms/6 ms 94 ms/174 ms 15 ms 100 ms | |

| Energy Voltage Amp-hour capacity Watt-hour capacity | 14.4 V 2.8 Ah 27 Wh |
|-----------------------------------------------------|-------------------------------------------------------|
| Temperature Operating Non-operating | 41 to 95°F/5 to 35 °C -22 to 140°F/-30 to 60 °C |

| Hard Drive | | |
|-----------------------------------------------------------------------------------------------|---------------------------------------------------|--|
| | 4.3 GB | |
| Formatted Capacity per Drive (GB) | 4.3 GB ² | |
| Logical Configuration Cylinders Heads Sectors per track Bytes per sector | 8955 4 N/A 512 | |
| Typical Seek Times, ms (including settling) Single track Average Full stroke Rotational speed | N/A 4 ms 13 ms (read) 23 ms 4,009 rpm | |
| Transfer Rate | 33.3 MB/s | |
| Operating Temperature | 41 to 131°F/5 to 55 °C | |

| CD-ROM Drive | | |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Applicable Disc | CD-ROM (Mode 1, 2, and 3) CD-XA ready (Mode 2, Form 1 and Form 2) CD-I ready (Mode 2, Form 1 and Form 2) CD-R (ready only) CD Plus Photo CD (single/multisession) CD Extra Video CD CD-WO (fixed packets only) CD-Bridge | |
| Center Hole Diameter | .59 in/15 mm | |

| Disc Diameter | 12 cm, 8 cm | | |
|-----------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
| Disc Thickness | 1.2 mm | | |
| Track Pitch | 1.6 um | | |
| Capacity | Mode 1, 12 Mode 2, 12 cm 8 cm | 550 MB 640 MB 180 MB | |
| Laser | Beam Divergence Output Power Type Wave Length | 53.5 ± 1.5 degrees 0.24 ± 0.1 mw Semiconducter Laser GaA1As 780 nm ± 25 nm | |
| Access Time | Random Full Stroke | < 150 ms < 300 ms | |
| Audio Output Level | Line out Headphone | 0.7 V rms none | |
| Cache Buffer | 128 KB | | |
| Data Transfer Rate (Sustained) | 24x Variable Normal PIO Mode 4 (single burst) Startup time Stop time | 150 KB/sec 1500 to 3600 KB/sec 16.6 MB/sec < 8.3 seconds < 4.0 seconds | |

| Lithium Ion (Li Ion) Battery Pack | | |
|----------------------------------------------------------------------------|--------------------------------|------------------------------|
| Dimensions | U.S. | Metric |
| Height Length | 0.9 in 10.47 in | 2.3 cm 26.6 cm |
| Weight | 0.48 lb | 0.21 kg |
| Cells | 4 Li-Ion | |
| Energy Voltage Amp-hour capacity Watt-hour capacity | 14.4 V 2.8 Ah 27 Wh | |
| Environmental Requirements Operating Temperature Non-operating Temperature | 41° to 95° F -22° to 140° F | 5° to 35° C -30° to 60° C |

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