



Maintenance and Service Guide

Compaq Evo Notebook N400c Series

Compaq Evo Notebook N410c Series

Document Part Number: 268629-002

August 2003

This guide is a troubleshooting reference used for maintaining and servicing the notebook. It provides comprehensive information on identifying notebook features, components, and spare parts, troubleshooting notebook problems, and performing notebook disassembly procedures.

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Maintenance and Service Guide
Second Edition (August 2003)
Document Part Number: 268629-002

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Product Description

The Compaq Evo Notebook N410c and N400c Series offer advanced modularity, 1.20-GHz, 1.00-GHz, 850-MHz, or 700-MHz Intel Pentium III processors with 64-bit architecture, industry-leading Accelerated Graphics Port (AGP) implementation, and extensive multimedia support. The notebook provides desktop functionality and connectivity through the optional Mobile Expansion Unit (MEU).



***Figure 1-1. Compaq Evo Notebook N410c and
Evo Notebook N400c***

1.1 Models

Model naming conventions are shown in Tables 1-1 through 1-3.

**Table 1-1
Compaq Evo Notebook N410c and N400c
Model Naming Conventions**

| Key | | | | | | | | | |
|-----|------------------------------|---|----|----|---|---|-----|----------------------------------|------------|
| N4c | P | 120 | X2 | 30 | 0 | C | 128 | O | XXXXXX-XXX |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Key | Description | Options | | | | | | | |
| 1 | Brand/Series designator | N = Evo Notebook | | | | | | 4 = Ultra portable c = Common | |
| 2 | Processor type | P = Intel Pentium III | | | | | | | |
| 3 | Processor speed | 120 = 1.20 GHz 100 = 1.00 GHz | | | | 850 = 850 MHz 700 = 700 MHz | | | |
| 4 | Display type/size/resolution | X = XGA (1024 × 768) | | | | | | | |
| 5 | Hard drive size | 30 = 30.0 MB | | | | 20 = 20.0 MB | | | |
| 6 | Optical drive designator | 0 = None | | | | | | | |
| 7 | Integrated communication | M = Modem 0 = None | | | | C = Modem/NIC combination card | | | |
| 8 | RAM | 25 = 256 MB 12 = 128 MB | | | | 0 = None | | | |
| 9 | Operating system | E = Windows XP Home O = Windows XP Pro o = Windows XP/Windows 2000 dual install | | | | 2 = Windows 2000 6 = Windows 2000/Window NT 4.0 dual install 8 = Windows 98 | | | |
| 10 | SKU# | | | | | | | | |

Table 1-2
Compaq Evo Notebook N410c Models

The following Evo Notebook N410c models use config. code **KVB2** and features:

- TouchPad pointing device
- 4-cell, 2.0-Ah lithium ion (Li ion) battery pack
- 3-year warranty with on-site service
- 16 MB of integrated video memory

| | | | | | | | | | | |
|---------------|---|-----|----|----|---|------------|----|---|--|--|
| N410c | P | 120 | X2 | 30 | 0 | C | 25 | O | | |
| United States | | | | | | 470040-185 | | | | |
| N410c | P | 120 | X2 | 30 | 0 | C | 0 | O | | |
| United States | | | | | | 470040-184 | | | | |
| N410c | P | 120 | X2 | 30 | 0 | C | 25 | 2 | | |
| United States | | | | | | 470040-182 | | | | |
| N410c | P | 120 | X2 | 30 | 0 | C | 0 | 2 | | |
| United States | | | | | | 470040-183 | | | | |

Table 1-2
Compaq Evo Notebook N410c Models (Continued)

The following Evo Notebook N410c models use config. code **KVBZ** and features:

- TouchPad pointing device
- 4-cell, 2.0-Ah Li ion battery pack
- 3-year warranty
- 16 MB of integrated video memory

| N410c | P | 120 | X2 | 30 | 0 | C | 25 | O | |
|----------------------|---|-----|----|----|---|-----------------|----|---|------------|
| Asia Pacific | | | | | | Latin America | | | 470037-597 |
| Australia | | | | | | (NAFTA) | | | |
| Belgium | | | | | | The Netherlands | | | 470037-629 |
| Brazil | | | | | | Norway | | | 470037-631 |
| Czech Republic | | | | | | People's | | | 470037-655 |
| Denmark | | | | | | Republic of | | | |
| Europe International | | | | | | China | | | |
| France | | | | | | Portugal | | | 470037-632 |
| French Canada | | | | | | Russia | | | 470037-634 |
| Germany | | | | | | Saudi Arabia | | | 470037-559 |
| Greece/Poland | | | | | | Slovenia | | | 470037-635 |
| Hong Kong | | | | | | Spain | | | 470037-637 |
| Hungary | | | | | | Sweden | | | 470037-638 |
| Israel | | | | | | Switzerland | | | 470037-640 |
| Italy | | | | | | Taiwan | | | 470037-657 |
| Japan | | | | | | Turkey | | | 470037-642 |
| Japan (English) | | | | | | United Kingdom | | | 470037-643 |
| Korea | | | | | | United States | | | 470037-550 |
| Latin America | | | | | | United States | | | 470037-600 |
| | | | | | | (NAFTA) | | | |

Table 1-2
Compaq Evo Notebook N410c Models (Continued)

| N410c | P | 120 | X2 | 30 | 0 | C | 25 | 2 | |
|----------------------|---|-----|----|----|---|-----------------|----|---|------------|
| Asia Pacific | | | | | | Latin America | | | 470037-574 |
| Australia | | | | | | (NAFTA) | | | |
| Belgium | | | | | | The Netherlands | | | 470037-732 |
| Brazil | | | | | | Norway | | | 470037-734 |
| Czech Republic | | | | | | People's | | | 470037-759 |
| Denmark | | | | | | Republic of | | | |
| Europe International | | | | | | China | | | |
| France | | | | | | Portugal | | | 470037-735 |
| French Canada | | | | | | Russia | | | 470037-737 |
| Germany | | | | | | Saudi Arabia | | | 470037-711 |
| Greece/Poland | | | | | | Slovenia | | | 470037-739 |
| Hong Kong | | | | | | Spain | | | 470037-740 |
| Hungary | | | | | | Sweden | | | 470037-742 |
| Israel | | | | | | Switzerland | | | 470037-745 |
| Italy | | | | | | Taiwan | | | 470037-760 |
| Japan | | | | | | Turkey | | | 470037-743 |
| Japan (English) | | | | | | United Kingdom | | | 470037-744 |
| Korea | | | | | | United States | | | 470037-662 |
| Latin America | | | | | | United States | | | 470037-690 |
| | | | | | | (NAFTA) | | | |

Table 1-2
Compaq Evo Notebook N410c Models (Continued)

| N410c | P | 100 | X2 | 20 | 0 | C | 25 | O | |
|----------------------|---|-----|----|----|---|-----------------|----|---|------------|
| Asia Pacific | | | | | | Latin America | | | 470040-133 |
| Australia | | | | | | The Netherlands | | | 470040-121 |
| Belgium | | | | | | Norway | | | 470040-122 |
| Brazil | | | | | | People's | | | 470040-137 |
| Czech Republic | | | | | | Republic of | | | |
| Denmark | | | | | | China | | | |
| Europe International | | | | | | Portugal | | | 470040-123 |
| France | | | | | | Russia | | | 470040-124 |
| French Canada | | | | | | Saudi Arabia | | | 470040-020 |
| Germany | | | | | | Slovenia | | | 470040-125 |
| Greece/Poland | | | | | | Spain | | | 470040-126 |
| Hong Kong | | | | | | Sweden | | | 470040-127 |
| Hungary | | | | | | Switzerland | | | 470040-128 |
| Israel | | | | | | Taiwan | | | 470040-138 |
| Italy | | | | | | Turkey | | | 470040-129 |
| Japan | | | | | | United Kingdom | | | 470040-130 |
| Japan (English) | | | | | | United States | | | 470039-997 |
| Korea | | | | | | | | | |

Table 1-2
Compaq Evo Notebook N410c Models (Continued)

| N410c | P | 100 | X2 | 20 | 0 | C | 25 | 2 | |
|----------------------|---|-----|----|----|---|-----------------|----|---|------------|
| Asia Pacific | | | | | | Latin America | | | 470040-174 |
| Australia | | | | | | The Netherlands | | | 470040-160 |
| Belgium | | | | | | Norway | | | 470040-161 |
| Brazil | | | | | | People's | | | 470040-178 |
| Czech Republic | | | | | | Republic of | | | |
| Denmark | | | | | | China | | | |
| Europe International | | | | | | Portugal | | | 470040-162 |
| France | | | | | | Russia | | | 470040-163 |
| French Canada | | | | | | Saudi Arabia | | | 470040-164 |
| Germany | | | | | | Slovenia | | | 470040-165 |
| Greece/Poland | | | | | | Spain | | | 470040-166 |
| Hong Kong | | | | | | Sweden | | | 470040-167 |
| Hungary | | | | | | Switzerland | | | 470040-168 |
| Israel | | | | | | Taiwan | | | 470040-179 |
| Italy | | | | | | Turkey | | | 470040-169 |
| Japan | | | | | | United Kingdom | | | 470040-170 |
| Japan (English) | | | | | | United States | | | 470040-148 |
| Korea | | | | | | | | | |

Table 1-2
Compaq Evo Notebook N410c Models (Continued)

The following Evo Notebook N410c models use config. code **KVBZ** and features:

- TouchPad pointing device
- 4-cell, 2.0-Ah Li ion battery pack
- 1-year warranty
- 16 MB of integrated video memory

| | | | | | | | | | | |
|-----------|---|-----|----|----|---|------------|----|---|--|--|
| N410c | P | 120 | X2 | 30 | 0 | C | 25 | O | | |
| Hong Kong | | | | | | 470037-594 | | | | |
| N410c | P | 120 | X2 | 30 | 0 | C | 25 | 2 | | |
| Hong Kong | | | | | | 470037-565 | | | | |

The following Evo Notebook N410c models use config. code **KVB1** and features:

- TouchPad pointing device
- 4-cell, 2.0-Ah Li ion battery pack
- 1-year warranty
- 16 MB of integrated video memory

| | | | | | | | | | | |
|-------|---|-----|----|----|---|------------|----|---|--|--|
| N410c | P | 100 | X2 | 30 | 0 | C | 25 | O | | |
| Japan | | | | | | 470037-593 | | | | |
| N410c | P | 100 | X2 | 30 | 0 | C | 12 | 2 | | |
| Japan | | | | | | 470037-534 | | | | |

Table 1-3
Compaq Evo Notebook N400c Models

The following Evo Notebook N400c models use config. code **JMWZ** and features:

- TouchPad pointing device
- 4-cell, 2.0-Ah Li ion battery pack
- 1-year warranty with on-site service
- 16 MB of integrated video memory

| N400c | P | 850 | X2 | 20 | 0 | 0 | 25 | 6 | |
|------------------------|---|-----|----|----|------------|-----------------------|----|-----|------------|
| European International | | | | | 470026-527 | Thailand | | | 470026-528 |
| N400c | P | 850 | X2 | 20 | 0 | C | 25 | 6 | |
| Australia | | | | | 470026-698 | Norway | | | 470031-229 |
| Belgium | | | | | 470031-219 | People's Republic of | | | 470031-237 |
| Brazil | | | | | 470031-236 | China | | | |
| Czech Republic | | | | | 470031-220 | Portugal | | | 470031-231 |
| Denmark | | | | | 470031-221 | Russia | | | 470031-232 |
| France | | | | | 470026-534 | Saudi Arabia | | | 470031-226 |
| French Canada | | | | | 470026-533 | Slovakia/ | | | 470031-233 |
| Germany | | | | | 470026-535 | Slovenia | | | |
| Greece/Poland | | | | | 470031-223 | Spain | | | 470031-410 |
| Hong Kong | | | | | 470031-239 | Sweden | | | 470031-234 |
| Hungary | | | | | 470031-224 | Switzerland | | | 470026-749 |
| Israel | | | | | 470031-225 | | | and | |
| Italy | | | | | 470026-536 | | | | 470026-750 |
| Japan | | | | | 470026-693 | Taiwan | | | 470031-238 |
| Japan English | | | | | 470026-694 | Thailand | | | 470026-697 |
| Korea | | | | | 470031-240 | Turkey | | | 470031-235 |
| Latin America | | | | | 470026-695 | United Kingdom | | | 470026-537 |
| Latin America (NAFTA) | | | | | 470026-532 | United States | | | 470026-529 |
| The Netherlands | | | | | 470031-228 | United States (NAFTA) | | | 470026-531 |

Table 1-3
Compaq Evo Notebook N400c Models (Continued)

| N400c | P | 700 | X2 | 20 | 0 | C | 12 | 6 | |
|--------------------------|---|-----|----|----|---|--------------------------|----|-----|------------|
| Asia Pacific | | | | | | Norway | | | 470013-742 |
| Australia | | | | | | People's | | | 470013-788 |
| Belgium | | | | | | Republic of | | | |
| Brazil | | | | | | China | | | |
| Czech Republic | | | | | | Portugal | | | 470013-746 |
| Denmark | | | | | | Russia | | | 470013-752 |
| France | | | | | | Saudi Arabia | | | 470013-733 |
| French Canada | | | | | | Slovakia/ | | | 470013-756 |
| Germany | | | | | | Slovenia | | | |
| Greece/Poland | | | | | | Spain | | | 470013-758 |
| Hong Kong | | | | | | Sweden/Finland | | | 470013-760 |
| Hungary | | | | | | Switzerland | | | 470013-769 |
| Israel | | | | | | | | and | |
| Italy | | | | | | | | | 470013-770 |
| Japan | | | | | | Taiwan | | | 470013-790 |
| Japan English | | | | | | Turkey | | | 470013-772 |
| Korea | | | | | | United Kingdom | | | 470013-774 |
| Latin America | | | | | | United States | | | 470013-471 |
| Latin America (NAFTA) | | | | | | United States (NAFTA) | | | 470013-689 |
| The Netherlands | | | | | | | | | 470013-738 |

Table 1-3
Compaq Evo Notebook N400c Models (Continued)

| N400c | P | 700 | X2 | 20 | 0 | C | 12 | 8 | |
|---------------------------|---|-----|----|----|------------|-----------------|----|---|------------|
| Asia Pacific | | | | | 470013-783 | The Netherlands | | | 470013-736 |
| Australia | | | | | 470013-785 | Norway | | | 470013-740 |
| Belgium | | | | | 470013-695 | People's | | | 470013-787 |
| Brazil | | | | | 470013-781 | Republic of | | | |
| Czech Republic | | | | | 470013-696 | China | | | |
| Denmark | | | | | 470013-697 | Portugal | | | 470013-744 |
| France | | | | | 470013-698 | Russia | | | 470013-750 |
| French Canada | | | | | 470013-694 | Saudi Arabia | | | 470013-732 |
| Germany | | | | | 470013-699 | Slovakia/ | | | 470013-755 |
| Greece/Poland | | | | | 470013-711 | Slovenia | | | |
| Hong Kong | | | | | 470013-791 | Spain | | | 470013-757 |
| Hungary | | | | | 470013-715 | Sweden/Finland | | | 470013-759 |
| Israel | | | | | 470013-716 | Taiwan | | | 470013-789 |
| Italy | | | | | 470013-720 | Turkey | | | 470013-771 |
| Japan | | | | | 470013-775 | United Kingdom | | | 470013-773 |
| Japan English | | | | | 470013-777 | United States | | | 470013-470 |
| Korea | | | | | 470013-793 | United States | | | 470013-683 |
| Latin America | | | | | 470013-779 | (NAFTA) | | | |
| Latin America (NAFTA) | | | | | 470013-686 | | | | |
| N400c | P | 700 | X2 | 20 | 0 | 0 | 12 | 6 | |
| European International | | | | | 470013-678 | Asia Pacific | | | 470013-679 |
| N400c | P | 700 | X2 | 20 | 0 | 0 | 12 | 8 | |
| European International | | | | | 470013-676 | Asia Pacific | | | 470013-677 |

1.2 Features

The notebook has the following features:

- Intel Pentium III 1.20-GHz, 1.00-GHz, 850-MHz, or 700-MHz processor, with 256-KB integrated cache, varying by notebook model
- ATI Mobility M1, 8-MB SDRAM
- 128 MB standard memory, expandable to 512 MB
- Microsoft Windows 98, Windows 2000, Windows NT, or Windows XP preinstalled, varying by notebook model
- 12.1-inch, XGA, TFT (1024 × 768) or 12.1-inch, SVGA, TFT (800 × 600) display, with over 16.8 million colors, varying by notebook model
- TouchPad or pointing stick pointing device (pointing stick available only on Evo Notebook N400c models)
- Mini PCI 56K V.90 modem, or optional Mini PCI V.90 modem plus 10/100 NIC combination card
- Support for one Type II PC Card slot with support for both 32-bit CardBus and 16-bit PC Cards
- External AC adapter with power cord
- Supports a 4-cell Li ion primary battery pack in the battery bay and an external 4-cell Li ion or 9-cell high-capacity battery pack
- 40-, 30-, 20-, or 10-GB high-capacity hard drive
- Connectors for Mobile Expansion Unit (MEU), MultiPort wireless communication devices, stereo speaker/headphone, microphone, universal serial bus (USB), RJ-45 network, RJ-11 modem, parallel, serial, video out, external monitor, and AC power
- Speaker

1.3 Clearing a Password

If the notebook you are servicing has an unknown password, follow these steps to clear the password. These steps also clear CMOS.

1. Prepare the notebook for disassembly. Refer to Section 5.3, “Preparing the Computer for Disassembly,” for more information.
2. Remove the real time clock (RTC) battery (refer to Section 5.10, “Real Time Clock (RTC) Battery”).
3. Wait approximately five minutes.
4. Replace the RTC battery and reassemble the notebook.
5. Connect AC power to the notebook. Do **not** reinsert any battery packs at this time.
6. Turn on the notebook.

All passwords and all CMOS settings are clear.

1.4 Power Management

The notebook comes with a collection of power management features that extends battery operating time and conserves power. The notebook supports the following power management features:

- Standby
- Hibernation
- Setting customized by the user
- Hotkeys for setting level of performance
- Smart battery that provides an accurate battery power gauge
- Battery calibration
- Lid switch suspend/resume
- Power switch
- Standby button
- Advanced Configuration and Power Management (ACP) compliant

1.5 Computer External Components

The external components on the display and left side of the notebook are shown in Figure 1-2 and described in Table 1-4.

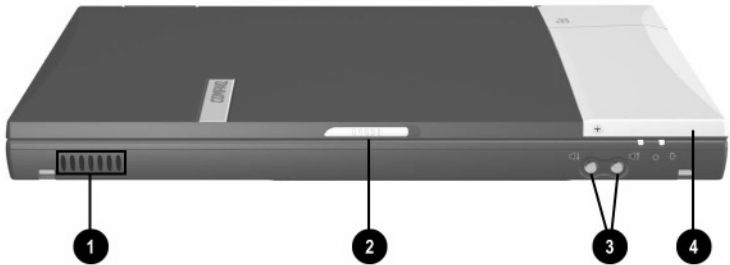


Figure 1-2. Front Panel Components

**Table 1-4
Front Panel Components**

| Item | Component | Function |
|------|-----------------------|--|
| 1 | Vent | Allows airflow to cool internal components. |
| 2 | Display release latch | Releases the display to open the notebook. |
| 3 | Volume buttons (2) | Adjust or mute the system volume. |
| 4 | MultiPort | Connects wireless communication devices, such as a Bluetooth or 802.11b MultiPort Module, and other options. |

The external components on the right side of the notebook are shown in Figure 1-3 and described in Table 1-5.

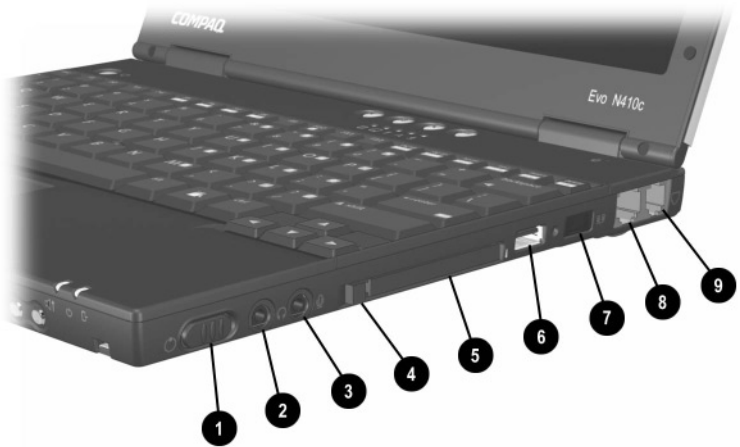




Figure 1-3. Right Side Components

**Table 1-5
Right Side Components**

| Item | Component | Function |
|------|-----------------------------------|---|
| 1 | Power switch | Turns the notebook on or off or exits Standby. |
| 2 | Stereo speaker/ headphone jack | Connects stereo speakers, headphones, headset, or television audio. |

Table 1-5
Right Side Components (Continued)

| Item | Component | Function |
|-------------|---|---|
| 3 | Microphone jack | Connects a single sound channel microphone. |
| 4 | PC Card eject button | Ejects a PC Card from the PC Card slot. |
| 5 | PC Card slot | Supports 32-bit (CardBus) and 16-bit PC Cards. |
| 6 | USB connector | Connects USB devices. |
| 7 | Infrared port | Links another IrDA-compliant device for wireless communication. |
| 8 | RJ-45 jack (network models only) | Connects the network cable.  A network cable is included with network models. |
| 9 | RJ-11 jack (internal modem models only) | Connects the modem cable to an internal modem.  A modem cable is included with internal modem models. |

The external components on the left side of the notebook are shown in Figure 1-4 and described in Table 1-6.

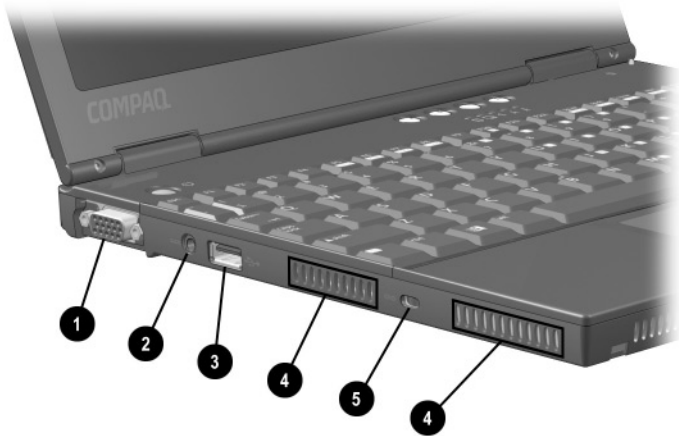



Figure 1-4. Left Side Components

Table 1-6
Left Side Components

| Item | Component | Function |
|-------------|----------------------------|---|
| 1 | External monitor connector | Connects an external monitor or overhead projector. |
| 2 | Power jack | Connects any one of the following: <ul style="list-style-type: none"> ■ AC adapter ■ Optional automobile power adapter/charger ■ Optional aircraft power adapter |
| 3 | USB connector | Connects USB devices. |
| 4 | Vents | Allow airflow to cool internal components.  The forward vent is present only on Evo Notebook 400c models. |
| 5 | Security cable slot | Attaches an optional security cable to the notebook. |

Computer keyboard components are shown in Figure 1-5 and described in Table 1-7.

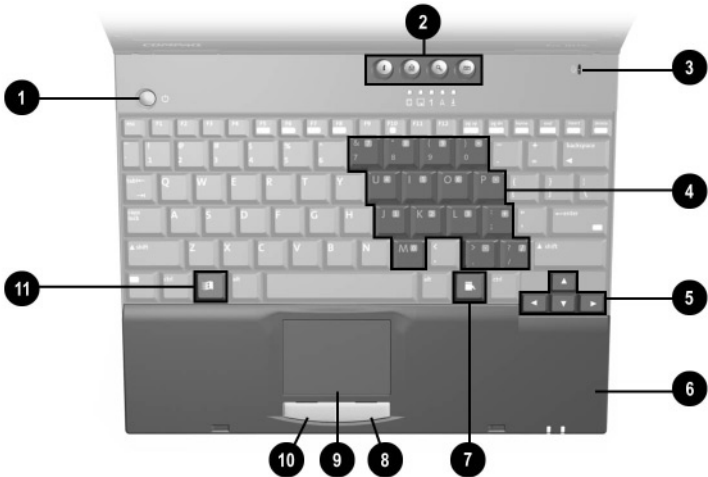


Figure 1-5. Keyboard Components (TouchPad Model)

**Table 1-7
Keyboard Components**

| Item | Component | Function |
|------|-------------------------|--|
| 1 | Power/Standby button | <ul style="list-style-type: none">■ Turns on the notebook if it is off.■ Initiates and exits Standby.■ When pressed with the Fn key, initiates Hibernation. |
| 2 | Easy Access buttons (4) | Provide quick access to the Internet. |

Table 1-7
Keyboard Components (Continued)

| Item | Component | Function |
|-------------|---|---|
| 3 | Microphone | Inputs single-channel sound to the notebook; can be used whether the notebook is open or closed. |
| 4 | Embedded numeric keypad | Converts keys to numeric keypad. |
| 5 | Cursor control keys | Move the cursor around the screen. |
| 6 | Palm rest | Provides TouchPad and TouchPad buttons or the pointing stick buttons. Also protects the internal hard drive, internal memory expansion slot, and modem/NIC mini PCI slot connector. |
| 7 | Windows application key | Displays a menu when using a Microsoft application. The menu is the same one that is displayed by pressing the right mouse button. |
| 8 | Right TouchPad button (TouchPad models only) | Functions like the right mouse button on an external mouse. |
| 9 | TouchPad (TouchPad models only) | Moves the mouse cursor, selects, and activates. |
| 10 | Left TouchPad button (TouchPad models only) | Functions like the left mouse button on an external mouse. |
| 11 | Windows logo key | Displays Windows Start menu. |
| 12 | Caps lock key | Turns on the caps lock function. |

Computer top components are shown in Figure 1-6 and described in Table 1-8.

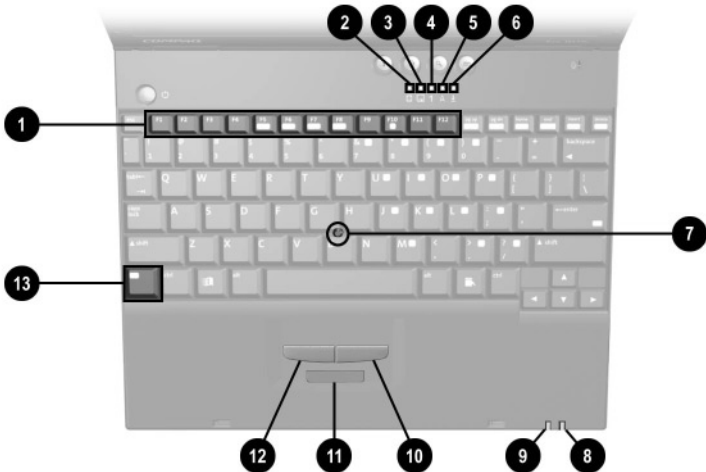


Figure 1-6. Keyboard Components (Pointing Stick Model—Evo Notebook N400c models only)

**Table 1-8
Keyboard Components**

| Item | Component | Function |
|------|--|---|
| 1 | F1 through F12 function keys | Perform preset functions. |
| 2 | Hard drive light | On: The primary hard drive is being accessed. |
| 3 | MultiBay light | On: A MultiBay drive in the optional MEU or an external diskette drive connected to the notebook is being accessed. |

Table 1-8
Keyboard Components (Continued)

| Item | Component | Function |
|-------------|-----------------------------|---|
| 4 | Num lock light | On: Num lock is on and the embedded numeric keypad is enabled. |
| 5 | Caps lock light | On: Caps lock is on. |
| 6 | Scroll lock light | On: Scroll lock is on. |
| 7 | Battery light | On: A battery pack is charging. Blinking: A battery pack that is the only available power source has reached a low-battery condition. |
| 8 | Power light | On: Power is turned on. Blinking: Computer is in Standby. The power light also blinks if a battery pack that is the only available power source reaches a critical low-battery condition while Hibernation is disabled. |
| 9 | Pointing stick | Moves the mouse cursor. |
| 10 | Right pointing stick button | Functions like the right mouse button on an external mouse. |
| 11 | Scroll button | Can be set to scroll, magnify, or function like the third button on an external mouse. |
| 12 | Left pointing stick button | Functions like the left mouse button on an external mouse. |
| 13 | Fn key | Used with hotkeys to perform preset hotkey functions. |

The external components on the bottom of the notebook are shown in Figure 1-7 and described in Table 1-9.

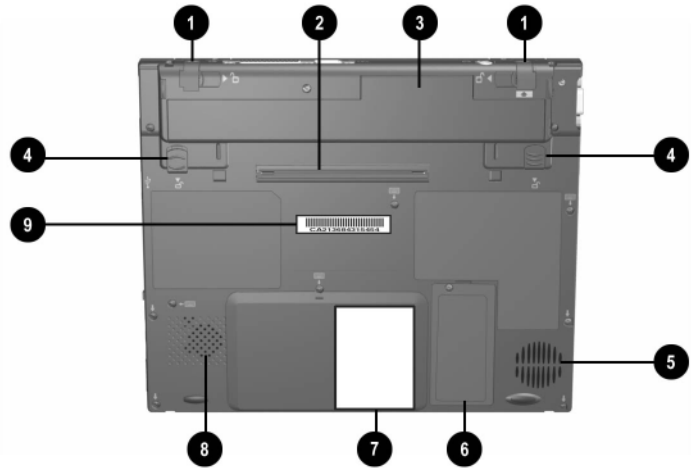


Figure 1-7. Bottom Components

Table 1-9
Bottom Components

| Item | Component | Function |
|-------------|--------------------------------------|---|
| 1 | External battery release latches (2) | Release the external battery pack. |
| 2 | Docking connector | Connects the notebook to an optional Mobile Expansion Unit. |
| 3 | Battery bay | Holds the primary battery pack. |
| 4 | Primary battery release latches (2) | Release the primary battery pack from the battery bay. |
| 5 | Fan | Provides airflow to cool internal components. |
| 6 | Memory expansion compartment cover | Covers the memory expansion compartment that contains one memory expansion slot for a memory expansion board. |
| 7 | Certificate of Authenticity label | Contains the Product Key, which may need to be entered before using some Windows operating systems. |
| 8 | Speaker | Produces sound. |
| 9 | Serial number | Identifies the notebook; needed when you call Compaq customer support. |

The notebook rear panel components are shown in Figure 1-8 and described in Table 1-10.

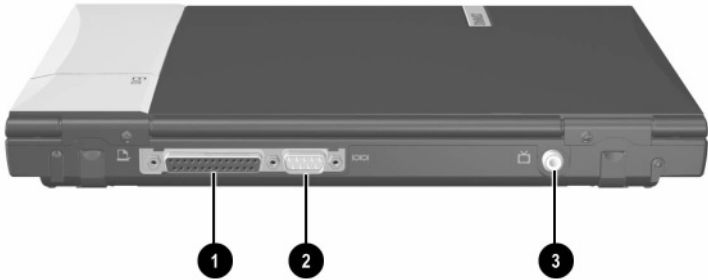


Figure 1-8. Rear Panel Components

**Table 1-10
Rear Panel Components**

| Item | Component | Function |
|------|------------------------|---|
| 1 | Parallel connector | Connects a parallel device. |
| 2 | Serial connector | Connects a serial device. |
| 3 | Composite TV connector | Connects a television, VCR, camcorder, overhead projector, or video capture card. |

1.6 Design Overview

This section presents a design overview of key parts and features of the notebook. Refer to Chapter 3, “Illustrated Parts Catalog,” to identify replacement parts, and Chapter 5, “Removal and Replacement Procedures,” for disassembly steps.

The system board provides the following device connections:

- Memory expansion board
- Hard drive
- Display
- Keyboard/TouchPad or pointing stick
- Audio
- Intel Pentium III processor
- Fan
- PC Card
- Modem or modem/NIC

The notebook uses an electrical fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software applications. Exhaust air is displaced through the ventilation grill located on the right side of the notebook.



CAUTION: To properly ventilate the notebook, allow at least a 7.6-cm. (3-inch) clearance on the left side of the notebook.

Troubleshooting



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, no one should attempt to make repairs at the component level or make modifications to any printed wiring board. Improper repairs can create a safety hazard. Any indication of component replacement or printed wiring board modification may void any warranty or exchange allowances.

2.1 Computer Setup and Diagnostics Utilities

Selecting Computer Setup or Compaq Diagnostics

The notebook features two Compaq system management utilities:

- **Computer Setup**—A system information and customization utility that can be used even when your operating system is not working or will not load. This utility includes settings that are not available in Windows.

- **Compaq Diagnostics**—A system information and diagnostic utility that is used within your Windows operating system.

Use this utility whenever possible to:

- Display system information.
- Test system components.
- Troubleshoot a device configuration problem in Windows 2000, Windows XP Professional, or Windows XP Home.

Using Computer Setup

Information and settings in Computer Setup are accessed from the File, Security, or Advanced menus:

1. Turn on or restart the notebook. Press **F10** while the F10 = ROM Based Setup message is displayed in the lower-left corner of the screen.
 - To change the language, press **F2**.
 - To view navigation information, press **F1**.
 - To return to the Computer Setup menu, press **esc**.
2. Select the File, Security, or Advanced menu.
3. To close Computer Setup and restart the notebook:
 - Select File > Save Changes and Exit and press **enter**.
 - or
 - Select File > Ignore Changes and Exit and press **enter**.
4. When you are prompted to confirm your action, press **F10**.




Selecting from the File Menu

**Table 2-1
File Menu**

| Select | To Do This |
|-------------------------|--|
| System Information | <ul style="list-style-type: none"> ■ View identification information about the notebook, a docking base, and any battery packs in the system. ■ View specification information about the processor, memory and cache size, and system ROM. |
| Save to Floppy | Save system configuration settings to a diskette. |
| Restore from Floppy | Restore system configuration settings from a diskette. |
| Restore Defaults | Replace configuration settings in Computer Setup with factory default settings. (Identification information is retained.) |
| Ignore Changes and Exit | Cancel changes entered during the current session, then exit and restart the notebook. |
| Save Changes and Exit | Save changes entered during the current session, then exit and restart the notebook. |

Selecting from the Security Menu

**Table 2-2
Security Menu**

| Select | To Do This |
|--|--|
| Setup Password | Enter, change, or delete a setup password. (The setup password is called an administrator password in Compaq Computer Security, a program accessed from the Windows Control Panel.) |
| Power-on Password | Enter, change, or delete a power-on password. |
| DriveLock Passwords | Enable/disable DriveLock; change a DriveLock User or Master password.  Drive Lock Settings are accessible only when you enter Computer Setup by turning on (not restarting) the notebook. |
| Password Options Password options can be selected only when a power-on password has been set. | Enable/disable: <ul style="list-style-type: none"> ■ QuickLock ■ QuickLock on Standby ■ QuickBlank  To enable QuickLock on Standby or QuickBlank, you must first enable QuickLock. |
| Device Security | Enable/disable: <ul style="list-style-type: none"> ■ Ports or diskette drives* ■ Diskette write* ■ CD-ROM or diskette startup  Settings for a DVD-ROM can be entered in the CD-ROM field. |
| System IDs | Enter identification numbers for the notebook, a docking base, and all battery packs in the system. |
| *Not applicable to SuperDisk LS-120 drives. | |

Selecting from the Advanced Menu

Table 2-3
Advanced Menu

| Select | To Do This |
|--------------------------------|---|
| Language (or press F2) | Change the Computer Setup language. |
| Boot Options | <p>Enable/disable:</p> <ul style="list-style-type: none"> ■ QuickBoot, which starts the notebook more quickly by eliminating some startup tests. (If you suspect a memory failure and want to test memory automatically during startup, disable QuickBoot.) ■ MultiBoot, which sets a startup sequence that can include most bootable devices and media in the system. |
| Device Options | <ul style="list-style-type: none"> ■ Enable/disable the embedded numeric keypad at startup. ■ Enable/disable multiple standard pointing devices at startup. (To set the notebook to support only a single, usually nonstandard, pointing device at startup, select Disable.) ■ Enable/disable USB legacy support for a USB keyboard. (When USB legacy support is enabled, the keyboard works even when a Windows operating system is not loaded.) ■ Set an optional external monitor or overhead projector connected to a video card in a docking base as the primary device. (When the notebook display is set as secondary, the notebook must be shut down before undocking from a docking base.) |

Table 2-3
Advanced Menu (*Continued*)

| Select | To Do This |
|--|--|
| Device Options (<i>continued</i>) | <ul style="list-style-type: none">■ Change the parallel port mode from Enhanced Parallel Port (EPP, the default setting) to standard, bidirectional, EPP or Enhanced Capabilities Port (ECP).■ Set video-out mode to NTSC (default), PAL, NTSC-J, or PAL-M.*■ Enable/disable all settings in the SpeedStep window. (When Disable is selected, the notebook runs in Battery Optimized mode.)■ Specify how the notebook recognizes multiple identical docking bases that are identically equipped. (Select Disable to recognize the docking bases as a single docking base; select Enable to recognize the docking bases individually, by serial number.)■ Enable/disable the reporting of the processor serial number by the processor to the software. |
| HDD Self Test Options | Run a quick comprehensive self test on hard drives in the system that support the test features. |

* Video modes vary even within regions. However, NTSC is common in North America; PAL, in Europe, Africa, and the Middle East; NTSC-J, in Japan; and PAL-M, in Brazil. Other South and Central American regions may use NTSC, PAL, or PAL-M.

2.2 Using Compaq Diagnostics

When you access Compaq Diagnostics, a scan of all system components is displayed on the screen before the Compaq Diagnostics window opens.

You can display more or less information from anywhere within Compaq Diagnostics by selecting Level on the menu bar.

Compaq Diagnostics is designed to test Compaq components. If non-Compaq components are tested, the results may be inconclusive.

Obtaining, Saving, or Printing Configuration Information

1. Access Compaq Diagnostics by selecting Start > Settings > Control Panel > Compaq Diagnostics.
2. Select Categories, then select a category from the drop-down list.
 - To save the information, select File > Save As.
 - To print the information, select File > Print.
3. To close Compaq Diagnostics, select File > Exit.

Obtaining, Saving, or Printing Diagnostic Test Information

1. Access Compaq Diagnostics by selecting Start > Settings > Control Panel > Compaq Diagnostics.
2. Select the Test tab.
3. In the scroll box, select the category or device you want to test.
4. Select a test type:
 - Quick Test**—Runs a quick, general test on each device in a selected category.
 - Complete Test**—Performs maximum testing on each device in a selected category.
 - Custom Test**—Performs maximum testing on a selected device.
 - ◆ To run all tests for your selected device, click Check All.
 - ◆ To run only the tests you select, click Uncheck All, then select the checkbox for each test you want to run.

5. Select a test mode:

- Interactive Mode**—Provides maximum control over the testing process. You determine whether the test was passed or failed, and you may be prompted to insert or remove devices.
- Unattended Mode**—Does not display prompts. If errors are found, they are displayed when testing is complete.

6. Click Begin Testing.

7. Select a tab to view a test report:

- Status tab**—Summarizes the tests run, passed, and failed during the current testing session.
- Log tab**—Lists tests run on the system, the number of times each test has run, the number of errors found on each test, and the total run time of each test.
- Error tab**—Lists all errors found in the notebook with their error codes.

8. Select a tab to save the report:

- Log tab**—Select Save.
- Error tab**—Select Save.

9. Select a tab to print the report:

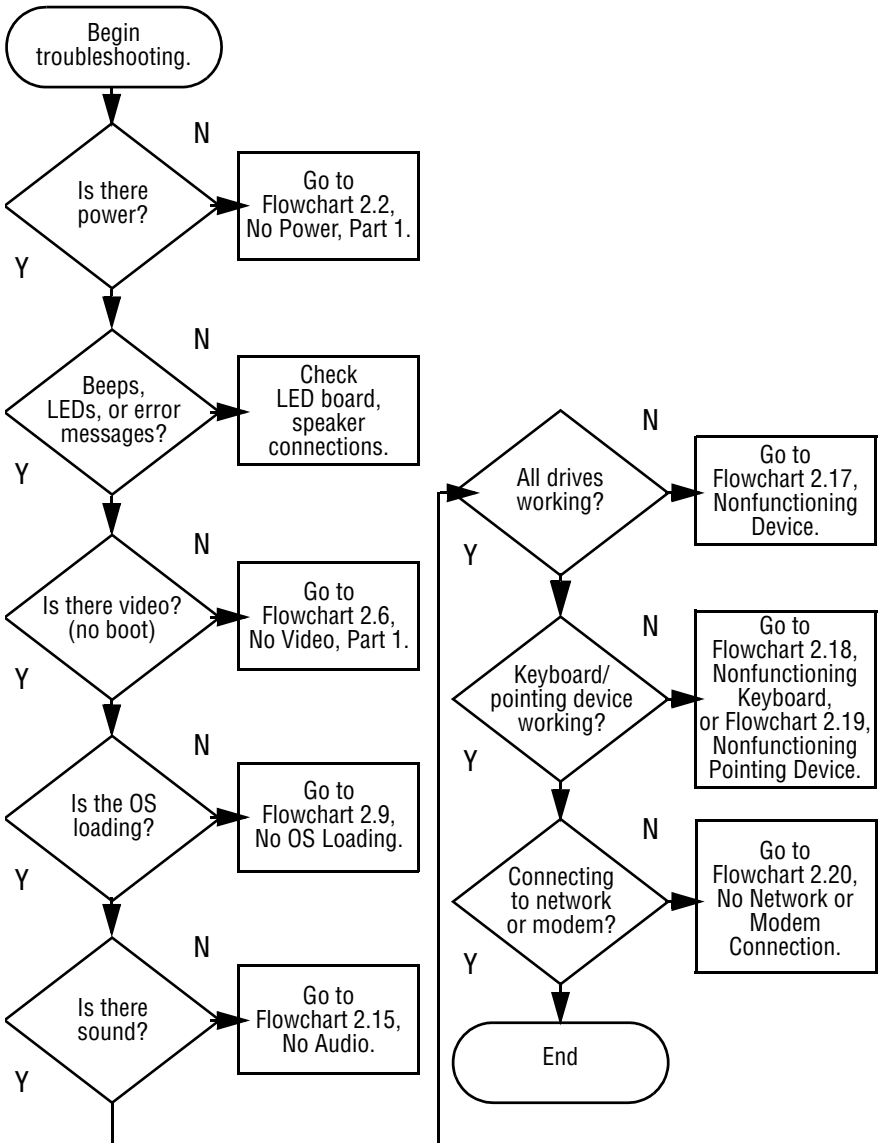
- Log tab**—Select File > Save As, then print the file from your folder.

2.3 Troubleshooting Flowcharts

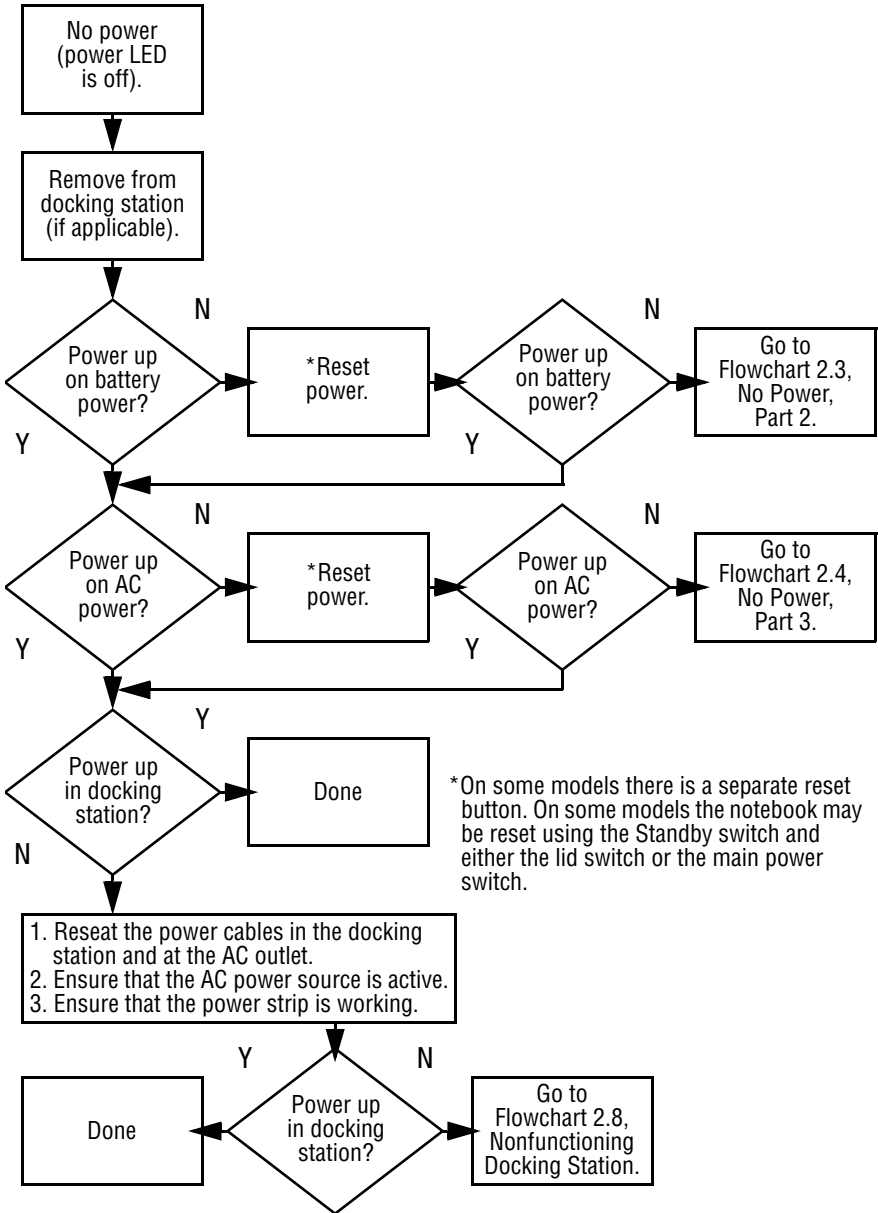
Table 2-4
Troubleshooting Flowcharts Overview

| Flowchart | Description |
|------------------|---|
| 2.1 | Initial Troubleshooting |
| 2.2 | No Power, Part 1 |
| 2.3 | No Power, Part 2 |
| 2.4 | No Power, Part 3 |
| 2.5 | No Power, Part 4 |
| 2.6 | No Video, Part 1 |
| 2.7 | No Video, Part 2 |
| 2.8 | Nonfunctioning Docking Station |
| 2.9 | No Operating System (OS) Loading |
| 2.10 | No OS Loading From Hard Drive, Part 1 |
| 2.11 | No OS Loading From Hard Drive, Part 2 |
| 2.12 | No OS Loading From Hard Drive, Part 3 |
| 2.13 | No OS Loading From Diskette Drive |
| 2.14 | No OS Loading From CD- or DVD-ROM Drive |
| 2.15 | No Audio, Part 1 |
| 2.16 | No Audio, Part 2 |
| 2.17 | Nonfunctioning Device |
| 2.18 | Nonfunctioning Keyboard |
| 2.19 | Nonfunctioning Pointing Device |
| 2.20 | No Network or Modem Connection |

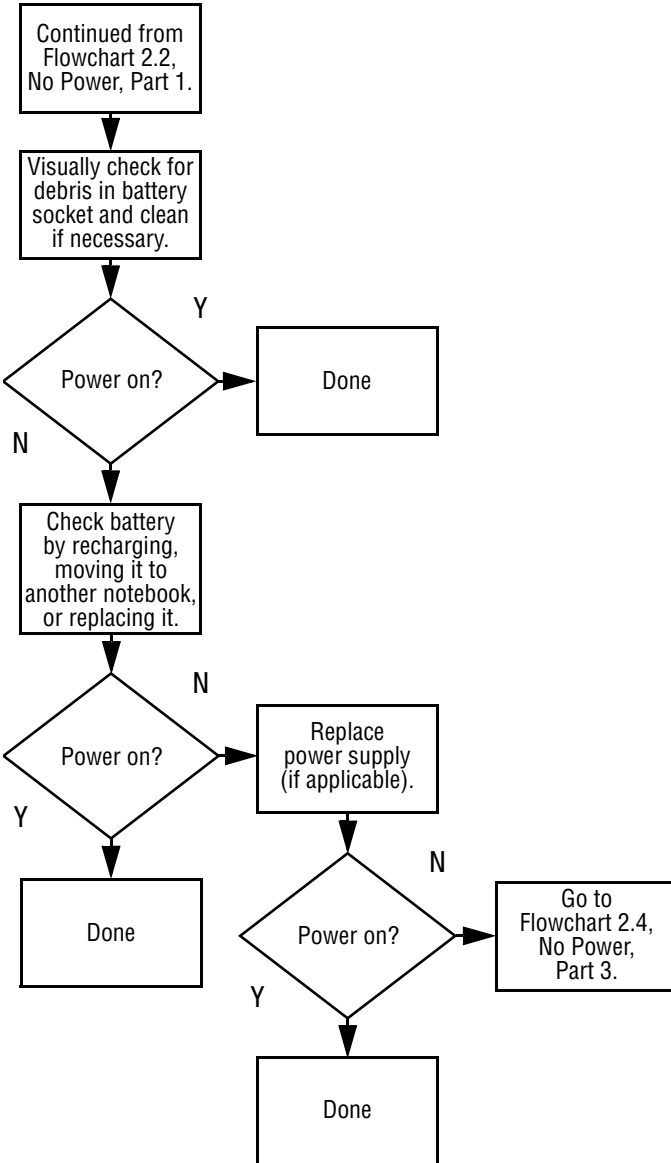
Flowchart 2.1 - Initial Troubleshooting



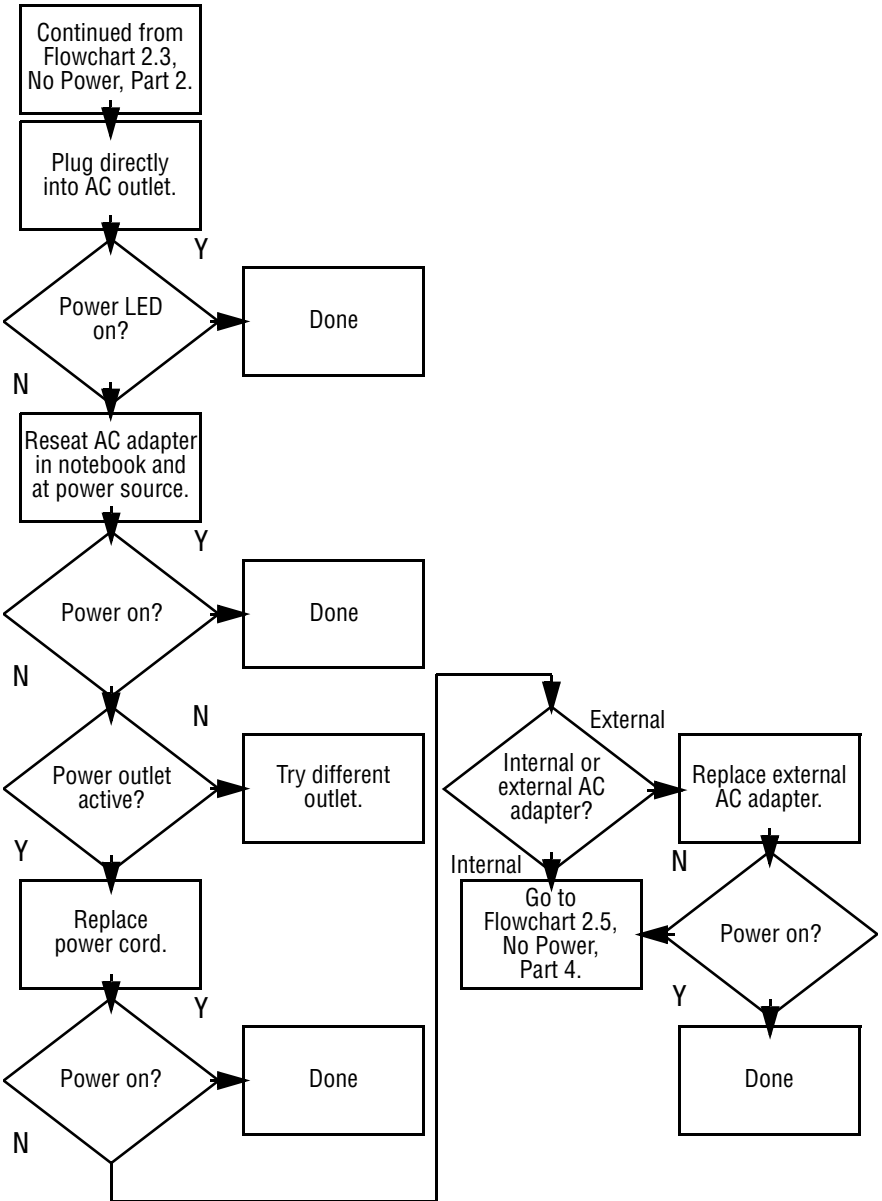
Flowchart 2.2 - No Power, Part 1



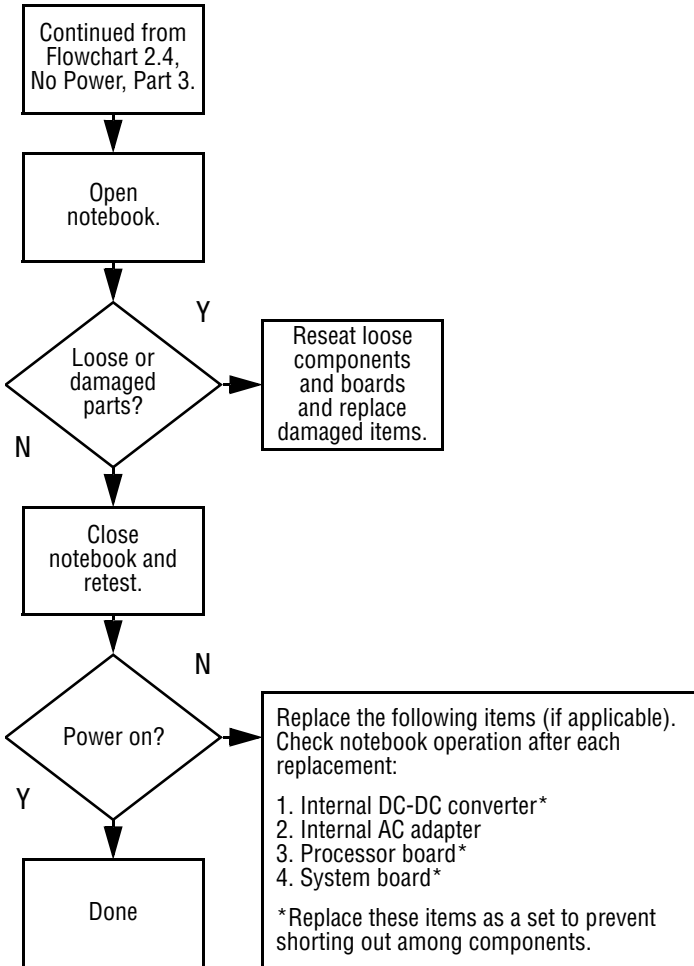
Flowchart 2.3 - No Power, Part 2



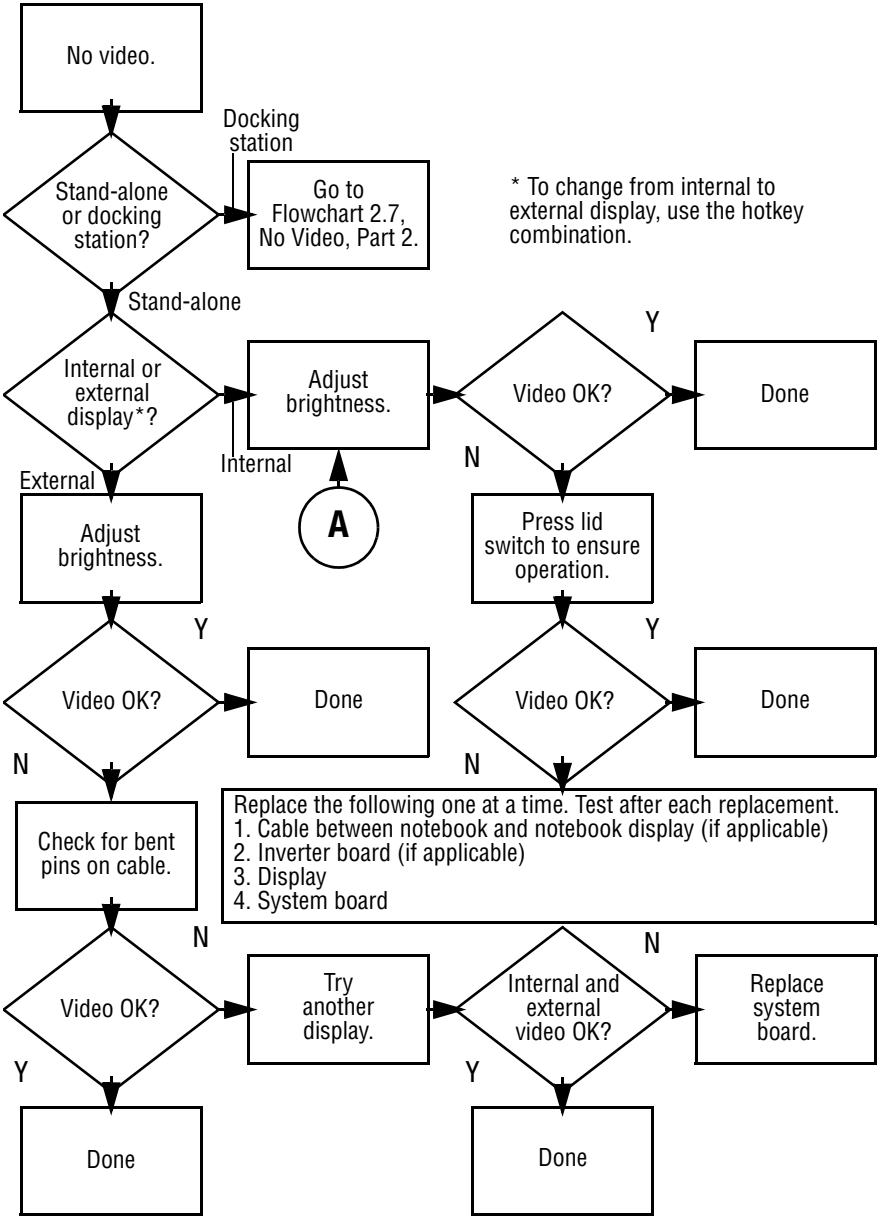
Flowchart 2.4 - No Power, Part 3



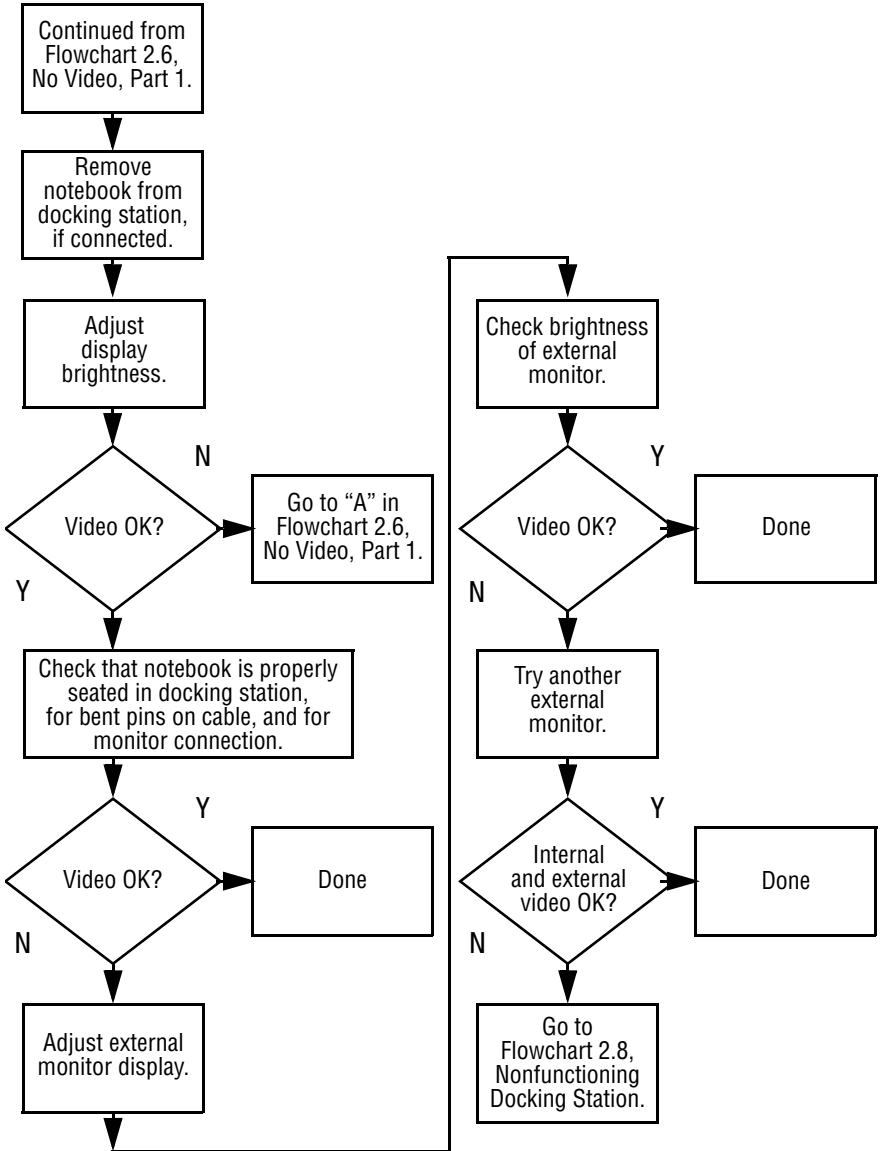
Flowchart 2.5 - No Power, Part 4



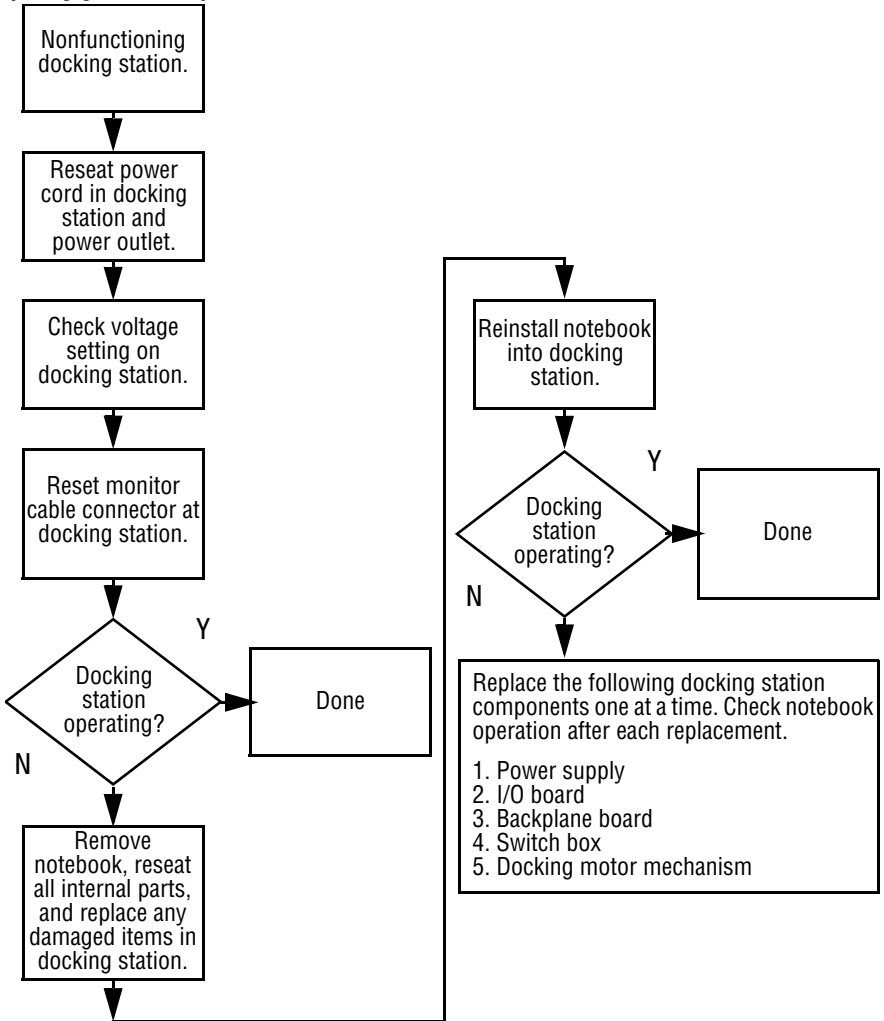
Flowchart 2.6 - No Video, Part 1



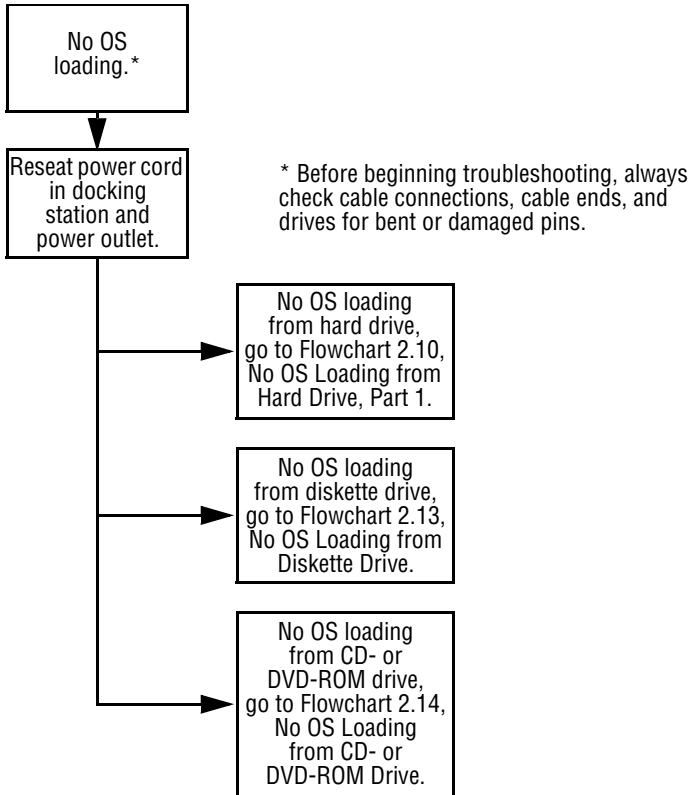
Flowchart 2.7 - No Video, Part 2



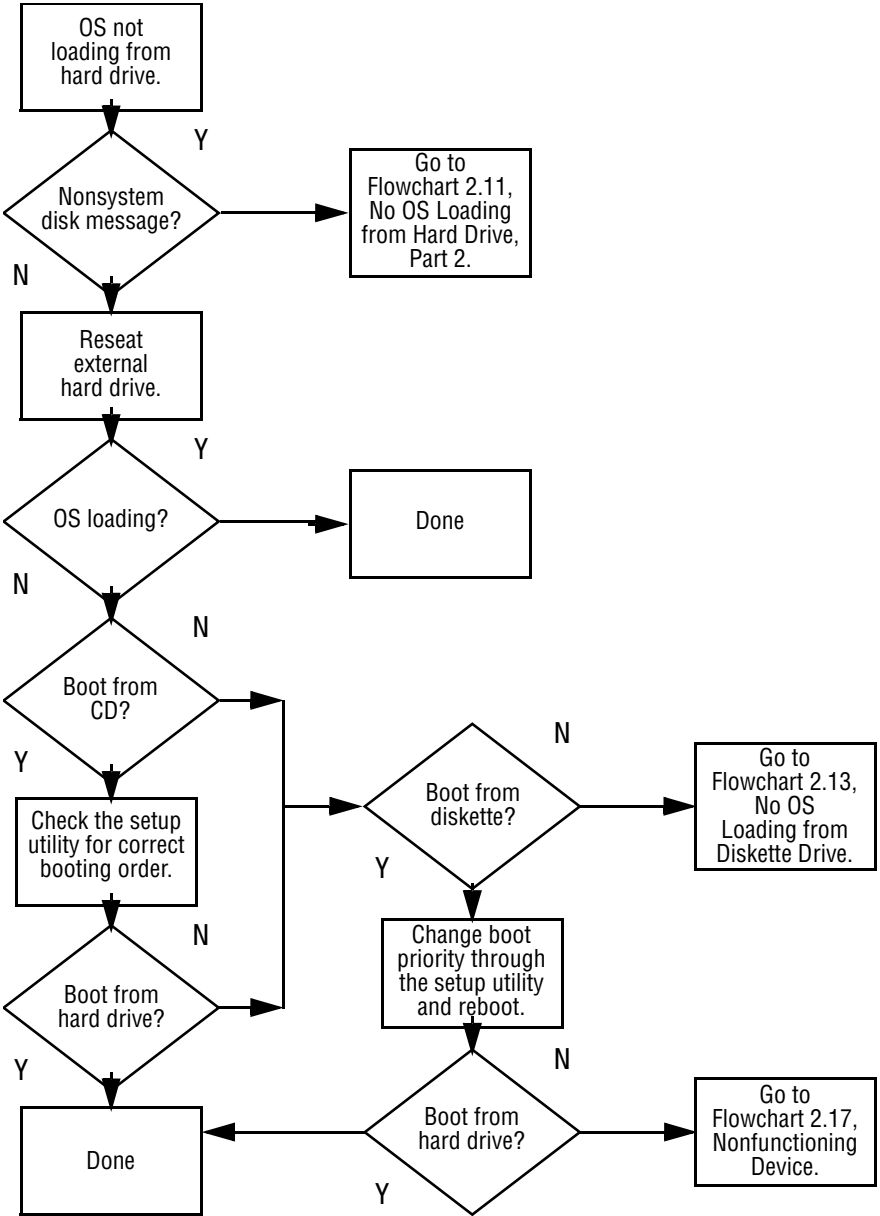
Flowchart 2.8 - Nonfunctioning Docking Station (if applicable)



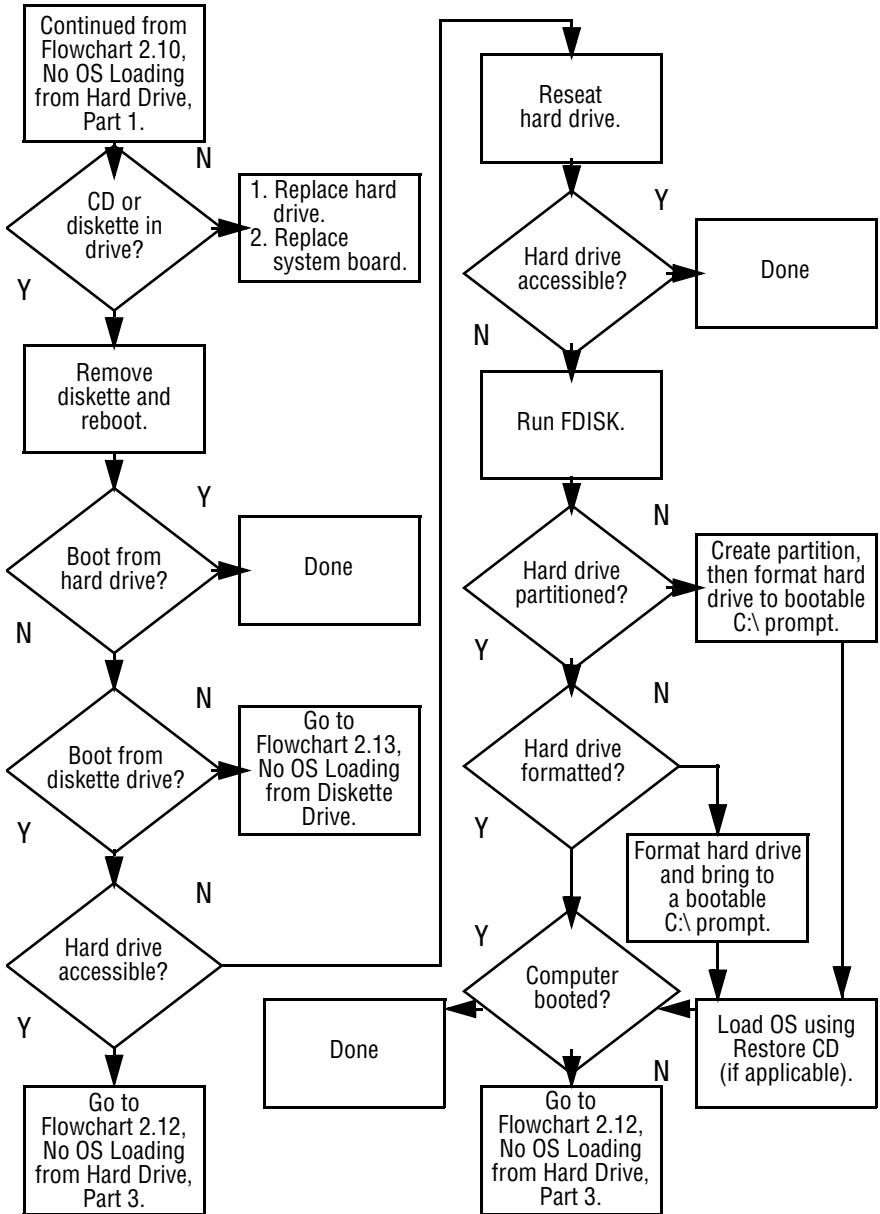
Flowchart 2.9 - No Operating System (OS) Loading



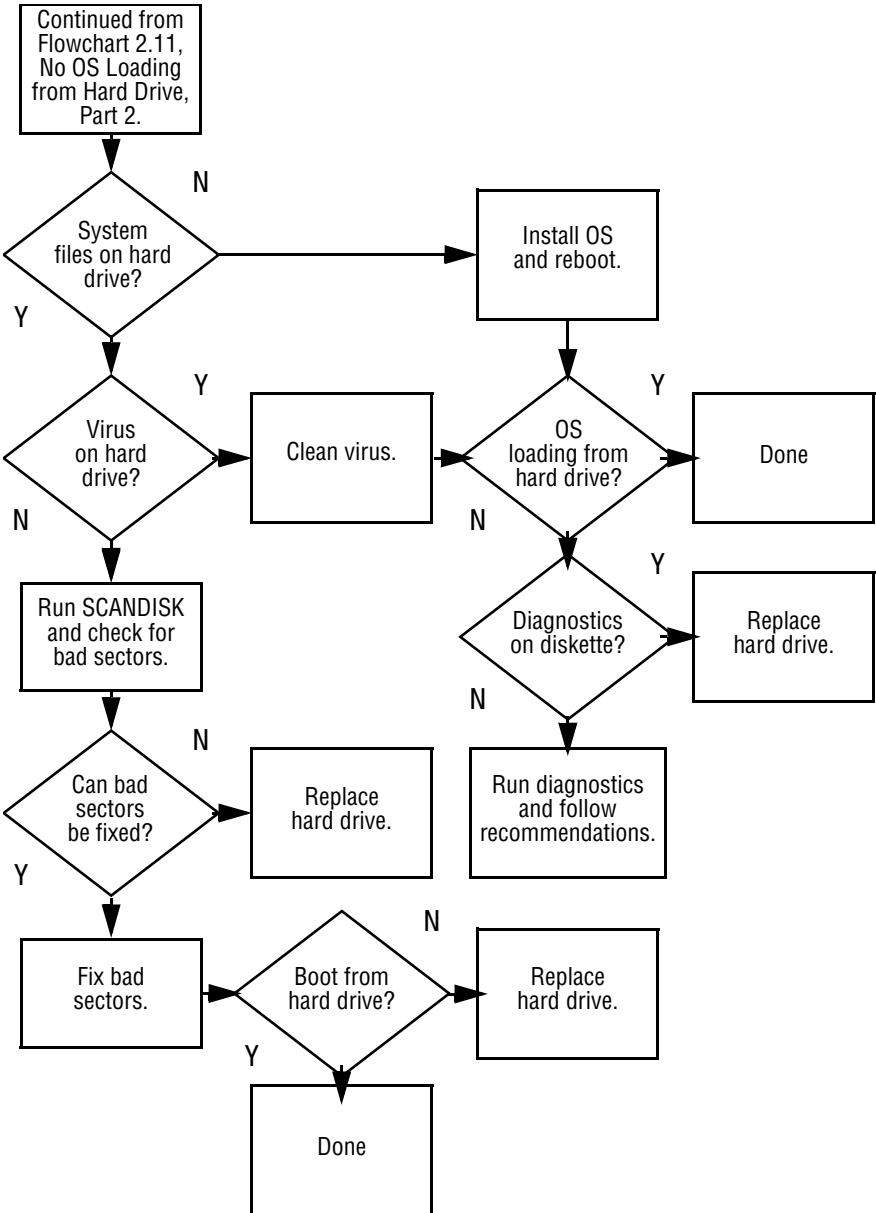
Flowchart 2.10 - No OS Loading from Hard Drive, Part 1



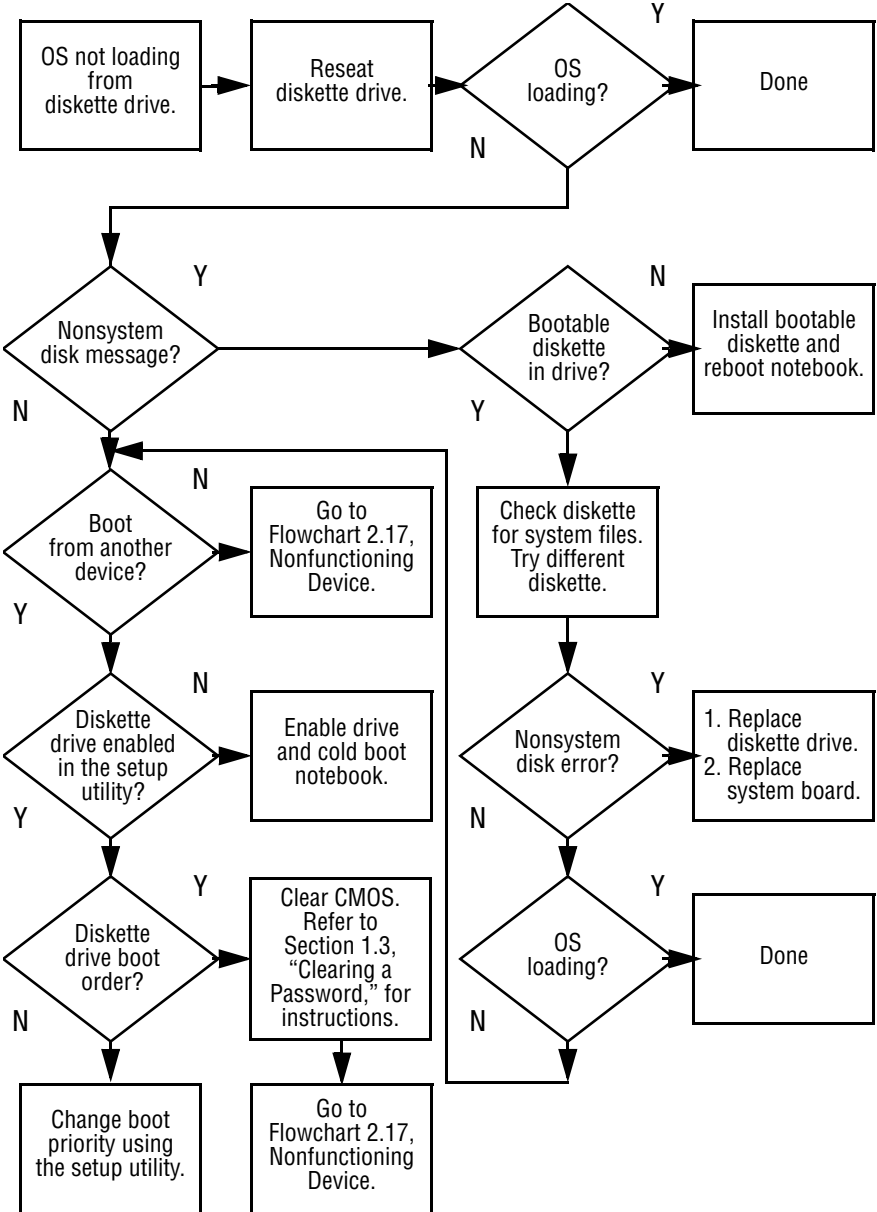
Flowchart 2.11 - No OS Loading from Hard Drive, Part 2



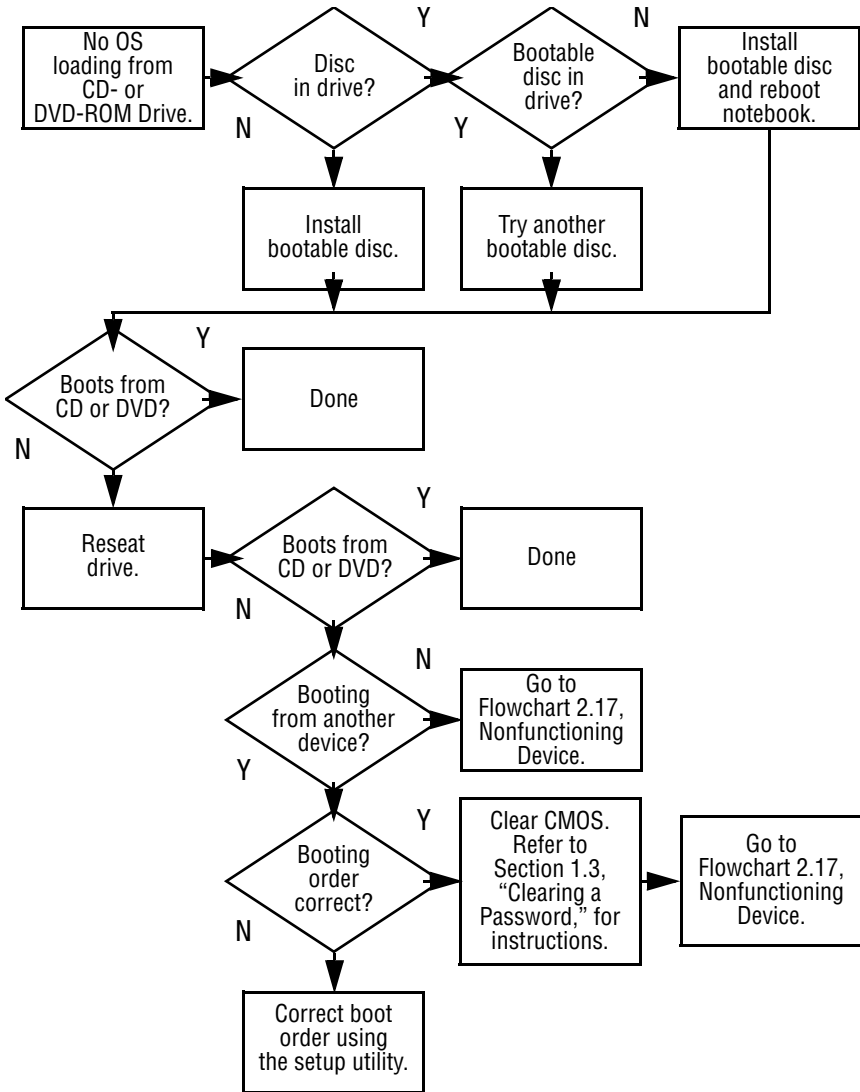
Flowchart 2.12 - No OS Loading from Hard Drive, Part 3



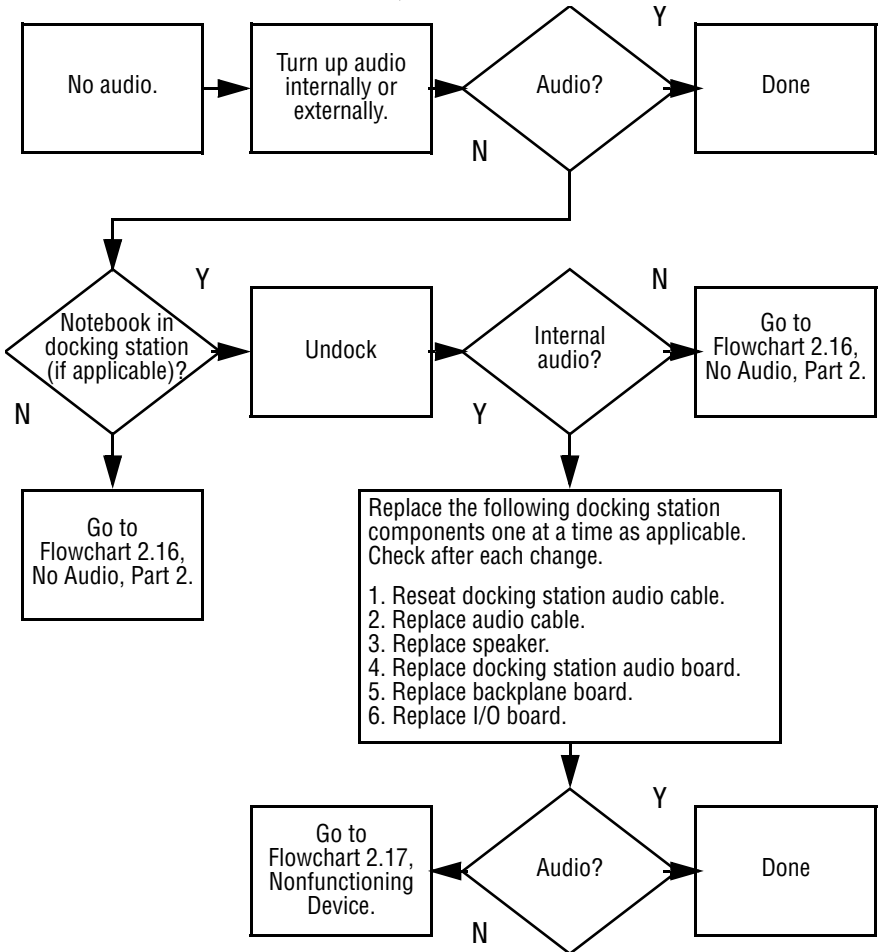
Flowchart 2.13 - No OS Loading from Diskette Drive



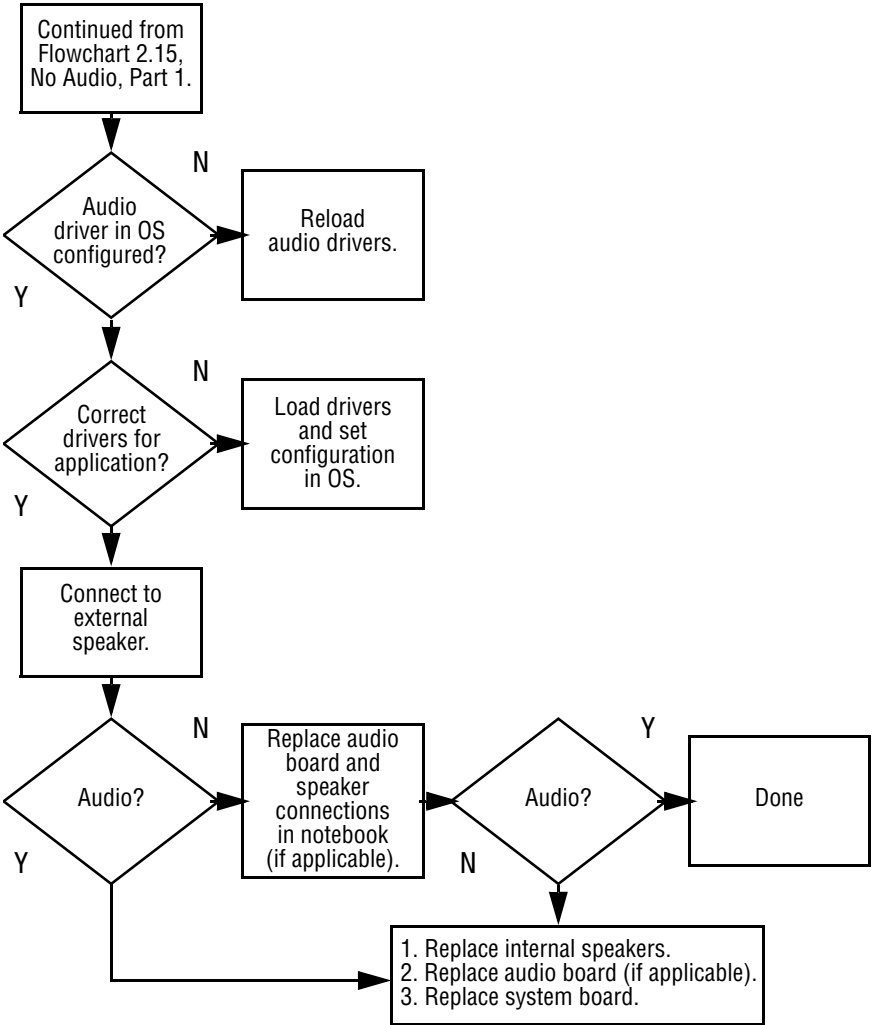
Flowchart 2.14 - No OS Loading from CD- or DVD-ROM Drive



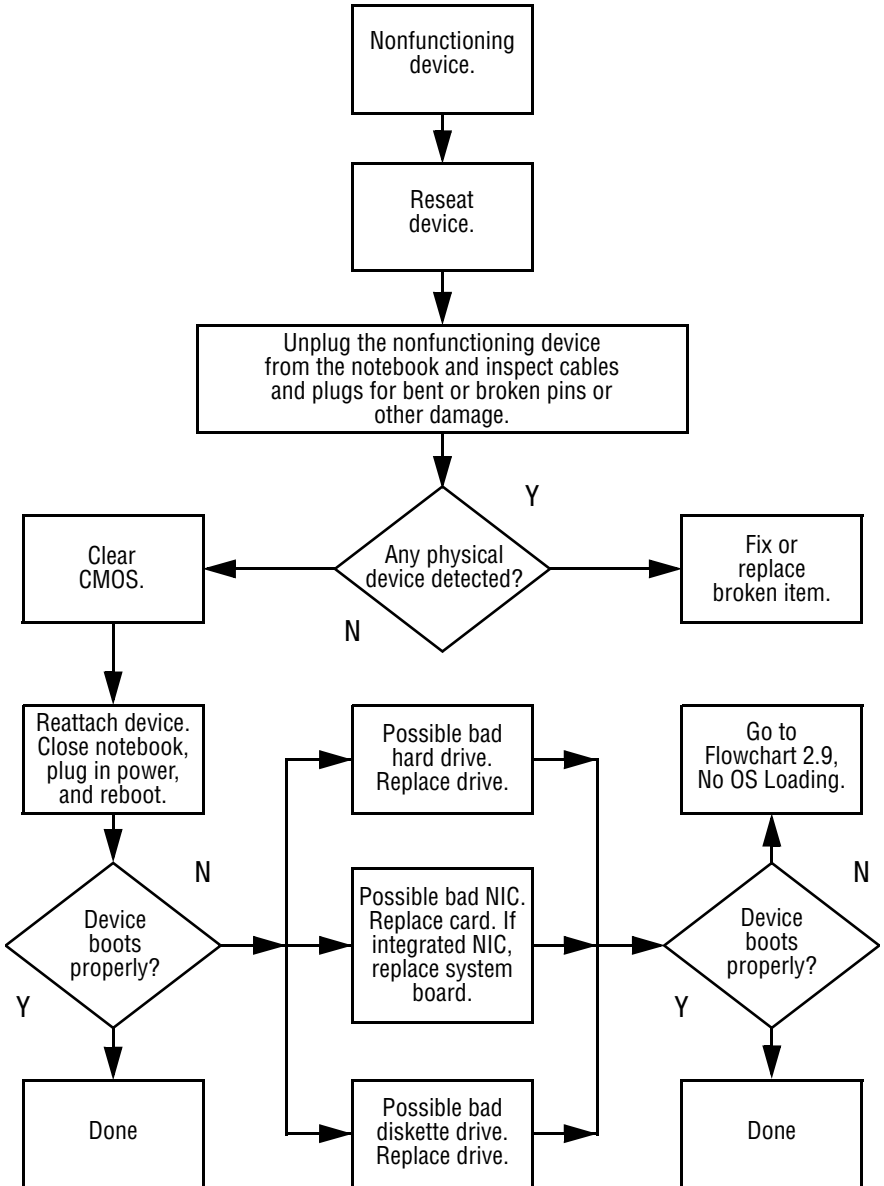
Flowchart 2.15 - No Audio, Part 1



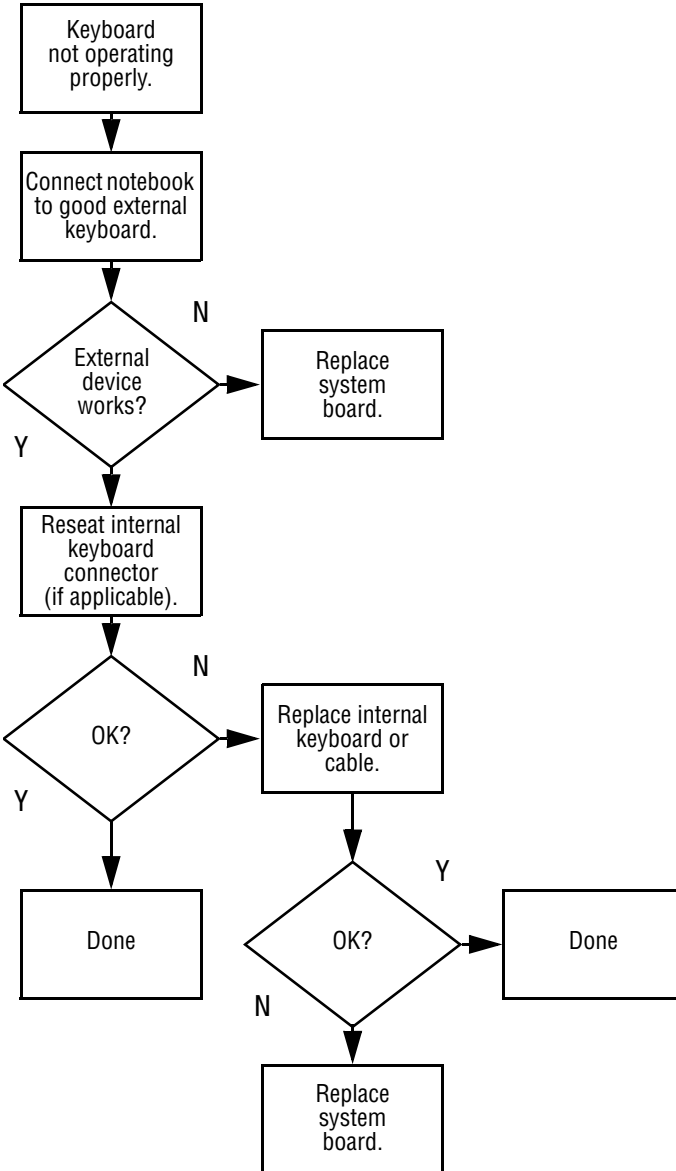
Flowchart 2.16 - No Audio, Part 2



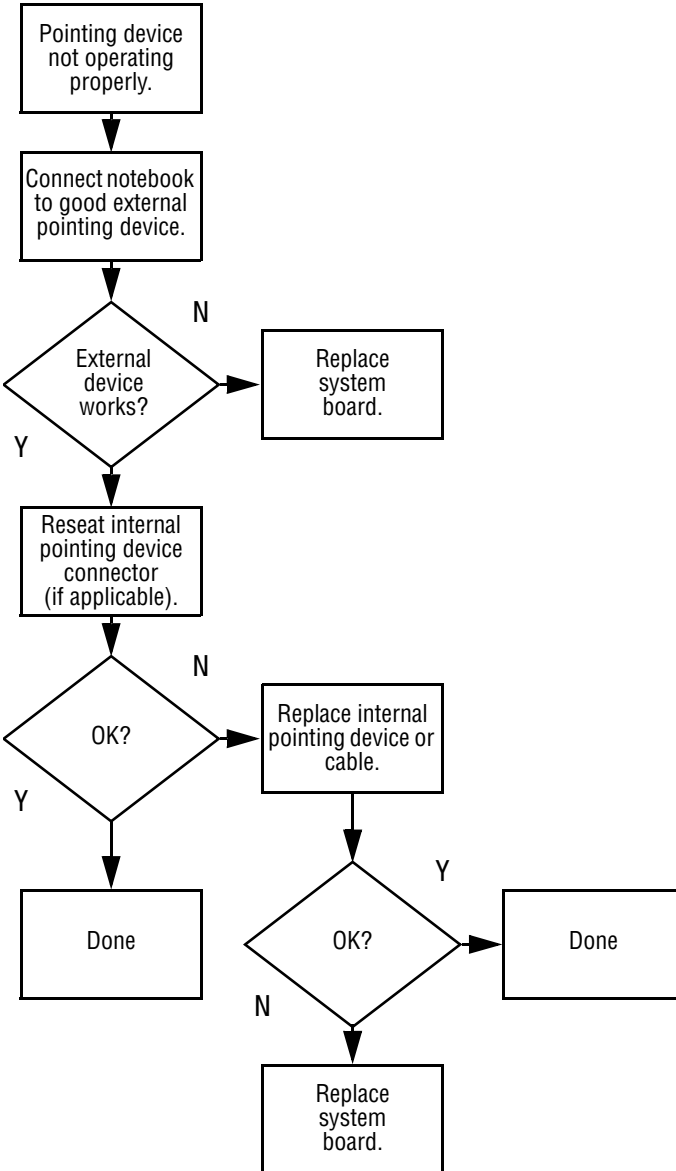
Flowchart 2.17 - Nonfunctioning Device



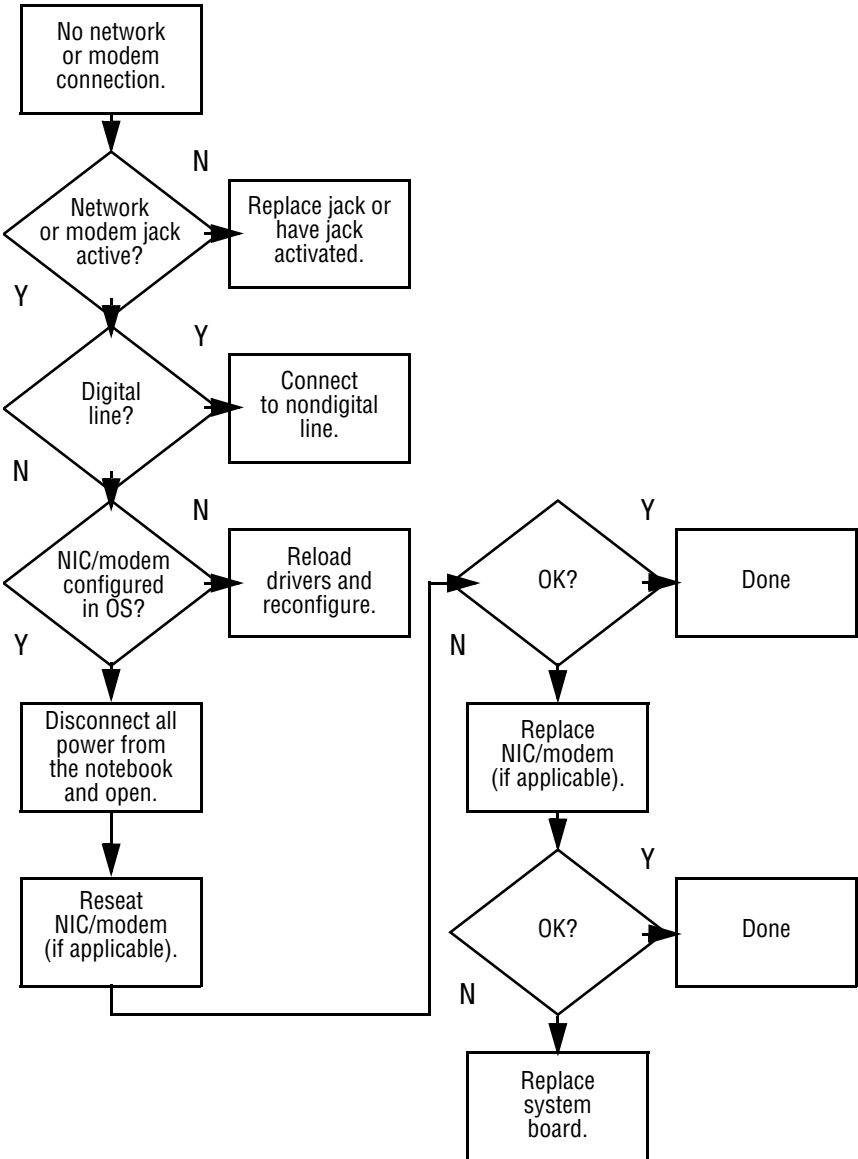
Flowchart 2.18 - Nonfunctioning Keyboard



Flowchart 2.19 - Nonfunctioning Pointing Device



Flowchart 2.20 - No Network or Modem Connection



Illustrated Parts Catalog

This chapter provides an illustrated parts breakdown and a reference for spare part numbers and option part numbers.

3.1 Serial Number Location

When ordering parts or requesting information, provide the notebook serial number and model number located on the bottom of the notebook (Figure 3-1).

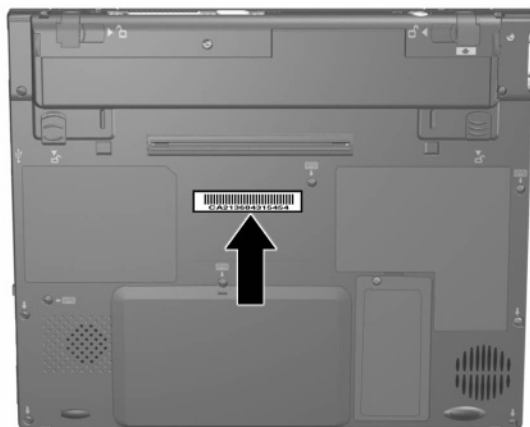


Figure 3-1. Serial Number Location

3.2 Computer System Major Components

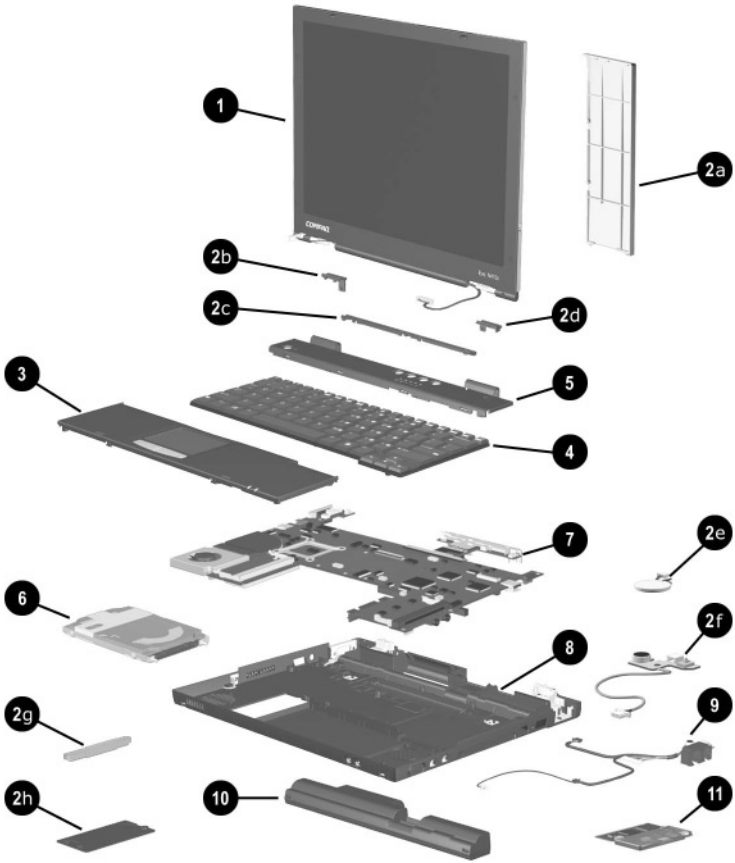
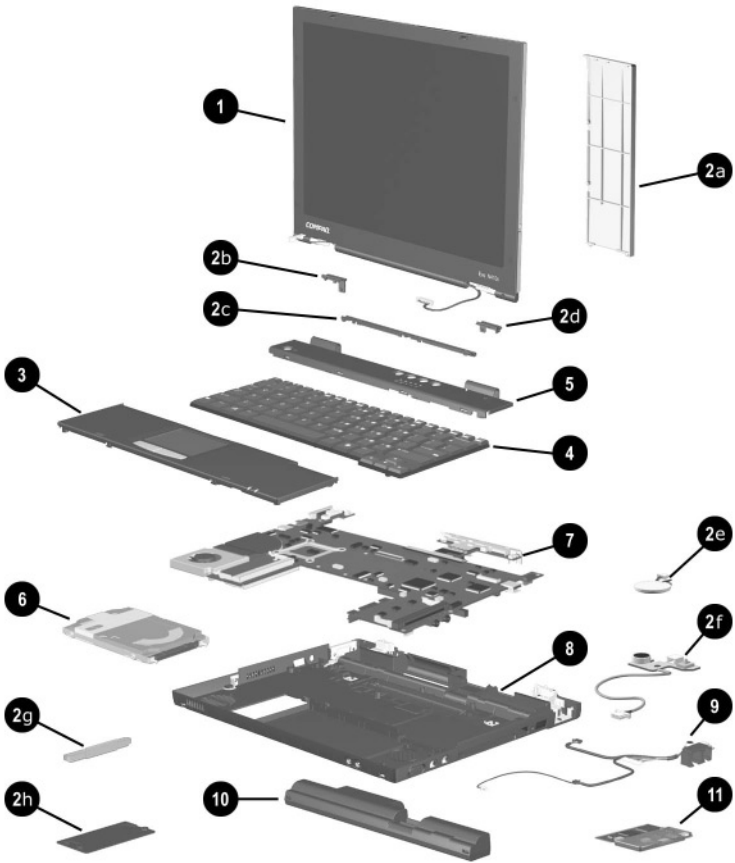


Figure 3-2. Computer System Major Components

**Table 3-1
Computer System Major Components**

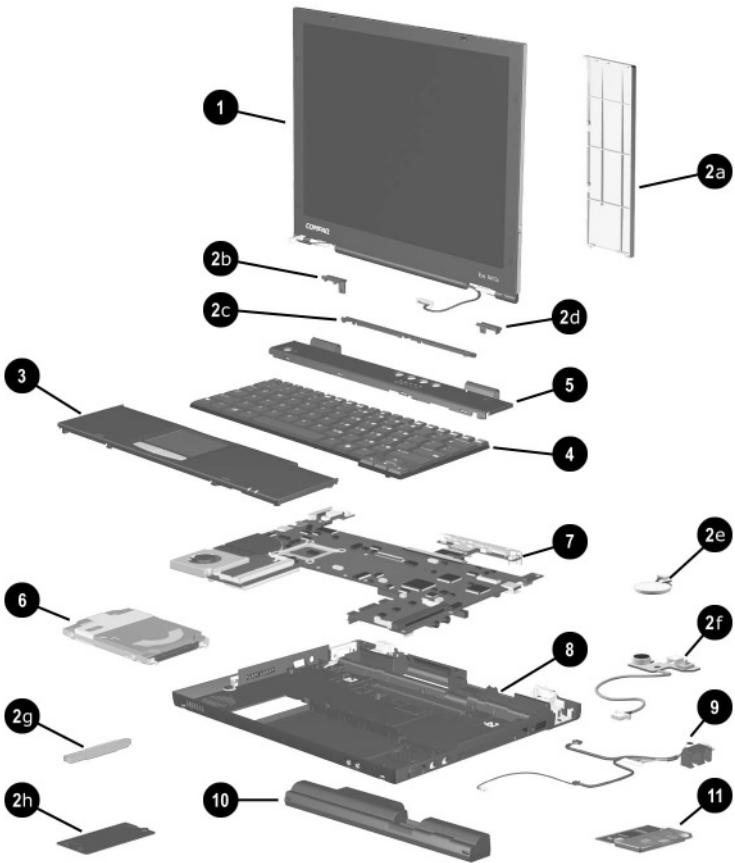
| Item | Description | Spare Part Number |
|------|--|------------------------------------|
| 1 | Displays | |
| | 12.1-inch, XGA, CTFT (for use only with Evo Notebook N410c models) | 292383-001 |
| | 12.1-inch, SVGA, CTFT (for use only with Evo Notebook N400c models) | 231448-001 |
| | Miscellaneous Plastics Kit | 231454-001 |
| 2a | MultiPort cover | Not Illustrated |
| 2b | Left display support | ■ TouchPad cable |
| 2c | Center display support | ■ PC Card slot weight saver |
| 2d | Right display support | ■ External battery slot spacers |
| 2e | RTC battery | ■ Computer feet |
| 2f | Display lid switch board (used only with Evo Notebook N400c models) | ■ External monitor connector cover |
| 2g | Hard drive spacer | |
| 2h | Memory expansion compartment cover | |
| 3 | Palm rests | |
| | with TouchPad and two buttons (for use with TouchPad models) | 231449-001 |
| | with three buttons (for use with pointing stick models—Evo Notebook N400c models only) | 231591-001 |



Computer System Major Components (continued)

Table 3-1
Computer System Major Components (Continued)

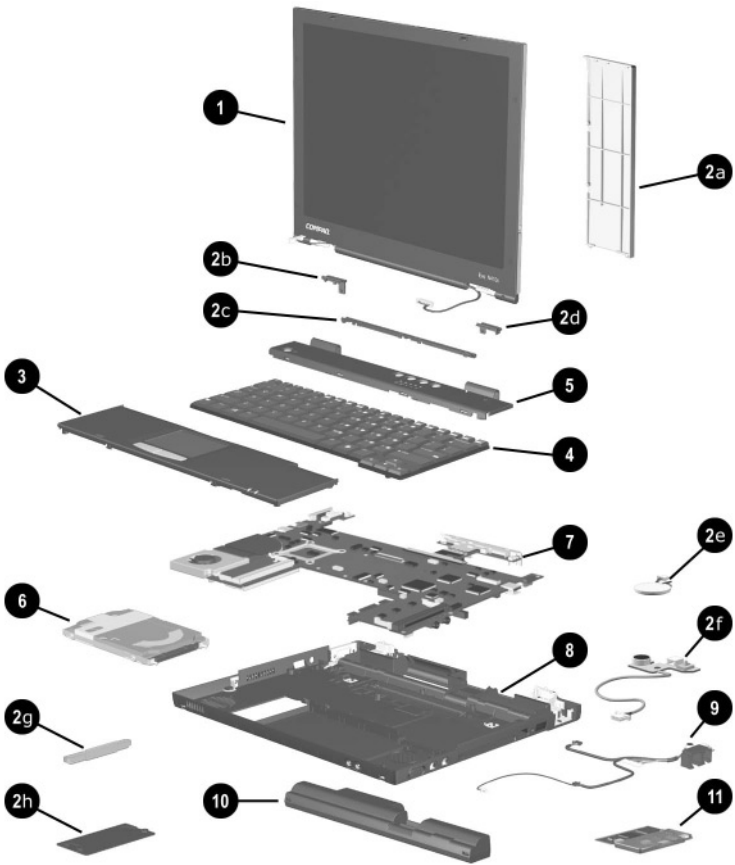
| Item | Description | Spare Part Number |
|------|---|-------------------|
| 4 | Keyboard without pointing stick (for use with TouchPad models) | |
| | Arabic | 230514-171 |
| | Belgian | 230514-181 |
| | Brazilian | 230514-201 |
| | Czech | 230514-221 |
| | Danish | 230514-081 |
| | French | 230514-051 |
| | French Canadian | 230514-121 |
| | German | 230514-041 |
| | Greek | 230514-151 |
| | Hebrew | 230514-211 |
| | Hungarian | 230514-BB1 |
| | International | 230514-002 |
| | Italian | 230514-061 |
| | Japanese | 230514-291 |
| | Korean | 230514-AD1 |
| | Latin American | 230514-161 |
| | Spanish | 230514-091 |
| | Norwegian | 230514-131 |
| | Portuguese | 230514-251 |
| | Russian | 230514-BA1 |
| | Slovakian | 230514-071 |
| | Spanish | |
| | Swedish/ | 230514-101 |
| | Finnish | 230514-111 |
| | Swiss | 230514-AB1 |
| | Taiwanese | 230514-141 |
| | Turkish | 230514-031 |
| | U.K. English | 230514-001 |
| | U.S. English | |
| | Keyboard with pointing stick (for use only with Evo Notebook N400c models) | |
| | Belgian | 230515-181 |
| | Brazilian | 230515-201 |
| | Czech | 230515-221 |
| | Danish | 230515-081 |
| | French | 230515-051 |
| | French Canadian | 230515-121 |
| | German | 230515-041 |
| | Hungarian | 230515-211 |
| | International | 230515-002 |
| | Italian | 230515-061 |
| | Japanese | 230515-291 |
| | Korean | 230515-AD1 |
| | Latin American | 230515-161 |
| | Spanish | 230515-091 |
| | Norwegian | 230515-131 |
| | Portuguese | 230515-251 |
| | Spanish | 230515-071 |
| | Swedish/ | |
| | Finnish | 230515-101 |
| | Swiss | 230515-111 |
| | Taiwanese | 230515-AB1 |
| | Turkish | 230515-141 |
| | U.K. English | 230515-031 |
| | U.S. English | 230515-001 |



Computer System Major Components (continued)

Table 3-1
Computer System Major Components (Continued)

| Item | Description | Spare Part Number |
|------|---|-------------------|
| 5 | Switch cover | 231453-001 |
| 6 | Hard drives | |
| | 40 GB | 265495-001 |
| | 30 GB | 304095-001 |
| | 20 GB | 235540-001 |
| | | and |
| | | 218371-001 |
| | 10 GB | 218370-001 |
| 7 | System boards (includes fan and heat sink) | |
| | For use only with Evo Notebook N410c models | |
| | 1.20-GHz Intel Pentium III processor | 292387-001 |
| | 1.00-GHz Intel Pentium III processor | 292386-001 |
| | For use only with Evo Notebook N400c models | |
| | 850-MHz Intel Pentium III processor | 253104-001 |
| | 700-MHz Intel Pentium III processor | 231446-001 |
| 8 | Base enclosures | |
| | For use only with Evo Notebook N410c models (includes NTSC module and battery terminals) | 292384-001 |
| | For use only with Evo Notebook N410c models (includes NTSC module, RJ45/RJ11 module, and battery terminals) | 231452-001 |



Computer System Major Components (continued)

Table 3-1
Computer System Major Components (Continued)

| Item | Description | Spare Part Number |
|-------------|---|--------------------------|
| 9 | Modem cables | |
| | For use only with Evo Notebook N410c models (includes RJ45/RJ11 connector module, display lid switch board, microphone, and modem/microphone/NIC cable bundle) | 302781-001 |
| | For use only with Evo Notebook N400c models (includes display lid switch board, microphone, and microphone cable) | 231451-001 |
| 10 | Battery packs | |
| | Primary Li ion battery pack, 4 cell | |
| | For use only with Evo Notebook N410c models | 292389-001 |
| | For use with Evo Notebook N410c and N400c models | 231445-001 |
| | External Li ion battery pack, 4 cell | 230609-001 |
| | External high capacity battery pack, 9 cell | |
| | For use only with Evo Notebook N410c models | 292388-001 |
| | For use with Evo Notebook N410c and N400c models | 155065-001 |
| 11 | Mini PCI communication boards | |
| | Lucent Win Modem + Intel PRO-100 (S)P Mobile Combo Adapter | 230339-001 |
| | Type III mini PCI combination 56 Kbps modem/NIC board | 230338-001 |
| | Type III mini PCI 56 Kbps modem board | 230337-001 |

3.3 Miscellaneous Plastics Kit Components

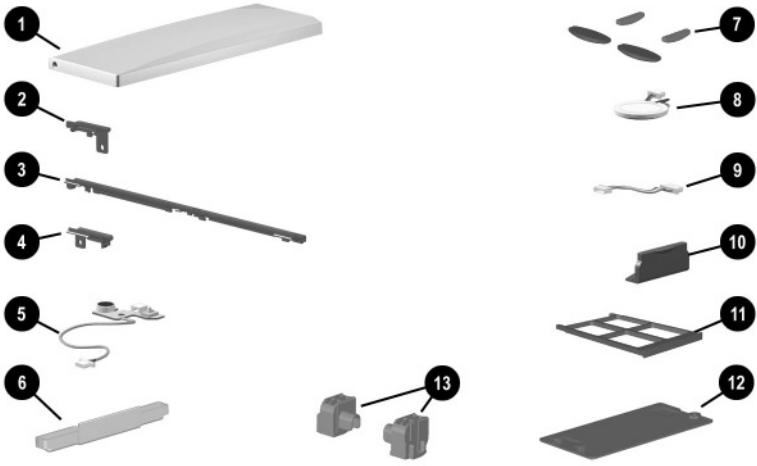


Figure 3-3. Miscellaneous Plastics Kit Components

Table 3-2
Miscellaneous Plastics Kit Components
Spare Part Number 231454-001

| Item | Description | Item | Description |
|-------------|--|-------------|------------------------------------|
| 1 | MultiPort cover | 8 | RTC battery |
| 2 | Right display support | 9 | TouchPad cable |
| 3 | Center display support | 10 | External monitor connector cover |
| 4 | Left display support | 11 | PC Card slot weight saver |
| 5 | Display lid switch board (used only with Evo Notebook 400c models) | 12 | Memory expansion compartment cover |
| 6 | Hard drive spacer | 13 | External battery slot spacers |
| 7 | Computer feet | | |

3.4 Mass Storage Devices

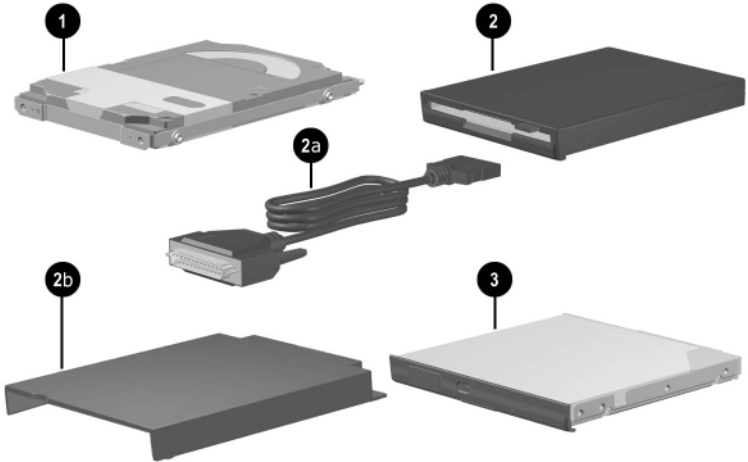


Figure 3-4. Mass Storage Devices

**Table 3-3
Mass Storage Devices**

| Item | Description | Spare Part Number |
|-------------|---|---------------------------------|
| 1 | Hard drives | |
| | 40 GB | 265495-001 |
| | 30 GB | 304095-001 |
| | 20 GB | 235540-001 and 218371-001 |
| | 10 GB | 218370-001 |
| 2 | External diskette drive | 241995-001 and 135233-001 |
| 2a | External diskette drive cable | 135232-001 |
| 2b | External diskette drive cradle | 175375-001 |
| 3 | Optical drives | |
| | The following options are for use only with the Mobile Expansion Unit: | |
| | 8X Max DVD-ROM drive | 173949-001 and 202837-001 |
| | 24X Max CD-ROM drive | 228746-001 |
| | CD-RW drive | 153992-001 |
| | DVD-ROM/CD-RW combination drive | 238878-001 |

3.5 Miscellaneous Spare Parts

Table 3-4
Miscellaneous Spare Parts (not illustrated)

| Description | Spare Part Number |
|--|--------------------------|
| Automobile adapter | 261699-001 |
| Battery charger | 153991-001 |
| Bluetooth MultiPort Module | 230336-001 |
| External AC adapters | |
| 65 W, slim line | 239704-001 |
| 50 W, slim line | 163444-001 |
| Memory expansion boards | |
| For use only with Evo Notebook N410c models | |
| 133 MHz, 256 MB | 238879-001 |
| 133 MHz, 256 MB | 212683-001 |
| 133 MHz, 128 MB | 212682-001 |
| 133 MHz, 128 MB | 212681-001 |
| For use with all Evo Notebook N410c and N400c models | |
| 100 Mhz, 256 MB | 167136-001 |
| 100 Mhz, 128 MB | 135244-001 |
| 100 Mhz, 64 MB | 135243-001 |

Table 3-4
Miscellaneous Spare Parts (not illustrated) (Continued)

| Description | Spare Part Number | | |
|---|-------------------|---|------------|
| Mobile Expansion Units | | | |
| For use only with Evo Notebook N410c models | 292385-001 | | |
| For use with Evo Notebook N410c and N400c models | 231450-001 | | |
| Power cords (3 W, black, 6 feet) | | | |
| Australian | 246959-011 | Japanese | 246959-291 |
| Danish | 246959-081 | Korean | 246959-AD1 |
| European/Middle | | Swiss | 246959-AG1 |
| Eastern/African | 246959-021 | U.K. English | 246959-031 |
| Italian | 246959-061 | U.S. English | 246959-001 |
| Miscellaneous Screw Kit , includes the following screws (Refer to Appendix C, "Screw Listing," for more information on screw specifications and usage.) | | | 231455-001 |
| ■ Torx T8 Metric 2.0 × 6.0 | | ■ Phillips P0 Metric 2.0 × 3.0 | |
| ■ Torx T8 Metric 2.0 × 3.5 | | ■ Phillips P0 Metric 2.0 × 4.0 | |
| ■ Phillips P0 Metric 2.0 × 5.0 | | ■ Phillips P0 Metric 2.0 × 7.0 barrel screw | |
| ■ 5.0 mm × 9.5 screwlock | | | |

Table 3-4
Miscellaneous Spare Parts (not illustrated) (Continued)

| Description | Spare Part Number |
|---|-------------------|
| Modems | |
| Type III mini PCI combination 56 Kbps modem/NIC board | 233558-001 |
| Type III mini PCI 56 Kbps modem board | 233557-001 |
| PC Card modem | 233564-001 |
| Modem adapters | |
| Czech | 234963-221 |
| German | 304398-041 |
| Hungarian | 234963-211 |
| Norwegian | 234963-091 |
| Swiss | 198294-111 |
| Modem cable | 234962-001 |
| Modem cable adapters | |
| Australian | 304398-011 |
| Belgian | 304398-1811 |
| French | 304398-051 |
| RJ-11 P55 adapters | |
| Danish | 316904-081 |
| Finnish | 316904-351 |
| Italian | 316904-061 |
| Swedish | 316904-101 |
| RJ-11 PTT adapter (used in the United Kingdom) | 158593-031 |

Removal and Replacement Preliminaries

This chapter provides essential information for proper and safe removal and replacement service.

4.1 Tools Required

You will need the following tools to complete the removal and replacement procedures:

- Magnetic screwdriver
- Phillips P0 screwdriver
- Torx T8 screwdriver
- Tool kit (includes connector removal tool, loopback plugs, and case utility tool)

4.2 Service Considerations

The following sections include some of the considerations that you should keep in mind during disassembly and assembly procedures.



As you remove each subassembly from the notebook, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic Parts

Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and Connectors

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Ensure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.



CAUTION: When servicing the notebook, ensure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the notebook.

4.3 Preventing Damage to Removable Drives

Removable drives are fragile components that must be handled with care. To prevent damage to the notebook, damage to a removable drive, or loss of information, observe the following precautions:

- Before removing or inserting a hard drive, shut down the notebook. If you are unsure whether the notebook is off or in Hibernation, turn the notebook on, then shut it down.
- Before removing a diskette drive or optical drive, ensure that a diskette or disc is not in the drive. Ensure that the optical drive tray is closed.
- Before handling a drive, ensure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
- Handle drives on surfaces that have at least one inch of shock-proof foam.
- Avoid dropping drives from any height onto any surface.
- After removing a hard drive, CD-ROM drive, or a diskette drive, place it in a static-proof bag.
- Avoid exposing a hard drive to products that have magnetic fields, such as monitors or speakers.
- Avoid exposing a drive to temperature extremes or to liquids.
- If a drive must be mailed, place the drive in a bubble-pack mailer or other suitable form of protective packaging and label the package “Fragile: Handle With Care.”

4.4 Preventing Electrostatic Damage

Many electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. 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.

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 may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

4.5 Packaging and Transporting Precautions

Use the following grounding precautions when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe containers, such as tubes, bags, or boxes.
- Protect all electrostatic-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a sensitive component or assembly.

- Store reusable electrostatic-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyers made of antistatic belts and roller bushings. Ensure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

4.6 Workstation Precautions

Use the following grounding precautions at workstations:

- Cover the workstation with approved static-dissipative material (refer to Table 4-2).
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When using fixtures that must directly contact dissipative surfaces, only use fixtures made of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle electrostatic-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

4.7 Grounding Equipment and Methods

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, connect a wrist strap with alligator clips.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one-megohm resistance between the operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

Other grounding equipment recommended for use in preventing electrostatic damage includes:

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive tabletop workstations with ground cords of one-megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages

- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

Table 4-1 shows how humidity affects the electrostatic voltage levels generated by different activities.

**Table 4-1
Typical Electrostatic Voltage Levels**

| Event | Relative Humidity | | |
|---------------------------------|-------------------|----------|---------|
| | 10% | 40% | 55% |
| Walking across carpet | 35,000 V | 15,000 V | 7,500 V |
| Walking across vinyl floor | 12,000 V | 5,000 V | 3,000 V |
| Motions of bench worker | 6,000 V | 800 V | 400 V |
| Removing DIPS from plastic tube | 2,000 V | 700 V | 400 V |
| Removing DIPS from vinyl tray | 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 PCB | 26,500 V | 20,000 V | 7,000 V |
| Packing PCBs in foam-lined box | 21,000 V | 11,000 V | 5,000 V |


 A product can be degraded by as little as 700 V.

Table 4-2 lists the shielding protection provided by antistatic bags and floor mats.

**Table 4-2
Static-Shielding Materials**

| Material | Use | Voltage Protection Level |
|-----------------------|------------|--------------------------|
| Antistatic plastic | Bags | 1,500 V |
| Carbon-loaded plastic | Floor mats | 7,500 V |
| Metallized laminate | Floor mats | 5,000 V |

Removal and Replacement Procedures

This chapter provides removal and replacement procedures.

There are 31 different Torx T8 and Phillips screws and screwlocks, in 6 different sizes, that must be removed when servicing the notebook. Make special note of the size and location of each screw during removal and replacement.

Refer to Appendix C, “Screw Listing,” for detailed information on screw sizes, locations, and usage.

5.1 Serial Number

Report the notebook serial number to Compaq when requesting information or ordering spare parts. The serial number is located on the bottom of the notebook (Figure 5-1).

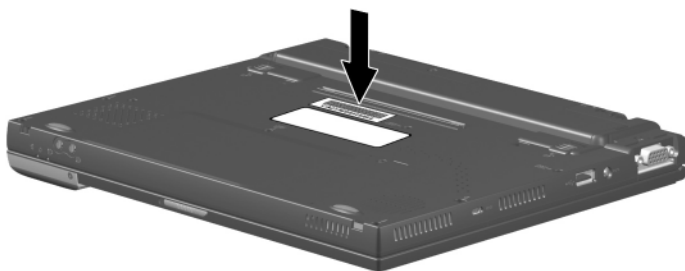


Figure 5-1. Serial Number Location

5.2 Disassembly Sequence Chart

Use the chart below to determine the section number to be referenced when removing notebook components.

Table 5-1
Disassembly Sequence Chart

| Section | Description | # of Screws Removed |
|----------------|--|--|
| 5.3 | Preparing the notebook for disassembly Primary battery pack Optional external battery pack | 0 |
| 5.4 | Computer feet | 0 |
| 5.5 | Palm rest | 4 |
| 5.6 | Memory expansion board | 1 |
| 5.7 | Hard drive | 0 |
| 5.8 | Mini PCI communications board | 0 |
| 5.9 | Keyboard | 4 |
| 5.10 | Real time clock (RTC) battery | 0 |
| 5.11 | Switch cover | 4 |
| 5.12 | Display | 4 |
| 5.13 | Modem cable | 2 |
| 5.14 | System board | 12 on Evo Notebook N410c models 10 on Evo Notebook N400c models |

5.3 Preparing the Notebook for Disassembly

Perform the following steps before disassembling the notebook:

1. Turn off the notebook.
2. Undock the notebook and Mobile Expansion Unit (MEU) from the docking base, if applicable.
3. Disconnect the notebook from the MEU, if applicable.
4. Disconnect the AC adapter and external devices.
5. Remove the primary battery pack by following these steps:
 - a. Turn the notebook bottom side up with the front facing forward.
 - b. Slide the left primary battery release latch forward ❶ (Figure 5-2).
 - c. Slide the right primary battery release latch forward and hold it in place ❷.
 - d. Swing the front edge of the primary battery pack up and back ❸.
 - e. Lift the primary battery pack out of the battery bay ❹.

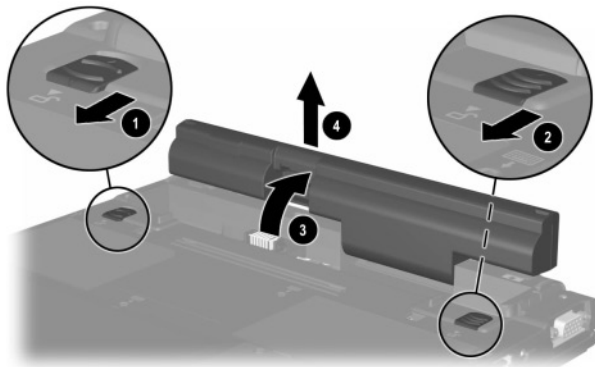


Figure 5-2. Removing the Primary Battery Pack

6. Remove the optional external battery pack, if installed, by following these steps:
 - a. Turn the notebook bottom side up with the front facing forward.
 - b. Make sure the external battery pack is located behind the notebook rear panel.
 - c. Slide the external battery release latches toward the inside of the notebook ❶ (Figure 5-3).
 - d. Rotate the external battery pack 90 degrees toward the notebook ❷.
 - e. Remove the battery pack from the notebook ❸.

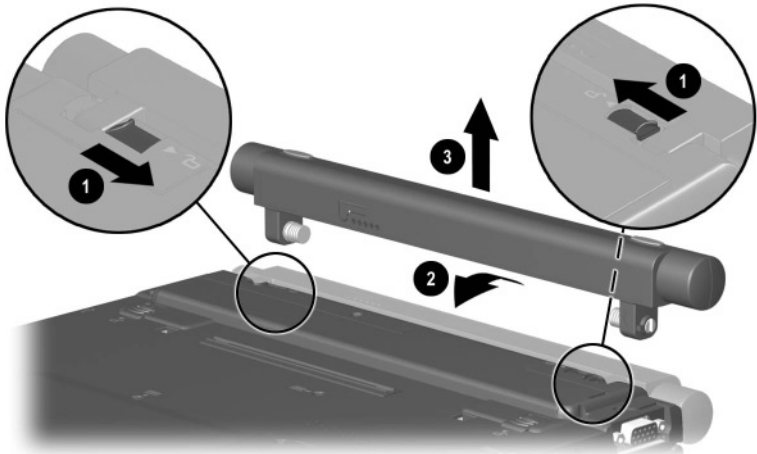


Figure 5-3. Removing the Optional External Battery Pack

5.4 Computer Feet

The base feet are adhesive-backed rubber pads. The base feet are included in the Miscellaneous Plastics Kit (spare part number 231454-001). Refer to Figure 5-4 for the locations of the notebook feet.

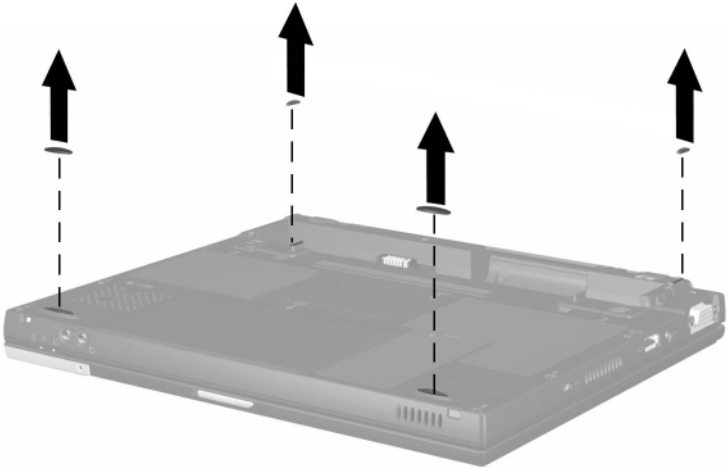


Figure 5-4. Replacing the Computer Feet

5.5 Palm Rest

Palm Rest Spare Part Number Information

Palm rests

| | |
|--|------------|
| with TouchPad and two buttons (for use with TouchPad models) | 231449-001 |
| with three buttons (for use with pointing stick models—Evo Notebook N400c models only) | 231591-001 |

The palm rest must be removed to access the internal memory expansion slot, the hard drive, and the modem/NIC board.

1. Prepare the notebook for disassembly (Section 5.3).
2. Turn the notebook bottom side up with the front facing forward.

3. Remove the four TM2.0 × 6.0 screws that secure the palm rest to the base enclosure (Figure 5-5).

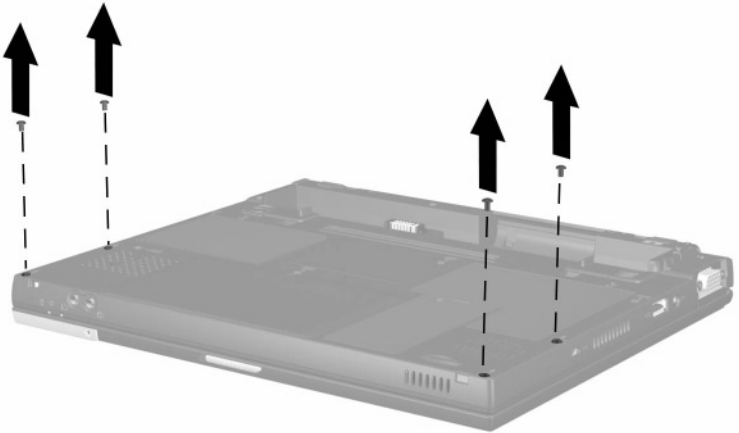


Figure 5-5. Removing the Palm Rest Screws

4. Turn the notebook top side up with the front facing forward.
5. Open the notebook.

6. Press forward on the back edge of the palm rest between the right side of the space bar and the right **Alt** key to disengage the palm rest from the base enclosure (Figure 5-6).



Figure 5-6. Releasing the Palm Rest

7. Lift up the back edge of the palm rest ❶ until the RTC battery ❷ and TouchPad cables ❸ prevent it from lifting any farther (Figure 5-7).

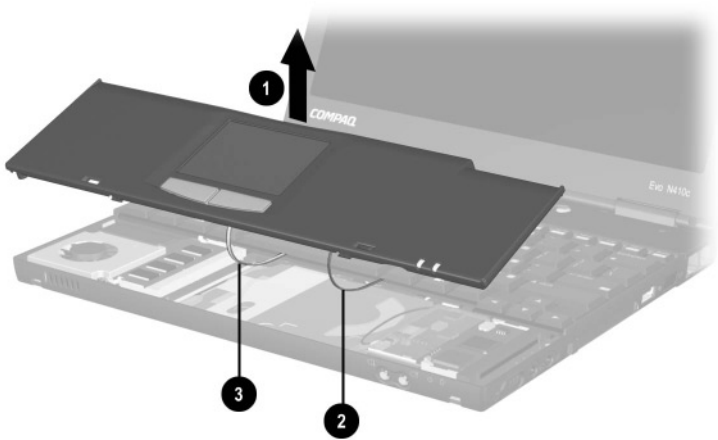


Figure 5-7. Releasing the Palm Rest (continued)

8. While holding the palm rest at a 45 degree angle, slide the front edge of the palm rest forward ❶ (Figure 5-8).
9. After the front edge of the palm rest clears the base enclosure, swing the front edge of the palm rest up and back ❷ and rest the palm rest on the keyboard ❸.

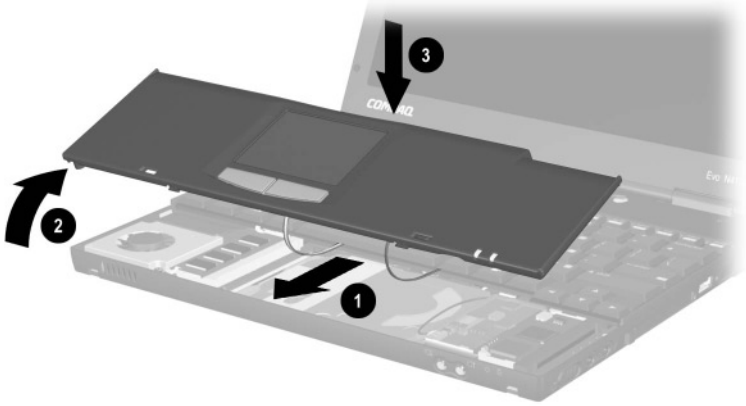


Figure 5-8. Releasing the Palm Rest (continued)

10. Remove the RTC battery from the retaining clip **1** (Figure 5-9).



The RTC battery is included in the Miscellaneous Plastics Kit (spare part number 231454-001).

11. Disconnect the TouchPad cable **2** from the connector on the TouchPad.

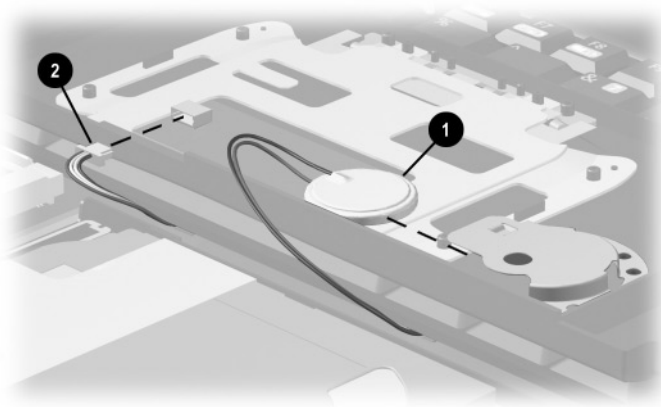


Figure 5-9. Removing the RTC Battery and Disconnecting the TouchPad Cable



Evo Notebook N400c models only—Models with pointing stick keyboards have a pointing stick button cable that needs to be disconnected prior to removing the palm rest. Perform Steps 12 and 13 before removing the palm rest on a pointing stick model.

12. Release the zero insertion force (ZIF) connector to which the pointing stick button cable is attached ❶ and disconnect the pointing stick button cable ❷ (Figure 5-10).

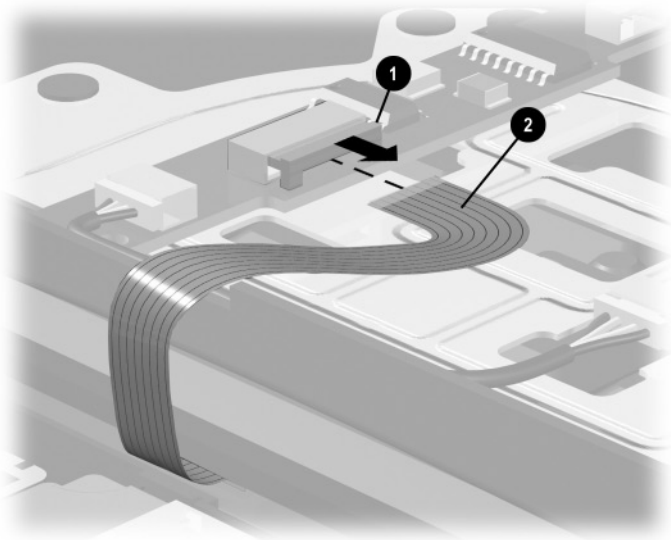


Figure 5-10. Disconnecting the Pointing Stick Button Cable

13. Remove the palm rest and set it aside.

Reverse the above procedure to install the palm rest.



Before installing the palm rest on TouchPad models, make sure the TouchPad ❶ and RTC battery cables ❷ are routed through the respective notches in the palm rest (Figure 5-11).

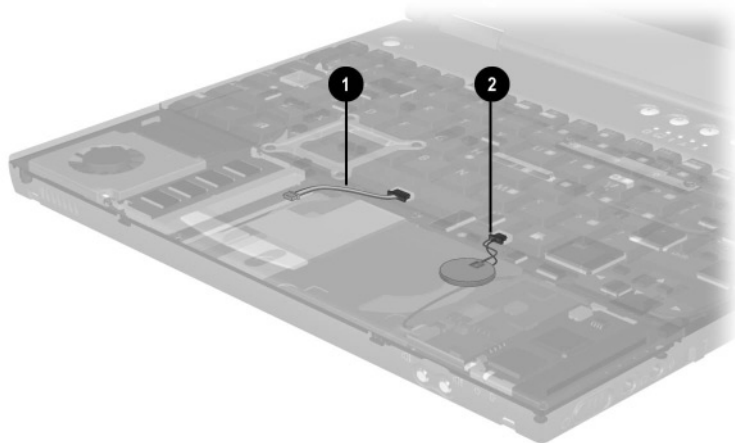


Figure 5-11. Routing the RTC Battery and TouchPad Cables

5.6 Memory Expansion Board



The Compaq Evo Notebook N410c notebook has two memory expansion slots: one is located on the bottom of the notebook and the other is located under the palm rest. The procedure for removing a memory expansion board from a memory expansion socket is identical for both locations.

Follow these steps to remove a memory expansion board from the slot in the bottom of the notebook:

1. Prepare the notebook for disassembly (Section 5.3).
2. Turn the notebook bottom side up with the front facing forward.

3. Remove the TM2.0 × 6.0 screw ❶ that secures the memory expansion compartment cover to the base enclosure (Figure 5-12).
4. Lift the back edge of the memory expansion compartment cover and swing it up and forward ❷.

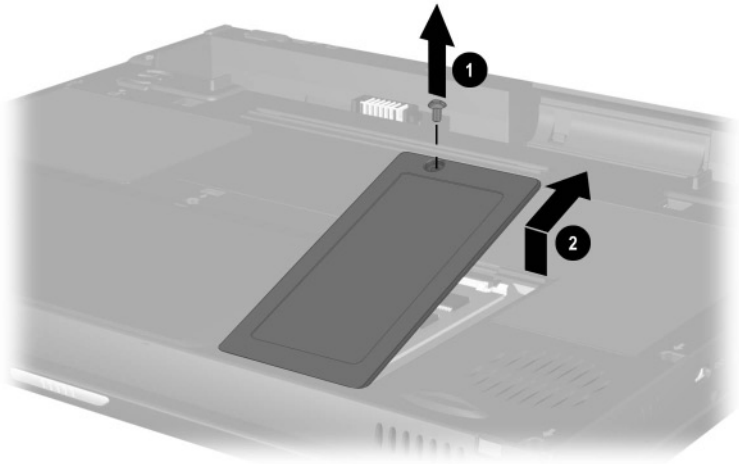


Figure 5-12. Removing the Memory Expansion Compartment Cover

5. Pull away the plastic retention clips on each side of the memory expansion board ❶. The memory expansion board tilts upward (Figure 5-13).
6. Lift the edge of the memory expansion board and slide it gently out of the memory expansion slot at a 45-degree angle ❷.

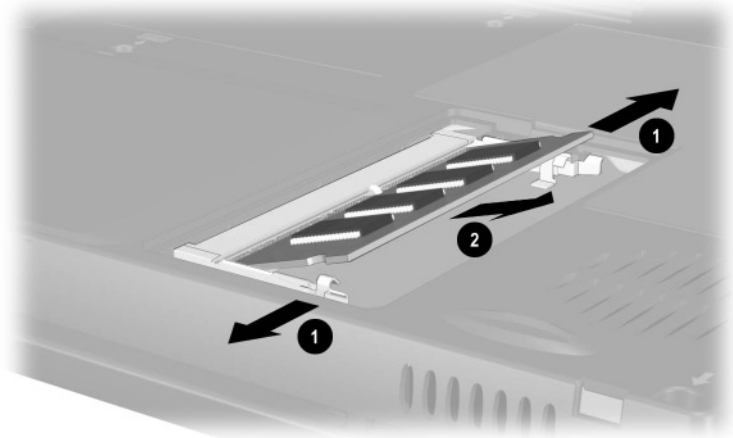


Figure 5-13. Removing a Memory Expansion Board

Follow these steps to remove a memory expansion board from the memory expansion slot under the palm rest:

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the palm rest (Section 5.5).
3. Pull away the plastic retention clips on each side of the memory expansion board ❶. The memory expansion board tilts upward (Figure 5-14).
4. Lift the edge of the memory expansion board and slide it gently out of the memory expansion slot at a 45-degree angle ❷.

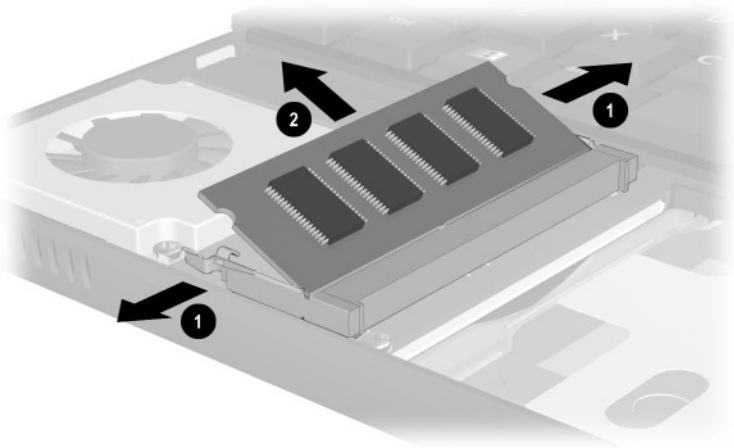


Figure 5-14. Removing a Memory Expansion Board

5.7 Hard Drive

Hard Drive Spare Part Number Information

| | |
|-------|---------------------------------|
| 40 GB | 265495-001 |
| 30 GB | 304095-001 |
| 20 GB | 235540-001 and 218371-001 |
| 10 GB | 218370-001 |



CAUTION: To prevent damage to the notebook and hard drive and loss of information, shut down the notebook before removing the hard drive from the hard drive bay. Do not remove the hard drive while the notebook is on, in Standby, or in Hibernation. If you are not sure whether the notebook is in Hibernation, turn the notebook on, then shut it down. If the notebook is running a retail version of a Windows operating system, shut down the notebook before removing any drive.

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the palm rest (Section 5.5).

3. Remove the hard drive spacer ❶ from the base enclosure (Figure 5-15).



The hard drive spacer is included in the Miscellaneous Plastics Kit (spare part number 231454-001).

4. Grasp the hard drive tab and slide the hard drive to the left ❷.
5. Remove the hard drive.
6. Place the hard drive in an electrostatic-safe container.

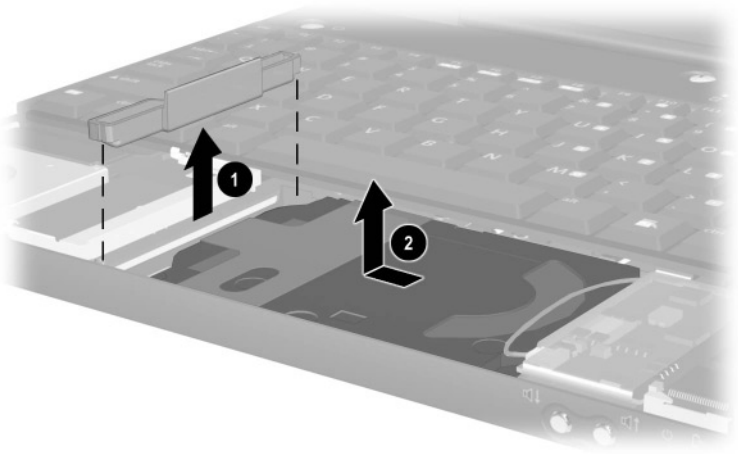


Figure 5-15. Removing the Hard Drive

Reverse the above procedure to install the hard drive.



CAUTION: When installing the hard drive, make sure the speaker and modem/NIC cables are not crimped between the back edge of the hard drive and the base enclosure.

5.8 Mini PCI Communications Board

Mini PCI Communications Board Spare Part Number Information

| | |
|---|------------|
| Lucent Win Modem + Intel PRO-100 (S)P Mobile Combo Adapter | 230339-001 |
| Type III mini PCI combination 56 Kbps modem/NIC board | 230338-001 |
| Type III mini PCI 56 Kbps modem board | 230337-001 |

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the palm rest (Section 5.5).

3. Disconnect the modem/NIC cable from the modem/NIC board ❶ (Figure 5-16).
4. Pull away the retention clips on each side of the modem/NIC board ❷. The modem/NIC board tilts upward.
5. Lift the edge of the modem/NIC board and slide it out of the connector at a 45-degree angle ❸.
6. Place the modem/NIC board in an electrostatic-safe container.

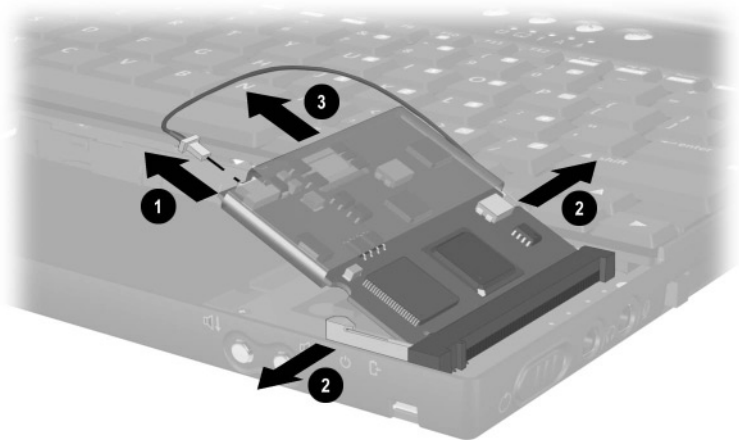


Figure 5-16. Removing the Modem/NIC Board

Reverse the above procedure to install the modem/NIC board.

5.9 Keyboard

Keyboard Spare Part Number Information

Keyboard without pointing stick (for use with TouchPad models)

| | | | |
|-----------------|------------|------------------------|------------|
| Arabic | 230514-171 | Korean | 230514-AD1 |
| Belgian | 230514-181 | Latin American Spanish | 230514-161 |
| Brazilian | 230514-201 | Norwegian | 230514-091 |
| Czech | 230514-221 | Portuguese | 230514-131 |
| Danish | 230514-081 | Russian | 230514-251 |
| French | 230514-051 | Slovakian | 230514-BA1 |
| French Canadian | 230514-121 | Spanish | 230514-071 |
| German | 230514-041 | Swedish/Finnish | 230514-101 |
| Greek | 230514-151 | Swiss | 230514-111 |
| Hebrew | 230514-211 | Taiwanese | 230514-AB1 |
| Hungarian | 230514-BB1 | Turkish | 230514-141 |
| International | 230514-002 | U.K. English | 230514-031 |
| Italian | 230514-061 | U.S. English | 230514-001 |
| Japanese | 230514-291 | | |

Keyboard with pointing stick (for use only with Evo Notebook N400c models)

| | | | |
|-----------------|------------|------------------------|------------|
| Belgian | 230515-181 | Korean | 230515-AD1 |
| Brazilian | 230515-201 | Latin American Spanish | 230515-161 |
| Czech | 230515-221 | Norwegian | 230515-091 |
| Danish | 230515-081 | Portuguese | 230515-131 |
| French | 230515-051 | Spanish | 230515-071 |
| French Canadian | 230515-121 | Swedish/Finnish | 230515-101 |
| German | 230515-041 | Swiss | 230515-111 |
| Hungarian | 230515-211 | Taiwanese | 230515-AB1 |
| International | 230515-002 | Turkish | 230515-141 |
| Italian | 230515-061 | U.K. English | 230515-031 |
| Japanese | 230515-291 | U.S. English | 230515-001 |

Evo Notebook N400c models only—If you are removing a pointing stick keyboard, you must first remove the palm rest so the pointing stick button cable can be disconnected. Refer to Section 5.5 for palm rest removal instructions.

If you are removing a TouchPad keyboard, it is not necessary to remove the palm rest prior to removing the keyboard.

1. Prepare the notebook for disassembly (Section 5.3).
2. Turn the notebook bottom side up with the front facing forward.
3. Remove the four TM2.0 × 6.0 screws that secure the keyboard to the base enclosure (Figure 5-17).

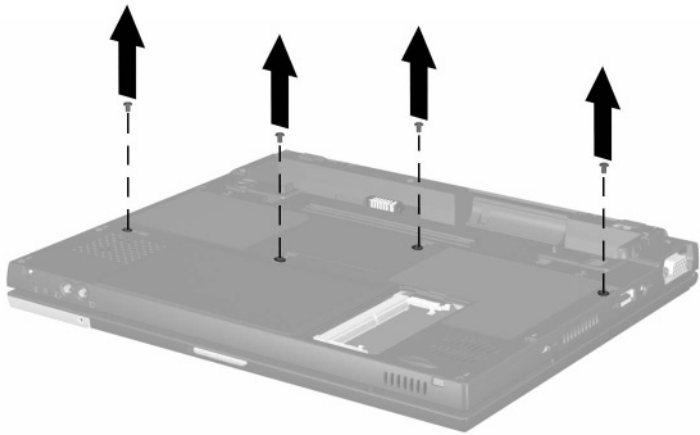


Figure 5-17. Removing the Keyboard Screws

4. Turn the notebook top side up with the front facing forward.
5. Open the notebook.



If you are removing a pointing stick keyboard, make sure the palm rest has been removed and the pointing stick button cable is disconnected before proceeding with the following steps.

6. Lift up the front edge of the keyboard **1** until it clears the memory expansion connector and the mini PCI connector (Figure 5-18).
7. Slide the keyboard forward until it disengages from the **2** and rest it on the base enclosure.



Figure 5-18. Releasing the Keyboard

8. Release the ZIF connector ❶ to which the keyboard cable is attached and disconnect the keyboard cable ❷ (Figure 5-19).
9. Remove the keyboard.

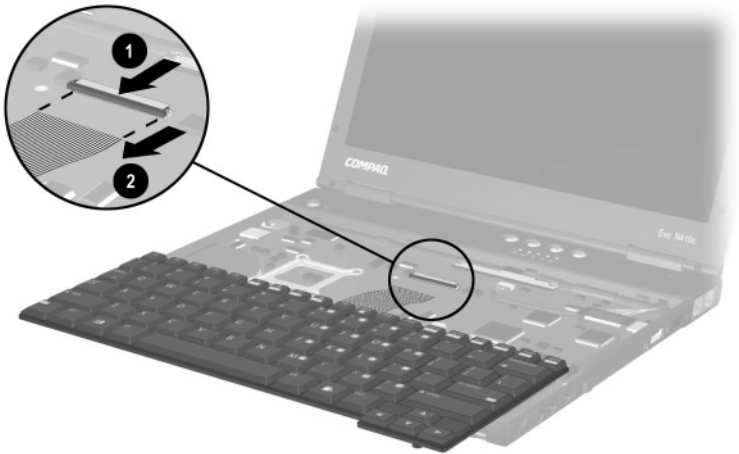


Figure 5-19. Disconnecting the Keyboard Cable

Reverse the above procedure to install the keyboard.

5.10 Real Time Clock (RTC) Battery



The RTC battery is included in the Miscellaneous Plastics Kit (spare part number 231454-001).

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the palm rest (Section 5.5).
3. Remove the keyboard (Section 5.9).
4. Disconnect the RTC battery cable from the system board ❶ (Figure 5-20).
5. Remove the RTC battery ❷.

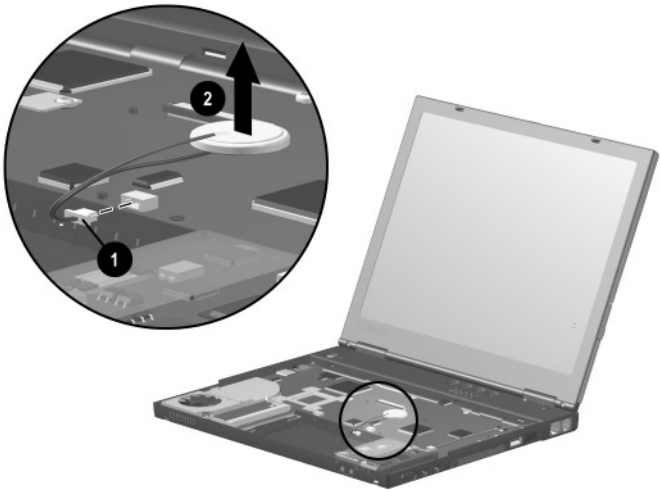


Figure 5-20. Removing the RTC Battery

Reverse the above procedure to install the RTC battery.

5.11 Switch Cover

Switch Cover Spare Part Number Information

Switch cover

231453-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the palm rest (Section 5.5).
3. Remove the keyboard (Section 5.9).
4. Close the notebook.
5. Turn the notebook bottom side up with the rear panel facing forward.
6. Remove the four TM2.0 × 6.0 screws that secure the switch cover to the base enclosure (Figure 5-21).

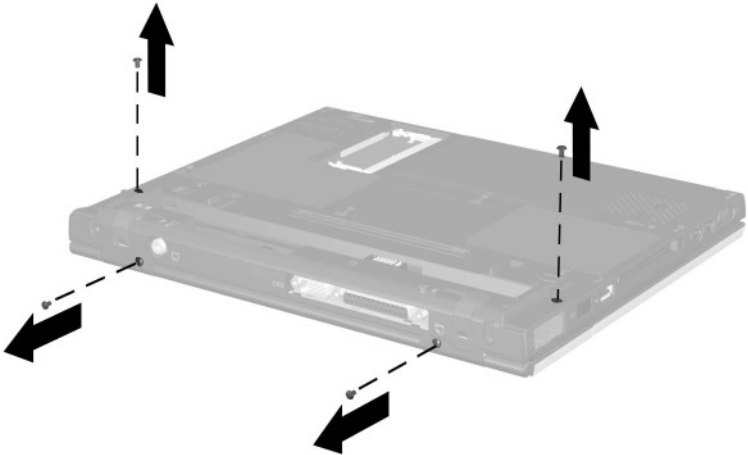


Figure 5-21. Removing the Switch Cover Screws

7. Turn the notebook top side up with the front facing forward.
8. Open the notebook as far as it will open.
9. Lift up on the outside edges of the switch cover to disengage it from the base enclosure ❶ (Figure 5-22).
10. Remove the switch cover ❷.

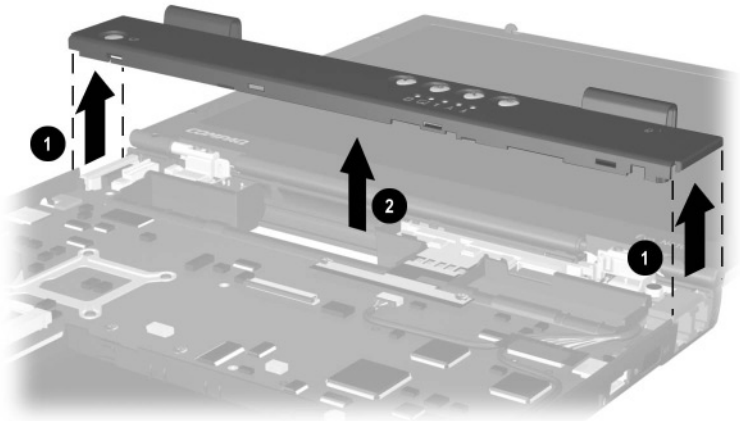


Figure 5-22. Removing the Switch Cover

Reverse the above procedure to install the switch cover.

5.12 Display

Display Spare Part Number Information

| | |
|--|------------|
| 12.1-inch, XGA, CTFT (for use only with Evo Notebook N410c models) | 292383-001 |
| 12.1-inch, SVGA, CTFT (for use only with Evo Notebook N400c models) | 231448-001 |

1. Prepare the notebook for disassembly (Section 5.3) and, in the order below, remove the following components:
 - Palm rest (Section 5.5)
 - Keyboard (Section 5.9)
 - Switch cover (Section 5.11)

2. Disconnect the display signal ❶ and backlight ❷ cables from the system board (Figure 5-23).



When the display screws are removed, the display assembly is unsupported. Make sure to provide support for the display assembly when removing the display screws.

3. Remove the four TM2.0 × 6.0 screws ❸ that secure the display to the base enclosure.
4. Remove the display.

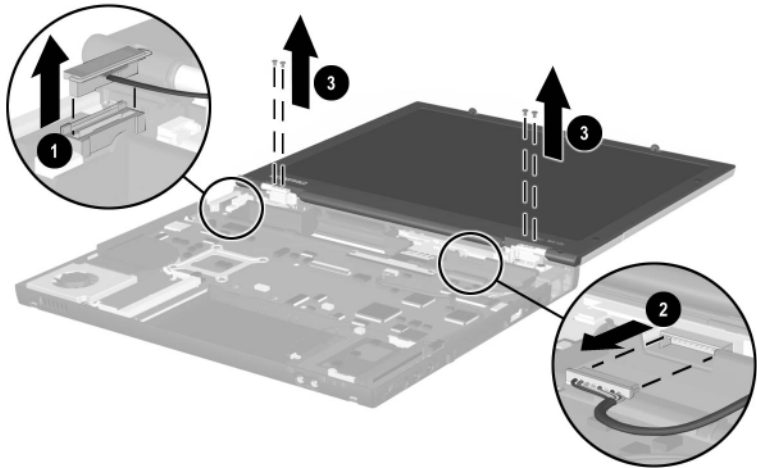


Figure 5-23. Removing the Display



When replacing the display, make sure the display cables are routed as indicated in Figure 5-24. To ensure proper alignment of the display, loosely install the screws in the ①, ②, ③, ④ sequence indicated. After all four screws have been loosely installed, tighten them.

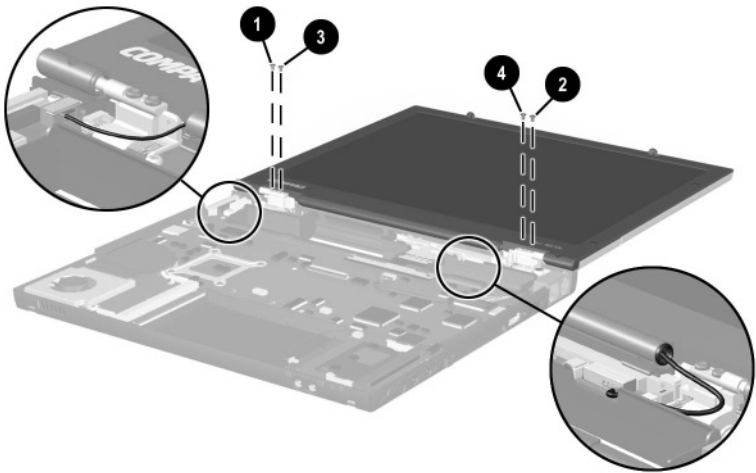


Figure 5-24. Routing the Display Cables and Installing the Display Screws

5.13 Modem Cable

Modem Cable Spare Part Number Information

| | |
|--|------------|
| For use only with Evo Notebook N410c models (includes RJ45/RJ11 connector module, display lid switch board, microphone, and modem/microphone/NIC cable bundle) | 302781-001 |
| For use only with Evo Notebook N400c models (includes display lid switch board, microphone, and microphone cable) | 231451-001 |

1. Prepare the notebook for disassembly (Section 5.3) and, in the order below, remove the following components:
 - Palm rest (Section 5.5)
 - Keyboard (Section 5.9)
 - Switch cover (Section 5.11)
 - Display (Section 5.12)
2. Position the notebook so the rear panel faces you.

3. Remove the TM2.0 × 6.0 screw ❶ that secures the right display support to the base enclosure (Figure 5-25).
4. Remove the right display support ❷.

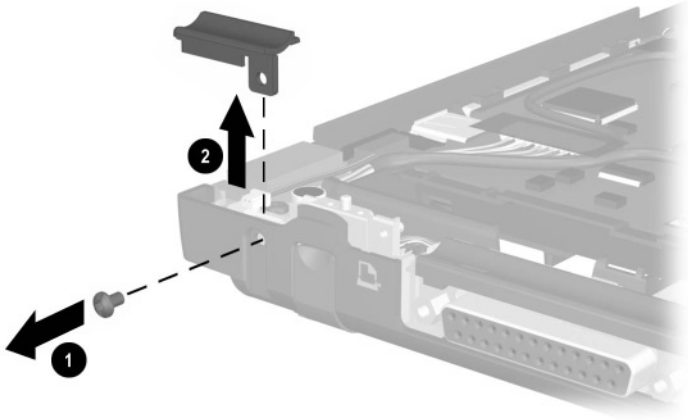


Figure 5-25. Removing the Right Display Support

5. Position the notebook so the front faces you.



Steps 6 through 11 apply only to Evo Notebook N410c models.

6. Lift the RJ45/RJ11 connector module ❶ out of the base enclosure (Figure 5-26).
7. Disconnect the microphone cable ❷ from the connector on the display lid switch board.
8. Disconnect the microphone cable ❸ from the system board.
9. Remove the PM 2.0 × 5.0 screw ❹ that secures the display lid switch board to the base enclosure.

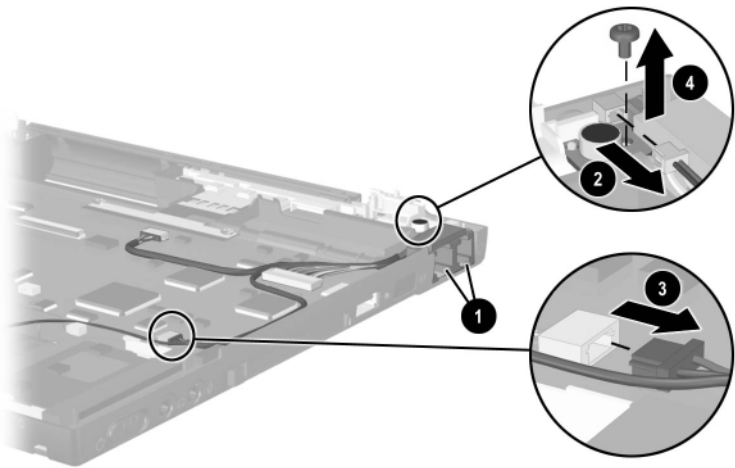


Figure 5-26. Removing the Modem Cable on Evo Notebook N410c Models

10. Disconnect the network interface card (NIC) passthrough cable ❶ and NIC/switch to system cable ❷ from the system board (Figure 5-27).
11. Remove the modem cable.

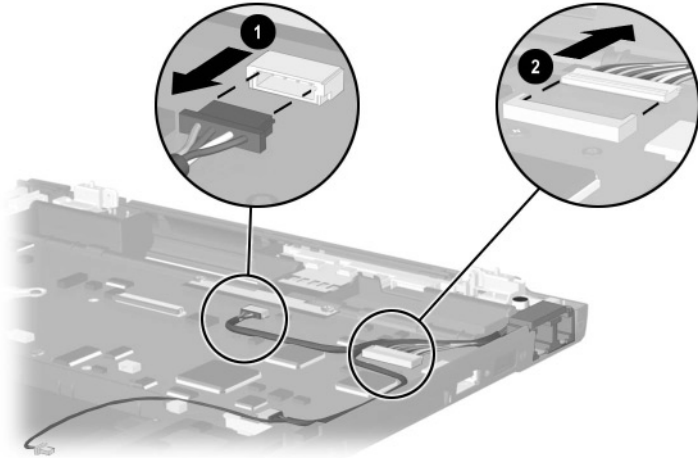


Figure 5-27. Removing the Modem Cable on Evo Notebook N410c Models (continued)



Steps 12 through 16 apply only to Evo Notebook N400c models.

12. Remove the RJ45/RJ11 connector module ❶ from the base enclosure (Figure 5-28).
13. Disconnect the microphone cable ❷ from the display lid switch board.
14. Disconnect the microphone cable ❸ from the system board.
15. Remove the PM2.0 × 4.0 screw ❹ that secures the display lid switch board to the base enclosure.
16. Remove the modem cable.

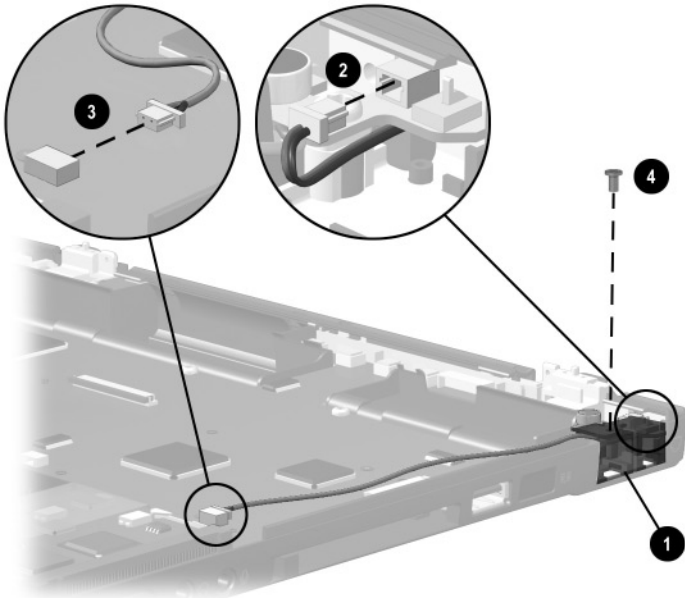


Figure 5-28. Removing the Modem Cable on Evo Notebook N400c Models

Reverse the above procedure to install the modem cable.

5.14 System Board

System Board Spare Part Number Information

System boards (includes fan and heat sink)

| | |
|---|------------|
| For use only with Evo Notebook N410c models | |
| 1.20-GHz Intel Pentium III processor | 292387-001 |
| 1.00-GHz Intel Pentium III processor | 292386-001 |
| For use only with Evo Notebook N400c models | |
| 850-MHz Intel Pentium III processor | 253104-001 |
| 700-MHz Intel Pentium III processor | 231446-001 |

1. Prepare the notebook for disassembly (Section 5.3) and, in the order below, remove the following components:
 - Palm rest (Section 5.5)
 - Hard drive (Section 5.7)
 - Mini PCI communications board (Section 5.8)
 - Keyboard (Section 5.9)
 - RTC battery (Section 5.10)
 - Switch cover (Section 5.11)
 - Display (Section 5.12)
 - Modem cable (Section 5.12)

2. Lift the inside edge of the center display support and swing it toward the back of the notebook ❶ (Figure 5-29).
3. Remove the center display support ❷.



The center display support is included in the Miscellaneous Plastics Kit (spare part number 231454-001).

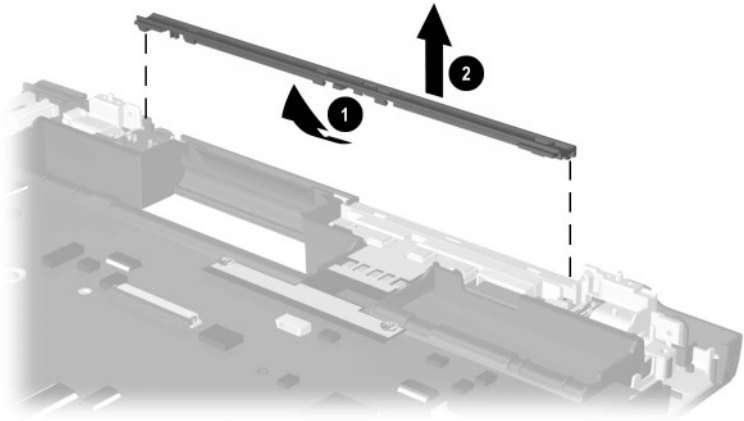


Figure 5-29. Removing the Center Display Support

4. Turn the base enclosure bottom side up with the rear panel facing forward.
5. Remove the PM2.0 × 7.0 barrel screw ❶ that secures the system board to the base enclosure (Figure 5-30).
6. **Evo Notebook N410c models only**—Remove the PM2.0 × 4.0 screw ❷ that secures the system board to the base enclosure.

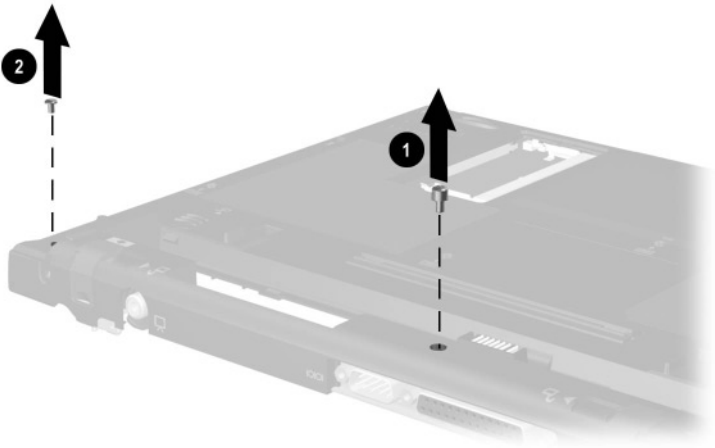


Figure 5-30. Removing the System Board Screw

7. Turn the base enclosure top side up with the rear panel facing forward.
8. Remove the TM2.0 × 6.0 screw ❶ that secures the left display support to the base enclosure (Figure 5-31).



The left display support is included in the Miscellaneous Plastics Kit (spare part number 231454-001).

9. Remove the left display support ❷.
10. Remove the two HM5.0 × 9.0 screwlocks ❸ that secure the external monitor connector to the base enclosure.
11. Remove the six TM2.0 × 4.0 screws ❹ that secure the system board to the base enclosure.



Evo Notebook N410c models have an additional TM2.0 × 3.5 screw ❺ that must be removed.

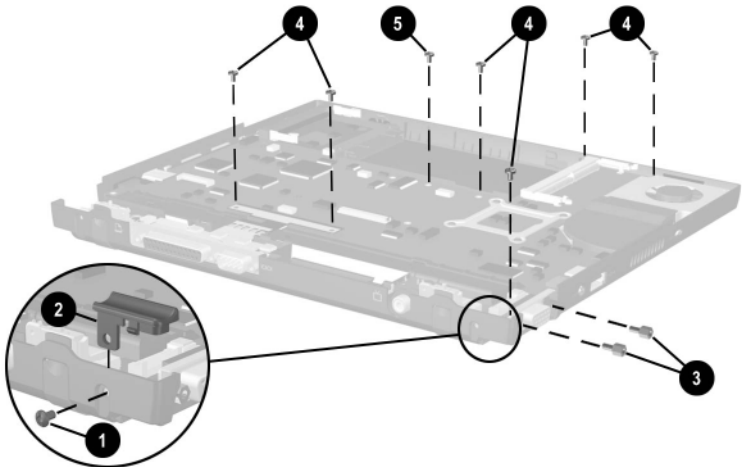


Figure 5-31. Removing the System Board Screws and Screwlocks



Do not remove the screw ❶ on the fan assembly or the four screws that secure the processor mounting bracket ❷ when removing the system board (Figure 5-32).

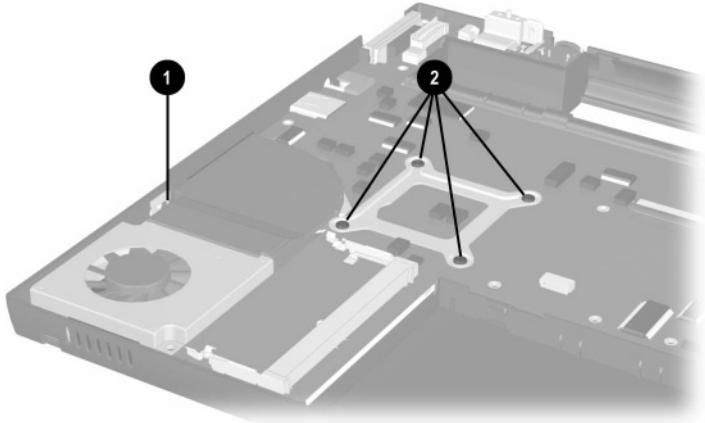


Figure 5-32. Identifying the Processor Mounting Bracket and Fan Screws

12. Disconnect the external battery terminal ❶ and speaker cables ❷ from the system board (Figure 5-33).

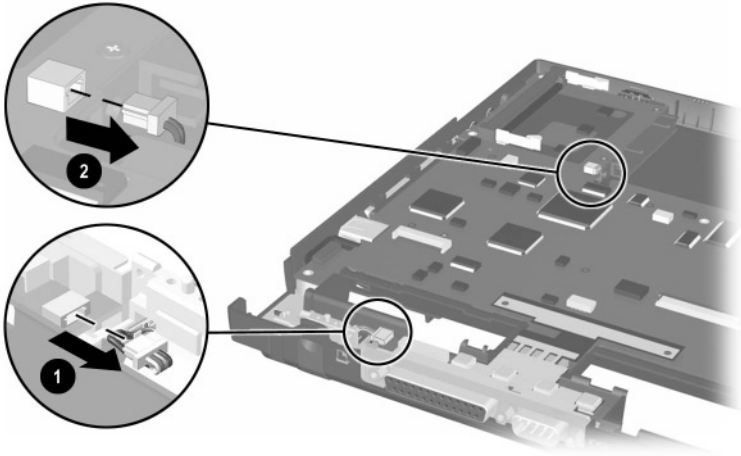


Figure 5-33. Disconnecting the External Battery Terminal and Speaker Cables from the System Board

13. Position the base enclosure so the front faces forward.
14. Use the fan and heat sink assembly to lift up and hold the right side of the system board ❶ until the external battery terminal ❷ and NTSC module cables ❸ clear the base enclosure (Figure 5-34).



CAUTION: When lifting the system board, do not exert any pressure on the external monitor connector. Lifting the system board using the external monitor connector can stress and damage the system board.

15. Disconnect the external battery terminal ❷ and NTSC module cables ❸ from the system board.

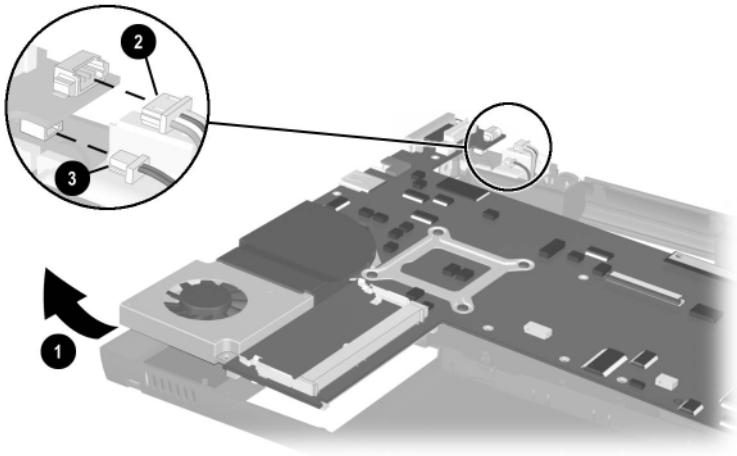


Figure 5-34. Disconnecting the External Battery Terminal and NTSC Module Cables from the System Board

- Slide the system board to the left to remove it from the base enclosure (Figure 5-35).

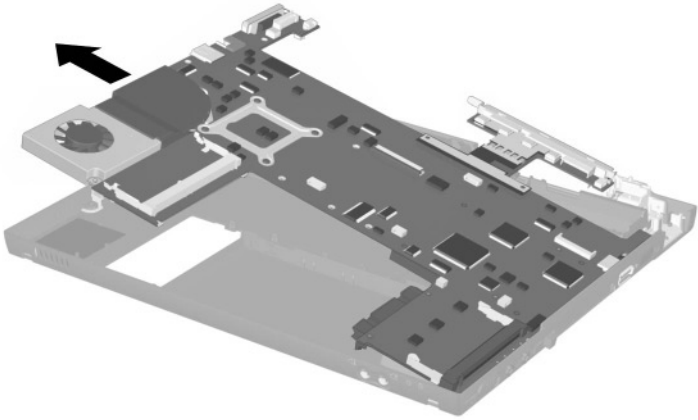


Figure 5-35. Removing the System Board

Reverse the above procedure to install the system board.



When installing the system board into the base enclosure, place the left edge of the system board into the base enclosure first to ensure that the PC Card eject button properly fits into the slot in the base enclosure ❶. Make sure the external monitor connector bracket ❷ and security cable slot bracket ❸ are in their proper locations (Figure 5-36).

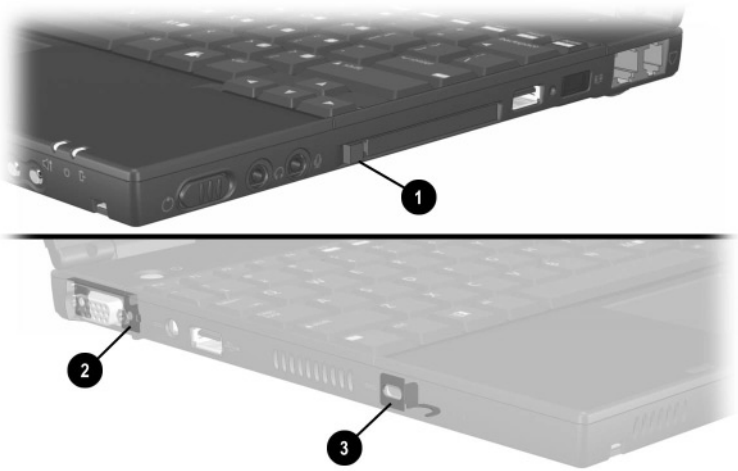


Figure 5-36. Installing the System Board

CAUTION: Make sure the speaker ❶, external battery terminal ❷ and ❸, NTSC module ❹, and fan cables ❺ do not get trapped underneath the system board when it is installed into the base enclosure (Figure 5-37). Failure to follow this caution can result in damage to notebook components, system failure, and data loss

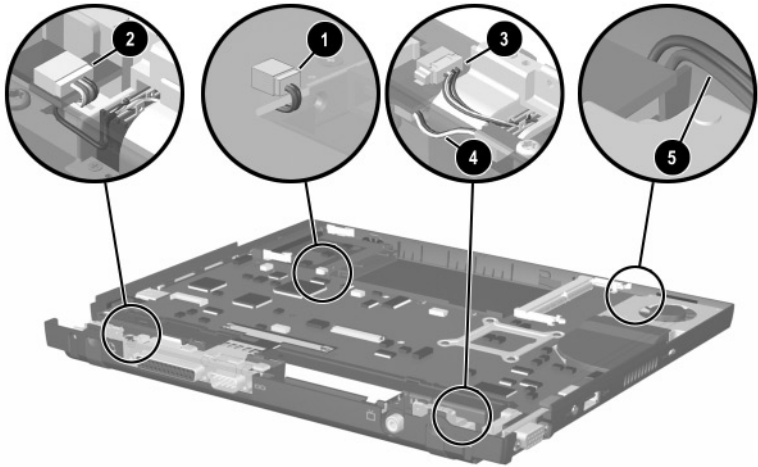


Figure 5-37. Routing the Speaker, External Battery Terminal, NTSC Module, and Fan Cables

6

Specifications

This chapter provides physical and performance specifications.

Table 6-1
Computer

Dimensions

| | | |
|--------|----------|---------|
| Height | 2.26 cm | .89 in |
| Width | 26.67 cm | 10.5 in |
| Depth | 24.13 cm | 9.5 in |

| | | |
|---------------|---------|--------|
| Weight | 1.59 kg | 3.5 lb |
|---------------|---------|--------|

Standalone (battery) power requirements

| | |
|------------------------------------|----------|
| Nominal operating voltage (Li ion) | 14.8 VDC |
| Maximum operating power | 40 W |
| Peak operating power | 50 W |

AC adapter power requirements

| | |
|---------------------|------------------------------------|
| Rated input power | 90 to 264 VAC RMS (auto switching) |
| Rated input current | < 60 W |
| Rated frequency | 47 to 63 Hz |

Temperature

| | | |
|--------------|--------------|--------------|
| Operating | 10 to 35° C | 50 to 95° F |
| Nonoperating | -20 to 60° C | -4 to 140° F |

Table 6-1
Computer (Continued)

Relative humidity

| | |
|--------------|--|
| Operating | 10 to 90% relative humidity, non-condensing |
| Nonoperating | 5 to 90% relative humidity, 101.6° F/38.7° C maximum wet bulb temperature |

Altitude (unpressurized)

| | | |
|-------------------------------------|--------------|----------------|
| Operating (14.7 to 10.1 psia) | 0 to 3,048 m | 0 to 10,000 ft |
| Nonoperating (14.7 to 14.4 psia) | 0 to 9,144 m | 0 to 30,000 ft |

Shock

| | |
|--------------|------------------------|
| Operating | 10 G, 11 ms, half sine |
| Nonoperating | 60 G, 11 ms, half sine |

Vibration

| | |
|--------------|--|
| Operating | 0.5 G, 10 to 500 Hz, 0.5 oct/min sweep rate |
| Nonoperating | 1.0 G, 10 to 500 Hz, 0.50 oct/min sweep rate |



Applicable product safety standards specify thermal limits for plastic surfaces. The notebook operates well within this range of temperatures.

Table 6-2
12.1-inch XGA, TFT Display

| | | |
|--------------------------------|--|---------|
| Dimensions | | |
| Height | 21.16 cm | 10.3 in |
| Width | 19.81 cm | 7.8 in |
| Diagonal | 30.73 cm | 12.1 in |
| Number of colors | Up to 16.8 million | |
| Contrast ratio | 125:1 | |
| Brightness | 130 nits typical on AC power, 70 nits typical on battery power, 115 nits minimum | |
| Pixel resolution | | |
| Pitch | 0.264 × 0.264 mm | |
| Format | 1024 × 768 | |
| Configuration | RGB vertical stripe | |
| Backlight | Cold cathode fluorescent, 1 tube | |
| Character display | 80 × 25 | |
| Refresh rate | 60 Hz | |
| Total power consumption | 4 W | |

Table 6-3
12.1-inch SVGA, TFT Display

| | | |
|--------------------------------|--|---------|
| Dimensions | | |
| Height | 21.16 cm | 10.3 in |
| Width | 19.81 cm | 7.8 in |
| Diagonal | 30.73 cm | 12.1 in |
| Number of colors | Up to 16.8 million | |
| Contrast ratio | 125:1 | |
| Brightness | 130 nits typical on AC power, 70 nits typical on battery power, 115 nits minimum | |
| Pixel resolution | | |
| Pitch | 0.264 × 0.264 mm | |
| Format | 800 × 600 | |
| Configuration | RGB vertical stripe | |
| Backlight | Cold cathode fluorescent, 1 tube | |
| Character display | 80 × 25 | |
| Refresh rate | 60 Hz | |
| Total power consumption | 4 W | |

**Table 6-4
Hard Drives**

| | 40 GB | 30 GB | 20 GB | 10 GB |
|---|--------------|--------------|--------------|--------------|
| User capacity per drive¹ | 40.0 GB | 30.0 GB | 20.0 GB | 10.0 GB |
| Drive height | 9.5 mm | 9.5 mm | 9.5 mm | 9.5 mm |
| Drive width | 70 mm | 70 mm | 70 mm | 70 mm |
| Interface type | ATA-5 | ATA-5 | ATA-5 | ATA-4 |
| Seek times (typical read, including setting) | | | | |
| Single track | 3 ms | 3 ms | 3 ms | 2.5 ms |
| Average | 13 ms | 13 ms | 13 ms | 12 ms |
| Full stroke | 24 ms | 24 ms | 24 ms | 23 ms |
| Logical blocks³ | 78,140,160 | 58,605,120 | 39,070,080 | 19,640,880 |
| Logical configuration | | | | |
| Cylinders | 16,683 | 16,683 | 16,683 | 16,683 |
| Heads | 16 | 16 | 16 | 16 |
| Sectors per track | 63 | 63 | 63 | 63 |

¹ 1 GB = 1,073,741,824 bytes.

³ Actual drive specifications may differ slightly.

Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.

**Table 6-4
Hard Drives (Continued)**

| | 40 GB | 30 GB | 20 GB | 20 GB |
|-----------------------------------|--------------|--------------|--------------|--------------|
| Physical configuration | | | | |
| Cylinders ³ | 22,784 | 25,800 | 22,784 | 22,784 |
| Heads | 4 | 2 | 4 | 2 |
| Sectors per track ³ | 293 to 560 | 398 to 731 | 293 to 560 | 293–560 |
| Bytes per sector | 512 | 512 | 512 | 512 |
| Buffer size³ | 2 MB | 512 KB | 512 KB | 512 KB |
| Disk rotational speed | 4200 rpm | 4200 rpm | 4200 rpm | 4200 rpm |
| Transfer rate | | | | |
| Interface max (MB/s) ² | 66.6 | 100 | 66.6 | 66.6 |
| Media (Mb/s) ³ | 109 to 203 | 155 to 256 | 109 to 203 | 109 to 203 |

² System capability may differ.

³ Actual drive specifications may differ slightly.

Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.

**Table 6-5
Diskette Drive**

| | | |
|---------------------------|--------------|-------------|
| Diskette size | 8.89 cm | 3.5 in |
| Light | On system | |
| Height | 1.27 cm | .05 in |
| Bytes per sector | 512 | |
| Sectors per track | | |
| High density | 18 (1.44 MB) | 15 (1.2 MB) |
| Low density | 9 | |
| Tracks per side | | |
| High density | 80 | |
| Low density | 80 | |
| Read/write heads | 2 | |
| Average seek times | | |
| Track-to-track (high/low) | 3 ms | 6 ms |
| Average (high/low) | 95 ms | 174 ms |
| Settling time | 15 ms | |
| Latency average | 100 ms | |

**Table 6-6
CD-ROM Drive**

| | | |
|----------------------------------|--|--------|
| Applicable disk | CD-ROM (Mode 1, 2, and 3) CD-XA ready (Mode 2, Form 1 and 2) CD-I ready (Mode 2, Form 1 and 2) CD-R (read only) CD Plus Photo CD (single/multisession) CD-Extra Video CD CD-WO (fixed packets only) CD-Bridge | |
| Center hole diameter | 1.50 cm | .59 in |
| Disk diameter | 12 cm, 8 cm | |
| Disk thickness | 1.20 mm | |
| Track pitch | 1.6 μ | |
| Access time | | |
| Random | < 150 ms | |
| Full Stroke | < 300 ms | |
| Cache buffer | 128 KB | |
| Data transfer rate | | |
| Sustained, 24X | 2400 KB/sec (150 KB/sec at 1X) | |
| Variable | 1500 to 3600 KB/sec (10X to 24X) | |
| Normal PIO Mode 4 (single burst) | 16.66 KB/sec | |
| Startup time | < 8 seconds | |
| Stop time | < 4 seconds | |

Table 6-7
DVD-ROM Drive

| | | |
|---------------------------------|--|--------|
| Applicable disk | DVD-5, DVD-9, DVD-10 CD-ROM (Mode 1 and 2) CD Digital Audio CD-XA ready (Mode 2, Form 1 and 2) CD-I ready (Mode 2, Form 1 and 2) CD-R (read only) CD Plus Photo CD (single/multisession) CD-Bridge | |
| Center hole diameter | 1.50 cm | .59 in |
| Disk diameter | 12 cm, 8 cm | |
| Disk thickness | 1.20 mm | |
| Track pitch | .74 μ | |
| Access time | | |
| Random | < 150 ms | |
| Full Stroke | < 225 ms | |
| Audio output level | | |
| Lineout | 0.7 V rms | |
| Headphone | None | |
| Cache buffer | 128 KB | |
| Data transfer rate | | |
| Sustained, 1X DVD rate | 150 KB/sec | |
| Sustained, 16X DVD rate | 2400 KB/sec | |
| Sustained, 1X DVD rate | 1380 KB/sec | |
| Sustained, 4X DVD rate | 5520 KB/sec | |
| Normal IO Mode 4 (single burst) | 16.6 MB/sec | |
| Startup time | < 15 seconds | |
| Stop time | < 6 seconds | |

Table 6-8
Battery Packs

Dimensions

Primary Lithium ion (Li ion)

| | | |
|--------|----------|---------|
| Height | 1.98 cm | .78 in |
| Width | 23.01 cm | 9.06 in |
| Depth | 4.67 cm | 1.84 |
| Weight | .22 kg | .49 lb |
| Cells | 4 | |

External Li ion

| | | |
|--------|----------|----------|
| Height | 2.29 cm | .90 in |
| Width | 26.59 cm | 10.47 in |
| Depth | 2.29 cm | .9 in |
| Weight | .22 kg | .48 lb |
| Cells | 4 | |

External Li ion High Capacity

| | | |
|--------|----------|----------|
| Height | 4.60 cm | 1.81 in |
| Width | 26.90 cm | 10.59 in |
| Depth | 3.00 cm | 1.18 in |
| Weight | .42 kg | .93 lb |
| Cells | 4 | |

Energy

Primary and External Li ion

| | |
|--------------------|---------|
| Voltage | 14.4 V |
| Amp-hour capacity | 1.96 Ah |
| Watt-hour capacity | 28 Wh |

External Li ion High Capacity

| | |
|--------------------|---------|
| Voltage | 14.4 V |
| Amp-hour capacity | 2.87 Ah |
| Watt-hour capacity | 349 Wh |

Environmental requirements

| | | |
|--------------|----------------|----------------|
| Temperature | | |
| Operating | 5°C to 35° C | 41°F to 95° F |
| Nonoperating | -20°C to 60° C | -4°F to 140° F |

**Table 6-9
AC Adapter**

| | | |
|-----------------------------|---------------------------|---------|
| Weight | .18 kg | 0.39 lb |
| Power supply (input) | | |
| Operating voltage | 90 to 260 VAC RMS Nominal | |
| Operating current | 1.3 A RMS | |
| Operating frequency range | 47 to 63 Hz Nominal | |
| Maximum transient | 4/50 kV | |

**Table 6-10
System DMA**

| Hardware DMA | System Function |
|---------------------|--|
| DMA0 | Available for audio |
| DMA1 | Entertainment audio (default; alternate = DMA0, DMA3, none) |
| DMA2 | Diskette drive |
| DMA3 | ECP parallel port LPT1 (default; alternate = DMA0, none) |
| DMA4 | DMA controller cascading (not available) |
| DMA5 | Available for PC Card |
| DMA6 | Not assigned |
| DMA7 | Not assigned |

PC Card controller can use DMA 1, 2, or 5.

Table 6-11
System Interrupts

| Hardware IRQ | System Function |
|---------------------|---|
| IRQ0 | System timer |
| IRQ1 | Keyboard controller |
| IRQ2 | Cascaded |
| IRQ3 | COM2 |
| IRQ4 | COM1 |
| IRQ5 | Audio (default)* |
| IRQ6 | Diskette drive |
| IRQ7 | Parallel port |
| IRQ8 | Real time clock (RTC) |
| IRQ9 | Infrared |
| IRQ10 | System use |
| IRQ11 | System use |
| IRQ12 | Internal point stick or external mouse |
| IRQ13 | Coprocessor (not available to any peripheral) |
| IRQ14 | IDE interface (hard drive and optical drive) |
| IRQ15 | System use |

PC 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.

Table 6-12
System I/O Addresses

| I/O Address (hex) | System Function (shipping configuration) |
|--------------------------|---|
| 000 - 00F | DMA controller no. 1 |
| 010 - 01F | Unused |
| 020 - 021 | Interrupt controller no. 1 |
| 022 - 024 | Opti chipset configuration registers |
| 025 - 03F | Unused |
| 02E - 02F | 87334 "Super IO" configuration for CPU |
| 040 - 05F | Counter/timer registers |
| 044 - 05F | Unused |
| 060 | Keyboard controller |
| 061 | Port B |
| 062 - 063 | Unused |
| 064 | Keyboard controller |
| 065 - 06F | Unused |
| 070 - 071 | NMI enable/real time clock |
| 072 - 07F | Unused |
| 080 - 08F | DMA page registers |
| 090 - 091 | Unused |
| 092 | Port A |
| 093 - 09F | Unused |
| 0A0 - 0A1 | Interrupt controller no. 2 |

Table 6-12
System I/O Addresses (*Continued*)

| I/O Address (hex) | System Function (shipping configuration) |
|--------------------------|---|
| 0A2 - 0BF | Unused |
| 0C0 - 0DF | DMA controller no. 2 |
| 0E0 - 0EF | Unused |
| 0F0 - 0F1 | Coprocessor busy clear/reset |
| 0F2 - 0FF | Unused |
| 100 - 16F | Unused |
| 170 - 177 | Secondary fixed disk controller |
| 178 - 1EF | Unused |
| 1F0 - 1F7 | Primary fixed disk controller |
| 1F8 - 200 | Unused |
| 201 | Joystick (decoded in ESS1688) |
| 202 - 21F | Unused |
| 220 - 22F | Entertainment audio |
| 230 - 26D | Unused |
| 26E - 26 | Unused |
| 278 - 27F | Unused |
| 280 - 2AB | Unused |
| 2A0 - 2A7 | Unused |
| 2A8 - 2E7 | Unused |
| 2E8 - 2EF | Reserved serial port |

Table 6-12
System I/O Addresses (*Continued*)

| I/O Address (hex) | System Function (shipping configuration) |
|--------------------------|---|
| 2F0 - 2F7 | Unused |
| 2F8 - 2FF | Infrared port |
| 300 - 31F | Unused |
| 320 - 36F | Unused |
| 370 - 377 | Secondary diskette drive controller |
| 378 - 37F | Parallel port (LPT1/default) |
| 380 - 387 | Unused |
| 388 - 38B | FM synthesizer - OPL3 |
| 38C - 3AF | Unused |
| 3B0 - 3BB | VGA |
| 3BC - 3BF | Reserved (parallel port/no EPP support) |
| 3C0 - 3DF | VGA |
| 3E0 - 3E1 | PC Card controller in CPU |
| 3E2 - 3E3 | Unused |
| 3E8 - 3EF | Internal modem |
| 3F0 - 3F7 | "A" diskette controller |
| 3F8 - 3FF | Serial port (COM1/default) |
| CF8 - CFB | PCI configuration index register (PCIDIVO-1) |
| CFC - CFF | PCI configuration data register (PCIDIVO-1) |

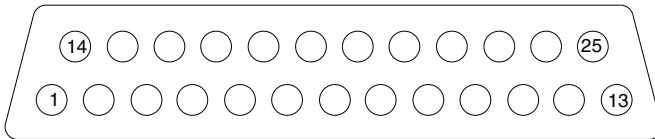
Table 6-13
System Memory Map

| Size | Memory Address | System Function |
|-------------|-----------------------|------------------------------|
| 640 K | 00000000 - 0009FFFF | Base memory |
| 128 K | 000A0000 - 000BFFFF | Video memory |
| 48 K | 000C0000 - 000CBFFF | Video BIOS |
| 160 K | 000C8000 - 000E7FFF | Unused |
| 64 K | 000E8000 - 000FFFFF | System BIOS |
| 15 M | 00100000 - 00FFFFFF | Extended memory |
| 58 M | 01000000 - 047FFFFFFF | Super extended memory |
| 58 M | 04800000 - 07FFFFFFF | Unused |
| 2 M | 08000000 - 080FFFFFFF | Video memory (direct access) |
| 4 G | 08200000 - FFFFFFFFFF | Unused |
| 64 K | FFFF0000 - FFFFFFFF | System BIOS |

A

Connector Pin Assignments

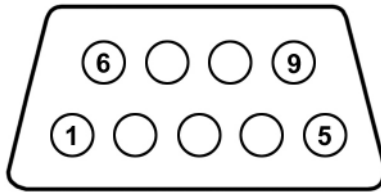
Table A-1
Parallel



| 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 line feed* |
| 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 |

*Signal is active low.

Table A-2
Serial



| Pin | Signal | Pin | Signal |
|-----|---------------------|-----|----------------|
| 1 | Carrier detect | 6 | Data set ready |
| 2 | Receive data | 7 | Ready to send |
| 3 | Transmit data | 8 | Clear to send |
| 4 | Data terminal ready | 9 | Ring indicator |
| 5 | Signal ground | | |

Table A-3
Stereo Speaker/Headphone



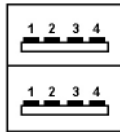
| Pin | Signal | Pin | Signal |
|-----|-----------|-----|--------|
| 1 | Audio out | 2 | Ground |

**Table A-4
Microphone**



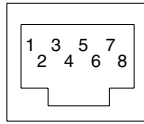
| Pin | Signal | Pin | Signal |
|-----|----------|-----|--------|
| 1 | Audio in | 2 | Ground |

**Table A-5
Universal Serial Bus**



| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | +5 VDC | 3 | Data + |
| 2 | Data - | 4 | Ground |

Table A-6
RJ-45 Network Interface



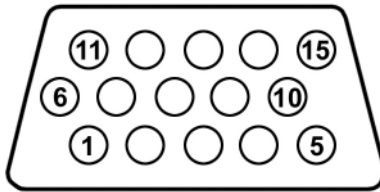
| Pin | Signal | Pin | Signal |
|-----|------------|-----|-----------|
| 1 | Transmit + | 5 | Unused |
| 2 | Transmit - | 6 | Receive - |
| 3 | Receive + | 7 | Unused |
| 4 | Unused | 8 | Unused |

Table A-7
RJ-11 Modem



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

Table A-8
External Monitor



| Pin | Signal | Pin | Signal |
|-----|---------------|-----|-----------------|
| 1 | Red analog | 9 | +5 VDC |
| 2 | Green analog | 10 | Ground |
| 3 | Blue analog | 11 | Monitor detect |
| 4 | Not connected | 12 | DDC 2B data |
| 5 | Ground | 13 | Horizontal sync |
| 6 | Ground analog | 14 | Vertical sync |
| 7 | Ground analog | 15 | DDC2B clock |
| 8 | Ground analog | | |

Power Cord Set Requirements

3-Conductor Power Cord Set

The wide range input feature of the notebook permits it to operate from any line voltage from 100 to 120 or 220 to 240 volts AC.

The power cord set received with the notebook meets the requirements for use in the country where the equipment is purchased.

Power cord sets for use in other countries must meet the requirements of the country where the notebook is used. For more information on power cord set requirements, contact a Compaq authorized reseller or service provider.

General Requirements

The requirements listed below are applicable to all countries:

- The length of the power cord set must be at least 1.5 m (5.00 feet) and no more than 2.0 m (6.50 feet).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.
- The power cord set must have a minimum current capacity of 10 amperes and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector, for mating with the appliance inlet on the back of the notebook.

Country-Specific Requirements

3-Conductor Power Cord Set Requirements

| Country | Accredited Agency | Applicable Note Number |
|-----------------|--------------------------|-------------------------------|
| Australia | EANSW | 1 |
| Austria | OVE | 1 |
| Belgium | CEBC | 1 |
| Canada | CSA | 2 |
| Denmark | DEMKO | 1 |
| Finland | FIMKO | 1 |
| France | UTE | 1 |
| Germany | VDE | 1 |
| Italy | IMQ | 1 |
| Japan | METI | 3 |
| The Netherlands | KEMA | 1 |
| Norway | NEMKO | 1 |
| Sweden | SEMKO | 1 |
| Switzerland | SEV | 1 |

3-Conductor Power Cord Set Requirements (Continued)

| Country | Accredited Agency | Applicable Note Number |
|----------------|-------------------|------------------------|
| United Kingdom | BSI | 1 |
| United States | UL | 2 |

Notes

1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm² conductor size. The power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where they will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

C

Screw Listing

This appendix provides specification information for the screws used in the notebook. All screws listed in this appendix are available in the Miscellaneous Screw Kit, spare part number 231455-001.

Table C-1
Phillips P0 Metric 2.0 × 3.0 Screw

|  | Color | Qty | Length | Thread | Head Width |
|---|--------|-----|--------|--------|------------|
| | Silver | 1 | 3.0 mm | 2.0 mm | 3.0 mm |

Where used:

One screw that secures the MultiPort cover to the display assembly (refer to the documentation included with the MultiPort device for information on removing the MultiPort cover)

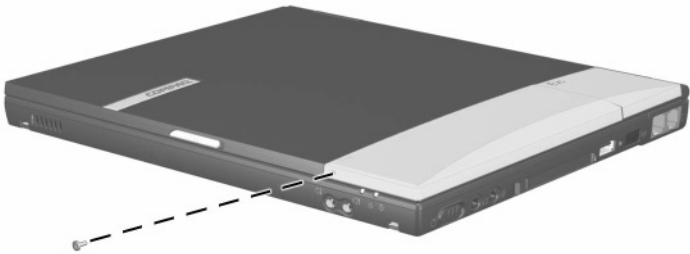


Figure C-1. TM2.0 × 3.0 Screw Location

Table C-2
Torx T8 Metric 2.0 × 6.0 Screw



| | Color | Qty | Length | Thread | Head Width |
|--|-------|-----|--------|--------|------------|
| | Black | 19 | 6.0 mm | 2.0 mm | 4.0 mm |

Where used:

- ❶ Four screws that secure the palm rest to the base enclosure (documented in Section 5.5)
- ❷ One screw that secures the memory expansion compartment cover to the base enclosure (documented in Section 5.6)
- ❸ Four screws that secure the keyboard to the base enclosure (documented in Section 5.9)

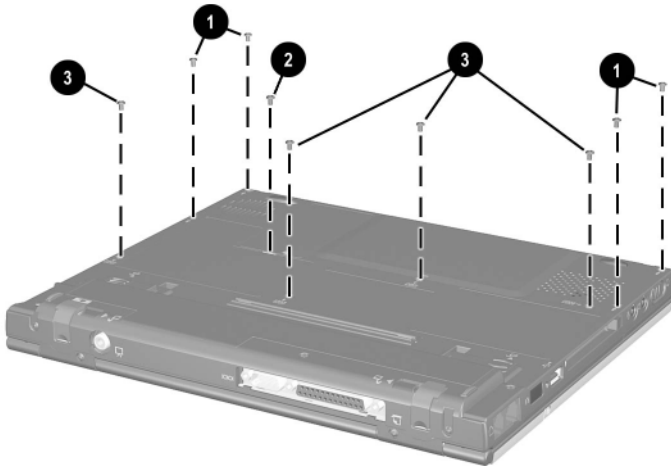


Figure C-2. TM2.0 × 6.0 Screw Locations

Table C-2
Torx T8 Metric 2.0 × 6.0 Screw (Continued)



| | Color | Qty | Length | Thread | Head Width |
|--|-------|-----|--------|--------|------------|
| | Black | 19 | 6.0 mm | 2.0 mm | 4.0 mm |

Where used:

- ❶ Four screws that secure the switch cover to the base enclosure (documented in Section 5.11)
- ❷ One screw that secures the right display support to the base enclosure (documented in Section 5.13)
- ❸ One screw that secures the left display support to the base enclosure (documented in Section 5.14)

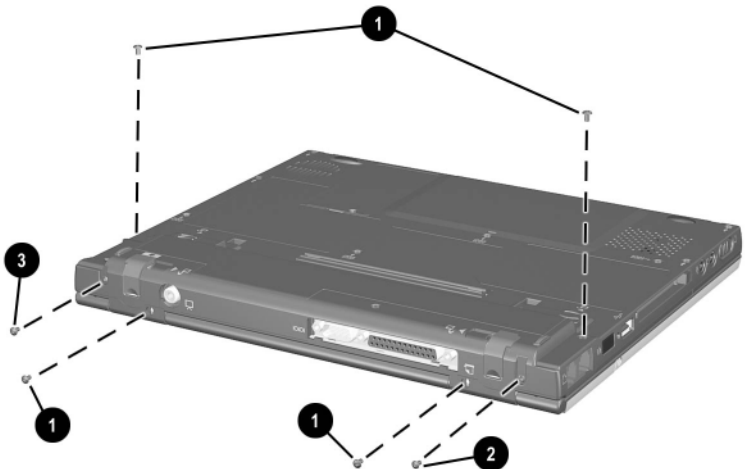


Figure C-3. T2.0 × 6.0 Screw Locations

Table C-2
Torx T8 Metric 2.0 × 6.0 Screw (Continued)



| | Color | Qty | Length | Thread | Head Width |
|--|--------------|------------|---------------|---------------|-------------------|
| | Black | 19 | 6.0 mm | 2.0 mm | 4.0 mm |

Where used:

Four screws that secure the display to the base enclosure
 (documented in Section 5.12)

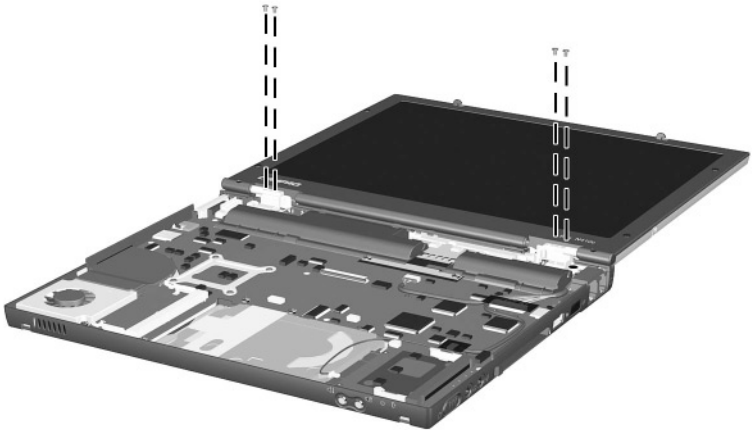


Figure C-4. TM2.0 × 6.0 Screw Locations

Table C-3
Phillips P0 Metric 2.0 × 5.0 Screw



| | Color | Qty | Length | Thread | Head Width |
|--|-------|-----|--------|--------|------------|
| | Black | 1 | 5.0 mm | 2.0 mm | 3.0 mm |

Where used:

Evo Notebook N410c models only—One screw that secures the display lid switch board to the system board (documented in Section 5.13)

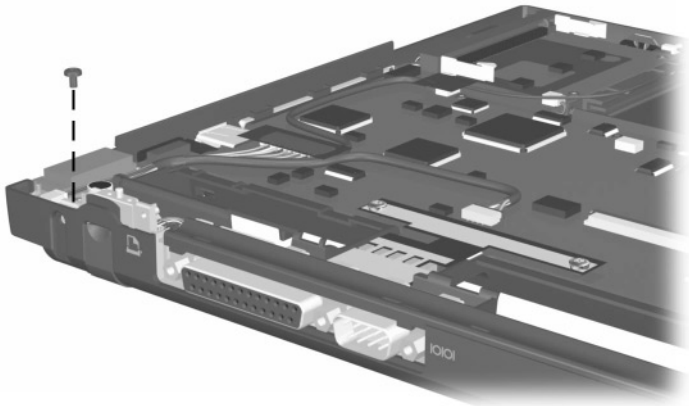


Figure C-5. TM2.0 × 6.0 Screw Location

Table C-4
Phillips P0 Metric 2.0 × 4.0 Screw



| | Color | Qty | Length | Thread | Head Width |
|--|--------------|------------|---------------|---------------|-------------------|
| | Black | 1 | 4.0 mm | 2.0 mm | 3.0 mm |

Where used:

Evo Notebook N400c models only—One screw that secures the display lid switch board to the system board (documented in Section 5.13)

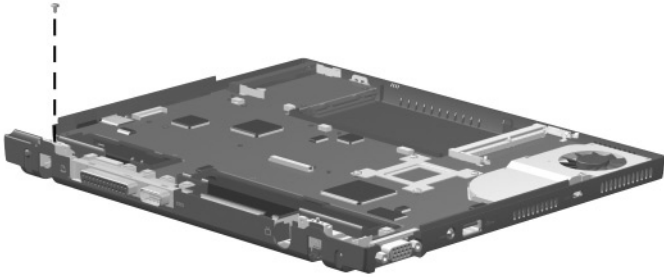


Figure C-6. TM2.0 × 4.0 Screw Location

Table C-4
Phillips P0 Metric 2.0 × 4.0 Screw (Continued)



| | Color | Qty | Length | Thread | Head Width |
|--|--------|-----|--------|--------|------------|
| | Silver | 1 | 4.0 mm | 2.0 mm | 3.0 mm |

Where used:

Evo Notebook N410c models only—One screw that secures the system board to the system board (documented in Section 5.14)



Figure C-7. TM2.0 × 4.0 Screw Location

Table C-5
Phillips P0 Metric 2.0 x 7.0 Barrel Screw



| Color | Qty | Length | Thread | Head Width |
|--------|-----|--------|--------|------------|
| Silver | 1 | 7.0 mm | 2.0 mm | 5.0 mm |

Where used:

One screw that secures the system board to the base enclosure (documented in Section 5.14)

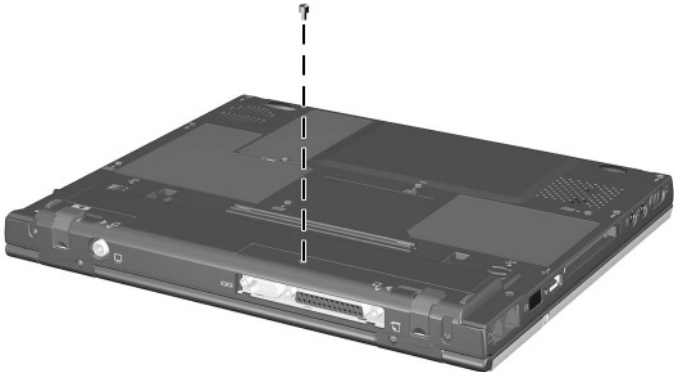


Figure C-8. PM2.0 x 7.0 Barrel Screw Location

Table C-5
Torx T8 Metric 2.0 × 4.0 Screw



| | Color | Qty | Length | Thread | Head Width |
|--|--------|-----|--------|--------|------------|
| | Silver | 7 | 4.0 mm | 2.0 mm | 4.0 mm |

Where used:

- ❶ and ❷ **Evo Notebook N410c models**—Seven screws that secure the system board to the base enclosure (documented in Section 5.14)
- ❶ **Evo Notebook N400c models**—Six screws that secure the system board to the base enclosure (documented in Section 5.14)

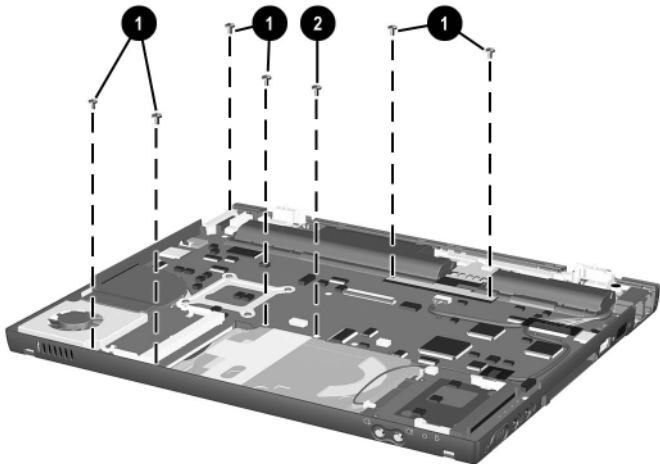


Figure C-9. TM2.0 × 4.0 Screw Locations

Table C-6
5.0 mm × 9.5 Screwlock



| | Color | Qty | Length | Thread | Head Width |
|--|--------------|------------|---------------|---------------|-------------------|
| | Silver | 2 | 9.5 mm | n/a | 5.0 mm |

Where used:

Two screwlocks that secure the system board to the base enclosure on each side of the external monitor connector (documented in Section 5.14)

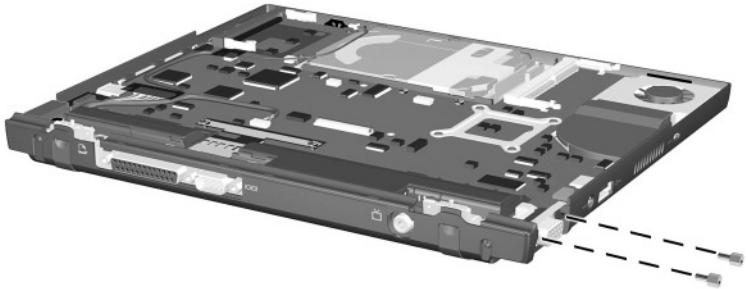


Figure C-10. HM5.0 × 9.5 Screwlock Locations

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