Dell™ Latitude™ CP and CPi

PARTS REMOVAL AND REPLACEMENT GUIDE

Model PPL

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Read This First

A prerequisite for using this manual to service Dell computer systems is a basic knowledge of PCs and prior training in PC troubleshooting techniques. In addition to information provided in this manual and the online *Systems User's Guide* that came with the system, Dell provides the *Diagnostics and Troubleshooting Guide* for troubleshooting procedures and instructions on using the Dell diagnostics to test the computer system.

Notes, Cautions, and Warnings

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, cautions, and warnings, and they are used as follows:

NOTE: A NOTE indicates important information that helps you make better use of your computer system.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates the potential for bodily harm and tells you how to avoid the problem.

Dell™ Latitude™ CP and CPi Parts Removal and Replacement Guide

This guide provides instructions for removing and replacing field-replaceable components, assemblies, and subassemblies. Unless otherwise noted, each procedure in this guide assumes the following:

- The computer and any attached peripherals are turned off, and the peripherals are disconnected from the I/O panel on the back of the computer.
- A part can be replaced by performing the removal procedure in reverse order.

When the display assembly is open nearly 180 degrees, use a book or something similar to support it. The angle of the display assembly with respect to the bottom case should never be allowed to exceed 180 degrees. Also, when performing the procedures in this guide, the locations or directions relative to the computer are as shown in Figure 1 unless otherwise specified.

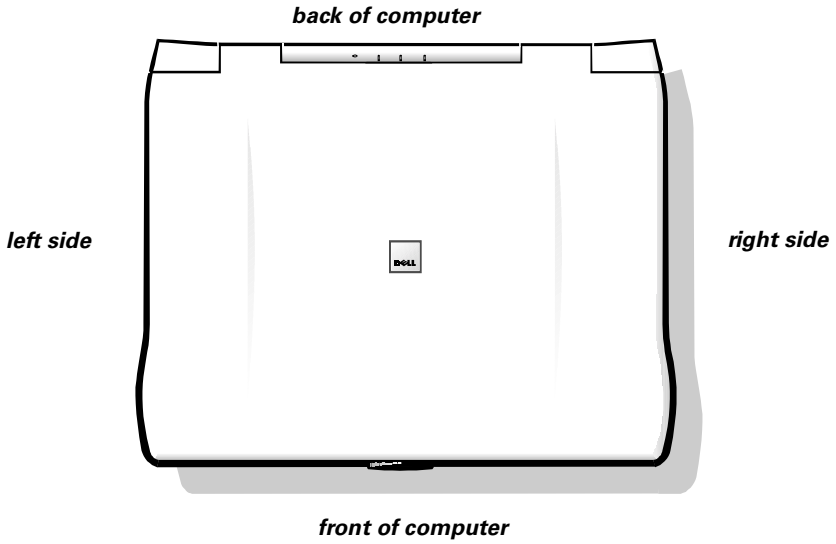

Figure 1. Computer Orientation

Recommended Tools

Most of the procedures in this guide require the use of one or more of the following tools:

- Number 1 magnetized Phillips-head screwdriver
- Small flat-blade screwdriver
- Small plastic scribe

Precautionary Measures

WARNING: For your personal safety and protection of the equipment, perform the following steps in the sequence listed.

Before you start to work on the computer, perform the following steps:

1. **To avoid possible damage to the computer from ESD, periodically ground yourself by touching the metal surface of an I/O connector on the computer's back panel.**
2. **Save any work in progress and close all open application programs.**
3. **Turn off the computer and any attached peripherals.**

   NOTE: Make sure the computer is turned off and not in suspend-to-disk mode. If you cannot shut down the computer using the computer's operating system, press the power button for 4 seconds.

4. **If the computer is docked in a C/Port Advanced Port Replicator (APR) or C/Dock Expansion Station, undock the computer.**
5. **Disconnect the computer and any attached peripherals from AC power sources to reduce the potential for personal injury or shock. Also disconnect any telephone or telecommunications lines from the computer.**
6. **Disconnect all other external cables from the computer.**
7. **Remove any installed PC Cards.**

CAUTION: Make sure the work surface is clean to prevent scratching the computer cover.

8. **Remove any diskette drive, CD-ROM drive, travel module, or battery installed in the modular bay. Close the display and turn the computer over. Push the modular bay latch away from the center of the computer. While holding the latch with one hand, pull the device out of the modular bay with the other hand.**
9. **Remove the main battery assembly from the battery bay.**

   Slide the battery bay latch away from the center of the computer. Then slide the battery out of the battery bay (see Figure 2).

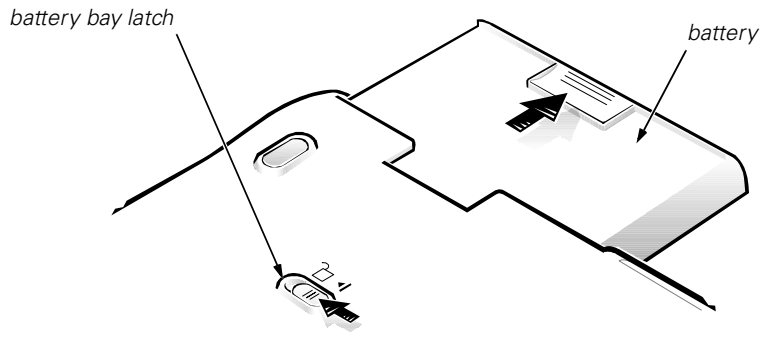

Figure 2. Main Battery Assembly Removal

10. **Remove the hard-disk drive assembly (see "Hard-Disk Drive Assembly" found later in this guide).**

Screw Identification and Tightening

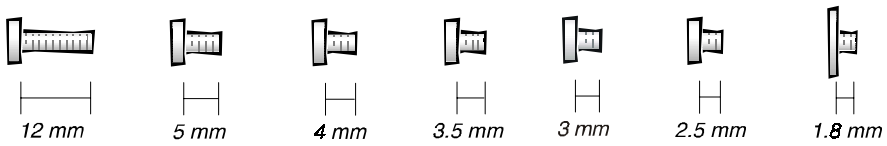

Figure 3. Screw Identification

CAUTION: When reinstalling a screw, it is essential that a screw of the correct length be used. Otherwise, hardware damage could result. Make sure that the screw is properly aligned with its corresponding hole, and avoid overtightening.

The illustrations in the following removal procedures provide the correct screw length as part of the screw's label. A graphic for that length screw is also included in the illustration. Match the actual screw to the graphic in the illustration to check for correct length.

ZIF Connectors

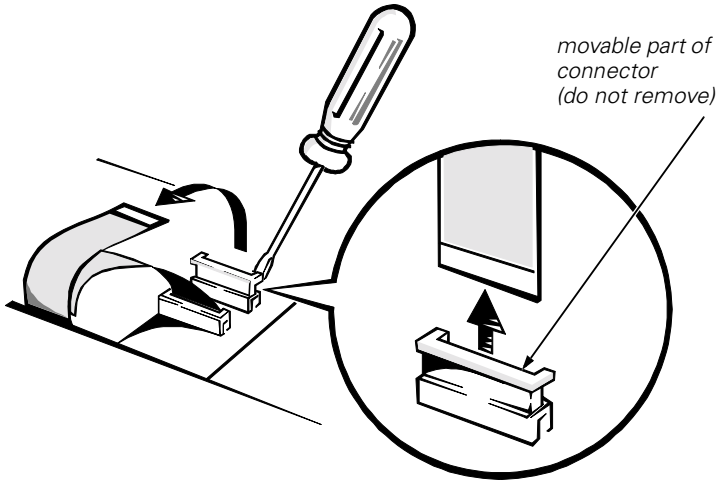

Figure 4. Disconnecting an Interface Cable

Some of the computer's interface connectors are zero insertion force (ZIF) connectors. These connectors are not removable, but they must be released to disconnect a cable from them.

CAUTION: The ZIF connectors are fragile. To avoid damage, do not apply too much pressure to the movable part of the connector.

To disconnect an interface cable from a ZIF connector, follow these steps:

1. **Insert a small flat-blade screwdriver under the movable part of the connector.**
2. **Pull gently upward on the movable part of the connector until it releases the interface cable.**
3. **Grasp the interface cable and pull it out of the connector.**

To reconnect an interface cable to a ZIF connector, follow these steps:

1. **Use a small flat-blade screwdriver to open the movable part of the ZIF connector.**
2. **Orient the end of the interface cable with the ZIF connector, and insert the end of the cable into the connector.**
3. **While holding the cable in place, close the ZIF connector.**

   To ensure a firm connection, make sure the ZIF connector is completely closed.

Field-Replaceable Parts and Assemblies

Table 1 lists the parts and assemblies available for the computer. Some parts may only be available as part of a service kit or assembly, and are provided for reference only. The subsections that follow Table 1 provide instructions for removing and replacing these parts and assemblies.

Table 1. Parts and Assemblies

Part or Assembly Name	Order Name	Figure
AC Adapter and Power Cords		
Customer kit, AC adapter	CUS,ADPT,AC,EXT,20V,70W, NBK,CP	
AC adapter	ADPT,AC,EXT,20V,70W, NBK,CP	
Power cable, Australia	CORD,PWR,110V,6F, AC ADPT,AUS	
Power cable, U.S.	CORD,PWR,110V,6F, AC ADPT,US	
Audio Board		
Service kit, audio board	SVC,PWA,AUDIO,CP	26
Audio Shield		
Audio shield	SHLD,W/SPR,AUDIO CRD	26
Back Cover Assembly		
Service kit, back cover assembly	SVC,SUBASSY, BK CVR/DOOR,I/O,CP	11
Back cover assembly	ASSY,BK PLT/DOOR,I/O,CP	
Docking bar	BAR,DOOR,DCKG,MET	
Docking door	DOOR,DCKG,PLSTC,I/O	
Battery (Main)		
Customer kit, main battery	CUS,BTRY,MN,14.4V,8CELL, LITH	2
Main battery	BTRY,MN,14.4V,8CELL,LITH	
Battery (Reserve)		
Service kit, reserve battery	SVC,BTRY,RSRV,7.2V,30MAH,6, NIHD	35
Reserve battery	BTRY,RSRV,7.2V,30MAH,6, NIHD	
Reserve battery sponge pad	PAD,FOAM,BRTY,RSRV,CP	

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
Bottom Case Assembly		
Bottom case assembly	ASSY,CVR,BTM,PLSTC, BASE,CP	24
Bottom Case Bracket		
Bottom case bracket assembly	ASSY,BRKT,CASE,BTM	27
CD-ROM Drive Subassembly		
Service kit, CD-ROM drive	SVC,SUBASSY,CD,20X, NBK,SANYO	25
CD-ROM drive bezel	BZL,CD	
20X CD-ROM drive	CD,680M,10X,INT,NBK	
CD-ROM drive interface board	PWA,CD/FDD INTERCONN,SE	
Bottom CD-ROM drive cover	CVR,BTM,PLSTC,CD,CP	
Top CD-ROM drive cover	CVR,TOP,PLSTC,CD,CP	
CD-ROM drive shield	SHLD,CD,CP	
CD-ROM drive label	LBL,REG,CD,20X	
Diskette Drive Subassembly		
Diskette drive service kit	SVC,SUBASSY,FD,F3, INT/EXT,CP	25
Diskette drive subassembly	SUBASSY,FD,F3,INT/EXT,CP	
Diskette drive	FD,F3,CP	
Diskette drive assembly bottom cover	CVR,BTM,PLSTC,FD,F3,CP	
Diskette drive assembly top cover	CVR,TOP,PLSTC,FD,F3,CP	
Diskette drive assembly interface board	PWA,INTFC,FD,F3,CP	
Diskette drive assembly interface cable	CBL,FPC,FD,F3,CP	
Diskette drive assembly shield	SHLD,FD,F3,CP	
Exhaust Fan		
Service kit, exhaust fan	SVC,FAN,25X25X10,CP	33

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
Hard-Disk Drive Assemblies		
Hard-disk drive, subassembly	SUBASSY,HD,*xxxxx*,I,*yyy*MM, CP*	6
Hard-disk drive	HD,*xxxxx*,I,*yy*MM,NBK,*zzz**	
Hard-disk drive interface board	PWA,INTERCONN,HD,CP	
Hard-disk drive bracket	BRKT,HD,CP	
Hard-Disk Drive Bracket/Door Assembly		
Hard-disk drive carrier bracket/door assembly service kit	SVC,ASSY,BRKT/DOOR, HD,CP	6
Hard-disk drive carrier door	DOOR,HD,12.5MM,CP	
Hard-disk drive carrier bracket	BRKT,HD,12.5MM,CP	
Hard-disk drive carrier insulator	INSUL,HD,CP	
Hard-disk drive carrier screws	SCR,M3X3,PHH,LP,ZPS	
I/R Board		
Service kit, I/R board	SVC,PWA,FAST IR,CP	34
Keyboards		
Keyboard, Belgian	KYBD,88,BEL,CP	10
Keyboard, Chinese	KYBD,87,CHI,CP	
Keyboard, Danish	KYBD,88,DEN,CP	
Keyboard, French	KYBD,88,FR,CP	
Keyboard, French/Canadian	KYBD,87,FR CAN,CP	
Keyboard, German	KYBD,88,GER,CP	
Keyboard, Italian	KYBD,88,ITALIAN,CP	
Keyboard, Japanese	KYBD,90,JPN,CP	
Keyboard, Korean	KYBD,87,KOR,CP	
Keyboard, Latin American	KYBD,88,LAC,CP	
Keyboard, Norwegian	KYBD,88,NOR,CP	
Keyboard, Portuguese	KYBD,88,PORTUGEUSE,CP	

* *Substitute the drive capacity for* xxxxx*, the drive height for* yy*, and the manufacturer for* zzz*.*

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
Keyboards *(continued)*		
Keyboard, Russian	KYBD,87,RUS,CP	
Keyboard, Spanish	KYBD,88,SPN,CP	
Keyboard, Swedish/Finnish	KYBD,88,SWE,CP	
Keyboard, Swiss	KYBD,88,SWI,CP	
Keyboard, Thailand	KYBD,87,THAI,CP	
Keyboard, U.K.	KYBD,88,UK,CP	
Keyboard, U.S.	KYBD,87,DOM,CP	
LCD Assemblies, 12.1-Inch Display		
Bezel service kit, 12.1-inch display	SVC,BZL,LCD,12.1",CP	14, 17
Display assembly bezel	BZL,LCD,TFT,12.1",CP	
Bezel retaining screw covers, upper corners, 12.1-inch display	CVR,SCR,TOP,RND,ADH	
bezel retaining screw covers, lower	CVR,SCR,BTM,OVAL,ADH	
Display-assembly-bezel retaining screw covers, latch, 12.1-inch display	CVR,SCR,TOP,OVAL,SM,ADH,12.1	
Display top-cover service kit, 12.1-inch display	SVC,ASSY,CVR,TOP,LCD, 12.1",CP	
Display top cover	CVR,TOP,LCD,TFT,12.1",CP	
Display top-cover EMI shield	SHLD,EMI,DIS,TFT/STN, 12.1",CP	

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
LCD Assemblies, 12.1-Inch Display *(continued)*		
LCD/Cable service kit, Samsung	SVC,LCD/CBL/INV, TFT,SMSNG,CP	14, 18
LCD inverter board subassembly	SUBASSY,PWA,INVRTR W/INSUL,LCD,CP	
LCD cable subassembly, Samsung	SUBASSY,CBL/HLDR,TFT, SMSNG,CP	
LCD panel, Samsung	LCD,TFT,SVGA,12.1",SMSNG	
LCD/Cable service kit, Sharp	SVC,LCD/CBL/INV, TFT,SHARP,CP	
LCD inverter board assembly	ASSY,PWA,INVRTR,LCD,CP	
LCD cable subassembly, Sharp (TFT)	SUBASSY,CBL/HLDR,TFT, SHARP,CP	
LCD cable subassembly, Sharp (STN)	SUBASSY,CBL/HLDR,STN, SHARP,CP	
LCD panel, Sharp (TFT)	LCD,TFT,SVGA,12.1",SHARP	
LCD panel, Sharp (STN)	LCD,STN,SVGA,12.1",SHARP	
LCD Assemblies, 13.3-Inch XGA Display		
Bezel service kit, 13.3-inch TFT display	SVC,BZL,LCD,13.3",CPX	15, 17
Display assembly bezel	BZL,LCD,TFT,13.3",CPX	
Bezel retaining screw covers, upper corners, 13.3-inch display	CVR,SCR,LCD,13.3",TOP, OVAL,CPX	
Bezel retaining screw covers, lower	CVR,SCR,BTM,RND,ADH	
Display-assembly-bezel retaining screw covers, latch, 13.3-inch display	BMPR,RBR,UPR,LCD,13.3", NBK,CPX	

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
LCD Assemblies, 13.3-Inch XGA Display *(continued)*		
Display top cover service kit, 13.3-inch display	SVC,CVR,TOP,LCD,13.3"	19
Display top cover	CVR,LCD,TOP,TFT,13.3"	
Display top-cover shield	SHLD,EMI,DIS,TFT,13.3"	
LCD/Cable service kit, Samsung	SVC,LCD/CBL/INV,SMSNG, CPX	
LCD inverter board	PWA,INVRTR,LCD,13.3",CPX	
LCD inverter board shield	SHLD,INVRTR,LCD,MYLAR, 13.3",CPX	
LCD cable subassembly, Samsung	SUBASSY,CBL/HLDR,SMSNG, CPX	
LCD panel, Samsung	LCD,TFT,XGA,13.3",CP, SMSNG	
LCD/Cable service kit, Sharp	SVC,LCD/CBL/INV,SHARP, CPX	
LCD inverter board	PWA,INVRTR,LCD,13.3",CPX	
LCD inverter board shield	SHLD,INVRTR,LCD,MYLAR, 13.3",CPX	
LCD cable subassembly, Sharp	SUBASSY,CBL/HLDR,TFT, SHARP,CP	
LCD panel, Sharp	LCD,TFT,XGA,13.3",CP,SHARP	
LCD Latch Assembly, 12.1-Inch Display		
Latch service kit, 12.1-inch LCD display	SVC,LATCH,DIS,BZL,CP	14
LCD Latch Assembly, 13.3-Inch Display		
Latch service kit, 13.3-inch LCD display	SVC,LATCH,DIS,BZL,CPX	15

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
LCD Parts, Miscellaneous		
Left hinge, 12.1-inch display	HNG,LF,LCD,TFT/STN,12.1"	14
Right hinge, 12.1-inch display	HNG,RT,LCD,TFT/STN,12.1"	
Left hinge, 13.3-inch display	HNG,LF,LCD,TFT,13.3"	15
Right hinge, 13.3-inch display	HNG,RT,LCD,TFT,13.3"	
Right bracket, 12.1-inch display	BRKT,RT,LCD,TFT/STN	14
Reed switch magnet, 12.1-inch display	SWT,SUS,MGNT,DSPL, TFT/STN	
Plastic inverter-board screw caps, 12.1-inch display	SPCR,SCR,INVRTR,TFT	
Memory		
Customer kit, memory module, 16-MB	CUS,DIMM,16,60N,2X64,2K, 144,EDO,NBK	8
Customer kit, memory module, 32-MB	CUS,DIMM,32,60N,4X64,4K, 144,EDO,NBK	
Customer kit, memory module, 64-MB	CUS,DIMM,64,60N,8X64,4K, 144,EDO,NBK	
Memory Door		
Service kit, memory door assembly	SVC,SUBASSY,DOOR, MEM/BIOS,CP	7
Memory/BIOS door subassembly	SUBASSY,DOOR, MEM/BIOS,NB,CP	
Miscellaneous Parts		
Touch-pad bracket	BRCKT,TPAD,CP	13
Air flow duct	GDE,INTK,AIR,FAN,PLSTC,CP	30
Palmrest Assembly		
Service kit, palmrest assembly	SVC,SUBASSY,PLMRST,CP	12
Palmrest assembly	ASSY,PLMRST,GRY,CP	
Power button	SWT,PWR SW, CP	
Power button spring	SPR,PWR SW,CP	

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
Screws		
LCD panel	SCR,M3X5,PHH,LP,ZPS	18, 19
LCD hinge	SCR,M3X5,PHH,LP,ZPS	16
LCD inverter board	SCR,M3X5,PHH,LP,ZPS	21
LCD bezel and latch, 12.1-inch display	SCR,M3X5,PHH,LP,ZPS	17
Keyboard	SCR,M2.6X12,PHH,LP,ZPS	9
Thermal cooling assembly	SCR,M2X2.5,PHH,LP,ZPS	30
Touch-pad	SCR,M2.6X1.8,PHH,XLP,ZPS	13
Palmrest, front edge	SCR,M2.6X12,PHH,LP,ZPS	12
Palmrest, hard-disk drive area	SCR,M2.6X5,PHH,LP,ZPS	12
I/R board	SCR,M2.6X5,PHH,LP,ZPS	34
Upper EMI shield, 1st	SCR,M2.6X5,PHH,LP,ZPS	-
PC/Video board	SCR,M2.6X5,PHH,LP,ZPS	-
Back cover	SCR,M2.6X5,PHH,LP,ZPS	11
Audio board	SCR,M2.6X5,PHH,LP,ZPS	26
Upper EMI shield, 2nd	SCR,M2.6X5,PHH,LP,ZPS	
Bottom-case bracket	SCR,M2.6X5,PHH,LP,ZPS	27
Exhaust fan	SCR,M2.6X12,PHH,LP,ZPS	33
Speakers		
Left speaker assembly	SUBASSY,SPKR,LF,W/WIRES	
Right speaker assembly	SUBASSY,SPKR,RT,W/WIRES	
System Board Assembly		
System board assembly, CP*xxx*,service kit*	SVC,ASSY,PRM/PWA,ENGINE,CP*xxx**	30
System board assembly, CPi*xxx*,service kit*	SVC,ASSY,PRM/PWA,ENGINE,CPi*xxx**	
Service tag install disk	DISK,FLD SERV,F3,US,LXP	
System board assembly with system board and processor module	ASSY,PRM/PWA,ENGINE, CP*xxx**	

* *Substitute the drive capacity for* xxxxx*, the drive height for* yy*, and the manufacturer for* zzz.

Table 1. Parts and Assemblies *(continued)*

Part or Assembly Name	Order Name	Figure
System Board Assembly *(continued)*		
System board assembly with system board and processor module	ASSY,PRM/PWA,ENGINE, CPi*xxx**	
System-board engine subassembly	SUBASSY,PWA/ENGINE,CP	
I/R board	PWA,FAST IR,CP	
Microphone boot	GRMT,RBR,BOOT,MCPHN	
Main system board	PWA,PLN,0M,NB,CP	
Video/PC Card board	PWA,DTRBD,VID/PCMCIA,CP	
LED board	PWA,LED,CP	
Lower EMI shield	SHLD,BTM,PLN ASSY,CP	
Upper EMI shield, 1st	SHLD,TOP,1ST,PLN ASSY,CP	
Upper EMI shield, 2nd	SHLD,TOP,2ND,PLN ASSY,CP	
Exhaust fan and cable	FAN,25X25X10,CP	
Microphone	MCPHN,CP	
Reserve battery	BTRY,RSRV,7.2,30MAH,6,NIHD	
Foam pad	PAD,FOAM,BTRY,RSRV,CP	
Thermal Cooling Assembly		
Service kit, thermal cooling subassembly	SVC,SUBASSY,HTSNK, CPU,HYB,CP	30
Touch Pad		
Touch-pad service kit	SVC,TPAD,SQ,INTFC,CP	13
Touch-pad subassembly	TPA,INTFC,CP	

* *Substitute the drive capacity for* xxxxx*, the drive height for* yy*, and the manufacturer for* zzz*.*

Removing Field-Replaceable Parts and Assemblies

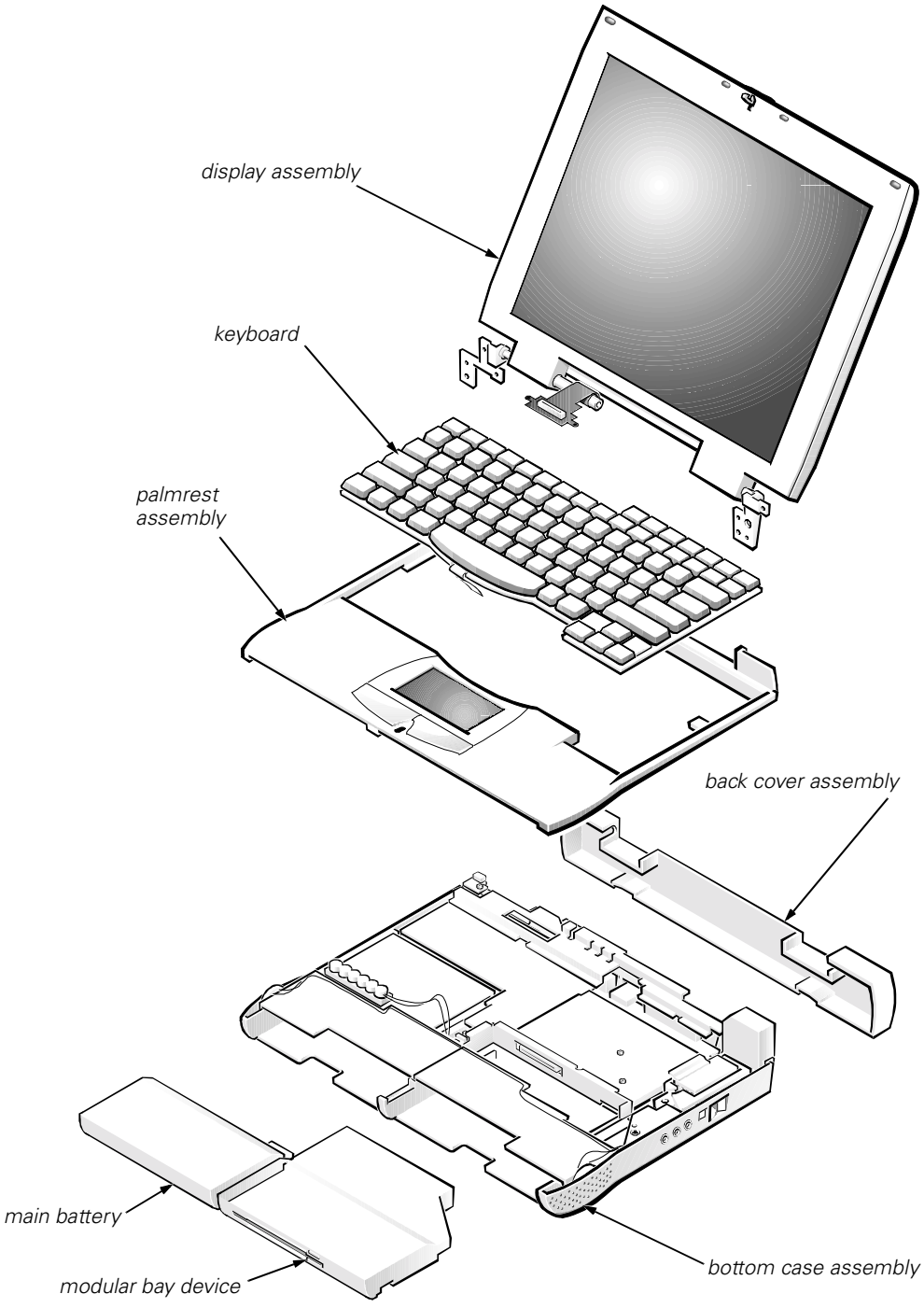

Figure 5. Exploded View—Computer

The following subsections provide instructions for removing and replacing field-replaceable parts and assemblies.

Hard-Disk Drive Assembly

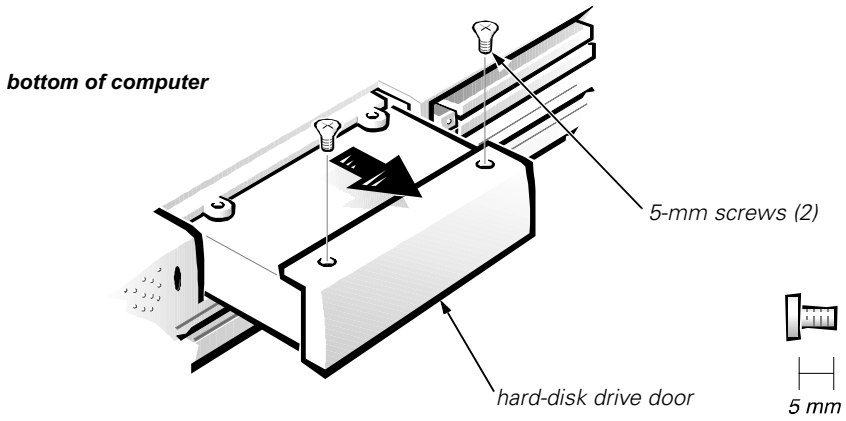

Figure 6. Hard-Disk Drive Assembly Removal

1. **Turn the computer over, and remove the two 5-mm screws from the hard-disk drive door.**

   The drive is on the left side of the computer.

CAUTION: The hard-disk drive is very sensitive to shock. Handle the assembly by its edges (do not squeeze the top of the hard-disk drive case), and avoid dropping it.

2. **Grasp the drive door and pull the drive out of the computer.**

Memory Module Cover

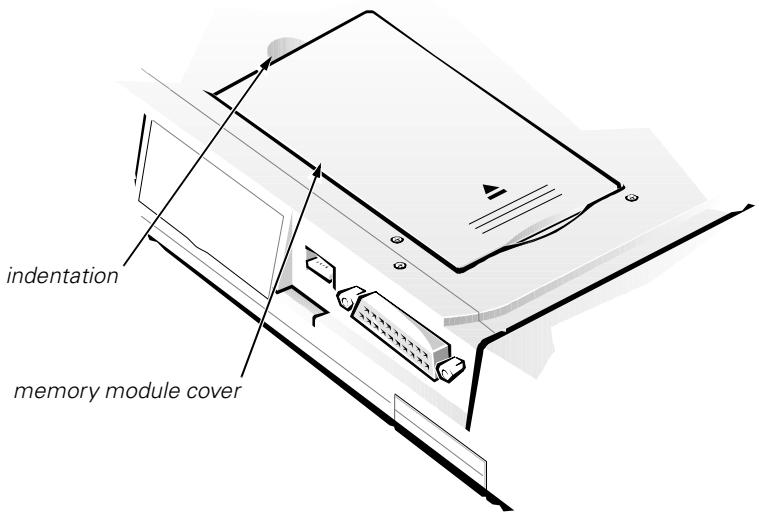

Figure 7. Memory Module Cover Removal

CAUTION: Make sure the work surface is clean to prevent scratching the computer cover.

1. **Close the display, and turn the computer upside down on a flat work surface.**

2. **Release the memory module cover.**

   Insert a fingertip in the indentation in the bottom case assembly and lift the cover slightly; then slide the cover in the direction indicated by the arrow on the cover.

Memory Modules

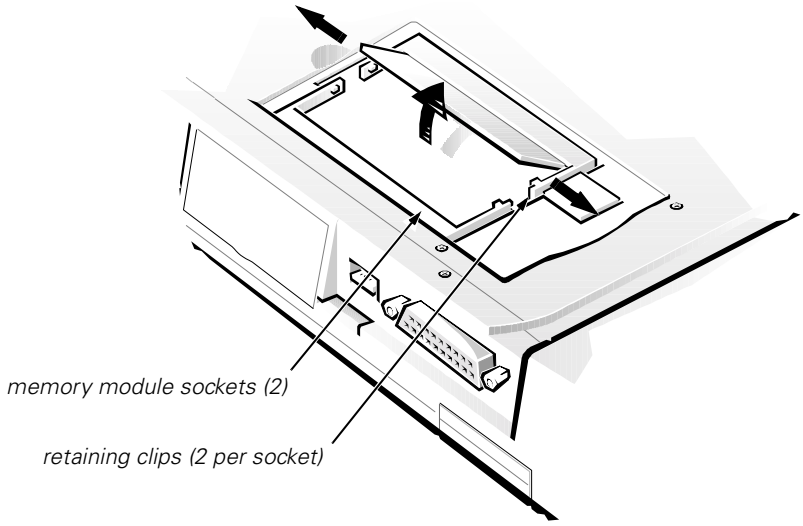

Figure 8. Memory Module Removal

1. **Remove the memory module cover.**
2. **To avoid possible damage to the memory module from ESD, ground yourself by touching the metal surface of an I/O connector on the computer's back panel.**
3. **To release a memory module from its socket, gently push outward on each of the memory module's two metal retaining clips.**

   The memory module should rotate upward out of its retaining clips.

4. **Lift the memory module out of its socket.**

Memory modules can be installed only one way. Do not attempt to force the memory module into the socket. Align the notch near the center of the memory module with the corresponding key in the memory module socket.

Keyboard Assembly

To remove the keyboard assembly, follow these steps.

CAUTION: Make sure the work surface is clean to prevent scratching the computer cover.

1. **Close the display assembly, and turn the computer upside down on a flat work surface (see Figure 9).**

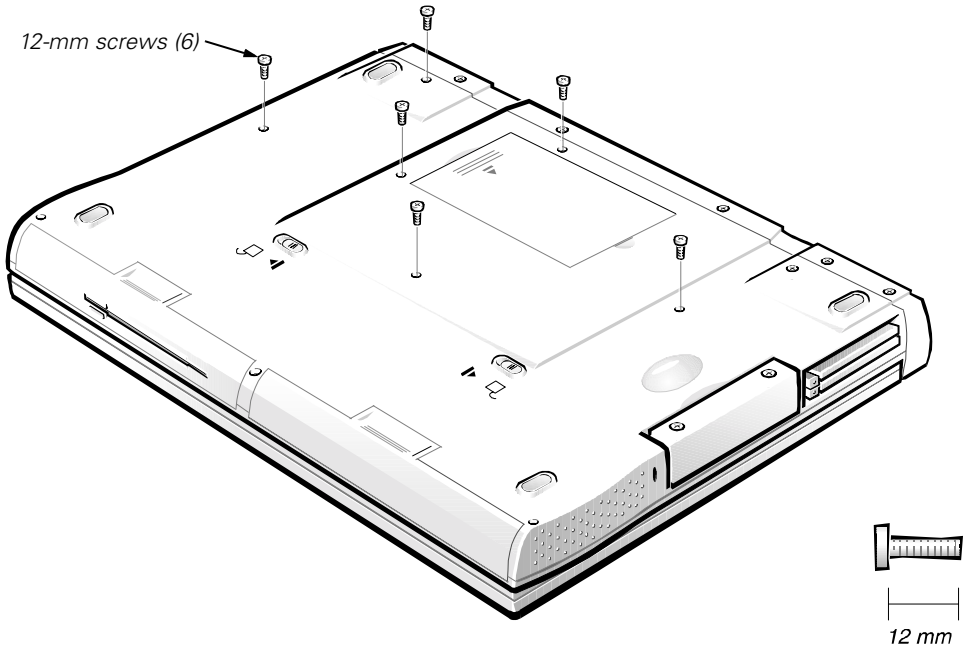

Figure 9. Keyboard Assembly Screws Removal

2. **Remove the six 12-mm screws securing the keyboard to the computer.**

3. **Turn the computer right-side up and open the display.**

CAUTION: The keycaps on the keyboard are fragile, easily dislodged, and time-consuming to replace. Be careful when removing and handling the keyboard.

4. **Release the keyboard from the palmrest assembly:**

   a. Carefully deflect the palmrest (next to the blank key below the <Shift> key) away from the center of the keyboard, until the tab on the palmrest's inner edge disengages from the keyboard. The keyboard should raise up slightly.

   b. Insert a fingernail or a small flat-bladed screwdriver under the scalloped edge of the blank key (see Figure 10), and lift the right edge of the keyboard.

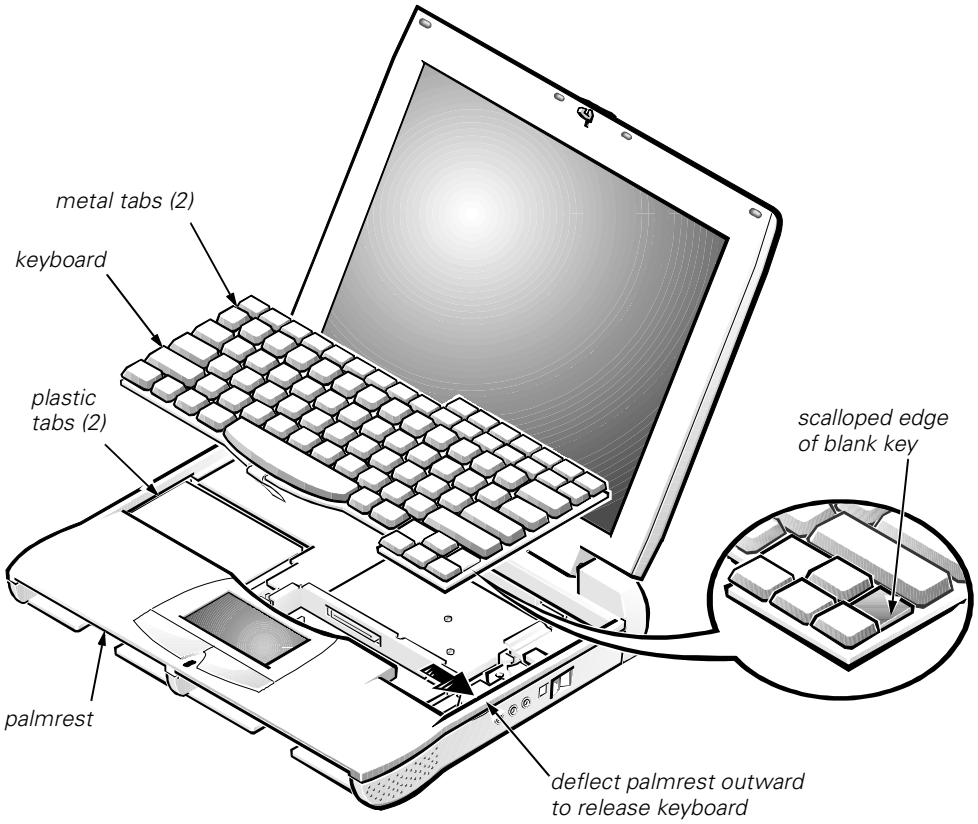

Figure 10. Keyboard Assembly Removal

5. **Once the keyboard is fully released from the palmrest, place the keyboard upside down over the touch pad.**
6. **Disconnect the keyboard cable from connector KB1 on the system board.**
7. **Remove the keyboard assembly.**

Follow these steps when replacing the keyboard assembly:

1. **Connect the keyboard cable to connector KB1 on the system board.**
2. **Fit the left edge of the keyboard into place, making sure the two small metal tabs on the keyboard fit under the corresponding plastic tabs on the palmrest's inner edge.**
3. **Lower the right edge of the keyboard into place, and press on the blank key below the <Shift> key until the tab on the palmrest's inner edge engages the keyboard with an audible "click."**
4. **Check that the keyboard is correctly installed. The keys should be flush with the left and right surfaces of the palmrest.**
5. **Reinstall the six 12-mm screws.**

Back Cover Assembly

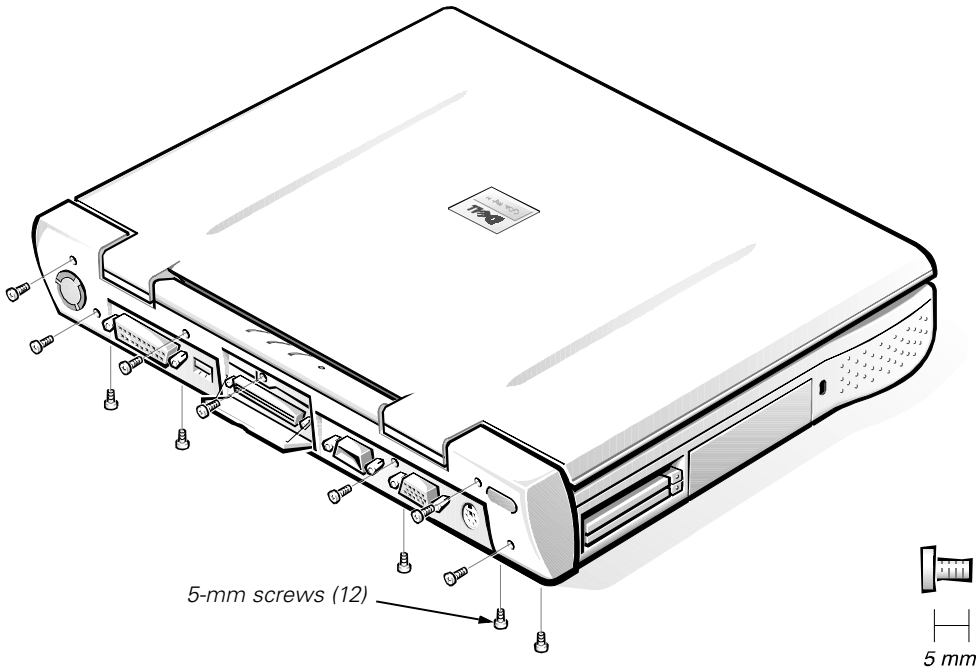

Figure 11. Back Cover Assembly Removal

1. **Close the display.**
2. **Remove the twelve 5-mm screws securing the back cover:**
   - Five screws on the underside of the back cover
   - One screw behind the docking connector door
   - Six screws on the face of the back cover
3. **Close the docking connector door.**
4. **Remove the back cover assembly.**

   Grasp the right end of the back cover assembly firmly, and unsnap it from the computer. Then disengage the left end of the back cover assembly.

Palmrest Assembly

The palmrest assembly consists of the touch pad and the palmrest.

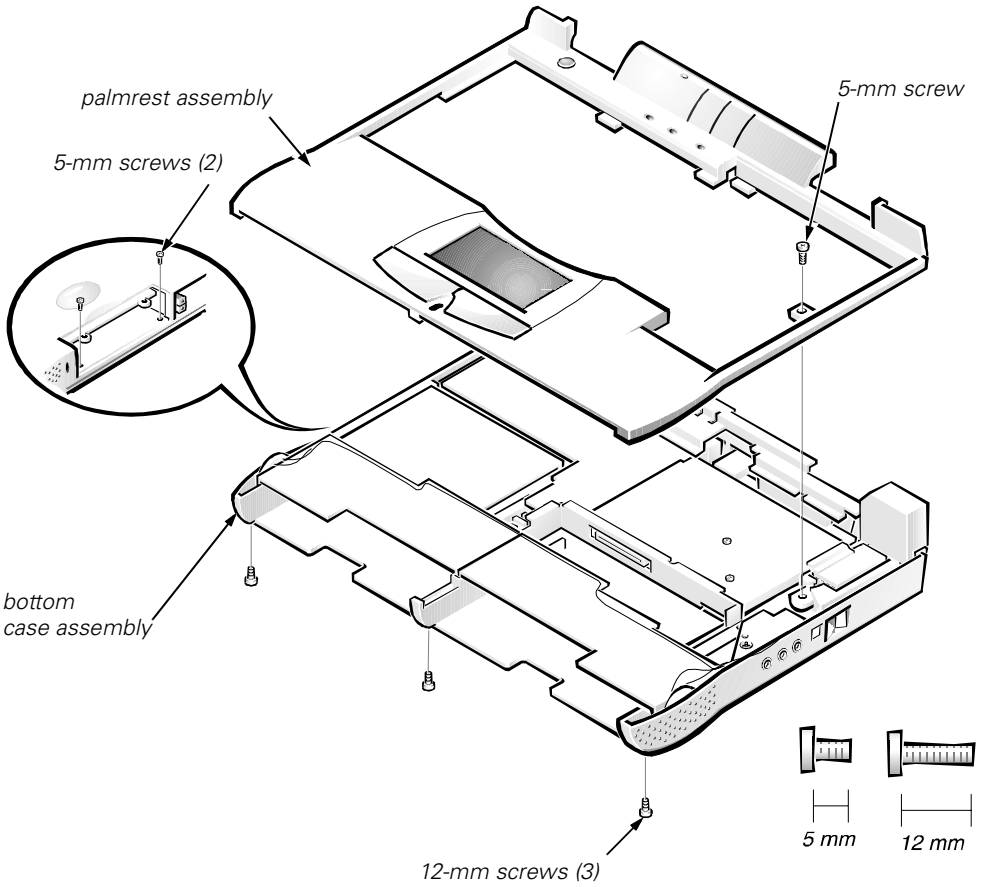

Figure 12. Palmrest Assembly Removal

1. **Remove the keyboard.**
2. **Disconnect the touch-pad cable from ZIF connector JP2 on the system board.**
3. **Remove the back cover assembly.**
4. **Remove the following screws securing the palmrest to the computer:**
   - One 5-mm screw inside the computer, adjacent to the thermal cooling assembly
   - Two 5-mm screws inside the upper edge of the hard-disk drive bay (you must remove the hard-disk drive to access these screws)
   - Three 12-mm screws underneath the front edge of the computer

5. **Turn the computer right-side up on the work surface, and open the display assembly 180 degrees.**

NOTE: Support the display assembly with a book or similar object so that the display assembly does not open beyond 180 degrees.

6. **Carefully remove the palmrest assembly from the bottom case assembly.**

   The palmrest assembly is secured in the bottom case assembly by four snaps and tabs on the right and left ends of the palmrest. Take care not to damage the snaps when removing the palmrest.

*NOTE: When replacing the palmrest, ensure that the vertical tab at the back of the palmrest fits on the **outside** of the system board assembly, near the parallel port connector. Also, check that the microphone boot is properly located in its slot on the top EMI shield and is fitted within the palmrest assembly.*

Touch-Pad Interface Module

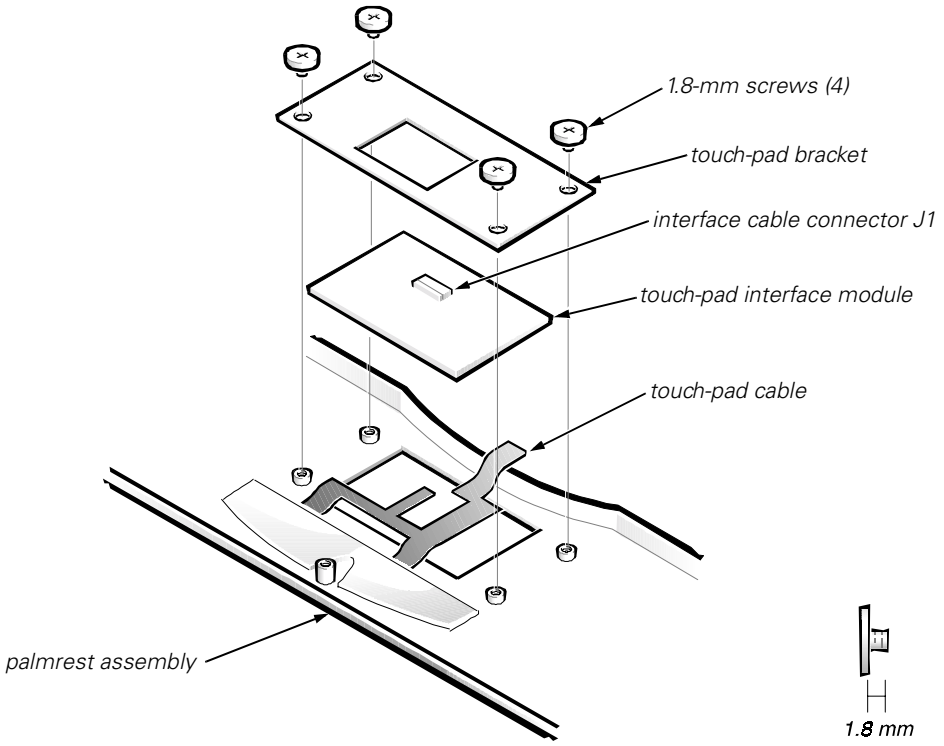

Figure 13. Touch-Pad Interface Module Removal

1. **Remove the palmrest assembly.**
2. **Turn the palmrest assembly upside down on a flat work surface.**
3. **Remove the four 1.8-mm screws securing the touch-pad bracket.**
4. **Carefully disconnect the touch-pad cable from ZIF connector J1 on the touch-pad interface module.**

   To release the ZIF connector latch, use a fingernail to lift up the central portion of the black plastic latch.
5. **Remove the touch-pad interface module from the palmrest.**

Power Button

1. **Remove the palmrest assembly.**
2. **Turn the palmrest assembly upside down on a flat work surface.**
3. **Compress the two catches securing the power button, and remove the power button and spring from the palmrest assembly.**

Display Assembly Components

For removal purposes, the display assembly consists of the following components:

- Display assembly bezel
- LCD panel
- LCD inverter board
- LCD inverter board shield (13.3-inch display only)
- Display-assembly interface cable
- Display assembly latch
- Display assembly top-cover assembly
- Display assembly hinges
- Display assembly right bracket (12.1-inch display only)

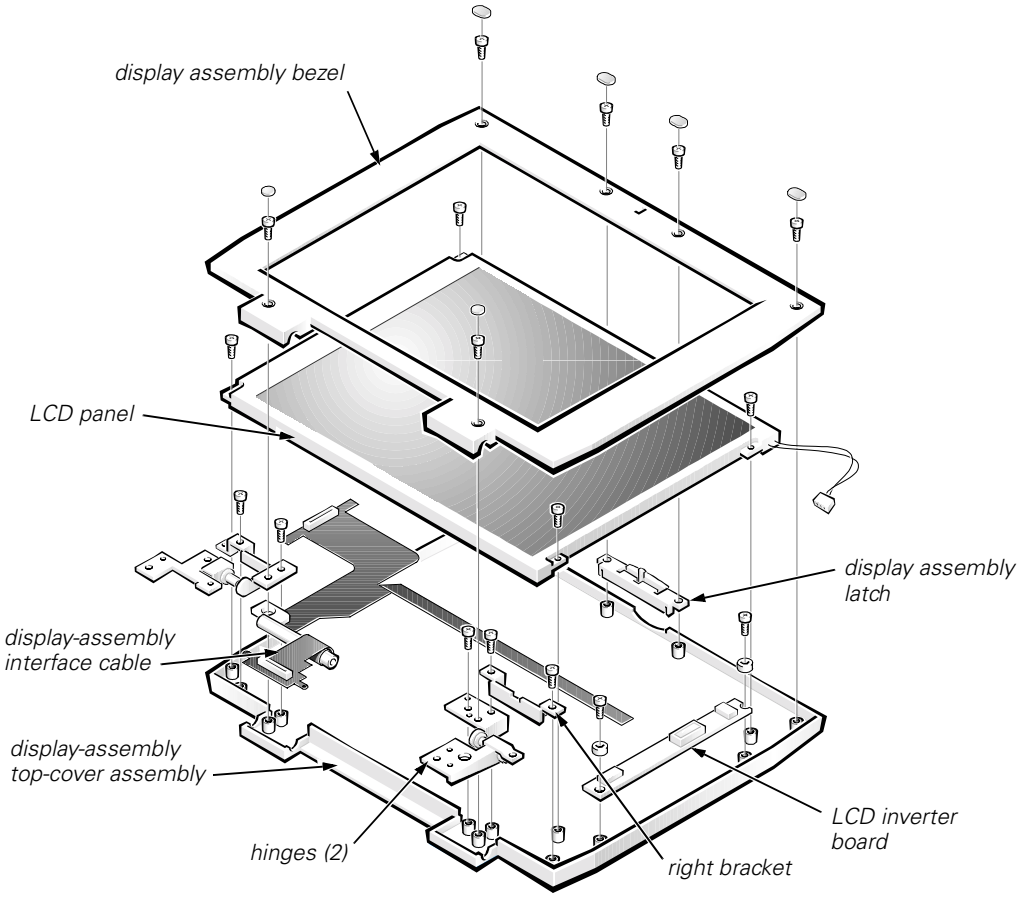

Figure 14. Exploded View—Display Assembly (12.1-Inch Display Shown)

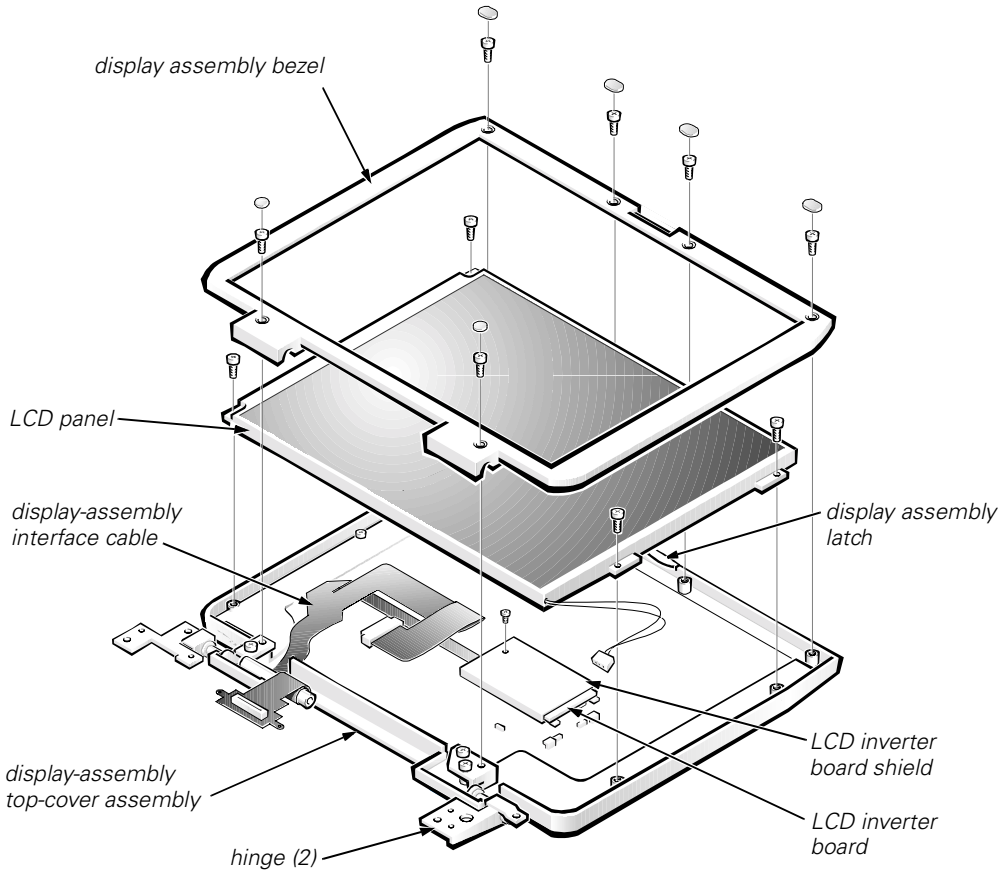

Figure 15. Exploded View—Display Assembly (13.3-Inch Display Shown)

Display Assembly

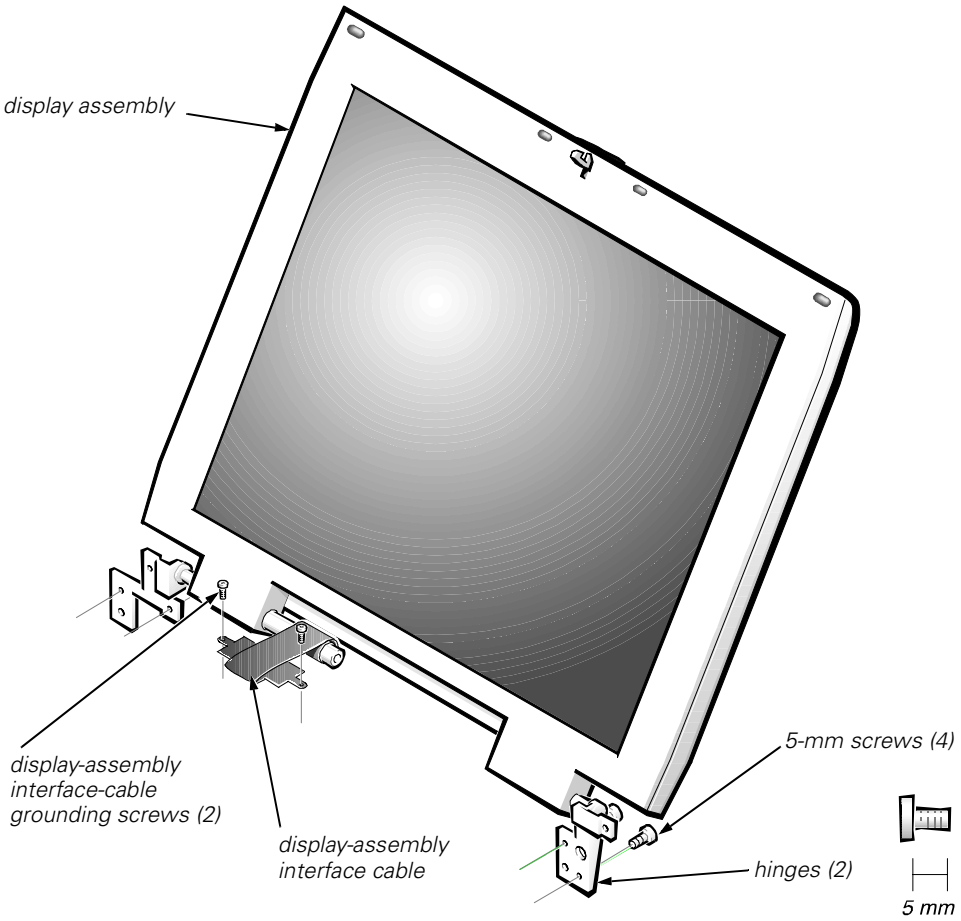

Figure 16. Display Assembly Removal

1. **Remove the palmrest assembly.**
2. **Remove the two 5-mm interface-cable grounding screws from the display-assembly interface cable.**
3. **Disconnect the display-assembly interface cable from connector JP1 on the system board.**

   Grasp the grounding tabs and pull the connector straight up from the system board.
4. **Close the display, being careful not to damage the display interface cable.**

5. **Remove the four silver 5-mm screws securing each of the two hinge brackets to the bottom case assembly.**

6. **Lift the display assembly from the bottom case assembly.**

NOTE: When reinstalling the display assembly, install the four screws securing the hinges at the locations marked by arrows on the face of each hinge.

CAUTION: When reinstalling the interface-cable connector, be very careful not to insert the connector at an angle. Position the cable end over the connector and push the connector straight down—to prevent bending the connector pins.

Display Assembly Bezel

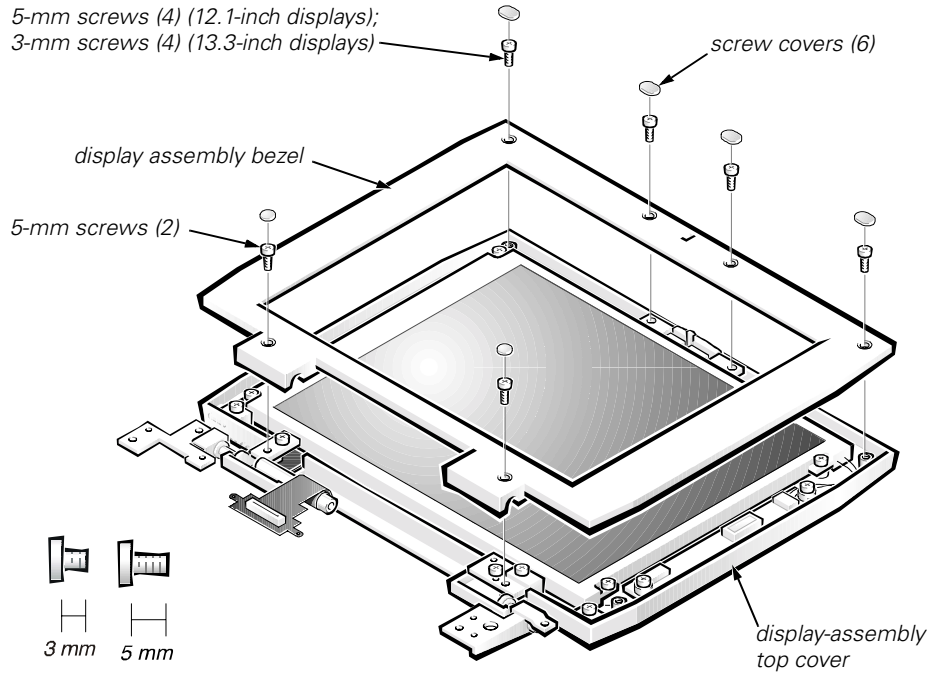

Figure 17. Display Assembly Bezel Removal (12.1-Inch Display Shown)

1. **Use a scribe to carefully pry the screw covers out of the six screw holes in the bezel.**

2. **Remove the six screws from the bezel.**

   On 12.1-inch displays, all six screws are 5-mm screws. On 13.3-inch displays, the four upper screws are 3-mm screws, while the lower two screws are 5-mm in length.

3. **Separate the bezel from the display-assembly top cover.**

   If removing the bezel from a 12.1-inch display — The bezel is secured by snaps around all four of its edges. Insert your fingertips between the bezel and the LCD panel, and lift upward on the bezel to release the hidden snaps. Avoid pressing on the surface of the LCD panel.

If removing the bezel from a 13.3-inch display — The bezel is secured by snaps along its lower edge and hooks along its right and left edges.

a. Insert your fingertips between the lower edge of the bezel and the LCD panel, and lift upward on the bezel to release the hidden snaps.

b. Lift the lower right corner of the bezel slightly, and then slide the bezel off of the display assembly until the hooks on the right and left edges release from the display-assembly top cover.

Display Assembly Latch

1. **Remove the display assembly bezel.**

2. **Remove the display assembly latch:**

   a. *If replacing the latch in a 12.1-inch display*, lift the display assembly latch straight up from the display-assembly top cover.

   b. *If replacing the latch in a 13.3-inch display*, unsnap the latch and captive spring from the inside of the display assembly top-cover assembly.

LCD Panel

The following subsections describe how to remove an LCD panel.

12.1-Inch LCD Displays

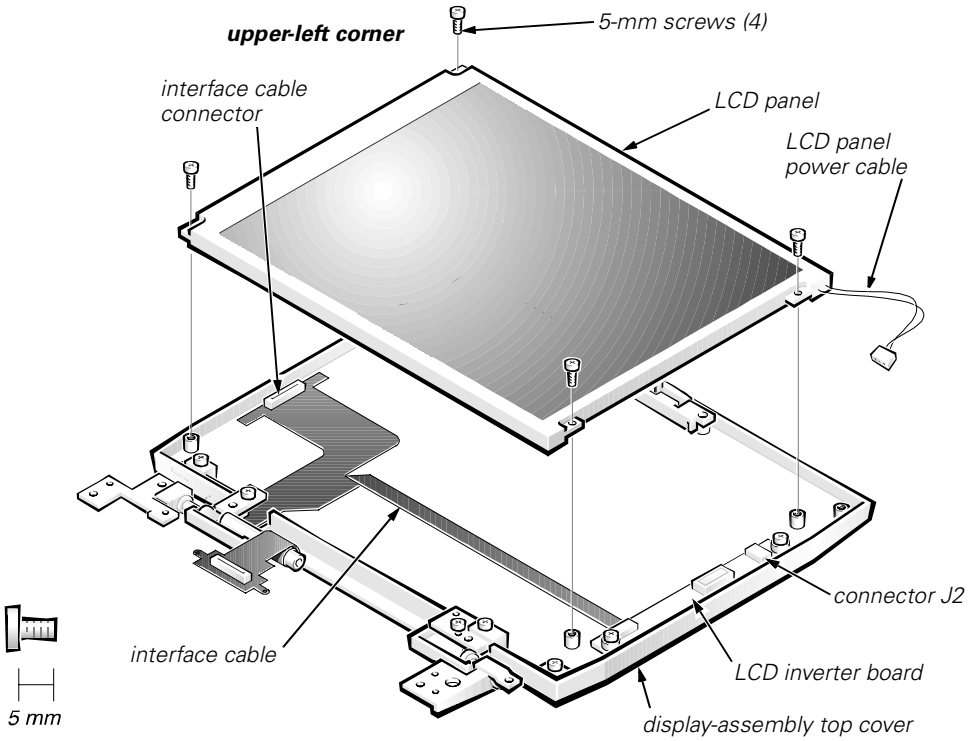

Figure 18. LCD Panel Removal (12.1-Inch Display)

1. **Remove the display assembly bezel.**
2. **Remove the four silver 5-mm screws at the corners of the LCD panel.**
3. **Disconnect the LCD panel power cable from connector J2 on the LCD inverter board.**
4. **Lift the left edge of the LCD panel far enough to gain access to the the display-assembly interface cable connector on the underside of the LCD panel.**
5. **Using the two pull-tabs, disconnect the display-assembly interface cable from the LCD interface connector on the underside of the LCD panel.**

CAUTION: When replacing the STN LCD panel on the Latitude CP M233SD, you must replace the screws at the four corners of the LCD panel in the following order or the panel may be damaged: first, reinstall the upper-right screw; second, reinstall the lower-left screw; third, reinstall the lower-right screw; and fourth, reinstall the upper left-screw.

NOTE: When replacing the LCD panel, ensure that the tabs on the display-assembly EMI shield fit over the four LCD panel mounting bosses. (This is necessary for adequate grounding of the LCD panel.)

13.3-Inch LCD Displays

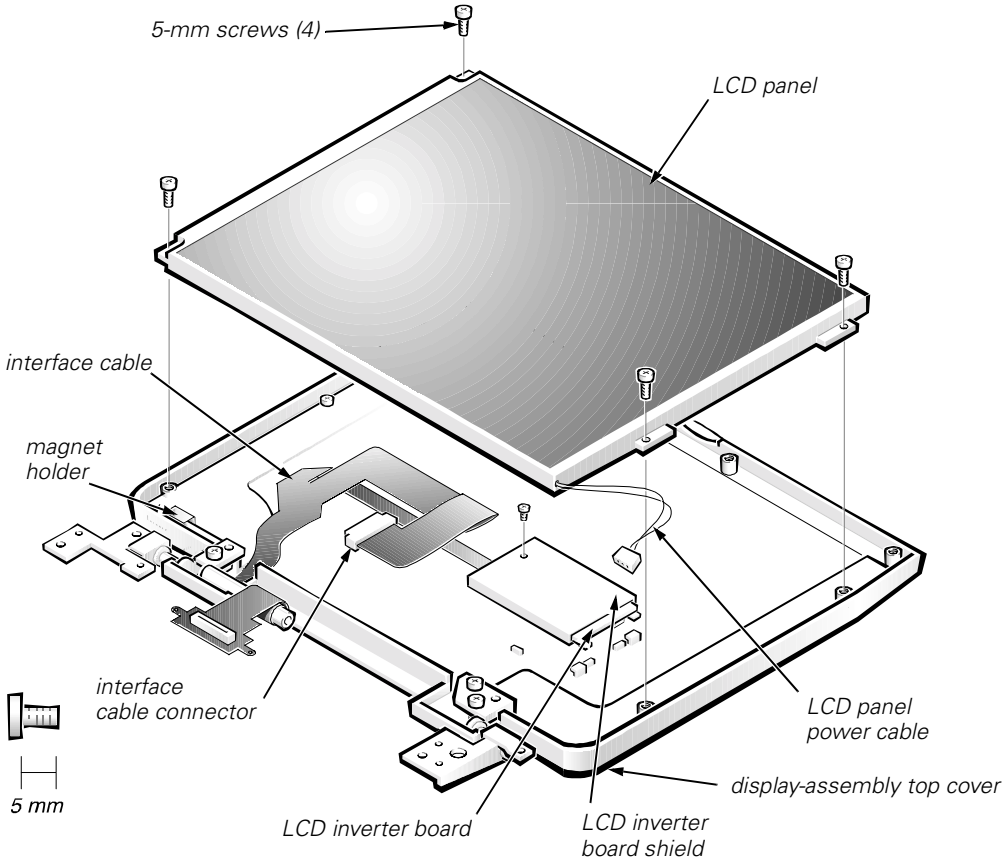

Figure 19. LCD Panel Removal (13.3-Inch Display)

1. **Remove the display assembly bezel.**
2. **Remove the four silver 5-mm screws at the corners of the LCD panel.**
3. **Lift the upper edge of the LCD panel and pivot the panel up to gain access to the LCD inverter board in the display-assembly top cover.**
4. **Remove the screw securing the LCD inverter board to the display-assembly top cover.**
5. **Lift the LCD inverter board and inverter board shield far enough to disconnect the LCD panel power cable.**
6. **Disconnect the display-assembly interface cable from the ZIF connector on the underside of the LCD panel.**

   To disconnect the cable, carefully work the cable connector free from the ZIF connector on the LCD panel. Do *not* pull on the LCD interface cable itself.

7. **Before replacing the LCD panel, ensure that the correct magnet is installed in the magnet holder.**

A magnet switch causes the computer to go into suspend mode when the display is closed. Failure to install the correct magnet in the magnet holder may prevent the computer from going into suspend mode. Begin by checking the back of the LCD panel for the manufacturer's label, and then follow the instructions for that manufacturer.

Sharp LCD Panel

Some revisions of the Sharp LCD panel have a magnetic frame and require a single, large magnet, or two small magnets with no foam spacer, for the magnet switch to operate properly. Other revisions of the Sharp LCD panel have a nonmagnetic frame and require a single, small magnet with a foam spacer. To identify the revision of the LCD you are working with, follow these steps:

a. Remove the magnet from the magnet holder (see Figures 19 and 20), and place it against the replacement LCD panel frame.

b. If the magnet sticks, the LCD panel has a magnetic frame. Place a single, large magnet, or 2 small magnets with no foam spacer, in the magnet holder.

c. If the magnet does not stick, the LCD panel has a nonmagnetic frame. Place a single, small magnet and a foam spacer in the magnet holder, as shown in Figure 20. Place the magnet to the left of the foam spacer, assuming you are facing the display as shown in Figure 19.

Samsung LCD Panel

Place a single, small magnet and a foam spacer in the magnet holder, as shown in Figure 20. Place the magnet to the left of the foam spacer, assuming you are facing the display as shown in Figure 19.

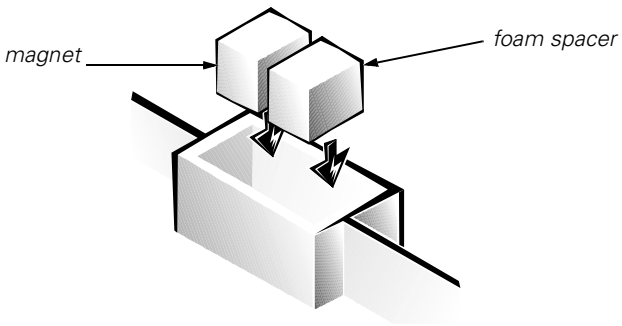

Figure 20. Magnet Holder

NOTE: When replacing the LCD panel, ensure that the tabs on the display-assembly EMI shield fit over the four LCD-panel mounting bosses. (This is necessary for adequate grounding of the LCD panel.)

LCD Inverter Board

The following subsections describe how to remove an LCD inverter board from a 12.1-inch or 13.3-inch LCD display.

12.1-Inch LCD Display

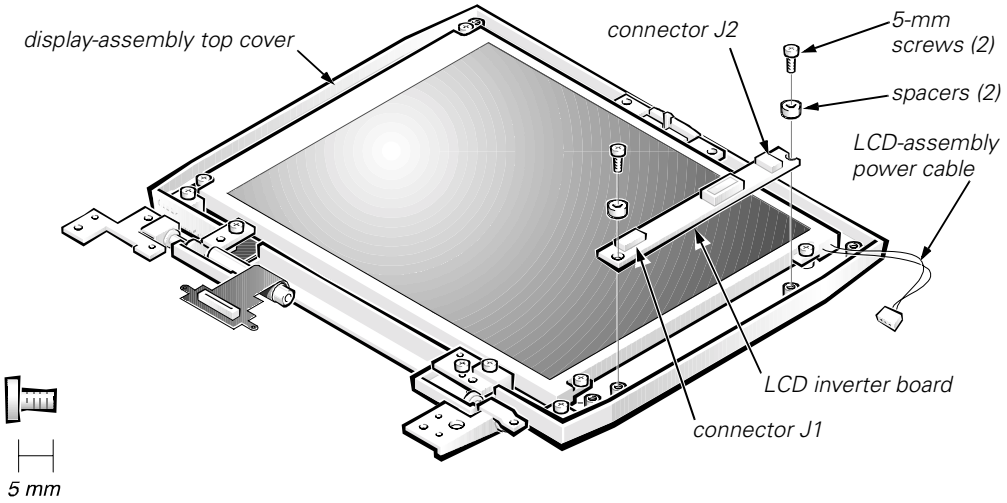

Figure 21. LCD Inverter Board Removal (12.1-Inch Display)

1. **Remove the display assembly bezel.**
2. **Disconnect the LCD-assembly power cable from connector J2 on the LCD inverter board.**
3. **Disconnect the display-assembly interface cable from ZIF connector J1 on the LCD inverter board.**
4. **Remove the two silver 5-mm screws and plastic spacers securing the LCD inverter board.**

   Note the placement of the EMI shield over the lower screw boss, and the routing of the LCD-panel power cable around the upper screw boss.
5. **Lift the LCD inverter board out of the display-assembly top cover.**

NOTE: When installing the inverter board, connect the LCD interface cable to the board prior to securing the board in the display-assembly top cover. After installing the inverter board, ensure that the LCD-panel power cable is routed around the plastic screw bosses in the display-assembly top cover.

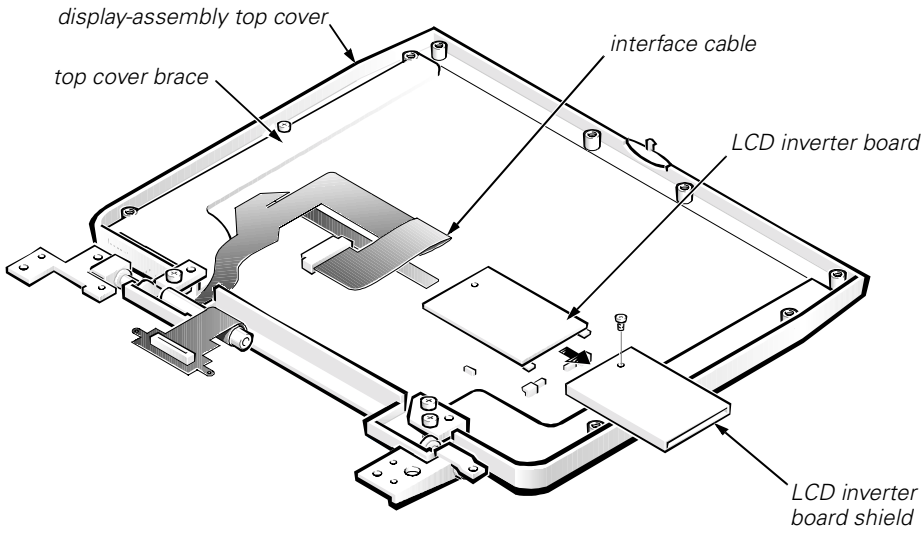

Figure 22. LCD Inverter Board Removal (13.3-Inch Display)

1. **Remove the display assembly bezel.**
2. **Remove the LCD panel.**
3. **Disconnect the display-assembly interface cable from ZIF connector J1 on the LCD inverter board.**
4. **Slide the LCD inverter board out of the LCD inverter board shield.**

NOTE: Replace the LCD inverter board in the shield so that the components on the board face towards the display-assembly top cover.

Display-Assembly Interface Cable

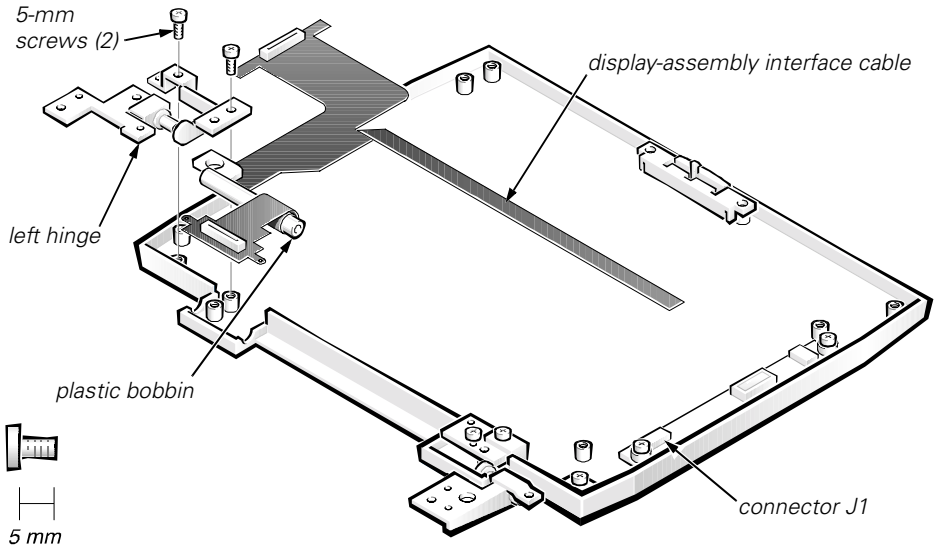

Figure 23. Display-Assembly Interface Cable Removal (12.1-Inch Display Shown)

1. **Remove the display assembly.**
2. **Remove the LCD panel.**
3. **Disconnect the display-assembly interface cable from ZIF connector J1 on the LCD inverter board.**
4. **Remove the two 5-mm screws securing the left hinge, and then remove the hinge from the display-assembly top cover.**
5. **If you are removing the display-assembly interface cable from a 13.3-inch display, remove the left top-cover brace from the display-assembly top cover (see Figure 22).**

   To remove the top cover brace, remove the 3-mm screw securing it.
6. **Lift the display-assembly interface cable out of the display-assembly top cover.**

NOTE: When replacing the display assembly, reinstall the screws securing the left hinge at the locations marked on the hinge by arrows. Ensure that the display-assembly interface cable wraps once around the plastic bobbin before connecting the cable to the system board.

LCD Display Hinge

1. **Remove the LCD display assembly from the computer.**
2. **Remove the display assembly bezel.**

3. **Remove the four silver 5-mm screws securing the two hinge brackets to the display-assembly top cover.**

NOTES: To aid in reinstalling the hinges and display assembly, the right and left hinges are marked by an "R" and an "L," respectively. Install the four screws securing the hinges at the locations marked by arrows on the face of each hinge.

The right bracket on a 12.1-inch display fits above the right hinge (see Figure 14).

Display-Assembly Top Cover

1. **Remove the display assembly bezel.**
2. **Remove the display assembly.**
3. **Remove the LCD panel.**
4. **Remove the LCD inverter board.**
5. **Remove the display assembly latch.**
6. **Remove the left and right hinges.**
7. **Remove the right bracket (12.1-inch display only).**
8. **Remove the display-assembly interface cable.**
9. **If you are removing the display-assembly top cover from a 13.3-inch display, remove the right and left braces.**

   To remove a brace, remove the 3-mm screw securing the brace to the display-assembly top cover.

NOTES: The replacement display-assembly top cover assembly includes two badges, one for Dell Latitude CP and one for the Dell Latitude CPi. Look at the old cover to determine which badge is appropriate, and then attach the appropriate badge to the new cover.

When reinstalling the display assembly, install the four screws securing the hinges at the locations marked by arrows on the face of each hinge.

Bottom Case Assembly

The bottom case assembly consists of the following field-replaceable components:

- Diskette drive assembly, CD-ROM drive assembly, or travel module
- Back cover assembly
- Audio shield
- Audio board

- Bottom case bracket
- Module latch assemblies
- Speakers
- System board assembly
- Thermal cooling assembly
- Air flow duct
- Exhaust fan
- I/R board
- Reserve battery

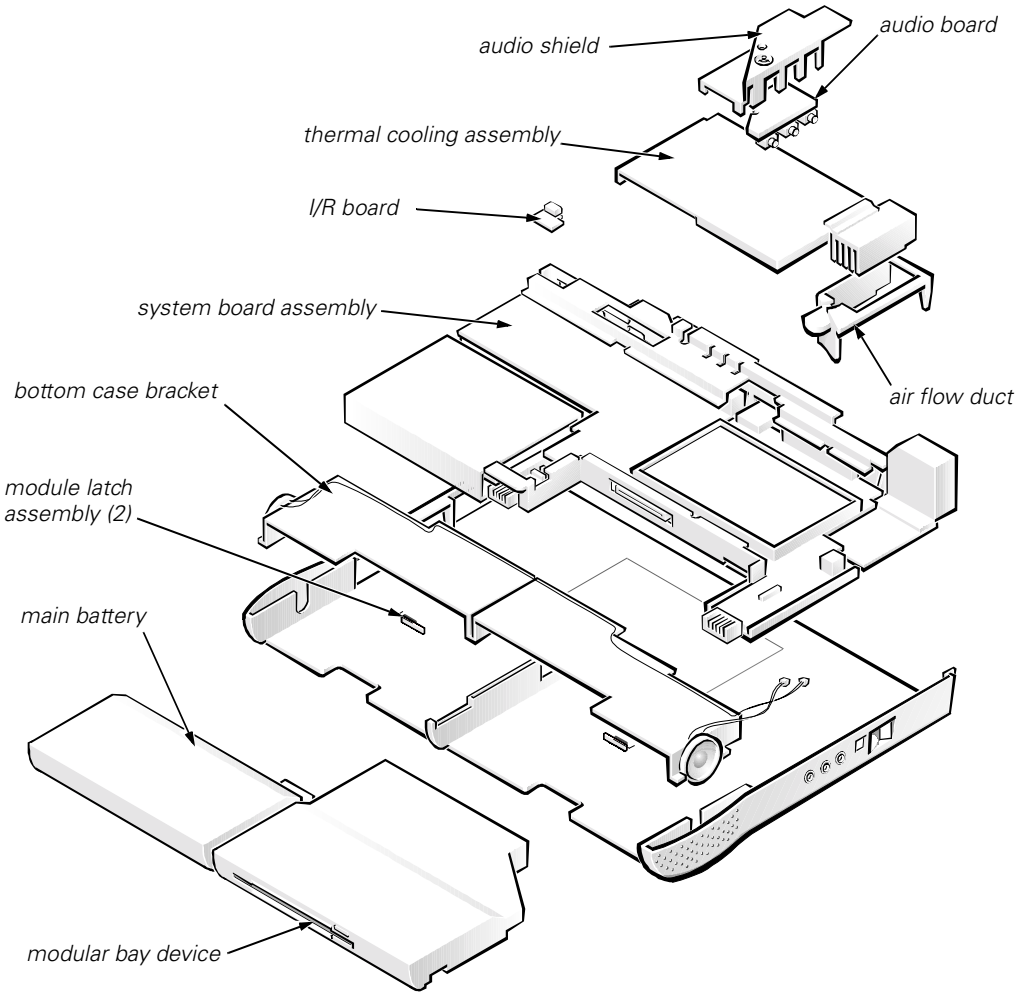

Figure 24. Bottom Case Assembly

Modular Bay Devices (Diskette Drive, CD-ROM Drive, Battery, or Travel Module)

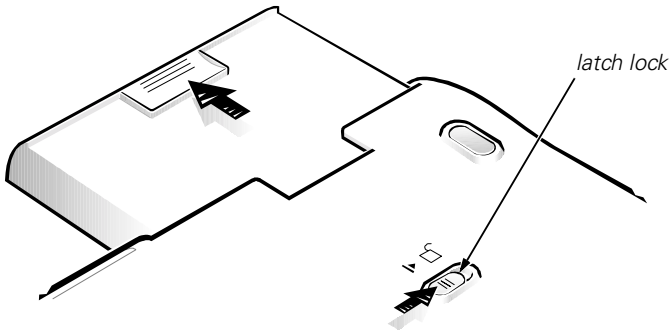

Figure 25. Modular Bay Device Removal

NOTE: You do not need to remove the main battery or hard-disk drive prior to this procedure.

CAUTION: Make sure the work surface is clean to prevent scratching the computer cover.

1. **Close the display and turn the computer over.**
2. **Remove the device from the modular bay.**

   Push the modular bay latch away from the center of the computer. Keep holding the latch open while pulling the device out of the modular bay with the other hand.

Audio Shield

1. **Remove the palmrest assembly.**
2. **Remove the 5-mm screw securing the audio board shield (see Figure 26).**
3. **Remove the audio board shield.**

NOTE: When replacing the audio shield, ensure that the audio shield is properly seated to prevent it from cutting into the speaker wires or interfering with devices installed in the modular bay. (You can check this by temporarily installing a device in the modular bay prior to reinstalling the palmrest assembly.)

Audio Board

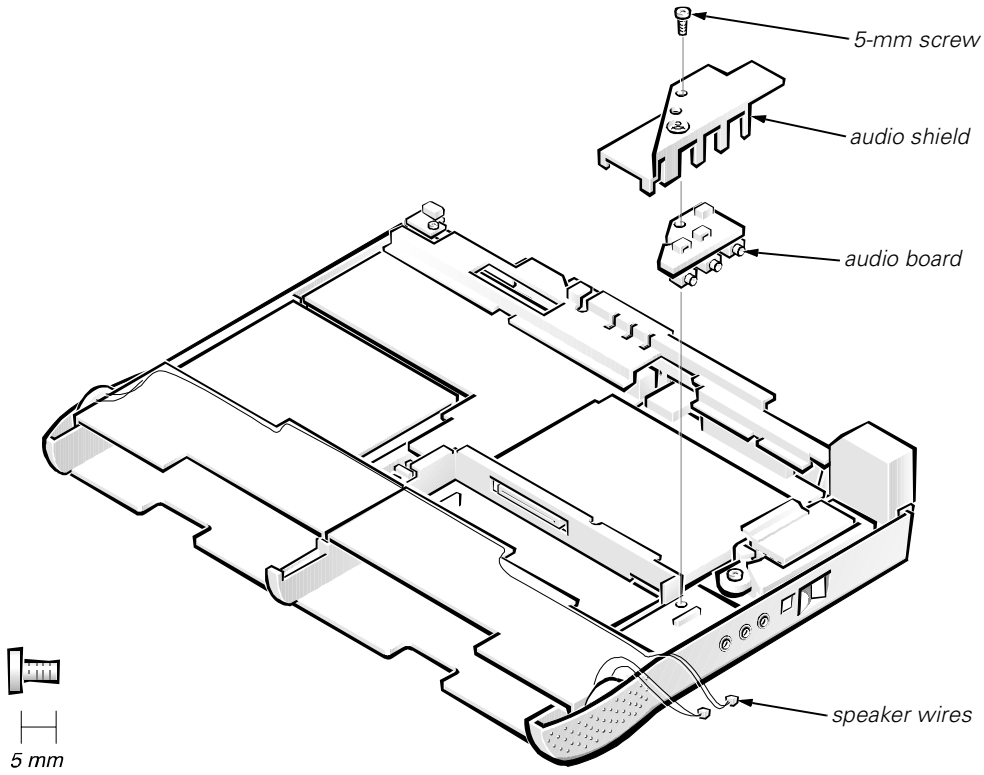

Figure 26. Audio Board Removal

1. **Remove the palmrest assembly.**
2. **Remove the 5-mm screw securing the audio board shield.**
3. **Remove the audio board shield.**
4. **Disconnect the speaker wires and microphone wires from their connectors on the audio board.**

   The connectors are fragile—do not pull on the wires to disconnect them.
5. **Remove the audio board from the bottom case.**

NOTE: When replacing the audio shield, ensure that the audio shield is properly seated to prevent it from cutting into the speaker wires or interfering with devices installed in the modular bay. (You can check this by temporarily installing a device in the modular bay prior to reinstalling the palmrest assembly.)

Bottom Case Bracket

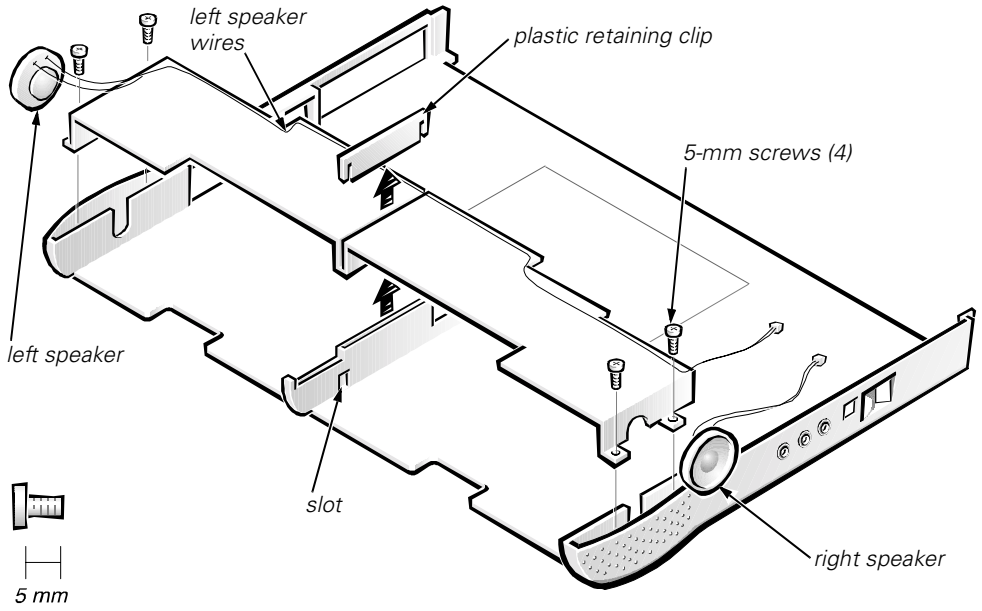

Figure 27. Bottom Case Bracket Removal

1. **Remove the palmrest assembly.**
2. **Remove the audio board shield.**
3. **Disconnect the speaker wires from connectors JP1 and JP2 on the audio board.**

   The connectors are fragile—do not pull on the speaker wires to disconnect them.
4. **Remove the two 5-mm screws at each end of the bottom case bracket.**
5. **Insert the end of a small flat-bladed screwdriver into the slot in the vertical support in the center of the bottom case, and disengage the plastic retaining clip.**
6. **Lift the bottom case bracket from the computer.**

NOTE: When replacing the bottom case bracket, follow these guidelines to prevent damage to the speaker wires:

- Orient each speaker in the bottom case so that its wires are facing upwards.
- Route the speaker wires under their respective retaining clips on the bottom case bracket.

Module Latch Assemblies

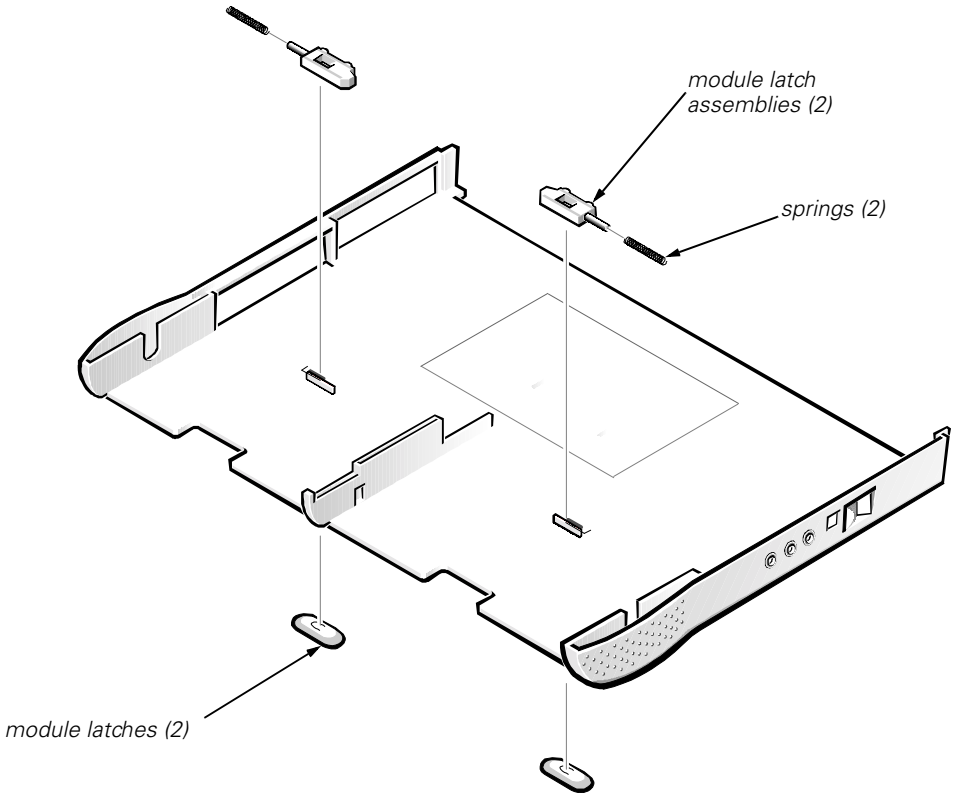

Figure 28. Module Latch Assemblies Removal

1. **Remove the bottom case bracket.**

2. **Remove the left latch from the outside of the bottom case by unsnapping the slider-spring assembly.**

   Keep pressure applied to the slider-spring assembly while unsnapping the latch to prevent the slider-spring assembly from coming loose from the case. If the slider-spring assembly does come loose from the case:

   a. Carefully reinsert the spring onto the plunger on the slider, and reinstall the slider-spring assembly into the holding features on the inside of the case.

   b. Ensure that the plunger is inserted in its respective hole, that the side of the slider with the two bumps is facing the rear of the case, and that the surface with the wear ribs is facing the bottom of the case (see Figure 29).

3. **Snap in the new latch from the bottom of the base, making certain its snap features are fully engaged in the slider.**

4. **Ensure that the newly installed latch moves smoothly and freely when pushed and released.**

5. **Repeat steps 1–4 for the right latch.**

6. **On the base plastic, find the molded label "P.N. ASSY 89501"; then, using a permanent marker, write "A01" to the right of "89501."**

   This revision mark indicates that the latch rework is complete.

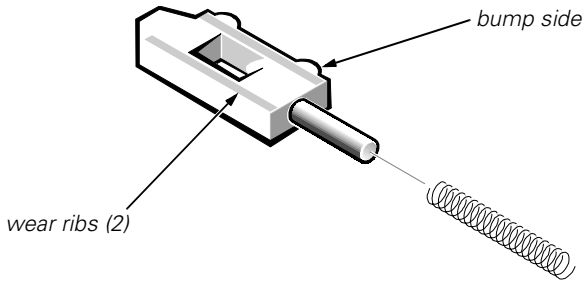

Figure 29. Left Slider

Speakers

1. **Remove the bottom case bracket.**

2. **If you are replacing the left speaker, carefully remove the speaker wires from the retaining clips along the bracket's edges.**

3. **Remove the speaker from the bottom case bracket.**

NOTES: When replacing the speaker, follow these guidelines to prevent damage to the speaker wires:

- Orient the speaker in the bottom case so that the speaker wires are facing upwards.
- Route the speaker wires under their retaining clips on the bottom case bracket.

System Board Assembly

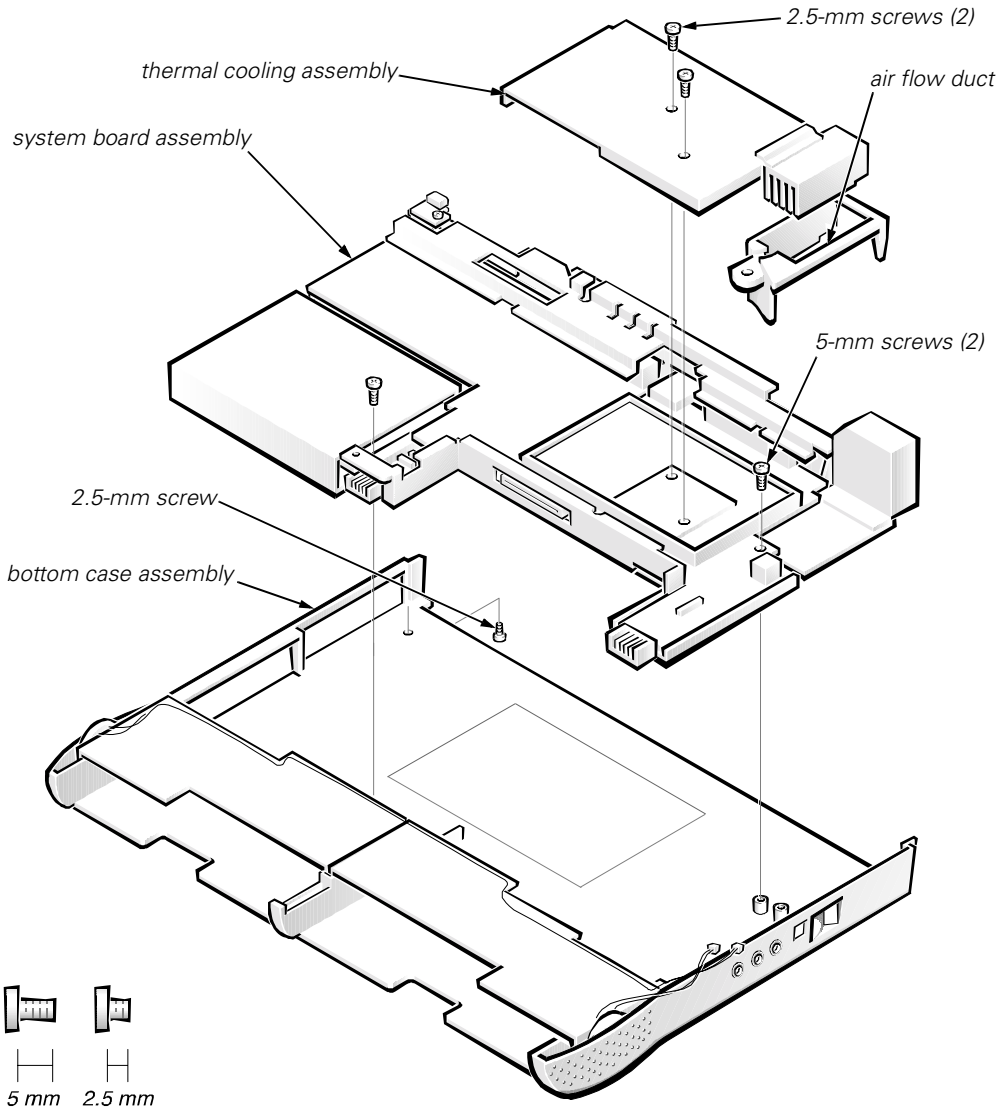

Figure 30. System Board Assembly Removal

The system board's BIOS chip contains the system service tag number, which is also visible on a bar-code label on the bottom of the computer. The replacement kit for the system board assembly includes a diskette that provides a utility for transferring the service tag number to the replacement system board assembly.

1. **Remove the palmrest assembly.**
2. **Remove the LCD display assembly.**
3. **Remove the audio board.**
4. **Remove the two 2.5-mm screws securing the thermal cooling subassembly to the microprocessor module.**

CAUTION: To ensure maximum cooling for the microprocessor, do not touch the heat transfer areas on the thermal cooling assembly. The oils in your skin reduce the heat transfer capability of the thermal pads.

5. **Remove the thermal cooling subassembly from the microprocessor module.**

6. **Remove the processor hold-down clip, if one is attached to the microprocessor module fence.**

   Your computer may have a one- or two-slot hold-down clip. One tab locks the one-slot hold-down clip to the fence. Two tabs lock the two-slot clip to the fence. To remove the clip, perform the following steps to bend the tabs away from the fence:

   a. Insert a small flat-blade screwdriver into one of the slots at the top of the clip (see Figure 31).

   b. Bend the tab away from the fence by carefully tipping the screwdriver away from the microprocessor module.

   c. If your computer has a two-slot hold-down clip (see Figure 31), repeat substeps a and b for the second slot.

   d. Lift the clip off the fence and discard it.

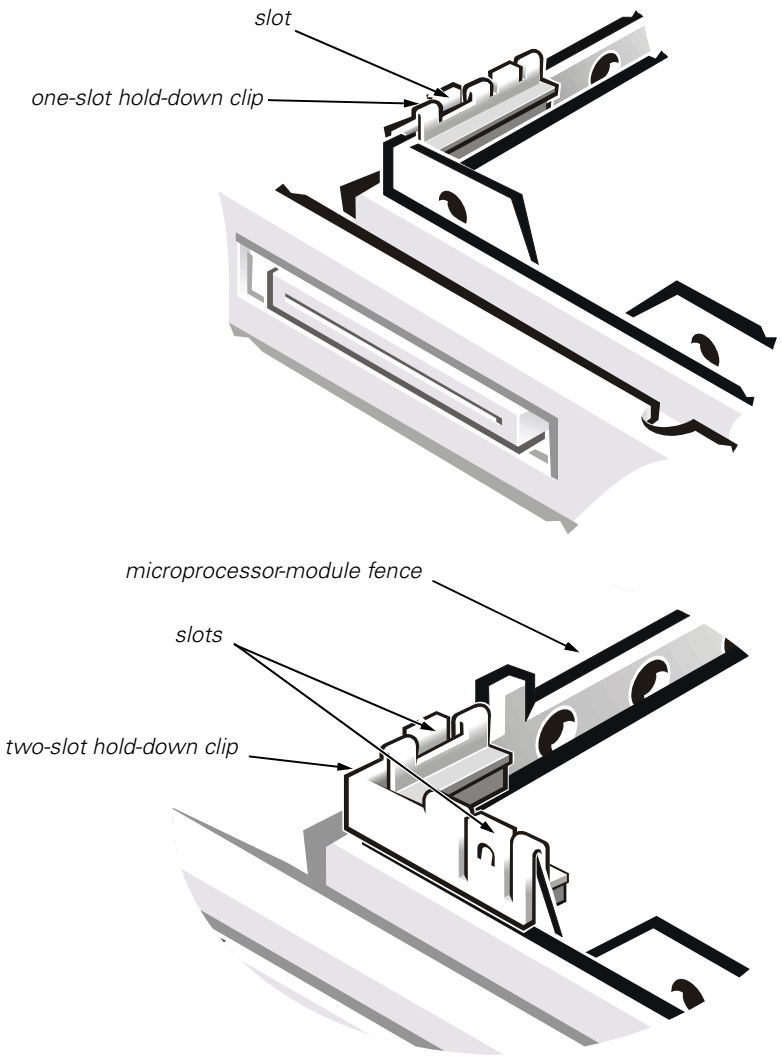

Figure 31. One- and Two-Slot Hold-Down Clips

7. **Remove the three screws that secure the microprocessor module to the system board.**
8. **Use a processor extractor tool to remove the microprocessor module.**

   The tool fits on the left side of the module, in the notches.

CAUTION: Pull the module straight up. Do not move the tool from side to side to extract the processor board.

9. **Remove the air flow duct.**
10. **Verify that the PC Card ejectors do not extend from the PC Card bay.**
11. **Remove the 2.5-mm screw from the center of the computer's left rear foot.**

12. **Remove the following two screws from the system board assembly (see Figure 30):**

    - The 5-mm screw near the reserve-battery cable connector
    - The 5-mm screw near the microprocessor module

13. **Lift the system board assembly out of the bottom case assembly.**

Be sure to transfer the memory module(s) to the replacement system board assembly. If you are replacing the thermal cooling assembly with a new one, remove any lining present on the thermal pad before installing the new thermal cooling assembly.

After replacing the system board assembly, be sure to enter the system's service tag number into the BIOS of the replacement system board assembly. Insert the diskette that accompanied the replacement system board assembly into the diskette drive, and turn on the computer. Follow the instructions on the display.

When you reinstall the processor module in the system board, make sure you press down evenly at all four corners of the module. When the processor module is seated, all four corners must be at the same height. If one or more corners of the module are higher than the others, the module is not seated correctly. To ensure the processor module is seated correctly, look at the holes on the processor-module fence. You should see no less than the top half of the holes all the way around the processor module (see Figure 32). Install the three screws to secure the processor module to the system board. Place a new processor hold-down clip (either a one-slot or two-slot clip) over the corner of the fence as shown in Figure 32. Press the clip down to lock it in place. Do not reuse the old clip.

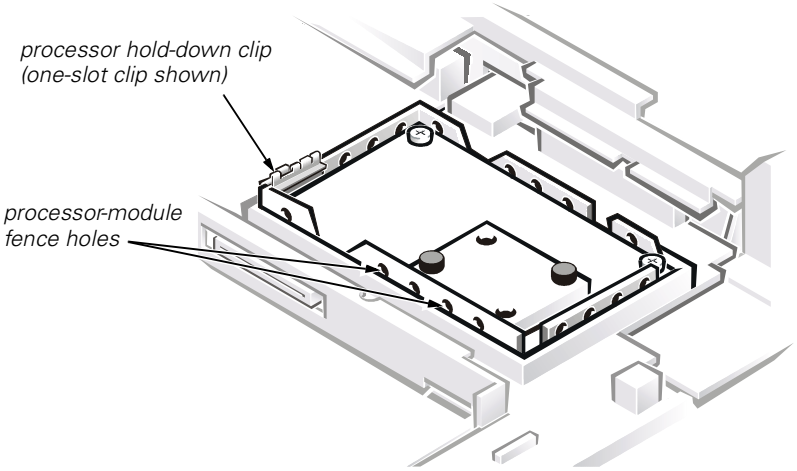

Figure 32. Processor Module

Exhaust Fan

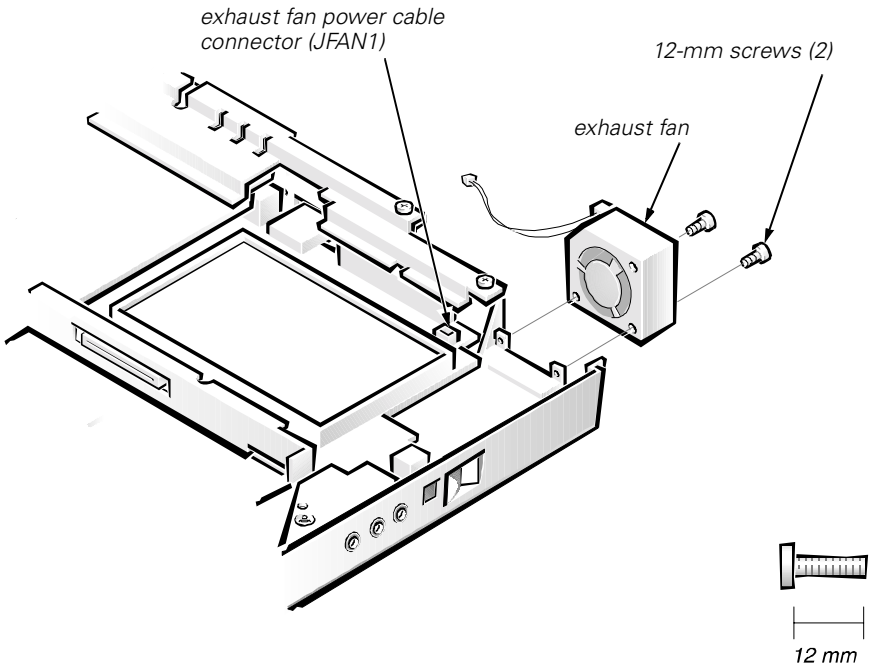

Figure 33. Exhaust Fan Removal

1. **Remove the palmrest assembly.**
2. **Disconnect the exhaust fan power cable from connector JFAN1 on the system board.**
3. **Remove the two 12-mm screws securing the exhaust fan, and then remove the exhaust fan.**

NOTE: When replacing the exhaust fan, orient the fan such that the fan label faces outward and the power cable is at the upper right corner of the fan (when viewed from the back of the computer). (This will prevent the fan wires from being pinched when you reassemble the computer.) Make sure that the wires are routed below the upper EMI shield.

I/R Board

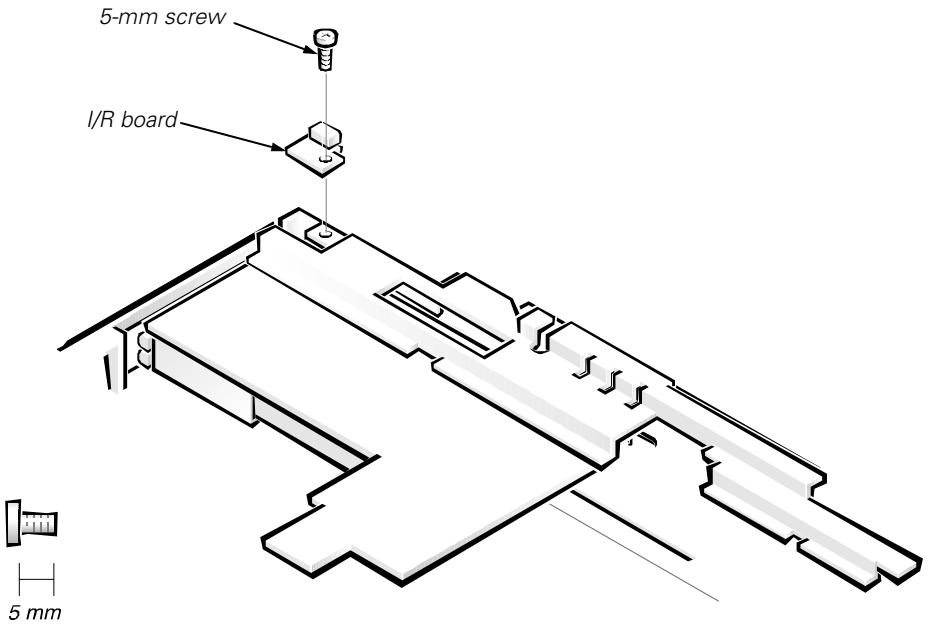

Figure 34. I/R Board Removal

1. **Remove the palmrest assembly.**
2. **Remove the 5-mm screw securing the I/R board to the system board assembly.**
3. **Lift the I/R board straight up from the system board assembly.**

Reserve Battery

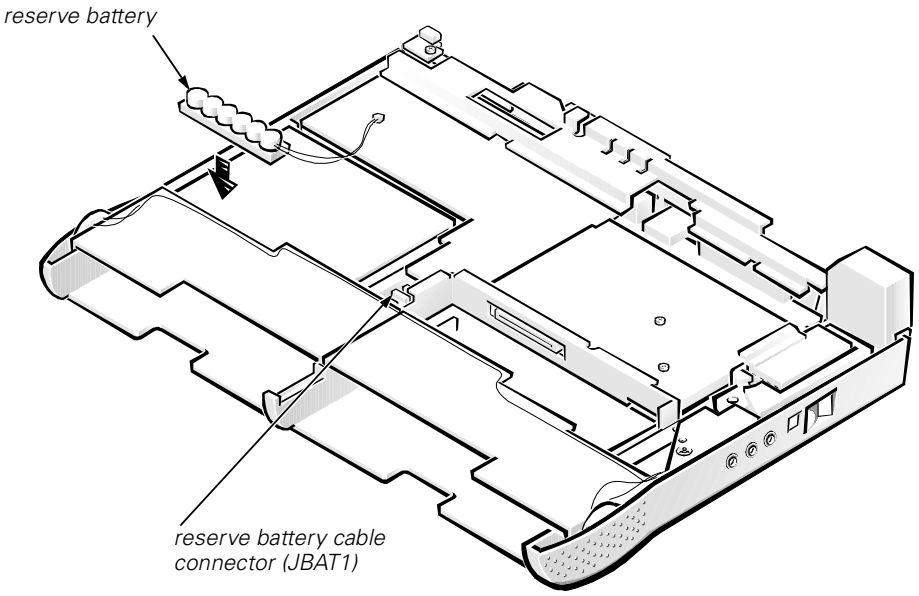

Figure 35. Reserve Battery Installation

CAUTION: The reserve battery provides power to the computer's RTC and NVRAM when the computer is turned off. Removing the battery causes the computer to lose its date and time information as well as all user-settable parameters in NVRAM. If possible, make a copy of this information before you remove the reserve battery.

To remove the reserve battery, follow these steps:

1. **Remove the palmrest assembly.**
2. **Disconnect the reserve battery cable from connector JBAT1 on the system board.**
3. **Remove the reserve battery from the bottom case bracket.**
   a. Tear the reserve battery free from the foam pad.
   b. Remove the remnants of the foam pad from the system board assembly.

NOTE: When replacing the reserve battery, first connect the reserve battery cable to the system board. Then position the reserve battery on the hard-disk drive bay so there is minimal slack in the cable.

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