Maintenance and Service Guide

HP Compaq Business Notebook nx5000 Series
Compaq Presario V1000 Notebook PC

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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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Product Description

The HP Compaq Business Notebook nx5000 Series and the Compaq Presario V1000 notebook PC offer advanced modularity, an Intel® Pentium® M or an Intel Celeron® M processor with 64-bit architecture, an Intel Extreme Graphics 2 graphics controller with up to 64 MB of shared video memory, and extensive multimedia support.

HP Compaq Business Notebook nx5000 Series (Compaq Presario V1000 notebook PC appearance varies slightly).

1.1 Models

Notebook models are shown in Table 1-1, Table 1-2, and Table 1-3.

Table 1-1
HP Compaq Business Notebook nx5000 and Compaq Presario V1000 Notebook PC Model Naming Conventions

Key										
Cnx	U	P	170	X5	60	y	Ci	10	h	XXXXXX-XXX
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Key	Description	Options	
1	Brand/Series designator	C = HP Compaq P = Presario	nx5000 (all models) V10xx
2	Graphics memory	U = Shared memory architecture	
3	Processor type	P = Intel Pentium M C = Intel Mobile Celeron	
4	Processor speed	170 = 1.70 GHz 160 = 1.60 GHz 150 = 1.50 GHz	140 = 1.40 GHz 130 = 1.30 GHz 120 = 1.20 GHz
5	Display type/ size/resolution	X = XGA Y = SXGA+WVA	5 = 15.0-inch 4 = 14.1-inch
6	Hard drive size	60 = 60 GB 40 = 40 GB	30 = 30 GB
7	Optical drive designator	Y = 24x DVD+RW/R and CD-RW Combo Drive C = 24x CD-ROM Drive	W = 24x DVD/CD-RW Combo Drive D = 8x/24x DVD-ROM Drive

Table 1-1
HP Compaq Business Notebook nx5000 and Compaq Presario V1000 Notebook PC Model Naming Conventions *(Continued)*

Key										
Cnx	U	P	170	X5	60	y	Ci	10	h	XXXXXX-XXX
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Key	Description	Options	
8	Integrated communication/ wireless device	M = Modem C = Combination modem + FE NIC N = None	b = 802.11b d = 802.11a/b/g g = 802.11b/g i = 802.11b + Bluetooth® j = 802.11b/g + Bluetooth m = 802.11a/b/g + Bluetooth N = None
9	RAM	12 = 128-MB 25 = 256-MB	51 = 512-MB 10 = 1,024-MB
10	Operating system	P = Microsoft® Windows® XP Professional H = Microsoft Windows XP Home 2 = Microsoft Windows 2000 L = Linux F = FreeDOS	a = 1-year warranty on parts and labor g= 4-year warranty on parts and labor S = Special
11	SKU#		

Table 1-2
HP Compaq Business Notebook nx5000 Models

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000		P	140	X5	30	W	Md	25	PaS	
United States			PD973US ABA							
Cnx5000	U	C	120	X4	30	C	Cb	25	H	
Taiwan			DY824PA AB0							
Cnx5000	U	C	120	X4	30	C	CN	25	2	
Japan			PB690PA ABJ							
Cnx5000	U	C	120	X4	30	C	CN	25	H	
Japan			PB328PA ABJ							
Cnx5000	U	C	120	X4	30	C	CN	25	P	
Japan			PB688PA ABJ							
Cnx5000	U	C	120	X4	30	D	Cb	25	H	
Taiwan			DY825PA AB0							
Cnx5000	U	C	120	X4	30	D	Cb	25	P	
Taiwan			DY826PA AB0							
Cnx5000	U	C	120	X4	30	W	Cb	25	P	
Japan			PC993PA ABJ							
Cnx5000	U	C	120	X4	30	W	CN	25	P	
Japan			PB691PA ABJ							
Cnx5000	U	C	120	X4	40	C	Cb	51	H	
Asia Pacific			PC981PA UUF							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	C	120	X4	40	C	CN	25	P	
Japan			PB689PA ABJ							
Cnx5000	U	C	120	X4	40	W	Cb	51	H	
Australia			DX925P ABG							
Cnx5000	U	C	120	X5	30	C	CN	25	P	
Brazil			PA502A AC4							
Cnx5000	U	C	120	X5	30	D	Cb	25	P	
French Canada Latin America			DH946U ABC DH946U ABM			United States			DH946U ABA	
Cnx5000	U	C	120	X5	40	W	Cb	51	H	
Australia			PB324PA ABG							
Cnx5000	U	C	130	X4	30	C	Cg	25	P	
United States			DV110U ABA							
Cnx5000	U	C	130	X4	30	C	Cg	25	PgS	
United States			PE804UC ABA							
Cnx5000	U	C	130	X4	40	D	CN	25	P	
Australia			PE734PA ABG							
Cnx5000	U	C	130	X4	40	N	Cg	25	P	
United States			DV137U ABA							
Cnx5000	U	C	130	X5	40	W	Cb	25	P	
Australia			PE735PA ABG							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	C	130	X5	40	W	Cb	51	H	
Australia			PB707PA ABG							
Cnx5000	U	C	130	X5	40	W	CN	51	P	
Brazil			PA498A AC4							
Cnx5000	U	P	140	X4	30	C	Cb	12	LS	
Thailand			PC529PC AKL							
Cnx5000	U	P	140	X4	30	C	Cb	25	H	
Asia Pacific			DY819PA UUF			Taiwan			DY827PA AB0	
Cnx5000	U	P	140	X4	30	C	Cb	25	P	
Asia Pacific Hong Kong			DX905P UUF DV616P AB5			Taiwan			DY830PA AB0	
Cnx5000	U	P	140	X4	30	D	Cb	25	F	
United States			PE776AA ABA							
Cnx5000	U	P	140	X4	30	D	Cb	25	H	
Asia Pacific			DY822PA UUF			Taiwan			DY828PA AB0	
Cnx5000	U	P	140	X4	30	D	Cb	25	P	
Asia Pacific French Canada Latin America			DX373P UUF DW804AA ABC DW804AA ABM			Taiwan United States			DW804AA AB0 DW804AA ABA	
Cnx5000	U	P	140	X4	30	W	Cb	25	PS	
Thailand			PA094PC AKL							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	140	X4	40	C	Cb	25	P	
Thailand			PA621PA AKL							
Cnx5000	U	P	140	X4	40	D	Cb	25	H	
Taiwan			DY833PA AB0							
Cnx5000	U	P	140	X4	40	D	Cb	25	P	
People's Republic of China			DV836P AB2			Taiwan			DY872PA AB0 and DY837PA AB0	
Cnx5000	U	P	140	X4	40	W	Cb	25	H	
Taiwan			DY835PA AB0							
Cnx5000	U	P	140	X4	40	W	Cb	25	LS	
Thailand			PC530PC AKL							
Cnx5000	U	P	140	X4	40	W	Cb	25	P	
Asia Pacific Hong Kong			PA244PA UUF DV617P AB5			People's Republic of China Taiwan			DV837P AB2 DY839PA AB0	
Cnx5000	U	P	140	X4	60	W	Cb	51	P	
Thailand			PB703PA AKL and PB702PA AKL							
Cnx5000	U	P	140	X5	30	C	Cb	25	H	
Asia Pacific			DY820PA UUF							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	140	X5	30	C	Cb	25	P	
Asia Pacific Brazil Latin America			DZ512PA UUF PB451A AC4 PA501A ABM			Taiwan United States			DY831PA AB0 PA501A ABA	
Cnx5000	U	P	140	X5	30	C	CN	25	2	
Japan			DV834P ABJ							
Cnx5000	U	P	140	X5	30	C	CN	25	P	
Japan			DV625P ABJ							
Cnx5000	U	P	140	X5	30	D	Cb	25	H	
Asia Pacific			DY821PA UUF			Taiwan			DY829PA AB0	
Cnx5000	U	P	140	X5	30	D	Cb	25	P	
Asia Pacific Latin America			DZ513PA UUF PA500A ABM			Taiwan United States			DY832PA AB0 PA500A ABA	

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	140	X5	30	W	Cb	25	H	
Belgium			DU302A UUG			The Netherlands			DU302A ABH	
Czech Republic			DU302A AKB			Norway			DU302A ABN	
Denmark			DU302A ABY			Poland			DU302A AKD	
Europe International			DU302A ABB			Portugal			DU302A AB9	
France			DU302A ABF			Russia			DU302A ACB	
Greece/Polish/ English			DU302A B1A			Saudi Arabia			DU302A ABV	
						Slovenia			DU302A AKN	
Germany			DU302A ABD			Spain			DU302A ABE	
Hungary			DU302A AKC			Sweden/Finland			DU302A AK8	
Iceland			DU302A A2M			Switzerland			DU302A UUZ	
Israel			DU302A ABT			Turkey			DU302A AB8	
Italy			DU302A ABZ			United Kingdom			DU302A ABU	
Cnx5000	U	P	140	X5	30	W	Cb	25	P	
Belgium			DU303A UUG			The Netherlands			DU303A ABH	
Czech Republic			DU303A AKB			Norway			DU303A ABN	
Denmark			DU303A ABY			Poland			DU303A AKD	
Europe International			DU303A ABB			Portugal			DU303A AB9	
France			DU303A ABF			Russia			DU303A ACB	
Greece/Polish/ English			DU303A B1A			Saudi Arabia			DU303A ABV	
						Slovenia			DU303A AKN	
Germany			DU303A ABD			Spain			DU303A ABE	
Hungary			DU303A AKC			Sweden/Finland			DU303A AK8	
Iceland			DU303A A2M			Switzerland			DU303A UUZ	
Israel			DU303A ABT			Turkey			DU303A AB8	
Italy			DU303A ABZ			United Kingdom			DU303A ABU	

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	140	X5	30	W	Cb	51	P	
Latin America			PA497A ABM and PA499A ABM			United States			PA497A ABA and PA499A ABA	
Cnx5000	U	P	140	X5	30	W	Cg	25	P	
Latin America			PD366L ABM			United States			PD366L ABA	
Cnx5000	U	P	140	X5	40	C	CN	25	P	
Japan			DV833P ABJ							
Cnx5000	U	P	140	X5	40	D	Cb	25	H	
Korea			DZ845PA AB1			Taiwan			DY834PA AB0	
Cnx5000	U	P	140	X5	40	D	Cb	25	P	
Brazil			PB452A AC4			Taiwan			DY838PA AB0	
Cnx5000	U	P	140	X5	40	W	Cb	25	H	
Asia Pacific Hong Kong			DY823PA UUF DV618P AB5			Korea Taiwan			DZ846PA AB1 DY836PA AB0	
Cnx5000	U	P	140	X5	40	W	Cb	25	P	
Asia Pacific Australia/New Zealand Hong Kong			DX903P UUF DV614P ABG PA223PA AB5			Japan Korea Taiwan			DX366AA ABJ PA217PA AB1 DY840PA AB0	
Cnx5000	U	P	140	X5	40	W	Cb	25	PS	
Australia			PD642PC ABG							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	140	X5	40	W	Cb	51	P	
Asia Pacific Belgium French Canada			DW805AA UUF DW806AA UUG DW806AA ABC			Latin America United States			PA496A ABM and DW80AA ABM PA496A ABA and DW806AA ABA	
Cnx5000	U	P	140	X5	40	W	Cb	51	PaS	
United States			PE688UC ABA							
Cnx5000	U	P	140	X5	40	W	Cg	51	P	
Latin America			Pd364L ABM			United States			PD364L ABA	
Cnx5000	U	P	140	X5	40	W	Ci	25	P	
Asia Pacific Europe International France			PC979PA UUF DW807AA ABB DW807AA ABF			Germany Italy United Kingdom			DW807AA ABD DW807AA ABZ DW807AA ABU	
Cnx5000	U	P	140	X5	40	W	Mg	25	PaS	
United States			PD931US ABA							
Cnx5000	U	P	140	Y5	30	D	Ci	51	P	
Italy			DU411A ABZ							
Cnx5000	U	P	140	Y5	30	W	CN	25	P	
Japan			DV835P ABJ							
Cnx5000	U	P	140	Y5	40	W	Cb	51	H	

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Korea			PB744Pa AB1							
Cnx5000	U	P	150	S5	60	Y	Ci	51	P	
Australia/New Zealand			DX384P ABG							
Cnx5000	U	P	150	S5	60	Y	Ci	51	PS	
Australia			PD641PC ABG							
Cnx5000	U	P	150	X4	30	C	Cg	25	P	
Hong Kong			PB721PA AB5							
Cnx5000	U	P	150	X4	30	C	CN	25	P	
Japan			PD677PA ABJ							
Cnx5000	U	P	150	X4	30	D	Cg	25	P	
Asia Pacific			PE761Pa UUF							
Cnx5000	U	P	150	X4	30	D	CN	51	H	
Taiwan			PB696PA AB0							
Cnx5000	U	P	150	X4	40	D	Cb	25	H	
People's Republic of China			PD664PA AB2							
Cnx5000	U	P	150	X4	40	D	Cb	25	P	
People's Republic of China			DV838P AB2							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	X4	40	D	CN	25	P	
People's Republic of China			PD667Pa AB2							
Cnx5000	U	P	150	X4	40	W	Cb	25	H	
People's Republic of China			PD665PA AB2							
Cnx5000	U	P	150	X4	40	W	Cb	25	P	
People's Republic of China			PC986PA AB2							
Cnx5000	U	P	150	X4	40	W	Cg	25	P	
Thailand			PE759PA AKL							
Cnx5000	U	P	150	X4	40	W	CN	25	H	
People's Republic of China			PD668Pa AB2							
Cnx5000	U	P	150	X5	30	C	Cb	25	P	
Brazil			PD362L AC4							
Cnx5000	U	P	150	X5	30	C	CN	25	P	
Japan			PD678PA ABJ							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	X5	30	W	Cg	25	H	
Belgium			DU396A UUG			Norway			DU396A ABN	
Denmark			DU396A ABY			Poland			DU396A AKD	
Europe International			DU396A ABB			Portugal			DU396A AB9	
France			DU396A ABF			Russian			DU396A ACB	
Germany			DU396A ABD			Saudi Arabia			DU396A ABV	
Greece/Polish/ English			DU396A B1A			Slovenia			DU396A AKN	
						South Africa			DU396A ACQ	
Hungary			DU396A AKC			Spain			DU396A ABE	
Iceland			DU396A A2M			Sweden/Finland			DU396A AK8	
Italian			DU396A ABZ			Switzerland			DU396A UUZ	
Netherlands			DU396A ABH			United Kingdom			DU396A ABU	

Cnx5000	U	P	150	X5	30	W	Cg	25	P	
Belgium			DU397A UUG			Norway			DU397A ABN	
Denmark			DU397A ABY			Poland			DU397A AKD	
Europe International			DU397A ABB			Portugal			DU397A AB9	
France			DU397A ABF			Russian			DU397A ACB	
Germany			DU397A ABD			Saudi Arabia			DU397A ABV	
Greece/Polish/ English			DU397A B1A			Slovenia			DU397A AKN	
						South Africa			DU397A ACQ	
Hungary			DU397A AKC			Spain			DU397A ABE	
Iceland			DU397A A2M			Sweden/Finland			DU397A AK8	
Italy			DU397A ABZ			Switzerland			DU397A UUZ	
Latin America			PD367L ABM			United Kingdom			DU397A ABU	
Netherlands			DU397A ABH			United States			PD367L ABA	

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	X5	40	C	Cb	25	H	
Korea			PA218PA AB1							
Cnx5000	U	P	150	X5	40	C	CN	25	P	
Japan			PD679PA ABJ							
Cnx5000	U	P	150	X5	40	D	Cb	25	H	
Korea			PA219PA AB1							
Cnx5000	U	P	150	X5	40	D	Cb	25	P	
Brazil			PD361L AC4							
Cnx5000	U	P	150	x5	40	D	Cg	25	P	
United States			DV111U ABA							
Cnx5000	U	P	150	X5	40	N	Cg	25	P	
United States			DV138U ABA							
Cnx5000	U	P	150	X5	40	W	Cb	25	H	
Korea			PA220PA AB1							
Cnx5000	U	P	150	x5	40	W	Cb	25	P	
Asia Pacific			DX904P UUF and DX374P UUF			Korea Thailand			PA221PA AB1 DY870PA AKL	

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	x5	40	W	Cb	51	H	
Belgium			DU304A UUG			The Netherlands			DU304A ABH	
Czech Republic			DU304A AKB			Norway			DU304A ABN	
Denmark			DU304A ABY			Poland			DU304A AKD	
Europe International			DU304A ABB			Portugal			DU304A AB9	
France			DU304A ABF			Russia			DU304A ACB	
Greece/Polish/ English			DU304A B1A			Saudi Arabia			DU304A ABV	
						Slovenia			DU304A AKN	
Germany			DU304A ABD			Spain			DU304A ABE	
Hungary			DU304A AKC			Sweden/Finland			DU304A AK8	
Iceland			DU304A A2M			Switzerland			DU304A UUZ	
Israel			DU304A ABT			Turkey			DU304A AB8	
Italy			DU304A ABZ			United Kingdom			DU304A ABU	
Cnx5000	U	P	150	X5	40	W	Cb	51	LS	
Asia Pacific			PC637PC UUF							
Cnx5000	U	P	150	X5	40	W	Cb	51	P	
Asia Pacific			PB704PA UUF							
Cnx5000	U	P	150	X5	40	W	Cd	25	H	
Korea			PB745PA AB1							
Cnx5000	U	P	150	X5	40	W	Cg	25	P	
Hong Kong			PB720PA AB5							
Cnx5000	U	P	150	X5	40	W	Cg	51	P	
Latin America			PD365L ABM							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	X5	40	W	Cg	51	P	
United States			PD365L ABA							
Cnx5000	U	P	150	X5	40	W	Ci	25	PS	
Australia			PE784PC ABG							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	x5	40	W	Ci	51	P	
Belgium			DU305T UUG and DU305A UUG			Norway			DU305T ABN and DU305A ABN	
Czech Republic			DU305A AKB			Poland			DU305A AKD	
Denmark			DU305A ABY			Portugal			DU305A AB9	
Europe International			DU305A ABB			Russia			DU305T ACB and DU305A ACB	
France			DU305T ABF and DU305A ABF			Saudi Arabia			DU305A ABV	
Greece/Polish/ English			DU305T B1A and DU305A B1A			Slovenia			DU305A AKN	
Germany			DU305T ABD and DU305A ABD			Spain			DU305T ABE and DU305A ABE	
Hungary			DU305A AKC			Sweden/Finland			DU305T AK8 and DU305A AK8	
Iceland			DU305A A2M			Switzerland			DU305T UUZ and DU305A UUZ	
Israel			DU305A ABT			Turkey			DU305A AB8	
Italy			DU305T ABZ and DU305A ABZ			United Kingdom			DU305T ABU and DU305A ABU	
The Netherlands			DU305T ABH and DU305A ABH							
Cnx5000	U	P	150	X5	40	W	Cj	25	H	
Hong Kong			PB722PA AB5							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	X5	60	W	Cb	25	P	
People's Republic of China			PC987PA AB2							
Cnx5000	U	P	150	x5	60	W	Cb	51	P	
Asia Pacific			DZ496PA UUF							
Cnx5000	U	P	150	X5	60	W	Ci	51	P	
Asia Pacific			PC980PA UUF							
Cnx5000	U	P	150	x5	60	Y	Cb	51	P	
Australia/New Zealand			DV615P ABG							
Cnx5000	U	P	150	Y5	30	W	CN	51	P	
Japan			PD680PA ABJ							
Cnx5000	U	P	150	Y5	40	D	CN	51	P	
Korea			PB743PA AB1							
Cnx5000	U	P	150	Y5	40	N	Ci	51	P	
Germany			DU344A ABD							
Cnx5000	U	P	150	Y5	40	W	Cb	25	P	
Korea			DV839P AB1							
Cnx5000	U	P	150	Y5	40	W	Ci	25	H	
Hong Kong			DV619P AB5							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	150	Y5	60	W	Cb	51	H	
Korea			PC969PA AB1							
Cnx5000	U	P	150	Y5	60	W	Cd	10	H	
Korea			PC967PA AB1							
Cnx5000	U	P	160	X4	40	C	Ci	51	H	
Poland			DU407S AKD							
Cnx5000	U	P	160	X4	40	D	Cb	25	H	
Latin America			PA503A ABM			United States			PA503A ABA	
Cnx5000	U	P	160	X4	40	D	Cb	25	P	
People's Republic of China			PD666PA AB2							
Cnx5000	U	P	160	X5	40	D	CN	51	H	
United States			DV149US ABA							
Cnx5000	U	P	160	X5	40	W	Cb	51	P	
Asia Pacific			DX375P UUF			Thailand			DY871PA AKL	
Cnx5000	U	P	160	X5	40	W	Cg	25	P	
Asia Pacific Hong Kong			PE892PA UUF PB723PA AB5			Thailand			PE760PA AKL	

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	160	X5	40	W	Cj	51	P	
Belgium			DU399T UUG and DU399A UUG			Norway			DU399T ABN and DU399A ABN	
Denmark			DU399A ABY			Poland			DU399A AKD	
Europe International			DU399A ABB			Portugal			DU399A AB9	
France			DU399T ABF and DU399A ABF			Russian			DU399T ACB and DU399A ACB	
Germany			DU399T ABD and DU399T AB8 and DU399A ABD			Saudi Arabia			DU399A ABV	
						Slovenia			DU399A AKN	
						South Africa			DU399A ACQ	
						Spain			DU399T ABE and DU399A ABE	
Greece/Polish/ English			DU399A B1A			Sweden/Finland			DU399T AK8 and DU399A AK8	
Hungary			DU399A AKC							
Iceland			DU399A A2M							
Italy			DU399T ABZ and DU399A ABZ			Switzerland			DU399T UUZ and DU399A UUZ	
Netherlands			DU399T ABH and DU399A ABH			United Kingdom			DU399T ABU and DU399A ABU	
Cnx5000	U	P	160	X5	40	W	Cm	51	P	
Latin America			PA495A ABM			United States			PA495A ABA	

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	160	X5	40	W	CN	25	P	
United States			DV142US ABA							
Cnx5000	U	P	160	X5	40	W	CN	51	P	
United States			PF001US ABA							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	160	X5	40	Y	Cg	51	H	
Belgium			DU398A UUG and DU398T UUG			Norway			DU398T ABN and DU398A ABN	
Denmark			DU398A ABY			Poland			DU398A AKD	
Europe International			DU398A ABB			Portugal			DU398A AB9	
France			DU398T ABF and DU398A ABF			Russian			DU398T ACB and DU398A ACB	
Germany			DU398T ABD and DU398A ABD			Saudi Arabia			DU398A ABV	
						Slovenia			DU398A AKN	
						South Africa			DU398A ACQ	
Greece/Polish/ English			DU398A B1A			Spain			DU398T ABE and DU398A ABE	
Hungary			DU398A AKC							
Iceland			DU398A A2M			Sweden/Finland			DU398T AK8 and DU398A AK8	
Italy			DU398T ABZ and DU398A ABZ							
Netherlands			DU398T ABH and DU398A ABH			Switzerland			DU398T UUZ and DU398A UUZ	
						United Kingdom			DU398T ABU and DU398A ABU	
Cnx5000	U	P	160	X5	60	W	Cb	25	H	
Korea			DV842P AB1							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	160	X5	60	W	Cb	25	P	
Thailand			DV880P AKL							
Cnx5000	U	P	160	X5	60	Y	Cb	51	P	
Brazil			PB453A AC4							
Cnx5000	U	P	160	X5	60	Y	Ci	51	H	

Belgium	DU306A UUG	The Netherlands	DU306A ABH
Czech Republic	DU306A AKB	Norway	DU306A ABN
Denmark	DU306A ABY	Poland	DU306A AKD
Europe International	DU306A ABB	Portugal	DU306A AB9
France	DU306A ABF	Russia	DU306A ACB
Greece/Polish/ English	DU306A B1A	Saudi Arabia	DU306A ABV
		Slovenia	DU306A AKN
Germany	DU306A ABD	Spain	DU306A ABE
Hungary	DU306A AKC	Sweden/Finland	DU306A AK8
Iceland	DU306A A2M	Switzerland	DU306A UUZ
Israel	DU306A ABT	Turkey	DU306A AB8
Italy	DU306A ABZ	United Kingdom	DU306A ABU

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	160	X5	60	Y	Ci	51	P	
Australia/New Zealand			DX367AA ABG			Poland			DU307A AKD	
Belgium			DU307A UUG			Portugal			DU307A AB9	
Czech Republic			DU307A AKB			Russia			DU307A ACB	
Denmark			DU307A ABY			Saudi Arabia			DU307A ABV	
Europe International			DU307A ABB			Slovenia			DU307A AKN	
France			DU307A ABF			Spain			DX367AA ABE and DU307A ABE	
Greece/Polish/ English			DU307A B1A							
Germany			DU307A ABD			Sweden/Finland			DX367AA AK8 and DU307A AK8	
Hungary			DU307A AKC							
Iceland			DU307A A2M							
Israel			DU307A ABT			Switzerland			DX367AA UUZ and DU307A UUZ	
Italy			DU307A ABZ							
Korea			DX367AA AB1							
Latin America			PA494A ABM							
The Netherlands			DU307A ABH			Turkey			DU307A AB8	
Norway			DU307A ABN			United Kingdom			DU307A ABU	
						United States			PA494A ABA	
Cnx5000	U	P	160	Y5	40	W	Mb	51	PS	
United States			PB657US ABA							
Cnx5000	U	P	160	Y5	60	W	Cb	25	P	
Korea			DV841P AB1							
Cnx5000	U	P	160	Y5	60	W	Ci	51	P	
United States			DY520AA ABA							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	160	Y5	60	Y	Ci	51	P	
United States			DX368AA ABA							
Cnx5000	U	P	160	Y5	60	Y	Cj	51	P	
Latin America			PD363L ABM			United States			PD363L ABA	
Cnx5000	U	P	170	X4	30	C	CN	25	2	
Japan			DV623P ABJ							
Cnx5000	U	P	170	X4	30	C	CN	25	H	
Japan			DV620P ABJ							
Cnx5000	U	P	170	X4	30	C	CN	25	P	
Japan			DV621P ABJ							
Cnx5000	U	P	170	X4	30	W	CN	25	P	
Japan			DV624P ABJ							
Cnx5000	U	P	170	X4	40	C	CN	25	P	
Japan			DV622P ABJ							
Cnx5000	U	P	170	X5	60	W	Cb	51	P	
Asia Pacific			DX376P UUF							
Cnx5000	U	P	170	X5	60	Y	Cb	51	P	
Brazil			PD360L AC4							
Cnx5000	U	P	170	X5	60	Y	Cj	51	P	
Greece/Polish/ English			DU400A B1A							

Table 1-2
HP Compaq Business Notebook nx5000 Models *(Continued)*

All HP Compaq Business Notebook nx5000 models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- or 3-year warranty on parts and labor, varying by model

Cnx5000	U	P	170	Y5	60	W	Cd	25	H	
Korea			DZ515PA AB1							
Cnx5000	U	P	170	Y5	60	W	Cd	25	P	
Korea			DZ514PA AB1							

Table 1-3
Compaq Presario V1000 Notebook PC Models

All Compaq Presario V1000 notebook PC models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1-year warranty on parts and labor

PV1001AP	U	P	140	X4	30	D	Cb	25	H	
Asia Pacific			DY202P UUF			Thailand				DY202P AKL
PV1002AP	U	P	150	Y5	40	W	Ci	25	H	
Hong Kong			DY203P AB5							
PV1003AP	U	P	140	X5	40	W	Cb	25	H	
Asia Pacific			DY204P UUF			Hong Kong				DY204P AB5
PV1004AP	U	P	140	X4	30	W	Cb	25	H	
Hong Kong			DY205P AB5							
PV1004XX	U	P	140	X4	30	W	Cb	25	H	
Asia Pacific			DZ543AA UUF							
PV1005AP	U	C	120	X4	30	D	Cb	25	H	
People's Republic of China			DY206P AB2							
PV1006AP	U	C	130	X4	40	D	Cb	25	H	
People's Republic of China			DY207P AB2							
PV1007AP	U	P	140	X4	40	D	Cb	25	H	
People's Republic of China			DY208P AB2							
PV1008AP	U	P	140	X4	40	W	Cb	25	H	
Asia Pacific			DY209P UUF			People's Republic of China				DY209P AB2

Table 1-3
Compaq Presario V1000 Notebook PC Models *(Continued)*

All Compaq Presario V1000 notebook PC models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1-year warranty on parts and labor

PV1009AP	U	P	140	X5	40	W	Cb	25	H	
Peoples Republic of China			DY210P AB2							
PV1010AP	U	P	150	X5	40	D	Cb	25	H	
People's Republic of China			DY211P AB2							
PV1011AP	U	P	150	X5	40	W	Cb	25	H	
People's Republic of China			DY212P AB2							
PV1011AP	U	P	150	X5	40	W	Cb	25	H	
Thailand			DY212P AKL							
PV1012AP	U	C	120	X4	30	D	Cb	25	H	
Taiwan			DY213P AB0							
PV1013AP	U	P	140	X4	30	C	Cb	25	H	
Taiwan			DY214P AB0							
PV1014AP	U	P	140	X4	30	D	Cb	25	H	
Taiwan			DY215P AB0							
PV1015AP	U	P	140	X4	40	D	Cb	25	H	
Taiwan			DY216P AB0							
PV1016AP	U	P	140	X4	40	W	Cb	25	H	
Taiwan			DY217P AB0							

Table 1-3
Compaq Presario V1000 Notebook PC Models *(Continued)*

All Compaq Presario V1000 notebook PC models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1-year warranty on parts and labor

PV1017AP	U	P	140	X5	30	C	Cb	25	H	
Taiwan			DY218P AB0							
PV1018AP	U	P	140	X5	30	D	Cb	25	H	
Taiwan			DY219P AB0							
PV1019AP	U	P	140	X5	40	D	Cb	25	H	
Taiwan			DY220P AB0							
PV1020AP	U	P	140	X5	40	W	Cb	25	H	
Taiwan			DY221P AB0							
PV1021AP	U	P	140	X4	30	D	Cb	12	H	
Asia Pacific			DY222P UUF							
PV1022AP	U	P	150	X5	40	Y	Cb	25	H	
Asia Pacific			DY223P UUF							
PV1023AP	U	P	160	X5	60	W	Cb	51	H	
Asia Pacific			DY224P UUF							
PV1024AP	U	P	140	X5	30	D	Cb	25	H	
Asia Pacific			DY225P UUF							
PV1025AP	U	P	140	X4	30	C	Cb	25	H	
Asia Pacific			DY226P UUF							
PV1026AP	U	P	140	X5	30	C	Cb	25	H	
Asia Pacific			DY227P UUF							

Table 1-3
Compaq Presario V1000 Notebook PC Models *(Continued)*

All Compaq Presario V1000 notebook PC models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1-year warranty on parts and labor

PV1027AP	U	P	150	X4	40	W	Cb	25	H	
Asia Pacific			DY228P UUF							
PV1028AP	U	P	150	X5	40	Y	Cb	25	H	
Thailand			DY229P AKL							
PV1029AP	U	C	120	X4	30	D	Cb	25	H	
Taiwan			DY230PA AB0							
PV1030AP	U	P	140	X4	30	W	Cb	25	H	
Taiwan			DZ847PA AB0							
PV1031AP	U	C	130	X5	60	W	Cb	25	H	
Korea			DZ848PA AB1							
PV1032AP	U	P	160	X5	40	W	Cb	25	H	
Korea			DZ849PA AB1							
PV1033AP	U	P	160	Y5	60	W	Cb	25	H	
Korea			DZ850PA AB1							
PV1034AP	U	P	170	X5	60	W	Cb	51	H	
Korea			DZ851PA AB1							
PV1035AP	U	P	160	X5	40	W	Cb	51	H	
Korea			DZ852PA AKL							
PV1036AP	U	P	150	X5	40	Y	Ci	25	H	
Hong Kong			DZ853PA AB5							

Table 1-3
Compaq Presario V1000 Notebook PC Models *(Continued)*

All Compaq Presario V1000 notebook PC models feature:

- TouchPad pointing device
- Video memory
- 8- or 6-cell lithium ion (Li-Ion) battery pack
- 1- year warranty on parts and labor

PV1037AP	U	P	140	X5	60	W	Cb	25	H	
Thailand			DZ854PA AKL							
PV1038AP	U	P	140	X4	40	W	Ci	25	H	
Asia Pacific			DZ855PA UUF							
PV1039AP	U	P	150	X4	40	W	Ci	25	H	
Asia Pacific			DZ856PA UUF							
PV1040AP	U	P	150	X5	40	W	Ci	25	H	
Asia Pacific			DZ857PA UUF							
PV1041AP	U	P	160	X5	60	W	Ci	51	H	
Asia Pacific			DZ858PA UUF							
PV1042AP	U	P	150	X5	40	W	Cj	25	H	
Hong Kong			DZ859PA AB5							
PV1043XX	U	P	150	X5	60	W	Cb	51	H	
Korea			DZ544AA AB1							

1.2 Features

- Intel Pentium M 2.0-, 1.8-, 1.7-, 1.6-, 1.5-, or 1.4-GHz processors, with 1.0-MB or 2.0-MB L2 cache, varying by notebook model
  - or -
  Intel Celeron M 1.4-, 1.3-, or 1.2-GHz processor, with 512-KB L2 cache, varying by notebook model
- 15.0-inch SXGA+ WVA (1400 × 1050) display with over 16.7 million colors
  - or -
  15.0- or 14.1-inch XGA (1024 × 768) TFT displays with over 16.7 million colors, varying by notebook model
- Intel Extreme Graphics 2 graphics controller with up to 64 MB of shared video memory, limited to 32 MB of shared video memory on models with 128 MB system memory
- 60-, 40-, or 30-GB high-capacity hard drive, varying by notebook model
- 128-MB DDR synchronous DRAM (SDRAM) at 266 MHz, expandable to 2.0 GB
- Microsoft® Windows® XP Professional, Windows XP Home, or Windows 2000, varying by notebook model
- Full-size Windows keyboard with integrated numeric keypad
- TouchPad pointing device
- Integrated Secure Digital (SD) Memory Card slot
- MultiBay device support
- Integrated 10/100 BASE-T Ethernet local area network (LAN) NIC with RJ-45 connector
- Integrated wireless support for Bluetooth®, LAN, Mini PCI 802.11a/b/g WLAN devices, and 802.11b WLAN PC cards
- Support for 2 Type I or Type II or one Type III PC Card with support for both 32-bit (CardBus) and 16-bit PC Cards
- Infrared port

- External 65-watt AC adapter with power cord
- 8-cell 4.4 Ah Li-Ion battery pack
  -or-
  6-cell 4.4 Ah Li-Ion battery pack
- Stereo speakers
- Support for the following devices in the MultiBay:
  - 24X CD-ROM Drive
  - 24X DVD/CD-RW Combo Drive
  - 8X/24X DVD-ROM Drive
  - 24X DVD+RW/R and CD-RW Combo Drive
  - 8-cell 3.6 Ah Li-Ion battery pack
- Connectors for:
  - RJ-11 (modem)
  - RJ-45 network interface card (NIC)
  - Universal Serial Bus (USB) v. 2.0
  - S-Video
  - Serial device
  - Parallel device
  - External monitor
  - DC power
  - Docking station
  - Microphone
  - Stereo speaker/headphone
  - One Type III or 2 Type I/II PC Cards
  - SD Cards

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 (Section 5.3).
2. Remove the real time clock (RTC) battery (Section 5.18).
3. Wait approximately 5 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 will have been cleared.

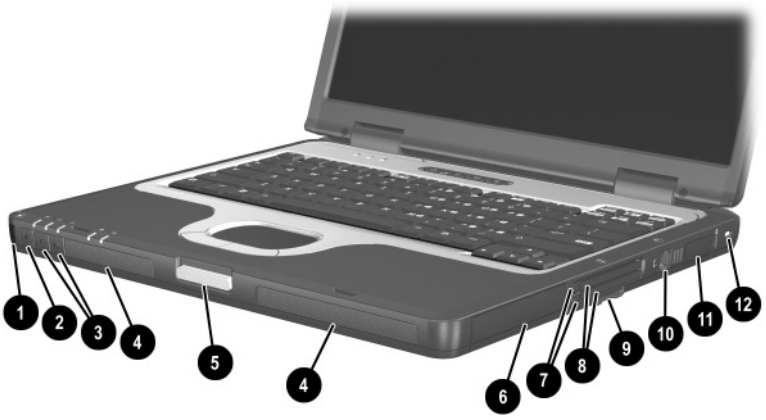
1.4 Power Management

The notebook comes with power management features that extend battery operating time and conserve power. The notebook supports the following power management features:

- Standby
- Hibernation
- User customization of settings
- Hotkeys for setting level of performance
- Display switch standby/resume
- Power/Standby button
- Advanced Configuration and Power Interface (ACPI) compliance

1.5 External Components

The external components on the front and right side of the notebook are shown below and described in Table 1-4.

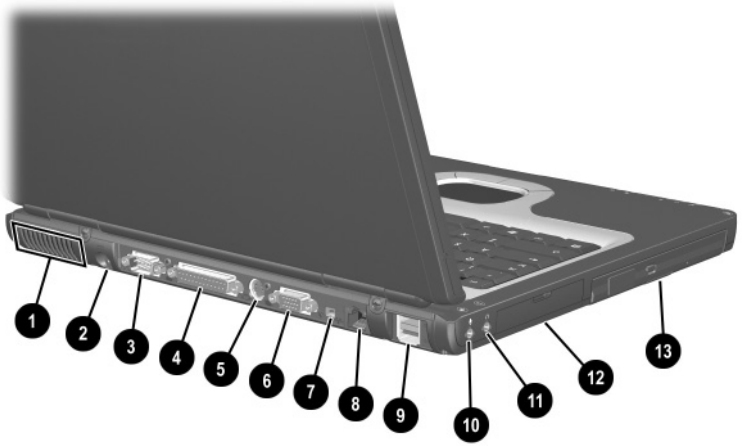


Front and Right-Side Components

Table 1-4
Front and Right-Side Components

Item	Component	Function
1	Infrared port	Provides wireless communication between the notebook and an optional IrDA-compliant device.
2	Mute button	On: Mutes the system volume. A light comes on when the button is pushed in and the sound is muted.
3	Volume control buttons	Increase and decrease system volume. Press the volume up button to increase sound. Press the volume down button to decrease sound.
4	Stereo speakers (2)	Produce stereo sound.
5	Display release latch	Opens the notebook.
6	Battery bay	Holds the primary battery.
7	PC Card eject buttons	Release PC Card devices from the PC Card slots.
8	PC Card slots (2)	Support optional Type I, Type II, or Type III 32-bit (CardBus) or 16-bit PC Cards.
9	Secure Digital (SD) Memory Card slot	Accepts SD Cards and MultiMedia Cards.
10	RJ-11 (modem) jack	Connects a modem cable.
11	Bluetooth compartment	Holds a Bluetooth wireless device. ✎ Bluetooth is not supported in all countries.
12	Security cable slot	Attaches an optional security cable to the notebook. ✎ The purpose of security solutions is to act as a deterrent. These solutions do not prevent the product from being mishandled or stolen.

The notebook rear panel and left-side components are shown below and described in Table 1-5.



Rear and Left Components

Table 1-5
Rear and Left-Side Components

Item	Component	Function
1	Vent	Allows airflow to cool internal components.
2	AC power connector	Connects an AC adapter, an optional Automobile Power Adapter/Charger, or an optional Aircraft Power Adapter.
3	Serial connector	Connects an optional serial device.
4	Parallel connector	Connects an optional parallel device, such as an external diskette drive bay or a printer.

Table 1-5
Rear and Left-Side Components *(Continued)*

Item	Component	Function
5	S-Video connector	Connects an optional S-Video device, such as a television, VCR, camcorder, overhead projector, or video capture card.
6	External monitor connector	Connects an optional external monitor or overhead projector.
7	1394 connector	Connects an optional IEEE-1394 compliant device to the notebook.
8	RJ-45 (network) jack	Connects a network cable.
9	USB connectors (2)	Connect optional USB 1.1- and 2.0-compliant devices to the notebook, using a standard USB cable.
10	Headphone jack	Produces system sound when connected to optional powered stereo speakers, headphones, headset, or television audio.
11	Microphone jack	Connects an optional monaural microphone.
12	Hard drive bay	Holds the primary hard drive.
13	MultiBay device slot	Holds a MultiBay device.

The notebook wireless antennae are shown below and described in Table 1-6.

Wireless Antennae Locations

Table 1-6
Wireless Antennae

Component	Description
Wireless antennae (2)	Transmit wireless data. ⚠ **Exposure to Radio Frequency Radiation.** The radiated output power of this device is below the FCC radio frequency exposure limits. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna should not be less than 20 cm (8 inches) during normal operation, including when the notebook display is closed.

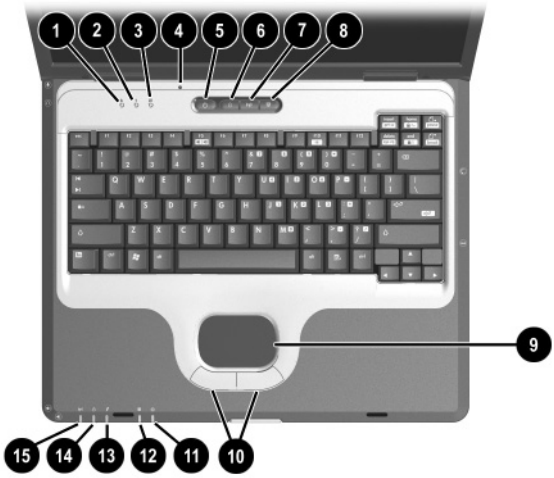
The notebook keyboard components are shown below and described in Table 1-7.

Keyboard Components

Table 1-7
Keyboard Components

Item	Component	Function
1	Windows logo key	Displays the Windows Start menu.
2	**fn** key	Executes frequently used system functions when pressed in combination with another key.
3	**caps lock** key	Enables caps lock and turns on the caps lock light.
4	**f1** through **f12** function keys	Perform system and application tasks. When combined with the **fn** key, the function keys **f1** and **f3** through **f12** perform additional tasks as hotkeys.
5	**num lock** key	Enables numeric lock and the internal keypad.
6	Embedded numeric keypad	Operates as a standard external numeric keypad.
7	Cursor control keys	Move the cursor around the screen.
8	Windows applications key	Displays a shortcut menu for items beneath the pointer.

The notebook top components are shown below and described in Table 1-8.



Top Components

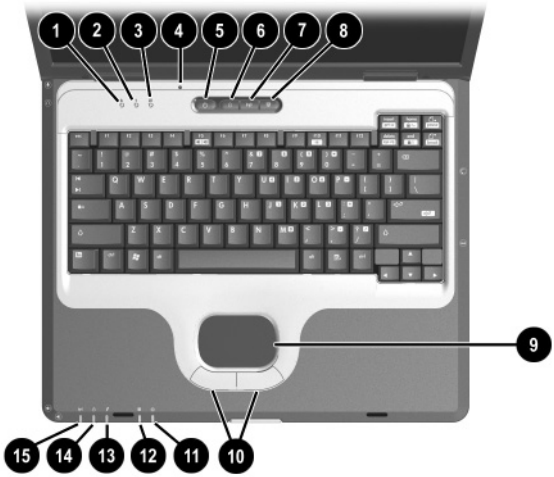
Table 1-8
Top Components

Item	Component	Function
1	Num lock light	On: Num lock is on or the embedded numeric keypad is enabled.
2	Caps lock light	On: Caps lock is on.
3	Scroll lock light	On: Scroll lock is on.

Table 1-8
Top Components *(Continued)*

Item	Component	Function
4	Display lid switch*	■ If the notebook is closed while on, turns off the display. ■ If the notebook is opened while on, turns on the display.
5	Power button*	When the notebook is: ■ Off, press and release to turn on the notebook. ■ In Standby, press and release to exit Standby. ■ In Hibernation, press and release to exit Hibernation. If the system has stopped responding and Windows shutdown procedures cannot be used, press and hold for 5 seconds to turn off the notebook.
6	QuickLock button	Disables the keyboard and pointing device and clears the display.
7	Wireless on/off button	Enables and disables the optional integrated wireless device(s) on the notebook. ✎ When using the wireless on/off button to enable integrated WLAN or Bluetooth, first ensure that WLAN or Bluetooth has been enabled in the software and that the wireless on/off light is on before attempting to make a connection.

*This table describes default settings. For information about changing the functions of the display lid switch and power button and about using Standby and Hibernation, refer to the “Power” chapter in the *Software Guide* on the *Documentation Library* CD.



Top Components (Continued)

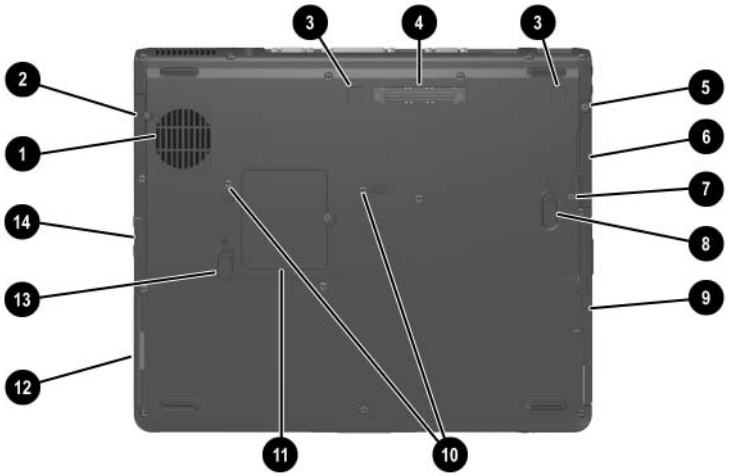
Table 1-8
Top Components *(Continued)*

Item	Component	Function
8	Presentation Mode button	Alternates between presentation modes.
9	TouchPad	Moves the pointer and selects or activates items on the screen.
10	Left and right TouchPad buttons	Function like the left and right buttons on an external mouse.
11	MultiBay light	On: A device in the MultiBay is being accessed.
12	Hard drive light	On: Hard drive in the hard drive bay is being accessed.

Table 1-8
Top Components *(Continued)*

Item	Component	Function
13	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. When the battery reaches a critical low-battery condition, the battery light begins blinking more quickly. Off: AC power is applied with battery pack either fully charged or not installed, or no AC power is applied.
14	Power/Standby light	On: Power is turned on. Blinking: Notebook is in Standby. The Power/Standby light also blinks when a battery pack that is the only available power source reaches a critical low-battery condition. The light goes off when the system enters Hibernation or shuts down.
15	Wireless on/off light	On: An optional integrated wireless device has been enabled.

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



Bottom Components

Table 1-9
Bottom Components

Item	Component	Function
1	Intake vent	Allows airflow to cool internal components. ⚠ To prevent overheating, do not obstruct vents. Using the notebook on a soft surface, such as a pillow, blanket, rug, or thick clothing, may block airflow.
2	Bluetooth compartment	Holds an optional Bluetooth device. ✎ Bluetooth is not supported in all countries.

Table 1-9
Bottom Components *(Continued)*

Item	Component	Function
3	Port replicator docking latches	Secures the notebook to an optional Port Replicator or advanced Port Replicator.
4	Docking connector	Connects the notebook to an optional Port Replicator or advanced Port Replicator.
5	Hard drive cover screw	Secures the hard drive cover.
6	Hard drive bay	Holds the internal hard drive.
7	Hard drive security screw	Secures the hard drive.
8	MultiBay release latch	Releases the MultiBay device.
9	MultiBay	Holds the MultiBay device.
10	Keyboard access screws (2)	Secure the keyboard.

Table 1-9
Bottom Components *(Continued)*

Item	Component	Function
11	Mini PCI compartment	Holds an optional wireless LAN device. ✎ To prevent an unresponsive system and the display of a warning message, install only a Mini PCI device authorized for use in your notebook by the governmental agency that regulates wireless devices in your country. If you install a device and then receive a warning message, remove the device to restore notebook functionality. Then contact Customer Care.
12	Battery bay	Holds the primary battery pack.
13	Battery release latch	Releases a battery pack from the battery bay.
14	Secure Digital (SD) Memory Card slot	Accepts SD Cards and MultiMedia Cards.

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 module
- Mini PCI communications device
- Hard drive
- Display
- Keyboard and TouchPad
- Audio
- Intel Pentium M or Intel Mobile Celeron processor
- Fan
- PC Card

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

The notebook uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to come on automatically when high temperature conditions exist. These conditions can be caused by high external temperatures, heavy system power consumption, certain power management/battery conservation configurations, battery fast charging, and some software applications. Exhaust air is displaced through the ventilation grill located on the notebook rear panel.

2

Troubleshooting

WARNING: Only authorized technicians trained by HP 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, do not attempt to make repairs at the component level or 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

The notebook features 2 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 Microsoft Windows.
- **Diagnostics for Windows**—A system information and diagnostic utility that is used within the Windows operating system. Use this utility whenever possible to
  - Display system information.
  - Test system components.
  - Troubleshoot a device configuration problem in Windows XP Professional or Windows XP Home.

It is not necessary to configure a device connected to a USB connector on the notebook or to an optional Port Replicator.

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	■ View identification information about the notebook, a Port Replicator, 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
Administrator password	Enter, change, or delete an Administrator password.
Power-On password	Enter, change, or delete a power-on password.
DriveLock passwords	Enable/disable DriveLock; change a DriveLock User or Master password. ✎ DriveLock Settings are accessible only when you enter Computer Setup by turning on (not restarting) the notebook.
SmartCard passwords	Enable/disable support for Smart Card passwords. ✎ This feature is supported by only certain Smart Card Readers.
Device security	Enable/disable devices in the system. Enable NIC for inclusion in MultiBoot.
System IDs	Enter identification numbers for the notebook, a Port Replicator, and all battery packs in the system.

Selecting from the Tools Menu

Table 2-3
Tools Menu

Select	To Do This
HDD Self-Test options	Run a quick comprehensive self test on hard drives in the system that support the test features.
Battery Status	View identification and charge information about the primary or MultiBay battery packs when they are in the system.

Selecting from the Advanced Menu

Table 2-4
Advanced Menu

Select	To Do This
Language	Change the Computer Setup language.
Boot Options	Enable/disable: ■ 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.

Table 2-4
Advanced Menu *(Continued)*

Select	To Do This
Device Options	■ 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 Port Replicator as the primary device. (When the notebook display is set as secondary, the notebook must be shut down before it is undocked from a Port Replicator). ■ Change the parallel port mode from Enhanced Parallel Port (EPP, the default setting) to standard, bi-directional 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 Intel SpeedStep window. (When Disable is selected, the notebook runs in Battery Optimized mode).

Table 2-4
Advanced Menu *(Continued)*

Select	To Do This
Device Options *(continued)*	■ Specify how the notebook recognizes multiple identical Port Replicators that are identically equipped. Select **Disable** to recognize the Port Replicators as a single Port Replicator; select **Enable** to recognize the Port Replicators individually, by serial number. ■ Enable/disable the reporting of the processor serial number by the processor to the software.

*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 can use NTSC, PAL, or PAL-M.

2.2 Using Diagnostics for Windows

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

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

Diagnostics for Windows is designed to test HP and Compaq notebook components. If other components are tested, the results might be inconclusive.

Obtaining, Saving, or Printing Configuration Information

1. Access Diagnostics for Windows by selecting **Start > Settings > Control Panel > Diagnostics for Windows.**
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 Diagnostics for Windows, select **File > Exit.**

Obtaining, Saving, or Printing Diagnostic Test Information

1. Access Diagnostics for Windows by selecting **Start > Settings > Control Panel > Diagnostics for Windows.**
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, select the **Check All** button.
     - ◆ To run only the tests you select, select the **Uncheck All** button, then select the check box 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. You might be prompted to insert or remove devices.
   - ❏ **Unattended Mode**—Does not display prompts. If errors are found, they are displayed when testing is complete.

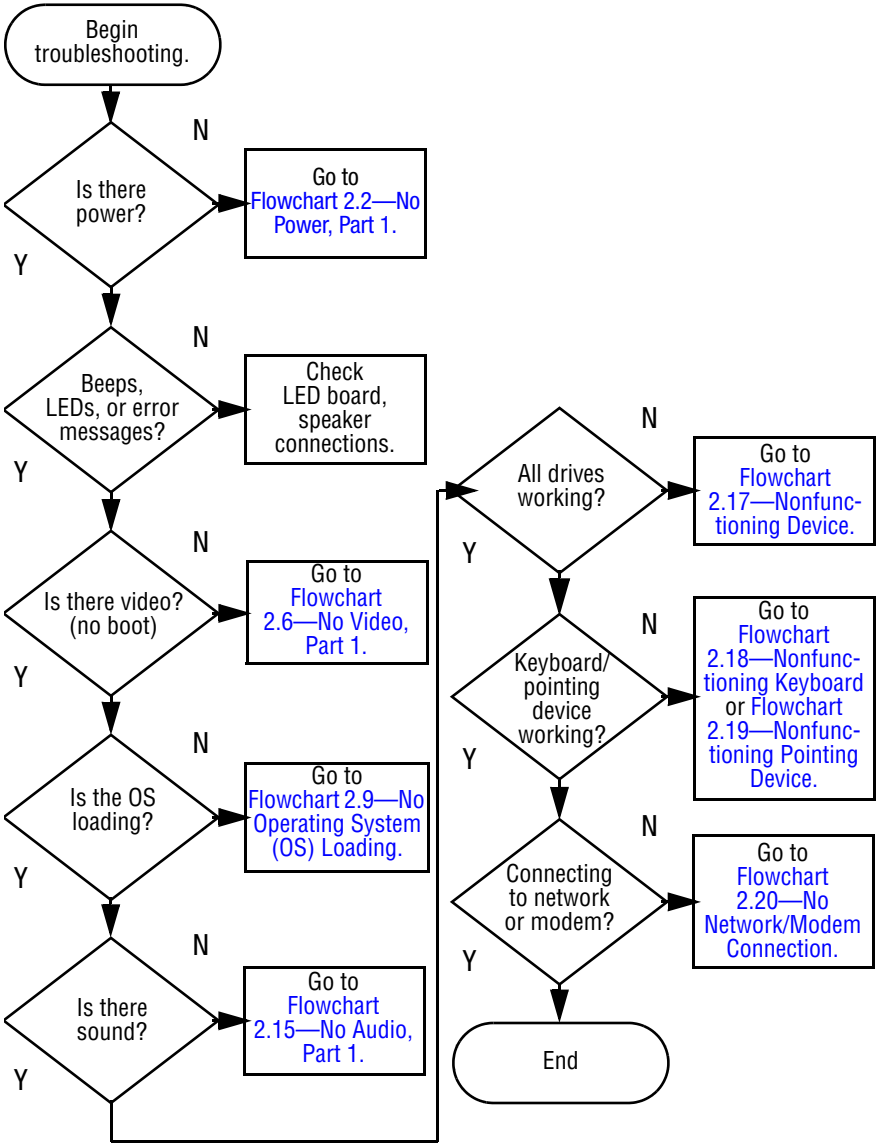
6. Select the **Begin Testing** button.
7. Select a tab to view a test report:
   - **Status tab**—Summarizes the tests run, passed, and failed during the current testing session.
   - **Log tab**—Lists tests run on the system, the number of times each test has run, the number of errors found on each test, and the total run time of each test.
   - **Error tab**—Lists all errors found in the notebook, along with the corresponding error codes.
8. Select a tab to save the report:
   - **Log tab**—Select the **Save** button.
   - **Error tab**—Select the **Save** button.
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

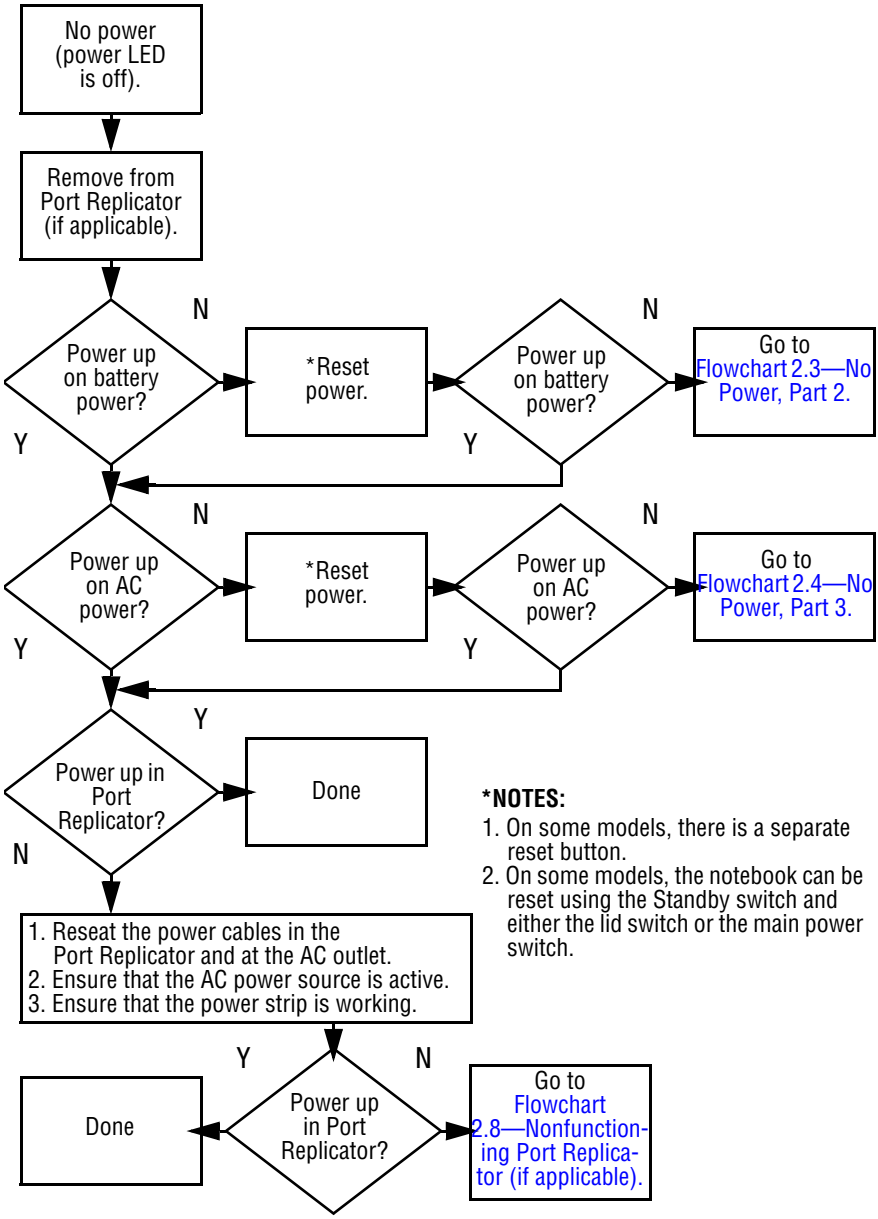
Table 2-4
Troubleshooting Flowchart Overview

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 Port Replicator (if applicable)
Flowchart 2.9—No Operating System (OS) Loading
Flowchart 2.10—No OS Loading, Hard Drive, Part 1
Flowchart 2.11—No OS Loading, Hard Drive, Part 2
Flowchart 2.12—No OS Loading, Hard Drive, Part 3
Flowchart 2.13—No OS Loading, Diskette Drive
Flowchart 2.14—No OS Loading, CD-ROM 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/Modem Connection

Flowchart 2.1—Initial Troubleshooting



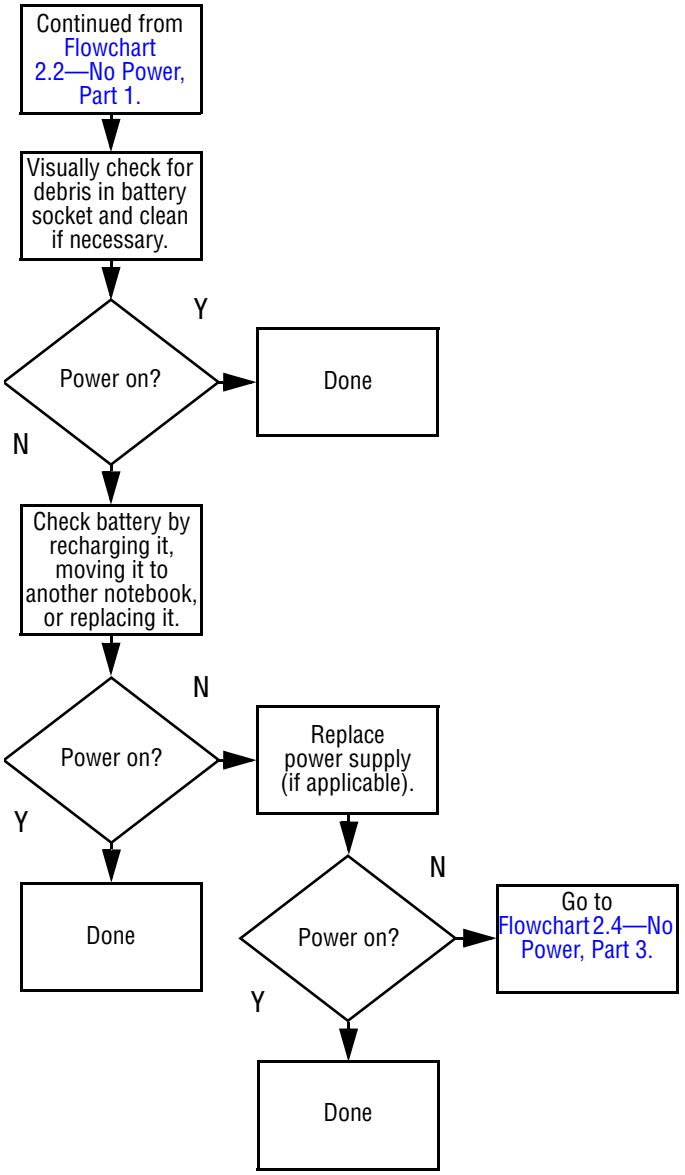
Flowchart 2.2—No Power, Part 1



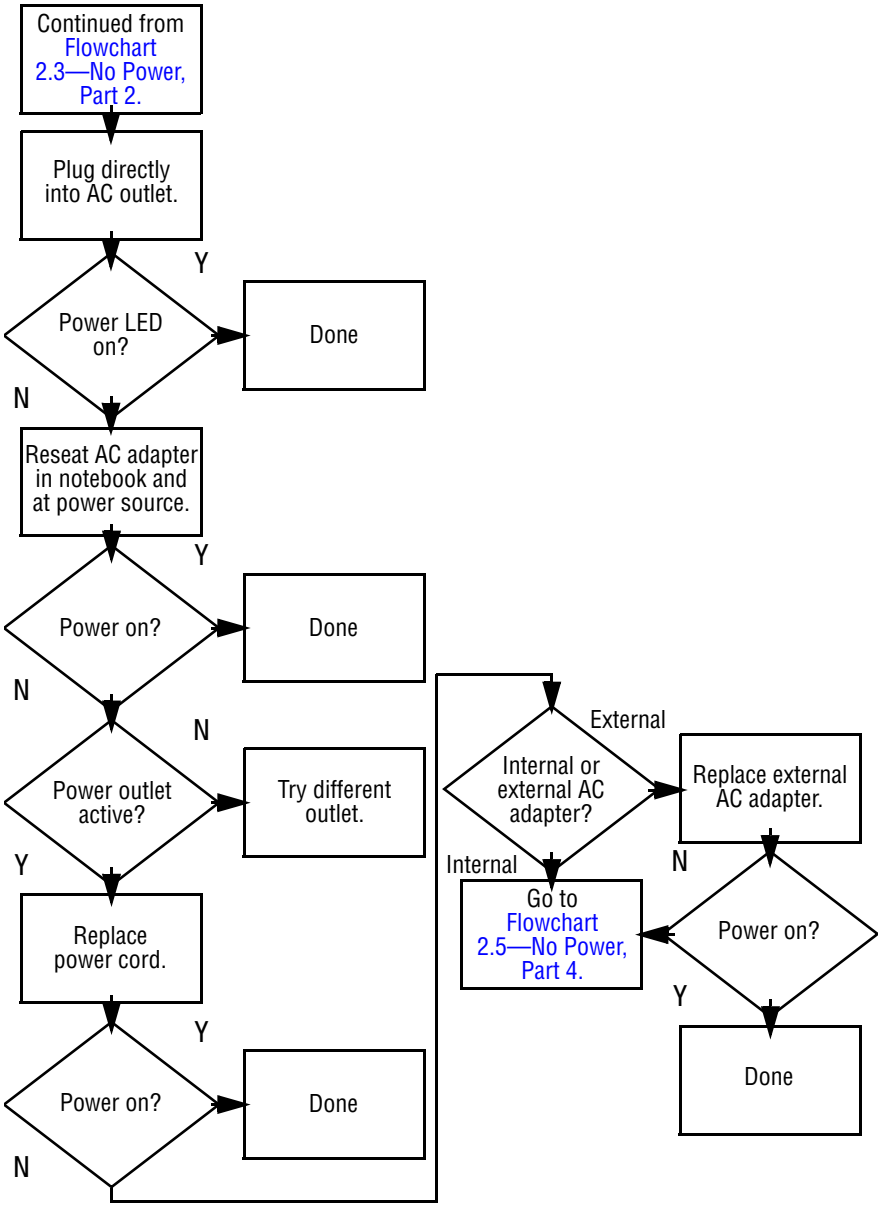
***NOTES:**

1. On some models, there is a separate reset button.
2. On some models, the notebook can be reset using the Standby switch and either the lid switch or the main power switch.

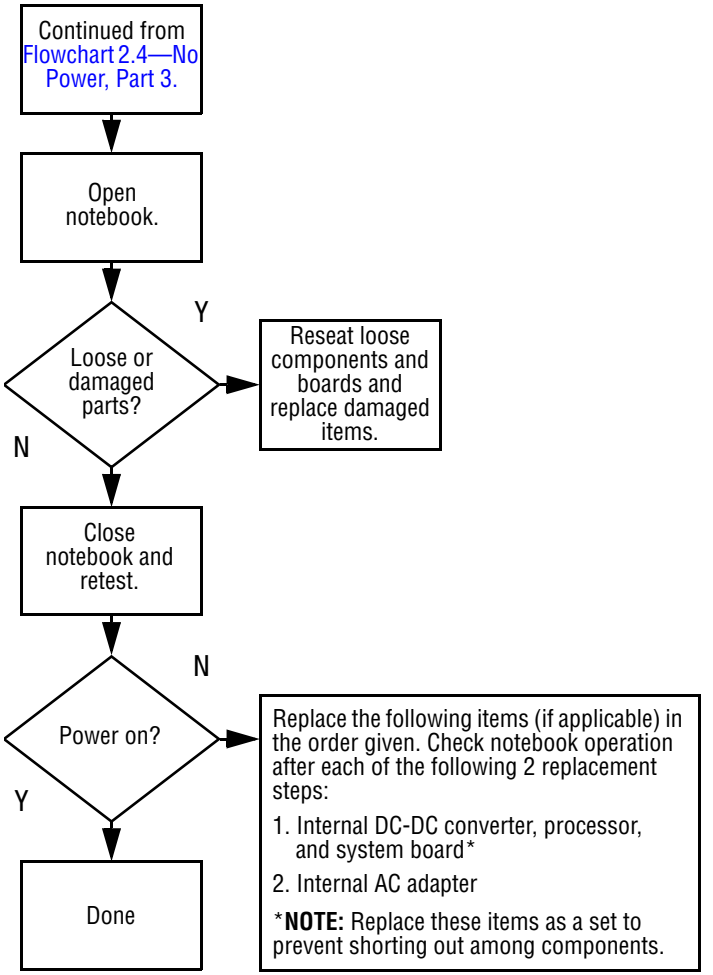
Flowchart 2.3—No Power, Part 2



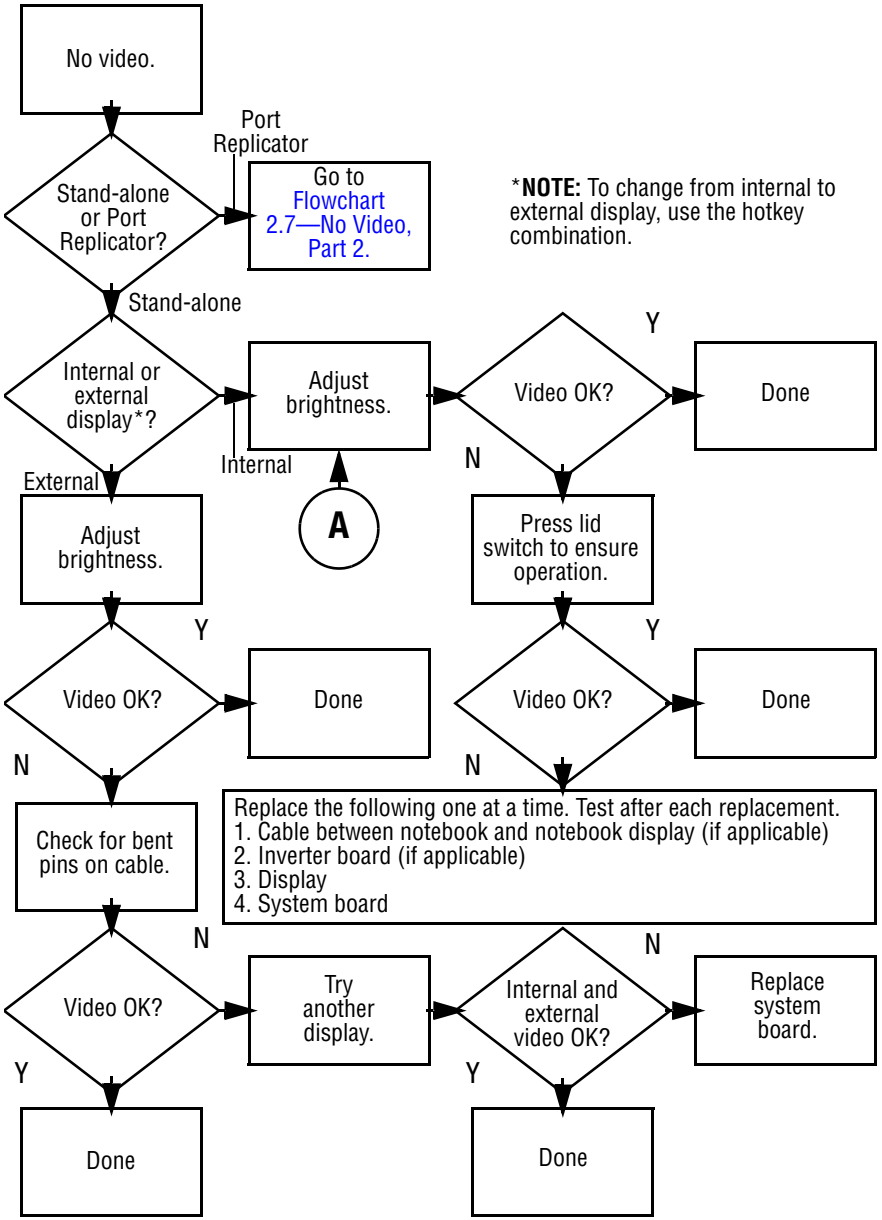
Flowchart 2.4—No Power, Part 3



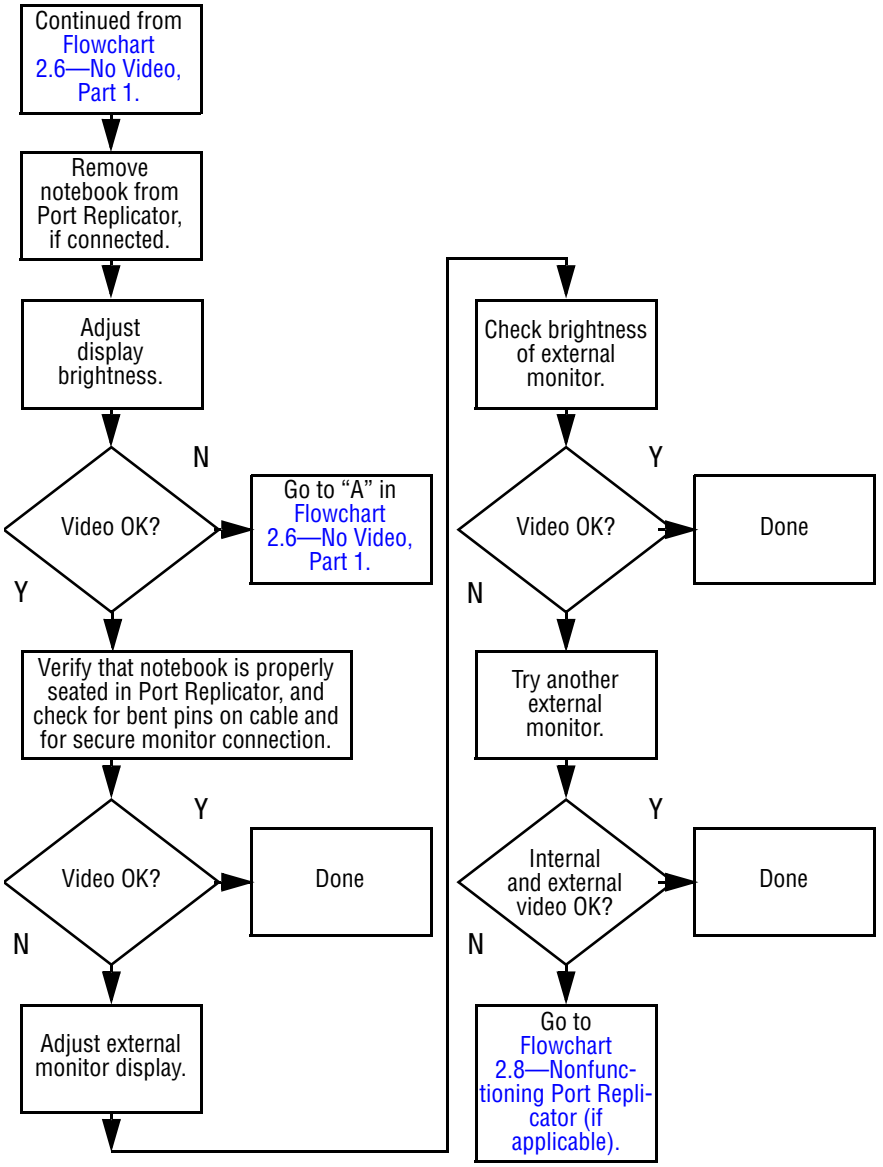
Flowchart 2.5—No Power, Part 4



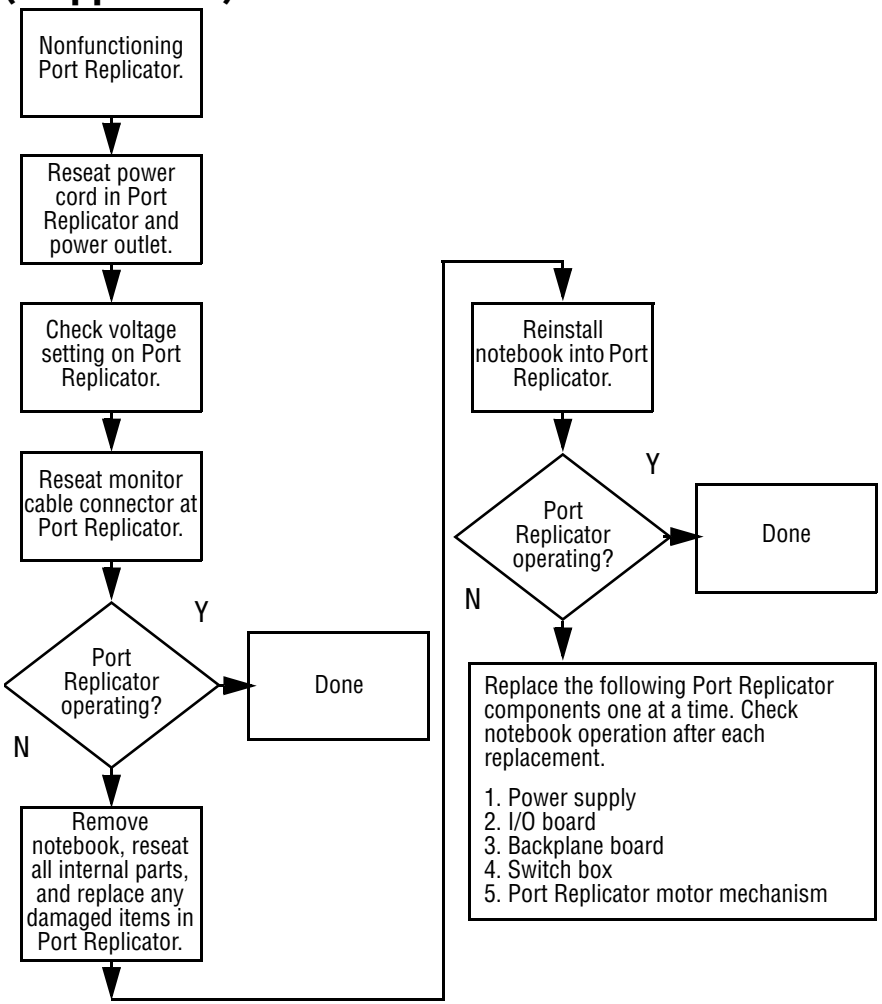
Flowchart 2.6—No Video, Part 1



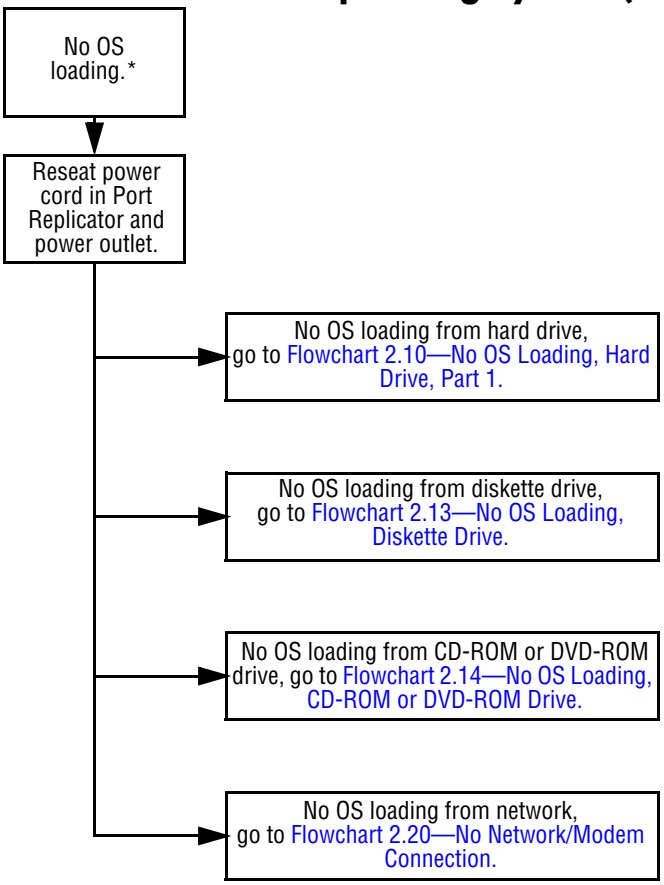
Flowchart 2.7—No Video, Part 2



Flowchart 2.8—Nonfunctioning Port Replicator (if applicable)

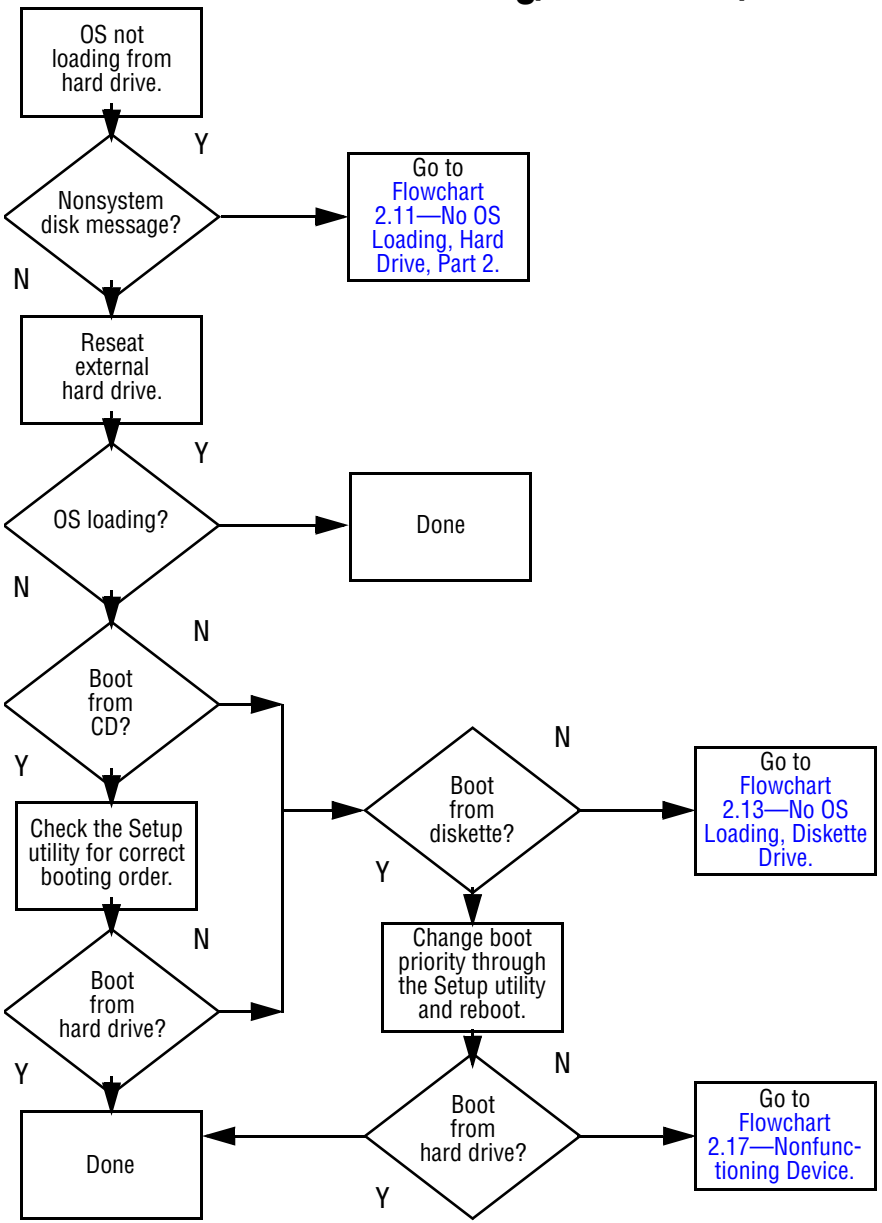


Flowchart 2.9—No Operating System (OS) Loading

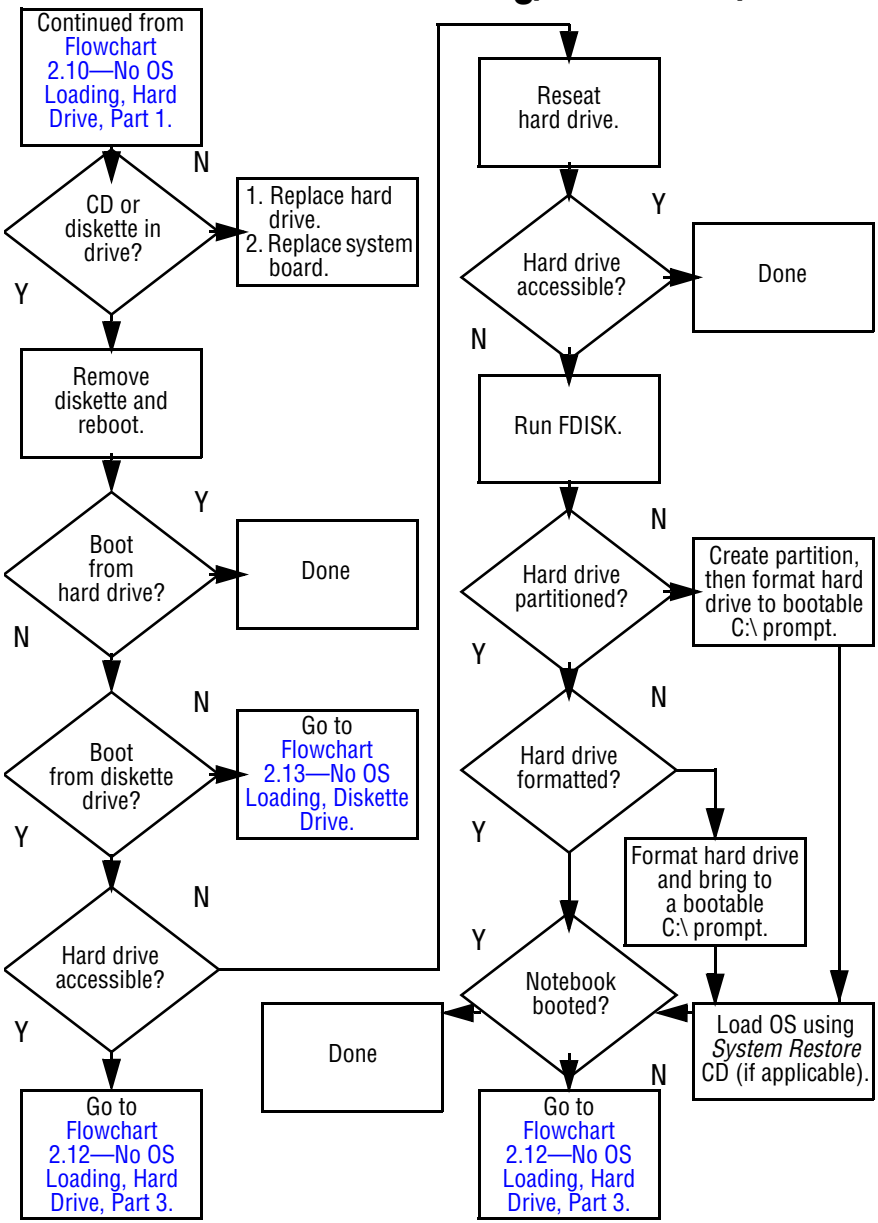


*__NOTE:__ Before beginning to troubleshoot, always check cable connections, cable ends, and drives for bent or damaged pins.

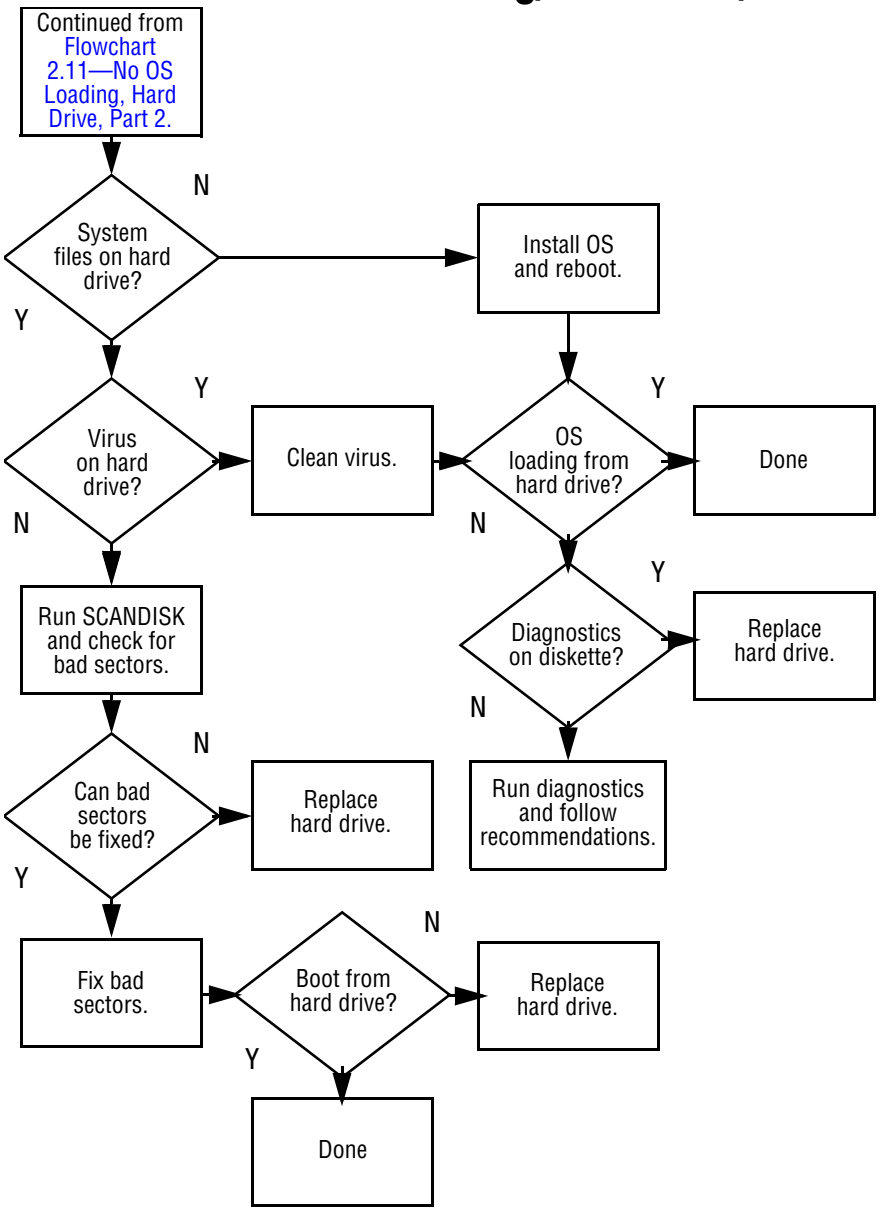
Flowchart 2.10—No OS Loading, Hard Drive, Part 1



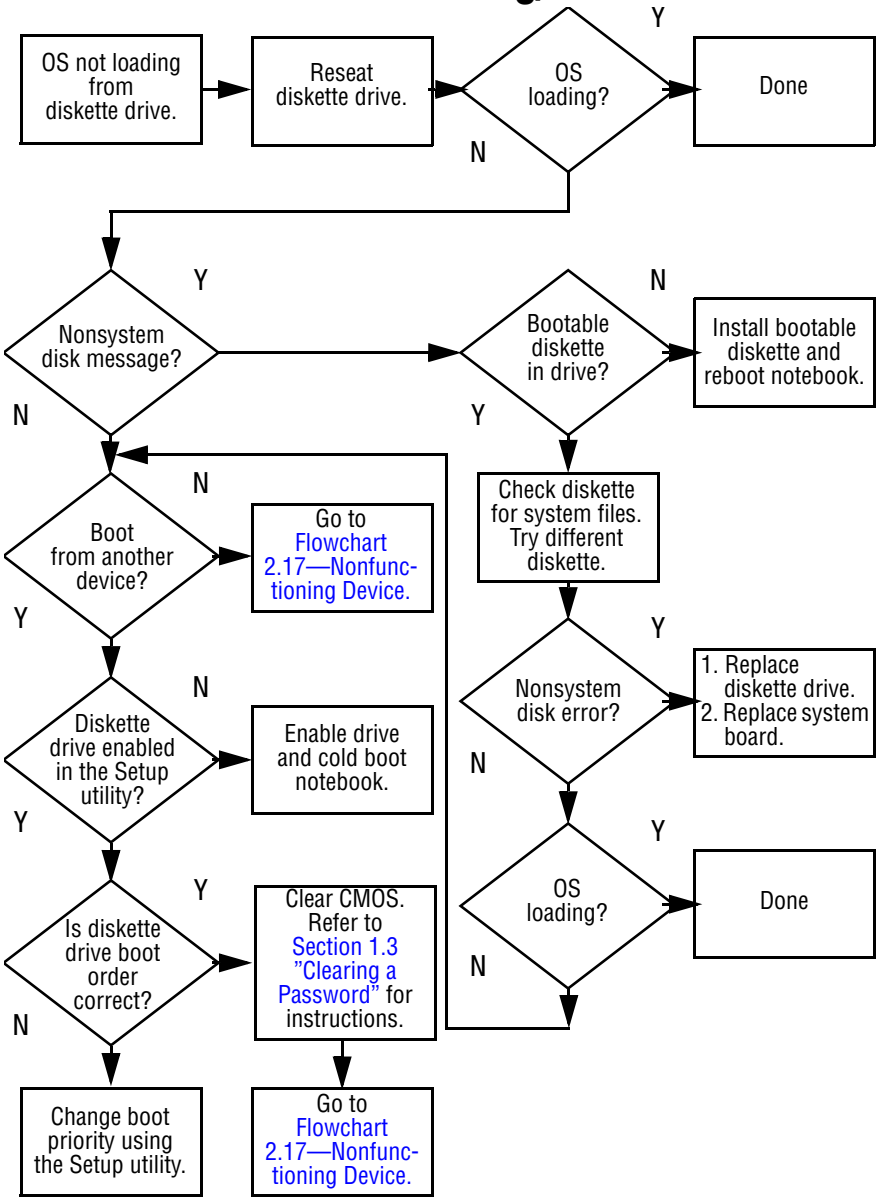
Flowchart 2.11—No OS Loading, Hard Drive, Part 2



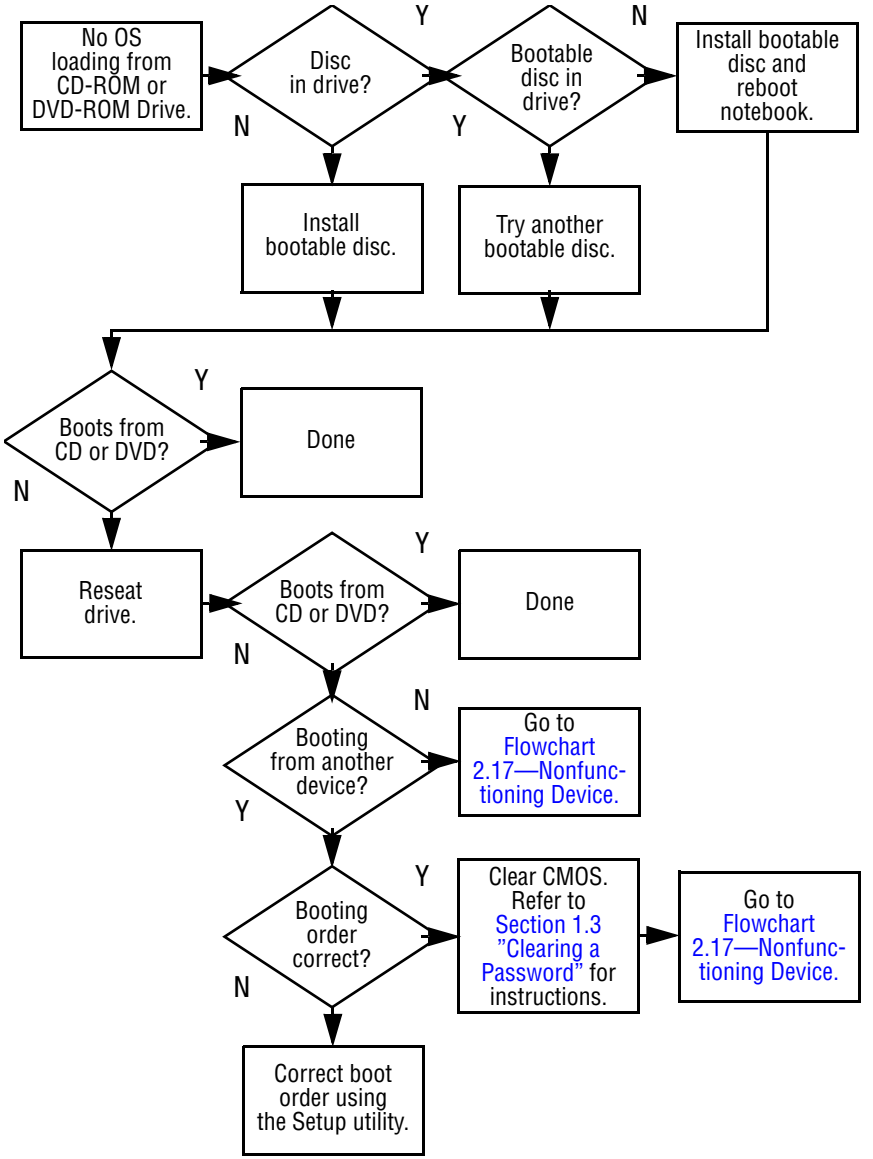
Flowchart 2.12—No OS Loading, Hard Drive, Part 3



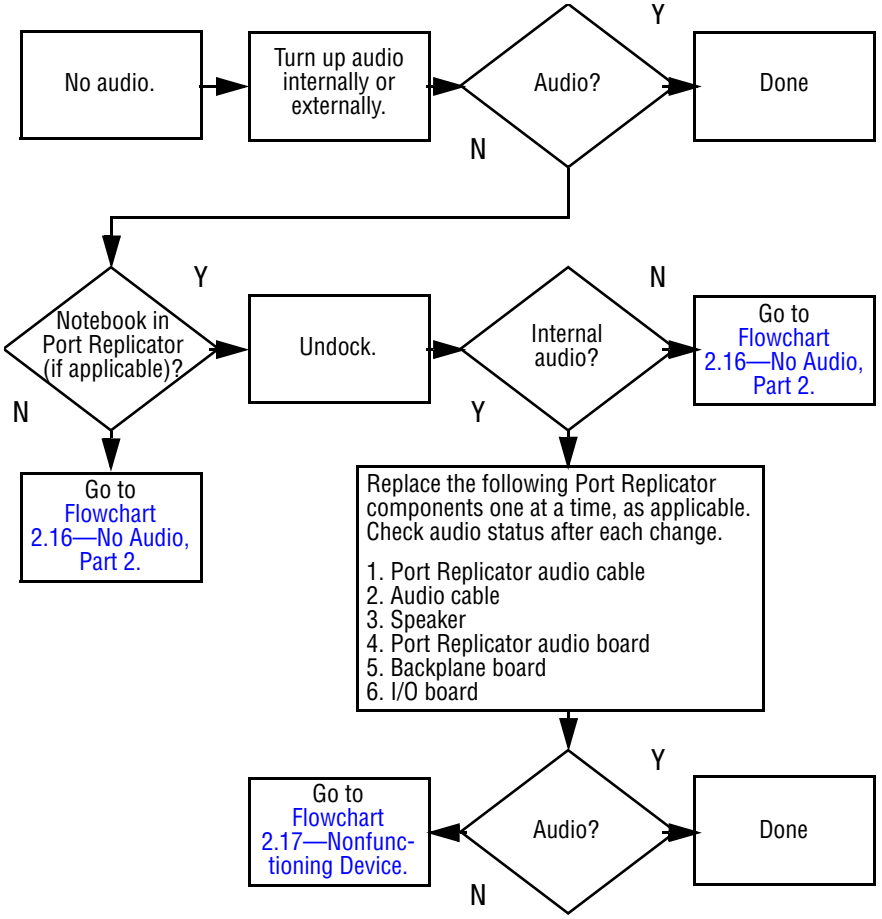
Flowchart 2.13—No OS Loading, Diskette Drive



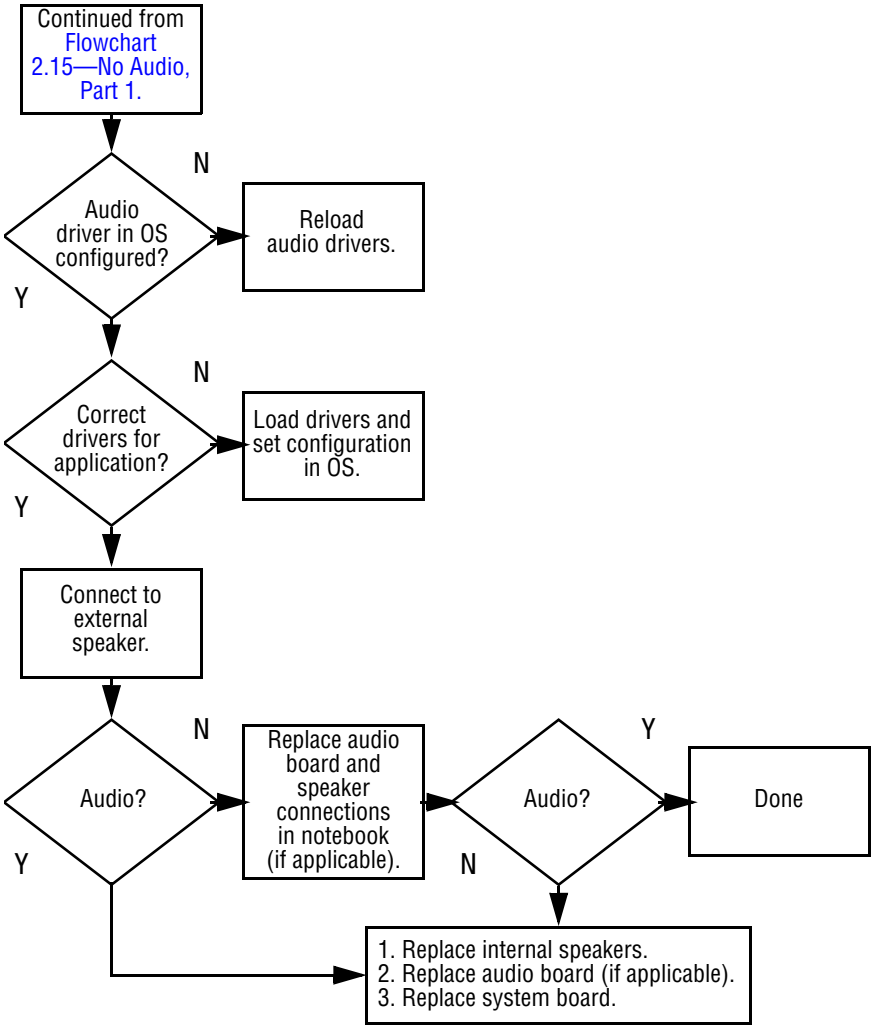
Flowchart 2.14—No OS Loading, CD-ROM or DVD-ROM Drive



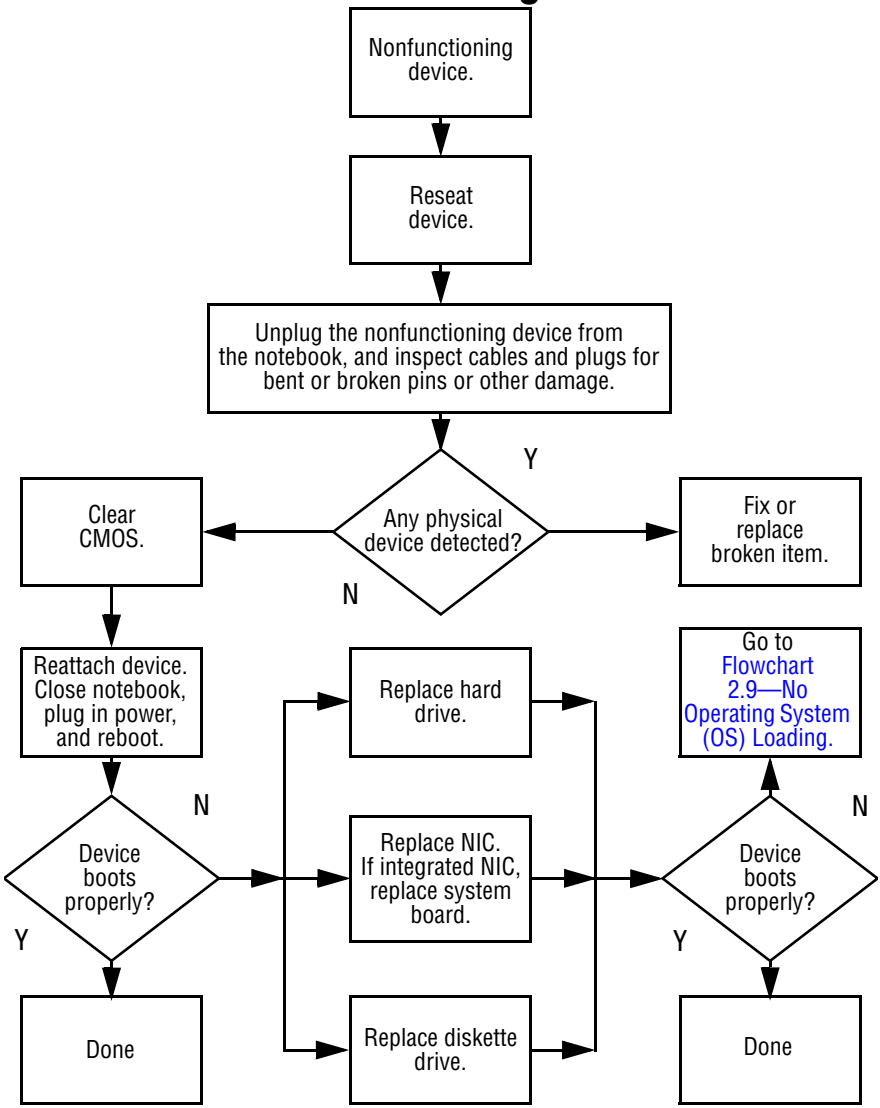
Flowchart 2.15—No Audio, Part 1



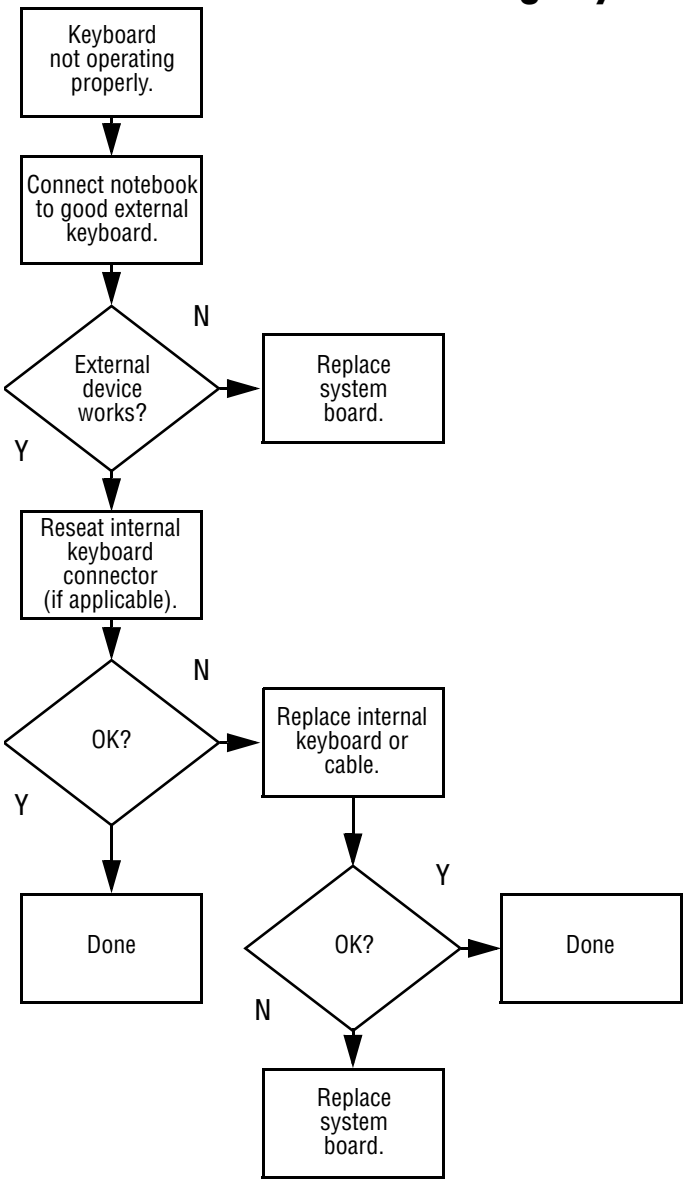
Flowchart 2.16—No Audio, Part 2



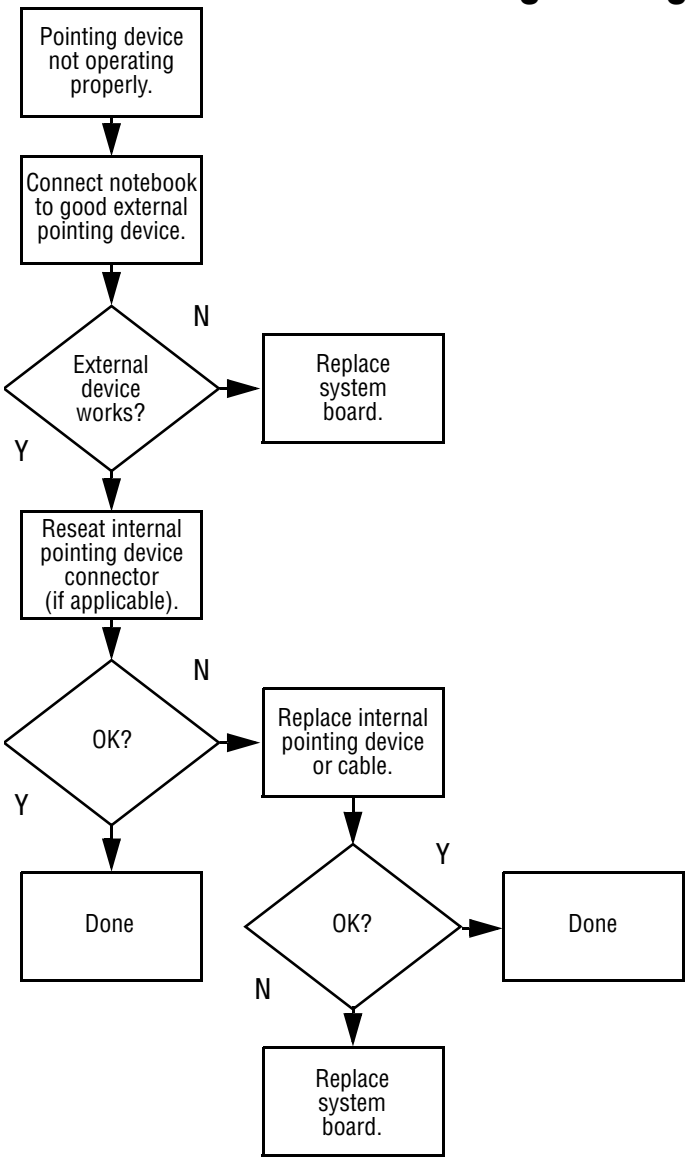
Flowchart 2.17—Nonfunctioning Device



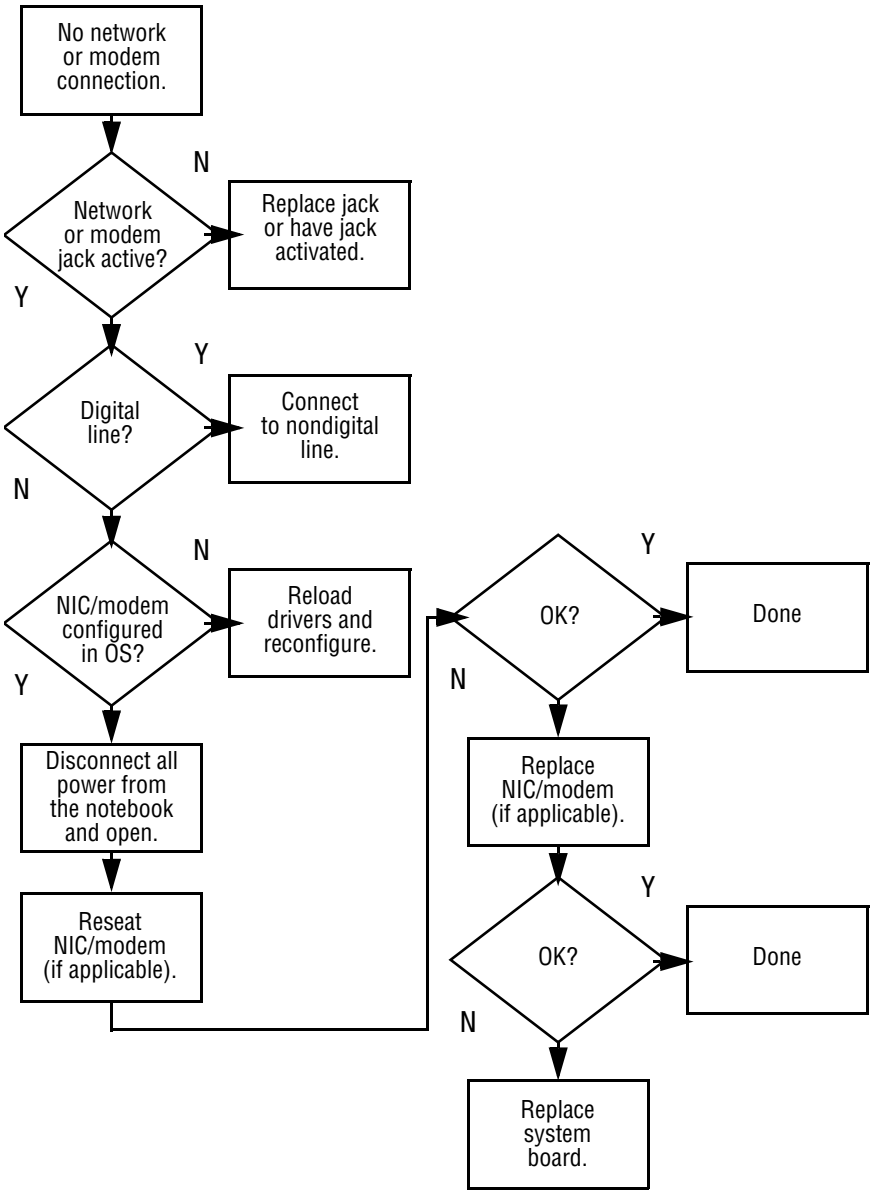
Flowchart 2.18—Nonfunctioning Keyboard



Flowchart 2.19—Nonfunctioning Pointing Device



Flowchart 2.20—No Network/Modem Connection



3

Illustrated Parts Catalog

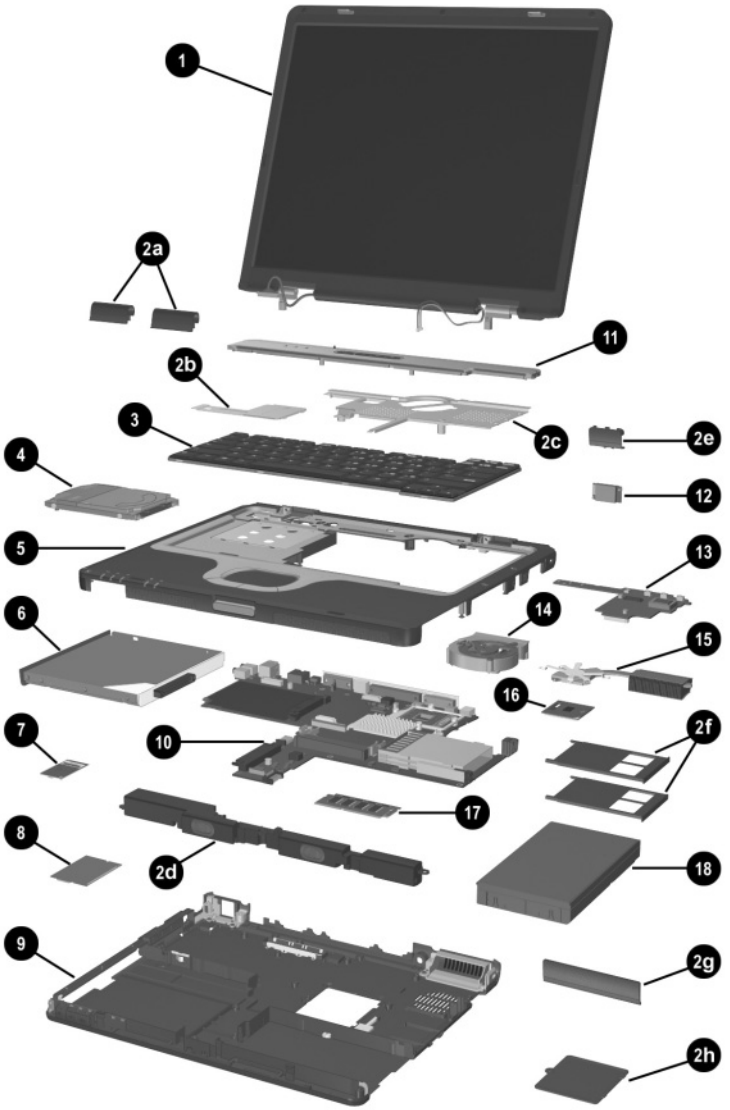
This chapter provides an illustrated parts breakdown and a reference for spare part numbers and option part numbers.

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.

Serial Number Location

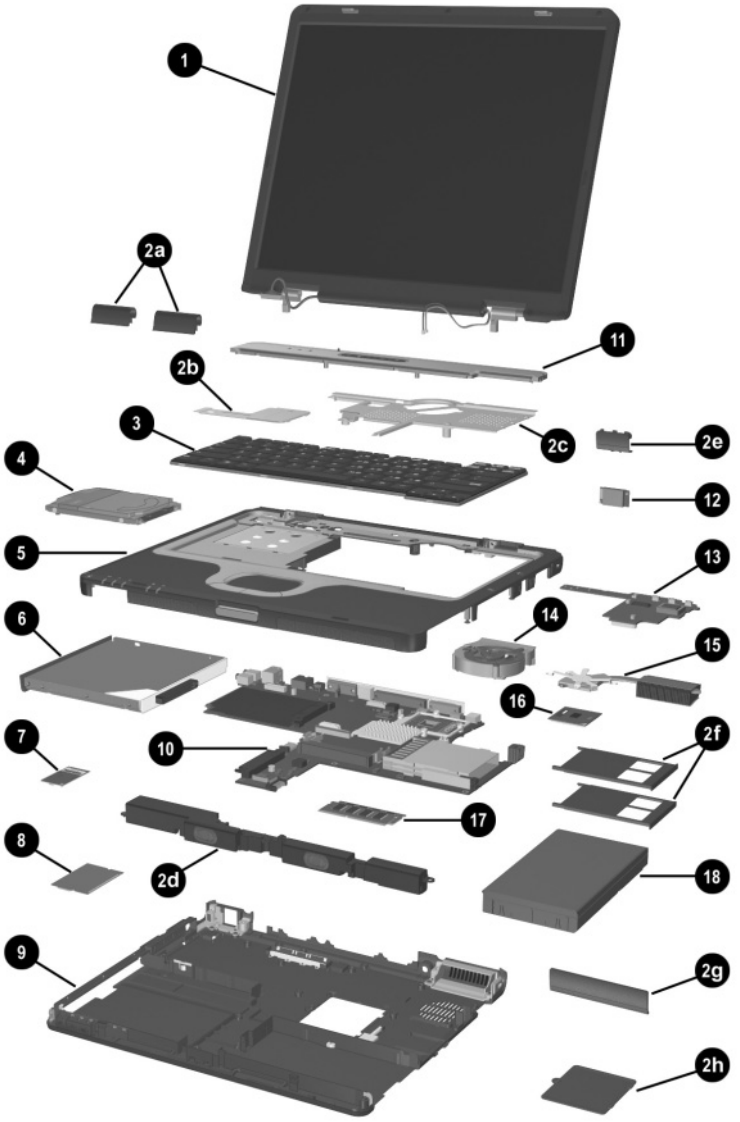
3.2 Notebook Major Components



Notebook Major Components

Table 3-1
Spare Parts: Notebook Major Components

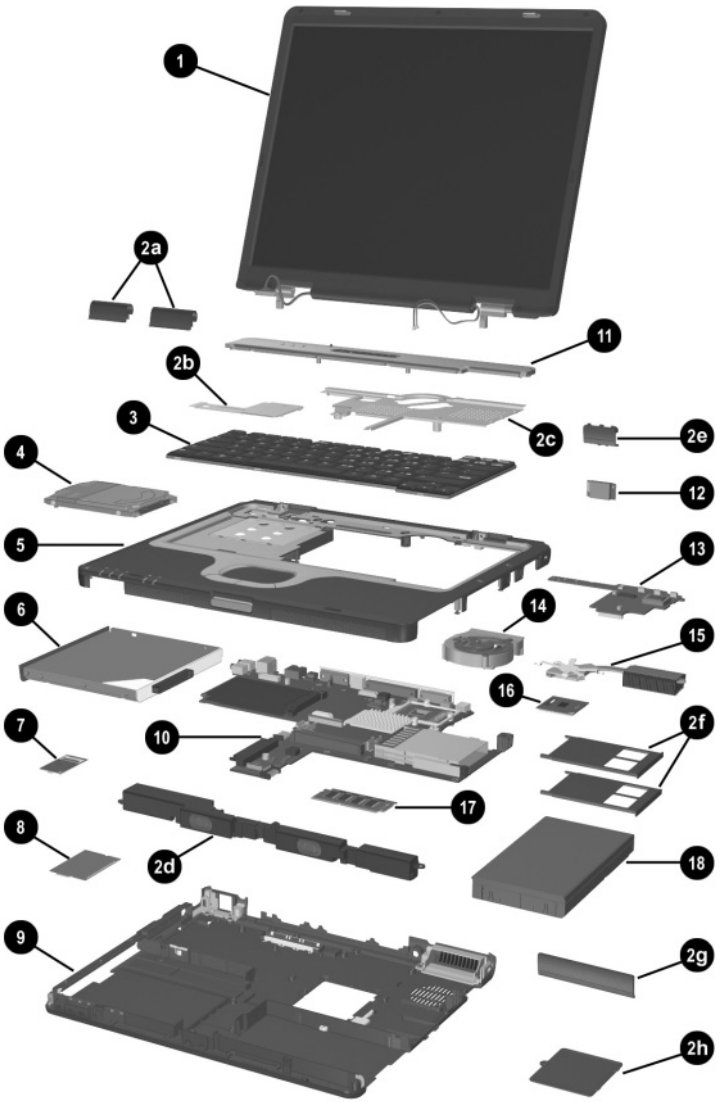
Item	Description	Spare Part Number
1	**Display assemblies**	
	for use with HP Compaq Business Notebook nx5000	
	14.1-inch, TFT, XGA	353384-001
	15.0-inch, TFT, XGA	353385-001
	15.0-inch, TFT, SXGA+WVA	353386-001
	for use with Compaq Presario V1000 notebook PC	
	14.1-inch, TFT, XGA	359916-001
	15.0-inch, TFT, XGA	359917-001
	15.0-inch, TFT, SXGA+WVA	359918-001
	Miscellaneous Plastics Kit (includes the following components)	353393-001
2a	Left and right display hinge covers	
2b	Memory shield	
2c	Keyboard plate	
2d	Speaker assembly	
2e	Bluetooth compartment cover	
2f	PC Card slot space savers (2)	
2g	Battery bezel	
2h	Mini PCI compartment cover	
	Not Shown RTC Battery Left and right display hinges Left and right display hinge screw caps Display rubber bumpers Notebook feet (4)	



Notebook Major Components

Table 3-1
Spare Parts: Notebook Major Components *(Continued)*

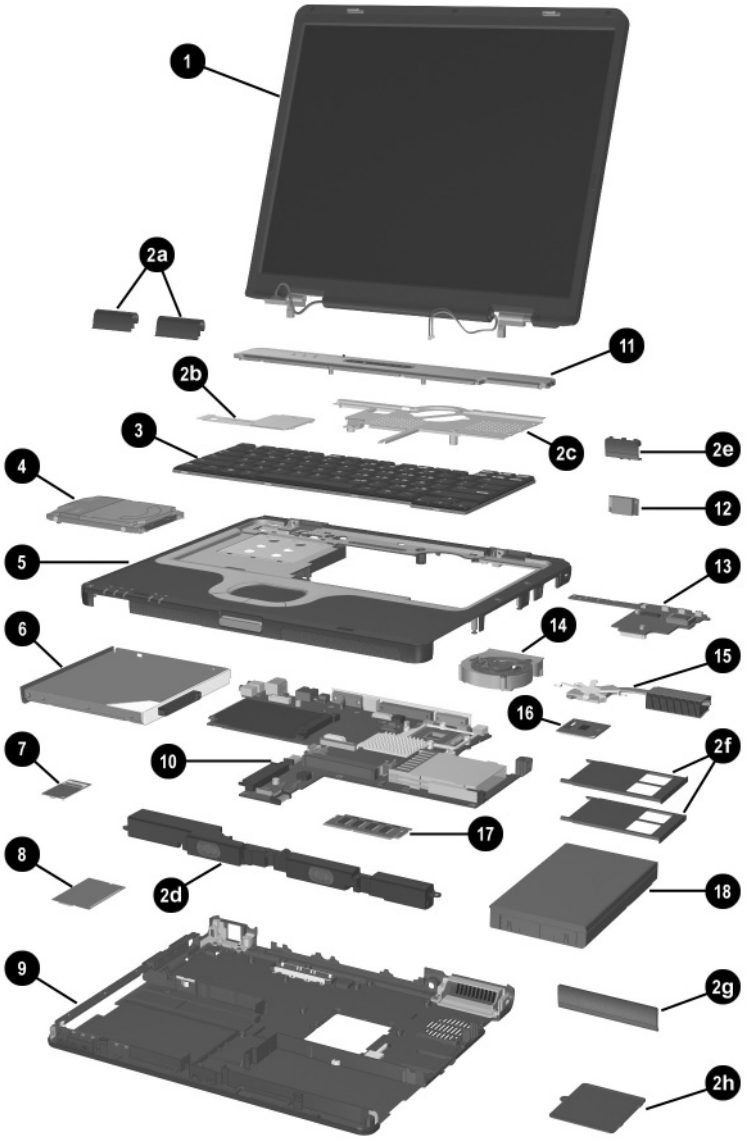
Item	Description			Spare Part Number
3	**Keyboards** (include pointing stick)			
	Brazil	344390-201	Korea	344390-AD1
	Czech Republic	344390-221	Latin America	344390-161
	Denmark	344390-081	Norway	344390-091
	European	344390-A41	Portugal	344390-131
	France	344390-051	Russia	344390-251
	French Canada	344391-121	Saudi Arabia	344390-171
	Germany	344390-041	Slovenia	344390-BA1
	Hungary	344390-211	Spain	344390-071
	Iceland	344390-DD1	Sweden/Finland	344390-B71
	India	344390-D61	Switzerland	344390-BG1
	International	344390-B31	Taiwan	344390-AB1
	Israel	344390-BB1	Thailand	344390-281
	Italy	344390-061	Turkey	344390-141
	Japan	344390-291	United Kingdom	344390-031
			United States	344390-001
4	**Hard drives**			
	60-GB (5400-rpm)			344406-001
	60-GB (4200-rpm)			360291-001
	40-GB (5400-rpm)			344405-001
	40-GB (4200-rpm)			359108-001
	30-GB (4200-rpm)			344404-001
5	**Top Cover** (includes TouchPad)			
	for use with HP Compaq Business Notebook nx5000			353387-001
	for use with Compaq Presario V1000 notebook PC			359919-001



Notebook Major Components

Table 3-1
Spare Parts: Notebook Major Components *(Continued)*

Item	Description	Spare Part Number
6	**MultiBay devices**	
	24X CD-ROM Drive	228746-001
	8X/24X DVD-ROM Drive	251292-001
	4X DVD+RW/R and CD-RW Combo Drive	344256-001
	24X DVD/CD-RW Combo Drive	346789-001
	Diskette drive	241955-001
	8-cell, prismatic, 3.6-Ah, 52-Wh battery pack	267747-001
7	**Modem board** (includes cables)	325521-001
8	**Mini PCI communications cards**	
	802.11a/b/g WLAN card	325525-001
	802.11b/g WLAN card	325526-001
	Wireless LAN cards	
	802.11b (MOW)	345641-001
	802.11b (ROW)	345640-001
9	**Base enclosure, with speakers**	353388-001
10	**System board**	353390-001
11	**LED switch cover**	
	for use with HP Compaq Business Notebook nx5000	353389-001
	for use with Compaq Presario V1000 notebook PC	359920-001
12	**Bluetooth wireless communications board**	
	With cable	348277-001
	Without cable	348276-001
13	**Bottom board**	353392-001
14	**Fan assembly**	345065-001
15	**Heat sink**	344410-001

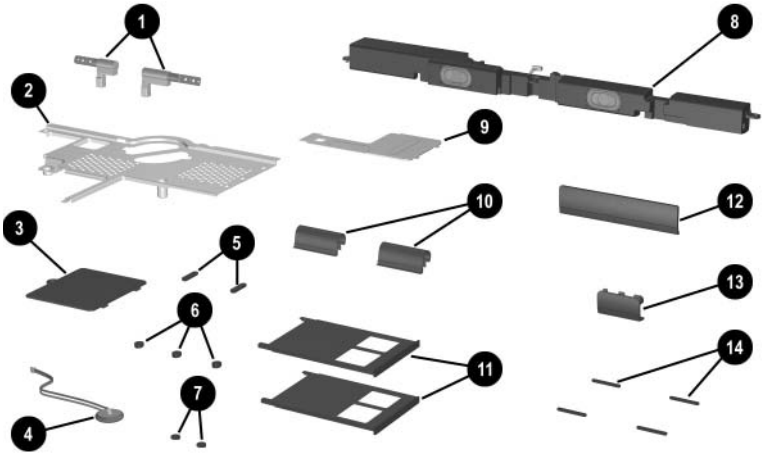


Notebook Major Components

Table 3-1
Spare Parts: Notebook Major Components *(Continued)*

Item	Description	Spare Part Number
16	**Processors**	
	Intel Celeron M processor, 1.4-GHz	359637-001
	Intel Celeron M processor, 1.3-GHz	356599-001
	Intel Celeron M processor, 1.2-GHz	356598-001
	Intel Pentium M processor (2-MB L2 cache), 2.0-GHz	353395-001
	Intel Pentium M processor (2-MB L2 cache), 1.8-GHz	345857-001
	Intel Pentium M processor (2-MB L2 cache), 1.7-GHz	356597-001
	Intel Pentium M processor (2-MB L2 cache), 1.6-GHz	356596-001
	Intel Pentium M processor (2-MB L2 cache), 1.5-GHz	359636-001
	Intel Pentium M processor (1-MB L2 cache), 1.7-GHz	340165-001
	Intel Pentium M processor (1-MB L2 cache), 1.6-GHz	319777-001
	Intel Pentium M processor (1-MB L2 cache), 1.5-GHz	347253-001
	Intel Pentium M processor (1-MB L2 cache), 1.4-GHz	319775-001
17	**Memory modules, 266-MHz**	
	1024-MB DDR	336579-001
	512-MB DDR	336578-001
	256-MB DDR	336577-001
	128-MB DDR	336576-001
18	**Battery packs**	
	6-cell, Li-Ion, 4.4-Ah, 48-Wh	346886-001
	8-cell, Li-Ion, 4.4-Ah, 63-Wh	338669-001
	Not shown	
	LED board (with cable)	353391-001

3.3 Miscellaneous Plastics Kit Components



Miscellaneous Plastics Kit Components

Table 3-2
Miscellaneous Plastics Kit Components
Spare Part Number 353393-001

Item	Description
1	Left and right display hinges
2	Keyboard plate
3	Mini PCI compartment cover
4	RTC Battery
5	Rubber bumpers for side of display (2)
6	Rubber bumpers for top of display (3)
7	Left and right display hinge screw caps (2)

Table 3-2
Miscellaneous Plastics Kit Components
Spare Part Number 353393-001 *(Continued)*

Item	Description
8	Speaker assembly
9	Memory shield
10	Left and right display hinge covers (2)
11	PC Card slot space savers (2)
12	Battery bezel
13	Bluetooth compartment cover
14	Notebook feet

3.4 Hard Drives and MultiBay Devices

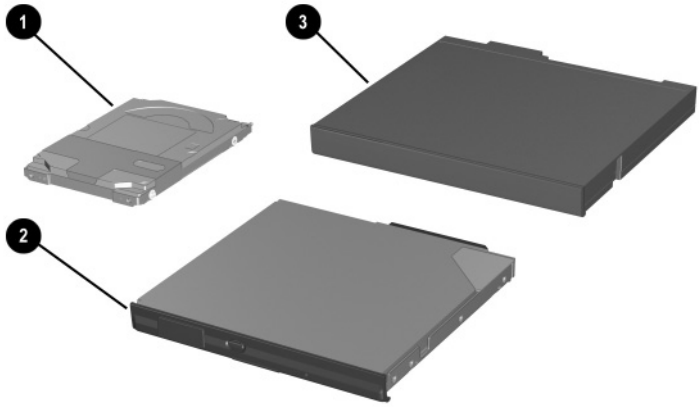


Table 3-3
Hard Drives and MultiBay Devices
Spare Part Information

Item	Description	Spare Part Number
1	**Hard drives** (include hard drive bezel and frame)	
	60-GB (5400-rpm)	344406-001
	60-GB (4200-rpm)	360291-001
	40-GB (5400-rpm)	344405-001
	40-GB (4200-rpm)	359108-001
	30-GB (4200-rpm)	344404-001
2	**MultiBay drives**	
	24X CD-ROM Drive	228746-001
	8X/24X DVD-ROM Drive	251292-001
	4X DVD+RW/R and CD-RW Combo Drive	344256-001
	24X DVD/CD-RW Combo Drive	346789-001
	Diskette drive	241955-001
3	**MultiBay battery pack**	267747-001

3.5 Miscellaneous

Table 3-4
Miscellaneous (not illustrated)
Spare Part Information

Description			Spare Part Number
3-wire power cords			
Australia	246959-011	Italy	246959-061
Brazil	246959-201	Japan	246959-291
Denmark	246959-081	Korea	246959-AD1
Europe/ Middle East/ Africa	246959-021	Switzerland	246959-AG1
		United Kingdom	246959-031
		United States	246959-001
Israel	246959-BB1		
65-watt AC adapter			239704-001
Carrying cases			
Leather, top load, Samsung			325817-001
Leather, top load, SG			325817-002
Nylon, top load, Samsung			325815-001
Nylon, top load, SG			325815-002
Nylon, entry level			325814-001
Port Replicators			
Advanced Port Replicator			339096-001
Simple Port Replicator			339097-001

Table 3-4
Miscellaneous (not illustrated)
Spare Part Information *(Continued)*

Description	Spare Part Number
Security card	345856-001
Screw Kit (includes the following screws; refer to Appendix C, "Screw Listing," for more information on screw specifications and usage.) ■ Phillips PM3.0×4.0 screw ■ Phillips PM3.0×3.5 screw ■ Phillips PM2.5×11.0 screw ■ Phillips PM2.5×9.0 screw ■ Phillips PM2.5×7.0 screw ■ Phillips PM2.5×3.5 screw ■ Phillips PM2.0×5.0 screw ■ Phillips PM2.0×3.0 screw ■ Phillips PM1.5×3.0 screw ■ Torx T8M2.5×5.5 screw ■ Torx T8M2.5×5.0 screw ■ Torx T8M2.5×3.5 flat-head screw ■ Torx T5M3.0×4.0 screw ■ Hex M2.5×9.0 screw ■ Hex M2.0×10.0 alignment pin	353394-001
USB mouse, carbon	164999-001

4

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
- 5.0-mm socket for system board standoffs
- Flat-bladed 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

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.

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.

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, a 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 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 might not be affected at all and can work perfectly throughout a normal life cycle. Or the device might 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 them 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 conveyors 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 Notebook Precautions

Use the following grounding precautions with notebooks:

- Cover the notebook with approved static-shielding material (refer to Table 4-2 Static-Shielding Materials).
- 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, use only 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 near static-free notebooks.
- 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 with a grounded notebook.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±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 while standing 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
- 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

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

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

5

Removal and Replacement Procedures

This chapter provides removal and replacement procedures.

There are 62 screws, standoffs, and pins that must be loosened, removed, or replaced when servicing the notebook. Make special note of each screw size and location during removal and replacement.

Refer to Appendix C, "Screw Listing," for detailed information on removable screw, standoff, and pin sizes, locations, and usage.

5.1 Serial Number

When ordering parts or requesting information, provide the notebook serial number and model number located on the bottom of the notebook.

Serial Number Location

5.2 Disassembly Sequence Chart

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

Disassembly Sequence Chart

Section	Description	# of Screws Removed
5.3	Preparing the Notebook for Disassembly	
	Battery pack Hard drive	0 2 to remove, 6 to disassemble
5.4	Notebook Feet	0

Section	Description	# of Screws Removed
5.5	Mini PCI Communications Board	1 captive screw
WARNING:	To prevent an unresponsive system and the display of a warning message, install only a Mini PCI device authorized for use in your notebook by the governmental agency that regulates wireless devices in your country. If you install a device and then receive a warning message, remove the device to restore notebook funtionality. Then contact Customer Care.	0
5.7	Bluetooth Wireless Communications Board	2 1 captive screw
5.8	Keyboard	2
5.9	Switch Cover	2
5.10	Modem Board	2
5.11	Memory Module	0
5.12	Keyboard Plate	0

Disassembly Sequence Chart *(Continued)*		
5.13	Fan Assembly	2
5.14	Heat Sink	4
5.15	Processor	1 locking screw
5.16	Display Assembly	4
5.17	Top Cover	17
5.18	RTC Battery	0
5.19	Speakers	1
5.20	LED Board	1
5.21	Bottom Board	2
5.22	System Board	10 screws, 2 standoffs

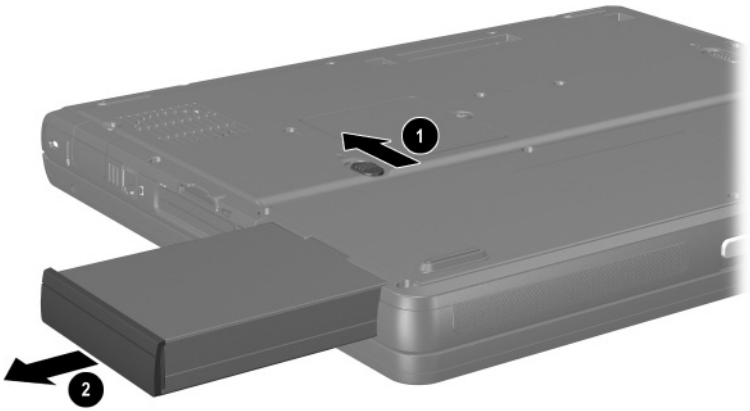
5.3 Preparing the Notebook for Disassembly

Before you begin any removal or installation procedures:

1. Shut down the notebook. If you are not sure whether the notebook is off or in Hibernation, turn the computer on and then shut it down through the operating system.
2. Disconnect all external devices connected to the notebook.
3. Disconnect the power cord.

Spare Part Number Information	
Battery packs	
6-cell, Li-Ion, 4.4-Ah, 48-Wh	346886-001
8-cell, Li-Ion, 4.4-Ah, 63-Wh	338669-001

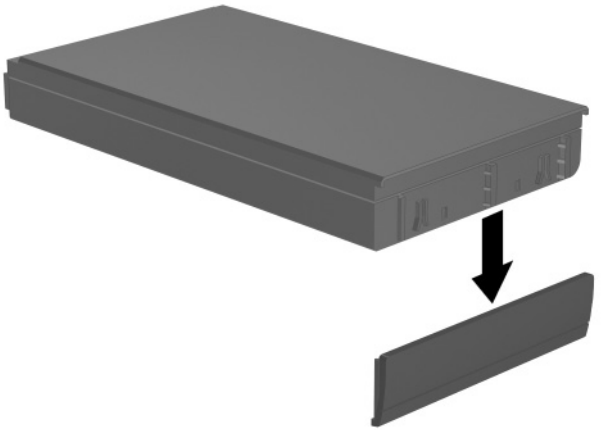
4. Remove the battery pack:
   a. Turn the notebook upside down, with the front panel toward you.
   b. Slide and hold the battery release latch ❶ toward the back of the notebook.
   c. Use the notch in the battery pack to slide the battery pack ❷ away from the notebook.
   d. Remove the battery pack.



Removing the Battery Pack

5. Remove the battery bezel by sliding it down and off of the battery pack.

The battery bezel is included in the Miscellaneous Plastics Kit, spare part number 353393-001.

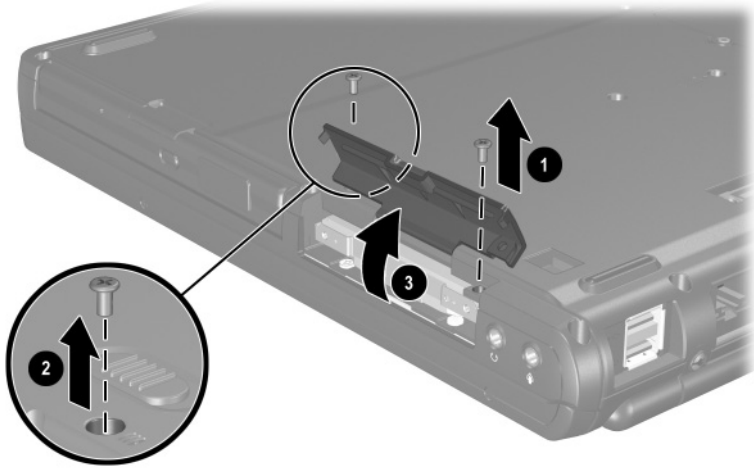


Removing the Battery Bezel

Reverse the above procedure to install the battery pack and battery bezel.

Spare Part Number Information	
Hard drives (include hard drive frame and connector)	
60-GB (5400-rpm)	344406-001
60-GB (4200-rpm)	360291-001
40-GB (5400-rpm)	344405-001
40-GB (4200-rpm)	359108-001
30-GB (4200-rpm)	344404-001

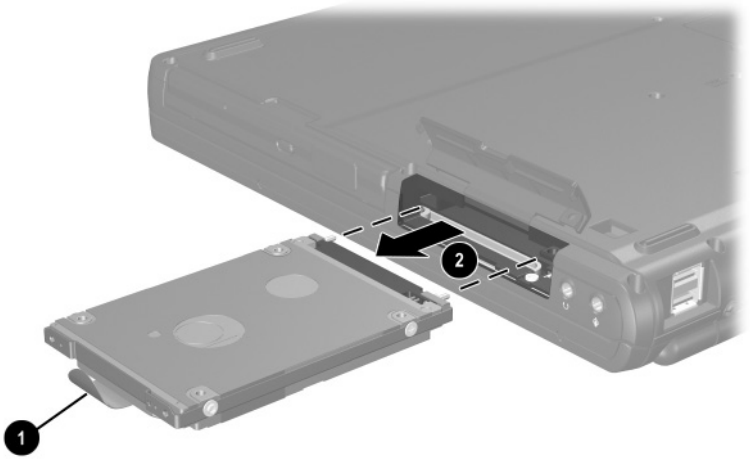
6. Remove the hard drive by following these steps:
   a. Turn the notebook upside down, with the rear panel toward you.
   b. Remove the PM2.5×4.0 retaining screw ❶ that secures the hard drive door to the notebook.
   c. Remove the PM3.0×3.0 hard drive security screw ❷ that secures the hard drive to the notebook.
   d. Lift the hard drive cover ❸ and swing it back.



Removing the Hard Drive Screws

e. Use the Mylar tab ❶ to pull the hard drive ❷ out of the bay.

f. Remove the hard drive.



Removing the Hard Drive

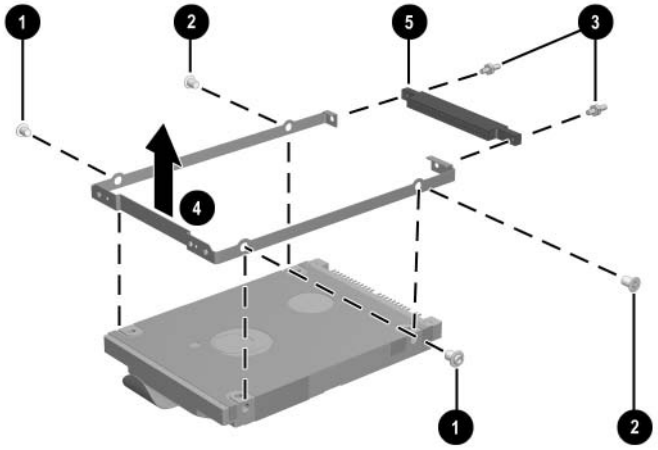
CAUTION: The hard drive should be disassembled only if it is damaged and must be repaired. Unnecessary disassembly of the hard drive can result in damage to the hard drive and loss of information.

g. Remove the two PM3.0×3.5 screws ❶ and the two T5M3.0×4.0 screws ❷ that secure the hard drive to the hard drive frame.

h. Use a 4.0-mm socket to remove the two M2.0×10.0 alignment pins ❸ that secure the hard drive to the hard drive frame.

i. Remove the hard drive from the hard drive frame ❹.

j. Remove the hard drive connector ❺ from the hard drive.



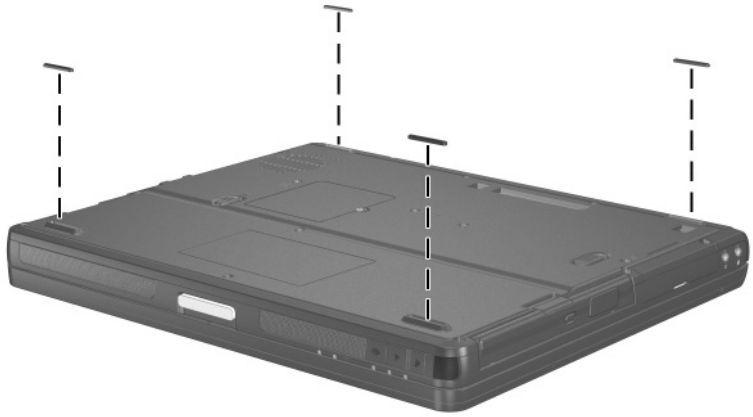
Removing the Hard Drive Frame and Connector

Reverse the above procedure to reassemble and install the hard drive.

5.4 Notebook Feet

The notebook feet are adhesive-backed rubber pads. The notebook feet are included in the Miscellaneous Plastics Kit, spare part number 353393-001.

» Attach the notebook feet to the base enclosure as illustrated below.



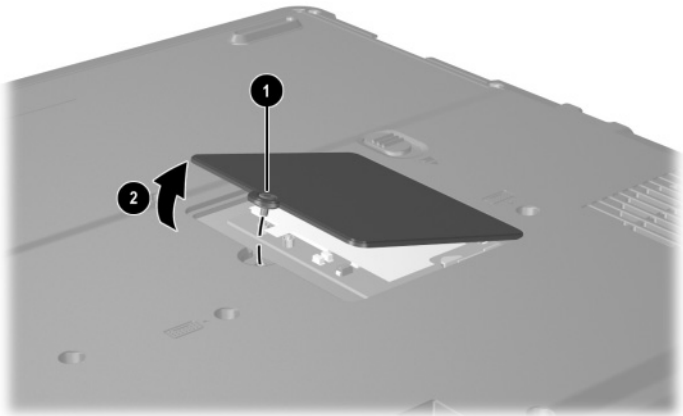
Replacing the Notebook Feet

5.5 Mini PCI Communications Board

Spare Part Number Information	
Mini PCI communications cards	
802.11a/b/g LAN card	325525-001
802.11b/g LAN card	325526-001
Wireless LAN cards	
802.11b (MOW)	345641-001
802.11b (ROW)	345640-001

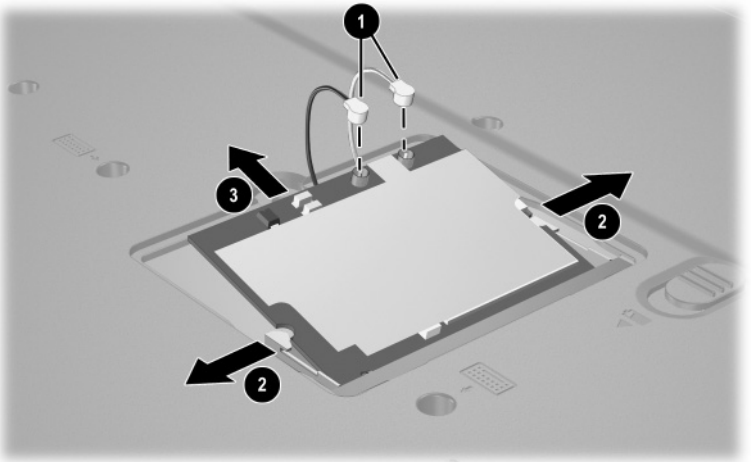
1. Prepare the notebook for disassembly (Section 5.3).
2. Turn the notebook upside down, with the rear toward you.
3. Loosen the PM2.5×3.5 screw ❶ that secures the Mini PCI compartment cover to the notebook.
4. Lift the left side of the cover ❷ up and swing it to the right.
5. Remove the cover.

The Mini PCI compartment cover is included in the Miscellaneous Plastics Kit, spare part number 353393-001.



Removing the Mini PCI Compartment Cover

6. Disconnect the 2 antenna cables ❶ from the Mini PCI communications board. Note that the longer cable connects to the rear antenna terminal and the shorter antenna cable connects to the front antenna terminal.
7. Spread the retaining tabs ❷ that secure the Mini PCI communications board to the socket. The board rises up.
8. Pull the board ❸ away from the socket at a 45-degree angle.



Disconnecting the Cables and Removing the Mini PCI Communications Board

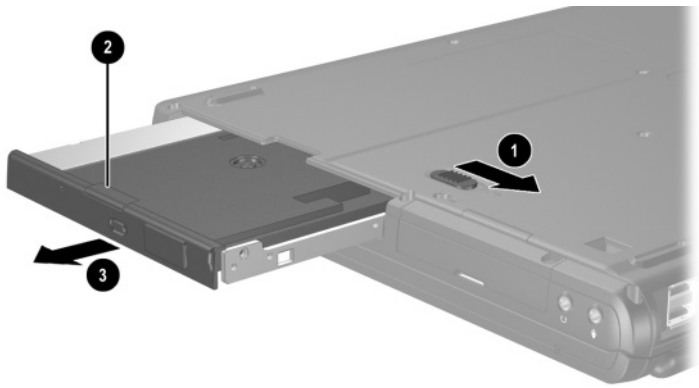
Reverse the above procedure to install a Mini PCI communications board.

WARNING: To prevent an unresponsive system and the display of a warning message, install only a Mini PCI device authorized for use in your notebook by the governmental agency that regulates wireless devices in your country. If you install a device and then receive a warning message, remove the device to restore notebook funtionality. Then contact Customer Care.

5.6 MultiBay Device

Spare Part Number Information	
MultiBay devices	
24X CD-ROM Drive	228746-001
8X/24X DVD-ROM Drive	251292-001
24X DVD+RW/R and CD-RW Combo Drive	344256-001
24X DVD/CD-RW Combo Drive	346789-001
Diskette drive	241955-001
8-cell, prismatic, 3.6-Ah, 52-Wh battery pack	267747-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Turn the notebook upside down, with the left side toward you.
3. Slide and hold the MultiBay release latch to the right ❶.
4. Pull on the notch ❷ in the MultiBay device bezel and remove the device ❸ from the notebook.



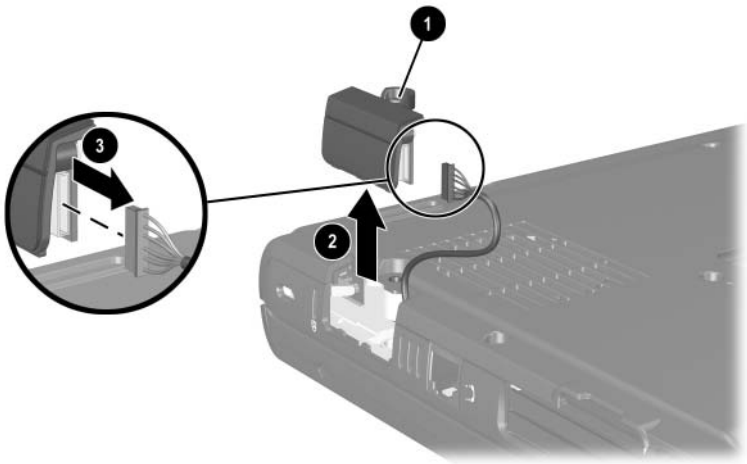
Removing a MultiBay Device

Reverse the above procedure to install a MultiBay device.

5.7 Bluetooth Wireless Communications Board

Spare Part Number Information	
Bluetooth wireless communications board	
With cable	348277-001
Without cable	348276-001

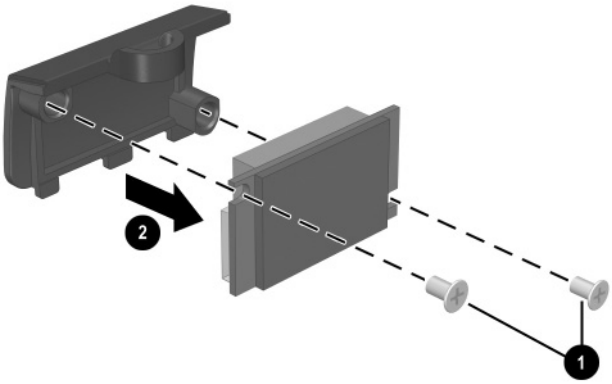
1. Prepare the notebook for disassembly (Section 5.3).
2. Turn the notebook upside down, with the right side toward you.
3. Loosen the PM2.0×5.0 screw ❶ that secures the Bluetooth cover to the notebook.
4. Remove the cover ❷ from the notebook as far as the cable will allow.
5. Disconnect the cable ❸ from the Bluetooth board.



Removing the Bluetooth Cover

6. Remove the two PM1.5×3.0 screws ❶ that secure the Bluetooth board to the Bluetooth cover.
7. Remove the board ❷ from the cover.

The Bluetooth cover is included in the Miscellaneous Plastics Kit, spare part number 353393-001.



Removing the Bluetooth Board

Reverse the above procedure to install a Bluetooth board.

5.8 Keyboard

Spare Part Number Information			
Keyboards (include pointing stick)			
Brazil	344390-201	Latin America	344390-161
Czech Republic	344390-221	Norway	344390-091
Denmark	344390-081	Portugal	344390-131
European	344390-A41	Russia	344390-251
France	344390-051	Saudi Arabia	344390-171
French Canada	344390-121	Slovenia	344390-BA1
Germany	344390-041	Spain	344390-071
Hungary	344390-211	Sweden/Finland	344390-101
Iceland	344390-DD1	Switzerland	344390-111
India	344390-D61	Taiwan	344390-AB1
International	344390-B31	Thailand	344390-281
Israel	344390-BB1	Turkey	344390-141
Italy	344390-061	United Kingdom	344390-031
Japan	344390-291	United States	344390-001
Korea	344390-AD1		

1. Prepare the notebook for disassembly (Section 5.3).
2. Turn the notebook upside down, with the front toward you.

3. Remove the two T8M2.5×9.0 screws that secure the keyboard to the notebook.

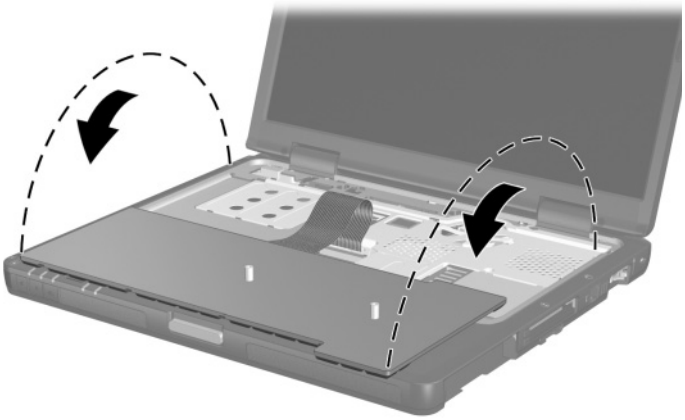
Removing the Keyboard Screws

4. Turn the notebook right-side up, with the front toward you.
5. Open the notebook.

6. Slide the 4 tabs on the top edge of the keyboard toward you.

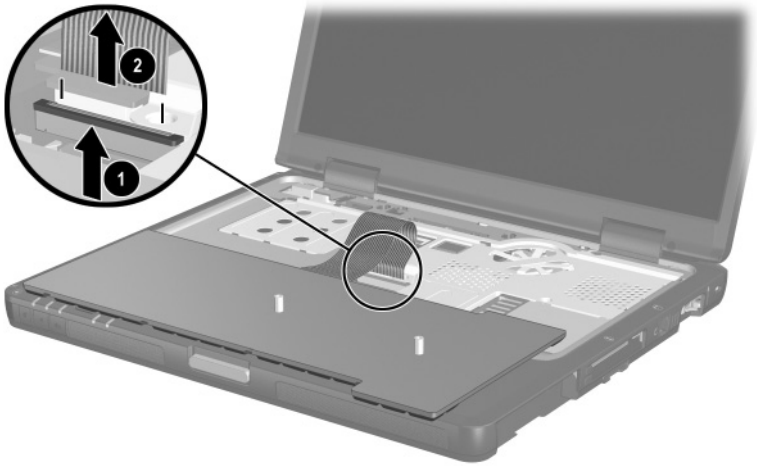
Releasing the Keyboard Latches

7. Lift the rear edge of the keyboard up and swing it toward you until it rests on the palm rest.



Releasing the Keyboard

8. Release the ZIF connector ❶ to which the keyboard cable is attached and disconnect the cable ❷.



Disconnecting the Keyboard Cable

Reverse the above procedure to install the keyboard.

5.9 Switch Cover

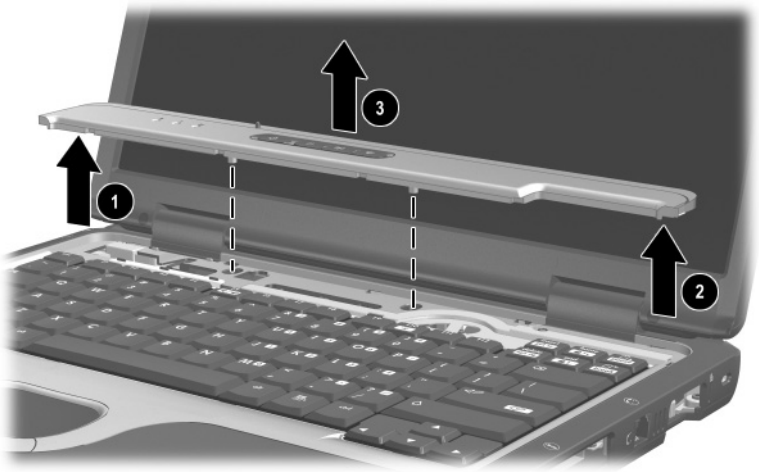
Spare Part Number Information	
LED switch cover	
for use with HP Compaq Business Notebook nx5000	353389-001
for use with Compaq Presario V1000 notebook PC	359920-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.8).
3. Close the notebook.
4. Turn the notebook upside down, with the rear panel toward you.
5. Remove the two T8M2.5×9.0 screws that secure the switch cover to the notebook.

Removing the Switch Cover Screws

6. Turn the notebook right-side up, with the front toward you.

7. Open the notebook.
8. Using a flat-bladed tool, lift up the left ❶ and right ❷ ends of the switch cover to disengage it from the notebook.
9. Remove the switch cover ❸.



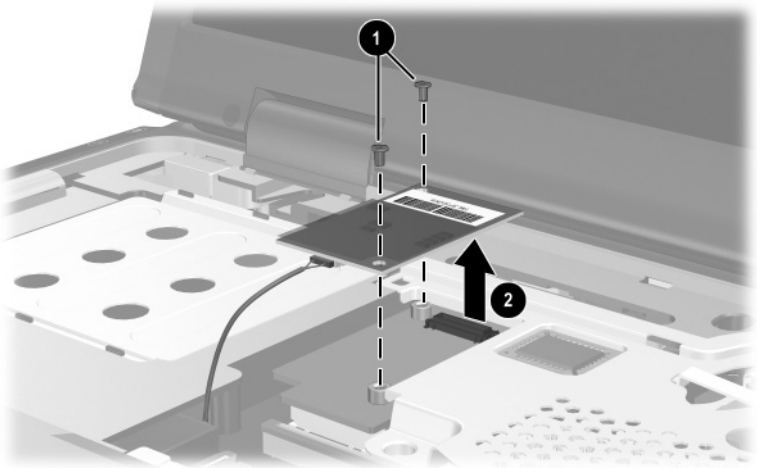
Removing the Switch Cover

Reverse the above procedure to install the switch cover.

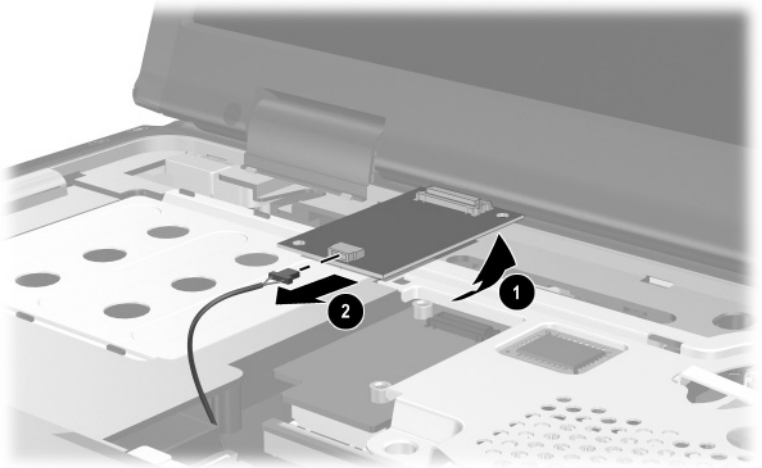
5.10 Modem Board

Spare Part Number Information	
Modem board (includes cable)	325521-001

1. Prepare the notebook for disassembly (Section 5.3).
2. Release the keyboard (Section 5.8).
3. Remove the switch cover (Section 5.9).
4. Remove the two PM2.0×3.0 screws ❶ that secure the modem board to the notebook.
5. Lift the rear edge of the modem board ❷ to disconnect it from the system board.



6. Turn the modem board ❶ over and disconnect the modem cable ❷ from the modem board.
7. Remove the modem board.



Removing the Modem Board

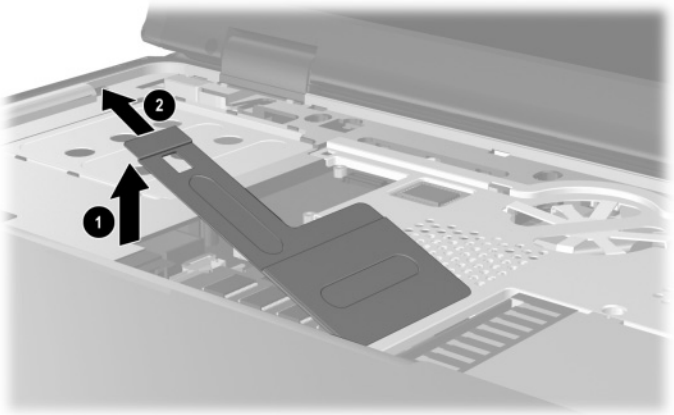
Reverse the above procedure to install the modem board.

5.11 Memory Module

Spare Part Number Information	
Memory modules, 266-MHz	
1024-MB DDR	336579-001
512-MB DDR	336578-001
256-MB DDR	336577-001
128-MB DDR	336576-001

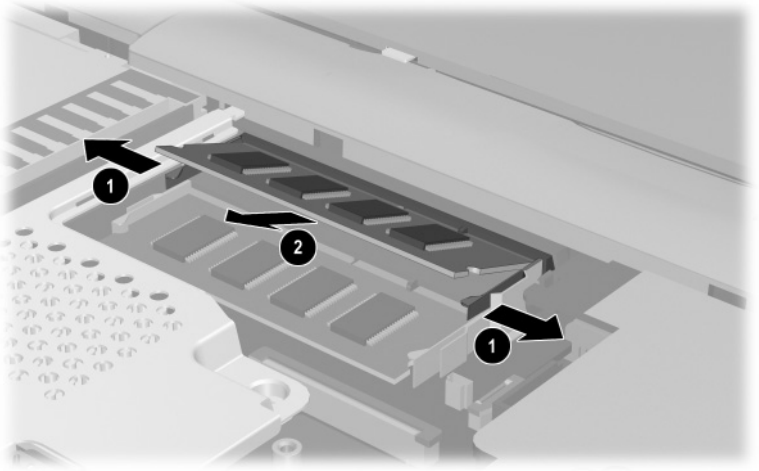
1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.8).
3. Press in on the latch to release the memory shield and lift the left side of the memory shield ❶ until it rests at a 45-degree angle.
4. Slide the shield to the left ❷ to remove it.

The memory shield is included in the Miscellaneous Plastics Kit, spare part number 353393-001.



Removing the Memory Shield

5. Spread the retaining tabs ❶ that secure the memory module to the socket. The module rises up.
6. Pull the module ❷ away from the socket at a 45-degree angle.



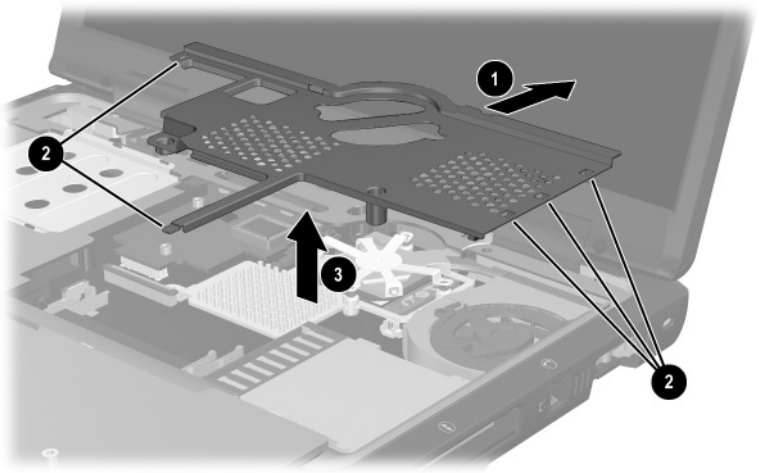
Removing a Memory Module

Reverse the above procedure to install a memory module.

5.12 Keyboard Plate

The keyboard plate is included in the Miscellaneous Plastics Kit, spare part number 353393-001.

1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.8).
3. Remove the switch cover (Section 5.9).
4. Remove the memory shield (Section 5.11).
5. Slide the keyboard plate toward the back of the notebook ❶ to disengage the plate tabs from the slots ❷ in the top cover, and then lift the plate straight up ❸ to remove it.



Removing the Keyboard Plate

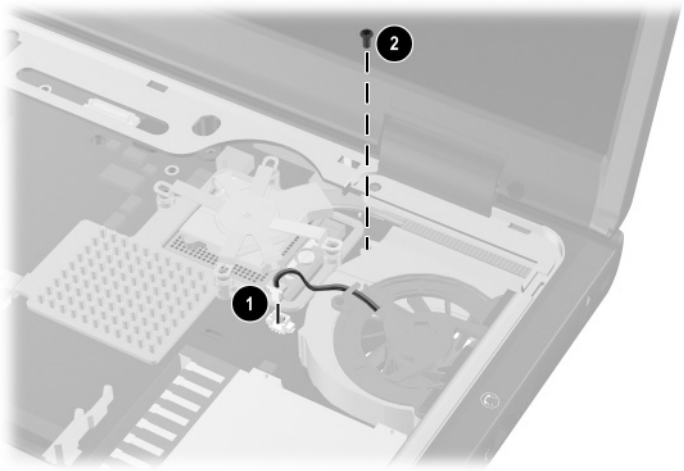
Reverse the above procedure to install the keyboard plate.

5.13 Fan Assembly

Spare Part Number Information	
Fan assembly	345065-001

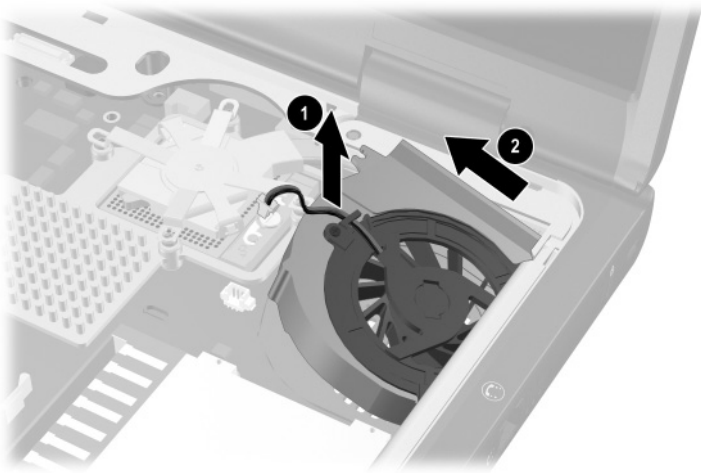
1. Prepare the notebook for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.8).
3. Remove the switch cover (Section 5.9).
4. Remove the memory shield (Section 5.11).
5. Remove the keyboard plate (Section 5.12).
6. Turn the notebook upside down with the rear side toward you and remove the T8M2.5x5.0 screw that secures the fan assembly to the notebook.

7. Turn the notebook right-side up and open it.
8. Disconnect the fan cable ❶ from the system board.
9. Remove the PM2.5×7.0 screw ❷ that secures the fan assembly to the notebook.



Removing the Fan Assembly Screws

10. Lift the left side of the fan assembly ❶ until it rests at an angle.
11. Slide the fan assembly up and to the left ❷ to remove it from the notebook.



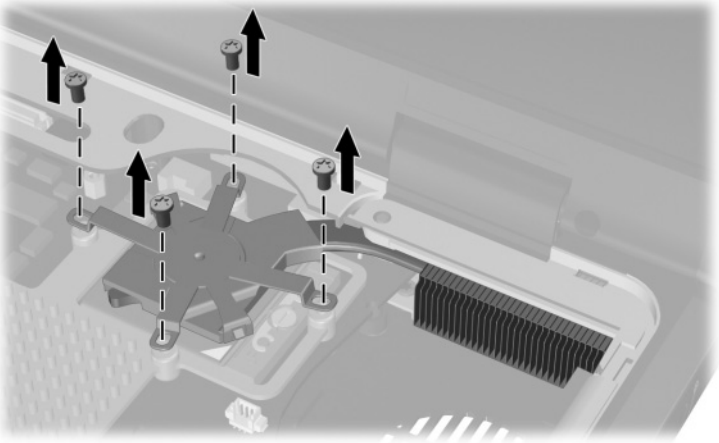
Removing the Fan Assembly

Reverse the above procedure to install the fan assembly.

5.14 Heat Sink

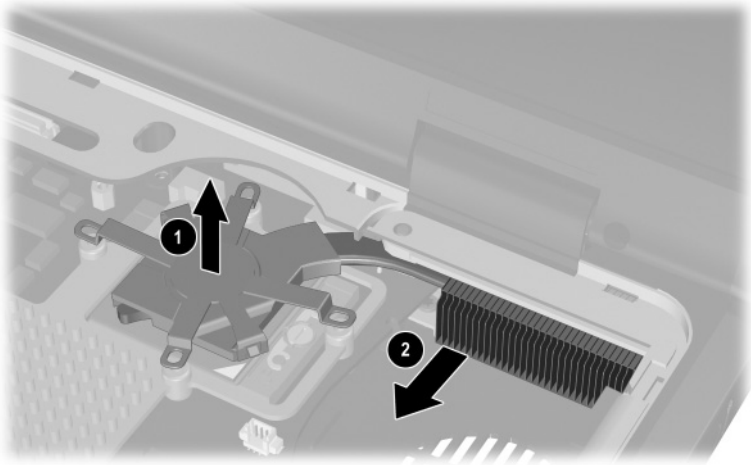
Spare Part Number Information	
Heat sink	344410-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ Keyboard (Section 5.8)
   - ❏ Switch cover (Section 5.9)
   - ❏ Memory shield (Section 5.12)
   - ❏ Keyboard plate (Section 5.11)
   - ❏ Fan assembly (Section 5.13)
2. Remove the four T8M2.5×5.0 screws that secure the heat sink bracket to the system board in the order indicated on top of the heat sink bracket.



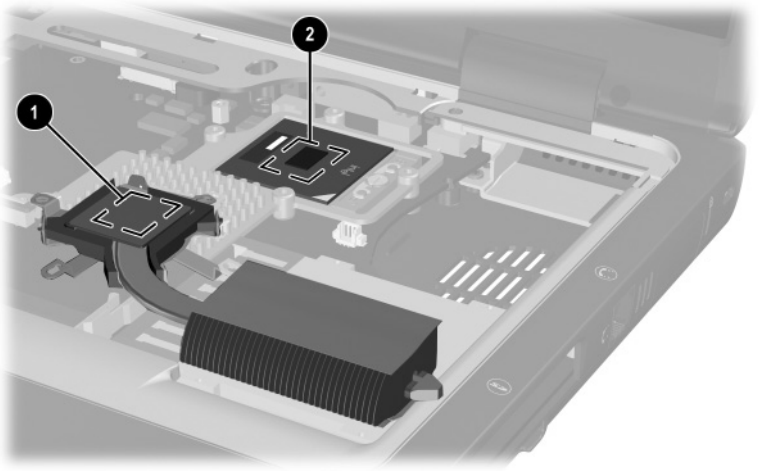
Removing the Heat Sink Bracket Screws

3. Lift the left side of the heat sink ❶ up until the thermal grease bond between the heat sink and the processor disengages.
4. Slide the cooling fins ❷ forward until they clear the top cover.
5. Lift the heat sink straight up to remove it.



Removing the Heat Sink

Carefully clean any thermal grease residue from the underside of the heat sink ❶ and processor surfaces ❷ each time you remove the heat sink. Then apply new thermal grease to both surfaces.



Removing the Thermal Grease from the Heat Sink and Processor

Reverse the above procedure to install the heat sink.

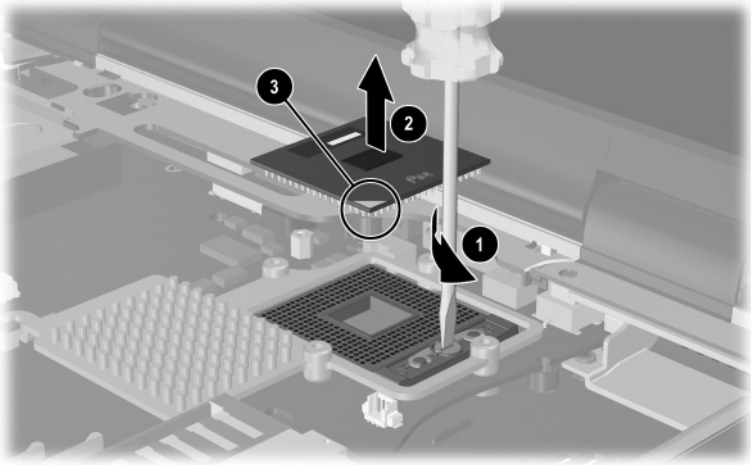
5.15 Processor

Spare Part Number Information	
Processors (include thermal grease)	
Intel Celeron M processor, 1.4-GHz	359637-001
Intel Celeron M processor, 1.3-GHz	356599-001
Intel Celeron M processor, 1.2-GHz	356598-001
Intel Pentium M processor (2-MB L2 cache), 2.0-GHz	353395-001
Intel Pentium M processor (2-MB L2 cache), 1.8-GHz	345857-001
Intel Pentium M processor (2-MB L2 cache), 1.7-GHz	356597-001
Intel Pentium M processor (2-MB L2 cache), 1.6-GHz	356596-001
Intel Pentium M processor (2-MB L2 cache), 1.5-GHz	359636-001
Intel Pentium M processor (1-MB L2 cache), 1.7-GHz	340165-001
Intel Pentium M processor (1-MB L2 cache), 1.6-GHz	319777-001
Intel Pentium M processor (1-MB L2 cache), 1.5-GHz	347253-001
Intel Pentium M processor (1-MB L2 cache), 1.4-GHz	319775-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ Keyboard (Section 5.8)
   - ❏ Switch cover (Section 5.9)
   - ❏ Memory shield (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)
   - ❏ Fan assembly (Section 5.13)
   - ❏ Heat sink (Section 5.14)

2. Use a flat-bladed screwdriver to turn the processor lock screw ❶ one-quarter turn counterclockwise to release the processor from the socket.
3. Lift the processor ❷ straight up to remove it.

Note that the gold triangle ❸ on the processor should be aligned in the lower right corner when you install the processor.



Removing the Processor

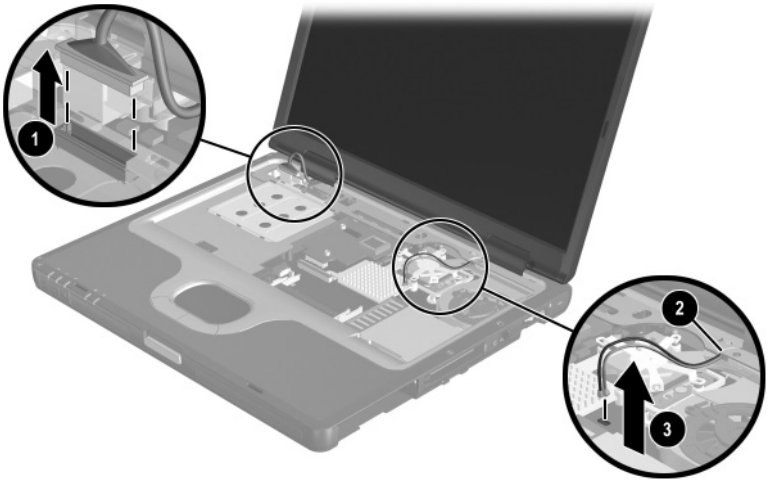
Reverse the above procedure to install the processor.

5.16 Display Assembly

Spare Part Number Information	
Display assemblies	
for use with HP Compaq Business Notebook nx5000	
14.1-inch, TFT, XGA	353384-001
15.0-inch, TFT, XGA	353385-001
15.0-inch, TFT, SXGA+WVA	353386-001
for use with Compaq Presario V1000 notebook PC	
14.1-inch, TFT, XGA	359916-001
15.0-inch, TFT, XGA	359917-001
15.0-inch, TFT, SXGA+WVA	359918-001

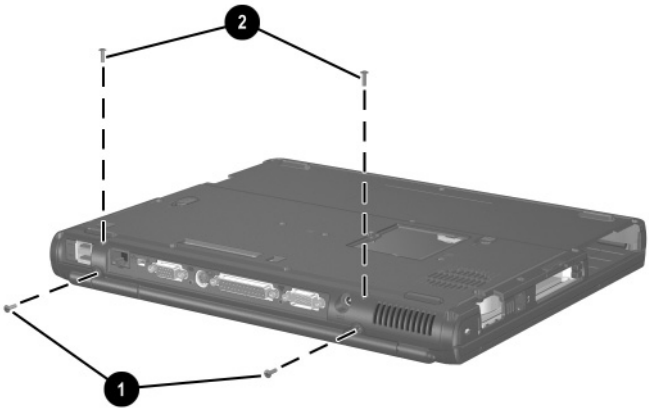
1. Prepare the notebook for disassembly (Section 5.3).
2. Disconnect the wireless antenna cables from the Mini PCI communications board (Section 5.5).
3. Remove the following components:
   - ❏ Mini PCI board (Section 5.5)
   - ❏ Keyboard (Section 5.8)
   - ❏ Switch cover (Section 5.9)
   - ❏ Memory shield (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)

4. Disconnect the display cable ❶ from the system board.
5. Remove the left and right wireless antenna cables from the groove ❷ in the top cover.
6. Carefully work the wireless antenna cables ❸ up through the hole in the system board from the Mini PCI compartment.



Disconnecting the Display Cables

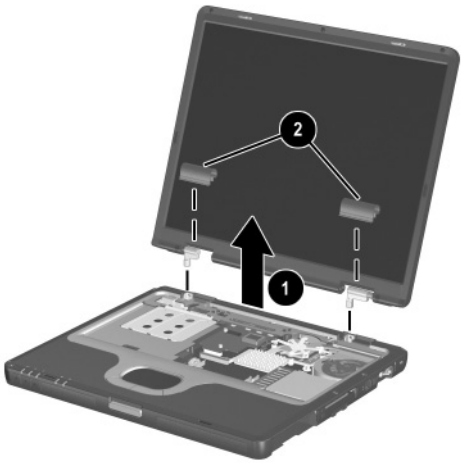
7. Close the notebook.
8. Turn the notebook upside down, with the rear panel toward you.
9. Remove the following screws:
   - ❏ Two T8M2.5×9.0 screws ❶ from the rear panel.
   - ❏ Two T8M2.5×9.0 screws ❷ from the bottom of the notebook.



Removing the Display Screws

10. Turn the notebook right-side up, with the front toward you.
11. Open the notebook until the display assembly is in an upright position.
12. Lift the display assembly ❶ straight up to remove it.
13. If necessary, remove the left and right display hinge covers ❷ from the display assembly.

The display hinges, hinge covers, hinge screw caps, and display bumpers are included in the Miscellaneous Plastics Kit, spare part number 353393-001.



Removing the Display Assembly

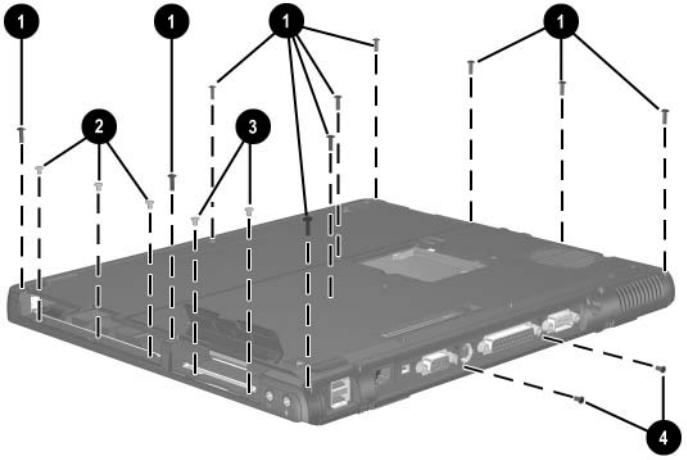
Reverse the above procedure to install the display assembly.

5.17 Top Cover

Spare Part Number Information	
Top Cover (includes TouchPad)	
for use with HP Compaq Business Notebook nx5000	353387-001
for use with Compaq Presario V1000 notebook PC	359919-001

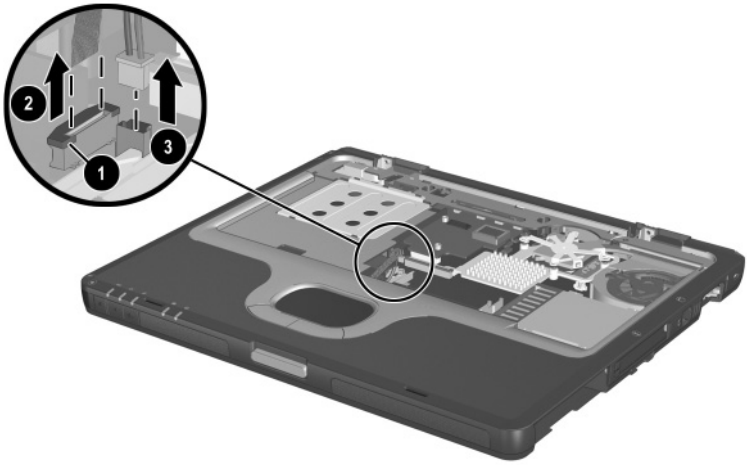
1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ MultiBay device (Section 5.6)
   - ❏ Keyboard (Section 5.8)
   - ❏ Switch cover (Section 5.9)
   - ❏ Memory shield (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)
   - ❏ Display assembly (Section 5.16)
2. Turn the notebook upside down, with the rear panel toward you.

3. Remove the following screws:
   - ❏ Ten T8M2.5×9.0 screws ❶ along the front edge, sides, rear corners and center of the bottom of the notebook.
   - ❏ Three T8M2.5x3.0 screws ❷ from the MultiBay.
   - ❏ Two T8M2.5×3.0 screws ❸ from the hard drive bay.
   - ❏ Two T8M2.5×5.0 screws ❹ from the rear panel.



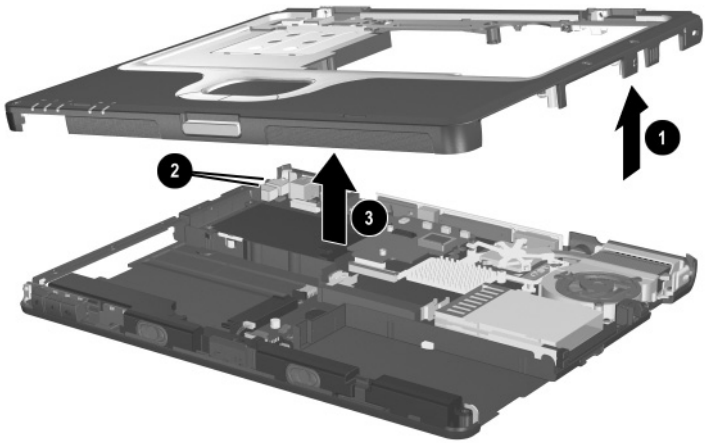
Removing the Top Cover Screws

4. Turn the notebook right-side up, with the front toward you.
5. Release the ZIF connector ❶ to which the TouchPad cable is attached and disconnect the TouchPad cable ❷.
6. Disconnect the RTC battery cable ❸ from the system board.



Removing the TouchPad and RTC Battery Cables

7. Lift the right side ❶ of the top cover until it rests at a 45-degree angle.
8. Slide the top cover to the left to disengage the audio connectors ❷ from the top cover.
9. Remove the top cover ❸.



Removing the Top Cover

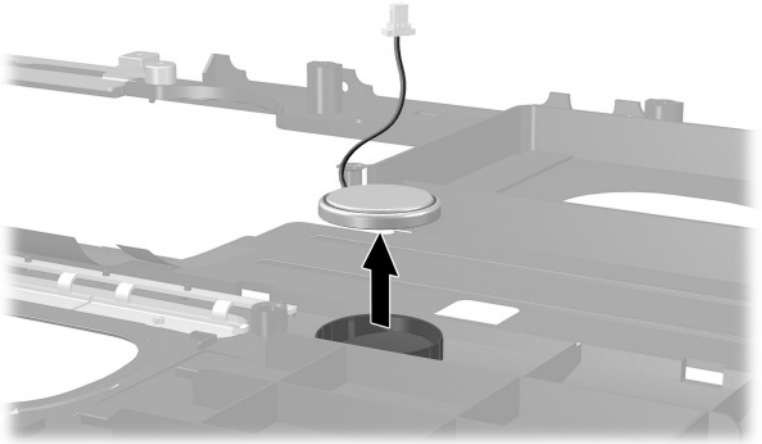
Reverse the above procedure to install the top cover.

5.18 RTC Battery

The RTC battery is included in the Miscellaneous Plastics Kit, spare part number 353393-001.

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ Keyboard (Section 5.8)
   - ❏ Switch cover (Section 5.9)
   - ❏ Memory shield (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)
   - ❏ Display assembly (Section 5.16)
   - ❏ Top cover (Section 5.17)
2. Turn the top cover upside down, with the front toward you.

3. Lift the RTC battery out of the top cover clip.



Removing the RTC Battery

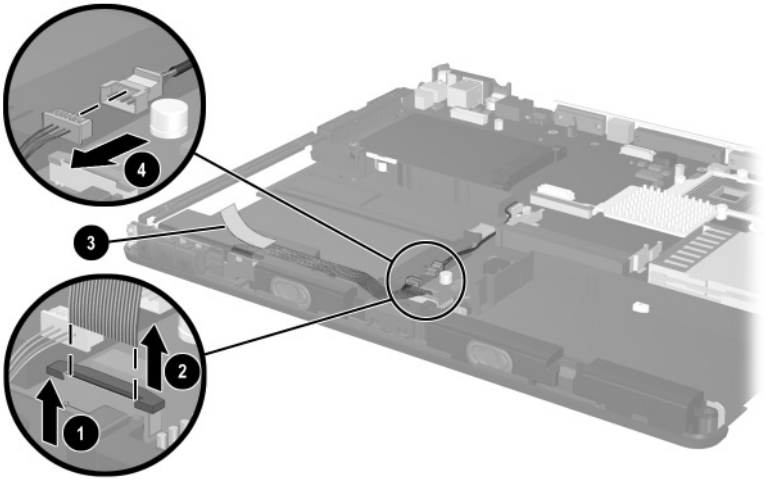
Reverse the above procedure to install the RTC battery.

5.19 Speakers

The speakers are included in the Miscellaneous Plastics Kit, spare part number 353393-001 and with the base enclosure, spare part number 353388-001.

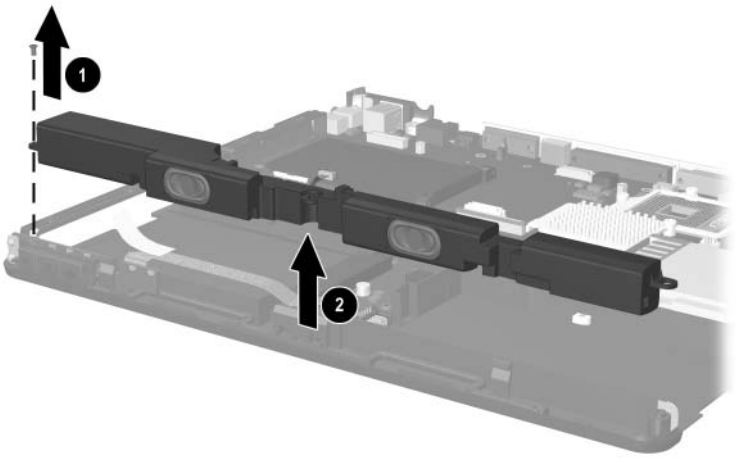
1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ Keyboard (Section 5.8)
   - ❏ Memory shield (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)
   - ❏ Fan assembly (Section 5.13)
   - ❏ Heat sink (Section 5.14)
   - ❏ Display assembly (Section 5.16)
   - ❏ Top cover (Section 5.17)
2. Turn the notebook right-side up, with the front toward you.

3. Release the ZIF connector ❶ on the system board to which the LED board cable is attached and disconnect the cable ❷.
4. Lift up the tape ❸ that holds the LED board connector cable to the speaker.
5. Disconnect the speaker cable ❹ from the connector on the system board.



Releasing the LED board and Speaker Cables

6. Remove the PM1.5x4.0 screw ❶ that secures the speaker assembly to the base enclosure.
7. Lift the speaker assembly ❷ from the base enclosure.



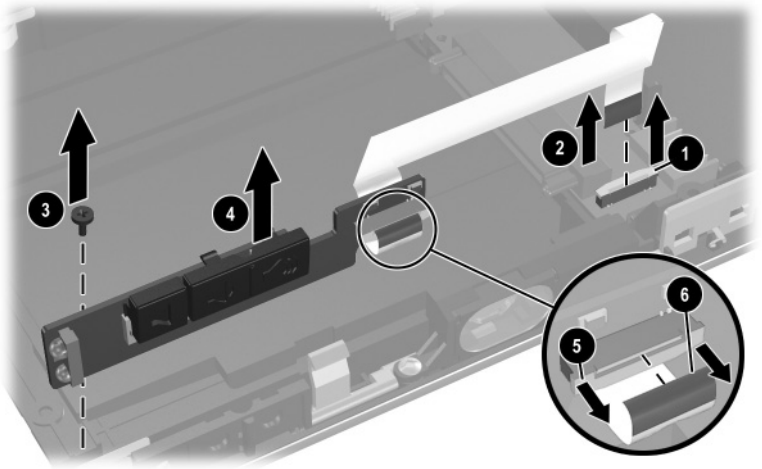
Removing the Speaker Assembly

5.20 LED Board

Spare Part Number Information	
LED board (includes cable)	353391-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ Keyboard (Section 5.8)
   - ❏ Memory shield (Section 5.10)
   - ❏ Switch cover (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)
   - ❏ Display assembly (Section 5.16)
   - ❏ Top cover (Section 5.17)
   - ❏ Speaker assembly (Section 5.19)
2. Turn the notebook right-side up, with the front toward you.

3. Release the ZIF connector ❶ on the system board to which the LED board cable is attached, and then disconnect the cable ❷.
4. Remove the PM1.5x4.0 screw ❸ that secures the LED board to the base enclosure.
5. Lift the board straight up to remove it ❹.
6. Release the ZIF connector ❺ on the LED board to which the LED board cable is attached and disconnect the cable ❻.



Removing the LED Board

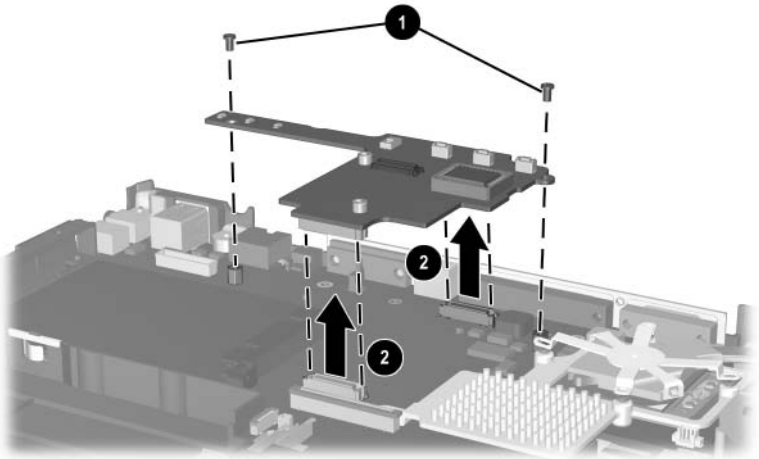
Reverse the above procedure to install the LED board.

5.21 Bottom Board

Spare Part Number Information	
Bottom board	353392-001

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ Keyboard (Section 5.8)
   - ❏ Switch cover (Section 5.9)
   - ❏ Modem board (Section 5.10)
   - ❏ Memory shield (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)
   - ❏ Display assembly (Section 5.16)
   - ❏ Top cover (Section 5.17)
2. Turn the notebook right-side up, with the front toward you.

3. Remove the two PM2.5×5.0 screws ❶ that secure the bottom board to the notebook.
4. Lift the front and rear edges of the bottom board to disconnect it from the system board ❷.
5. Remove the bottom board.



Removing the Bottom Board

Reverse the above procedure to install the bottom board.

5.22 System Board

Spare Part Number Information	
System board	353390-001

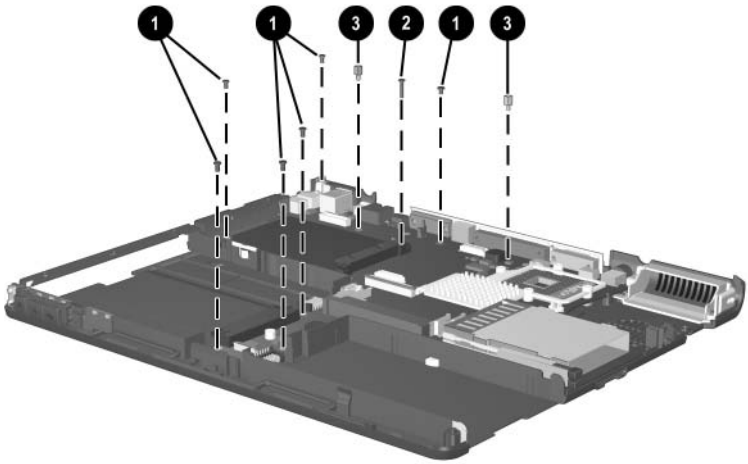
When replacing the system board, ensure that the following components are removed or disconnected from the defective system board and installed on or reconnected to the replacement system board:

- Mini PCI communications board (Section 5.5)
- Bluetooth wireless communications board cable (Section 5.7)
- Memory modules (Section 5.11)
- Processor (Section 5.15)
- Speaker assembly cable (Section 5.19)

1. Prepare the notebook for disassembly (Section 5.3) and remove the following components:
   - ❏ Mini PCI communications board (Section 5.5)
   - ❏ MultiBay device (Section WARNING:)
   - ❏ Bluetooth wireless communications board (Section 5.7)
   - ❏ Keyboard (Section 5.8)
   - ❏ Switch cover (Section 5.9)
   - ❏ Modem board (Section 5.10)
   - ❏ Memory shield (Section 5.11)
   - ❏ Keyboard plate (Section 5.12)
   - ❏ Fan assembly (Section 5.13)
   - ❏ Heat sink (Section 5.14)
   - ❏ Processor (Section 5.15)

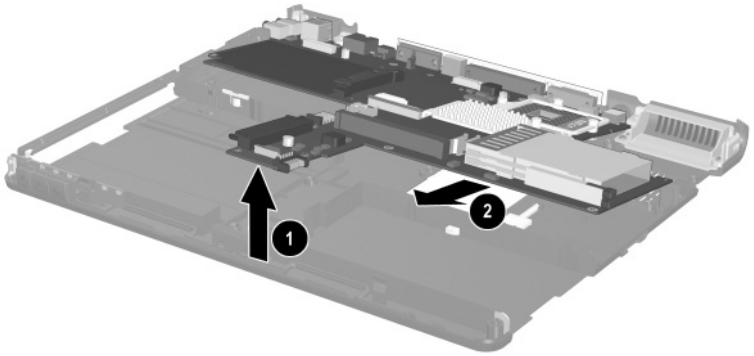
- ❏ Display assembly (Section 5.16)
- ❏ Top cover (Section 5.17)
- ❏ Speaker assembly cable (Section 5.19)
- ❏ LED board (Section 5.20)
- ❏ Bottom board (Section 5.21)
- ❏ Any Secure Digital (SD) cards in the SD Card slots

2. Remove the six PM2.5×5.0 screws ❶ that secure the system board to the notebook.
3. Remove the PM2.5x11.5 screw ❷ that secures the hard drive connector to the system board.
4. Use a 5.0-mm socket to remove the two HM5.0×9.0 standoffs ❸ that secure the system board to the notebook.



Removing the System Board Screws and Standoffs

5. Lift the front edge of the system board ❶ until it rests at an angle.
6. Slide the system board toward you at an angle ❷, and then lift it straight up to remove it.



Removing the System Board

Reverse the above procedure to install the system board.

6

Specifications

This chapter provides physical and performance specifications.

Table 6-1
Notebook

Dimensions		
Height	3.67 cm	1.44 in
Width	32.60 cm	12.83 in
Depth	27.50 cm	10.83 in
Weight		
With 14.1-inch display		
With 6-cell battery pack and MultiBay weight saver	2.47 kg	5.44 lb
With 6-cell battery pack and MultiBay DVD-ROM drive	2.72 kg	6.00 lb
With 8-cell battery pack and MultiBay DVD-ROM drive	2.81 kg	6.19 lb
With 15.0-inch display		
With 6-cell battery pack and MultiBay weight saver	2.61 kg	5.75 lb
With 6-cell battery pack and MultiBay DVD-ROM drive	2.82 kg	6.21 lb
With 8-cell battery pack and MultiBay DVD-ROM drive	2.91 kg	6.41 lb

Table 6-1
Notebook *(Continued)*

Stand-alone power requirements		
Nominal operating voltage	14.4 V dc (8-cell battery) 10.8 V dc (6-cell battery)	
Peak operating power	65 W	
Temperature		
Operating (not writing optical)	0°C to 35°C	32°F to 95°F
Operating (writing optical)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%, 38.7°C (101.6°F) maximum wet bulb temperature	
Altitude (unpressurized)		
Operating (14.7 psia to 10.1 psia)	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating (14.7 psia to 4.4 psia)	-15 m to 12,192 m	-50 ft to 40,000 ft
Shock		
Operating	50 g, 2 ms, half-sine	
Nonoperating	175 g, 2 ms, half-sine	
Random vibrations		
Operating	0.75 g	
Non-operating	1.50 g	

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

Table 6-2
14.1-inch XGA TFT Display

Dimensions		
Height	28.6 cm	11.2 in
Width	21.4 cm	8.4 in
Diagonal	35.7 cm	14.1 in
Number of colors	16M	
Contrast ratio	250:1 typical	
Refresh rate	60 Hz	
Brightness	150 nits typical (min)	
Pixel resolution		
Pitch	0.279 × 0.279 mm	
Format	1024 × 768	
Configuration	RGB stripe	
Backlight	CCFT	
Character display	80 × 25	
Total power consumption	4.0 W	
Viewing angle	±45° horizontal, +15/-35° vertical (typical)	

Table 6-3
15.0-inch XGA TFT Display

Dimensions		
Height	30.4 cm	11.8 in
Width	22.8 cm	9.0 in
Diagonal	35.7 cm	15.0 in
Number of colors	16M	
Contrast ratio	250:1 typical	
Refresh rate	60 Hz	
Brightness	150 nits typical (min)	
Pixel resolution		
Pitch	0.279 × 0.279 min	
Format	1024 × 768	
Configuration	RGB stripe	
Backlight	CCFT	
Character display	80 × 25	
Total power consumption	5.5 W	
Viewing angle	±40° horizontal, +20/-40° vertical (typical)	

Table 6-4
15.0-inch SXGA+WVA TFT Display

Dimensions		
Height	30.4 cm	11.8 in
Width	22.8 cm	9.0 in
Diagonal	35.7 cm	15.0 in
Number of colors	16M	
Contrast ratio	250:1 typical	
Refresh rate	60 Hz	
Brightness	150 nits typical (min)	
Pixel resolution		
Pitch	0.204 × 0.204 mm	
Format	1400 × 1050	
Configuration	RGB stripe	
Backlight	CCFT	
Character display	80 × 25	
Total power consumption	6.0 W	
Viewing angle	±60° horizontal, +40/-60° vertical (typical)	

Table 6-5
Hard Drives

	60-GB	60-GB	40-GB	40-GB	30-GB
User capacity per drive[1]	60 GB	60 GB	40 GB	40 GB	30 GB
Dimensions					
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm	70 mm
Weight	102 g	102 g	102 g	102 g	102 g
Interface type	ATA-5	ATA-5	ATA-5	ATA-5	ATA-5
Transfer rate					
Synchronous (maximum)	100 MB/ sec	100 MB/ sec	100 MB/sec	100 MB/ sec	100 MB/ sec
Security	ATA security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)					
Single track	3.0 ms	3.0 ms	3.0 ms	3.0 ms	2.5 ms
Average	13 ms	13 ms	13 ms	13 ms	12 ms
Maximum	24 ms	24 ms	24 ms	24 ms	23 ms
Logical blocks[2]	117,210,240	117,210,240	78,140,160	78,140,160	58,605,120
Disk rotational speed	5400 rpm	4200 rpm	5400 rpm	4200 rpm	4200 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)				

[1]1 GB = 1,073,741,824 bytes.

[2]Actual drive specifications may differ slightly.

Certain restrictions and exclusions apply. Consult Customer Care for details.

Table 6-6
External AC Adapter

Weight		
Adapter	0.29 kg	0.65 lb
Power cord	0.13 kg	0.29 lb
Power supply		
Operating voltage	90 to 264 VAC RMS	
Operating current	1.6 A RMS	
Operating frequency range	47 to 63 Hz AC	
Maximum transient	4/50 kV	

Table 6-7
Primary 6-Cell, Li-Ion Battery Pack

Dimensions		
Height	1.90 cm	0.75 in
Width	7.60 cm	3.00 in
Depth	14.70 cm	5.80 in
Weight	0.34 kg	0.75 lb
Energy		
Voltage	11.1 V	
Amp-hour capacity	4.4 Ah	
Watt-hour capacity	48 Wh	
Temperature		
Operating	5°C to 45°C	41°F to 113°F
Nonoperating	0°C to 60°C	32°F to 140°F

Table 6-8
Optional High-Capacity 8-Cell, Li-Ion Battery Pack

Dimensions		
Height	1.90 cm	0.75 in
Width	7.60 cm	3.00 in
Depth	14.70 cm	5.80 in
Weight	0.43 kg	0.94 lb
Energy		
Voltage	14.4 V	
Amp-hour capacity	4.4 Ah	
Watt-hour capacity	63 Wh	
Temperature		
Operating	5°C to 45°C	41°F to 113°F
Nonoperating	0°C to 60°C	32°F to 140°F

Table 6-9
Optional MultiBay 8-Cell, Li-Ion Battery Pack

Dimensions		
Height	1.30 cm	0.50 in
Width	13.20 cm	5.20 in
Depth	13.90 cm	5.45 in
Weight	0.39 kg	0.86 lb
Energy		
Voltage	14.8 V	
Amp-hour capacity	3.6 Ah	
Watt-hour capacity	53 Wh	
Temperature		
Operating	5°C to 45°C	41°F to 113°F
Nonoperating	0°C to 60°C	32°F to 140°F

Table 6-10
24X Max DVD+RW/R and CD-RW Combo Drive

Applicable disc	Read: DVD-R DVD-RW DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18) 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 CR-RW Photo CD (single/multisession) CD-Bridge	Write: CD-R CD-RW DVD-R DVD-RW
Center hole diameter	1.5 cm	0.59 in
Disc diameter		
Standard disc Mini disc	12 cm 8 cm	4.72 in 3.15 in
Disc thickness	1.2 mm	0.047 in
Track pitch	0.74 µm	
Access time	CD	DVD
Random Full stroke	<175 ms <285 ms	<230 ms <335 ms
Audio output level	Line-out, 0.7 V rms	
Cache buffer	2 MB	

Table 6-10
24X Max DVD+RW/R and CD-RW Combo Drive *(Continued)*

Data transfer rate	
CD-R (16X)	2,400 KB/s (150 KB/s at 1X CD rate)
CD-RW (8X)	1,200 KB/s (150 KB/s at 1X CD rate)
CD-ROM (24X)	3,600 KB/s (150 KB/s at 1X CD rate)
DVD (8X)	10,800 KB/s (1,352 KB/s at 1X DVD rate)
DVD-R (4X)	5,400 KB/s (1,352 KB/s at 1X DVD rate)
DVD-RW (2X)	2,700 KB/s (1,352 KB/s at 1X DVD rate)
Multiword DMA mode 2	16.6 MB/s
Startup time	< 15 seconds
Stop time	< 6 seconds

Table 6-11
24X Max DVD/CD-RW Combo Drive

Applicable disc	Read: DVD-R DVD-RW DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18) 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 CR-RW Photo CD (single/multisession) CD-Bridge	Write: CD-R CD-RW
Center hole diameter	1.5 cm	0.59 in
Disc diameter		
Standard disc	12 cm	4.72 in
Mini disc	8 cm	3.15 in
Disc thickness	1.2 mm	0.047 in
Track pitch	0.74 µm	
Access time	CD	DVD
Random	< 110 ms	<130 ms
Full stroke	< 210 ms	<225 ms
Audio output level	Line-out, 0.7 V rms	
Cache buffer	2 MB	

Table 6-11
24X Max DVD/CD-RW Combo Drive *(Continued)*

Data transfer rate	
CD-R (24X)	3,600 KB/s (150 KB/s at 1X CD rate)
CD-RW (10X)	1,500 KB/s (150 KB/s at 1X CD rate)
CD-ROM (24X)	3,600 KB/s (150 KB/s at 1X CD rate)
DVD (8X)	10,800 KB/s (1352 KB/s at 1X DVD rate)
Multiword DMA mode 2	16.6 MB/s
Startup time	< 15 seconds
Stop time	< 6 seconds

Table 6-12
8X/24X DVD-ROM Drive

Applicable disc	Read: DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18) 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 CD-RW Photo CD (single/multisession) CD-Bridge	
Center hole diameter	1.5 cm	0.59 in
Disc diameter		
Standard disc	12 cm	4.72 in
Mini disc	8 cm	3.15 in
Disc thickness	1.2 mm	0.047 in
Track pitch	0.74 µm	
Access time		
Random DVD media	< 125 ms	
Full stroke DVD media	< 225 ms	
Random CD media	< 100 ms	
Full stroke CD media	< 175 ms	
Audio output level	Line-out, 0.7 V rms	
Cache buffer	512 KB	

Table 6-12
8X/24X DVD-ROM Drive *(Continued)*

Data transfer rate	
CD-R (24X)	3,600 KB/s (150KB/s at 1X CD rate)
CD-RW (10X)	1,500 KB/s (150KB/s at 1X CD rate)
CD-ROM (24X)	3,600 KB/s (150 KB/s at 1X CD rate)
DVD (8X)	10,800 KB/s (1352 KB/s at 1X DVD rate)
Multiword DMA mode 2	16.6 MB/s
Startup time	< 10 seconds
Stop time	< 3 seconds

Table 6-13
24X CD-ROM Drive

Applicable disc	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 CD-RW Photo CD (single/multisession) CD-Bridge	
Center hole diameter	1.5 cm	0.59 in
Disc diameter		
Standard disc	12 cm	4.72 in
Mini disc	8 cm	3.15 in
Disc thickness	1.2 mm	0.047 in
Track pitch	1.6 µm	
Access time		
Random	< 110 ms	
Full stroke	< 220 ms	
Audio output level	Line-out, 0.7 V rms	
Cache buffer	128 KB/s	
Data transfer rate		
CD-ROM (24X)	3,600 KB/s (150 KB/s at 1X CD rate)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 8 seconds	
Stop time	< 4 seconds	

Table 6-14
System DMA

Hardware DMA	System Function
DMA1	Available for parallel
DMA2	Floppy Disk Controller
DMA3	Fast Infrared port
DMA4	DMA controller cascading (not available)

Table 6-15
System Interrupts

Hardware IRQ	System Function
IRQ0	System timer
IRQ1	Keyboard controller
IRQ2	Cascaded
IRQ3	Infrared
IRQ4	COM1
IRQ5	Available for Parallel port
IRQ6	Diskette drive
IRQ7	Available for Parallel port
IRQ8	Real time clock (RTC)
IRQ9	Microsoft ACPI-Compliant System
IRQ12	Internal point stick or external mouse
IRQ13	Numeric Data Processor
IRQ14	Primary IDE Channel
IRQ15	Secondary IDE Channel
IRQ 16	Graphics Controller and USB Host Controller
IRQ 17	Audio and Modem
IRQ 18	USB Host Controller, Cardbus Controller, and FlashMedia Controller
IRQ 19	USB Host Controller
IRQ 20	LAN Controller
IRQ 21	Mini PCI Wireless Adapter
IRQ 23	USB 2.0 Host Controller and 1394 Host Controller
✎	Either the infrared or the serial port may assert IRQ3 or IRQ4.

Table 6-16
System I/O Addresses

I/O Address (hex)	**System Function** (shipping configuration)
000 - CF7	DMA controller; PCI bus
010 - 01F	Motherboard resources
020 - 021	Programmable Interrupt Controller
024 - 03F	Motherboard resources
040 - 043	System Timer
04E - 04F	Motherboard resources
050 - 053	Motherboard resources
060	Keyboard Controller
061	System speaker
062 - 063	Microsoft ACPI-Compliant Controller
064	Keyboard Controller
066	Microsoft ACPI-Compliant Controller
068 - 06F	Motherboard resources
070 - 071	System CMOS/real time clock
072 - 073	System CMOS/real time clock
074 - 077	Motherboard resources
080 - 08F	DMA Controller
090 - 09F	Motherboard resources
0A0 - 0A1	Programmable Interrupt Controller

Table 6-16
System I/O Addresses *(Continued)*

I/O Address (hex)	**System Function** (shipping configuration)
0A4 - 0BD	Motherboard resources
0C0 - 0DF	DMA Controller
0F0 - 0FF	Numeric Data Processor
100 - 107	Fast Infrared Port
140 - 14F	Motherboard resources
170 - 177	Secondary IDE Channel
1F0 - 1F7	Primary IDE Channel
274 - 277	ISAPNP Read Data Port
279	ISAPNP Read Data Port
376	Secondary IDE Channel
378 - 37F	Parallel port (LPT1)
3B0 - 3BB	Graphics Controller
3C0 - 3DF	Graphics Controller
3E8 - 3EF	Fast Infrared Port
3F0 - 3F5	Floppy Disk Controller
3F6	Primary IDE Channel
3F7	Floppy Disk Controller
3F8 - 3FF	Serial port (COM1)
4D0 - 4D1	Motherboard resources

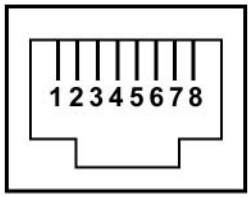
Table 6-16
System I/O Addresses *(Continued)*

I/O Address (hex)	**System Function** (shipping configuration)
778 - 77A	Parallel Port (LPT1)
A79	ISAPNP Read Data Port
D00 - FFFF	PCI bus
1000 - 107F	Motherboard resources
1100 - 113F	Motherboard resources
1200 - 121F	Motherboard resources
2000 - 20FF	Digital Audio
2400 - 24FF	Modem
2800 - 287F	Modem
2880 - 28BF	Digital Audio
28C0 - 28DF	USB Universal Host Controller
28E0 - 28FF	USB Universal Host Controller
2C00 - 2C1F	USB Universal Host Controller
28C0 - 28DF	USB Universal Host Controller
2C20 - 2C2F	Ultra ATA Storage Controller
2C30 - 2C37	Graphics Controller
FC00 - FCFF	Cardbus Controller
FD00 - FDFF	Cardbus Controller
FE00 - FEFF	Cardbus Controller
FF00 - FFFF	Cardbus Controller

A

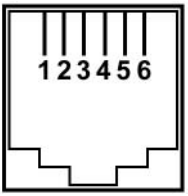
Connector Pin Assignments

Table A-1
RJ-45 Network Interface



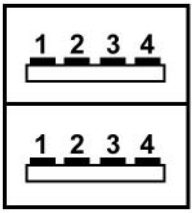
Pin	Signal	Pin	Signal
1	Transmit +	5	Unused
2	Transmit –	6	Receive –
3	Receive +	7	Unused
4	Unused	8	Unused

Table A-2
RJ-11 Modem



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

Table A-3
Universal Serial Bus

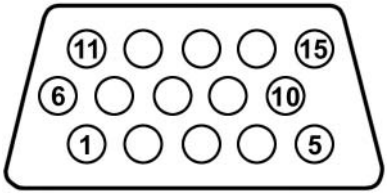


Pin	Signal	Pin	Signal
1	+5 VDC	3	Data +
2	Data –	4	Ground

Table A-4
S-Video

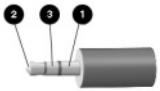
Pin	Signal	Pin	Signal
1	Ground (Y)	3	Y-Luminance (Intensity)
2	Ground (C)	4	C-Chrominance (Color)

Table A-5
External Monitor



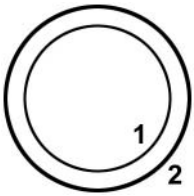
Pin	Signal	Pin	Signal
1	Red analog	9	+5 VDC
2	Green analog	10	Ground
3	Blue analog	11	Monitor detect
4	Not connected	12	DDC 2B data
5	Ground	13	Horizontal sync
6	Ground analog	14	Vertical sync
7	Ground analog	15	DDC 2B clock
8	Ground analog		

Table A-6
Headphone Jack



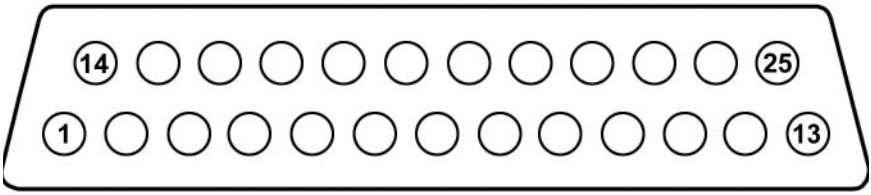
Pin	Signal	Pin	Signal
1	Ground	2	Left audio signal
3	Right audio signal		

Table A-7
Microphone



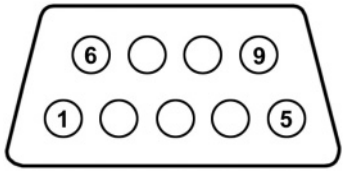
Pin	Signal	Pin	Signal
1	Audio in	2	Ground

Table A-8
Parallel



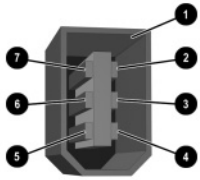
Pin	Signal	Pin	Signal
1	Strobe	14	Auto linefeed
2	Data bit 0	15	Error
3	Data bit 1	16	Initialize paper
4	Data bit 2	17	Select in
5	Data bit 3	18	Ground
6	Data bit 4	19	Ground
7	Data bit 5	20	Ground
8	Data bit 6	21	+5VS
9	Data bit 7	22	PTF
10	Acknowledge	23	EXTFDD_VCC (+5V)
11	Busy	24	Ground
12	Paper end	25	Ground
13	Select		

Table A-9
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	Ground		

Table A-10
1394



Pin	Signal	Pin	Signal
1	Connector housing	5	TPA-
2	Ground	6	TPB-
3	TPB+	7	Power
4	TPA+		

B

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 included with the notebook meets the requirements for use in the country where the equipment is purchased.

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

General Requirements

The requirements listed below are applicable to all countries:

- The length of the power cord must be at least 1.5 meters (5.00 feet) and a maximum of 2.0 meters (6.50 feet).
- All power cords must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord will be used.
- 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.

C

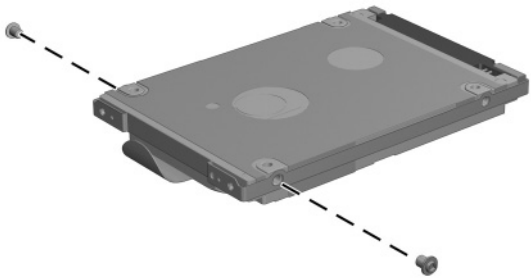
Screw Listing

This appendix provides specification and reference information for the screws used in the notebook. All screws listed in this appendix are available in the Miscellaneous Screw Kit, spare part number 353394-001.

Table C-1
Torx T5M3.0×4.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Silver	2	4.0 mm	3.0 mm	5.0 mm

Where used:
Two screws that secure the hard drive frame to the hard drive (documented in Section 5.3)

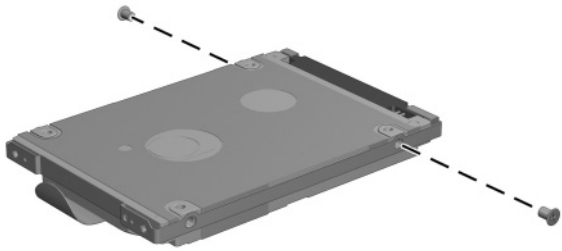


Torx T5M3.0x4.0 Hard Drive Frame Locations

Table C-2
Phillips PM3.0×3.5 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Silver	2	3.5 mm	3.0 mm	5.0 mm

Where used:
Two screws that secure the hard drive frame to the hard drive (documented in Section 5.3)

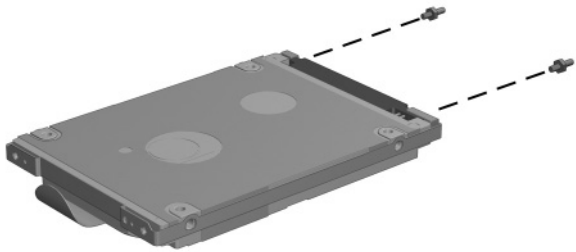


Phillips PM3.0x3.5 Hard Drive Frame Screw Locations

Table C-3
Hex M2.0×10.0 Alignment Pin

mm	Color	Qty.	Length	Thread	Head Width
	Silver	2	10.0 mm	2.0 mm	4.0 mm

Where used:
Two alignment pins that secure the hard drive frame and connector to the hard drive (documented in Section 5.3)

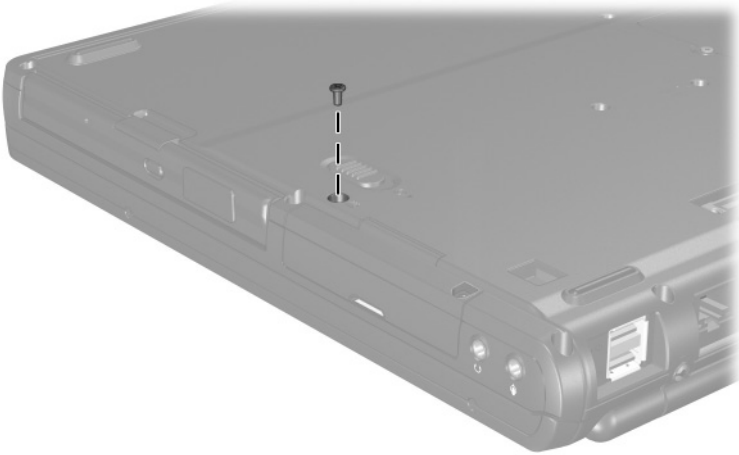


Hex M2.0×10.0 Hard Drive Alignment Pin Locations

Table C-4
Phillips PM2.5×3.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	1	3.0 mm	2.5 mm	4.0 mm

Where used:
One screw that secures the hard drive to the notebook (documented in Section 5.3)



Phillips PM2.5×3.0 Screw Location

Table C-5
Torx T8M2.5×5.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	7	5.0 mm	2.5 mm	4.0 mm

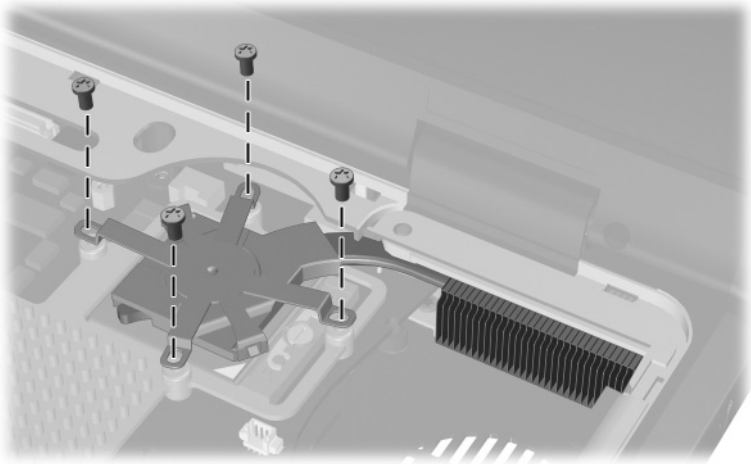
Where used:
One screw that secures the fan assembly to the notebook (documented in Section 5.13)

Torx T8M2.5×5.0 Fan Assembly Screw Location

Table C-5
Torx T8M2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	7	5.0 mm	2.5 mm	4.0 mm

Where used:
Four screws that secure the heat sink to the notebook (documented in Section 5.14)

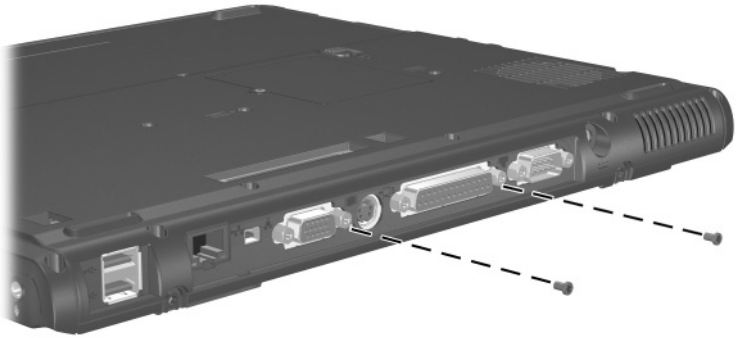


Torx T8M2.5×5.0 Heat Sink Screw Locations

Table C-5
Torx T8M2.5×5.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	7	5.0 mm	2.5 mm	4.0 mm

Where used:
Two screws that secure the top cover to the notebook (documented in Section 5.17)

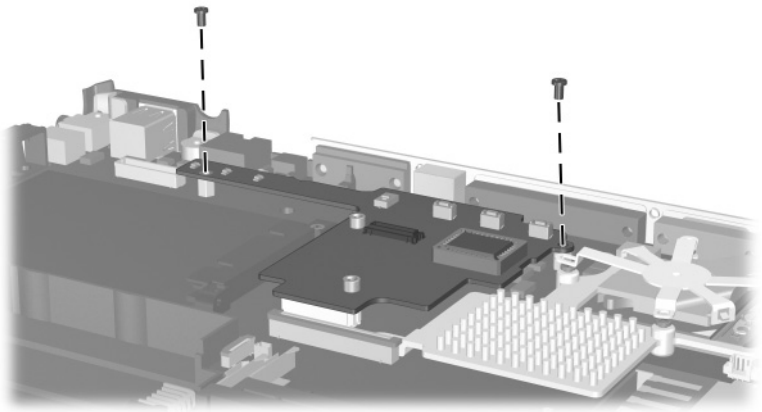


Torx T8M2.5×5.0 Top Cover Screw Locations

Table C-6
Phillips PM2.0x4.0 Screws

mm	Color	Qty.	Length	Thread	Head Width
	Black	9	4.0 mm	2.0 mm	4.0 mm

Where used:
Two screws that secure the bottom board to the notebook (documented in Section 5.21)

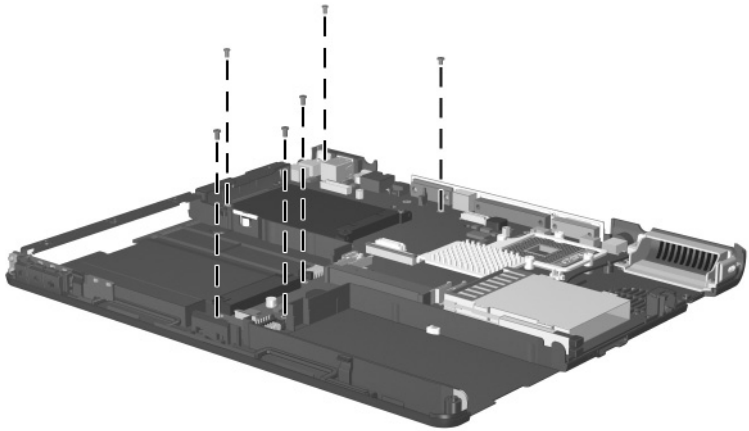


Phillips PM2.0×4.0 Bottom Board Screw Locations

Table C-6
Phillips PM2.0x4.0 Screws *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	9	4.0 mm	2.0 mm	4.0 mm

Where used:
Six screws that secure the system board to the notebook (documented in Section 5.22)



Phillips PM2.0x4.0 System Board Screw Locations

Table C-6
Phillips PM2.0x4.0 Screws *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	9	4.0 mm	2.0 mm	4.0 mm

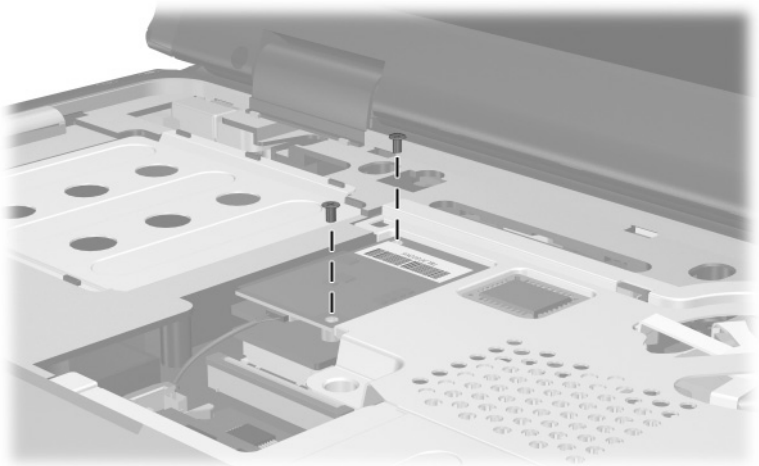
Where used:
One screw that secures the hard drive cover to the notebook (documented in Section 5.3)

Phillips PM2.0x4.0 Hard Drive Cover Screw Location

Table C-7
Phillips PM2.0×3.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	2	3.0 mm	2.0 mm	4.0 mm

Where used:
Two screws that secure the modem board to the notebook (documented in Section 5.10)

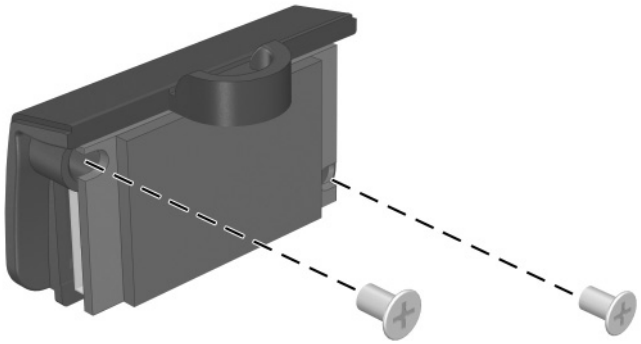


Phillips PM2.0×3.0 Modem Board Screw Locations

Table C-8
Phillips PM1.5×3.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	2	3.0 mm	1.5 mm	3.5 mm

Where used:
Two screws that secure the Bluetooth board to the Bluetooth cover (documented in Section 5.7)



Phillips PM1.5×3.0 Bluetooth Cover Screw Locations

Table C-9
Torx T8M2.5×9.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Silver	2	9.0 mm	2.5 mm	5.0 mm

Where used:
Two screws that secure the keyboard to the notebook (documented in Section 5.8)

Torx T8M2.5×9.0 Keyboard Access Screw Locations

Table C-10
Torx T8M2.5×9.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	16	9.0 mm	2.5 mm	5.0 mm

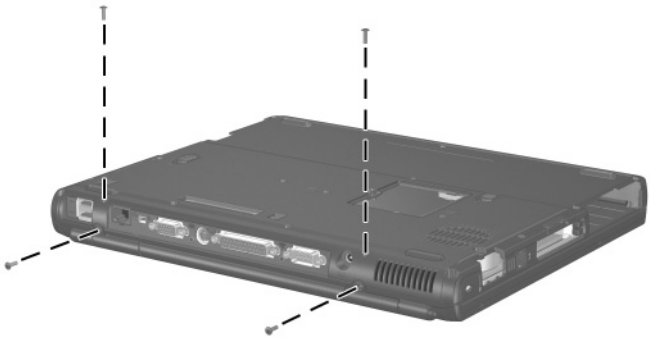
Where used:
Two screws that secure the switch cover to the notebook (documented in Section 5.9)

Torx T8M2.5×9.0 Switch Cover Screw Locations

Table C-10
Torx T8M2.5×9.0 Screw *(Continued)*

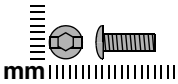
	Color	Qty.	Length	Thread	Head Width
	Black	16	9.0 mm	2.5 mm	5.0 mm

Where used:
Four screws that secure the display assembly to the notebook (documented in Section 5.16)

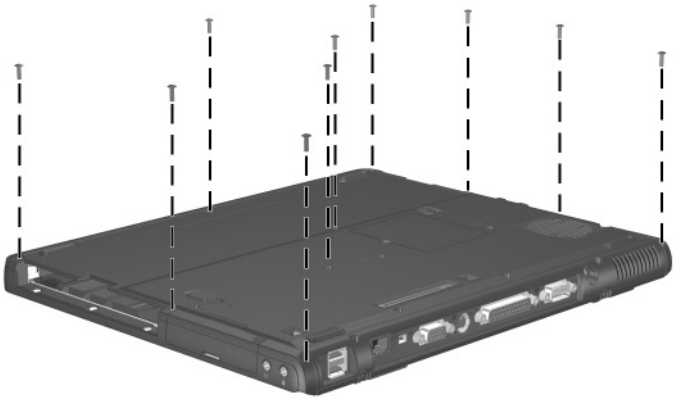


Torx T8M2.5×9.0 Display Assembly Screw Locations

Table C-10
Torx T8M2.5×9.0 Screw *(Continued)*

	Color	Qty.	Length	Thread	Head Width
	Black	16	9.0 mm	2.5 mm	5.0 mm

Where used:
Ten screws that secure the top cover to the notebook (documented in Section 5.17)

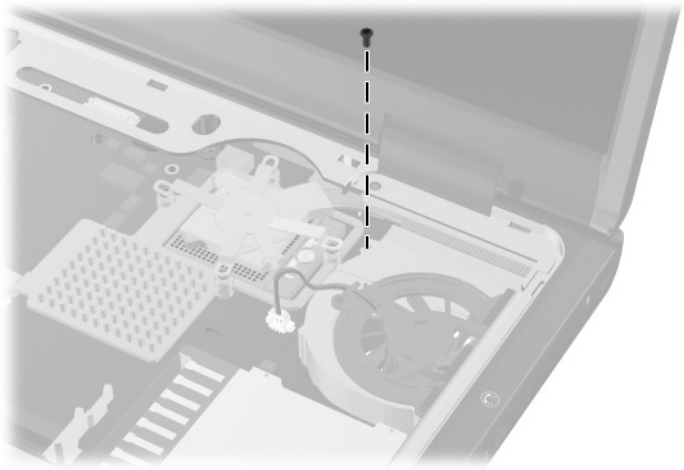


Torx T8M2.5×9.0 Top Cover Screw Locations

Table C-11
Phillips PM2.5×6.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	1	6.0 mm	2.5 mm	5.0 mm

Where used:
One screw that secures the fan assembly to the notebook (documented in Section 5.13)

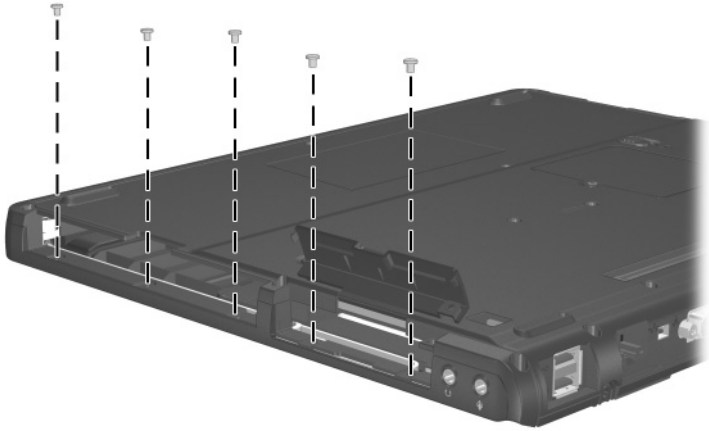


Torx T8M2.5×6.0 Fan Assembly Screw Location

Table C-12
Phillips M2.5×3.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Bronze	5	3.0 mm	2.5 mm	4.0 mm

Where used:
Five screws that secure the top cover to the notebook (3 in the MultiBay, 2 in the hard drive bay; documented in Section 5.17)

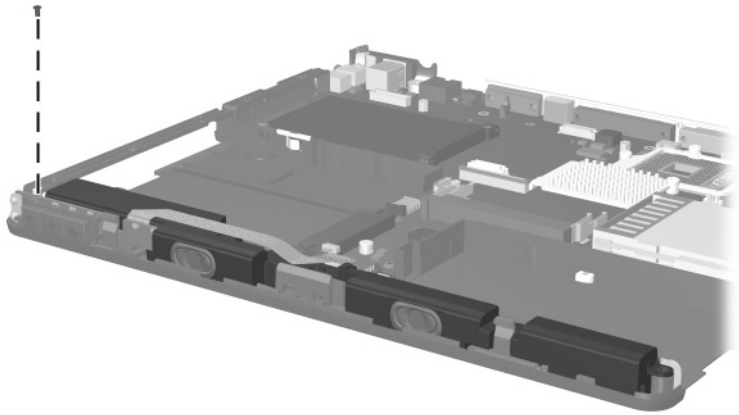


Phillips M2.5×3.0 Top Cover Screw Locations

Table C-13
Phillips PM1.5x4.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	2	4.0 mm	1.5 mm	

Where used:
One screw that secures speaker assembly to the base enclosure (documented in Section 5.19)

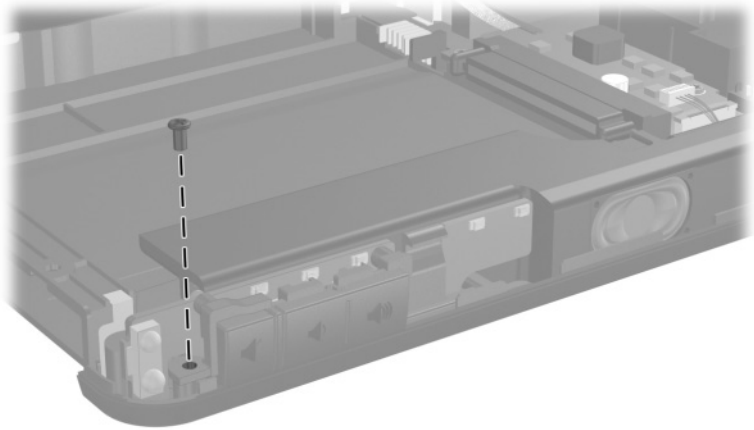


Phillips PM1.5x4.0 Speaker Assembly Screw Location

Table C-13
Phillips PM1.5x4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	2	4.0 mm	1.5 mm	

Where used:
One screw that secures the LED board to the base enclosure (documented in Section 5.20)

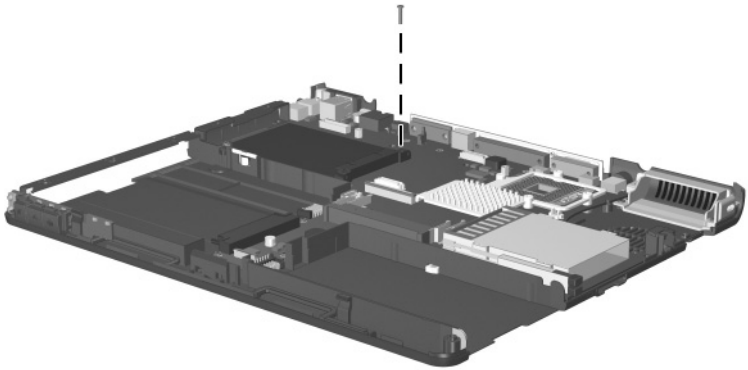


Phillips PM1.5x4.0 LED Board Screw Location

Table C-14
Phillips PM2.5x11.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	1	11.0 mm	2.5 mm	5.0 mm

Where used:
One screw that secures the hard drive connector to the system board (documented in Section 5.22)

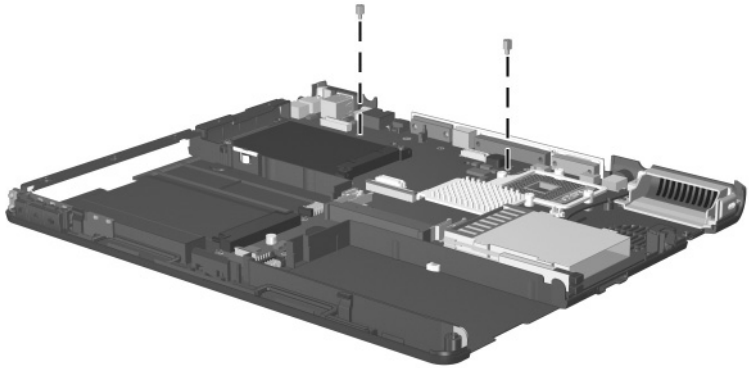


Phillips PM2.5×11.0 Hard Drive Connector Screw Location

Table C-15
Hex M2.5×9.0 Standoffs

mm	Color	Qty.	Length	Thread	Head Width
	Silver	2	9.0 mm	2.5 mm	

Where used:
Two standoffs that secure the system board to the notebook (documented in Section 5.22)



Hex M2.5×9.0 System Board Standoff Locations

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