

IBM Mobile Systems

S82G-1503-05

**Hardware Maintenance Manual
Volume 3: ThinkPad Computers**

March 1997

**We Want Your Comments!
(Please see page 611)**

This Manual Supports:

ThinkPad 365C/CD	(2625)
ThinkPad 365CS/CSD	(2625)
ThinkPad 365X/XD	(2625)
ThinkPad 380	(2635)
ThinkPad 385	(2635)
ThinkPad 560	(2640)
ThinkPad 760C/CD	(9546)
ThinkPad 760E/ED	(9546)
ThinkPad 760L/LD	(9546)
ThinkPad 760EL/ELD	(9547)
ThinkPad 760XL	(9546)
ThinkPad 760XD	(9547)
SelectaDock	(3547)

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Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 616.

Sixth Edition (March 1997)

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About This Manual

This manual contains service and reference information for IBM ThinkPad 365, 380, 385, 560, 760, and SelectaDock products. Use this manual along with the advanced diagnostic tests to troubleshoot problems effectively.

The manual is divided into sections as follows:

- The Introduction section provides general information, guidelines, and safety information required to service computers.
- The product-specific sections include service, reference, and product-specific parts information.
- The Common Devices Checkout section provides procedures for testing the devices that are commonly attached to ThinkPad computers.
- The Miscellaneous Information section contains information about acronyms, abbreviations, terms, and a telephone number listing.

Important

This manual is intended for trained servicers who are familiar with ThinkPad products. Use this manual along with the advanced diagnostic tests to troubleshoot problems effectively.

Before servicing an IBM mobile product, be sure to review the safety information under "Safety Notices (Multi-lingual Translations)" on page 8 and "Safety Information" on page 15.

Related Publications

The following mobile product publications are available through IBM or your IBM Authorized Dealer.

Publication	Part, Form Number
Mobile Systems HMM Volume 1: Laptop, Notebook, Portable, and ThinkPad Computers (Models L40, CL57, N45, N51, P70/P75, ThinkPad 300, 350, 500, 510, 710T, Expansion Unit, Dock I, Dock II)	30H2356, S82G-1501-01
Mobile Systems HMM Volume 2: ThinkPad Computers (Model 340, 355, 360, 370, 700, 701, 720, 750, 755)	30H2357, S82G-1502-03
ThinkPad 700 (9552) HMS	42G2016, S42G-2016
ThinkPad 700 (9552) HMR	42G2015, S42G-2015
ThinkPad 700C (9552) HMS	42G2022, S42G-2022
ThinkPad 700C (9552) HMR	42G2021, S42G-2021
ThinkPad 720/720C (9552) HMS	61G1193, S61G-1193
ThinkPad 720/720C (9552) HMR	61G1187, S61G-1187
ThinkPad 730T (2524) HMM	82G5497, S82G-5497
ThinkPad Exp. Crtg. (3550) HMS	42G2338, S42G-2338
ThinkPad Exp. Crtg. (3550) HMR	42G2339, S42G-2339
PS/2 FaxConcentrator HMS	15F2262, S15F-2262
PS/2 FaxConcentrator HMR	84F8541, S84F-8541
PS/2 Comm. Cartridge I HMS	10G5993, S10G-5993
PS/2 Comm. Cartridge I HMR	10G5992, S10G-5992
IBM High Speed Internal, PCMCIA Data/Fax Modems	61G1556, S61G-1556

Related Diskettes

The following diskettes are available through IBM or your IBM Authorized Dealer.

Diskette	Part, Form Number
ThinkPad 300 (2615) Advanced Diagnostics Diskette	33G9361, S33G-9361
ThinkPad 350, 350C, 425, 425C (2618) Advanced Diagnostics Diskette	A211000, GA21-1000
ThinkPad 365 (2625) Advanced Diagnostics Diskette	76H7578, S30H-2498
ThinkPad 500 (2603) Advanced Diagnostics Diskette	71G3702, S71G-3702
ThinkPad 510 (2604) Advanced Diagnostics Diskette	83G8095, S83G-8095
ThinkPad 700 (9552) Reference Diskette	42G2017, S42G-2017
ThinkPad 700C (9552) Reference Diskette	42G2023, S42G-2023
ThinkPad 720/720C (9552) Reference Diskette	61G1194, S61G-1194
ThinkPad Hardware Maintenance Diskette (for all Models 355, 360, 560, 750, 755, 760)	78H5384, S78H-5384
ThinkPad Dock I (3545)	71G4140, S71G-4140
Docking Station (3550)	42G2428, S42G-2428
Data/Fax Modem	61G1556, S61G-1556
FaxConcentrator/A	84F8540, S84F-8540

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Portable Computer Descriptions

Models N51, CL57, and P70/75 and Thinkpads 700x and 720x are Micro Channel systems. All others are AT/ISA bus systems.

Model	Type	Processor	Memory	Hrd Dsk
Model L40SX	8543-044	386SX-20	2M/18M	60M
Model N45 SL	2614-065	386SL-25	2M/8M	80M
	2614-067	386SL-25	2M/8M	120M
Model N51 SLC	8551-025	386SLC-16	2M/10M	80M
Model N51 SX	8551-033	386SX-16	2M/10M	40M
Model CL57 SX	8554-045	386SX-20	2M/16M	80M
Model P70 386	8573-031	80386-16	2M/8M	30M
	8573-061	80386-20	2M/8M	60M
	8573-121	80386-20	2M/8M	120M
Model P75 486	8573-161	80486-33	8M/16M	160M
	8573-401	80486-33	8M/16M	400M
ThinkPad 300	2615-065	386SL-25	4M/12M	80M
	2615-067	386SL-25	4M/12M	120M
ThinkPad 340	2610	486SLC2-50/25	4M/12M	125M
ThinkPad 340CSE	2610	486SLC2-50/25	4M/12M	200M
ThinkPad 340CSE	2610	486SLC2-66/33	4M/12M	360M
ThinkPad 345	2610	486DX4-75	4M/20M	360M
ThinkPad 345CS	2610	DX4-75	4M/20M	540M
ThinkPad 350	2618-AOE	486SL-25	4M/20M	85M
	2618-JOA	486SL-25	4M/20M	125M
	2618-LOA	486SL-25	4M/20M	250M
ThinkPad 350C	2618-NOA	486SL-25	4M/20M	125M
	2618-POA	486SL-25	4M/20M	250M
ThinkPad 355	2619	486SX-33	4M/16M	125M
ThinkPad 355C	2619	486SX-33	4M/16M	125M
	2619	486SX-33	4M/16M	250M
ThinkPad 355Cs	2619	486SX-33	2M/16M	170M
	2619	486SX-33	2M/16M	250M
ThinkPad 360	2620	486SX-33	4M/16M	170M
	2620	486SX-33	4M/16M	340M
ThinkPad 360C	2620	486SX-33	4M/16M	170M
	2620	486SX-33	4M/16M	340M
ThinkPad 360Cs	2620	486SX-33	4M/16M	170M
	2620	486SX-33	4M/16M	340M
ThinkPad 360Ce	2620	486DX2-50/25	4M/16M	170M
	2620	486DX2-50/25	4M/16M	340M
	2620	486DX2-50/25	4M/16M	540M
ThinkPad 360Cse	2620	486DX2-50/25	4M/16M	170M
	2620	486DX2-50/25	4M/16M	340M
	2620	486DX2-50/25	4M/16M	540M
ThinkPad 360P	2620	486SX-33	4M/16M	170M
	2620	486SX-33	4M/16M	340M
ThinkPad 365C	2625-205	486DX4-75	8M/24M	340M
	2625-x05	486DX4-75	8M/24M	540M
ThinkPad 365E	2625	5x86-100/33	8M/24M	540M
ThinkPad 365ED	2625	5x86-100/33	8M/24M	540M
ThinkPad 365X/XD	2625	Pentium-100	8M/24M	540M
	2625	Pentium-100	8M/24M	810M
	2625	Pentium-100	8M/24M	1.0G
ThinkPad 365X/XD	2625	Pentium-120	8M/24M	540M
	2625	Pentium-120	8M/24M	810M
	2625	Pentium-120	8M/24M	1.0G
ThinkPad 365X/XD	2625	Pentium-133	8M/40M	810M
	2625	Pentium-133	8M/40M	1.0G
	2625	Pentium-133	8M/40M	1.3G
ThinkPad 370C	9545	486DX4-75/25	4M/32M	340M
	9545	486DX4-75/25	4M/32M	540M
	9545	486DX4-75/33	4M/32M	810M

C Color
M Megabyte
P Pen
T Tablet
TPF ThinkPad File

Model	Type	Processor	Memory	Hrd Dsk
ThinkPad 380	2635	Pentium-150	16M/48M	1.08G
	2635	Pentium-150	16M/48M	1.35G
	2635	Pentium-150	16M/48M	2.10G
ThinkPad 385	2635	Pentium-150	16M/48M	1.08G
	2635	Pentium-150	16M/48M	1.35G
	2635	Pentium-150	16M/48M	2.10G
ThinkPad 500	2603-081	486SLC2-50/25	4M/12M	80M
	2603-171	486SLC2-50/25	4M/12M	170M
ThinkPad 560	2640	Pentium-100	8M/40M	540M
	2640	Pentium-100	8M/40M	810M
	2640	Pentium-100	8M/40M	1.0G
ThinkPad 560	2640	Pentium-120	8M/40M	540M
	2640	Pentium-120	8M/40M	810M
ThinkPad 560	2640	Pentium-120	8M/40M	1.0G
	2640	Pentium-130	8M/40M	540M
	2640	Pentium-130	8M/40M	810M
ThinkPad 700	9552-300	486SLC-25	4M/16M	80M
	9552-301	486SLC-25	4M/16M	120M
ThinkPad 700C	9552-30B	486SLC-25	4M/16M	120M
ThinkPad 701C	2630	486DX2-25/50	4M/32M	360MB
	2630	486DX2-25/50	4M/32M	540MB
	2630	486DX4-25/75	8M/32M	360MB
	2630	486DX4-25/75	8M/32M	540MB
ThinkPad 701Cs	2630	486DX2-25/50	4M/32M	360MB
	2630	486DX2-25/50	4M/32M	540MB
	2630	486DX4-25/75	8M/32M	360MB
	2630	486DX4-25/75	8M/32M	540MB
ThinkPad 710T	2523-09Y	486SLC2-25	4M/12M	TPF
	2523-302	486SLC2-25	4M/12M	60M
	2523-303	486SLC2-25	4M/12M	60M
ThinkPad 720	9552-307	486SLC-25/50	4M/16M	120M
	9552-308	486SLC-25/50	4M/16M	160M
ThinkPad 720C	9552-30J	486SLC-25/50	4M/16M	160M
ThinkPad 730T	2524	486SLC2-25	4M/12M	0M
	2524	486SLC2-25	4M/12M	60M
ThinkPad 750	9545-006	486SL-33	4M/20M	170M
	9545-008	486SL-33	4M/20M	340M
ThinkPad 750C	9545-306	486SL-33	4M/20M	170M
	9545-308	486SL-33	4M/20M	340M
ThinkPad 750Ce	9545	P24S-50/25	4M/20M	340M
ThinkPad 750Cs	9545	486SL-33	4M/20M	170M
	9545	486SL-33	4M/20M	340M
ThinkPad 750P	9545-40C	486SL-33	4M/20M	170M
	9545-40E	486SL-33	4M/20M	340M
ThinkPad 755C	9545	486DX4-50/25	4M/32M	170M
	9545	486DX4-50/25	4M/32M	340M
	9545	486DX4-50/25	4M/32M	540M
	9545	486DX4-75/25	4M/32M	170M
	9545	486DX4-75/25	4M/32M	340M
	9545	486DX4-75/25	4M/32M	540M
ThinkPad 755CD	9545	486DX4-100/33	8M/32M	540M
	9545	486DX4-100/33	8M/32M	810M
ThinkPad 755CDV	9545	486DX4-100/33	8M/32M	540M
	9545	486DX4-100/33	8M/32M	810M
ThinkPad 755Ce	9545	486DX4-100/33	8M/32M	340M
	9545	486DX4-100/33	8M/32M	540M
	9545	486DX4-100/33	8M/32M	810M
	9545	486DX4-50/25	8M/32M	170M
ThinkPad 755Cs	9545	486DX4-50/25	8M/32M	340M
	9545	486DX4-50/25	8M/32M	540M
	9545	486DX4-75/25	8M/32M	170M
	9545	486DX4-75/25	8M/32M	340M
	9545	486DX4-75/25	8M/32M	540M
	9545	486DX4-100/33	8M/32M	340M
ThinkPad 755Cse	9545	486DX4-100/33	8M/32M	540M
	9545	486DX4-100/33	8M/32M	810M

C Color
M Megabyte
P Pen
T Tablet
TPF ThinkPad File

Model	Type	Processor	Memory	Hrd Dsk
ThinkPad 755CV	9545	486DX4-100/33	8M/32M	540M
	9545	486DX4-100/33	8M/32M	810M
ThinkPad 755CV	9545	486DX4-100/33	8M/32M	540M
	9545	486DX4-100/33	8M/32M	810M
ThinkPad 760C/CD	9546	Pentium-90	8M/40M	360M
	9546	Pentium-120	8M/40M	720M
	9546	Pentium-90	8M/40M	810M
	9546	Pentium-120	8M/40M	1.2G
ThinkPad 760E/ED	9546	Pentium-120	8M/80M	810M
	9546	Pentium-133	8M/80M	1.0G
	9546	Pentium-150	8M/80M	1.2G
	9546	Pentium-166	8M/80M	1.3G
	9546	Pentium-166	8M/80M	2.1G
ThinkPad 760EL/ELD	9547	Pentium-100	8M/80M	810M
	9547	Pentium-100	8M/80M	1.0G
	9547	Pentium-100	8M/80M	1.2G
	9547	Pentium-120	8M/80M	810M
	9547	Pentium-120	8M/80M	1.0G
	9547	Pentium-120	8M/80M	1.2G
	9547	Pentium-133	8M/80M	810M
	9547	Pentium-133	8M/80M	1.0G
	9547	Pentium-133	8M/80M	1.2G
	9547	Pentium-133	8M/80M	810M
ThinkPad 760L/LD	9547	Pentium-90	8M/40M	810M
	9547	Pentium-90	8M/40M	1.1G
	9547	Pentium-90	8M/40M	1.2G
	9547	Pentium-120	8M/40M	810M
	9547	Pentium-120	8M/40M	1.1G
	9547	Pentium-120	8M/40M	1.2G
ThinkPad 760X	9546	Pentium-150	32M/80M	3.0G
ThinkPad 760XD	9546	Pentium-166	32M/80M	3.0G
ThinkPad 760XL	9547	Pentium-166	16M/80M	2.1G
	9547	Pentium-166	16M/80M	3.0G

C Color
M Megabyte
P Pen

T Tablet
TPF ThinkPad File

Drive and Diskette Compatibility Matrix

The following table provides identification information for 3.5-inch drives.

Diskette Drive	Identifying Mark
3.5-Inch - 1.44MB	1.44 on the eject button
3.5-Inch - 2.88MB	2.88 on the eject button

The following table provides compatibility information for 3.5-inch diskettes and 3.5-inch diskette drives.

Diskette Capacity	1.44MB Drive	2.88MB Drive
1.0MB	Read/Write	Read/Write
2.0MB	Read/Write	Read/Write
4.0MB	Not Compatible	Read/Write

The following table provides identification information for 5.25-inch diskette drives.

Diskette Drive	Identifying Mark
5.25-Inch - 360KB (External)	Asterisk on bezel
5.25-Inch - 1.2MB (Internal)	1.2 on the eject button

The following table provides compatibility information for 5.25-inch diskettes and 5.25-inch diskette drives.

Diskette Capacity	360KB Drive	1.2MB Drive
360KB	Read/Write	Read/Write
1.2MB	Not Compatible	Read/Write

Note: A 360KB diskette written to or formatted on a 1.2MB drive can be read reliably only on a 1.2MB drive.

Important Service Information

Important

Diskette fixes are customer installable. The diskette fixes are located on the PC Company Bulletin Board Service (BBS). The direct phone line for modem connection is 919-557-0001 or tieline 255-0001.

Advise customers to contact the PC Company HelpCenter at 800-772-2227 if they need assistance in obtaining or installing any diskette fixes.

Customers in Canada should call IBM HelpPC at 800-565-3344 for assistance or down-load information. The Canadian BBS phone numbers are:

Montreal	514-938-3022
Toronto	905-316-4255
Vancouver	604-664-6464
Winnipeg	204-934-2735

FRU Replacement Strategy

Before Replacing Parts

Ensure that all diskette fixes are installed prior to replacing any FRUs listed in this manual.

Use the following strategy to prevent unnecessary FRU replacement and service expense:

- **If you are instructed to replace a FRU and that does not correct the problem, reinstall the original FRU before you continue.**
- Some computers have both a processor board and a system board. If you are instructed to replace either the processor board or the system board, and the first board that you replaced does not correct the problem, reinstall the original board, then replace the other (processor or system) board.
- If an adapter or device consists of more than one FRU, an error code may be caused by any of the FRUs. Before replacing the adapter or device, remove the FRUs, one by one, to see if the symptoms change. Replace only the FRU that changed the symptoms.

Attention

A customized setup configuration (other than default settings) may exist on the computer you are servicing. Running Automatic Configuration may alter those settings. Note the current configuration settings (using the View Configuration option) and verify that the settings are in place when service is complete.

The advanced diagnostic tests are intended to test *only* IBM products. Non-IBM products or modified options can give false errors and invalid responses.

Hard Disk Drive Replacement Strategy:

Always try to run a low-level format before replacing a hard disk drive.

Attention

The drive startup sequence in the computer you are servicing might have been changed. Be extremely careful during write operations such as copying, saving, or formatting. Data or programs can be overwritten if you select an incorrect drive.

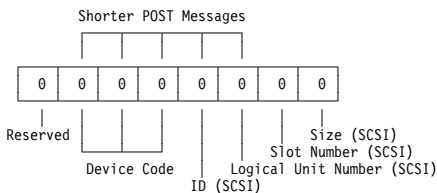
How to Use Error Messages

Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the Symptom-to-FRU Index for the computer you are servicing.

How to Read POST Error Messages

POST error messages are displayed on the screen as three, four, five, or eight digits. The error messages that can be displayed as shorter POST messages are highlighted in this index. Some digits will represent different information for SCSI errors versus non-SCSI errors.

The following example shows which digits display the shorter POST error messages and also defines the SCSI information in an eight-digit error message.



All SCSI devices are set to a different SCSI ID.

Duplicate SCSI ID settings can generate a false error message. Use the SCSI ID to determine whether the error message is coming from an internal or an external device.

Safety Notices (Multi-lingual Translations)

In this manual, safety notices appear in English with a page number reference to the appropriate multi-lingual, translated safety notice found in this section.

The following safety notices are provided in English, French, German, Italian, and Spanish languages.

Safety Notice 1

Before the computer is powered-on after FRU replacement, make sure all screws, springs, or other small parts are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical shorts.

Avant de remettre l'ordinateur sous tension après remplacement d'une unité en clientèle, vérifiez que tous les ressorts, vis et autres pièces sont bien en place et bien fixées. Pour ce faire, secouez l'unité et assurez-vous qu'aucun bruit suspect ne se produit. Des pièces métalliques ou des copeaux de métal pourraient causer un court-circuit.

Bevor nach einem FRU-Austausch der Computer wieder angeschlossen wird, muß sichergestellt werden, daß keine Schrauben, Federn oder andere Kleinteile fehlen oder im Gehäuse vergessen wurden. Der Computer muß geschüttelt und auf Klappergeräusche geprüft werden. Metallteile oder -splitter können Kurzschlüsse erzeugen.

Prima di accendere l'elaboratore dopo che é stata effettuata la sostituzione di una FRU, accertarsi che tutte le viti, le molle e tutte le altri parti di piccole dimensioni siano nella corretta posizione e non siano sparse all'interno dell'elaboratore. Verificare ciò scuotendo l'elaboratore e prestando attenzione ad eventuali rumori; eventuali parti o pezzetti metallici possono provocare cortocircuiti pericolosi.

Antes de encender el sistema despues de sustituir una FRU, compruebe que todos los tornillos, muelles y demás piezas pequeñas se encuentran en su sitio y no se encuentran sueltas dentro del sistema. Compruébelo agitando el sistema y escuchando los posibles ruidos que provocarían. Las piezas metálicas pueden causar cortocircuitos eléctricos.

Safety Notice 2

Some standby batteries contain a small amount of nickel and cadmium. Do not disassemble it, recharge it, throw it into fire or water, or short-circuit it. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

Certaines batteries de secours contiennent du nickel et du cadmium. Ne les démontez pas, ne les rechargez pas, ne les exposez ni au feu ni à l'eau. Ne les mettez pas en court-circuit. Pour les mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la pile de sauvegarde ou celle de l'horloge temps réel, veillez à n'utiliser que les modèles cités dans la liste de pièces détachées adéquate. Une batterie ou une pile inappropriée risque de prendre feu ou d'exploser.

Die Bereitschaftsbatterie, die sich unter dem Diskettenlaufwerk befindet, kann geringe Mengen Nickel und Cadmium enthalten. Sie darf nur durch die Verkaufsstelle oder den IBM Kundendienst ausgetauscht werden. Sie darf nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Die Batterie kann schwere Verbrennungen oder Verätzungen verursachen. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Bereitschafts- oder Systembatterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

Alcune batterie di riserva contengono una piccola quantità di nichel e cadmio. Non smontarle, ricaricarle, gettarle nel fuoco o nell'acqua né cortocircuitarle. Smaltirle secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). Quando si sostituisce la batteria dell'RTC (real time clock) o la batteria di supporto, utilizzare soltanto i tipi inseriti nell'appropriato Catalogo parti. L'impiego di una batteria non adatta potrebbe determinare l'incendio o l'esplosione della batteria stessa.

Algunas baterías de reserva contienen una pequeña cantidad de níquel y cadmio. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.

Safety Notice 3

The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations. Use only the battery in the appropriate parts listing when replacing the battery pack. Use of an incorrect battery can result in ignition or explosion of the battery.

La batterie contient du nickel. Ne la démontez pas, ne l'exposez ni au feu ni à l'eau. Ne la mettez pas en court-circuit. Pour la mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la batterie, veillez à n'utiliser que les modèles cités dans la liste de pièces détachées adéquate. En effet, une batterie inappropriée risque de prendre feu ou d'exploser.

Akkus enthalten geringe Mengen von Nickel. Sie dürfen nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Batterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

La batteria contiene piccole quantità di nichel. Non smontarla, gettarla nel fuoco o nell'acqua né cortocircuitarla. Smaltirla secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). Quando si sostituisce la batteria, utilizzare soltanto i tipi inseriti nell'appropriato Catalogo parti. L'impiego di una batteria non adatta potrebbe determinare l'incendio o l'esplosione della batteria stessa.

Las baterías contienen pequeñas cantidades de níquel. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas al sustituir la batería. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.

Safety Notice 4

The lithium battery can cause a fire, explosion, or severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

La pile de sauvegarde contient du lithium. Elle présente des risques d'incendie, d'explosion ou de brûlures graves. Ne la rechargez pas, ne retirez pas son connecteur polarisé et ne la démontez pas. Ne l'exposez pas à une température supérieure à 100°C, ne la faites pas brûler et n'en exposez pas le contenu à l'eau. Mettez la pile au rebut conformément à la réglementation en vigueur. Une pile inappropriée risque de prendre feu ou d'exploser.

Die Systematterie ist eine Lithiumatterie. Sie kann sich entzünden, explodieren oder schwere Verbrennungen hervorrufen. Batterien dieses Typs dürfen nicht aufgeladen, zerlegt, über 100 C erhitzt oder verbrannt werden. Auch darf ihr Inhalt nicht mit Wasser in Verbindung gebracht oder der zur richtigen Polung angebrachte Verbindungsstecker entfernt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Batterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

La batteria di supporto è una batteria al litio e può incendiarsi, esplodere o procurare gravi ustioni. Evitare di ricaricarla, smontarne il connettore polarizzato, smontarla, riscaldarla ad una temperatura superiore ai 100 gradi centigradi, incendiarla o gettarla in acqua. Smaltirla secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). L'impiego di una batteria non adatta potrebbe determinare l'incendio o l'esplosione della batteria stessa.

La batería de repuesto es una batería de litio y puede provocar incendios, explosiones o quemaduras graves. No la recargue, ni quite el conector polarizado, ni la desmonte, ni caliente por encima de los 100°C (212°F), ni la incinere ni exponga el contenido de sus celdas al agua. Deséchela tal como dispone la normativa local.

Safety Notice 5

If the LCD breaks and the fluid from inside the LCD gets into your eyes or on your hands, immediately wash the affected areas with water for at least 15 minutes. Seek medical care if any symptoms from the fluid are present after washing.

Si le panneau d'affichage à cristaux liquides se brise et que vous recevez dans les yeux ou sur les mains une partie du fluide, rincez-les abondamment pendant au moins quinze minutes. Consultez un médecin si des symptômes persistent après le lavage.

Die Leuchtstoffröhre im LCD-Bildschirm enthält Quecksilber. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Der LCD-Bildschirm besteht aus Glas und kann zerbrechen, wenn er unsachgemäß behandelt wird oder der Computer auf den Boden fällt. Wenn der Bildschirm beschädigt ist und die darin befindliche Flüssigkeit in Kontakt mit Haut und Augen gerät, sollten die betroffenen Stellen mindestens 15 Minuten mit Wasser abgespült und bei Beschwerden anschließend ein Arzt aufgesucht werden.

Nel caso che caso l'LCD si dovesse rompere ed il liquido in esso contenuto entrasse in contatto con gli occhi o le mani, lavare immediatamente le parti interessate con acqua corrente per almeno 15 minuti; poi consultare un medico se i sintomi dovessero permanere.

Si la LCD se rompe y el fluido de su interior entra en contacto con sus ojos o sus manos, lave inmediatamente las áreas afectadas con agua durante 15 minutos como mínimo. Obtenga atención medica si se presenta algún síntoma del fluido despues de lavarse.

Safety Notice 6

To avoid shock, do not remove the plastic cover that surrounds the lower portion of the inverter card.

Afin d'éviter tout risque de choc électrique, ne retirez pas le cache en plastique protégeant la partie inférieure de la carte d'alimentation.

Aus Sicherheitsgründen die Kunststoffabdeckung, die den unteren Teil der Spannungswandlerplatine umgibt, nicht entfernen.

Per evitare scosse elettriche, non rimuovere la copertura in plastica che avvolge la parte inferiore della scheda invertitore.

Para evitar descargas, no quite la cubierta de plástico que rodea la parte baja de la tarjeta invertida.

Safety Notice 7

Though main batteries have low voltage, a shorted or grounded battery can produce enough current to burn combustible materials or personnel.

Bien que le voltage des batteries principales soit peu élevé, le court-circuit ou la mise à la masse d'une batterie peut produire suffisamment de courant pour brûler des matériaux combustibles ou causer des brûlures corporelles graves.

Obwohl Hauptbatterien eine niedrige Spannung haben, können sie doch bei Kurzschluß oder Erdung genug Strom abgeben, um brennbare Materialien zu entzünden oder Verletzungen bei Personen hervorzurufen.

Sebbene le batterie di alimentazione siano a basso voltaggio, una batteria in corto circuito o a massa può fornire corrente sufficiente da bruciare materiali combustibili o provocare ustioni ai tecnici di manutenzione.

Aunque las baterías principales tienen un voltaje bajo, una batería cortocircuitada o con contacto a tierra puede producir la corriente suficiente como para quemar material combustible o provocar quemaduras en el personal.

Safety Notice 8

Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery pack, then disconnect any interconnecting cables.

Avant de retirer une unité remplaçable en clientèle, mettez le système hors tension, débranchez tous les cordons d'alimentation des socles de prise de courant, retirez la batterie et déconnectez tous les cordons d'interface.

Die Stromzufuhr muß abgeschaltet, alle Stromkabel aus der Steckdose gezogen, der Akku entfernt und alle Verbindungskabel abgenommen sein, bevor eine FRU entfernt wird.

Prima di rimuovere qualsiasi FRU, spegnere il sistema, scollegare dalle prese elettriche tutti i cavi di alimentazione, rimuovere la batteria e poi scollegare i cavi di interconnessione.

Antes de quitar una FRU, apague el sistema, desenchufe todos los cables de las tomas de corriente eléctrica, quite la batería y, a continuación, desconecte cualquier cable de conexión entre dispositivos.

Safety Information

The following section contains the safety information that you need to be familiar with before servicing an IBM mobile computer.

General Safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally between your feet.
 3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.*
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.
Attention: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

Electrical Safety

Observe the following rules when working on electrical equipment.

Important

Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine that has *exposed* electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.

Attention: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.

Attention: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts *with the power on* when they are removed from their normal operating places in a machine:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generators
 and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
 - **Use caution; do not become a victim yourself.**
 - **Switch off power.**
 - **Send another person to get medical aid.**

Safety Inspection Guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented in a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the computer. Disconnect the power cord.
3. Check the power cord for:
 - a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
 - b. The power cord should be the appropriate type as specified in the parts listings.
 - c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling Electrostatic Discharge-Sensitive Devices

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the machine, the part, the work mat, and the person handling the part are all at the same charge.

Notes

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

Note

The use of a grounding system is desirable but not required to protect against ESD damage.

- Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
- Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.
- Use the round ground-prong of the AC plug on AC-operated computers.

Grounding Requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Laser Compliance Statement

Some IBM Personal Computer models are equipped from the factory with a CD-ROM drive. CD-ROM drives are also sold separately as options. The CD-ROM drive is a laser product. The CD-ROM drive is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products. Elsewhere, the drive is certified to conform to the requirements of the International Electrotechnical Commission (IEC) 825 and CENELEC EN 60 825 for Class 1 laser products.

When a CD-ROM drive is installed, note the following.

CAUTION:

Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

O uso de controles, ajustes ou desempenho de procedimentos diferentes daqueles aqui especificados pode resultar em perigosa exposição à radiação.

凡未在这里指明的任何控制用法、调整、行为，都会导致严重后果。

Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites.

Werden Steuer- und Einstellelemente anders als hier festgesetzt verwendet, kann gefährliche Laserstrahlung auftreten.

Az itt előírt eljárásoktól, beállítástól és vezérlésektől eltérni a lézersugárzás veszélye miatt kockázatos !

L'utilizzo di controlli, regolazioni o l'esecuzione di procedure diverse da quelle specificate possono provocare l'esposizione a

Использование элементов настройки и выполнение процедур иных, чем указано здесь, может привести к опасному радиационному облучению.

Použitie kontrôl, úprav alebo iných vykonaní od iných výrobcov, ako je v tomto špecifikované, mohlo by mať za následok nebezpečenstvo vystavenia sa vyžiarovaniu.

El uso de controles o ajustes o la ejecución de procedimientos distintos de los aquí especificados

puede provocar la exposición a radiaciones peligrosas.

Opening the CD-ROM drive could result in exposure to hazardous laser radiation. There are no serviceable parts inside the CD-ROM drive. **Do not open.**

Some CD-ROM drives contain an embedded Class 3A or Class 3B laser diode. Note the following.

DANGER:

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

Radiação por raio laser ao abrir. Não olhe fixo no feixe de luz, não olhe diretamente por meio de instrumentos óticos e evite exposição direta com o feixe de luz.

开启时会有激光发射时，请勿直视激光光束，请勿直接查看视觉仪器，并且避免直接接触在激光光束之中。

Rayonnement laser si carter ouvert. Évitez de fixer le faisceau, de le regarder directement avec des instruments optiques, ou de vous exposer au rayon.

Laserstrahlung bei geöffnetem Gerät. Nicht direkt oder über optische Instrumente in den Laserstrahl sehen und den Strahlungsbereich meiden.

Kinyitáskor lézersugár ! Ne nézzen bele se szabad szemmel, se optikai eszközökkel. Kerülje a sugárnyalábbal való érintkezést !

Aprindo l'unità vengono emesse radiazioni laser. Non fissare il fascio, non guardarlo direttamente con strumenti ottici e evitare l'esposizione diretta al fascio.

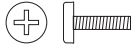







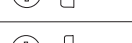



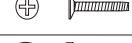


Открывая, берегитесь лазерного излучения. Не смотрите на луч, не разглядывайте его с помощью оптических инструментов, а также избегайте прямого воздействия лазерного луча.

Ked' je laserová jednotka otvorená. Vyhňte sa priamemu pohľadu a nehladte priamo s optickými nástrojmi do lúča a vyhňte sa priamemu vystaveniu lúčov.

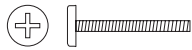









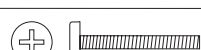




Radiación láser al abrir. No mire fijamente ni examine con instrumental óptico el haz de luz. Evite la exposición directa al haz.

Screw Size Chart



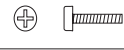












Use the chart below to match the size and shape of the screws used in the computer you are servicing.

A		Silver
B		Black
C		Silver
D		Brass
E		Black
F		Black
G		Black
H		Brass
J		Silver
K		Brass
L		Silver
M		Silver
N		Silver
P		Black
Q		Brass

Screw Size Chart (continued): Use the chart below to match the size and shape of the screws used in the computer you are servicing.

R		Brass
S		Black
T		Brass
U		Black
V		Brass
W		Black
X		Black
Y		Brass
Z		Brass
AA		Black
BB		Brass
CC		Brass
DD		Black
EE		Black
FF		Silver

Screw Size Chart (continued): Use the chart below to match the size and shape of the screws used in the computer you are servicing.

GG		Silver
HH		Brass
JJ		Silver
KK		Black
LL		Brass
MM		Brass
NN		Silver
PP		Brass
QQ		Brass
RR		Brass
SS		Brass
TT		Black
UU		Black
WW		Silver
XX		Black

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Read This First

This hardware maintenance manual contains information for the IBM ThinkPad 365 computer.

- **Be extremely careful during write operations such as copying, saving, or formatting.** Drives in the computer that you are servicing might have been rearranged or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs can be written over.
- **Use only the correct FRUs.** When you replace a FRU, make sure the model of the machine and FRU part number are correct by referring to the parts listing.
- **FRUs should not be replaced because of a single, un-reproducible failure.** Single failures can occur from a variety of reasons that have nothing to do with a hardware defect such as electrostatic discharge or software errors. FRU replacement should only be considered when a recurring problem exists.

The servicer must include the following in the parts exchange form or part return form that is attached to the returned FRU.

- ___ 1. Name and phone number of servicer.
- ___ 2. Date of service.
- ___ 3. Date when part failed.
- ___ 4. Date of purchase.
- ___ 5. Failure symptoms, error codes appearing on display, and beep symptoms.
- ___ 6. Procedure index and page number in which failing FRU was detected.
- ___ 7. Failing FRU name and part number.
- ___ 8. Machine type, model number, and serial number.
- ___ 9. Customer's name and address.

What to Do First

Before servicing the computer, determine whether or not the damage applies to the warranty by referring to the following:

Warranty Note

During the warranty period, the customer may be responsible for repair costs if the damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer.

The following list provides some common items that are not covered under warranty and some symptoms that could indicate that the system was subjected to stresses beyond normal use.

Warranty Coverage Notes

The following is not covered under warranty:

- LCD panel cracked from being dropped or applying too much force.
- Scratched (cosmetic) parts.
- Cracked or broken plastic parts, broken latches, broken pins or connectors caused by excessive force.
- Damage caused by liquid spilled onto the system.
- Damage caused by improperly inserting a PCMCIA card or installation of an incompatible card.
- Damage due to foreign material in the FDD or FDD bay.
- Damage to the diskette drive caused by pressing the diskette drive cover or inserting diskettes with multiple labels.
- Diskette eject button was bent or damaged.
- Damage to the CD-ROM drive caused by excessive force shocked or dropped.
- Fuse blown by attaching non-supported devices.
- Computer or hard disk could not be used because the password was forgotten.

If the following symptoms are present, they could indicate the damage was caused by non-warranted activity:

- Missing parts can be a symptom of unauthorized service or modification.
- HDD spindles can become noisy if subjected to excessive force or if dropped.
- Errors can be caused by exposure to strong magnetic fields.

How to Use Error Messages: Use the error codes or messages displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 41.

How to Diagnose Multiple FRUs: When the adapter or device has more than one FRU, the error code could be caused by either FRU. Before replacing multiple-FRUs, try removing or exchanging each FRU, one by one in the designated sequence, to see if the symptoms change.

Passwords: The Passwords are security features that are used to protect the system and the hard disk data from unauthorized access. There are two types of passwords:

- User Password
- Supervisor Password

How to Disable the Passwords

Important

This information is not available in this online HMM format. See your IBM Servicer or IBM Authorized Dealer for this procedure.

General Checkout

Use the following procedure as a guide for computer problems.

Note: The diagnostic tests are intended to test *only* IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible. Pay close attention to the error messages on the screen.
2. Verify the symptoms by attempting to recreate the failure by running the diagnostic test or by repeating the same operation.

Note: To run the diagnostics, refer to "How to Run Diagnostics" on page 51.

3. Use the following table to locate the description that best matches the symptom, then go to the page indicated.

Symptom	Go to
AC Adapter	"Checking the AC Adapter" on page 36.
Audio Card	"Audio Card Checkout" on page 34.
Battery Pack	"Checking the Battery Pack" on page 37.
Configuration is not the same as the installed devices.	"How to Run Diagnostics" on page 51.
Diskette Drive	"Diskette Drive Checkout" on page 34.
Keyboard/Auxiliary Device (Mouse/Pointing Device)	"Keyboard/Auxiliary Input Device Checkout" on page 33.
Memory related problems	"Memory Checkout" on page 31.
Operational Charging	"Checking Operational Charging" on page 37.
Other symptoms. (Such as LCD problems.)	"Symptom-to-FRU Index" on page 41, and then use other miscellaneous symptoms tables.
Port Replicator	"Port Replicator Power Overload" on page 40.
POST does not complete. No beeps/error code are indicated.	"Symptom-to-FRU Index" on page 41, and then use the No Beep Symptoms table.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 41, and then use the Beep Symptoms table.

Symptom	Go to
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 41, and then use the Numeric Error Codes table.
Power failure. (The power indicator does not go on or stay on.)	"Power Systems Checkout" on page 35.
Symptoms cannot be recreated. (Intermittent problems.)	Use the customer reported symptoms and go to "Symptom-to-FRU Index" on page 41.
TrackPoint III will not work	"TrackPoint III Checkout" on page 34.

Memory Checkout

Depending on the model, the memory size that is available for customer use appears differently. See the following table for the available memory size of each card.

System Board	8MB Memory Board	Optional SO-DIMM	Extended Memory	Switch Setting
640KB	8MB	0	7168KB	1,2,3,4 OFF
		4	11264KB	1,2,3,4 OFF
		16	23552KB	2 ON 1,3,4 OFF
640KB	16MB	0	15360KB	1,2,3,4, OFF
		4	19456KB	1,2,3,4 OFF
		16	31744KB	2 ON 1,3,4 OFF
Note: Refer to "Memory Board Switch Settings" on page 83 for Memory Board Switch location.				

Memory errors might stop system operations, show error messages on the screen, or hang the system. The computer detects memory parity errors but does not correct them.

Use the following procedure to isolate memory problems.

Memory Error Notes

- Ignore any references to parity errors.
- Remove any installed PCMCIA memory cards.

1. Make sure that any memory options are fully installed into their connectors. A loose connection can cause an error.
2. Run the diagnostics. See “How to Run Diagnostics” on page 51.
3. If memory problems occur intermittently, use the loop option to repeat the test.
4. FRUs should not be replaced because of a single, un-reproducible failure. Single failures can occur from a variety of reasons that have nothing to do with a hardware defect such as electrostatic discharge or software errors. FRU replacement should only be considered when a recurring problem exists.

Flash Memory: BIOS, system setup programs, and some diagnostic utilities are stored in flash memory.

Flash Memory Update: A flash memory update is required for new versions.

When Updating Flash Memory

During the flash update **do not**:

- Power-off the computer.
- Disconnect the AC Adapter.
- Remove the battery.
- Lift the keyboard.
- Press any key.

Attention

On certain systems, updating flash memory can reset all customer's configuration settings to the default values. The following steps bypass the CONFIG.SYS and AUTOEXEC.BAT files, so the customer's configuration settings are not reset to the default values.

To update the flash memory:

1. Power-off the computer.
2. Install the battery pack and connect the AC Adapter.
3. Insert the update diskette in drive A.
4. Power-on the computer.
5. When the message “Starting PC DOS” appears, press **F5** to bypass the CONFIG.SYS and AUTOEXEC.BAT.
6. At the prompt, select **Country Language** then press **Enter**.
7. Follow the instructions on the screen.

Keyboard/Auxiliary Input Device Checkout

Disconnect the external keyboard and mouse, then try the internal keyboard. If the internal keyboard works correctly, replace the external keyboard or mouse.

If the internal keyboard does not work correctly or an unexpected character appears, make sure that the three flexible cables extending from the keyboard are correctly seated in the connectors on the keyboard card.

If the keyboard cables are seated correctly, run the **Keyboard Test** using the IBM ThinkPad 365 Advanced Diagnostics Diskette.

Attention

To use the IBM ThinkPad 365 Advanced Diagnostics Diskette, you must have at least 500KB of free memory. Be sure to read the "README.PO" file on the IBM ThinkPad 365 Advanced Diagnostics Diskette before using the following instructions.

1. Power-off the computer.
2. Insert the IBM ThinkPad 365 Advanced Diagnostics Diskette into drive A.
3. Power-on the computer.
4. Follow the instructions on the screen and proceed to the Main Menu. Allow two to four minutes for the diagnostic programs to load.
5. At the Main Menu, select **Diagnostics**.
6. At the Diagnostics Menu, select **Module Tests**.
7. At the Module Tests Menu, select **Keyboard**.
8. Press **Enter** to run the keyboard tests.
9. Do not press any key until prompted, then follow the instructions on the screen.
10. When the tests are completed, press **Esc** twice to return to the main menu.
11. Select **Exit**.

If the tests detect a keyboard problem, do the following one at a time to correct the problem. Do not replace a non-defective FRU.

- Reseat the three cables.
- Replace the keyboard.
- Replace the keyboard card.
- Replace the system board.

The following auxiliary input devices are supported for this computer.

- Space-saver keyboard
- Mouse (PS/2 compatible)

If any of the above devices do not work, reseat the cable connector and repeat the failing operation. If the problem

does not occur again, recheck the connector. If the problem remains, replace the device, and then the system board.

TrackPoint III Checkout

The TrackPoint automatically compensates to adjust the pointer sensor. During this process, the pointer moves on the screen automatically for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the TrackPoint pointer while the computer is powered on or while the system is running, or re-adjustment is required because the temperature has exceeded its normal temperature range. This symptom does not indicate a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

If either the pointing stick or the click button will not work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU.

- Reseat the three keyboard cables.
- Replace the keyboard.
- Replace the keyboard card.
- Replace the system board.

Audio Card Checkout

Do the following to run the audio tests.

- Go to a DOS full screen, press **Ctrl+Alt+F11** to access the setup utility.
Note: The setup screen can only be accessed at a full-screen DOS prompt.
- Use the arrow keys to select **Audio**, then use the space bar to toggle the audio selection to enabled (**IRQ 7**).
- Set the volume control to mid range.
- Press **Esc** then **F4** to save and reboot.
- Listen for the sounds.

If the audio card does not produce any sound during reboot, replace the Audio card. If the problem remains, replace the system board.

Diskette Drive Checkout

Important

The ThinkPad 365 does not support both an internal and external drive simultaneously.

Do the following to isolate the problem to a controller, drive, or diskette. A scratch, write enabled, non-defective 2HD diskette is required. Make sure that the diskette does not have more than one label attached to it. Multiple labels can cause damage to the drive or can cause the drive to fail.

Use the following information to test the diskette drive.

Attention

To use the IBM ThinkPad 365 Advanced Diagnostics Diskette, you must have at least 500KB of free memory. Be sure to read the "README.PO" file on the IBM ThinkPad 365 Advanced Diagnostics Diskette before using the following instructions.

1. Power-off the computer.
2. Insert the IBM ThinkPad 365 Advanced Diagnostics Diskette into drive A.
3. Power-on the computer.
4. Follow the instructions on the screen and proceed to the Main Menu. Allow two to four minutes for the diagnostic programs to load.
5. At the Main Menu, select **Diagnostics**.
6. At the Diagnostics Menu, select **Module Tests**.
7. At the Module Tests Menu, select **Floppy Disks**.
8. Press **Enter** to run the Floppy Disks tests.
9. Do not press any key until prompted, then follow the instructions on the screen.
10. When the tests are completed, press **Esc** twice to return to the main menu.
11. Select **Exit**.

If the drive is attached through a Port Replicator and the test detects errors, move the drive to the computer's diskette drive connector directly, and test it again.

- If an error occurs replace the diskette drive.
- If no errors occur, the drive is not defective. Go to "Port Replicator Checkout" on page 597 to isolate the replicator problem.

If the drive is attached through a Diskette Drive Attachment Unit, replace the unit.

Power Systems Checkout

To verify the symptom of the problem:

1. Remove the port replicator (if attached), reconnect the AC Adapter, and replace the battery pack in the computer.

If the computer power problem remains, do the following:

2. Remove the battery pack, external diskette drive, and hard disk drive.
3. Connect the AC Adapter and check that power is supplied.
4. Connect one at a time, the external diskette drive, and hard disk drive and check that power is supplied from each power source.
5. Disconnect the AC Adapter, remove the hard disk and diskette drive, and install the charged battery pack; then check that power is supplied by battery pack.

6. Remove the memory card and PCMCIA cards and check the power supply. Reinstall one at a time and check the power supply.
7. Disconnect the AC Adapter. Remove the CD-ROM and Audio Card. Reinstall one at a time, connect the AC Adapter and check that power is supplied.

If you suspect a power problem, see the appropriate power supply check listed below.

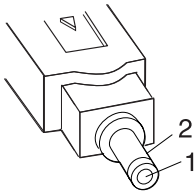
- “Checking the AC Adapter.”
- “Checking Operational Charging” on page 37.
- “Checking the Battery Pack” on page 37.
- “Port Replicator Power Overload” on page 40.

Checking the AC Adapter: You are here because the computer fails only when the AC Adapter is used.

- If the power problem occurs only when the port replicator is used, replace the replicator.
- If the power-on indicator does not turn on, check the power cord of the AC Adapter for correct continuity and installation.
- If the operational charge does not work, go to “Checking Operational Charging” on page 37.

Use the following procedure to check the adapter.

1. Unplug the AC Adapter cable from the computer and measure the output voltage at the plug of the AC Adapter cable. See the following figure.



Pin	Voltage (V dc)
1	+10.0 to +16.0
2	Ground

- If the voltage is correct:
 - Replace the DC/DC Card.
 - If the problem remains, replace the system board.
 - If the problem still is not corrected, go to “Undetermined Problems” on page 49.
 - If the voltage is not correct, go to the next step.
2. Unplug the AC Adapter cable from the ac power outlet and wait five minutes or longer to allow the over voltage protection circuit to be fully discharged and initialized.
 3. Plug the AC Adapter cable into the ac power outlet.

4. Measure the output voltage of the AC Adapter.
5. If the voltage is still not correct, replace the AC Adapter.

Note: An audible noise from the AC Adapter does not always indicate a defective adapter.

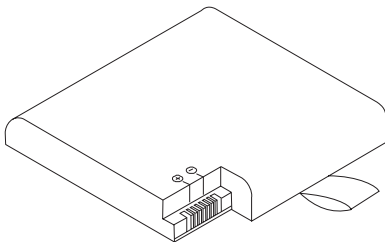
Checking Operational Charging: To check operational charging, use a discharged battery pack or a battery pack that shows an amber battery status indicator when it is installed in the computer.

Perform operational charging. If the battery status indicator turns orange and the battery charging indicator turns green within two minutes, replace the AC Adapter.

Checking the Battery Pack: Battery charging will not start until the Fuel-Gauge shows that less than 90% of the total power remains; with this condition the battery pack will charge to 100% of its capacity. This protects the battery pack from being over-charged or having a shortened life.

Before you perform the following procedure, be sure you have the correct battery pack for this model.

1. Power-off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 2 (+) and 6 (-). See the following figure.



3. If the voltage is less than +7.2 V dc, the battery pack has been discharged or is defective. Recharge the battery. If the recharging does not work, go to Step 5 on page 38 to check the charging circuit.

If the voltage is still less than +7.2 V dc after the recharging, replace the battery.

4. If the voltage is more than +7.2 V dc, measure the resistance between battery terminals 4 and 6. The resistance must be 4K ohms to 30K ohms.

If the resistance is not correct, replace the battery pack.

If the resistance is correct, replace the DC/DC card.

5. To check the charging circuit, do the following. Plug in the AC Adapter with the battery pack removed, then power-on the computer.
6. Measure the charging voltage between DC/DC terminals 2 (+) and 6 (-).
7. If the voltage is less than +9.0 V dc, replace the DC/DC card. If the voltage is more than +9.0 V dc, the charging circuit is working correctly, replace the battery pack.

Power Management Features

Five power management modes are provided by the computer to save power consumption and prolong battery power.

Standby Mode: When in standby mode the following occurs:

- The LCD backlight turns off.
- The hard disk motor stops.
- The CPU clock is set to the lowest speed.

Events that cause entering of standby mode:

- Standby requested by the Fn key (**Fn+F3**).
- No activity under **auto-standby** enabled by the feature utility.

Events that cause exiting or resuming of standby mode:

- (Resume) Any key operation.
- Ring wakeup if enabled.

Suspend Mode: When in suspend mode, the following, in addition to the four actions of standby mode, occur:

- The Audio is powered-off
- The CD-ROM is powered off.
- The LCD power is powered-off.
- The hard disk is powered-off.
- The CPU is stopped.

When the computer is powered with AC power and is used with one of the following IBM PC cards, the computer does not enter *suspend* or *hibernate mode* by either the LCD suspend switch or power-management timeout; the PC card and application program remain active.

- 3270 Emulation Credit Card Adapter
- 5250 Emulation Credit Card Adapter
- Token-Ring 16/4 Credit Card Adapter
- Credit Card Adapter for Ethernet
- IBM Modem

In the following condition, the computer cannot enter the suspend mode.

- While the communication link is running.

- Active interrupts (CD-ROM activity, etc.)

Events that cause entering of suspend mode:

- Suspend mode is requested by the Fn key (**Fn+F4**).
- The LCD is closed.
- The specified time has elapsed from the last operation with the keyboard, mouse, hard disk drive, parallel connector, diskette drive, or the AC Adapter is plugged in. The time is specified by **Suspend Timer** in the setup program (if enabled).
- If the battery condition is low the system enters the Safe Suspend mode and the configuration/setup information is saved. If the battery gets to critical the battery power indicator blinks (amber) and the system goes into the Hibernation mode.

Events that cause exiting or resuming of suspend mode:

- (Resume) The LCD is opened.
- (Resume) Real time clock alarm signaled.
- (Resume) Ring indicator (RI) signaled by serial or PCMCIA device.
- (Resume) Any keyboard key is pressed.
- (Exit) Timer conditions are satisfied to enter hibernation mode.

Hibernation Mode: When in hibernation mode, the following occurs:

- The system status, RAM, VRAM, and setup data are stored on the hard disk.
- The system is powered-off.

When the computer is powered with AC power and is used with one of the following IBM PC cards, the computer does not enter *suspend* or *hibernate mode* by either the LCD suspend switch or power-management timeout; the PC card and application program remain active.

- PCMCIA Data/FAX Modem
- High Speed PCMCIA Data/FAX Modem
- 3270 Emulation Credit Card Adapter
- 5250 Emulation Credit Card Adapter
- Token-Ring 16/4 Credit Card Adapter
- Credit Card Adapter for Ethernet

Events that cause entering of hibernation mode:

- The hibernation mode is requested by the Fn key (**Fn+F12**).
- Timer conditions are satisfied in suspend mode.
- Critical low battery condition. The system first goes into safe suspend mode, then when the battery reaches critical the system goes into the hibernation mode.

Event that causes exiting of hibernation mode.

- The power-on switch is operated.

When power is turned on, the hibernation history of the boot record on the hard disk is recognized and system status is restored from the hard disk to resume operation.

Doze Mode: In the Doze mode, the system slows down the central processing unit and the system uses less power. Enable the doze mode in the setup program. Exiting the doze mode is instantaneous by pressing any keyboard key.

Safe Suspend: Saves the computer state, then enters the suspend mode.

Port Replicator Power Overload: If power shut downs occur intermittently when using a port replicator, suspect an over-current problem. Some devices use more power; if the maximum usage of each device occurs simultaneously, the total current will exceed the limit, thereby causing a power shut down. Isolate this problem by removing one of the devices, and use the computer under the same condition to see whether a power shut down occurs. Do this procedure for all devices, then determine the cause.

Setup Utility

Note

The Setup Utility is ROM-resident and can only be started at a full-screen DOS prompt.

Do the following to run the Setup Utility.

1. Go to a DOS full screen.
2. Press **Ctrl+Alt+F11**.
3. Follow the instructions on the screen.

Note

When exiting the Setup Utility using **Fn+6**, press **Ctrl+Alt** together after returning to the full-screen DOS. This ensure the keyboard controller is in the proper reset state.

Symptom-to-FRU Index

The Symptom-to-FRU Index lists error symptoms and possible causes. The most likely cause is listed first. Always begin with "General Checkout" on page 30. This index can also be used to help you decide which FRUs to have available when servicing a computer.

If you are unable to correct the problem using this index, go to "Undetermined Problems" on page 49.

Notes

- If you have both an error message and an incorrect audio response, diagnose the error message first.
- Check all power supply voltages before you replace the system board. (See "Power Systems Checkout" on page 35.)

Beep Symptoms

Beeps symptoms are short tones or a series of short tones separated by pauses (intervals without sound). See the following examples.

Beep Symptom	FRU/Action
1-1-3 CMOS write/read test in progress or failure.	1. Run Setup 2. System Board
1-1-4 ROM BIOS check error.	1. System Board
1-2-1 Programmable interval timer 0 test in progress or failure.	1. System Board
1-2-2 DMA channel 0 address and count register test in progress or failure.	1. System Board
1-2-3 DMA page register write/read in progress or failure.	1. System Board
1-3-1 RAM refresh verification test in progress or failure.	1. System Board
1-3-3 First 64K RAM chip or data line failure, multi-bit.	1. RAM Memory Board 2. System Board
1-4-2 Parity failure first 64K RAM.	1. System Board
1-4-3 Fail-safe timer failure (only used by EISA BIOS).	1. System Board

Beep Symptom	FRU/Action
1-4-4 Software NMI port failure (only used by EISA BIOS).	1. System Board
2-1-1, 2-1-2, 2-1-3 2-1-4, 2-2-1, 2-2-2 2-2-3, 2-2-4, 2-3-1 2-3-2, 2-3-4, 2-4-1 2-4-2, 2-4-3, 2-4-4 First 64K RAM chip or data line failure on bit x.	1. RAM Memory Board 2. System Board
3-1-2 Master DMA register test in progress or failure.	1. System Board
3-1-3 Master interrupt mask register test in progress or failure.	1. System Board
3-1-4 Slave interrupt mask register test in progress or failure.	1. System Board
3-2-4 Keyboard controller test in progress or failure.	1. System Board 2. Keyboard 3. Keyboard Card
3-3-1 Slave DMA register test in progress or failure.	1. System Board
3-3-4 Screen memory test in progress or failure.	1. System Board
3-4-1 Screen initialization in progress.	1. System Board
3-4-2 Screen retrace test in progress.	1. System Board
4-2-1 Timer-tick interrupt test in progress or failure.	1. System Board
4-2-2 Shutdown test in progress or failure.	1. System Board 2. Processor Card
4-2-3 Gate A20 failure.	1. System Board
4-2-4 Unexpected interrupt in protected mode.	1. System Board 2. Processor Card
4-3-1 RAM test of memory above 64K in progress or failure.	1. RAM Memory Board 2. SO DIMM 3. System Board

Beep Symptom	FRU/Action
4-3-2 Programmable interval timer channel 2 test in progress or failure.	1. System Board
4-3-4 Real-time clock test in progress or failure.	1. System Board
4-4-1 Serial port test in progress or failure.	1. System Board
4-4-2 Parallel port test in progress or failure.	1. System Board
4-4-3 Math coprocessor test in progress or failure.	1. Processor Card 2. System Board

No Beep Symptoms

Symptom/Error	FRU/Action
No beep during POST but computer works correctly.	1. System Board 2. Audio card
No beep during POST and no display.	1. See "Undetermined Problems" on page 49. 2. System Board 3. Audio card 4. Memory 5. See "Power Systems Checkout" on page 35.

Error Messages

Error Message/Symptom	FRU/Action
Bus Timeout NMI , Slot <i>n</i> . Type (S)hut off NMI, (R)eboot, other keys to continue.	1. System Board
Configuration for slot <i>n</i>.	1. Run Setup Utility.
Diskette drive failure	1. See "Diskette Drive Checkout" on page 34.
Diskette drive <i>x</i> failure where <i>x</i> =0 or <i>x</i> =1.	1. See "Diskette Drive Checkout" on page 34.
Diskette read failure - press F1 to retry boot (or may also say F2 for Setup Utility).	1. Replace diskette with a bootable diskette and retry.
Gate A20 failure	1. System Board
Hard disk configuration error	1. Correct the hard disk configuration.
Hard disk controller failure	1. System Board
Hard Disk failure	1. Hard Disk
Hard disk failure - press F1 to retry boot (or may also say press F2 for Setup Utility).	1. Check drive selection in setup. 2. Hard Disk.
F2 to enter ROM-based SETUP	1. Run Setup Utility. 2. Verify Configuration.
ID information mismatch for slot <i>n</i>	1. Run Setup Utility.
Invalid configuration information.	1. Run Setup Utility.
Internal cache test failed - cache is disabled.	1. Processor Card 2. System Board
Keyboard clock line failure.	1. Keyboard cable and Keyboard connection. 2. System Board
Keyboard controller failure.	1. System Board
Keyboard data line failure.	1. System Board
Keyboard is locked.	1. Unlock the Keyboard
Keyboard stuck key failure.	1. Locate and fix. 2. Keyboard cable and Keyboard connection. 3. System Board
Memory failure at <i>hex-value</i>, read <i>hex-value</i>, expecting <i>hex-value</i>.	1. RAM Memory Board

Error Message/Symptom	FRU/Action
No boot device available - press F1 to reboot or press F2 for Setup Utility.	<ol style="list-style-type: none"> 1. Diskette 2. Diskette Drive 3. Hard Disk
No boot sector on hard disk. Press F1 to reboot or F2 for Setup Utility.	<ol style="list-style-type: none"> 1. Format the C drive.
No fail safe timer NMI	<ol style="list-style-type: none"> 1. System Board
No software port NMI	<ol style="list-style-type: none"> 1. System Board
No timer tick interrupt	<ol style="list-style-type: none"> 1. System Board
Not a boot diskette - press F1 to reboot or F2 for Setup Utility	<ol style="list-style-type: none"> 1. Replace diskette with a bootable diskette.
Pointer device failure	<ol style="list-style-type: none"> 1. Check cable connections 2. Keyboard (TrackPoint) 3. External Mouse
Real time clock failure	<ol style="list-style-type: none"> 1. Run Setup Utility
Shutdown failure	<ol style="list-style-type: none"> 1. Power-off, Power-on, Retry 2. System Board
Time of day not set - run SETUP program	<ol style="list-style-type: none"> 1. Run Setup Utility
Timer 2 failure	<ol style="list-style-type: none"> 1. System Board
Unexpected HW interrupt at address Type (R)eboot, other keys to continue. Hardware problem. Not displayed if the extended interrupt handler is not enabled.	<ol style="list-style-type: none"> 1. System Board
Unexpected interrupt in protected mode	<ol style="list-style-type: none"> 1. System Board
Unexpected SW interrupt at address Type (R)eboot, other keys to continue. Error(s) in software program. Not displayed if the extended interrupt handler is not enabled.	<ol style="list-style-type: none"> 1. System Board
Unexpected type 02 interrupt at xxxxxh Type (S)hut off NMI, (R)eboot, other keys to continue. Parity error occurred. Cause undetermined.	<ol style="list-style-type: none"> 1. System Board
Unresolved BUS Timeout NMI , Type (S)hut off NMI, (R)eboot, other keys to continue. Parity error occurred. Cause undetermined.	<ol style="list-style-type: none"> 1. System Board 2. Processor Card

Error Message/Symptom	FRU/Action
Unresolved memory parity error Type (S)hut off NMI, (R)eboot, other keys to continue. Parity error occurred. Cause undetermined.	<ol style="list-style-type: none"> 1. System Board 2. SO-DIMM 3. Optional Memory (8MB or 16MB Board)
xxxxxh Option ROM checksum failure where xxxxxh is the starting address of the option ROM	<ol style="list-style-type: none"> 1. Power-off, Power-on, Retry 2. Peripheral Card

LCD Related Symptoms

Important

The TFT LCD of the notebook computers contain over 921 000 thin film transistors (TFTs). A small number of missing, discolored or lighted dots (on all the time) is characteristic of TFT LCD technology. Excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of missing or discolored, or lighted dots in any colored background is 21 or more.

Symptom/Error	FRU/Action
<ul style="list-style-type: none"> • LCD backlight not working, or • LCD too dark, or • LCD brightness cannot be adjusted, or • LCD contrast cannot be adjusted. 	<ol style="list-style-type: none"> 1. Reseat the LCD connectors. 2. Inverter Card 3. LCD Assembly 4. Keyboard Card 5. DC/DC Card
<ul style="list-style-type: none"> • LCD screen unreadable, or • Characters missing pels, or • Screen abnormal, or • Wrong color displayed. 	<ol style="list-style-type: none"> 1. See the preceding important note. 2. Reseat all LCD connectors. 3. LCD Assembly 4. System Board 5. Keyboard Card
LCD has extra horizontal or vertical lines displayed.	<ol style="list-style-type: none"> 1. LCD Assembly
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System Board 2. DC/DC Card 3. Processor Card

Keyboard/TrackPoint Related Symptoms

Symptom/Error	FRU/Action
Keyboard (one or more keys) does not work.	<ol style="list-style-type: none"> 1. Reseat the three keyboard cables. 2. Keyboard 3. Keyboard Card 4. System Board
TrackPoint does not work.	<ol style="list-style-type: none"> 1. Go to "TrackPoint III Checkout" on page 34. 2. Keyboard 3. Keyboard Card 4. System Board
Pointer moves automatically or does not work correctly.	<ol style="list-style-type: none"> 1. See "TrackPoint III Checkout" on page 34.

Indicator Related Symptoms

Symptom/Error	FRU/Action
Indicator incorrectly remains off or on, but system runs correctly.	<ol style="list-style-type: none"> 1. Reseat the status indicator cable. 2. Status Indicator 3. System Board
Battery power status indicator blinks from green, yellow, to orange.	<ol style="list-style-type: none"> 1. Check that a correct battery is installed. 2. Battery Pack 3. DC/DC Card 4. System Board

Power Related Symptoms

Symptom/Error	FRU/Action
Power shut down during operation.	<ol style="list-style-type: none"> 1. Go to "Power Systems Checkout" on page 35. 2. Battery Pack 3. Remove the battery pack and let it cool for two hours. 4. DC/DC Card 5. Power sources
The system will not power-off.	<ol style="list-style-type: none"> 1. Remove AC Adapter. 2. Remove the battery. 3. Wait 10 seconds. 4. Reconnect the AC Adapter and try to reproduce the error. 5. If the error remains, replace the System Board.

Audio Related Symptoms

The following are the audio input sources:

- Line In
- Mic In
- System board
- CD-ROM
- Audio card

Note: Use either a data or music CD to check the audio function. If the audio fails see “Audio Card Checkout” on page 34.

Peripheral Device Related Symptoms

Symptom/Error	FRU/Action
External display does not work correctly.	1. See “ External Display Self-Test ” on page 592.
Printer problems.	1. Run Printer Self-test. 2. System Board 3. Parallel Port Device 4. Cable
Serial or parallel port device problems.	1. Device 2. Device Cable 3. System Board

Other Symptoms

Symptom/Error	FRU/Action
Errors occur only when Port Replicator is used.	1. See “ Port Replicator Checkout ” on page 597.
PCMCIA slot pin is damaged.	1. PCMCIA Socket 2. System Board

Note: If you cannot find a symptom or error in this list and the problem remains, see “Undetermined Problems” on page 49.

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should only be considered when a recurring problems exits.

When analyzing the intermittent problem, do the following:

1. Run the diagnostic test for the system board in loop mode at least 10 times.
2. If any error is detected, replace the FRU indicated. Rerun the test to verify that no more errors exist.

Undetermined Problems

You are here because the diagnostic tests did not identify which adapter or device failed, installed devices are incorrect, a short circuit is suspected, or the system is inoperative. Follow the procedures below to isolate the failing FRU (do not isolate non-defective FRUs).

Verify that all attached devices are supported by the computers.

Verify that the power supply being used at the time of the failure is operating correctly. (See "Power Systems Checkout" on page 35.)

1. Power-off the computer.
2. Check the cables, wires, and connectors for short circuits and open circuits. Visually check them for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices.
 - a. Non-IBM devices
 - b. Devices attached to external connectors
 - c. Printer, mouse, and other external devices
 - d. Battery pack
 - e. Hard disk drive
 - f. Diskette drive or the device attached to the diskette drive connector
 - g. DIMM card
 - h. CD-ROM
 - i. Sound card
 - j. Port replicator
 - k. Keyboard
 - l. Keyboard card

Note: Remember that removing the hard disk drive, or any adapter or device, might cause configuration errors. Ignore error code 174.
4. Power-on the computer.
5. Determine if the problem has changed.
6. If the problem does not occur again, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRUs one at a time. Do not replace a non-defective FRU.
 - DC/DC card
 - System board
 - LCD assembly
 - Processor card












Related Service Procedures

This section provides information about the following:

- “System Status Indicators”
- “I/O Status Indicators”
- “How to Run Diagnostics” on page 51
- “System Key Combinations” on page 57

System Status Indicators

The system status indicators show the current computer status in different colors (amber and green).

Symbol	Color	Meaning
	Blinking green	Speaker sounds.
	Green	Battery fully charged.
	Amber	1 minute or less of battery power left.
	Green	Battery charging.
	Off	Battery charged. (Battery must be installed for proper reading.)
	Amber	PC card in-use.
	Amber	Diskette drive in-use.
	Amber	Hard disk drive in-use.
	Green	Keys in Num Lock mode.
	Green	Keys in Caps Lock mode.
	Green	Keys in Scroll Lock mode.
	Green	Computer in suspend mode.
	Green	Computer powered-on.

I/O Status Indicators

The I/O status indicators on the front panel of the CD-ROM drive or the FDD drive indicate the current status.

I/O status	Amber	CD-ROM in use.
	Green	Disk Drive in use.

How to Run Diagnostics

The QAPLus/PRO diagnostic program, developed by DiagSoft for IBM, is the primary method of testing the computer. It is unique to the ThinkPad 365 and will not run on other models. You can use it to test the IBM components of the system and some external devices. The amount of time required to test all components depends on the number of components. The more optional adapters and devices you have attached to your system, the longer the testing takes.

Important

Before loading the diagnostics program:

1. Go to a DOS full screen.
2. Press **Ctrl+Alt+F11** to go to the setup screen.
3. Verify all peripherals devices are enabled.
4. Page Down to the second page and verify all peripherals are enabled.

The diagnostics program is intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

Loading the IBM ThinkPad 365 Advanced Diagnostics Diskette

Attention

The Advanced Diagnostics Diskette Version 1.0 supports all ThinkPad 365C, CD, CS, CSD, E, and ED models. However, this diskette refers to all processors as **DX4-100**. If the diagnostics detect a processor error, refer to the "Parts Listing" to correctly identify the installed processor.

To use the IBM ThinkPad 365 Advanced Diagnostics Diskette, you must have at least 500KB of free memory. Also, be sure to read the "README.PO" file on the Diagnostics Diskette.

1. Power-off the computer.
2. Insert the IBM ThinkPad 365 Advanced Diagnostics Diskette into drive A.
3. Power-on the computer.
4. Follow the instructions on the screen and proceed to the Main Menu. Allow two to four minutes for the diagnostic programs to load.
5. At the Main Menu, select the test to run.
6. Press **Enter** to run the test selected.
7. After starting a test, do not press any key until prompted, then follow the instructions on the screen.
8. When the test is completed, press **Esc** twice to return to the main menu.
9. Select **Exit**.

Diagnostic Test Programs

The diagnostics diskette outline follows:

Main Menu:

- Diagnostics
 - Quick Check
When selected runs the system quick check diagnostics.
 - Module Tests
When selected displays a menu of the modules you can select to test.
 - Options
When selected displays a menu of test preferences, log results, and save script options.
- System info
 - When selected displays a menu with selections for system information
- Reports
 - When selected displays a list of the reports you can select.
- Utilities
 - When selected displays a list of diagnostic utilities.
- Exit
 - When selected exits diagnostics and returns you to the system prompt.

Error Messages

Messages generated by the software—the operating system or application programs—generally are text messages, but they also can be numeric. The following are the various error messages.

- POST beep codes
- POST error messages
- Diagnostic error messages
- Software generated messages
- Multiple messages

Error Message	Description
POST Beep Codes	Sounds emitted from the speaker if POST finds a problem. One beep indicates POST completed successfully. Multiple beeps indicate a problem was found by the POST.
POST Error Messages	Displayed when POST detects hardware or configuration problems.
Diagnostic Error Messages	Displayed when a test program finds a hardware problem.
Software Generated Error Messages	Displayed if a problem or conflict is found by an application program, the operating system, or both. For an explanation of these messages, refer to the information supplied with that software package.
Multiple Messages	The first error that occurs can cause additional errors. Always follow the suggested action instructions for the <i>first</i> error message displayed.

Return Codes

For the test programs to properly determine if a test *Passed*, *Failed*, or *Aborted*, the test programs check the error-return code at test completion. To register the test properly in the test log, the test programs must generate one of the following return codes:

Return Code	Description
0	Indicates device passed its test.
1	Indicated device failed its test.
2 or greater	Indicates test stopped or aborted.

Using the Diagnostics Test Programs

To load the IBM ThinkPad 365 Advanced Diagnostics Diskette, see "Loading the IBM ThinkPad 365 Advanced Diagnostics Diskette" on page 51.

The test programs provide tests and utilities for users and service or support professionals to troubleshoot even the most difficult problems.

You can maneuver within the test programs by typing the first letter of a menu choice, or using the TrackPoint III pointer.

Throughout the test programs, pressing the first letter of an option on a menu is the same as moving to that item with the cursor and pressing Enter.

Using the Function Keys

Use the following keys to maneuver throughout the test programs:

Keys	Action
Enter	Select an item, run the test module, or run the test
Down Arrow (↓)	Moves the cursor down
Up Arrow (↑)	Moves the cursor up
F1	Calls up the appropriate Help information. Use the up arrow key (↑) or the down arrow key (↓) to scroll through the information. Pressing F1 from within a Help screen provides a help index from which you can select different categories. One of the important help categories is function key usage. Pressing Esc exits Help and returns to where you left off.
Esc	Go back to the previous menu.

Additional functions are available in the Module Tests screen and the Test Group screen using the following keys:

Keys	Action
Spacebar	Toggle modules on/off (or toggle tests on/off)
F2	View test results log
F10	Local menu

Viewing the Test Groups

As you move the cursor bar up or down in the Module Tests menu, the right hand screen changes to show the attributes, parameters, and the selected tests of the corresponding Test Group. The "DIAMOND" mark indicates a module selected for testing.

Module Testing Mode

If the Quick Check does not find a problem, or you want to perform in-depth testing, the Module Testing mode provides a method to run individual tests on a single module. For example, you can run an individual test for the diskette drive, or you can the test for all selected modules.

To start the Module Tests:

Attention

To use the IBM ThinkPad 365 Advanced Diagnostics Diskette, you must have at least 500KB of free memory. Be sure to read the "README.PO" file on the IBM ThinkPad 365 Advanced Diagnostics Diskette before using the following instructions.

1. Power-off the computer.
2. Insert the IBM ThinkPad 365 Advanced Diagnostics Diskette into drive A.
3. Power-on the computer.
4. Follow the instructions on the screen and proceed to the Main Menu. Allow two to four minutes for the diagnostic programs to load.
5. At the Main Menu, select **Diagnostics**.
6. At the Diagnostics Menu, select **Module Tests**.
7. At the Module Tests Menu, select the modules to test.
8. Use the up and down arrow keys (↑ and ↓) to move the highlight bar from one selection to the next.
9. Press **Enter** to run the tests.
10. Do not press any key until prompted, then follow the instructions on the screen.
11. Follow the instructions on the screen.
12. Select **Exit**.

Running Selected Module Tests

To run a selected tests for a test group:

1. Use the up and down arrow keys (↑ and ↓) to move the cursor to your selection.
2. Press **Enter**.

Note: A "DIAMOND" appears next to your selection.

Running All Selected Modules

To run all selected test modules:

1. Use the down arrow key (↓) to move the cursor to the last choice, **Run All Selected Modules**.
2. Press **Enter**.

Note: A “DIAMOND” appears next to your selection.

Changing Selected Tests in Test Groups

To change selected tests in a Test Group:

1. In the Module Tests Menu, use the up and down arrow keys (↑ and ↓) to move the cursor to your selection.
2. Scroll to the test you want to select or deselect.
3. Press the spacebar at the highlighted test to toggle between select (indicated by a “DIAMOND”) and deselect.

Note: Pressing the first letter of a test does not activate the test, unlike menu operation.

4. Press **Enter**.

Running an Individual Test

To run an individual test:

1. Use the up and down arrow keys (↑ and ↓) to move to the highlighted bar to the test you want to run.
2. Press **Enter** to run the test.

Note: The results of the test appear in the lower-right-hand Test Log window. Also, if you enabled Test Logging, the results are recorded in the Test Log.

3. When the test completes, press **Esc** to return to the Test Group Menu.

Stopping the Tests

To stop running a specific test or stop testing after you have started a test, press **Esc** while the test is running. The test pauses at the first possible opportunity, and the Skip/Abort Test Menu appears with the following options:

Option	Action
Continue	The test program begins testing where it left off.
Skip to next test	The test program skips the current test, but remaining tests for the selected Module Tests continue.
Skip to next group	The test program skips the remaining tests in the current test group.
Abort all tests	The test program stops and returns to the previous menu.

System Key Combinations

The following table shows the system **Fn** key and function key combinations and their corresponding functions.

The **Fn** key works independently from the operating system. The operating system obtains the status through the system management interface to control the system.

Key Combinations	Description
Ctrl+Alt+F11	Accesses the system setup screen from any full-screen DOS program.
Fn+F2	Displays the fuel gauge.
Fn+F3	Standby mode invocation.
Fn+F4	Suspend mode invocation.
Fn+F7	Toggles LCD/SIMUL/CRT.
Fn+F8	Toggles normal/reverse video.
Fn+F12	Hibernation mode invocation.
Fn+PgUp	Speaker enable.
Fn+PgDn	Speaker disable.

External Keyboard Key Combinations

The following table shows the external keyboard combinations used with the IBM ThinkPad Space Saver Keyboard.

Key Combinations	Description
Ctrl+Alt+F2	Fuel gauge display.
Ctrl+Alt+F4	Suspend Mode invocation.
Ctrl+Alt+F7	Toggles LCD/SIMUL/CRT.
Ctrl+Alt+F12	Hibernation invocation.
Ctrl+Alt+F11	Accesses setup and Power Management screens.

Attention

To avoid possible conflicts with certain software applications, you might need to disable these hot-key combinations. The **Ctrl+Alt+Right-Shift-Key** toggles the hot-keys On and Off for the external keyboard.

Product Overview (365C, CD, CS, CSD)

The following provides an overview of the ThinkPad 365C, 365CD, 365CS, and 365CSD system features.

Feature	Description
Processor	80486 DX4 75MHz
Bus Architecture	AT/ISA Bus
Memory (Standard)	<ul style="list-style-type: none">• 8MB Memory Board• 16MB Memory Board
Memory (Optional)	4MB, 8MB, or 16MB SO-DIMM
Memory (Maximum)	24MB
CMOS RAM	128 Bytes
Video	<ul style="list-style-type: none">• 1MB Video RAM• TFT or DSTN LCD color, supports from 256 up to 65,536 colors.• VGA (640 x 480 resolution)• Brightness control• Contrast control (DSTN Only)
Diskette Drive	1.44MB, 3.5-inch (Removable) 1.44MB, 3.5-inch 3-Mode (Japan)
Hard Disk Drive	2.5-Inch (Removable) <ul style="list-style-type: none">• 340MB Hard Disk Drive• 540MB Hard Disk Drive• 720MB Hard Disk Drive• 810MB Hard Disk Drive• 1.08GB Hard Disk Drive
Optional CD-ROM	5.25-Inch CD-ROM (2X) Drive (365CD, 365CSD Models Only)
PCMCIA	One Type-III or Two Type-II
Keyboard	85-key, 86-key, or 90-key TrackPoint 12 Function Keys
Audio	16-Bit (365CD, 365CSD Only)
Infrared (IR)	IR Transceiver supports wireless file and data transfer.

Product Overview (365E, ED)

The following provides an overview of the ThinkPad 365E and 365ED system features.

Feature	Description
Processor	IBM 5x86C 100MHz
Bus Architecture	AT/ISA Bus
Memory (Standard)	<ul style="list-style-type: none">• 8MB Memory Board• 16MB Memory Board
Memory (Option)	4MB, 8MB, or 16MB SO-DIMM
Memory (Maximum)	24MB
CMOS RAM	128 Bytes
Video	<ul style="list-style-type: none">• 1MB Video RAM• TFT or DSTN LCD color, supports from 256 up to 65,536 colors.• VGA (640 x 480 resolution)• Brightness control• Contrast control (DSTN Only)
Diskette Drive	1.44MB, 3.5-inch (removable) 1.44MB, 3.5-inch 3-Mode (Japan)
Hard Disk Drive	2.5-inch (removable)
Optional CD-ROM	5.25-Inch CD-ROM (4X) Drive (365ED Model Only)
PCMCIA	One Type-III or Two Type-II
Keyboard	85-key, 86-key, or 90-key TrackPoint 12 Function Keys
Audio	16-Bit (365ED Only)
Infrared (IR)	IR Transceiver supports wireless file and data transfer.

FRU Removals and Replacements

This section contains information about removals and replacements.

- The system board is sensitive to, and can be damaged by, electrostatic discharge. Establish personal grounding by touching a ground point with one hand before touching these units.
An electrostatic discharge (ESD) strap must be used to establish personal grounding.
- Do not damage any parts. Only certified, trained personnel should service the computer.
- The arrows in the “Removals and Replacements” section show the direction of movement to remove a FRU, or to turn a screw to release the FRU. The arrows are marked in numeric order, in square callouts, to show the correct sequence of removal.
- When other FRUs must be removed before removing the failing FRU, they are listed at the top of the page.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See “Locations” for internal cable connections and arrangement information.
- When replacing a FRU, use the correct screw size as shown in the procedures.

Safety Notice 1: Translation on page 8

Before the computer is powered-on after FRU replacement, make sure all screws, springs, or other small parts, are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.

Safety Notice 3: Translation on page 10

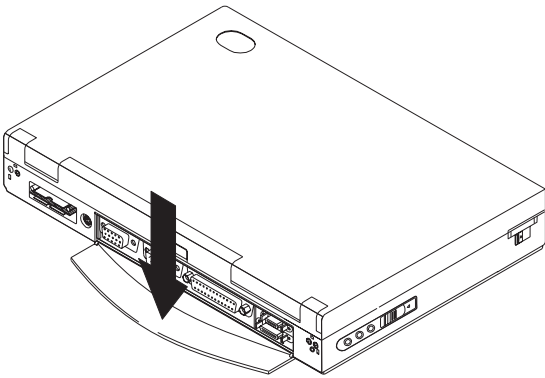
The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations.

Safety Notice 8: Translation on page 14

Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.

1010 Rear Connector Door

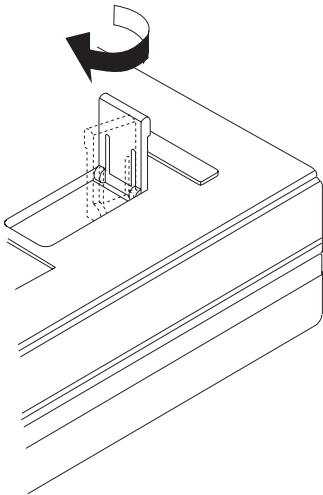
Open the door, then push down on the center of the door to remove it.



1015 Foot

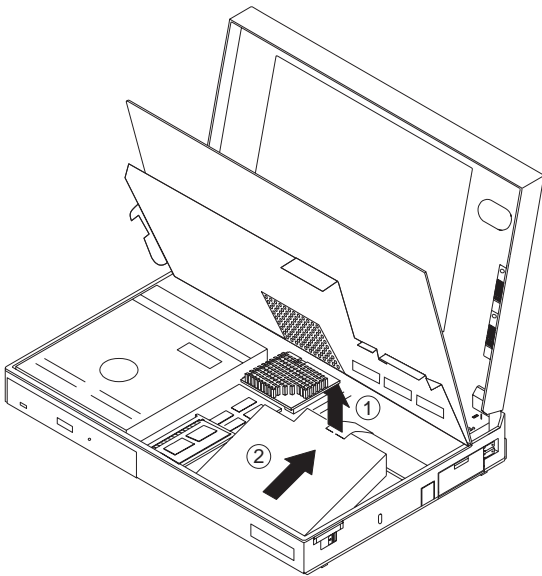
To replace the foot:

- Align the foot in the open position with one pivot pin in its hinge in the cover base.
- Press the other pivot pin into position by rotating the foot as shown.



1020 Battery Pack

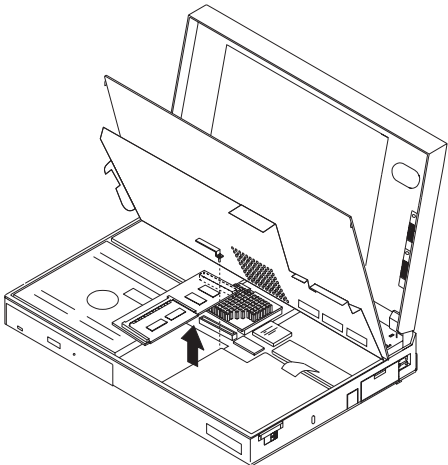
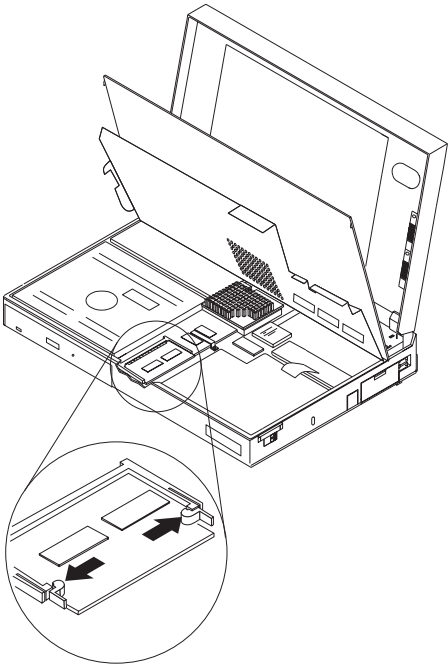
- Disconnect the AC Adapter.
- Open the computer.
- Release the keyboard latches and raise the keyboard.
- Be careful the computer does not fall over backwards as you remove the battery.



1030 SO-DIMM/Memory Board

- Battery Pack (1020)

To remove the optional SO-DIMM, release the latches as shown, then remove the SO-DIMM card.

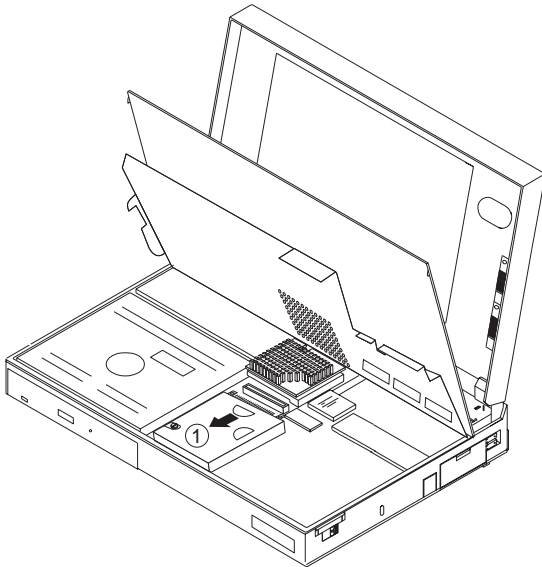


1040 Hard Disk Drive

- Battery Pack (1020)
- Memory Board (1030)

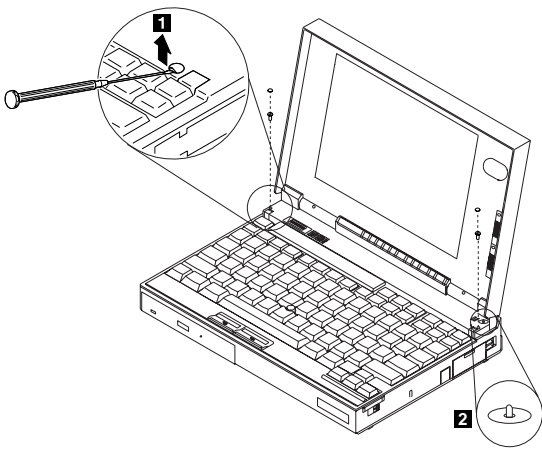
Attention

Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard disk drive, have the user make a backup copy of all the information on the hard disk. Never remove the hard disk drive while the system is operating or is in suspend mode.



1050 Keyboard Unit

- Battery Pack (1020)



Attention

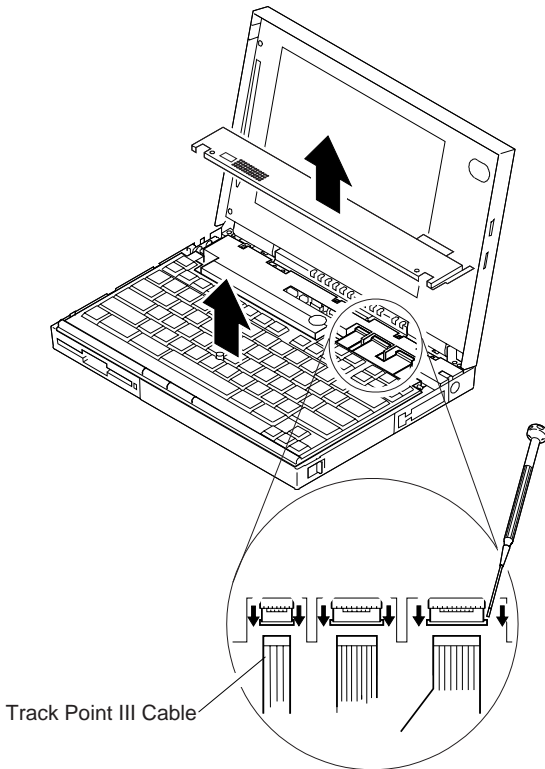
During removal and replacement procedures, pay special attention to the LCD Suspend Switch **2**. Be sure the LCD Suspend Switch actuator is properly aligned with the hole in the cover.

Procedure continues on the following page.

1. Remove the plastic upper cover as shown.
2. Lift the keyboard and locate the cables as shown.

Attention

The keyboard cables are fragile and can be damaged. Do not pull on the keyboard cables. Pull on the connectors only.



Important

- When replacing the keyboard, check that the three cables are clean, and inserted straight and fully into the connectors.
- Test all keyboard keys before returning the computer to the customer.
- When replacing the top cover:
 - Be sure the tabs on the back of the top cover are seated in the bottom of the LCD display
 - Be sure the LCD Suspend Switch actuator is properly aligned with the hole in the cover.

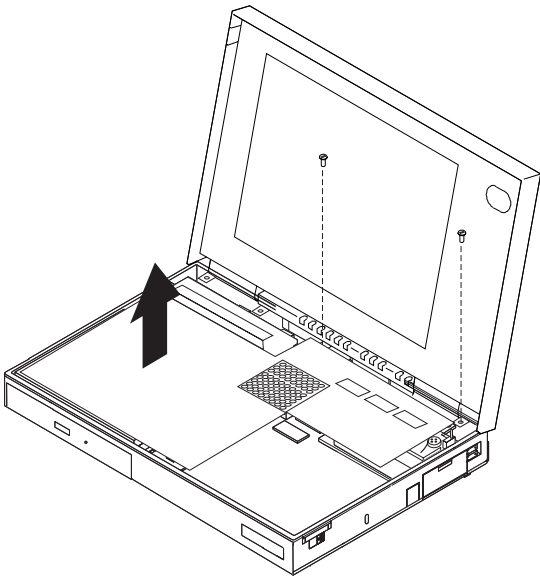
1055 Mylar Cover

Note

The ThinkPad 365C, CD, CS, and CSD Model mylar cover is not secured with screws and can be easily removed after raising the keyboard.

The ThinkPad 365E, ED Model mylar cover is secured with screws. The following procedure is for ThinkPad 365E, ED Models only.

- Battery Pack **(1020)**
 - Keyboard Unit **(1050)**
1. Remove the two screw as shown.
 2. Carefully remove the mylar cover.

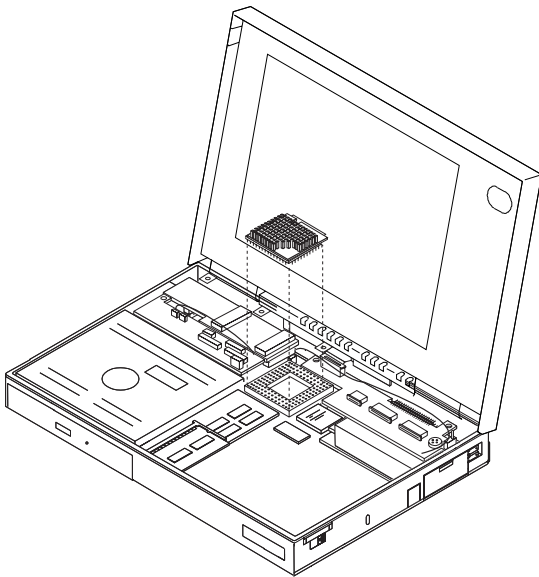


Attention

During removal and replacement procedures, make sure the Mylar Cover does not interfere with the LCD Suspend Switch.

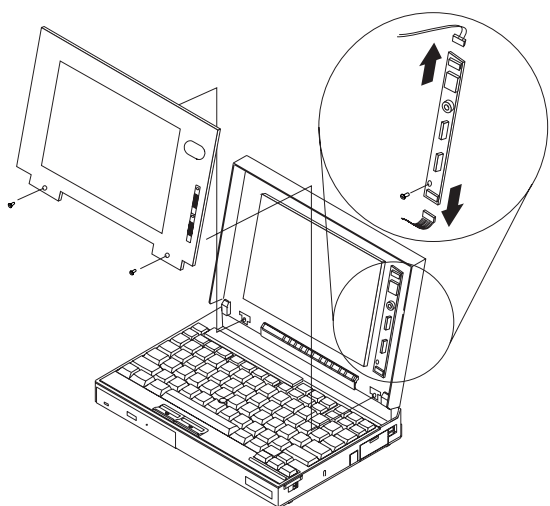
1060 Processor Card

- Battery Pack (1020)
- Keyboard (1050)
- Mylar Cover (1055)



1065 LCD Inverter Card

- Battery Pack (1020)

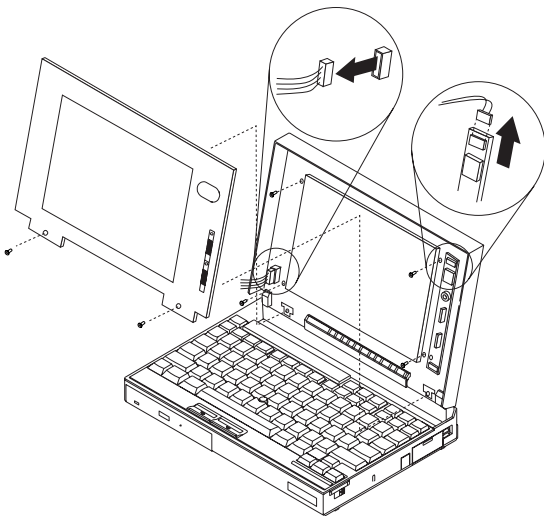


Note

Screws shown above are 8 mm long.

1068 LCD Panel

- Battery Pack (1020)



Note

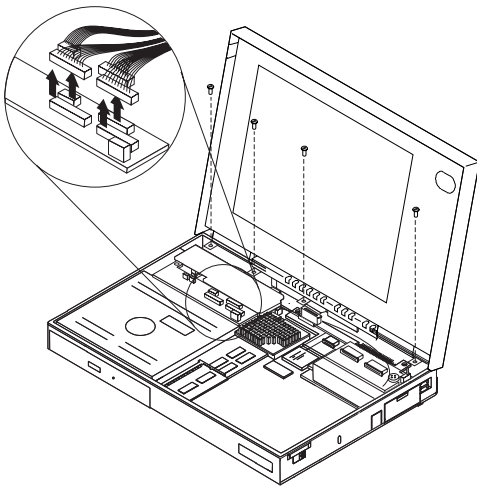
Screws shown above are 8 mm long.

1070 LCD Assembly

- Battery Pack (1020)
- Keyboard (1050)
- Mylar Cover (1055)

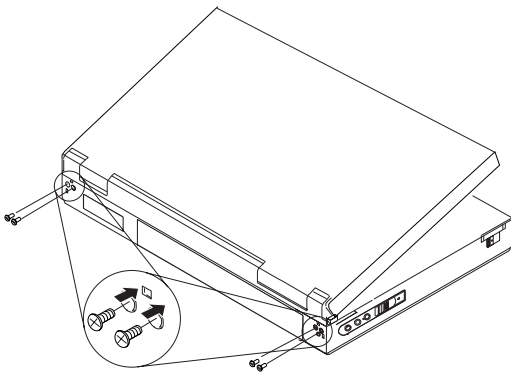
Attention

Make note of the location and placement of ground points and tape. Replace tape to its original position.



Note

Screws shown above are 6 mm long.



Note

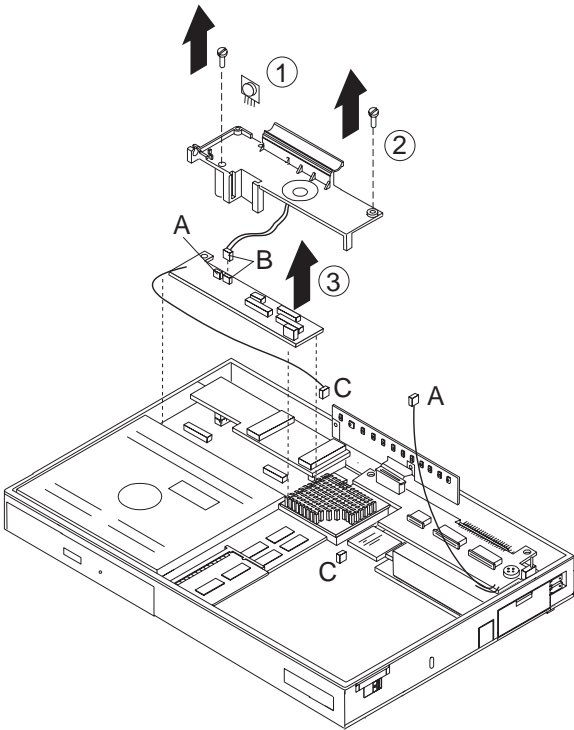
Screws shown above are 8 mm long.

1080 Sound Card

- Battery Pack (1020)
- Keyboard (1050)
- Mylar Cover (1055)
- LCD Assembly (1070)

Attention

During replacement, make sure the microphone (A), speaker (B), and sound card (C) cable connections are correct.



Note

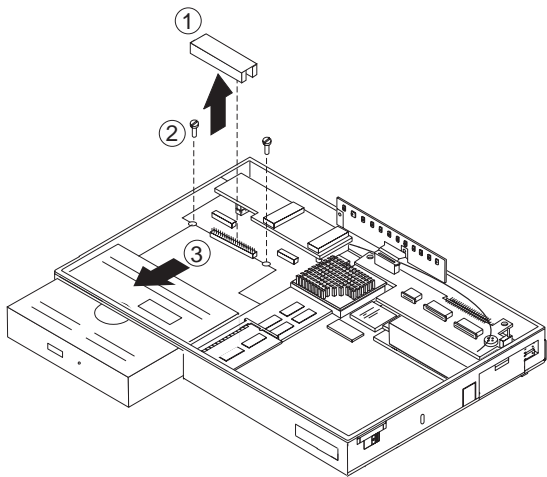
Screws shown above are 6 mm long.

1090 CD-ROM Drive

- Battery Pack (1020)
- Keyboard (1050)
- LCD Assembly (1070)
- Sound Card (1080)

Attention

During replacement, make sure that all connectors are properly aligned and seated.



Note

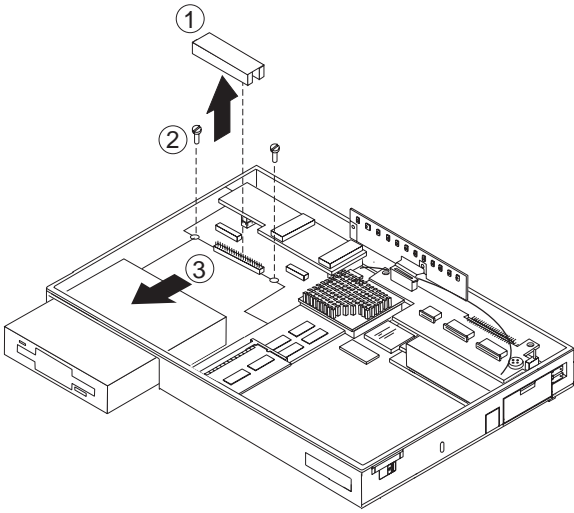
Screws shown above are 6 mm long.

1100 Diskette Drive

- Battery Pack (1020)
- Keyboard (1050)
- Mylar Cover (1055)
- LCD Assembly (1070)
- Sound Card (1080)

Attention

During replacement, make sure that all connectors are properly aligned and seated.



Note

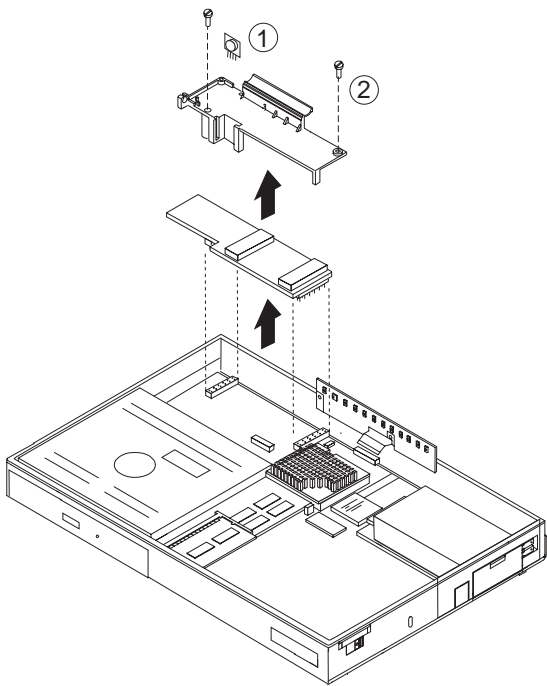
Screws shown above are 6 mm long.

1110 DC/DC Card

- Battery Pack (1020)
- Keyboard (1050)
- Mylar Cover (1055)
- LCD Assembly (1070)
- Sound Card (1080)

Attention

During replacement, make sure the DC/DC Card connectors are properly aligned with the system board and fully seated.



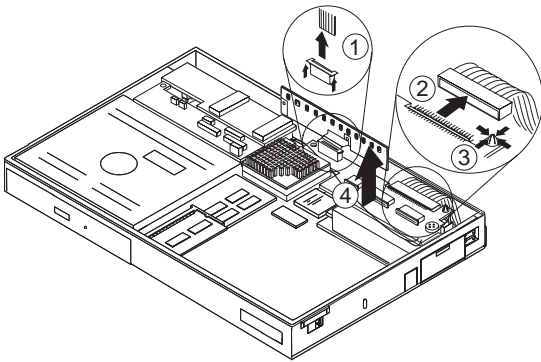
Note

Screws shown above are 6 mm long.

1120 Keyboard Card

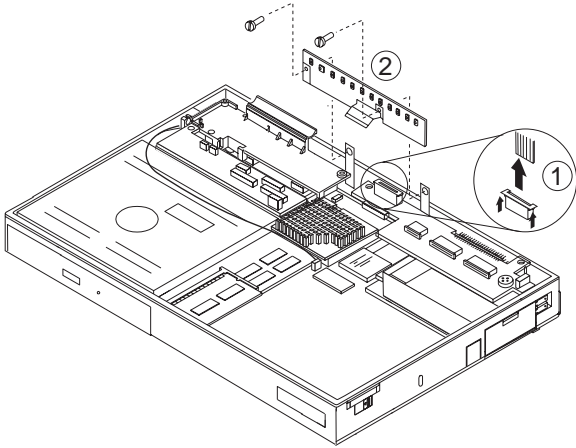
- Battery Pack (1020)
- Keyboard (1050)
- Mylar Cover (1055)
- LCD Assembly (1070)

1. Disconnect all attached cable connectors.
2. Release the locking tab at the right rear of the keyboard card.
3. Remove the keyboard card.



1130 LED/IR Board

- Battery Pack (1020)
- Keyboard (1050)
- Mylar Cover (1055)
- LCD Assembly (1070)



Note

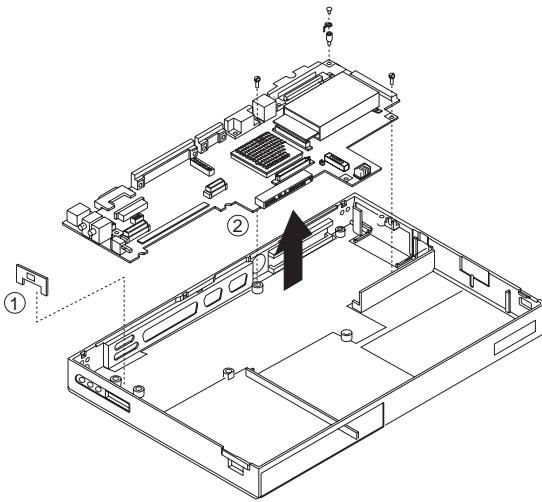
Screws shown above are 5 mm long.

1140 System Board

- Battery Pack (1020)
- Memory Board (1030)
- Hard Disk Drive (1040)
- Keyboard Unit (1050)
- Mylar Cover (1055)
- LCD Assembly (1070)
- Sound Card (1080)
- Diskette Drive (1100)
- DC/DC Board (1110)
- Keyboard Card (1120)
- LED/IR Board (1130)

Attention

The system board fits very tightly in the bottom cover. Pay special attention to the PCMCIA eject buttons, audio connectors, and I/O connectors when removing and replacing the system board.



Note

Screws shown above are 6 mm long.

Procedure continues on the following page.

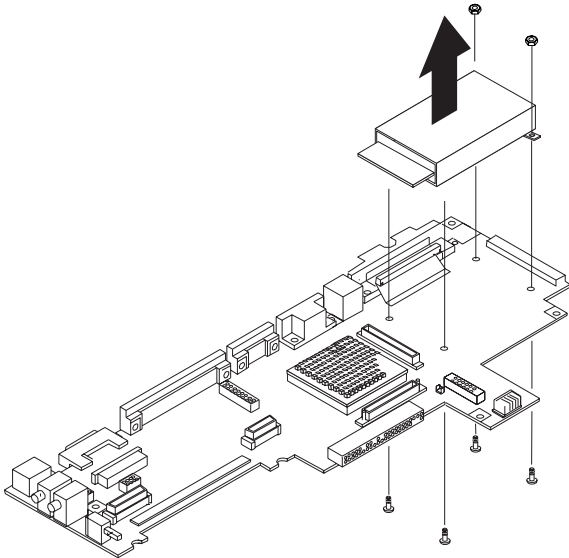
Important

If you replace the system board FRU, do the following to update the system setup program.

1. Power-on the computer.
2. Go to a DOS full screen.
3. Press **Ctrl+Alt+F11** to access the setup screen.
4. Use the arrow keys to select **Personalization**.
5. Press **Tab** to edit.
6. At the Greeting screen, type in the required information.
7. Press **F3** to save.
8. Press **Esc** to access Exiting Setup.
9. Press **F4** to save settings and reboot.

1150 PCMCIA Assembly

- Battery Pack (1020)
- Memory Board (1030)
- Hard Disk Drive (1040)
- Keyboard Unit (1050)
- LCD (1060)
- Sound Card (1080)
- CD-ROM (1090)
- Diskette Drive (1100)
- DC/DC Board (1110)
- Keyboard Card (1120)
- LED/IR (1130)
- System Board Assembly (1140)



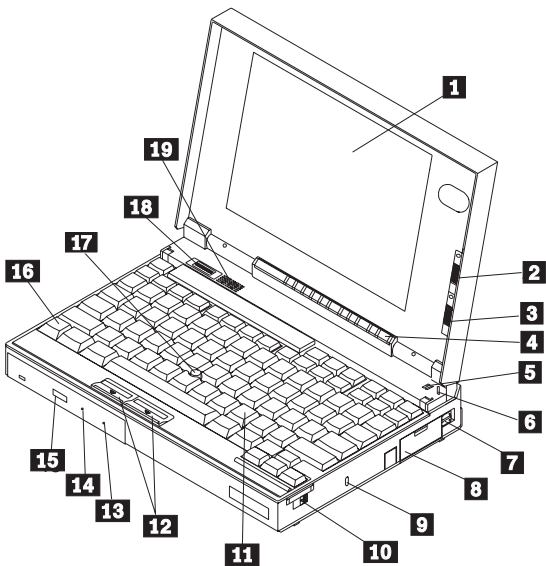
Note

Screws shown above are 6 mm long.

Locations

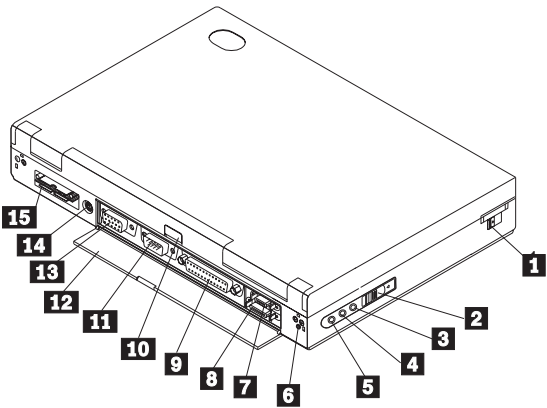
System Front View

- 1** Color LCD Screen
- 2** Contrast Control
- 3** Brightness Control
- 4** Status Indicator
- 5** Built in Microphone
- 6** LCD Suspend Switch
- 7** PCMCIA Release Levers
- 8** PCMCIA Slots
- 9** Locking Device Keyhole
- 10** LCD and Keyboard Latch
- 11** Keyboard
- 12** Click Buttons
- 13** CD-ROM or Diskette Drive
- 14** Mechanical CD-ROM Eject Button
- 15** Electronic CD-ROM Eject Button
- 16** Fn Key
- 17** TrackPoint
- 18** Speaker Volume Control
- 19** Built in Speaker

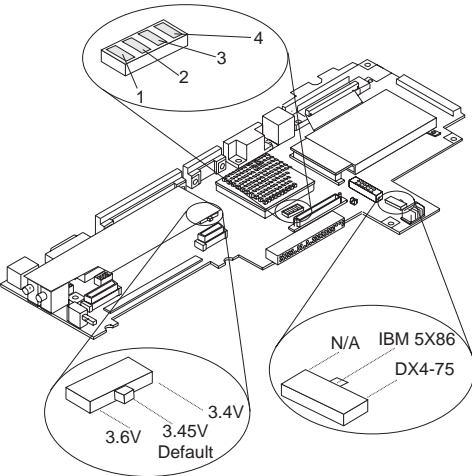


System Rear View

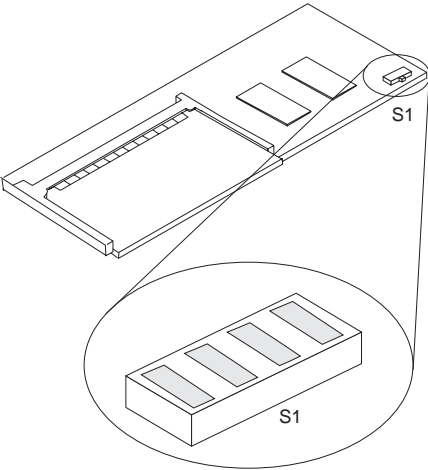
- 1** LCD and Keyboard Latch
- 2** Power Switch
- 3** Microphone/Line-In Jack
- 4** Line-in Jack
- 5** Line-out Headphone Jack
- 6** Power Jack
- 7** MIDI/Joystick Port
- 8** External Diskette Drive Connector
- 9** Parallel Connector
- 10** Infrared (IR) Port
- 11** Serial Connector
- 12** Rear Door
- 13** External Display Connector
- 14** External Keyboard/Mouse Connector
- 15** Port Replicator Connector



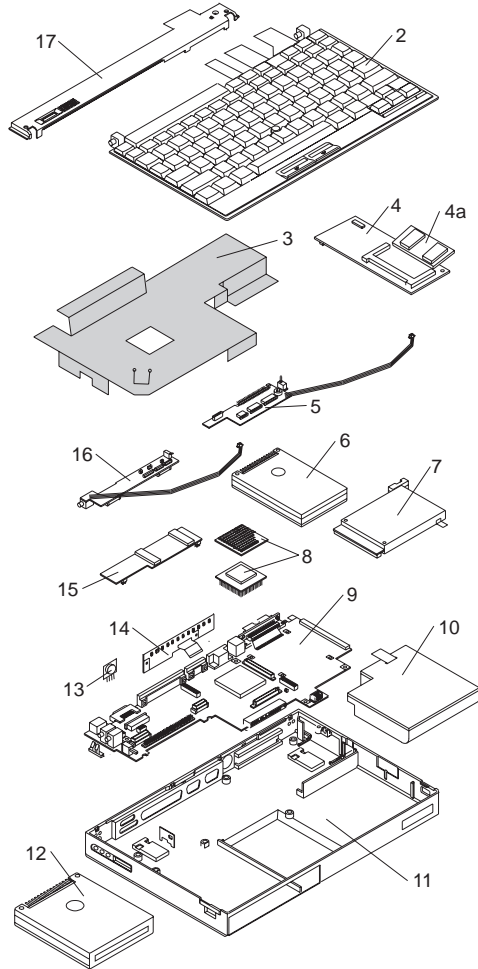
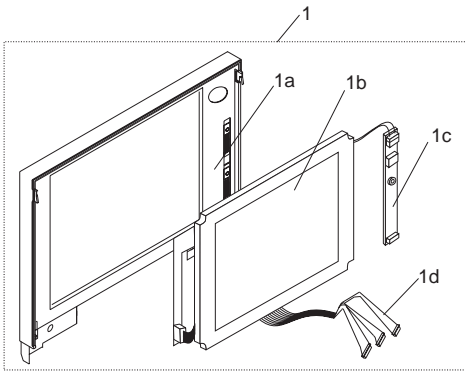
System Board Switch Settings



Memory Board Switch Settings



Parts Listing 365C, CD, CS, CSD (2625)



System Unit - ThinkPad 365C, CD, CS, CSD Only

Important

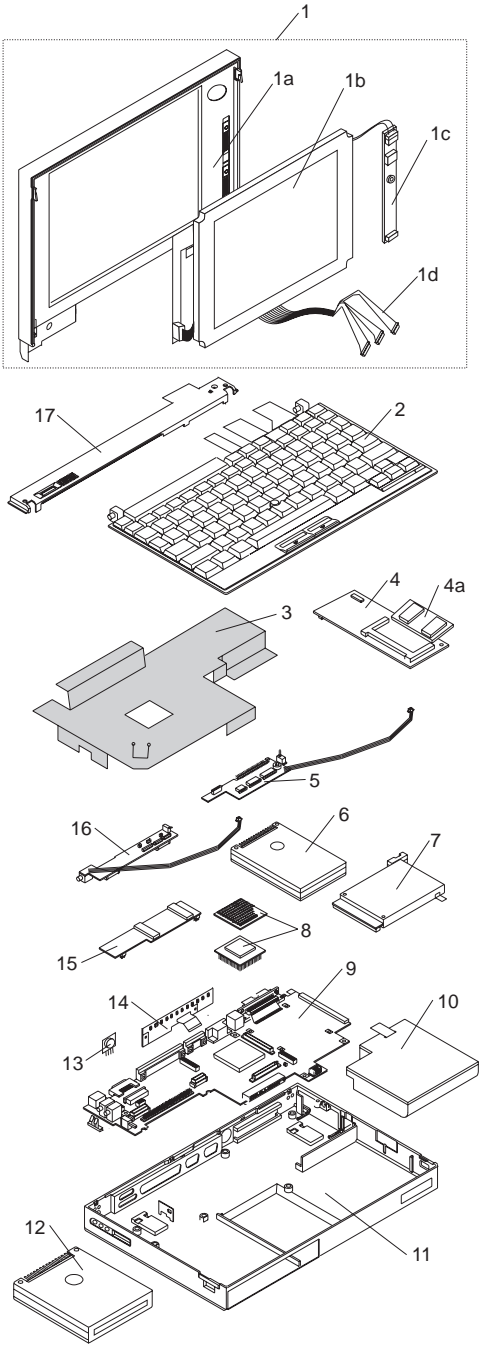
The following FRUs are for ThinkPad 365C, CD, CS, and CSD models only. For ThinkPad 365E and 365ED models, see "Parts Listing 365E, ED (2625)" on page 87.

Index FRU

1	LCD Assembly, 10.4-Inch DSTN (LCD Cover Kit, Panel, Inverter, Cable)	75H7620
1a	LCD Cover Kit, 10.4-Inch DSTN	41H9818
1b	LCD Panel, 10.4-Inch DSTN	41H7463
1c	Inverter Board, 10.4-Inch DSTN	42H4049
1d	Cable Assembly, 10.4-Inch DSTN	42H4051
1	LCD Assembly, 10.4-Inch TFT (LCD Cover Kit, Panel, Inverter, Cable)	75H7621
1a	LCD Cover Kit, 10.4-Inch TFT	41H9819
1b	LCD Panel, 10.4-Inch TFT	41H7464
1c	Inverter Board, 10.4-Inch TFT	42H4055
1d	Cable Assembly, 10.4-Inch TFT	NA
	- Order FRU 75H7621	
2	Keyboard (U.S. Only)	41H9789
3	Mylar Cover	
	- See "Base Assembly (with Parts Kit)"	
4	8MB Memory Board	88G1262
	Memory Board Insulated Bracket (10)	75H7624
4a	4MB RAM Card (SO-DIMM)	92G7290
4a	16MB RAM Card (SO-DIMM)	92G7296
5	Keyboard Card	41H7436
6	Hard Disk Drive	
	- 340MB Hard Disk Drive	02K0485
	- 540MB Hard Disk Drive	02K0486
	- 720MB Hard Disk Drive	85G8371
	- 810MB Hard Disk Drive	07H0392
	- 1.08GB Hard Disk Drive	39H2221
7	PCMCIA Socket Assembly	75H7622
8	Processor, 80486-DX4 75MHz	88G1249
9	System Board (with PCMCIA Socket)	
	- 512K VRAM System Board	76H2986
	- 1MB VRAM System Board	76H2984
10	Battery Pack	41H7438
11	Lower Cover Assembly	76H3079
	Lower Cover Rubber Feet (2)	75H7609
12	DASD Devices	
	- Internal Diskette Drive Assembly	41H7444
	- External Diskette Drive with Cable	75H7572
	- CD-ROM (2X) Drive	41H7446
13	Volume Control Card	41H7434
14	LED/IR Board	41H7443
15	DC/DC Board	41H7433
16	Sound Card (16-Bit)	41H7449
16	Sound Card (No Audio)	41H7437
17	Upper Cover (with Screws, Gasket)	75H7573
	AC Adapter (35W Universal)	85G6698
	AC Power Cord (6-Inch - U.S.)	25H2207
	Game Port Cable	75H7576

Index FRU	
Base Assembly (With Parts Kit)	41H7432
- Upper Cover Bracket with Speaker,	
- Power Switch Knob, Power Bracket,	
- Support Bracket, Misc. Rubber Parts.	
- TrackPoint Caps (2), IR Lens	
Plastic Door/Bezel Package	41H7452
- PCMCIA, I/O, Modem, CD-ROM, FDD	
- Replicator, Misc. Rubber Parts	
Flat Plastic Cable Kit	75H7575
- DSTN, TFT, CD-ROM, Internal FDD	
Replicator Base Assembly	41H7457
Replicator Cable Cover	41H7458
Mini-Replicator Assembly	75H7528
Miscellaneous Parts/Screws Kit	41H7456
- CD-ROM Removal Pin, Washers, Hex Nuts,	
- Misc. Rubber Parts, Various Mylar Pieces,	
- Keyboard Knobs, Power Knob, Rubber Pads	
- Diskette Drive Brackets, Hard Disk Brackets	
- Memory Board Bracket, Power Bracket	
- Screw M2.5x3.5 (4), Screw M2x4 (6),	
- Screw M3x4 (4), Screw M3x6 (4)	
- Screw M2x15 (2), Screw M2x7 (4)	
- Screw M2x5 pan (16), Screw M3x6 pan (4)	
- Screw M3x6 binding (4)	
TrackPoint Cap Kit	84G6536

Parts Listing 365E, ED (2625)



System Unit - ThinkPad 365E, 365ED Only

Important

The following FRUs are for ThinkPad 365E and 365ED models only. For ThinkPad 365C, CD, CS, and CSD models, see "Parts Listing 365C, CD, CS, CSD (2625)" on page 84.

Index FRU

1	LCD Assembly, 10.4-Inch DSTN (365E Only) (LCD Cover Kit, Panel, Inverter, Cable) (U.S.-2625, model R6A, W9A)	75H7616
1	LCD Assembly, 10.4-Inch DSTN (365ED Only) (LCD Cover Kit, Panel, Inverter, Cable) (U.S.-2625, model R6G, W9G)	75H7617
1a	LCD Cover Kit, 10.4-Inch DSTN (365E Only) (U.S.-2625, model R6A, W9A)	42H4047
1a	LCD Cover Kit, 10.4-Inch DSTN (365ED Only) (U.S.-2625, model R6G, W9G)	75H7578
1b	LCD Panel, 10.4-Inch DSTN (U.S.-2625, model R6A, R6G, W9A, W9G)	41H7463
1c	Inverter Board, 10.4-Inch DSTN (U.S.-2625, model R6A, R6G, W9A, W9G)	42H4049
1d	Cable Assembly, 10.4-Inch DSTN (U.S.-2625, model R6A, R6G, W9A, W9G)	42H4051
1	LCD Assembly, 10.4-Inch TFT (365E Only) (LCD Cover Kit, Panel, Inverter, Cable)	75H7618
1	LCD Assembly, 10.4-Inch TFT (365ED Only) (LCD Cover Kit, Panel, Inverter, Cable)	75H7619
1a	LCD Cover Kit, 10.4-Inch TFT (365E Only)	42H4053
1a	LCD Cover Kit, 10.4-Inch TFT (365ED Only)	75H7579
1b	LCD Panel, 10.4-Inch TFT	41H7464
1c	Inverter Board, 10.4-Inch TFT	42H4055
1d	Cable Assembly, 10.4-Inch TFT	42H4057
2	See "Keyboard"	
3	Mylar Cover	42H4021
4	8MB Memory Board	88G1262
4	16MB Memory Board (Special Bid only)	76H2997
	Memory Board Insulated Bracket (10)	75H7624
4a	4MB RAM Card (SO-DIMM) (Option)	92G7290
4a	8MB RAM Card (SO-DIMM) (Option)	88G1262
4a	16MB RAM Card (SO-DIMM) (Option)	92G7296
5	Keyboard Card	75H7536
6	Hard Disk Drive	
	- 540MB Hard Disk Drive (U.S.-2625, model R6A, R6G, W9A, W9G)	02K0486
	- 720MB Hard Disk Drive	85G8371
	- 810MB Hard Disk Drive	07H0392
	- 1.08GB Hard Disk Drive	39H2221
7	PCMCIA Socket Assembly	75H7622
8	Processor, IBM 5x86C 100MHz	40H4012
9	System Board, 1MB VRAM	76H2982
9	System Board, 1MB VRAM (Japan Only)	76H2982
10	Battery Pack	41H7438
11	Lower Cover Assembly	76H3123
	Lower Cover Rubber Feet (2)	75H7609
12	DASD Devices	
	- Internal Diskette Drive Assembly (U.S.-2625, model R6A, W9A)	41H7444

Index FRU

- External Diskette Drive with Cable (U.S.-2625, model R6G, W9G)	75H7572
- External Diskette Drive 3-Mode (Japan Only)	10H4055
- External Diskette Drive Cable (Japan Only)	74H0219
- CD-ROM (4X) Drive (U.S.-2625, model R6G, W9G)	42H4042
13 Volume Control Card	41H7434
14 LED/IR Board	41H7443
15 DC/DC Board	42H4037
16 Sound Card (16-Bit) (U.S.-2625, model R6G, W9G)	42H4035
16 Sound Card (No Audio) (U.S.-2625, model R6A, W9A)	42H4033
17 Upper Cover (with Screws, Gasket)	75H7573
AC Adapter (35W Universal)	85G6698
AC Adapter (35W Japan Only)	85G6700
AC Power Cord (6-Inch - U.S.)	25H2207
Game Port Cable	75H7576
Base Assembly (With Parts Kit)	41H7432
- Upper Cover Bracket with Speaker, - Power Switch Knob, Power Bracket, - Support Bracket, Misc. Rubber Parts, - TrackPoint Caps (2), IR Lens	
Plastic Door/Bezel Package	75H7574
- PCMCIA, I/O, Modem, CD-ROM, FDD - Replicator, Misc. Rubber Parts	
Flat Plastic Cable Kit	75H7575
- DSTN, TFT, CD-ROM, Internal FDD	
Replicator Base Assembly	41H7457
Replicator Cable Cover	41H7458
Mini-Replicator Assembly	75H7528
Miscellaneous Parts/Screws Kit	41H7456
- CD-ROM Removal Pin, Washers, Hex Nuts, - Misc. Rubber Parts, Various Mylar Pieces, - Keyboard Knobs, Power Knob, Rubber Pads - Diskette Drive Brackets, Hard Disk Brackets - Memory Board Bracket, Power Bracket - Screw M2.5x3.5 (4), Screw M2x4 (6), - Screw M3x4 (4), Screw M3x6 (4) - Screw M2x15 (2), Screw M2x7 (4) - Screw M2x5 pan (16), Screw M3x6 pan (4) - Screw M3x6 binding (4)	
TrackPoint Cap Kit	84G6536

Keyboard (Index Number 2)

Arabic	42H3936
Belgian	42H3937
Canadian (French)	42H3938
Danish	42H3939
Dutch	42H3940
Swedish	42H3941
French	42H3942
German	42H3943
Greek	42H3944
Hebrew	42H3945
Italian	42H3946
Japanese	42H3947
Latin American, Spanish	42H3948

Norwegian	42H3949
Portuguese/Brazil	42H3950
Russian	42H3956
Spanish	42H3951
Swiss French	42H3953
Swiss German	42H3952
Swiss French/German Combination	75H7562
Turkish	42H3954
United Kingdom	42H3955
United States	41H9789

ThinkPad 365X, 365XD (2625)

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Read This First

Before you go to the checkout guide, be sure to read this section.

Important Notes

- **Only certified trained personnel should service the computer.**
- Read FRU service procedures before replacing any FRUs.
- **Be extremely careful during write operations such as copying, saving, or formatting.** Drives in the computer that you are servicing might have been rearranged or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs can be written over.
- **Replace FRUs only for the correct model.** When you replace the FRU, make sure the model of the machine and FRU part number are correct by referring to the parts list.
- **FRUs should not be replaced because of a single, un-reproducible failure.** Single failures can occur from a variety of reasons that have nothing to do with a hardware defect such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should only be considered when a recurring problem exists. If this is suspected, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.
- **Be careful not to replace a non-defective FRU.**

How to Use Error Messages: Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 106.

Port Replicator Problems: If you suspect a problem with the Port Replicator, see "Port Replicator Checkout" in the "Common Devices Checkout" section.

How to Diagnose Multiple FRUs: When the adapter or device has more than one FRU, the error code could be caused by either FRU. Before replacing multiple FRUs, try removing or exchanging each FRU, one by one in the designated sequence, to see if the symptoms change.

What to Do First: The servicer must include the following information on the parts exchange form or parts return form that is attached to the returned FRU:

- ___ 1. Name and phone number of servicer.
- ___ 2. Date of service.
- ___ 3. Date when part failed.
- ___ 4. Date of purchase.
- ___ 5. Failure symptoms, error codes appearing on display, and beep symptoms.
- ___ 6. Procedure index and page number in which failing FRU was detected.
- ___ 7. Failing FRU name and part number.
- ___ 8. Machine type, model number, and serial number.
- ___ 9. Customer's name and address.

Before checking problems with the computer, determine whether or not the damage is covered by the warranty by referring to the following:

Warranty Note

During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer. The following list provides some common items that are not covered under warranty and some symptoms that may indicate the system was subjected to stresses beyond normal use.

- LCD panel cracked by excessive force or being dropped.
- Scratched (cosmetic) parts.
- Cracked or broken plastic parts, broken latches, broken pins, or broken connectors caused by excessive force.
- Damage caused by liquid spilled into the system.
- Damage caused by improperly inserting a PCMCIA card or installation of an incompatible card.
- Damage caused by foreign material in the diskette drive slot.
- Diskette drive damage caused by pressing the diskette drive cover or inserting diskettes with multiple labels.
- Damaged or bent diskette eject button.
- CD-ROM drive damage caused by excessive force, shock, or from being dropped.
- Fuses blown by attaching a non-supported device.
- Forgotten computer or hard disk password (making computer or hard disk unusable).

If the following symptoms are present, they may indicate damage caused by non-warranted activity:

- Missing parts may be a symptom of unauthorized service or modification.
- HDD spindles can become noisy if subjected to excessive force or if the HDD is dropped.
- I9990303 errors can be caused by exposure to strong magnetic fields.

How to Disable the Power-On Password:

Important

This information is not available in this online HMM format. See your IBM Servicer or IBM Authorized Dealer for this procedure.

Supervisor and Hard Disk Passwords: The Supervisor Password and the Hard Disk Password (HDP) are security features that are used to protect the system and the hard disk data from unauthorized access. No overriding capability is provided. If only a hard disk password is set, obtaining permission from the password owner to unlock the password is a prerequisite for running diagnostic tests and performing service. If both supervisor password and hard disk password are set, you can enter Easy-Setup by pressing the **Enter** key or power-on password at the supervisor password prompt. In this case, the **Password**, **Start up**, and **Initialize** icons cannot be selected.

See "Password Combinations (POP, HDP, PAP)" on page 124 for more information about passwords.

Checkout Guide

Use the following procedure as a guide for computer problems.

Note

The diagnostic tests are intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to recreate the failure by running the diagnostic test or by repeating the same operation.

Note

To run the diagnostics, refer to "How to Run the Diagnostics" on page 120.

3. Use the following table with the verified symptom to determine which page to go to. Search the symptoms column and find the description that best matches your symptom; then go to the page shown in the "Go to" column.

Symptoms (Verified)	Go to
Power failure. (The power indicator does not go on or stay on.)	"Power Systems Checkout" on page 100.
POST does not complete. No beeps or error codes are indicated.	"Symptom-to-FRU Index" on page 106, and then use the No-Beep Symptoms table.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 106, and then use the Beep Symptoms table.
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 106, and then use the Numeric Error Codes table.
The diagnostic test detected an error and displayed a FRU code.	"FRU Codes" on page 123.

Symptoms (Verified)	Go to
The configuration is not the same as the installed devices.	"Checking the Installed Devices List" on page 123.
Other symptoms (such as LCD display problems).	"Symptom-to-FRU Index" on page 106, and then use the Other Symptoms table.
Symptoms cannot be recreated. (Intermittent problems.)	Use the customer reported symptoms and go to "Symptom-to-FRU Index" on page 106.

Memory Checkout

DIMM cards are available for increasing memory capacity.

DIMM	Displayed Value
No DIMM installed	7808KB
8MB	16000KB
16MB	24192KB
32MB	40576KB

Memory errors might stop system operations, show error messages on the screen, or hang the system.

Use the following procedure to isolate memory problems.

Note

Make sure that the DIMM is fully installed into the connector. Both latches must be latched completely. A loose connection can cause error code 195.

1. Power off the computer and remove the DIMM from its slot (if installed).
2. Press and hold the F1 key; then power on the computer. Hold the F1 key down until the Easy-Setup screen appears.
3. Select **Test** and press Enter.
4. Select **Memory** and press Enter to run the memory test on base memory. If an error appears, replace the system board.
5. Power off the computer and reinstall the DIMM; then power on the computer. Verify the memory size; then test the memory. If an error appears, replace the DIMM.

If memory problems occur intermittently, make sure the DIMM socket latches are latched completely. If the DIMM latches are securely latched, use the loop option to repeat the test. When the test detects an error, an error log is

printed on the printer connected to the parallel port. See “Error Log” on page 121 for more information.

System Programs in Flash Memory: System setup programs and diagnostic tests are stored in flash memory.

Flash Memory Update: A flash memory update is required for the following conditions:

- New versions of system programs.
- New features or options are added.

To update the flash memory, do the following:

1. Get the appropriate diskette containing the update.
2. Insert the **System Program Service Diskette** into drive A and power on the computer.
3. Select **Update system programs** from the menu.

System Board and CPU Card Checkout

The processing functions are performed by both the system board and the CPU card. Processor problems can be caused by either FRU. However, the CPU card generally has a lower probability of failure. When a numeric code calls the system board or the CPU card as a FRU, or the CPU card is called by a diagnostic test by showing FRU code 11, use the following procedure to isolate the problem:

1. Run the system board test to verify the symptom. This test verifies both the system board and the CPU card. If no error is detected, return to “Checkout Guide” on page 96.
2. If FRU code 10 appears, replace the system board but do not replace the CPU card. Transfer the CPU card from the old system board to the new system board.
3. If FRU code 11 appears, reseal the CPU card.
4. Rerun the test to verify the fix.
5. If FRU code 11 remains, replace the CPU card.

If above procedure does not correct the problem, go to “Undetermined Problems” on page 116.

Keyboard/Auxiliary Input Device Checkout

Remove the external keyboard if the internal keyboard is to be tested.

If the internal keyboard does not work or an unexpected character appears, make sure that the three flexible cables extending from the keyboard are correctly seated in the connectors on the keyboard card.

If the keyboard cable connections are correct, check the keyboard card.

TrackPoint III Checkout

If the TrackPoint III will not work, check the configuration in the ThinkPad Features program. If the configuration of the TrackPoint III is disabled, select **Enable** to enable it.

If this does not correct the TrackPoint III problem, continue with the following steps.

The TrackPoint III does automatic compensations to adjust the pointer sensor. During this process, the pointer moves on the screen automatically for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the TrackPoint III pointer while the computer is powered on or while the system is running, or when re-adjustment is required because the temperature has exceeded its normal temperature range. This symptom does not indicate a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

If a click button problem or pointing stick problem occurs, do the following:

1. Go to the Easy-Setup screen.
2. Select an item with the pointing stick.
3. Press either the left or right click button.
4. Verify that both buttons work correctly.

If either the pointing stick or the click button do not work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU.

- Reseat the keyboard card cables.
- Replace the keyboard.
- Replace the keyboard card.
- Replace the system board.

Port Replicator Game Port Checkout

Do the following if a Port Replicator joystick problem occurs:

1. Connect the joystick to the Port Replicator game port.
2. Go to the Easy-Setup screen.
3. Select an item with the joystick.
4. Press any button of the joystick.
5. Verify that all buttons work correctly.

If either the joystick or a button does not work, replace the Port Replicator. If the problem still remains, replace the system board.

Diskette Drive Test

Do the following to isolate the problem to a controller, drive, or diskette. A scratch, write enabled, non-defective 2HD diskette is required.

FDD-1 represents the built-in diskette drive for 365X.
FDD-2 represents a diskette drive in the Port Replicator or

a diskette drive attached through the external diskette drive connector.

Warning: Make sure that the diskette does not have more than one label attached to it. Multiple labels can cause damage to the drive or can cause the drive to fail.

Do the following to select the test device:

1. Select the advanced diagnostics mode and select **Tool**; then select the **FDD-1** or **FDD-2** icon and press the spacebar. A ✓ mark appears next to the selected icon. Insert a **blank** diskette when instructed.
2. Run the diskette drive test.
3. If the controller test detects an error, FRU code 10 appears. Replace the system board.
4. If the controller test runs without errors, the drive read/write tests start automatically.
5. If the drive test detects an error, FRU code 50 for FDD-1 or 51 for FDD-2 appears. If the diskette itself is known to be good, replace the drive.

Status Indicators Checkout

If a status indicator LED problem occurs, do the following:

1. Power off the computer.
2. Power on the computer.
3. All the LEDs in the status indicator panel turn on for a moment soon after the computer is powered on. Verify that all indicators turn on correctly.

If some of the indicators do not turn on, replace the LED indicator card.

If the problem still remains, replace the keyboard card.

Power Systems Checkout

To verify the symptom of the problem, power on the computer using each of the power sources as follows:

1. Remove the battery pack, diskette drive, and hard disk drive.
2. Connect the AC Adapter and check that power is supplied.
3. Install the diskette drive or hard disk drive one at a time, and check that power is supplied from each power source.
4. Disconnect the AC Adapter, remove the hard disk and diskette drive, and install the charged battery pack; then check that power is supplied by the battery pack.

If you suspect a power problem, see the appropriate power supply check listed below.

- “Checking the AC Adapter” on page 101.
- “Checking Operational Charging” on page 102.
- “Checking the Battery Pack” on page 102.
- “Checking the Backup Battery” on page 103.

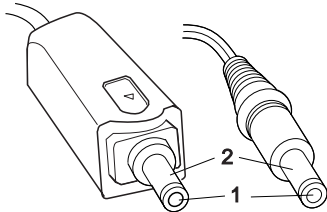
Checking the AC Adapter: You are here because the computer fails only when the AC Adapter is used.

- If the power problem occurs only when a Port Replicator is used, replace the replicator.
- If the power-on indicator does not turn on, check the power cord of the AC Adapter for correct continuity and installation.
- If the operational charge does not work, go to “Checking Operational Charging” on page 102.

Note

There are two types of adapters. The procedure for checking both types is the same.

1. Unplug the AC Adapter cable from the computer and measure the output voltage at the plug of the AC Adapter cable. See the following figure:



(16 - 10 V)

Pin	Voltage (V dc)
1	+14.5 to +17.0
2	Ground

- If the voltage is correct, replace the system board.
 - If the problem is not corrected, go to “Undetermined Problems” on page 116.
 - If the voltage is not correct, go to the next step.
2. Unplug the AC Adapter cable from the ac power outlet and wait five minutes or longer to allow the over-voltage protection circuit to be fully discharged and initialized.
 3. Plug the AC Adapter cable into the ac power outlet.
 4. Measure the output voltage of the AC Adapter.
 5. If the voltage is still not correct, replace the AC Adapter.

Note

An audible noise from the AC Adapter does not always indicate a defective adapter.

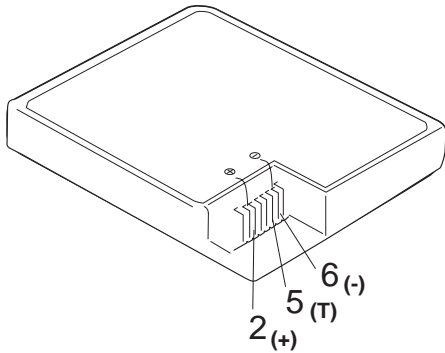
Checking Operational Charging: To check operational charging, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

Perform operational charging. If the battery status indicator does not turn on, remove the battery pack and leave it to return to room temperature. Reinstall the battery pack. If the charge indicator still does not turn on, replace the battery pack.

Checking the Battery Pack: Battery charging will not start until the Fuel-Gauge shows that less than 95% of the total power remains; with this condition the battery pack will charge to 100% of its capacity. This protects the battery pack from being overcharged or having a shortened life.

Do the following:

1. Power off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 2 (+) and 6 (-). See the following figure:



Terminal	Voltage (V dc) / Signal
1	—
2	+8 to +13.5
3	—
4	—
5	Thermal
6	Ground (-)

Note

Signal lines, not used in these steps, are used for communication between the system and the battery.

3. If the voltage is less than +9.6 V dc, the battery pack has been discharged. Recharge the battery pack.

If the voltage is still less than +9.6 V dc after recharging, replace the battery.

Note

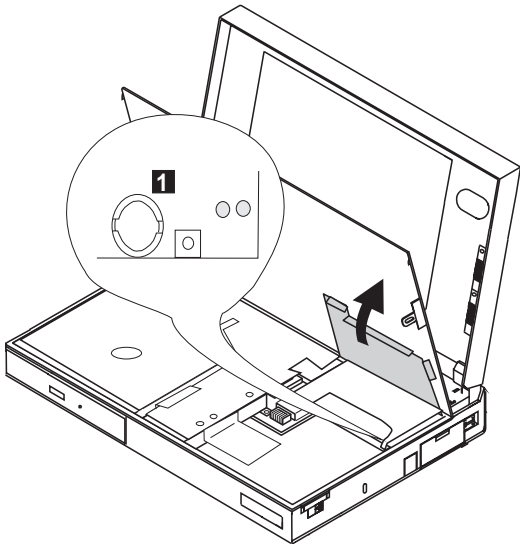
If the voltage of the battery pack is 0 V, it is not defective.

4. If the voltage is more than +9.6 V dc, measure the resistance between battery terminals 5 and 6. The resistance must be 4 K to 30 K ohm.

If the resistance is not correct, replace the battery pack. If the resistance is correct, replace the system board.

Checking the Backup Battery

1. Power off the computer and unplug the AC Adapter from the computer.
2. Open the keyboard and remove the battery pack.
3. Lift the right-hand section of the black insulator sheet.
4. Locate the backup battery on the system board, shown at **1**.



5. Using a plastic tool, remove the backup battery from the system board.

DANGER

Do not use a metal tool when removing the backup battery. Use only a plastic tool.

6. Measure the voltage of the backup battery. Refer to the following table for voltages:

Wire	Voltage (V dc)
+	+2.5 to +3.7
-	Ground

- If the voltage is correct, replace the system board.
- If the voltage is not correct, the backup battery has been discharged. Replace the backup battery.
- If the backup battery discharges quickly after replacement, replace the system board.

Power Management Features

Three power management modes are provided by the computer to reduce power consumption and prolong battery power.

Standby Mode: When in standby mode the following occurs:

- The LCD backlight turns off.
- The hard disk motor stops.

Events that cause the computer to enter standby mode:

- Standby requested by the Fn key. (Fn+F3)
- No activity under **auto-standby** enabled by the ThinkPad Features program.

Events that cause the computer to exit or resume standby mode:

- (Resume) Any key operation.

Suspend Mode: When in suspend mode, the following, in addition to the two actions of standby mode, occur:

- The LCD is powered off.
- The hard disk is powered off.
- The CPU is stopped.

Notes

1. In the ThinkPad Features Program, the computer can be set to "Will not suspend even if LCD is closed."
2. When the computer is powered with ac power and is used with one of the communication PC cards, the computer enters *standby mode*; the PC card and application program remain active.
3. The computer cannot enter suspend mode while a communication link is running.

Events that cause the computer to enter suspend mode:

- Suspend mode is requested by the Fn key (Fn+F4).
- The LCD is closed.
- The specified time has elapsed from the last operation with the keyboard, mouse, hard disk drive, parallel connector, or diskette drive; or the AC Adapter is plugged in. The time is specified by **Suspend Timer** in the ThinkPad Features program.
- The battery condition is low. The battery power indicator blinks amber.
- Either the *PS2 OFF* or *PS2 SUSpend* command is set in the ThinkPad Features program.

Events that cause the computer to exit or resume suspend mode:

- (Resume) The LCD is opened.
- (Resume) The real time clock alarm is signaled.
- (Resume) The ring indicator (RI) is signaled by a serial or PCMCIA device.
- (Resume) The Fn key is pressed.
- (Resume) An external keyboard key is pressed while operating with ac power.
- (Exit) Timer (timeout) conditions are satisfied for entering hibernation mode.

Hibernation Mode: When in hibernation mode, the following occurs:

- The system status, RAM, VRAM, and setup data are stored on the hard disk.
- The system is powered off.

Note

The computer cannot enter hibernation mode when the computer is powered with ac power and a communication PC card is used.

Events that cause the computer to enter hibernation mode:

- The keyboard is opened.
- Hibernation mode is requested by the Fn key (Fn+F12).
- Timer/timeout conditions are satisfied in suspend mode.
- A critical low battery condition occurs.
- The *PS2 HIBernation* command is set in the ThinkPad Features program.

Event that causes the computer to exit hibernation mode:

- The power-on switch is operated.

When power is turned on, the hibernation history in the boot record on the hard disk is recognized and system status is restored from the hard disk to resume operation.

Symptom-to-FRU Index

The Symptom-to-FRU Index lists the symptoms and errors and the possible causes. The most likely cause is listed first.

Note

Perform the FRU replacement or actions in the sequence shown in the "FRU/Action" columns. If a FRU did not solve the problem, put the original part back in the computer. Do not replace a non-defective FRU.

This index can also be used to help you decide which FRUs to have available when servicing a computer.

Numeric error codes show the errors detected in POST or system operation. In the following error codes, **X** can be any number.

If no codes are available, use narrative symptoms.

If the symptom is not listed, go to "Undetermined Problems" on page 116.

Note

For any IBM device not supported by the diagnostic codes in this ThinkPad computer, see the manual for that device.

Numeric Error Codes

Symptom / Error	FRU / Action in Sequence
10X 101 Interrupt failure. 102 Timer failure. 103 Timer interrupt failure. 104 Protected mode failure. 105 Last 8042 command not accepted. 107 NMI test failure. 108 Timer bus test failure. 109 Low meg-chip select test.	1. System Board
110 (Planar parity.)	1. Go to "Memory Checkout" on page 97. 2. DIMM 3. The computer is attached to a Port Replicator. 4. System Board

Symptom / Error	FRU / Action in Sequence
111 (I/O parity.)	<ol style="list-style-type: none"> 1. Go to "Memory Checkout" on page 97. 2. Port Replicator 3. System Board
158 (HDP was not set even though the supervisor password is set.)	<ol style="list-style-type: none"> 1. Set an HDP for the hard disk drive.
159 (HDP is not set the same as the supervisor password.)	<ol style="list-style-type: none"> 1. Set a correct HDP for the hard disk drive.
161 (Dead battery.)	<ol style="list-style-type: none"> 1. Go to "Checking the Backup Battery" on page 103. 2. Backup Battery 3. System Board
163 (Time and Date were not set.)	<ol style="list-style-type: none"> 1. Set Time and Date. 2. Backup Battery 3. System Board
173 (Configuration data was lost.)	<ol style="list-style-type: none"> 1. Select OK in the error screen; then set the time and date. 2. Backup Battery 3. System Board
174 (Configuration error: Perform "Checking the Installed Devices List" on page 123 before changing any FRUs.)	<ol style="list-style-type: none"> 1. Check Device Configuration. 2. System Board 3. Diskette Drive Assembly 4. Hard Disk Drive Assembly
175, 177, 178 175 EEPROM CRC #1 error. 177 Supervisor password check sum error. 178 EEPROM is not functional.	<ol style="list-style-type: none"> 1. System Board
183 (Incorrect password entered at the supervisor password prompt.)	<ol style="list-style-type: none"> 1. Have the user examine the password.
184 (POP check sum error.)	<ol style="list-style-type: none"> 1. Reset the POP (power-on password) in Easy-Setup.
185 (The startup sequence is not valid. Suspect that power was off when the startup sequence was being updated.)	<ol style="list-style-type: none"> 1. Reset the startup sequence in Easy-Setup.
186	<ol style="list-style-type: none"> 1. System Board

Symptom / Error	FRU / Action in Sequence
188 (EEPROM CRC #2 error.)	1. Set the system identification using the ThinkPad 750Ce hardware maintenance diskette.
190 (Depleted battery pack was installed when the power was on.)	1. Go to “Checking the Battery Pack” on page 102.
191XX (PM initialization error.)	1. System Board 2. CPU card
195 (The configuration read from the hibernation area does not match the actual configuration.)	1. Check if the configuration was changed. For example, check if the hard disk drive is from another computer. Also, when a DIMM card has been installed, unsecured DIMM latches can result in this error. Make sure the DIMM is securely seated and fully latched into place.
196 (Read error occurred in the hibernation area of the HDD.)	1. Run the hard disk drive test. 2. Hard Disk Drive
199XX (Resume error.)	1. System Board
1XX	1. System Board
2XX 201 Memory data error. 202 Memory line error 00–15. 203 Memory line error 16–23. 205 Memory test failure on on-board memory. 221 ROM to RAM remap error.	1. Go to “Memory Checkout” on page 97. 2. DIMM 3. System Board
301, 303, 304, 305, 3XX (301: Keyboard error.)	1. Go to “Keyboard/Auxiliary Input Device Checkout” on page 98. 2. Keyboard 3. External Numeric Keypad 4. External Keyboard 5. Keyboard/Mouse Cable 6. Keyboard Card 7. System Board

Symptom / Error	FRU / Action in Sequence
601, 6XX (601: Diskette drive or controller error.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 99. 2. Diskette Drive Assembly 3. Diskette 4. System Board
602 (Diskette read error.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 99. 2. Diskette 3. Diskette Drive Assembly
604 (Unacceptable ID was read from the diskette drive.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 99. 2. Diskette Drive Assembly 3. System Board
11XX 1101: Serial_A test failure.	<ol style="list-style-type: none"> 1. Serial Device 2. Communication Cable 3. System Board
12XX 1201: Serial_B test failure.	<ol style="list-style-type: none"> 1. System Board
17XX 1701 Hard disk controller failure. 1780, 1790 Hard disk 0 error. 1781, 1791 Hard disk 1 error.	<ol style="list-style-type: none"> 1. Hard Disk Drive 2. System Board
24XX (2401: System board video error.)	<ol style="list-style-type: none"> 1. System Board
808X 8081 PCMCIA presence test failure. (PCMCIA revision number also checked.) 8082 PCMCIA register test failure.	<ol style="list-style-type: none"> 1. Reseat the PCMCIA Connector. 2. PCMCIA Slot Assembly 3. PCMCIA Device 4. System Board
860X (Pointing device error when TrackPoint III is disabled.) 8601 System bus error—8042 mouse interface. 8602 External mouse error. 8603 System bus error or mouse error.	<ol style="list-style-type: none"> 1. External Mouse 2. External Keyboard 3. System Board

Symptom / Error	FRU / Action in Sequence
861X (Pointing device error when TrackPoint III is enabled.) 8611 System bus error—I/F between 8042 and IPDC. 8612 TrackPoint error. 8613 System board or TrackPoint error.	<ol style="list-style-type: none"> 1. Reseat the keyboard connector. 2. Reseat the keyboard TrackPoint III cable on the keyboard card. See "1070 Keyboard Unit" on page 139. 3. Keyboard 4. External Mouse 5. System Board
I9990301 I9990302 I9990305 I9990301 Hard disk error. I9990302 Invalid hard disk boot record. I9990305 No bootable device.	<ol style="list-style-type: none"> 1. Reseat the boot device. 2. Check the startup sequence for the correct boot device. 3. Check that the operating system has no failure and is installed correctly.
I9990303 (Bank 2 flash ROM check sum error.)	<ol style="list-style-type: none"> 1. System Board
Other codes not listed above	<ol style="list-style-type: none"> 1. Go to "Undetermined Problems" on page 116.

Beep Symptoms

Symptom / Error	FRU / Action in Sequence
Continuous beeps.	System Board
One beep and a blank, unreadable, or flashing LCD.	<ol style="list-style-type: none"> 1. Reseat the LCD connector. 2. LCD Assembly 3. System Board
One beep, and the message "Unable to access boot source."	<ol style="list-style-type: none"> 1. Boot device 2. System Board
One long beep, two short beeps, and a blank or unreadable LCD.	<ol style="list-style-type: none"> 1. System Board 2. LCD Assembly
One long beep followed by four short beeps each time the power switch is operated. (System cannot power on because of low battery voltage.)	Connect the AC Adapter or install a fully charged battery.
One beep every second. (System shuts down because of low battery voltage.)	Connect the AC Adapter or install a fully charged battery (allows system to complete shutdown before changing the battery).

Symptom / Error	FRU / Action in Sequence
Two short beeps with error codes.	POST error. See “Numeric Error Codes” on page 106.
Two short beeps with blank screen.	System Board

No-Beep Symptoms

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator not on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. Go to “Power Systems Checkout” on page 100. 2. System Board 3. Power sources
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System Board 2. CPU Card
No beep, power-on indicator on, and a blinking cursor only during POST.	<ol style="list-style-type: none"> 1. System Board 2. CPU Card
No beep during POST but system runs correctly.	<ol style="list-style-type: none"> 1. Turn the volume up and check the speaker. 2. Speaker / Volume Switch Assembly

LCD-Related Symptoms

Important

The TFT LCD on some models of this computer contains over 1,440,000 thin-film transistors (TFTs). A small number of missing, discolored, or lighted dots (on all the time) is characteristic of TFT LCD technology, but excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of dots satisfies the following condition:

- The number of missing, discolored, or lighted dots in any background is 21 or more.

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System Board 2. CPU Card
<ul style="list-style-type: none"> • LCD backlight not working, or • LCD too dark, or • LCD brightness cannot be adjusted, or • LCD contrast cannot be adjusted. 	<ol style="list-style-type: none"> 1. Reseat the LCD connectors. 2. LCD Assembly
<ul style="list-style-type: none"> • LCD screen unreadable, or • Characters missing pels, or • Screen abnormal, or • Wrong color displayed. 	<ol style="list-style-type: none"> 1. See important note for "LCD-Related Symptoms." 2. Reseat all LCD connectors. 3. LCD Assembly 4. System Board
LCD has extra horizontal or vertical lines displayed.	LCD Assembly

Keyboard/TrackPoint III–Related Symptoms

Symptom / Error	FRU / Action in Sequence
Keyboard (one or more keys) does not work.	<ol style="list-style-type: none"> 1. Reseat the keyboard connector. 2. Reseat the three keyboard cables on the keyboard card. 3. Keyboard 4. Keyboard Card 5. System Board
TrackPoint III does not work.	<ol style="list-style-type: none"> 1. Reseat the keyboard connector. 2. Go to “TrackPoint III Checkout” on page 99. 3. Keyboard 4. System Board
Pointer moves automatically or does not work correctly.	<ol style="list-style-type: none"> 1. See “TrackPoint III Checkout” on page 99.

Indicator–Related Symptoms

Symptom / Error	FRU / Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly.	<ol style="list-style-type: none"> 1. Reseat the LED Indicator Card cable. 2. LED Indicator Card 3. System Board

Power–Related Symptoms

Symptom / Error	FRU / Action in Sequence
Power shuts down during operation.	<ol style="list-style-type: none"> 1. Go to “Power Systems Checkout” on page 100. 2. Battery Pack 3. Remove the battery pack and let it cool for two hours. 4. Power sources
The system will not power off.	System Board

Function–Related Symptoms

Symptom / Error	FRU / Action in Sequence
The system will not enter hibernation mode by opening the keyboard.	<ol style="list-style-type: none"> 1. Go to “Hibernation Mode” on page 105 and check whether the computer can enter hibernation mode. 2. Enable hibernation mode using the ThinkPad Features program. 3. Boot an operating system and press Fn+F12. If the computer enters hibernation mode, suspect that the application program is not working properly. 4. CPU Card 5. Initialize the system in Easy-Setup. 6. System Board
The system will not suspend or resume by opening or closing the LCD.	<ol style="list-style-type: none"> 1. Go to “Suspend Mode” on page 104, and check that the computer can enter suspend mode. 2. Boot an operating system and press Fn+F4. If the computer enters suspend mode, suspect that the application program is not working properly. 3. Initialize the system in Easy-Setup. 4. Keyboard Card 5. System Board
Battery Fuel-Gauge does not go higher than 90%.	Go to “Checking the Battery Pack” on page 102 and see the note.
Memory count (size) appears different from actual size.	Go to “Memory Checkout” on page 97.
System configuration does not match the installed devices.	Go to “Checking the Installed Devices List” on page 123.
System hangs intermittently.	Go to “Intermittent Problems” on page 115.

Peripheral Device–Related Symptoms

Symptom / Error	FRU / Action in Sequence
External display does not work correctly.	1. See “ External Display Self-Test ” in “ Common Devices Checkout ” section.
Printer problems.	1. Run Printer Self-test. 2. Parallel Port Device 3. Cable 4. System Board
Serial or parallel port device problems.	1. Device 2. Device Cable 3. System Board

Infrared–Related Symptoms

Symptom / Error	FRU / Action in Sequence
Unable to communicate using the Infrared (IR) Port.	1. Make sure the setup for the IR is correct. 2. Make sure there are no fluorescent lights near the computer. The computer may receive optical interference from the fluorescent light. 3. Reseat the IR unit. 4. Run the advanced diagnostic test. If an error occurs and a FRU code is displayed, replace the parts shown by the FRU code.

Other Symptoms

Symptom / Error	FRU / Action in Sequence
Errors occur only when Port Replicator is used.	See “ Port Replicator Checkout ” in the “ Common Devices Checkout ” section.
PCMCIA slot pin is damaged.	PCMCIA Slots Assembly

Note

If you cannot find a symptom or error in this list and the problem remains, see “Undetermined Problems” on page 116.

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should only be considered when a recurring problem exists.

When analyzing the intermittent problem, do the following:

1. Run the advanced diagnostic test for the system board in loop mode at least 10 times.
2. If no error is detected, do **not** replace any FRUs.
3. If any error is detected, replace the FRU shown by the FRU code. Rerun the test to verify that no more errors exist.

Undetermined Problems

You are here because the diagnostic tests did not identify which adapter or device failed, installed devices are incorrect, a short circuit is suspected, or the system is inoperative. Follow the procedures below to isolate the failing FRU (do not isolate non-defective FRUs).

Verify that all attached devices are supported by the computer.

Verify that the power supply being used at the time of the failure is operating correctly. (See "Power Systems Checkout" on page 100.)

1. Power off the computer.
2. Check the cables, wires, and connectors for short circuits and open circuits. Visually check them for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices.
 - a. Non-IBM devices
 - b. Devices attached to the expansion bus connector
 - c. Printer, mouse, and other external devices
 - d. Battery pack
 - e. Hard disk drive
 - f. Internal diskette drive or CD-ROM drive
 - g. DIMM
 - h. PC Cards
4. Power on the computer.
5. Determine if the problem has changed.
6. If the problem does not occur again, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem still remains, remove the backup battery and wait for 3 minutes; then replace the backup battery and set current date and time.
8. Determine if the problem has changed.
9. If the problem remains, replace the following FRUs one at a time. Do not replace a non-defective FRU.
 - Keyboard card
 - LCD assembly
 - System board
 - CPU card

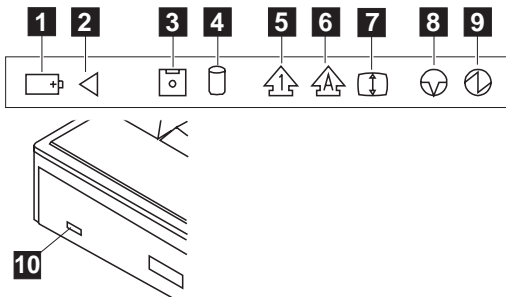
Related Service Procedures


This section provides information about the following:







- “Status Indicators”
- “How to Run the Diagnostics” on page 120
- “Diagnostic Error Codes” on page 121
- “Error Log” on page 121
- “Checking the Installed Devices List” on page 123
- “Password Combinations (POP, HDP, PAP)” on page 124
- “How to Run a Low-Level Format” on page 124
- “PC Test Card LED” on page 124
- “Fn Key Combinations” on page 125
- “Keyboard/Auxiliary Input Device Checkout” on page 98



Status Indicators

The system status LED indicators show the current computer status in green and amber using symbols. The following shows the location of each symbol and the meaning of each indicator.



Symbol	Color	Meaning
1 Battery Power Status 	Green	Indicates that sufficient power remains for operation. The battery power status cannot be determined when the battery is not installed in the computer.
	Blinking Amber	Indicates that the battery pack needs charging. When the indicator starts blinking amber, the computer beeps three times.

Symbol	Color	Meaning
2 Battery Charging 	Green	Indicates that the battery pack is charging. When the indicator turns off, the battery pack is fully charged.
	Off	Indicates that the battery pack is charged (if the AC Adapter is attached).
3 Diskette Drive In Use 	Amber	Turns on when data is written to or read from the internal diskette drive.
4 Hard Disk In-Use 	Amber	Turns on when data is read from or written to the hard disk or internal CD-ROM. Do not enter suspend mode or turn off the computer when this indicator is on.
5 Numeric Lock 	Green	When on, indicates the numeric keypad on the keyboard is enabled. You enable and disable the keypad by pressing and holding the Shift key. Then press the NumLk key.
6 Caps Lock 	Green	When on, indicates the Caps Lock mode is enabled. All alphabetic characters (A–Z) are entered in capital letters without pressing the Shift key. You enable and disable Caps Lock mode by pressing the Caps Lock key.
7 Scroll Lock 	Green	Alternately turns on and off each time the Scroll Lock key is pressed. While this indicator is on, the Arrow keys are used as screen-scroll function keys. In this state, the cursor cannot be moved with the Arrow keys. Not all application programs support this function.

Symbol	Color	Meaning
8 Suspend Mode 	Green	When on, indicates the computer is in suspend mode.
	Blinking Green	Indicates that the computer is entering suspend mode or hibernation mode, or the computer is resuming normal operation.
9 Power On 	Green	Shows that the computer is operational. This indicator turns on when the computer is turned on and the computer is not in suspend mode.
10 CD-ROM Drive / Diskette Drive In-Use LED	Amber	365XD: turns on when data is read from a CD in the CD-ROM drive. Do not enter suspend mode or eject the CD when this indicator is on.
	Amber	365X: turns on when data is read from or written to a diskette in the internal diskette drive. Do not enter suspend mode or eject the diskette when this indicator is on.

How to Run the Diagnostics

Use either the TrackPoint III or the cursor move keys to interact with the tests. The Enter key works the same as selecting the OK icon to reply OK.

Note

Make sure you have the following tools available before starting the tests:

- Wrap Plug (P/N 72X8546) for the serial and parallel connector tests.
- Wrap Plug (P/N 35G4680) for the PCMCIA tests.
- Scratch diskette for the FDD1 or FDD2 tests.
- Any data CD for the CD-ROM drive test.

1. Press and hold the F1 key; then power on the computer. Hold the F1 key down until the Easy-Setup screen appears.
2. Select **Test** and press Enter.
3. Select a device and press Enter to run the test.
4. The test progress screen appears.
5. **OK** appears when the test ends without any errors.
6. Start the **Advanced Diagnostic test** by pressing **Ctrl+A** on the basic diagnostic menu screen.
7. Select **Tool** to install the tools.
8. Select a device, press the **Spacebar** and install the tool. Multiple devices can be selected by repeating this step.
A √ mark appears beside the selected devices.
9. Select **OK** and press Enter if the selection is OK.
10. Select a device and press Enter to start the tests.
11. Select **Test All** to test all devices.
12. Select **Loop Test** to run the tests in a repeated loop.
A loop option menu appears in which a device loop or all-device loop can be selected. Select a device and press the **Spacebar** to select a device. Repeat this step to select multiple devices. Press Enter to start the diagnostic loop. If no device is selected, all device tests are looped.
13. To exit the loop, keep pressing **Ctrl+Pause** until the test exits. A beep sounds to notify that the exit interrupt is sensed by the test program.

Error Log

Diagnostic errors are printed on the printer that is attached to the parallel port when the error is detected. The error is also logged in the system memory.

Do the following to display the errors:

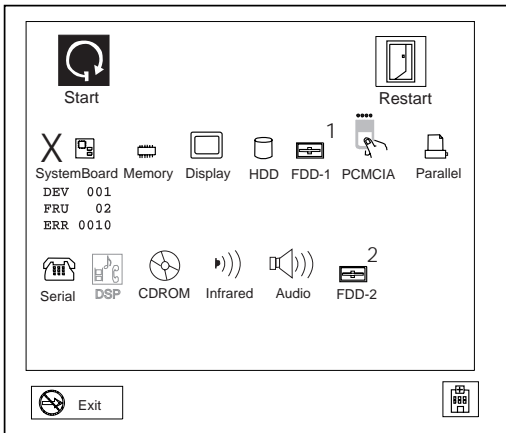
1. End the test, if it is running.
2. Press **Ctrl+A** to select the advanced diagnostic mode.
3. Press **Ctrl+E**.
4. The error log appears.
5. To exit the screen, select the cancel icon or press Esc.

The error log is not saved when the system is powered-off.

Diagnostic Error Codes













If an error is detected, the following appears:

- Large **X** on the left side of the device icon.
- Device ID (three digit)
- Error code (two digit)
- FRU code (four digit)



The device ID and error code are used to indicate the detail portion of the FRU which caused the error. If replacing a FRU does not correct the problem, see the device ID or error code from the previous failure. If they have changed, the cause might be because the new FRU is defective or that the FRU was incorrectly installed.

Device ID: If an error is detected by the diagnostic tests, a three-digit device ID is displayed. The device ID indicates the suspected device.

Icon	Device ID	Suspected Device
 SystemBoard	001	System Board
	003	Keyboard
	007	Math Coprocessor
	086	Pointing Device
 Memory	002	Memory
 Display	050	Display
 HDD	017	Hard Disk Drive
 1 FDD-1	006	Diskette Drive
 2 FDD-2	066	External Diskette Drive
	080	PCMCIA
 Parallel	009	Parallel
 Serial	011	Serial
 CDROM	215	CD-ROM
 Infrared	103	Infrared port
 Audio	150	Audio (ESS AudioDrive Sound Chip)

FRU Codes: If an error is detected by the diagnostic tests, a *four-digit* FRU code is displayed. The FRU code indicates two suspected FRUs. Replace the FRU that is indicated by the *two leftmost digits* first, then replace the FRU indicated by the *two rightmost digits*. No FRU is assigned to code 00. If only one FRU is suspected, the other FRU code is filled with zeros. See the referenced page before replacing the FRU.

FRU Code	FRU/Action
10	System Board
11	CPU Card
20	Memory (See "Memory Checkout" on page 97.)
30	Reserved
32	External Keyboard
33	External Mouse
40	LCD Assembly
45	External CRT
50	1. Reseat the Diskette Drive (FDD-1) 2. Diskette Drive (FDD-1)
51	1. Reseat the Diskette Drive (FDD-2) 2. Diskette Drive (FDD-2)
60	1. Reseat the Hard Disk Drive (HDD) 2. Hard Disk Drive (HDD)
72	PCMCIA Slot Assembly
90	CD-ROM Drive

If the problem remains after replacement of the FRUs, go to "Undetermined Problems" on page 116.

Checking the Installed Devices List

If a device is installed but the icon appears in a gray shade rather than a dark shade on the basic diagnostics screen, the device is defective. Reseat the device connectors. If the symptom remains, replace the device or the system board. If needed, adjust the contrast control to clearly distinguish the shade of the icon.

If a device that is not installed appears in a dark shade (for example, FDD-2 appears in a dark shade when *no* second FDD is installed), do the following:

1. Replace the **first** device in the configuration, such as the FDD-1.
2. If the problem remains, replace the system board.

The PCMCIA, Parallel, and Serial icons are always displayed in a dark shade because the icons represent subsystems of the system board and not the actual attachment of the devices.

The FDD-1 icon represents the **first** drive in the system configuration. Similarly, the FDD-2 icon represents the **second** drive, attached to the external diskette drive connector or through a Port Replicator.

Password Combinations (POP, HDP, PAP)

When the power-on password (POP), hard disk password (HDP), and supervisor password (PAP) are used, the following situations may occur:

- **When the POP is the same as the HDP**
The POP prompt appears, but the HDP prompt does not appear.
- **When the POP is not the same as the HDP**
The POP and HDP prompts both appear.
- **When the PAP and HDP are enabled**
When a PAP is used, the HDP is enabled automatically, but no HDP prompt appears. The HDP is set to the same password as the PAP.

How to Run a Low-Level Format

Do the following to format the hard disk.

Warning: Make sure the drive address to be formatted is correct. This procedure will erase all information on the disk.

1. Power off the computer.
2. Insert the **ThinkPad 750Ce hardware maintenance diskette** into diskette drive **A** and power on the computer.

Note

You can use this maintenance diskette for the ThinkPad 365X and 365XD computers.

3. Select **Format the hard disk** from the main menu.
4. Select the drive from the menu.
5. Follow the instructions on the screen.

PC Test Card LED

The green LED on the PC test card turns on when the PCMCIA test is running. If the LED does not turn on, check that the card is installed correctly by reseating the card. If it still does not turn on after it is reseated, try using another slot for the test. If the LED still does not turn on and the test fails, replace the FRU shown by the diagnostic error code.

Fn Key Combinations

The following table shows the **Fn** key and function key combinations and their corresponding functions.

The Fn key works independently from the operating system. The operating system obtains the status through the system management interface to control the system.

Fn +	Description
F1	Reserved
F2	Fuel-Gauge display ON/OFF
F3	Standby mode invocation
F4	Suspend mode invocation
F5	Reserved
F6	Reserved
F7	LCD/CRT display switching
F8	Reserved
F9	Reserved
F10	Reserved
F11	Power management mode switching (Toggles between High Power, Auto, and Customize settings.)
F12	Hibernation invocation
Page Up	Reserved
Page Down	Reserved

Product Overview (365X, 365XD)

The following table shows an overview of the system features.

Feature	Description
Processor	<ul style="list-style-type: none">Intel® Pentium® 100 MHz, 120 MHz, or 133 MHz.
Bus Architecture	<ul style="list-style-type: none">PCI
Memory (Standard)	<ul style="list-style-type: none">8MB
Memory (Option)	<ul style="list-style-type: none">8 MB, 16 MB, or 32 MB DIMM card, maximum 40 MB (70ns, 144-pin EDO)
CMOS RAM	<ul style="list-style-type: none">114 bytes
SVGA Video	<ul style="list-style-type: none">10.4-inch, 65,536 colors 800x600 pixel TFT color LCD11.3-inch, 65,536 colors 800x600 pixel TFT color LCD10.4-inch, 256 colors, 800x600 pixel DSTN color LCD11.3-inch, 256 colors, 800x600 pixel DSTN color LCD
Diskette Drive (For 365X: built-in; for 365XD: external)	<ul style="list-style-type: none">1.44MB (2-mode), 3.5-inch1.44MB (3-mode), 3.5-inch, for Japan
Hard Disk Drive	<ul style="list-style-type: none">720MB, 2.5-inch, IDE810MB, 2.5-inch, IDE1.08GB, 2.5-inch, IDE1.35GB, 2.5-inch, IDE2.1GB, 2.5-inch, IDE
I/O Port	<ul style="list-style-type: none">HeadphoneMicrophoneStereo Line-InPort Replicator
Audio	<ul style="list-style-type: none">ESS AudioDrive Sound ChipInternal speakerMechanical volume
CD-ROM (For 365XD: built-in)	<ul style="list-style-type: none">5-inch, X4, X6, or X8 speed, IDE interface
Infrared Transfer	<ul style="list-style-type: none">Rear IR portIrDA** 1.0 compliant115K bps
PCMCIA** Cards	<ul style="list-style-type: none">One Type III or two Type II

FRU Removals and Replacements

This section contains information about removals and replacements.

- Do not damage any part. Only certified and trained personnel should service the computer.
- The arrows in the “Removals and Replacements” section show the direction of movement to remove a FRU, or to turn a screw to release the FRU. The arrows are marked in numeric order, in square callouts, to show the correct sequence of removal.
- When other FRUs must be removed before removing the failing FRU, they are listed at the top of the page.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See “Locations” for internal cable connections and arrangement information.
- When replacing a FRU, use the correct screw size as shown in the procedures.

Safety Notice 1: Translation on page 8

Before the computer is powered-on after FRU replacement, make sure all screws, springs, or other small parts, are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.

Safety Notice 3: Translation on page 10

The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations.

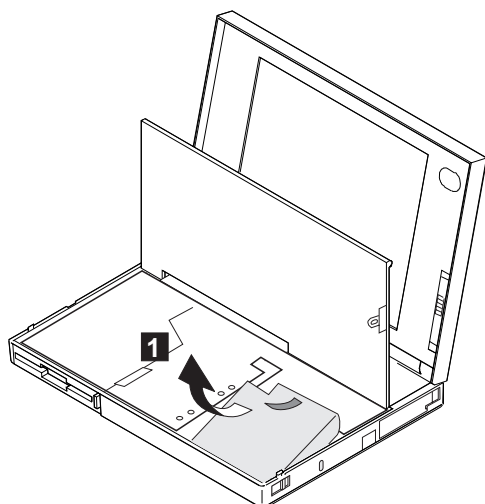
Safety Notice 8: Translation on page 14

Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.

1020 Battery Pack

Note

Be careful that the computer does not fall backward when the battery pack is removed.

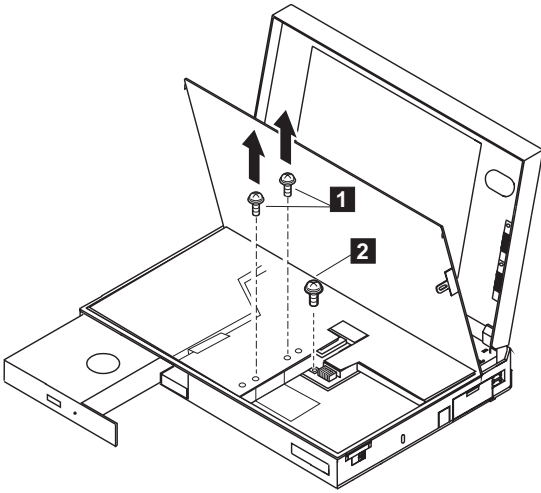


1025 Insulator Sheet

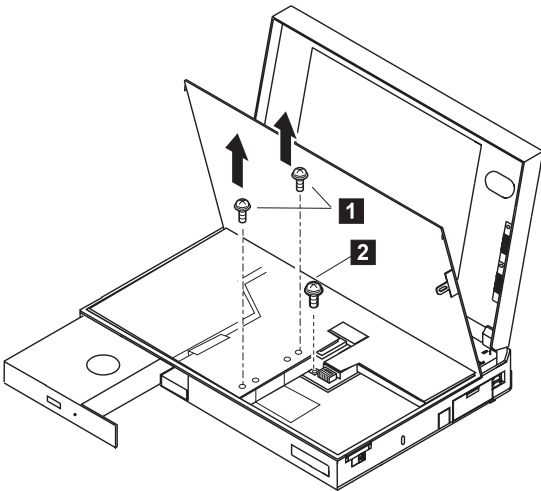
To access items under the keyboard other than the battery pack, first raise the black insulator sheet as shown in the figures.

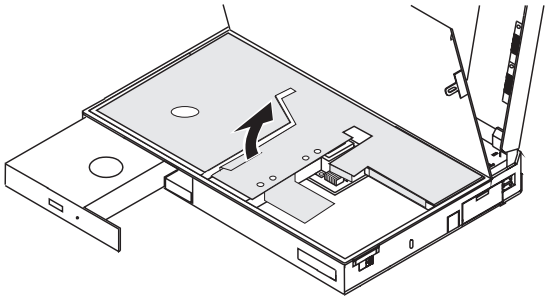
To access the hard disk drive and DIMM slots, remove the three screws and raise the middle section of the insulator sheet, as shown in the figures.

The location of the screws is different according to the model.



OR



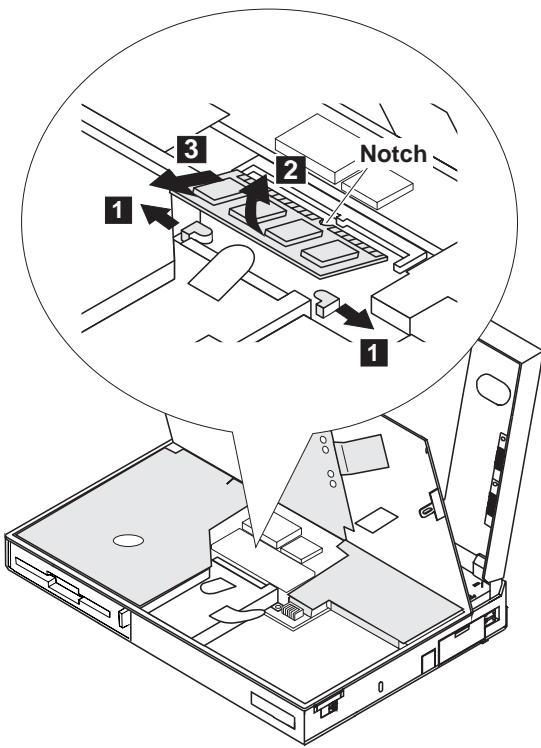


Step	Screw Location (Quantity)	Length
1	Insulator Sheet (2)	M3 x 3 mm
2	HDD Bracket (1)	M2 x 5 mm

Note: Make sure you use the correct screws when replacing.

1030 DIMM Card (If Installed)

- Battery Pack (1020)
- Lift Insulator Sheet (1025)



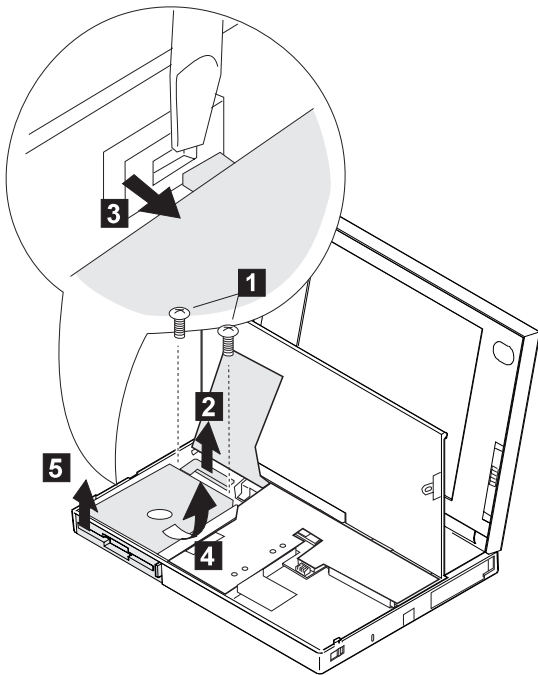
1040 Diskette Drive / CD-ROM Drive

- Battery Pack (1020)
- Lift Insulator Sheet (1025)

Diskette Drive (Model 365X):

Note

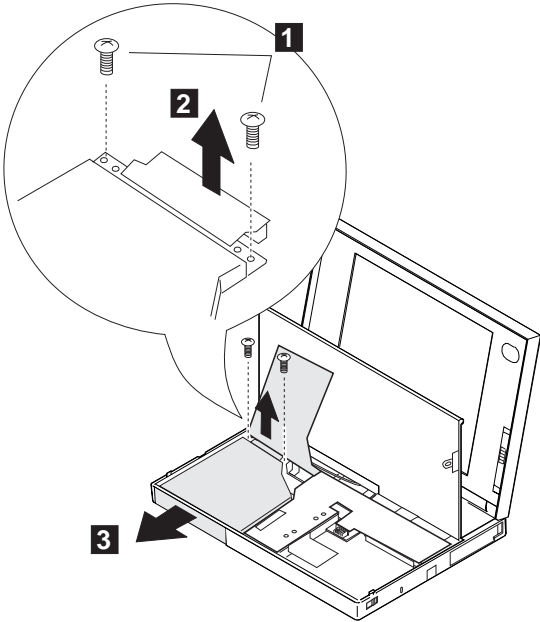
Release the latch at the left side of the diskette drive, as shown in the figure at **3**, and remove the diskette drive.



Step	Screw Location (Quantity)	Length
1	Diskette Drive (2)	M2 x 5 mm
Note: Make sure you use the correct screws when replacing.		

CD-ROM Drive (Model 365XD)

Warning
Remove the CD-ROM drive exactly as shown in the figure. Do not apply any extra force to the CD-ROM drive when removing it.



Step	Screw Location (Quantity)	Length
1	CD-ROM Drive (2)	M2 x 8 mm

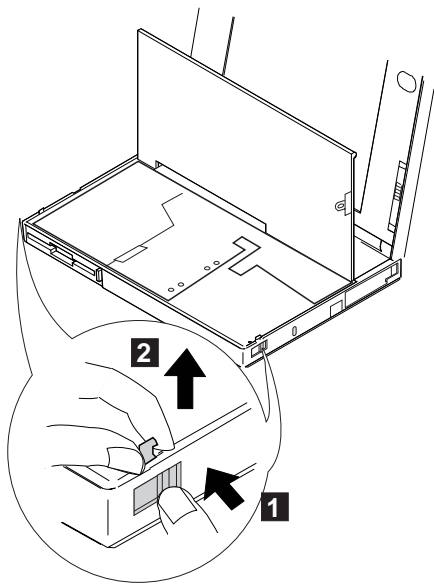
Note: Make sure you use the correct screws when replacing.

1045 Base Cover Assembly / Keyboard Latch

- Battery Pack (1020)
- Diskette Drive / CD-ROM Drive (1040)

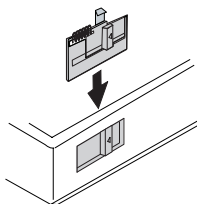
Note

Push the keyboard latch from the outside of the base cover (**1**), then pull out the latch (**2**). Some pressure might be needed to push the latch.



When replacing:

Assemble the parts as shown below; then replace the latch.



1050 Hard Disk Drive

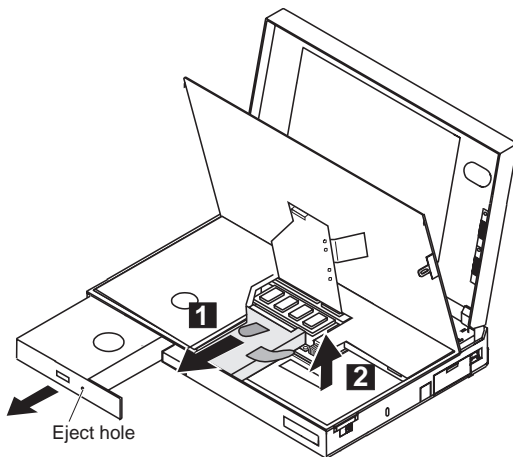
- Battery Pack (1020)
- Lift Insulator Sheet (1025)

Warning

Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard disk drive, have the user make a backup copy of all the information on the hard disk. Never remove the hard disk drive while the system is operating or is in suspend mode.

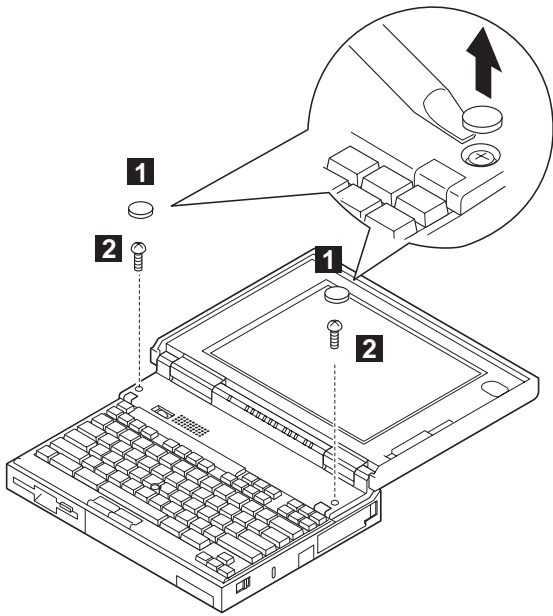
Notes

1. Before removing the hard disk drive, eject the CD-ROM tray by inserting a pin into the mechanical eject hole on the front of the CD-ROM drive. Pull the tray out fully. Otherwise, the CD-ROM drive may be damaged when you remove the hard disk drive.
2. Remove the hard disk drive exactly as shown in the figure. Do not apply any extra force to the hard disk drive when removing it.
3. This procedure is the same for Model 365X and Model 365XD.



1060 Top Cover

- Battery Pack (1020)

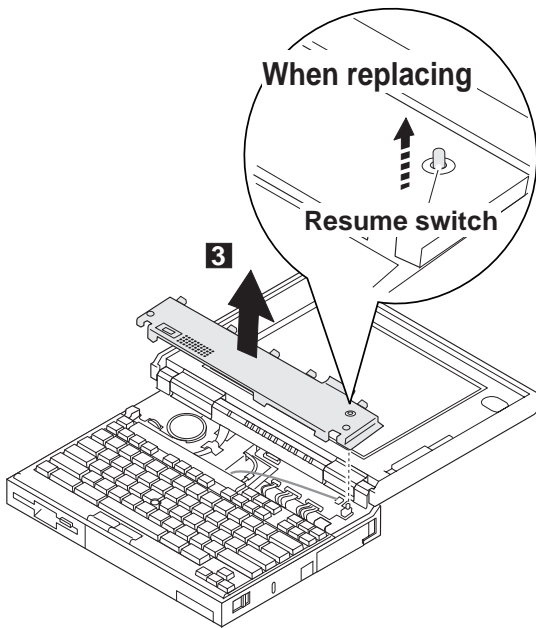


Step	Screw Location (Quantity)	Length
2	Top Cover (2)	M2 x 5 mm

Note: Make sure you use the correct screws when replacing.

Note

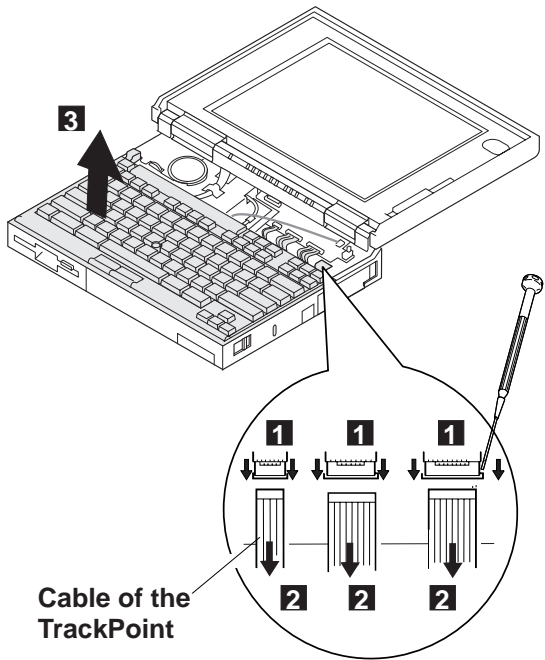
When replacing the top cover, be careful not to damage the resume switch. Ensure that the resume switch extends through the hole, as shown in the figure.



1070 Keyboard Unit

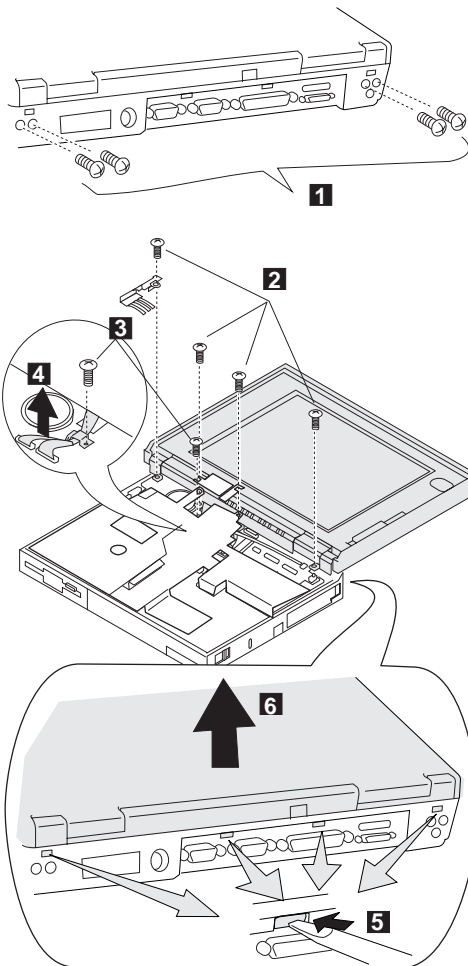
- Battery Pack (1020)
- Top Cover (1060)

When replacing the keyboard unit, connect the keyboard connector as shown in the figure; then replace the keyboard.



1080 LCD Assembly

- Battery Pack (1020)
- Insulator Sheet (1025)
- Diskette Drive / CD-ROM Drive (1040)
- Hard Disk Drive (1050)
- Top Cover (1060)
- Keyboard Unit (1070)



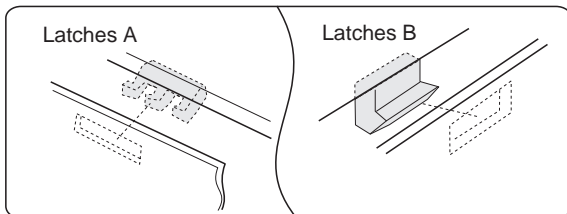
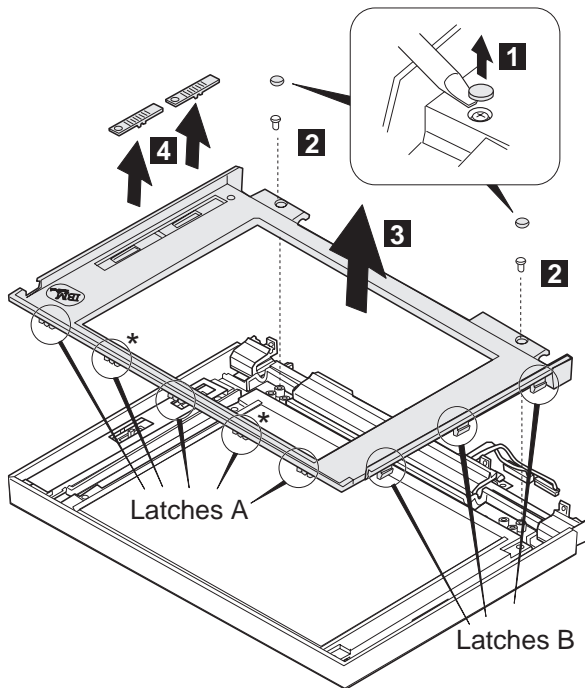
Step	Screw Location (Quantity)	Length
1	Base Cover (4)	M3 x 5 mm
2	LCD Assembly (4)	M2 x 5 mm

Step	Screw Location (Quantity)	Length
3	LCD Cable (1)	M3 x 4 mm
Note: Make sure you use the correct screws when replacing.		

1085 LCD Panel

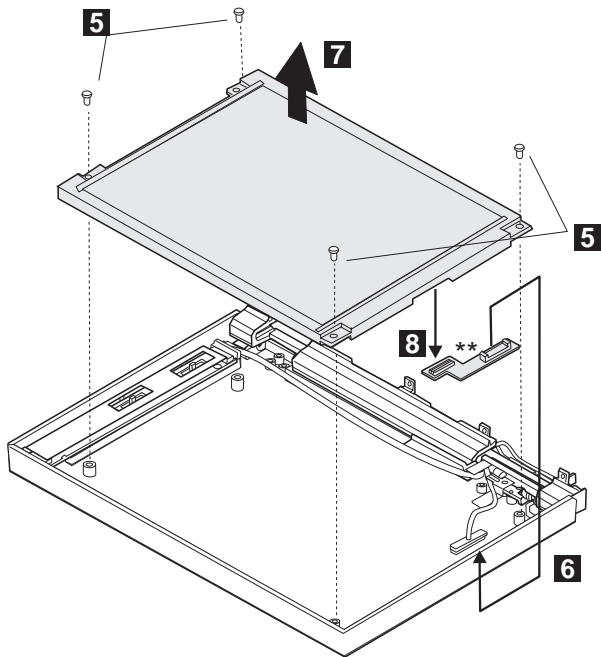
- Battery Pack (1020)
- Insulator Sheet (1025)
- Diskette Drive / CD-ROM Drive (1040)
- Hard Disk Drive (1050)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Assembly (1080)

DSTN LCD Panel



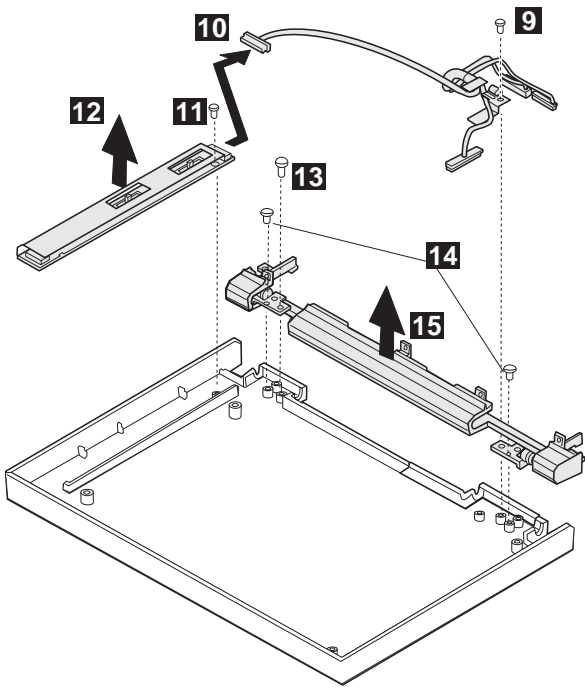
*Latches only for 11.3-inch LCDs (total 5 latches).

Step	Screw Location (Quantity)	Length
2	LCD Front Cover (2)	M3 x 6 mm
Note: Make sure you use the correct screws when replacing.		

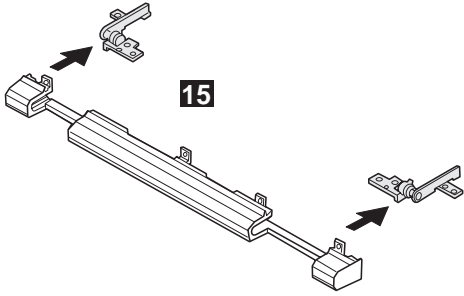


**Part only for 10.4-inch LCDs.

Step	Screw Location (Quantity)	Length
5	LCD Panel (4)	M3 x 6 mm
Note: Make sure you use the correct screws when replacing.		



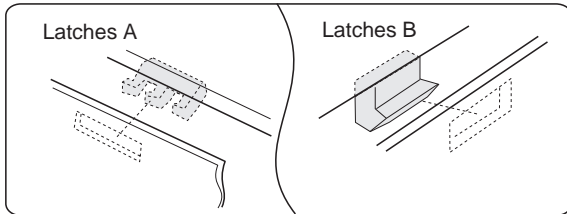
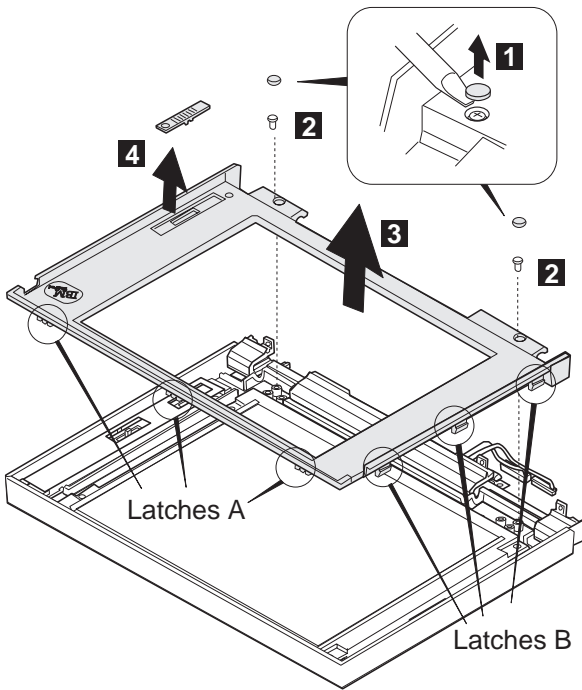
Step	Screw Location (Quantity)	Length
9	LCD Cable (1)	M3 x 6 mm
11	Inverter Card (1)	ST2.9 x 4.5 mm (10.4-inch LCD) M3 x 6 mm (11.3-inch LCD)
13	Right Hinge (1)	M3 x 6 mm
14	Hinge (2)	M2 x 4 mm
Note: Make sure you use the correct screws when replacing.		



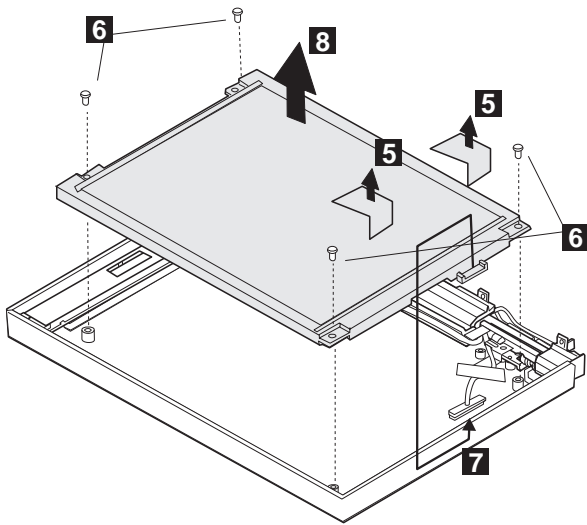
TFT 10.4-inch LCD Panel (A)

- **TFT 10.4 (A)** P/N 46H8093 69H7947 82H8039

Note: You can replace the entire 10.4-inch TFT LCD unit (A) with the entire LCD unit (B), or vice versa. But you cannot replace parts of (A) with parts of (B), or vice versa.

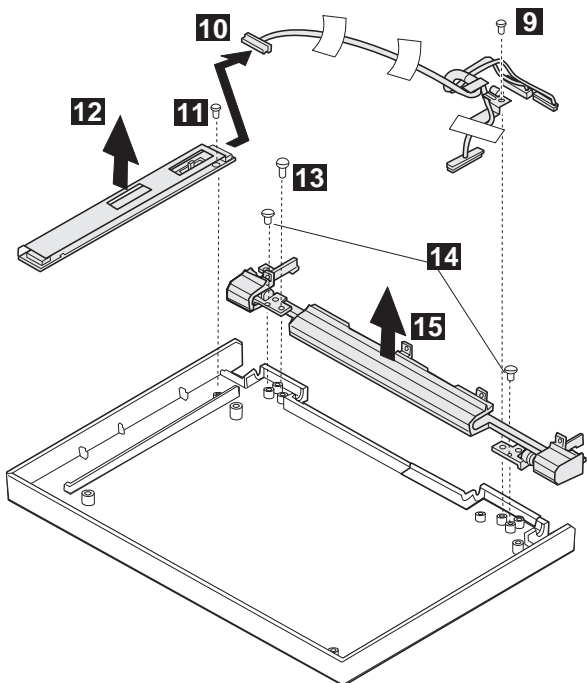


Step	Screw Location (Quantity)	Length
2	LCD Front Cover (2)	M3 x 6 mm
Note: Make sure you use the correct screws when replacing.		



Step	Screw Location (Quantity)	Length
6	LCD Panel (4)	M3 x 6 mm

Note: Make sure you use the correct screws when replacing.



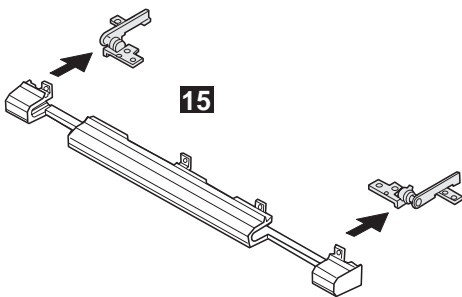
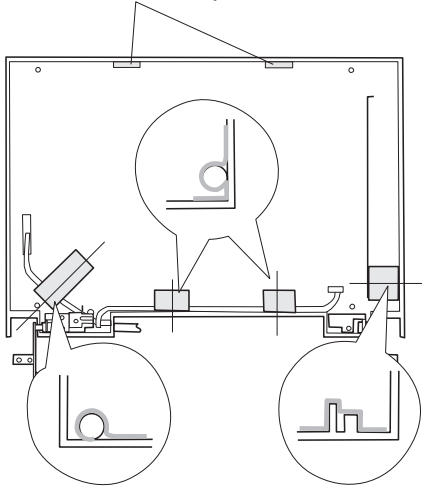
Step	Screw Location (Quantity)	Length
9	LCD Cable (1)	M3 x 6 mm
11	Inverter Card (1)	ST2.9 x 4.5 mm
13	Right Hinge (1)	M3 x 6 mm
14	Hinge (2)	M2 x 4 mm

Note: Make sure you use the correct screws when replacing.

When replacing:

When replacing the LCD cable, replace the copper tape and gasket top as shown below.

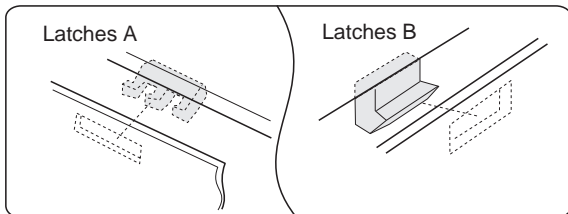
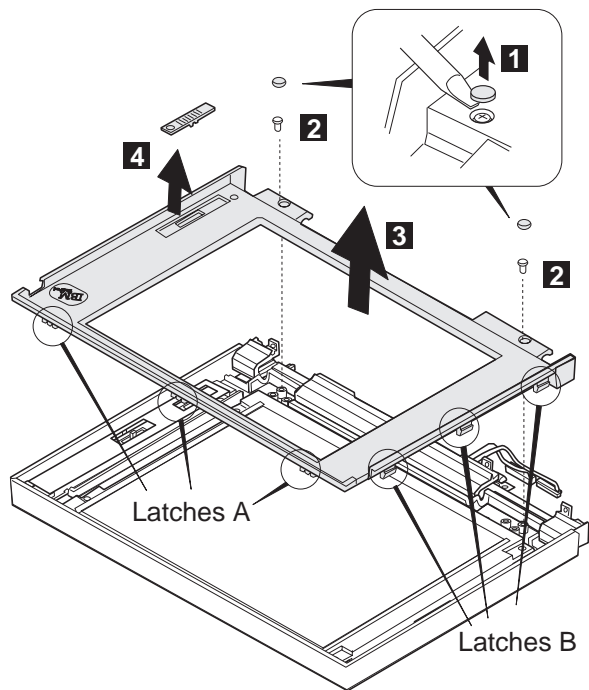
Gasket Top



TFT 10.4-inch LCD Panel (B)

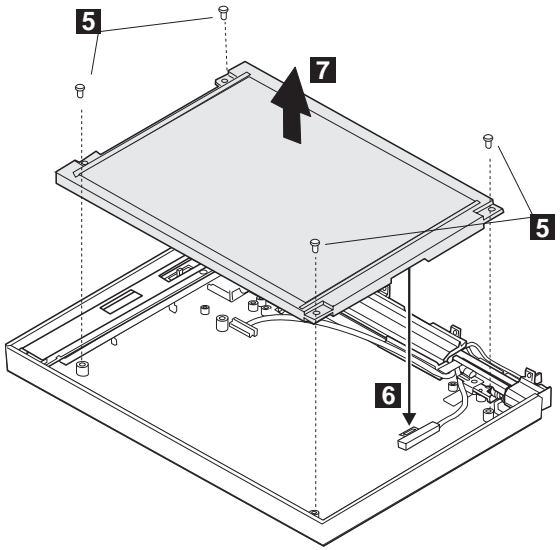
- TFT 10.4 (B) P/N 83H5349 83H5350

Note: You can replace the entire 10.4-inch TFT LCD unit (A) with the entire LCD unit (B), or vice versa. But you cannot replace parts of (A) with parts of (B), or vice versa.

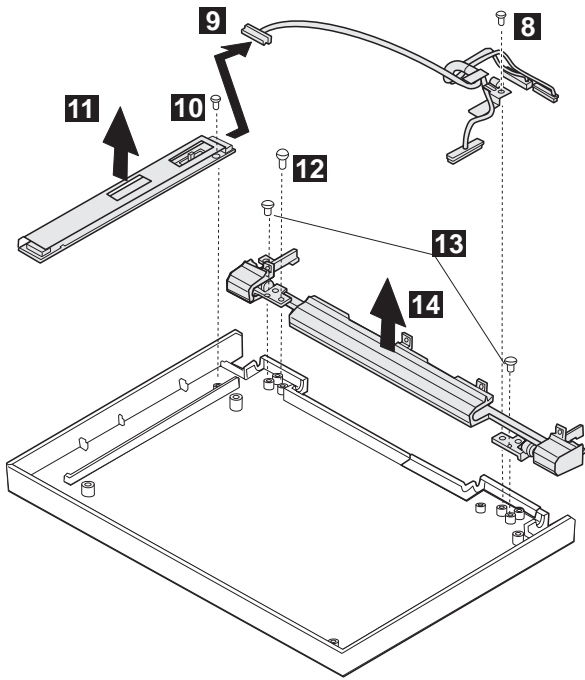


Step	Screw Location (Quantity)	Length
2	LCD Front Cover (2)	M3 x 6 mm

Note: Make sure you use the correct screws when replacing.

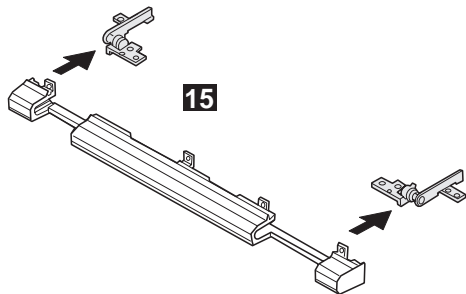


Step	Screw Location (Quantity)	Length
5	LCD Panel (4)	M3 x 6 mm
Note: Make sure you use the correct screws when replacing.		

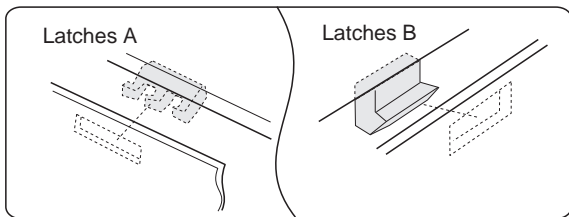
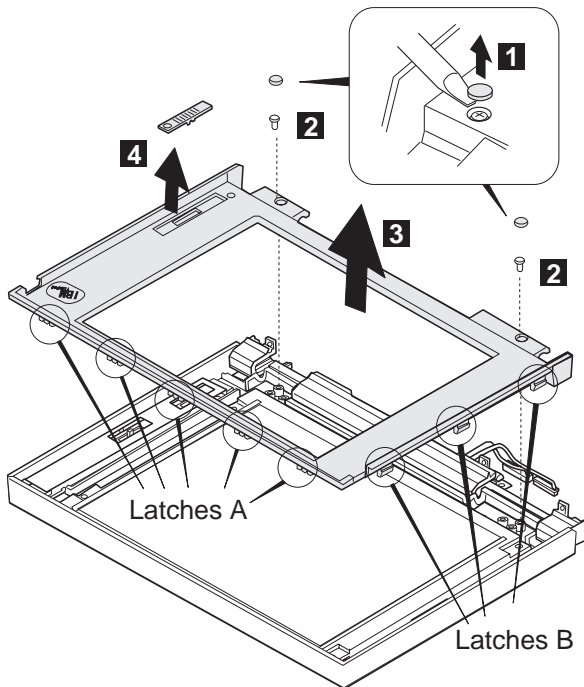


Step	Screw Location (Quantity)	Length
8	LCD Cable (1)	M3 x 6 mm
10	Inverter Card (1)	ST2.9 x 4.5 mm
12	Right Hinge (1)	M3 x 6 mm
13	Hinge (2)	M2 x 4 mm

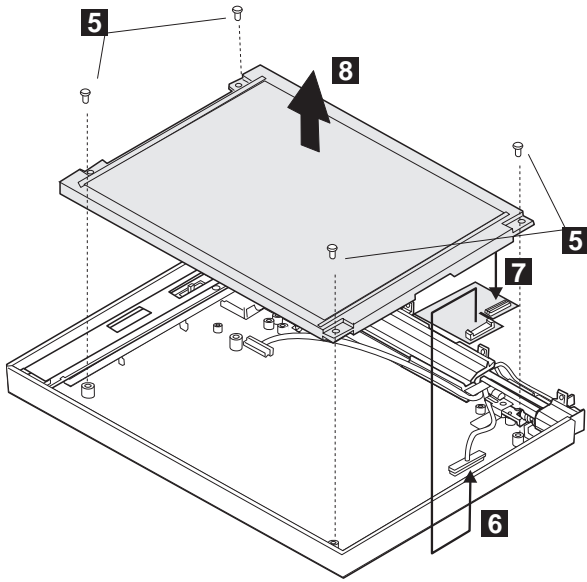
Note: Make sure you use the correct screws when replacing.



TFT 11.3-inch LCD Panel



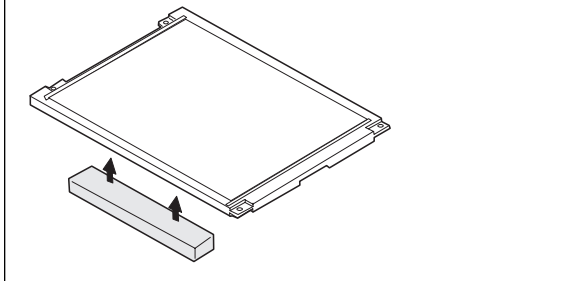
Step	Screw Location (Quantity)	Length
2	LCD Front Cover (2)	M3 x 6 mm
Note: Make sure you use the correct screws when replacing.		

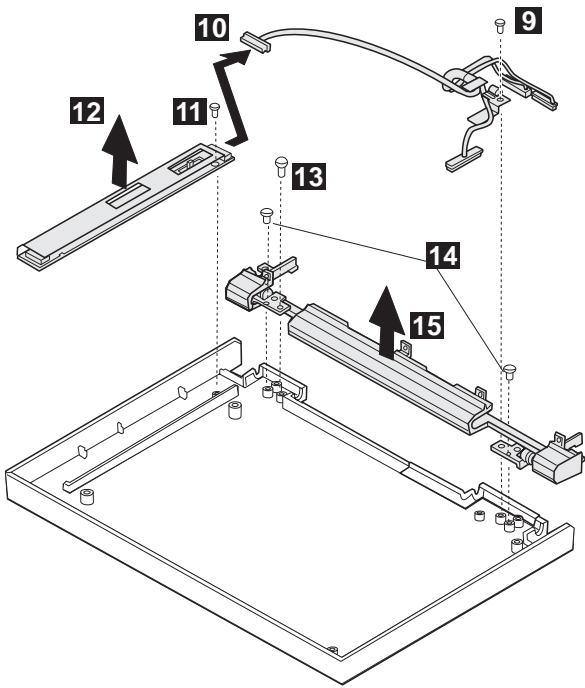


Step	Screw Location (Quantity)	Length
5	LCD Panel (4)	M3 x 6 mm
Note: Make sure you use the correct screws when replacing.		

When replacing:

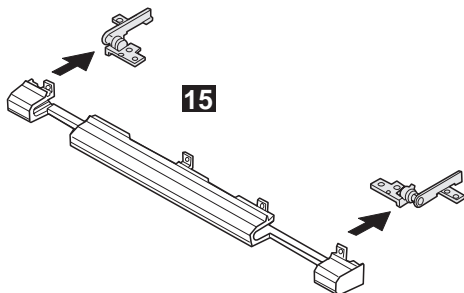
When replacing the LCD panel, glue the rear foam on the rear of the LCD as shown below.





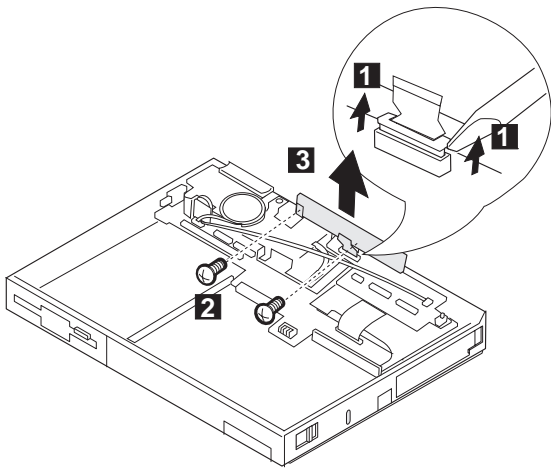
Step	Screw Location (Quantity)	Length
9	LCD Cable (1)	M3 x 6 mm
11	Inverter Card (1)	M3 x 6 mm
13	Right Hinge (1)	M3 x 6 mm
14	Hinge (2)	M2 x 4 mm

Note: Make sure you use the correct screws when replacing.



1090 Indicator Card

- Battery Pack (1020)
- Insulator Sheet (1025)
- Diskette Drive / CD-ROM Drive (1040)
- Hard Disk Drive (1050)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Assembly (1080)
- LCD Panel (1085)

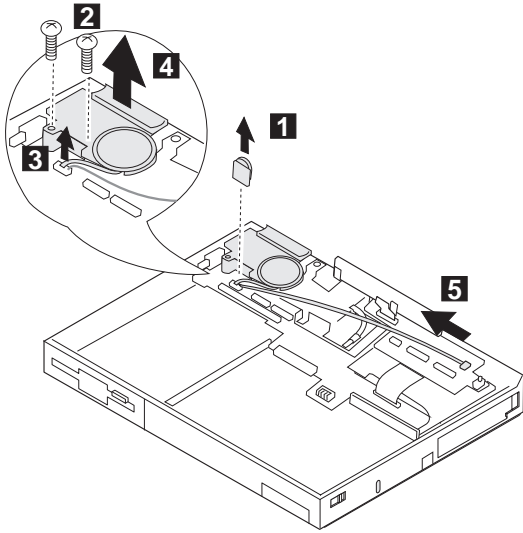


Step	Screw Location (Quantity)	Length
2	Indicator Card (2)	M2 x 4 mm

Note: Make sure you use the correct screws when replacing.

1100 Volume Switch / Speaker Assembly

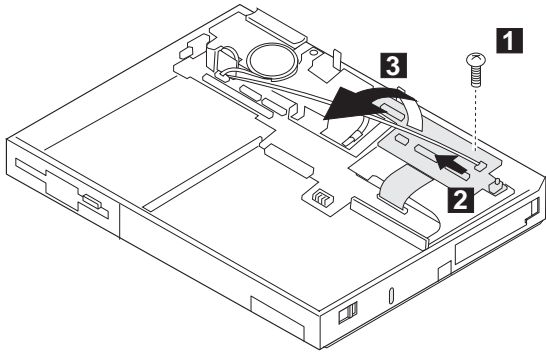
- Battery Pack (1020)
- Insulator Sheet (1025)
- Diskette Drive / CD-ROM Drive (1040)
- Hard Disk Drive (1050)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Assembly (1080)
- LCD Panel (1085)
- Indicator Card (1090)



Step	Screw Location (Quantity)	Length
2	Speaker Assembly (1)	M2 x 4 mm
3	Speaker Assembly (2)	M2 x 5 mm
Note: Make sure you use the correct screws when replacing.		

1110 Keyboard Card / Cable

- Battery Pack (1020)
- Insulator Sheet (1025)
- Diskette Drive / CD-ROM Drive (1040)
- Hard Disk Drive (1050)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Assembly (1080)
- LCD Panel (1085)
- Indicator Card (1090)



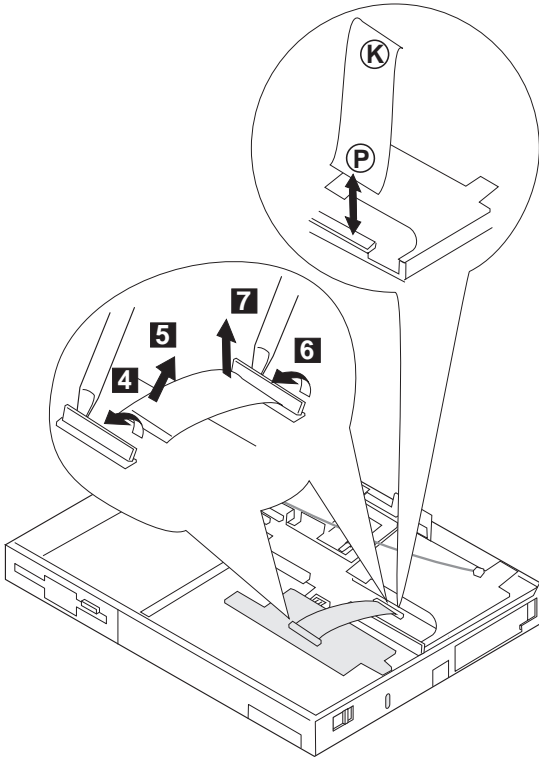
Step	Screw Location (Quantity)	Length
1	Keyboard Card (1)	M2 x 5 mm

Note: Make sure you use the correct screws when replacing.

Note

To remove the cable, do steps 6 and 7.

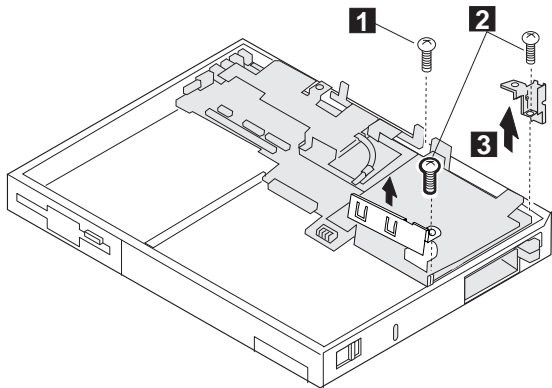
When reinstalling the cable, make sure the cable end with the letter P is installed in the system board connector. The end with the letter K should be installed in the keyboard card connector. (The letters should be facing you when you install the cable from the front of the machine.)



1120 CPU Card and System Board Card

- Battery Pack (1020)
- Insulator Sheet (1025)
- Diskette Drive / CD-ROM Drive (1040)
- Hard Disk Drive (1050)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Assembly (1080)
- LCD Panel (1085)
- Indicator Card (1090)
- Volume Switch / Speaker (1100)
- Keyboard Card (1110)

To remove the system board and CPU Card:

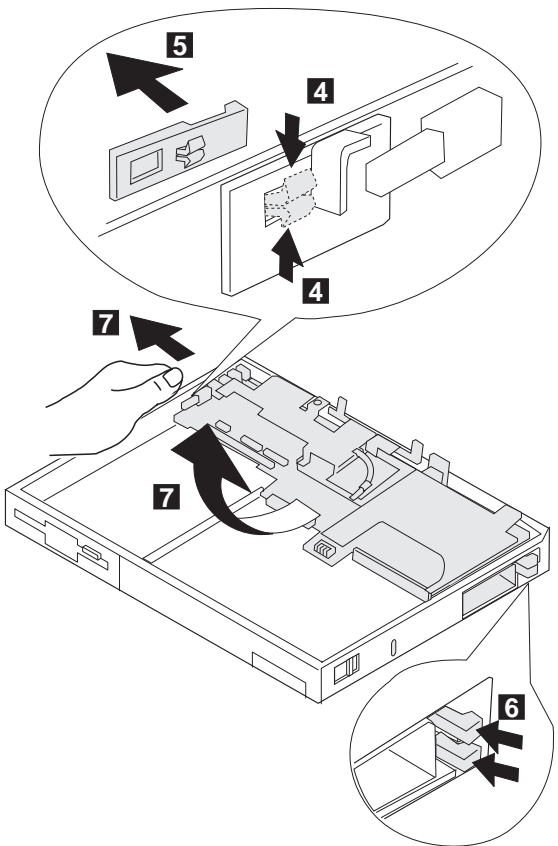


Step	Screw Location (Quantity)	Length
1	CPU Card to System Board (1)	M2 x 4 mm
2	CPU Card to System Board (2)	M2 x 5 mm

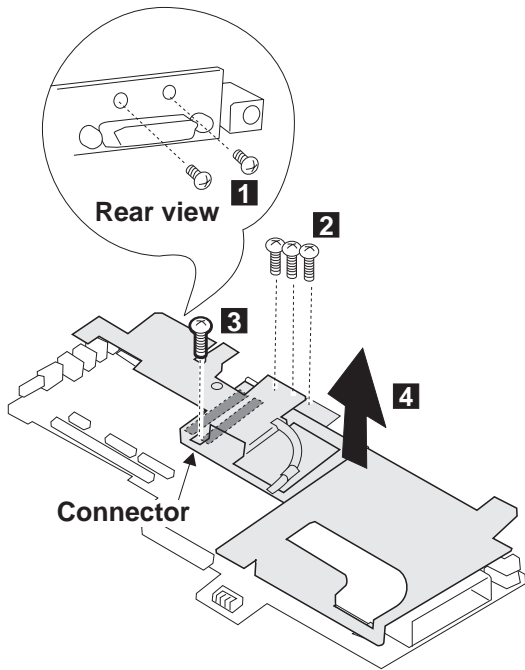
Note: Make sure you use the correct screws when replacing.

Note

The system board fits exactly in place in the base cover. Align the system board carefully when removing or reinstalling. Do not force it. Be careful not to damage the input jacks on the left side of the computer or the PCMCIA slots on the right side of the computer.



To remove the CPU card from the system board:



Be Careful

When connecting the CPU card and the system board again, use the procedures exactly as shown in the figures. Make sure that the two CPU card connectors are connected properly. If these connectors are not properly connected, the computer will not work.

Step	Screw Location (Quantity)	Length
1	System Board (2)	M2 x 4 mm
2	System Board (3)	M2 x 4 mm
3	System Board (1)	M2 x 4 mm

Note: Make sure you use the correct screws when replacing.

1130 System Board / PCMCIA Slot Assembly

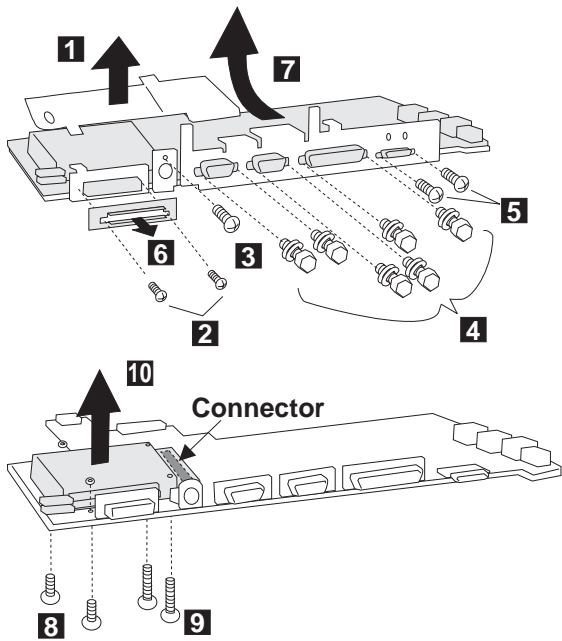
- Battery Pack (1020)
- Insulator Sheet (1025)
- Diskette Drive / CD-ROM Drive (1040)
- Hard Disk Drive (1050)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Assembly (1080)
- LCD Panel (1085)
- Indicator Card (1090)
- Volume Switch / Speaker (1100)
- Keyboard Card (1110)
- CPU Card (1120)

Be Careful

- Connect the CPU card using the procedures exactly as shown in the figures. Make sure that the two CPU card connectors are connected properly. If these connectors are not connected, you cannot power on the computer.
- **Do not apply any extra force to the shaded area of the CPU card when connecting.**

Notes

1. The system unit serial number must be restored when the system board is replaced. To restore the system unit serial number, select the option "Set system identification" on the maintenance diskette. The EEPROM on the system board contains the vital product data (VPD); that is, the system unit serial number, system board system number, and other computer-unique data.
2. Do not power off the computer when restoring the VPD. The system unit serial number label is attached to the base cover.
3. Before removing and replacing the system board, make sure that the PCMCIA cards are removed and the eject levers are not sticking out.
4. Do not pull the PCMCIA slot assembly while removing the system board.
5. When handling the PCMCIA slot assembly, be careful not to disassemble any part of it. The slot assembly is not solidly fixed when it is removed from the system board or the FRU.



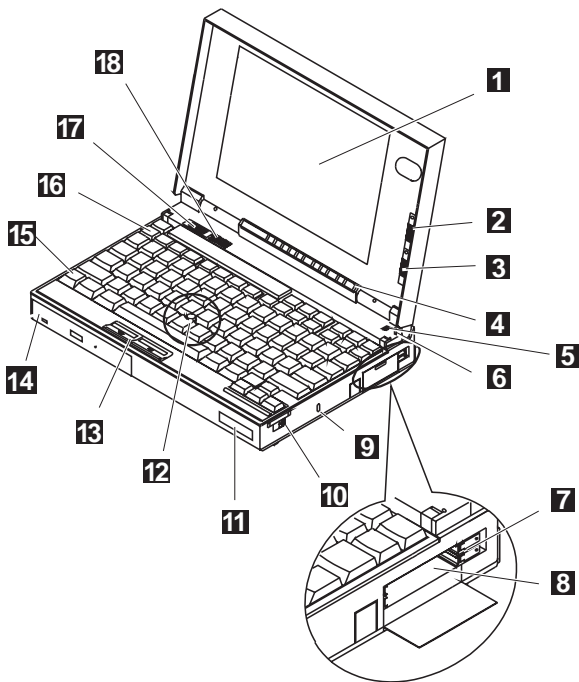
Step	Screw Location (Quantity)	Length
2	System Board (2)	M2.5 x 3 mm
3	System Board (1)	M2.5 x 4 mm
4	System Board (6)	Hex Stud
5	System Board (2)	M2 x 4 mm
8	PCMCIA Slot (2)	M2 x 4 mm and M2 nut
9	PCMCIA Slot (2)	M2 x 14 mm

Note: Make sure you use the correct screws when replacing.

Locations

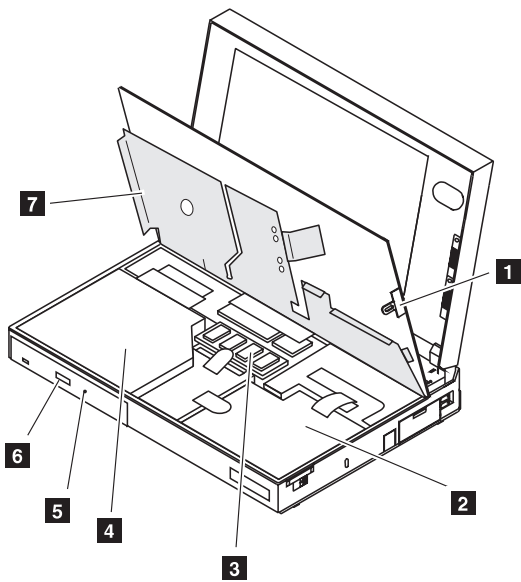
Front View

- 1** LCD
- 2** Contrast Control
- 3** Brightness Control
- 4** Indicator Panel
- 5** Built-in Microphone
- 6** LCD Suspend Switch
- 7** PC Card Eject Buttons
- 8** PCMCIA Slots
- 9** Locking Device Keyhole
- 10** Release Latches
- 11** Personalization Name Plate
- 12** TrackPoint III
- 13** Click Buttons
- 14** CD-ROM (365XD) / Diskette Drive (365X)
- 15** Fn Key
- 16** Function Keys
- 17** Speaker Volume Control
- 18** Speaker



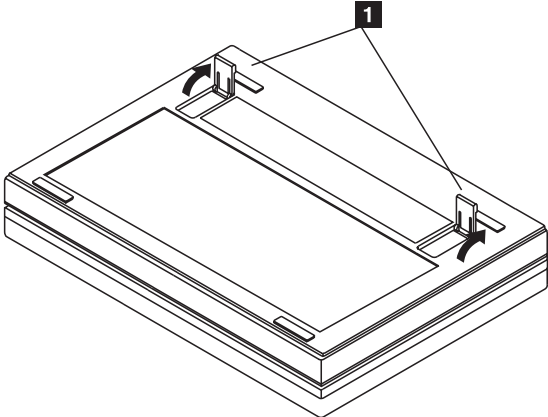
Inside View

- 1** Keyboard Lock
- 2** Battery Pack
- 3** Optional Memory Expansion Module
- 4** CD-ROM Drive (365XD),
Diskette Drive (365X)
- 5** Mechanical CD-ROM eject (365XD)
- 6** CD-ROM Eject Button (365XD),
FDD Bezel (365X)
- 7** Cosmetic Shield



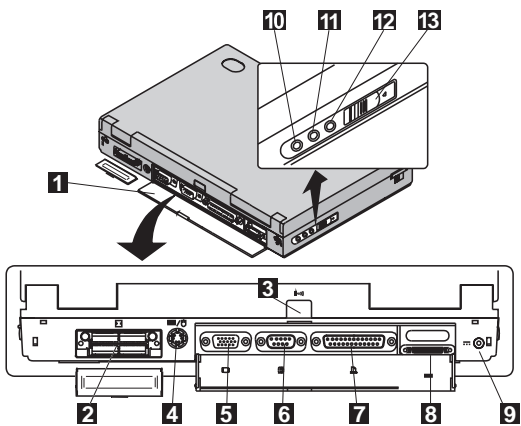
Bottom View

1 Legs



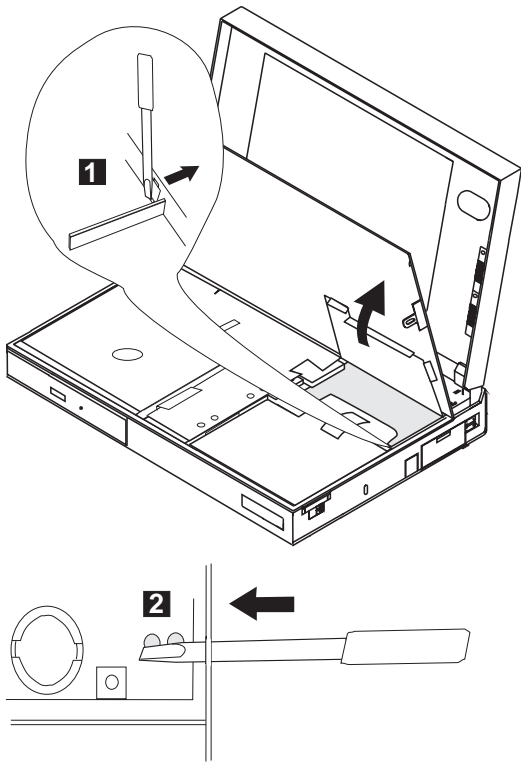
Rear View

- 1** Rear Connector Door
- 2** Connector for Port Replicator
- 3** IR Port
- 4** External Input Device Connector
- 5** External Display Connector
- 6** Serial Connector
- 7** Parallel Connector
- 8** External Diskette Drive Connector
- 9** Power Jack
- 10** Line-out/Headphone Jack
- 11** Line-in Jack
- 12** Microphone Jack
- 13** Power Switch



Power-On Password Jumper Pads

The power-on password jumper pads are found on the system board near the backup battery, as shown in the figures.



1. Push out the door at **1**.
2. See "How to Disable the Power-On Password:" on page 95 to cancel the power-on password. Apply the short across the Power-On Password Jumper Pads at **2**.

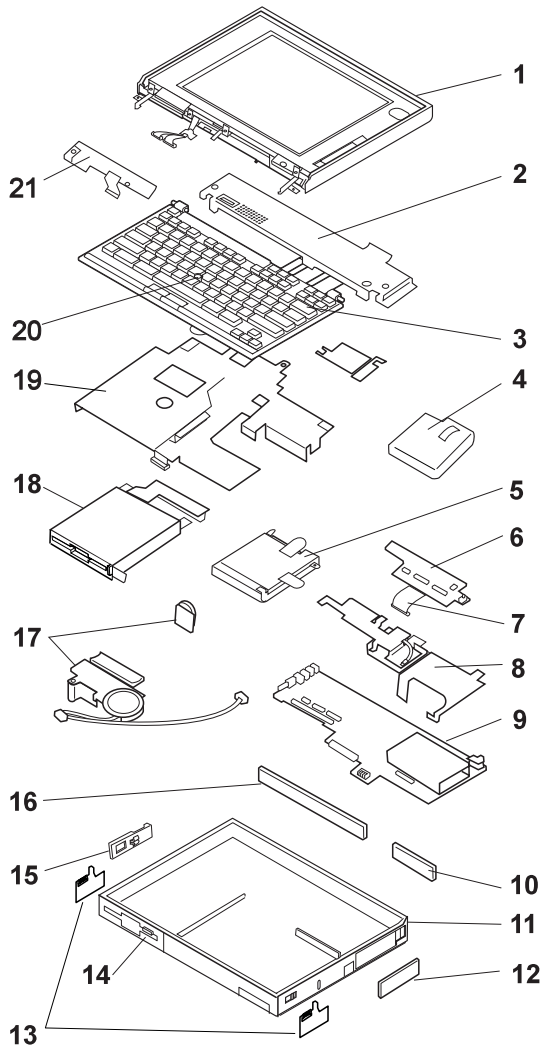
Warning

When using a metal tool to short the two jumper pads, make sure the metal tool does not touch any metal parts other than the two jumper pads.

Notes

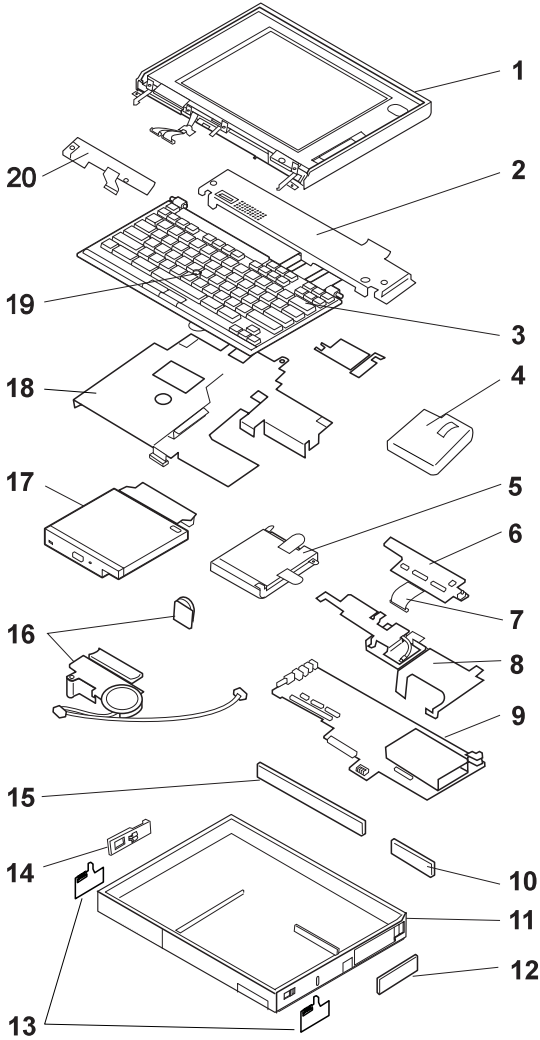
Parts Listing 365X, 365XD (2625)

Model 365X - Diskette Drive



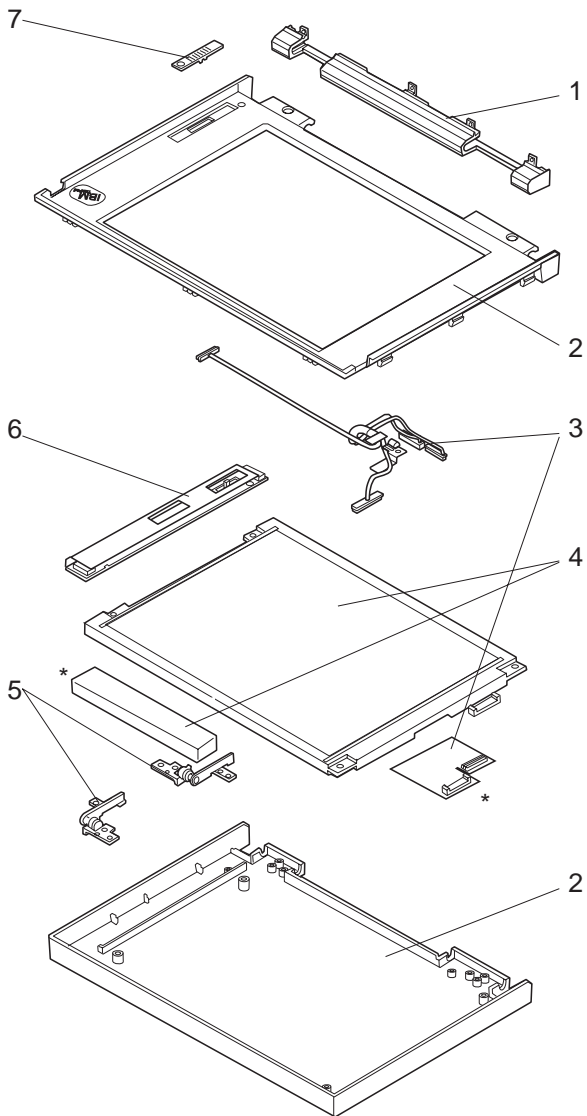
Index	System Unit (365X)	
1	LCD Panel — See page 174.	
2	Top Cover	69H7919
3	Keyboard — See page 178.	
4	Battery Pack	41H7438
5	Hard Disk Drive (720 MB)	85G8371
	Order either of the below 810MB hard drives	
	Hard Disk Drive (810 MB)	07H0392
	Hard Disk Drive (810 MB)	39H2220
	Hard Disk Drive (1.08 GB)	39H2221
	Hard Disk Drive (1.35 GB)	73H6419
NS	Bracket Kit (HDD)	74H0238
6	Keyboard Card Assembly	69H7913
7	Miscellaneous Cable Kit:	
	Keyboard Card to System Board	
	FDD to System Board (365X)	74H0574
8	CPU Card Assembly (P100)	69H7912
	CPU Card Assembly (P120)	74H0237
	CPU Card Assembly (P133)	82H8162
9	System Board Card Assembly with Audio	83H7117
10	Port Replicator Cap	69H7906
11	Base Cover Assembly	69H7903
12	PCMCIA Card Slot Cover	69H7904
13	Keyboard Latch (L/R)	82H8177
14	FDD Bezel	83H5275
15	Power Switch — See Misc. Base Parts	
16	Rear I/O Connector Cover	69H7905
17	Speaker/Volume/Cable Assembly	74H0573
18	Diskette Drive (2 mode)	69H7926
	Diskette Drive (3 mode; Japan)	74H0232
19	Cosmetic Shield	82H8172
20	TrackPoint III Cap set	84G6536
21	LED Indicator Card	69H7914
NS	Real-Time Clock Backup Battery	46H4132
NS	Misc. Base Parts:	
	Cover Support Bracket, Screw Caps, Power Switch Knob, Power Switch Bracket, EMI Bracket, EMI Top Plate, System Insulator, Base Insulator, Base Right Clip	69H7916
NS	Misc. Logic Parts:	
	CPU Spacer, CPU Heat Sink I/O Connector Bracket, Port Replicator Bracket	69H7915
NS	Foot (Tilt)	74H0571

Model 365XD - CD-ROM Drive



Index	System Unit (365XD)	
1	LCD Panel — See page 174.	
2	Top Cover	69H7919
3	Keyboard — See page 178.	
4	Battery Pack	41H7438
5	Hard Disk Drive (720 MB)	85G8371
	Order either of the below 810MB hard drives	
	Hard Disk Drive (810 MB)	07H0392
	Hard Disk Drive (810 MB)	39H2220
	Hard Disk Drive (1.08 GB)	39H2221
	Hard Disk Drive (1.35 GB)	73H6419
NS	Bracket Kit (HDD)	74H0238
6	Keyboard Card Assembly	69H7913
7	Miscellaneous Cable Kit:	
	Keyboard Card to System Board	
	CD-ROM to system board (365XD)	74H0574
8	CPU Card Assembly (P100)	69H7912
	CPU Card Assembly (P120)	74H0237
	CPU Card Assembly (P133)	82H8162
9	System Board Card Assembly	
	with Audio	83H7117
10	Port Replicator Cap	69H7906
11	Base Cover Assembly	69H7903
12	PCMCIA Card Slot Cover	69H7904
13	Keyboard Latch (L/R)	82H8177
14	Power Switch — See Misc. Base Parts	
15	Rear I/O Connector Cover	69H7905
16	Speaker/Volume/Cable Assembly	74H0573
17	CD-ROM Drive (X4 Speed)	69H7925
	CD-ROM Drive (X6 Speed)	82H8160
	CD-ROM Drive (X8 Speed)	82H8173
18	Cosmetic Shield	82H8172
19	TrackPoint III Cap set	84G6536
20	LED Indicator Card	69H7914
NS	Real-Time Clock Backup Battery	46H4132
NS	Miscellaneous Base Parts:	
	Cover Support Bracket, Screw Caps,	
	Power Switch Knob, Power Switch Bracket,	
	EMI Bracket, EMI Top Plate,	
	System Insulator, Base Insulator,	
	Base Right Clip	69H7916
NS	Miscellaneous Logic Parts:	
	CPU Spacer, CPU Heat Sink	
	I/O Connector Bracket,	
	Port Replicator Bracket	69H7915
NS	Foot (Tilt)	74H0571

Model 365X/365XD - TFT LCD Panel



* Parts only for the 11.3-inch TFT.

TFT LCD FRU Parts List

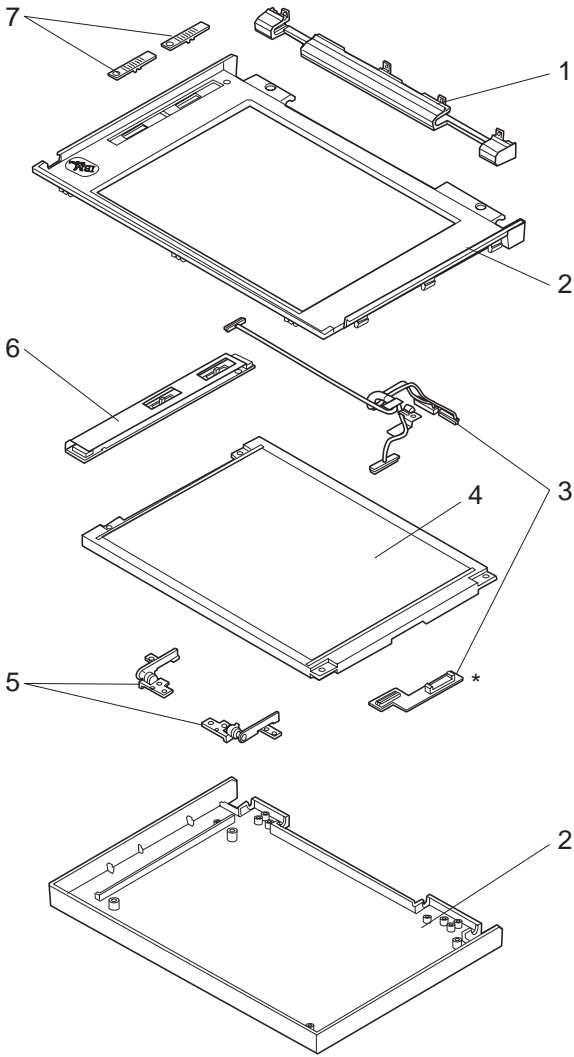
- **10.4-inch (A)** P/N 46H8093 69H7947 82H8039
- **10.4-inch (B)** P/N 83H5349 83H5350

Notes

1. You can distinguish the 10.4-inch TFT LCD unit (A) or (B) by the label sealed on the inside of its hinge cover assembly (1 in the parts list).
2. You can replace the entire 10.4-inch TFT LCD unit (A) with the entire LCD unit (B), or vice versa. But you cannot replace parts of (A) with parts of (B), or vice versa.
3. Model-Gxx contains only 10.4-inch (B) type.

System Unit	10.4 (A)	10.4 (B)	11.3
1 Hinge Cover Assembly			
FDD	74H0617	74H0617	74H0617
CD-ROM	74H0618	74H0618	74H0618
2 LCD Cover Kit	74H0582	83H5355	82H8165
3 LCD Cable Kit	74H0627	83H5356	82H8169
4 LCD Unit	74H0621	83H5357	82H8166
5 Hinges (Right/Left)			
– See LCD Misc. Parts			
6 Inverter Card	69H7959	83H5358	82H8167
7 Slide Knob			
– See LCD Misc. Parts			
LCD Misc. Parts:	74H0619	74H0619	74H0619
LCD Slide Knob,			
LCD Foam Support,			
Right Hinge,			
Left Hinge,			
Cable Clamp,			
Back Gasket,			
Top Gasket,			
Copper TFT Tape,			
Rubber Lid,			
Front Logo,			
Rear Logo			

Model 365X/365XD - DSTN LCD Panel



* Part only for the 10.4-inch LCDs.

DSTN LCD FRU Parts List

10.4-inch DSTN LCD

<i>Index</i>	<i>System Unit</i>	
1	Hinge Cover Assembly FDD	74H0617
	Hinge Cover Assembly CD-ROM	74H0618
2	LCD Cover Kit	74H0581
3	LCD Cable Kit	74H0626
4	LCD Unit	74H0620
5	Hinges (Right/Left) — See LCD Misc. Parts	
6	Inverter Card	69H7958
7	Slide Knob — See LCD Misc. Parts	

11.3-inch DSTN LCD

<i>Index</i>	<i>System Unit</i>	
1	Hinge Cover Assembly FDD	74H0617
	Hinge Cover Assembly CD-ROM	74H0618
2	LCD Cover Kit	74H0583
3	LCD Cable Kit	74H0628
4	LCD Unit	74H0622
5	Hinges (Right/Left) — See LCD Misc. Parts	
6	Inverter Card	69H7961
7	Slide Knob — See LCD Misc. Parts	

LCD Miscellaneous Parts

LCD Slide Knob, LCD Foam Support, Right Hinge, Left Hinge, Cable Clamp, Back Gasket, Top Gasket, Copper TFT Tape, Rubber Lid, Front Logo, Rear Logo	74H0619
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Keyboard Unit

Arabic	42H3936
Belgian	42H3937
Canadian French	42H3938
Czech	73H7241
Danish	42H3939
Dutch	42H3940
French	42H3942
German	42H3943
Greek	42H3944
Hungary	73H7242
Hebrew	42H3945
Italian	42H3946
Japanese	42H3947
Latin Spanish	42H3948
Norwegian	42H3949
Poland	73H7243
Portuguese	42H3950
Russian	42H3956
Spanish	42H3951
Slovenia /Croatia / Bosnia	73H7244
Swedish / Finnish	42H3941
Swiss	75H7562
Turkish	42H3954
U.K. English	42H3955
U.S. English	41H9789

Common/Option Parts List

Miscellaneous Parts

Screw Kit	74H0229
Includes (Type) (Quantity):	
M2 x 4 (Bind Head) (15)	
M2 x 5 (Pan Head) (11)	
M2 x 4 with washer (Pan Head) (2)	
M2 x 8 (Pan Head) (2)	
M2.5 x 4 (Bind Head) (4)	
M2.5 x 3 (3.5D Pan Head) (2)	
M2.5 x 4 with washer (Bind Head) (3)	
M3 x 3 (Cross Slotted Pan Head) (4)	
M3 x 4 (Pan Head) (2)	
M3 x 4 (Flat Head) (4)	
M3 x 6 (Pan Head) (6)	
M3 x 6 with washer (Pan Head) (2)	
Hex Stud M2.5 Short length (6)	
Screw ST2.9 x 4.5 (Pan Head) (1)	
M2 x 5 (Bind Head) (4)	
M2 x 5 (Cross Slotted Pan Head) (2)	
M3 x 5 (Pan Head) (6)	

Options

Notes:

1. When you replace the AC Adapter with a new one, use the one for the country where the computer is used, even if the computer is from different country.
2. The warranty for the system unit does not apply to all options.

720MB Hard Disk Drive Assembly	85G8371
810MB Hard Disk Drive Assembly	39H2220
810MB Hard Disk Drive Assembly	07H0392
1.08GB Hard Disk Drive Assembly	39H2221
1.35GB Hard Disk Drive Assembly	73H6419
2.1GB Hard Disk Drive Assembly	73H6427
AC Adapter	
35W Universal	85G6698
35W Japan only	85G6700
Slim AC Adapter	
3 Prong	85G6736
2 Prong	85G6738
Port Replicator Base Assembly	41H7457
Port Replicator Cable Cover	41H7458
Mini Replicator Assembly	75H7528
DIMM 8MB	42H2767
DIMM 16MB	42H2768
DIMM 32MB	42H2769
External Diskette Drive (2 mode)	10H4056
External Diskette Drive (3 mode-Japan)	10H4055
External Diskette Drive Cable	74H0219
Battery Pack	41H7438
CD-ROM Drive (x4 speed)	69H7925
CD-ROM Drive (x6 speed)	82H8160
CD-ROM Drive (x8 speed)	82H8173

Numeric Keypad

Belgian	95F5741
Canadian French	95F5466
Danish	95F5467
Dutch	95F5467
French	95F6313
German	95F6314
Greek	95F5467
Hebrew	95F5741
Icelandic	95F5467
Italian	95F6316
Japanese	79F6401
Norwegian	95F5467
Spanish	95F6315
Swedish / Finnish	95F5468
Swiss / French	95F5711
Swiss / German	95F5715
Turkish	95F5467
U.K. English	95F5741
U.S. English	95F5741

Black Keypad

French	84G6286
German	84G6280
Italian	84G6292
Swedish	84G6304
U.K. English	84G6298
Norway	84G6310
U.S. English	84G2530

Black Keyboard

French	84G6285
German	84G6279
Italian	84G6291
Swedish	84G6303
U.K. English	84G6297
Norway	84G6309
U.S. English	84G2529

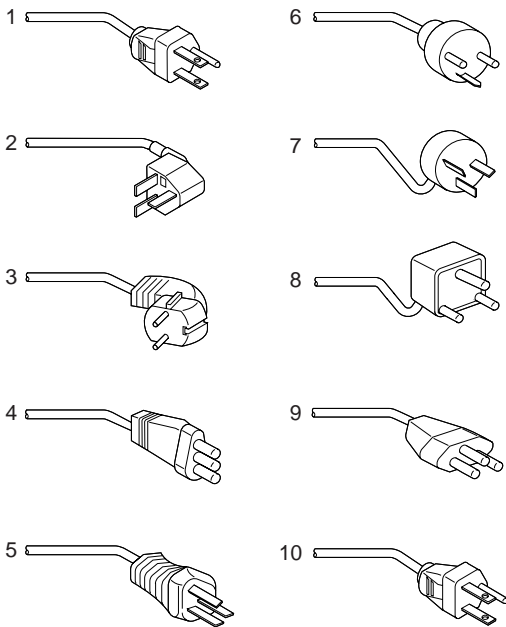
Accessories

Keyboard/Mouse Cable	54G0444
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Tools

Tri-Connector Wrap Plug	72X8546
PC Test Card	35G4703
Screwdriver Kit	95F3598
ThinkPad 750Ce	
Hardware Maintenance Diskette (This diskette is used for 365X and 365XD also.)	82G3891

Power Cords



Warning:

Use the power cord certified for your country.

1	Colombia, U.S., Venezuela	25H2207
	Japan, 2-pin	85G6665
2	Hong Kong, Singapore, U.K.	25H2215
3	France, Germany, Spain	25H2209
4	Italy	25H2223
5	Australia, New Zealand	25H2205
6	Denmark	25H2211
7	Israel	25H2225
8	Bangladesh, Pakistan, Sri Lanka, South Africa	25H2213
9	Switzerland	25H2221
10	Thailand	25H2219

ThinkPad 380, 380D, 385, 385D (2635)

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Read This First

Before you go to the checkout guide, be sure to read this section.

Important Notes

- **Only certified trained personnel should service the computer.**
- Read FRU service procedures before replacing any FRUs.
- **Be extremely careful during write operations such as copying, saving, or formatting.**
Drives in the computer that you are servicing might have been rearranged or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs can be written over.
- **Replace FRUs only for the correct model.**
When you replace the FRU, make sure the model of the machine and FRU part number are correct by referring to the part list.
- **FRUs should not be replaced because of a single, unreproducible failure.** Single failures can occur from a variety of reasons that have nothing to do with a hardware defect such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists. If this is suspected, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.
- **Be careful not to replace a nondefective FRU.**

How to Use Error Messages: Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 199.

Port Replicator Problems: If you suspect a problem with the Port Replicator, see "Port Replicator Checkout" on page 196.

How to Diagnose Multiple FRUs: When the adapter or device has more than one FRU, the error code could be caused by either FRU. Before replacing multiple FRUs, try removing or exchanging each FRU, one by one in the designated sequence, to see if the symptoms change.

What to Do First: The servicer must include the following in the parts exchange form or parts return form that is attached to the returned FRU:

- ___ 1. Name and phone number of servicer
- ___ 2. Date of service
- ___ 3. Date when part failed
- ___ 4. Date of purchase
- ___ 5. Failure symptoms, error codes appearing on display, and beep symptoms
- ___ 6. Procedure index and page number in which failing FRU was detected
- ___ 7. Failing FRU name and part number
- ___ 8. Machine type, model number, and serial number
- ___ 9. Customer's name and address

Before checking problems with the computer, determine whether the damage is covered under the warranty by referring to the following:

Warranty Note

During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer. The following list provides some common items that are not covered under warranty and some symptoms that may indicate the system was subjected to stresses beyond normal use.

The following is not covered under warranty:

- LCD panel cracked by applying excessive force or by being dropped
- Scratched (cosmetic) parts
- Cracked or broken plastic parts, broken latches, broken pins, or broken connectors caused by excessive force
- Damage caused by liquid spilled into the system
- Damage caused by improperly inserting a PCMCIA card or installation of an incompatible card
- Damage caused by foreign material in the FDD
- Diskette drive damage caused by pressing the diskette drive cover or inserting diskettes with multiple labels
- Damaged or bent diskette eject button
- CD-ROM drive damage caused by excessive forces shock, or by being dropped
- Fuses blown by attaching a nonsupported device
- Forgotten computer password (making the computer unusable).

If the following symptoms are present, they may indicate damage caused by nonwarranted activity:

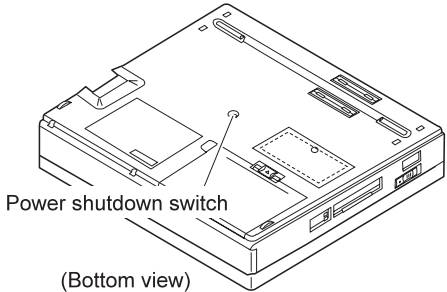
- Missing parts may be a symptom of unauthorized service or modification.
- HDD spindles can become noisy if subjected to excessive force or by being dropped.
- I9990303 errors can be caused by exposure to strong magnetic fields.

:h4/.How to Disable the Power-On Password:

Important

This information is not available in this online HMM format. See your IBM Servicer or IBM Authorized Dealer for this procedure.

Power Shutdown Switch: The power shutdown switch resets the system regardless of the microcode status and forces the power off. Use this push button to power-off when power is not completely off or the microcode is in a hung state.



Checkout Guide

Use the following procedure as a guide for computer problems.

Note: The diagnostic tests are intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.

Note: To run the diagnostics, refer to "How to Run the Diagnostics" on page 212.

3. Use the following table with the verified symptom to determine which page to go to. Search the symptoms column and find the description that best matches your symptom; then go to the page shown in the "Go to" column.

Symptoms (Verified)	Go to
Power failure. (The power indicator does not go on or stay on.)	"Power Systems Checkout" on page 193.
POST does not complete. No beeps or error codes are displayed.	"Symptom-to-FRU Index" on page 199, and then use the No Beep Symptoms table.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 199, and then use the Beep Symptoms table.
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 199, and then use the Numeric Error Codes table.
The diagnostic test detected an error and displayed an FRU code.	"How to Run the Diagnostics" on page 212.
The configuration is not the same as the installed devices.	"Checking the Installed Devices List" on page 213.
Other symptoms (such as LCD display problems).	"Symptom-to-FRU Index" on page 199, and then use the Other Symptoms table.

Symptoms (Verified)	Go to
Symptoms cannot be re-created. (Intermittent problems).	Use the customer reported symptoms and go to "Symptom-to-FRU Index" on page 199.

Memory Checkout

DIMMs are available for increasing memory capacity.

DIMM	Displayed Value
No DIMM installed	16000KB
8MB	24192KB
16MB	32384KB
32MB	48768KB

Memory errors might stop system operations, show error messages on the screen, or hang the system.

Use the following procedure to isolate memory problems.

Note: Make sure that the DIMM is fully installed into the connector. A loose connection can cause an error.

1. Power off the computer and remove the DIMM from its slot (if installed).
2. Press and hold the **F1** key; then power on the computer. Hold the **F1** key down until the Easy-Setup screen appears.
3. Select **Test** and press Enter.
4. Select **Memory** and press Enter to run the memory test on base memory. If an error appears, replace the system board.
5. Power off the computer and reinstall the DIMM; then power on the computer. Verify the memory size; then test the memory. If an error appears, replace the DIMM.

If memory problems occur intermittently, use the loop option to repeat the test. When the test detects an error, an error log is printed on the printer connected to the parallel port. See "Error Log" on page 213 for more information.

System Programs in Flash Memory: System setup programs and diagnostic tests are stored in flash memory.

Flash Memory Update: A flash memory update is required for the following conditions:

- New versions of system programs.
- New features or options are added.

To update the flash memory, do the following:

1. Get the appropriate diskette containing the update.

2. Insert the **System Program Service Diskette** into drive A and power on the computer.
3. Select **Update system programs** from the menu.

System Board Checkout

The processing functions are performed by the system board. When a numeric code calls the system board as a FRU, use the following procedure to isolate the problem.

1. Run the system board test to verify the symptom.
This test verifies the system board. If no error is detected, return to "Checkout Guide" on page 189.
2. If FRU code 10 appears, replace the system board.
3. Rerun the test to verify the fix.

If this procedure does not correct the problem, go to "Undetermined Problems" on page 209.

Keyboard/Auxiliary Input Device Checkout

Remove the external keyboard if the internal keyboard is to be tested.

If the internal keyboard does not work or an unexpected character appears, make sure that the flexible cable extending from the keyboard is correctly seated in the connector on the subcard.

If the keyboard cable connection is correct, run the **keyboard test** by doing the following:

1. Go to the diagnostic menu screen by selecting **Test** in the Easy-Setup screen.
2. Press **Ctrl+A**. The ThinkPad FRU Connections screen appears. (If the **Ctrl+A** does not work, triple-click on the icon on the right bottom corner on the basic diagnostic screen.)
3. Make sure that the keyboard connection is **Connected**; then press **Esc** to escape the screen.
4. A layout of the keyboard appears on the screen. Check that when each key is pressed, the key's position on the keyboard layout on the screen changes to a black square.
Note: When a **Fn** key is pressed, a black square briefly appears.
5. Press **Ctrl+Pause** to end the test.

If the tests detect a keyboard problem, do the following one at a time to correct the problem. **Do not replace a nondefective FRU.**

- Reseat the keyboard flexible cable.
- Replace the keyboard assembly.
- Replace the subcard.
- Replace the system board.

The following auxiliary input devices are supported for this computer:

- Numeric keypad
- Mouse (PS/2 compatible)
- External keyboard (with keyboard/mouse cable)

If any of these devices do not work, reseal the cable connector and repeat the failing operation.

If the problem does not recur, recheck the connector.

If the problem is not corrected, replace the device, and then the system board.

TrackPoint III Checkout

If the TrackPoint III does not work, check the configuration in the ThinkPad Features program. If the configuration of the TrackPoint III is disabled, select **Enable** to enable it.

If this does not correct the TrackPoint III problem, continue with the following:

The TrackPoint III does automatic compensations to adjust the pointer sensor. During this process, the pointer moves on the screen automatically for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the TrackPoint III pointer while the computer is powered on or while the system is running, or when readjustment is required because the temperature has exceeded its normal temperature range. This symptom does not indicate a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

If a click button problem or pointing stick problem occurs, do the following:

1. Go to the Easy-Setup screen.
2. Select an item with the pointing stick.
3. Press either the left or right click button.
4. Verify that both buttons work correctly.

If either the pointing stick or the click button does not work, do the following actions one at a time to correct the problem. Do not replace a nondefective FRU.

- Reseat the keyboard flexible cables.
- Replace the keyboard.
- Replace the subcard.
- Replace the system board.

Diskette Drive Test

Do the following to isolate the problem to a controller, drive, or diskette. A scratch, write enabled, nondefective 2HD diskette is required.

FDD-1 represents the built-in diskette drive. FDD-2 represents the external diskette drive attached through the port replicator.

Warning: Make sure that the diskette does not have more than one label attached to it. Multiple labels can cause damage to the drive or can cause the drive to fail.

Do the following to select the test device:

1. Go to the advanced diagnostic mode by pressing **Ctrl+A** from the diagnostic menu.
2. Select **FDD-1** or **FDD-2** to run the diskette drive test.
3. Type **Y** (Yes) to the question on the screen.
4. Insert the **blank** diskette when instructed.
5. If the controller test detects an error, FRU code 10 appears. Replace the system board.
6. If the controller test runs without errors, the drive read/write tests start automatically.
7. If the drive test detects an error, FRU code 50 for FDD-1; or 51 for FDD-2 appears. If the diskette itself is known to be good, replace the drive.

Status Indicator Checkout

If an LED problem occurs, do the following:

1. Power off the computer.
2. Power on the computer.
3. All the LEDs in the indicator panel should turn on for a moment soon after the computer is powered-on. Make sure that all LEDs turn on.

If the problems remains, replace the following cards one at a time:

- Subcard
- System board

Power Systems Checkout

To verify the symptom of the problem, power on the computer using each of the power sources as follows.

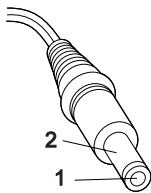
1. Remove the battery pack and diskette drive.
2. Connect the AC Adapter and check that power is supplied.
3. Disconnect the AC Adapter and install the charged battery pack; then check that power is supplied by the battery pack.

If you suspect a power problem, see the appropriate power supply check listed below.

- "Checking the AC Adapter" on page 194.
- "Checking Operational Charging" on page 194.
- "Checking the Battery Pack" on page 195.
- "Checking the Backup Battery" on page 195.

Checking the AC Adapter: You are here because the computer fails only when the AC Adapter is used.

- If the power problem occurs only when the port replicator is used, replace the replicator.
 - If the power-on indicator does not turn on, check the power cord of the AC Adapter for correct continuity and installation.
 - If the operational charge does not work, go to “Checking Operational Charging.”
1. Unplug the AC Adapter cable from the computer and measure the output voltage at the plug of the AC Adapter cable. See the following figure:



Pin	Voltage (V dc)
1	+14.5 to +17.0
2	Ground

- If the voltage is correct, replace the subcard.
 - If the problem is not corrected, replace the system board.
 - If the problem is not corrected, go to “Undetermined Problems” on page 209.
 - If the voltage is not correct, go to the next step.
2. Unplug the AC Adapter cable from the ac power outlet and wait 5 minutes or longer to allow the overvoltage protection circuit to be fully discharged and initialized.
 3. Plug the AC Adapter cable into the ac power outlet.
 4. Measure the output voltage of the AC Adapter.
 5. If the voltage is still not correct, replace the AC Adapter.

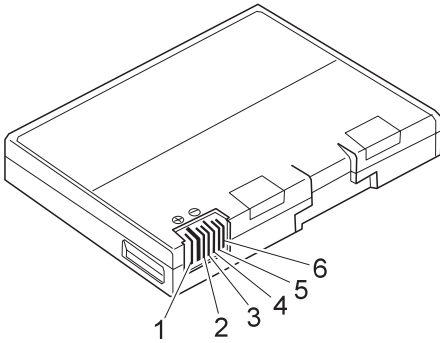
Note: An audible noise from the AC Adapter does not always indicate a defective adapter.

Checking Operational Charging: To check operational charging, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

Perform operational charging. If the battery status indicator does not turn on, remove the battery pack and leave it to return to room temperature. Reinstall the battery pack. If the charge indicator still does not turn on, replace the battery pack.

Checking the Battery Pack

1. Power off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 1 (+) and 4 (-). See the following figure.



Terminal	Voltage (V dc) / Signal
1	+0 to +13.5
2	N/C
3	Thermal
4	Ground (-)
5	Select
6	A-Ground

Note: Signal lines not used in these steps are used for communication between the system and the battery.

3. If the voltage is less than +11.0 V dc, the battery pack has been discharged. Recharge the battery pack.
If the voltage is still less than +11.0 V dc after recharging, replace the battery.

Note: If the voltage of the battery pack is 0 V, it is not defective.

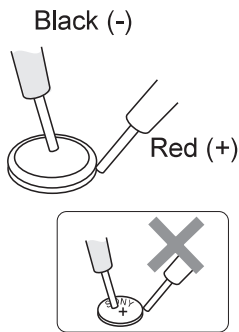
4. If the voltage is more than +11.0 V dc, measure the resistance between battery terminals 3 and 4. The resistance must be 4 to 30 K ohm.
If the resistance is not correct, replace the battery pack.
If the resistance is correct, replace the subcard.

Checking the Backup Battery

1. Power off the computer and unplug the AC Adapter from the computer.
2. Turn the computer upside down.
3. Remove the DIMM cover and backup battery (see "1020 DIMM Card / Backup Battery" on page 218).

4. Measure the voltage of the backup battery. See the following figure.

Note: Be careful not to measure the wrong side of the backup battery.



Wire	Voltage (V dc)
Red	+2.5 to +3.7
Black	Ground

- If the voltage is correct, replace the system board.
- If the voltage is not correct, the backup battery has been discharged. Replace the backup battery.
- If the backup battery discharges quickly after replacement, replace the system board.

Port Replicator Checkout

Use the following procedure to isolate a port replicator problem. A port replicator attaches to the system expansion connector at the bottom of the computer.

1. Power off the computer.
2. Remove the failing devices from the replicator.
3. Unplug the AC adapter from the replicator, if attached.
4. Remove the port replicator from the computer.
5. Reconnect the failing device directly to the computer. (If another device already connected to the computer, remove it first.)
6. Go to "How to Run the Diagnostics" on page 212 and follow that procedure.
7. If the advanced diagnostic device test does not find an error, suspect a problem with the port replicator of the system expansion bus.
8. Power off the computer and reconnect the port replicator.
9. Power on the computer and run the following advanced diagnostic tests:
 - Serial port test with the wrap plug installed on the replicator

- Parallel port test with the wrap plug installed on the replicator
 - FDD-2 device test on the failing device with the scratch diskette
10. If diagnostic errors appear, replace the replicator or the external diskette drive.
- If the problem remains after the replacement, replace the system board.
11. If power problems appear only when you use the replicator, replace the replicator.

Power Management Features

Three power management modes are provided by the computer to reduce power consumption and prolong battery power.

Standby Mode: When in standby mode the following occurs:

- The LCD backlight turns off.
- The hard disk motor stops.

Events that cause the computer to enter standby mode:

- Standby requested by the **Fn** key. (**Fn+F3**)
- No activity under **auto-standby** enabled by the ThinkPad Features program.

Events that cause the computer to exit or resume standby mode:

- (Resume) Any key operation.

Suspend Mode: When in suspend mode, the following, in addition to the three actions of standby mode, occur:

- The LCD is powered-off.
- The hard disk is powered-off.
- The CPU is stopped.

Notes:

1. In the ThinkPad Features Program, the computer can be set to "Will not suspend even if LCD is closed."
2. When the computer is powered with ac power and is used with one of the communication PC cards, the computer enters *standby mode*; the PC card and application program remain active.
3. The computer cannot enter suspend mode while a communication link is running.

Events that cause the computer to enter suspend mode:

- Suspend mode is requested by the **Fn** key (**Fn+F4**).
- The LCD is closed.

- The specified time has elapsed from the last operation with the keyboard, mouse, hard disk drive, parallel connector, or diskette drive; or the AC Adapter is plugged in. The time is specified by **Suspend Timer** in the ThinkPad Features program.
- The battery condition is low. The battery power indicator blinks orange.
- Either the *PS2 OFF* or *PS2 SUSpend* command is set in the ThinkPad Features program.

Events that cause the computer to exit or resume suspend mode:

- (Resume) The LCD is opened.
- (Resume) The real time clock alarm is signaled.
- (Resume) The ring indicator (RI) is signaled by a serial or PCMCIA device.
- (Resume) The **Fn** key is pressed.
- (Exit) Timer conditions are satisfied for entering hibernation mode.

Hibernation Mode: When in hibernation mode, the following occurs:

- The system status, RAM, VRAM, and setup data are stored on the hard disk.
- The system is powered-off.

Notes:

The computer cannot enter hibernation mode when the computer is powered with ac power and a communication PC card is used.

Events that cause the computer to enter hibernation mode:

- Hibernation mode is requested by the **Fn** key (**Fn+F12**).
- Timer conditions are satisfied in suspend mode.
- A critical low battery condition occurs.
- The *PS2 HIBernation* command is set in the ThinkPad Features program.

Event that causes the computer to exit hibernation mode.

- The power-on switch is operated.

When power is turned on, the hibernation history in the boot record on the hard disk is recognized and system status is restored from the hard disk to resume operation.

Symptom-to-FRU Index

The Symptom-to-FRU Index lists the symptoms and errors and the possible causes. The most likely cause is listed first.

Note: Perform the FRU replacement or actions in the sequence shown in the “FRU/Action” columns. If a FRU did not solve the problem, put the original part back in the computer. Do not replace a nondefective FRU.

This index can also be used to help you decide which FRUs to have available when servicing a computer.

Numeric error codes show the errors detected in POST or system operation. In the following error codes, **X** can be any number.

If no codes are available, use narrative symptoms.

If the symptom is not listed, go to “Undetermined Problems” on page 209.

<p>Note: For IBM devices not supported by diagnostic codes in the ThinkPad notebook computers, see the manual for that device.</p>

Numeric Error Codes

Symptom / Error	FRU / Action in Sequence
10X 101: Interrupt failure. 102: Timer failure. 103: Timer interrupt failure. 104: Protected mode failure. 105: Last 8042 command not accepted. 107: NMI test failure. 108: Timer bus test failure. 109: Low meg-chip select test.	1. System board
161 (Dead battery.)	1. Go to “Checking the Backup Battery” on page 195. 2. Backup battery 3. System board
163 (Time and Date was not set.)	1. Set time and date. 2. System board

Symptom / Error	FRU / Action in Sequence
173 (Configuration data was lost.)	<ol style="list-style-type: none"> 1. Select OK in the error screen; then set the time and date. 2. Backup battery 3. System board
174 (Configuration error: Perform "Checking the Installed Devices List" on page 213 before changing any FRUs.)	<ol style="list-style-type: none"> 1. Check Device Configuration. 2. Hard disk drive 3. System board
184 (POP check sum error.)	<ol style="list-style-type: none"> 1. Reset the POP (power-on password) in Easy-Setup.
190 (Depleted battery pack was installed when the power was on.)	<ol style="list-style-type: none"> 1. Go to "Checking the Battery Pack" on page 195.
191XX (PM initialization error.)	<ol style="list-style-type: none"> 1. System board
195 (The configuration read from the hibernation area does not match the actual configuration.)	<ol style="list-style-type: none"> 1. Check if the configuration was changed. For example, check if the DIMM is added.
196 (Read error occurred in the hibernation area of the HDD.)	<ol style="list-style-type: none"> 1. Run the hard disk drive test. 2. Hard disk drive
1XX	<ol style="list-style-type: none"> 1. System board
2XX 201: Memory data error. 202: Memory line error 00–15. 203: Memory line error 16–23. 205: Memory test failure on on-board memory. 221: ROM to RAM remap error.	<ol style="list-style-type: none"> 1. Go to "Memory Checkout" on page 190. 2. DIMM 3. System board
301, 303, 304, 305, 3XX (301: Keyboard error.)	<ol style="list-style-type: none"> 1. Go to "Keyboard/Auxiliary Input Device Checkout" on page 191. 2. Keyboard 3. External numeric keypad 4. External keyboard 5. Keyboard/mouse cable 6. Subcard 7. System board

Symptom / Error	FRU / Action in Sequence
601, 6XX (601: Diskette drive or controller error.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 192. 2. FDD assembly 3. Diskette 4. System board
602 (Diskette read error.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 192. 2. Diskette 3. FDD assembly
604 (Unacceptable ID was read from the diskette drive.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 192. 2. FDD assembly 3. System board
11XX 1101: Serial_A test failure.	<ol style="list-style-type: none"> 1. Serial device 2. Communication cable 3. System board
12XX 1201: Serial_B test failure.	<ol style="list-style-type: none"> 1. System board (Infrared)
17XX 1701: Hard disk controller failure. 1780, 1790: Hard disk 0 error. 1781, 1791: Hard disk 1 error.	<ol style="list-style-type: none"> 1. Hard disk drive 2. System board
24XX (2401: System board video error.)	<ol style="list-style-type: none"> 1. System board
808X 8081: PCMCIA presence test failure. (PCMCIA revision number also checked.) 8082: PCMCIA register test failure.	<ol style="list-style-type: none"> 1. PCMCIA slot assembly 2. PCMCIA device 3. System board
860X (Pointing device error when TrackPoint III is disabled.) 8601: System bus error—8042 mouse interface. 8602: External mouse error. 8603: System bus error or mouse error.	<ol style="list-style-type: none"> 1. External mouse 2. External keyboard 3. System board
861X (Pointing device error when TrackPoint III is enabled.) 8611: System bus error—I/F between 8042 and IPDC. 8612: TrackPoint error. 8613: System board or TrackPoint error.	<ol style="list-style-type: none"> 1. Reseat the keyboard cables. 2. Keyboard 3. External mouse 4. System board

Symptom / Error	FRU / Action in Sequence
I9990301 I9990302 I9990305 I9990301: Hard disk error. I9990302: Invalid hard disk boot record. I9990305: No bootable device.	<ol style="list-style-type: none"> 1. Check that the operating system is installed in the HDD. If not, install the operating system. 2. Reseat the boot device. 3. Check the startup sequence for the correct boot device. 4. Check that the operating system has no failure and is installed correctly.
I9990303 (Bank-2 flash ROM check sum error.)	<ol style="list-style-type: none"> 1. System board
Other codes, not in this list	<ol style="list-style-type: none"> 1. Go to “Undetermined Problems” on page 209.

Diagnostic Error Codes

A detected error is shown as in the following example:
















```
SystemBoard
DEV 001
ERR 0010
FRU 002
```

- Large **X** on the left side of the device icon.
- Device ID (three digit)
- Error code (two digit)
- FRU code (four digit)

The device ID and error code are used to indicate the detail portion of the FRU that caused the error. If replacing a FRU does not correct the problem, see the device ID or error code from the previous failure. If they have changed, the cause might be because the new FRU is defective or that the FRU was incorrectly installed.

Device ID: If an error is detected by the diagnostic tests, a three-digits device ID is displayed. The device ID indicates suspected device.

Icon	Device ID	Suspected Device
 SystemBoard	001	System board
	003	Keyboard
	007	Math coprocessor
	086	Pointing device

Icon	Device ID	Suspected Device
 Memory	002	Memory
 Display	050	Display
	054	
 HDD	017	Hard disk drive
 1 FDD-1	006	(Internal) diskette drive
 2 FDD-2	066	External diskette drive or FDD Connector of the port replicator
 1 PCMCIA	080	PCMCIA
 2 PCMCIA	088	External PCMCIA
 Parallel	009	Parallel
 Serial	011	Serial
 CDROM	215	CD-ROM
 Infrared	103	IR
 Audio	153	Audio

FRU Codes: If an error is detected by the diagnostic tests, a four-digit FRU code is displayed. The FRU code indicates two suspected FRUs. No FRU is assigned to code 00. If only one FRU is suspected, the other FRU code is filled with zeros. Replace the FRU that is indicated by the **two leftmost** digits first; then replace the FRU that is indicated by the **two rightmost** digits. See the

reference page before replacing the FRU. The suspected FRU name is also displayed on the screen. The following table shows the FRU code:

FRU Code	FRU
10	System board
30	Reserved
32	External keyboard
33	External mouse
40	LCD unit
45	External CRT
50	1. Reseat the diskette drive (FDD-1) 2. Diskette drive (FDD-1)
51	1. Reseat the diskette drive (FDD-2) 2. Diskette drive (FDD-2)
60	1. Reseat the hard disk drive 2. Hard disk drive
70	PCMCIA-2 (Replicator) .
72	PCMCIA slot assembly
90	CD-ROM drive

If the problem still remains after replacement of the FRUs, go to "Undetermined Problems" on page 209.

Beep Symptoms

Symptom / Error	FRU / Action in Sequence
Continuous beeps.	System board
One beep and a blank, unreadable, or flashing LCD.	1. Reseat the LCD connector. 2. LCD unit 3. System board 4. Subcard
One beep, and the message "Unable to access boot source."	1. Boot device 2. System board
One long and two short beeps, and a blank or unreadable LCD.	1. System board 2. LCD unit
One long beep followed by four short beeps each time the power switch is operated. (System cannot power-on due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery.
One beep every second. (System is shutting down due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery. (Allow the system to complete shutdown before changing the battery.)

Symptom / Error	FRU / Action in Sequence
Two short beeps with error codes.	POST error. See "Numeric Error Codes" on page 199.
Two short beeps with blank screen.	System board

No Beep Symptoms

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator not on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. Go to "Power Systems Checkout" on page 193. 2. System board 3. Subcard 4. Power sources
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System board 2. Subcard
No beep, power-on indicator on, and a blinking cursor only during POST.	<ol style="list-style-type: none"> 1. System board 2. Subcard
No beep during POST but system runs correctly.	<ol style="list-style-type: none"> 1. Turn the volume up and check the speaker. 2. Speaker 3. System board 4. Subcard

LCD-Related Symptoms

Important

The LCD for the notebook computer contains over 921 000 thin-film transistors (TFTs). A small number of missing, discolored, or lighted dots (on all the time) is characteristic of TFT LCD technology, but excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of dots satisfies the following condition:

- The number of missing, discolored, or lighted dots in any background is 21 or more.

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System board 2. Subcard

Symptom / Error	FRU / Action in Sequence
<ul style="list-style-type: none"> LCD backlight not working LCD too dark LCD brightness cannot be adjusted (TFT) LCD contrast cannot be adjusted (STN) 	<ol style="list-style-type: none"> Reseat the LCD connectors. LCD unit Subcard
<ul style="list-style-type: none"> LCD screen unreadable Characters missing Screen abnormal Wrong color displayed 	<ol style="list-style-type: none"> See important note for "LCD-Related Symptoms." Reseat all LCD connectors. LCD unit System board Subcard
LCD has extra horizontal or vertical lines displayed.	LCD unit

Keyboard/TrackPoint III-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Keyboard (one or more keys) does not work.	<ol style="list-style-type: none"> Reseat the keyboard cable on the subcard. Keyboard Subcard System board
TrackPoint III does not work.	<ol style="list-style-type: none"> Reseat the keyboard cable on the subcard. Go to "Keyboard/TrackPoint III-Related Symptoms." Keyboard Subcard System board
Pointer moves automatically or does not work correctly.	<ol style="list-style-type: none"> See "Keyboard/TrackPoint III-Related Symptoms."

Indicator-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly.	<ol style="list-style-type: none"> Subcard System board
Battery power status indicator blinks from green, yellow, to orange.	<ol style="list-style-type: none"> Check that a correct battery is installed. Battery pack Subcard System board

Power-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Power shuts down during operation.	<ol style="list-style-type: none"> 1. Go to “Power Systems Checkout” on page 193. 2. Battery pack 3. Remove the battery pack and let it cool for two hours. 4. Subcard 5. Power sources
The system will not power-off. (See “Power Shutdown Switch” on page 188.)	<ol style="list-style-type: none"> 1. Press the power shutdown switch. 2. System board

Function/Audio-Related Symptoms

Symptom / Error	FRU / Action in Sequence
The system does not suspend or resume when the LCD is opened or closed.	<ol style="list-style-type: none"> 1. Go to “Suspend Mode” on page 197, and check that the computer can enter suspend mode. 2. Boot an operating system and press Fn+F4. If the computer enters suspend mode, suspect that the application program is not working properly. 3. Subcard 4. System board
Battery Fuel-Gauge does not go higher than 90%.	Go to “Checking the Battery Pack” on page 195 and see the note.
Memory count (size) appears different from actual size.	Go to “Memory Checkout” on page 190.
System configuration does not match the installed devices.	Go to “Checking the Installed Devices List” on page 213.
System hangs intermittently.	Go to “Intermittent Problems” on page 209.

Peripheral-Device-Related Symptoms

Symptom / Error	FRU / Action in Sequence
External display does not work correctly.	1. See “External Display Self-Test” in “Common Devices Checkout” section.
Printer problems.	1. Run Printer Self-test. 2. Parallel port device 3. Cable 4. System board
Serial or parallel port device problems.	1. Device 2. Device cable 3. System board

Infrared-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Unable to communicate using the Infrared (IR) Port.	1. Make sure the setup for the IR is correct. 2. Make sure there are no fluorescent lights near the computer. The computer may receive optical noise from the fluorescent light. 3. Run the advanced diagnostic test. If an error occurs and a FRU code is displayed, replace the parts shown by the FRU code.

Other Symptoms

Symptom / Error	FRU / Action in Sequence
Errors occur only when Port Replicator is used.	See “Port Replicator Checkout” on page 196.
PCMCIA slot pin is damaged.	PCMCIA Slot Assembly

Note: If you cannot find a symptom or error in this list and the problem remains, see “Undetermined Problems” on page 209.

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists.

When analyzing the intermittent problem, do the following:

1. Run the advanced diagnostic test for the system board in loop mode at least 10 times.
2. If no error is detected, do **not** replace any FRUs.
3. If any error is detected, replace the FRU shown by the FRU code. Rerun the test to verify that no more errors exist.

Undetermined Problems

You are here because the diagnostic tests did not identify which adapter or device failed, installed devices are incorrect, a short circuit is suspected, or the system is inoperative. Follow the procedures below to isolate the failing FRU (do not isolate nondefective FRUs).

Verify that all attached devices are supported by the computer.

Verify that the power supply being used at the time of the failure is operating correctly. (See "Power Systems Checkout" on page 193.)

1. Power off the computer.
2. Check the cables, wires, and connectors for short or open circuits. Visually check for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices.
 - a. Non-IBM devices
 - b. Devices attached to the expansion bus connector
 - c. Printer, mouse, and other external devices
 - d. Battery pack
 - e. Hard disk drive
 - f. Diskette drive
 - g. DIMM card
 - h. PC Cards
4. Power on the computer.
5. Determine if the problem has changed.
6. If the problem does not occur again, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRUs one at a time. Do not replace a non-defective FRU.
 - Subcard
 - System board

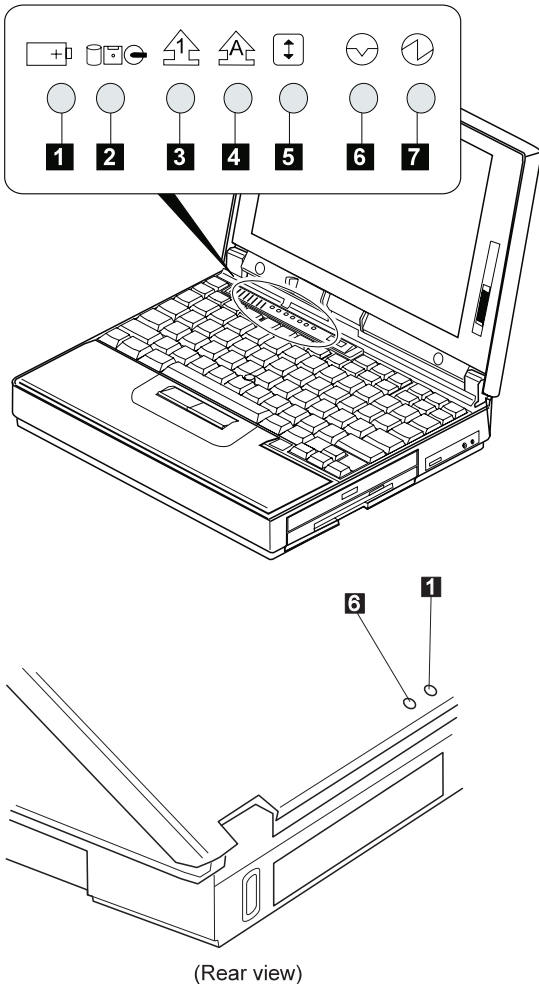
Related Service Procedures








This section provides information about the following:

- “Status Indicators”
- “How to Run the Diagnostics” on page 212
- “Error Log” on page 213
- “Checking the Installed Devices List” on page 213
- “How to Run a Low-Level Format” on page 213
- “PC Test Card LED” on page 214
- “Fn Key Combinations” on page 214
- “Keyboard/Auxiliary Input Device Checkout” on page 191

Status Indicators

The system status indicators show the current computer status in different colors (green and orange).



Symbol	Color	Meaning
1 Battery 	Green	Enough battery power remains for operation.
	Orange	Battery pack is charging.
	Blinking orange	Battery pack needs charging.
2 Device Access 	Orange	Data is read from or written to the hard disk drive, FDD, or CD-ROM drive.
3 Numeric Lock 	Green	Numeric keypad on the keyboard is enabled.
4 Caps Lock 	Green	Caps lock mode is enabled.
5 Scroll Lock 	Green	Arrow keys can be used as screen-scroll function key.
6 Suspend Mode 	Green	Suspend mode
7 Power On 	Green	Power on

How to Run the Diagnostics

Use either the TrackPoint III or the cursor move keys to interact with the tests. Pressing the **Enter** key works the same as selecting the OK icon to reply **OK**.

The following tools are required:

<i>FDD:</i>	Erasable 2HD diskette
<i>Parallel:</i>	Wrap plug (P/N 72X8546)
<i>Serial:</i>	Wrap plug (P/N 72X8546)
<i>PCMCIA:</i>	PC Test Card (P/N 35G4703)
<i>CDROM:</i>	Any CD (data CD is recommended)

1. Press and hold the F1 key; then power on the computer. Hold the F1 key down until the Easy-Setup screen appears.
2. Select **Test** and press **Enter**.
3. Select a device and press **Enter** to run the test.
4. The test progress screen appears.
5. **OK** appears when the test ends without any errors.
6. Start the **Advanced Diagnostic test** as either of the following way:
 - Pressing **Ctrl+A** on the basic diagnostic menu screen.
 - Triple-click the icon on the right bottom corner on the basic diagnostic screen.
7. The ThinkPad FRU Connections screen appears. This screen shows the state of the connection of all connectors.
Check the connector if the **Not connected** message appears on the screen.
8. Click on **Exit** on the screen or press **Esc** to exit the screen.
9. The keyboard test screen appears.
Check the keyboard.
10. Click on **Exit** on the screen or press **Ctrl+Pause** to exit the screen.
11. Select a device and press **Enter** to start the tests.
The instruction appears, and follow the instruction on the screen.
12. Select **Test All** to test all devices.
13. Select **Loop Test** to run the tests in a repeated loop.
A loop option menu appears in which a device loop or all-device loop can be selected. Select a device and press the **Spacebar** to select a device. Repeat this step to select multiple devices. Press Enter to start the diagnostic loop. If no device is selected, all device tests are looped.
14. To exit the loop, keep pressing **Ctrl+Pause** until the test exits. A beep sounds to notify that the exit interrupt is sensed by the test program.

Error Log

Diagnostic errors are printed on the printer that is attached to the parallel port when the error is detected. The error is also logged in the system memory.

Do the following to display the errors:

1. End the test, if it is running.
2. Press **Ctrl+A** to select the advanced diagnostic mode.
3. Press **Esc** to exit the &tpad. FRU Connections screen.
The keyboard test screen appears.
4. Press **Ctrl+Pause** to exit the keyboard test screen.
5. Press **Ctrl+E**.
6. The error log appears.
7. To exit the screen, select the cancel icon or press **Esc**.

The error log is not saved when the system is powered-off.

Checking the Installed Devices List

If a device is installed but the icon appears in a gray shade rather than a dark shade on the basic diagnostics screen, the device is defective. Reseat the device connectors. If the symptom remains, replace the device or the system board. If needed, adjust the contrast control to clearly distinguish the shades of the icon.

If a device that is not installed appears in a dark shade (for example, FDD-2 appears in a dark shade when *NO* second FDD is installed), do the following:

1. Replace the **first** device in the configuration, such as an FDD-1.
2. If the problem remains, replace the system board.

The Parallel, and Serial icons are always displayed in a dark shade because the icons represent subsystems of the system board and not the attachment of the devices.

The FDD-1 and PCMCIA-1 icons represent the drive in the computer. The FDD-2 and PCMCIA-2 icons represent the devices in the port replicator or that is attached through the port replicator.

How to Run a Low-Level Format

Do the following to format the hard disk.

Warning: Make sure the drive address to be formatted is correct. This procedure erases all information on the disk.

1. Power off the computer.
2. Insert the **ThinkPad Hardware Maintenance Diskette Version 1.30** into diskette drive **A** and power on the computer.
3. Select **Format the hard disk** from the main menu.
4. Select the drive from the menu.
5. Follow the instructions on the screen.

PC Test Card LED

The green LED on the PC test card turns on when the PCMCIA test is running. If the LED does not turn on, check that the card is installed correctly by reseating the card. If it still does not turn on after it is reseated, try using another slot for the test. If the LED still does not turn on and the test fails, replace the FRU shown by the diagnostic error code.

Fn Key Combinations

The following table shows the **Fn** key and function key combinations and their corresponding functions.

The **Fn** key works independently from the operating system. The operating system obtains the status through the system management interface to control the system.

Fn +	Description
F1	Reserved
F2	Fuel-Gauge display on or off
F3	Standby mode invocation
F4	Suspend mode invocation
F5	Reserved
F6	Reserved
F7	LCD/CRT display switching
F8	Screen expansion on or off (no symbol on the key)
F9	Reserved
F10	Reserved
F11	Power management mode switching (toggles High Power, Intelligent, Economy)
F12	Hibernation invocation

Product Overview (380, 380D, 385, 385D)

The following table shows an overview of the system features.

Feature	Description
Processor	<ul style="list-style-type: none">Intel Pentium 150/60 MHz, 256K L2 cache
Bus Architecture	<ul style="list-style-type: none">PCI bus
Memory (standard)	16MB (on the system board)
Memory (option) (One 144-pin DIMM slot)	<ul style="list-style-type: none">8MB, 16MB, 32MB non parity DIMM (max. 48MB)
CMOS RAM	242 bytes
Video	<ul style="list-style-type: none">12.1-inch, 64K colors, 800x600 pixel DSTN color LCD12.1-inch, 256K colors, 800x600 pixel TFT color LCD
Diskette Drive	<ul style="list-style-type: none">1.44MB (3-mode), 3.5-inch
CD-ROM Drive	<ul style="list-style-type: none">8X transfer speed
Hard Disk Drive	<ul style="list-style-type: none">1.08GB, 2.5-inch, IDE interface1.35GB, 2.5-inch, IDE interface2.1GB, 2.5-inch, IDE interface
I/O Port	<ul style="list-style-type: none">HeadphoneMicrophonePort replicator
Audio	<ul style="list-style-type: none">16-bit audioInternal speakerInternal microphoneMechanical volume
Infrared Transfer	<ul style="list-style-type: none">4 million bps serial communicationTransmitter and receiver module
PCMCIA	<ul style="list-style-type: none">One Type-III or two Type-IIZV port

FRU Removals and Replacements

This section contains information about removals and replacements.

- Do not damage any parts. Only certified and trained personnel should service the computer.
- The arrows in the “Removals and Replacements” section show the direction of movement to remove a FRU, or to turn a screw to release the FRU. The arrows are marked in numeric order, in square callouts, to show the correct sequence of removal.
- When other FRUs must be removed before removing the failing FRU, they are listed at the top of the page.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See “Locations” for internal cable connections and arrangement information.
- When replacing a FRU, use the correct screw size as shown in the procedures.

Safety Notice 1: Translation on page 8

Before the computer is powered-on after FRU replacement, make sure all screws, springs, or other small parts, are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.

Safety Notice 3: Translation on page 10

The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations.

Safety Notice 8: Translation on page 14

Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.

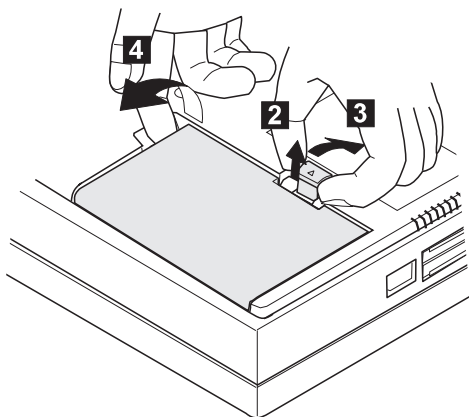
Safety Notice 4: Translation on page 11

The lithium battery can cause a fire, explosion, or severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

1010 Battery Pack

1 Turn the computer upside down.

Pull up the battery pack latch **2**, push it back **3**, and then pull up the battery pack **4**.



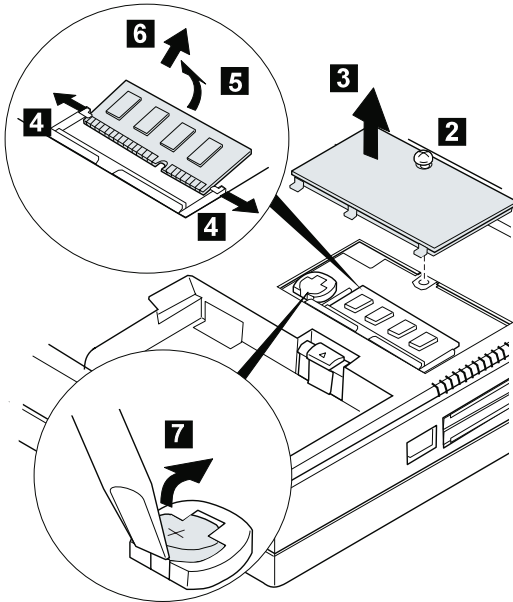
1020 DIMM Card / Backup Battery

Safety Notice 4: Translation on page 11

The lithium battery can cause a fire, explosion, or severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

- 1 Turn the computer upside down.

2 3 4 5 6 : DIMM
2 3 7 : Backup battery



When replacing:

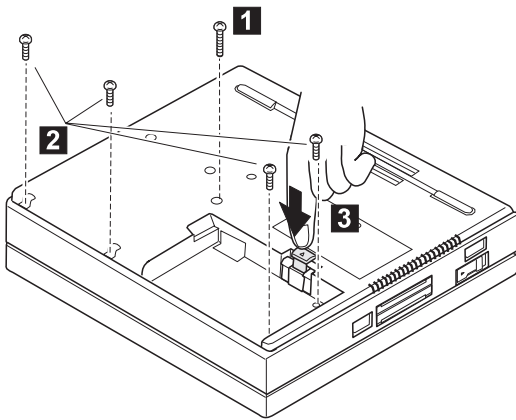
Make sure the plus side is on top when replacing the backup battery.

Step	Location (Quantity)	Length
2	DIMM cover (1)	—

Note: Only loosen the screw in step **2**.

1030 Keyboard Unit

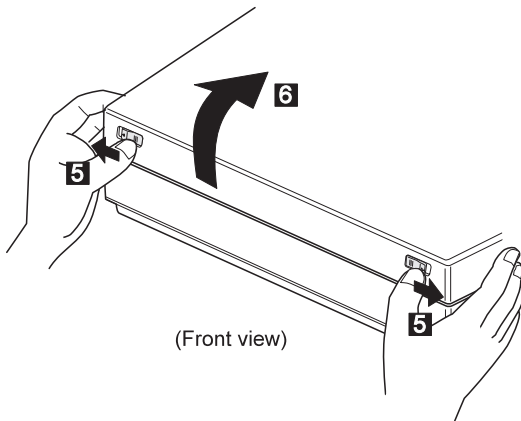
- Battery Pack (1010)



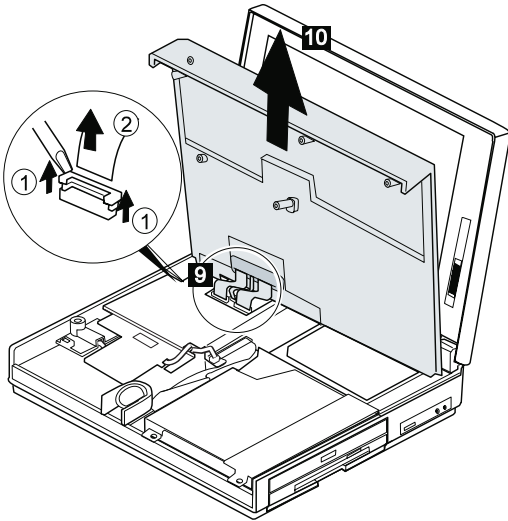
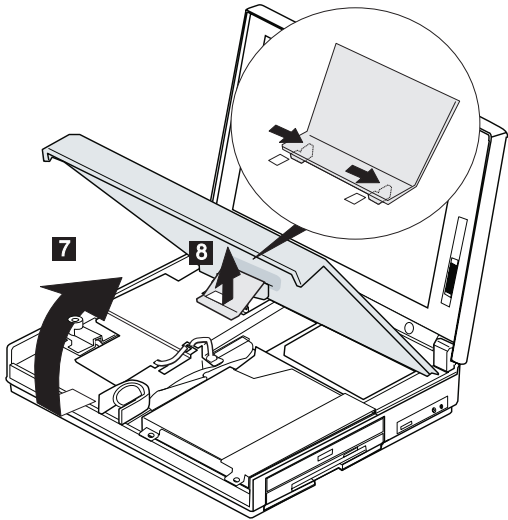
Step	Location (Quantity)	Length
1	Base cover (1)	M 2.5 x 25mm
2	Base cover (4)	M 2.5 x 6mm

Note: When replacing, make sure you use the correct screw.

- 4** Turn the computer over again.



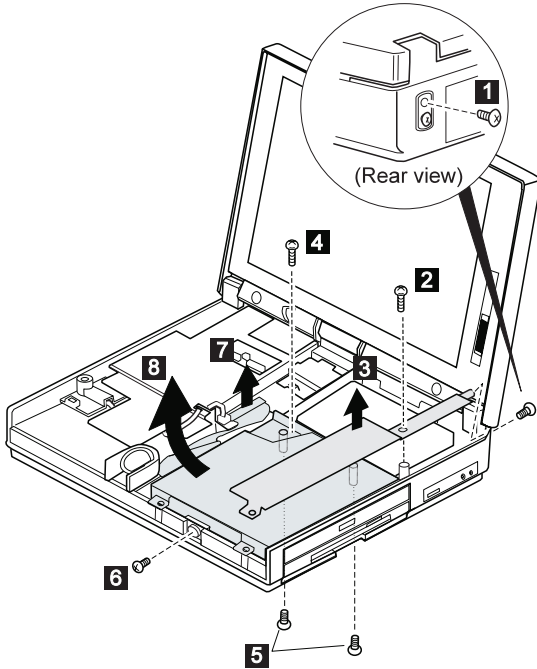
Note: Pull the keyboard assembly forward a **little** in step **7**.



1040 CD-ROM/FDD Assembly

- Battery Pack (1010)
- Keyboard Unit (1030)

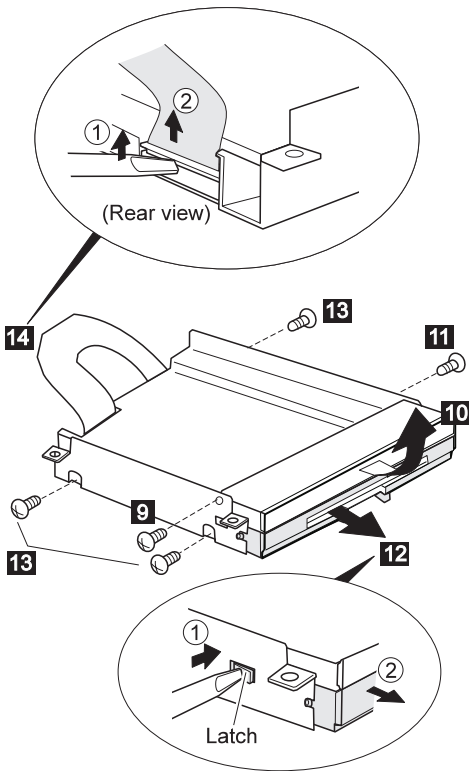
Note: Be careful that the computer does not fall backward when the CD-ROM/FDD assembly is removed.



Step	Location (Quantity)	Length
1 2	Bracket (2)	M 2.5 x 6mm
4 5 6	Base cover (4)	M 2.5 x 6mm

Models 380/385

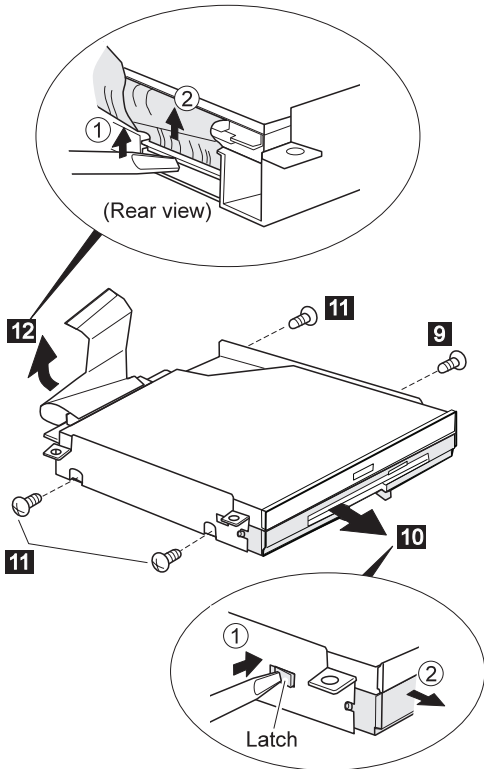
- 9 10** : Blank Bezel
- 11 12** : FDD Bezel
- 11 12 13 14** : FDD



Step	Location (Quantity)	Length
9	Bracket (1)	M 2.6 x 4mm
11	Bracket (1)	M 2.6 x 4mm
13	Bracket (3)	M 2.6 x 2.8mm (red)

Note: When replacing, make sure you use the correct screw.

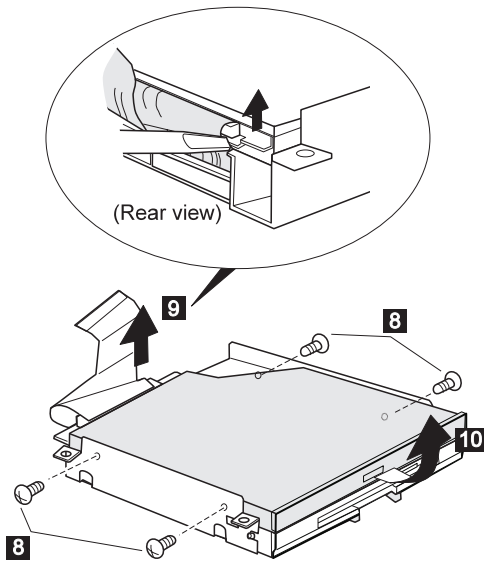
Models 380D/385D FDD



Step	Location (Quantity)	Length
9	Bracket (1)	M 2.6 x 4mm
11	Bracket (3)	M 2.6 x 2.8mm (red)

Note: When replacing, make sure you use the correct screw.

Models 380D/385D CD-ROM



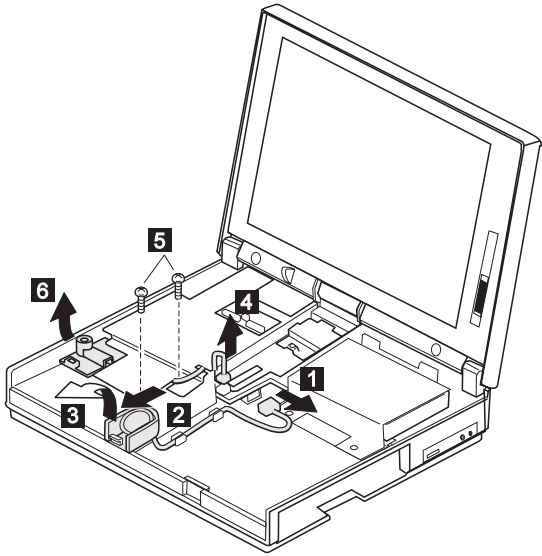
Step	Location (Quantity)	Length
9	Bracket (4)	M 2 x 2.4mm w/washer
Note: When replacing, make sure you use the correct screw.		

1050 Speaker / Microphone

- Battery Pack (1010)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)

1 2 3 : Speaker
4 5 6 : Microphone

Note: To remove the microphone easily, pull up the upper shield slightly.



Step	Location (Quantity)	Length
5	System board assembly (2)	M 2.6 x 4mm

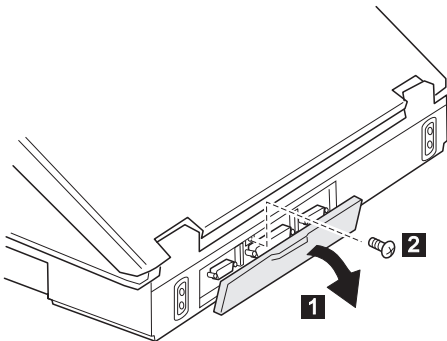
Note: When replacing, make sure you use the correct screw.

1060 Hard Disk Drive

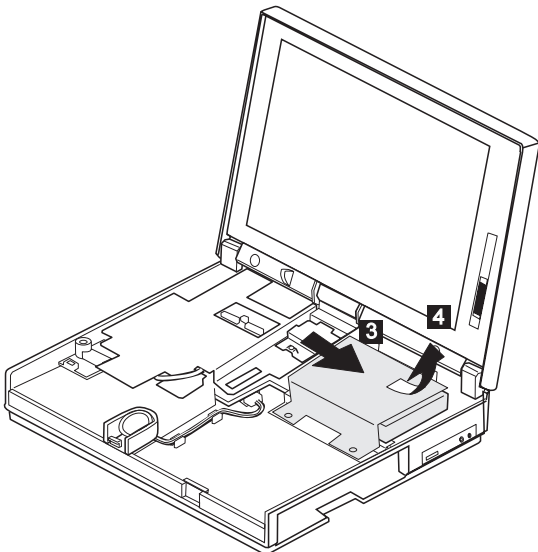
Warning

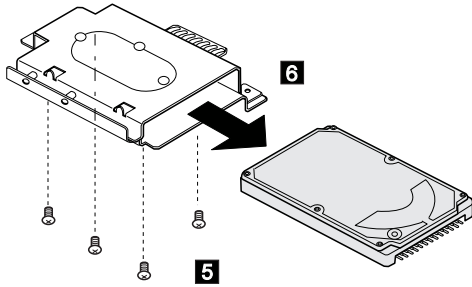
Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard disk drive, have the user make a backup copy of all the information on the hard disk. Never remove the hard disk drive while the system is operating or is in suspend mode.

- Battery Pack (1010)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)



(Rear view)



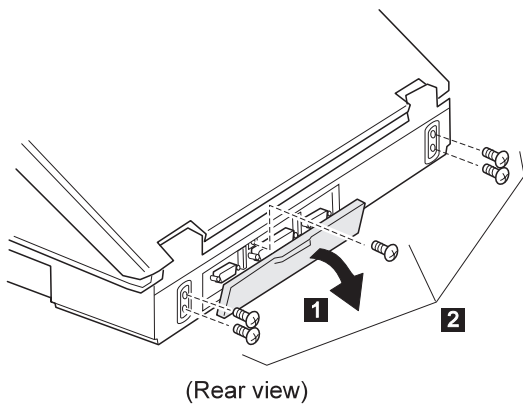


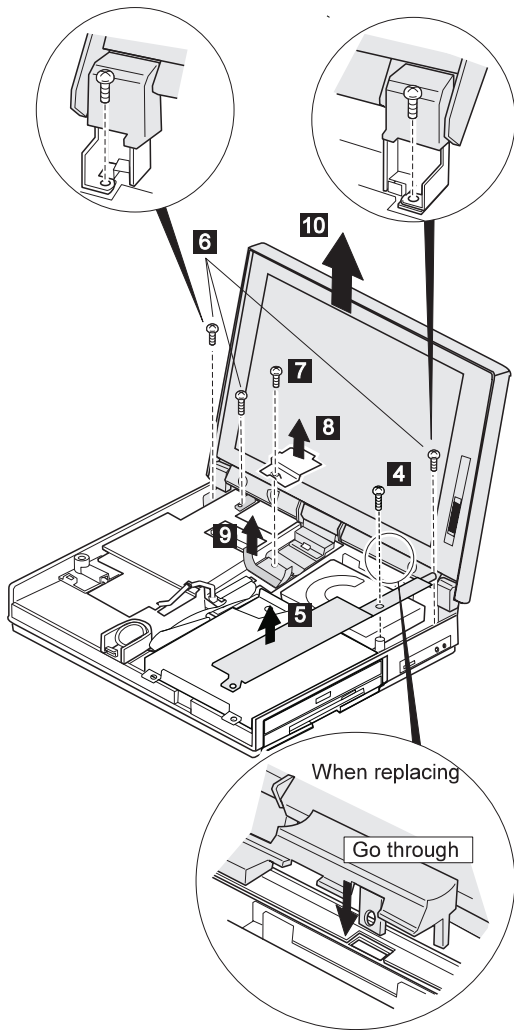
Step	Location (Quantity)	Length
2	Base cover (1)	M 2.5 x 6mm
5	Base cover (4)	M 2.5 x 6mm

Note: When replacing, make sure you use the correct screw.

1070 LCD Unit

- Battery Pack (1010)
- Keyboard Unit (1030)

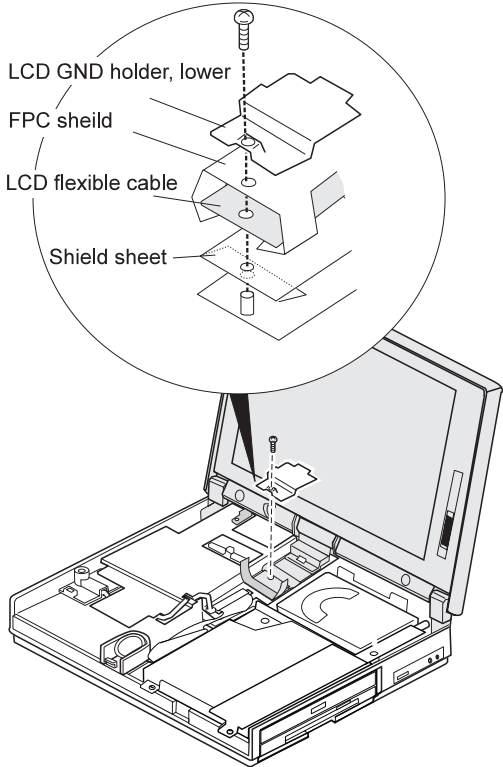




Step	Location (Quantity)	Length
2	Base cover (5)	M 2.5 x 6mm
4	Bracket (1)	M 2.5 x 6mm
6	Hinges, LCD unit (3)	M 2.5 x 6mm
7	LCD cable (1)	M 2.5 x 6mm

Note: When replacing, make sure you use the correct screw.

When replacing: The following artwork is the reference for replacement.

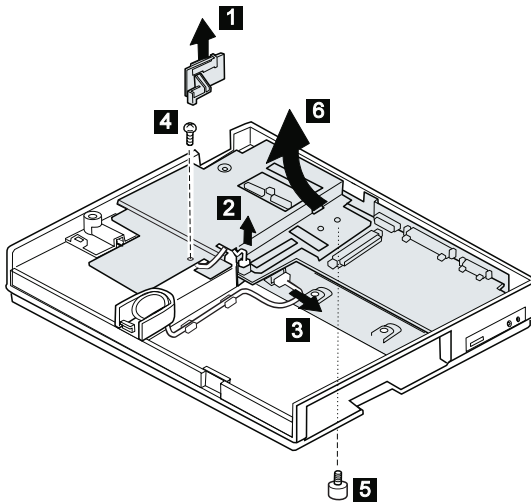


1080 System Board Assembly

Notes:

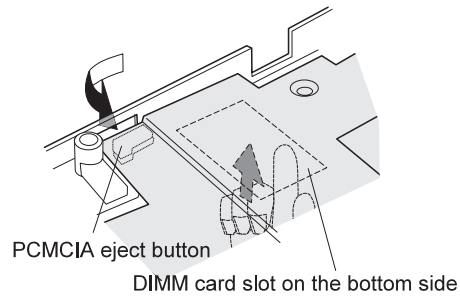
1. The system unit serial number must be restored when the system board is replaced. To restore the system unit serial number, select the option "Set system identification" on the maintenance diskette. The flash ROM on the system board contains the vital product data (VPD)—that is, the system unit serial number, system board system number, and other computer-unique data.
2. Do not power off the computer when restoring the VPD. The system unit serial number label is attached to the base cover.
3. Before removing and replacing the system board assembly, make sure that the PCMCIA cards are removed and the eject levers are not sticking out.
 - Battery Pack **(1010)**
 - DIMM Cover **(1020)**
 - Keyboard Unit **(1030)**
 - CD-ROM/FDD Assembly **(1040)**
 - LCD Unit **(1070)**
 - Hard Disk Drive **(1060)**

1080 System Board Assembly (Continued)



Note

As the PCMCIA eject buttons are sticking out, pull the buttons out slightly and fold them to the right; then push up the system board assembly from the bottom when removing the system board assembly.

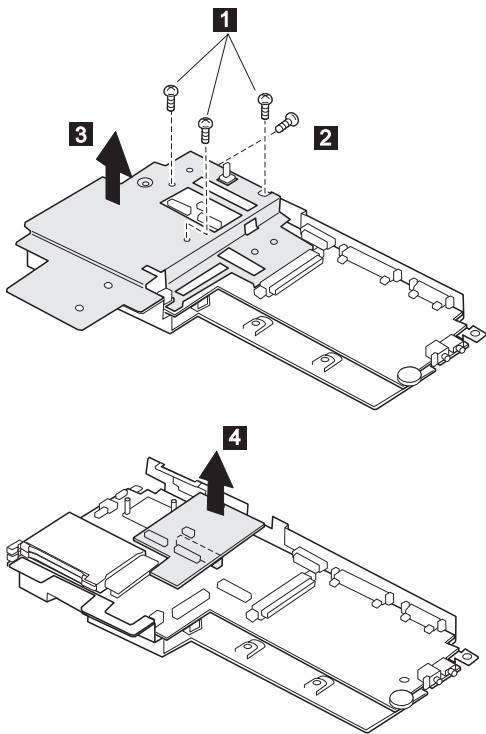


Step	Location (Quantity)	Length
4	System board assembly (2)	M 2.5 x 6mm
5	Base cover (1)	Special screw

Note: When replacing, make sure you use the correct screw.

1090 Sub Card

- Battery Pack (1010)
- DIMM Cover (1020)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)
- LCD Unit (1070)
- Hard Disk Drive (1060)
- System Board Assembly (1080)

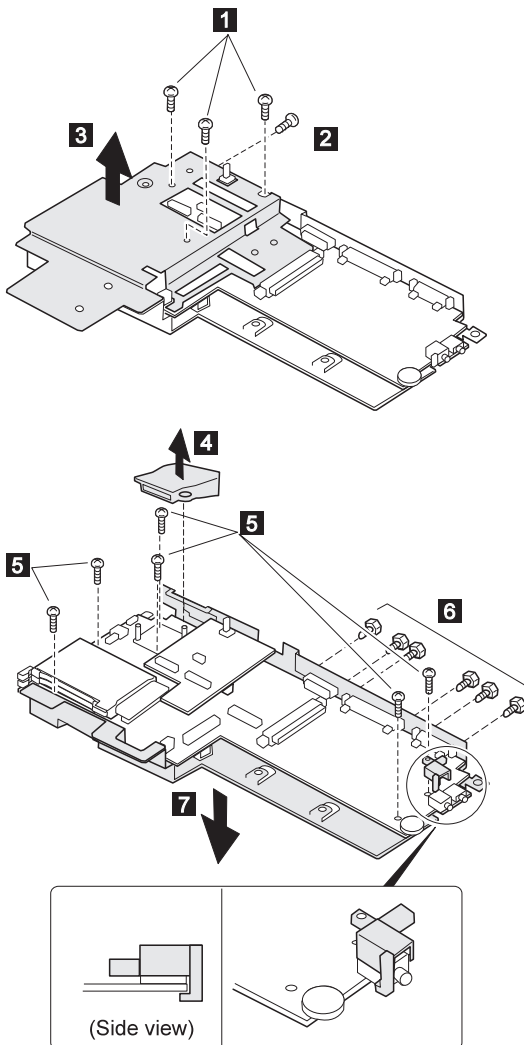


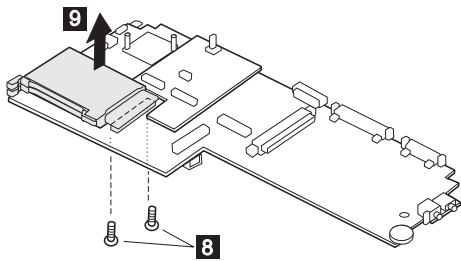
Step	Location (Quantity)	Length
1	Upper shield (3)	M 2.5 x 6mm
2	Upper shield (1)	M 2.5 x 8mm

Note: When replacing, make sure you use the correct screw.

1100 PCMCIA Slot

- Battery Pack (1010)
- DIMM Cover (1020)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)
- LCD Unit (1070)
- Hard Disk Drive (1060)
- System Board Assembly (1080)



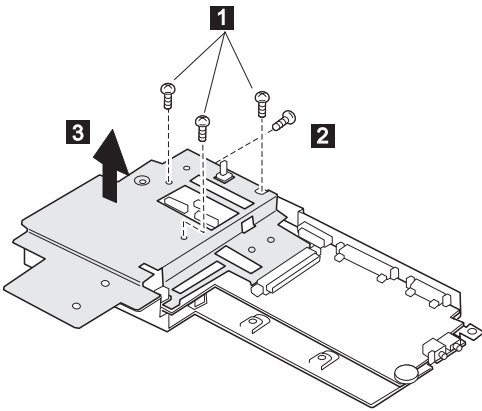


Step	Location (Quantity)	Length
1	Upper shield (3)	M 2.5 x 6mm
2	Upper shield (1)	M 2.5 x 8mm
5	Lower shield (6)	M 2.5 x 6mm
6	Lower shield (6)	Stud screw
8	PCMCIA assembly (2)	M 2 x 16mm

Note: When replacing, make sure you use the correct screw.

1110 Fan

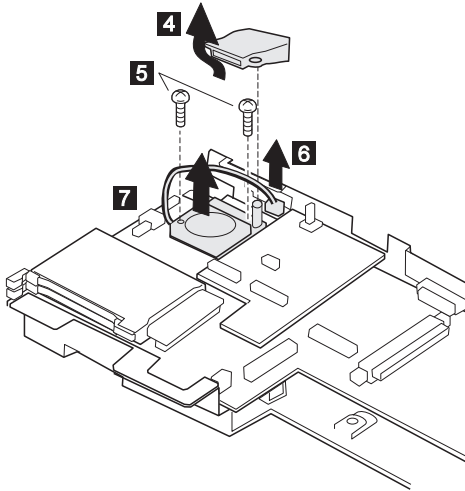
- Battery Pack (1010)
- DIMM Cover (1020)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)
- LCD Unit (1070)
- Hard Disk Drive (1060)
- System Board Assembly (1080)



1110 Fan (Continued)

Notes:

1. Be careful not to touch the rotor and blade of the fan when assembling or disassembling.
2. Fix the fan cable on the air duct by using the cable holder when replacing.

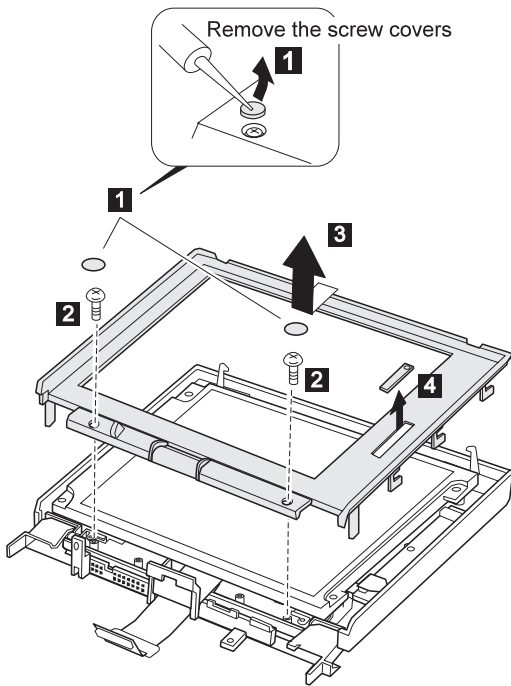


Step	Location (Quantity)	Length
1	Upper shield (3)	M 2.5 x 6mm
2	Upper shield (1)	M 2.5 x 8mm
5	Fan (2)	M 2 x 6mm

Note: When replacing, make sure you use the correct screw.

1120 LCD Front Cover

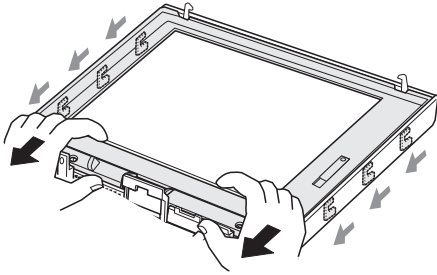
- Battery Pack (1010)
- DIMM Cover (1020)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)
- LCD Unit (1070)



1120 LCD Front Cover (Continued)

Note

The LCD front cover has several latches. Release the latches as shown.



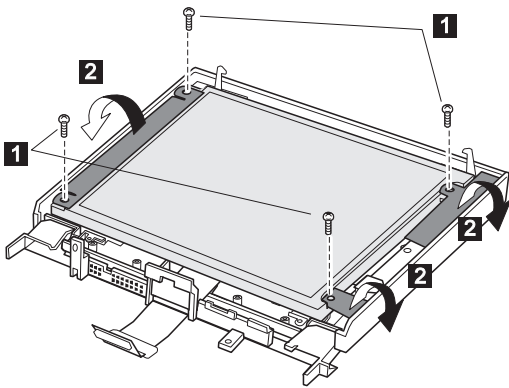
Step	Location (Quantity)	Length
1	LCD front cover (2)	M 2.5 x 6mm

Note: When replacing, make sure you use the correct screw.

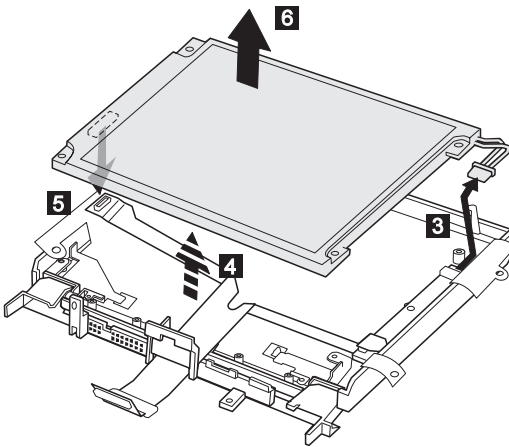
1130 LCD Panel

- Battery Pack (1010)
- DIMM Cover (1020)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)
- LCD Unit (1070)
- LCD Front Cover (1120)

DSTN LCD Panel

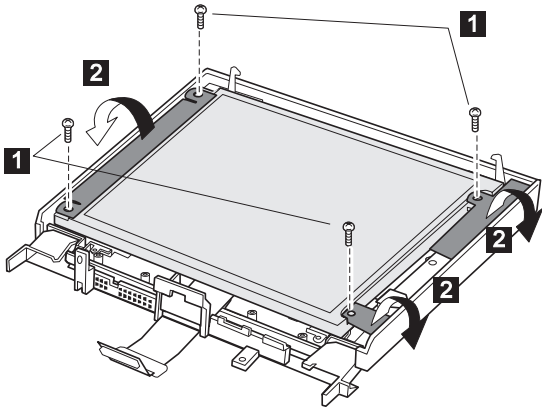


Note: In step **4**, lift the LCD panel a little to disconnect the flexible cable in step **5**.

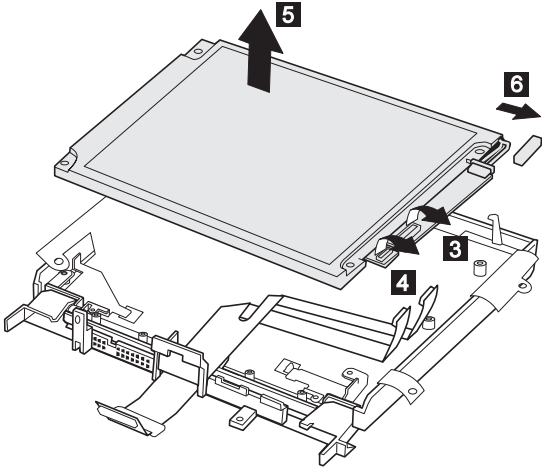


Step	Location (Quantity)	Length
1	LCD panel (4)	M 2.5 x 6mm
Note: When replacing, make sure you use the correct screw.		

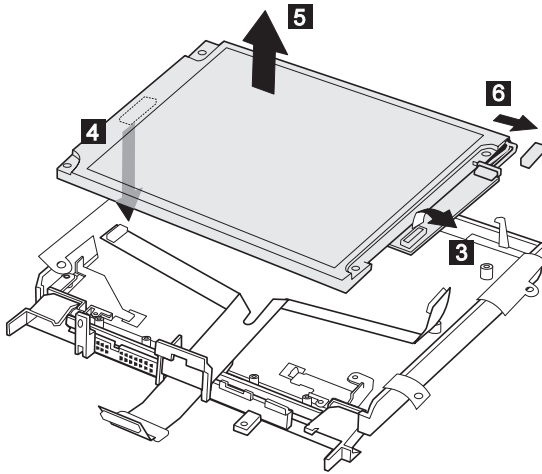
TFT LCD Panel



Type 1



Type 2

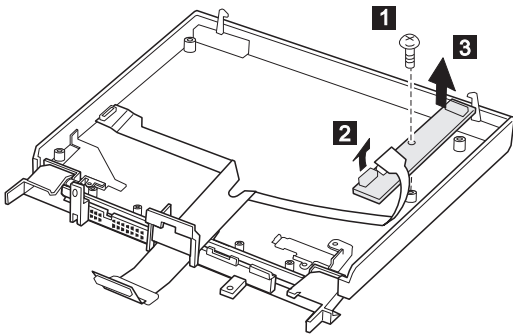


Step	Location (Quantity)	Length
1	LCD panel (4)	M 2.5 x 6mm
Note: When replacing, make sure you use the correct screw.		

1140 LCD Inverter Card

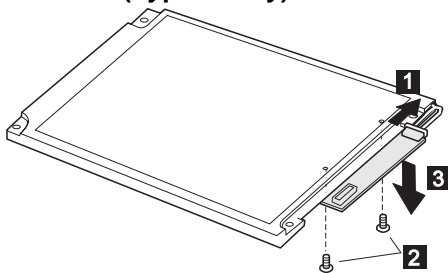
- Battery Pack (1010)
- DIMM Cover (1020)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)
- LCD Unit (1070)
- LCD Front Cover (1120)
- LCD Panel (1130)

DSTN LCD



Step	Location (Quantity)	Length
1	LCD inverter card (1)	M 2.5 x 6mm
Note: When replacing, make sure you use the correct screw.		

TFT LCD (Type 2 only)



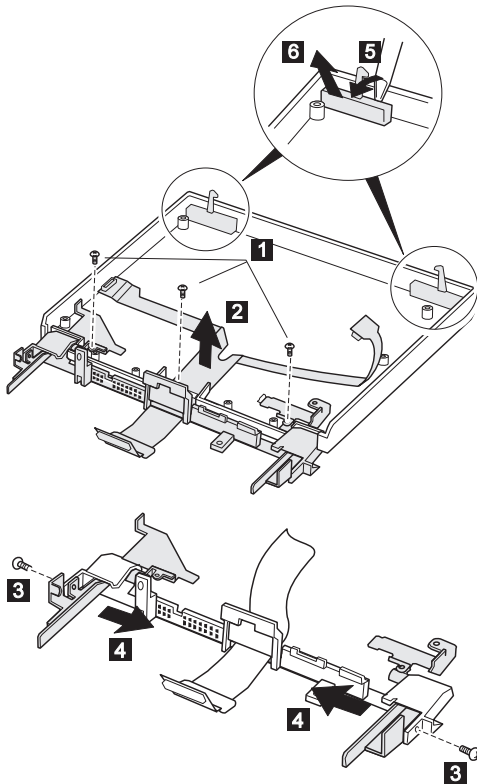
Step	Location (Quantity)	Length
2	LCD inverter card (2)	M 2.0 x 3.7mm
Note: When replacing, make sure you use the correct screw.		

1150 LCD Misc. Parts

- Battery Pack (1010)
- DIMM Cover (1020)
- Keyboard Unit (1030)
- CD-ROM/FDD Assembly (1040)
- LCD Unit (1070)
- LCD Front Cover (1120)
- LCD Panel (1130)
- LCD Inverter Card (1140)

DSTN LCD Hinges/Latches

- 1 2 3 4** : Hinges
5 6 : Latches

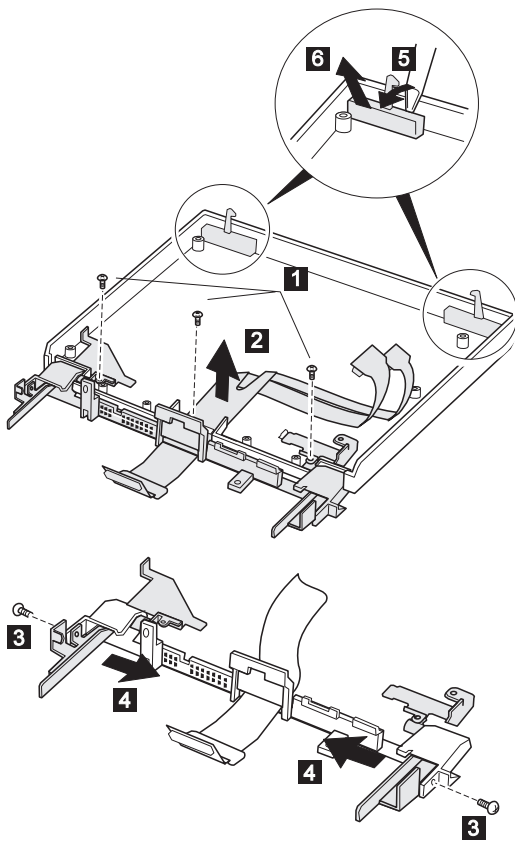


Step	Location (Quantity)	Length
1	LCD hinge (3)	M2.5x6mm
3	LCD hinge (2)	M2.5x6mm

Note: When replacing, make sure you use the correct screw.

TFT LCD: This artwork shows the TFT type 1 LCD.
For the type 2, do the same procedure.

- 1 2 3 4** : Hinges
- 5 6** : Latches

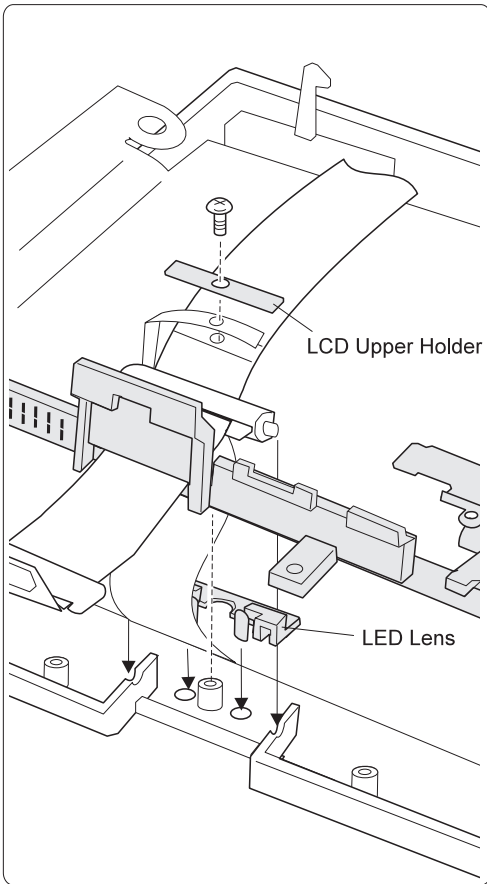


Step	Location (Quantity)	Length
1	LCD hinge (3)	M 2.5 x 6mm
3	LCD hinge (2)	M 2.5 x 6mm

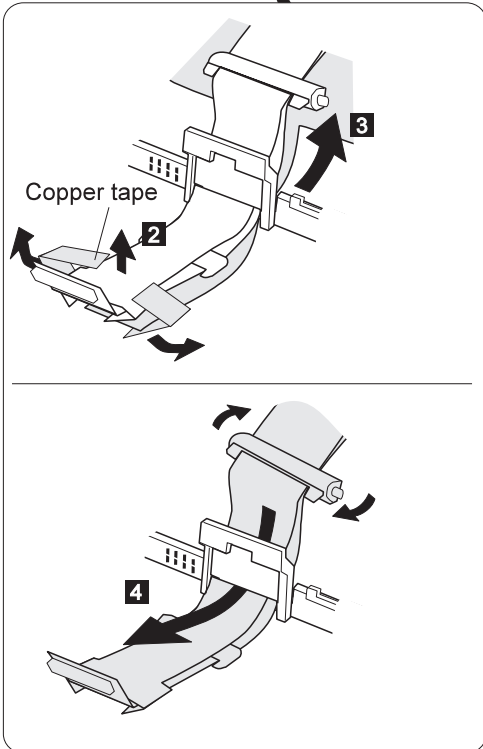
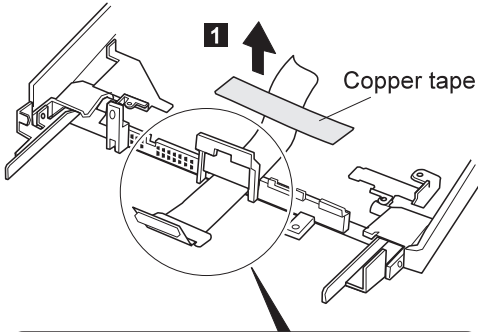
Note: When replacing, make sure you use the correct screw.

When replacing:

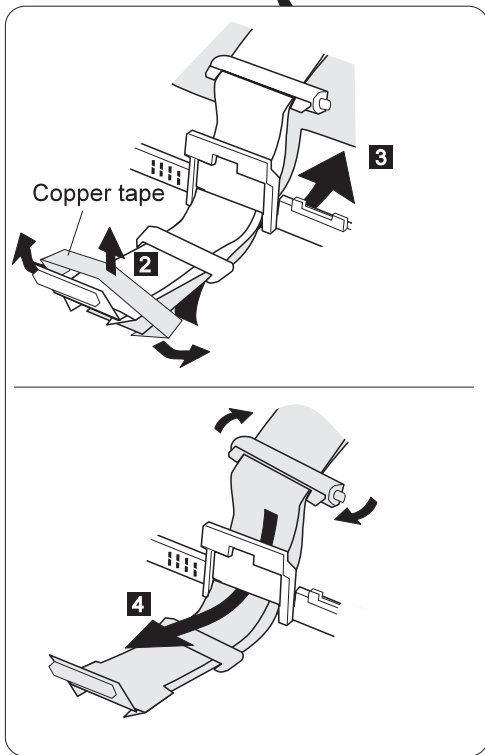
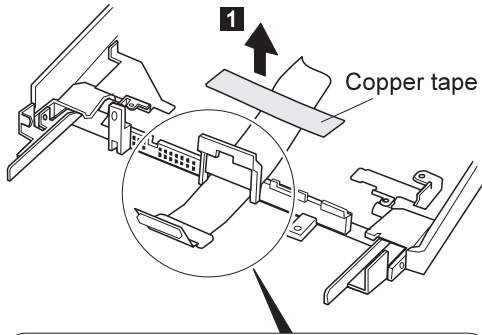
Replace the LCD miscellaneous parts as follows:



LCD Cable
DSTN LCD



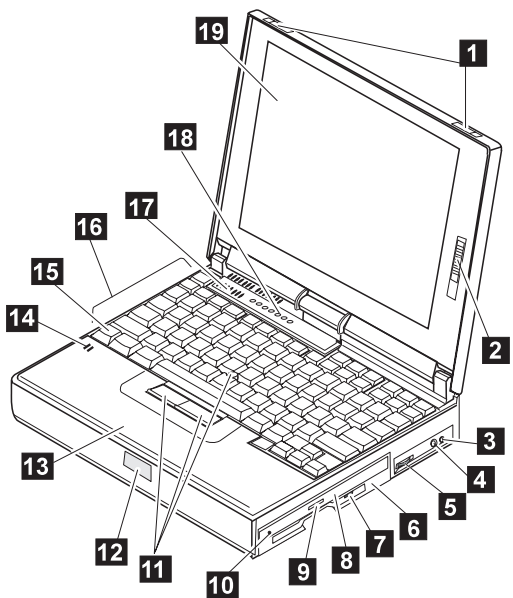
TFT LCD



Locations

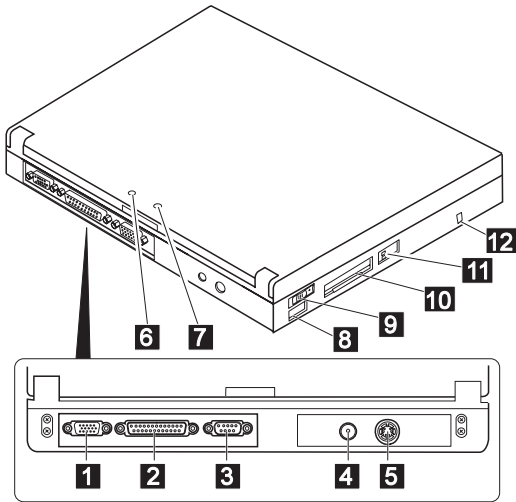
Front View

- 1** LCD latch
- 2** Contrast control (DSTN model)
Brightness control (TFT model)
- 3** Headphone jack
- 4** Microphone/line-in jack
- 5** Volume control
- 6** Diskette drive
- 7** Diskette eject button
- 8** CD-ROM drive
- 9** CD-ROM eject button
- 10** CD-ROM emergency eject hole
- 11** TrackPoint III
- 12** Built-in speaker
- 13** Palm rest
- 14** Built-in microphone
- 15** Fn Key
- 16** Keyboard
- 17** Fan louver
- 18** Status indicator
- 19** LCD panel



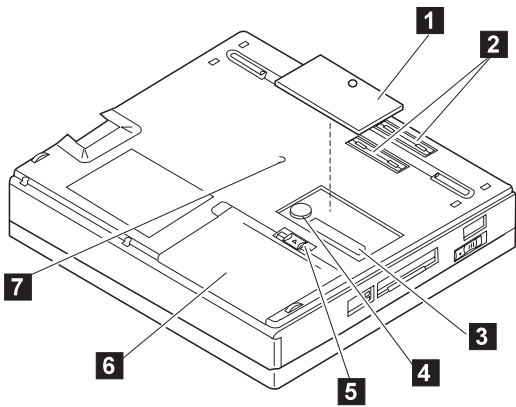
Rear View

- 1** External-monitor connector
- 2** Parallel connector
- 3** Serial connector
- 4** Power jack
- 5** External-input-device connector
- 6** Suspend mode indicator
- 7** Battery indicator
- 8** IR port
- 9** Power switch
- 10** PCMCIA slots
- 11** PC Card eject button
- 12** Security key hole

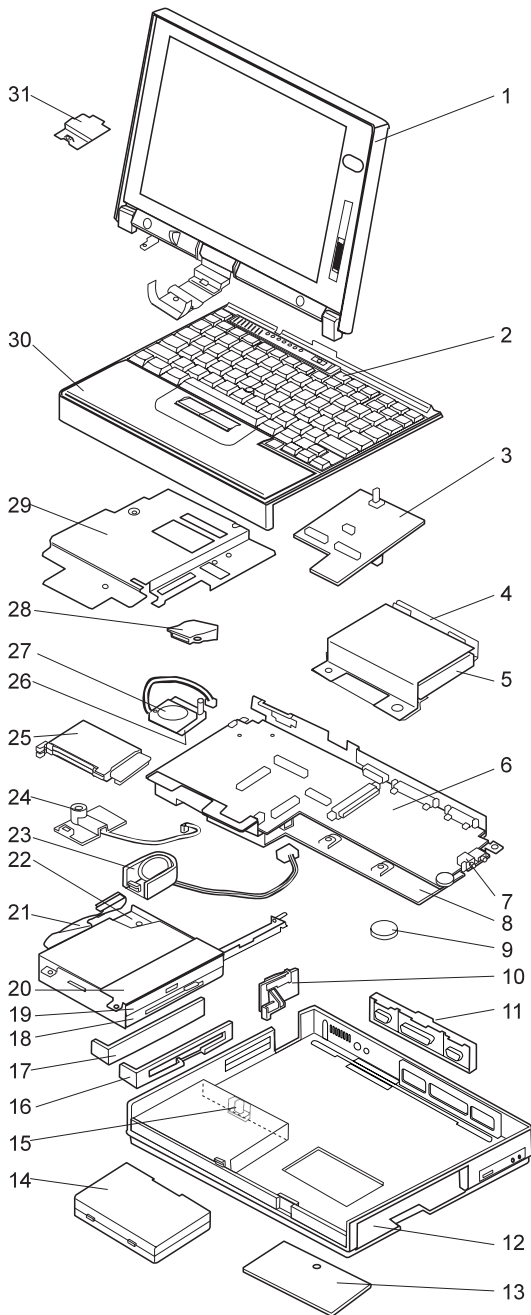


Bottom View

- 1** Memory-slot cover
- 2** System-expansion connector
- 3** Memory slot
- 4** Backup battery
- 5** Battery pack latch
- 6** Battery pack
- 7** Power shutdown switch

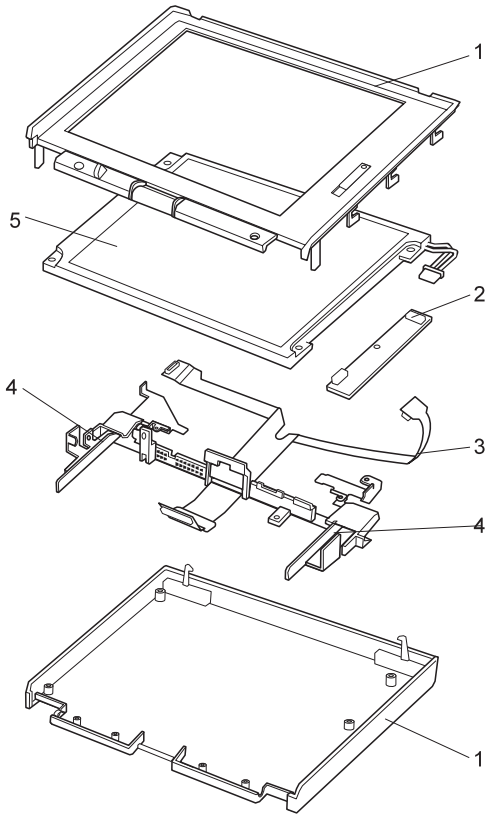


Parts Listing 380/385 (2635)



Index	System Unit	
1	LCD Assembly (<i>see LCD FRU section</i>)	
2	Keyboard Assembly (<i>see Keyboard</i>)	
3	Subcard	73H9928
4	HDD Bracket	73H9936
5	Hard Disk Drive (1.08 GB)	73H6418
	Hard Disk Drive (1.4 GB)	73H6419
	Hard Disk Drive (2.1 GB)	73H6427
6	System Board (150MHz-P54C)	83H6524
	System Board (150MHz-P55C)	73H9923
7	Audio Jack Holder (<i>see Misc. Parts</i>)	
8	Lower Shield Case	73H9927
9	Backup Battery	46H4132
10	Power Switch Knob (<i>see Misc. Parts</i>)	
11	I/O Door	73H9920
12	Base Cover Assembly	73H9919
13	DIMM Cover Assembly	73H9921
14	Battery Pack (Li-ion)	73H9951
	Battery Pack (NiMH)	73H9952
15	Battery Pack Latch Kit	11J8315
16	FDD Bezel	73H9932
17	Blank Bezel	73H9934
18	FDD	11J8338
19	CD-ROM	73H9933
20	Support Structure (<i>see Misc. Parts</i>)	
21	CD/FDD Connector (CD-Model)	73H9935
	FDD Connector (non CD-Model)	83H6527
22	Drive Bracket	73H9930
23	Speaker Assembly	73H9938
24	Microphone Assembly	73H9939
25	PCMCIA Slot	83H6523
26	Heat Sink (for fan)	83H6525
27	Fan	83H6526
28	Air Duct (<i>see Misc. Parts</i>)	
29	Upper Shield Case	73H9929
30	Keyboard Bezel	73H9950
	Include the following labels:	
	- for 380	
	- for 380D	
	- for 385	
	- for 385D	
31	LCD GND Holder, Lower (<i>see Misc. Parts</i>)	
	Cable Holder	11J8376
	Thermal Rubber	73H9924
	TrackPoint III Cap	84G6536
	AC Adapter (35W)	85G6738
	AC Adapter (35W, 3-prong)	85G6736

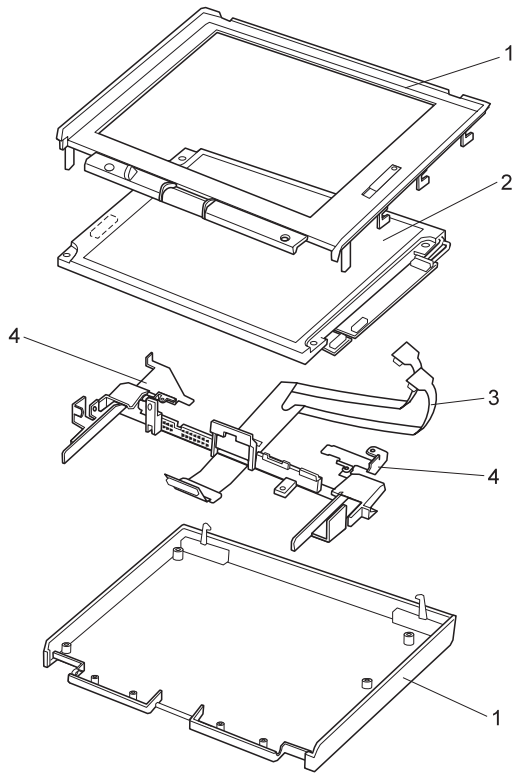
LCD FRU (DSTN)



1	LCD Cover	73H9940
2	LCD Inverter	73H9946
3	LCD Cable	73H9947
4	LCD Hinge	73H9942
5	LCD Panel(12.1" DSTN)	73H9944

LCD FRU (TFT)

Type 1



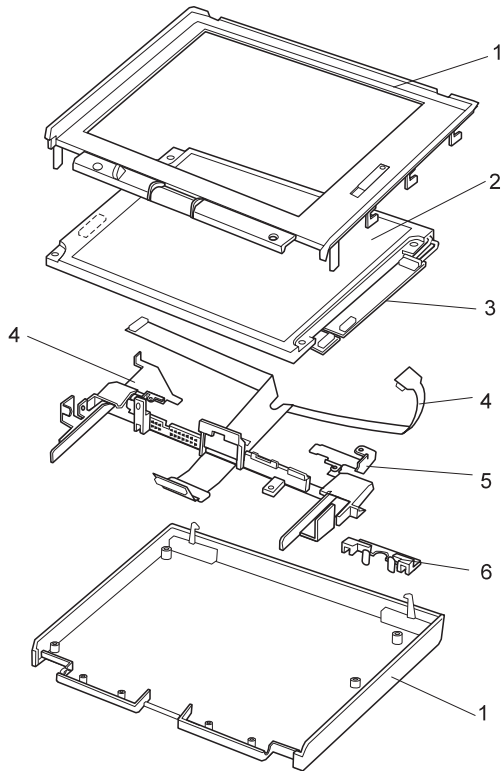
1	LCD Cover	73H9941
2	LCD Panel (12.1" TFT)	73H9945
3	LCD Cable	73H9948
4	LCD Hinge	73H9943
5	LCD Lens (see <i>Misc. Parts</i>)	

LCD Misc. Parts 73H9949

Include the following:

- Control Knob
- LCD Upper Holder
- Latch, Right
- Latch, Left
- Latch, Spring (2)
- Latch, Holder (2)
- LED Lens
- Screw Cap (2)

Type 2



1	LCD Cover	11J8860
2	LCD Panel (12.1" TFT)	11J9623
3	LCD Cable	11J9625
4	LCD Inverter	11J9622
5	LCD Hinge	73H9943
6	LCD Lens (<i>see Misc. Parts</i>)	

LCD Misc. Parts 73H9949

Includes the following:

- Control Knob
- LCD Upper Holder
- Latch, Right
- Latch, Left
- Latch, Spring (2)
- Latch, Holder (2)
- LED Lens
- Screw Cap (2)

Keyboard

Arabic	11J8305
Belgian	83H6485
Canadian French	83H6488
Czech	11J8306
Danish	83H6487
Dutch	83H6480
French	83H6478
German	83H6477
Greek	11J8307
Hebrew	11J8308
Hungarian	11J8309
Italian	83H6479
Japanese	83H6476
Korean	11J8299
Latin Spanish	11J8302
Norwegian	83H6486
Poland	11J8311
Portuguese	11J8310
Russian	11J8300
Slovakian	11J8312
Slovenian	11J8313
Spanish	83H6482
Swedish / Finnish	83H6481
Swiss	83H6483
Turkish	11J8304
Chinese	11J8301
Thai	11J8303
U.K. English	83H6475
U.S. English	83H6474

Common/Option Parts List

Miscellaneous Parts

Misc. Parts 73H9937
Include the following:
Support structure
Air Duct
Audio Jack Holder
Power Switch Knob
LCD GNG Holder, Lower

Screw Kits 83H6522
Include the following:
Hex Stud, D-Sub (6)
M2 x 2.4, Pan head (4)
M2 x 6, Pan head (2)
M2.5 x 6, Bind head (60)
M2.5 x 8, Bind head (1)
M2.5 x 25, Bind head (1)
M2.5 Special (1)
M2.6 x 4, Bind head (1)
M2.6 x 2.8, Bind head (3)
M3 x 3, Bind head (4)

Options

Notes:

1. When you replace the AC Adapter, use the one for the country you are in even if the computer is from a different country.
2. The warranty for the system unit does not apply to all options.

Headset	85G1529
Microphone	66G7871
PS/2 Miniature Mouse	95F5723
DIMM 8MB	42H2767
DIMM 16MB	42H2768
DIMM 32MB	42H2769
Interface Cable, System to Keyboard	84G2531
Interface Cable, Keyboard to Keypad	84G2532
Mini-DIN to Mini-DIN Cable.	84G6474
380/385 Port Replicator	84G1320
380/385 Cover Set - Port Replicator	84G1321
ThinkPad 560 Port Replicator	46H4107

Numeric Keypad

Belgian	95F5741
Canadian French	95F5466
Danish	95F5467
Dutch	95F5467
French	95F6313
German	95F6314
Greek	95F5467
Hebrew	95F5741
Icelandic	95F5467
Italian	95F6316
Japanese	79F6401
Norwegian	95F5467
Spanish	95F6315
Swedish / Finnish	95F5468
Swiss / French	95F5711
Swiss / German	95F5715
Turkish	95F5467
U.K. English	95F5741
U.S. English	95F5741

Black Keypad

French	84G6286
German	84G6280
Italian	84G6292
Norwegian	84G6310
Swedish	84G6304
U.K. English	84G6298
U.S. English	84G2530

Black Keyboard

French	84G6285
German	84G6279
Italian	84G6291
Norwegian	84G6309
Swedish	84G6303
U.K. English	84G6297
U.S. English	84G2529

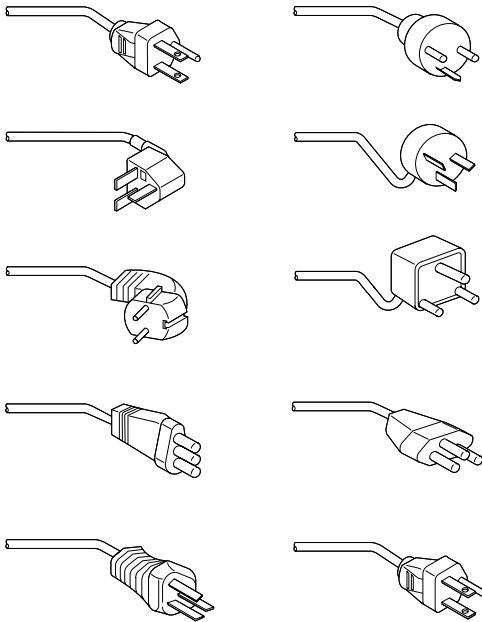
Accessories

Keyboard/Mouse Cable	54G0444
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Tools

Tri-Connector Wrap Plug	72X8546
PC Test Card	35G4703
Audio Wrap Cable	66G5180
Screwdriver Kit	95F3598
ThinkPad Hardware Maintenance Diskette - Version 1.30	78H5384

Power Cords



IBM power cords for a specific country are usually available only in that country:

- For 2-pin power cords:

IBM Power Cord Part Number	Used in These Countries
13H5264	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Thailand, Trinidad (West Indies), United States of America, Venezuela
14F0033	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Singapore, United Kingdom

IBM Power Cord Part Number	Used in These Countries
13H5270	Austria, Belgium, Bulgaria, Chile, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, former Yugoslavia
13H5273	Japan
13H5276	Argentina, Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay
13H5279	Bangladesh, Pakistan, South Africa, Sri Lanka

- For 3-pin power cords:

Important

The grounded adapter is required for full MPRI compliance.

IBM Power Cord Part Number	Used in These Countries
76H3514	Argentina, Australia, Papua New Guinea, New Zealand, Paraguay, Uruguay
76H3516	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela
76H3518	Austria, Belgium, Bulgaria, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Turkey, former Yugoslavia
76H3520	Denmark
76H3522	Bangladesh, Pakistan, South Africa, Sri Lanka

IBM Power Cord Part Number	Used in These Countries
76H3524	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Singapore, United Kingdom
76H3526	Japan
76H3528	Switzerland, Liechtenstein
76H3530	Chile, Italy, Ethiopia, Libya
76H3532	Israel
76H3535	Korea
76H4866	Thailand

ThinkPad 560 (2640)

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Read This First

Before you go to the checkout guide, be sure to read this section.

Important Notes

- **Only certified trained personnel should service the computer.**
- Read FRU service procedures before replacing any FRUs.
- **Be extremely careful during write operations such as copying, saving, or formatting.** Drives in the computer that you are servicing might have been rearranged or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs can be written over.
- **Replace FRUs only for the correct model.** When you replace the FRU, make sure the model of the machine and FRU part number are correct by referring to the part list.
- **FRUs should not be replaced because of a single, un-reproducible failure.** Single failures can occur from a variety of reasons that have nothing to do with a hardware defect such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should only be considered when a recurring problem exists. If this is suspected, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.
- **Be careful not to replace a non-defective FRU.**

How to Use Error Messages: Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 279.

Port Replicator Problems: If you suspect a problem with the Port Replicator, see "Port Replicator Checkout" on page 275.

How to Diagnose Multiple FRUs: When the adapter or device has more than one FRU, the error code could be caused by either FRU. Before replacing multiple FRUs, try removing or exchanging each FRU, one by one in the designated sequence, to see if the symptoms change.

What to Do First: The servicer must include the following in the parts exchange form or parts return form that is attached to the returned FRU.

- ___ 1. Name and phone number of servicer.
- ___ 2. Date of service.
- ___ 3. Date when part failed.
- ___ 4. Date of purchase.
- ___ 5. Failure symptoms, error codes appearing on display, and beep symptoms.
- ___ 6. Procedure index and page number in which failing FRU was detected.
- ___ 7. Failing FRU name and part number.
- ___ 8. Machine type, model number, and serial number.
- ___ 9. Customer's name and address.

Before checking problems with the computer, determine whether or not the damage applies the warranty by referring to the following:

Warranty Note

During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer. The following list provides some common items that are not covered under warranty and some symptoms that may indicate the system was subjected to stresses beyond normal use:

- LCD panel cracked by applying excessive force or by being dropped.
- Scratched (cosmetic) parts.
- Cracked or broken plastic parts, broken latches, broken pins, or broken connectors caused by excessive force.
- Damage caused by liquid spilled into the system.
- Damage caused by improperly inserting a PCMCIA card or installation of an incompatible card.
- Damage caused by foreign material in the FDD.
- Diskette drive damage caused by pressing the diskette drive cover or inserting diskettes with multiple labels.
- Damaged or bent diskette eject button.
- Fuses blown by attaching a non-supported device.
- Forgotten computer password, making computer unusable.

If the following symptoms are present, they may indicate damage caused by non-warranted activity:

- Missing parts may be a symptom of unauthorized service or modification.
- HDD spindles can become noisy if subjected to excessive force or by being dropped.
- I9990303 errors can be caused by exposure to strong magnetic fields.

How to Disable the Power-On Password

Important

This information is not available in this online HMM format. See your IBM Servicer or IBM Authorized Dealer for this this procedure.

Power Shutdown Switch: The power shutdown switch resets the system regardless of the microcode status and forces the power off. Use this push button to power-off when power is not completely off or the microcode is in a hung state.

See "Bottom View" on page 322 for the power shutdown switch.

Checkout Guide

Use the following procedure as a guide for computer problems.

Note

The diagnostic tests are intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to recreate the failure by running the diagnostic test or by repeating the same operation.

Note

To run the diagnostics, refer to "How to Run the Diagnostics" on page 292.

3. Use the following table with the verified symptom to determine which page to go to. Search the symptoms column and find the description that best matches your symptom; then go to the page shown in the "Go to" column.

Symptoms (Verified)	Go to
Power failure. (The power indicator does not go on or stay on.)	"Power Systems Checkout" on page 272.
POST does not complete. No beeps/error code are indicated.	"Symptom-to-FRU Index" on page 279, and then use the No Beep Symptoms table.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 279, and then use the Beep Symptoms table.
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 279, and then use the Numeric Error Codes table.
The diagnostic test detected an error and displayed an FRU code.	"How to Run the Diagnostics" on page 292.
The configuration is not the same as the installed devices.	"Checking the Installed Devices List" on page 293.

Symptoms (Verified)	Go to
Other symptoms (such as LCD display problems).	"Symptom-to-FRU Index" on page 279, and then use the Other Symptoms table.
Symptoms cannot be recreated. (Intermittent problems.)	Use the customer reported symptoms and go to "Symptom-to-FRU Index" on page 279.

Memory Checkout

DIMM cards are available for increasing memory capacity.

DIMM	Displayed Value
No DIMM installed	7808KB
8MB	16000KB
16MB	24192KB
32MB	40576KB

Memory errors might stop system operations, show error messages on the screen, or hang the system.

Use the following procedure to isolate memory problems.

Note

Make sure that the DIMM card is fully installed into the connector. A loose connection can cause an error.

1. Power off the computer and remove the DIMM card from its slot (if installed).
2. Press and hold the F1 key; then power on the computer. Hold the F1 key down until the Easy-Setup screen appears.
3. Select **Test** and press Enter.
4. Select **Memory** and press Enter to run the memory test on base memory. If an error appears, replace the system board.
5. Power off the computer and reinstall the DIMM card; then power on the computer. Verify the memory size; then test the memory. If an error appears, replace the DIMM card.

If memory problems occur intermittently, use the loop option to repeat the test. When the test detects an error, an error log is printed on the printer connected to the parallel port. See "Error Log" on page 293 for more information.

System Programs in Flash Memory: System setup programs and diagnostic tests are stored in flash memory.

Flash Memory Update: A flash memory update is required for the following conditions:

- New versions of system programs.
- New features or options are added.

To update the flash memory, do the following:

1. Get the appropriate diskette containing the update.
2. Insert the **System Program Service Diskette** into drive A and power on the computer.
3. Select **Update system programs** from the menu.

System Board Checkout

The processing functions are performed by the system board. When a numeric code calls the system board as a FRU, use the following procedure to isolate the problem.

1. Run the system board test to verify the symptom. This test verifies the system board. If no error is detected, return to "Checkout Guide" on page 268.
2. If FRU code 10 appears, replace the system board.
3. Rerun the test to verify the fix.

If above procedure does not correct the problem, go to "Undetermined Problems" on page 290.

Keyboard/Auxiliary Input Device Checkout

Remove the external keyboard if the internal keyboard is to be tested.

If the internal keyboard does not work or an unexpected character appears, make sure that the flexible cable extending from the keyboard is correctly seated in the connector on the system board.

If the keyboard cable connection is correct, run the

Keyboard Test by doing the following:

1. Go to the diagnostic menu screen by pressing **Ctrl+A** in the Easy-Setup screen.
2. Press **Ctrl+K**; a layout of the keyboard appears on the screen.
3. Check that when each key is pressed, the key's position on the keyboard layout on the screen changes to a black square.

Note

When a Fn key is pressed, a black square briefly appears.

If the tests detect a keyboard problem, do the following one at a time to correct the problem. Do not replace a non-defective FRU.

- Reseat the keyboard cable.
- Replace the keyboard.

- Replace the system board.

The following auxiliary input devices are supported for this computer.

- Numeric keypad
- Mouse (PS/2 compatible)
- External keyboard (with keyboard/mouse cable)

If any of the above devices do not work, reseal the cable connector and repeat the failing operation.

If the problem does not occur again, recheck the connector.

If the problem is not corrected, replace the device, and then the system board.

TrackPoint III Checkout

If the TrackPoint III will not work, check the configuration in the ThinkPad Features program. If the configuration of the TrackPoint III is disabled, select **Enable** to enable it.

If this does not correct the TrackPoint III problem, continue with the following.

The TrackPoint III does automatic compensations to adjust the pointer sensor. During this process, the pointer moves on the screen automatically for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the TrackPoint III pointer while the computer is powered on or while the system is running, or when re-adjustment is required because the temperature has exceeded its normal temperature range. This symptom does not indicate a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

If a click button problem or pointing stick problem occurs, do the following:

1. Go to the Easy-Setup screen.
2. Select an item with the pointing stick.
3. Press either the left or right click button.
4. Verify that both buttons work correctly.

If either the pointing stick or the click button do not work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU.

- Reseat the keyboard cables.
- Replace the keyboard.
- Replace the system board.

Diskette Drive Test

Do the following to isolate the problem to a controller, drive, or diskette. A scratch, write enabled, non-defective 2HD diskette is required.

FDD-1 represents external diskette drive attached through the external diskette drive connector. FDD-2 represents the port replicator.

Warning: Make sure that the diskette does not have more than one label attached to it. Multiple labels can cause damage to the drive or can cause the drive to fail.

Do the following to select the test device:

1. Select the advanced diagnostics mode and select **Tool**; then select the **FDD-1** or **FDD-2** icon and press the spacebar. A ✓ mark appears next to the selected icon. Insert the **blank** diskette when instructed.
2. Run the diskette drive test.
3. If the controller test detects an error, FRU code 10 appears. Replace the system board.
4. If the controller test runs without errors, the drive read/write tests start automatically.
5. If the drive test detects an error, FRU code 50 for FDD-1 or 51 for FDD-2 appears. If the diskette itself is known to be good, replace the drive.
6. If FDD-2 test detects an error, move the drive to the computer's diskette drive connector directly, if possible, and test it again as FDD-1.

If no errors occur in the FDD-1 position, the drive is not defective. Go to "Port Replicator Checkout" on page 275 to isolate the replicator problem.

Status Indicator Checkout

If an LED problem occurs, do the following:

1. Power off the computer
2. Power on the computer
3. All the LEDs in the indicator panel turn on for a moment soon after the computer is powered-on. Make sure that all LEDs turn on.

If the problems remains, replace the system board.

Power Systems Checkout

To verify the symptom of the problem, power on the computer using each of the power sources as follows.

1. Remove the battery pack and diskette drive.
2. Connect the AC Adapter and check that power is supplied.
3. Disconnect the AC Adapter and install the charged battery pack; then check that power is supplied by the battery pack.

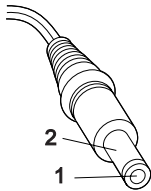
If you suspect a power problem, see the appropriate power supply check listed below.

- "Checking the AC Adapter" on page 273.
- "Checking Operational Charging" on page 273.
- "Checking the Battery Pack" on page 274.

- “Checking the Backup Battery” on page 275.

Checking the AC Adapter: You are here because the computer fails only when the AC Adapter is used.

- If the power problem occurs only when the port replicator is used, replace the replicator.
 - If the power-on indicator does not turn on, check the power cord of the AC Adapter for correct continuity and installation.
 - If the operational charge does not work, go to “Checking Operational Charging.”
1. Unplug the AC Adapter cable from the computer and measure the output voltage at the plug of the AC Adapter cable. See the following figure.



(16 - 10 V)

Pin	Voltage (V dc)
1	+14.5 to +17.0
2	Ground

- Replace the system board.
 - If the problem is not corrected, go to “Undetermined Problems” on page 290.
 - If the voltage is not correct, go to the next step.
2. Unplug the AC Adapter cable from the ac power outlet and wait five minutes or longer to allow the over-voltage protection circuit to be fully discharged and initialized.
 3. Plug the AC Adapter cable into the ac power outlet.
 4. Measure the output voltage of the AC Adapter.
 5. If the voltage is still not correct, replace the AC Adapter.

Note

An audible noise from the AC Adapter does not always indicate a defective adapter.

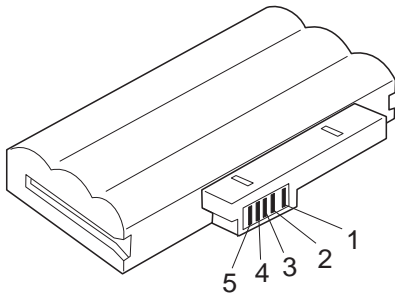
Checking Operational Charging: To check operational charging, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

Perform operational charging. If the battery status indicator does not turn on, remove the battery pack and leave it to return to room temperature. Reinstall the battery pack. If the charge indicator still does not turn on, replace the battery pack.

Checking the Battery Pack: Battery charging will not start until the Fuel-Gauge shows that less than 95% of the total power remains; with this condition the battery pack will charge to 100% of its capacity. This protects the battery pack from being over-charged or having a shortened life.

Do the following:

1. Power off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 1 (+) and 4 (-). See the following figure.



Terminal	Voltage (V dc) / Signal
1	+0 to +13.5
2	Send
3	Thermal
4	Ground (-)
5	Select

Note

Signal lines, not used in these steps, are used for communication between the system and the battery.

3. If the voltage is less than +11.0 V dc, the battery pack has been discharged. Recharge the battery pack. If the voltage is still less than +11.0 V dc after recharging, replace the battery.

Note

If the voltage of the battery pack is 0 V, it is not defective.

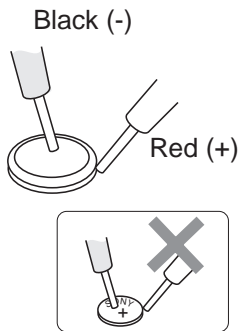
- If the voltage is more than +11.0 V dc, measure the resistance between battery terminals 3 and 4. The resistance must be 4 to 30 K ohm.

If the resistance is not correct, replace the battery pack. If the resistance is correct, replace the system board.

Checking the Backup Battery

- Power off the computer and unplug the AC Adapter from the computer.
- Turn the computer upside down.
- Remove the DIMM cover and backup battery (see "1010 Backup Battery" on page 298).
- Measure the voltage of the backup battery. See the following figure.

Note: Be careful not to measure the wrong side of the backup battery.



Wire	Voltage (V dc)
Red	+2.5 to +3.7
Black	Ground

- If the voltage is correct, replace the system board.
- If the voltage is not correct, the backup battery has been discharged. Replace the backup battery.
- If the backup battery discharges quickly after replacement, replace the system board.

Port Replicator Checkout

Use the following procedure to isolate a port replicator problem. A port replicator attaches to the system expansion connector at the bottom of the computer.

- Power off the computer.
- Remove the failing devices from the replicator.
- Unplug the AC adapter from the replicator, if attached.
- Remove the port replicator from the computer.

5. Reconnect the failing device directly to the computer. (If another device already connected to the computer, remove it first.)
6. Go to the “How to Run the Diagnostics” on page 292 and run the diagnostics.
7. If the advanced diagnostic device test does not find an error, suspect a problem with the port replicator of the system expansion bus.
8. Power off the computer and reconnect the port replicator.
9. Power on the computer and run the following advanced diagnostic tests:
 - Serial port test with the wrap plug installed on the replicator.
 - Parallel port test with the wrap plug installed on the replicator.
 - FDD-2 device test on the failing device with scratch diskette.
10. If diagnostic errors appear, replace the replicator or diskette drive attachment unit.
If the problem remains after the replacement, replace the system board.
11. If power problems appear only when using the replicator, replace the replicator.

Power Management Features

Three power management modes are provided by the computer to reduce power consumption and prolong battery power.

Standby Mode: When in standby mode the following occurs:

- The LCD backlight turns off.
- The hard disk motor stops.

Events that cause the computer to enter standby mode:

- Standby requested by the Fn key. (Fn+F3)
- No activity under **auto-standby** enabled by the ThinkPad Features program.

Events that cause the computer to exit or resume standby mode:

- (Resume) Any key operation.

Suspend Mode: When in suspend mode, the following, in addition to the four actions of standby mode, occur:

- The LCD is powered-off.
- The hard disk is powered-off.
- The CPU is stopped.

Notes

1. In the ThinkPad Features Program, the computer can be set to "Will not suspend even if LCD is closed."
2. When the computer is powered with ac power and is used with one of the communication PC cards, the computer enters *standby mode*; the PC card and application program remain active.
3. The computer cannot enter suspend mode while a communication link is running.

Events that cause the computer to enter suspend mode:

- Suspend mode is requested by the Fn key (Fn+F4).
- The LCD is closed.
- The specified time has elapsed from the last operation with the keyboard, mouse, hard disk drive, parallel connector, or diskette drive; or the AC Adapter is plugged in. The time is specified by **Suspend Timer** in the ThinkPad Features program.
- The battery condition is low. The battery power indicator blinks orange.
- Either the *PS2 OFF* or *PS2 SUSpend* command is set in the ThinkPad Features program.

Events that cause the computer to exit or resume suspend mode:

- (Resume) The LCD is opened.
- (Resume) The real time clock alarm is signaled.
- (Resume) The ring indicator (RI) is signaled by a serial or PCMCIA device.
- (Resume) The Fn key is pressed.
- (Resume) An external keyboard key is pressed while operating with ac power.
- (Exit) Timer conditions are satisfied for entering hibernation mode.

Hibernation Mode: When in hibernation mode, the following occurs:

- The system status, RAM, VRAM, and setup data are stored on the hard disk.
- The system is powered-off.

Note

The computer cannot enter hibernation mode when the computer is powered with ac power and a communication PC card is used.

Events that cause the computer to enter hibernation mode:

- Hibernation mode is requested by the Fn key (Fn+F12).
- Timer conditions are satisfied in suspend mode.
- A critical low battery condition occurs.

- The *PS2 HIB*ernation command is set in the ThinkPad Features program.

Event that causes the computer to exit hibernation mode.

- The power-on switch is operated.

When power is turned on, the hibernation history in the boot record on the hard disk is recognized and system status is restored from the hard disk to resume operation.

Symptom-to-FRU Index

The Symptom-to-FRU Index lists the symptoms and errors and the possible causes. The most likely cause is listed first.

Note

Perform the FRU replacement or actions in the sequence shown in the "FRU/Action" columns. If a FRU does not solve the problem, put the original part back in the computer. Do not replace a non-defective FRU.

This index can also be used to help you decide which FRUs to have available when servicing a computer.

Numeric error codes show the errors detected in POST or system operation. In the following error codes, **X** can be any number.

If no codes are available, use narrative symptoms.

If the symptom is not listed, go to "Undetermined Problems" on page 290.

Note

For IBM devices not supported by diagnostic codes in the ThinkPad notebook computers, see the manual for that device.

Numeric Error Codes

Symptom / Error	FRU / Action in Sequence
10X 101: Interrupt failure. 102: Timer failure. 103: Timer interrupt failure. 104: Protected mode failure. 105: Last 8042 command not accepted. 107: NMI test failure. 108: Timer bus test failure. 109: Low meg-chip select test.	1. System Board

Symptom / Error	FRU / Action in Sequence
110 (Planar parity.)	<ol style="list-style-type: none"> 1. Go to “Memory Checkout” on page 269. 2. DIMM Card 3. The computer is attached to the expansion unit. 4. System Board
111 (I/O parity.)	<ol style="list-style-type: none"> 1. Go to “Memory Checkout” on page 269. 2. System Board
161 (Dead battery.)	<ol style="list-style-type: none"> 1. Go to “Checking the Backup Battery” on page 275. 2. Backup Battery 3. System Board
163 (Time and Date was not set.)	<ol style="list-style-type: none"> 1. Reseat the keyboard connector on the system board. 2. Set Time and Date. 3. System Board
173 (Configuration data was lost.)	<ol style="list-style-type: none"> 1. Reseat the keyboard connector on the system board. 2. Select OK in the error screen; then set the time and date. 3. Backup Battery 4. System Board
174 (Configuration error: Perform “Checking the Installed Devices List” on page 293 before changing any FRUs.)	<ol style="list-style-type: none"> 1. Check Device Configuration. 2. System Board 3. Diskette Drive Assembly 4. Hard Disk Drive Assembly
184 (POP check sum error.)	<ol style="list-style-type: none"> 1. Reset the POP (power-on password) in Easy-Setup.
190 (Depleted battery pack was installed when the power was on.)	<ol style="list-style-type: none"> 1. Go to “Checking the Battery Pack” on page 274.
191XX (PM initialization error.)	<ol style="list-style-type: none"> 1. System Board
195 (The configuration read from the hibernation area does not match the actual configuration.)	<ol style="list-style-type: none"> 1. Check if the configuration was changed. For example, check if the DIMM card is added.

Symptom / Error	FRU / Action in Sequence
196 (Read error occurred in the hibernation area of the HDD.)	<ol style="list-style-type: none"> 1. Run the hard disk drive test. 2. Hard Disk Drive
1XX	1. System Board
2XX 201: Memory data error. 202: Memory line error 00–15. 203: Memory line error 16–23. 205: Memory test failure on on-board memory. 221: ROM to RAM remap error.	<ol style="list-style-type: none"> 1. Go to “Memory Checkout” on page 269. 2. DIMM Card 3. System Board
301, 303, 304, 305, 3XX (301: Keyboard error.)	<ol style="list-style-type: none"> 1. Go to “Keyboard/Auxiliary Input Device Checkout” on page 270. 2. Keyboard 3. External Numeric Keypad 4. External Keyboard 5. Keyboard/Mouse Cable 6. System Board
601, 6XX (601: Diskette drive or controller error.)	<ol style="list-style-type: none"> 1. Go to “Diskette Drive Test” on page 271. 2. Diskette Drive Assembly 3. Diskette 4. System Board
602 (Diskette read error.)	<ol style="list-style-type: none"> 1. Go to “Diskette Drive Test” on page 271. 2. Diskette 3. Diskette Drive Assembly
604 (Unacceptable ID was read from the diskette drive.)	<ol style="list-style-type: none"> 1. Go to “Diskette Drive Test” on page 271. 2. Diskette Drive Assembly 3. System Board
11XX 1101: Serial_A test failure.	<ol style="list-style-type: none"> 1. Serial Device 2. Communication Cable 3. System Board
12XX 1201: Serial_B test failure.	1. System Board (Infrared)

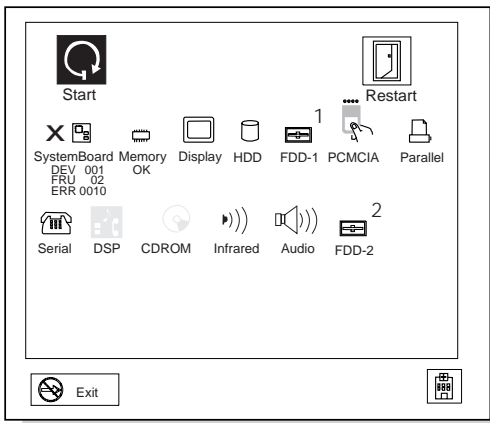
Symptom / Error	FRU / Action in Sequence
17XX 1701: Hard disk controller failure. 1780, 1790: Hard disk 0 error. 1781, 1791: Hard disk 1 error.	<ol style="list-style-type: none"> 1. Hard Disk Drive 2. System Board
24XX (2401: System board video error.)	<ol style="list-style-type: none"> 1. System Board
808X 8081: PCMCIA presence test failure. (PCMCIA revision number also checked.) 8082: PCMCIA register test failure.	<ol style="list-style-type: none"> 1. PCMCIA Slot Assembly 2. PCMCIA Device 3. System Board
860X (Pointing device error when TrackPoint III is disabled.) 8601: System bus error—8042 mouse interface. 8602: External mouse error. 8603: System bus error or mouse error.	<ol style="list-style-type: none"> 1. External Mouse 2. External Keyboard 3. System Board
861X (Pointing device error when TrackPoint III is enabled.) 8611: System bus error—I/F between 8042 and IPDC. 8612: TrackPoint error. 8613: System board or TrackPoint error.	<ol style="list-style-type: none"> 1. Reseat the keyboard cable on the system board. 2. Keyboard 3. External Mouse 4. System Board
I9990301 I9990302 I9990305 I9990301: Hard disk error. I9990302: Invalid hard disk boot record. I9990305: No bootable device.	<ol style="list-style-type: none"> 1. Check that the operating system is installed in the HDD. If not, install the operating system. 2. Reseat the boot device. 3. Check the startup sequence for the correct boot device. 4. Check that the operating system has no failure and is installed correctly.
I9990303 (Bank-2 flash ROM check sum error.)	<ol style="list-style-type: none"> 1. System Board

Symptom / Error	FRU / Action in Sequence
Other codes not listed above	1. Go to “Undetermined Problems” on page 290.

Diagnostic Error Codes



If an error is detected, the following appears:










- Large X on the left side of the device icon.
- Device ID (three digit)
- Error code (two digit)
- FRU code (four digit)



The device ID and error code are used to indicate the detail portion of the FRU which caused the error. If replacing a FRU does not correct the problem, see the device ID or error code from the previous failure. If they have changed, the cause might be because the new FRU is defective or that the FRU was incorrectly installed.

Device ID: If an error is detected by the diagnostic tests, a three digits device ID is displayed. The device ID indicates suspected device.

Icon	Device ID	Suspected Device
 SystemBoard	001	System Board
	003	Keyboard
	007	Math Coprocessor
	086	Pointing Device
 Memory	002	Memory

Icon	Device ID	Suspected Device
 Display	050	Display
 HDD	017	Hard Disk Drive
 1 FDD-1	006	External Diskette Drive or FDD Connector of the computer
 2 FDD-2	066	External Diskette Drive or FDD Connector of the port replicator
 PCMCIA	080	PCMCIA
 Parallel	009	Parallel
 Serial	011, 012	Serial
 Infrared	103	IR
 Audio	150	Audio (ESS)

FRU Codes: If an error is detected by the diagnostic tests, a four-digit FRU code is displayed. The FRU code indicates two suspected FRUs. Replace the FRU that is indicated by the **two leftmost digits** first, then replace the FRU that indicated **two rightmost digits**. No FRU is assigned to code 00. If only one FRU is suspected, the other FRU code is filled with zeros. See the reference page before replacing the FRU.

FRU Code	FRU
10	System Board
30	Reserved
32	External Keyboard
33	External Mouse
40	LCD Assembly
45	External CRT

FRU Code	FRU
50	<ol style="list-style-type: none"> 1. Reseat the Diskette Drive (FDD-1) 2. Diskette Drive (FDD-1)
51	<ol style="list-style-type: none"> 1. Reseat the Diskette Drive (FDD-2) 2. Diskette Drive (FDD-2)
60	<ol style="list-style-type: none"> 1. Reseat the Hard Disk Drive 2. Hard Disk Drive
72	PCMCIA Slot Assembly

If the problem still remains after replacement of the FRUs, go to "Undetermined Problems" on page 290.

Beep Symptoms

Symptom / Error	FRU / Action in Sequence
Continuous beeps.	System Board
One beep and a blank, unreadable, or flashing LCD.	<ol style="list-style-type: none"> 1. Reseat the LCD connector. 2. LCD Assembly 3. System Board
One beep, and the message "Unable to access boot source."	<ol style="list-style-type: none"> 1. Boot device 2. System Board
One long, two short beeps and a blank or unreadable LCD.	<ol style="list-style-type: none"> 1. System Board 2. LCD Assembly
One long beep followed by four short beeps each time the power switch is operated. (System cannot power-on due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery.
One beep every second. (System is shutting down due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery (allows system to complete shutdown before changing the battery).
Two short beeps with error codes.	POST error. See "Numeric Error Codes" on page 279.
Two short beeps with blank screen.	System Board

No Beep Symptoms

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator not on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. Go to “Power Systems Checkout” on page 272. 2. System Board 3. Power sources
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System Board
No beep, power-on indicator on, and a blinking cursor only during POST.	<ol style="list-style-type: none"> 1. System Board
No beep during POST but system runs correctly.	<ol style="list-style-type: none"> 1. Turn the volume up and check the speaker. 2. Speaker 3. System Board

LCD-Related Symptoms

Important

The LCD for the notebook computer contains over 921 000 thin-film transistors (TFTs). A small number of missing, discolored, or lighted dots (on all the time) is characteristic of TFT LCD technology, but excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of dots satisfies the following condition:

- The number of missing, discolored, or lighted dots in any background is 21 or more.

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System Board
<ul style="list-style-type: none"> • LCD backlight not working, or • LCD too dark, or • LCD brightness cannot be adjusted, or • LCD contrast cannot be adjusted. 	<ol style="list-style-type: none"> 1. Reseat the LCD connectors. 2. LCD Assembly
<ul style="list-style-type: none"> • LCD screen unreadable, or • Characters missing pels, or • Screen abnormal, or • Wrong color displayed. 	<ol style="list-style-type: none"> 1. See important note for “LCD-Related Symptoms.” 2. Reseat all LCD connectors. 3. LCD Assembly 4. System Board

Symptom / Error	FRU / Action in Sequence
LCD has extra horizontal or vertical lines displayed.	LCD Assembly

Keyboard/TrackPoint III-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Keyboard (one or more keys) does not work.	<ol style="list-style-type: none"> 1. Reseat the keyboard cable on the system board. 2. Keyboard 3. System Board
TrackPoint III does not work.	<ol style="list-style-type: none"> 1. Reseat the keyboard cable on the system board. 2. Go to "TrackPoint III Checkout" on page 271. 3. Keyboard 4. System Board
Pointer moves automatically or does not work correctly.	<ol style="list-style-type: none"> 1. See "TrackPoint III Checkout" on page 271.

Indicator-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly.	<ol style="list-style-type: none"> 1. System Board
Battery power status indicator blinks from green, yellow, to orange.	<ol style="list-style-type: none"> 1. Check that a correct battery is installed. 2. Battery Pack 3. System Board

Power-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Power shuts down during operation.	<ol style="list-style-type: none"> 1. Go to "Power Systems Checkout" on page 272. 2. Battery Pack 3. Remove the battery pack and let it cool for two hours. 4. Power sources
The system will not power-off. (See "Power Shutdown Switch" on page 267.)	<ol style="list-style-type: none"> 1. Press the power shutdown switch. 2. System Board

Function-Related Symptoms

Symptom / Error	FRU / Action in Sequence
The system will not suspend or resume by opening or closing the LCD.	<ol style="list-style-type: none"> 1. Go to “Suspend Mode” on page 276, and check that the computer can enter suspend mode. 2. Boot an operating system and press Fn+F4. If the computer enters suspend mode, suspect that the application program is not working properly. 3. LCD Assembly 4. System Board
Battery Fuel-Gauge does not go higher than 90%.	Go to “Checking the Battery Pack” on page 274 and see the note.
Memory count (size) appears different from actual size.	Go to “Memory Checkout” on page 269.
System configuration does not match the installed devices.	Go to “Checking the Installed Devices List” on page 293.
System hangs intermittently.	Go to “Intermittent Problems” on page 289.

Peripheral-Device-Related Symptoms

Symptom / Error	FRU / Action in Sequence
External display does not work correctly.	1. See “External Display Self-Test” in “Common Devices Checkout” section.
Printer problems.	<ol style="list-style-type: none"> 1. Run Printer Self-test. 2. Parallel Port Device 3. Cable 4. System Board
Serial or parallel port device problems.	<ol style="list-style-type: none"> 1. Device 2. Device Cable 3. System Board

Infrared-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Unable to communicate using the Infrared (IR) Port.	<ol style="list-style-type: none">1. Make sure the setup for the IR is correct.2. Make sure there are no fluorescent lights near the computer. The computer may receive optical noise from the fluorescent light.3. Run the advanced diagnostic test. If an error occurs and a FRU code is displayed, replace the parts shown by the FRU code.

Other Symptoms

Symptom / Error	FRU / Action in Sequence
Errors occur only when Port Replicator is used.	See "Port Replicator Checkout" on page 275.
PCMCIA slot pin is damaged.	PCMCIA Slots Assembly

Note

If you cannot find a symptom or error in this list and the problem remains, see "Undetermined Problems" on page 290.

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should only be considered when a recurring problem exists.

When analyzing the intermittent problem, do the following:

1. Run the advanced diagnostic test for the system board in loop mode at least 10 times.
2. If no error is detected, do **not** replace any FRUs.
3. If any error is detected, replace the FRU shown by the FRU code. Rerun the test to verify that no more errors exist.

Undetermined Problems

You are here because the diagnostic tests did not identify which adapter or device failed, installed devices are incorrect, a short circuit is suspected, or the system is inoperative. Follow the procedures below to isolate the failing FRU (do not isolate non-defective FRUs).

Verify that all attached devices are supported by the computer.

Verify that the power supply being used at the time of the failure is operating correctly. (See "Power Systems Checkout" on page 272.)

1. Power off the computer.
2. Check the cables, wires, and connectors for short circuits and open circuits. Visually check them for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices.
 - a. Non-IBM devices
 - b. Devices attached to the expansion bus connector
 - c. Printer, mouse, and other external devices
 - d. Battery pack
 - e. Hard disk drive
 - f. Diskette drive
 - g. DIMM card
 - h. PC Cards
4. Power on the computer.
5. Determine if the problem has changed.
6. If the problem does not occur again, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRUs one at a time. Do not replace a non-defective FRU.
 - LCD assembly
 - System board

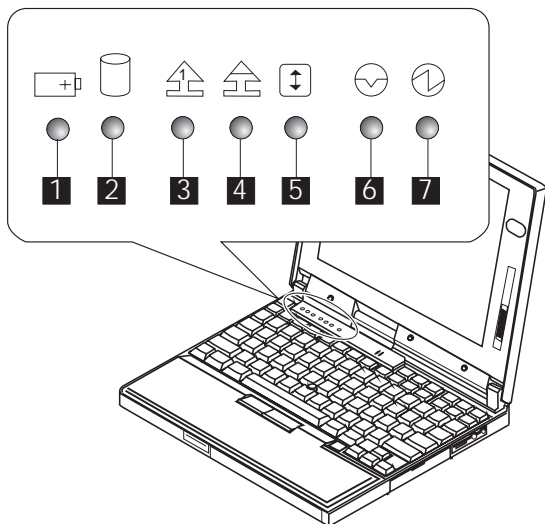
Related Service Procedures








This section provides information about the following:

- “Status Indicators”
- “How to Run the Diagnostics” on page 292
- “Error Log” on page 293
- “Checking the Installed Devices List” on page 293
- “How to Run a Low-Level Format” on page 294
- “PC Test Card LED” on page 294
- “Fn Key Combinations” on page 295
- “Keyboard/Auxiliary Input Device Checkout” on page 270

Status Indicators

The system status indicators show the current computer status in different colors (green, yellow, and orange).



Symbol	Color	Meaning
1 Battery 	Green	Battery fully charged
	Orange	Battery charging
	Blinking orange	Battery needs charging
2 Hard Disk In Use 	Orange	Data is read from or written to the hard disk drive.
3 Numeric Lock 	Green	Numeric keypad on the keyboard is enabled.
4 Caps Lock 	Green	Caps lock mode is enabled.
5 Scroll Lock 	Green	Arrow keys can be used as screen-scroll function key.
6 Suspend Mode 	Green	Suspend mode
	Blinking Green	Entering suspend mode
7 Power On 	Green	Power on

How to Run the Diagnostics

Use either the TrackPoint III or the cursor move keys to interact with the tests. The Enter key works the same as selecting the OK icon to reply OK.

Note

The following tools are required:

FDD: Erasable 2HD diskette
Parallel: Wrap plug (P/N 72X8546)
Serial: Wrap plug (P/N 72X8546)
PCMCIA: PC Test Card (P/N 35G4703)

1. Press and hold the F1 key; then power on the computer. Hold the F1 key down until the Easy-Setup screen appears.
2. Select **Test** and press Enter.
3. Select a device and press Enter to run the test.
4. The test progress screen appears.
5. **OK** appears when the test ends without any errors.
6. Start the **Advanced Diagnostic test** by pressing **Ctrl+A** on the basic diagnostic menu screen.

7. Select **Tool** to install the tools.
8. Select a device, press the **Spacebar** and install the tool. Multiple devices can be selected by repeating this step.
- A ✓ mark appears beside the selected devices.
9. Select **OK** and press Enter if the selection is OK.
10. Select a device and press Enter to start the tests.
11. Select **Test All** to test all devices.
12. Select **Loop Test** to run the tests in a repeated loop.

A loop option menu appears in which a device loop or all-device loop can be selected. Select a device and press the **Spacebar** to select a device. Repeat this step to select multiple devices. Press Enter to start the diagnostic loop. If no device is selected, all device tests are looped.

13. To exit the loop, keep pressing **Ctrl+Pause** until the test exits. A beep sounds to notify that the exit interrupt is sensed by the test program.

Error Log

Diagnostic errors are printed on the printer that is attached to the parallel port when the error is detected. The error is also logged in the system memory.

Do the following to display the errors.

1. End the test, if it is running.
2. Press **Ctrl+A** to select the advanced diagnostic mode.
3. Press **Ctrl+E**.
4. The error log appears.
5. To exit the screen, select the cancel icon or press Esc.

The error log is not saved when the system is powered-off.

Checking the Installed Devices List

If a device is installed but the icon appears in a gray shade rather than a dark shade on the basic diagnostics screen, the device is defective. Reseat the device connectors. If the symptom remains, replace the device or the system board. If needed, adjust the contrast control to clearly distinguish the shades of the icon.

If a device that is not installed appears in a dark shade (for example, FDD-2 appears in a dark shade when *NO* second FDD is installed), do the following:

1. Replace the **first** device in the configuration, such as an FDD-1.
2. If the problem remains, replace the system board.

The Parallel, and Serial icons are always displayed in a dark shade because the icons represent subsystems of the system board and not the attachment of the devices.

The FDD-1 icon represent the **first** drive in the system configuration for each type of device. For ThinkPad 560, FDD-1 represents an external diskette drive attached through the external diskette drive connector. Similarly, the FDD-2 icon represent the **second** drive, usually attached through a port replicator.

How to Run a Low-Level Format

Do the following to format the hard disk.

Warning: Make sure the drive address to be formatted is correct. This procedure will erase all information on the disk.

1. Power off the computer.
2. Insert the **ThinkPad hardware maintenance diskette Ver 1.20** into diskette drive **A** and power on the computer.
3. Select **Format the hard disk** from the main menu.
4. Select the drive from the menu.
5. Follow the instructions on the screen.

PC Test Card LED

The green LED on the PC test card turns on when the PCMCIA test is running. If the LED does not turn on, check that the card is installed correctly by reseating the card. If it still does not turn on after it is reseated, try using another slot for the test. If the LED still does not turn on and the test fails, replace the FRU shown by the diagnostic error code.

Fn Key Combinations

The following table shows the **Fn** key and function key combinations and their corresponding functions.

The Fn key works independently from the operating system. The operating system obtains the status through the system management interface to control the system.

Fn +	Description
F1	Reserved
F2	Fuel-Gauge display ON/OFF
F3	Standby mode invocation
F4	Suspend mode invocation
F5	Reserved
F6	Reserved
F7	LCD/CRT display switching
F8	Reserved
F9	Reserved
F10	Reserved
F11	Power management mode switching (Toggles High Power, Intelligent, Economy)
F12	Hibernation invocation

Product Overview (560)

The following table shows an overview of the system features.

Feature	Description
Processor	<ul style="list-style-type: none">• Intel Pentium 100 MHz• Intel Pentium 120 MHz• Intel Pentium 133 MHz
Bus Architecture	<ul style="list-style-type: none">• PCI Bus
Memory (Standard)	8MB (on the system board)
Memory (Option)	<ul style="list-style-type: none">• 8MB, 16MB, 32MB DIMM card (max. 40MB)
CMOS RAM	114 Bytes
VGA Video	<ul style="list-style-type: none">• 11.3-inch, 256 colors, 800×600 pixel DSTN color LCD• 12.1-inch, 64K colors, 800×600 pixel TFT color LCD
Diskette Drive (External)	<ul style="list-style-type: none">• 1.44MB (2-mode), 3.5-inch• 1.44MB (3-mode), 3.5-inch, for Japan
Hard Disk Drive	<ul style="list-style-type: none">• 810MB, 2.5-inch, IDE interface• 1.08GB, 2.5-inch, IDE interface• 2.11GB, 2.5-inch, IDE interface
I/O Port	<ul style="list-style-type: none">• Headphone• Microphone• Port replicator
Audio	<ul style="list-style-type: none">• 16-bit Audio• Internal speaker• Internal microphone• Mechanical volume
Infrared Transfer	<ul style="list-style-type: none">• IrDA** 1.0
PCMCIA	<ul style="list-style-type: none">• One Type-III or two Type-II

FRU Removals and Replacements

This section contains information about removals and replacements.

- Do not damage any part. Only certified and trained personnel should service the computer.
- The arrows in the “Removals and Replacements” section show the direction of movement to remove a FRU, or to turn a screw to release the FRU. The arrows are marked in numeric order, in square callouts, to show the correct sequence of removal.
- When other FRUs must be removed before removing the failing FRU, they are listed at the top of the page.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See “Locations” for internal cable connections and arrangement information.
- When replacing a FRU, use the correct screw size as shown in the procedures.

Safety Notice 1: Translation on page 8

Before the computer is powered-on after FRU replacement, make sure all screws, springs, or other small parts, are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.

Safety Notice 3: Translation on page 10

The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations.

Safety Notice 8: Translation on page 14

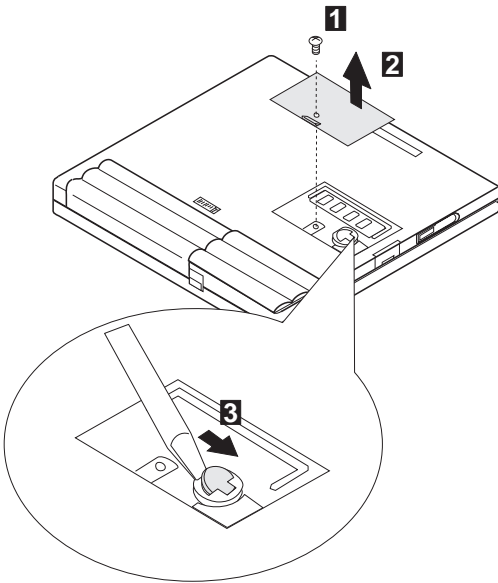
Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.

1010 Backup Battery

Safety Notice 4: Translation on page 11

The lithium battery can cause a fire, explosion, or severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

Turn the computer upside down.

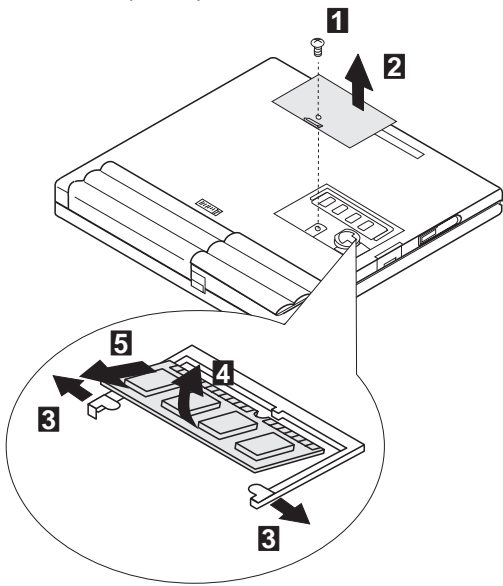


Step	Location (Quantity)	Length
1	DIMM Cover (1)	6 mm

Note: Make sure you use the correct screw.

1020 DIMM Card (If installed)

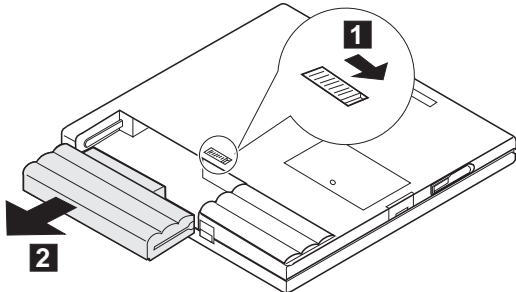
Turn the computer upside down.



Step	Location (Quantity)	Length
1	DIMM Cover (1)	6 mm
Note: Make sure you use the correct screw.		

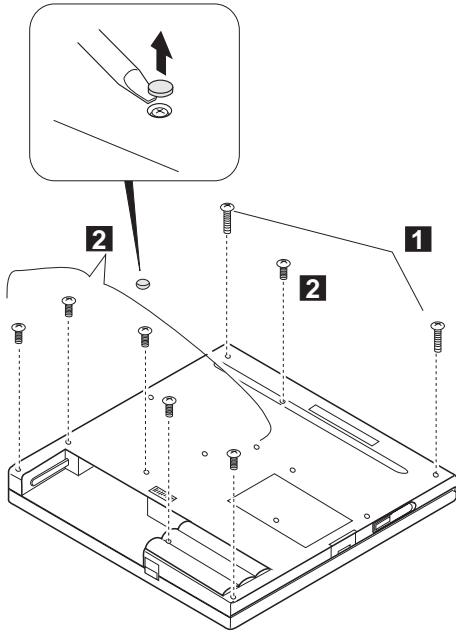
1030 Battery Pack

Turn the computer upside down.



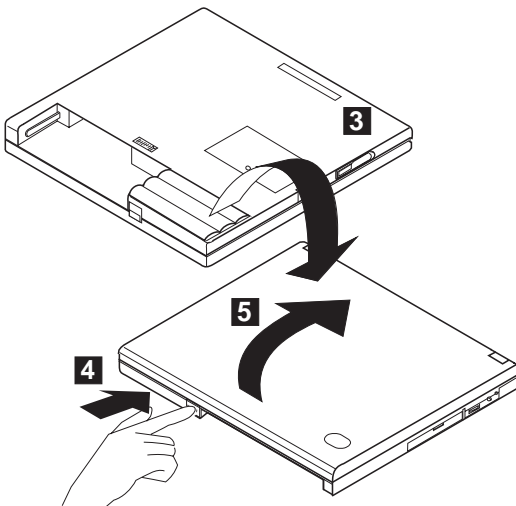
1040 Frame

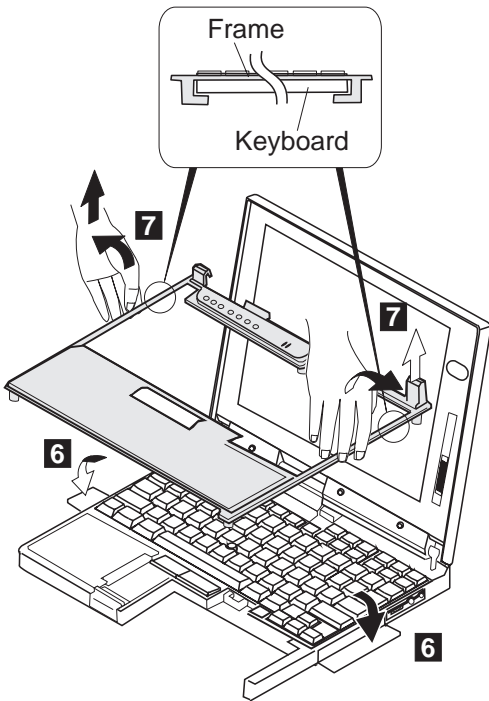
- Battery Pack (1030)



Step	Location (Quantity)	Length
1	Base Cover (2)	12 mm
2	Base Cover (6)	6 mm

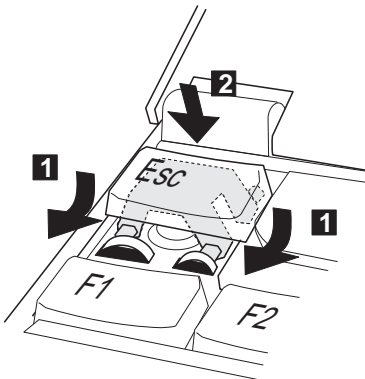
Note: Make sure you use the correct screw.





Note

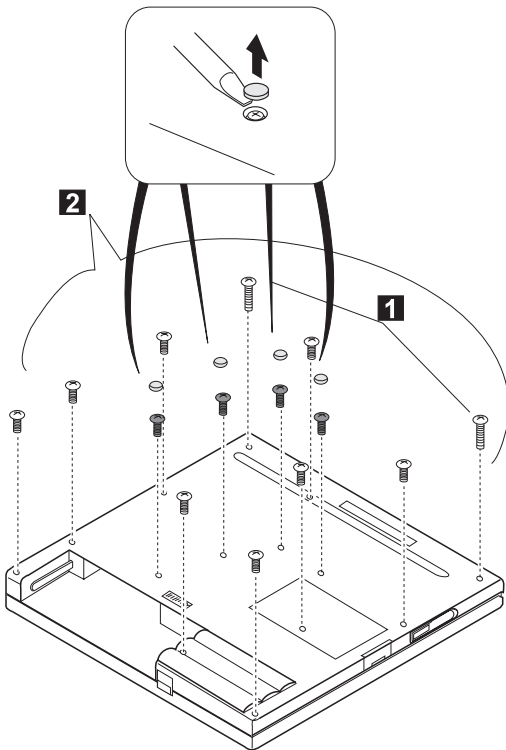
1. Be careful not to remove the **Esc** key when you remove the frame. If **Esc** key is removed, replace the key as shown.



2. When replacing the frame, check whether the click buttons of the TrackPoint III can be pressed correctly.
If the frame is not in place, the click buttons do not work.

1050 Keyboard Unit

- Battery Pack (1030)



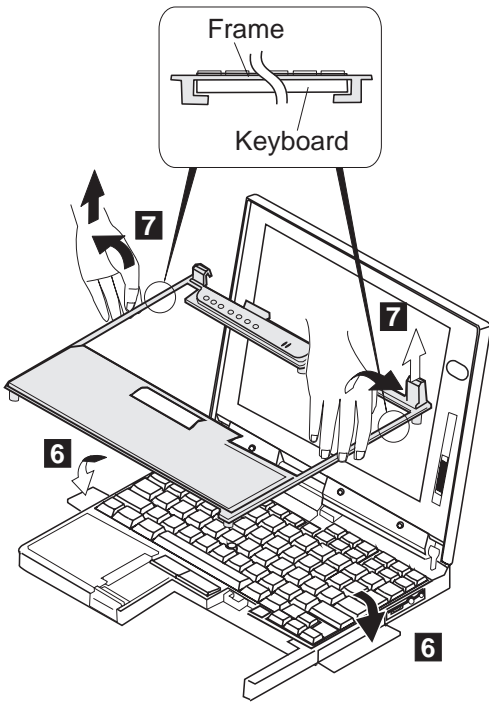
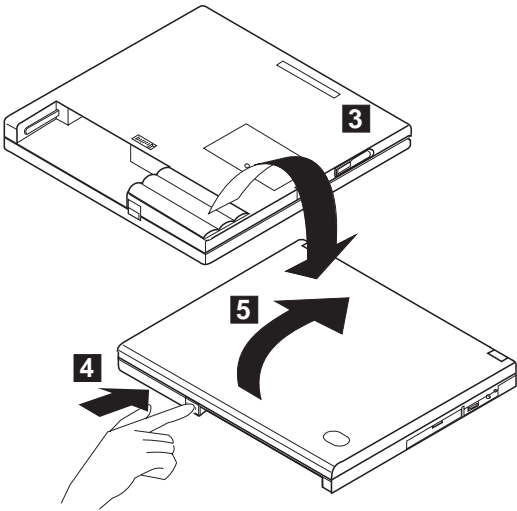
Step	Location (Quantity)	Length
1	Base Cover (2)	12 mm
2	Base Cover (12)	6 mm

Note: Make sure you use the correct screw.

Note

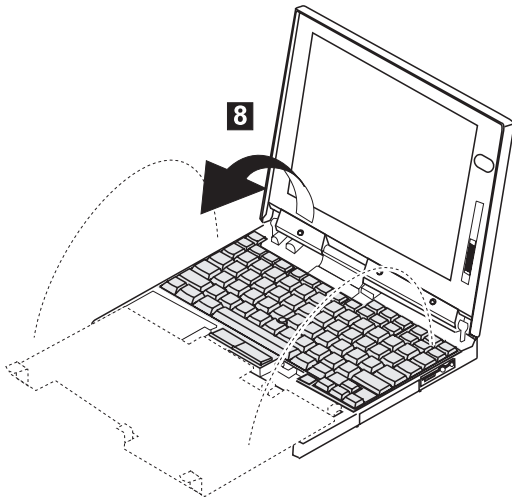
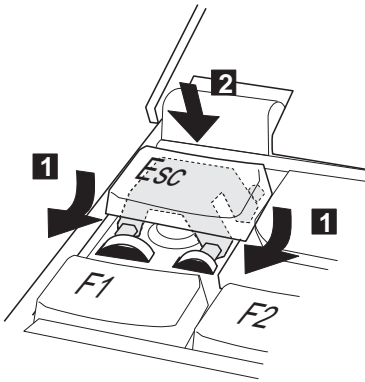
When replacing the frame, first replace the middle four screws that shown in black in the figure; then check whether the click buttons of the TrackPoint III can be pressed correctly.

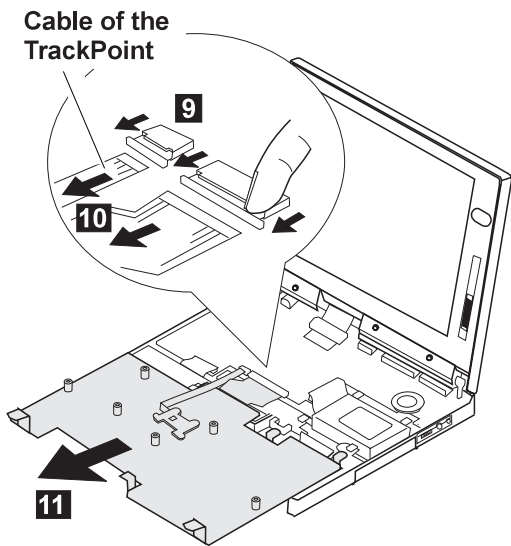
If the frame is not in place, the click buttons do not work.



Note

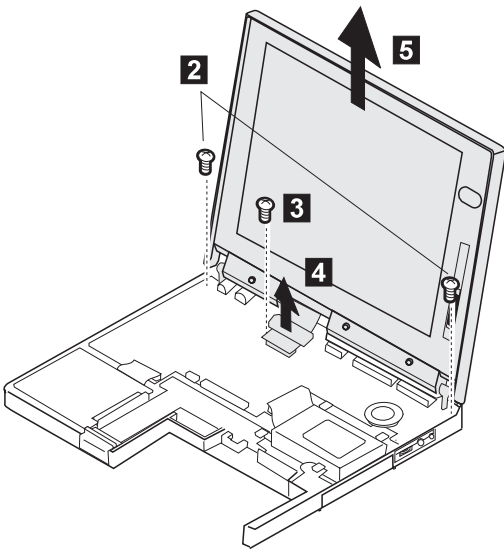
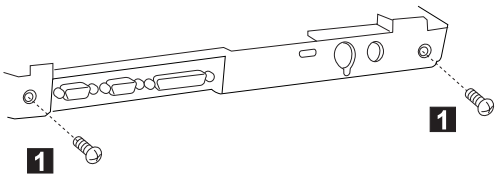
Be careful not to remove the **Esc** key when you remove the frame. If **Esc** key is removed, replace the key as shown.





1060 LCD Assembly

- Battery Pack (1030)
- Keyboard Unit (1050)

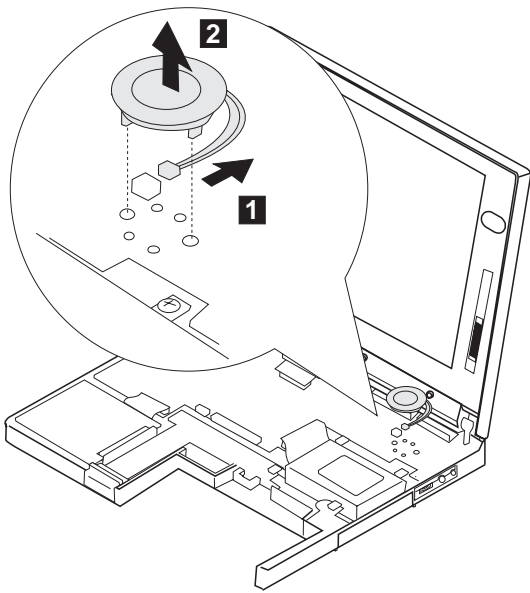


Step	Location (Quantity)	Length
1	Base Cover (2)	4 mm
2	LCD Assembly (2)	6 mm
3	LCD Cable (1)	4 mm

Note: Make sure you use the correct screw.

1070 Speaker

- Battery Pack (1030)
- Keyboard Unit (1050)



1080 Hard Disk Drive

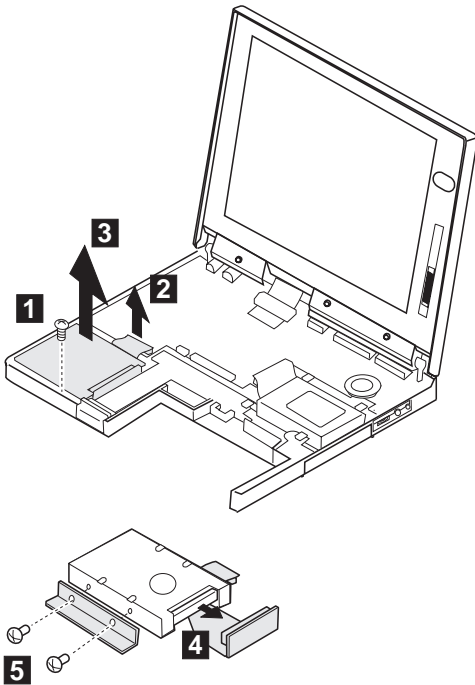
Warning

Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard disk drive, have the user make a backup copy of all the information on the hard disk. Never remove the hard disk drive while the system is operating or is in suspend mode.

Note

Remove the hard disk drive exactly as shown in the figure. Do not apply any extra force to the hard disk drive when removing it.

- Battery Pack (1030)
- Keyboard Unit (1050)



Step	Location (Quantity)	Length
1	HDD Bracket (1)	6 mm
5	Hard Disk Drive (2)	3 mm

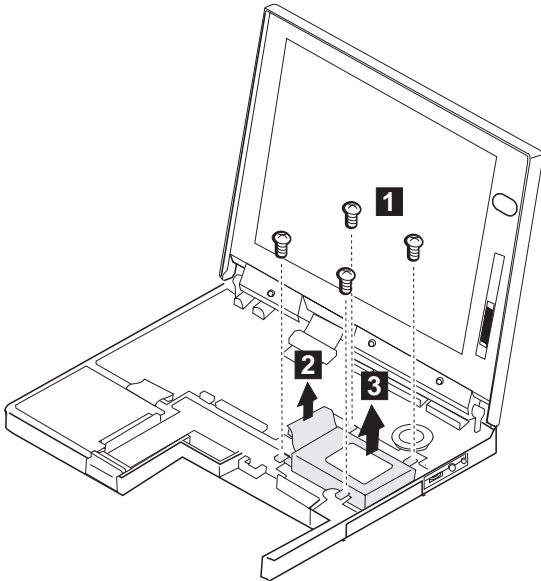
Note: Make sure you use the correct screw.

1090 PCMCIA Slot Assembly

- Battery Pack (1030)
- Keyboard Unit (1050)

Note

Before removing and replacing the PCMCIA slot assembly, make sure that the PCMCIA cards are removed and the eject levers are not sticking out.



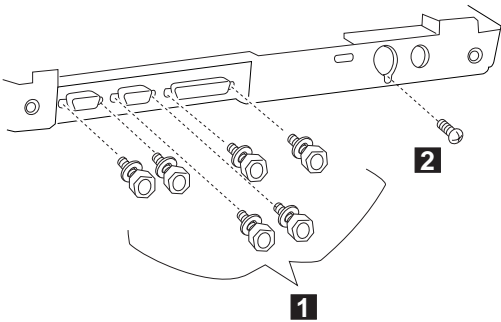
Step	Location (Quantity)	Length
1	PCMCIA Slot Assembly (4)	6 mm
Note: Make sure you use the correct screw.		

1100 System Board

- DIMM Card (If installed) (1020)
- Battery Pack (1030)
- Keyboard Unit (1050)
- LCD Assembly (1060)
- Speaker (1070)
- Hard Disk Drive (1080)
- PCMCIA Slot Assembly (1090)

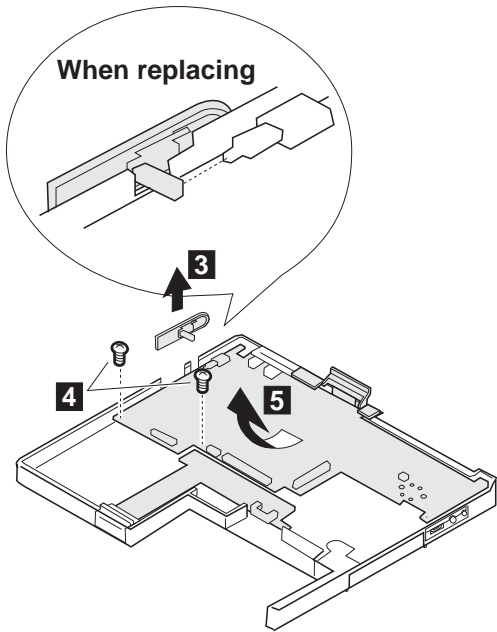
Notes

- The system unit serial number must be restored when the system board is replaced. To restore the system unit serial number, select the option "Set system identification" on the maintenance diskette. The flash ROM on the system board contains the vital product data (VPD), that is, the system unit serial number, system board system number, and other computer-unique data.
- Do not power off the computer when restoring the VPD. The system unit serial number label is attached to the base cover.



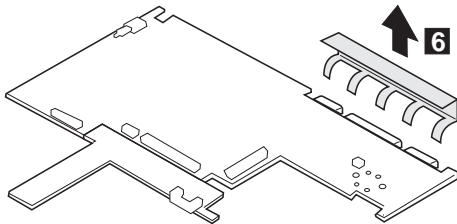
Step	Location (Quantity)	Length
1	Base Cover (6)	4 mm (Hex)
2	Base Cover (1)	3 mm

Note: Make sure you use the correct screw.



Step	Location (Quantity)	Length
4	System Board (2)	4 mm

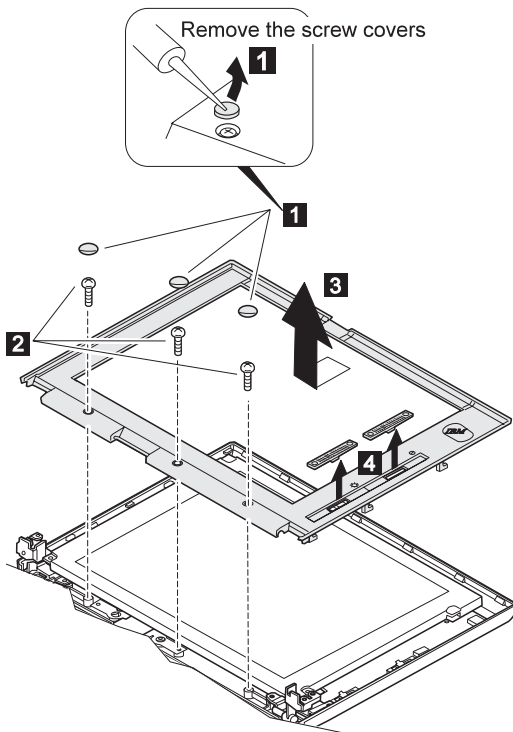
Note: Make sure you use the correct screw.



1120 LCD Front Cover

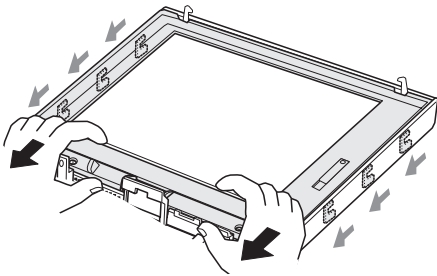
Important

The LCD for the notebook computer contains over 921,000 thin-film transistors (TFTs). A small number of missing, discolored, or constantly lighted dots is characteristic of TFT LCD technology, but excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of missing, discolored, or lighted dots in any background is 21 or more.



Notes:

1. For the TFT LCD, the slide knob is one in step **4**.
2. The LCD front cover has several latches. Release the latches as shown.

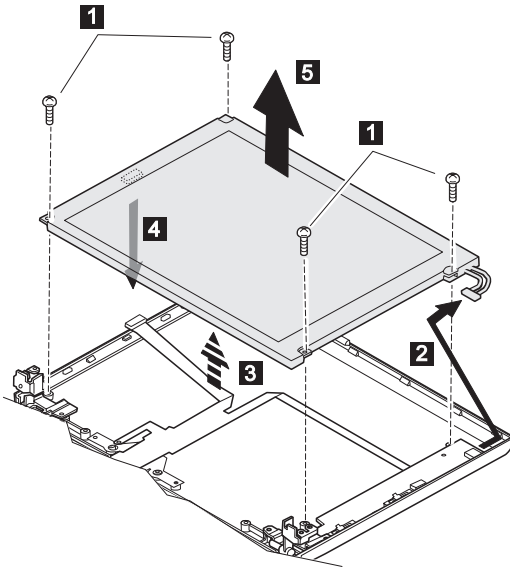


Step	Location (Quantity)	Length
2	LCD Front Cover (3)	M 2.6 x 6mm, Flat head

1130 LCD Panel

- LCD Front Cover (1110)

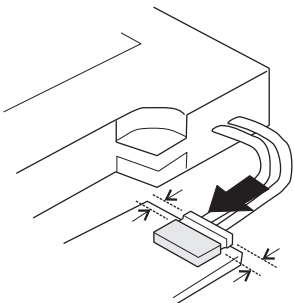
DSTN Panel



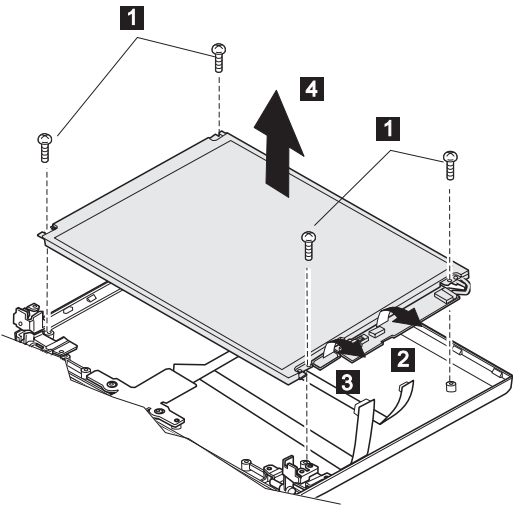
Step	Location (Quantity)	Length
1	LCD Panel (4)	M 2.5 x 6mm, Flat head

When replacing:

Connect the LCD connector to the inverter card by lining them up straight.



TFT Panel

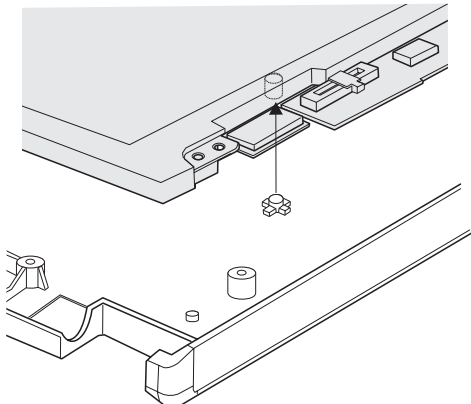


Step	Location (Quantity)	Length
1	LCD Panel (4)	M 2.5 x 6mm, Flat head

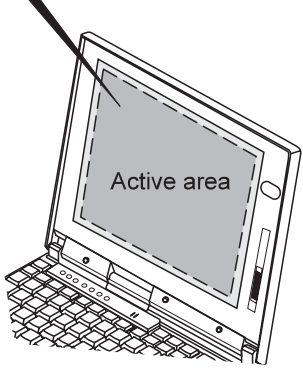
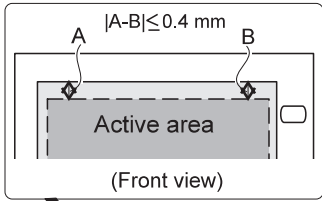
Notes:

There are two types of rear covers for the ThinkPad 560 TFT LCD unit. Make sure which type you have and follow the relevant information.

1. If there are bosses on the rear cover, put each boss into each hole of the LCD panel assembly.

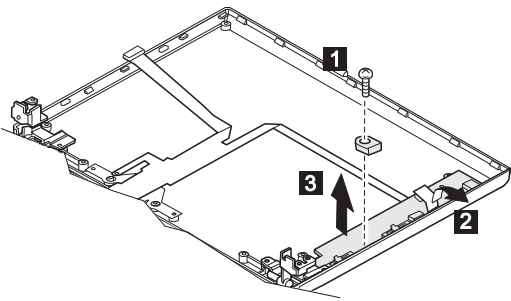


2. If there are no bosses on the rear cover, assemble the panel as shown in the following figure.



1140 Inverter Card (DSTN only)

- LCD Front Cover (1120)
- LCD Panel (1130)



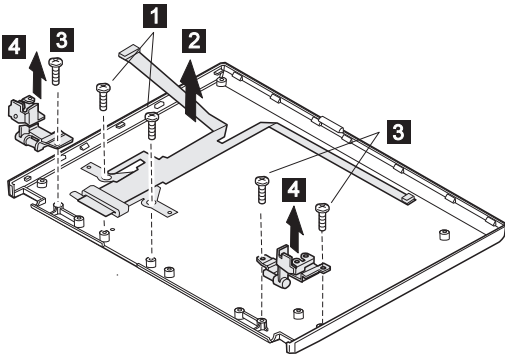
Step	Location (Quantity)	Length
1	Hinges (1)	M 2.5 x 6mm, Flat head

1150 LCD Cable / Hinges

- DIMM Card (If installed) (1020)
- Battery Pack (1030)
- Keyboard Unit (1050)
- LCD Assembly (1060) file
- LCD Front Cover (1120)
- LCD Panel (1130)
- Inverter Card (DSTN only)(1140)

DSTN

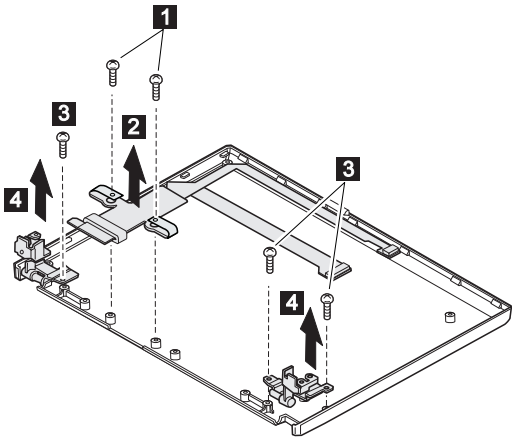
- **1 2** : LCD cable
- **3 4** : Hinges



Step	Location (Quantity)	Length
1	LCD Cable (2)	M 2.5 x 6mm, Flat head
3	Hinges (3)	M 2.5 x 6mm, Flat head

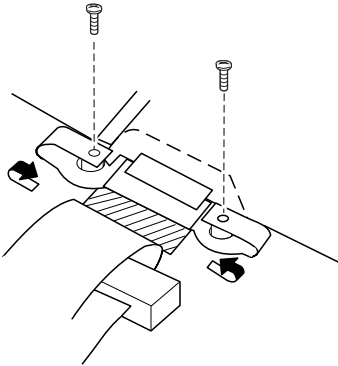
TFT

- **1 2** : LCD cable
- **3 4** : Hinges



When replacing:

See the following figure when replacing the LCD cable.

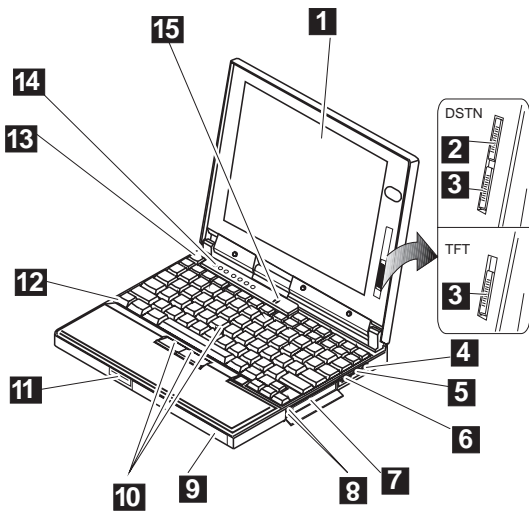


Step	Location (Quantity)	Length
1	LCD Cable (2)	M 2.5 x 6mm, Flat head
3	Hinges (3)	M 2.5 x 6mm, Flat head

Locations

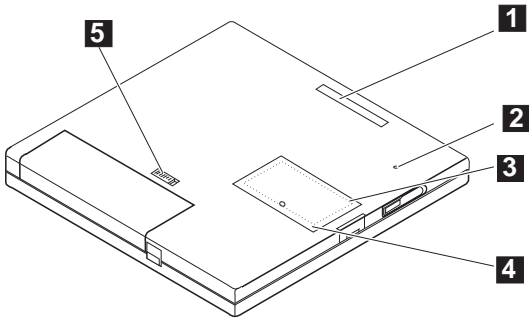
Front View

- 1** LCD
- 2** Contrast Control
- 3** Brightness Control
- 4** Headphone Jack
- 5** Microphone/Line-In Jack
- 6** Volume Control
- 7** PCMCIA Slots
- 8** PC Card Eject Buttons
- 9** Battery Pack
- 10** TrackPoint III
- 11** LCD Latch
- 12** Fn Key
- 13** Keyboard
- 14** Indicator Panel
- 15** Built-In Microphone



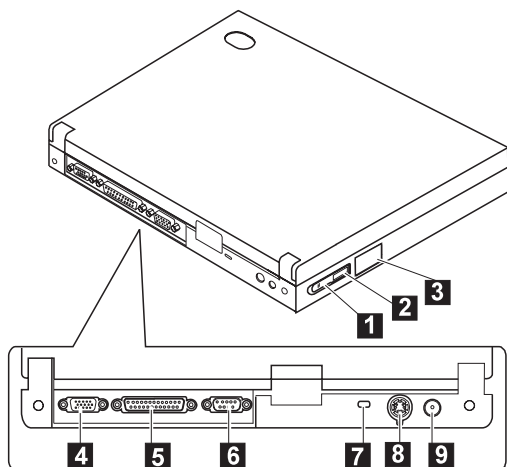
Bottom View

- 1** System-Expansion Connector
- 2** Power Shutdown Switch
- 3** Memory Slot
- 4** Memory-Slot Cover
- 5** Battery Pack Latch



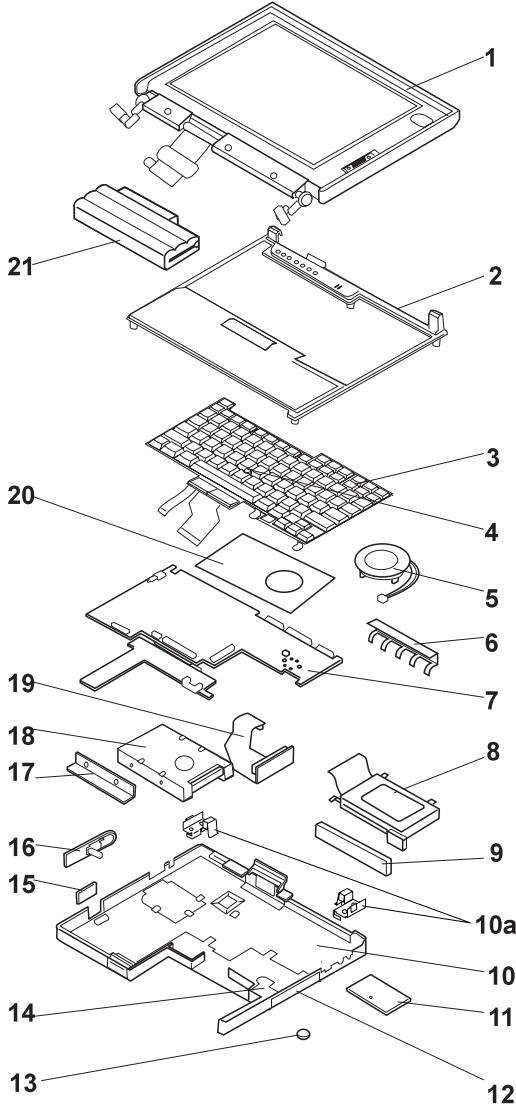
Rear View

- 1** Power Switch
- 2** IR Port
- 3** External Diskette Drive Connector
- 4** External Monitor
- 5** Parallel Connector
- 6** Serial Connector
- 7** Security Keyhole
- 8** External-Input-Device Connector
- 9** Power Jack



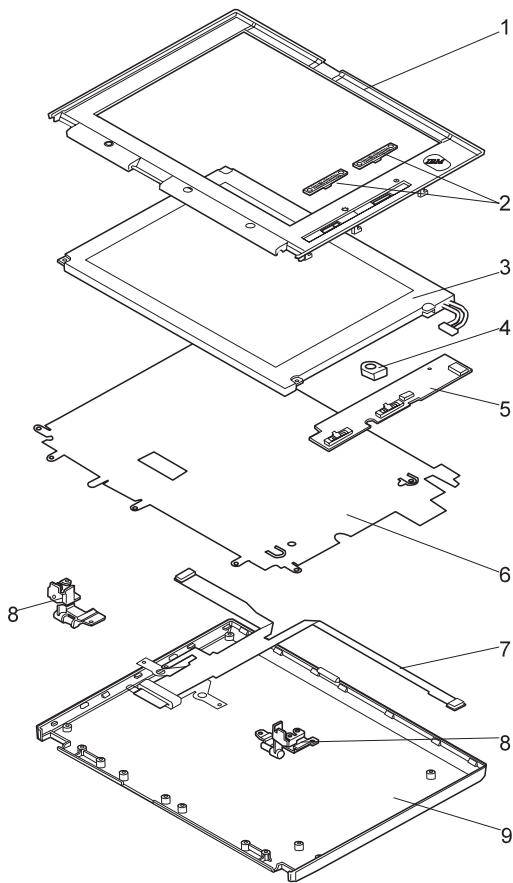
Notes

Parts Listing 560 (2640)



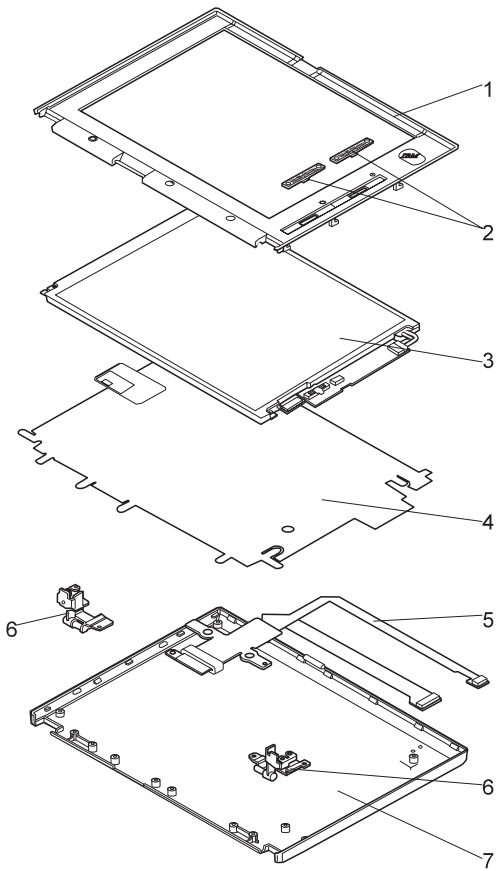
Index	System Unit	
1	LCD Assembly (11.3 DSTN)	20H4267
	(U.S.-2640, model 1xx, 3xx, 5xx)	
	LCD Assembly (12.1 TFT)	12J1600
	(U.S.-2640, model 2xx, Exx, Fxx)	
2	Frame	10L2028
3	Keyboard (see keyboard section)	
4	TrackPoint III	84G6536
5	Speaker	46H4133
6	EMI Bracket I/O	46H4149
7	System Board (100 MHz)	05K4302
	(U.S.-2640, model 5xx)	
	System Board (120 MHz)	05K4303
	(U.S.-2640, model Exx)	
	System Board (133 MHz)	05K4304
	(U.S.-2640, model Fxx)	
	System Board (133 MHz)	05K4305
	(U.S.-2640, model 1xx, 2xx)	
8	PCMCIA Slot	46H4134
9	Rubber Cap I/O	46H4151
10	Base Cover	46H4084
10a	EMI Spring	46H4145
11	DIMM Cover	46H4131
12	PCMCIA Cover	46H4127
13	Backup Battery	46H4132
14	Bracket Battery Guide	46H4135
15	FDD Connector Cover	46H4128
16	Power Switch	46H4138
17	HDD Bracket	46H4137
18	Hard Disk Drive (540 MB)	39H2219
	Hard Disk Drive (810 MB)	39H2220
	(U.S.-2640, model 5xx, Exx)	
	Hard Disk Drive (1.0 GB)	39H2221
	(U.S.-2640, model Fxx)	
	Note:	
	Order either of the below hard disk drives that	
	match the FRU number of the drive being replaced.	
	(U.S.-2640, model 1xx, 2xx, 3xx, 4xx)	
	Hard Disk Drive (2.1 GB)	83H7080
	Hard Disk Drive (2.1 GB)	12J4569
19	HDD Flexible Cable	46H4136
20	Keyboard Sheet	46H4150
21	Battery Pack	46H4144
	DC/DC Card	05K4300
	AC Adapter	85G6698
	AC Adapter Slim (2 plong)	85G6738
	External FDD (2-mode)	10H4056
	(U.S.-2640, model 1xx, 2xx, 3xx, 4xx, 5xx, Exx, Fxx, Hxx)	
	External FDD (3-mode)	39F2086
	External FDD Cable	39F2077
	Screw Kit	46H4143
	Screw Cap	66G5046

LCD FRU (DSTN)



Index	System Unit	
1	LCD Front Cover	20H4265
2	Control Knob	46H4158
3	LCD Panel (Order LCD Assembly)	N/A
4	Spacer	46H4159
5	Inverter Card	46H4152
6	Shield Sheet	46H4157
7	LCD Cable	46H4156
8	Hinges	46H4155
9	LCD Rear Cover	46H4153
	Screw Cover	66G5046
	Screw	46H4160

LCD FRU (TFT)



Index	System Unit	
1	LCD Front Cover	05K4603
2	Control Knob	11J9664
3	LCD Panel (Order LCD Assembly)	N/A
4	Shield Sheet	46H4165
5	LCD Cable	46H4164
6	Hinges	11J9663
7	LCD Rear Cover	46H4161
	Inverter Card	82H5509
	Screw Cover	66G5046
	Screw	46H3939

Keyboard

Arabic	20H4232
Belgian	20H4230
Canadian French	20H4237
Danish	20H4225
Dutch	20H4224
French	20H4222
German	20H4221
Greek	20H4235
Hebrew	20H4233
Italian	20H4223
Japanese	20H4239
Korean	20H4140
Latin Spanish	20H4236
Norwegian	20H4227
Portuguese	20H4231
Russian	20H4238
Spanish	20H4226
Swedish / Finnish	20H4229
Swiss	20H4228
Turkish	20H4234
U.K. English	20H4220
U.S. English	20H4219

Common/Option Parts List

Miscellaneous Parts

Screw Kit	46H4143
(Includes the following:)	
M2 x 3 Screw (1)	
M2.5 x 4, black (5)	
M2.5 x 6, black (19)	
M2.5 x 12, black (2)	
M3 x 3 (2)	
Hex Stud (6)	

Options

Notes:

1. When you replace the AC Adapter with a new one, use the one for the country you are in even if the computer is from different country.
2. The warranty for the system unit does not apply to all options.

Headset	85G1529
1.08 GB Hard Disk Drive Assembly	39H2221
Microphone	66G7871
PS/2 Miniature Mouse	95F5723
ThinkPad 560 Port Replicator	46H4107
DIMM 8MB	42H2767
DIMM 16MB	42H2768
DIMM 32MB	42H2769
Interface Cable, System to Keyboard	84G2531
Interface Cable, Keyboard to Keypad	84G2532
Mini-DIN to Mini-DIN Cable.	84G6474

Numeric Keypad

Belgian	95F5741
Canadian French	95F5466
Danish	95F5467
Dutch	95F5467
French	95F6313
German	95F6314
Greek	95F5467
Hebrew	95F5741
Icelandic	95F5467
Italian	95F6316
Japanese	79F6401
Norwegian	95F5467
Spanish	95F6315
Swedish / Finnish	95F5468
Swiss / French	95F5711
Swiss / German	95F5715
Turkish	95F5467
U.K. English	95F5741
U.S. English	95F5741

Black Keypad

French	84G6286
German	84G6280
Italian	84G6292
Swedish	84G6304
U.K. English	84G6298
Norway	84G6310
U.S. English	84G2530

Black Keyboard

French	84G6285
German	84G6279
Italian	84G6291
Swedish	84G6303
U.K. English	84G6297
Norway	84G6309
U.S. English	84G2529

Accessories

Keyboard/Mouse Cable	54G0444
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Tools

Tri-Connector Wrap Plug	72X8546
PC Test Card	35G4703
Audio Wrap Cable	66G5180
Screwdriver Kit	95F3598
ThinkPad Hardware Maintenance Diskette Ver 2.01 (This diskette is common for all ThinkPad models.)	78H5384

Power Cords

IBM power cords for a specific country are usually available only in that country:

For 2-pin power cords:

IBM Power Cord Part Number	Used in These Countries
13H5264	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Thailand, Trinidad (West Indies), United States of America, Venezuela
14F0033	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Macao, Malasia, Nigeria, Oman, People's Republic of China, Qatar, Singapore, United Kingdom
13H5270	Austria, Belgium, Bulgaria, Chile, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, former Yugoslavia
13H5273	Japan
13H5276	Argentina, Australia, New Guinea, New Zealand, Papua, Paraguay, Uruguay
13H5279	Bangladesh, Pakistan, South Africa, Sri Lanka

For 3-pin power cords:

Note

The grounded adapter is required for full MPRII compliance.

IBM Power Cord Part Number	Used in These Countries
25H2205	Argentina, Australia, New Guinea, New Zealand, Papua, Paraguay, Uruguay
25H2207	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela
25H2209	Austria, Belgium, Bulgaria, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Turkey, former Yugoslavia
25H2211	Denmark
25H2213	Bangladesh, Pakistan, South Africa, Sri Lanka
25H2215	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Singapore, United Kingdom
25H2219	Thailand
25H2221	Switzerland
25H2223	Chile, Italy
25H2225	Israel

For 3-pin slim power cords:

IBM Power Cord P/N	Used in These Countries
76H3514	Argentina, Australia, Papua New Guinea, New Zealand, Paraguay, Uruguay
76H3516	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela
76H3518	Austria, Belgium, Bulgaria, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Turkey, former Yugoslavia
76H3520	Denmark
76H3522	Bangladesh, Pakistan, South Africa, Sri Lanka
76H3524	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Singapore, United Kingdom
76H3526	Japan
76H3528	Switzerland, Liechtenstein
76H3530	Chile, Italy, Ethiopia, Libya
76H3532	Israel
76H3535	Korea
76H4866	Thailand

ThinkPad 760 (9546, 9547)

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Read This First

Before you go to the checkout guide, be sure to read this section.

Important Notes

- **Only certified trained personnel should service the computer.**
- Read FRU service procedures before replacing any FRUs.
- **Be extremely careful during write operations such as copying, saving, or formatting.** Drives in the computer that you are servicing might have been rearranged or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs can be written over.
- **Replace FRUs only for the correct model.** When you replace the FRU, make sure the model of the machine and FRU part number are correct by referring to the part list.
- **FRUs should not be replaced because of a single, unreproducible failure.** Single failures can occur from a variety of reasons that have nothing to do with a hardware defect such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists. If this is suspected, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.
- **Be careful not to replace a nondefective FRU.**

How to Use Error Messages: Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 359.

Port Replicator Problems: If you suspect a problem with the Port Replicator, see "Port Replicator Checkout" in the "Common Devices Checkout" section for more information.

How to Diagnose Multiple FRUs: If the adapter or device has more than one FRU, the error code could be caused by either FRU. Before replacing multiple FRUs, try removing or exchanging each FRU, one by one in the designated sequence, to see if the symptoms change.

What to Do First: The servicer must include the following in the parts exchange form or part return form that is attached to the returned FRU:

- ___ 1. Name and phone number of servicer
- ___ 2. Date of service
- ___ 3. Date when part failed
- ___ 4. Date of purchase
- ___ 5. Failure symptoms, error codes appearing on display, and beep symptoms
- ___ 6. Procedure index and page number in which failing FRU was detected
- ___ 7. Failing FRU name and part number
- ___ 8. Machine type, model number, and serial number
- ___ 9. Customer's name and address

Before checking problems with the computer, determine whether the damage applies the warranty by referring to the following:

Note for Warranty: During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer. The following list provides some common items that are not covered under warranty and some symptoms that may indicate the system was subjected to stresses beyond normal use:

The following is not covered under warranty:

- LCD panel cracked by applying excessive force or by being dropped
- Scratched (cosmetic) parts
- Cracked or broken plastic parts, broken latches, broken pins, or broken connectors caused by excessive force
- Damage caused by liquid spilled into the system
- Damage caused by improperly inserting a PCMCIA card or installation of an incompatible card
- Damage caused by foreign material in the FDD or UltraBay
- Diskette drive damage caused by pressing the diskette drive cover or inserting diskettes with multiple labels
- Damaged or bent diskette eject button
- CD-ROM drive damage caused by excessive forces shock, or by being dropped
- Fuses blown by attaching a nonsupported device
- Forgotten computer or hard disk password (making the computer or hard disk unusable)

If the following symptoms are present, they may indicate damage caused by nonwarranted activity:

- Missing parts may be a symptom of unauthorized service or modification.
- HDD spindles can become noisy if subjected to excessive force or by being dropped.
- I9990303 errors can be caused by exposure to strong magnetic fields.

How to Disable the Power-On Password:

Important

This information is not available in this online HMM format. See your IBM Servicerc or IBM Authorized Dealer for this procedure.

Supervisor and Hard Disk Passwords: The supervisor password and the hard disk password (HDP) are security features that are used to protect the system and the hard disk data from unauthorized access. No overriding capability is provided. If only a hard disk password is set, obtaining permission from the password owner to unlock the password is a prerequisite for running diagnostic tests and performing service. If both supervisor password and hard disk password are set, you can enter Easy-Setup by pressing the **Enter** key or power-on password at the supervisor password prompt. In this case, the **Password**, **Start up**, and **Initialize** icons cannot be selected.

See "Password Combinations (POP, HDP, PAP)" on page 375 for more information about passwords.

Power Shutdown Switch: The power shutdown switch resets the system regardless of the microcode status and forces the power off. Use this push button to power-off when power is not completely off or the microcode is in a hung state.

See "Rear View" on page 479 for the power shutdown switch.

Checkout Guide

Use the following procedure as a guide for computer problems.

Note: The diagnostic tests are intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.

Note: To run the diagnostics, refer to "How to Run the Diagnostics" on page 373.

3. Use the following table with the verified symptom to determine which page to go to. Search the symptoms column and find the description that best matches your symptom; then go to the page shown in the "Go to" column.

Symptoms (Verified)	Go to
Power failure. (The power indicator does not go on or stay on.)	"Power Systems Checkout" on page 349.
POST does not complete. No beeps or error code are indicated.	"Symptom-to-FRU Index" on page 359, and then use the No Beep Symptoms table.
The configuration is not the same as the installed devices.	"Checking the Installed Devices List" on page 374.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 359, and then use the Beep Symptoms table.
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 359, and then use the Numeric Error Codes table.
The diagnostic test detected an error and displayed an FRU code.	"FRU Codes" on page 363.
Other symptoms (such as LCD display problems).	"Symptom-to-FRU Index" on page 359, and then use the other symptom table.

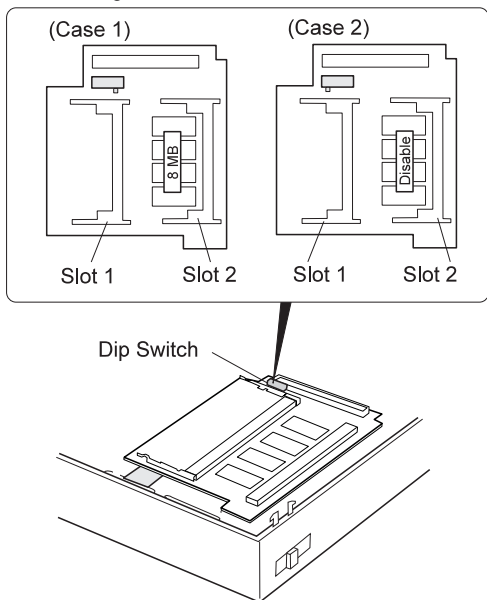
Symptoms (Verified)	Go to
Symptoms cannot be re-created. (Intermittent problems.)	Use the customer reported symptoms and go to "Symptom-to-FRU Index" on page 359.

Memory Checkout

DIMMs are available for increasing memory capacity.

Note: Models 760XL and 760XD have a dip switch on the DIMM adapter card. When a 64MB 2-bank DIMM is installed, the dip switch is located to the left (see Case 2), and the base memory (8MB) on the DIMM adapter card is disabled.

The 64MB 2-bank DIMM can be installed only in slot 2. If the card is installed in slot 1, the card will not be recognized as 64MB DIMM.



Models 760C/760CD/760L/760LD

DIMM	Displayed Value
0MB	7808KB
8MB	16000KB
12MB	20096KB
16MB	24192KB
20MB	28288KB
24MB	32384KB
28MB	36480KB
32MB	40576KB

Models 760E/760ED/760EL/760ELD/760XL/760XD

DIMM	Displayed Value	
	Base Memory 8MB	Base Memory 16MB
0MB	7808KB	16000KB
8MB	16000KB	24192KB
16MB	24192KB	32384KB
24MB	32384KB	40576KB
32MB	40576KB	48768KB
40MB	48768KB	56960KB
48MB	56960KB	65152KB
64MB	73344KB	81536KB

Memory errors might stop system operations, show error messages on the screen, or hang the system.

Use the following procedure to isolate memory problems:

Note: Make sure that the DIMM adapter card is fully installed into the connector. A loose connection can cause an error.

1. Power-off the computer and remove the DIMM adapter card from its slot (if installed).
2. Press and hold the **F1** key; then power-on the computer. Hold the **F1** key down until the Easy-Setup screen appears.
3. Select **Test** and press **Enter**.
4. Select **Memory** and press **Enter** to run the memory test on base memory. If an error appears, replace the system board.
5. Power-off the computer and reinstall the DIMM adapter card; then power-on the computer. Verify the memory size; then test the memory. If an error appears, replace the DIMM adapter card.

If memory problems occur intermittently, use the loop option to repeat the test. When the test detects an error, an error log is printed on the printer connected to the parallel port. See "Error Log" on page 374 for more information.

System Programs in Flash Memory: System setup programs and diagnostic tests are stored in flash memory.

Flash Memory Update: A flash memory update is required for the following conditions:

- New versions of system programs.
- New features or options are added.

To update the flash memory, do the following:

1. Get the appropriate diskette containing the update.
2. Insert the System Program Service Diskette into drive A and power-on the computer.
3. Select **Update system programs** from the menu.

System Board and CPU Card Checkout

The processing functions are performed by both the system board and the CPU card. Processor problems can be caused by either FRU. However, the CPU card generally has a lower probability of failure. When a numeric code calls the system board or the CPU card as a FRU, or the CPU card is called by a diagnostic test by showing FRU code 11, use the following procedure to isolate the problem:

1. Run the system board test to verify the symptom. This test verifies both the system board and the CPU card. If no error is detected, return to "Checkout Guide" on page 341.

Note: Don't touch the keyboard and pointing device when the system board test is running. This may cause an unexpected error.

2. If FRU code 10 appears, replace the system board but do not replace the CPU card. Transfer the CPU card from the old system board to the new system board.
3. If FRU code 11 appears, reseal the CPU card.
4. Rerun the test to verify the fix.
5. If FRU code 11 remains, replace the CPU card.

If this procedure does not correct the problem, go to "Undetermined Problems" on page 371.

Keyboard and Auxiliary Input Device Checkout

Remove the external keyboard if the internal keyboard is to be tested.

If the internal keyboard does not work or an unexpected character appears, make sure that the flexible cable extending from the keyboard is correctly seated in the connector on the video card.

If the keyboard cable connection is correct, check the DSP card (see "DSP Card Checkout" on page 346) or Audio (ESS) card (see "Audio (ESS) Card Checkout" on page 346).

If the tests do not detect a keyboard problem, run the **keyboard test** by doing the following:

1. Go to the diagnostic menu screen by selecting **Test** in the Easy-Setup menu.
2. Press **Ctrl+A** to enter to the advanced diagnostic mode.
3. Press **Ctrl+K**; a layout of the keyboard appears on the screen.
4. Check that when each key is pressed, the key's position on the keyboard layout on the screen changes to a black square.

Note: When the **Fn** key is pressed, a black square briefly appears.

If the tests detect a keyboard problem, do the following one at a time to correct the problem. Do not replace a nondefective FRU.

- Reseat the keyboard card cable.
- Replace the keyboard card cable.
- Replace the keyboard card assembly.
- Replace the video card.
- Replace the system board.

The following auxiliary input devices are supported for this computer:

- Numeric keypad
- Mouse (PS/2 compatible)
- External keyboard (with keyboard/mouse cable)

If any of these devices do not work, reseal the cable connector and repeat the failing operation.

If the problem does not recur, recheck the connector.

If the problem is not corrected, replace the device, and then the system board.

DSP Card Checkout

(Models 760C/760CD/760E/760ED/760XD)

1. Go to the diagnostic menu screen by selecting **Test** in the Easy-Setup menu.
2. Select **DSP** and run the diagnostic tests.
3. If the test detects a DSP card problem, replace the DSP card.

Audio (ESS) Card Checkout

(Models 760L/760LD/760EL/760ELD/760XL)

1. Go to the diagnostic menu screen by selecting **Test** in the Easy-Setup menu.
2. Select **Audio** and run the diagnostic tests.
3. If the test detects a audio (ESS) card problem, replace the audio (ESS) card.

TrackPoint III Checkout

If the TrackPoint III does not work, check the configuration in the ThinkPad Features program. If the configuration of the TrackPoint III is disabled, select **Enable** to enable it.

If this does not correct the TrackPoint III problem, continue with the following.

The TrackPoint III does automatic compensations to adjust the pointer sensor. During this process, the pointer moves on the screen automatically for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the TrackPoint III pointer while the computer is powered on or while the system is running, or when readjustment is required because the temperature has exceeded its normal temperature range. This symptom does not indicate a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

If a click button problem or pointing stick problem occurs, do the following:

1. Go to the Easy-Setup menu.
2. Select an item with the pointing stick.
3. Press either the left or right click button.
4. Verify that both buttons work correctly.

If either the pointing stick or the click button does not work, do the following actions one at a time to correct the problem. Do not replace a nondefective FRU.

- Reseat the keyboard card cables.
- Replace the keyboard card cables.
- Replace the keyboard card assembly.
- Replace the video card.
- Replace the system board.

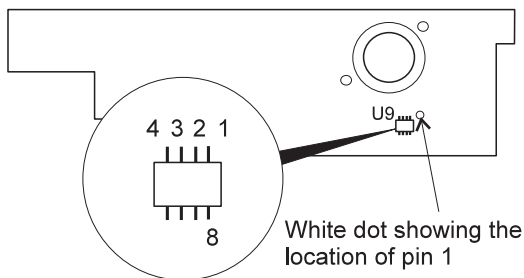
Fan Checkout (Models 760XL/760XD)

The cooling fan is controlled by a thermostat on the video card. Prior to checking the fan, confirm that the 760XL or 760XD passes the diagnostics. Refer to "How to Run the Diagnostics" on page 373.

Model 760XL: To check the fan, do the following:

1. Turn off the computer.
2. Remove the following FRUs (see "FRU Removals and Replacements" on page 382):
 - a. Diskette drive/CD-ROM drive
 - b. Battery pack
 - c. Hard disk drive
 - d. Top cover
 - e. LCD unit
 - f. Keyboard unit
 - g. Rear IR
 - h. System board assembly
 - i. Upper shield
3. Attach the AC adapter to the system board assembly.
4. Find U9 on the video card. Apply a short across pin 1 and pin 4 of U9 (LM56) with an appropriate conductor. Then, turn on the computer.

(Video card top view)



White dot showing the location of pin 1

Attention

Make sure the location of pin 1 and pin 4. Pin 8 is for power control. **Don't touch pin 8.** Applying a short across pin 8 and another pin may damage the card.

5. Check the rotation of the fan.

Model 760XD: The fan starts when the temperature of the inside box rises over 54°C, and stops when the temperature of the inside box falls under 49°C.

To check the fan, do the following:

1. Turn off the computer.
2. Do the following steps to warm the computer up so that the fan starts:
 - a. Put the computer on a non-thermal-conductive material — for example, corrugated cardboard.
 - b. Attach the AC adapter; then turn on the computer.
 - c. Run the video function loop test of the diagnostics (see “How to Run the Diagnostics” on page 373)
 - d. Close the LCD unit.

The fan should start rotating within 30 minutes.

3. Check the air flow coming out from the fan louver.

Game Port Checkout

Do the following if a joystick problem occurs:

1. Connect the joystick to the game port.
2. Go to the Easy-Setup menu.
3. Select an item with the joystick.
4. Press any button of the joystick.
5. Verify that all buttons work correctly.

If either the joystick or a button does not work, replace the video card. If the problem persists, replace the system board.

Diskette Drive Test

Do the following to isolate the problem to a controller, drive, or diskette. A scratch, write enabled, nondefective 2HD diskette is required.

FDD-1 represents the the diskette drive in the UltraBay. FDD-2 represents the port replicator, expansion unit, or diskette drive attached through the external diskette drive connector.

Warning: Make sure that the diskette does not have more than one label attached to it. Multiple labels can cause damage to the drive or can cause the drive to fail.

Do the following to select the test device:

1. Select the advanced diagnostics mode and select **Tool**; then select **FDD-1** or **FDD-2** and press the **Spacebar**. A ✓ mark appears next to the selected icon. Insert the *blank* diskette when instructed.
2. Run the diskette drive test.
3. If the controller test detects an error, FRU code 10 appears. Replace the system board.

4. If the controller test runs without errors, the drive read/write tests start automatically.
5. If the drive test detects an error, FRU code 50 for FDD-1; or 51 for FDD-2 appears. If the diskette itself is known to be good, replace the drive.
6. If FDD-2 test detects an error, move the drive to the computer's diskette drive connector directly, if possible, and test it again as FDD-1.

If no errors occur in the FDD-1 position, the drive is not defective. Go to "Port Replicator Checkout" in "Common Devices Checkout" section to isolate the replicator problem.
7. If the drive is attached through an Expansion Unit, go to the service manual of the Expansion Unit to isolate the problem.
8. If the drive is attached through a Diskette Drive Attachment Unit, replace the unit.

If an error occurs when the external diskette drive is attached through the external diskette drive connector and there is not a diskette drive in the UltraBay, reseal the connector on the video card. If the error still remains, reseal the external diskette drive connector. If the error still remains, replace the following FRUs one at a time:

1. External diskette drive kit
2. Video card
3. External diskette drive connector

LCD Information Panel Checkout

If an LCD information panel problem occurs, do the following:

1. Power-off the computer.
2. Power-on the computer.
3. All the icons in the LCD information panel appear for a moment soon after the computer is powered-on. Verify that all icons appear correctly.

If some of the icons do not appear, replace the keyboard.

If the problem still remains, replace the video card.

Power Systems Checkout

To verify the symptom of the problem, power-on the computer using each of the power sources as follows:

1. Remove the battery pack, diskette drive, and hard disk drive.
2. Connect the AC Adapter and check that power is supplied.
3. Install the diskette drive or hard disk drive one at a time, and check that power is supplied from each power source.

4. Disconnect the AC Adapter, remove the hard disk and diskette drive, and install the charged battery pack; then check that power is supplied by the battery pack.

If you suspect a power problem, see the appropriate power supply check in the following list:

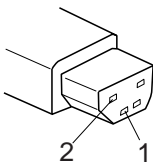
- “Checking the AC Adapter.”
- “Checking Operational Charging” on page 351.
- “Checking the Battery Pack” on page 351.
- “Checking the Car-Battery Adapter” on page 352.
- “Checking the Backup Battery” on page 353.
- “Checking the Standby Battery” on page 354.
- “Port Replicator Power Overload” on page 358.

Checking the AC Adapter: You are here because the computer fails only when the AC Adapter is used.

- If the power problem occurs only when the port replicator is used, replace the replicator.
- If the power-on indicator does not turn on, check the power cord of the AC Adapter for correct continuity and installation.
- If the operational charge does not work, go to “Checking Operational Charging” on page 351.

Note: For Model 760CD, 760ED, 760LD, 760ELD, 760XL, and 760XD, there are two types of adapters. The procedure for checking both types is the same.

1. Unplug the AC Adapter cable from the computer and measure the output voltage at the plug of the AC Adapter cable. See the following figure:



(20 - 10 V)

Pin	Voltage (V dc)
1	+18.0 to +21.0
2	Ground

(16 - 10 V)

Pin	Voltage (V dc)
1	+14.5 to +17.0
2	Ground

- If the voltage is correct, make sure the connection between DC/DC card and system board is not loose.

- Replace the DC/DC card.
 - If the problem is not corrected, replace the system board.
 - If the problem is still not corrected, go to “Undetermined Problems” on page 371.
 - If the voltage is not correct, go to the next step.
2. Unplug the AC Adapter cable from the ac power outlet and wait five minutes or longer to allow the over-voltage protection circuit to be fully discharged and initialized.
 3. Plug the AC Adapter cable into the ac power outlet.
 4. Measure the output voltage of the AC Adapter.
 5. If the voltage is still not correct, replace the AC Adapter.

Note: An audible noise from the AC Adapter does not always indicate a defective adapter.

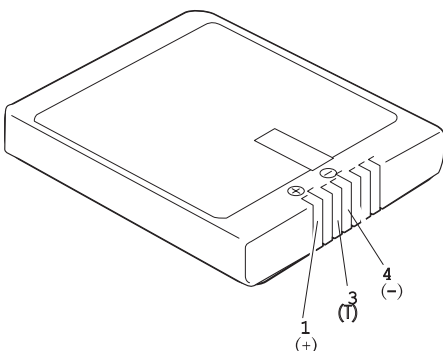
Checking Operational Charging: To check operational charging, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

Perform operational charging. If the battery status indicator does not turn on, remove the battery pack and leave it to return to room temperature. Reinstall the battery pack. If the charge indicator still does not turn on, replace the battery pack.

Checking the Battery Pack: Battery charging will not start until the Fuel-Gauge shows that less than 95% of the total power remains; with this condition the battery pack will charge to 100% of its capacity. This protects the battery pack from being overcharged or having a shortened life.

Do the following:

1. Power-off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 1 (+) and 4 (-). See the following figure:



Terminal	Voltage (V dc) / Signal
1	+0 to +13.5
2	Send
3	Thermal
4	Ground (-)
5	Select

Note: Signal lines, not used in these steps, are used for communication between the system and the battery.

- If the voltage is less than +11.0 V dc, the battery pack has been discharged. Recharge the battery pack.

If the voltage is still less than +11.0 V dc after recharging, replace the battery.

Note: If the voltage of the battery pack is 0 V, it is not defective.

- If the voltage is more than +11.0 V dc, measure the resistance between battery terminals 3 and 4. The resistance must be 4 to 30 K ohm.

If the resistance is not correct, replace the battery pack.

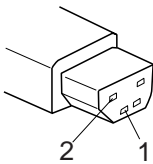
If the resistance is correct, replace the DC/DC card.

Checking the Car-Battery Adapter

- Unplug the Car-Battery Adapter cable from the computer.
- Plug the Car-Battery Adapter into the cigarette lighter socket.

Note: If the adapter is already plugged in, reseal it.

- Measure the output voltage of the Car-Battery Adapter cable. See the following figure:



Pin	Voltage (V dc)
1	+19.0 to +21.0
2	Ground

- If the voltage is correct, the Car-Battery Adapter is working correctly. Check that the computer runs with the AC Adapter. If it runs correctly with the AC Adapter, check the system board. If the problem still remains, replace the following FRUs one at a time.

- a. DC/DC card
- b. System board

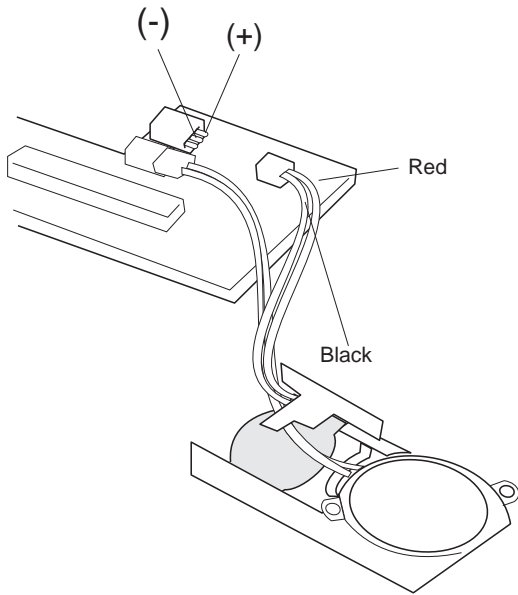
If the problem is not resolved when the system board is replaced, go to "Undetermined Problems" on page 371.

- If the voltage is outside the normal voltage range, do one of the following:
 - Try these test procedures in a different car, if one is available.
 - Replace the Car-Battery Adapter if the computer works correctly with the AC Adapter.

Note: If the output voltage from the cigarette lighter socket of the car is less than 10.5 V dc, a continuous noise may be heard. The condition of the car battery should be checked by appropriate service personal.

Checking the Backup Battery

1. Power-off the computer and unplug the AC Adapter from the computer.
2. Open the keyboard, and remove the diskette drive/CD-ROM drive, the battery pack, and the hard disk drive.
3. Remove the top cover and keyboard unit.
4. Open the keyboard unit; then remove the keyboard card.
5. Remove the backup battery from the keyboard card. (Refer to "1200 Backup Battery, Speaker, Standby Battery" on page 425 to remove the battery.)
6. Measure the voltage of the backup battery. See the following figure:



Wire	Voltage (V dc)
Red	+2.5 to +3.7
Black	Ground

- If the voltage is correct, replace the system board.
- If the voltage is not correct, the backup battery has been discharged. Replace the backup battery.
- If the backup battery discharges quickly after replacement, replace the system board.

Checking the Standby Battery

1. Power-off the computer and unplug the AC Adapter from the computer.
2. Open the keyboard, and remove the diskette drive/CD-ROM drive, the battery pack, and the hard disk drive.
3. Remove the top cover and keyboard unit.
4. Open the keyboard unit; then remove the keyboard card.
5. Remove the standby battery from the keyboard card. (Refer to "1200 Backup Battery, Speaker, Standby Battery" on page 425 to remove the battery.)

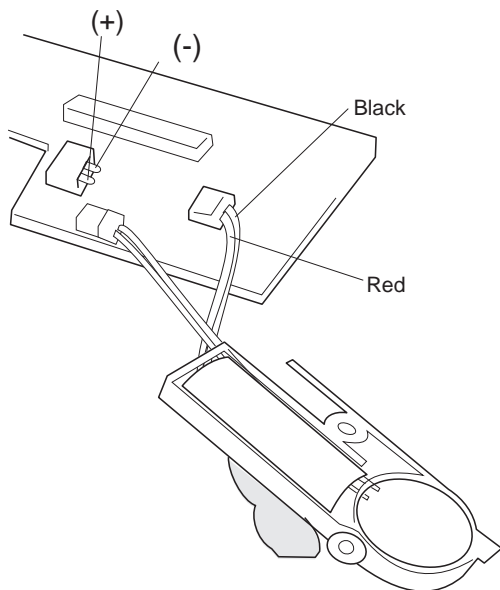
Warning: Be careful not to cause a short circuit when measuring the voltage.

6. Measure the voltage of the standby battery.
 - If the voltage between red and black is 3.5 V dc or greater, the voltage is correct. Go to step 12 on page 355 to verify standby battery operation.

- If the voltage is less than 3.5 V dc, go to the next step.
7. Plug the AC Adapter into the computer and power-on the computer.

Warning: Be careful not to cause a short circuit when measuring the voltage.

8. Measure the output voltage at the connector on the system board.



Pin	Voltage (V dc)
+	+4.0
-	Ground

- If the voltage is less than +4.0 V dc, replace the DC/DC card. If the voltage is still low, replace the system board.
 - If the voltage is more than +4.0 V dc, power-off the computer, replace the standby battery, and go to the next step.
9. Ensure that the AC Adapter is plugged into the computer; then power-on the computer.
 10. Charging of the standby battery starts. A depleted battery needs approximately 30 minutes to be recharged to the operational voltage of +3.5 V dc.
 11. Unplug the AC Adapter.
 12. Verify the standby battery function by removing and installing the battery pack during suspend mode.

Note: Removing and installing the battery pack during suspend mode should be done within

one minute. The resume operation must start. If the resume operation does not work, switching of power from the battery pack to standby battery will not be correct. Replace the DC/DC card.

If replacing the DC/DC card does not resolve the problem, replace the system board.

Power Management Features

Three power management modes are provided by the computer to reduce power consumption and prolong battery power.

Standby Mode: When in standby mode the following occurs:

- The LCD backlight turns off.
- The hard disk motor stops.

Events that cause the computer to enter standby mode:

- Standby requested by the **Fn** key (**Fn+F3**).
- No activity under **auto-standby** enabled by the ThinkPad Features program.

Events that cause the computer to exit or resume standby mode:

- (Resume) Any key operation.

Suspend Mode: When in suspend mode, the following, in addition to the four actions of standby mode, occur:

- The LCD is powered off.
- The hard disk is powered off.
- The CPU is stopped.

Notes:

1. In the ThinkPad Features program, the computer can be set to "Will not suspend even if LCD is closed."
2. In the ThinkPad Features program, the computer can be set to "suspend hibernate while docked."
3. When the computer is powered with ac power and is used with one of the communication PC cards, the computer enters *standby mode*; the PC card and application program remain active.
4. In the following conditions, the computer cannot enter suspend mode:
 - While a communication link is running.
 - While the computer is attached to a Dock I.

Events that cause the computer to enter suspend mode:

- Suspend mode is requested by the **Fn** key (**Fn+F4**).
- The LCD is closed.

- The keyboard is opened.
- The specified time has elapsed from the last operation with the keyboard, mouse, hard disk drive, parallel connector, or diskette drive; or the AC Adapter is plugged in. The time is specified by **Suspend Timer** in the ThinkPad Features program.
- The battery condition is low. The battery power indicator blinks orange.
- In the ThinkPad features program, the computer can be set to "Hibernate when battery becomes low." The default setting is suspend.
- Either the *PS2 OFF* or *PS2 SUSpend* command is set in the ThinkPad Features program.

Events that cause the computer to exit or resume suspend mode:

- (Resume) The LCD is opened.
- (Resume) The keyboard is closed.
- (Resume) The real time clock alarm is signaled.
- (Resume) The ring indicator (RI) is signaled by a serial or PCMCIA device.
- (Resume) The **Fn** key is pressed.
- (Resume) An external keyboard key is pressed while operating with ac power.
- (Exit) Timer conditions are satisfied for entering hibernation mode.

Hibernation Mode: When in hibernation mode, the following occurs:

- The system status, RAM, VRAM, and setup data are stored on the hard disk.
- The system is powered off.

Notes:

1. In the ThinkPad Features program, the computer can be set to "suspend hibernate while docked."
2. The computer cannot enter hibernation mode when:
 - It is powered with ac power and a communication PC card is used.
 - The computer is attached to a DOCK I.

Any of the following events can cause the computer to enter hibernation mode:

- Hibernation mode is requested by the **Fn** key (**Fn+F12**).
- Timer conditions are satisfied in suspend mode.
- A critical low battery condition occurs.
- The PS2 **HI**Bernation command is set in the ThinkPad Features program.

The following event causes the computer to exit hibernation mode:

- The power-on switch is turned on.

When power is turned on, the hibernation history in the boot record on the hard disk is recognized and system status is restored from the hard disk to resume operation.

Port Replicator Power Overload: If power shutdowns occur intermittently when using PCMCIA-2 devices via a port replicator, suspect a current overload. Some PCMCIA devices use much power; if the maximum usage of each device occurs simultaneously, the total current will exceed the limit, thereby causing a power shutdown. Isolate this problem by removing one of the devices, and use the computer under the same condition to see whether a power shutdown occurs. Do this procedure for all devices; then determine the cause.

Symptom-to-FRU Index

The Symptom-to-FRU Index lists the symptoms and errors and the possible causes. The most likely cause is listed first.

Note: Perform the FRU replacement or actions in the sequence shown in the “FRU/Action in Sequence” column. If a FRU did not solve the problem, put the original part back in the computer. Do not replace a nondefective FRU.

This index can also be used to help you decide which FRUs to have available when servicing a computer.

Numeric error codes show the errors detected in POST or system operation. In the following error codes, **X** can be any number.

If no codes are available, use narrative symptoms.

If the symptom is not listed, go to “Undetermined Problems” on page 371.

<p>Note: For IBM devices not supported by diagnostic codes in the ThinkPad notebook computers, see the manual for that device.</p>

Numeric Error Codes

Symptom / Error	FRU / Action in Sequence
10X <ul style="list-style-type: none">• 101: Interrupt failure.• 102: Timer failure.• 103: Timer interrupt failure.• 104: Protected mode failure.• 105: Last 8042 command not accepted.• 107: NMI test failure.• 108: Timer bus test failure.• 109: Low meg-chip select test.	<ol style="list-style-type: none">1. System board
110 (System board parity.)	<ol style="list-style-type: none">1. Go to “Memory Checkout” on page 342.2. DIMM Adapter Card and DIMM3. The computer is attached to the expansion unit.4. System board

Symptom / Error	FRU / Action in Sequence
111 (I/O parity.)	<ol style="list-style-type: none"> 1. Go to "Memory Checkout" on page 342. 2. Expansion Unit/Port Replicator 3. System board
158 (HDP was not set even though the supervisor password is set.)	<ol style="list-style-type: none"> 1. Set HDPs for both hard disk drives in the HDD bay and the UltraBay.
159 (HDP is not set the same as the supervisor password.)	<ol style="list-style-type: none"> 1. Set correct HDPs for both hard disk drives in the HDD bay and the UltraBay.
161 (Dead battery.)	<ol style="list-style-type: none"> 1. Go to "Checking the Backup Battery" on page 353. 2. Backup battery 3. System board
163 (Time and date were not set.)	<ol style="list-style-type: none"> 1. Reseat the keyboard connector on the video card. 2. Set time and date. 3. System board
173 (Configuration data was lost.)	<ol style="list-style-type: none"> 1. Reseat the keyboard connector on the video card. 2. Select OK in the error screen; then set the time and date. 3. Backup battery 4. System board
174 (Configuration error: Perform "Checking the Installed Devices List" on page 374 before changing any FRUs.)	<ol style="list-style-type: none"> 1. Check device configuration. 2. System board 3. Diskette drive assembly 4. Hard disk drive assembly
175, 177, 178 <ul style="list-style-type: none"> • 175: EEPROM CRC #1 error. • 177: Supervisor password check sum error. • 178: EEPROM is not functional. 	<ol style="list-style-type: none"> 1. System board
183 (Incorrect password entered at the supervisor password prompt.)	<ol style="list-style-type: none"> 1. Have the user examine the password.
184 (POP check sum error.)	<ol style="list-style-type: none"> 1. Reset the POP (power-on password) in Easy-Setup.

Symptom / Error	FRU / Action in Sequence
185 (The startup sequence is not valid. Suspect that power was off when the startup sequence was being updated.)	1. Reset the startup sequence in Easy-Setup.
186	1. System board
188 (EEPROM CRC #2 error.)	1. Set the system identification using the ThinkPad Hardware Maintenance Diskette Version 1.20.
190 (Depleted battery pack was installed when the power was on.)	1. Go to “Checking the Battery Pack” on page 351.
191XX (PM initialization error.)	1. System board 2. CPU card
195 (The configuration read from the hibernation area does not match the actual configuration.)	1. Check if the configuration was changed. For example, check if the disk drive is from another computer.
196 (Read error occurred in the hibernation area of the HDD.)	1. Run the hard disk drive test. 2. Hard disk drive
1XX	1. System board
2XX <ul style="list-style-type: none"> • 201: Memory data error. • 202: Memory line error 00–15. • 203: Memory line error 16–23. • 205: Memory test failure on on-board memory. • 221: ROM to RAM remap error. 	1. Go to “Memory Checkout” on page 342. 2. DIMM, or DIMM Adapter 3. System board
301, 303, 304, 305, 3XX (301: Keyboard error.)	1. Go to “Keyboard and Auxiliary Input Device Checkout” on page 345. 2. Keyboard 3. Video card 4. External numeric keypad 5. External keyboard 6. Keyboard/mouse cable 7. System board

Symptom / Error	FRU / Action in Sequence
601, 6XX (601: Diskette drive or controller error.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 348. 2. Diskette drive assembly 3. Diskette 4. System board
602 (Diskette read error.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 348. 2. Diskette 3. Diskette drive assembly
604 (Unacceptable ID was read from the diskette drive.)	<ol style="list-style-type: none"> 1. Go to "Diskette Drive Test" on page 348. 2. Diskette drive assembly 3. System board
11XX 1101: Serial_A test failure.	<ol style="list-style-type: none"> 1. Serial device 2. Communication cable 3. System board
17XX <ul style="list-style-type: none"> • 1701: Hard disk controller failure. • 1780, 1790: Hard disk 0 error. • 1781, 1791: Hard disk 1 error. 	<ol style="list-style-type: none"> 1. Hard disk drive 2. System board
24XX (2401: System board video error.)	<ol style="list-style-type: none"> 1. System board 2. Video card
808X <ul style="list-style-type: none"> • 8081: PCMCIA presence test failure. (PCMCIA revision number also checked.) • 8082: PCMCIA register test failure. 	<ol style="list-style-type: none"> 1. PCMCIA slot assembly 2. PCMCIA device 3. System board
860X (Pointing device error when TrackPoint III is disabled.) <ul style="list-style-type: none"> • 8601: System bus error.—8042 mouse interface. • 8602: External mouse error. • 8603: System bus error or mouse error. 	<ol style="list-style-type: none"> 1. External mouse 2. External keyboard 3. System board

Symptom / Error	FRU / Action in Sequence
861X (Pointing device error when TrackPoint III is enabled.) <ul style="list-style-type: none"> 8611: System bus error.–I/F between 8042 and IPDC. 8612: TrackPoint error. 8613: System board or TrackPoint error. 	<ol style="list-style-type: none"> Reseat the keyboard connector on the video card. Reseat the keyboard TrackPoint III cable on the keyboard card. See "1180 Keyboard Cable" on page 422. Keyboard External mouse Video card System board
19990301 19990302 19990305 <ul style="list-style-type: none"> 19990301: Hard disk error. 19990302: Invalid hard disk boot record. 19990305: No bootable device. 	<ol style="list-style-type: none"> Check that the operating system is installed in the HDD. Install the operating system if it is not installed. Reseat the boot device. Check the startup sequence for the correct boot device. Check that the operating system has no failure and is installed correctly.
19990303 (Bank–2 flash ROM check sum error.)	<ol style="list-style-type: none"> System board
Other codes not listed above	<ol style="list-style-type: none"> Go to "Undetermined Problems" on page 371.

FRU Codes

If an error is detected by the diagnostic tests, a *four-digit* FRU code is displayed. The FRU code indicates two suspected FRUs. Replace the FRU that is indicated by the *two leftmost digits* first; then replace the FRU indicated by the *two rightmost digits*. No FRU is assigned to code 00. If only one FRU is suspected, the other FRU code is filled with zeros. See the page referred to before replacing the FRU.

FRU Code	FRU/Action
10	System board
11	CPU card
15	Audio card (ESS)
16	DSP card
17	Front IR unit
18	Rear IR unit

FRU Code	FRU/Action
20	Memory (See "Memory Checkout" on page 342.)
30	Reserved
32	External keyboard
33	External mouse
40	LCD assembly
42	Video card
45	External CRT
50	1. Reseat the drive (FDD-1) 2. Diskette drive (FDD-1)
51	1. Reseat the diskette drive (FDD-2) 2. Diskette drive (FDD-2)
60	1. Reseat the hard disk drive (HDD-1) 2. Hard disk drive (HDD-1)
61	1. Reseat the hard disk drive (HDD-3) 2. Hard disk drive (HDD-3)
62	1. Reseat the hard disk drive in the UltraBay (HDD-2) 2. Hard disk drive in the UltraBay (HDD-2)
63	1. Reseat the hard disk drive (HDD-4) 2. Hard disk drive (HDD-4)
70	PCMCIA-2 (replicator)
71	PCMCIA (under UltraBay)
72	PCMCIA slot assembly
90	CD-ROM drive
91	External CD-ROM drive

Note: The device ID and error codes are used to indicate the detail portion of the FRU which caused the error. If replacing a FRU does not correct a problem, see the device ID or error code from the previous failure. If they have changed, the cause might be because the new FRU is defective or that the FRU was incorrectly installed.

If the problem remains after replacement of the FRUs, go to "Undetermined Problems" on page 371.

Beep Symptoms

Symptom / Error	FRU / Action in Sequence
Continuous beeps.	System board
One beep and a blank, unreadable, or flashing LCD.	1. Reseat the LCD connector. 2. LCD assembly 3. Video card 4. System board 5. DC/DC card

Symptom / Error	FRU / Action in Sequence
One beep, and the message "Unable to access boot source."	<ol style="list-style-type: none"> 1. Boot device 2. System board
One long, two short beeps and a blank or unreadable LCD.	<ol style="list-style-type: none"> 1. System board 2. Video card 3. LCD assembly
One long beep followed by four short beeps each time the power switch is operated. (System cannot power-on due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery.
One beep every second. (System is shutting down due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery (allows system to complete shutdown before changing the battery).
Two short beeps with error codes.	POST error. See "Numeric Error Codes" on page 359.
Two short beeps with blank screen.	System board

No Beep Symptoms

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator not on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. Go to "Power Systems Checkout" on page 349. 2. System board 3. DC/DC card 4. Power sources
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System board 2. DC/DC card 3. CPU card
No beep, power-on indicator on, and a blinking cursor only during POST.	<ol style="list-style-type: none"> 1. System board 2. CPU card 3. DC/DC card
No beep during POST but system runs correctly.	<ol style="list-style-type: none"> 1. Turn the volume up and check the speaker. 2. Check whether the DSP card or Audio (ESS) card connector is loose and reseat the connector. 3. Speaker 4. DSP card/audio (ESS) card 5. DC/DC card

LCD-Related Symptoms

Important

The LCD for the notebook computer contains over 921,000 thin-film transistors (TFTs). A small number of missing, discolored, or lighted dots (on all the time) is characteristic of TFT LCD technology, but excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of missing, discolored, or lighted dots in any background is 21 or more.

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator on, and a blank LCD during POST.	<ol style="list-style-type: none"> 1. System board 2. DC/DC card 3. Video card 4. CPU card
<ul style="list-style-type: none"> • LCD backlight not working, or • LCD too dark, or • LCD brightness cannot be adjusted, or • LCD contrast cannot be adjusted. 	<ol style="list-style-type: none"> 1. Reseat the LCD connectors. 2. LCD assembly 3. DC/DC card
<ul style="list-style-type: none"> • LCD screen unreadable, or • Characters missing pels, or • Screen abnormal, or • Wrong color displayed. 	<ol style="list-style-type: none"> 1. See important note for “LCD-Related Symptoms.” 2. Reseat all LCD connectors. 3. LCD assembly 4. System board 5. Video card
LCD has extra horizontal or vertical lines displayed.	LCD assembly

Keyboard/TrackPoint III-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Keyboard (one or more keys) does not work.	<ol style="list-style-type: none"> 1. Reseat the keyboard connector on the video card. 2. Reseat the three keyboard cables on the keyboard card. 3. Keyboard 4. Video card 5. System board

Symptom / Error	FRU / Action in Sequence
TrackPoint III does not work.	<ol style="list-style-type: none"> 1. Reseat the keyboard connector on the video card. 2. Go to "TrackPoint III Checkout" on page 346. 3. Keyboard 4. Video card 5. System board
Pointer moves automatically or does not work correctly.	<ol style="list-style-type: none"> 1. See "TrackPoint III Checkout" on page 346.

Indicator-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly.	<ol style="list-style-type: none"> 1. Reseat the LCD connector on the video card. 2. LCD assembly 3. Video card 4. System board

LCD Information Panel-Related Symptoms

Symptom / Error	FRU / Action in Sequence
An icon in the LCD information panel remains off or on, but the system runs correctly.	<ol style="list-style-type: none"> 1. Reseat the keyboard cable in the video card connector. 2. Reseat the LCD information panel cable connectors in the keyboard. 3. Keyboard 4. Video card 5. System board

Power-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Power shuts down during operation.	<ol style="list-style-type: none"> 1. Go to "Power Systems Checkout" on page 349. 2. Battery pack 3. Remove the battery pack and let it cool for 2 hours. 4. DC/DC card 5. Power sources

Symptom / Error	FRU / Action in Sequence
The system will not power-off. (See "Power Shutdown Switch" on page 340.)	<ol style="list-style-type: none"> 1. Press the power shutdown switch. 2. System board

Function/Audio-Related Symptoms

Symptom / Error	FRU / Action in Sequence
The system will not suspend or resume by opening or closing the keyboard.	<ol style="list-style-type: none"> 1. Go to "Suspend Mode" on page 356 and check that the computer can enter suspend mode. 2. Boot an operating system and press Fn+F4. If the computer enters suspend mode, suspect that the application program is not working properly. 3. Keyboard card 4. Video card 5. System board
The system will not suspend or resume by opening or closing the LCD.	<ol style="list-style-type: none"> 1. Go to "Suspend Mode" on page 356, and check that the computer can enter suspend mode. 2. Boot an operating system and press Fn+F4. If the computer enters suspend mode, suspect that the application program is not working properly. 3. LCD assembly 4. Video card 5. System board
Battery fuel gauge does not go higher than 90%.	Go to "Checking the Battery Pack" on page 351 and see the note.
Memory count (size) appears different from actual size.	Go to "Memory Checkout" on page 342.
System configuration does not match the installed devices.	Go to "Checking the Installed Devices List" on page 374.
System hangs intermittently.	Go to "Intermittent Problems" on page 370.

DSP-Related Symptoms

Symptom / Error	FRU / Action in Sequence
In OS/2, DOS, or Windows multimedia programs, no sound comes from the computer. (Only system beeps are heard at power-on.)	<ol style="list-style-type: none"> 1. Reseat the DSP card. 2. Go to "DSP Card Checkout" on page 346 and check the DSP card. 3. Check that the device driver is installed correctly.
In OS/2, DOS, or Windows, the modem does not work.	<ol style="list-style-type: none"> 1. Check that the DSP Modem is active. OS/2 and Windows: Click the DSP Modem icon in the ThinkPad Feature program. DOS: Run the MWMODEM ON command. 2. Reseat the DAA module.

ESS-Related Symptoms

Symptom / Error	FRU / Action in Sequence
In OS/2, DOS, or Windows multimedia programs, no sound comes from the computer. (Only system beeps are heard at power-on.)	<ol style="list-style-type: none"> 1. Reseat the audio (ESS) card. 2. Go to "Audio (ESS) Card Checkout" on page 346 and check the audio (ESS) card. 3. Check that the device driver is installed correctly.

Peripheral-Device-Related Symptoms

Symptom / Error	FRU / Action in Sequence
External display does not work correctly.	<ol style="list-style-type: none"> 1. See "External Display Self-Test" in "Common Devices Checkout" section.
Printer problems.	<ol style="list-style-type: none"> 1. Run printer self-test. 2. Parallel port device 3. Cable 4. System board
Serial or parallel port device problems.	<ol style="list-style-type: none"> 1. Device 2. Device cable 3. System board

Infrared-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Unable to communicate using the Infrared (IR) Port.	<ol style="list-style-type: none">1. Make sure the setup for the IR is correct.2. Make sure there are no fluorescent lights near the computer. The computer may receive optical noise from the fluorescent light.3. Reseat the IR unit.4. Run the advanced diagnostic test. If an error occurs and a FRU code is displayed, replace the parts shown by the FRU code.

Other Symptoms

Symptom / Error	FRU / Action in Sequence
Errors occur only when Port Replicator is used.	See “Port Replicator Checkout” in the “Common Devices Checkout” section.
PCMCIA slot pin is damaged.	PCMCIA slots assembly

Note: If you cannot find a symptom or error in this list and the problem remains, see “Undetermined Problems” on page 371.

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as cosmic radiation, electrostatic discharge, or software errors. FRU replacement should only be considered when a recurring problem exists.

When analyzing the intermittent problem, do the following:

1. Run the advanced diagnostic test for the system board in loop mode at least 10 times.
2. If no error is detected, do **not** replace any FRUs.
3. If any error is detected, replace the FRU shown by the FRU code. Rerun the test to verify that there are no more errors.

Undetermined Problems

You are here because the diagnostic tests did not identify which adapter or device failed, installed devices are incorrect, a short circuit is suspected, or the system is inoperative. Follow the procedures below to isolate the failing FRU (do not isolate nondefective FRUs).

Verify that all attached devices are supported by the computer.

Verify that the power supply being used at the time of the failure is operating correctly. (See "Power Systems Checkout" on page 349.)

1. Power-off the computer.
2. Check the cables, wires, and connectors for short circuits and open circuits. Visually check them for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:
 - a. Non-IBM devices
 - b. Devices attached to the expansion bus connector
 - c. Printer, mouse, and other external devices
 - d. Battery pack
 - e. Hard disk drive
 - f. Diskette drive/CD-ROM drive or the device attached in the UltraBay.
 - g. DIMM
 - h. PC Cards
4. Power-on the computer.
5. Determine if the problem has changed.
6. If the problem does not occur again, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRUs one at a time. Do not replace a nondefective FRU.
 - DC/DC card
 - Video card
 - Keyboard card
 - LCD assembly
 - System board
 - DSP card or audio (ESS) card
 - CPU card




Related Service Procedures

This section provides information about the following:

- “Status Indicators”
- “How to Run the Diagnostics” on page 373
- “Error Log” on page 374
- “Checking the Installed Devices List” on page 374
- “Password Combinations (POP, HDP, PAP)” on page 375
- “How to Run a Low-Level Format” on page 375
- “PC Test Card LED” on page 375
- “Fn Key Combinations” on page 376

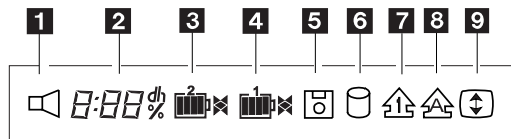
Status Indicators



The system status indicators show the current computer status in different colors (green, yellow, and orange).








Symbol	Color	Meaning
	Green	Battery fully charged
	Orange	Battery charging
	Blinking orange	Battery needs charging
	Green	Computer is in suspend mode
	Blinking Green	Computer is entering suspend mode or hibernation mode, or is resuming normal operation
	Green	Power on

LCD Information Panel

The LCD information panel shows the current computer status using these icons:



Icon	Meaning
1 	Speaker
2 	Remaining battery

Icon	Meaning
3 	Secondary battery status
4 	Main battery status
5 	Diskette drive in-use
6 	Hard disk in-use
7 	Numeric lock
8 	Caps lock
9 	Scroll lock

How to Run the Diagnostics

Use either the TrackPoint III or the cursor move keys to interact with the tests. The **Enter** key works the same as selecting the **OK** icon to reply OK.

1. Press and hold the **F1** key; then power-on the computer. Hold the **F1** key down until the Easy-Setup screen appears.
2. Select **Test** and press **Enter**.
3. Select a device and press **Enter** to run the test.
4. The test progress screen appears.
5. "OK" appears when the test ends without any errors.
6. Start the Advanced Diagnostic test by pressing **Ctrl+A** on the basic diagnostic menu screen.
7. Select **Tool** to install the tools.

Note: The following tools are required.

FDD: Erasable 2HD diskette
Parallel: Wrap plug (P/N 72X8546)
Serial: Wrap plug (P/N 72X8546)
PCMCIA: PC Test Card (P/N 35G4703)
CDROM: Any CD (data CD is recommended)

8. Select a device, press the **Spacebar**, and install the tool. Multiple devices can be selected by repeating this step.
A √ mark appears beside the selected devices.
9. Select **OK** and press **Enter** if the selection is OK.

10. Select a device and press **Enter** to start the tests.
Note: Don't touch the keyboard and pointing device when the system board test is running. This may cause an error.
11. Select **Test All** to test all devices.
12. Select **Loop Test** to run the tests in a repeated loop.
A loop option menu appears where you can select a device loop or all-device loop. Select a device by pressing the **Spacebar**. Repeat this step to select multiple devices. Press **Enter** to start the diagnostic loop. If no device is selected, all device tests are looped.
13. To exit the loop, keep pressing **Ctrl+Pause** until the test exits. A beep sounds to notify that the exit interrupt is sensed by the test program.

Error Log

Diagnostic errors are printed on the printer that is attached to the parallel port when the error is detected. The error is also logged in the system memory.

Do the following to display the errors.

1. End the test, if it is running.
2. Press **Ctrl+A** to select the advanced diagnostic mode.
3. Press **Ctrl+E**.
4. The error log appears.
5. To exit the screen, select the cancel icon or press **Esc**.

The error log is not saved when the system is powered-off.

Checking the Installed Devices List

If a device is installed but the icon appears in a gray shade rather than a dark shade on the basic diagnostics screen, the device is defective. Reseat the device connectors. If the symptom remains, replace the device or the system board. If needed, adjust the contrast control to clearly distinguish the shades of the icon.

If a device that is not installed appears in a dark shade (for example, FDD-2 appears in a dark shade when *no* second FDD is installed), do the following:

1. Replace the **first** device in the configuration, such as an FDD-1, an HDD-1, or a PCMCIA-1.
2. If the problem remains, replace the system board.

The PCMCIA-1, Parallel, and Serial icons are always displayed in a dark shade because the icons represent subsystems of the system board and not the attachment of the devices.

The FDD-1, HDD-1, or PCMCIA-1 icons represent the **first** drive in the system configuration for each type of device. Similarly, the FDD-2 or PCMCIA-2 icons represent the

second drive, usually attached through a port replicator or an expansion unit. The HDD-2 icon represents the hard disk drive in the UltraBay. The HDD-3 and HDD-4 icons represent the hard disk drive, attached through an expansion unit.

Password Combinations (POP, HDP, PAP)

When the power-on password (POP), hard disk password (HDP), and supervisor password (PAP) are used, the following situations may occur:

- **When POP is the same as HDP-1 or HDP-2**

The POP prompt appears, but one of the HDP prompts does not appear.

- **When POP is not the same as HDP-1 and HDP-2**

The POP, HDP-1, and HDP-2 prompts all appear.

- **When PAP is used with HDP-1 or HDP-2**

When PAP is used, HDP-1 or HDP-2 are enabled automatically, but no HDP prompt appears. HDP-1 and HDP-2 are set the same as PAP.

How to Run a Low-Level Format

Do the following to format the hard disk.

Attention: Make sure the address of the drive to be formatted is correct. This procedure erases all information on the disk.

1. Power-off the computer.
2. Insert the ThinkPad Hardware Maintenance Diskette Version 1.20 into diskette drive A and power-on the computer.
3. Select **Format the hard disk** from the main menu.
4. Select the drive from the menu.
5. Follow the instructions on the screen.

PC Test Card LED

The green LED on the PC test card turns on when the PCMCIA test is running. If the LED does not turn on, check that the card is installed correctly by reseating the card. If it still does not turn on after it is reseated, try using another slot for the test. If the LED still does not turn on and the test fails, replace the FRU shown by the diagnostic error code.

Fn Key Combinations

The following table shows the **Fn** key and function key combinations and their corresponding functions.

The **Fn** key works independently from the operating system. The operating system obtains the status through the system management interface to control the system.

Fn +	Description
F1	Reserved
F2	Fuel-Gauge display on or off
F3	Standby mode invocation
F4	Suspend mode invocation
F5	Reserved
F6	Reserved
F7	LCD or CRT display
F8	Reserved
F9	Reserved
F10	Reserved
F11	Power management mode (toggling between high power, intelligent, and economy)
F12	Hibernation invocation

Product Overview (760)

The following table shows an overview of the system features:

Model 760C or 760CD

Feature	Description
Processor	<ul style="list-style-type: none">Intel Pentium 90 MHz with 256KB L2 CacheIntel Pentium 120 MHz with 256KB L2 Cache
Bus architecture	<ul style="list-style-type: none">AT busVESA local bus for video subsystem
Memory (standard)	8MB (on the system board)
Memory (option)	<ul style="list-style-type: none">4MB, 8MB, 16MB, DIMM (max. 40MB)DIMM adapter
CMOS RAM	114 bytes
VGA video	<ul style="list-style-type: none">12.1-inch, 64K colors, 800×600 pixel TFT color LCD10.4-inch, 64K colors, 800×600 pixel TFT color LCD
Diskette drive (removable)	<ul style="list-style-type: none">720KB, 1.2MB, 1.44MB, 2.88MB (4-mode), 3.5-inch720KB, 1.2MB, 1.44MB (3-mode), 3.5-inch
Hard disk drive (removable)	<ul style="list-style-type: none">760C<ul style="list-style-type: none">360MB, 2.5-inch720MB, 2.5-inch760CD<ul style="list-style-type: none">810MB, 2.5-inch1200MB, 2.5-inch
Enhanced video card	<ul style="list-style-type: none">760CD<ul style="list-style-type: none">Video acceleratorVideo capture and overlayVideo composite in/outMPEG hardware decodingMPEG2
CD-ROM (removable)	<ul style="list-style-type: none">760CD<ul style="list-style-type: none">5-inch, quadruple speed, IDE interface
DSP card	<ul style="list-style-type: none">Audio functionFax/modem functionTelephony functionMWave function
Infrared transfer	<ul style="list-style-type: none">Two IR portsIrDA 1.0ASK1.15 million bps
PCMCIA	<ul style="list-style-type: none">One Type-III or two Type-II

Model 760E or 760ED

Feature	Description
Processor	<ul style="list-style-type: none"> • Intel Pentium 120 MHz with 256KB L2 Cache • Intel Pentium 133 MHz with 256KB L2 Cache • Intel Pentium 150 MHz with 256KB L2 Cache • Intel Pentium 166 MHz with 256KB L2 Cache
Bus architecture	<ul style="list-style-type: none"> • PCI bus • VESA local bus for video subsystem
Memory (standard)	8MB or 16MB (on the system board)
Memory (option)	<ul style="list-style-type: none"> • 8MB, 16MB, 32MB, DIMM (max. 72MB or 80MB) • DIMM adapter
CMOS RAM	114 bytes + 4 kilobytes
VGA video	<ul style="list-style-type: none"> • 12.1-inch, 64K colors, 800×600 pixel TFT color LCD • 12.1-inch, 64K colors, 1024×768 pixel TFT color LCD
Diskette drive (removable)	<ul style="list-style-type: none"> • 720KB, 1.2MB, 1.44MB, 2.88MB (4-mode), 3.5-inch • 720KB, 1.2MB, 1.44MB (3-mode), 3.5-inch
Hard disk drive (removable)	<ul style="list-style-type: none"> • 810MB, 2.5-inch • 1.08GB, 2.5-inch • 1.2GB, 2.5-inch • 1.35GB, 2.5-inch • 2.1GB, 2.5-inch
Enhanced video card	<ul style="list-style-type: none"> • 760ED (enhanced model) <ul style="list-style-type: none"> – Video accelerator – Video capture and overlay – Video composite in/out – S-video in – MPEG hardware decoding – MPEG2
CD-ROM (removable)	<ul style="list-style-type: none"> • 760ED <ul style="list-style-type: none"> – 5-inch, 4X, 6X, or 8X speed, IDE interface
DSP card	<ul style="list-style-type: none"> • Audio function • Fax/modem function • Telephony function • MWave function
Infrared transfer	<ul style="list-style-type: none"> • Two IR ports • IrDA 1.0 • ASK • 1.15 million bps
PCMCIA/cardbus	<ul style="list-style-type: none"> • One Type-III or two Type-II

Model 760L or 760LD

Feature	Description
Processor	<ul style="list-style-type: none"> Intel Pentium 90 MHz with 256KB L2 Cache Intel Pentium 120 MHz with 256KB L2 Cache
Bus architecture	<ul style="list-style-type: none"> AT bus VESA local bus for video subsystem
Memory (standard)	8MB (on the system board)
Memory (option)	<ul style="list-style-type: none"> 4MB, 8MB, 16MB, DIMM (max. 40MB) DIMM adapter
CMOS RAM	114 Bytes
VGA video	<ul style="list-style-type: none"> 12.1-inch, 64K colors, 800×600 pixel TFT color LCD 10.4-inch, 64K colors, 800×600 pixel TFT color LCD
Diskette drive (removable)	<ul style="list-style-type: none"> 720KB, 1.2MB, 1.44MB, 2.88MB (4-mode), 3.5-inch 720KB, 1.2MB, 1.44MB (3-mode), 3.5-inch
Hard disk drive (removable)	<ul style="list-style-type: none"> 810MB, 2.5-inch 1.08GB, 2.5-inch 1.2MB, 2.5-inch
CD-ROM (removable)	<ul style="list-style-type: none"> 760LD <ul style="list-style-type: none"> 5-inch, quadruple speed, IDE interface
ESS card	<ul style="list-style-type: none"> Audio function
Infrared transfer	<ul style="list-style-type: none"> Two IR ports IrDA 1.0 ASK 1.15 million bps
PCMCIA	<ul style="list-style-type: none"> One Type-III or two Type-II

Model 760EL or 760ELD

Feature	Description
Processor	<ul style="list-style-type: none"> • Intel Pentium 100 MHz w/o L2 Cache • Intel Pentium 120 MHz w/o L2 Cache • Intel Pentium 133 MHz w/o L2 Cache
Bus architecture	<ul style="list-style-type: none"> • PCI bus • VESA local bus for video subsystem
Memory (standard)	8MB or 16MB (on the system board)
Memory (option)	<ul style="list-style-type: none"> • 8MB, 16MB, 32MB, DIMM (max. 72MB or 80MB) • DIMM adapter
CMOS RAM	114 bytes + 4 kilobytes
VGA video	<ul style="list-style-type: none"> • 12.1-inch, 64K colors, 800×600 pixel TFT color LCD • 11.3-inch, 256 colors, 800×600 pixel DSTN color LCD
Diskette drive (removable)	<ul style="list-style-type: none"> • 720KB, 1.2MB, 1.44MB, 2.88MB (4-mode), 3.5-inch • 720KB, 1.2MB, 1.44MB (3-mode), 3.5-inch
Hard disk drive (removable)	<ul style="list-style-type: none"> • 810MB, 2.5-inch • 1.08GB, 2.5-inch • 1.2GB, 2.5-inch
CD-ROM (removable)	<ul style="list-style-type: none"> • 760ELD <ul style="list-style-type: none"> – 5-inch, quadruple speed, IDE interface
ESS card	<ul style="list-style-type: none"> • Audio function
Infrared transfer	<ul style="list-style-type: none"> • Two IR ports • IrDA 1.0 • ASK • 1.15 million bps
PCMCIA/cardbus	<ul style="list-style-type: none"> • One Type-III or two Type-II

Model 760XL or 760XD

Feature	Description
Processor	<ul style="list-style-type: none"> • 760XL/760XD <ul style="list-style-type: none"> – Intel MMX Pentium 166MHz with 256KB L2 Cache
Bus architecture	<ul style="list-style-type: none"> • PCI bus • VESA local bus for video subsystem
Memory (standard)	<ul style="list-style-type: none"> • 760XL <ul style="list-style-type: none"> – 16MB • 760XD <ul style="list-style-type: none"> – 32MB (16MB on the system board and 16MB as DIMM)
Memory (option)	<ul style="list-style-type: none"> • 8 MB, 16MB, and 32MB DIMM
CMOS RAM	114 bytes + 4 kilobytes
VGA video	<ul style="list-style-type: none"> • 760XD <ul style="list-style-type: none"> – 12.1-inch, 64K colors, 1024x768 pixel XGA TFT color LCD • 760XL <ul style="list-style-type: none"> – 12.1-inch, 64K colors, 800x600 pixel SVGA TFT color LCD
Diskette drive (removable)	<ul style="list-style-type: none"> • 720KB, 1.2MB, 1.44MB, 2.88MB (4-mode), 3.5-inch • 720KB, 1.2MB, 1.44MB (3-mode), 3.5-inch
Hard disk drive (removable)	<ul style="list-style-type: none"> • 760XD <ul style="list-style-type: none"> – 3.0GB 2.5-inch • 760XL <ul style="list-style-type: none"> – 2.1GB 2.5-inch
CD-ROM (removable)	<ul style="list-style-type: none"> • 760XD <ul style="list-style-type: none"> – 5-inch, 8x speed, IDE interface
Audio function	<ul style="list-style-type: none"> • 760XD <ul style="list-style-type: none"> – DSP card • 760XL <ul style="list-style-type: none"> – ESS card
Infrared transfer	<ul style="list-style-type: none"> • Two IR ports • IrDA 1.0 • ASK • 1.15 million bps
PCMCIA/cardbus	<ul style="list-style-type: none"> • One Type-III or two Type-II

FRU Removals and Replacements

This section contains information about removals and replacements.

- Do not damage any part. Only certified and trained personnel should service the computer.
- The arrows in this section show the direction of movement to remove a FRU, or to turn a screw to release the FRU. The arrows are marked in numeric order, in square callouts, to show the correct sequence of removal.
- Any FRUs that must be removed before removing the failing FRU are listed at the top of the page.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See “Locations” on page 478 for internal cable connections and arrangement information.
- When replacing a FRU, use the correct screw size, as shown in the procedure.

Safety Notice 1: Translation on page 8

Before the computer is powered-on after FRU replacement, make sure all screws, springs, or other small parts, are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.

Safety Notice 3: Translation on page 10

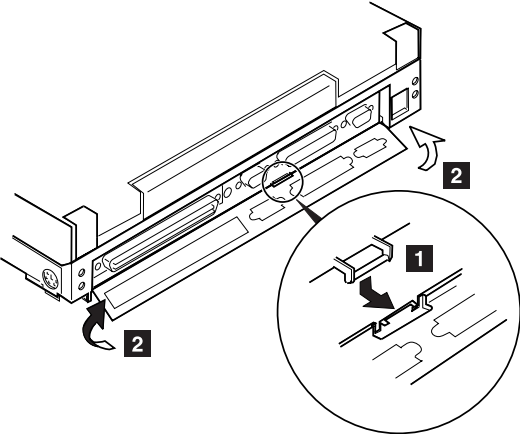
The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations.

Safety Notice 8: Translation on page 14

Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.

1010 Rear Connector Door

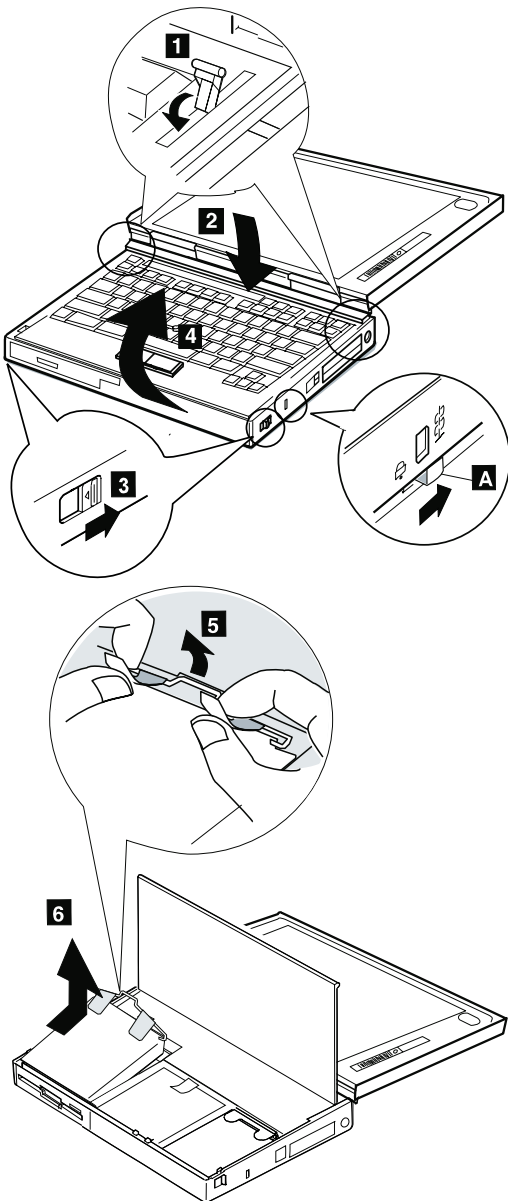
Remove the center latch **1**; then remove the rear connector door by flexing it **2**.



1020 Diskette Drive/CD-ROM Drive

Diskette Drive (Model Unique)

Note: If the security latch **A** is at the left position, push and slide it to the right position (unlock).

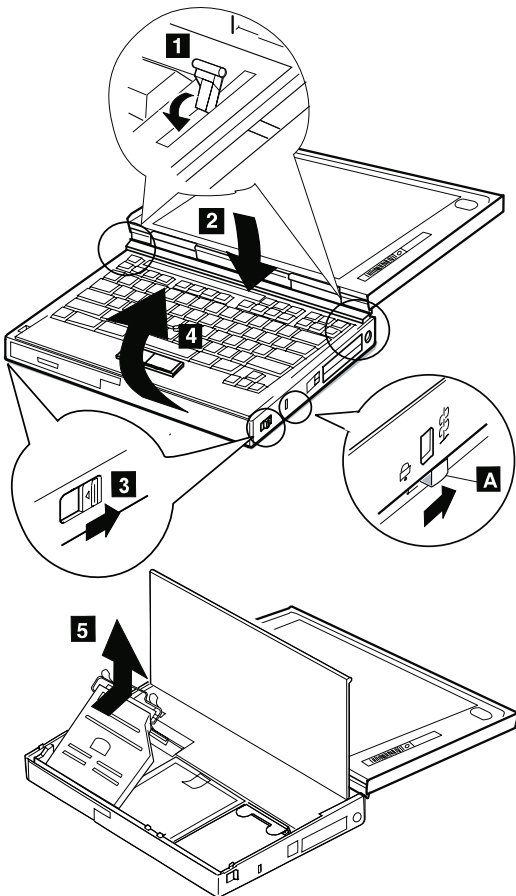


CD-ROM Drive (Model Unique)

Attention

Note: Remove the CD-ROM drive exactly as shown in the figure. Do not apply any extra force to the CD-ROM drive when removing it.

Note: If the security latch **A** is at the left position, push and slide it to the right position (unlock).

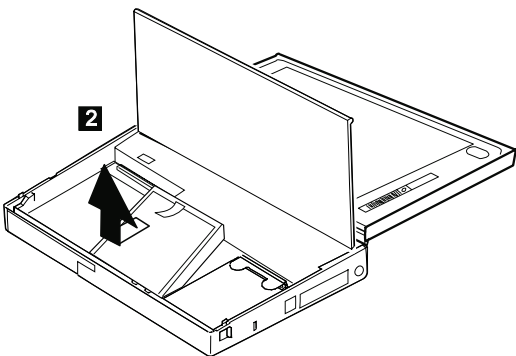
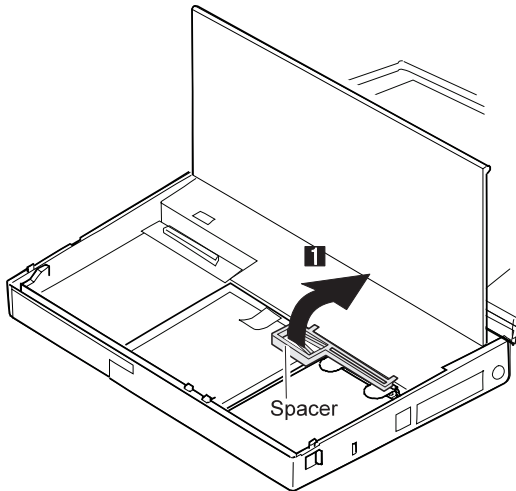


1030 Battery Pack

- CD-ROM Drive (Model unique) (1020)

Note: Be careful that the computer does not fall backward when the battery pack is removed.

If there is a spacer, open the spacer before removing the battery pack.



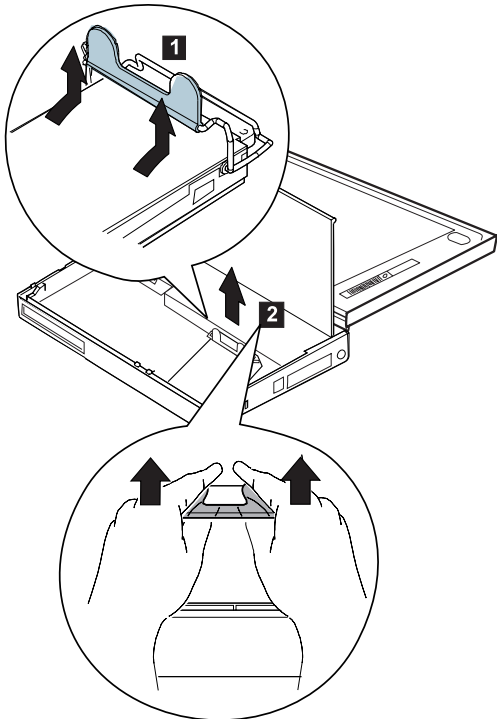
1040 Hard Disk Drive

- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)

Attention

Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard disk drive, have the user make a backup copy of all the information on the hard disk. Never remove the hard disk drive while the system is operating or is in suspend mode.

Note: Remove the hard disk drive exactly as shown in the figure. Do not apply any extra force to the hard disk drive when removing it.

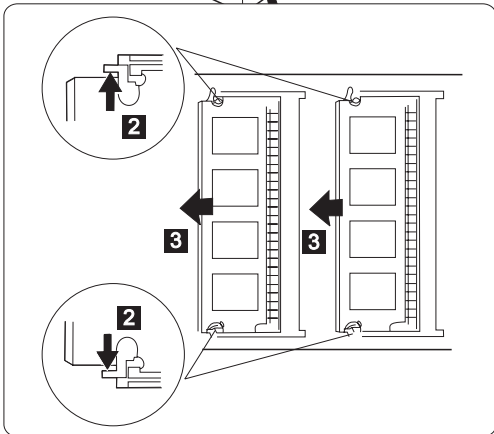
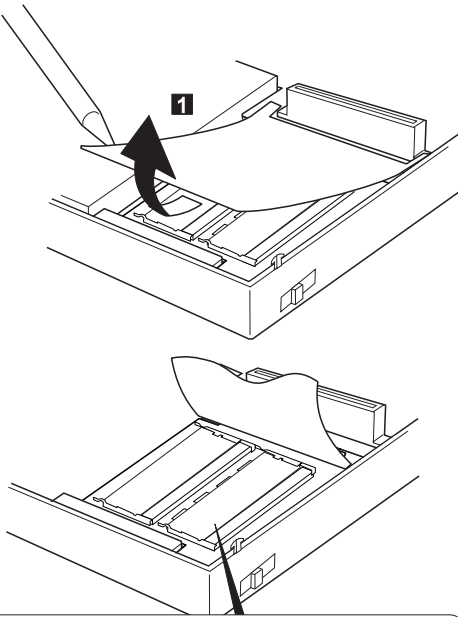


Note: After replacing the hard disk drive, latch the removal strap into the correct position.

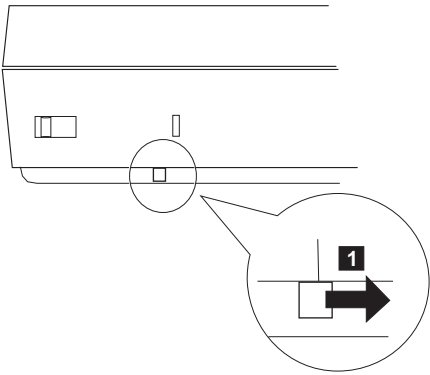
1050 DIMM

760XL/760XD

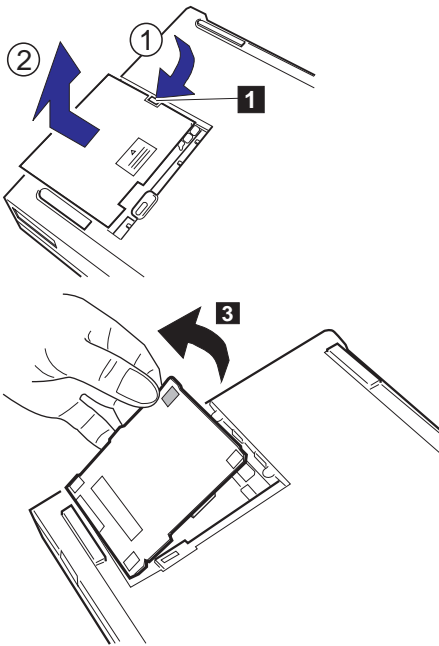
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)

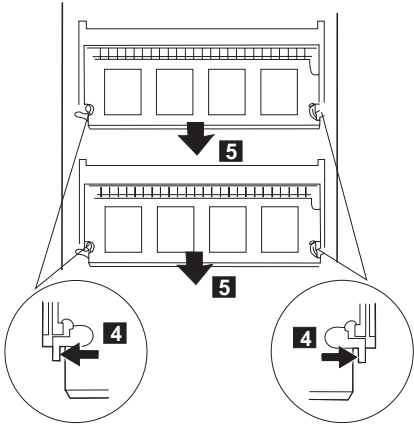


Other Models



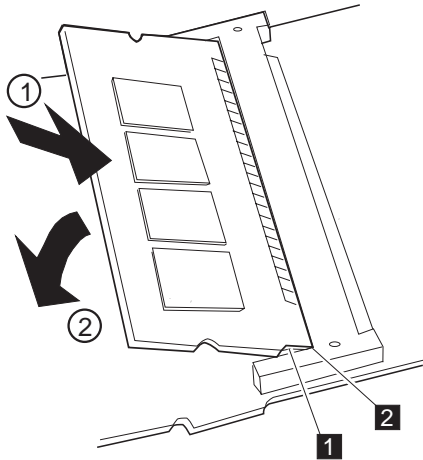
Turn the computer upside down.



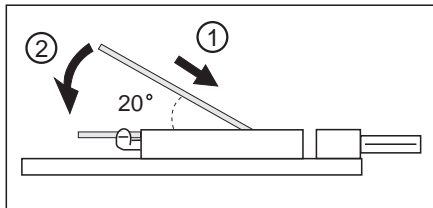


Note: When installing the DIMM, do the following:

1. Find the notch **1** on the side of the DIMM.
2. With the notched end of the DIMM toward the right side of the socket **2**, insert the DIMM, at an angle of approximately 20°, into the socket; then press it firmly.
3. Pivot the DIMM until it snaps into place.



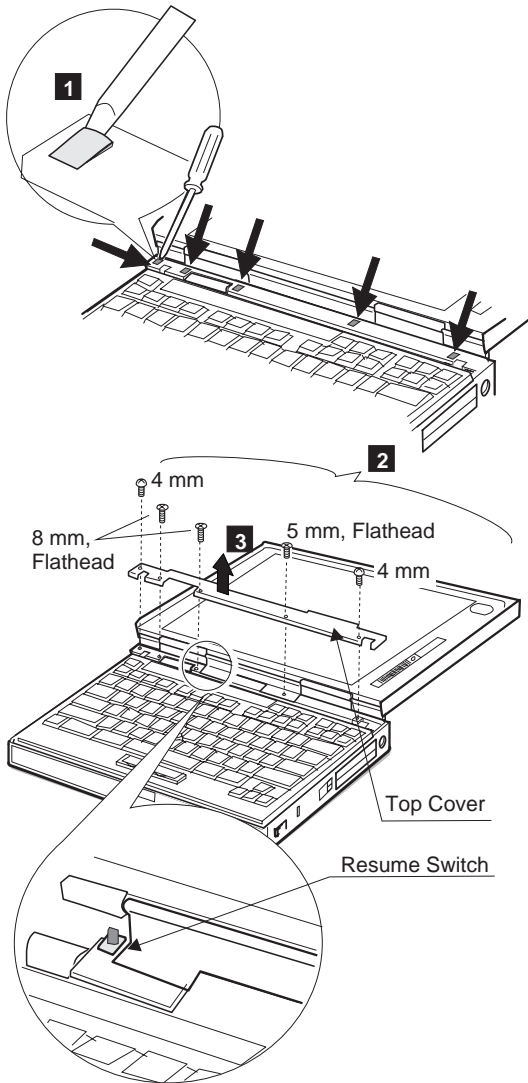
Side View



1060 Top Cover

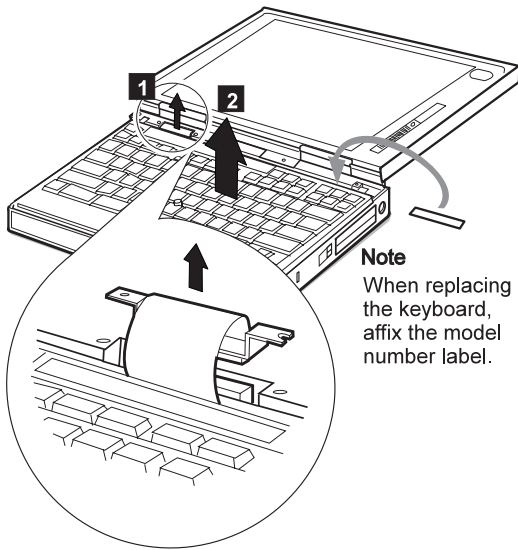
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (760C/760L/760E/760EL) (1030)
- Hard Disk Drive (1040)

Note: When replacing the top cover, be careful not to damage the resume switch, shown in the figure.

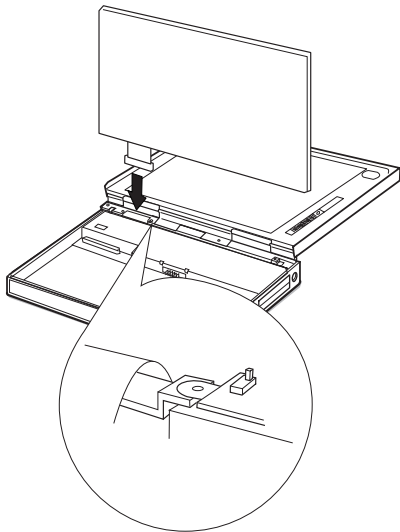


1070 Keyboard Unit

- Top Cover (1060)

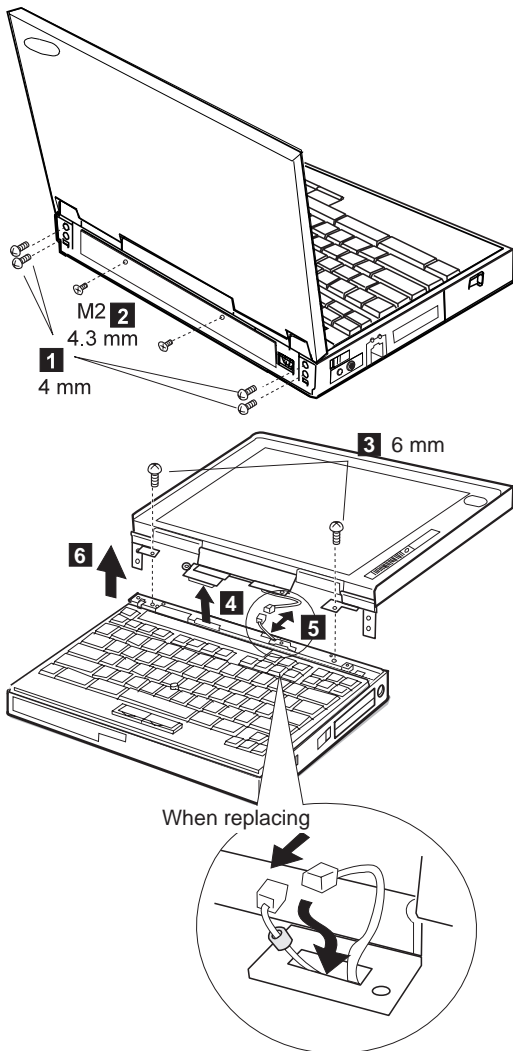


When replacing the keyboard unit, connect the keyboard connector as shown in the figure; then replace the keyboard.



1080 LCD Unit

- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)

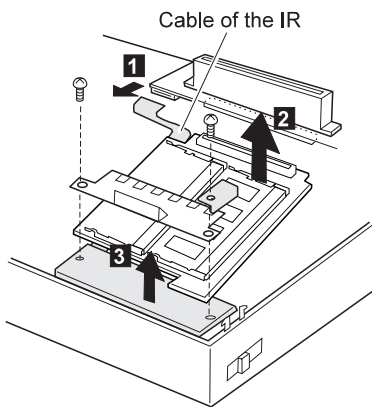


1090 Front IR

Models 760XL/760XD

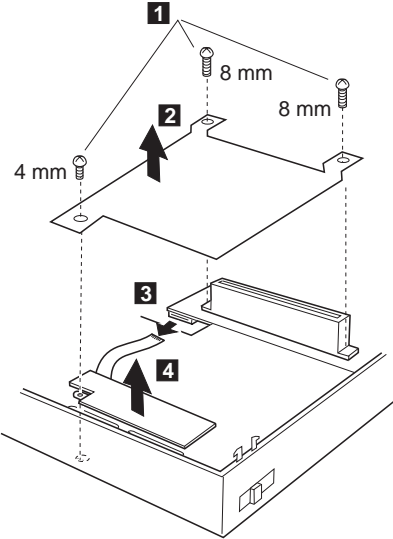
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- System Board Assembly (1100)

After removing the DIMM adapter card, remove the front IR.



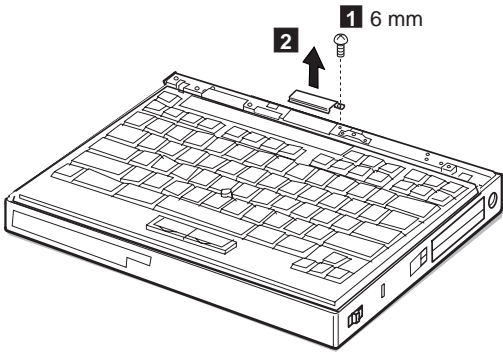
Other Models

- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)



1095 Rear IR

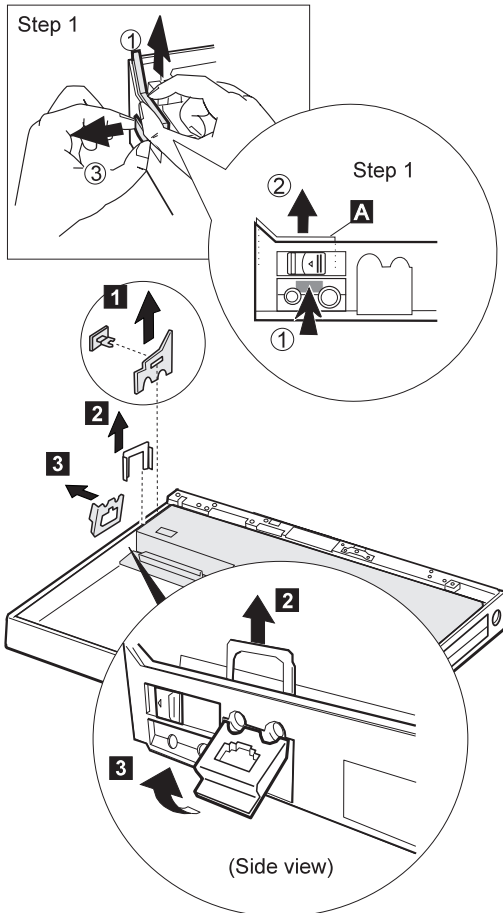
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- LCD Unit (1080)



1100 System Board Assembly

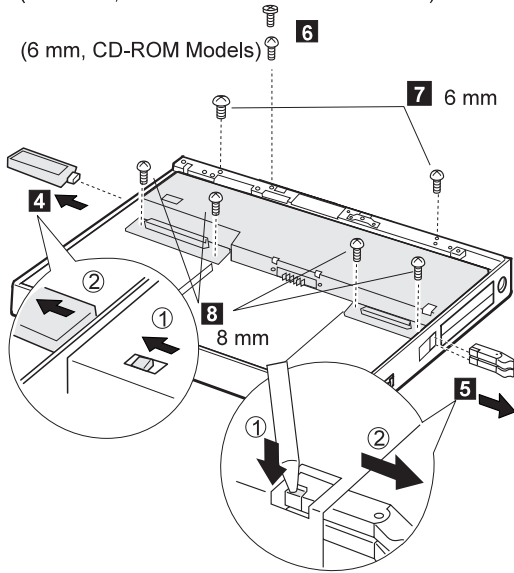
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Rear IR (1090)

Note: In step 1, gently pushing the shaded area (①), lift the switch cover halfway up (②), as shown. Then pull the switch lever out to remove (③).



(85G0023, Models 760C/760L/760E/760EL)

(6 mm, CD-ROM Models)

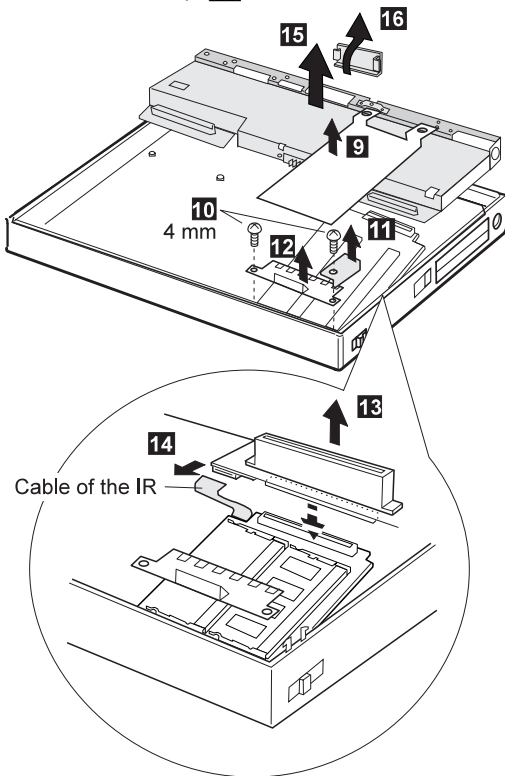


Notes:

1. Step **4** is a DSP-model-unique step. DSP models are:
 - Models 760C/760E/760CD/760ED/760XD
2. In step **5**, gently push the levers to avoid flexing them.

Models 760XL/760XD

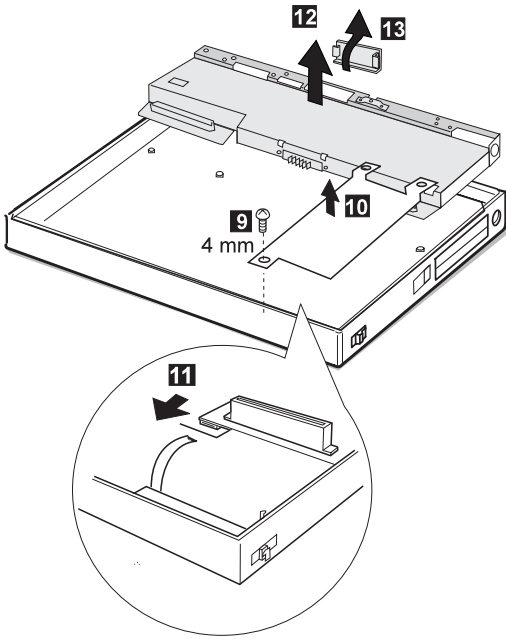
For Models 760XL or 760XD, raise the system board assembly a bit to disconnect the DIMM adapter card in step **12**. Be careful not to damage the IR flexible cable under the DIMM adapter card. Then remove the IR flexible cable in step **13**.



When replacing:

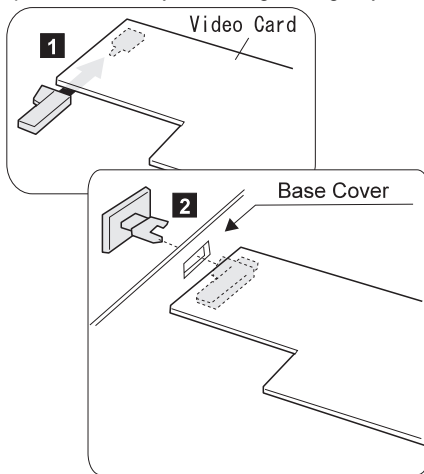
Refer to the following figure to locate the DIMM adapter card. Make sure that the connector of the DIMM adapter card is connected firmly. A loose or wrong connection causes memory error.

Other Models



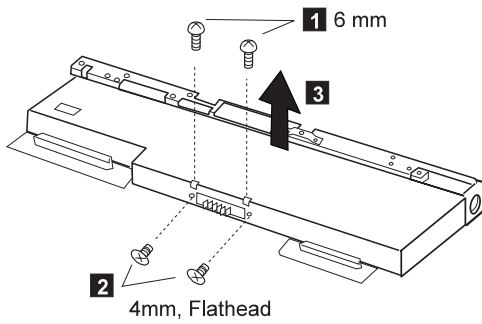
When replacing:

When replacing the power switch, align the power switch and power actuator in step **2** of the following figure. Check that the power switch operates correctly before tightening any screws.



1125 Upper Shield

- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Front IR and Rear IR (1090)
- System Board Assembly (1100)



1110 Video Card/Fan (Model Unique)

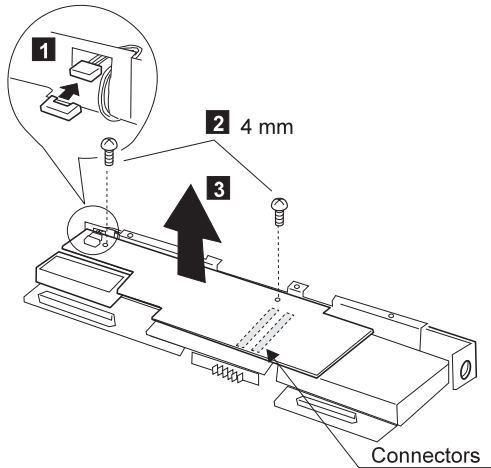
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Front IR and Rear IR (1090)
- System Board Assembly (1100)
- Upper Shield (1125)

Check the Model

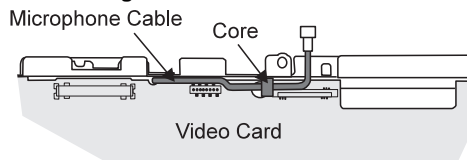
There are two 760ED models: One has a standard video card built in, and the other has an enhanced video card built in. If you install an incorrect video card, the LCD will not work. Check to be sure which 760ED model you are servicing.

Standard Video Card

- 760C/760L/760E/760ED/760EL/760LD/760ELD

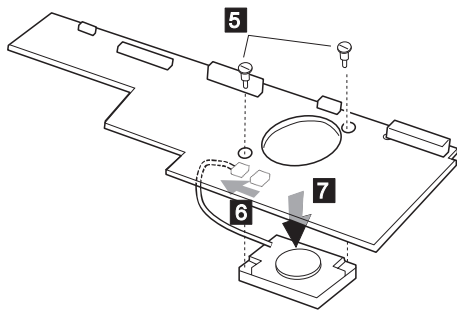
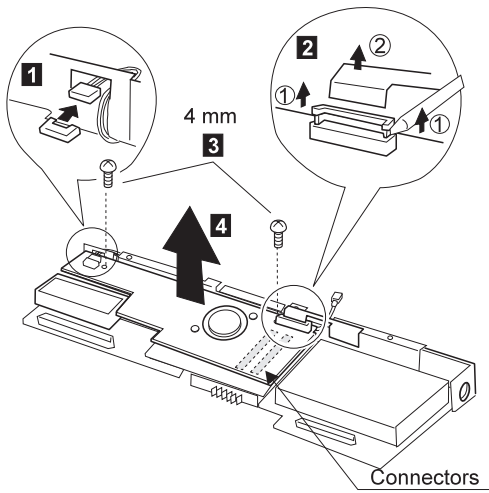


When replacing, the following figure shows the cable routing:



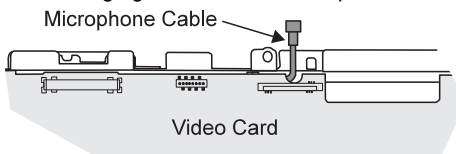
- **760XL**

Note: Be careful not to touch the fan rotor when assembling or disassembling.

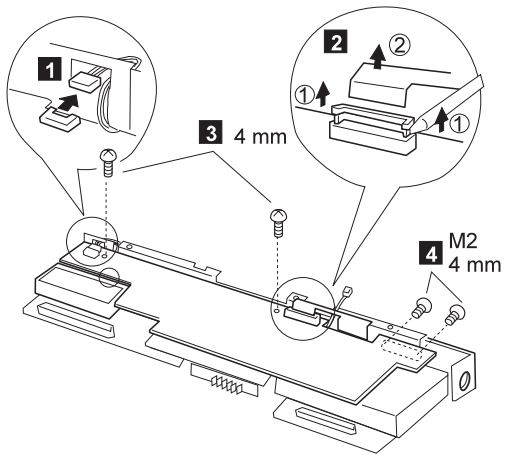


When replacing:

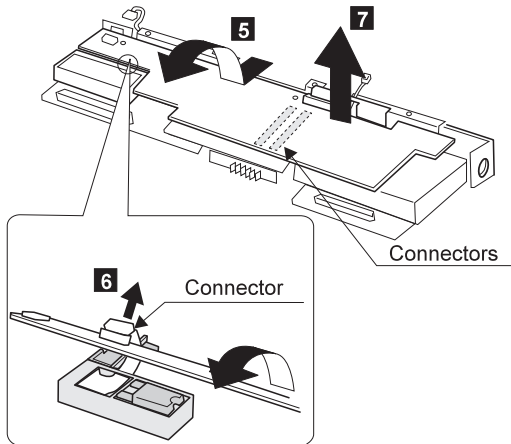
The following figure shows the microphone routing.



Enhanced Video Card

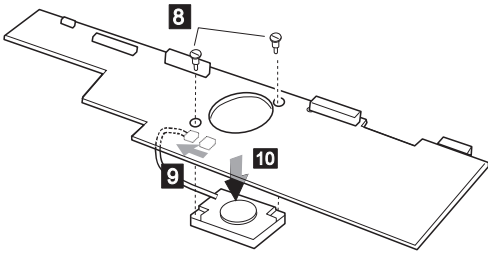


In step **5**, turn the video card upside down to disconnect the cable in step **6**.



For Model 760XD, remove the fan as follows.

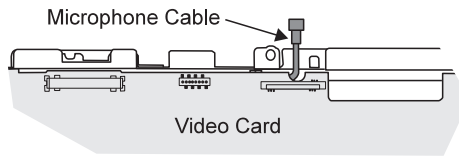
Note: Be careful not to touch the fan rotor when assembling or disassembling.



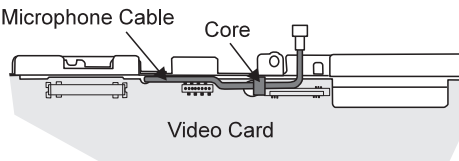
When replacing:

The following figure shows the cable routing.

- **Model 760XD**



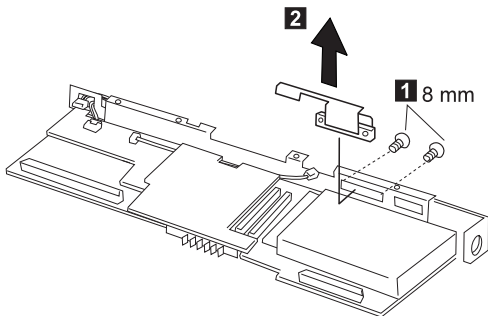
- **Other Models**



1135 External Diskette Drive Connector

- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Front IR and Rear IR (1090)
- System Board Assembly (1100)
- Upper Shield (1125)
- Video Card (1110)

760CD/760LD/760E/760ED/760EL/760ELD/760XL/760XD

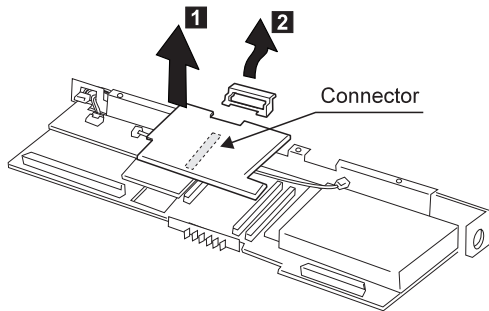


1120 DC/DC Card

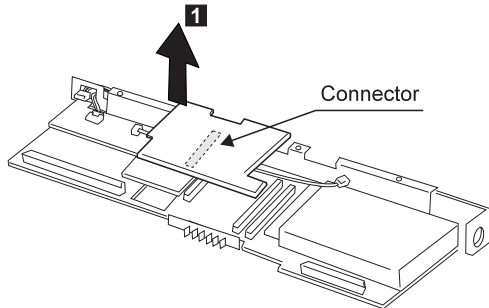
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Front IR and Rear IR (1090)
- System Board Assembly (1100)
- Upper Shield (1125)
- Video Card (1110)

760XL/760XD

- 1** : DC/DC Card
- 2** : Air Duct

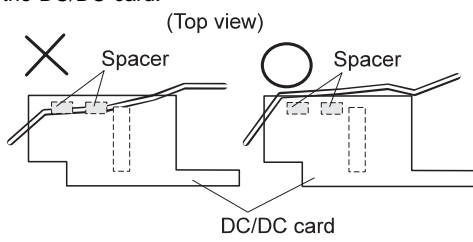


Other Models



When replacing:

Make sure that the microphone cable does not catch between the system board and the spacer on the DC/DC card.



1130 DSP Card/ Audio (ESS) Card

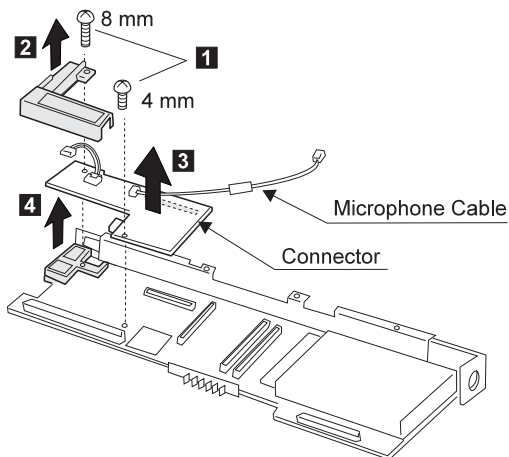
- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Front IR and Rear IR (1090)
- System Board Assembly (1100)
- Upper Shield (1125)
- Video Card (1110)
- DC/DC Card (1120)

Notes:

1. There are two models for 760E, slim type and thick type. Check the screw length in step **2** when removing the DSP card.
2. See the following table and make sure to replace the correct card.

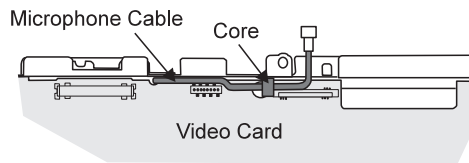
Audio (ESS) Card	DSP card
760L 760LD 760EL 760ELD 760XL	760C 760E 760CD 760ED 760XD

Slim-Type Models (Models 760C/760E/760L)



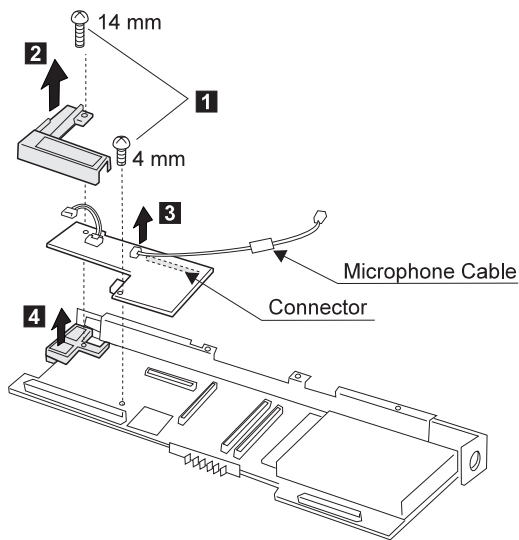
When replacing:

1. The following figure shows the cable routing.



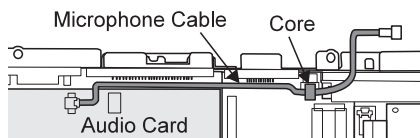
2. When replacing the DSP card or the audio (ESS) card, make sure that the connector on the card is not loose. If the connector does not connect properly, no sound will be produced.

Thick-Type Models (Other Models and 760E)



When replacing:

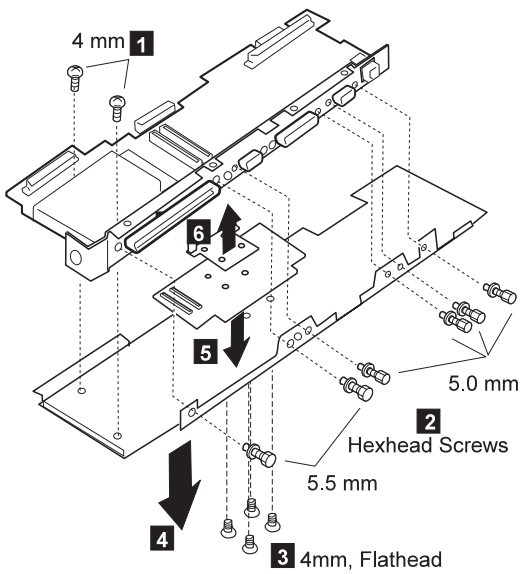
1. The following figure shows the cable routing for models 760XL/760XD.



2. When replacing the DSP card or the audio (ESS) card, make sure that the connector on the card is not loose. If the connector does not connect properly, no sound will be produced.

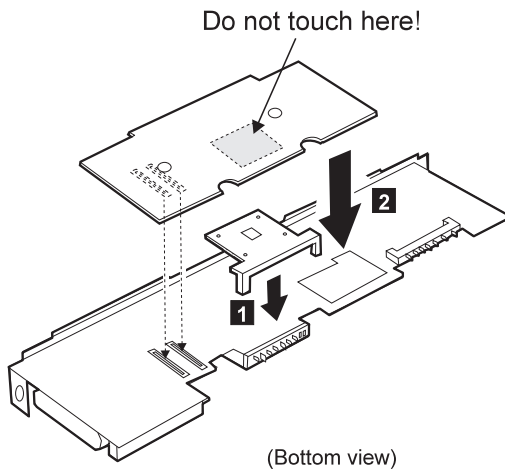
1140 CPU Card

- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Front IR and Rear IR (1090)
- System Board Assembly (1100)
- Upper Shield (1125)
- Video Card (1110)
- DC/DC Card (1120)
- DSP Card / Audio (ESS) Card (1130)



Be careful

- Connect the CPU card using the exact procedure shown in the figures, and make sure that the two CPU card connectors are connected properly. If these connectors are not connected, you cannot power on the computer.
- **Do not apply any extra force to the shaded area of the CPU card when connecting.**



1150 System Board and PCMCIA Slot Assembly


- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- LCD Unit (1080)
- Front IR and Rear IR (1090)
- Video Card (1110)
- DC/DC Card (1120)
- DSP Card / Audio (ESS) Card (1130)
- CPU Card (1140)

Notes:

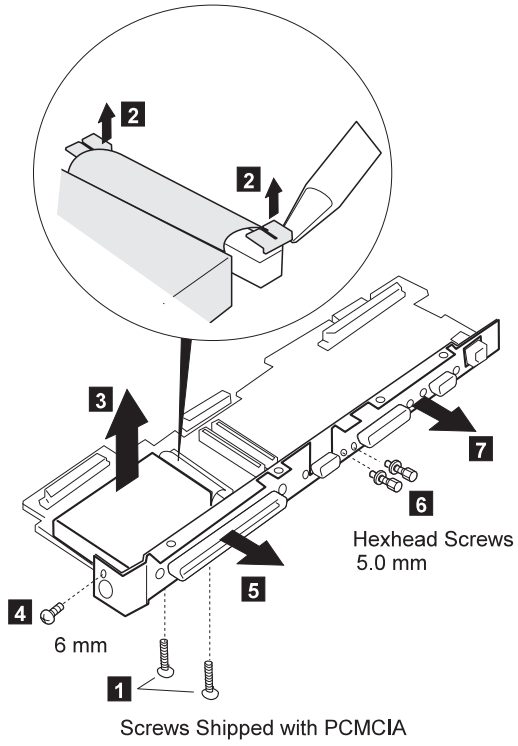
1. The system unit serial number must be restored when the system board is replaced. To restore the system unit serial number, select the option "Set system identification" on the maintenance diskette. The EEPROM on the system board contains the vital product data (VPD), the system unit serial number, system board system number, and other computer-unique data.

Note: Do not power off the computer when restoring the VPD.

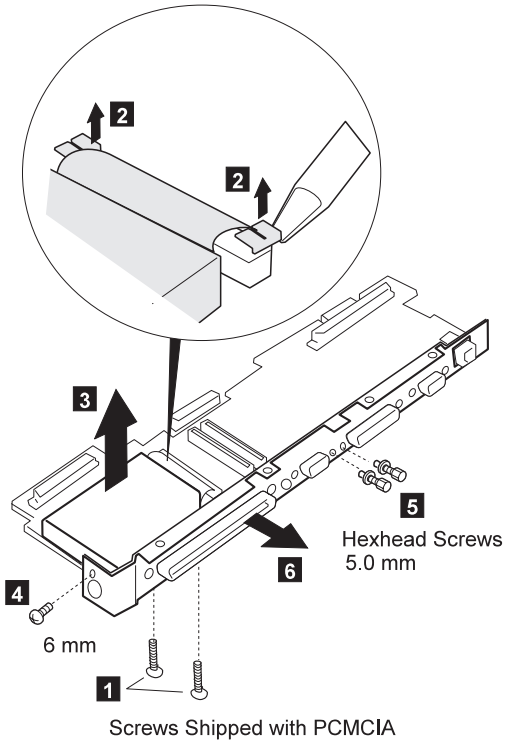
The system unit serial number label is attached to the base cover.

2. Before removing and replacing the system board, make sure that the PCMCIA cards are removed and the eject levers are not sticking out.
3. Do not pull the PCMCIA slot assembly while removing the system board.
4. When handling the PCMCIA slot assembly, be careful not to disassemble any part of it. The slot assembly is not solidly fixed when it is removed from the system board or the FRU.
5. Be sure to unlock both ends of the PCMCIA connector before removing the PCMCIA slot assembly from the system board ().

Models 760XL/760XD



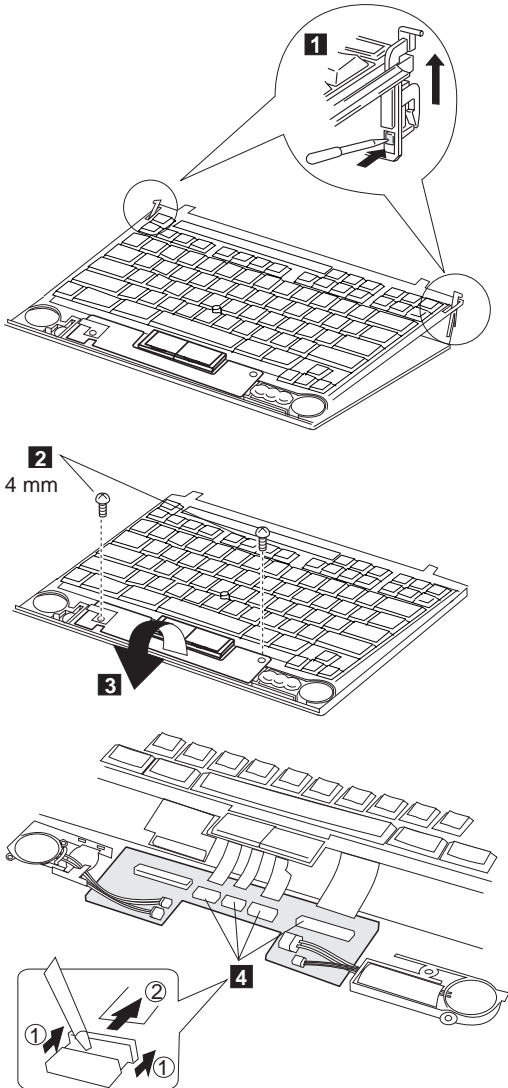
Other Models

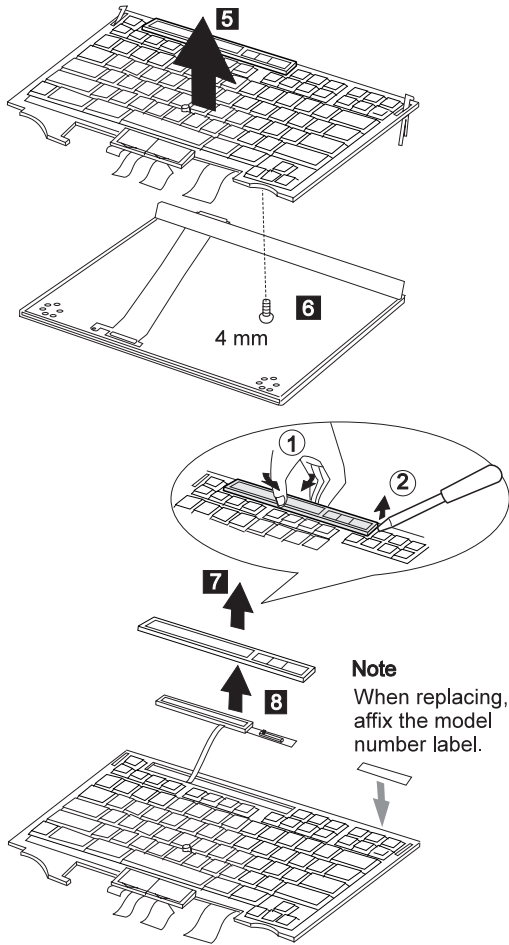


1170 Keyboard, Information Panel

- Top Cover (1060)
- Keyboard Unit (1070)
- Palm Rest (1160)

Note: When pulling the lever off the foot **1**, separate the lower part of the lever from the foot by inserting a pointed device through the hole in the foot.

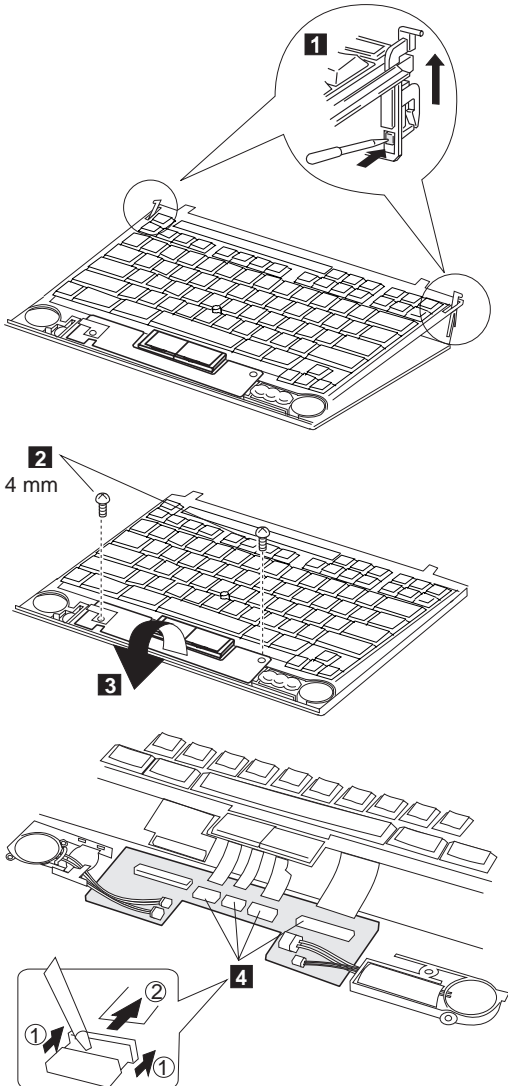


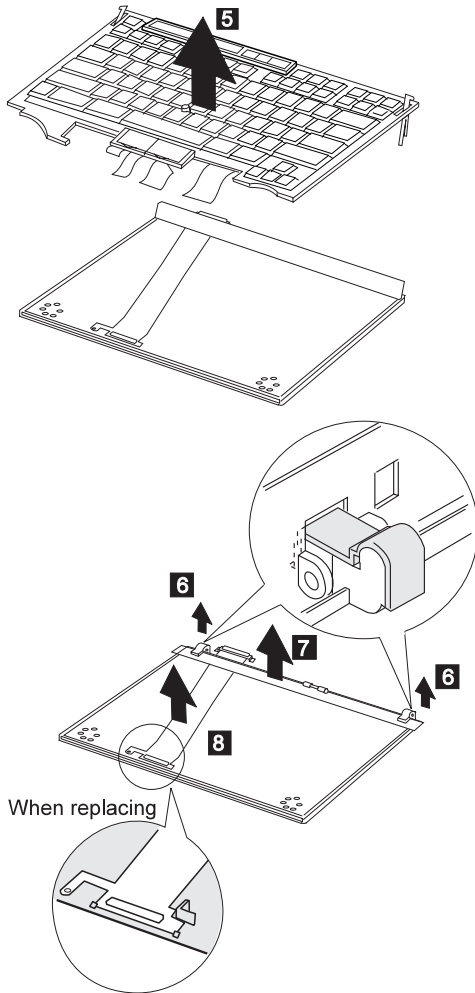


1180 Keyboard Cable

- Top Cover (1060)
- Keyboard Unit (1070)
- Palm Rest (1160)

Note: When pulling the lever off the foot **1**, separate the lower part of the lever from the foot by inserting a pointed device through the hole in the foot.



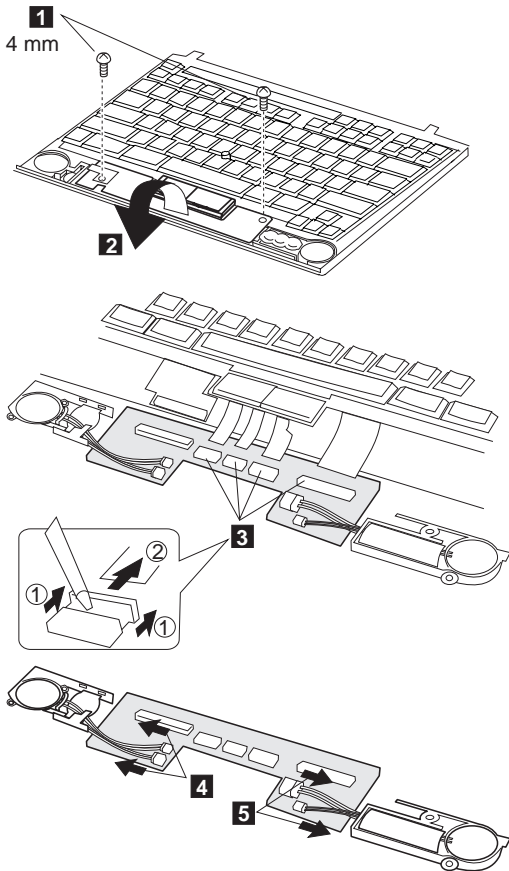


Notes:

1. When removing the latch from the keyboard base **6**, push both ends of the latch simultaneously.
2. When replacing the keyboard cable, place the cable correctly, as shown by the artwork in the circle.

1190 Keyboard Card

- Battery Pack (760C/760L/760E/760EL) (1020)
- Diskette Drive/CD-ROM Drive (1020)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- Palm Rest (1160)



1200 Backup Battery, Speaker, Standby Battery

- Diskette Drive/CD-ROM Drive (1020)
- Battery Pack (1030)
- Hard Disk Drive (1040)
- Top Cover (1060)
- Keyboard Unit (1070)
- Palm Rest (1160)
- Keyboard Card (1190)

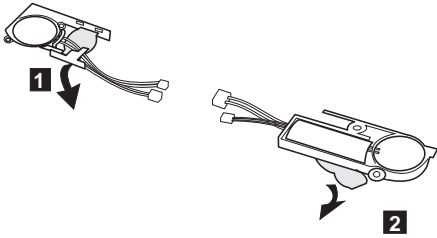
Safety Notice 4: Translation on page 11

The lithium battery can cause a fire, explosion, or severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

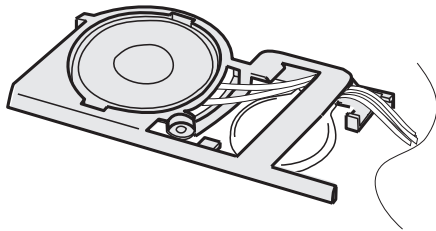
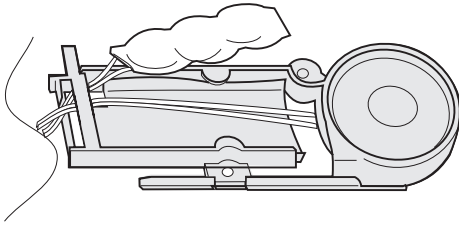
Safety Notice 2: Translation on page 9

Some standby batteries contain a small amount of nickel and cadmium. Do not disassemble it, recharge it, throw it into fire or water, or short-circuit it. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

- 1** for Backup Battery
- 2** for Standby Battery
- 1 2** for Speaker



Note: When replacing the speakers, backup battery, and standby battery, position the cables as shown.



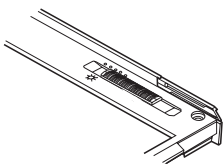
LCD Removal and Replacement

This section discusses removal and replacement procedure for the LCD unit of the ThinkPad 760x series. After removing the LCD unit, check its part number; then go to the appropriate section:

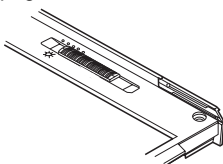
- **P/N 29H9226 (12.1 SVGA):**

There are two types of LCDs with the part number 29H9226. They differ in the location of the brightness control slide knob:

- **ASM P/N 29H9029:** Go to “LCD Unit, 12.1 SVGA (P/N 29H9226, ASM P/N 29H9029)” on page 428.



- **ASM P/N 73H6599:** Go to “LCD Unit, 12.1 SVGA (P/N 29H9226, ASM P/N 73H6599)” on page 433.



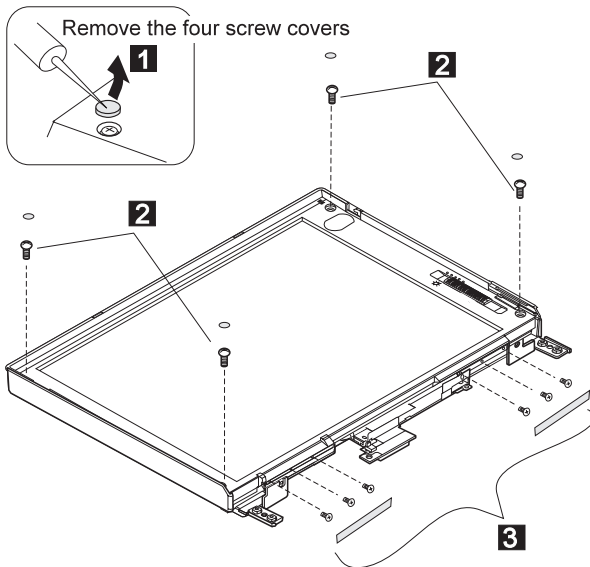
- **P/N 29H9227 (10.4 SVGA):** Go to “LCD Unit, 10.4 SVGA (P/N 29H9227)” on page 439.
- **P/N 46H5355 (10.4 VGA):** Go to “LCD Unit, 10.4 VGA (P/N 46H5355)” on page 444.
- **P/N 39H6232 (11.3 SVGA):** Go to “LCD Unit, 11.3 DSTN (P/N 39H6232)” on page 449.
- **P/N 82H8486 (12.1 XGA):** Go to “LCD Unit, 12.1 XGA” on page 454.
- **P/N 82H8496 (12.1 SVGA):** Go to “LCD Unit, 12.1 SVGA (P/N 82H8496)” on page 460.
- **P/N 11J8867 (12.1 SVGA):** Go to “LCD Unit, 12.1 SVGA (P/N 11J8867, ASM P/N 11J8855)” on page 466.
- **P/N 46H5725 (ASM P/N 46H5723) (12.1 SVGA):** Go to “LCD Unit, 12.1 SVGA (P/N 46H5725, ASM P/N 46H5723)” on page 472.
- **P/N 46H5735 (ASM P/N 46H5731) (12.1 XGA):** Go to “LCD Unit, 12.1 XGA” on page 454.

LCD Unit, 12.1 SVGA (P/N 29H9226, ASM P/N 29H9029)

1010 LCD Cover

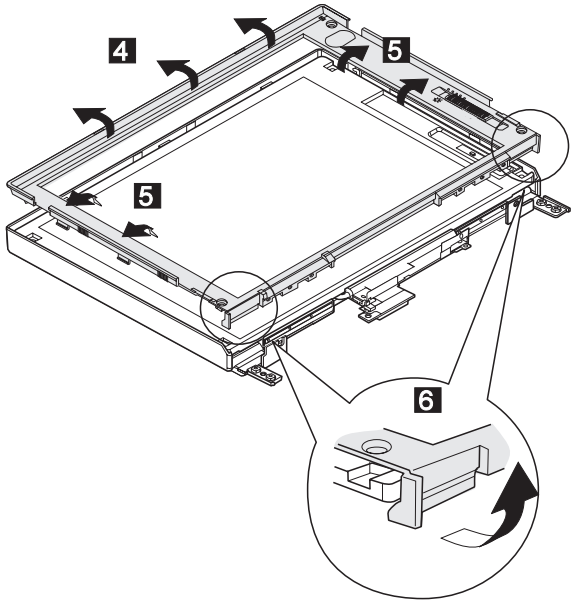
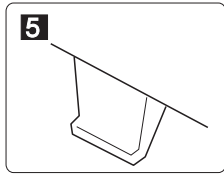
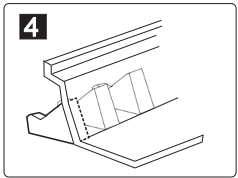
Notes:

1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Step	Length (Quantity)	Memo
2	M2.5 x 8 mm (4)	
3	M2 x 4.3 mm (6)	Flat head

Note: Make sure you use the correct screw when replacing.



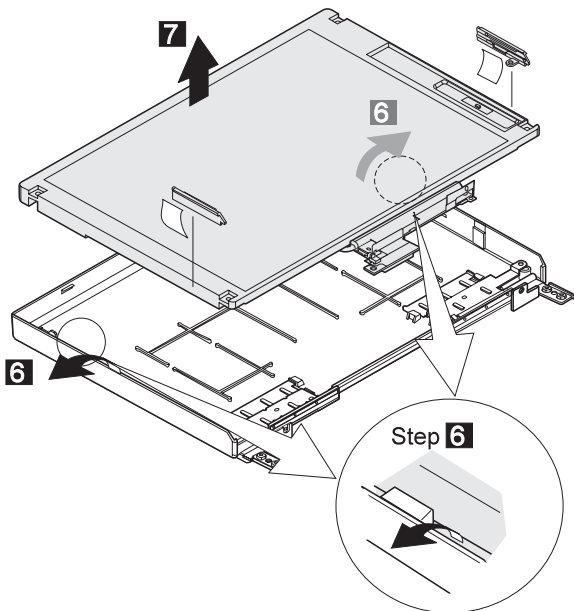
1020 LCD Panel, Interface Cable Assembly

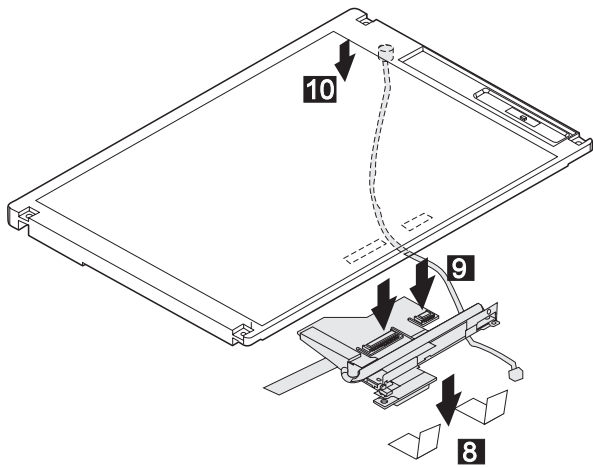
- LCD Cover (1010)

Note

Be careful not to scratch or soil the surface of the LCD panel when replacing it.

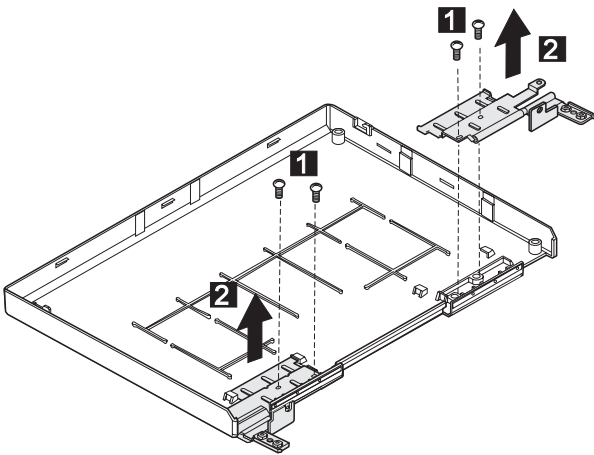
The LCD panel is latched to the rear cover. Remove the LCD panel by bending the rear cover in step **6**. **Too much force will break the rear cover.**





1030 Hinges

- LCD Cover (1010)
- LCD Panel (1020) (with interface cable assembly)



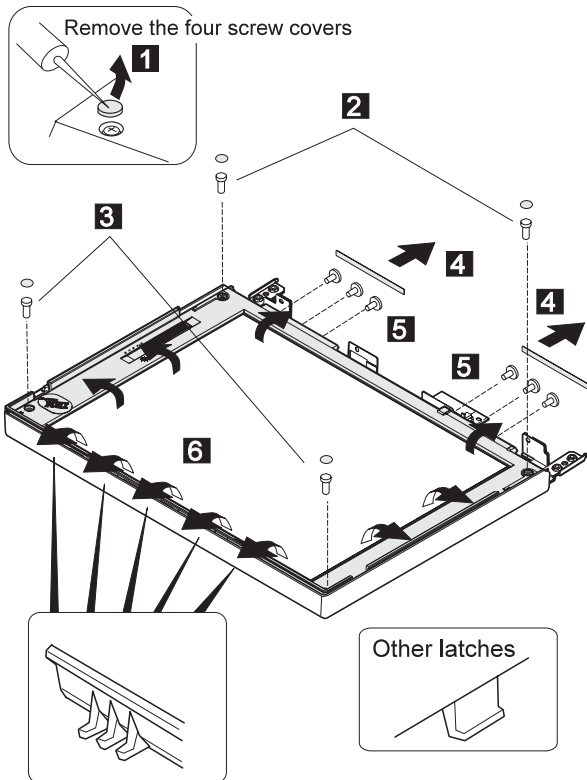
Step	Length (Quantity)	Memo
1	M2 x 4.3 mm (4)	
Note: Make sure you use the correct screw when replacing.		

LCD Unit, 12.1 SVGA (P/N 29H9226, ASM P/N 73H6599)

2010 LCD Cover

Notes:

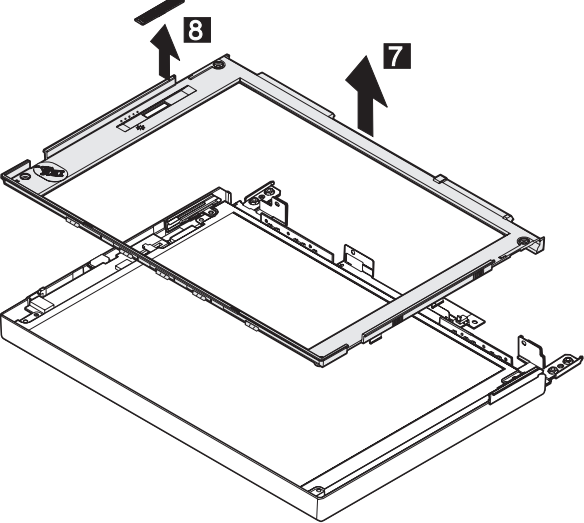
1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Step	Length (Quantity)	Memo
2	M2.5 x 9 mm (2)	
3	M2.5 x 6 mm (2)	
5	M2 x 4.3 mm (6)	Flat head

Note: Make sure you use the correct screw when replacing.

Lift the LCD front cover slightly; then remove the microphone cable.



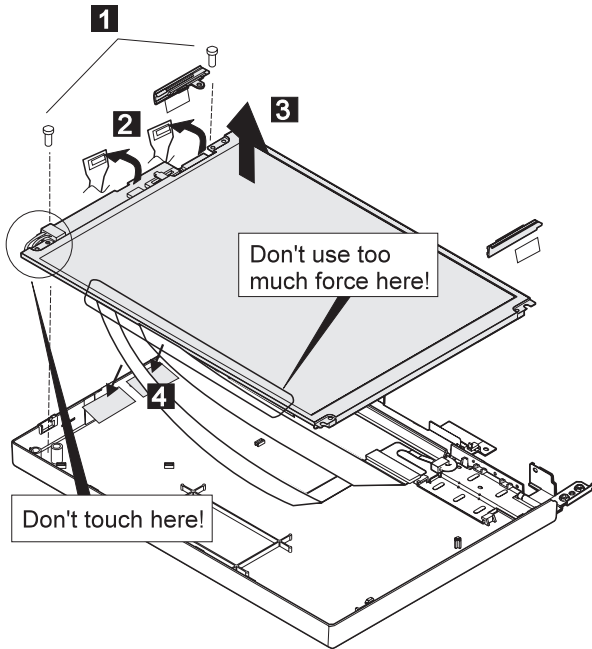
2020 LCD Panel

- LCD Cover (2010)

Note

Be careful not to scratch or soil the surface of the LCD panel when replacing it.

Lift the LCD panel slightly and disconnect the connector for the interface cable. If there is kapton tape on the rear of the panel, remove it.

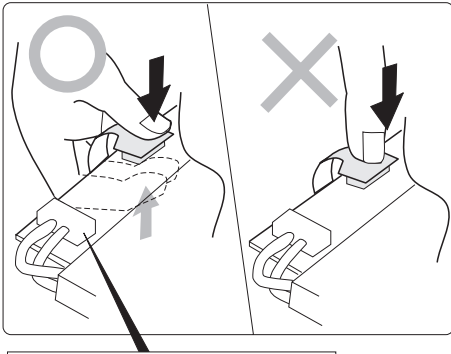


Step	Length (Quantity)	Memo
1	M2.5 x 6 mm (2)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Attention:

1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



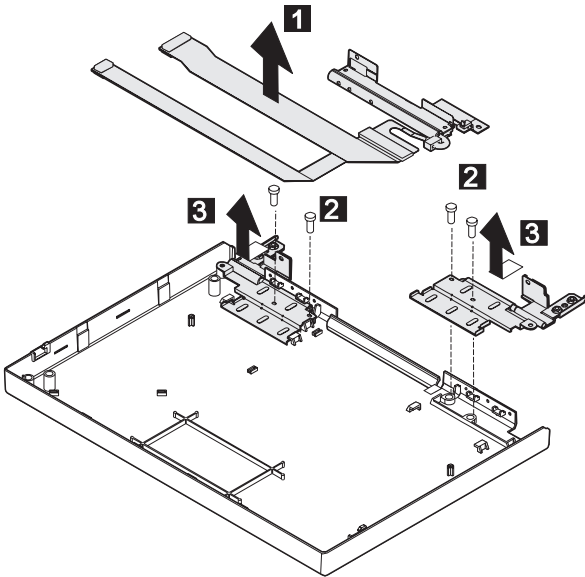
Don't touch this connector **A**

2030 Interface Cable Assembly, Hinges

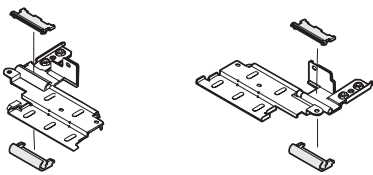
- LCD Cover (2010)
- LCD Panel (2020)

1 : When replacing the interface cable assembly

2, **3** : When replacing the hinges



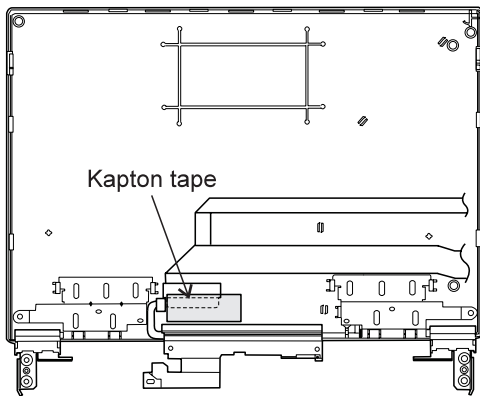
Removing the hinge cover:



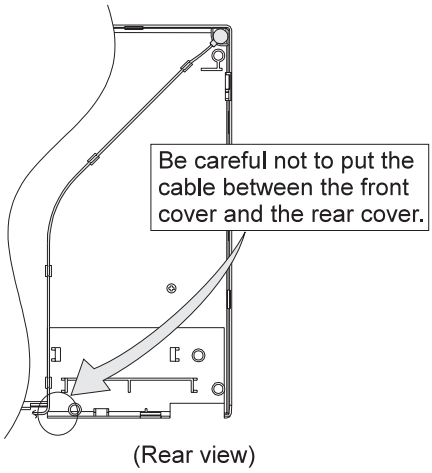
Step	Length (Quantity)	Memo
2	M2 x 4.3 mm (4)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Replace the kapton tape as shown below.



Position the microphone cable as shown.

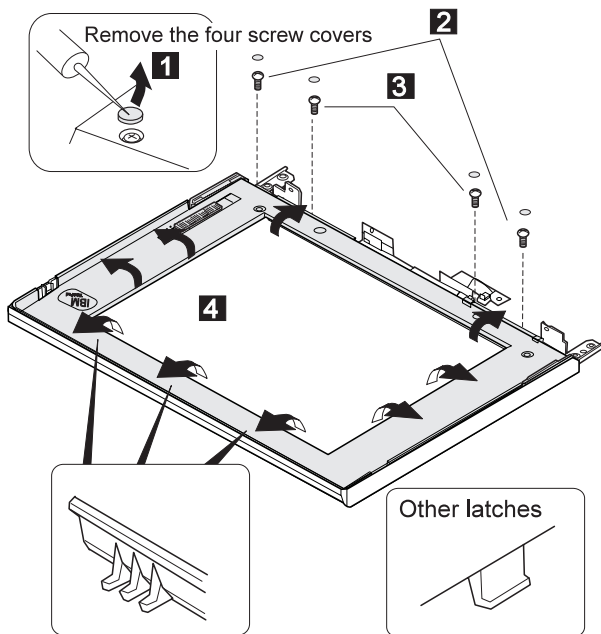


LCD Unit, 10.4 SVGA (P/N 29H9227)

3010 LCD Cover

Notes:

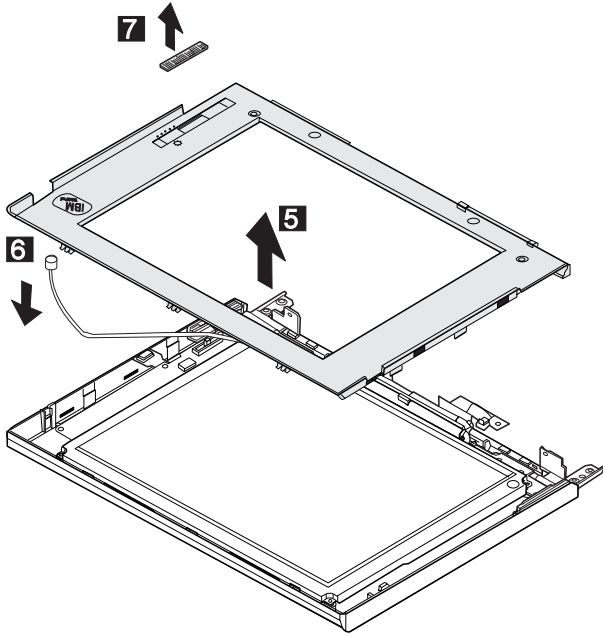
1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Step	Length (Quantity)	Memo
2	M2.5 x 6 mm (2)	
3	M2 x 5 mm (2)	

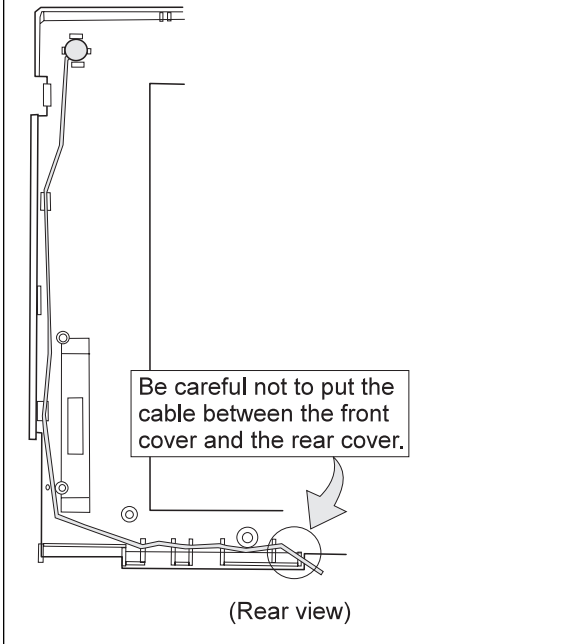
Note: Make sure you use the correct screw when replacing.

Lift the LCD front cover slightly; then remove the microphone cable.



When replacing

Position the microphone cable as shown below.

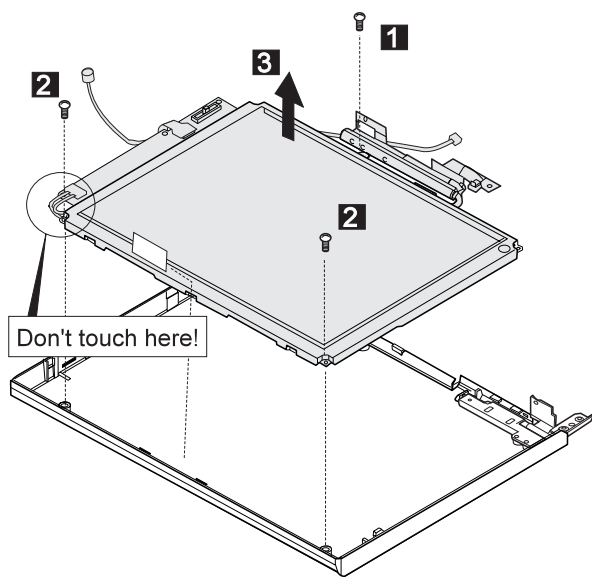


3020 LCD Panel, Interface Cable Assembly

- LCD Cover (3010)

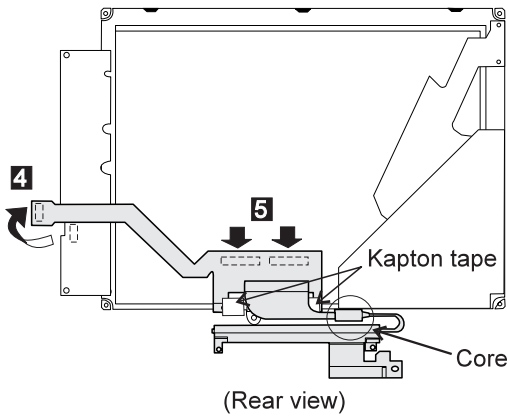
Note

Be careful not to scratch or soil the surface of the LCD panel when replacing it.



Step	Length (Quantity)	Memo
1	M2.5 x 4 mm (1)	
2	M2 x 4.3 mm (2)	
Note: Make sure you use the correct screw when replacing.		

When removing the interface cable assembly, remove the kapton tape on the cable; then disconnect the three connectors as shown.



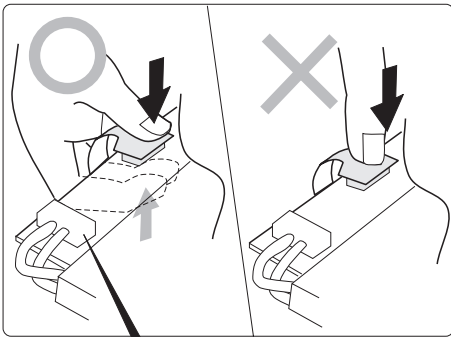
When replacing

Be careful not to place the core under the LCD panel.

When replacing

Attention:

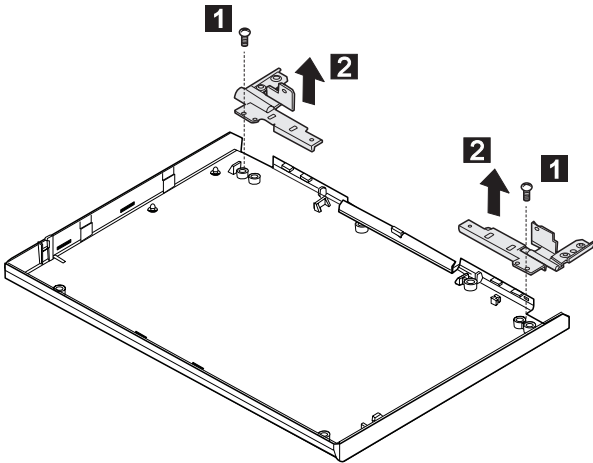
1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



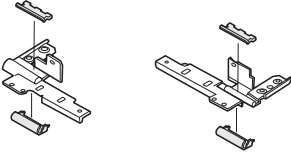
Don't touch this connector **A**

3030 Hinges

- LCD Cover (3010)
- LCD Panel (3020) (with interface cable assembly)



Removing the hinge cover:



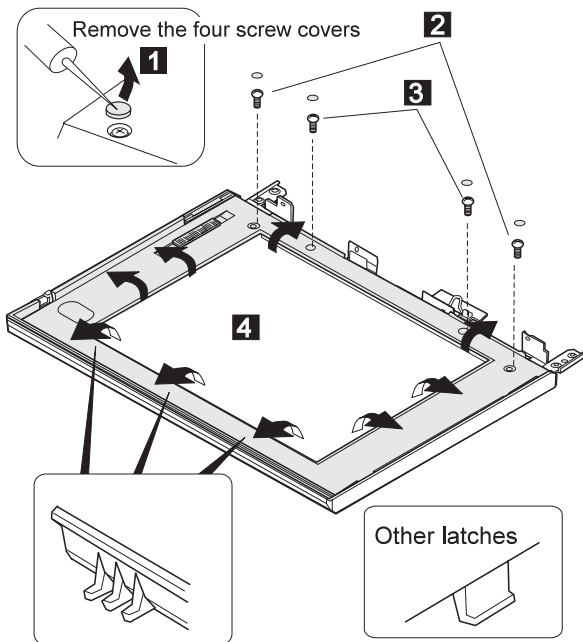
Step	Length (Quantity)	Memo
1	M2.5 x 4 mm (2)	
Note: Make sure you use the correct screw when replacing.		

LCD Unit, 10.4 VGA (P/N 46H5355)

4010 LCD Cover

Notes:

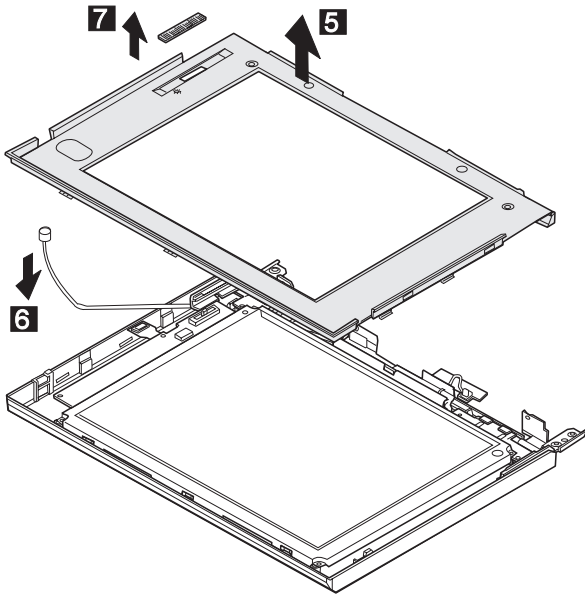
1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Step	Length (Quantity)	Memo
2	M2.5 x 6 mm (2)	
3	M2 x 5 mm (2)	

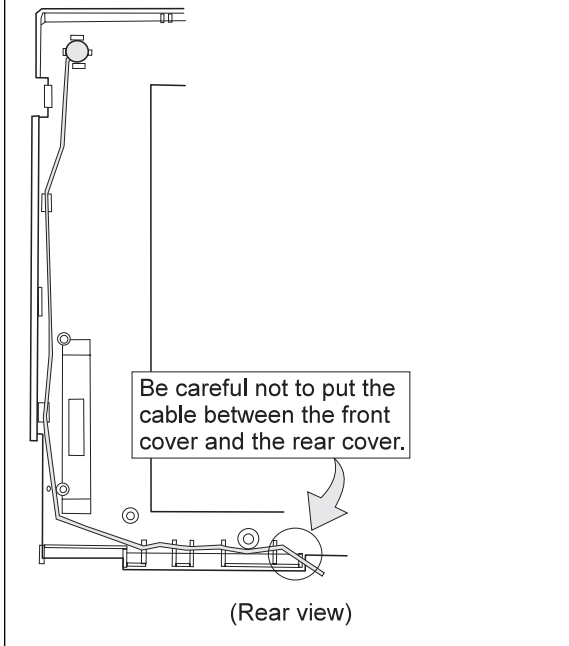
Note: Make sure you use the correct screw when replacing.

Lift the LCD front cover slightly; then remove the microphone cable.



When replacing

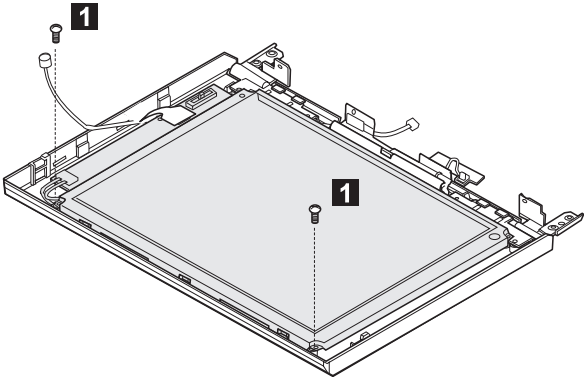
Position the microphone cable as shown.



4020 LCD Panel

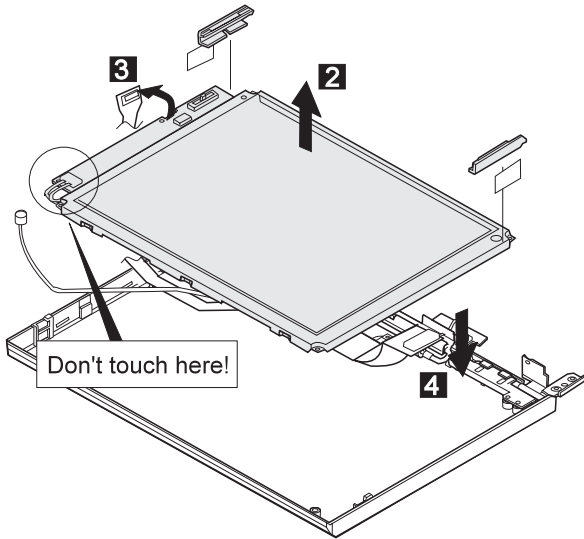
- LCD Cover (4010)

Note
Be careful not to scratch or soil the surface of the LCD panel when replacing it.



Step	Length (Quantity)	Memo
1	M2 x 4.3 mm (2)	
Note: Make sure you use the correct screw when replacing.		

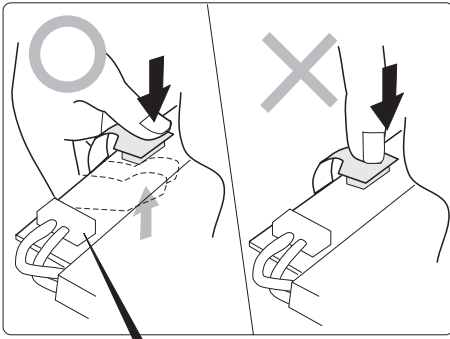
Lift the LCD panel slightly **2**; then disconnect the flexible cable **3** and **4**.



When replacing

Attention:

1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



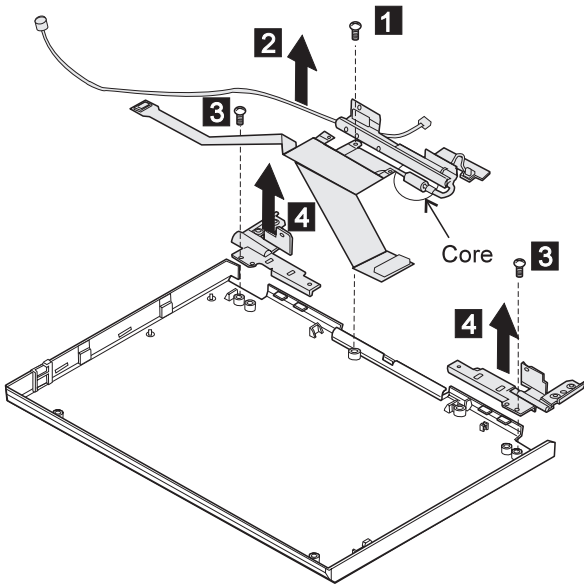
Don't touch this connector **A**

4030 Interface Cable Assembly, Hinges

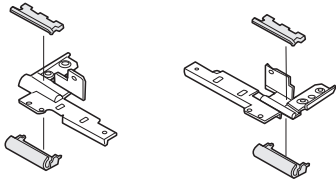
- LCD Cover (4010)
- LCD Panel (4020)

1, **2** : When replacing the interface cable assembly

3, **4** : When replacing the hinges



Removing the hinge cover:



Step	Length (Quantity)	Memo
1 3	M2.5 x 4 mm (3)	
Note: Make sure you use the correct screw when replacing.		

When replacing

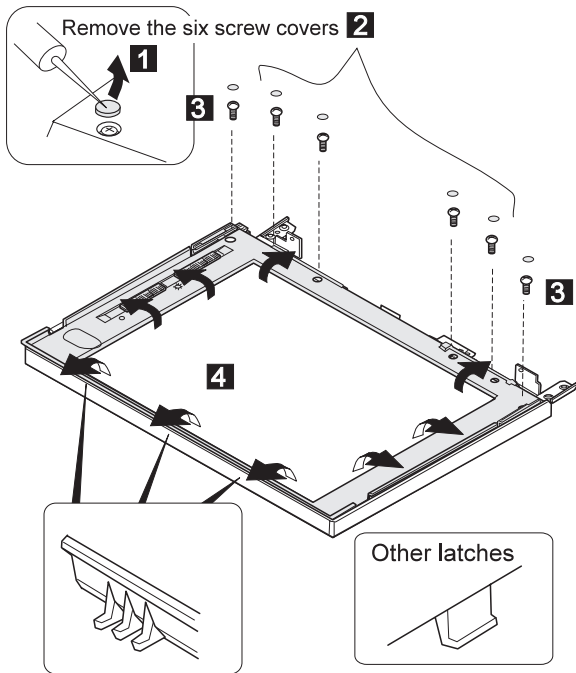
Don't locate the core under the LCD panel.

LCD Unit, 11.3 DSTN (P/N 39H6232)

5010 LCD Cover

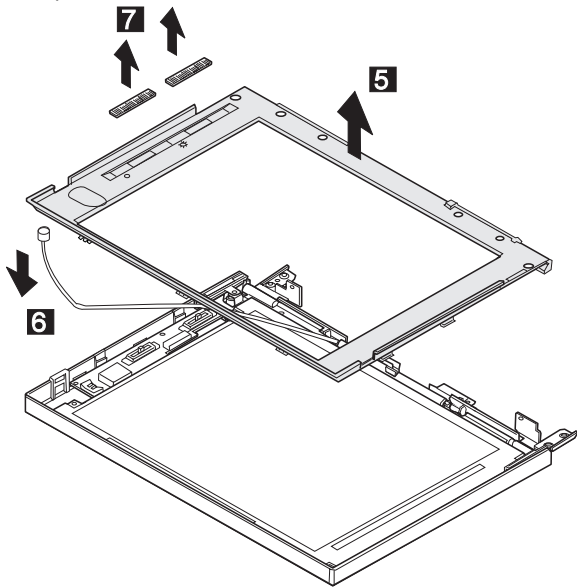
Notes:

1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



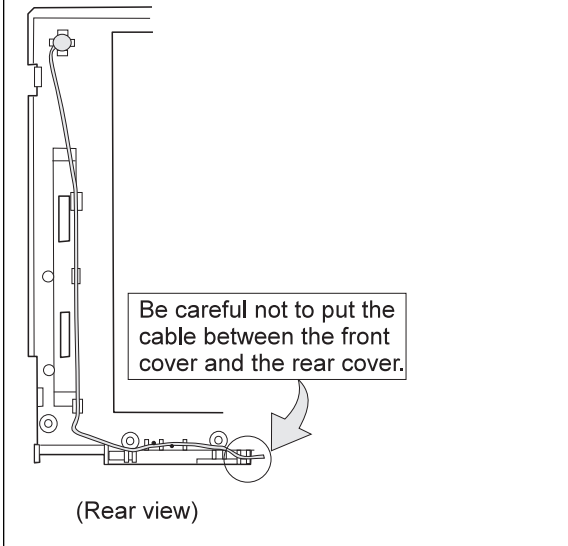
Step	Length (Quantity)	Memo
2	M2.5 x 6 mm (4)	
3	M2.5 x 9 mm (2)	
Note: Make sure you use the correct screw when replacing.		

Lift the LCD front cover slightly; then remove the microphone cable.



When replacing

Position the microphone cable as shown.

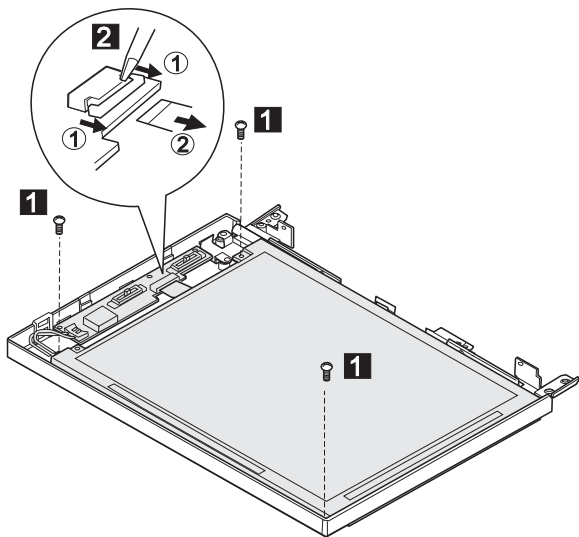


5020 LCD Panel

- LCD Cover (5010)

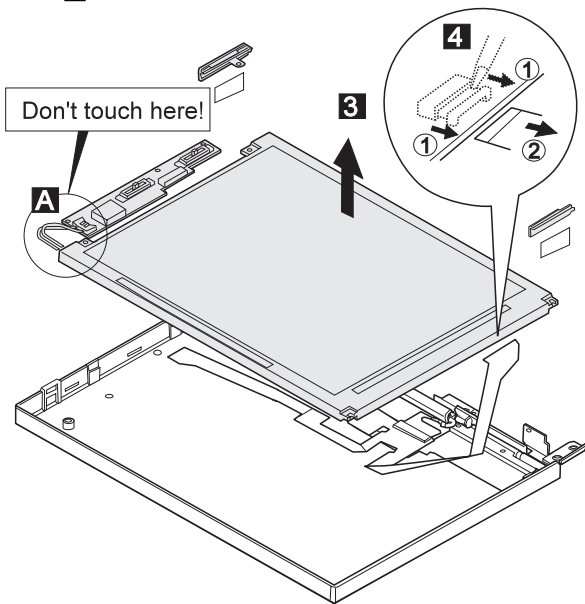
Note

Be careful not to scratch or soil the surface of the LCD panel when replacing it.



Step	Length (Quantity)	Memo
1	M2.5 x 6 mm (3)	
Note: Make sure you use the correct screw when replacing.		

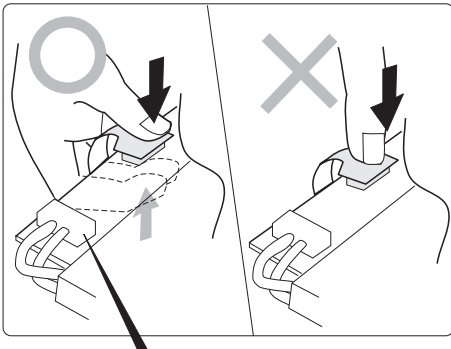
Lift the LCD panel a bit **3**, then disconnect the flexible cable **4**.



When replacing

Attention:

1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



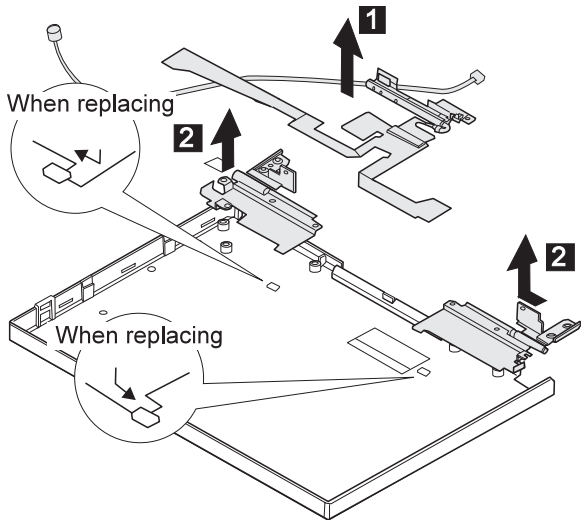
Don't touch this connector **A**

5030 Interface Cable Assembly, Hinges

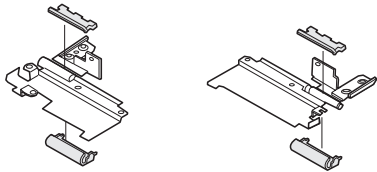
- LCD Cover (5010)
- LCD Panel (5020)

1 : When replacing the interface cable assembly

2 : When replacing the hinges



Removing the hinge cover:



LCD Unit, 12.1 XGA

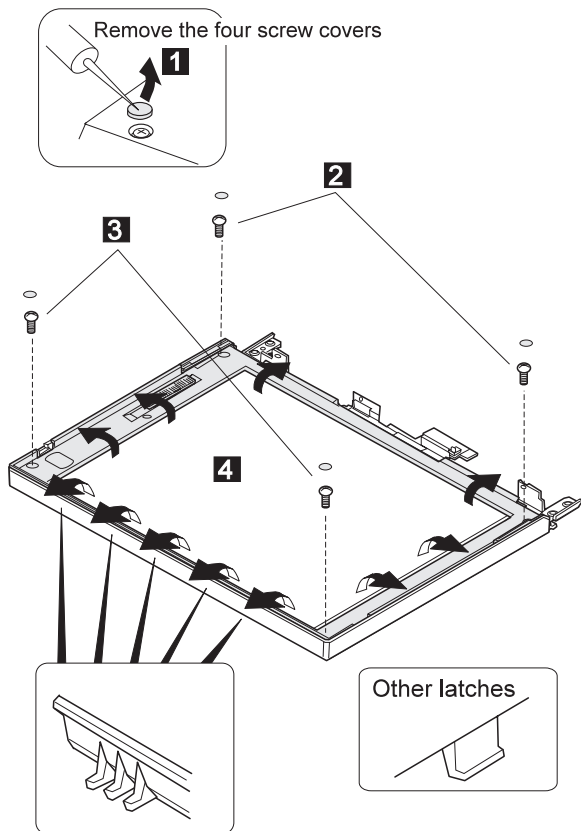
P/N 82H8486

P/N 46H5735, ASM P/N 46H5731

6010 LCD Cover

Notes:

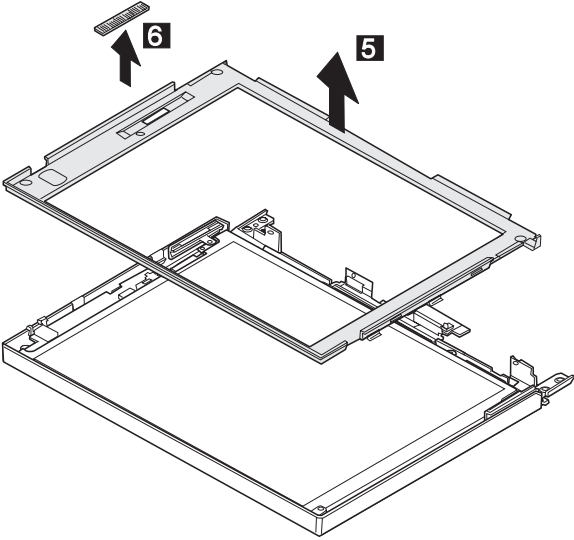
1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Step	Length (Quantity)	Memo
2	M2.5 x 9 mm (2)	
3	M2.5 x 6 mm (2)	

Note: Make sure you use the correct screw when replacing.

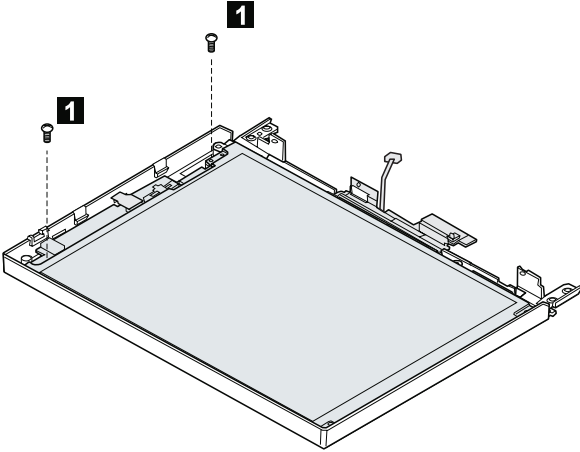
Lift the LCD front cover slightly; then remove the microphone cable.



6020 LCD Panel

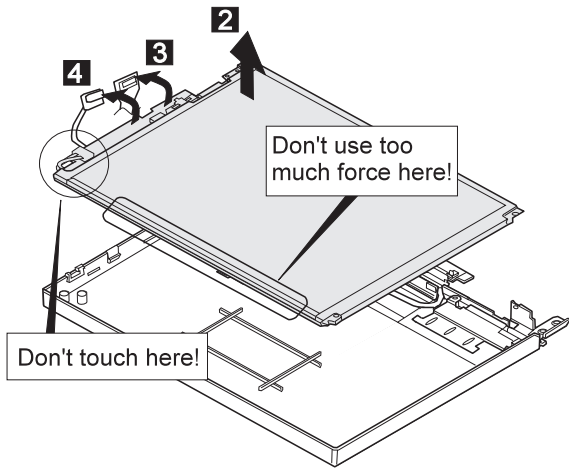
- LCD Cover (6010)

Note
Be careful not to scratch or soil the surface of the LCD panel when replacing it.



Step	Length (Quantity)	Memo
1	M2.5 x 6 mm (2)	
Note: Make sure you use the correct screw when replacing.		

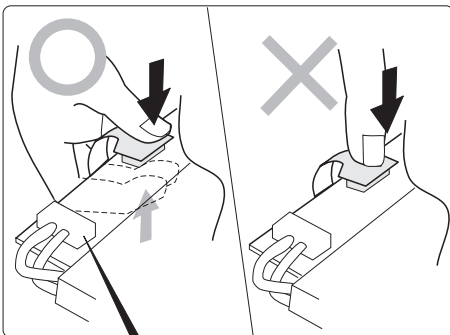
Lift the LCD panel a bit; then disconnect the interface cable connector.



When replacing

Attention:

1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



Don't touch this connector **A**

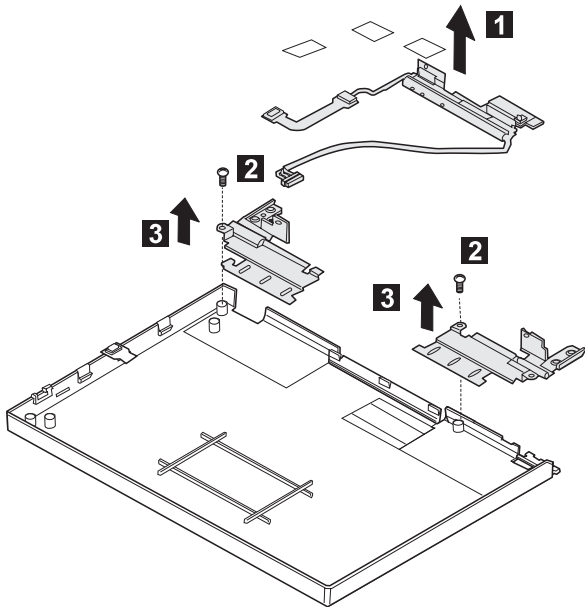
6030 Interface Cable Assembly, Hinges

- LCD Cover (6010)
- LCD Panel (6020)

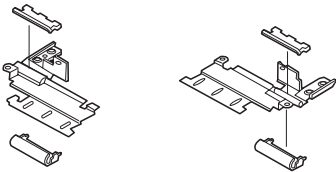
1 : When replacing the interface cable assembly

2, **3** : When replacing the hinges

Remove the kapton tape in step **1**.



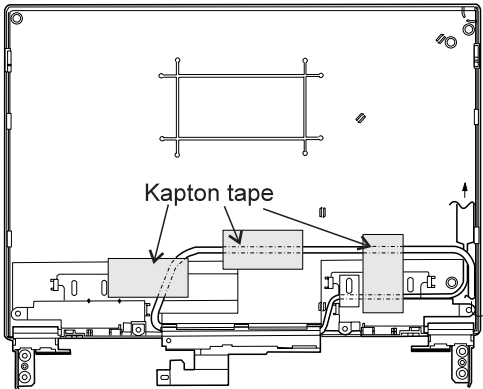
Removing the hinge cover:



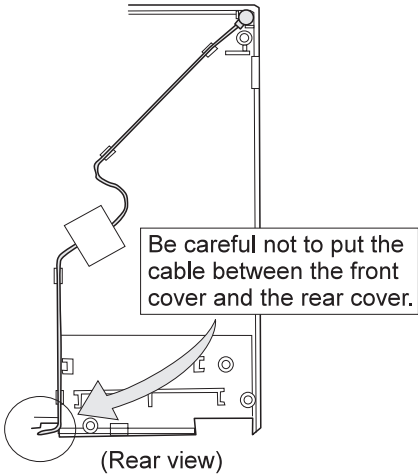
Step	Length (Quantity)	Memo
2	M2.5 x 4 mm (2)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Replace the kapton tape as shown below.



Position the microphone cable as shown.

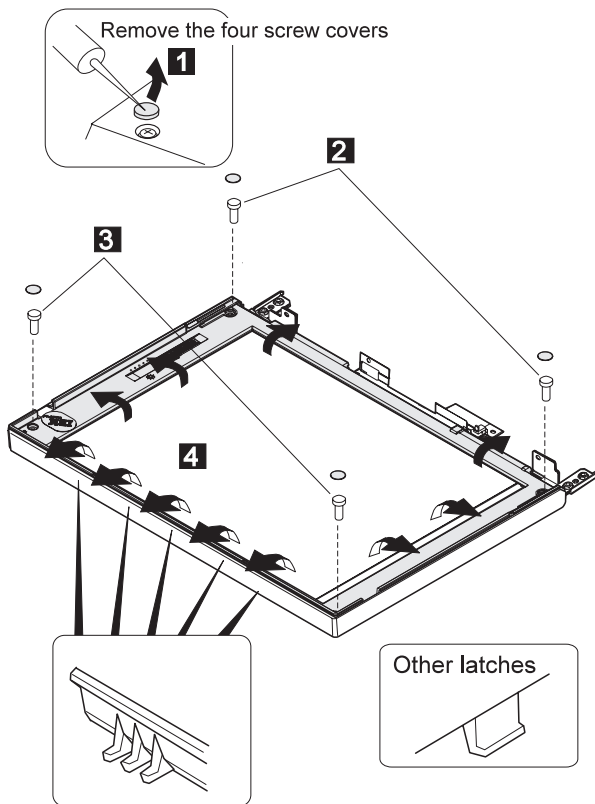


LCD Unit, 12.1 SVGA (P/N 82H8496)

7010 LCD Cover

Notes:

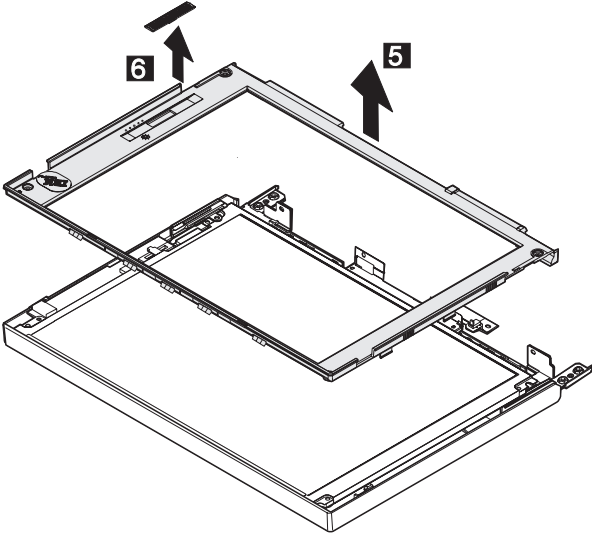
1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Step	Length (Quantity)	Memo
2	M2.5 x 9 mm (2)	
3	M2.5 x 6 mm (2)	

Note: Make sure you use the correct screw when replacing.

Lift the LCD front cover slightly; then remove the microphone cable.



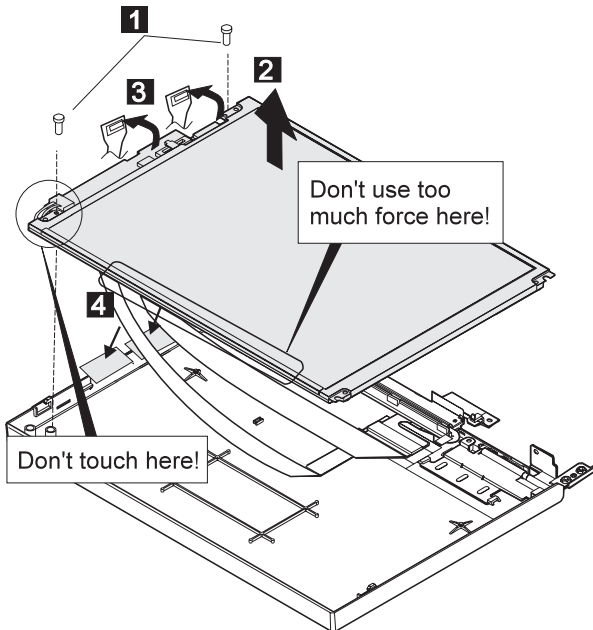
7030 LCD Panel

- LCD Cover (7010)

Note

Be careful not to scratch or soil the surface of the LCD panel when replacing it.

Lift the LCD panel slightly and disconnect the connector for the interface cable. If there is kapton tape on the rear of the panel, remove it.

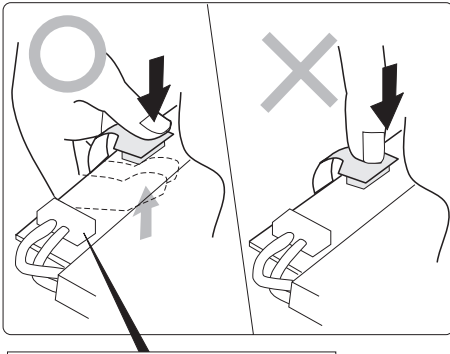


Step	Length (Quantity)	Memo
1	M2.5 x 6 mm (2)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Attention:

1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



Don't touch this connector **A**

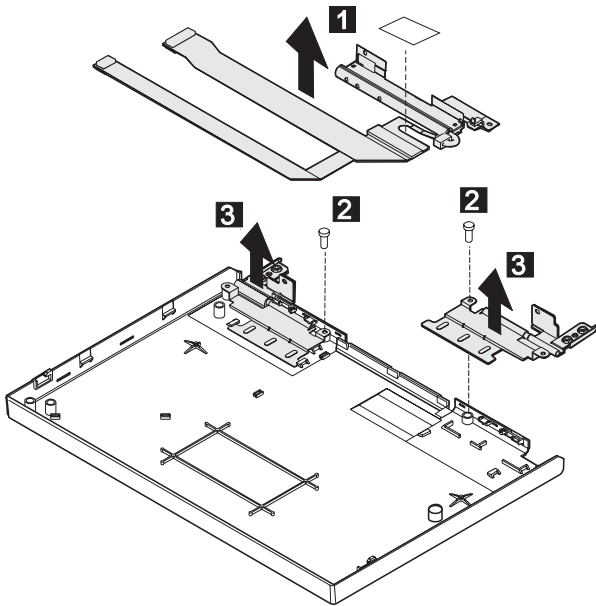
7040 Interface Cable Assembly, Hinges

- LCD Cover (7010)
- LCD Panel (7020)

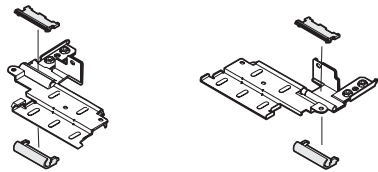
1: When replacing the interface cable assembly

2, **3**: When replacing the hinges

Remove the kapton tape in step **1**.



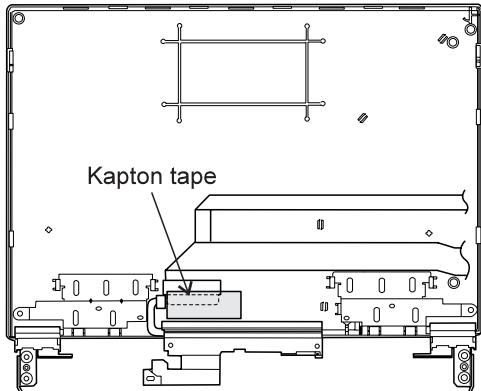
Removing the hinge cover:



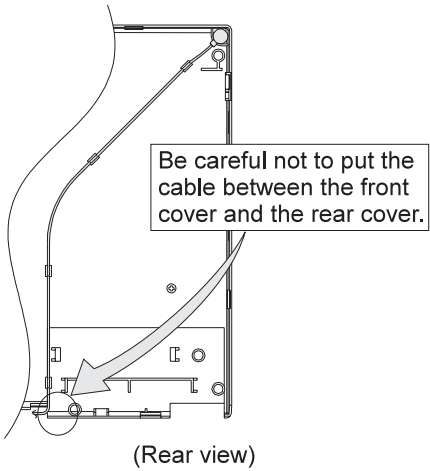
Step	Length (Quantity)	Memo
2	M2.5 x 4 mm (2)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Replace the kapton tape as shown below.



Position the microphone cable as shown below.

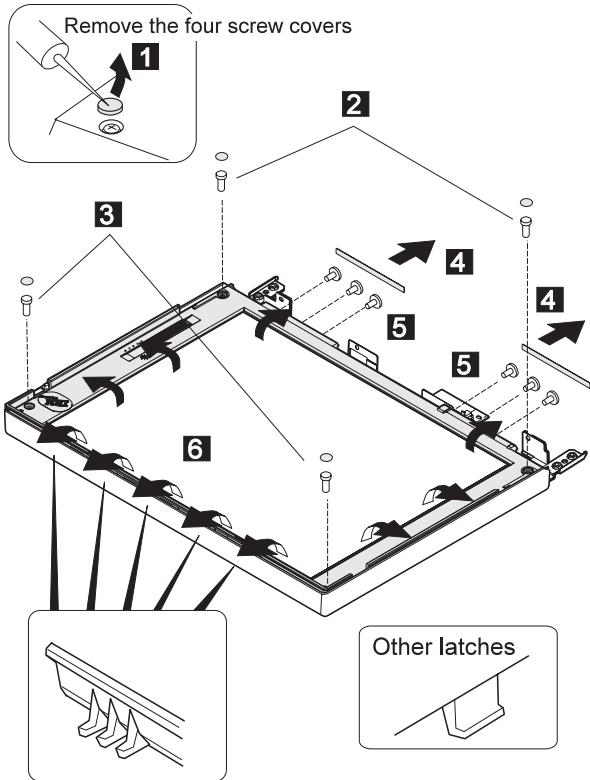


**LCD Unit, 12.1 SVGA (P/N 11J8867,
ASM P/N 11J8855)**

8010 LCD Cover

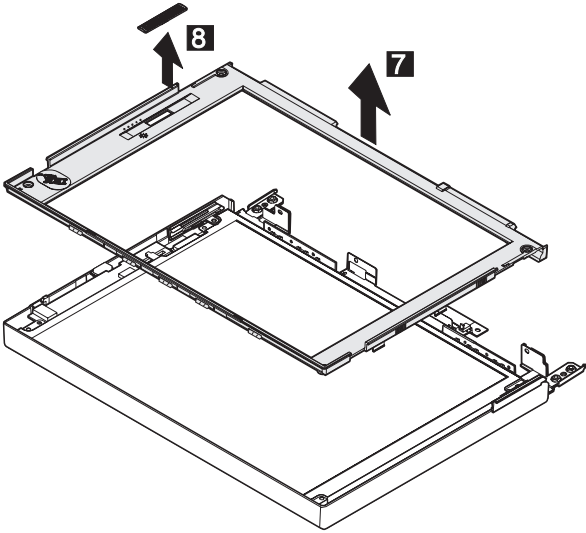
Notes:

1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Step	Length (Quantity)	Memo
2	M2.5 x 9 mm (2)	
3	M2.5 x 6 mm (2)	
5	M2 x 4.3 mm (6)	Flat head
Note: Make sure you use the correct screw when replacing.		

Lift the LCD front cover slightly; then remove the microphone cable.



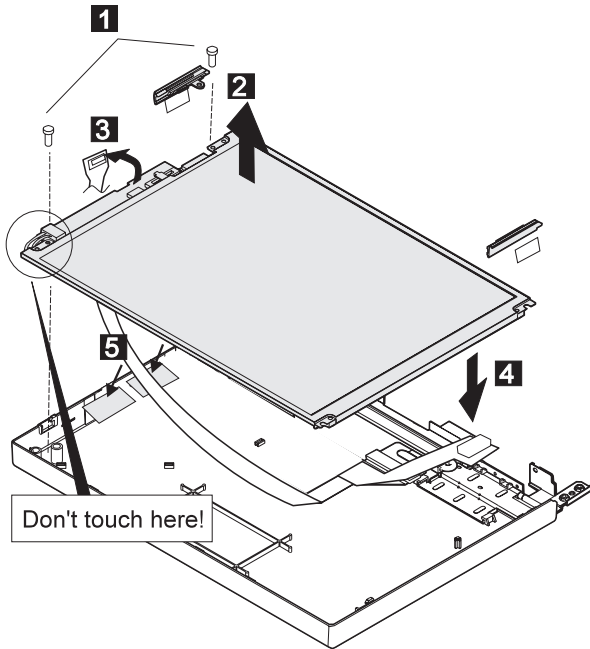
8020 LCD Panel

- LCD Cover (8010)

Note

Be careful not to scratch or soil the surface of the LCD panel when replacing it.

Lift the LCD panel slightly and disconnect the connector for the interface cable. If there is kapton tape on the rear of the panel, remove it.

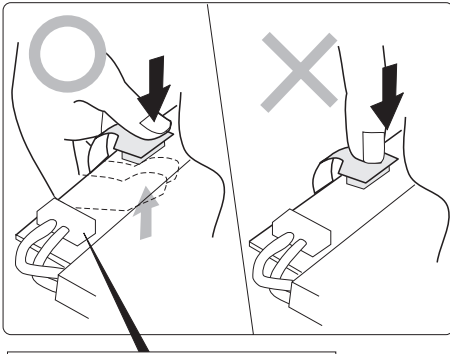


Step	Length (Quantity)	Memo
1	M2.5 x 6 mm (2)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Attention:

1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



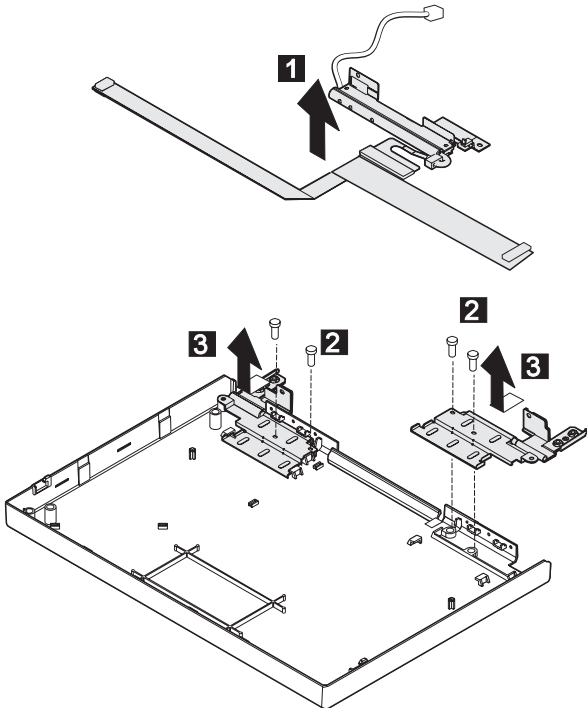
Don't touch this connector **A**

8030 Interface Cable Assembly, Hinges

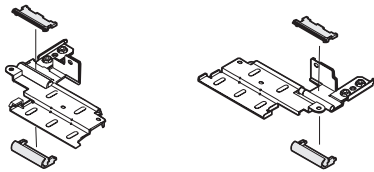
- LCD Cover (8010)
- LCD Panel (8020)

1 : When replacing the interface cable assembly

2, **3** : When replacing the hinges



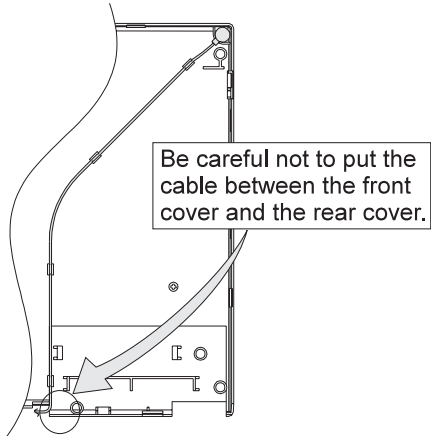
Removing the hinge cover:



Step	Length (Quantity)	Memo
2	M2 x 4.3 mm (4)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Position the microphone cable as shown.



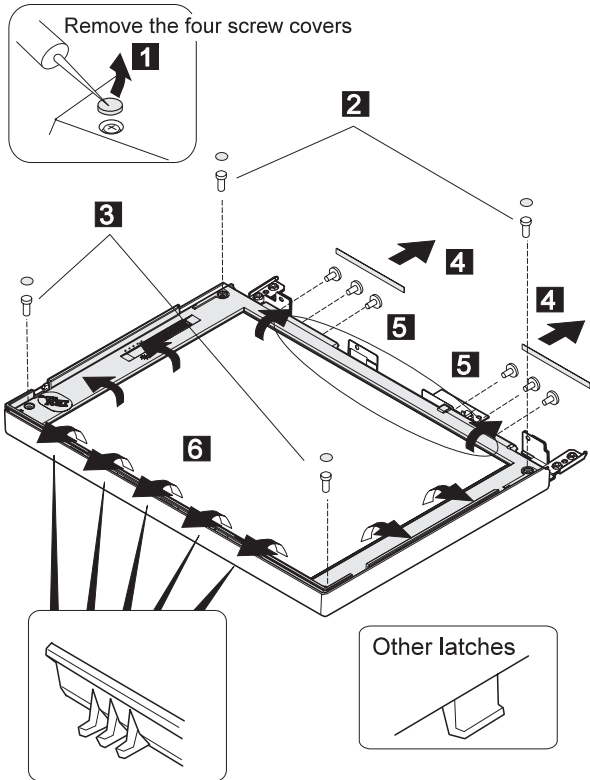
(Rear view)

**LCD Unit, 12.1 SVGA (P/N 46H5725,
ASM P/N 46H5723)**

9010 LCD Cover

Notes:

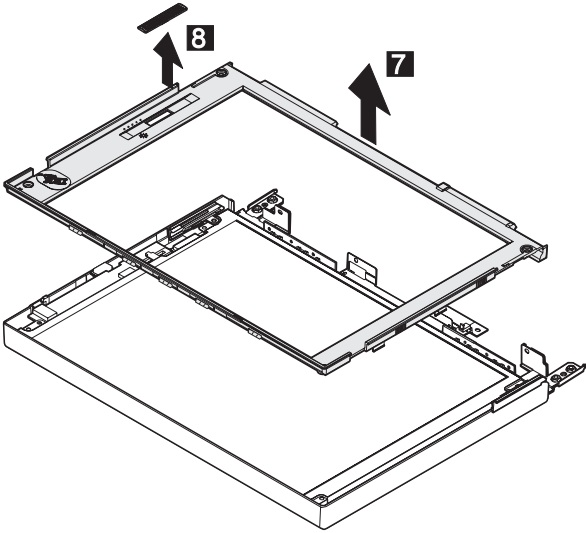
1. Be careful not to scratch the LCD cover when removing the screw covers **1**.
2. The LCD cover has several latches. Release these latches; then remove the LCD cover. Be careful not to break the latches.



Note: The front cover adhere to the LCD panel. The circle in the figure shows the adhesive part.

Step	Length (Quantity)	Memo
2	M2.5 x 9 mm (2)	
3	M2.5 x 6 mm (2)	
5	M2 x 4.3 mm (6)	Flat head
Note: Make sure you use the correct screw when replacing.		

Lift the LCD front cover slightly; then remove the microphone cable.



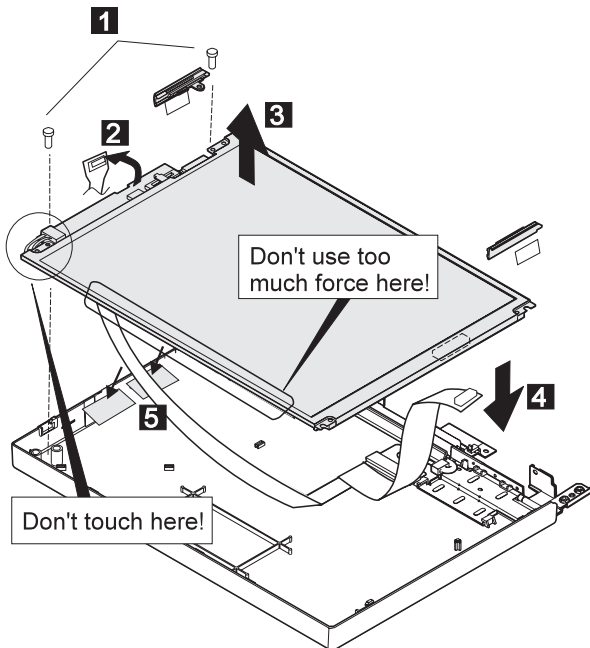
9020 LCD Panel

- LCD Cover (9010)

Note

Be careful not to scratch or soil the surface of the LCD panel when replacing it.

Lift the LCD panel slightly and disconnect the connector for the interface cable. If there is kapton tape on the rear of the panel, remove it.

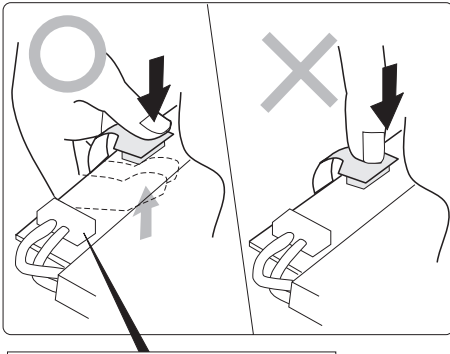


Step	Length (Quantity)	Memo
1	M2.5 x 6 mm (2)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Attention:

1. The inverter card is very fragile, and flexing the inverter card can seriously damage the card. Carefully connect the interface cable as shown.
2. Carefully ensure the inverter card is securely connected **A**. A loose or incorrect connection can cause a serious problem.



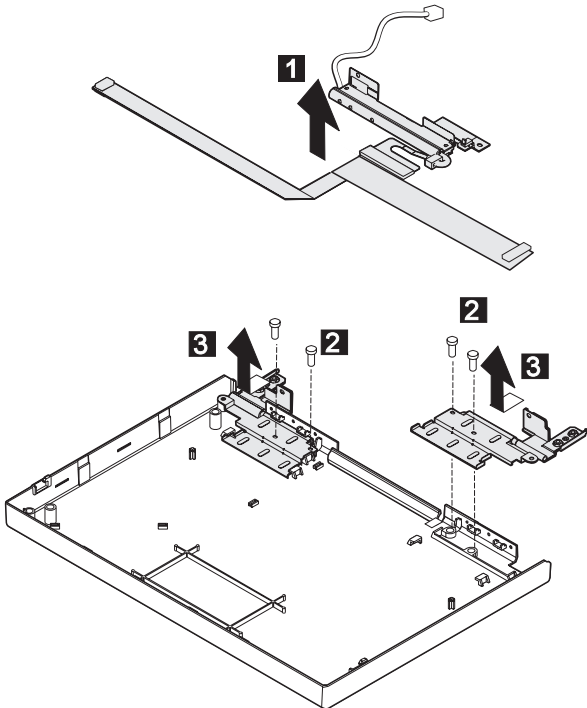
Don't touch this connector **A**

9030 Interface Cable Assembly, Hinges

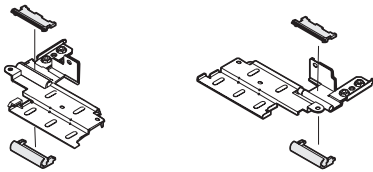
- LCD Cover (9010)
- LCD Panel (9020)

1 : When replacing the interface cable assembly

2, **3** : When replacing the hinges



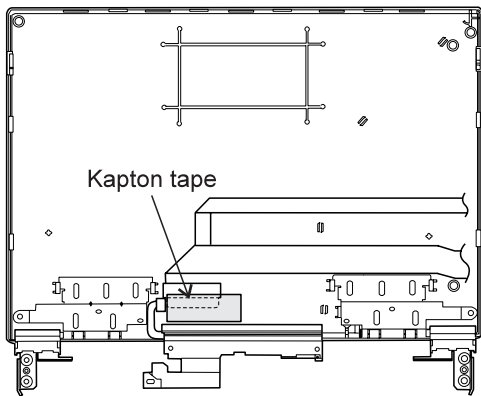
Removing the hinge cover:



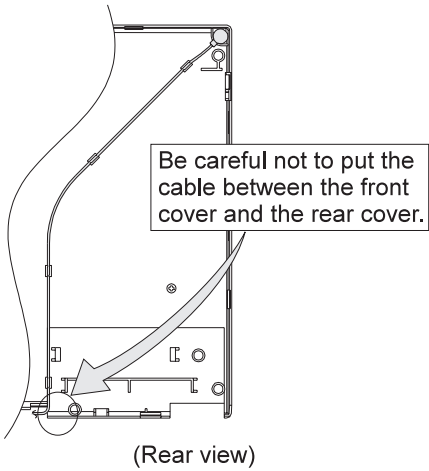
Step	Length (Quantity)	Memo
2	M2 x 4.3 mm (4)	
Note: Make sure you use the correct screw when replacing.		

When replacing

Replace the kapton tape as shown below.



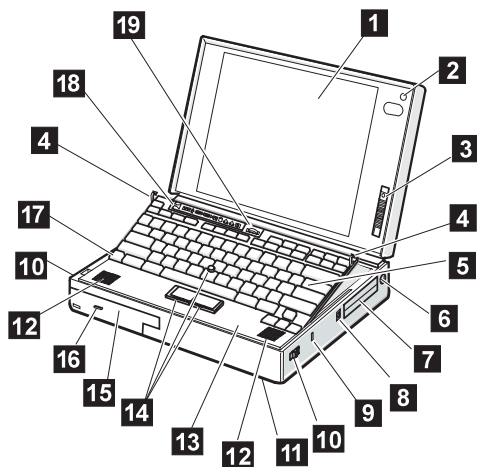
Position the microphone cable as shown.



Locations

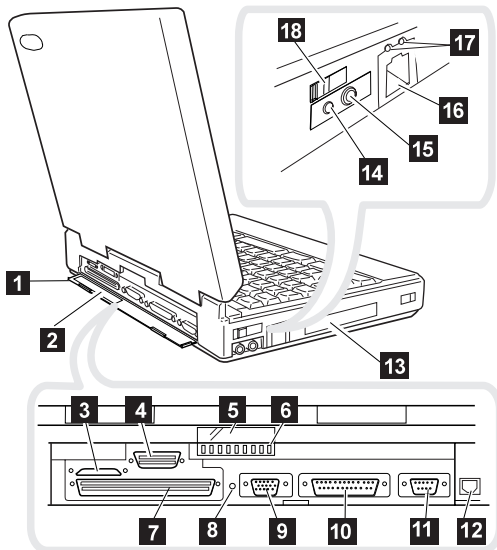
Front View

- 1** LCD
- 2** Built-in Microphone
- 3** Brightness Control
- 4** Keyboard Risers
- 5** Auto Tilt Keyboard
- 6** External-Input-Device Connector
- 7** PCMCIA Slot
- 8** PCMCIA Slot
- 9** Security Keyhole
- 10** Release Latches
- 11** Front Infrared Port
- 12** Built-in Speaker
- 13** Front Palm Rest
- 14** TrackPoint III
- 15** Removable Diskette Drive or CD-ROM Drive
(model-unique)
- 16** CD-ROM Eject Button (CD-ROM model)
- 17** Fn Key
- 18** LCD Indicator Panel
- 19** Volume Control



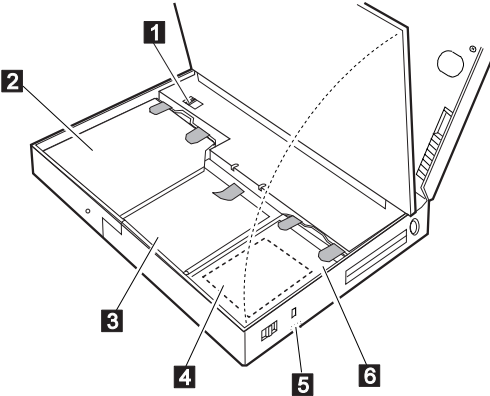
Rear View

- 1** Rear Door
- 2** Connector Door
- 3** MIDI/Joystick Port (model-unique)
- 4** External Diskette Drive Connector (model-unique)
- 5** Rear Infrared Port
- 6** Air Duct (Model unique)
- 7** System Expansion Connector
- 8** Power Shutdown Switch
- 9** External Display Connector
- 10** Parallel Connector
- 11** Serial Connector
- 12** Power Jack
- 13** Option Cover
- 14** Headphone Jack
- 15** Microphone/Line-in Jack
- 16** Modem/Fax Port
- 17** Video In/Out Ports (model-unique)
- 18** Power Switch



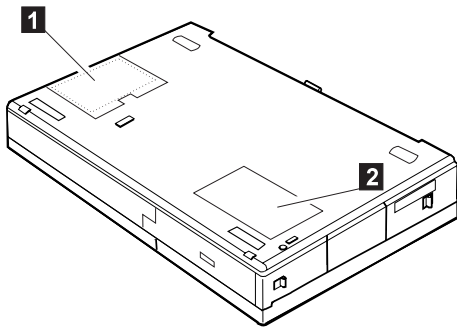
Inside View

- 1** Modem/Fax Port Release Latch
- 2** UltraBay
- 3** Battery Pack
- 4** Memory Slot
- 5** Security Latch
- 6** Removable Hard Disk Drive

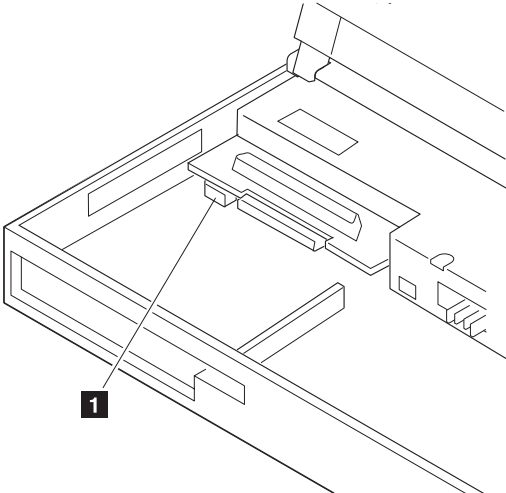


Bottom View

- 1** Memory Slot (Model unique)
- 2** Serial Number



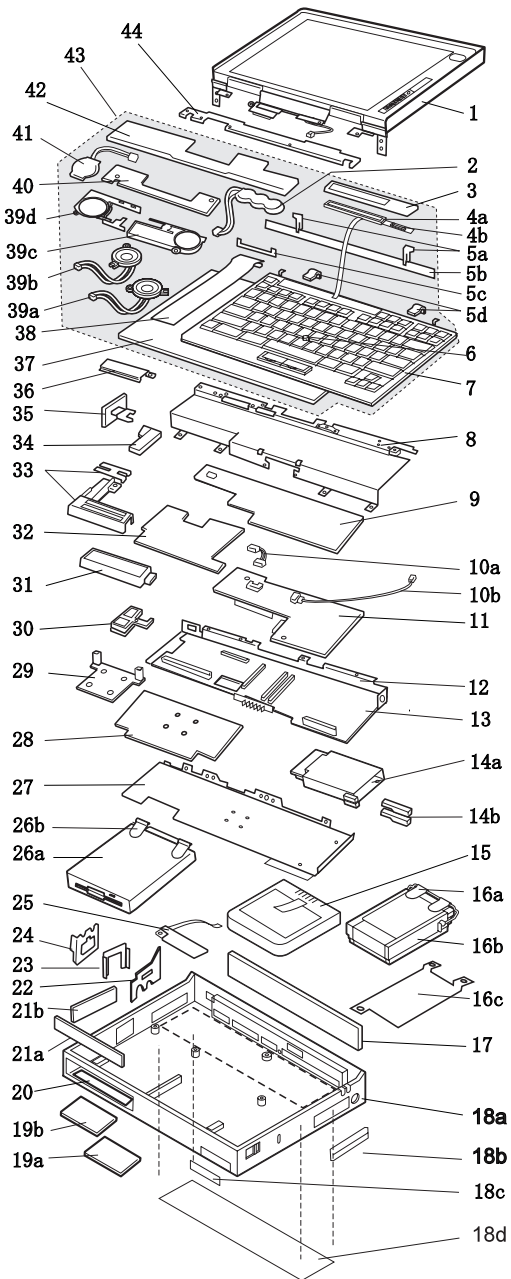
Power-On Password Connector



1 : Power-On Password Connector

Parts Listing 760 (9546, 9547)

Model 760C (9546)

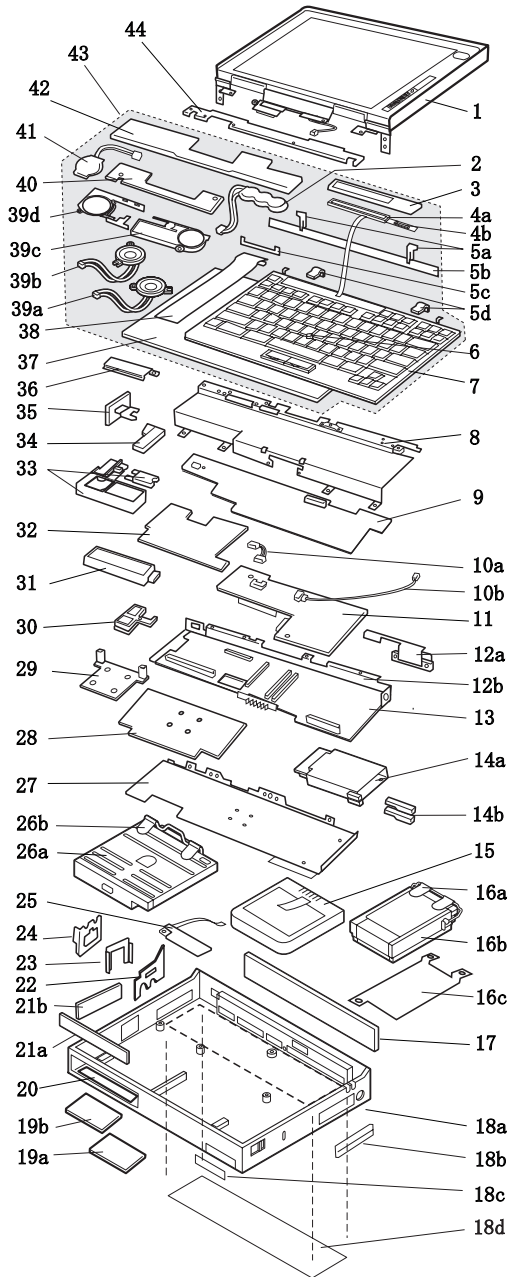


Index	Parts (760C)	
1	LCD Assembly (12.1 TFT) (U.S.-9546, model U21, U27, U28, U2A, U2H, U2J)	29H9226
	LCD Assembly (10.4 TFT) (U.S.-9546, model U22, U2B)	29H9227
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	39H7036
4a	LCD Indicator Assembly	29H9220
4b	Volume Knob	39H7037
5a	See Keyboard Misc. parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9212
9	Video Card	29H9207
10a	Volume Connection Cable	29H9211
10b	Mic Connection Cable	29H9210
11	DSP Card	29H9205
12	Rear Shield Case	29H9200
13	System Board	29H9199
14a	PC Card Slot	39H7019
14b	Eject Button	39H7018
15	Battery Pack (Li-ion)	29H9232
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (720 MB, 12.7 mm) (U.S.-9546, model U21, U22, U27, U2A, U2B, U2H)	29H9229
16b	Hard Disk Drive (1.08 GB, 12.7 mm) (U.S.-9546, model U28, U2J)	29H9367
16c	EMI Sheet	39H7031
17	Rear Connector Door	29H9185
18a	Base Cover-W/W	29H9181
	Base Cover-Japan	39H7056
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Thermal Rubber Sheet	82H8966
19a	DIMM Cover	69H8422
19b	DIMM Adapter Card	29H9296
20	Lower Spacer	29H9194
21a	FDD Blank Bezel	29H9239
	FDD Bezel	29H9196
21b	Option Cover	29H9193
22	AV Cover	29H9189
23	Modem Cover Lock	39H7028
24	Modem Cover	39H7030
	Blank Cover for EMEA	29H9187
25	Front IR Assembly	29H9215
26a	Diskette Drive (3-mode)	29H9230
26b	Diskette Drive Removable Strap	29H9237
27	Lower Shield	29H9202

Index Parts (760C)

28	CPU Card (90 MHz, Pentium) (U.S.-9546, model U21, U22, U2A, U2B)	29H9198
	CPU Card (120 MHz, Pentium) (U.S.-9546, model U27, U28, U2H, U2J)	29H9297
29	Heat Sink (Pentium 90MHz) (U.S.-9546, model U21, U22, U2A, U2B)	39H7005
	Heat Sink (Pentium 120MHz) (U.S.-9546, model U27, U28, U2H, U2J)	39H7006
30	See Misc. Parts	
31	Internal DAA Assembly	29H9216
32	DC/DC Card	83H5375
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9191
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	29H9225
39b	Speaker (left)	39H6983
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	29H9221
41	Backup Battery	29H9506
42	Palm Rest	29H9219
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9183
	AC Adapter (35W)	85G6701
	For Japan	85G6699
	Keyboard Misc. Parts	39H7105
	Misc. Parts	29H9234
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	DSP Holder	
	Rear IR Lens	

Model 760CD (9546)



Index	Parts (760CD)	
1	LCD Assembly (12.1 TFT)	29H9226
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	39H7036
4a	LCD Indicator Assembly	29H9220
4b	Volume Knob	39H7037
5a	See Keyboard Misc. Parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. Parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9213
9	Video Card	83H7108
10a	Volume Connection Cable	29H9211
10b	Mic Connection Cable	29H9210
11	DSP Card	29H9205
12a	External Diskette Drive Connector	29H9203
12b	Rear Shield Case	29H9201
13	System Board	29H9199
14a	PC Card Slot	39H7019
14b	Eject Button	39H7018
15	Battery Pack (Li-ion)	29H9232
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (1.2 GB, 17 mm) (U.S.-9546, model U11, U13, U1A, U1C)	29H9228
	Hard Disk Drive (720 MB, 12.7 mm)	29H9229
16c	EMI Sheet	39H7031
17	Rear Connector Door	29H9186
18a	Base Cover-W/W	29H9182
	Base Cover-Japan	39H7059
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Thermal Rubber Sheet	82H8966
19a	DIMM Cover	69H8422
19b	DIMM Adapter Card	29H9296
20	Lower Spacer	29H9194
21a	CD-ROM Blank Bezel	29H9289
	Diskette Drive Bezel	29H9197
21b	Option Cover	29H9193
22	AV Cover	29H9190
23	Modem Cover Lock	39H7027
24	Modem Cover	39H7029
	Blank Cover for EMEA	29H9188
25	Front IR Assembly	29H9215
26	CD-ROM Drive	29H9231
26a	Diskette Drive (3 mode)	29H9230
26b	Diskette Drive Removal Strap	29H9237
27	Lower Shield	29H9202

Index	Parts (760CD)	
28	CPU Card (90 MHz, Pentium) (U.S.-9546, model U11, U1A)	29H9198
	CPU Card (120 MHz, Pentium) (U.S.-9546, model U13, U1C)	29H9297
29	Heat Sink (Pentium 90MHz) (U.S.-9546, model U11, U1A)	39H7005
	Heat Sink (Pentium 120MHz) (U.S.-9546, model U13, U1C)	39H7006
30	See Misc. Parts	
31	Internal DAA Assembly	29H9216
32	DC/DC Card	83H5375
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9192
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	29H9225
39b	Speaker (left)	39H6983
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	29H9221
41	Backup Battery	29H9506
42	Palm Rest	29H9219
	For Japan	29H7032
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9184
	Conversion Cable, Game Port	29H9269
	Conversion Cable, Game Video	85G1897
	Wall Plug	85G2367
	Microphone	66G7871
	AC Adapter (35W)	85G6701
	For Japan	85G6699
	Keyboard Misc. Parts	39H7105
	Misc. Parts	29H9235
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	DSP Holder	
	Rear IR Lens	
	S-Video Bracket	

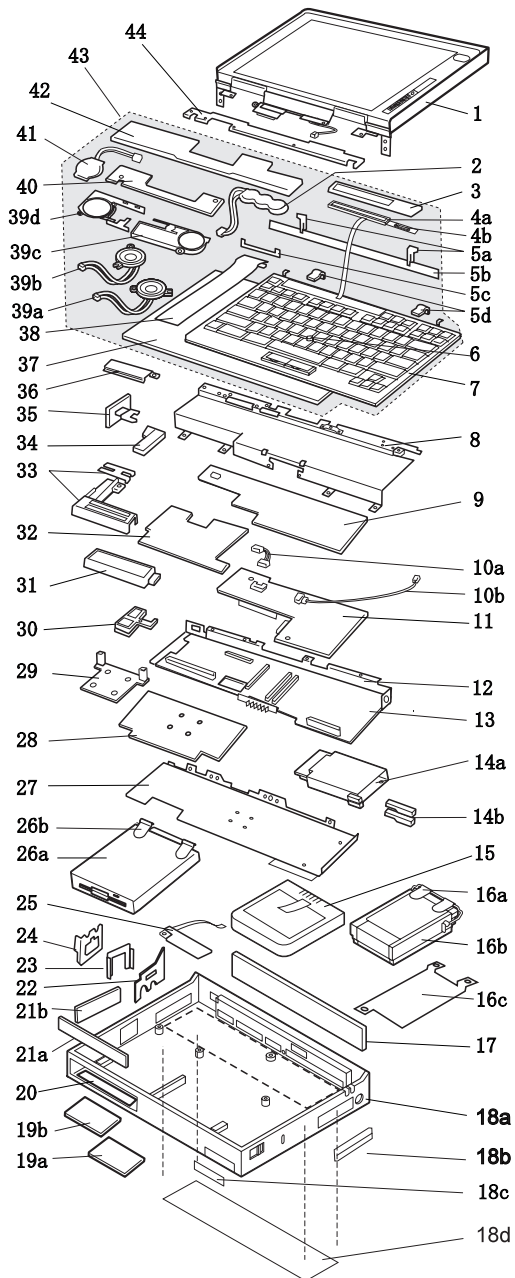
Keyboard Assembly

Arabic	29H9076
Belgian	29H9074
Canadian French	29H9082
Czech	29H9292
Danish	29H9073
Dutch	29H9071
French	29H9067
German	29H9065
Greek	29H9080
Hebrew	29H9077
Hungary	29H9291
Italian	29H9069
Japanese	29H9083
New World Spanish	29H9081
Norwegian	29H9075
Portuguese	29H9078
Polish	29H9290
Russian	29H9084
Slovak	29H9293
Spanish	29H9072
Swedish or Finnish	29H9070
Swiss	46H5989
Turkish	29H9079
U.K. English	29H9064
U.S. English	29H9063

Keyboard Unit

Arabic	29H9408
Belgian	29H9406
Canadian French	29H9414
Czech	39H6978
Danish	29H9405
Dutch	29H9403
French	29H9399
German	29H9397
Greek	29H9412
Hebrew	29H9409
Hungary	39H6977
Italian	29H9401
Japanese	29H9415
New World Spanish	29H9413
Norwegian	29H9407
Portuguese	29H9410
Polish	39H6976
Russian	29H9416
Slovak	39H6979
Spanish	29H9404
Swedish or Finnish	29H9402
Swiss	46H5990
Turkish	29H9411
U.K. English	29H9396
U.S. English	29H9395

Model 760E (9546) (CD Nonupgradable Type)



Check the Type

There are two types of 760E: Both come with an FDD built-in, but only one model is upgradable with an internal CD-ROM drive.

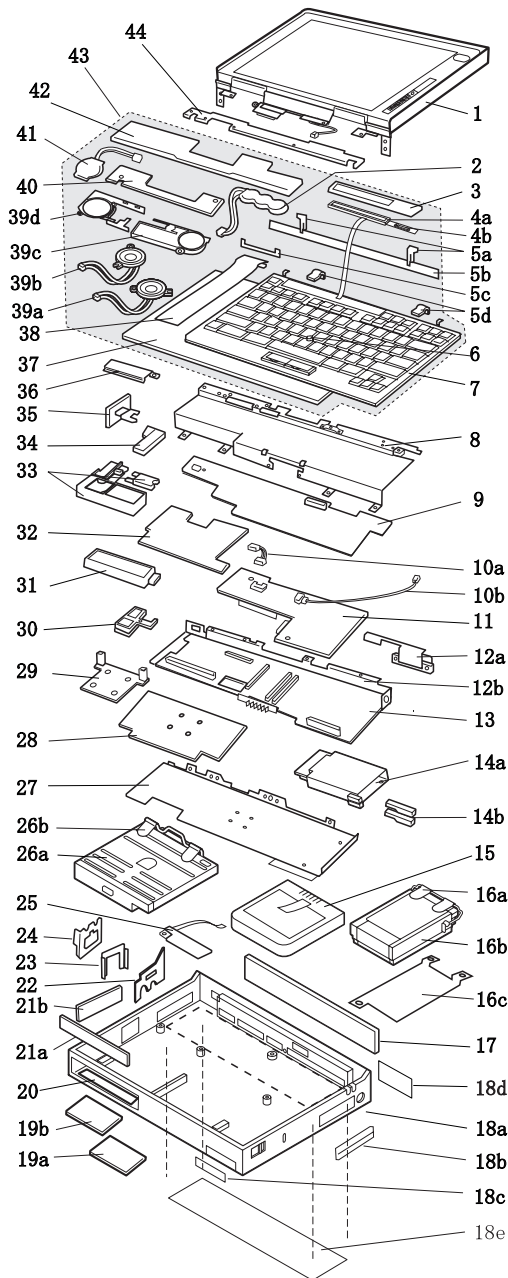
- The nonupgradable type 760E model has the FDD built-in space that is thick enough to install only an FDD.
- The upgradable type 760E model has the FDD built-in space that is thick enough to install a CD-ROM.

Check to be sure which type of 760E you are servicing before ordering FRU parts. **FRUs for the CD-ROM upgradable type are listed in the 760E(CD Upgradable Type)/760ED parts list. (See “Model 760E (9546) (CD Upgradable Type) or 760ED” on page 494.)**

Index	Parts (760E CD Nonupgradable Type)	
1	LCD Assembly (12.1 TFT)	29H9226
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	39H7036
4a	LCD Indicator Assembly	29H9220
4b	Volume Knob	39H7037
5a	See Keyboard Misc. parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9212
9	Video Card	39H6226
10a	Volume Connection Cable	29H9211
10b	Mic Connection Cable	29H9210
11	DSP Card	29H9205
12	Rear Shield Case	29H9200
13	System Board	11J8234
14a	PC Card Slot	46H6031
14b	Eject Button	46H6028
15	Battery Pack (Li-ion)	29H9232
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (810 MB)	29H9366
	(U.S.-9546, model U4B)	
	Hard Disk Drive (1.08 GB)	29H9367
	(U.S.-9546, model U4A)	
16c	EMI Sheet	39H7031
17	Rear Connector Door	29H9185
18a	Base Cover	39H6249
	For Japan	39H6234
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Thermal Rubber Sheet	82H8966
19a	DIMM Cover	69H8422
19b	DIMM Adapter Card (8 MB)	83H7126
	(U.S.-9546, model U4A)	
	DIMM Adapter Card (Blank)	83H7124
	(U.S.-9546, model U4B)	
20	Lower Spacer	29H9194
21a	FDD Blank Bezel	29H9239
	FDD Bezel	29H9196
21b	Option Cover	29H9193

Index	Parts (760E CD Nonupgradable Type)	
22	AV Cover	29H9189
23	Modem Cover Lock	39H7028
24	Modem Cover	39H7030
	Blank Cover for EMEA	29H9187
25	Front IR Assembly	29H9215
26a	Diskette Drive (3-mode)	29H9230
	Diskette Drive (4-mode, for Japan)	29H9372
26b	Diskette Drive Removable Strap	29H9237
27	Lower Shield	29H9202
28	CPU Card (120 MHz, Pentium)	11J9672
	(U.S.-9546, model U4B)	
	CPU Card (133 MHz, Pentium)	82H8897
	(U.S.-9546, model U4A)	
29	Heat Sink	39H7006
30	See Misc. Parts	
31	Internal DAA Assembly	29H9216
32	DC/DC Card	83H5375
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9191
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	29H9225
39b	Speaker (left)	39H6983
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	29H9221
41	Backup Battery	29H9506
42	Palm Rest	29H9219
	For Japan	39H7032
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9183
	AC Adapter (35W)	
	For U.S./Canada/LA/Japan	85G6705
	For EMEA/AP	85G6701
	Keyboard Misc. Parts	39H7105
	Misc. Parts	29H9234
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	DSP Holder	
	Rear IR Lens	

Model 760E (9546) (CD Upgradable Type) or 760ED



Check the Model

There are two models each for the 760E (CD upgradable type) and 760ED.

- The LCD thick model is the 760E/760ED with the thickness of 54.3 mm (2.14 inches).
- The LCD slim model is the 760E/760ED with the thickness of 50.7 mm (2.00 inches).

Index 760E CD Upgradable Type or 760ED

1	LCD Assembly (12.1 SVGA TFT thick model)	29H9226
	LCD Assembly (U.S.-9546, model U3A, U3B, U3L) (12.1 SVGA TFT slim model)	82H8496
	LCD Assembly (12.1 XGA TFT slim model) (U.S.-9546, model U9A, U9B)	82H8486
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	39H7036
4a	LCD Indicator Assembly	29H9220
4b	Volume Knob	39H7037
5a	See Keyboard Misc. Parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. Parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9213
9	Video Card (760E thick model) (U.S.-9546, model U3B)	39H6228
	Video Card (760ED thick model) (U.S.-9546, model U3A, U3L)	39H6227
	Video Card (760ED XGA slim model) (U.S.-9546, model U9A)	82H8880
	Video Card (760E XGA slim model) (U.S.-9546, model U9B)	82H8881
	Video Card (760E SVGA slim model)	82H8882
10a	Volume Connection Cable (U.S.-9546, model U3A, U3B, U3L)	29H9211
	Volume Connection Cable (760E/760ED XGA slim model) (U.S.-9546, model U9A, U9B)	82H8965
10b	Mic Connection Cable	29H9210
11	DSP Card	29H9205
12a	FDD Connector Cable	29H9203
12b	Rear Shield Case	29H9201
13	System Board (760E thick model) (U.S.-9546, model U3B)	11J8234
	System Board (760ED thick model) (U.S.-9546, model U3A, U3L)	11J7660
	System Board (760E/760ED XGA slim model) (U.S.-9546, model U9A, U9B)	11J7659
	System Board (760E/760ED SVGA slim model)	11J7660
14a	PC Card Slot	46H6031
14b	Eject Button	46H6028
15	Battery Pack (Li-ion)	29H9232
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (810 MB)	29H9366
	Hard Disk Drive (1.08 GB)	29H9367
	Hard Disk Drive (1.2 GB) (U.S.-9546, model U3A, U3B, U3L)	85G8549
	Hard Disk Drive (1.4 GB)	82H8884
	Hard Disk Drive (2.1 GB) (U.S.-9546, model U9A, U9B)	82H8489
16c	EMI Sheet	39H7031
17	Rear Connector Door	29H9186

Index	Part	
	(760E CD Upgradable Type or 760ED)	
18a	Base Cover (760E thick type)	46H6043
	For Japan	46H6044
	Base Cover (760ED)	39H6248
	For Japan	39H6233
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Game Port Bracket	82H8895
	(9546, model U9B only)	
18e	Thermal Rubber Sheet	82H8966
19a	DIMM Cover	69H8422
19b	DIMM Adapter Card (8 MB)	83H7126
	(U.S.-9546, model U3A, U9A, U9B)	
	DIMM Adapter Card (Blank)	83H7124
	(U.S.-9546, model U3B, U3L)	
20	Lower Spacer	29H9194
21a	FDD Blank Bezel	29H9289
	FDD Bezel	29H9197
21b	Option Cover	29H9193
22	AV Cover	29H9190
23	Modem Cover Lock	39H7027
24	Modem Cover	39H7029
	Blank Cover for EMEA	29H9188
25	Front IR Assembly	29H9215
26a	FDD Drive (3 mode)	29H9230
	(U.S.-9546, model U3A, U3B, U3L, U9A, U9B)	
	FDD Drive for Japan (4 mode)	29H9372
	In the U.S., either of the CD-ROM 4X drives below may be used for 9546, model U3A, U3B, U3L)	
	Order the FRU number of the drive being replaced.	
	CD-ROM Drive (4X)	29H9231
	CD-ROM Drive (4X)	12J2186
	CD-ROM CD-ROM Drive (6X-slim model)	82H8850
	(U.S.-9546, model U9A)	
26b	Diskette Drive Removable Strap	29H9237
27	Lower Shield	29H9202
28	CPU Card	
	(120 MHz, Pentium) thick model	11J9672
	(U.S.-9546, model U3B, U3L)	
	(133 MHz, Pentium)	82H8897
	(U.S.-9546, model U3A, U9A)	
	(150 MHz, Pentium) slim model	82H8877
	(U.S.-9546, model U9B)	
29	Heat Sink	39H7006
30	See Misc. Parts	
31	Internal DAA Assembly	29H9216
32	DC/DC Card	83H5375
	(U.S.-9546, model U3A, U3B, U3L, U9A)	
	DC/DC Card	
	for CPU Card 150 MHz, Pentium	83H5373
	(U.S.-9546, model U9B)	
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9192
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222

Index	Parts	
	(760E CD Upgradable Type or 760ED)	
39a	Speaker (right)	29H9225
39b	Speaker (left)	39H6983
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	29H9221
41	Backup Battery	29H9506
42	Palm Rest	29H9219
	For Japan	39H7032
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9184
	AC Adapter (35W, U.S./Canada/ Latin America/Japan)	85G6705
	For EMEA/AP	85G6701
	For EMEA/AP Slim 3-Prong	85G6735
	Keyboard Misc. Parts	39H7105
	Misc. Parts (760E thick type)	46H5367
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	Rear IR Lens	
	S-Video Bracket	
	Video Bracket	
	Misc. Parts (760ED)	29H9235
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	DSP Holder	
	Rear IR Lens	
	S-Video Bracket	

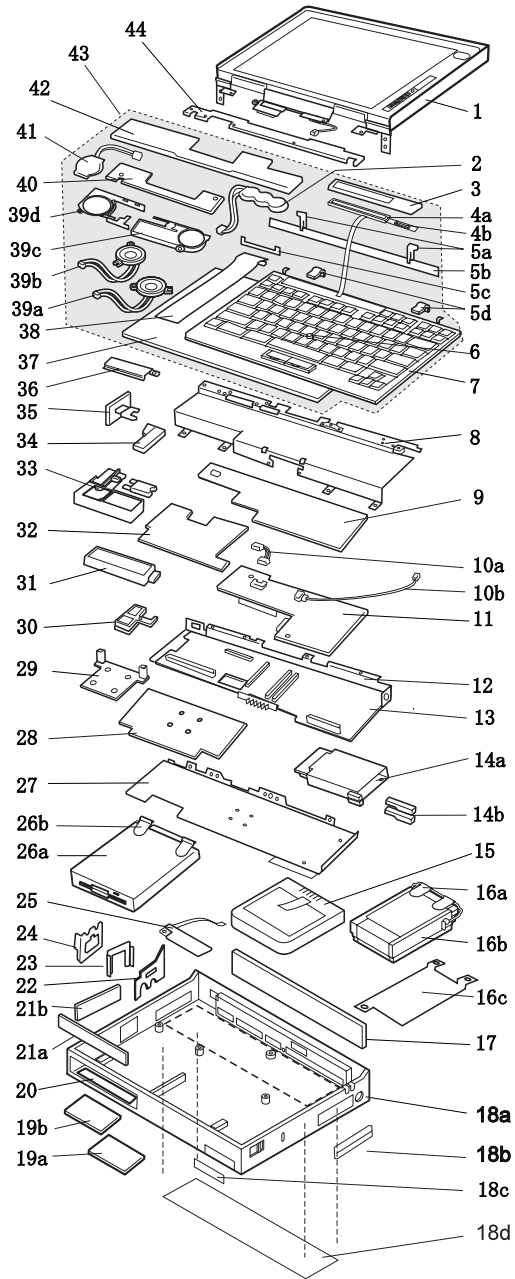
Keyboard Assembly

Arabic	29H9076
Belgian	29H9074
Canadian French	29H9082
Danish	29H9073
Dutch	29H9071
French	29H9067
German	29H9065
Greek	29H9080
Hebrew	29H9077
Italian	29H9069
Japanese	29H9083
New World Spanish	29H9081
Norwegian	29H9075
Portuguese	29H9078
Russian	29H9084
Spanish	29H9072
Swedish or Finnish	29H9070
Swiss	46H5989
Turkish	29H9079
U.K. English	29H9064
U.S. English	29H9063

Keyboard Unit

Arabic	29H9408
Belgian	29H9406
Canadian French	29H9414
Danish	29H9405
Dutch	29H9403
French	29H9399
German	29H9397
Greek	29H9412
Hebrew	29H9409
Italian	29H9401
Japanese	29H9415
New World Spanish	29H9413
Norwegian	29H9407
Portuguese	29H9410
Russian	29H9416
Spanish	29H9404
Swedish or Finnish	29H9402
Swiss	46H5990
Turkish	29H9411
U.K. English	29H9396
U.S. English	29H9395

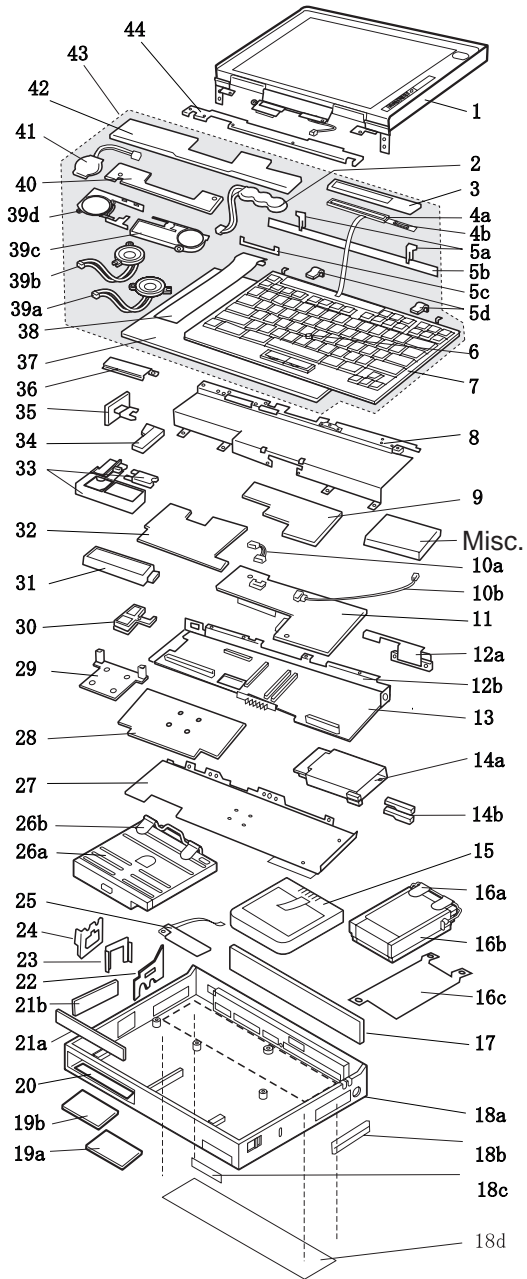
Model 760L (9547)



Index	Parts (760L)	
1	LCD Assembly (10.4 TFT)	46H5355
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	39H7036
4a	LCD Indicator Assembly	29H9220
4b	Volume Knob	39H7037
5a	See Keyboard Misc. Parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. Parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9212
9	Video Card	29H9207
10a	Volume Connection Cable	29H9211
10b	Mic Connection Cable	29H9210
11	ESS Card	46H5353
12	Rear Shield Case	29H9200
13	System Board	29H9199
14a	PC Card Slot	39H7019
14b	Eject Button	39H7018
15	Battery Pack (Ni-MH)	29H9233
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (810 MB, 12.7 mm)	29H9366
16c	EMI Sheet	39H7031
17	Rear Connector Door	29H9185
18a	Base Cover	46H5358
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Thermal Rubber Sheet	82H8966
19a	DIMM Cover	69H8422
19b	DIMM Adapter Card	29H9296
20	Lower Spacer	29H9194
21a	FDD Blank Bezel	29H9239
	FDD Bezel	29H9196
21b	Option Cover	29H9193
22	AV Cover	29H9189
23	Modem Cover Lock	39H7028
24	Modem Cover	39H7030
	Blank Cover for EMEA	29H9187
25	Front IR Assembly	29H9215
26a	Diskette Drive (3-mode)	29H9230
26b	Diskette Drive Removable Strap	29H9237
27	Lower Shield	29H9202

Index	Parts (760L)	
28	CPU Card (90 MHz, Pentium) (U.S.-9547, model U01, U0A, U0R)	29H9198
	CPU Card (120 MHz, Pentium)	29H9297
29	Heat Sink (Pentium 90MHz) (U.S.-9547, model U01, U0A, U0R)	39H7005
	Heat Sink (Pentium 120MHz)	39H7006
30	See Misc. Parts	
31	Modem Bracket Assembly	46H5360
32	DC/DC Card	83H5375
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9191
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	29H9225
39b	Speaker (left)	39H6983
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	29H9221
41	Backup Battery	29H9506
42	Palm Rest	29H9219
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9183
	AC Adapter (35W)	85G6701
	For Japan	85G6699
	Keyboard Misc. Parts	39H7039
	Misc. Parts	46H5366
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	Rear IR Lens	

Model 760LD (9547)



Index	Parts (760LD)	
1	LCD Assembly (10.4 TFT)	46H5355
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	39H7036
4a	LCD Indicator Assembly	29H9220
4b	Volume Knob	39H7037
5a	See Keyboard Misc. Parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. Parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9213
9	Video Card	46H5318
10a	Volume Connection Cable	29H9211
10b	Mic Connection Cable	29H9210
11	ESS Card	46H5353
12a	External Diskette Drive Connector	29H9203
12b	Rear Shield Case	29H9201
13	System Board	29H9199
14a	PC Card Slot	39H7019
14b	Eject Button	39H7018
15	Battery Pack (Ni-MH)	46H5365
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (810 MB, 12.7 mm)	29H9366
16c	EMI Sheet	39H7031
17	Rear Connector Door	29H9186
18a	Base Cover	46H5359
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Thermal Rubber Sheet	82H8966
19a	DIMM Cover	69H8422
19b	DIMM Adapter Card	29H9296
20	Lower Spacer	29H9194
21a	CD-ROM Blank Bezel	29H9289
	Diskette Drive Bezel	29H9197
21b	Option Cover	29H9193
22	AV Cover	29H9190
23	Modem Cover Lock	39H7027
24	Modem Cover	39H7029
	Blank Cover for EMEA	29H9188
25	Front IR Assembly	29H9215
26a	Diskette Drive (3-Mode)	29H9230
26a	Diskette Drive(4-Mode Japan)	29H9372
26b	Diskette Drive Removable Strap	29H9237
	CD-ROM Drive	39H7424
27	Lower Shield	29H9202

Index	Parts (760LD)	
28	CPU Card (90 MHz, Pentium) (U.S.-9547, model U31, U3A, U3R)	29H9198
	CPU Card (120 MHz, Pentium)	29H9297
29	Heat Sink (Pentium 90MHz) (U.S.-9547, model U31, U3A, U3R)	39H7005
	Heat Sink (Pentium 120MHz)	39H7006
30	See Misc. Parts	
31	Modem Bracket Assembly	46H5360
32	DC/DC Card	83H5375
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9192
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	29H9225
39b	Speaker (left)	39H6983
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	29H9221
41	Backup Battery	29H9506
42	Palm Rest	29H9219
	For Japan	29H7032
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9184
	Wall Plug	85G2367
	Microphone	66G7871
	AC Adapter (35W)	85G6701
	For Japan	85G6699
	Keyboard Misc. Parts	39H7039
	Misc. Parts	46H5367
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	Rear IR Lens	

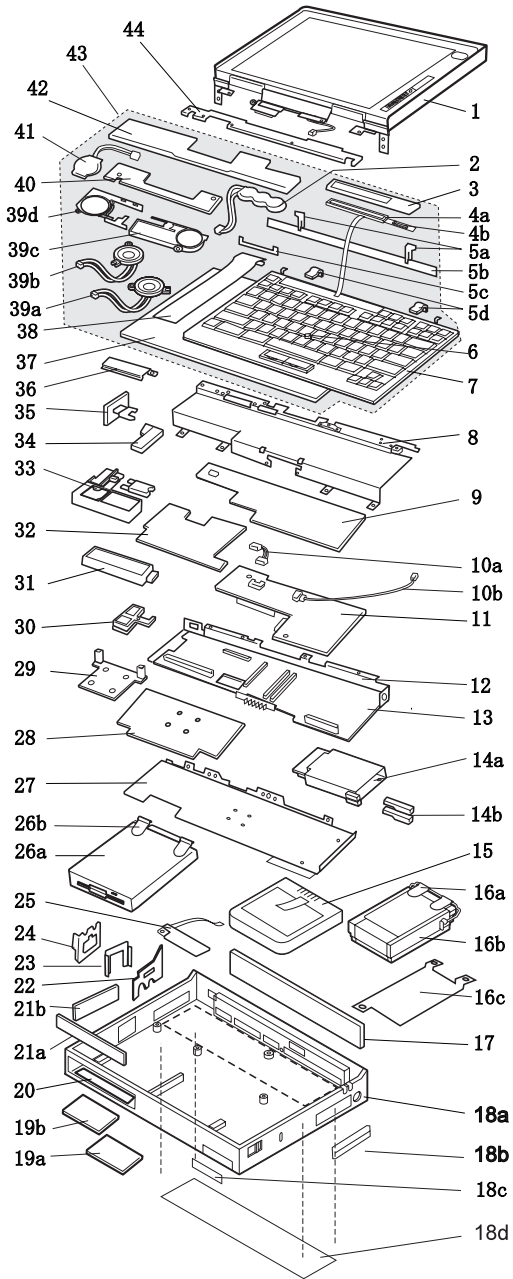
Keyboard Assembly

Arabic	29H9076
Belgian	29H9074
Canadian French	29H9082
Czech	29H9292
Danish	29H9073
Dutch	29H9071
French	29H9067
German	29H9065
Greek	29H9080
Hebrew	29H9077
Hungary	29H9291
Italian	29H9069
Japanese	29H9083
New World Spanish	29H9081
Norwegian	29H9075
Portuguese	29H9078
Polish	29H9290
Russian	29H9084
Slovak	29H9293
Spanish	29H9072
Swedish or Finnish	29H9070
Swiss	46H5989
Turkish	29H9079
U.K. English	29H9064
U.S. English	29H9063

Keyboard Unit

Arabic	29H9408
Belgian	29H9406
Canadian French	29H9414
Czech	39H6978
Danish	29H9405
Dutch	29H9403
French	29H9399
German	29H9397
Greek	29H9412
Hebrew	29H9409
Hungary	39H6977
Italian	29H9401
Japanese	29H9415
New World Spanish	29H9413
Norwegian	29H9407
Portuguese	29H9410
Polish	39H6976
Russian	29H9416
Slovak	39H6979
Spanish	29H9404
Swedish or Finnish	29H9402
Swiss	46H5990
Turkish	29H9411
U.K. English	29H9396
U.S. English	29H9395

Model 760EL or 760ELD (9547)



Index	Parts (760EL/760ELD)	
1	LCD Assembly (760EL/760ELD, 12.1 TFT thick type) (U.S.-9547, model U3F, U48, U4F, U4H, U4R, U4S)	29H9226
	LCD Assembly (760EL, 11.3, DSTN) (U.S.-9547, model U6F, U6G, U6H, U6R)	39H6232
	LCD Assembly (760EL, 12.1 TFT slim type) (U.S.-9547, model U4G, U4K, U4T)	82H8496
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	39H7036
4a	LCD Indicator Assembly	29H9220
4b	Volume Knob	39H7037
5a	See Keyboard Misc. Parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. Parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9213
9	Video Card (U.S.-9547, model U3F, U48, U4F, U4H, U4R, U4S, U6F, U6G, U6H, U6R)	39H6228
	Video Card (U.S.-9547, model U4G, U4K, U4T)	97H5502
10a	Volume Connection Cable	29H9211
10b	Mic Connection Cable	29H9210
11	ESS Card	46H5353
12a	Rear Shield Case	29H9201
12b	FDD Connector Cable	29H9003
13	System Board (U.S.-9547, model U3F, U48, U4F, U4H, U4R, U4S, U6F, U6G, U6R)	11J8234
	System Board- SVGA (U.S.-9547, model U4G, U4K, U4T)	11J7660
	System Board- DSTN (U.S.-9547, model U6H)	11J8234

Index	Parts (760EL/760ELD)	
14a	PC Card Slot	46H6031
14b	Eject Button	46H6028
15	Battery Pack (Li-ion)	29H9232
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (810 MB)	29H9366
	(U.S.-9547, model U3F, U6F, U6G, U6R)	
	Hard Disk Drive (1.08 GB)	29H9367
	(U.S.-9547, model U48, U4F, U4H, U4R, U4S)	
	Hard Disk Drive (1.2 GB)	29H9228
	Hard Disk Drive (1.4 GB)	82H8884
	(U.S.-9547, model U6H)	
	Hard Disk Drive (2.1 GB)	82H8489
	(U.S.-9547, model U4G, U4K, U4T)	
16c	EMI Sheet	39H7031
17	Rear Connector Door	29H9186
18a	Base Cover	46H5599
	For Japan	46H5600
18b	PC Card Door	29H9238
18c	Name Label	46H6034
18d	Game Port Bracket	82H8895
	(U.S.-9547, model U4G, U4K, U4T)	
18e	Thermal Rubber Sheet	82H8966
19a	DIMM Cover	69H8422
19b	DIMM Adapter Card (8 MB)	83H7126
	(U.S.-9547, model U48, U4G, U4H, U4K, U4R, U4T)	
	DIMM Adapter Card (Blank)	83H7124
	(U.S.-9547, model U3F, U4F, U4S, U6F, U6G, U6H, U6R)	
20	Lower Spacer	29H9194
21a	FDD Blank Bezel	29H9289
	FDD Bezel	29H9197
21b	Option Cover	29H9193
22	AV Cover	29H9190
23	Modem Cover Lock	39H7027
24	Modem Cover	29H9188
25	Front IR Assembly	29H9215
26a	Diskette Drive (3-mode)	29H9230
	(U.S.-9547, model U3F, U48, U4F, U4G, U4K, U4S, U4T, U6F, U6G, U6H, U6R)	
	Diskette Drive (4-mode)	29H9372
	Note:	
	In the U.S., either of the CD-ROM 4X drives below may be used for 9547, model U3F.	
	Order the FRU number of the drive being replaced.	
	CD-ROM Drive 4X	29H9231
	CD-ROM Drive 4X	02K0490
26b	Diskette Drive Removable Strap	29H9237
27	Lower Shield	29H9202

Index	Parts (760EL/760ELD)	
28	CPU Card (760EL/760ELD, 100 MHz, Pentium)	11J9673
	Note: In U.S., this FRU is for 9547-U3F, and 9547-U6G.	
	CPU Card (760EL/760ELD, 120 MHz, Pentium)	12J1574
	Note: In U.S., this FRU is for 9547-U6F, 9547-U4F, 9547-U4S, 9547-U6H, and 9547-U6R.	
	CPU Card (760EL, 133 MHz, Pentium)	11J9674
	Note: In U.S., this FRU is for 9547-U48, 9547-U4H, and 9547-U4R.	
	CPU Card (760EL, 133 MHz, Pentium)	82H8897
	Note: In U.S., this FRU is for 9547-U4G, U4K, and U4T.	
29	Heat Sink	39H7006
30	See Misc. Parts	
31	Modem Bracket Assembly	46H5360
32	DC/DC Card	83H5375
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9192
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	29H9225
39b	Speaker (left)	39H6983
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	29H9221
41	Backup Battery	29H9506
42	Palm Rest	29H9219
	For Japan	39H7032
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9184
	AC Adapter (35W, Slim U.S., Japan)	85G6705
	For EMEA/AP	85G6701
	For EMEA/AP Slim 3-Prong	85G6735
	Keyboard Misc. Parts	39H7105
	Misc. Parts	64H5367
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	DSP Holder	
	Rear IR Lens	

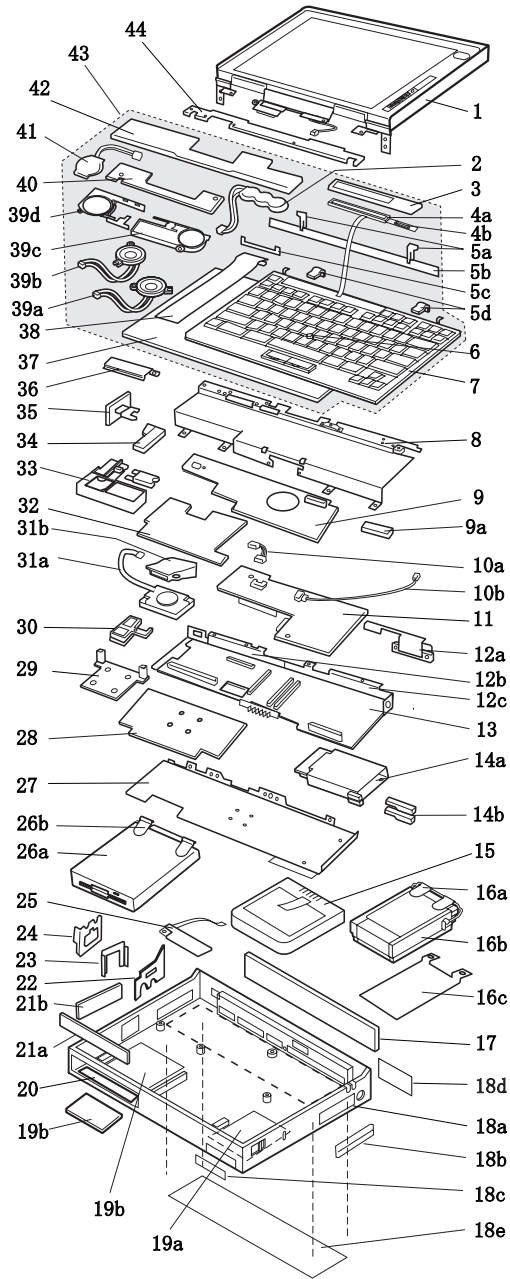
Keyboard Assembly

Arabic	29H9076
Belgian	29H9074
Canadian French	29H9082
Danish	29H9073
Dutch	29H9071
French	29H9067
German	29H9065
Greek	29H9080
Hebrew	29H9077
Italian	29H9069
Japanese	29H9083
New World Spanish	29H9081
Norwegian	29H9075
Portuguese	29H9078
Russian	29H9084
Slovak	29H9293
Spanish	29H9072
Swedish or Finnish	29H9070
Swiss	46H5989
Turkish	29H9079
U.K. English	29H9064
U.S. English	29H9063

Keyboard Unit

Arabic	29H9408
Belgian	29H9406
Canadian French	29H9414
Danish	29H9405
Dutch	29H9403
French	29H9399
German	29H9397
Greek	29H9412
Hebrew	29H9409
Italian	29H9401
Japanese	29H9415
New World Spanish	29H9413
Norwegian	29H9407
Portuguese	29H9410
Russian	29H9416
Slovak	39H6979
Spanish	29H9404
Swedish or Finnish	29H9402
Swiss	46H5990
Turkish	29H9411
U.K. English	29H9396
U.S. English	29H9395

Model 760XL (9547)



Index	Parts (760XL)	
1	LCD Assembly (12.1, TFT)	46H5725
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	69H8403
4a	LCD Indicator Assembly	46H5889
4b	Volume Knob	69H8404
5a	See Keyboard Misc. Parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. Parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9213
9	Video Card	46H5771
9a	Acoustic Spacer	46H5495
10a	Volume Connection Cable	29H9211
10b	Mic Connection Cable	29H9210
11	ESS Card	46H5775
12a	External FDD Connector	29H9203
12b	Rear Shield Case (left)	46H5759
12c	Rear Shield Case (right)	46H5758
13	System Board (SVGA)	46H5773
14a	PC Card Slot	46H5751
14b	Eject Button	46H6028
15	Battery Pack (Li-ion)	29H9232
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (2.1 GB)	82H8489
16c	EMI Sheet	46H5497
17	Rear Connector Door	46H5764
18a	Base Cover	46H5756
	For Japan	46H5757
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Game Port Bracket	82H8895
18e	Thermal Rubber Sheet	82H8966
19a	Shield Plate, right	46H5760
19b	Shield Plate, left	46H5761
19c	DIMM Adapter Card (8 MB)	46H5768
20	Lower Spacer	29H9194
21a	FDD Blank Bezel	29H9289
	FDD Bezel	29H9197
21b	Option Cover	29H9193

Index	Parts (760XL)	
22	AV Cover	29H9190
23	Modem Cover Lock	39H7027
24	Blank Cover for EMEA	29H9188
25	Front IR Assembly	29H9215
26a	Diskette Drive (3-mode)	29H9230
	Diskette Drive (4-mode, for Japan)	29H9372
26b	Diskette Drive Removable Strap	29H9237
27	Lower Shield	29H9202
28	CPU Card (166 MHz, Pentium)	82H8875
29	Heat Sink	39H7006
30	See Misc. Parts	
31a	Fan	46H5762
31b	Air Duct	46H5763
32	DC/DC Card	46H5750
33	See Misc. Parts	
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9192
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	46H5777
39b	Speaker (left)	46H5778
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	46H5776
41	Backup Battery	29H9506
42	Palm Rest	29H9219
	For Japan	39H7032
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9184
	DIMM Card Holder	46H5765
	AC Adapter (35W)	
	For U.S./Canada/LA/Japan	85G6705
	For EMEA/AP	85G6735
	Keyboard Misc. Parts	39H7105
	Misc. Parts	46H5367
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	DSP Holder	
	Rear IR Lens	
	Screw for Fan	46H5766
	Name Label	46H5767

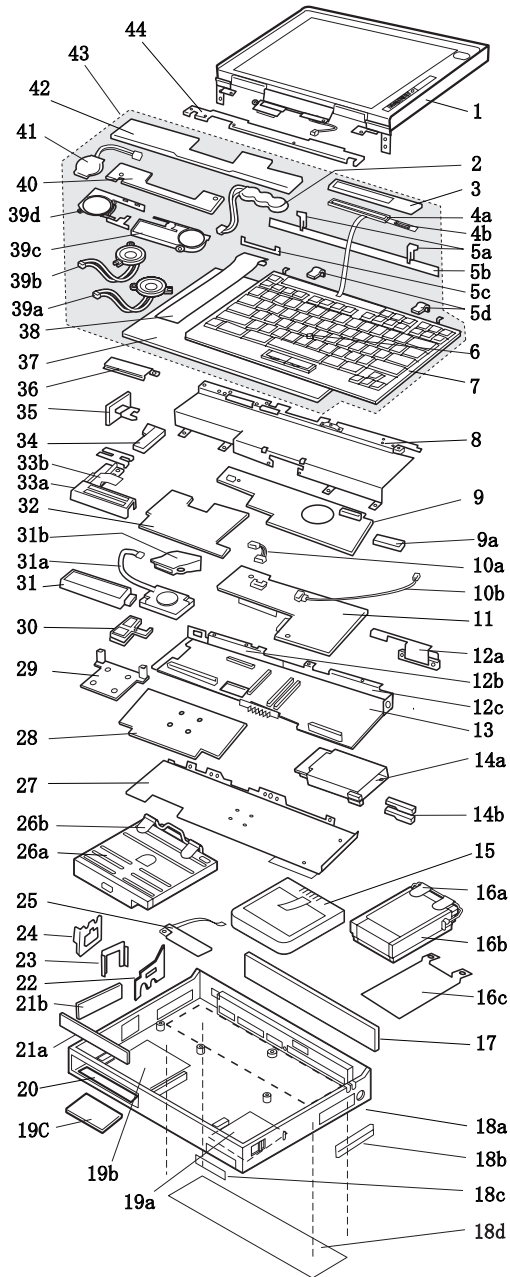
Keyboard Assembly

Arabic	29H9076
Belgian	29H9074
Canadian French	29H9082
Danish	29H9073
Dutch	29H9071
French	29H9067
German	29H9065
Greek	29H9080
Hebrew	29H9077
Italian	29H9069
Japanese	29H9083
New World Spanish	29H9081
Norwegian	29H9075
Portuguese	29H9078
Russian	29H9084
Spanish	29H9072
Swedish or Finnish	29H9070
Swiss	46H5989
Turkish	29H9079
U.K. English	29H9064
U.S. English	29H9063

Keyboard Unit

Arabic	46H5790
Belgian	46H5788
Canadian French	46H5796
Danish	46H5787
Dutch	46H5785
French	46H5782
German	46H5781
Greek	46H5794
Hebrew	46H5791
Italian	46H5783
Japanese	46H5797
Latin Spanish	46H5795
New World Spanish	
Norwegian	46H5789
Portuguese	46H5792
Russian	46H5798
Spanish	46H5786
Swedish or Finnish	46H5784
Swiss	46H5799
Turkish	46H5793
U.K. English	46H5780
U.S. English	46H5779

Model 760XD (9546)



Index	Part (760XD)	
1	LCD Assembly (12.1, XGA, TFT)	46H5735
2	Standby Battery	29H9497
3	LCD Indicator Assembly Cover	46H5736
4a	LCD Indicator Assembly	46H5889
4b	Volume Knob	69H8404
5a	See Keyboard Misc. parts	
5b	Keyboard Foot	39H7038
5c	Keyboard FPC Bracket	39H7035
5d	See Keyboard Misc. parts	
6	TrackPoint III Cap	84G6536
7	Keyboard (See Keyboard Section)	
8	Upper Shield Case	29H9213
9	Video Card	46H5770
9a	Acoustic Spacer	46H5495
10a	Volume Connection Cable	82H8965
10b	Mic Connection Cable	29H9210
11	DSP Card	29H9205
12a	FDD Connector Cable	29H9203
12b	Rear Shield Case (left)	46H5759
12c	Rear Shield Case (right)	46H5758
13	System Board (XGA)	46H5772
14a	PC Card Slot	46H5751
14b	Eject Button	46H6028
15	Battery Pack (Li-ion)	29H9232
16a	HDD Removable Strap	29H9236
16b	Hard Disk Drive (3 GB)	45H8791
16c	EMI Sheet	46H5497
17	Rear Connector Door	46H5764
18a	Base Cover	46H5754
	For Japan	46H5755
18b	PC Card Door	29H9238
18c	Name Label	66G9228
18d	Thermal Rubber Sheet	82H8966
19a	Shield Plate, right	46H5760
19b	Shield Plate, left	46H5761
19c	DIMM Adapter Card (8 MB)	46H5768
20	Lower Spacer	29H9194

Index	Part (760XD)	
21a	FDD Blank Bezel	29H9289
	FDD Bezel	29H9197
21b	Option Cover	29H9193
22	AV Cover	29H9190
23	Modem Cover Lock	39H7027
24	Modem Cover	39H7029
25	Front IR Assembly	29H9215
26a	Diskette Drive (3-mode)	29H9230
	Diskette Drive (4-mode)	29H9372
	CD-ROM Drive (8x)	82H8851
26b	Diskette Drive Removable Strap	29H9237
27	Lower Shield	29H9202
28	CPU Card (166 MHz, Pentium)	82H8875
29	Heat Sink	39H7006
30	See Misc. Parts	
31	Internal DAA Assembly	12J1571
31a	Fan	46H5762
31b	Air Duct	46H5763
32	DC/DC Card	46H5750
33a	See Misc. Parts	
33b	Cable	29H9206
34	Power Switch Actuator	29H9209
35	Power Switch Button	29H9192
36	Rear IR Assembly	29H9214
37	Keyboard Base	29H9218
38	Keyboard Cable	29H9222
39a	Speaker (right)	46H5777
39b	Speaker (left)	46H5778
39c	Speaker Holder (right)	39H7033
39d	Speaker Holder (left)	39H7034
40	Keyboard Card	46H5776
41	Backup Battery	29H9506
42	Palm Rest	29H9219
	For Japan	39H7032
43	Keyboard Unit (See Keyboard Unit Section)	
44	Top Cover	29H9184

Index	Part (760XD)	
	DIMM Card Holder	46H5765
	AC Adapter (35W, Slim U.S., Japan)	85G6705
	For EMEA/AP	85G6701
	For EMEA/AP Slim 3-Prong	85G6735
	Keyboard Misc. Parts	39H7105
	Misc. Parts	29H9235
	(Includes the following:)	
	Modem Holder	
	Modem Lever	
	DSP Holder	
	Rear IR Lens	
	Screw for Fan	46H5766
	Model Label	46H5767

Keyboard Assembly

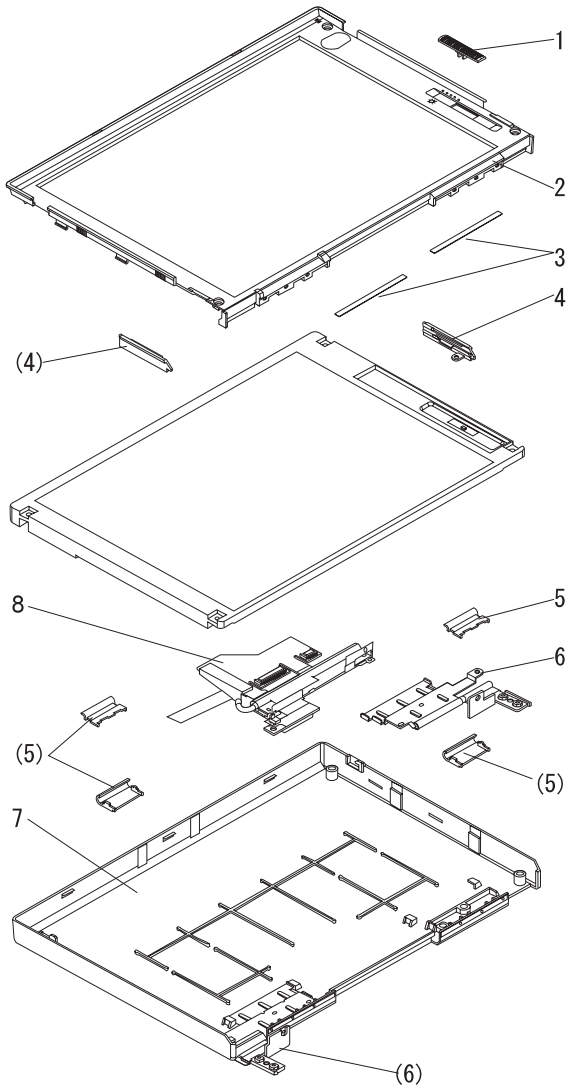
Arabic	29H9076
Belgian	29H9074
Canadian French	29H9082
Danish	29H9073
Dutch	29H9071
French	29H9067
German	29H9065
Greek	29H9080
Hebrew	29H9077
Italian	29H9069
Japanese	29H9083
New World Spanish	29H9081
Norwegian	29H9075
Portuguese	29H9078
Russian	29H9084
Spanish	29H9072
Swedish or Finnish	29H9070
Swiss	46H5989
Turkish	29H9079
U.K. English	29H9064
U.S. English	29H9063

Keyboard Unit

Arabic	46H5790
Belgian	46H5788
Canadian French	46H5796
Danish	46H5787
Dutch	46H5785
French	46H5782
German	46H5781
Greek	46H5794
Hebrew	46H5791
Italian	46H5783
Japanese	46H5797
Latin Spanish	46H5795
New World Spanish	
Norwegian	46H5789
Portuguese	46H5792
Russian	46H5798
Spanish	46H5786
Swedish or Finnish	46H5784
Swiss	46H5799
Turkish	46H5793
U.K. English	46H5780
U.S. English	46H5779

LCD Parts List

LCD Unit, 12.1 SVGA (P/N 29H9226,
ASM P/N 29H9029)



LCD Cover Group 46H5710

Note

Includes the following parts:

- 1 Slide Knob
- 2 Front Cover
- 3 Screw Cap, Large
- 4 Guide (R/L)
- 5 Hinge Cover (R/L)
- 7 Rear Cover
 - Screw Cap
 - Screw
 - Tape

Hinge Group 46H5714

Note

Includes the following parts:

- 6 Hinge (R/L)
 - Screw Cap

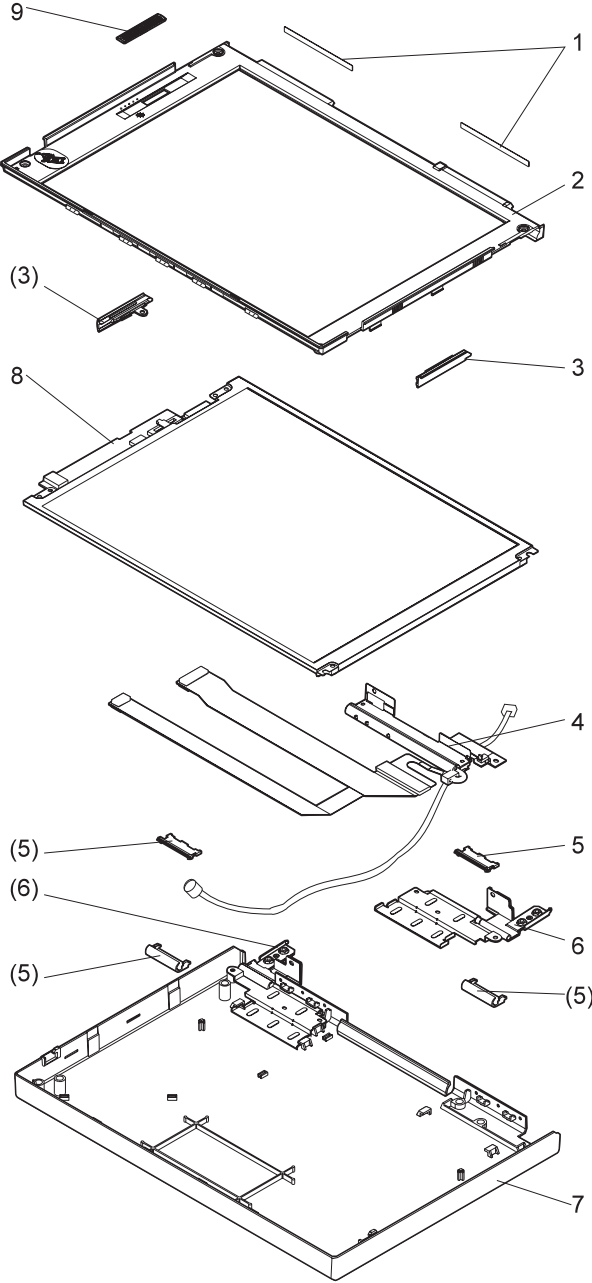
Interface Cable Group 46H5717

Note

Includes the following parts:

- 8 Interface Cable Assembly
 - Screw Cap

**LCD Unit, 12.1 SVGA (P/N 29H9226,
ASM P/N 73H6599)**



LCD Cover Group 46H5711

Note

Includes the following parts:

- 1 Screw Cap, Large
- 2 Front Cover
- 3 Guide (R/L)
- 5 Hinge Cover (R/L)
- 7 Rear Cover
- 8 Slide Knob
 - Screw Cap
 - Screw
 - Tape

Hinge Group 46H5714

Note

Includes the following parts:

- 6 Hinge (R/L)
 - Screw Cap

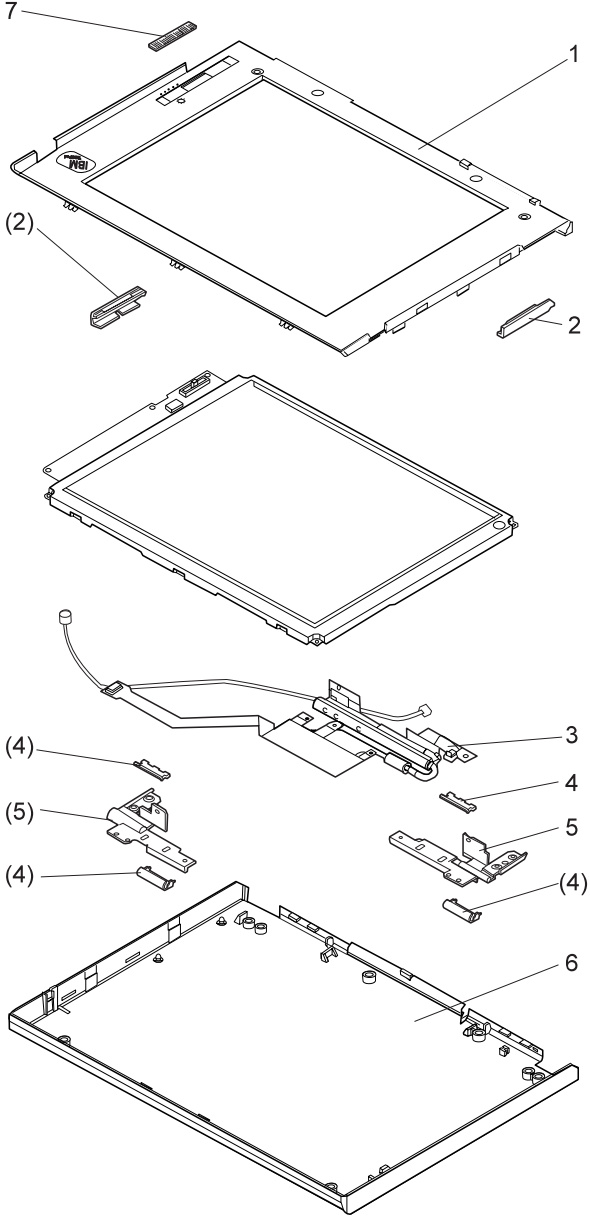
Interface Cable Group 46H5718

Note

Includes the following parts:

- 4 Interface Cable Assembly
 - Screw Cap

LCD Unit, 10.4 SVGA (P/N 29H9227)



LCD Cover Group 46H5712

Note

Includes the following parts:

- 1 Front Cover
- 2 Guide (R/L)
- 4 Hinge Cover (R/L)
- 6 Rear Cover
- 7 Slide Knob
- Screw Cap
- Screw
- Tape

Hinge Group 46H5715

Note

Includes the following parts:

- 5 Hinge (R/L)
- Screw Cap

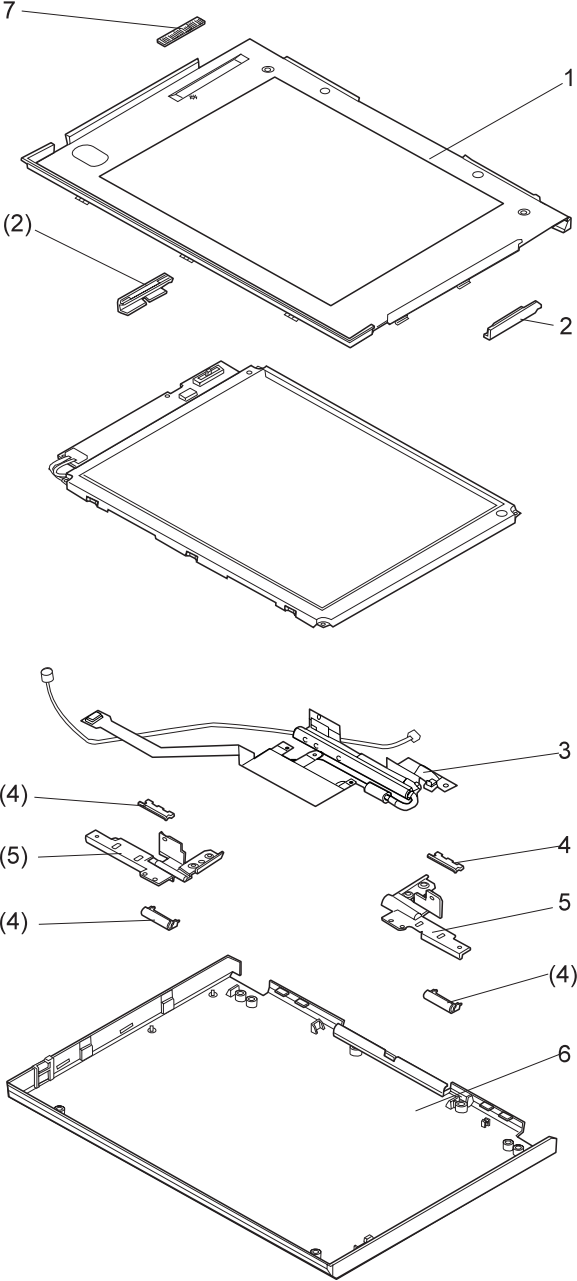
Interface Cable Assembly 46H5719

Note

Includes the following parts:

- 3 Interface Cable Assembly
- Screw Cap

LCD Unit, 10.4 VGA (P/N 46H5355)



LCD Cover Group 46H5712

Note

Includes the following parts:

- 1 Front Cover
- 2 Guide (R/L)
- 4 Hinge Cover (R/L)
- 6 Rear Cover
- 7 Slide Knob
 - Screw Cap
 - Screw
 - Tape

Hinge Group 46H5715

Note

Includes the following parts:

- 5 Hinge (R/L)
 - Screw Cap

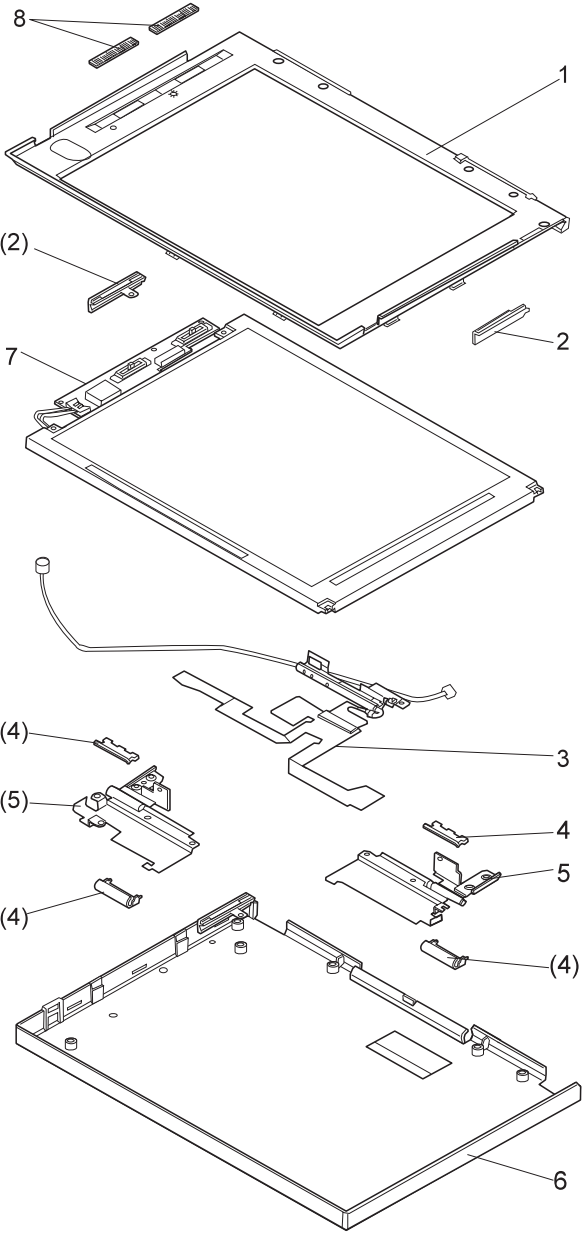
Interface Cable Group 46H5720

Note

Includes the following parts:

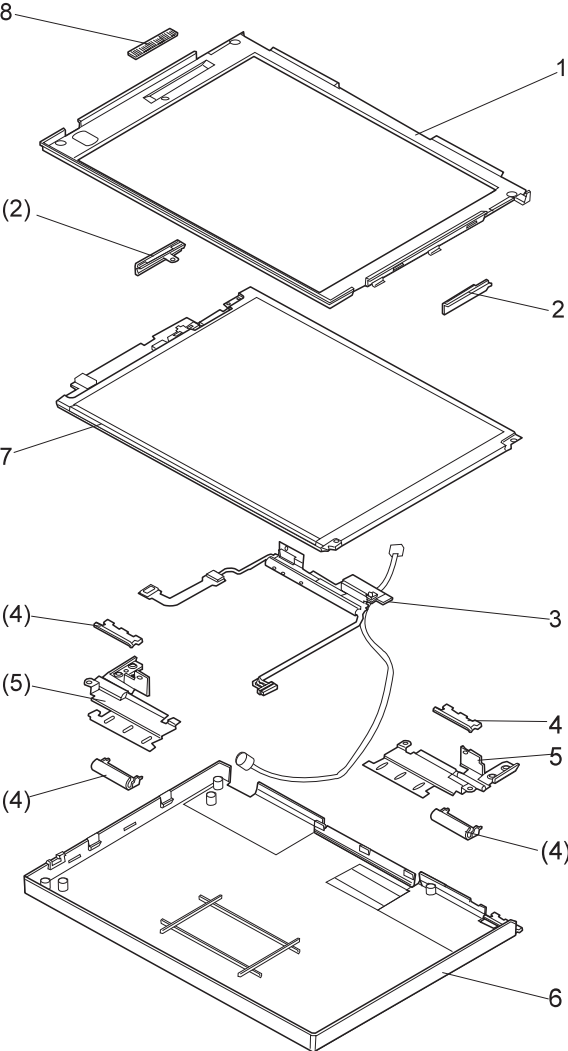
- 3 Interface Cable Assembly
 - Screw Cap

LCD Unit, 11.3 DSTN (P/N 39H6232)



LCD Cover Group	46H5713
Note	
Includes the following parts:	
1 Front Cover	
2 Guide (R/L)	
4 Hinge Cover (R/L)	
6 Rear Cover	
8 Slide Knob	
- Screw Cap	
- Screw	
- Tape	
Hinge Group	46H5716
Note	
Includes the following parts:	
5 Hinge (R/L)	
- Screw Cap	
Interface Cable Group	46H5721
Note	
Includes the following parts:	
3 Interface Cable Assembly	
- Screw Cap	
Inverter Card Group	46H5722
Note	
Includes the following parts:	
7 Inverter Card	
- Screw Cap	

LCD Unit, 12.1 XGA (P/N 82H8486)



LCD Cover Group 82H8891

Note

Includes the following parts:

- 1 Front Cover
- 2 Guide (R/L)
- 4 Hinge Cover (R/L)
- 6 Rear Cover
- 7 Bracket Spacer
- 8 Slide Knob
 - Screw Cap
 - Screw
 - Tape

Hinge Group 82H8892

Note

Includes the following parts:

- 5 Hinge (R/L)
 - Screw Cap

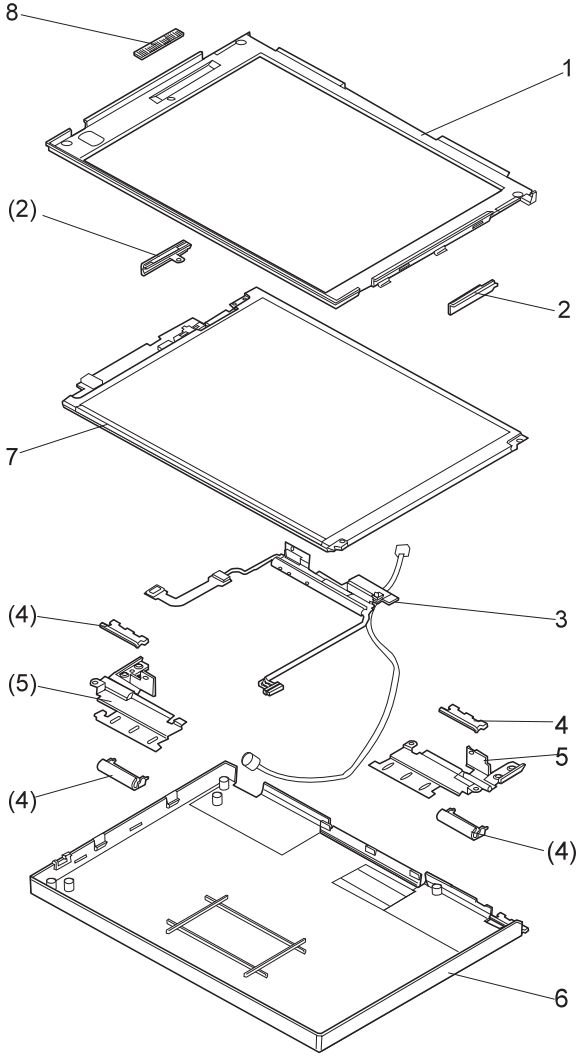
Interface Cable Group 82H8893

Note

Includes the following parts:

- 3 Interface Cable Assembly
 - Screw Cap

LCD Unit, 12.1 XGA (P/N 46H5735, ASM P/N 46H5731)



LCD Cover Group 46H5736

Note

Includes the following parts:

- 1 Front Cover
- 2 Guide (R/L)
- 4 Hinge Cover (R/L)
- 6 Rear Cover
- 7 Bracket Spacer
- 8 Slide Knob
- Screw Cap
- Screw
- Tape

Hinge Group 82H8892

Note

Includes the following parts:

- 5 Hinge (R/L)
- Screw Cap

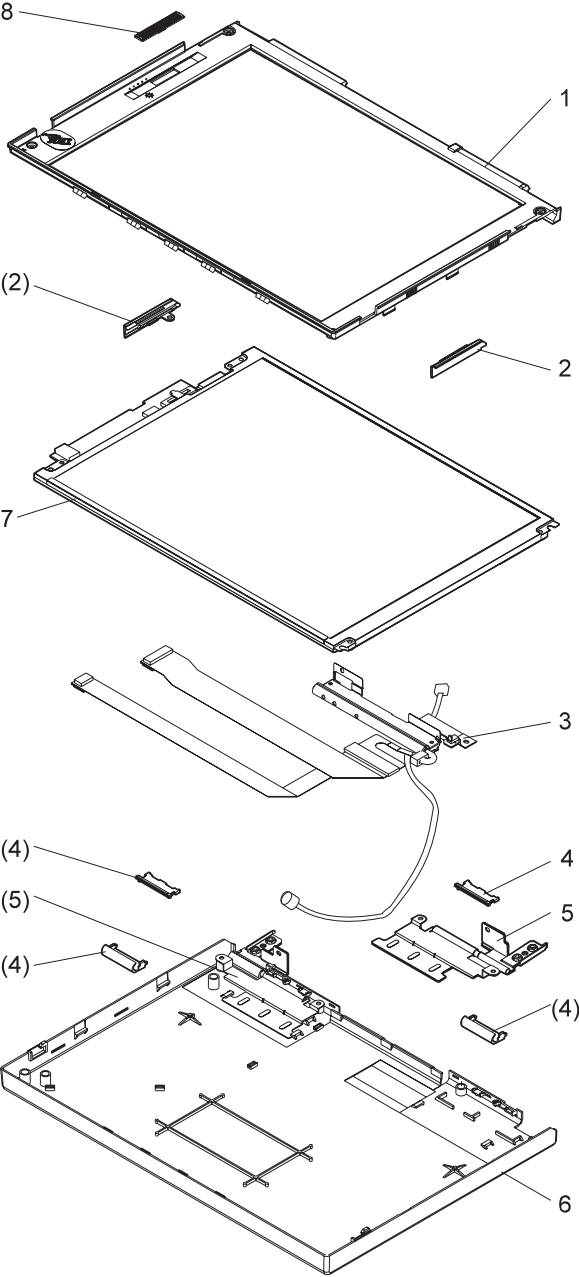
Interface Cable Group 46H5737

Note

Includes the following parts:

- 3 Interface Cable Assembly
- Screw Cap

LCD Unit, 12.1 SVGA (P/N 82H8496)



LCD Cover Group 82H8891

Note

Includes the following parts:

- 1 Front Cover
- 2 Guide (R/L)
- 4 Hinge Cover (R/L)
- 6 Rear Cover
- 7 Bracket Spacer
- 8 Slide Knob
- Screw Cap (4)
- Screw
- Tape

Hinge Group 82H8892

Note

Includes the following parts:

- 5 Hinge (R/L)
- Screw Cap

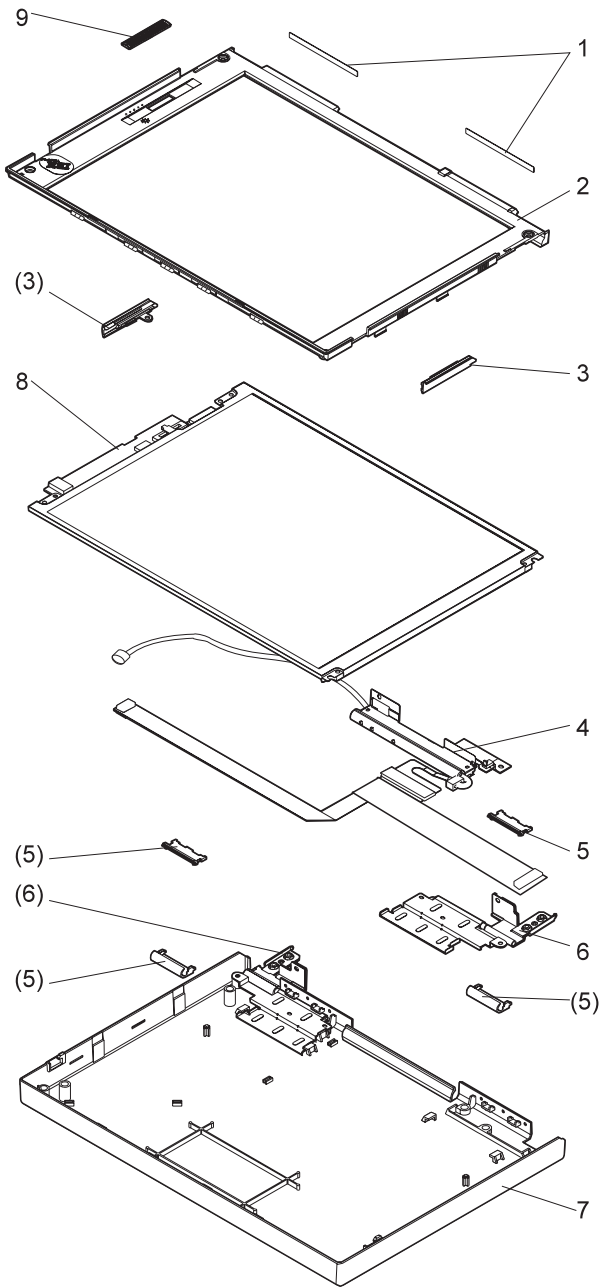
Interface Cable Group 82H8894

Note

Includes the following parts:

- 3 Interface Cable Assembly
- Screw Cap

LCD Unit, 12.1 SVGA (P/N 46H5725)



LCD Cover Group 46H5726

Note

Includes the following parts:

- 1 Screw Cap, Large
- 2 Front Cover
- 3 Guide (R/L)
- 5 Hinge Cover (R/L)
- 7 Rear Cover
- 8 Slide Knob
 - Screw Cap
 - Screw
 - Tape

Hinge Group 46H5714

Note

Includes the following parts:

- 6 Hinge (R/L)
 - Screw Cap

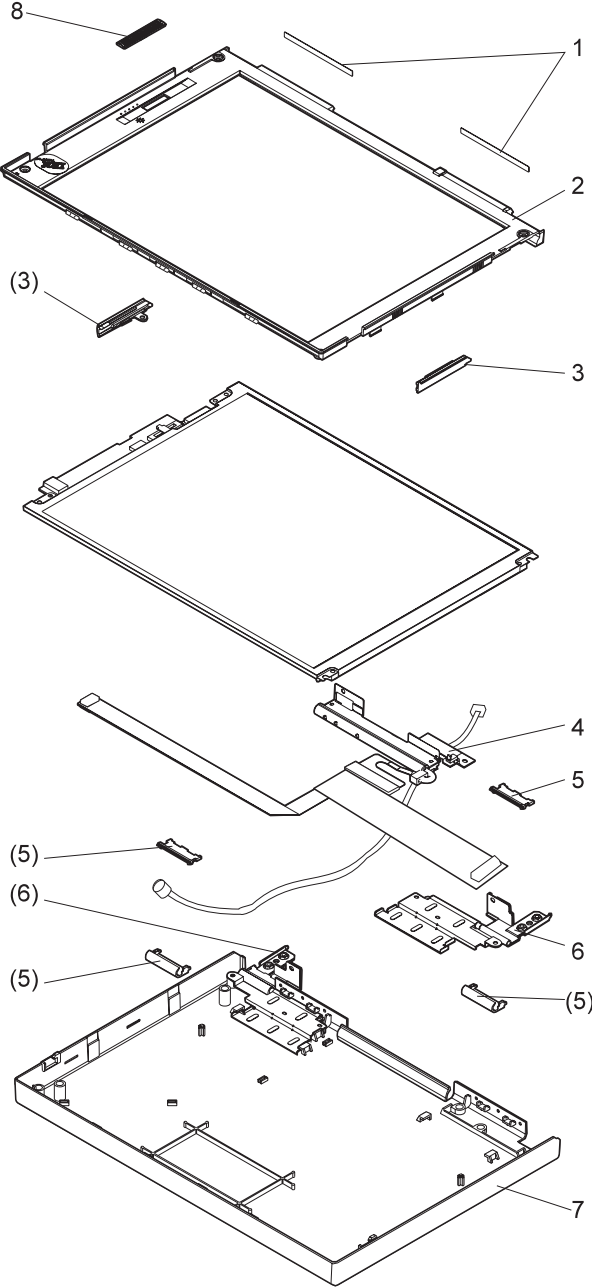
Interface Cable Group 46H5738

Note

Includes the following parts:

- 4 Interface Cable Assembly
 - Screw Cap

**LCD Unit, 12.1 SVGA (P/N 11J8867,
ASM P/N 11J8855)**



LCD Cover Group	11J8868
Note	
Includes the following parts:	
1 Screw Cap, Large	
2 Front Cover	
3 Guide (R/L)	
5 Hinge Cover (R/L)	
7 Rear Cover	
9 Slide Knob	
- Screw Cap	
- Screw	
- Tape	
Hinge Group	11J8869
Note	
Includes the following parts:	
6 Hinge (R/L)	
- Screw Cap	
Interface Cable Group	11J8870
Note	
Includes the following parts:	
4 Interface Cable Assembly	
- Screw Cap	
Inverter Card (8)	11J9621

Common or Option Parts List

Miscellaneous Parts

Security Parts Kit	29H9294
(Includes the following:)	
Keyboard Security Plate (760C)	
Keyboard Security Plate (760CD)	
PC Card Security Plate (760C)	
PC Card Security Plate (760CD)	
PC Card Security Stopper	
Keyboard Security Plate for Dock (760C)	
Keyboard Security Plate for Dock (760CD)	
Screw Kit	39H7003
(Includes the following:)	
M2.5 x 6 Screw (5)	
M2.5 x 4 Screw (10)	
M2.5 x 8 Screw (5)	
M2.5 Nut (10)	
Hex Stud D-Sub (5)	
Hex Stud Bus (5)	
M2.5 x 8 Flathead (5)	
M2 x 4 (5)	
Screw Cover for Top cover (5)	
M2.5 x 4 Flathead (5)	
M2.5 x 5 Flathead (5)	
Nut M2.5 (5)	
M2.6 x 5 Deform (5)	
M2.5 x 14 (5)	
M2.5 x 4 Thin Head (5)	
M1.4 x 1.8 Thin Head (5)	
M2 x 4.3 Thin Head (5)	

DAA Assembly

Austria	59G1041
Australia	59G1040
Belgium	43G3414
Denmark	59G1042
Finland	54F0715
France	4525652
Germany	59G1056
Malaysia	59G1066
Netherlands	80G3480
Norway	59G1044
New Zealand	80G4584
PRC and Hong Kong	54F0693
Sweden	54F0717
Switzerland	59G1057
Taiwan	59G1067
Thailand	59G1064
U.K.	59G1045

PSTN Cable

Austria	58G4386
Australia	58G4343
Belgium	58G4346
Denmark	58G4333
Finland	58G4334
France	58G4335
Germany	58G4347
U.S., Thailand, Malaysia, Singapore, and Hong Kong	43G3398
Netherlands	58G4340
New Zealand and PRC	58G4332
Norway	58G4334
Sweden	58G4336
Switzerland	58G4348
U.K.	58G4345

Options

Notes:

1. When you replace the AC Adapter or the Quick Charger, use the one for the country you are in, even if the computer is from a different country.
2. The warranty for the system unit does not apply to all options.

810MB Hard Disk Drive Assembly	29H9366
1.08GB Hard Disk Drive Assembly	29H9367
Audio Cable	66G5180
Battery Pack (NiMH)	29H9233
Battery under Spacer	29H9369
Cable Travel Charger Assembly	85G1531
Car-Battery Adapter	49G1148
Conversion Cable (Game Port)	29G9629
Conversion Cable (Video)	85G1897
DIMM 8MB	29H9287
DIMM 16MB	29H9288
External Battery Under Spacer	29H9369
External Diskette Drive Box Kit	66G5069
FDD (4-mode 2.88MB)	29H9372
FDD External Box Kit	66G5069
Hard Disk Drive over Pack	39H7040
Headset	85G1529
HDD Overpack	39H7040
Interface Cable, System - Keyboard	84G2531
Interface Cable, Keyboard - Keypad	84G2532
Mini-DIN to Mini-DIN Cable	84G6474
Microphone	66G7871
Model Label	46H6034
Name Label	66G9228
PCMCIA Cartridge	84G1303
PCMCIA RF Cartridge	84G1304
Port Replicator	66G3575
Port Replicator with PCMCIA	66G3574
PS/2 Miniature Mouse	95F5723
Quick Charger	85G1530
Quick Charger Cable	85G1531
Second HDD Tray	29H9295
Small Car-Battery Adapter	84G4359
Travel Charger Assembly	85G1530
Wall Plug	85G2367
SO-DIMM 8 MB	42H2767
SO-DIMM 16 MB	42H2768
SO-DIMM 32 MB	42H2769

Numeric Keypad

Belgian	95F5741
Canadian French	95F5466
Danish	95F5467
Dutch	95F5467
French	95F6313
German	95F6314
Greek	95F5467
Hebrew	95F5741
Icelandic	95F5467
Italian	95F6316
Japanese	79F6401
Norwegian	95F5467
Spanish	95F6315
Swedish or Finnish	95F5468
Swiss (French)	95F5711
Swiss (German)	95F5715
Turkish	95F5467
U.K. English	95F5741
U.S. English	95F5741

Black Keypad

French	84G6286
German	84G6280
Italian	84G6292
Norwegian	84G6310
Swedish	84G6304
U.K. English	84G6298
U.S. English	84G2530

Black Keyboard

French	84G6285
German	84G6279
Italian	84G6291
Norwegian	84G6309
Swedish	84G6303
U.K. English	84G6297
U.S. English	84G2529

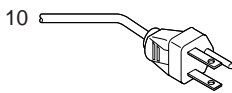
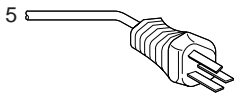
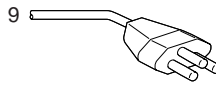
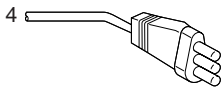
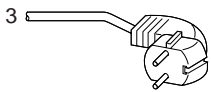
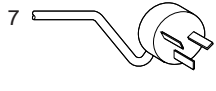
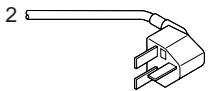
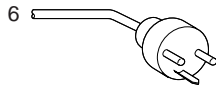
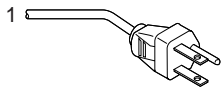
Accessories

Keyboard/Mouse Cable	54G0444
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Tools

Tri-Connector Wrap Plug	72X8546
PC Test Card	35G4703
Audio Wrap Cable	66G5180
Screwdriver Kit	95F3598
ThinkPad Hardware Maintenance Diskette - Version 1.20	78H5227

Power Cords



Warning:

Use the power cord certified for your country.

3-Prong

1	Colombia, U.S., Venezuela	25H2207
	Korea	25H2207
	Japan, 2-prong	85G6665
2	Hong Kong, Singapore, U.K.	25H2215
3	France, Germany, Spain	25H2209
4	Italy	25H2223
5	Australia, New Zealand	25H2205
6	Denmark	25H2211
7	Israel	25H2225
8	Bangladesh, Pakistan, Sri Lanka, South Africa	25H2213
9	Switzerland	25H2221
10	Thailand	25H2219

2-Prong Slim

1	Colombia, U.S., Venezuela	13H5264
	Korea	13H5264
	Japan	13H5273
2	Hong Kong, Singapore, U.K.	14F0033
3	France, Germany, Spain	13H5270
4	Italy	13H5270
5	Australia, New Zealand	13H5276
6	Denmark	13H5270
7	Israel	13H5270
8	Bangladesh, Pakistan, Sri Lanka, South Africa	13H5279
9	Switzerland	13H5270
10	Thailand	13H5264

3-Prong Slim

1	Colombia, U.S., Venezuela	76H3516
	Korea	76H3535
	Japan	76H3526
2	Hong Kong, Singapore, U.K.	76H3524
3	France, Germany, Spain	76H3518
4	Italy	76H3530
5	Australia, New Zealand	76H3514
6	Denmark	76H3520
7	Israel	76H3532
8	Bangladesh, Pakistan, Sri Lanka, South Africa	76H3522
9	Switzerland	76H3528
10	Thailand	76H3516

ThinkPad SelectaDock Docking System

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Read This First

Before you go to the checkout guide, be sure to read this section.

Important Notes

- **Only certified, trained personnel should service the computer.**
- Read FRU service procedures before replacing any FRUs.
- **Be extremely careful during write operations such as copying, saving, or formatting.**
Drives in the computer that you are servicing might have been rearranged or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs can be written over.
- **Use only the correct FRUs.** When you replace a FRU, make sure the model of the machine and FRU part number are correct by referring to the parts listing.
- **FRUs should not be replaced because of a single, un-reproducible failure.** Single failures can occur from a variety of reasons that have nothing to do with a hardware defect such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should only be considered when a recurring problem exists. If this is suspected, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.
- **Be careful not to replace a non-defective FRU.**

How to Use Error Messages: Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 565.

How to Diagnose Multiple FRUs: When the adapter or device has more than one FRU, the error code could be caused by either FRU. Before replacing multiple FRUs, try removing or exchanging each FRU, one by one in the designated sequence, to see if the symptoms change.

What to Do First: The servicer must include the following in the parts exchange form or part return form that is attached to the returned FRU.

- ___ 1. Name and phone number of servicer.
- ___ 2. Date of service.

- ___ 3. Date when part failed.
- ___ 4. Date of purchase.
- ___ 5. Failure symptoms, error codes appearing on display, and beep symptoms.
- ___ 6. Procedure index and page number in which failing FRU was detected.
- ___ 7. Failing FRU name and part number.
- ___ 8. Machine type, model number, and serial number.
- ___ 9. Customer's name and address.

Before servicing with the computer, determine if the warranty applies by referring to the following:

Warranty Note

During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer. The following list provides some common items that are not covered under warranty and some symptoms that might indicate the system was subjected to stresses beyond normal use:

The following is not covered under warranty:

- LCD panel cracked by applying excessive force or by being dropped.
- Scratched (cosmetic) parts.
- Cracked or broken plastic parts, broken latches, broken pins, or broken connectors caused by excessive force.
- Damage caused by liquid spilled into the system.
- Damage caused by improperly inserting a PCMCIA card or installation of an incompatible card.
- Damage caused by foreign material in the FDD or UltraBay.
- Diskette drive damage caused by pressing the diskette drive cover or inserting diskettes with multiple labels.
- Damaged or bent diskette eject button.
- CD-ROM drive damage caused by excessive forces shock, or by being dropped.
- Fuses blown by attaching a non-supported device.
- Forgotten computer or hard disk password. (making computer or hard disk unusable.)

Notes

If the following symptoms are present, they might indicate damage caused by non-warranted activity:

- Missing parts might be a symptom of unauthorized service or modification.
- HDD spindles can become noisy if subjected to excessive force or by being dropped.
- I9990303 errors can be caused by exposure to strong magnetic fields.

General Preparation

In this manual, IBM ThinkPad Dock I means that SelectaDock Base Model I and SelectaDock I together when docked as one unit.

1. Check that the SelectaDock Base Model I is correctly docked (connected) to the SelectaDock I.
2. Check that the computer is correctly docked (connected) to the IBM ThinkPad Dock I.
3. Dock a working computer to the SelectaDock Base Model I only, and verify there are no problems. If there are any problems, replace the SelectaDock Base Model I.
4. If possible, make sure there are no hardware setting conflicts, such as in interrupt levels, memory addresses, DMA channels, and I/O addresses.
5. Check that the SCSI ID is set correctly.
6. Test and correct any computer problems before you test it with IBM ThinkPad Dock I. Use the computer documentation to resolve any computer problems.
7. Test the computer with the external keyboard, external display, mouse, and parallel and serial device connectors. (Use the keyboard/mouse connector to test the external keyboard and mouse.) If no problems are found, connect the external keyboard, mouse, parallel and serial devices to IBM ThinkPad Dock I, then connect IBM ThinkPad Dock I to the computer and test it.
8. If external devices are attached to IBM ThinkPad Dock I, such as an audio amplifier, check the device by referring to the manual shipped with the device.
9. If the user did not bring the computer with IBM ThinkPad Dock I for service, use a computer that works correctly with IBM ThinkPad Dock I.

Checkout Guide

Use the following procedure as a guide for computer problems.

Note: The diagnostic tests are intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

Important

When the Problem Determination Procedure in the operation manual that is supplied with the adapter or device says "Have the system unit serviced", this means the computer and IBM ThinkPad Dock I.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to recreate the failure by running the diagnostic test or by repeating the same operation.
Note: To run the diagnostics, refer to "How to Run the Diagnostics" on page 557.
3. Use the following table with the verified symptom to determine which page to go to. Search the symptoms column and find the description that best matches your symptom; then go to the page shown in the "Go to" column.

Symptoms (Verified)	Go to
Power failure. (The power indicator does not go on or stay on.)	"Power Supply" on page 552.
POST does not complete. No beeps/error code are indicated.	"Symptom-to-FRU Index" on page 565, and then use the No Beep Symptoms table.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 565, and then use the Beep Symptoms table.
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 565, and then use the Numeric Error Codes table.
The diagnostic test detected an error and displayed an FRU code.	"Diagnostic Error Codes" on page 568.

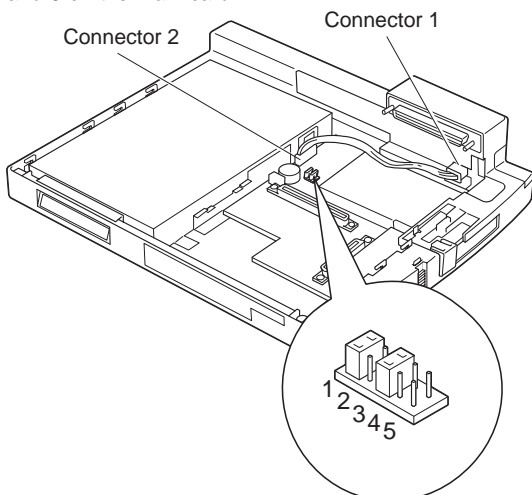
Symptoms (Verified)	Go to
The configuration is not the same as the installed devices.	"Checking the Installed Devices List" on page 554.
Other symptoms (such as LCD display problems)	"Symptom-to-FRU Index" on page 565, and then use the other symptom table.
Symptoms cannot be recreated. (Intermittent problems)	Use the customer reported symptoms and go to "Symptom-to-FRU Index" on page 565.

Power Supply

If the power-on indicator is not on and the power supply fan is not turning, check the power cord for continuity and correct installation.

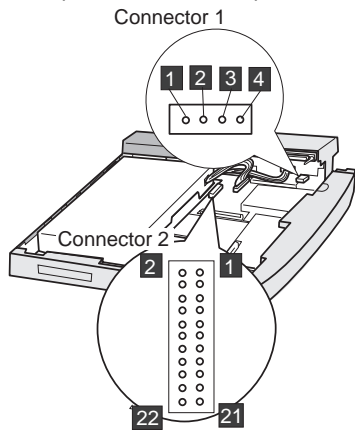
If the power cord is not the problem, either the power supply is defective, or another component is defective causing the power supply to cut off. To verify that the power supply is operating correctly, do the following:

1. Power-off the computer and disconnect the IBM ThinkPad Dock I power cord.
2. Remove all internal and external devices, and the computer from the IBM ThinkPad Dock I.
3. Undock the IBM ThinkPad Dock I.
4. Remove **power supply connector 1** from the riser card.
5. Install jumpers between pins 1 and 10, and pins 3 and 8 on the main card.



6. Connect the power cord.
7. Check the voltages at **connector 1**.
8. Disconnect the power cord.
9. Remove **power supply connector 2** from the main card.
10. Install jumpers between pins 6 and 8, and pins 1 and 17 of **connector 2**.
11. Reconnect the power cord.
12. Check the power supply voltages at **connector 2**. If the voltage is not correct, replace the power supply.

If any voltages are not correct, replace the power supply.
If the problem remains, replace the main card.



Power Supply Connector 1

Pin	Signal	V dc Min.	V dc Max.
1	CVCC	+19	+21
2	Ground	-	-

Power Supply Connector 2

Pin	Signal	V dc Min.	V dc Max.
1	-12 volts	-11.4	-13.2
3	-5 volts	-4.53	-5.5
5	+5 volts	+4.75	+5.25
7	SUB 12	+11.4	+12.6
9	+12 volts	+11.4	+12.6
11 - 13	+3.3	+3.0	+3.6
17 - 19	+5	+4.75	+5.25

Checking the Installed Devices List

If a device is installed but the icon appears in a gray shade rather than a dark shade on the basic diagnostics screen, the device is defective. Reseat the device connectors. If the symptom remains, replace the device or the system board. If needed, adjust the contrast control to clearly distinguish the shades of the icon.

If a device that is not installed appears in a dark shade (for example, FDD-2 appears in a dark shade when *NO* second FDD is installed), do the following:

1. Replace the **first** device in the configuration, such as an FDD-1, HDD-1, or PCMCIA-1.
2. If the problem remains, replace the system board.

The PCMCIA-1, Parallel, and Serial icons are always displayed in a dark shade because the icons represent subsystems of the system board and not the attachment of the devices.

The FDD-1, HDD-1, or PCMCIA-1 icons represent the **first** drive in the system configuration for each type of device. Similarly, the HDD-3, FDD-2, or PCMCIA-2 icons represent the **second** drive, usually attached through a port replicator or an expansion unit. The HDD-2 icon represents the hard disk drive in the UltraBay.

Printer

Test the printer by connecting it to the computer before testing it on the IBM ThinkPad Dock I.

1. Make sure the printer is correctly connected and the power is turned on.
2. Run the printer self-test.

If the printer self-test does not run correctly, the problem is in the printer. Refer to the printer service manual.

If the printer self-test runs correctly, connect a wrap plug on the parallel connector on the rear of IBM ThinkPad Dock I and run the advanced diagnostic tests to determine the failing FRU.

If the advanced diagnostic tests (with the wrap plug connected) did not detect a failure, replace the printer cable.

If the problem is not corrected, do one of the following:

- If the printer is attached to the parallel connector of IBM ThinkPad Dock I, replace the main card of IBM ThinkPad Dock I.
- If the printer is attached to the parallel connector on the adapter, replace the FRUs in the following order one at a time until the problem is corrected:

Note: If the replaced parts did not resolve the problem, put the original parts back in the IBM ThinkPad Dock I. Do not replace non-defective parts.

1. Adapter
2. Main Card of IBM ThinkPad Dock I

External Display

If the screen is rolling, replace the external display. If the problem is not corrected, replace FRUs in the following order one at a time until the problem is corrected:

Note: If the replaced parts did not resolve the problem, put the original parts back in the IBM ThinkPad Dock I. Do not replace non-defective parts.

- If the external display is attached to the IBM ThinkPad Dock I:
 1. Main Card of IBM ThinkPad Dock I
- If the external display is attached to the display adapter:
 1. Display adapter
 2. Main card of IBM ThinkPad Dock I
 3. Riser card

If the screen is not rolling, do the following to run the display self-test:

1. Power-off IBM ThinkPad Dock I and the external display.
2. Disconnect the external display signal cable from the IBM ThinkPad Dock I.
3. Power-on the external display.
4. Turn the contrast control to its maximum position.
5. Turn the brightness control to its center position.

Check for the following conditions:

- The screen should be white or light gray, with a black margin, see the appropriate display manuals for the correct self-test condition.
- The screen contrast and brightness controls should vary the intensity of the screen.

If the external display does not meet these specifications, replace the external display.

If the external display meets these specifications, replace FRUs in the following order one at a time until the problem is corrected.

Note: If the replaced parts did not resolve the problem, put the original parts back in the IBM ThinkPad Dock I. Do not replace non-defective parts.

- If the external display is attached to IBM ThinkPad Dock I:
 1. Main card of IBM ThinkPad Dock I
 2. External display
- If the external display is attached to the display adapter:
 1. Display adapter
 2. Main card of IBM ThinkPad Dock I
 3. Riser card
 4. External display

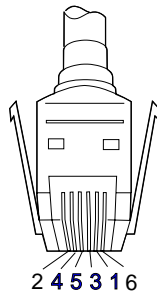
External Keyboard

Notes

- If a mouse or other pointing device is attached, remove it and see if the error symptom goes away. If the symptom goes away, the mouse or other pointing device is defective.
- The computer keyboard does not work when an external keyboard is connected.

1. Power-off the computer.
2. Disconnect the keyboard cable from the external keyboard.
3. Power-on the computer and check the keyboard cable connector for the following voltages. All voltages have a $\pm 5\%$ voltage tolerance.

Pin	Voltage (V dc)
1	+5.0
2	Not Used
3	Ground
4	+5.0
5	+5.0
6	Not Used



4. If all voltages are correct, replace the external keyboard.
5. If the voltages are not correct, replace the following FRUs one at a time until the problem is corrected.

Note: If the replaced parts did not resolve the problem, put the original parts back in the IBM ThinkPad Dock I. Do not replace non-defective parts.

- a. Keyboard cable
- b. Main card of IBM ThinkPad Dock I

How to Run the Diagnostics

Use either the TrackPoint III or the cursor move keys to interact with the tests. The Enter key works the same as selecting the OK icon to reply OK.

1. Press and hold the F1 key; then power-on the computer. Hold the F1 key down until the Easy-Setup screen appears.
2. Select **Test** and press Enter.
3. Select a device and press Enter to run the test.
4. The test progress screen appears.
5. **OK** appears when the test ends without any errors.
6. Start the **Advanced Diagnostic test** by pressing **Ctrl+A** on the basic diagnostic menu screen.
7. Select **Tool** to install the tools.
8. Select a device, press the **Spacebar** and install the tool. Multiple devices can be selected by repeating this step.

A ✓ mark appears beside the selected devices.

9. Select **OK** and press Enter if the selection is OK.
10. Select a device and press Enter to start the tests.
11. Select **Test All** to test all devices.
12. Select **Loop Test** to run the tests in a repeated loop.

A loop option menu appears in which a device loop or all-device loop can be selected. Select a device and press the **Spacebar** to select a device. Repeat this step to select multiple devices. Press Enter to start the diagnostic loop. If no device is selected, all device tests are looped.

13. To exit the loop, keep pressing **Ctrl+Pause** until the test exits. A beep sounds to notify that the exit interrupt is sensed by the test program.

Error Log: Diagnostic errors are printed on the printer that is attached to parallel port when the error is detected. The error is also logged in the system memory.

Use the following procedure to display the errors.

1. End the test, if it is running.
2. Press **Ctrl+A** to select the advanced diagnostic mode.
3. Press **Ctrl+E**.
4. The error log appears.
5. To exit the screen, select the cancel icon or press **Esc**.

The error log is not saved when system power is turned off.

How to Run the Keyboard Test: Use the following procedure to run the keyboard key test.

1. Power-off the computer.
2. Remove the external keyboard, if one is attached.
3. Press and hold **F1** key, then power-on the computer. Hold **F1** until the **Easy-Setup** screen appears.
4. Select **Test** and press **Enter**. The basic diagnostic screen appears.
5. Press **Ctrl+A** (to go to advanced diagnostic screen).
6. Press **Ctrl+K** (a keyboard picture appears on the screen).
7. By pressing a key, the mark appears or disappears on the corresponding key position on the screen. Repeat this step for any keys that need to be tested.
8. To exit the test, press **Esc** or select the cancel icon.

PC Test Card LED: The green LED on the PC test card lights when the PCMCIA test is running. If the LED does not go on, check that the card is installed correctly by reseating the card. If it still does not light after reseating, try using another slot for the test. If the LED still does not go on and the test fails, replace the FRU shown in the diagnostic error code.

Errors During the POST: If the POST detects an error, a three- to eight-digit error code is displayed.

Memory Errors: If the POST detects a memory error in the first 640KB of system memory, all of the first bank memory is de-allocated and the test continues with the second 640KB of the second bank memory. If the total amount of error free memory becomes less than 2MB, a 2XX POST error occurs and the system stops. All of the remaining memory is used as system memory. When the POST memory test has completed, the usable memory size is compared with the configuration data and if a mismatch is detected, a 2XX error code occurs. The user can continue with system operation by pressing Esc, and F1 after restart and call for service at a later time.

The memory sizes that are de-allocated because of the POST process is kept by the hibernation or suspend functions. To test this memory, it must be re-configured as part of the original memory size. The memory re-configuring is done by turning power off and on.

De-allocation support is done only by the POST for memory errors. All unrecoverable memory errors that occur during normal operation cause an interrupt to the operating system.

Running Diagnostics

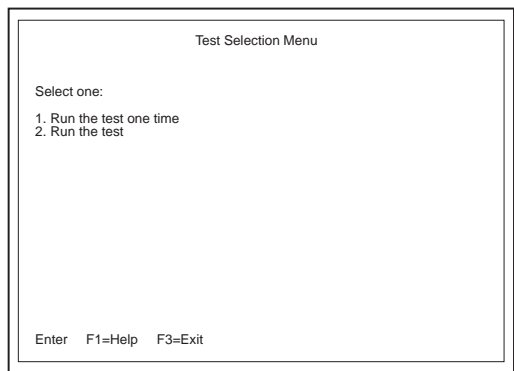
The IBM ThinkPad Dock I Options Diskette helps you troubleshoot the expansion unit, SCSI adapter, and SCSI device problems through a series of menus.

Run the diagnostics after you have completed the installation of the IBM ThinkPad Dock I and SCSI devices to verify these devices work correctly. Do the following:

1. Power-off the computer, the IBM ThinkPad Dock I, and external SCSI devices.
2. Insert the Option Diskette into drive A.
3. Power-on all attached external SCSI devices, the computer, then the IBM ThinkPad Dock I.
4. The **Logo Screen** appears.
5. After a few seconds the **Main Menu** appears.
6. Select a device for testing and go to the respective section.

Testing the Expansion Unit

1. The **Test Selection Menu** appears when you select **Test Expansion Unit** on the **Main Menu**.



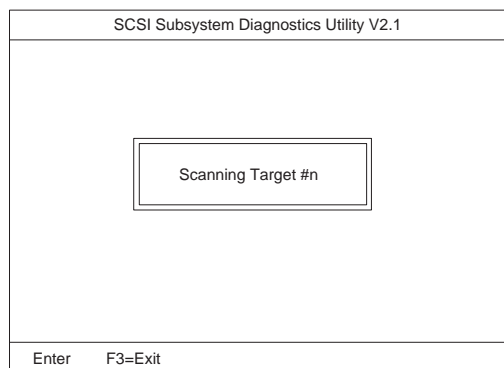
2. Select an item on the screen and follow the instructions that appear on the screen.

Testing the SCSI Subsystem

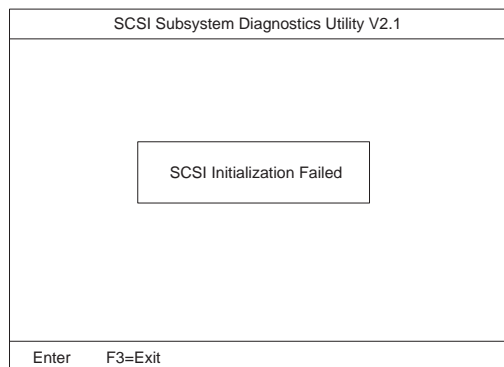
Note: If a SCSI adapter is installed in an PCI adapter card slot, remove it before running the SCSI diagnostic program.

1. When you select **Test SCSI Subsystem** on the **Main Menu**, the diagnostics program checks the system configuration for SCSI devices and displays the following if no SCSI controller is found.

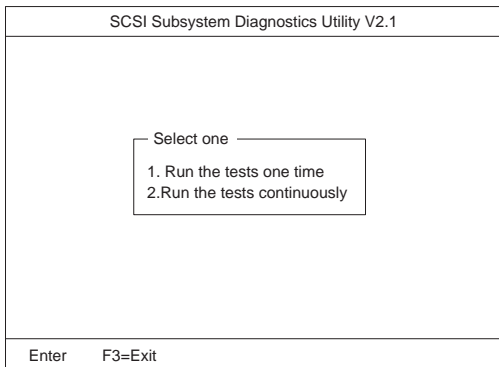
If a SCSI controller is found, the computer goes on to initialize the SCSI devices and displays the following.



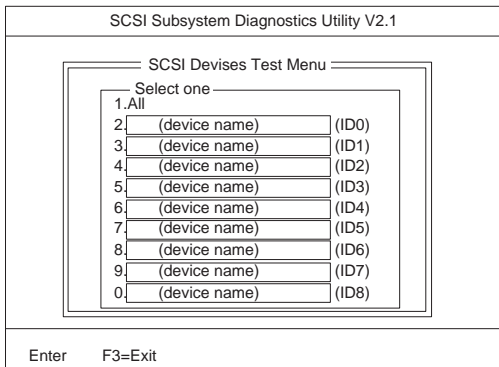
2. If the initialization fails, the following screen appears.



- If the initialization ends successfully, the following screen appears. Select an item.



- The **SCSI Devices Test Menu** appears. Select one of the devices.

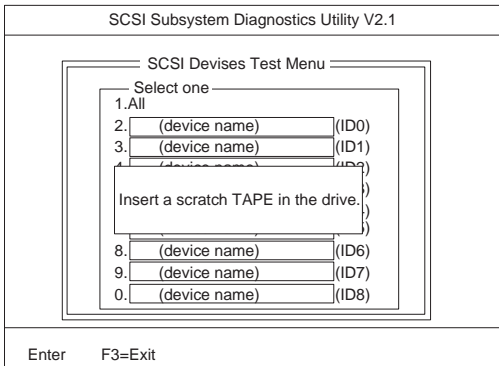


The device name may be any of the following:

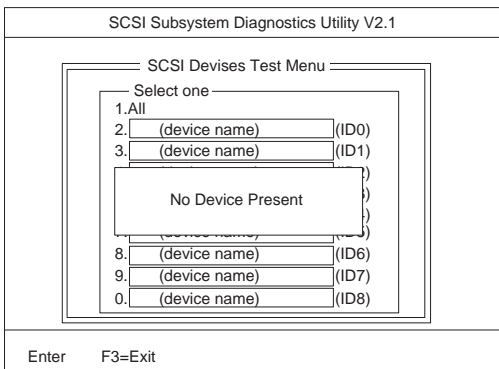
- SCSI Hard Disk
- SCSI Tape Drive
- SCSI CD-ROM
- SCSI Optical Drive
- or No Device

The IBM ThinkPad Dock I SCSI controller appears as ID7 on the screen.

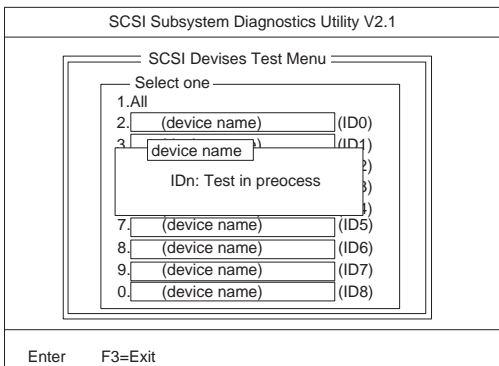
- If a SCSI device exists and a test media is required to test the SCSI device, the following pop-up menu appears (shows the case of a SCSI tape drive).



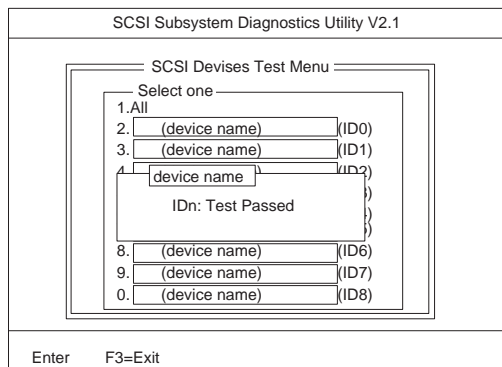
6. Insert the requested media and wait for approximately 30 seconds until the media is loaded.
7. Press any key. If no SCSI devices are found, a pop-up menu appears.



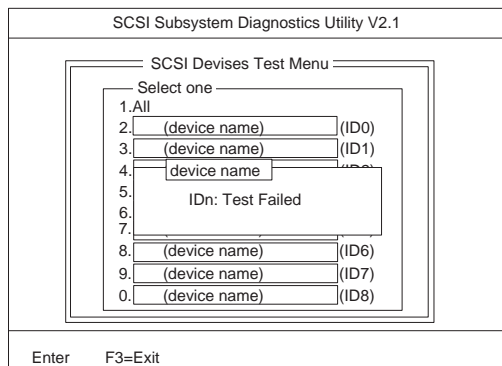
8. The test begins and the following pop-up menu appears.



9. If the test is successful, the following appears.



10. If the test is unsuccessful, the following appears.



Symptom-to-FRU Index

The Symptom-to-FRU Index lists error symptoms and possible causes. The most likely cause is listed first.

Note: Replace the FRUs one at a time in the sequence shown in the FRUs of the IBM ThinkPad Dock I Sequence of Action column. If a replaced part did not resolve the problem, put the original part back in the IBM ThinkPad Dock I. Do not replace non-defective parts.

Always begin with "General Preparation" on page 550. This index also can be used to help you decide which FRUs to have available when servicing the IBM ThinkPad Dock I.

Numeric error codes show the errors detected in the POST or system operation. Xs, when included in the error code, can be any number.

FRU codes are used for errors detected by diagnostic tests.

If no error codes are available, use narrative symptoms.

If the symptom is not listed or you cannot correct the problem using this index, go to "Undetermined Problems" on page 573.

If you cannot correct the problem using this index, go to "Undetermined Problems" on page 573.

IMPORTANT:

1. Before replacing any SCSI device, verify that there are no duplicate SCSI ID settings.
2. Make sure that there are no conflicts of hardware settings, such as, interrupt level, memory address, DMA channel, and I/O address.
3. If you have both an error message and an incorrect audio response, diagnose the error message first.
4. If you cannot run the advanced diagnostic tests, but did receive a POST error message, diagnose the POST error message.
5. If you did not receive an error message, look for a description of your error symptoms in the first part of this index.
6. Check all power supply voltages before you replace the main card, riser card, and audio card of the IBM ThinkPad Dock I. (See "Power Supply" on page 552.)

Numeric Error Codes

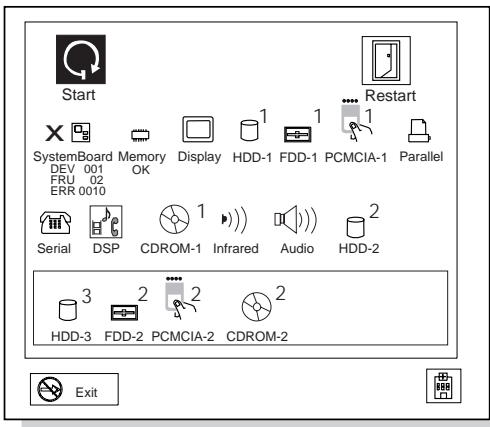
Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
10X, 11X 101: Interrupt failure. 102: Timer failure. 103: Timer interrupt failure. 104.: Protected mode failure. 105: Last 8042 command not accepted. 107: NMI test failure. 108: Timer bus test failure. 109: Low meg-chip select test.	<ol style="list-style-type: none"> 1. Adapter in slot (if used) 2. Riser card 3. Main card
195 (The computer was docked to the IBM ThinkPad Dock I while in hibernation mode.)	<ol style="list-style-type: none"> 1. Do the following steps. <ol style="list-style-type: none"> a. Power-off and undock the system. b. Power-on and shut down the system. c. Power-off and dock the system.
1XX	See the Hardware Maintenance Manual of the computer. If the problem remains, go to “Undetermined Problems” on page 573.
2XX 201: Memory data error. 202: Memory line error 00–15. 203: Memory line error 16–23. 205: Memory test failure on on-board memory. 221: ROM to RAM remap error.	<ol style="list-style-type: none"> 1. See the Hardware Maintenance Manual of the computer. 2. Main card
3XX	See “External Keyboard” on page 556.

Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
6XX	<ol style="list-style-type: none"> 1. Before changing any devices, run the diagnostic test. (See the "How to Run the Diagnostics" on page 557.) 2. FDD external attachment kit 3. Diskette drive assembly 4. Riser card
11XX, 12XX	<ol style="list-style-type: none"> 1. Serial devices 2. Communication cable 3. Riser card
17XX	<ol style="list-style-type: none"> 1. Hard disk drive (2.5-inch ThinkPad hard disk drive) 2. Main card
24XX	<ol style="list-style-type: none"> 1. Main card 2. Riser card
860X	<ol style="list-style-type: none"> 1. Mouse 2. External keyboard 3. Riser card
I9990301, I9990302 I9990305	See the Hardware Maintenance Manual of the computer.
Not shown above	<ol style="list-style-type: none"> 1. See the Hardware Maintenance Manual of the computer. 2. See "Undetermined Problems" on page 573.

Diagnostic Error Codes





If an error is detected, the following appears:














- Large X on the left side of the device icon.
- Device ID (three digit)
- Error code (two digit)
- FRU code (four digit)



The device ID and error code are used to indicate the detail portion of the FRU which caused the error. If replacing a FRU does not correct the problem, see the device ID or error code from the previous failure. If they have changed, the cause might be because the new FRU is defective or that the FRU was incorrectly installed.

Device ID: If an error is detected by the diagnostic tests, a three digits device ID is displayed. The device ID indicates suspected device.

Icon	Device ID	Suspected Device
 SystemBoard	001	System Board
	003	Keyboard
	007	Math Coprocessor
	086	Pointing Device
 Memory	002	Memory
 Display	050	Display
	051	Enhanced Video
	052	MPEG
 HDD-1	017	Hard Disk Drive

Icon	Device ID	Suspected Device
 HDD-2	151	Hard Disk in UltraBay
 HDD-3	067	External Hard Disk Drive
 FDD-1	006	Diskette Drive
 FDD-2	066	External Diskette Drive
 PCMCIA-1	080	PCMCIA
 PCMCIA-2	088	External PCMCIA
 Parallel	009	Parallel
 Serial	011, 012	Serial
 DSP	113	DSP
 CDROM-1	215	CD-ROM
 CDROM-2	216	External CD-ROM
 Infrared	103	IR
 Audio	150	Audio (ESS)

FRU Codes: If an error is detected by the diagnostic tests, a four-digit FRU code is displayed. The FRU code indicates two suspected FRUs. Replace the FRU that is indicated by the **two leftmost digits** first, then replace the FRU that indicated **two rightmost digits**. No FRU is assigned to code 00. If only one FRU is suspected, the other FRU code is filled with zeros. See the reference page before replacing the FRU.

FRU Code	FRU
10	1. System Board
30	Reserved
32	1. External Keyboard 2. Main Card 3. Riser Card
33	1. External Mouse 2. Main Card 3. Riser Card
45	External CRT
51	1. Reseat the Diskette Drive (FDD-2) 2. Diskette Drive (FDD-2) 3. Main Card 4. Riser Card
61	1. Reseat the Hard Disk Drive in IBM ThinkPad Dock I (HDD-3) 2. Hard Disk Drive in IBM ThinkPad Dock I (HDD-3) 3. Main Card
70	PCMCIA-2 (Replicator)
90	CD-ROM Drive
91	CD-ROM Drive in SelectaDock

If the problem still remains after replacement of the FRUs, go to "Undetermined Problems" on page 573.

Beep Symptoms

Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
Beep sounds continuously.	<ol style="list-style-type: none">1. Security feature group2. Main card

Keyboard-Related Symptoms

Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
One or more keys do not work on the external keyboard, but the IBM ThinkPad Dock I is otherwise functional.	Go to “External Keyboard” on page 556.

Indicator-Related Symptoms

Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
Power-good light does not turn on, fan does not run, and the computer is not functional.	See “Undetermined Problems” on page 573.
Computer is functional and the fan runs, but the power on indicator does not turn on.	<ol style="list-style-type: none">1. Check the connector of LCD Group2. Main Card3. Go to “Power Supply” on page 552.
LCD (IBM ThinkPad Dock I) for the hard disk drive stays on.	<ol style="list-style-type: none">1. 2.5-inch hard disk drive in the UltraBay of the IBM ThinkPad Dock I
LCD (IBM ThinkPad Dock I) for the hard disk drive is not working, but the IBM ThinkPad Dock I is functional.	<ol style="list-style-type: none">1. Check the connector of LCD Group2. LCD Circuit Board Group3. Main card

Power-Related Symptoms

Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
Although the computer is turned off, the fan of the IBM ThinkPad Dock I power supply is running.	The fan is working correctly. To stop the fan, set the key lock to the external left position. (P 2)
The power of IBM ThinkPad Dock I cannot be turned off.	See "Undetermined Problems" on page 573.

Peripheral-Device-Related Symptoms

Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
External display screen changes colors.	Go to "External Display" on page 555.

Other Symptoms

Symptom/Error	IBM ThinkPad Dock I FRUs Sequence of Actions
Computer does not work, the power-on indicator does not turn on, but the fan runs.	See "Undetermined Problems" on page 573.
Program-load error during remote IPL from the file server.	Network Adapter
Intermittent failures.	Do the loop test. (See "How to Run the Diagnostics" on page 557.)
The HDD-3 is not recognized and no error codes appear on the screen. (The password of the HDD-3 is still set.) Note: The HDD-3 icon indicates the 2.5-inch ThinkPad hard disk drive installed in IBM ThinkPad Dock I.	<ol style="list-style-type: none"> 1. Remove the hard disk password for the ThinkPad hard disk as follows: <ol style="list-style-type: none"> a. Install the second hard disk drive on the computer. b. Remove the hard disk password.

Undetermined Problems

Use the following procedure when the diagnostic tests do not identify the failing adapter or device.

Check that all cables, wires, and connectors are connected so that they do not cause a short circuit. If any problems are found, reconnect or replace them.

Check the power supply for correct operation (see "Power Supply" on page 552). If the power supply is operating correctly, return here and continue with the following procedures.

1. Power-off the computer.
2. Remove or disconnect one at a time the following adapters or devices from IBM ThinkPad Dock I. (Do not isolate adapters or devices that are known to be good.)
 - a. Non-IBM devices.
 - b. A modem, printer, mouse, external keyboard, external display, external diskette drive, numeric keypad, or other external devices.
 - c. Any adapter.
Note: Removing an adapter or device may cause configuration errors. Ignore error code 174.
 - d. SCSI device.
 - e. Hard disk drive.

3. Power-on the system and check if the problem has changed.
4. If the symptom remains, repeat Steps 1 through 3 until you find the failing adapter or device, or until all adapters or devices have been removed.
5. If all adapters or devices have been removed and the problem remains, replace the following IBM ThinkPad Dock I FRUs one at a time.

Note: If a replaced part did not resolve the problem, put the original part back in the IBM ThinkPad Dock I. Do not replace non-defective parts.

- a. Riser card
- b. Main card
- c. IBM ThinkPad Dock I audio card

If the problem goes away when you remove an adapter, but replacing the adapter does not correct the problem, replace the main card of IBM ThinkPad Dock I.

FRU Removals and Replacements

This section contains information on removals and replacements, and locations.

- The arrows in the removals and replacements show the direction of movement to remove a field replaceable unit (FRU), or to turn a screw to release the FRU. The arrows are marked in numeric order to show the correct sequence of removal.
- When other FRUs must be removed before removing the failing FRU, they are listed at the top of the page. Go to the removal procedure for each FRU listed, remove the FRU, and then continue with the removal of the failing FRU.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See "Locations" on page 583 for internal cable connections and arrangement information.

Safety Notice 8: Translation on page 14

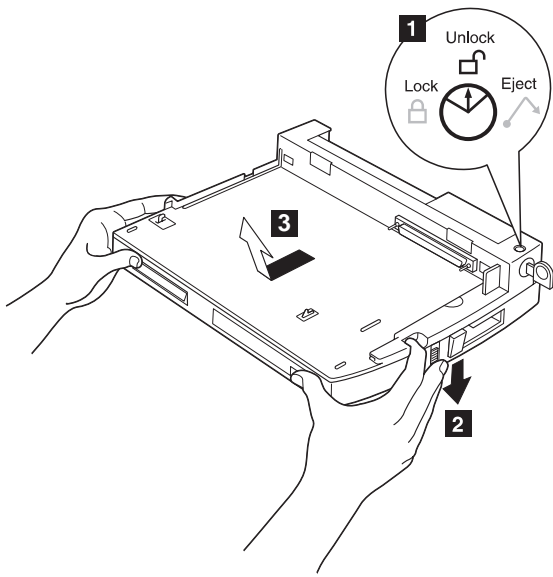
Before removing any FRU, power-off the ThinkPad Dock I and computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.

Warning: The main board, adapters, and circuit boards on the drives are sensitive to, and can be damaged by, electrostatic discharge. Establish personal grounding by touching a ground point with one hand before touching these units.

Note: An electrostatic discharge (ESD) strap must be used to establish personal grounding.

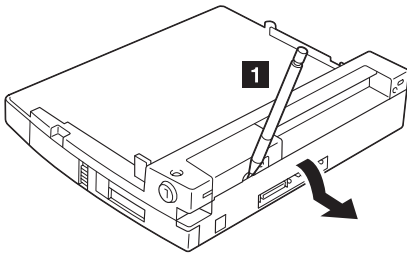
1010 SelectaDock I

- Make sure the security key is in the unlock position.

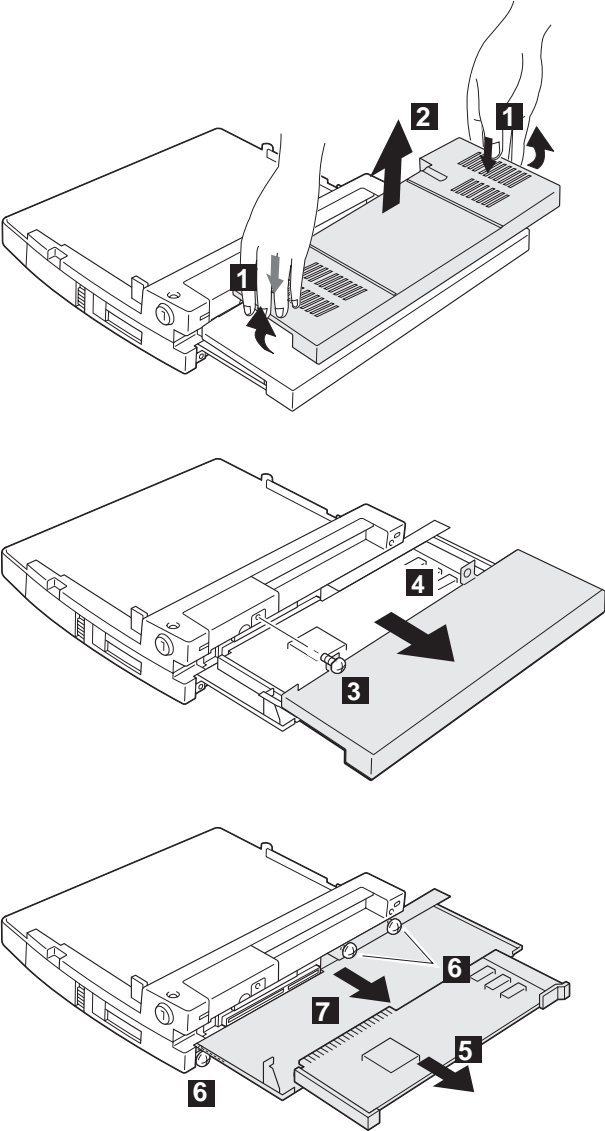


1020 Rear Panel / Option Card Cover (Option)

Rear Panel:

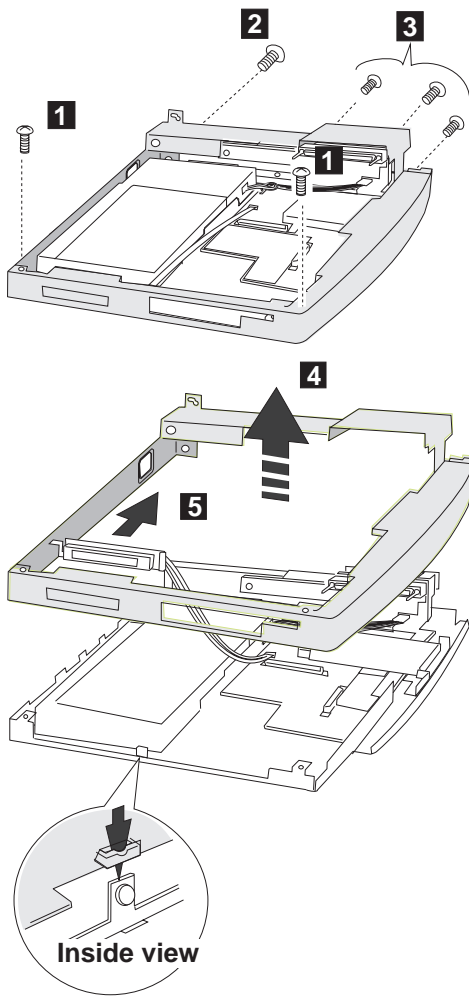


Option Card Cover (If installed)



1030 Upper Cover

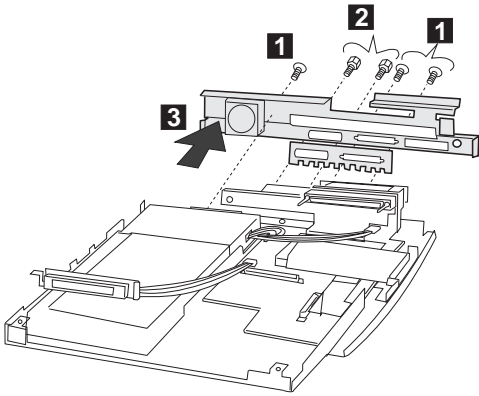
- SelectaDock Base Model I (1010)
- Rear Panel / Option Card Cover (1020)



Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (2)	Self tap, Black
2	M 2.6 x 5 mm (1)	Self tap
3	M 2.6 x 8 mm (3)	Black

1040 Fan Assembly

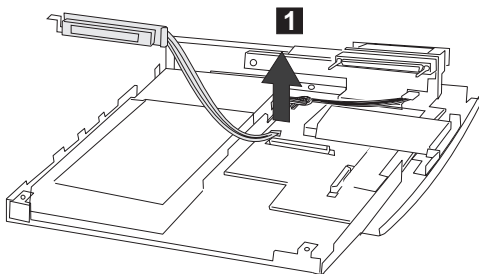
- SelectaDock Base Model I (1010)
- Rear Panel / Option Card Cover (1020)
- Upper Cover (1030)



Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (3)	Self tap
2	M 2.6 x 5 mm (2)	Self tap

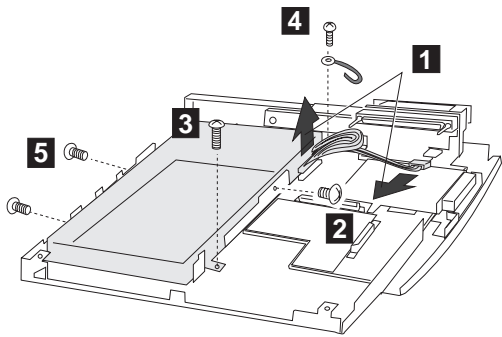
1050 LCD Panel

- SelectaDock Base Model I (1010)
- Rear Panel / Option Card Cover (1020)
- Upper Cover (1030)

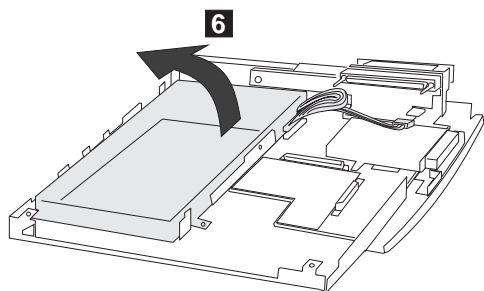


1060 Power Unit

- SelectaDock Base Model I (1010)
- Rear Panel / Option Card Cover (1020)
- Upper Cover (1030)
- Connector of the LCD Panel (1050)

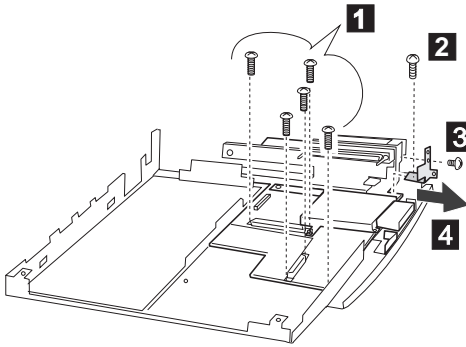


Step	Length (Quantity)	Memo
2	M 3 x 5 mm (1)	
3	M 2.6 x 5 mm (1)	
4	M 2.6 x 8 mm (1)	
5	M 2.6 x 4 mm (2)	

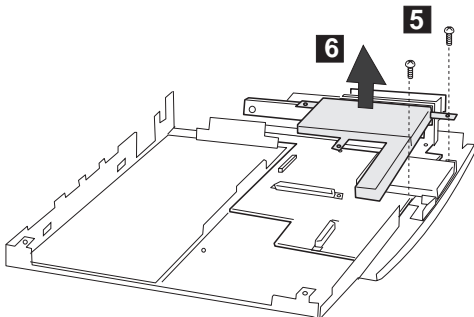


1070 Riser Card/Main Board

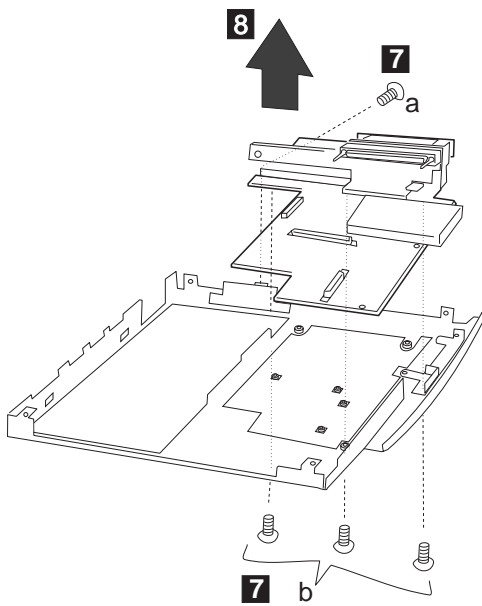
- SelectaDock Base Model I (1010)
- Rear Panel / Option Card Cover (1020)
- Upper Cover (1030)
- Fan Assembly (1040)
- Connector of the LCD panel (1050)
- Power Unit (1060)



Step	Length (Quantity)	Location
1	M 2.6 x 5 mm (1)	Main Board
	M 2.6 x 6 mm (2)	FDD connector
	M 2.6 x 8 mm (2)	HDD connector
2	M 2.6 x 8 mm (1)	
3	M 2.6 x 3 mm (1)	Precision screw
4	M 2.6 x 8 mm (1)	

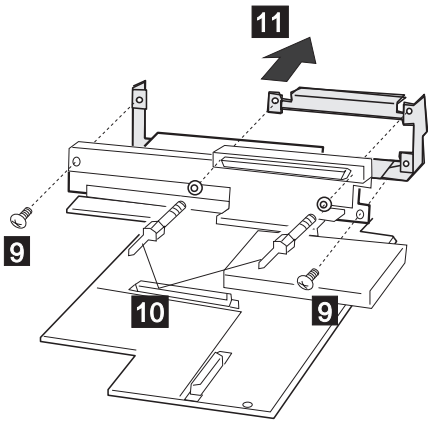


Step	Length (Quantity)	Memo
5	M 2 x 4 mm (2)	Flat head

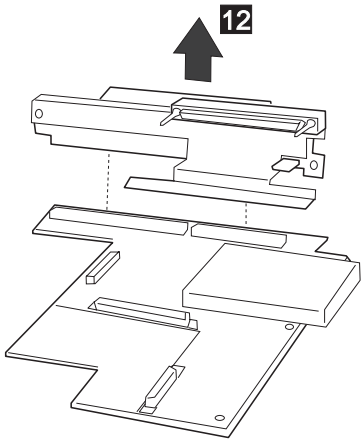


Step	Length (Quantity)	Location
7	a: M 2.6 x 5 mm (1) b: M 2.5 x 3 mm (3)	b: Bottom of the base cover

Procedure continued on the next page.



Step	Length (Quantity)	Location
9	M 2.6 x 4 mm (2)	Self tap

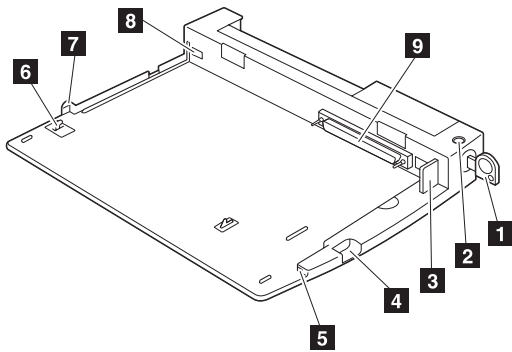


Locations

SelectaDock Base Model I

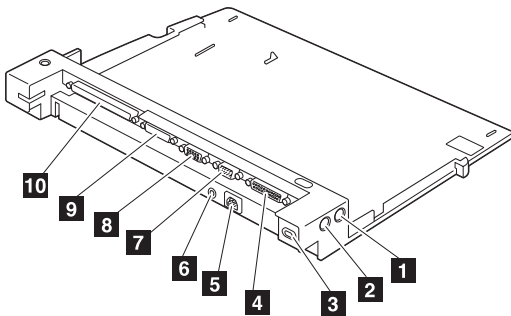
Front View

- 1** Security Lock
- 2** Lock Indicator
- 3** PC Card Lock
- 4** Right-Hand Hole
- 5** Computer Catch Slit
- 6** Computer Lock
- 7** Left-Hand Hole
- 8** Ejector
- 9** Docking Connector



Rear View

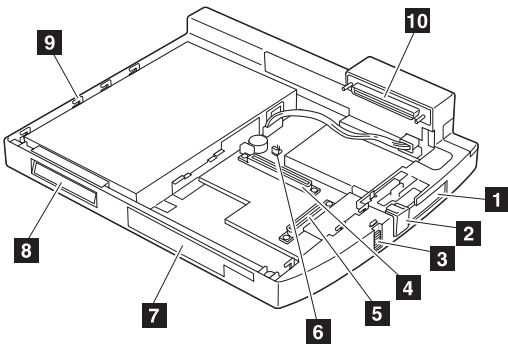
- 1** Mouse/Pointing Device Connector
- 2** Keyboard/Numeric Keypad Connector
- 3** Kensington Lock Keyhole
- 4** Parallel Connector
- 5** Power Jack
- 6** Line-Out Jack
- 7** Serial Connector
- 8** External Display Connector
- 9** External Diskette Drive Connector
- 10** Expansion Connector



SelectaDock I

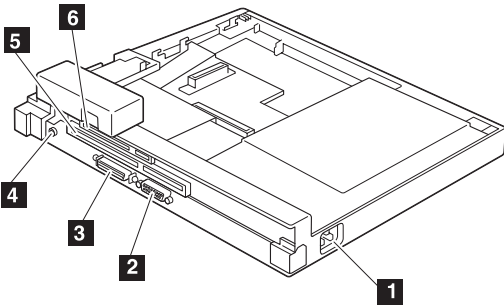
Front View

- 1** PCMCIA Slot
- 2** PC Card Lock Slide
- 3** SelectaDock Base Model I Lock
- 4** UltraBay Connector 1
- 5** UltraBay Connector 2
- 6** Feature Jumper
- 7** Blank Bezel
- 8** Status Indicator
- 9** Docking Guide
- 10** Docking Connector



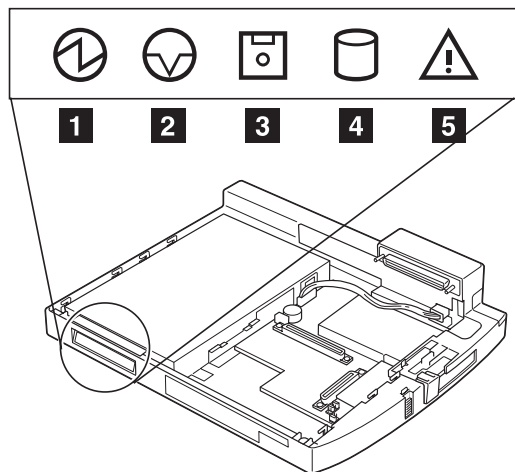
Rear View

- 1** Power Connector
- 2** MIDI/Joystick Jack
- 3** SCSI Connector
- 4** Line-Out Jack
- 5** ISA Adapter Card Slot
- 6** PCI Adapter Card Slot

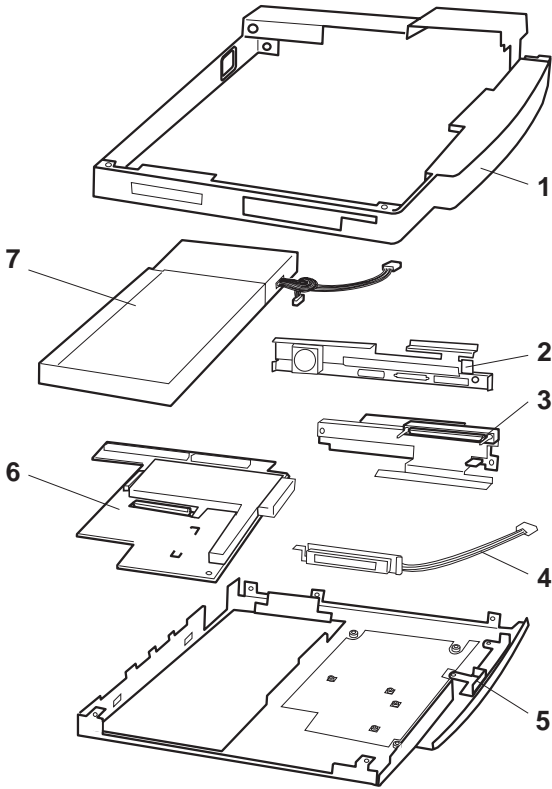


System Status Indicators

- 1** Docked
- 1** Power On
- 2** Suspend Mode
- 3** Diskette Drive In-use
- 4** Hard Disk In-use
- 5** Attention



Parts Listing SelectaDock (3547)

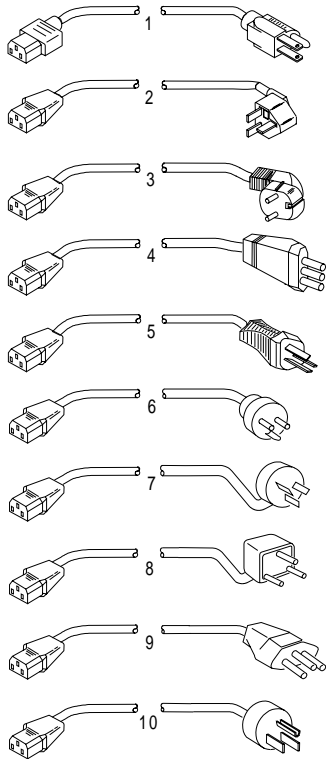


1	Upper Cover	39H7419
2	Fan ASM	39H7420
3	Riser Card ASM	39H7421
4	LCD ASM	
5	Base Cover ASM	39H7418
6	Main Board ASM	39H7422
7	Power Supply Unit	39H7417
	Option Card Cover	39H7423
	Miscellaneous Kit	39H7431
	(Includes the following:)	
	Screws	
	Spacers	
	Clamps	
	SelectaDock Base Model I	39H7416

Options

	Tape Drive Kit	84G1290
	Bracket and Bezel	84G1291
	Shelf	84G3631
	Tray Cover	84G3632

Power Cords



Warning:

Use the power cord certified for your country.

1	Colombia, U.S., Venezuela Japan, 2-pin Japan, 3-pin	13F9959 6454377 65F0031
2	Hong Kong, Singapore, U.K.	14F0033
3	France, Germany, Spain	13F9979
4	Italy	14F0069
5	Australia, New Zealand	13F9940
6	Denmark	13F9997
7	Israel	14F0087
8	Bangladesh, Pakistan, Sri Lanka, South Africa	14F0015
9	Switzerland	14F0051
10	Thailand	1838574

Common Devices Checkout

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External Diskette Drive Test

Use the following procedure to isolate the diskette problem to a controller, drive or diskette. A scratch, write-enabled 2HD diskette is required.

1. Select the icon **FDD** on the **TEST MENU**. By doing this, the controller test and the drive read/write test run. If the controller test detects an error, FRU code 10 appears. In this case, replace the system board.
2. If the controller test run without errors, follow the instructions on the screen and insert a scratch diskette.
3. If the drive test detects an error, FRU code 50 appears. If the diskette media are known to be good, replace the drive or the drive cable.

External Display Self-Test

If the display problem occurs only when using an external display, use the following instructions to correct the problem.

Note

Before you replace a display, check the following list to see if it is connected correctly.

- 8506 and 8508 displays must be connected to an Image Adapter/A or an Image-I Adapter/A.
- 63XX and 85XX systems support either 63XX or 85XX displays.
- 85XX systems with an XGA-2 adapter support 95XX displays.
- 95XX systems support either 63XX, 85XX, or 95XX displays.
- ThinkPad models support either 85XX or 95XX displays.

If the screen is rolling, replace the display assembly. If that does not correct the problem, replace FRUs in the following order until the problem goes away:

1. Video card
2. Display adapter (any type)
3. System board
4. Bus adapter (if used)

If the screen is not rolling, run the display self-test as follows:

1. Power-off the computer and display.
2. Disconnect the display signal cable.
3. Power-on the display.
4. Set the contrast to its maximum position.
5. Set the brightness control to the center detent position.

Check for the following conditions:

- You should be able to vary the screen intensity by adjusting the contrast and brightness controls.
- The screen should be white or light gray, with a black margin (test margin) on the screen.

Note: The location of the test margin varies with the type of display. The test margin might be on the top, bottom, or one or both sides.

If you do not see a test margin on the screen, replace the display. If there is a test margin on the screen, replace the system board.

Note: On ThinkPad Models 700, 700C, 720C, 720C, do the following:

1. Video card
2. System board

External Keyboard/Auxiliary Input Device Checkout

The following auxiliary input devices may be available for IBM ThinkPad models.

- Numeric keypad
- Mouse (PS/2 compatible)
- External keyboard (with Keyboard/Miniature Mouse cable)
- If you suspect a problem with any of the auxiliary input devices (listed above), replace the device. If the problem is not corrected, replace the following FRUs one at a time to correct the problem.
 - Keyboard control card
 - System board
- If the computer receives an incorrect keyboard response, remove other external devices, check the keyboard connections, and recheck the keyboard responses. If the problem remains, replace the following FRUs one at a time to correct the problem.
 - Keyboard
 - Keyboard control card
 - System board
- If a 00030100 error message appears, power-off the computer and the external devices. Then power-on the computer before you power-on the external devices.

Fax/Modem Checkout

001

- Power-off the computer.
- Ensure that the modem is installed correctly.
- If the modem never worked in customer mode, ensure that all drivers are loaded correctly onto the computer.
- Ensure that the communication program is supported on the computer.
- Ensure that the public switch telephone network (PSTN) cable and the data access arrangement (DAA) cable, if installed, are connected correctly.

If you need to correct one of the above conditions, do so now; then continue.

Note: PCMCIA cards can be inserted and removed while the system is powered on.

- Power-on the system.
- Insert the IBM Data/FAX Modem diskette into the default diskette drive.
- If you are servicing a High Speed Internal Data/Fax Modem (Models FC3632 and FC3650), at the DOS prompt (for example, A:\), type **IBMDIAG**; then press **Enter**.
- If you are servicing a PCMCIA Data/FAX Modem (Models FC3634 and FC3635), at the DOS prompt (for example, A:\), type **ESTDIAG**; then press **Enter**.
- Follow the instructions on the screen. (If you need help, press **F1**.)

DID THE DIAGNOSTIC TESTS DETECT AN ERROR?

Yes No

002

The diagnostic tests have completed successfully. If you suspect a problem, go to Step 004.

003

Go to the Symptom-to-FRU Index for the computer you are servicing.

004

- Check the PSTN cable and the DAA cable, if installed, for continuity.

IS THE CABLE(S) GOOD?

Yes No

005

Replace the defective cable(s).

006

(Step 006 continues)

006 (continued)

- Have the customer transmit a call.

WAS THE CALL TRANSMITTED SUCCESSFULLY?

Yes No

007

Go to Step 011.

008

- Have the customer receive an incoming call on the modem.

WAS THE INCOMING CALL RECEIVED?

Yes No

009

Go to Step 014.

010

The diagnostic tests have completed successfully. If you still suspect a problem that is not software related, replace the External DAA; then replace the modem.

011

- Have the customer transmit a call at a lower speed.

WAS THE CALL TRANSMITTED SUCCESSFULLY?

Yes No

012

If installed, replace the external DAA. If you do not have an external DAA installed, or replacing the external DAA does not correct the problem, replace the modem.

013

Have the telephone line checked.

014

- Have the customer receive an incoming call on the modem at a lower speed.

WAS THE INCOMING CALL RECEIVED?

Yes No

015

If installed, replace the external DAA. If you do not have an external DAA installed, or replacing the external DAA does not correct the problem, replace the modem.

(CONTINUED)

016

Have the telephone line checked.

Printer Checkout

1. Make sure the printer is correctly connected and is powered-on.
2. Run the printer self-test.

If the printer self-test does not run correctly, the problem is in the printer. Refer to the printer service manual.

If the printer self-test runs correctly, do the following.

1. Verify the port settings in configuration.
2. Install a wrap plug on the port (indicated in configuration) and run the advanced diagnostic tests.
3. If the advanced diagnostic tests (with the wrap plug installed) do not detect a failure, replace the printer cable.

If the problem is not corrected, replace the system board.

Port Replicator Checkout

Use the following procedure to isolate a port replicator problem. A port replicator attaches to the system expansion connector at the rear of the computer.

1. Power-off the computer.
2. Remove the failing devices from the replicator.
3. Unplug the AC adapter from the replicator, if attached.
4. Remove the port replicator from the computer.
5. Reconnect the failing device directly to the computer. (If another device occupies the connector, remove it first.)
6. Go to General Checkout and follow that procedure.
7. If the advanced diagnostic device test does not find an error, suspect a problem with the port replicator or the system expansion bus.
8. Power-off the computer and reconnect the port replicator.
9. Power-on the computer and run the following advanced diagnostic tests:
 - Serial port test with the wrap plug installed on the replicator.
 - Parallel port test with the wrap plug installed on the replicator.
 - PCMCIA-2 test with the PC test card installed.
 - FDD-2 (FDD-1 if no drive is installed in the computer) drive test on the failing device.
10. If diagnostic errors appear, replace the replicator or diskette drive attachment unit.

If the problem remains after the replacement, replace the system board.
11. If power problems appear only when using the replicator, replace the replicator.

If power shut downs occur intermittently when using PCMCIA-2 devices via a port replicator, suspect an over-current problem. Some PCMCIA devices use more power; if the maximum usage of each device occurs simultaneously, the total current will exceed the limit, thereby causing a power shut down. Isolate this problem by removing one of the devices, and use the computer under the same condition, and see whether a power shut down occurs. Do this procedure for all devices then determine the cause. Customer purchase of the larger AC adapter (50W, optional) is recommended, if it is not yet in use.

TrackPoint Checkout

- If the TrackPoint does not work, check the configuration. If the configuration of the TrackPoint is set to **Disabled** or **Off**, change it to **Enable** or **On**.

If the problem remains, continue.

Note: TrackPoint automatically compensates to adjust the pointer sensor. This causes the pointer to move slightly on the screen and then stop. Pointer movement might occur when a slight, steady pressure is applied to the TrackPoint pointer when the computer is powered-on or running, or when exceeded temperature range requires re-adjustment.

- If the cursor floats or moves erratically, power-off and disconnect the mouse. Power-on the computer. If the problem goes away, replace the mouse. If the problem remains, replace the keyboard.
- For click button or pointing stick problems:
 1. Go to the Easy-Setup screen.
 2. Select an item with the pointing stick.
 3. Press either left or right click button.
 4. Verify that both buttons work correctly.

If the pointing stick or the click button does not work, do the following.

1. Reseat the keyboard cables.
2. Replace the keyboard.
3. Replace the interposer card (355x, 360x, 750x, 755x).
4. Replace keyboard control card (720).
5. Replace the system board.

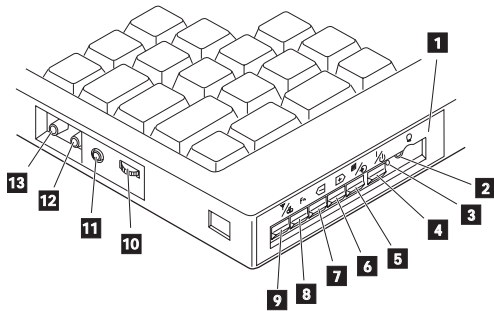
TV Tuner






The TV Tuner Pack (hereafter called TV Tuner) is an option for watching TV programs or videos on the IBM TFT color notebook computer. The computer changes to TV reception when the removable diskette drive is replaced with the TV Tuner.






The TV screen and normal computer display are easily switched by using the Hot key on the front panel of the TV Tuner.

Identifying Names and Functions

The following figure and table show the names and functions of each part of the TV Tuner.








Icons	Functions
1 Front Panel	Used to change the TV channels, switch TV mode to computer mode, and operate most functions of the TV Tuner.
2 Headphone Jack 	Connects the headphones.
3 Power Indicator	Shows the TV Tuner is powered on.
4 Power Switch 	Powered on and off the TV Tuner.
5 Hot Key 	Switches between the TV screen and computer screen.
6 Up Switch 	Increases the value such as the channel number.
7 Down Switch 	Decreases the value such as the channel number.

Icons	Functions
8 Function Key Fn	Enters the mode to change the value of each function, such as TV channel or color contrast. (See "Using the Function Key" on page 601.)
9 TV/EXT Switch 	Switches the TV mode or external video mode.
10 Volume Knob 	Controls the speaker volume.
11 Audio-In Jack 	Connects the audio-in connector of the AV cable.
12 Video-In Jack 	Connects video-in connector of the AV cable.
13 RF Connector 	Connects the active antenna unit or antenna cable.

Using the Front Panel
















The following table shows how to operate all functions of the TV Tuner with the controls on the front panel.

Key	Function
Power 	Turns on the TV Tuner. This key is used only when the computer is turned on.
Hot Key 	Switches computer display and TV screen.
Up 	Increases the value of parameters, Channel Number, Color, Tint, Brightness, Contrast, Auto Tuning Sensitivity, On-screen Message Selection.
Down 	Decreases the value of parameters, Channel Number, Color, Tint, Brightness, Contrast, Auto Tuning Sensitivity, On-screen Message Selection.

Key	Function
Function Fn	Selects a function mode to adjust each function parameter. (See "Using the Function Key" on page 601.)
TV/Ext 	Switches the displayed video source between the receiving TV broadcast program and external devices such as VCR, video camera recorder, laser disk, and so on.

Using the Function Key: Each time you press the Function key (Fn), one of the following messages (called *On-Screen Message*) appears at the top left corner of the LCD.

The changed values are automatically saved when you return to the "TV Channel" On-Screen message. The values are not saved when you power-off the TV Tuner without returning to this message.

Message on LCD	Parameter
 (xx)	TV Channel By using  and  , you can select the channels from 2 to 69.
 COL	Color Adjustment By pressing and holding  or  , you can change the color.
 TNT	TINT Adjustment By pressing and holding  or  , you can change the tint.
 BRT	Bright Adjustment By pressing and holding  or  , you can change the brightness.
 CNT	Contrast Adjustment By pressing and holding  or  , you can change the contrast.


Message on LCD	Parameter
---	(No function) Reserved.
LO HI	Auto Tune Sensitivity Selection LO: Means the sensitivity of the TV is low. In this mode, the TV Tuner receives strong TV signals only. To set LO, press \leftarrow . HI: Means the sensitivity of the TV is high (factory default). In this mode, the TV Tuner receives weak and strong TV signals. To set HI, press \rightarrow .
D3S DON	Time On-Screen Message appears D3S: On-Screen Message appears for 3 seconds. To set D3S, press \leftarrow . DON: On-Screen Message always appears. To set DON press \rightarrow

Power-on the TV Tuner: Use the ThinkPad Features program or PS2.EXE. to power-on the TV Tuner; then power-on the internal device in the diskette drive compartment. If power for the internal device is turned off when the TV Tuner is set up, nothing appears on the LCD display. Turn on power for the TV Tuner again.

- If you are using DOS, do one of the following:
 - Power-on the computer and type PS2 from the command prompt to start the ThinkPad Features program.
Select **Set Power Features** from the ThinkPad Features menu; then put a check mark at **Internal Serial Port** (or **Diskette Drive Compartment**) under the **Power for devices**. If you need help, press **F1** to display the help menu.
 - Type PS2 MODEM ON (or PS2 DDC ON) from the command prompt; press the Enter key to set the power ON.
- If you are using OS/2* or Microsoft Windows**, do the following:
 1. Power-on the computer and start the ThinkPad Features program.
 2. Select the **Power** icon; then move the pointer to **Internal Serial Port** (or **Diskette Drive Compartment**) under the **Power for devices** and click the button to check mark it.
 3. Press the **OK** button.

Troubleshooting

The following table shows what to do to solve problems when the TV Tuner does not work correctly.

Problem	Probable Cause
The TV Tuner does not operate. (No picture or sound)	<ul style="list-style-type: none"> • Computer is not powered on. • Computer is in suspend mode. • Volume control of the TV Tuner or computer is not adjusted correctly. • The power for the TV Tuner is not supplied. (See "Power-on the TV Tuner" on page 603.) • The wall outlet from the outdoor antenna is not active. • The video or antenna cable is not connected correctly. • Antenna elements of the active antenna unit are not adjusted. • The batteries in the active antenna unit are not inserted correctly. • The batteries in the active antenna unit are depleted. • The TV Tuner is not set up correctly. • You cannot watch TV or videos on the external display. • LO is set for the auto tune sensitivity selection. (See page 601.)
No color.	<ul style="list-style-type: none"> • The program is not in color.
Snow and noise only.	<ul style="list-style-type: none"> • Switch the TV/EXT () button.
Pictures are out of shape, or have double images.	<p>For TV:</p> <ul style="list-style-type: none"> • The channel is not tuned correctly. • Adjust the antenna. <p>For VCR:</p> <ul style="list-style-type: none"> • Change the tracking adjustment.
Dotted lines or stripes.	<ul style="list-style-type: none"> • Usually caused by interference from neon signs, hair dryers, and so on. Move the computer to avoid the interference.
Picture control are not saved.	<ul style="list-style-type: none"> • Do not power-off the TV Tuner when adjusting functions such as picture control, color, tint, brightness, or contrast.
Channel number is always displayed or is not displayed.	<p>Select your favorite mode for the on-screen message. (See page 601.)</p>

Common Parts Listing

This section contains FRUs common to most IBM portable, laptop, and notebook computers.

External Diskette Drives

5.25-Inch Diskette Drive:	
360KB External (4869-001)	72X6759
360KB External (4869-501)	72X6768
1.2MB External (4869-002)	15X7993
1.2MB External (4869-502)	15X7994
5.25-Inch Drive Adapter	72X6757
5.25-Inch Drive Adapter/A	15F7996
5.25-Inch External Diskette Drive Cable (from system board to adapter)	27F4211
Diskette Drive Bus Adapter	72X8524

CD-ROM Drives

Enhanced Internal CD-ROM II Drive (Eject button below slot)	61G1901
Internal CD-ROM I Drive (Eject button above slot)	81F7930
Terminator Kit (for 81F7930)	59F3530
Cleaning Kit (for 81F7930) (Disks, CD Caddy)	59F3562
Internal CD-ROM II Drive (Eject button below slot)	92F0084
Terminator Kit (for 92F0084)	92F0082
Media Kit (for 92F0084) (No cleaning necessary, Test Disk, CD Caddy)	31F4232
Signal Cable	34F0043
Power Cable	72X8521
Remote ID Switch Cable (3510)	92F0086
Audio Card, Cable, Screws (3510)	92F0085
CD Caddy	22F9419
Rail Kit (3510)	34F0041
Headphones	53F3610

SCSI Adapters, Terminators, Cables

SCSI Adapter/A (without Cache)	85F0002
SCSI Internal Cable	64F4127
SCSI Adapter/A (with Cache)	85F0063
Terminator, External (for 85F0063)	33F8464
Terminator, Internal (for 85F0063)	34F0025
Terminator, Internal (for 85F0002)	57F2870
SCSI Fast Adapter (16 bit)	92F0330
SCSI External Cable (for 92F0330)	32G4089
SCSI Internal Cable (for 92F0330)	32G0084
Terminator, Inline (space permitting)	92F0412

Rewritable Optical Drives

3.5-Inch Rewritable Optical Drive	92F0167
Rewritable Optical Cartridge	38F8647
Rewritable Optical Cartridge (5 Pack)	38F8646
Drive Mounting Slide (for 92F0167)	85F0022
Tray with Bezel (for 92F0167)	85F0021
Objective Lens Cleaner (for 92F0167)	38F8681
Prism Lens Cleaner (for 92F0167)	38F8682
3.5-Inch Enhanced Rewritable Optical Drive	92F0167
Mounting Tray	92F0269
Mounting Tray/Bezel (Model 3510)	92F0268

External Keyboard/Mouse

Keyboard Cable	72X8537
Mouse	61X8923
Mouse Ball and Pop-Off Retainer	33F8461
Mouse Ball and Twist-Off Retainer	33F8462
Mouse (New Style)	33G5420
Mouse Retainer Ring	33G5417
Miniature Mouse	95F5723

Enhanced Keyboards (101/102 Key)

Country	
Arabic	1391490
Belgian	1391414
Canadian French	1392011
Cyrillic	1393866
Danish	1391407
Dutch	1391511
French	1391402
German	1391403
Greek	1393285
Hebrew	1391408
Italian	1393395
Latin American Spanish	1392015
Norwegian	1391409
Portuguese	1391410
Russian/Cyrillic	1395622
Spanish	1391405
Swedish/Finnish	1391411
Swiss	1391412
Swiss/French	1395881
Swiss/German	1395882
Turkish	1393286
U.K. English	1391406
U.S. English (E/ME/A use only)	1396790
U.S. English	1392090
Yugoslavian	1393669

Optional Enhanced Keyboards (101/102 Key)

with PS/2 Style Cable	59G7980
with AT Style Cable	59G7981
with 25mm PS/2 Trackball	59G7982
with 25mm Serial Trackball	59G9757

Keybutton Kits (101/102 Key)

Keybutton Kits (R), Belgian	1392033
Keybutton Kits (R), Canadian French	1392032
Keybutton Kits (R), Danish	1392026
Keybutton Kits (R), Dutch	1392034
Keybutton Kits (R), French	6447047
Keybutton Kits (R), German	6447048
Keybutton Kits (R), Italian	6447049
Keybutton Kits (R), Norwegian	1392028
Keybutton Kits (R), Portuguese	1392029
Keybutton Kits (R), Spanish	6447050
Keybutton Kits (R), Spanish / Latin	1392035
Keybutton Kits (R), Swedish	1392030
Keybutton Kits (R), Swiss / French / German	1392031
Keybutton Kits (R), U.K. English	6447046
Keybutton Kits, U.S. English	6447045

Japanese Keyboard Type 2 (106 Key, DBCS Support)

Japanese Keyboard	94X1110
Keyboard Cable	94X1147

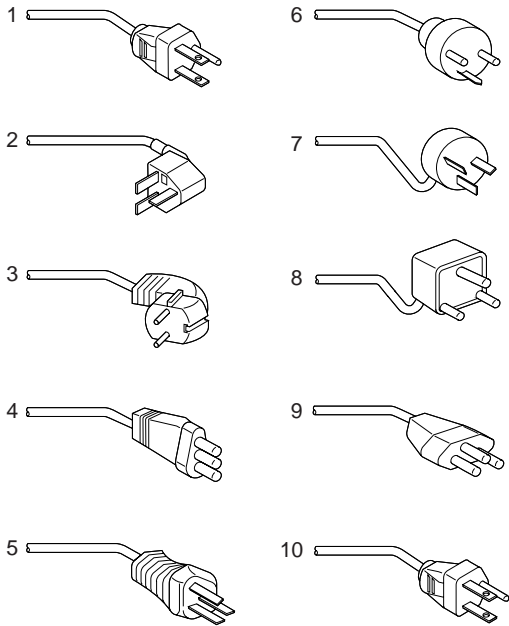
Space-Saving Keyboards (84/85 Key)

Country	
Canadian French	1396046
Spanish/Latin	1396047
U.S. English	1393290
Cable Assembly, External	1393082

Tools and Miscellaneous

Audio Wrap Cable	66G5180
Ethernet BNC T-Connector	84F8207
Ethernet BNC 50-ohm Terminator (2 required)	85F0037
Grounding Wire Set	38F4684
Keyboard Key Cap Removal Tool	6110464
PC Test Card	33G4703
Screwdriver Kit	95F3598
SCSI Terminator (any SCSI device, space permitting)	92F0142
SCSI Terminator Kit (R-PAC Terminator Modules (3) for 40, 60, 80, 120, and 160MB SCSI Hard Disk Drives)	92F0143
Wrap Plug Ethernet D-Shell	85F0036
Wrap Plug, Tri-Connector	72X8546
Wrap Plug (6157 Tape Attachment Adapter/A)	4178459
Wrap Plug (Token-Ring Network Adapter/A)	6165899
Plastic Envelope (For Wrap Plug)	6138013

Display Power Cords



Index Country

1	Colombia, U.S., Venezuela	6952300
	Colombia, U.S., Venezuela	62X1045
2	Hong Kong, Singapore, U.K.	14F0033
3	France, Germany, Spain	13F9979
4	Italy, Chile	14F0069
5	Australia, New Zealand, New Guinea, Papua	13F9940
6	Denmark	13F9997
7	Israel	14F0087
8	Bangladesh, Pakistan, South Africa, Sri Lanka	14F0015
9	Switzerland	14F0051
10	Thailand	1838574
	Japan	79F2755

Display and Monitor Information

Display and monitor information is separately available from IBM or an IBM Authorized Dealer.

Miscellaneous Information

Acronyms, Abbreviations and Terms

Term	Information
ACPA/A	Audio Capture and Playback Adapter
ADP	Automatic Data Processing
Alt	Alternate
ANSI	American National Standards Institute
ARTIC	A Real Time Interface Coprocessor
ASCII	American National Standard Code for Interface Interchange
AT	Advanced Technology (as in AT Bus)
AVC	Audio Video Connection
BIOS	Basic Input/Output System (Controls System Resources)
bps	Bits Per Second
BPS	Bytes Per Second
CCITT	The International Telephone and Telegraph Consultative Committee
CCS	Common Command Set
CCSB	Common Complete Status Block
CCSB	Configuration Control Sub Board
CD	Compact Disc
CDPD	Cellular Digital Packet Data
CD-ROM	CD Read Only Memory (stores data/audio)
CE	Customer Engineer or Service Representative
CRC	Cyclic Redundancy Check
CRT	Cathode Ray Tube
CSD	Corrective Service Diskette
CGA	Color Graphics Adapter (See EGA, VGA, XGA)
CRC	Cyclic Redundancy Check
CRT	Cathode Ray Tube
CSA	Canadian Standards Association
CSD	Corrective Service Diskette
DASD	Direct Access Storage Device (hard disk, diskette)
DMA	Direct Memory Access
DRAM	Dynamic Random Access Memory
DSTN	Double Super Twisted Nematic
ECA	Engineering Change Announcement
ECC	Error Correction Code
EGA	Enhanced Graphics Adapter
ESD	Electrostatic Discharge
ESDI	Enhanced Small Device Interface
EEPROM	Electrically Erasable Programmable Read Only Memory
EWS	Energy Work Station
FDD	Floppy Disk Drive
FRU	Field Replaceable Unit (replaceable part)
GPIB	General Purpose Interface Bus (IEEE 348)
GSA	General Services Administration
HDD	Hard Disk Drive
Ht	Height
IDE	Integrated Drive Electronics
IC	Integrated Circuit
IEEE	Institute of Electrical and Electronics Engineers
IEC	International Electrotechnical Commission
IML	Initial Machine Load

Term	Information
IPL	Initial Program Load
IR	Infrared
ISO	International Organization for Standardization
ISDN	Integrated-Services Digital Network
LAN	Local Area Network
LBA	Local Block Address
LTB	Local Transfer Bus
LUN	Logical Unit Number (as in SCSI)
MAP	Maintenance Analysis Procedure
MCGA	Modified Color Graphics Adapter (320 x 200 x 256)
MCA	Micro Channel Architecture (bus structure)
MHz	Mega hertz (millions of cycles per second)
MIDI	Musical Instrument Digital Interface
MM	Multimedia
N/A	Not Available or Not Applicable
NMI	Non-Maskable Interrupt
NSC	National Support Center
NVRAM	Non Volatile Random Access Memory
OEM	Original Equipment Manufacturer
PCMCIA	Personal Computer Memory Card International Association
POS	Programmable Option Select
PUN	Physical Unit Number (as in SCSI)
RAID	Redundant Array of Inexpensive Disks (disk array models)
RAM	Random Access Memory (read/write)
RGB	Red Green Blue (is in monitors)
RIPL	Remote Initial Program Load
ROM	Read Only Memory
SASD	Sequential Access Storage Device (Tape)
SCB	Subsystem Control Block
SCSI	Small Computer Systems Interface
SCSI ID	SCSI Identification Number (assigned device number)
SPD	Software Product Description
SR	Service Representative
SRAM	Static Random Access Memory
SVGA	Super Video Graphics Array
STN	Super Twisted Nematic
T/A	NDD Technical Advisor (See your Marketing Representative)
TDD	Telecommunications Device for the Deaf
TFT	Thin-Film Transistor
TPF	ThinkPad File
UL	Underwriters Laboratory
VCA	Video Capture Adapter
VESA	Video Electronics Standards Association
VGA	Video Graphics Array (640x480x16)
VPD	Vital Product Data
VRAM	Video Random Access Memory
WORM	Write Once, Read Many Media
XGA	Extended Graphics Array (1024 x 768 x 256)
Y/C	Luminance/Chrominance Signal (Pertains to Video)

Send Us Your Comments!

We want to know your opinion about this manual (part number 84H8099). Your input will help us to improve our publications.

Please photocopy this survey, complete it, and then fax it to **IBM HMM Survey at 919-543-8167 (USA)**.

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Problem Determination Tips

Due to the variety of hardware and software combinations that can be encountered, use the following information to assist you in problem determination. If possible, have this information available when requesting assistance from Service Support and Engineering functions.

- Machine type and model
- Processor or hard disk upgrades
- Failure symptom
 - Do diagnostics fail?
 - What, when, where, single, or multiple systems?
 - Is the failure repeatable?
 - Has this configuration ever worked?
 - If it has been working, what changes were made prior to it failing?
 - Is this the original reported failure?
- Reference Diskette Version
 - Type and revision level
- Hardware configuration
 - Print out (print screen) configuration from Reference Diskette currently in use
 - BIOS level
- Operating system software
 - Type and revision level

Important

To eliminate confusion, identical systems are considered *identical* only if they:

1. Are the exact machine type and models
2. Have the same BIOS level
3. Have the same adapters/attachments in the same locations
4. Have the same address jumpers/terminators/cabling
5. Have the same software versions and levels
6. Have the same Reference Diskette (version)
7. Have the same configuration options set in the system
8. Have the same setup for the operation system control files

Comparing the configuration and software set-up between “working and non-working” systems will often lead to problem resolution.

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800-426-7282	IBM Technical Manuals
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800-241-1620	Multimedia HelpCenter
800-342-6672	OS/2 Information Line
800-237-5511	OS/2 Support Services
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914-962-0310	Prodigy User Questions
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800-IBM-SERV	Customer Service Dispatch
800-263-2769	Customer Service Parts
800-465-2222	Customer Support Center (ISC)
416-443-5701	Customer Service Repair Centre
800-505-1855	Dealer Support Group (DSG)
800-465-7999	HelpClub Registration / IBM Direct
800-465-3299	HelpFax
905-316-3299	HelpFax - Toronto
800-565-3344	HelpPC
905-513-3355	IBM Certification Administrator Mail to: 50 Acadia Drive Markham, Ontario L3R 0B3
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800-268-3100	IBM Information Network Support
800-387-8343	IBM PC Service Partners
800-487-7426	International Warranty Registration
800-663-7662	Lexmark Product Information
800-IBM-9990	PartnerLine
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905-316-4255	PC Co Bulletin Board - Markham
604-664-6464	PC Co Bulletin Board - Vancouver
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