

IBM Mobile Systems

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ThinkPad i Series 1200/1300 (1161, 1171)

Hardware Maintenance Manual

May 2000

Before using this information and the product it supports, be sure to read the general information under "Introduction" on page 1, and "Read this first" on page 17.

First Edition (May 2000)

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Preface

About this manual

This manual contains service and reference information for IBM ThinkPad i Series 1200/1300 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 section includes service, reference, and product-specific parts information.

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 ThinkPad product, be sure to review the safety information under "Safety Notices (Multi-lingual Translations)" on page 3 and "Safety Information" on page 9.

Related publications

The following 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 (Models 340, 355, 360, 370, 700, 701, 720, 750, 755)	30H2357, S82G-1502-03
Mobile Systems HMM Volume 3: ThinkPad Computers (Models 365, 380, 385, 560, 760, SelectaDock)	84H8099, S82G-1503-05
Mobile Systems HMM Volume 4: ThinkPad Computers (Models 380, 385, 560, 760, 765)	05L1271, S05L-1270-01

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 380/385 (2635) Maintenance Diskette	06J0333, S06J-0333
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 i Series 1400 (2611) Diagnostic and Utilities diskettes	01K4841, S01K-4841-00
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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ThinkPad i Series 1200/1300

Hardware Maintenance Manual

General Descriptions

This chapter includes descriptions for any ThinkPad model that has the PC-Doctor DOS diagnostics program. Some descriptions might not apply to your particular computer.

Introduction

Important Service Information

Important

Diskette fixes are customer-installable. The diskette fixes are posted on the IBM support site (<http://www.pc.ibm.com/support/>).

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

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.

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 over-written 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.

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.

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

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 altre 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 provocarõan. 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 Systematterie 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 !

Aperto 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.

Keď je laserová jednotka otvorená. Vyhnite sa priamemu pohľadu a nehľadte priamo s optickými nástrojmi do lúča a vyhnite 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.

Read this first

Before you go to the check procedures, be sure to read this section.

Important Notes

- **Only certified trained personnel should service the computer.**
- Read the entire FRU service procedures before replacing any FRUs.
- **Use new nylon-coated screws when you replace 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 could be overwritten.
- **Replace FRUs only for the correct model.** When you replace a FRU, make sure that the model of the machine and FRU part number are correct by referring to the FRU parts list.
- **A FRU should not be replaced because of a single, unreproducible failure.** Single failure can occur for a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software error. FRU replacement should be considered only when a recurring problem exists. In this case, clear the error log and run the test again. Do not replace FRUs if log errors do not reappear.
- **Be careful not to replace a non-defective FRU.**

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:

Note for Warranty:

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 PC 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 drive eject button.
- CD-ROM/DVD-ROM drive damage caused by excessive force, shock, or by being dropped.
- Fuses blown by attaching a nonsupported device.
- Forgotten computer password (making the computer unusable).

The following symptoms might indicate damage caused by non-warranted activities:

- 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.

FRU replacement notices

This section contains notices for removal and replacement. Read this section carefully before replacing any FRU.

LCD replacement notice

The TFT LCD for the computer contains many 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:

- SVGA : 5 or more bright dots, 5 or more dark dots, or a total of 9 or more bright and dark dots.
- XGA : 8 or more bright dots, 8 or more dark dots, or a total of 9 or more bright and dark dots.

Screw notices

This computer uses special nylon-coated screws with the following characteristics:

- They maintain tight connections.
- They do not easily come loose, even with shock or vibration.
- They need additional force to tighten.
- They should be used only once.

Do the following when you service this machine:

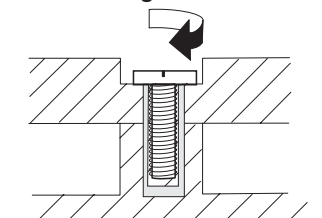
- Keep the screw kit (P/N 08K6560) in your tool bag.
- Always use new screws if you are instructed.
- Use a torque screwdriver if you have one.

Loose screws can cause a reliability problem. The IBM ThinkPad computer addresses this problem with nylon-coated screws. Tighten screws as follows:

- Plastic to plastic

Turn an additional **90 degrees** after the screw head touches the surface of the plastic part:

90 degrees more

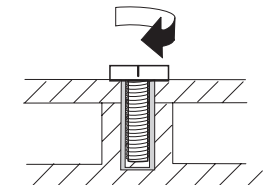


(Cross-section)

- Logic card to plastic

Turn an additional **180 degrees** after the screw head touches the surface of the plastic part:

180 degrees more



(Cross-section)

- Torque driver
If you have a torque driver, refer to the "Torque" column with each step.
- Make sure you use the correct screw, and tighten all screws firmly to the torque shown in the table if you have a torque screwdriver. **Never use a screw that you removed. Use a new one. Make sure the screws are tightened firmly.**

System board/LCD/Inverter replacement notice

Restoring the LCD panel ID: The EEPROM on the inverter stores its supported LCD type ID code. If you replace a LCD with one of a different brand or use a new inverter, the ID information in the inverter EEPROM should be updated.

Follow the steps below to set the LCD panel ID:

1. Install the ThinkPad CE Utility Diskette and restart the computer.
2. Select **1. LCD Panel ID Utility** from the main menu.
3. Follow the instruction on screen to read current or to set new LCD Panel ID code.
4. Restart computer : the new LCD should work normally.

Note: When you set a new LCD Panel ID and the new LCD is not yet enabled (to function), so connect an external CRT to see the program execution process.

CAUTION:

Make sure the new ID code you choose corresponds with the LCD brand and type. If you write a wrong ID into the inverter just reboot and re-execute the program and input the correct ID code.

Note: If LCD cannot display after change ID code, make sure you write the correct ID code, or try reseating the LCD FPC cable connectors.

Restoring the Vital Product Data: The EEPROM on the inverter contains vital product data (VPD). When the computer was manufactured, the EEPROM on the inverter was loaded with the serial numbers of the system and all major components. The EEPROM contains the following serial numbers:

- BIOS build ID (BIOS version number)
- System board serial number
- System unit serial number

When you update new BIOS, the **BIOS build ID** will be write into the EEPROM on the inverter automatically. To prevent the lost of writing BIOS build ID, the ThinkPad Hardware Maintenance Diskette provides the function that you can Read/Write the BIOS build ID.

To Read the BIOS build ID (BIOS version number), do the following:

1. Install the ThinkPad CE Utility Diskette and restart the computer.
2. Select **3. VPD Data Utility** from the main menu.
3. Select **1. Read VPD data** and follow the descriptions on screen to verify the BIOS build ID displayed.

To Write the BIOS build ID (BIOS version number), do the following:

1. Install the ThinkPad CE Utility Diskette and restart the computer.
2. Select **3. VPD Data Utility** from the main menu.
3. Select **1. Write VPD data** then select **1. Write Build ID** to write the BIOS build ID.

You must restore the **system unit serial number** to its original number when the LCD module or inverter is replaced.

To restore the system unit serial number, do the following:

1. Install the ThinkPad CE Utility Diskette and restart the computer.
2. Select **3. VPD Data Utility** from the main menu.
3. Select **1. Read VPD data** to verify the system unit serial number displayed.
4. If it is incorrect, select **2. Write VPD data** and then select **2. Write BoxSerial number** to type the correct number storing on the panel.

Notes:

1. Do not power-off the computer during the restoration process.
2. The serial number label is attached to the bottom of the computer.

To restore the **planar serial number** after you have replaced the system board, LCD module or LCD inverter, do the following:

1. Install the ThinkPad CE Utility Diskette and restart the computer.
2. Select **3. VPD Data Utility** from the main menu.
3. Select **1. Read VPD data** to verify the system board serial number displayed.
4. Select **2. Write VPD data** and then select **2. Write PlanarSerial number** to type the correct number storing on the panel.

Thermal Sensor: The system is equipped with sensors to protect against system overheating. By setting system and processor thermal thresholds, the system can turn on the cooling fan or shut down automatically when temperatures reach the defined threshold parameters.

System experiencing frequent auto sensor shutdown may need to reset the thermal sensor threshold and execute the fan test to ensure the normal operation of the cooling fan.

Follow the steps below to set thermal threshold:

1. Install the ThinkPad CE Utility Diskette and restart the computer.
2. Select **2. Thermal Sensor Utility** from the main menu.
3. Select **1. Read Thermal Setting** to view the original setting or **2. Set Default Thermal Setting** to restore the default setting.

UUID: The Universal Unique Identifier (UUID) is a 128-bit number uniquely assigned to your computer at production and stored in the EEPROM of your inverter. The algorithm that generates the unique number is designed to provide unique IDs until the year A.D. 3400. Consequently, no two computers in the world will have the same number.

When you replace the system board, you must set the UUID on the new system board as follows:

1. Install the ThinkPad CE Utility Diskette and restart the computer.
2. Select **4. UUID Data Utility** from the main menu then make a selection to read or create the UUID data.

A new UUID is created and written. If a valid UUID already exists, it is not overwritten.

Related service information

This section provides information about the following:

- “Power button as reset switch”
- “Running a low-level format”
- “Service Web site”
- “Passwords”
- “Power management features” on page 25
- “Fn key combinations” on page 26

Power button as reset switch

The power button acts as a reset switch when pressed for more than 4 seconds. This resets the system (regardless of the microcode status) and forces the power off. Use this only when power is not completely off or the microcode is in a hung state.

Running a low-level format

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

To format the hard disk, use the **Full Erase Hard Drive** or **Quick Erase Hard Drive** in Utility of the PC-Doctor DOS program. Refer to “Testing the computer” on page 27.

Service Web site

When the latest maintenance diskette and system program service diskette are available, they are posted on:

<http://www.pc.ibm.com/support> For more information, see “Important Service Information” on page 1.

Passwords

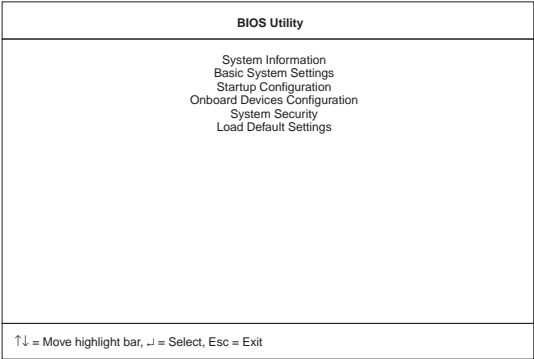
When the power-on password (POP), hard disk password (HDP), and setup password (SUP) are used, the following situations may occur:

- **If the POP is the same as the HDP**, the POP prompt appears, but the HDP prompt does not appear.
- **If the POP is not the same as the HDP**, both prompts appear.

Power-on and setup passwords: The power-on and setup password are security features that are used to protect the system from unauthorized access. If the power-on or setup password is forgotten, change the switch SW1, Bit 4 from 1 to 0 to bypass the password.

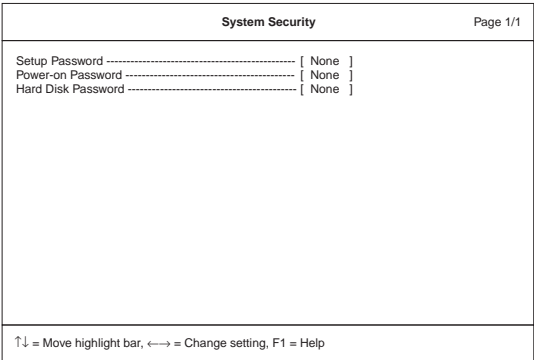
Removing the power-on/setup password: If the customer forgets the power-on or setup password, set the switch SW1, Bit 4 from 1 to 0 firstly to bypass the two passwords. Then do the following to remove the two passwords:

1. Power on the computer and press **F1** to enter the BIOS Utility menu.
2. The main screen displays as below:



3. Using the up or down arrow key, select **System Security**.
4. Press the **Enter** key.

The password selection window appears:



5. Move the highlight bar to **Power-on/Setup Password**.
6. Select **None**.
7. Save the change, and exit the BIOS Utility menu.

The other way to remove the power-on or setup password:

1. Remove all power sources including the AC adapter and battery assembly.
2. Remove the RTC battery from the system board for a while then reinstall it.

Attention: The CMOS settings will be restore to default values if you use this method to remove the power-on or setup password.

Hard disk password: The hard disk password is security feature that is used to protect the hard disk data from unauthorized access.

Attention: No overriding capability is provided. Therefore, if the customer forgets the hard disk password, the hard disk drive must be replaced.

Power management features

Two power management modes are available in the computer system to reduce power consumption and to prolong battery life.

Standby mode: When in standby mode, the following occurs:

- The LCD backlight turns off.
- The hard disk motor either spins down or stops (controlled by OS).
- CPU enters stop-grant mode.

Events that cause the computer to enter standby mode:

Note: These events depend on the **Power button, Sleep button and Lid** settings (options set to standby mode) in the "Advanced" page of the "Power Management Properties" screen.

- Standby requested by the Sleep button (Fn+F4)
- Standby requested by the power button
- Standby requested by closing the lid.

Events that cause the computer to exit standby mode:

- RTC alarm
- Power-on switch is operated
- Any key or Easy Launch button operation
- The LCD is opened (if the system entered standby mode from closing the lid).

Note: This is true if **When I close the lid of my portable computer:** is set to **Standby** in the "Advanced" page of the "Power Management Properties" screen.

- An embedded modem signals the modem ring indicator
- The battery power is at a critical level.

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.

Events that cause the computer to enter hibernation mode:

Note: These events depend on the **Power button, Sleep button and Lid** settings (options set to hibernate mode) in the "Advanced" page of the "Power Management Properties" screen.

- Hibernation requested by the Sleep button (Fn+F4)
- Hibernation requested by the power button
- Hibernation requested by closing the lid.

Events that cause the computer to exit hibernation mode:

- RTC alarm
- Power-on switch is operated

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

Fn key combinations

The following table shows the Fn key and function key combinations and their corresponding functions. Some of the keys do not work if proper device drivers and utilities are not installed.

Fn key	Function
Fn+F1	User Control Help
Fn+F2	Battery Applet Popup
Fn+F4	Sleep button
Fn+F7	Switch display output location.
Fn+F9	Skip Track Backward
Fn+F10	Skip Track Forward
Fn+F11	Play/Pause
Fn+F12	Stop/Eject
Fn+PageUp	Volume Up
Fn+PageDown	Volume Down
Fn+Backspace	Volume Mute
Fn+Home	Brightness up
Fn+End	Brightness down
Fn+Ins	Contrast up
Fn+Del	Contrast down

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.

Testing the computer

The ThinkPad computer has a test program called PC-Doctor DOS (hereafter called *PC-Doctor*). You can detect errors by running the diagnostics test of PC-Doctor. This section is an overview on detecting the problem. Refer to “Product overview” on page 32 for details that depend on model-unique functions.

To run the test, do the following:

Note: In the following procedure, you can select an item not only with the arrow keys, but also with the TrackPoint. Instead of pressing **Enter**, you can click the left click button.

1. Insert the PC-Doctor DOS Disk into the diskette drive; then power on the computer.

If the computer cannot be powered on, go to “Power systems checkout” on page 29 and check the power sources.

If an error code appears, go to “Symptom-to-FRU Index” on page 37.

The PC-Doctor main panel appears.

2. Select **Diagnostics** with the arrow keys, and press **Enter**.

A pull-down menu appears:

Note: The pull-down menu differs depending on the model.

3. Run the applicable function test.
4. Follow the instructions on the screen. If there is a problem, PC-Doctor shows some messages.
5. Reseat the cable or connector of the detected FRU and run the test again.

If the error recurs, replace the FRU that caused the error.

Note: With some FRUs, especially the system board, the problem might be caused by peripheral FRUs. Verify that each peripheral

FRU, such as the flexible cable, has no problem by doing the following:

- a. Replace each peripheral FRU one at a time, and run the test again.
- b. If the peripheral FRUs have no problem, replace the main FRU itself.

To see the FRU structure of each model, refer to “Product overview” on page 32.

6. To exit the test, select **Quit – Exit Diag**.

To cancel the test, press **Esc**.

The following table lists the options on the test menu.

Diagnostics	Interactive Tests
<ul style="list-style-type: none">• Run Normal Test• Run Quick Test• CPU/Coprocessor• System board• Video Adapter• Serial Port• Parallel Port• Fixed Disks• Diskette Drives• Other Devices• Memory Test – Full• Memory Test – Quick	<ul style="list-style-type: none">• Keyboard• Video• Internal Speaker• Mouse• Joystick Test• Diskette Test• System Load• CD-ROM/DVD• Stereo Speaker
<p>Note: In Keyboard test within Interactive Tests, the Fn key is scanned only once. Each key should be pressed for at least 2 seconds; otherwise, it cannot be sensed.</p>	

Related service information

PC-Doctor can detect the following system information:

Hardware Info:

- System Configuration
- Memory Contents
- Physical Disk Drive
- Logical Disk Drive
- VGA Information
- IDE Drive Information
- PCI Information
- PNPISA Information
- SMBIOS Information
- FRU Information
- VESA LCD Information
- SM712 General Information

Utility:

- Run External Tests
- Surface Scan Hard Disk
- Benchmark System
- DOS Shell
- Tech Support Form
- Battery Rundown
- View Test Log
- Print Log
- Save Log
- Full Erase Hard Drive
- Quick Erase Hard Drive

Power systems checkout

To verify the symptom of the power problem on the computer, do the following:

1. Power off the computer.
2. Remove the battery pack.
3. Connect the AC Adapter.
4. Check that power is supplied when you power on the computer.
5. Power off the computer.
6. Disconnect the AC Adapter and install the charged battery pack.
7. Check that power is supplied by the battery pack when you power on the computer.

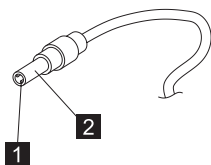
If you suspect a power problem, refer the appropriate power supply check listed below:

- “Checking the AC Adapter”
- “Checking operational charging” on page 30
- “Checking the Battery ASM” on page 30

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

- 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 30.

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	15.5 V. - 17.0 V.
2	Ground

If the voltage is not correct, replace the AC Adapter.

If the voltage is within the range, do the following:

- Replace the system board.
- If the problems still persist, go to “Undetermined Problems” on page 44.

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

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

Perform operational charging. If the battery status indicator or icon does not turn on, remove the Battery ASM and let it return to room temperature. Reinstall the Battery ASM. If the charge indicator or icon still does not turn on, replace the Battery ASM.

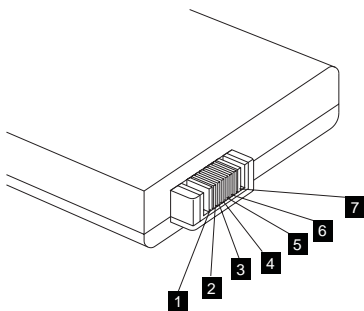
If the charge indicator still does not turn on, replace the system board. Then reinstall the Battery ASM. If the reinstalled Battery ASM is not charged, go to the next section.

Checking the Battery ASM:

Note: The Battery ASM might not be able to charged when it is hot. In that case, remove it from the computer and leave it at room temperature for a while. After it cools down, reinstall it and recharge it.

Do the following:

1. Power off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 1 (-) and 7 (+). See the following figure.



Terminal	Signal / Voltage (V dc)
1	Ground
2	BT-SENSE
3	Reserve
4	Reserve
5	Thermal
6	BT+SENSE
7	BT+ (0 V. - 13 V.)

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

3. First, discharge the battery, until the voltage is less than 9.6V. Then, charge the battery for 30 minutes. Now, check the voltage. If the voltage is still less than 9.6V, replace the battery.
4. If the voltage is more than 9.6V, measure the resistance between battery terminals 1 and 5. The resistance must be 10K Ω . If the resistance is not correct, replace the Battery ASM. If the resistance is correct, replace the system board.

Product overview

The following shows an overview of the system features.



Feature	Description
Processor	Intel Pentium III Celeron processor 500/100, 550/100 MHz (BGA2), L2 cache 128KB
Bus architecture	Host bus 64bits/100 MHz, PCI 32 bits/33 MHz, ISA 16 bits/8.33 MHz, PCMCIA 32 bits/33MHz
System memory	32 MB or 64 MB base main memory on system board (100MHz SDRAM) 1 SODIMM slot supports 32 MB, 64 MB, and 128 MB DIMM card Maximum frequency: 100 MHz Maximum size: 192 MB
CMOS RAM	242 bytes + 4 Kbytes
Video	2/4MB embedded Video memory with 2D/video LCD/CRT embedded controller 12.1–inch, 16M colors, 800x600 pixel HPA SVGA color LCD 13.0–inch, 16M colors, 800x600 pixel HPA SVGA color LCD 12.1–inch, 16M colors, 800x600 pixel TFT SVGA color LCD 13.3–inch, 16M colors, 1024x768 pixel TFT XGA color LCD 12.1 TFT/13.3 TFT with Brightness control by Function key 12.1 HPA/13.0 HPA w/ Brightness and Contrast control by Function key
Audio	AC97 audio based on the 440MX AC link DMA engine 16–bit audio Internal stereo speakers
Diskette drive (optional)	External 1.44MB (3–mode), 3.5 inch floppy drive via USB interface (Bootable)
Hard disk drive	6GB or 12GB, 2.5–inch 9.5mm height, E-IDE interface
CD-ROM drive	CD-ROM: 5.25–inch, 24X speed, E-IDE interface
Modem	Integrated MDC soft Modem based on the 440MX AC link DMA engine 56 Kbps Data/Fax Modem
Ethernet (optional)	A MiniPCI type-IIIb like card has a 40mm height. It supports 100Mbps






Feature	Description
IEEE 1394 (optional)	A MiniPCI type IIIb like card IEEE 1394.a 4-pin connector — no cable power IEEE 1394.a release 3 - Sony Camcorder reset issue fix OHCI 1.0 register set, #CLKRUN, #PME 100Mbps, 200Mbps and 400Mbps
PC Card (PCMCIA)	One Type I/II or Type III, with CardBus and ZV support
I/O ports	External monitor Speaker-out Microphone-in DC-in PS/2 Mouse/keyboard Parallel Two USB IEEE 1394a (optional) Telephone (RJ11) LAN (RJ45, optional)
Power	56-Watt AC Adapter 8-cell NiMH Battery Pack (Dumb Battery)

Status indicators

The system-status indicators on the computer show the current status of your computer by their on or off states and colors (green and orange). Each indicator is identified with a symbol. The following shows the location and the meaning of each icon:



Symbol	Color	Meaning
(1) Battery status 	Green	Enough battery power remains for operation.
	Blinking orange	The battery pack needs to be charged
	Orange	The battery pack is being charged.
(2) Standby mode 	Green	The computer is in standby mode
	Blinking green	The computer is entering or resuming from hibernation mode.

Symbol	Color	Meaning
(3) Drive in use 	Green	Data is being read from or written to the hard disk. Do not enter standby mode or power off the computer when this indicator is on.
(4) Numeric lock 	Green	The numeric keypad on the keyboard is enabled. You enable or disable the keypad by pressing and holding the Shift key, and pressing the NumLk key. For details, see the <i>User's Reference</i> .
(5) Caps lock 	Green	Caps Lock mode is enabled. All alphabetic characters (A-Z) are entered in capital letters without the Shift key being pressed. You enable or disable the Caps Lock mode by pressing the Caps Lock key.
(6) Scroll lock 	Green	Scroll Lock mode is enabled. The Arrow keys can be used as screen-scroll function keys. The cursor cannot be moved with the Arrow keys. <i>Not all application programs support this function.</i> You enable or disable Scroll Lock mode by pressing the ScrLk key.
(7) Power on 	Green	The computer is operational. This indicator is on when the computer is on.

FRU tests

The following table shows the applicable test for each FRU using PC-Doctor.

FRU	Applicable test
System board	<ol style="list-style-type: none"> 1. CPU/Coprocessor (Diagnostics) 2. System board (Diagnostics)
Power	Battery (Diagnostics)
LCD unit	<ol style="list-style-type: none"> 1. Video Adapter (Diagnostics) 2. Video (Interactive Tests)

FRU	Applicable test
Modem	<ol style="list-style-type: none"> 1. Make sure the modem set up correctly. 2. Replacing the modem jack and modem card one at a time, run the modem tests in Other Devices (Diagnostics)
Audio	Internal Speaker (Interactive Tests) Stereo Speaker (Interactive Tests)
Speaker	System beeper: Internal Speaker (Interactive Tests)
PC Card slots	System board (Diagnostics)
Keyboard	<ol style="list-style-type: none"> 1. Keyboard (Diagnostics) 2. Keyboard (Interactive Tests)
TrackPoint or Pointing device	<p>If the TrackPoint does not work, see if an external PS/2 mouse is connected to the mouse/keyboard connector and remove it. The TrackPoint is automatically disabled if an external PS/2 mouse is attached. Check also if the TrackPoint driver is correctly installed by accessing Windows Device Manager via the System icon in the Control Panel.</p> <p>After you use the TrackPoint, the pointer drifts on the screen for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the TrackPoint pointer. This symptom is not a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.</p> <p>If this does not correct the TrackPoint problem, continue with the following: Mouse (Interactive Tests).</p>
Hard disk drive	Fixed Disks (Diagnostics)
CD-ROM drive	CD-ROM (Interactive Tests)
Memory	<ol style="list-style-type: none"> 1. If a DIMM is installed, remove it and run Memory Test-Quick (Diagnostics) 2. If the problem does not recur, replace the DIMM and run the test again. 3. If the test does not detect the error, run Memory Test-Full (Diagnostics)
Fan	<ol style="list-style-type: none"> 1. Start Windows 98 and check the air turbulence at the louver at the rear of the computer. 2. Run the fan test in Other Devices (Diagnostics).

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 should be available when servicing a computer.

Numeric error codes show the errors detected in POST or system operation (runtime). 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 44.

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

Numeric Error Codes and Messages

Error Code	Message	FRU/Action in Sequence
006	Equipment Configuration Error	Enter BIOS Utility and execute "Load Setup Default Settings"; then reboot the system.
040	Diskette Drive Controller Error	<ul style="list-style-type: none">• Go to “FRU tests” on page 35.• Diskette drive connection• Diskette drive• System board
070	Real Time Clock Error	<ul style="list-style-type: none">• Reset Time in the Basic System Settings of BIOS Utility.• Backup battery (RTC battery)• Enter BIOS Utility and execute "Load Setup Default Settings"; then reboot the system.• System board

Error Code	Message	FRU/Action in Sequence
071	CMOS Battery Bad	<ul style="list-style-type: none"> • Backup battery (RTC battery) • Enter BIOS Utility and execute "Load Setup Default Settings"; then reboot the system. • System board
072	CMOS Checksum Error	<ul style="list-style-type: none"> • Enter BIOS Utility and execute "Load Setup Default Settings"; then reboot the system. • Backup battery (RTC battery) • System board
110	Incorrect Password Specified, System Halted.	<ul style="list-style-type: none"> • Set SW1 Pin 4 (Check Password) to "0". • Enter BIOS Utility and clear password. • Set SW1 Pin 4 (Check Password) to "1".
252	VPD Checksum Error	<ul style="list-style-type: none"> • Run ThinkPad Hardware Maintenance Diskette. • Input correct data.

Beep Symptoms

Symptom/Error	FRU/Action in Sequence
Five short beeps and then system shut down without any message on screen	<ul style="list-style-type: none"> • Battery power critical low (Connect the AC adapter or install a fully charged battery.) • Battery assembly.
One long beep and one short beep (Improper speed DIMM module (66MHz) be inserted.)	<ul style="list-style-type: none"> • DIMM • System board

LCD-Related Symptoms

LCD FRU Replacement Notice

The TFT LCD for the computer contains many 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:

- SVGA : 5 or more bright dots, 5 or more dark dots, or a total of 9 or more bright and dark dots.
- XGA : 8 or more bright dots, 8 or more dark dots, or a total of 9 or more bright and dark dots.

Symptom/Error	FRU/Action in Sequence
LCD backlight does not work. LCD is too dark. LCD brightness cannot be adjusted. LCD contrast cannot be adjusted (HPA LCD models only).	<ul style="list-style-type: none">• Keyboard (if contrast and brightness function keys do not work)• Reseat LCD connector• Check LCD inverter ID• LCD Cable ASM• LCD Inverter board (12.1"); LCD Inverter/LED board (13.0"/13.3")• LCD• System board
Unreadable LCD screen. Missing pixels in characters. Abnormal screen Wrong color displayed.	<ul style="list-style-type: none">• Reseat LCD connector• Check LCD inverter ID• LCD Cable ASM• LCD Inverter board (12.1"); LCD Inverter/LED board (13.0"/13.3")• LCD• System board
LCD has extra horizontal or vertical lines displayed.	<ul style="list-style-type: none">• Check LCD inverter ID• LCD Cable ASM• LCD Inverter board (12.1"); LCD Inverter/LED board (13.0"/13.3")• LCD• System board

Keyboard/TrackPoint-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Keyboard (one or more keys) doesn't work.	<ul style="list-style-type: none">• Go to "FRU tests" on page 35.• Reseat keyboard cable.• Keyboard• System board
TrackPoint does not work.	<ul style="list-style-type: none">• Go to "FRU tests" on page 35.• Reseat keyboard cable.• Keyboard• System board

Indicator-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly.	<ul style="list-style-type: none">• Reseat LED board (12.1"); Reseat Inverter/LED board (13.0"/13.3")• LED board (12.1"); Inverter/LED board (13.0"/13.3")• System board

Power-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Power shuts down during operation.	<ul style="list-style-type: none">• Go to "Power systems checkout" on page 29.• AC Adapter• Battery assembly• Keyboard• System board
The system doesn't power on.	<ul style="list-style-type: none">• Go to "Power systems checkout" on page 29.• AC Adapter• Battery assembly• Keyboard• System board
The system doesn't power off.	<ul style="list-style-type: none">• Go to "Power systems checkout" on page 29.• Hold and press the power switch for more than 4 seconds.• Keyboard• System board

Symptom/Error	FRU/Action in Sequence
Battery can't be charged.	<ul style="list-style-type: none"> Go to "Power systems checkout" on page 29. Battery assembly System board

Memory-Related Symptom

Symptom/Error	FRU/Action in Sequence
Memory count (size) appears different from the actual size.	<ul style="list-style-type: none"> Go to "FRU tests" on page 35. Enter BIOS Utility and execute "Load Setup Default Settings"; then reboot the system. DIMM System board

Audio-Related Symptoms

Symptom/Error	FRU/Action in Sequence
Internal speakers make noise or emit no sound.	<ul style="list-style-type: none"> Speaker volume control Go to "FRU tests" on page 35. Speaker(s)
External speakers make noise or emit no sound.	<ul style="list-style-type: none"> Speaker volume control Go to "FRU tests" on page 35. Speaker(s)
In DOS or Windows, multimedia programs, no sound comes from the computer. (Only system beeps are heard at power-on.)	<ul style="list-style-type: none"> Speaker volume control Go to "FRU tests" on page 35. Speaker(s)

PC Card (PCMCIA)-Related Symptoms

Symptom/Error	FRU/Action in Sequence
System cannot detect the PC Card (PCMCIA)	<ul style="list-style-type: none"> PC Card (PCMCIA) holder assembly System board
PCMCIA slot pin is damaged.	PC Card (PCMCIA) holder assembly

Power Management-Related Symptoms

Symptom/Error	FRU/Action in Sequence
The system doesn't enter hibernation mode.	<ul style="list-style-type: none"> Go to "Hibernation mode" on page 25. Boot an operating system and press Fn+F4 and see if the computer enters hibernation mode. Keyboard Hard disk drive connection board Hard disk drive System board
The system doesn't resume from hibernation mode.	<ul style="list-style-type: none"> Go to "Hibernation mode" on page 25. Hard disk drive connection board Hard disk drive System board
The system doesn't enter into or resume from sleep mode after closing the LCD.	<ul style="list-style-type: none"> Lid switch System board
System configuration does not match the installed devices.	<ul style="list-style-type: none"> Enter BIOS Utility and execute "Load Setup Default Settings"; then reboot the system. Reseat Hard disk/diskette/CD-ROM drive connector.
System hangs intermittently.	<ul style="list-style-type: none"> Reseat hard disk/diskette/CD-ROM drive connector. Fan ASM (go to "FRU tests" on page 35). System board

Peripheral-Device-Related Symptoms

Symptom/Error	FRU/Action in Sequence
External display does not work correctly.	<ul style="list-style-type: none"> Both display mode, press Fn+F7. System board
Printer problems.	<ul style="list-style-type: none"> Run printer self-test. Printer driver Printer cable Ensure that "Parallel Port" in the "Onboard Devices Configuration" menu of the BIOS Utility is correctly set. System board

Symptom/Error	FRU/Action in Sequence
Parallel port device problems.	<ul style="list-style-type: none"> • Device driver • Device cable • Device • Ensure that "Parallel Port" in the "Onboard Devices Configuration" menu of the BIOS Utility is correctly set. • System board

Modem-Related Symptom

Symptom/Error	FRU/Action in Sequence
Internal modem does not work correctly	<ul style="list-style-type: none"> • Go to "FRU tests" on page 35. • Modem connector • Modem board • System board

Operating System-Related Symptom

Symptom/Error	FRU/Action in Sequence
Operating system not found	<ul style="list-style-type: none"> • Check that the operating system has no failure and is installed correctly. • Enter IBM BIOS Setup Utility and see whether the hard disk drive and the diskette drive are properly identified. • Reseat the hard disk drive. • Reinstall the operating system. • Diskette drive • Hard disk drive • System board

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, electronic 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 diagnostic test for the system board at least 10 times.
2. If no error is detected, do not replace any FRUs.
3. If any error is detected, replace the FRU. Rerun the test to verify that there are no more errors.

Undetermined Problems

The diagnostic tests did not identify which adapter or device failed, which installed devices are incorrect, whether a short circuit is suspected, or whether the system is inoperative. Follow the procedures below to isolate the failing FRU.

Verify that the power supply being used at the time of the failure is operating correctly.

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:
 - Non-IBM devices
 - Printer, external mouse & keyboard, and other external devices
 - Battery pack
 - Hard disk drive
 - CD-ROM drive/Diskette drive (optional)
 - PC Card (PCMCIA)
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.
 - Hard disk drive connection board
 - LCD assembly
 - System board

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 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 callout, 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 83 for internal cable connections and arrangement information.
- When replacing a FRU, use the correct screw size, as shown in the procedure.

Safety Notice 1

Translations in "Safety Notices (Multi-lingual Translations)" section: 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.

Safety Notice 3

Translations in "Safety Notices (Multi-lingual Translations)" section: 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.

Safety Notice 8

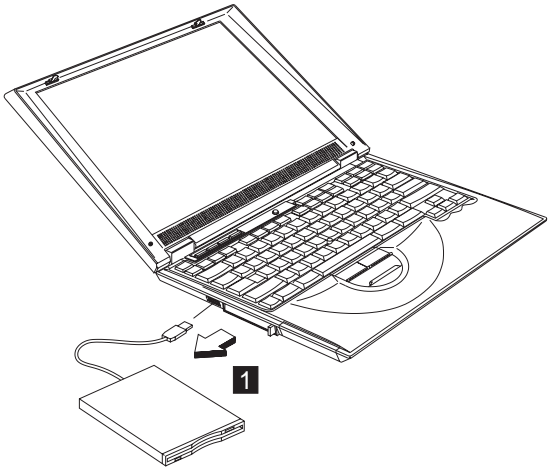
Translations in "Safety Notices (Multi-lingual Translations)" section: Before removing any FRU, power-off the computer, unplug all power cords from electrical outlets, remove the battery pack, then disconnect any interconnecting cables.

Attention: The system board is sensitive and can be damaged by electronic discharge. Establish personal

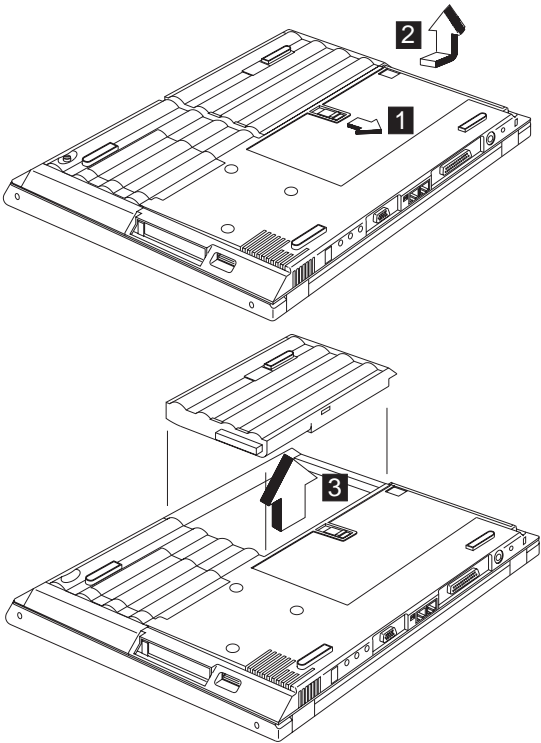
grounding by touching a ground point with one hand before touching these units.

An electrostatic discharge (ESD) strap (P/N: 6405959) must be used to establish personal grounding.

1010 External Diskette Drive



1020 Battery assembly



Warning

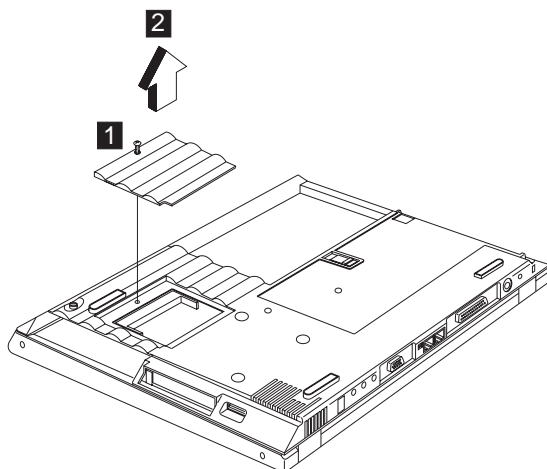
Battery packs are capable of delivering high currents for a significant amount of time. Do not short the battery terminals.

CAUTION:

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

1030 Memory cover and memory card

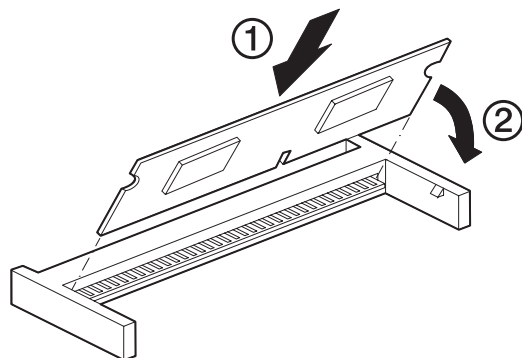
- "1020 Battery assembly" on page 46



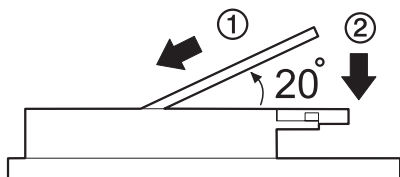
Note: The screw does not separate from the memory cover.

To install the memory card:

With the notched end of the memory card toward the right side of the socket, insert the memory card, at an angle of approximately 20°, into the socket; then press it firmly. Pivot the memory card until it snaps into place.

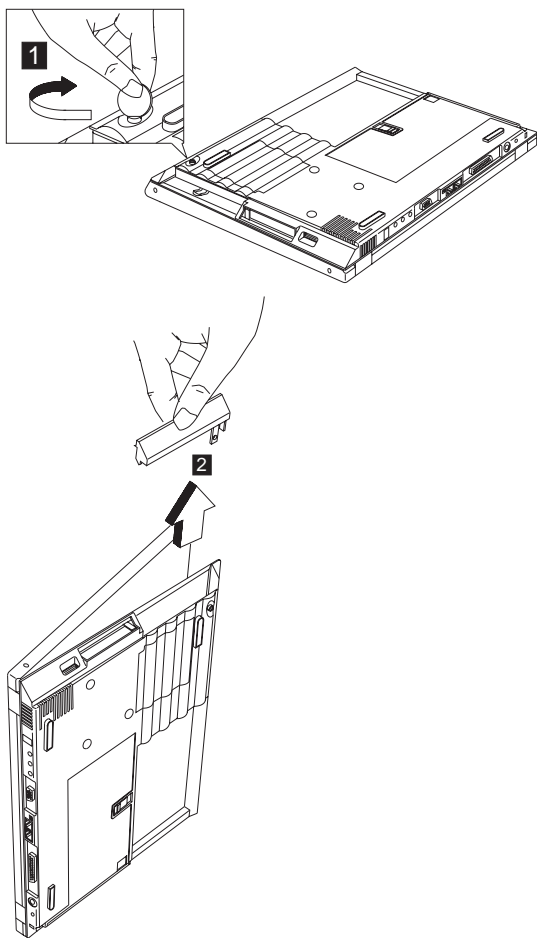


Side View

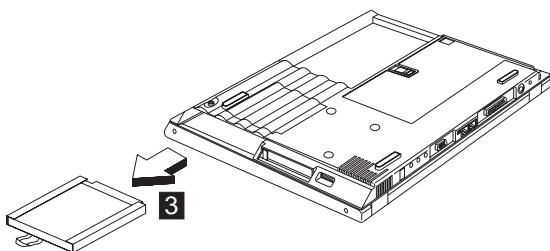


1040 Hard disk drive assembly

- “1020 Battery assembly” on page 46



Note: To remove the hard disk drive cover, let the top cover of the computer a little open. Then you can remove it more easily.



Warning

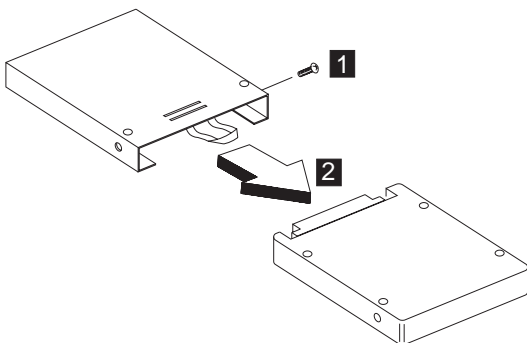
Do not drop or apply any shock to the hard disk drive. The hard disk drive is sensitive to physical shock. Incorrect handling can cause damage and permanent loss of data on the drive.

Before removing the drive, have the user make a backup copy of all the information on the drive if possible.

Never remove the drive while the system is operating or is in suspend mode.

1050 Hard disk drive kitting pack

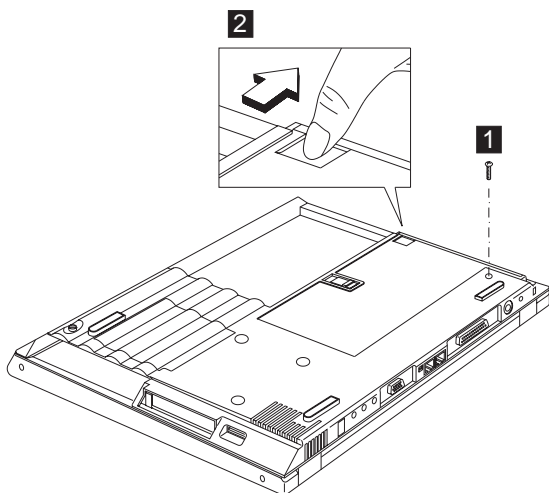
- “1020 Battery assembly” on page 46
- “1040 Hard disk drive assembly” on page 48



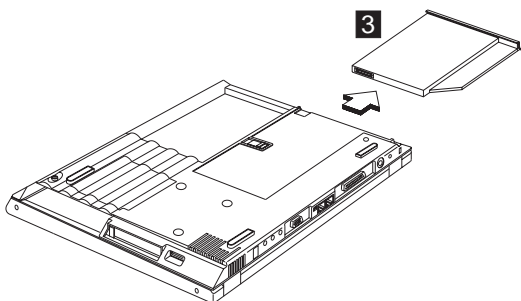
Step	Size (Quantity)	Color	Torque
1	M3 x 4L (1)	Silver	3.2 kgf-cm

1060 CD-ROM assembly

- “1020 Battery assembly” on page 46

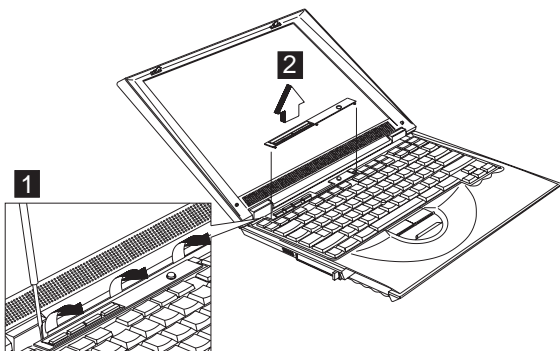


Step	Size (Quantity)	Color	Torque
1	M2.5 x 8L (1)	Black	3.2 kgf-cm



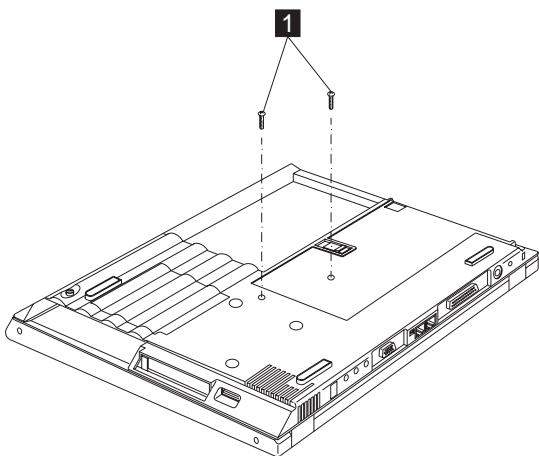
1070 EZ key cover

- “1020 Battery assembly” on page 46

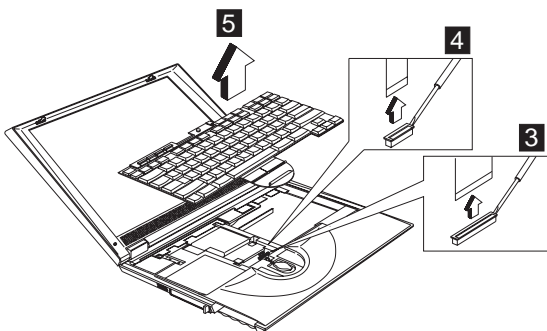
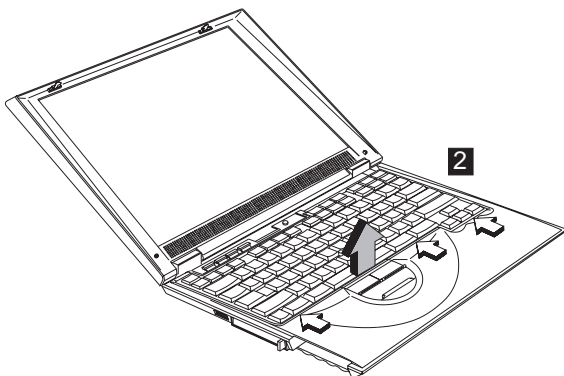


1080 Keyboard

- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50



Step	Size (Quantity)	Color	Torque
1	M2.5 x 8L (2)	Black	3.2 kgf-cm



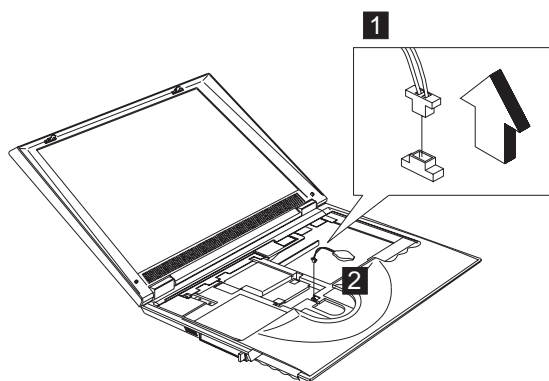
Note: Make sure the FPC finger side is facing correct, when inserted.

Notes:

1. When replacing the keyboard, make sure that the 2 cables are clean and insert them directly into the connectors, making sure they make contact with the bottom of the connector. Now press down on the latch of the connector to secure.
2. If the cables do not touch the bottom of the connector, the keyboard function will be rendered useless.
3. The cables of the keyboard are fragile and could be damaged. Be careful when pulling out the cables.

1090 Backup battery

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51



CAUTION:

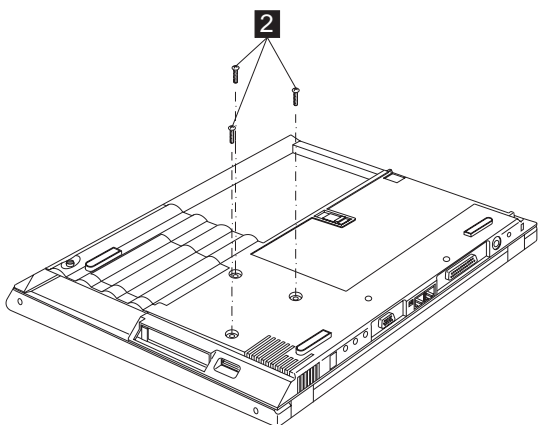
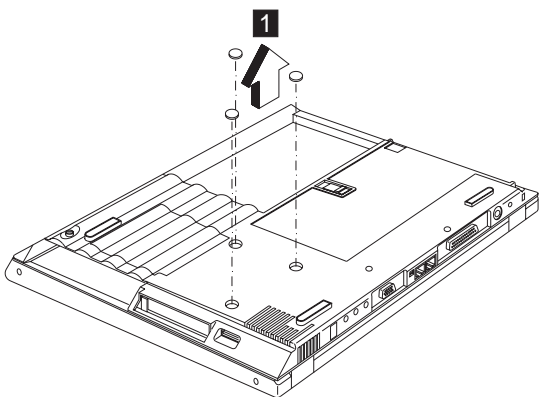
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to manufacturer's instruction.

Safety Notice 4

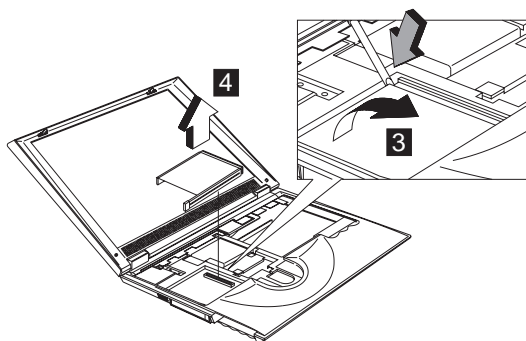
Translation in "Safety Notices: Multi-lingual Translations" section: The backup battery is a lithium battery and can cause a fire, an explosion, or severe burns. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use of an incorrect battery can result in ignition or explosion of the battery. Replacement batteries can be ordered from IBM or IBM Authorized Dealers.

1100 PCMCIA holder

- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51



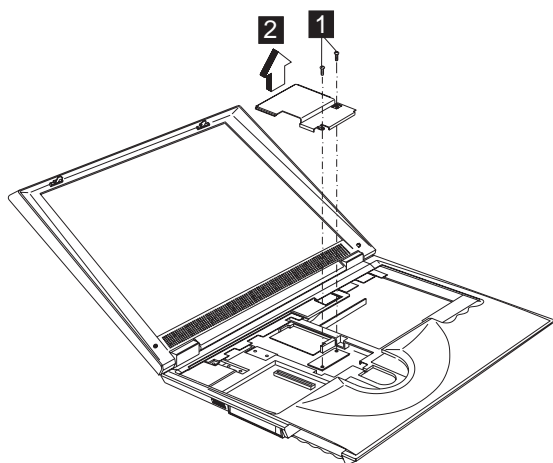
Step	Size (Quantity)	Color	Torque
2	M2 x 6L (3)	Silver with Binding head	1.6 kgf-cm



Note: Before removing and replacing the PCMCIA holder, make sure that the PCMCIA cards are removed and the eject levers are sticking out.

1110 Modem and Ethernet card cover

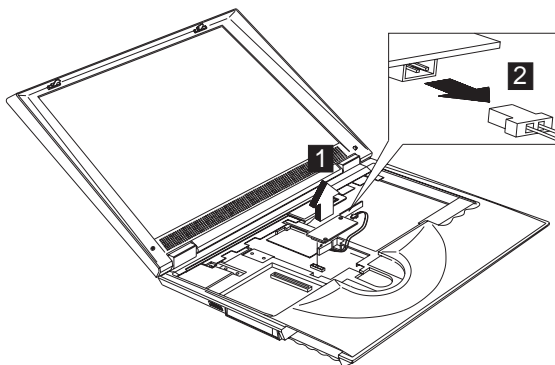
- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51



Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L (2)	Blue	3.2 kgf-cm

1120 Modem card

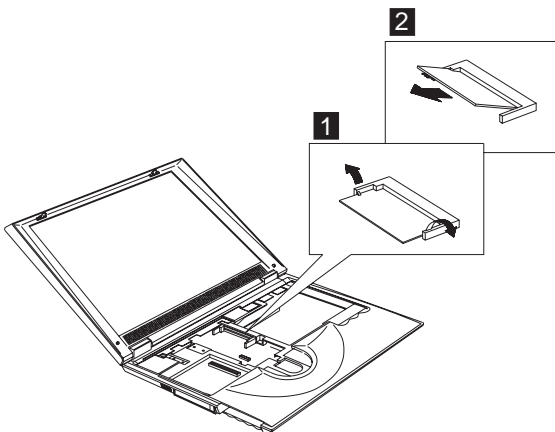
- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1110 Modem and Ethernet card cover” on page 54



Note: When you install the modem card, remember to press it down and ensure the connection is well.

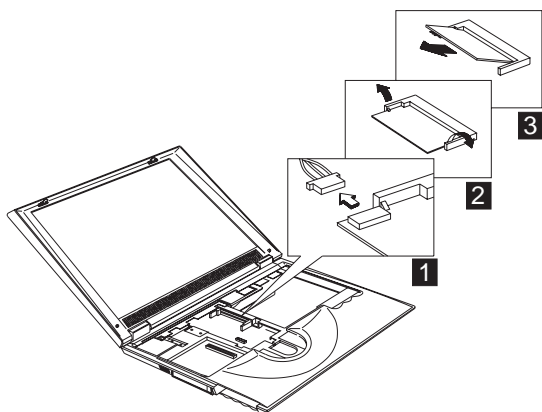
1130 Ethernet card (Optional)

- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1110 Modem and Ethernet card cover” on page 54



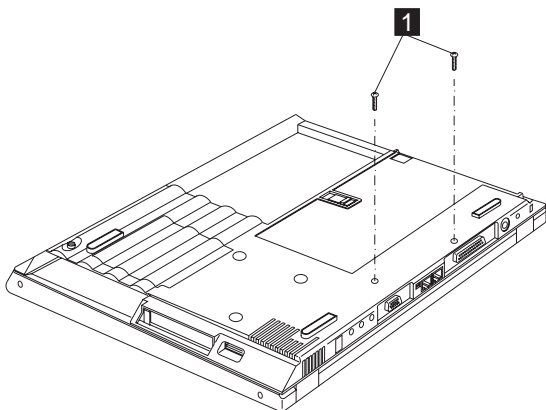
1140 IEEE 1394 card (Optional)

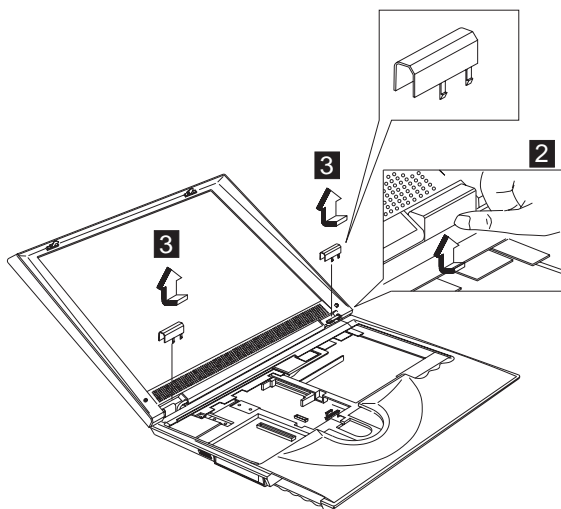
- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1110 Modem and Ethernet card cover” on page 54



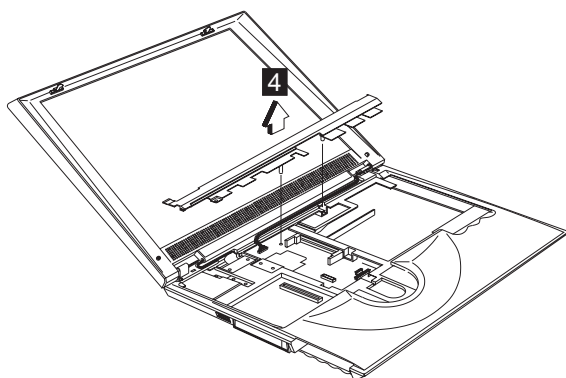
1150 Middle cover

- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51



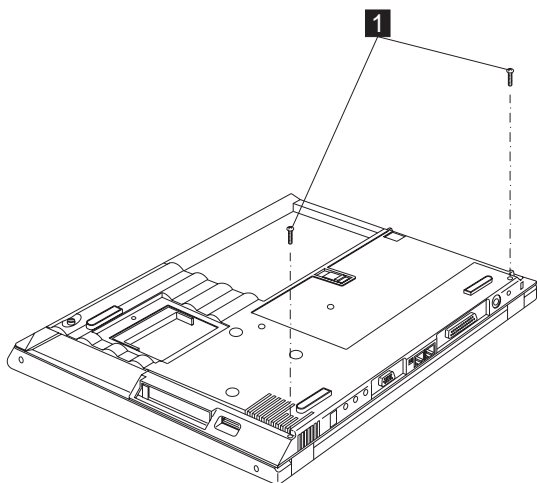


Step	Size (Quantity)	Color	Torque
1	M2.5 x 8L (2)	Black	3.2 kgf-cm

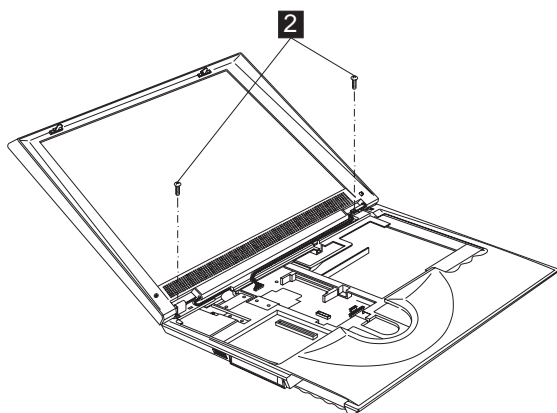


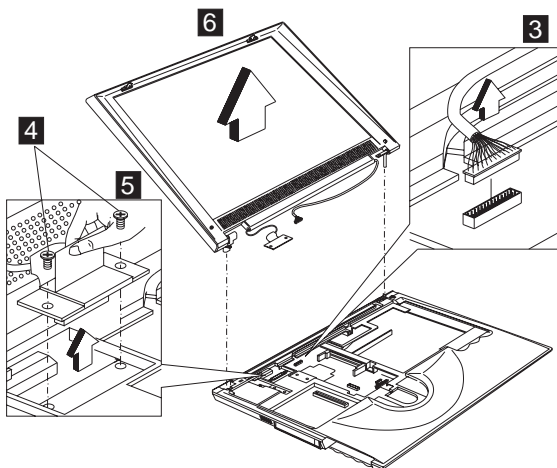
1160 LCD assembly

- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1150 Middle cover” on page 56



Step	Size (Quantity)	Color	Torque
1	M2.5 x 8L (2)	Black	3.2 kgf-cm

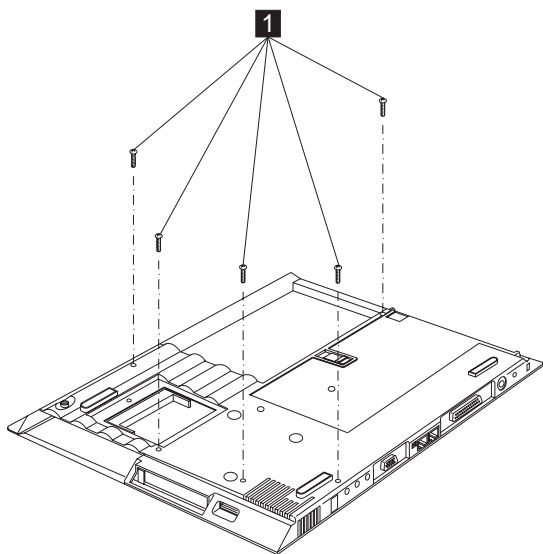




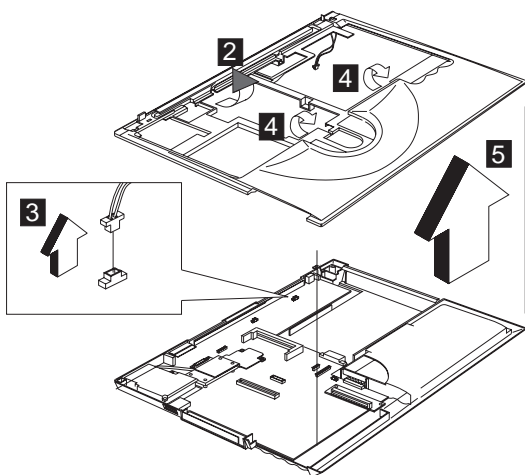
Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L (2)	Blue	3.2 kgf-cm
4	M2.5 x 5L (2)	Blue	3.2 kgf-cm

1170 Keyboard bezel

- “1020 Battery assembly” on page 46
- “1040 Hard disk drive assembly” on page 48
- “1060 CD-ROM assembly” on page 50
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1090 Backup battery” on page 52
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58



Step	Size (Quantity)	Color	Torque
1	M2.5 x 8L (5)	Black	3.2 kgf-cm

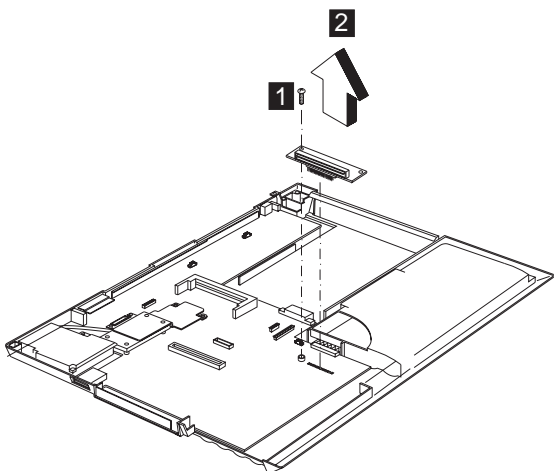


CAUTION:

The keyboard bezel has several latches. When removing the keyboard bezel from the bottom cover, gently release these latches, then raise the side of the keyboard bezel facing the palm rest to remove it. Be careful not to break the latches.

1180 Hard disk drive connection board

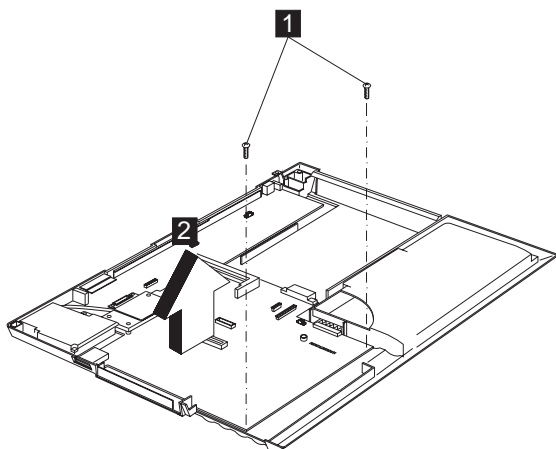
- “1020 Battery assembly” on page 46
- “1040 Hard disk drive assembly” on page 48
- “1060 CD-ROM assembly” on page 50
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1090 Backup battery” on page 52
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58
- “1170 Keyboard bezel” on page 59



Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L (1)	Blue	3.2 kgf-cm

1190 System board

- “1020 Battery assembly” on page 46
- “1040 Hard disk drive assembly” on page 48
- “1060 CD-ROM assembly” on page 50
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1090 Backup battery” on page 52
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58
- “1170 Keyboard bezel” on page 59



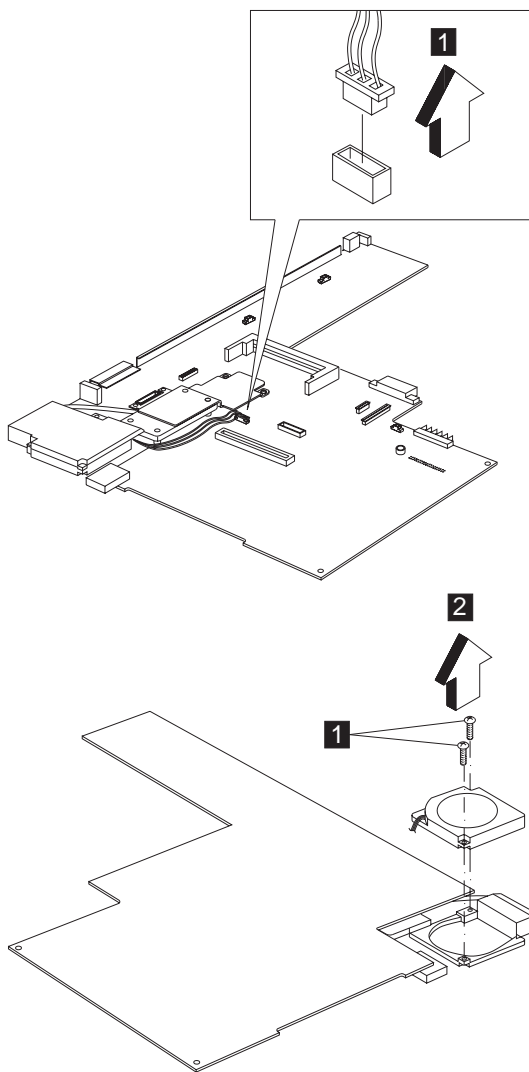
Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L(2)	Blue	3.2 kgf-cm

Notes:

1. When removing the system board from the bottom cover, gently raise the side of the system board facing the rear I/O ports; then pull out the system board.

1200 Fan assembly

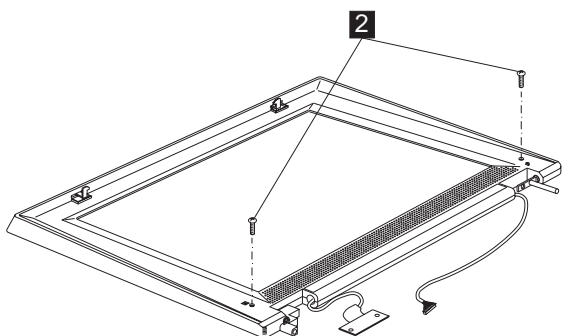
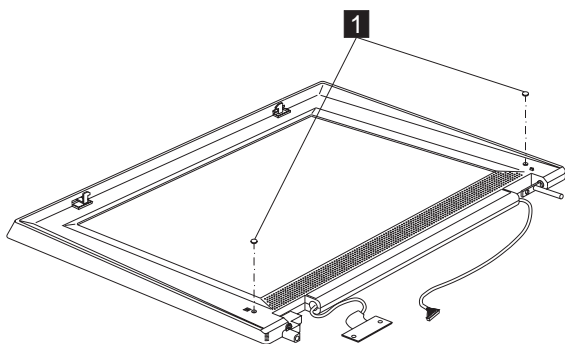
- “1020 Battery assembly” on page 46
- “1040 Hard disk drive assembly” on page 48
- “1060 CD-ROM assembly” on page 50
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1090 Backup battery” on page 52
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58
- “1170 Keyboard bezel” on page 59
- “1190 System board” on page 61



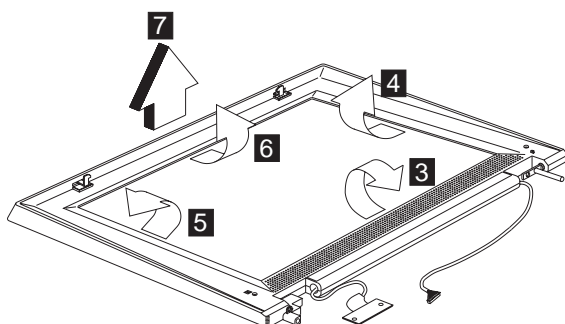
Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L (2)	Blue	3.2 kgf-cm

1210 LCD bezel assembly (12.1")

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58



Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L(2)	Blue	2.5 kgf-cm

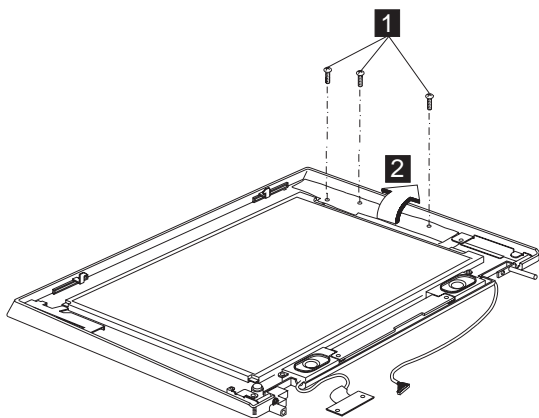


Note: When removing the LCD, take note of the following:

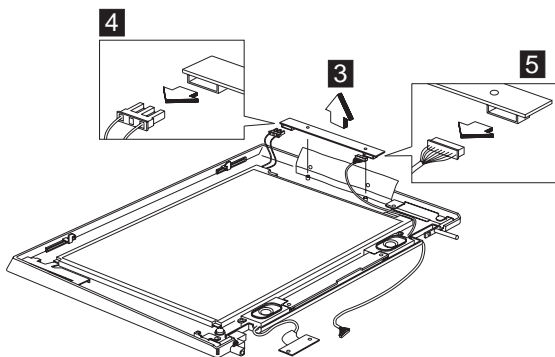
- Be careful not to scratch the LCD bezel when removing the screw mylars.
- The LCD bezel has several latches. Release these latches; then remove the LCD bezel. Be careful not to break these latches.
- Gently push the two LCD latches outward to remove the LCD bezel.

1220 LCD Inverter (12.1")

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1210 LCD bezel assembly (12.1)" on page 63

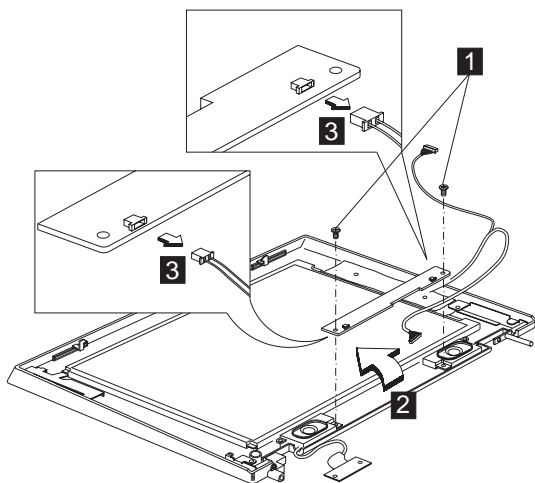


Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L(3)	Blue	2.5 kgf-cm

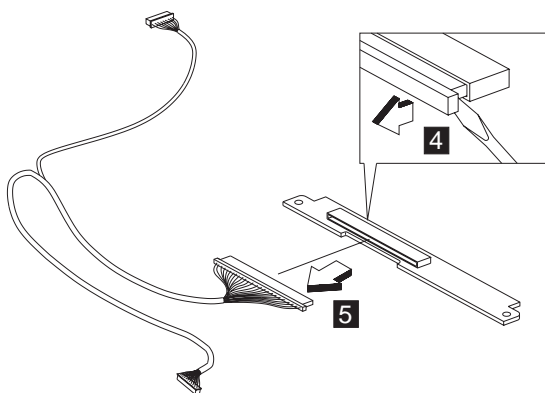


1230 LED board (12.1")

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1210 LCD bezel assembly (12.1)" on page 63

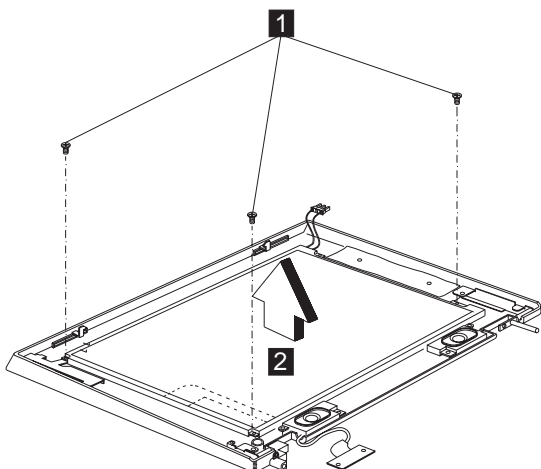


Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L (2)	Blue	2.5 kgf-cm

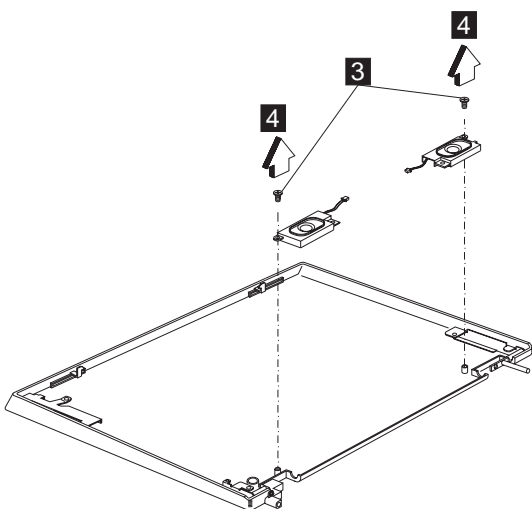


1240 LCD panel assembly (12.1"), speaker assembly and LCD bracket hinge assembly

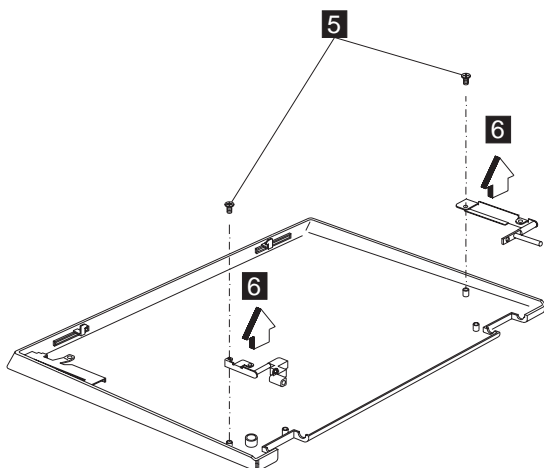
- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1210 LCD bezel assembly (12.1")" on page 63
- "1220 LCD Inverter (12.1")" on page 65
- "1230 LED board (12.1")" on page 65



Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L (3)	Blue	2.5 kgf-cm



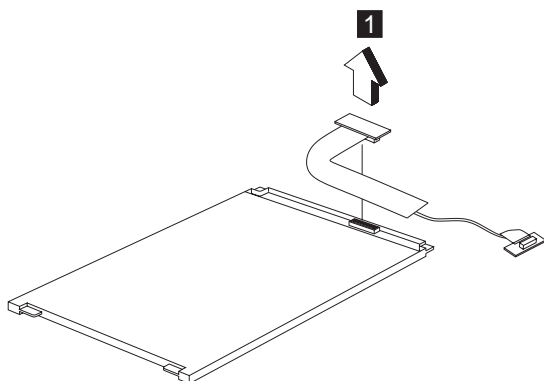
Step	Size (Quantity)	Color	Torque
3	M2.5 x 5L (2)	Blue	2.5 kgf-cm



Step	Size (Quantity)	Color	Torque
4	M2.5 x 5L (2)	Blue	2.5 kgf-cm

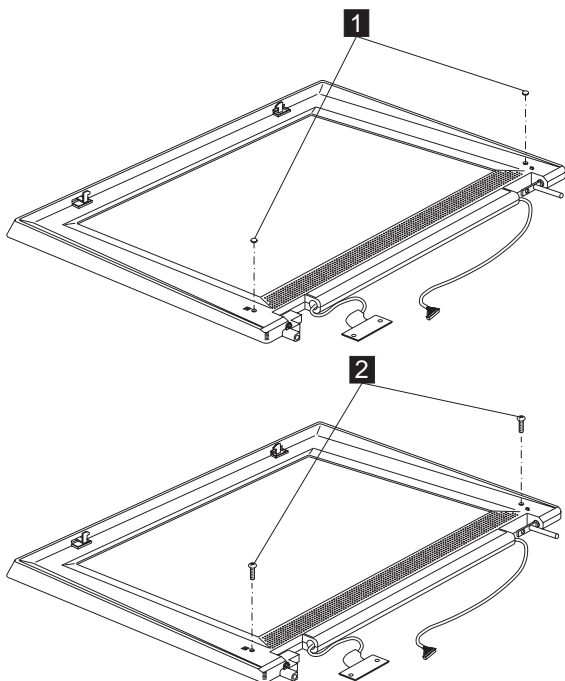
1250 LCD FPC assembly (12.1")

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1210 LCD bezel assembly (12.1")" on page 63
- "1220 LCD Inverter (12.1")" on page 65
- "1230 LED board (12.1")" on page 65
- "1240 LCD panel assembly (12.1"), speaker assembly and LCD bracket hinge assembly" on page 66

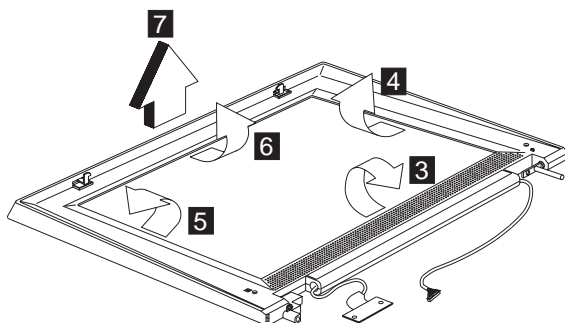


1260 LCD bezel assembly (12.1"/Hitachi)

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58



Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L(2)	Blue	2.5 kgf-cm

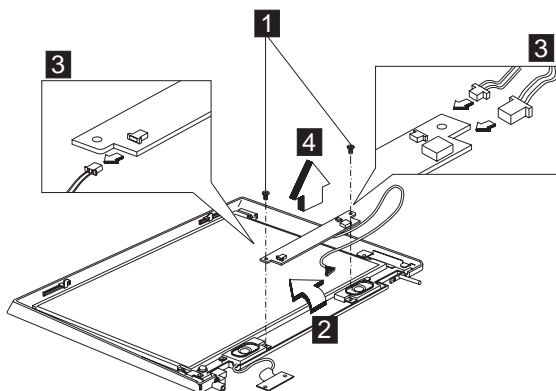


Note: When removing the LCD, take note of the following:

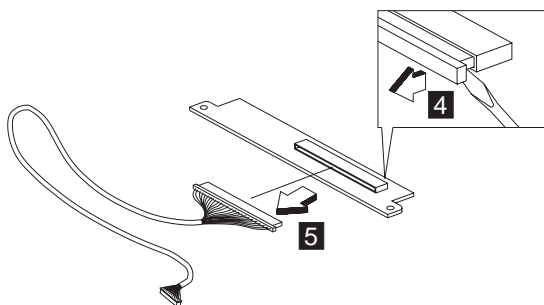
- Be careful not to scratch the LCD bezel when removing the screw mylars.
- The LCD bezel has several latches. Release these latches; then remove the LCD bezel. Be careful not to break these latches.
- Gently push the two LCD latches outward to remove the LCD bezel.

1270 LED/Inverter board (12.1"/Hitachi)

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1260 LCD bezel assembly (12.1"/Hitachi)" on page 69

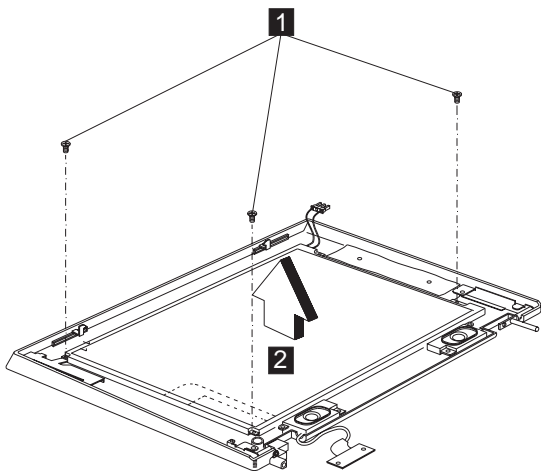


Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L(2)	Blue	2.5 kgf-cm

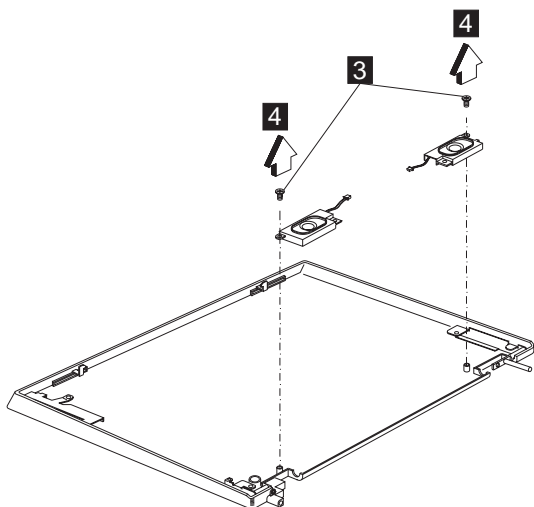


1280 LCD panel assembly (12.1"/Hitachi), speaker assembly and LCD bracket hinge assembly

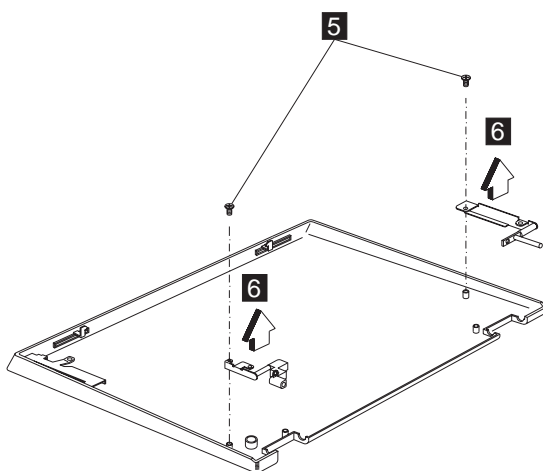
- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58
- “1260 LCD bezel assembly (12.1"/Hitachi)” on page 69
- “1270 LED/Inverter board (12.1"/Hitachi)” on page 70



Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L (3)	Blue	2.5 kgf-cm



Step	Size (Quantity)	Color	Torque
3	M2.5 x 5L (2)	Blue	2.5 kgf-cm

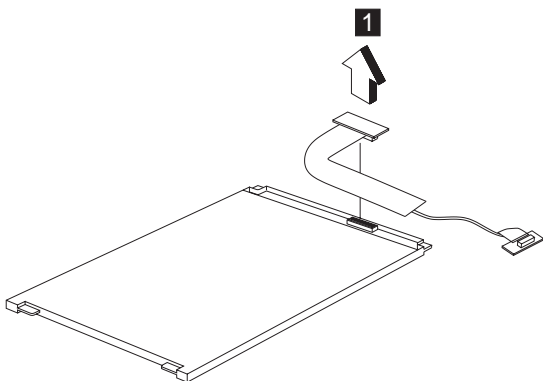


Step	Size (Quantity)	Color	Torque
4	M2.5 x 5L (2)	Blue	2.5 kgf-cm

1290 LCD FPC assembly (12.1"/Hitachi)

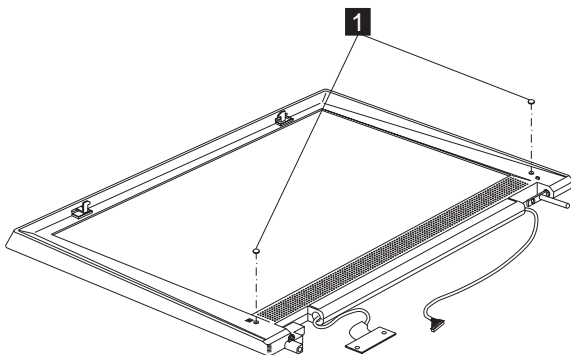
- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58

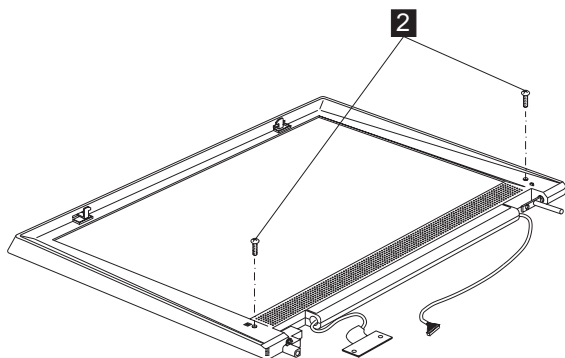
- “1260 LCD bezel assembly (12.1"/Hitachi)” on page 69
- “1270 LED/Inverter board (12.1"/Hitachi)” on page 70
- “1280 LCD panel assembly (12.1"/Hitachi), speaker assembly and LCD bracket hinge assembly” on page 71



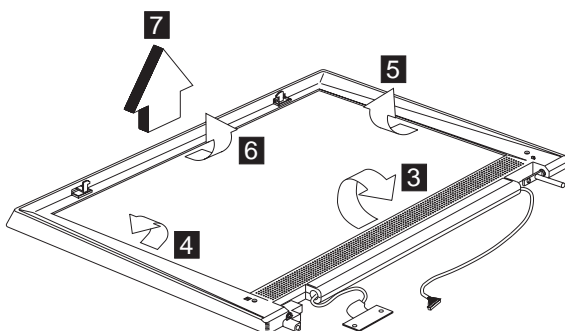
1300 LCD bezel assembly (13.0")

- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58





Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L(2)	Blue	2.5 kgf-cm

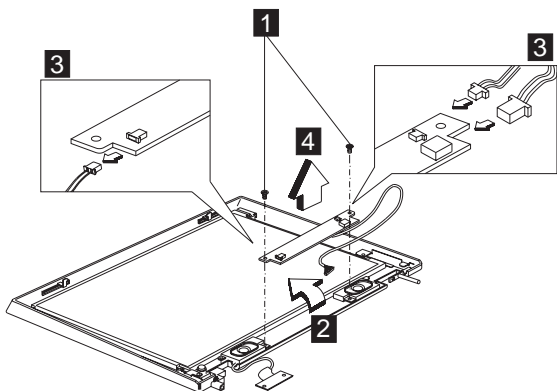


Note: When removing the LCD, take note of the following:

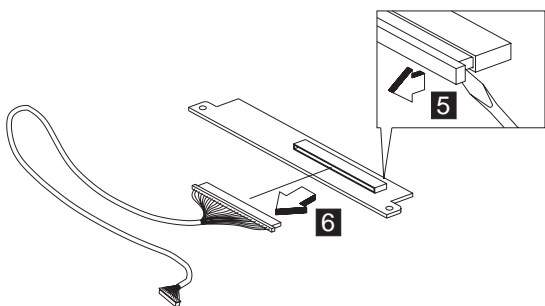
- Be careful not to scratch the LCD bezel when removing the screw mylars.
- The LCD bezel has several latches. Release these latches; then remove the LCD bezel. Be careful not to break these latches.
- Gently push the two LCD latches outward to remove the LCD bezel.

1310 LED/Inverter board (13.0")

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1300 LCD bezel assembly (13.0")" on page 73

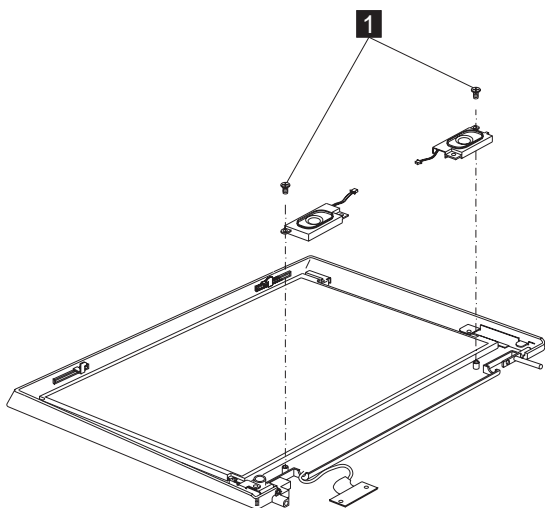


Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L(2)	Blue	2.5 kgf-cm

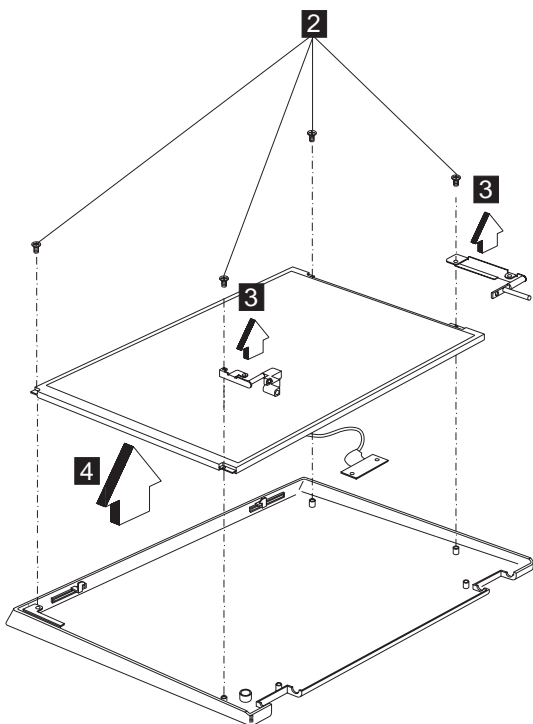


1320 LCD panel assembly (13.0"), speaker assembly and LCD bracket hinge assembly

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1300 LCD bezel assembly (13.0)" on page 73
- "1310 LED/Inverter board (13.0)" on page 74



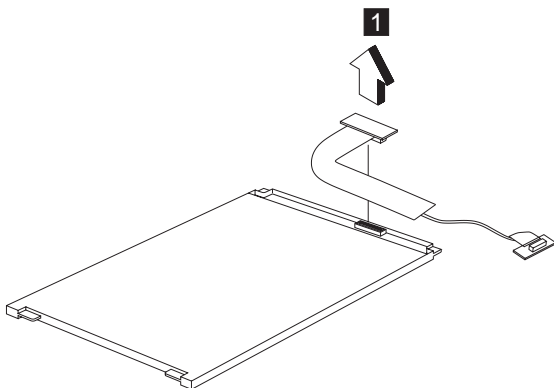
Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L (2)	Blue	2.5 kgf-cm



Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L (3)	Blue	2.5 kgf-cm

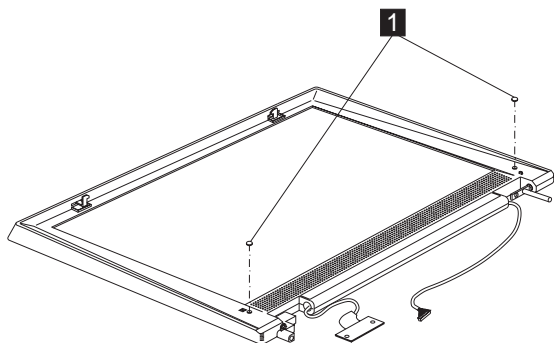
1330 LCD FPC assembly (13.0")

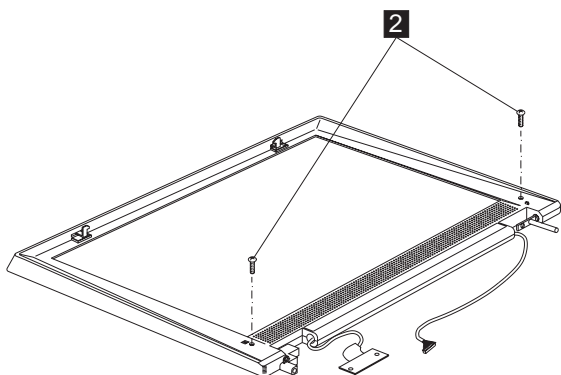
- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58
- "1300 LCD bezel assembly (13.0)" on page 73
- "1310 LED/Inverter board (13.0)" on page 74
- "1320 LCD panel assembly (13.0)", speaker assembly and LCD bracket hinge assembly" on page 75



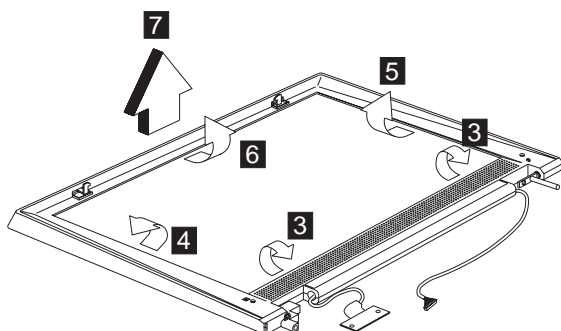
1340 LCD bezel assembly (13.3")

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58





Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L(2)	Blue	2.5 kgf-cm



Note: There has a double-sided adhesive tap on the 13.3-inch LCD bezel, please be careful to detach the LCD bezel gently by two hands when you perform the step 3 of the removal procedures.

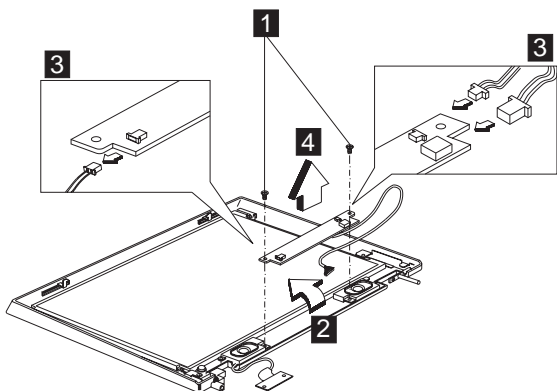
Note: When removing the LCD, take note of the following:

- Be careful not to scratch the LCD bezel when removing the screw mylars.
- The LCD bezel has several latches. Release these latches; then remove the LCD bezel. Be careful not to break these latches.
- Gently push the two LCD latches outward to remove the LCD bezel.

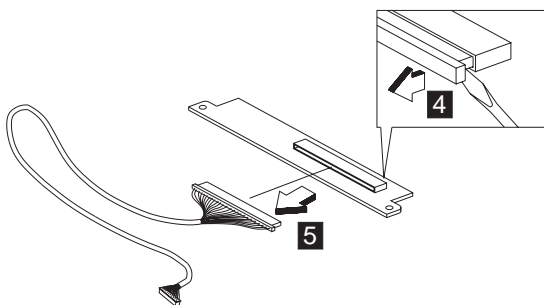
1350 LED/Inverter board (13.3")

- "1020 Battery assembly" on page 46
- "1070 EZ key cover" on page 50
- "1080 Keyboard" on page 51
- "1150 Middle cover" on page 56
- "1160 LCD assembly" on page 58

- “1340 LCD bezel assembly (13.3”)” on page 77

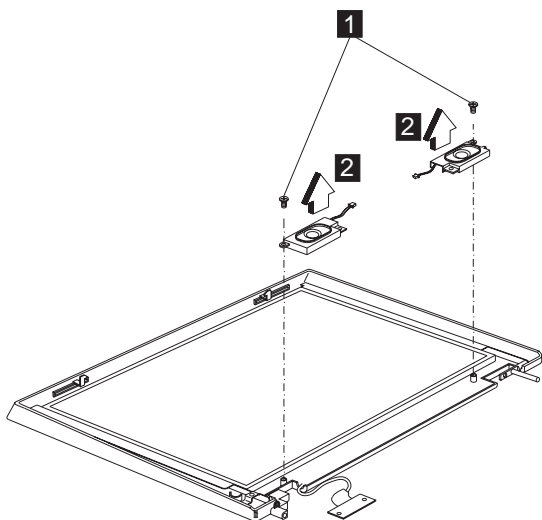


Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L(2)	Blue	2.5 kgf-cm

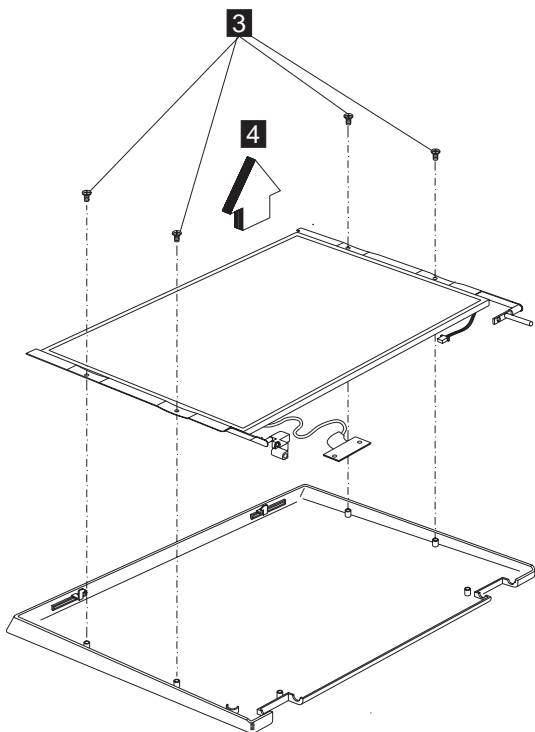


1360 LCD panel assembly (13.3”), speaker assembly and LCD bracket hinge assembly

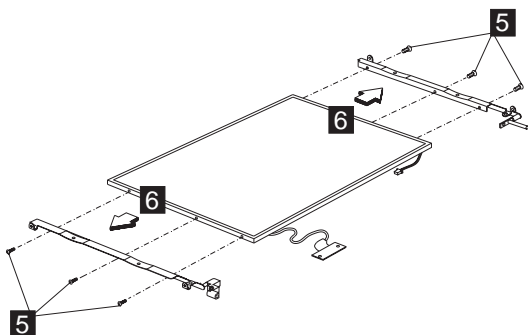
- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58
- “1340 LCD bezel assembly (13.3”)” on page 77
- “1350 LED/Inverter board (13.3”)” on page 78



Step	Size (Quantity)	Color	Torque
1	M2.5 x 5L (2)	Blue	2.5 kgf-cm



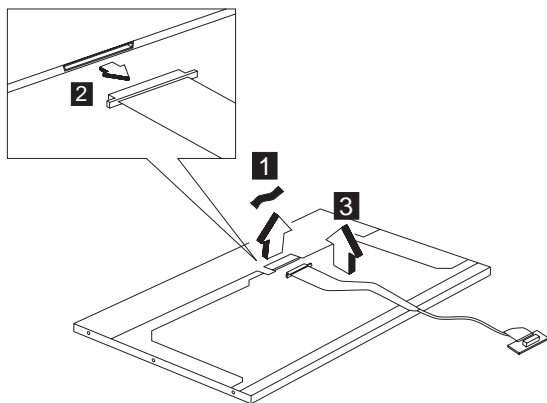
Step	Size (Quantity)	Color	Torque
2	M2.5 x 5L (4)	Blue	2.5 kgf-cm



Step	Size (Quantity)	Color	Torque
4	M2 x 2.5L (6)	Silver	2 kgf-cm

1370 LCD FPC assembly (13.3")

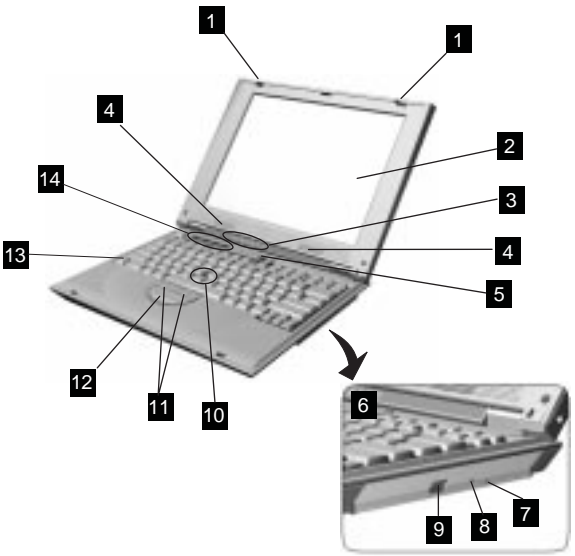
- “1020 Battery assembly” on page 46
- “1070 EZ key cover” on page 50
- “1080 Keyboard” on page 51
- “1150 Middle cover” on page 56
- “1160 LCD assembly” on page 58
- “1340 LCD bezel assembly (13.3)” on page 77
- “1350 LED/Inverter board (13.3)” on page 78
- “1360 LCD panel assembly (13.3)”, speaker assembly and LCD bracket hinge assembly” on page 79



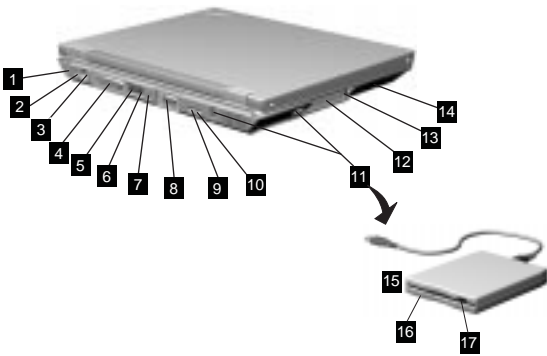
Locations

Front View

1. LCD latches
2. LCD
3. Indicator panel
4. Internal speakers
5. Power switch
6. CD-ROM drive
7. CD-ROM/DVD-ROM drive emergency eject hole
8. CD-ROM/DVD-ROM drive activity indicator
9. CD-ROM/DVD-ROM drive eject button
10. TrackPoint
11. Click buttons
12. Internet Scroll Bar
13. Fn key
14. Easy Launch buttons

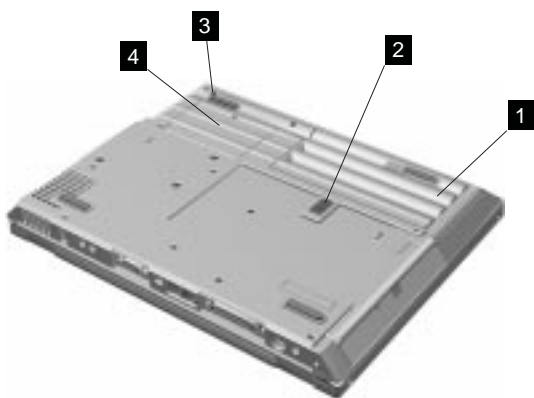


Rear View



1. Security keyhole
2. Power jack
3. Mouse/keyboard (PS/2) connector
4. Parallel connector
5. Modem connector
6. LAN connector
7. Internal IEEE-1394 port
8. External monitor connector
9. Line-out/headphone jack
10. Microphone-in jack
11. Universal serial bus (USB) connector
12. PC Card slots
13. PC Card eject buttons
14. Hard disk drive
15. Diskette drive
16. Diskette drive
17. Diskette-drive-activity indicator
18. Diskette eject button

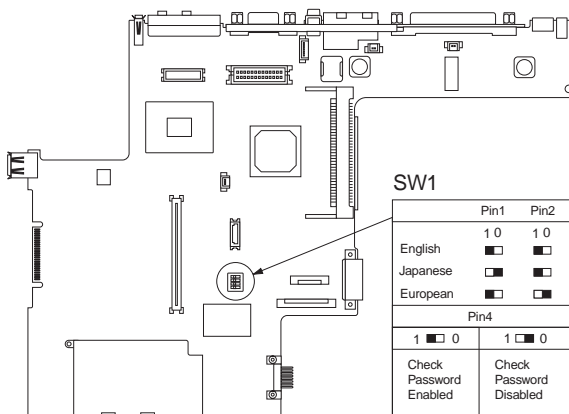
Bottom View



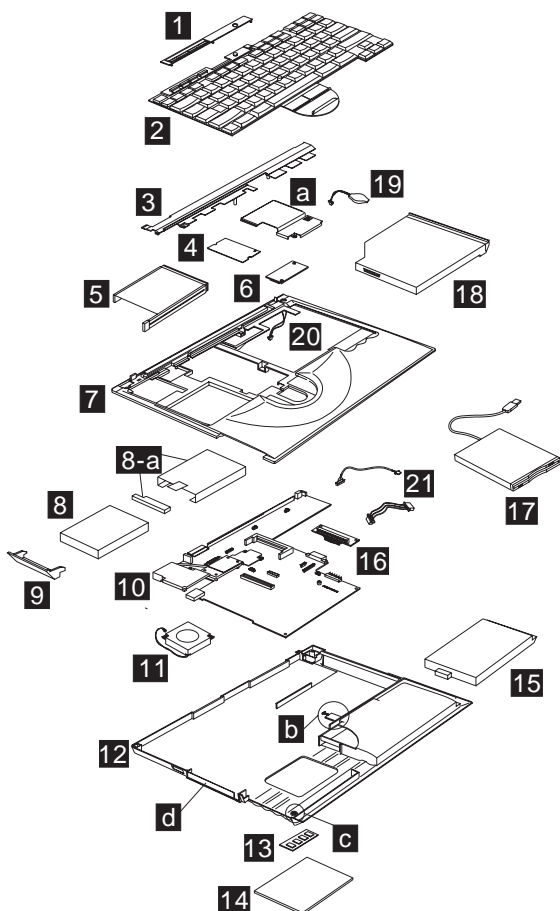
1. Battery pack
2. Battery-pack latch
3. Hard disk drive coin screw
4. Memory slot door

Switch Locations

&rb.



Parts list (ThinkPad i Series 1200/1300)



No.	Description	FRU No.
1	EZ Key Cover	08K6657
3	Middle Cover Asm.	08K6651
	Middle Cover Asm. for Japan	08K6656
4	Ethernet Card	08K3174
	IEEE 1394 Card	08K3175
5	PCMCIA Holder	08K6857
6	Modem Card	08K3173
7	KBD Bezel Asm. Cover Switch cable IBM Logo	08K6550
	KBD Bezel Asm. for Japan Cover Switch cable IBM Logo	08K6655

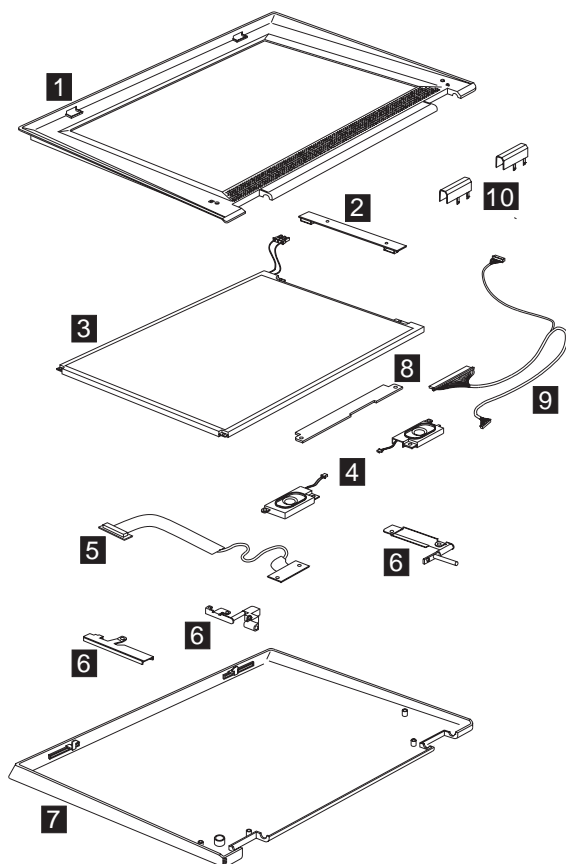
No.	Description	FRU No.
8	HDD module Assy./6.0 GB	05K9279
	HDD module Assy./6.0 GB	27L3430
	HDD module Assy./12.0 GB	05K9280
	HDD module Assy./12.0 GB	27L3431
8-a	Kitting, HDD HDD Connector HDD tray screw * 1	08K6555
9	HDD Cover Asm.	08K6659
	HDD Cover Asm. for Japan	08K6660
10	System board (Celeron-500, 32MB memory, "EM+" VGA, w/o LAN & 1394)	08K3171
	System board (Celeron-500, 64MB memory, "EM+" VGA, w/o LAN & 1394)	08K3172
	System board (Celeron-500, 64MB memory, "EM4+" VGA, w/ IEEE-1394)	08K3176
	System board (Celeron-550, 64MB memory, "EM4+" VGA, w/ IEEE-1394)	08K3177
11	FAN Asm.	08K6855
12	Bottom Case Asm. w/ 1394 cover (with 1161, w/w information label) Bottom case Battery knob HDD coin screw HDD coin spring IEEE-1394 dummy label IEEE-1394 icon label	08K6552
	Bottom Case Asm. w/ 1394 cover (with 1161, US information label) Bottom case Battery knob HDD coin screw HDD coin spring IEEE-1394 dummy label IEEE-1394 icon label	04P3096
	Bottom Case Asm. w/ 1394 cover (with 1161, Korea information label) Bottom case Battery knob HDD coin screw HDD coin spring IEEE-1394 dummy label IEEE-1394 icon label	04P3099

No.	Description	FRU No.
	Bottom Case Asm. w/ 1394 cover (with 1161, AIP information label) Bottom case Battery knob HDD coin screw HDD coin spring IEEE-1394 dummy label IEEE-1394 icon label	04P3100
	Bottom Case Asm. w/ 1394 cover (with 1171, w/w information label) Bottom case Battery knob HDD coin screw HDD coin spring IEEE-1394 dummy label IEEE-1394 icon label	08K6744
	Bottom Case Asm. w/ 1394 cover (with 1171, US information label) Bottom case Battery knob HDD coin screw HDD coin spring IEEE-1394 dummy label IEEE-1394 icon label	04P3102
	Bottom case asm w/ IEEE -1161 EMEA	04P3098
	Bottom case asm w/ IEEE -1171 EMEA	04P3104
13	DIMM 32MB	20L0263
	DIMM 64MB	20L0264
	DIMM 128MB	20L0265
14	DIMM Door Asm.	08K6553
15	Battery Assy. (Ni-Mh)	02K6692
16	HDD Daughter Card	08K3205
17	FDD Module (USB)	05K9283
18	24X CD-ROM Module	05K9281
	24X CD-ROM Module	27L3432
19	RTC Battery	02K6694
20	Lid S/W Cable	08K6554
21	RJ-11/1394 Cable Asm. RJ-11 Cable IEEE-1394 Cable	27L0553

No.	Description	FRU No.
a b b b c c d d	Miscellaneous Kit Modem and Ethernet card cover Battery Knob Battery Latch Battery Spring HDD coin screw HDD coin spring PCMCIA Door PCMCIA Door Spring RJ-45 Bling Cap	08K6558
	Rubber Kit PCMCIA screw rubber * 3 rubber foot * 4 LCD screw mylar (W/W) *2 LCD screw mylar (Japan) * 2 IEEE-1394 dummy label IEEE-1394 icon label	08K6561
	Screw Kit SCREW M2.5*5 WAFER B-ZN SCREW BINDING NI M2*.4P SRW M2.5*8L B/ZN NYLOK 700 SCREW M3*4 SCREW M2*3L B/ZN	08K6560
	Mylar/Insulation pack	08K6559

LCD FRU

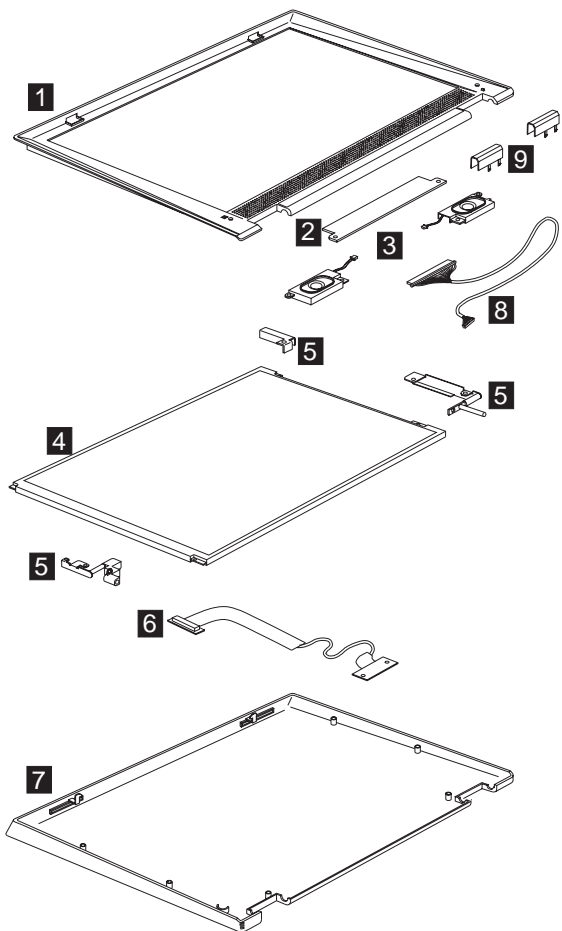
12.1-inch TFT/HPA



No.	Description	FRU No.
1	12.1" LCD Bezel (for W/W)	08K6543
	12.1" LCD Bezel (for Japan)	08K6654
2	LCD Inverter for 12.1" LCD	08K3168
3	LCD Panel Asm (12.1" TFT, Sanyo)	05K9626
	LCD Panel Asm (12.1" TFT, Hitachi)	05K9665
	LCD Panel Asm (12.1" HPA)	05K9630
4	Speaker Asm. speaker (R) speaker (L)	02K5214
5	12.1" TFT LCD FPC Asm. (for Sanyo LCD)	27L0550
	12.1" TFT LCD FPC Asm. (for Hitachi LCD)	27L0581
	12.1" HPA LCD FPC Asm.	27L0552

No.	Description	FRU No.
6	12.1" Hinge Asm (R,L) 12.1" LCD Hinge (L) 12.1" LCD Hinge (R)	08K6547
7	LCD Rear Cover Asm for 12.1" (for Sanyo LCD, W/W) 12.1" LCD rear cover LCD panel mica LCD latch (L) LCD latch (R) LCD latch spring *2 IBM Logo LCD panel Deco plate	08K6541
	LCD Rear Cover Asm for 12.1" (for Sanyo LCD, Japan) 12.1" LCD rear cover LCD panel mica LCD latch (L) LCD latch (R) LCD latch spring *2 IBM Logo LCD panel Deco plate	08K6652
	LCD Rear Cover Asm for 12.1" (for Hitachi LCD, W/W) 12.1" LCD rear cover IBM Logo	04P3127
	LCD Rear Cover Asm for 12.1" (for Hitachi LCD, Japan) 12.1" LCD rear cover IBM Logo	04P3128
8	LED board Asm.	08K3170
9	LED-Inverter Cable for 12.1" LCD	27L0577
	LG/IBM Logo Kit for LCD Rear Cover for KBD Bezel	08K5860
10	Hinge Cap Asm. (for 12.1" & 13.0")	08K6549

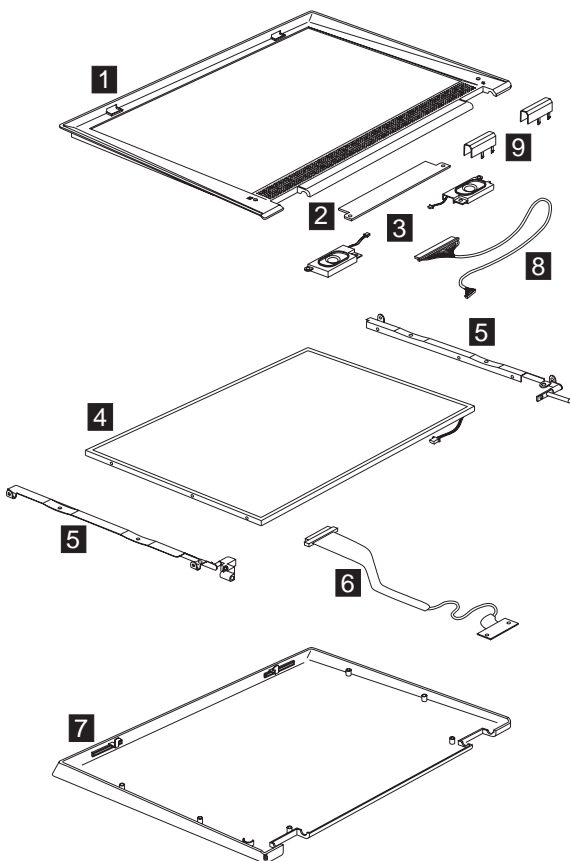
13.0-inch HPA



No.	Description	FRU No.
1	13.0" LCD Bezel (for W/W)	08K6544
	13.0" LCD Bezel (for Japan)	08K6545
2	LED-Inverter Board Asm. (for 13.0" & 13.3" LCD)	08K3167
3	Speaker Asm. speaker (R) speaker (L)	02K5214
4	LCD Panel Asm (13.0" HPA)	05K9596
5	13.0" Hinge Asm (R,L) 13.0" LCD Hinge (L) 13.0" LCD Hinge (R)	08K6856
6	13.0" HPA LCD FPC Asm.	27L0551

No.	Description	FRU No.
7	LCD Rear Cover Asm for 13.0" (for W/W) 13" LCD rear cover LCD panel mica LCD latch (L) LCD latch (R) LCD latch spring *2 IBM Logo LCD panel Deco plate	08K6853
	LCD Rear Cover Asm for 13.0" (for Japan) 13" LCD rear cover LCD panel mica LCD latch (L) LCD latch (R) LCD latch spring *2 IBM Logo LCD panel Deco plate	08K6854
8	LED-Inverter Cable for 13.0"/13.3" LCD	27L0576
9	Hinge Cap Asm. (for 12.1" & 13.0") for w/w * 2	08K6549
	LG/IBM Logo Kit for LCD Rear Cover for KBD Bezel	08K5860

13.3-inch TFT



No.	Description	FRU No.
1	13.3" LCD Bezel (for W/W)	08K6542
	13.3" LCD Bezel (for Japan)	08K6653
2	LED-Inverter Board Asm. (for 13.0" & 13.3" LCD)	08K3167
3	Speaker Asm. speaker (R) speaker (L)	02K5214
4	LCD Panel Asm (13.3" TFT)	05K9624
5	13.3" Hinge-Bracket Asm (R,L)	08K6546
6	13.3" TFT LCD FPC Asm.	27L0549

No.	Description	FRU No.
7	LCD Rear Cover Asm for 13.3" (for W/W) 13.3" LCD rear cover LCD panel mica LCD latch (L) LCD latch (R) LCD latch spring *2 IBM Logo LCD panel Deco plate	08K6540
	LCD Rear Cover Asm for 13.3" (for Japan) 13.3" LCD rear cover LCD panel mica LCD latch (L) LCD latch (R) LCD latch spring *2 IBM Logo LCD panel Deco plate	08K6651
8	LED-Inverter Cable for 13.0"/13.3" LCD	27L0576
9	LCD Hinge Cap Asm. for 13.3"	08K6548
	LG/IBM Logo Kit for LCD Rear Cover for KBD Bezel	08K6556

Keyboard

Description	Vendor	FRU No.
KBD ASM US English	NMB	02K5176
KBD ASM Canadian French	NMB	02K5178
KBD ASM German	NMB	02K5180
KBD ASM UK English	NMB	02K5182
KBD ASM French	NMB	02K5184
KBD ASM Dutch	NMB	02K5186
KBD ASM Swedish/Finnish	NMB	02K5188
KBD ASM Norwegian	NMB	02K5190
KBD ASM Danish	NMB	02K5192
KBD ASM Italian	NMB	02K5194
KBD ASM European Spanish	NMB	02K5196
KBD ASM Belgian	NMB	02K5198
KBD ASM Switzerland	NMB	02K5200
KBD ASM Portuguese	NMB	02K5202
KBD ASM Japanese	NMB	02K5204
KBD ASM Tradition Chinese	NMB	02K5206

Description	Vendor	FRU No.
KBD ASM Korean	NMB	02K5210
KBD ASM LA Spanish	NMB	02K5212
KBD ASM Arabic	NMB	02K5407
KBD ASM Russian	NMB	02K5409
KBD ASM Hebrew	NMB	02K5411
KBD ASM Turkish	NMB	02K5413
KBD ASM Czech	NMB	02K5415
KBD ASM Hungarian	NMB	02K5417
KBD ASM Greek	NMB	02K5419
KBD ASM Slovenian	NMB	02K5421
KBD ASM Slovakian	NMB	02K5423

Common parts list

Tools

Description	FRU No.
Tri-Connector Wrap Plug	72X8546
PC Test Card	35G4703
Audio Wrap Cable	66G5180
Screwdriver Kit	95F3598
USB Parallel Test Cable	05K2580
Torque Screwdriver	05K4695
5mm Socket Wrench	05K4694
Screwdriver	05K4693
USB FDD Tool Kit	27L3452

Note: The USB FDD tool kit contains 1 carrying case and 1 FDD external USB.

Modem cable

Description	FRU No.
Modem cable (German)	27L0441
Modem cable (UK, NZ)	27L0442
Modem cable (France)	27L0443
Modem cable (Holland)	27L0444
Modem cable (Sweden)	27L0445
Modem cable (Norway/Fin)	27L0446
Modem cable (Danish)	27L0447
Modem cable (Italy)	27L0448
Modem cable (Austria)	27L0449
Modem cable (Spain)	27L0450

Description	FRU No.
Modem cable (Belgium)	27L0451
Modem cable (Switzerland)	27L0462
Modem cable (US/C, JPN, Twn, APN, LA, Brz)	27L0465
Modem cable (Australia)	27L0467

AC adapter

Description	FRU No.
AC Adapter, 3-pin (Delta)	02K6550
AC Adapter, 3-pin (Sanken)	02K6555
AC Adapter 2-pin (Delta)	02K6548
AC Adapter 2-pin (Sanken)	02K6554

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 or regions
13H5273	Japan

For 3-pin power cords:

Note: The grounded adapter is required for full MPRII compliance. If a 3-pin power cord came with your computer, see "Safety Information" on page 9.

IBM power cord part number	Used in these countries or regions
02K0539	Simple China
36L8867	Argentina
76H3514	Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay
76H3516	Aruba, Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Curacao, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Thailand, Trinidad (West Indies), United States of America, Venezuela

IBM power cord part number	Used in these countries or regions
76H3518	Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Macao, Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, Yugoslavia
76H3520	Denmark
76H3522	Bangladesh, Myanmar, Pakistan, South Africa, Sri Lanka
76H3524	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Malaysia, Nigeria, Oman, Qatar, Singapore, United Kingdom
76H3528	Liechtenstein, Switzerland
76H3530	Chile, Ethiopia, Italy, Libya
76H3532	Israel
76H3535	Korea

Option Parts List

Description	Vendor	FRU No.
Charger Main Battery	Ambit	02K6697

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Pentium	Intel Corporation



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