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IBM Mobile Systems

**ThinkPad 380Z (2635) Computer
Hardware Maintenance Manual**

August 1998

Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 100.

First Edition (August 1998)

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Read This First

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

Important Notes

Only certified trained personnel should service the computer.

Read FRU Removal and Replacement procedures before replacing any FRUs.

Be extremely careful during write operations such as copying, saving, or formatting.

Drives in the computer that you are servicing might have been rearranged or the drive start-up sequence might have been altered. If you select an incorrect drive, data or programs might be overwritten.

Replace FRUs only for the correct model.

When you replace a FRU, make sure 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 failures can occur from a variety of reasons that have nothing to do with a hardware problem, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists. If this is suspected, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.

Be careful not to replace a nondefective FRU.

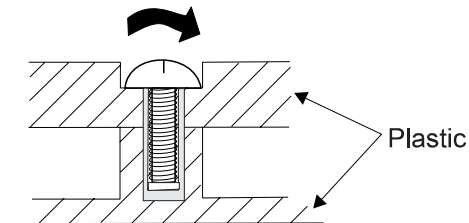
Screw Tightening Information

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:

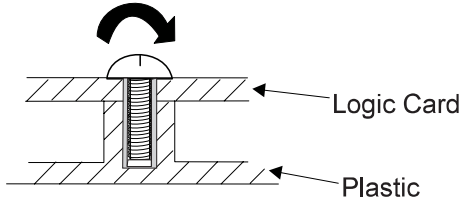
90 degrees more



Logic card to plastic

Turn an additional **180 degrees** after the screw head touches the surface of the logic card:

180 degrees more



Torque driver

If you have a torque driver, refer to the "Torque" instruction with each step.

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. Whatever caused the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 23.

Port Replicator Problems: If you suspect a problem with the port replicator, see "Port Replicator Checkout" on page 18.

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

What to Do First: The service personnel must fill in the following information in the parts exchange form or parts return form that is attached to the returned FRU:

- ___ 1. Name and phone number of service personnel
- ___ 2. Date of service
- ___ 3. Date when the part failed
- ___ 4. Date of purchase
- ___ 5. Failure symptoms, error codes appearing on the display, and beep symptoms
- ___ 6. Procedure index and page number in which the failing FRU was detected
- ___ 7. Failing FRU name and the 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: 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 the 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 installing an incompatible card
Damage caused by foreign material in the FDD
Diskette drive damage caused by pressing the diskette drive cover or inserting diskettes with multiple labels
Damaged or bent diskette eject button
CD-ROM drive damage caused by shock from excessive force, 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 nonwarranted activities:

Missing parts may be a symptom of unauthorized service or modification.

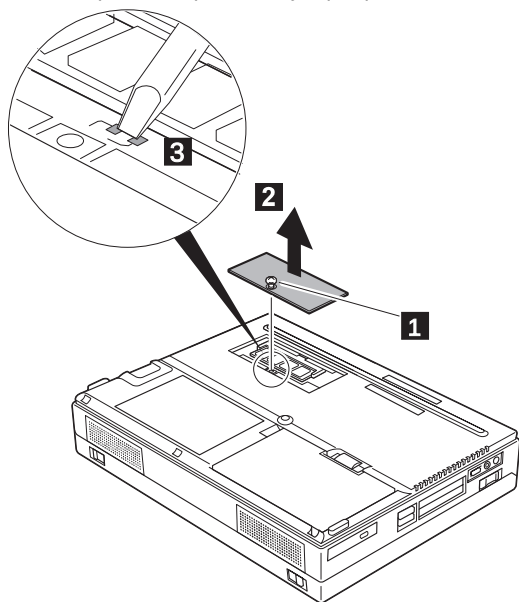
HDD spindles can become noisy from being subjected to excessive force or from being dropped.

I9990303 errors can be caused by exposure to strong magnetic fields.

Disabling the Power-On Password:

When Only the Power-on Password is Set.

1. Power off the computer.
2. Turn the computer upside down.
3. Loosen the memory-slot cover screw 1 , and remove the memory-slot cover 2 .
4. Short the power-on password jumper pads 3 .



5. Power on the computer and wait until the POST ends. The password is cleared.
6. Reinstall the memory-slot cover, and turn the computer right side up.
7. Verify that the password prompt does not appear.
8. To reactivate the password, set the password again.

When Both Power-on Password and Supervisor Password are Set.

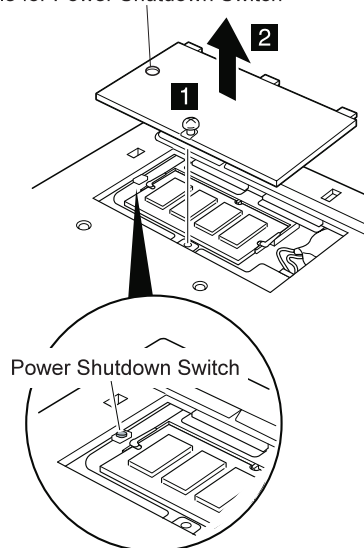
1. Power off the computer.
2. Press and hold **F1**; then power on the computer. After a few seconds, the password prompt appears.
3. Enter your **supervisor password**. The Easy-Setup Main Menu appears.
4. Select **Password** and then **Power on**. A rectangular box appears.
5. Enter your **supervisor password** and press the **Space bar** once.
6. Press **Enter** twice.
7. Select **Exit**.
8. Select **Restart** on the Easy-Setup Main Menu and wait until the POST ends.
9. Reinstall the memory-slot cover, and turn the computer right side up.

Verify that the password prompt does not appear.

To reactivate the password, set the password again.

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

Hole for Power Shutdown Switch



Product Overview

The following table is an overview of the system features of the IBM ThinkPad 380Z computer.

Feature	Description
Processor	2635-Hxx Intel Pentium II 233 MHz 2635-Jxx Intel Pentium II 300 MHz
Bus Architecture	PCI Bus
Memory (Standard)	32MB (on the system board)
Memory (Option)	Maximum of 96MB.
CMOS RAM	242 bytes
LCD	2635-Hxx/Jxx 13.3-inch, 16M colors, 1024×768 pixel TFT color LCD
Diskette Drive (Internal)	1.44 MB (3-mode), 3.5-inch
CD-ROM Drive	10×—24×
Hard Disk Drive	2635-Hxx/Jxx 4.0GB, 2.5-inch, IDE interface
I/O Port	Serial Parallel USB External monitor Headphone Microphone Port replicator
Audio	16-bit audio Internal speakers Internal microphone Mechanical volume
Infrared Transfer	IrDA 1.1
PC Card	One Type III or two Type I / Type II CardBus support ZV card support
AC Adapter	56Watt type

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 symptoms in detail.
2. Verify the symptoms by running the diagnostic test to re-create the same error or by repeating the same operation.

Note:

To run the diagnostic test, refer to "Running the Diagnostics" on page 34.

If the symptoms occur at irregular intervals and cannot be re-created (and therefore cannot be verified), go to "Symptom-to-FRU Index" on page 23; then go to "Intermittent Problems" on page 32.

3. Match the verified symptoms with the following table and determine the page to go to.

Verified Symptoms	Go To
Power failure. (The power indicator does not go on or stay on.)	"Power Systems Checkout" on page 13.
POST does not complete. No beeps or error codes are displayed.	"Symptom-to-FRU Index" on page 23, and then go to "No Beep Symptoms" on page 28.
The configuration is not the same as the installed devices.	"Checking the Installed Devices List" on page 35.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 23, and then go to "Beep Symptoms" on page 28.
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 23, and then go to "Numeric Error Codes" on page 23.
The diagnostic test detected an error and displayed a FRU code.	"FRU Codes" on page 38.

Verified Symptoms	Go To
Other symptoms (such as LCD monitor problems).	"Symptom-to-FRU Index" on page 23, and then go to "Other Symptoms" on page 32.

Audio Checkout

1. Go to the diagnostic menu by selecting **Test** in the Easy-Setup menu.
2. Select **Audio** and run the diagnostic tests.
3. If the test detects an audio problem, replace the system board.

Diskette Drive Checkout

This checkout is to isolate the problem to a controller, drive, or diskette. A write-enabled, blank, formatted 2HD diskette is required.

FDD-1 represents a diskette drive in the ThinkPad computer.

Attention

Make sure that the diskette does not have more than one label pasted on its surface. Inserting diskettes with multi-layered labels into the drive can damage it.

Take the following procedure to select the test device:

1. Click on **Test** in the Easy-Setup menu.
2. Press **Ctrl+A** to enter the advanced diagnostic menu. The ThinkPad FRU Connections window appears.
3. Click on **Exit**. The keyboard layout appears on the screen.
4. Click on **Exit**.
5. Click on **FDD-1**.
6. Type **Y** (Yes) to the question that appears on the screen. Insert a blank diskette into the drive when instructed.
7. Press **Enter** to run the diskette drive test.
 - a. If the controller test detects an error and FRU code 10 appears, replace the system board.
 - b. If the controller test runs without any errors, the drive read/write tests start automatically.
 - c. If the drive read/write test detects an error and either FRU code 50 for FDD-1 appears, replace the drive.
If the drive is attached to a port replicator, go to "Port Replicator Checkout" on page 18 to isolate the replicator. Otherwise, go on to the next step.
8. If the drive is attached through a port replicator, go to the service manual of the port replicator to isolate the problem.

9. If no error occurs when you test the formatted diskette, suspect the diskette that the customer used when reporting the problem.

Fan Checkout

To check the fan, listen for the fan. If you cannot hear it running at power-on, replace the fan. If you can hear it running but not steadily, run the diagnostic test as follows:

1. Start Easy-Setup.
2. Click on **Test**.
3. Press **Ctrl+A** to enter the advanced diagnostic mode. The ThinkPad Connection windows appear.
4. Click on **Exit**. The keyboard layout appears on the screen.
5. Click on **Exit** again.
6. Click on **System Board** then press **Enter** to run the test.

Follow the instructions that appear on the screen. If the test detects a fan problem, replace it.

Keyboard or Auxiliary Input Device Checkout

Remove any external keyboard before testing the built-in keyboard.

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

If the keyboard cable connection is correct, check the DC/DC card.

If the tests do not detect a keyboard problem, run the **keyboard test** by doing the following:

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

Note: When the **Fn** key is pressed, a black square appears briefly.

5. Press **Ctrl+Pause** to end the test.

If the tests detect a keyboard problem, do the following one at a time:

Warning: Do not replace a nondefective FRU.

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

Auxiliary Input Devices: The following auxiliary input devices are supported:

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

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

If the problem remains, replace the device, and then the system board.

Memory Checkout

DIMMs are available for increasing memory capacity.

DIMM	Displayed Value
No DIMM installed	32192 KB
16 MB	48576 KB
32 MB	64960 KB
64 MB	97728 KB

Memory errors may cause error messages to appear on the screen or may hang the operating system.

Take the following procedure to isolate memory problems:

1. Turn off the computer and remove any installed DIMM from the slot.
2. Press and hold the **F1** key; then turn on the computer. Hold the **F1** key down until the Easy-Setup menu appears.
3. Select **Test** and press **Enter**.
4. Select **Memory** and press **Enter** to run the memory test for the base memory. If an error appears, replace the system board.
5. Turn off the computer and reinstall the DIMM; then turn on the computer. Verify the memory size; then test the memory. If an error message appears, replace the DIMM.

If a memory problem occur intermittently, perform the loop option test. If the test detects an error, it prints an error log on a printer connected to the parallel port. See “Displaying the Error Log” on page 35 for more information.

Flash Memory Update: System setup programs and diagnostic tests are stored in the flash memory. A flash memory update is required when:

- A new version of the system program is installed.

A new features or options is added to the computer.

To update the flash memory, do the following:

1. Obtain an appropriate diskette containing the update.
2. Insert the System Program Service diskette into drive A, and turn on the computer with ac power or a fully charged battery.
3. Select **Update system programs** from the menu.

Power Systems Checkout

To determine whether a power systems problem is due to the AC Adapter or the battery, do the following:

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

If the problem is due to the AC Adapter, go to "AC Adapter Checkout"

If the problem is due to the battery, go to "Battery Checkout" on page 14

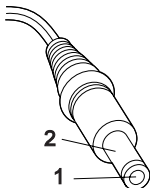
If the problem is not due to the AC Adapter or the battery, go to "Backup Battery Checkout (Nonrechargeable)" on page 15

AC Adapter Checkout: This checkout is used only when the computer fails under ac power.

If the problem occurs only when the AC Adapter is used with a port replicator, replace the replicator.

If the power-on indicator does not turn on, check the power cord of the AC Adapter for conductivity and installation.

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



Pin	Voltage (V dc)
1	+15.5 to +17.0
2	Ground

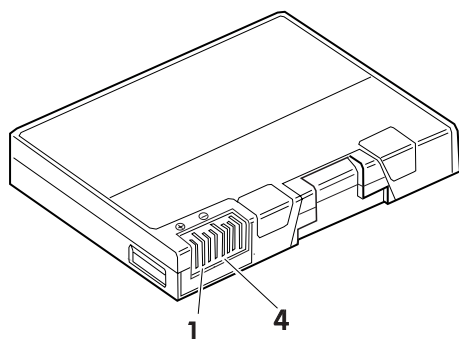
- a. If the voltage persists, go to the next step.

- b. If the voltage is correct, make sure the connection between the DC/DC card and the system board is not loose.
 - c. Replace the DC/DC card.
 - d. If the problem is not corrected, replace the system board.
 - e. If the problem persists, go to “Undetermined Problems” on page 32.
2. Unplug the AC Adapter cable from the ac power outlet and wait 5 minutes or longer to allow the overvoltage protection circuit to be fully discharged and initialized.
 3. Plug the AC Adapter cable into the ac power outlet.
 4. Measure the output voltage of the AC Adapter.
 5. If the voltage is still not correct, replace the AC Adapter.

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

Battery Checkout: If the error is due to the battery, do the following:

1. Turn off the computer.
2. Remove the battery and measure the voltage between the battery terminals 1 (+) and 4 (–).



Terminal	Voltage (V dc) / Signal
1	+0 to +13.5
4	Ground (–)

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

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

Note: The voltage of the battery could show 0 V because of the overdischarge protection

circuit. Try to trickle charge the battery by attaching it to the computer with the AC adapter.

4. If the voltage is more than +11.0 V dc, measure the resistance between the battery terminals 3 and 4. The resistance must be 4 to 30 K ohms.

If the resistance is not correct, replace the battery.

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

Checking Operational Charging

Note

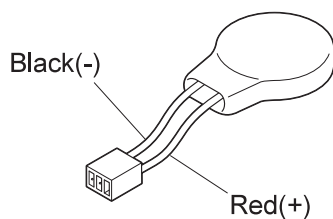
Battery charging will not start unless the Fuel-Gauge is below 95%. At below 95%, the battery will start charging to 100% of its capacity. This limitation protects the battery from overcharging and also prolongs its life.

To check the operational charging, install a fully discharged battery or a battery that is less than 50% charged.

Turn on the computer while it is connected to the AC Adapter. If the battery status indicator does not turn on, turn off the computer, remove the battery, and let the battery return to room temperature. Reinstall the battery, and turn on the computer (still connected to the AC Adapter). If the charge indicator still does not turn on, replace the battery.

Backup Battery Checkout (Nonrechargeable)

1. Turn off the computer and unplug the AC Adapter from the computer.
2. Open the Memory-slot cover.
3. Remove the backup battery. (Refer to "1010 DIMM Card and Backup Battery" on page 45 to remove the battery.)
4. Measure the voltage of the backup battery connector.



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

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

Status Indicator Checkout

If an LED problem occurs, do the following:

1. Turn off the computer.
 2. Turn on the computer.
 3. All the LEDs in the indicator panel should turn on for a moment soon after the computer is powered on. Make sure they turn on.
- If the problem persists, replace the system board.

System Board and CPU Card Checkout

The system board and the CPU card FRUs perform the operation on the computer. Processor problems can be caused by either FRU. Generally, the CPU card has a lower failure rate. If a numeric code indicates the system board or the CPU card as failing, do the following procedure to isolate the problem:

1. Run the system board test to verify the symptom.
 This test verifies both the system board and the CPU card. If no error is detected, return to "Undetermined Problems" on page 32.
- Note:** Do not touch the keyboard and the pointing device when the system board is being tested. This might cause unexpected errors.
2. If FRU code 10 appears, replace the system board, but do not replace the CPU card. Transfer the CPU card from the old system board to the new system board.
3. If FRU code 11 appears, reseal the CPU card.
4. Rerun the test to verify the fix.
5. If FRU code 11 remains, replace the CPU card.

If this procedure does not correct the problem, go to "Undetermined Problems" on page 32.

TrackPoint Checkout

If the TrackPoint does not work, do the following:

1. Run the ThinkPad Configuration program and check if the TrackPoint is enabled.
2. If it is not, select **Enable** and enable it.
3. If you still have a problem, continue to the next step.

Drifting Pointer

There may be cases when the pointer drifts for a short while on the screen, this is not a hardware problem. This movement can occur when a slight, steady pressure is applied to the TrackPoint. No service action needs to be taken.

4. Go to the Easy-Setup menu.
5. Move to an item with the TrackPoint.
6. Press either the left or the right click button.
7. Verify that both buttons work correctly.
8. Move to another item with the TrackPoint.
9. Press the TrackPoint (Press-to-Select).
10. Verify that the item is selected.
11. If the problem still persists, do the following one at a time:

Warning: Do not replace a nondefective FRU.

- Reseat the TrackPoint cable.
- Replace the keyboard.
- Replace the DC/DC card.
- Replace the system board.

Optional Device Checkout

If you suspect an optional device problem, do either of the following:

- “Port Replicator Checkout”
- “External Monitor Self-Test”

Port Replicator Checkout

Do the following procedures to isolate a port replicator problem. A port replicator attaches to the system expansion connector on the bottom of the computer.

1. Turn off the computer.
2. Remove the failing devices from the replicator.
3. Unplug the AC adapter from the replicator, if attached.
4. Remove the port replicator from the computer.
5. Reconnect the failing device directly to the computer. (If another device is already connected to the computer, remove it first.)
6. Go to the “Running the Diagnostics” on page 34 and run the diagnostics.
7. If the advanced diagnostic device test does not find an error, suspect a problem with the port replicator of the system expansion bus.
8. Turn off the computer and reconnect the port replicator.
9. Turn on the computer and run the following advanced diagnostic tests:
 - Serial port test with the wrap plug installed on the replicator
 - Parallel port test with the wrap plug installed on the replicator
10. If diagnostic errors appear, replace the replicator or diskette drive attachment unit. If the problem remains after the replacement, replace the system board.
11. If power problems appear only when the replicator is used, replace the replicator.

External Monitor Self-Test

If a monitor problem occurs only when an external monitor is connected, do the following:

Note: Before you replace a monitor:

- Check that the 95XX systems support either 63XX, 85XX, or 95XX displays.
- Make sure that the external monitor is properly connected to the computer.

If the screen is rolling, replace the external monitor. If that does not correct the problem, replace the FRUs in the following order:

1. System board

2. Bus adapter (if used)

If the screen is not rolling, run the monitor self-test as follows:

1. Power-off the computer and monitor.
2. Disconnect the monitor signal cable.
3. Power-on the monitor
4. Set the contrast to its maximum position.
5. Set the brightness control to the center detent position.

Check the following conditions:

The screen contrast and brightness control are adjustable.

The screen is either white or light gray, with a black margin (test margin).

The screen is set to **CRT** or **both** on the ThinkPad Configuration program.

Note: The location of the test margin may vary with the type of monitor. It can be either at the top and/or bottom, or left and/or right of the screen.

If you do not see a test margin on the screen, replace the monitor. If there is a test margin on the screen, replace the system board.

Power Management Features

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

Standby Mode

In standby mode, the following occurs:

- The LCD backlight turns off.
- The hard disk drive motor stops.
- The speaker is muted.

The computer enters standby mode when the **Fn + F3** keys are pressed.

The computer exits standby and resumes normal operation when any key is pressed.

Note: Standby mode in Windows 98 is called suspend mode in Windows 95.

Suspend Mode

The following events occur in addition to what occurs in standby mode when the computer enters suspend mode:

- The LCD is powered off.
- The hard disk drive is powered off.
- The CPU stops.

Note: Suspend mode in Windows 95 is called standby mode in Windows 98.

The following events cause the computer to enter suspend mode:

- The **Fn + F4** keys are pressed.
- The LCD cover is closed.
- If you add a check mark to the **Will not suspend even if LCD is closed** box in the "Power Management Properties" window, the computer will not enter suspend mode even if the LCD is closed.
- The LCD only turns off.
- The **Suspend** button is selected in the Fuel-Gauge program.
- The specified time has elapsed from the last operation with the keyboard, the TrackPoint, the hard disk drive, the parallel connector, or the diskette drive; or the AC Adapter is plugged in.
- In Windows 95, the timer is set by the **Suspend Timer** in the "Power Properties" window.
- In Windows 98, the timer is set by the **System standby timer** in the "Power Management Properties" window.
- The battery indicator blinks orange indicating that the battery power is low.
- If you add a check mark to the **Hibernate when battery becomes low** box in the "Power

Management Properties" window, the computer enters hibernation mode under this condition.

Note: In Windows 98, the **Alarms** setting in the "Power Management Properties" window may not be synchronous with the actual low battery condition which shows a blinking then a steady orange and may cause the alarm to sound prematurely.

Note: The computer cannot enter suspend mode when it is attached to a docking station.

The following events cause the computer to resume operation from suspend mode:

- The **Fn** key is pressed.

- The LCD cover is opened.

- The power switch is turned on.

- The resume timer is set.

In Windows 95, you can set the time in the **resume on timer** in the "Power Management Properties" window.

In Windows 98, the **Scheduled Tasks** setting has priority over the **resume on timer** in the "Power Management Properties" window.

Note: The computer does not accept any event immediately after it enters suspend mode. Therefore, wait a few seconds before taking any action to reenter operation mode.

Hibernation Mode

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.

The following events cause the computer to enter hibernation mode:

- The **Fn + F12** keys are pressed.

- The **Hibernation** button is selected in the Fuel-Gauge program.

- The power switch is turned off and hibernation mode is set to **Hibernate by Power Switch???**.

- The timer conditions are satisfied in suspend mode (for operating systems other than Windows 98).

- A critically low battery condition occurs and hibernation mode is set to **Hibernate when battery becomes low**.

The computer exits hibernation mode and resumes operation when the Power switch is pressed. When power is turned on, the hibernation file in the boot record on the hard disk drive is read and system status is restored from the hard disk drive.

Port Replicator Power Overload

If a power shutdown occurs intermittently when PC Card devices are used with a port replicator, suspect an over-current problem. Some PC Card devices use much power, and if at some point the required power exceeds the allowed power, a power shutdown occurs. Isolate this problem to a device by removing each device simultaneously and then using the computer under the same condition as when the power shutdown occurred. This will determine which device is causing the overload.

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 replacement did not solve the problem, put the original part back in the computer. Do not replace a nondefective FRU.

This index can also help you determine the next possible FRUs to be replaced when servicing a computer.

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

If no codes are available, use narrative symptoms.

If the symptom is not listed, go to “Undetermined Problems” on page 32.

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

Numeric Error Codes

Symptom / Error	FRU / Action in Sequence
10X 101: Interrupt failure. 102: Timer failure. 103: Timer interrupt failure. 104: Protected mode failure. 105: Last 8042 command not accepted. 107: NMI test failure. 108: Timer bus test failure. 109: Low meg-chip select test.	System board
110 (Planar parity.)	1. Go to “Memory Checkout” on page 12. 2. DIMM 3. Detach the expansion unit if it is attached to the computer. 4. System board

Symptom / Error	FRU / Action in Sequence
111 (I/O parity.)	1. Go to “Memory Checkout” on page 12. 2. Port replicator 3. System board
127 (Cache error)	1. CPU card. 2. System board.
158 (Hard disk password is not set even though the supervisor password is set.)	Set the password for hard disk drive.
159 (Hard disk password is not set the same as the supervisor password.)	Set the correct password for hard disk drive.
161 (Dead battery.)	1. Go to “Backup Battery Checkout (Nonrechargeable)” on page 15. 2. Backup battery 3. System board
163 (Time and date were not set.)	1. Set time and date. 2. System board
173 (Configuration data was lost.)	1. Select OK in the error screen; then set the time and date. 2. Backup battery 3. System board
174 (Configuration error: Perform “Checking the Installed Devices List” on page 35 before changing any FRUs.)	1. Check device configuration. 2. Hard disk drive 3. System board
175, 177, 178 175: EEPROM CRC #1 error. 177: Supervisor password check sum error. 178: EEPROM is not functional.	System board
183 (Incorrect password entered at the supervisor password prompt.)	Have the user examine the password.
184 (Power-on password check sum error.)	Reset the power-on password in Easy-Setup.

Symptom / Error	FRU / Action in Sequence
185 (The start-up sequence is not valid. Probably the computer was powered off when the start-up sequence was being updated.)	Reset the start-up sequence in Easy-Setup.
186	System Board
190 (A depleted battery pack was installed when the power was on.)	Go to "Battery Checkout" on page 14.
191XX (PM initialization error.)	System board
192 (Fan error)	Fan - System board
195 (The configuration read from the hibernation data storage area does not match the actual configuration.)	Check if the configuration was changed. For example, check if the DIMM is added.
196 (A read error occurred in the hibernation area of the hard disk drive.)	Run the hard disk drive test. - Hard disk drive
199XX (Resume error.)	System board
1XX	System board
225 (Unsupported memory module)	Check if a supported DIMM is installed. - DIMM Card - System board
2XX 201: Memory data error. 202: Memory line error 00–15. 203: Memory line error 16–23. 205: Memory test failure on on-board memory. 221: ROM to RAM remap error.	Go to "Memory Checkout" on page 12. - DIMM - System board
301, 303, 304, 305, 3XX (301: Keyboard error.)	Go to "Keyboard or Auxiliary Input Device Checkout" on page 11. - Keyboard - External numeric keypad - External keyboard - Keyboard/mouse cable - DC/DC card - System board

Symptom / Error	FRU / Action in Sequence
601, 6XX (601: Diskette drive or controller error.)	1. Go to “Diskette Drive Checkout” on page 10. 2. CD-ROM and FDD assembly 3. Diskette 4. System board
602 (Diskette read error.)	1. Go to “Diskette Drive Checkout” on page 10. 2. Diskette 3. CD-ROM and FDD assembly
604 (An unacceptable ID was read from the diskette drive.)	1. Go to “Diskette Drive Checkout” on page 10. 2. CD-ROM and FDD assembly 3. System board
11XX 1101: Serial_A test failure.	1. Serial device 2. Communication cable 3. System board
12XX 1201: Serial_B test failure.	1. System board (infrared)
17XX 1701: Hard disk controller failure. 1780, 1790: Hard disk 0 error. 1781, 1791: Hard disk 1 error.	1. Hard disk drive 2. System board
1801 (Unsupported Port Replicator)	An unsupported Port Replicator is attached to the computer.
24XX (2401: System board video error.)	System board
808X 8081: PCMCIA presence test failure. (PCMCIA revision number also checked.) 8082: PCMCIA registration test failure.	1. PC Card slot assembly 2. PCMCIA device 3. System board
860X (Pointing device error when the TrackPoint is disabled.) 8601: System bus error—8042 mouse interface. 8602: External mouse error. 8603: System bus error or mouse error.	1. External mouse 2. External keyboard 3. System board

Symptom / Error	FRU / Action in Sequence
861X (Pointing device error when the TrackPoint is enabled.) 8611: System bus error—I/F between 8042 and IPDC. 8612: TrackPoint error. 8613: System board or TrackPoint error.	1. Reseat the keyboard cable on the DC/DC card 2. Keyboard 3. External mouse 4. DC/DC card 5. System board
I9990301 I9990302 I9990305 I9990301: Hard disk error. I9990302: Invalid hard disk boot record. I9990305: No bootable device.	1. Check that the operating system is installed in the hard disk drive. If not, install the operating system. 2. Reseat the boot device. 3. Check the start-up sequence for the correct boot device. 4. Check that the operating system boots correctly.
I9990303 (Bank–2 flash ROM check sum error.)	System board
Other codes not listed above.	Go to “Undetermined Problems” on page 32.

Beep Symptoms

Symptom / Error	FRU / Action in Sequence
Continuous beeps.	System board
One beep and a blank, unreadable, or flashing LCD.	1. Reseat the LCD connector 2. LCD assembly 3. System board
One beep, and the message "Unable to access boot source" appears.	1. Boot device 2. System board
One long and two short beeps, and a blank or an unreadable LCD.	1. System board 2. LCD assembly
One long beep followed by four short beeps each time the Power switch is operated. (System cannot turn on due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery.
One beep every second. (System is shutting down due to low battery voltage.)	Connect the AC Adapter or install a fully charged battery. (Allow the system to completely shut down before changing the battery.)
Two short beeps with error codes.	POST error. See "Numeric Error Codes" on page 23.
Two short beeps and a blank screen.	System board

No Beep Symptoms

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator not on, and a blank LCD during POST.	1. Go to "Power Systems Checkout" on page 13. 2. DC/DC card 3. System board 4. CPU card 5. Check the power outlet
No beep, power-on indicator on, and a blank LCD during POST.	1. DC/DC card 2. System board 3. CPU card
No beep, power-on indicator on, and a blinking cursor only during POST.	1. DC/DC card 2. CPU card 3. System board
No beep during POST but the system runs correctly.	1. Turn the volume up and check the speaker. 2. Speaker 3. System board

Function-Related Symptoms

Symptom / Error	FRU / Action in Sequence
The system does not suspend or resume when the LCD is closed or opened.	1. Go to “Suspend Mode” on page 20, and check that the computer can enter suspend mode. 2. Boot an operating system and press Fn+F4. If the computer enters suspend mode, suspect that the application program is not working properly. 3. LCD assembly 4. System board
The battery Fuel-Gauge does not go higher than 90%.	Go to “Battery Checkout” on page 14 and see the note.
The memory count (size) appears different from the actual size.	Go to “Memory Checkout” on page 12.
The system configuration does not match the installed devices.	Go to “Checking the Installed Devices List” on page 35.
The system hangs intermittently.	Go to “Intermittent Problems” on page 32.

Indicator-Related Symptoms

Symptom / Error	FRU / Action in Sequence
The indicator incorrectly remains off or on, but the system runs correctly.	1. System board 2. DC/DC card
The battery power status indicator blinks from green, yellow, to orange.	1. Check that a correct battery is installed. 2. Battery pack 3. DC/DC card 4. System board
The battery indicator does not turn on when the battery is installed.	1. DC/DC card 2. Battery pack 3. System board

Infrared-Related Symptoms

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

Keyboard- or TrackPoint-Related Symptoms

Symptom / Error	FRU / Action in Sequence
The keyboard (one or more keys) does not work.	1. Reseat the keyboard cable on the DC/DC card. 2. Keyboard 3. System board
The TrackPoint does not work.	1. Reseat the keyboard cable on the DC/DC card. 2. Go to "TrackPoint Checkout" on page 16. 3. Keyboard 4. System board
The pointer moves automatically or does not work correctly.	See "TrackPoint Checkout" on page 16.

LCD-Related Symptoms

Important

The TFT LCD for the notebook computer contains over 2,359,296 thin-film transistors (TFTs). A small number of missing, discolored, or lighted dots (on all the time) is characteristic of TFT LCD technology, but excessive pixel problems can cause viewing concerns. The LCD should be replaced if the number of missing, discolored, or lighted dots in any background is **21 or more**.

Symptom / Error	FRU / Action in Sequence
No beep, power-on indicator on, and a blank LCD during POST.	1. Reseat the CPU card. 2. DC/DC card 3. System board
1. LCD backlight not working. 2. LCD too dark. 3. LCD brightness cannot be adjusted. 4. LCD contrast cannot be adjusted.	1. Reseat the LCD connectors. 2. LCD inverter card 3. LCD assembly 4. System board
1. The LCD screen is unreadable. 2. Some pels missing in characters. 3. The screen is abnormal. 4. Wrong color displayed.	1. See important note for "LCD-Related Symptoms." 2. Reseat all LCD connectors. 3. LCD assembly 4. System board
LCD has extra horizontal or vertical lines displayed.	LCD assembly

Peripheral-Device-Related Symptoms

Symptom / Error	FRU / Action in Sequence
The external monitor does not work correctly.	Connect the external monitor to another PC. If the monitor works fine, replace the system board. If not, replace the external monitor.
Printer problems.	1. Run printer self-test. 2. Parallel port wrap test. 3. System board 4. Printer cable (See the printer manual for the above tests.)
Serial or parallel port device problems.	1. Run serial or parallel port wrap test. (See the device manual for the test.) 2. Device 3. System board 4. Device cable

Power-Related Symptoms

Symptom / Error	FRU / Action in Sequence
Power shuts down during operation.	1. Go to “Power Systems Checkout” on page 13. 2. Battery pack 3. Remove the battery pack and let it cool for 2 hours. 4. DC/DC card 5. System board 6. Check the power outlet.
The system does not power off. (See “Reset Switch” on page 7.)	1. Press the Reset switch. 2. DC/DC card 3. System board

Other Symptoms

Symptom / Error	FRU / Action in Sequence
Errors occur only when the port replicator is used.	See “Port Replicator Checkout” on page 18.
PC Card slot pin is damaged.	PC Card slots assembly.

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

Intermittent Problems

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

When analyzing the intermittent problem, do the following:

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

Undetermined Problems

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

Verify that all attached devices are supported by the computer.

Verify that the power supply being used at the time of the failure is operating correctly. (See "Power Systems Checkout" on page 13):

1. Turn off the computer.
2. Visually check them for damages. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:
 - a. Non-IBM devices
 - b. Devices attached to the port replicator
 - c. Printer, mouse, and other external devices
 - d. Battery pack
 - e. Hard disk drive
 - f. CD-ROM and FDD
 - g. DIMM
 - h. PC Cards
4. Turn on the computer.
5. Determine if the problem is solved.
6. If the problem is solved, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRUs one at a time. Do not replace a nondefective FRU.
 - a. System board
 - b. DC/DC card
 - c. LCD assembly
 - d. CPU card

Running the Diagnostics

Use either the TrackPoint or the cursor move keys to interact with the tests.

The following table lists the special tools used in the diagnostics:

Tool Name	Part Number
PC test card	35G4703
Tri-Connector wrap plug	72X8546
USB parallel test cable	05K2580

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

1. Press and hold **F1**; then turn on the computer. Hold **F1** down until the Easy-Setup menu appears.
2. Click on **Test**. The basic diagnostic menu appears.
3. Click on a device to run the test. The test progress window appears; then **OK** appears under the tested device icon when the test ends without any errors.
4. Start the **Advanced Diagnostic test** by pressing **Ctrl+A** on the basic diagnostic menu. The ThinkPad FRU connections window appears.
5. Click on **Exit** or press the **Esc** key. The keyboard test window appears.
6. When you press a key, a mark appears or disappears on the corresponding key position on the screen. Repeat this step for any key that needs to be tested. You can run the keyboard test if you press the **Ctrl+K** keys at the advanced diagnostic menu.
7. To exit the keyboard test, click on **Exit** or press the **Ctrl+Break** keys. The Advanced Diagnostics menu appears.

- Click on a device to test, or click on **Test All** to test all devices.

Click on **Looptest** to run the tests in a repeated loop. The loop option menu appears. Click on a device; a mark appears beside the selected device. Repeat this step to select multiple devices. Click on **OK** to start the diagnostic loop. If no device is selected, all devices tests are looped.

- To exit the loop, keep pressing **Ctrl+Pause**. A beep sounds to notify that exit interrupt is sensed by the test program. Press **Esc** to exit from the loop test.

PC Card (PCMCIA) Slots Test

The green LED on the PC test card (P/N 35G4703) turns on when the PC Card (PCMCIA) slot test is running. If the LED does not turn on, check that the card is installed correctly by reseating it. If the LED still does not turn on after the card is reseated, try using another slot for the test. If the LED still does not turn on and the test fails, replace the FRU shown by the diagnostic error code.

Universal Serial Bus (USB) Test

At the advanced diagnostic test menu, connect the USB parallel test cable (P/N 05K2580) to the computer. Click on the USB icon to run the test. Follow the instructions on the screen. **OK** appears if the test passes and three lines of error codes appear if the test fails. The defective FRU must be the DC/DC card or the system board.

Use cable number 2 for an external USB port on the port replicator.

Displaying the Error Log

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

Use the following procedures to display the errors:

- Enter the advanced diagnostic test.
- Press **Ctrl+E**.
- The error log appears.
- To exit the window, click on **Exit** or press **Esc** key.

The error log is not saved when the system power is turned off.

Checking the Installed Devices List

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

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

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

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

The FDD-1 icon represents the **first** drive in the system configuration for each type of device. The FDD-2 icon represents the **second** drive, attached through a port replicator.

Diagnostic Error Codes

If an error is detected, the following appears:

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

For example:

X



SystemBoard
DEV 001
ERR 02
FRU 0010

The device ID and error code indicate the detailed portion of the FRU that caused the error. If replacing a FRU does not correct the problem, see the device ID or error code from the previous failure. If they changed, the new FRU might be defective, or it may have been incorrectly installed.

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

Icon	Device ID	Suspected Device
 SystemBoard	001	System board
	003	Keyboard
	007	Math coprocessor
	086	Pointing device
 Memory	002	Memory
 Display	050	Display
	054	

Icon	Device ID	Suspected Device
 HDD	017	Hard disk drive
 1 FDD-1	006	Built-in FDD
 2 FDD-2	066	1. External diskette drive 2. FDD connector of the port replicator
 1 PCMCIA-1	080	1. PC card slot connector 2. PC Card
 2 PCMCIA-2	088	External PC Card
 Parallel	009	Parallel
 Serial	011	Serial
 CDROM	215	CD-ROM
 DVD	217	DVD
 Infrared	103	IR
 Audio	153	Audio (Crystal)
 1 USB-1	154	USB port
 2 USB-2	155	USB port of the port replicator

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

FRU Code	FRU
10	System board
11	CPU card
12	DC/DC card
20	Memory (see "Memory Checkout" on page 12)
30	Reserved
32	External keyboard
33	External mouse
34	AC Adapter
35	Stereo Speaker
38	Fan
39	Box Speaker
40	LCD unit
45	External monitor
50	1. Reseat the diskette drive (FDD-1). 2. Diskette drive (FDD-1)
51	1. Reseat the diskette drive (FDD-2). 2. Diskette drive (FDD-2)
60	1. Reseat the hard disk drive (HDD). 2. Hard disk drive (HDD)
70	PCMCIA-2 (replicator)
72	1. Reseat the PC card slot assembly 2. PC Card slot assembly
73	Port replicator
90	CD-ROM drive
92	DVD drive

Note: The device ID and error codes are used to indicate the detailed portion of the FRU that is causing the error. If replacing a FRU does not correct the problem, see the device ID or error code from the previous failure. If they changed, the new FRU might be defective, or it may have been incorrectly installed.

If the problem persists even after the FRUs are replaced, go to "Undetermined Problems" on page 32.

Related Service Procedures

This section provides information on the following:

“Status Indicators”

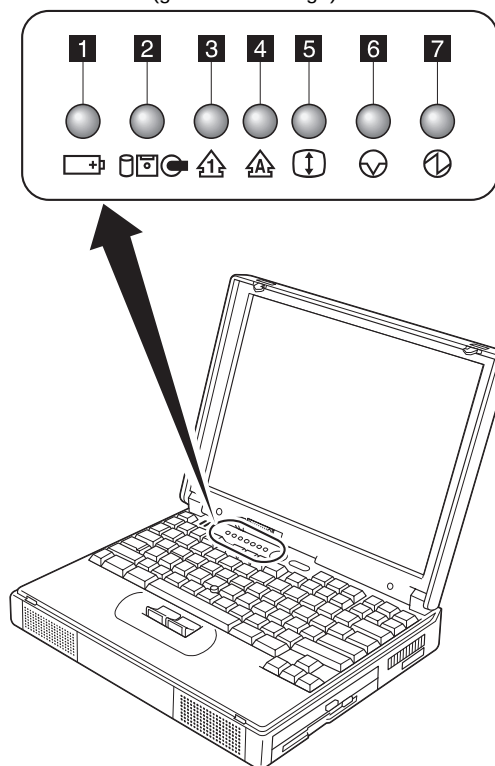
“Password Combinations” on page 40

“Running a Low-Level Format” on page 40

“Fn Key Combinations” on page 41

Status Indicators

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



Symbol	Color	Meaning
1 Battery 	Green	The battery is fully charged.
	Orange	The battery is charging.
	Blinking orange	The battery needs charging.
2 Hard Disk In Use 	Orange	Data is read from or written to the hard disk, diskette, or CD-ROM.
3 Numeric Lock 	Green	The numeric keypad on the keyboard is enabled.
4 Caps Lock 	Green	Caps Lock mode is enabled.
5 Scroll Lock 	Green	Arrow keys can be used as screen-scroll function keys.
6 Suspend Mode 	Green	Suspend mode
	Blinking Green	Entering suspend mode or hibernation mode, or reusing normal operation.
7 Power On 	Green	Power on

Password Combinations

The Model 380Z supports the following passwords:

- Power-on password (POP)
- Hard disk password (HDP)
- Supervisor password (PAP)

The password combinations are:

When the **POP** is the same the **HDP**, a POP prompt and an HDP prompt with the different password appears.

When the **POP** is not the same as the **HDP**, all of the prompts appear.

When the **PAP** is used, the **HDP** is automatically enabled but the HDP prompt does not appear. The HDP is then set to the same password as the PAP.

Running a Low-Level Format

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

Do the following to format the hard disk:

1. Turn off the computer.
2. Press and hold **F1**; then power on the computer.

3. Hold down **F1** until the Easy Setup menu appears.
4. Click on **Test**. The Basic Diagnostic menu appears.
5. Press **Ctrl + A** to enter Advanced Diagnostic mode.
The ThinkPad FRU Connections menu appears.
6. Click on **Exit**. The Keyboard Test menu appears.
7. Click on **Exit**.
8. Press **Ctrl + L**. The Low-Level Format menu appears.
9. If you have multiple drives, select a drive.
10. Follow the instructions on the menu.

Fn Key Combinations

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

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

Fn +	Description
F1	Reserved
F2	Fuel-Gauge monitor on or off
F3	Invokes standby mode
F4	Invokes suspend mode
F5	Reserved
F6	Reserved
F7	Switches between the LCD and an external monitor
F8	Switches between screen expansion on and off (no symbol on the key)
F9	Reserved
F10	Reserved
F11	In Windows 98, you can change only the CPU speed. For other operating systems, this key switches the power management mode between; High Performance, Automatic, and Customized.
F12	Invokes hibernation mode

FRU Removals and Replacements

This section contains information about removals and replacements.

Do not damage any part. Only certified and trained personnel should service the computer.

The arrows in the "Removals and Replacements" section show the direction of movement to remove a FRU, or to turn a screw to release the FRU. The arrows are marked in numeric order, in square callouts, to show the correct sequence of removal. When other FRUs must be removed before the failing FRU is removed, they are listed at the top of the page.

To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement.

See "Locations" for internal cable connections and arrangement information.

When replacing a FRU, use the correct screw size as shown in the procedures.

CAUTION:

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

CAUTION:

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.

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

Attention: The system board is sensitive to, and can be damaged by, electrostatic discharge. Establish personal grounding by touching a ground point with one hand before touching these units.

You must use an electrostatic discharge (ESD) strap (P/N 6405959) to establish personal grounding.

Important Notice

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

They maintain tight connection.

They do not easily come loose, even with shock or vibration.

But:

They need additional force to tighten.

They should not be reused.

Do the following when you service this machine:

- Keep the screw kit (P/N 12J0808) in your tool bag.
- Always use new screws.
- Use a torque screwdriver if you have one.

FRU Service Procedures

Review the following procedures before replacing any FRUs.

Replacing the System Board

Restoring the System Unit Serial Number

The system unit serial number is written on the label attached to the bottom cover of the computer and is also stored as vital product data (VPD) in the EEPROM on the system board.

When you replace the system board, you must set the system unit serial number on the new system board to its original number as follows:

1. Press and hold **F1** and power on the computer.
2. Hold down **F1** until the Easy-Setup menu appears.
3. Click on Config.
4. Press **Ctrl + N**. The System Unit Serial Number menu appears.
5. Follow the instructions on the menu.

Notes:

1. Do not power-off the computer during the restoring process.

Updating the Universally Unique Identifier (UUID)

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

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

1. Press and hold **F1** and power on the computer.
2. Hold down **F1** until the Easy-Setup menu appears.
3. Click on Config.
4. Press **Ctrl + G**. The UUID menu appears.
5. Press **F5** to generate a new UUID and press **Enter** to overwrite it to the EEPROM.

Removal Reference

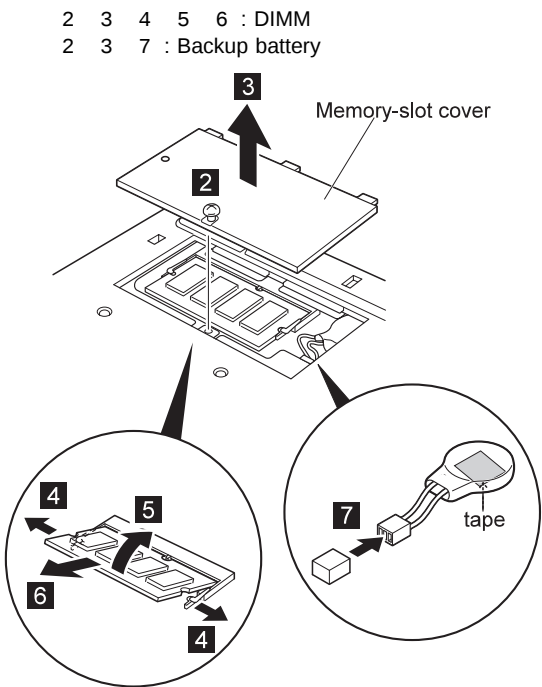
Refer to the following chart on where to go for the removal procedure:

Ref. No.	FRU	Page No.
1010	DIMM Card and Backup Battery	45
1020	Battery Pack	46
1030	Hard Disk Drive	47
1040	Keyboard Unit	49
1050	Keyboard and Speakers	52
1060	Diskette Drive Assembly or CD-ROM Drive Assembly	55
1070	Diskette Drive or CD-ROM Drive	56
1080	LCD Unit	60
1090	Fan Assembly, CPU Card, and Thermal Rubber	63
1100	Upper Shield Case	66
1110	Box Speaker and Microphone	67
1120	DC/DC Card	69
1130	System Board and PC Card Slot	71
1140	Battery Pack Latch	73
2010	LCD Front Cover	74
2020	LCD Inverter Card	76
2030	LCD Panel	77
2040	LCD Misc. Parts	79
2050	LCD Cable	81

1010 DIMM Card and Backup Battery

CAUTION:
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.

1 Turn the computer upside down.



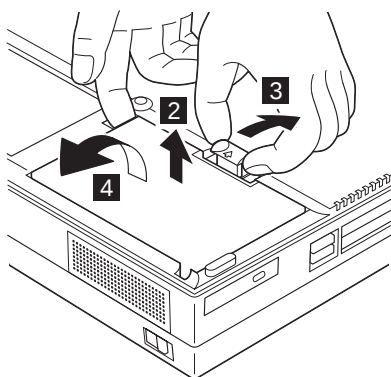
When installing:
When installing a new backup battery, place it where the old one was on the printed circuit board (system board) with double-sided adhesive tape.

Step	Size (Quantity)	Torque
2	—	3-4 kgcm
Note: You can loosen the screw in step 2 , but cannot remove it.		

1020 Battery Pack

- 1 Turn the computer upside down.

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



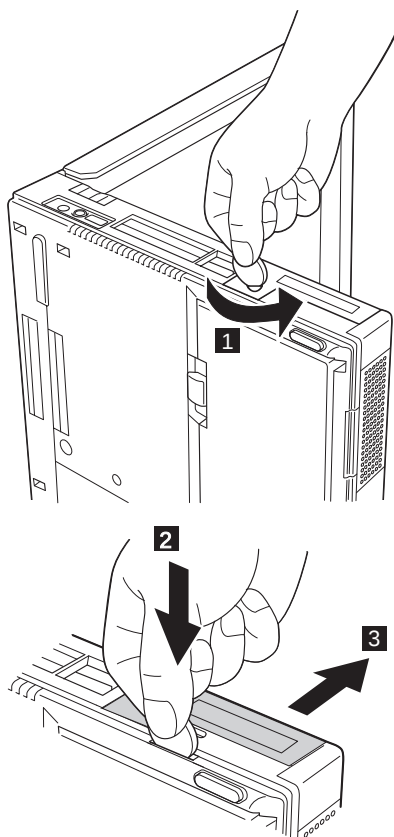
1030 Hard Disk Drive

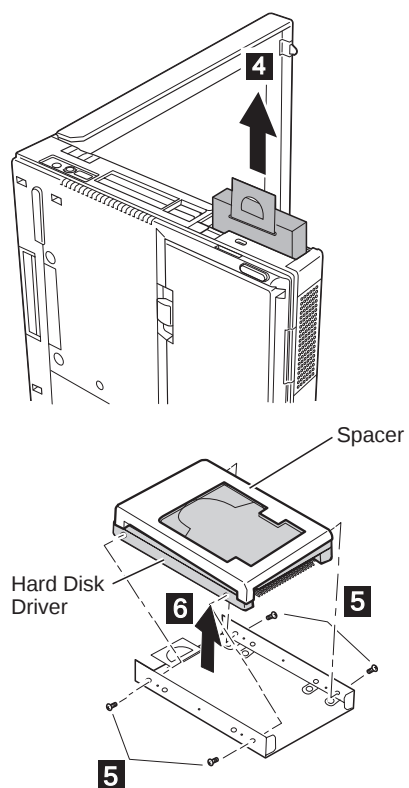
Warning

Do not drop or apply any shock.
Do not apply pressure to the cover.
Do not touch the connector.

The hard disk drive is sensitive. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard disk drive, make a backup copy of all the data on the hard disk. Never remove the drive while the system is operating, in suspend mode, or in hibernation mode.

Open the LCD cover.
Battery Pack (1020)



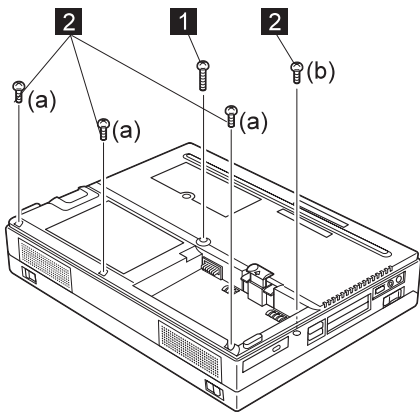


HDD Capacity	Actual Thickness	With Spacer
4.0 GB	9.5 mm	Yes
4.0 GB	12.5 mm	No
6.4 GB	12.5 mm	No

Step	Size (Quantity)	Torque
6	M 3 x 2.8 mm, Flathead (4)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

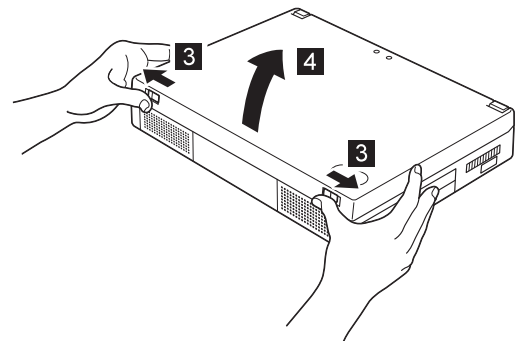
1040 Keyboard Unit

Battery Pack (1020)

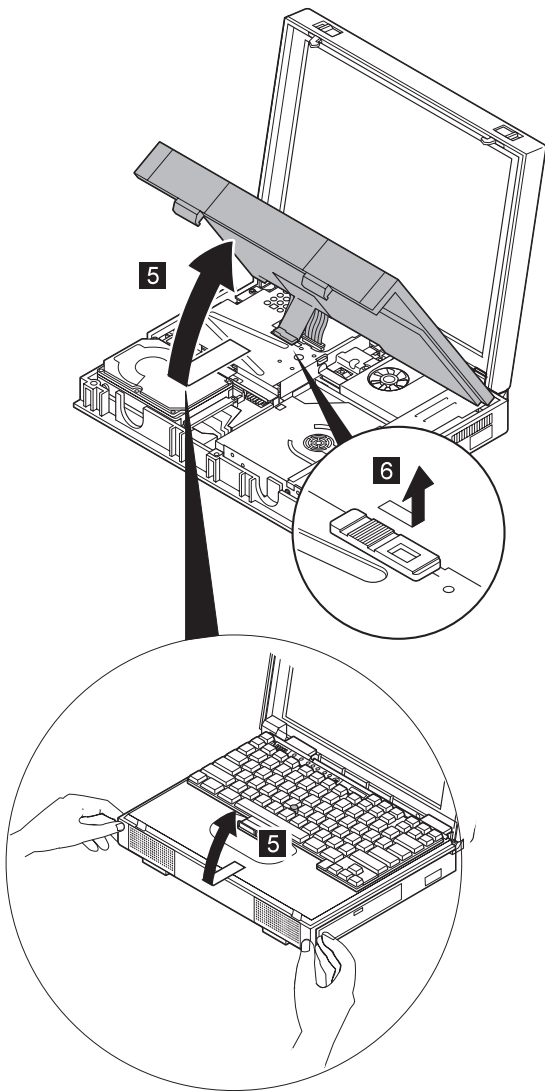


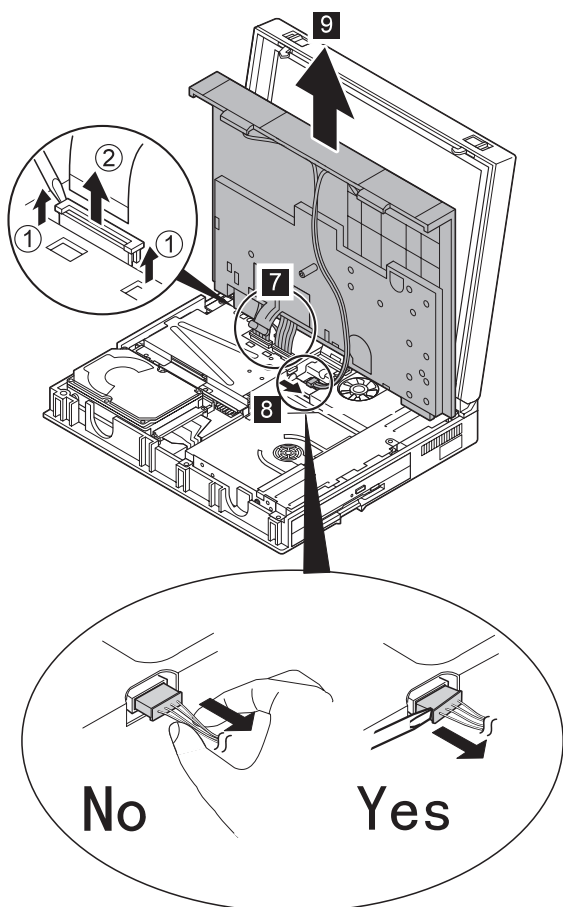
Step	Size (Quantity)	Torque
1	M 2.5 x 25 mm, nylon-coated (1)	3-4 kgcm
2	(a)M 2.5 x 8 mm, nylon-coated (3) (b)M 2.5 x 6 mm, nylon-coated (1)	3-4 kgcm

Note: Make sure that you use correct screws and tighten all of them **firmly** to the torque shown in the table. **Never reuse** screws that have been removed. Use new ones instead.



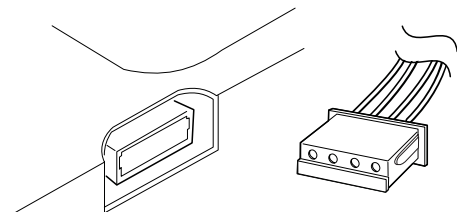
Note: In order not to damage the connectors, pull the keyboard assembly toward you **a little** in step 5 , and then go to step 6 .





When installing

See the following figure for the direction of the speaker connector:



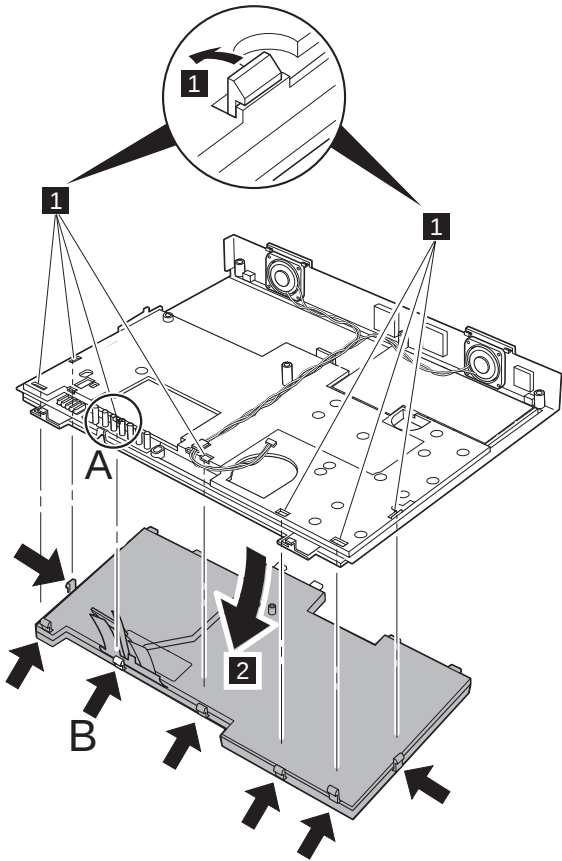
When replacing

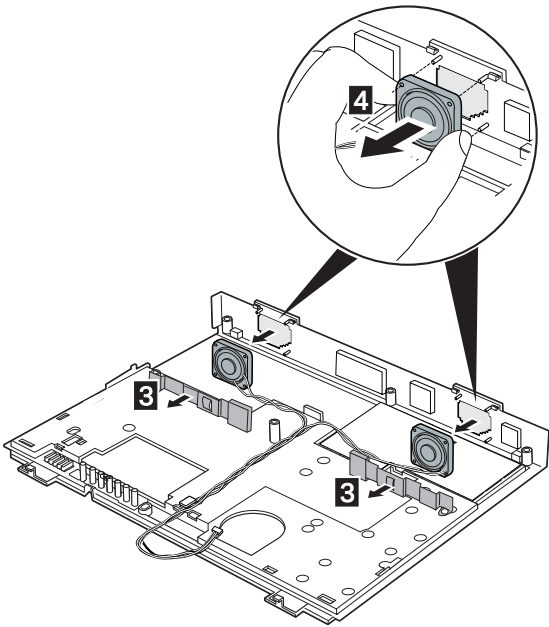
Stick a model name label on the keyboard.

1050 Keyboard and Speakers

Battery Pack (1020)
Keyboard Unit (1040)

Important: When you release **latch B**, be careful not to apply any force to area **A** (lenses for status indicators).

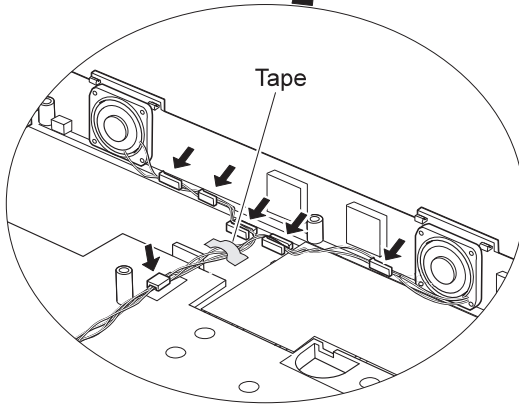
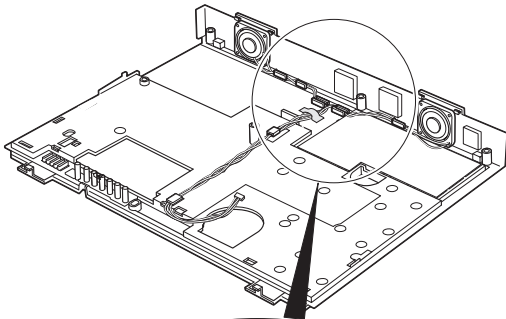




When installing

Attach the speakers to their correct side and route the speaker cables as shown.

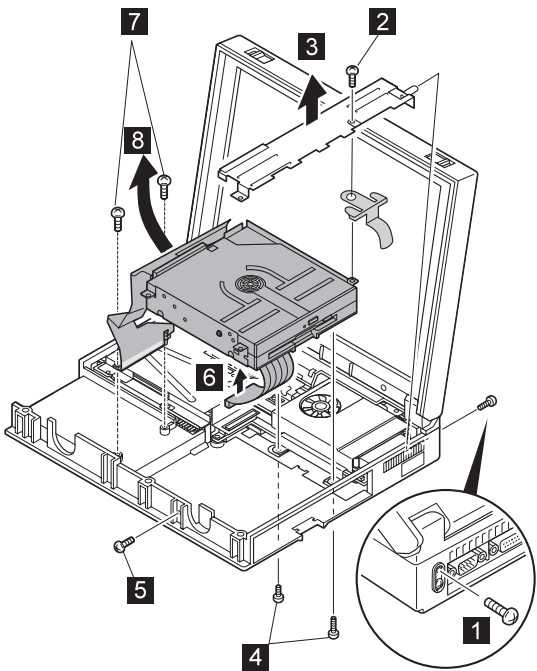
The right speaker has a red wire.
The left speaker has a blue wire.



1060 Diskette Drive Assembly or
CD-ROM Drive Assembly

- Battery Pack (1020)
- Hard Disk Drive (1030)
- Keyboard Unit (1040)

Note: Make sure that the computer does not fall backward when you remove the CD-ROM or the diskette drive assembly.



Step	Size (Quantity)	Torque
1	M 2.5 x 6 mm, nylon-coated (1)	3-4 kgcm
2	M 2.5 x 6 mm, nylon-coated (1)	3-4 kgcm
4	M 2.5 x 8 mm, nylon-coated (2)	3-4 kgcm
5	M 2.5 x 6 mm, nylon-coated (1)	3-4 kgcm
7	M 2.5 x 6 mm, nylon-coated (2)	3-4 kgcm

Note: Make sure that you use correct screws and tighten all of them **firmly** to the torque shown in the table. **Never reuse** screws that have been removed. Use new ones instead.

1070 Diskette Drive and CD-ROM Drive

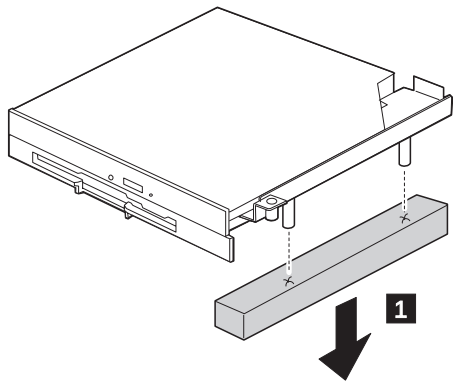
Battery Pack (1020)

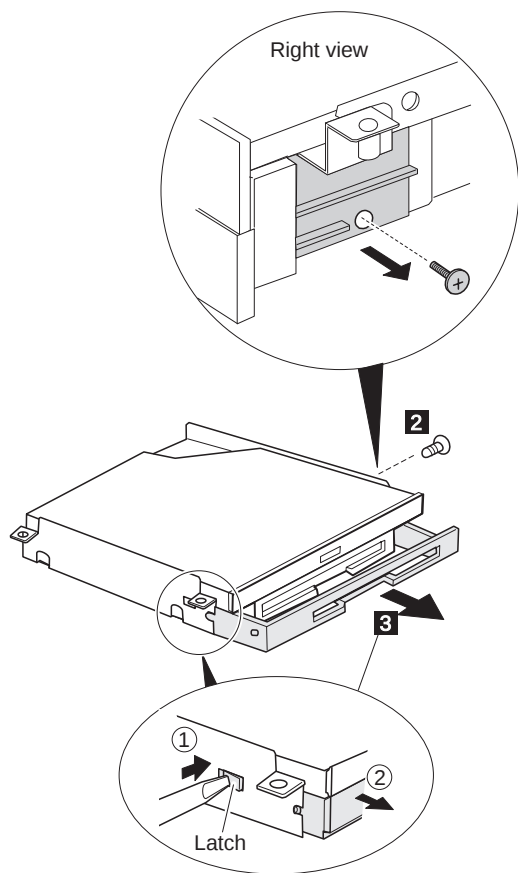
Keyboard Unit (1040)

CD-ROM and Diskette Drive Assembly (1060)

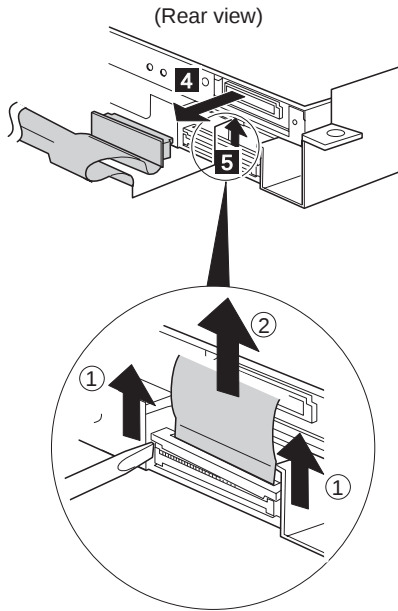
Note: When replacing a screw, be sure to tighten the pink screws and yellow ones **tightly**.

Diskette Drive

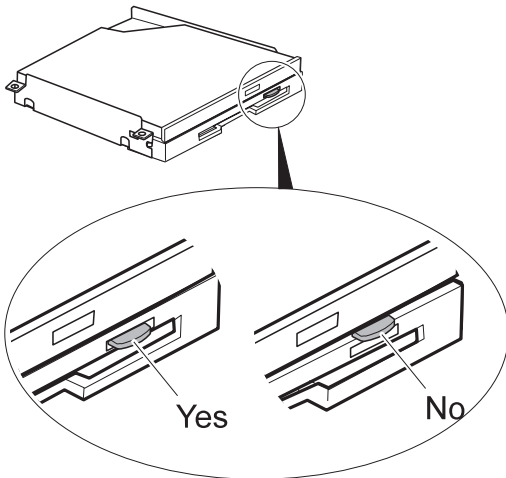




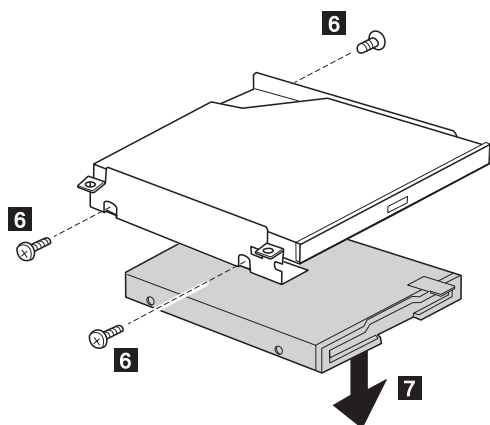
Step	Size (Quantity)	Torque
2	M 2.6 x 4 mm Yellow (1)	4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		



When reinstalling the plate cover, make sure that the blue bezel button comes out of the plate cover hole.

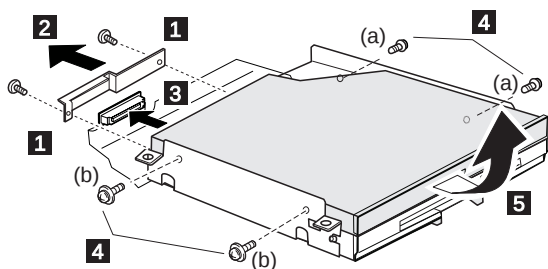


Step	Size (Quantity)	Torque
4	M 2 x 1.7 mm, special-head, Blue (2)	1.5-1.8 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		



Step	Size (Quantity)	Torque
6	M 2.6 x 2.8 mm pink (3)	4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

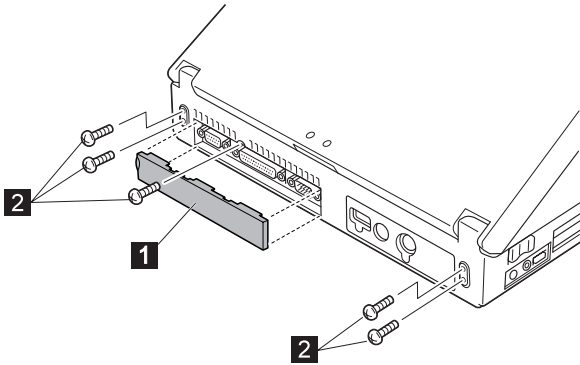
CD-ROM Drive



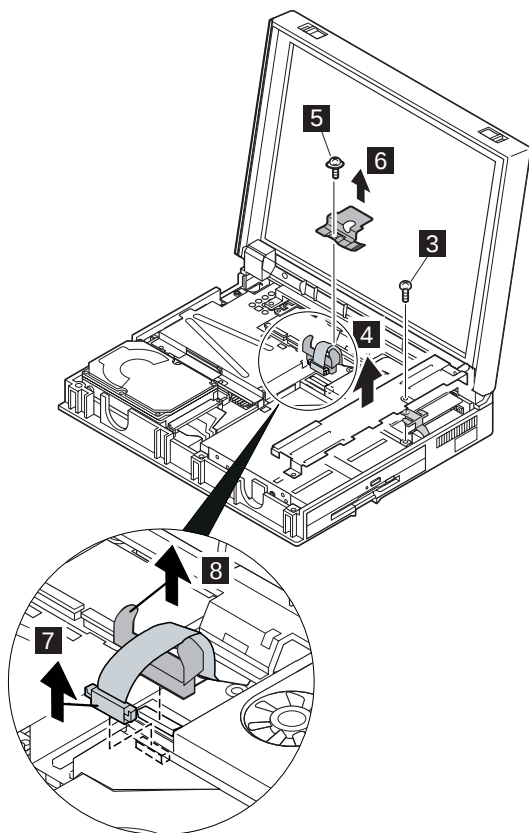
Step	Size (Quantity)	Torque
1	M 2 x 1.7 mm, special-head, blue (2)	1.5-1.8 kgcm
4	(a) M 2 x 1.7 mm, special-head, blue (2) (b) M 2 x 2.4 mm, special-head, yellow (2)	1.5-1.8 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

1080 LCD Unit

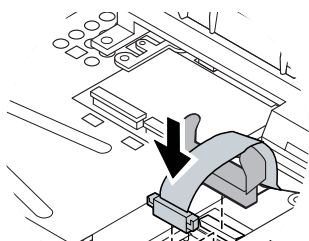
Battery Pack (1020)
Keyboard Unit (1040)



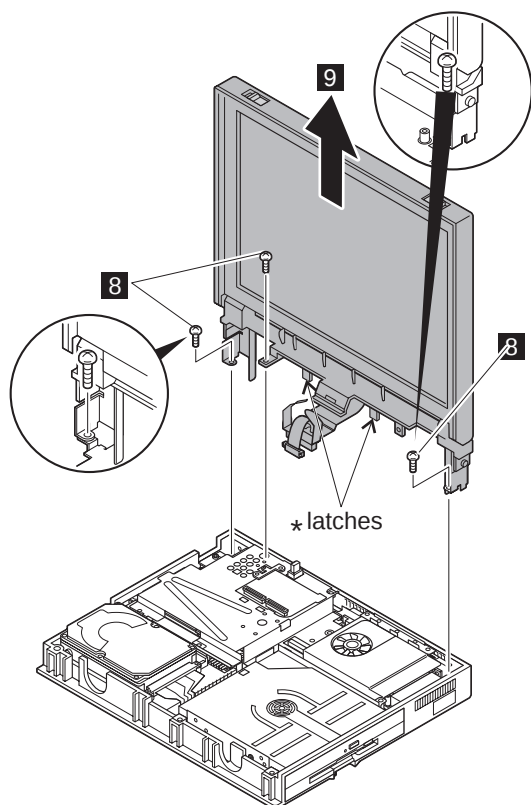
Step	Size (Quantity)	Torque
2	M 2.5 x 6 mm, nylon-coated (5)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		



When reinstalling the LCD Unit, push the cable connector straight into the socket.



Step	Size (Quantity)	Torque
3	M 2.5 x 6 mm, nylon-coated (1)	3-4 kgcm
5	M 2.5 x 6 mm, special-head (1)	3 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		



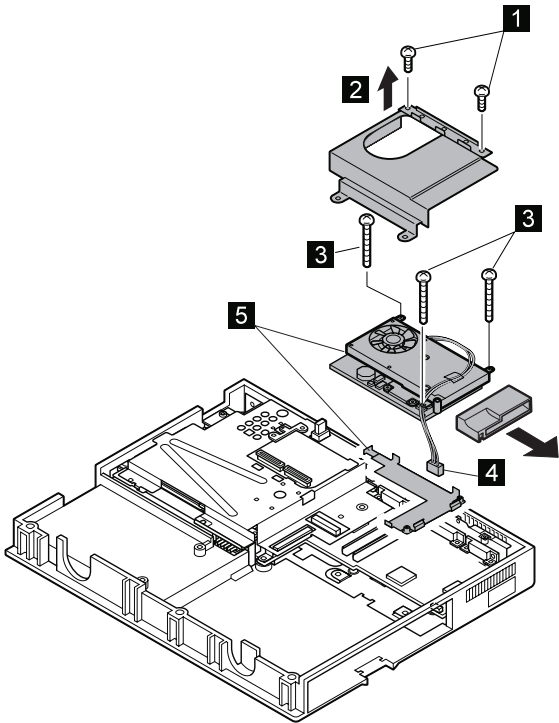
* When removing the LCD, be careful not to damage the **latches**.

Step	Size (Quantity)	Torque
8	M 2.5 x 6 mm, nylon-coated (3)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

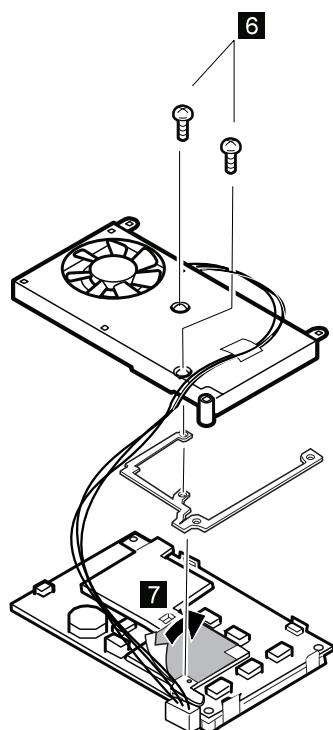
1090 Fan Assembly, CPU Card, and Thermal Rubber

- Battery Pack (1020)
- Keyboard Unit (1040)
- CD-ROM and Diskette Drive Assembly (1060)
- LCD Unit (1080)

Attention:
When removing, be careful not to damage the CPU card.



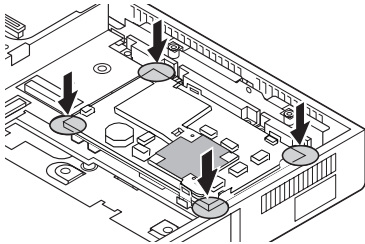
Step	Size (Quantity)	Torque
1	M 2 x 6 mm, nylon-coated (2)	2-3 kgcm
3	M 2 x 18 mm, nylon-coated (3)	2-3 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		



Step	Size (Quantity)	Torque
6	M 2 x 6 mm, nylon-coated (2)	2-3 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

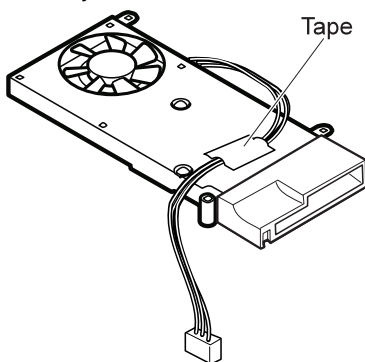
When installing

Make sure the connectors are fitted firmly by **pressing the corners of the card.**



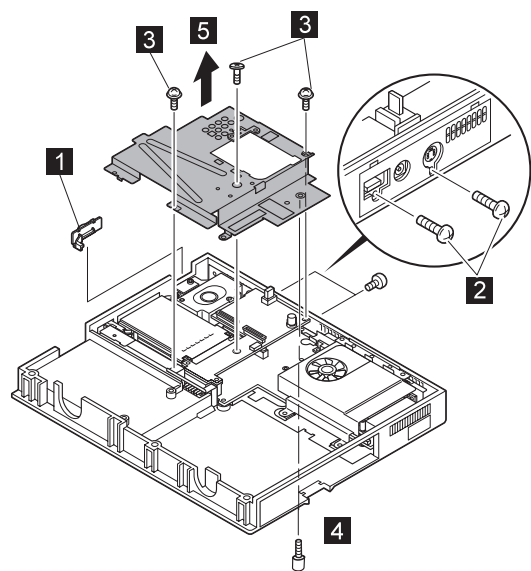
A loose connection or a damaged card causes a power failure.

The following figure shows the route of the fan assembly cables:



1100 Upper Shield Case

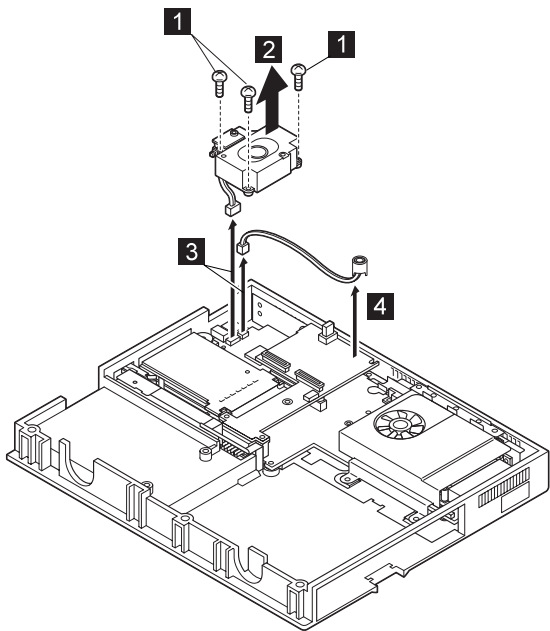
- Battery Pack (1020)
- Keyboard Unit (1040)
- CD-ROM/Diskette Drive Assembly (1060)
- LCD Unit (1080)



Step	Size (Quantity)	Torque
2	M 2.5 x 8 mm, nylon-coated (2)	3-4 kgcm
3	M 2.5 x 6 mm, nylon-coated (3)	3-4 kgcm
4	M 2.5 x 6 mm, bighead (1)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

1110 Box Speaker and Microphone

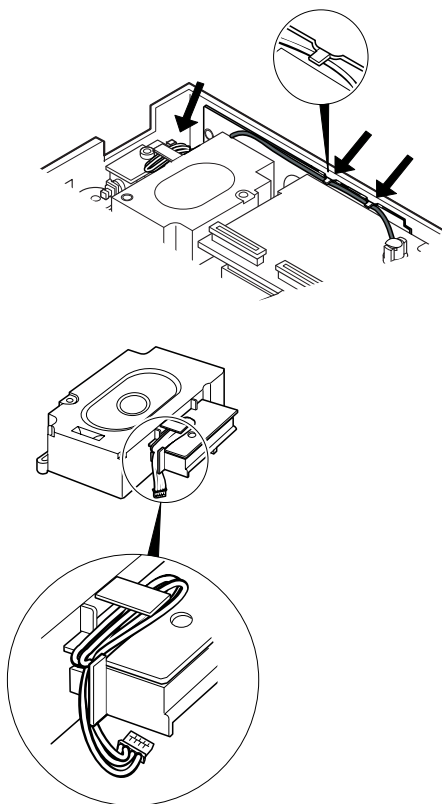
- Battery Pack (1020)
- Keyboard Unit (1040)
- CD-ROM and Diskette Drive Assembly (1060)
- LCD Unit (1080)
- Upper Shield Case (1100)



Step	Size (Quantity)	Torque
1	M 2.5 x 12 mm, nylon-coated (3)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

When installing

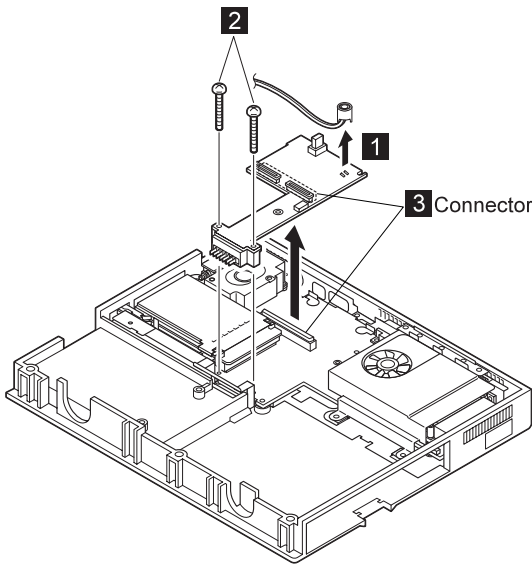
The following figure shows the route for the microphone and speaker cables:



1120 DC/DC Card

- Battery Pack (1020)
- Keyboard Unit (1040)
- CD-ROM and Diskette Drive Assembly (1060)
- LCD Unit (1080)
- Upper Shield Case (1100)

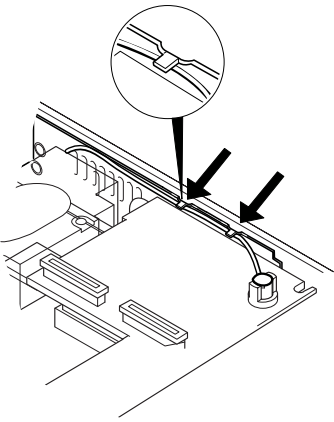
Make sure that the **connectors** are not caught in the base cover.



Step	Size (Quantity)	Torque
2	M 2.5 x 22 mm, nylon-coated (2)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

When installing

The following figure shows the route for the microphone cable:



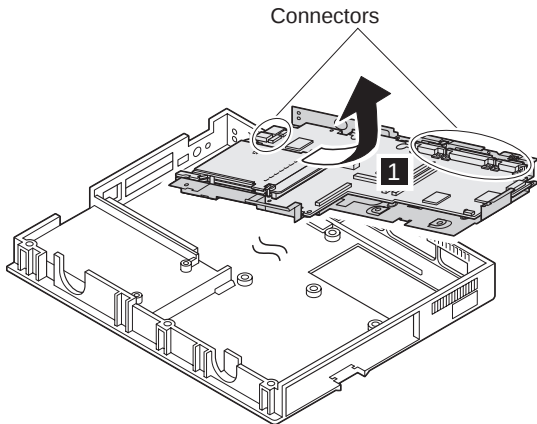
1130 System Board and PC Card Slot

Notes:

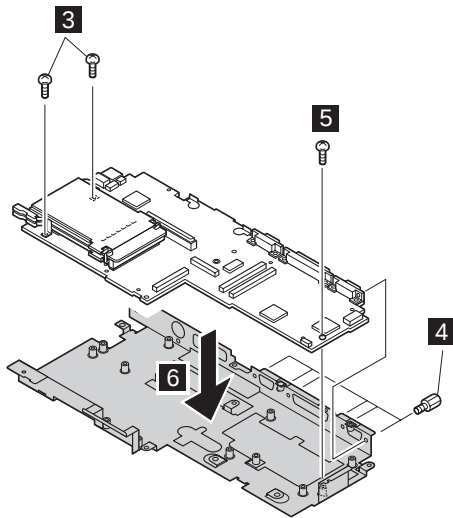
- 1. The system unit serial number must be restored when the system board is replaced. To restore the system unit serial number, select the option "Set system identification" on the maintenance diskette. The flash ROM on the system board contains the vital product data (VPD)—that is, the system unit serial number, system board serial number, and other computer-unique data.
- 2. Do not turn off the computer while restoring the VPD. The system unit serial number label is attached to the base cover.
- 3. Before removing and replacing the system board assembly, make sure that the PC Cards are removed and the eject buttons are not sticking out. If the PC Card eject buttons are sticking out, pull them further out slightly and fold them to the right; then push up the system board assembly from the bottom.

- Battery Pack (1020)
- Keyboard Unit (1040)
- CD-ROM and Diskette Drive Assembly (1060)
- LCD Unit (1080)
- Fan Assembly/CPU Card (1090)
- Upper Shield Case (1100)

Make sure that the **connectors** are not caught in the base cover.

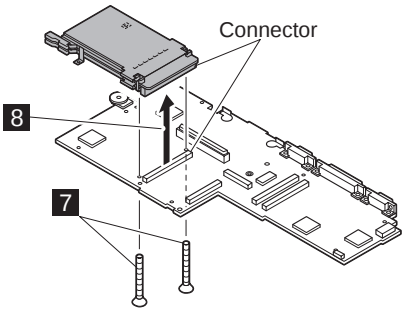


Step	Size (Quantity)	Torque
1	M 2.5 x 6 mm, nylon-coated (2)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		



Step	Size (Quantity)	Torque
3	M 2.5 x 6 mm, nylon-coated (2)	3-4 kgcm
4	Hex stud screw (6)	3-4 kgcm
5	M 2.5 x 6 mm, nylon-coated (1)	3-4 kgcm

Note: Make sure that you use correct screws and tighten all of them **firmly** to the torque shown in the table. **Never reuse** screws that have been removed. Use new ones instead.



Step	Size (Quantity)	Torque
7	M 2 x 16 mm, nylon-coated (2)	2-3 kgcm

Note: Make sure that you use correct screws and tighten all of them **firmly** to the torque shown in the table. **Never reuse** screws that have been removed. Use new ones instead.

1140 Battery Pack Latch

Battery Pack (1020)

Keyboard Unit (1040)

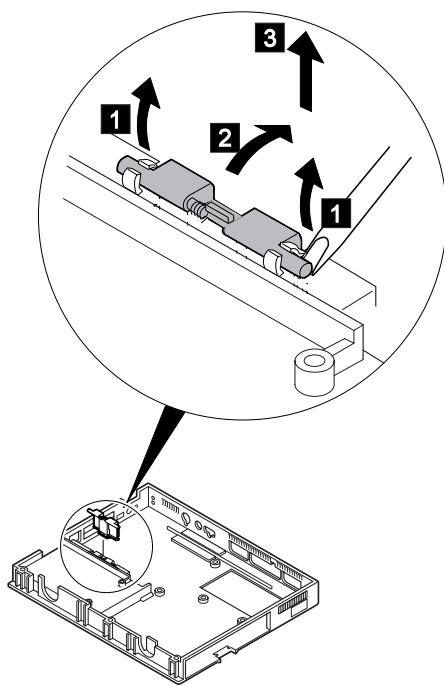
CD-ROM and Diskette Drive Assembly (1060)

LCD Unit (1080)

Fan Assembly/CPU Card (1090)

Upper Shield Case (1100)

System Board and PC Card Slot (1130)



2010 LCD Front Cover

Battery Pack (1020)

Keyboard Unit (1040)

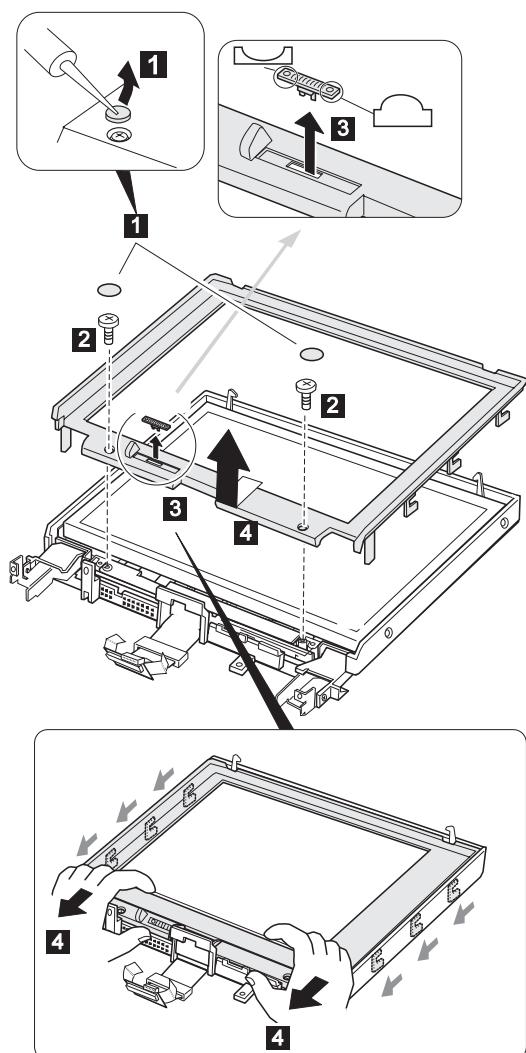
LCD Unit (1080)

1 : Screw Covers

2 : Screws

3 : Brightness Control Lever

4 : Front Cover



Step	Size (Quantity)	Torque
2	M 2.5 x 6 mm, flat head (2)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

2020 LCD Inverter Card

Battery Pack **(1020)**

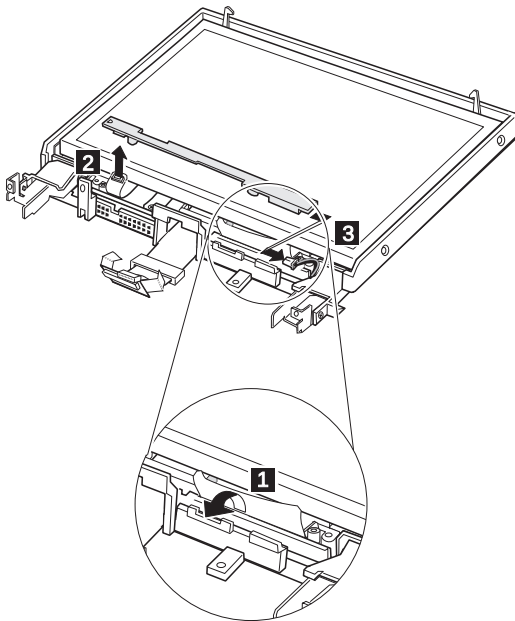
Keyboard Unit **(1040)**

CD-ROM/Diskette Drive Assembly **(1060)**

LCD Unit **(1080)**

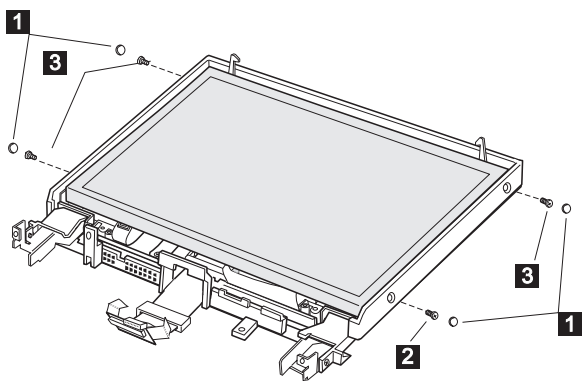
LCD Front Cover **(2010)**

Unwrap the aluminum insulator from the inverter card connector **1** before unplugging the connector **3** .



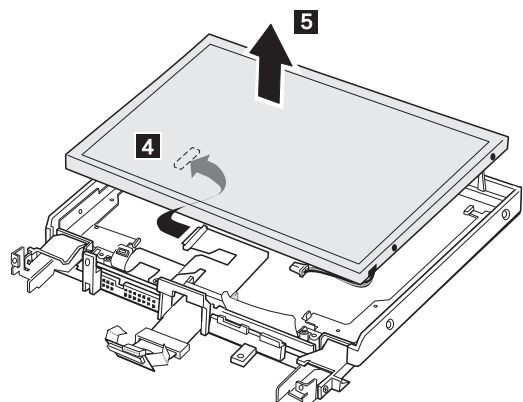
2030 LCD Panel

- Battery Pack (1020)
- Keyboard Unit (1040)
- LCD Unit (1080)
- LCD Front Cover (2010)
- LCD Inverter Card (2020)



Step	Size (Quantity)	Torque
2	M 2.5 x 4.8 mm, flat head (1)	3-4 kgcm
3	M 2.5 x 6 mm, flat head (3)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

Note: Lift the LCD panel a little to disconnect the flexible cable in step 4 .



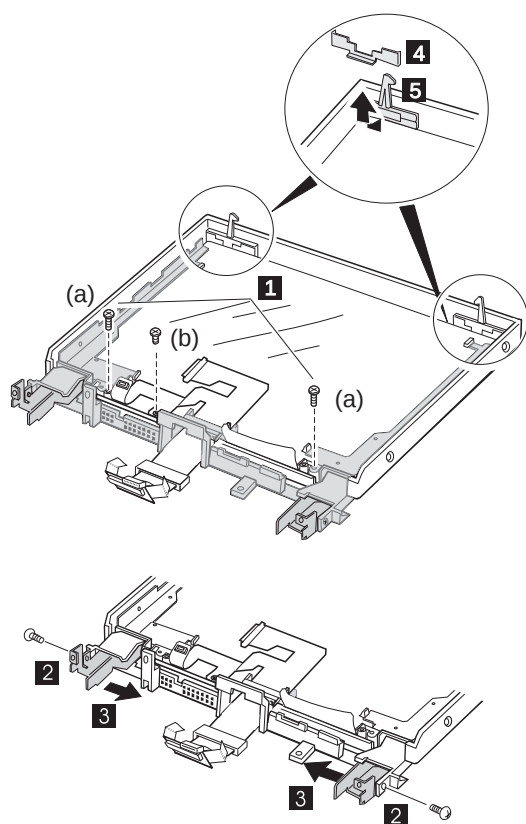
The position of the flexible cable connector may vary by the type of LCD.

2040 LCD Misc. Parts

Battery Pack (1020)
Keyboard Unit (1040)
CD-ROM/Diskette Drive Assembly (1060)
LCD Unit (1080)
LCD Front Cover (2010)
LCD Inverter Card (2020)
LCD Panel (2030)

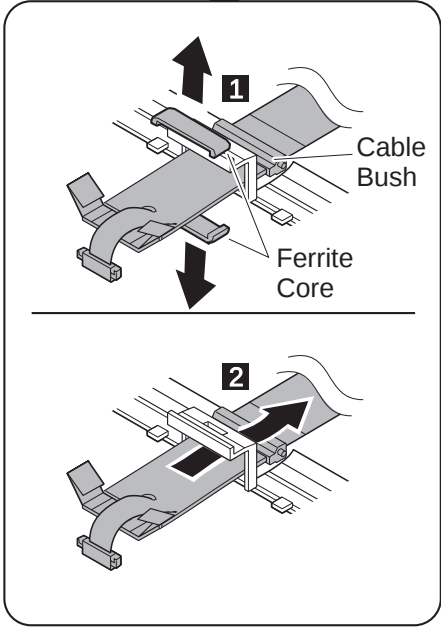
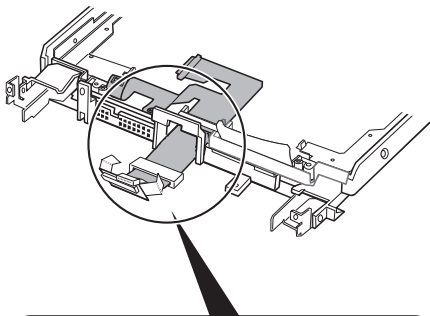
Hinges and latches

- 1 2 3 : Hinges
4 5 : Latches

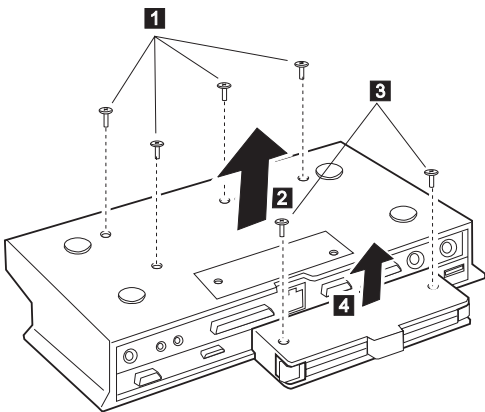


Step	Size (Quantity)	Torque
1	(a) M 2.5 x 6 mm, flat-head (2)	3-4 kgcm
	(b) M 2.5 x 3 mm, flat-head (1)	3-3.5 kgcm
2	M 2.5 x 6 mm, flat-head (2)	3-4 kgcm
Note: Make sure that you use correct screws and tighten all of them firmly to the torque shown in the table. Never reuse screws that have been removed. Use new ones instead.		

2050 LCD Cable

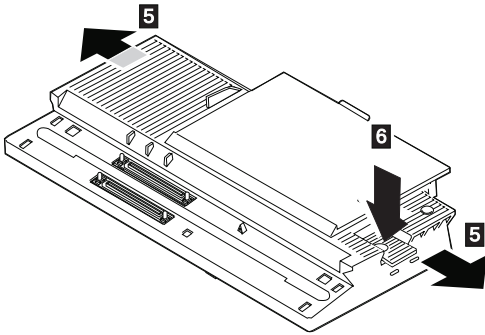


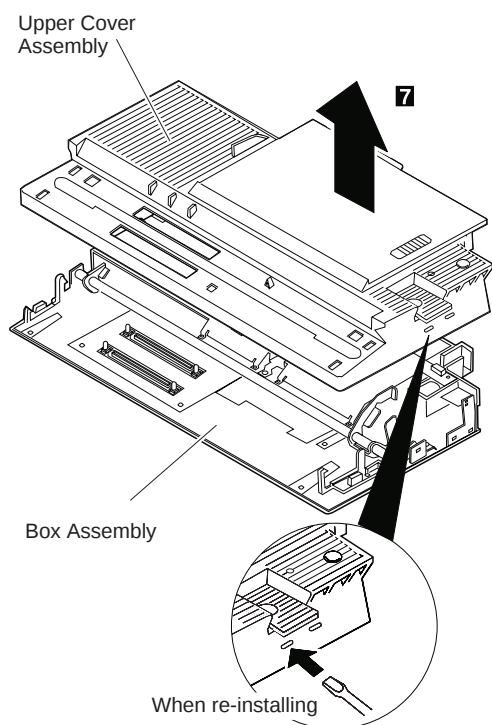
3010 ThinkPad Port Replicator with
Advanced EtherJet Feature



Step	Size (Quantity)	Torque
1	M2.5 x 5.5 mm, brass flat-head (2)	3 kgcm
3	M2.5 x 5.5 mm, brass flat-head (3)	3 kgcm

When re-installing: 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** (see "Screw Tightening Information" on page 4 if you do not have a torque screwdriver).

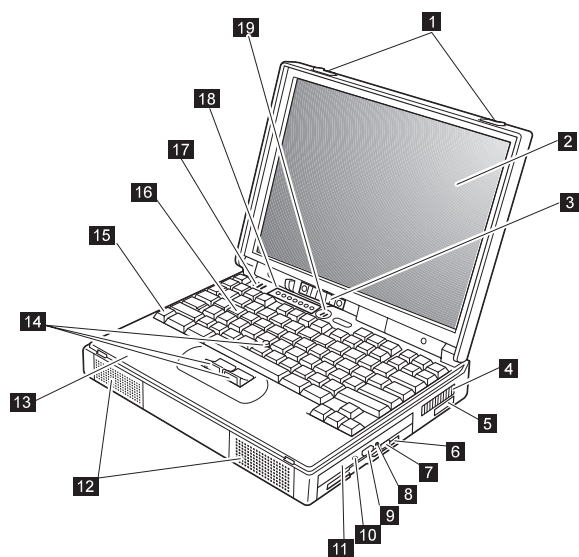




Locations

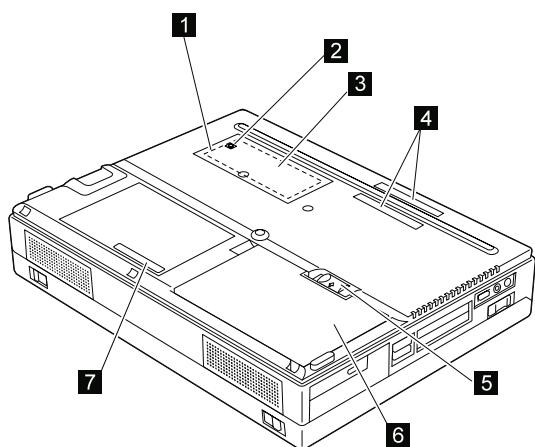
Front View

- 1 LCD latches
- 2 Color LCD screen
- 3 Brightness control
- 4 Fan louver
- 5 Infrared port
- 6 Diskette eject button
- 7 Diskette drive
- 8 CD-ROM emergency eject hole
- 9 CD-ROM eject button
- 10 CD-ROM in-use indicator
- 11 CD-ROM drive
- 12 Stereo speakers
- 13 Palm rest
- 14 TrackPoint
- 15 Fn key
- 16 Keyboard
- 17 Speaker (Box speaker:subwoofer)
- 18 Indicator panel
- 19 Built-in microphone



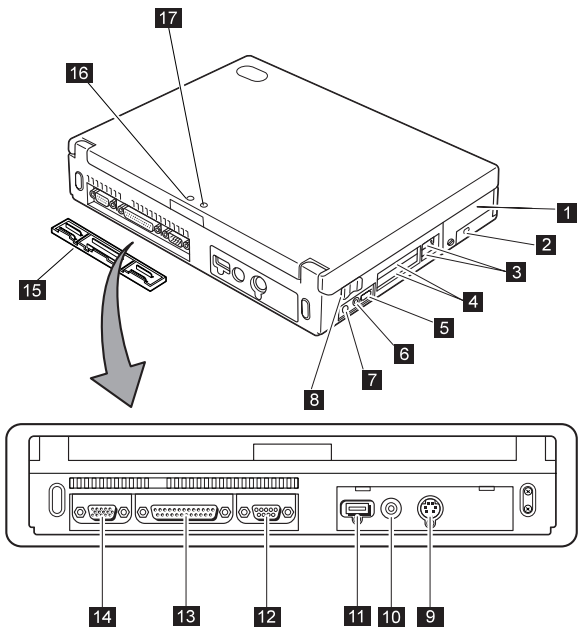
Bottom View

- 1 Memory-slot cover
- 2 Reset switch
- 3 Memory slots and backup battery
- 4 Expansion connectors
- 5 Battery pack lock
- 6 Battery pack
- 7 Serial number label

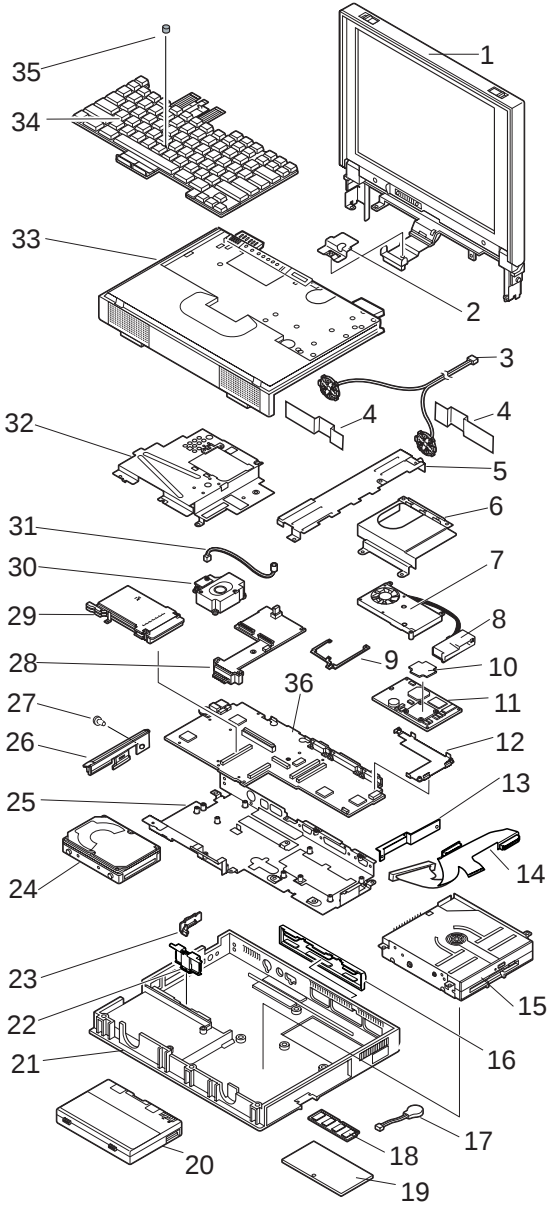


Rear View

- 1 Hard disk drive
- 2 Security keyhole
- 3 PC Card eject buttons
- 4 PC Card slots
- 5 Volume control
- 6 Microphone jack/Line-in jack
- 7 Headphone jack
- 8 Power switch
- 9 External-input device connector
- 10 Power jack
- 11 Universal serial bus (USB) port
- 12 Serial connector
- 13 Parallel connector
- 14 External-monitor connector
- 15 Connector cover
- 16 External suspend mode indicator
- 17 External battery indicator



Parts List



Note on LCD

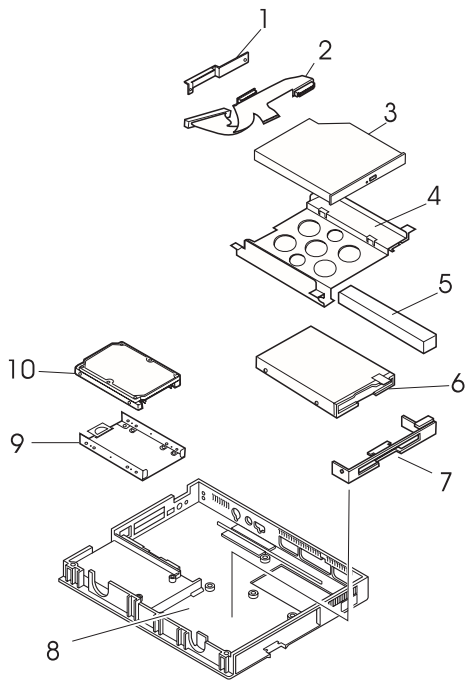
See page 77 for the LCD identification.

Ref. No.	FRU Name	FRU No.
1	LCD Assembly (See page 91)	
2	LCD Cable Holder (included in Base Misc. Parts Kit on page 92.)	
3	Stereo Speaker Assembly	05K5498
4	ESD Spring	05K5499
5	Support Plate (included in Base Misc. Parts Kit on page 89)	
6	Right Shield Case	05K5237
7	Fan	05K5494
8	Air Duct (included in Base Misc. Parts Kit on page 89)	
9	MMO Spacer	05K5234
10	Thermal Rubber	05K5235
11	CPU Card (233 MHz)	10L0888
	(300 MHz)	10L1020
12	Heat Sink	05K4747
13	Connector Bracket (See page 90)	
14	CD/Diskette Drive Connector Assembly (with-CD Model)	05K2709
15	CD-ROM/Diskette Drive Assembly (See page 90)	
16	Connector Cover	05K4744
17	Backup Battery	02K6498
18	SO-DIMM (See page 94)	
19	Memory Slot Cover	05K4758
20	Battery Pack	05K6509
21	Base Cover Assembly	05K4743
22	Battery Pack Lock Assembly	05K4775
23	Power Switch Knob (included in Base Misc. Parts Kit on page 89)	
24	Hard Disk Drive (See page 90)	
25	Lower Shield Case	05K4745
26	HDD Lid	05K5496
27	HDD Lid Coin Screw	05K4754
28	DC/DC Card	10L0930
29	PC Card Slot	05K4862
30	Box Speaker (includes the Power Switch)	02K4328
31	Microphone Assembly	02K4329
32	Upper Shield Case	05K5495
33	Keyboard Bezel	05K5497
34	Keyboard (See page 93)	
35	TrackPoint Cap	84G6536
36	System Board	10L1157

Ref. No.	FRU Name	FRU No.
NS	Base Misc. Parts Kit includes: LCD Cable Holder (Ref.No.2) Support Plate (Ref.No.4.) Air Duct (Ref.No.8) Power Switch Knob (Ref.No.23)	05K5696
NS	Logo for LG Korea	11J8373
NS	Cable Holding Tape	11J8376

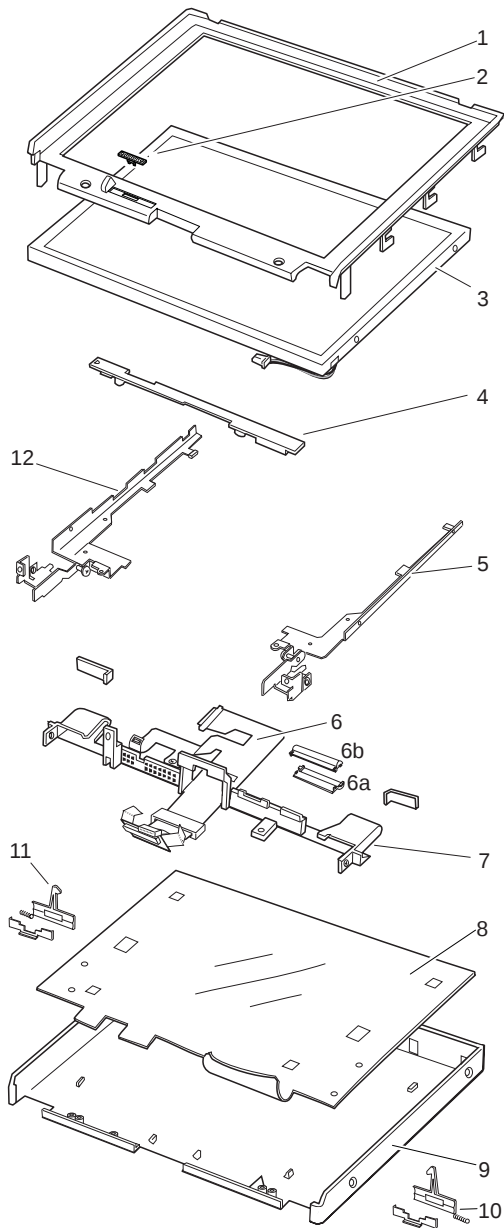
Note: NS: Not Shown

Hard Disk Drive and CD-ROM/Diskette Drive Assembly



Ref. No.	FRU Name	FRU No.
1	Connector Bracket (included in Ref.No.4. CD/Diskette Drive Bracket)	
2	CD/Diskette Drive Connector Assembly	05K2767
3	CD-ROM (10X - 24X)	05K8868
4	CD/Diskette Drive Bracket Kit includes: Connector Bracket (Ref.No.1) CD/Diskette Drive Bracket (Ref.No.4) Absorber (Ref.No.5)	05K4751
5	Absorber (included in Ref.No.4 CD/Diskette Drive Bracket)	
6	Diskette Drive	11J8338
7	Diskette Drive Bezel	73H9932
8	Base Cover Assembly	05K5697
9	HDD Bracket	05K4752
10	Hard Disk Drive Assembly	
	4.0GB HDD Assembly (9.5 mm) with Spacer	22L0024
	4.0GB HDD Assembly (12.5 mm) (See page 48 for the relationship between the HDD and the spacer.)	83H7085

LCD Assembly



Ref. No.	FRU Name	FRU No.
1	Front Cover (included in LCD Cover Kit)	
2	Brightness Control Lever (included in LCD Misc. Parts Kit)	
3	LCD Panel	05K9377
4	LCD Inverter Card	05K3472
5	Right Hinge (included Hinge Kit)	
6	LCD Cable Assembly aCable Bush-Front bCable Bush-Rear	05K2765
7	Hinge Holder (included in LCD Cover Kit)	
8	Insulation Sheet (included in LCD Misc. Parts Kit)	
9	LCD Cover (included in LCD Cover Kit)	
10	Right Latch (included in LCD Misc. Parts Kit)	
11	Left Latch (included in LCD Misc. Parts Kit)	
12	Left Hinge (included in Hinge Kit)	
NS	LCD Cover Kit includes: Front Cover (Ref.No.1) Hinge Holder (Ref.No.7) LCD Cover (Ref.No.9) Logo (Front, Rear) Hinge Cap Screw Cap	05K5500
NS	Hinge Kit includes: Right Hinge (Ref.No.6) Left Hinge (Ref.No.14) Screw Cap	05K5502
NS	LCD Misc. Parts Kit includes: LCD Cable Holder (Ref.No.2 on page 88) Brightness Control Knob (Ref.No.2) Insulation Sheet (Ref.No.8) Right Latch, Spring, Holder (Ref.No.10) Left Latch, Spring, Holder (Ref.No.11) Screw Cap	05K5503

NS: Not Shown

Keyboard

<i>Nomenclature</i>	<i>FRU No.</i>
Arabic	02K4351
Belgian	02K4341
Canadian French	02K4344
Czech	02K4352
Danish	02K4343
Dutch	02K4337
French	02K4335
German	02K4334
Greek	02K4353
Hebrew	02K4354
Hungarian	02K4355
Italian	02K4336
Japanese	02K4333
Korean	02K4345
Latin American Spanish	02K4348
Norwegian	02K4342
Poland	02K4357
Portuguese	02K4356
Russian	02K4346
Slovakian	02K4358
Slovenian	02K4359
Spanish	02K4339
Swedish or Finnish	02K4338
Swiss	02K4340
Taiwanese	02K4347
Thai	02K4349
Turkish	02K4350
U.K. English	02K4332
U.S. English	02K4331

Miscellaneous and Option Parts List

Miscellaneous Parts

FRU Name	FRU No.
Screw Kit includes:	05K5725
M2.5 x 6, Flat Head (9)	
M2.5 x 3, Flat Head (1)	
M2.5 x 4.8, Flat Head (1)	
Hex Stud (6)	
M2.5 x 6, Bind (Black) (19)	
M2.5 x 8, Bind (Black) (7)	
M2 x 6, Bind (4)	
M2 x 18, Bind (3)	
M2.5 x 22, Bind Nylock (2)	
M2.5 x 12, Bind Nylock (3)	
M2.6 x 4, Bind (Yellow) (1)	
M2.6 x 2.8, Bind (Red)(3)	
M2 x 1.7, Special Pan (Blue) (4)	
M2 x 2.4, Special Pan (Yellow) (2)	
M3 x 3, Flat (4)	
M2.5 x 6, Special (1)	
M2.5 x 6, Big Head (Yellow) (1)	
M2.5 x 25, Bind Nylock (1)	

Option Parts

Notes

1. If you need to replace the AC Adapter, use the one for the country you are in even if the computer is from a different country.
2. The warranty for the system unit does not apply to all options.

FRU Name	FRU No.
Headset	85G1529
6.4GB HDD Assembly	02K0520
AC Adapter (56 W, 3-prong) ¹	02K7007
AC Adapter (56 W, 3-prong) ¹	02K7011
AC Adapter (for Japan, 2-prong) ²	11J8974
AC Adapter (for Japan, 2-prong) ²	02K6497
Microphone	66G7871
PS/2 Miniature Mouse	95F5723
ThinkPad Port Replicator with Advanced EtherJet Feature	
Box Assembly	05K4874
Upper Cover Assembly	05K4875
ThinkPad 560 Port Replicator I	05K4645
DIMM 16MB (60 ns)	01K1115
DIMM 32MB (60 ns)	42H2769
DIMM 64MB (60 ns)	42H2817
Interface Cable to System for Keyboard	84G2531
Interface Cable to Keyboard for Keypad	84G2532
Mini-DIN to Mini-DIN Cable	84G6474

¹ The 3-prong adapters are interchangeable; you can order either one.

² The 2-prong adapters are interchangeable; you can order either one.

Numeric Keypad

FRU Name	FRU No.
Belgian	95F5741
Canadian French	95F5466
Danish	95F5467
Dutch	95F5467
French	95F6313
German	95F6314
Greek	95F5467
Hebrew	95F5741
Icelandic	95F5467
Italian	95F6316
Japanese	79F6401
Norwegian	95F5467
Spanish	95F6315
Swedish or Finnish	95F5468
Swiss French	95F5711
Swiss German	95F5715
Turkish	95F5467
U.K. English	95F5741
U.S. English	95F5741

Black Keypad

FRU Name	FRU No.
French	84G6286
German	84G6280
Italian	84G6292
Norwegian	84G6310
Swedish	84G6304
U.K. English	84G6298
U.S. English	84G2530

Black Keyboard

FRU Name	FRU No.
French	84G6285
German	84G6279
Italian	84G6291
Norwegian	84G6309
Swedish	84G6303
U.K. English	84G6297
U.S. English	84G2529

Accessories

FRU Name	FRU No.
Keyboard/Mouse Cable	54G0444

Tools

<i>FRU Name</i>	<i>FRU No.</i>
Tri-Connector Wrap Plug	72X8546
PC Test Card	35G4703
USB Parallel Test Cable	05K2580
Screwdriver Kit	95F3598
Torque Screwdriver	05K4695
5-mm Socket Wrench	05K4694
Screwdriver	05K4693

Power Cords

IBM power cords for a specific country are usually available only in that country:

For 2-pin power cords:

IBM Power Cord Part Number	Used in These Countries
13H5264	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Thailand, Trinidad (West Indies), United States of America, Venezuela
13H5267	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China (including Hong Kong), Qatar, Singapore, United Kingdom
13H5270	Austria, Belgium, Bulgaria, Chile, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, former Yugoslavia
13H5273	Japan
13H5276	Argentina, Australia, New Guinea, New Zealand, Papua New Guinea, Paraguay, Uruguay
13H5279	Bangladesh, Pakistan, South Africa, Sri Lanka

For 3-pin slim power cords:

IBM Power Cord P/N	Used in These Countries
76H3514	Argentina, Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay
76H3516	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela, Thailand
76H3518	Austria, Belgium, Bulgaria, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Turkey, former Yugoslavia
76H3520	Denmark
76H3522	Bangladesh, Pakistan, South Africa, Sri Lanka
76H3524	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China (including Hong Kong), Qatar, Singapore, United Kingdom
76H3526	Japan
76H3528	Liechtenstein, Switzerland
76H3530	Chile, Ethiopia, Italy, Libya
76H3532	Israel
76H3535	Korea

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