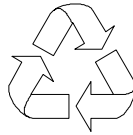# TravelMate 520
## Service Guide

Service guide files and updates are available
on the AIPG/CSD web; for more information,
please refer to http://csd.acer.com.tw

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## Copyright

## Disclaimer

# Conventions

The following conventions are used in this manual:

| | |
|---|---|
| `Screen messages` | Denotes actual messages that appear on screen. |
| **NOTE** | Gives bits and pieces of additional information related to the current topic. |
| **WARNING** | Alerts you to any damage that might result from doing or not doing specific actions. |
| **CAUTION** | Gives precautionary measures to avoid possible hardware or software problems. |
| **IMPORTANT** | Reminds you to do specific actions relevant to the accomplishment of procedures. |

# Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for Acer's "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.

2. Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide. For ACER-AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

# Table of Contents

# *Table of Contents*

# System Specifications

## Features

This computer was designed with the user in mind. Here are just a few of its many features:

### Performance

- ❑ Mobile Pentium® III processor with 256KB L2 cache, Mobile Pentium® III processor with 256KB level 2 cache featuring Intel® SpeedStep™ technology with 256KB level 2 cache or Mobile Celeron® processor with 128KB level 2 cache
- ❑ 64-bit memory bus
- ❑ Built-in floppy disk drive
- ❑ Lithium-Ion battery pack
- ❑ Power management system with ACPI (Advanced Configuration Power Interface)

### Multimedia

- ❑ 16-bit high fidelity PCI stereo audio with 3D sound and wavetable synthesizer
- ❑ Built-in dual speakers with microphone
- ❑ High-speed CD-ROM, DVD-ROM or CD-RW drive
- ❑ USB video capture kit option

### Connectivity

- ❑ High-speed fax/data modem port
- ❑ Fast infrared wireless communication
- ❑ USB (Universal Serial Bus) port
- ❑ Ethernet/Fast Ethernet port

### Human-centric Design and Ergonomics

- ❑ All-in-one design (CD-ROM, floppy disk drive, hard disk drive)
- ❑ Sleek, smooth and stylish design
- ❑ Full-sized keyboard
- ❑ Ergonomically-centered touchpad pointing device

### Expansion

- ❑ CardBus PC card (formerly PCMCIA) slots (two type II/I or one type III) with ZV (Zoomed Video) port support (lower slot)
- ❑ Upgradeable memory and hard disk
- ❑ Port replicator option for one-step connect/disconnect from peripherals

### Display

The large graphics display offers excellent viewing, display quality and desktop performance graphics. The computer supports a Thin-Film Transistor (TFT) liquid crystal display (LCD) displaying 24-bit true-color at 800x600 Super Video Graphic Array (SVGA) or 1024x768 eXtended Graphics Array (XGA) resolution.

### Video performance

2X AGP video graphic accelerator with 8 MB of video memory boost video performance.

### Simultaneous display

The computer's large display and multimedia capabilities are great for giving presentations. If you prefer, you can also connect an external monitor when giving presentations. This computer supports simultaneous LCD and CRT display. Simultaneous display allows you to control the presentation from your computer and at the same time face your audience. You can also connect other output display devices such as LCD projection panels for large-audience presentations.

### Dual Display

The computer's unique graphics chip takes advantage of Windows 98 multi-display capability, allowing you to extend your desktop to an external display device, such as an external monitor projector. With this feature enabled, you can move program windows to/from the computer LCD and the external monitor.

### Power management

The power management system incorporates an "automatic LCD dim" feature that automatically dims the LCD when the computer is powered by a battery pack to conserve battery power. See "Power Management" on page 26 for more information on power management features.

### Opening and closing the display

To open the display, slide the display cover latch to the left and lift up the cover. Then tilt it to a comfortable viewing position. The computer employs a microswitch that turns off the display (and enters standby mode) to conserve power when you close the display cover, and turns it back on when you open the display cover.

**NOTE:** If an external monitor is connected, the computer turns off the display (but does not enter standby mode) when you close the display cover.

To close the display cover, fold it down gently until the display cover latch clicks into place.

To avoid damaging the display, do not slam it when you close it. Also, do not place any object on top of the computer when the display is closed.

# System Block Diagram
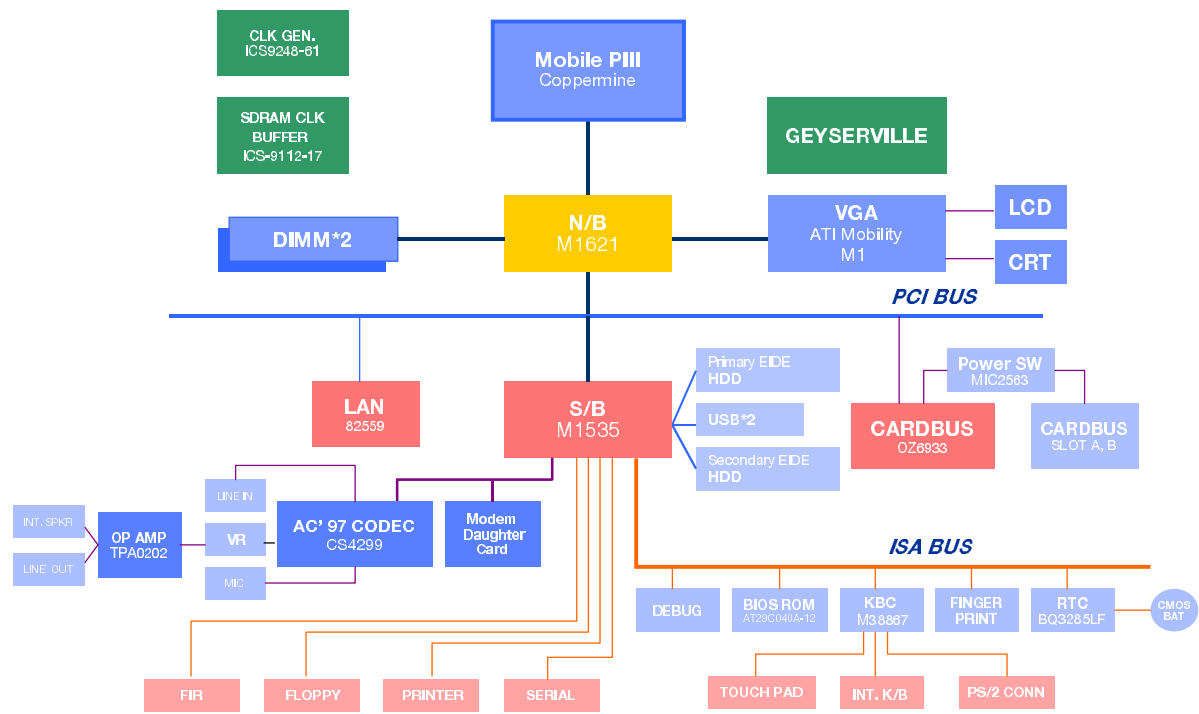
# Board Layout

## Top View
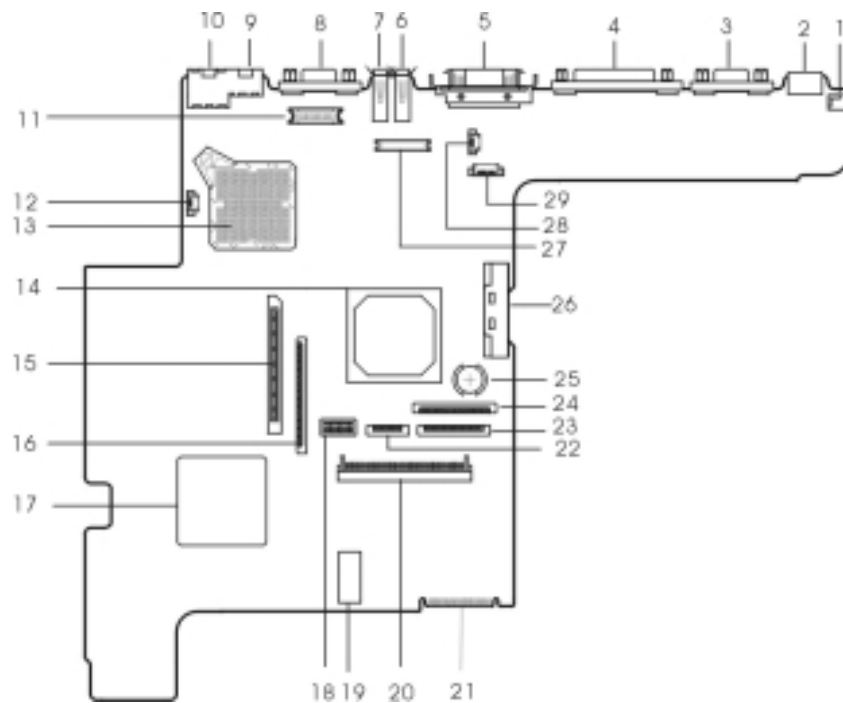


| | |
|---|---|
| 1. DC-in Port | 16. Diskette Drive Connector |
| 2. PS/2 Keyboard and Mouse Port | 17. PCMCIA (PC card) Controller (OZ6933) |
| 3. Serial Port | 18. Switch |
| 4. Parallel Port | 19. BIOS ROM |
| 5. Expansion Port | 20. HDD Connector |
| 6. USB Port 2 | 21. Golden Finger for Debug |
| 7. USB Port 1 | 22. Touchpad Cable Connector |
| 8. External Display Port | 23. Digital Finger Print Sensor Connector(Not Used) |
| 9. Modem Port | 24. Keyboard Cable Connector |
| 10. LAN Port | 25. RTC Battery |
| 11. LED & Inverter Connector | 26. CD-ROM Connector |
| 12. Fan Connector | 27. LCD Connector |
| 13. CPU Socket | 28. TV BD Connector(Not Used) |
| 14. VGA Controller (ATI Rage Mobility-M1) | 29. Launch Key Connector |
| 15. PCMCIA Socket Connector | |

## Bottom View
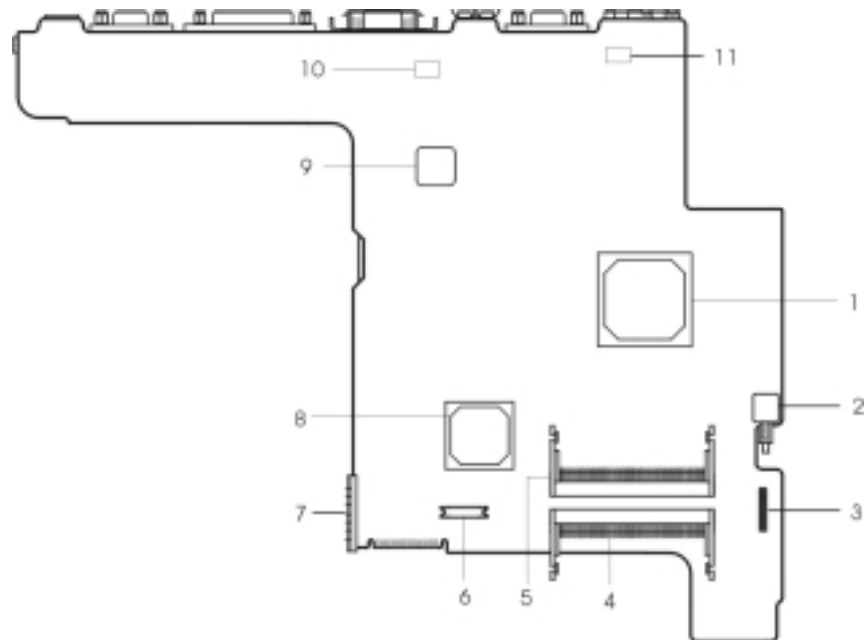


1. North Bridge (ALi M1621)
2. Power Push Switch
3. Audio Connector
4. DIMM 1 Socket
5. DIMM 2 Socket (Reverse)
6. Modem Connector
7. Battery Connector
8. South Bridge (ALi M1535)
9. LAN Controller(Intel GD82559)
10. Modem Card Cable Connector
11. Modem Card Cable Connector

# Panel

Ports allow you to connect peripheral devices to your computer as you would with a desktop PC.

## Front Panel
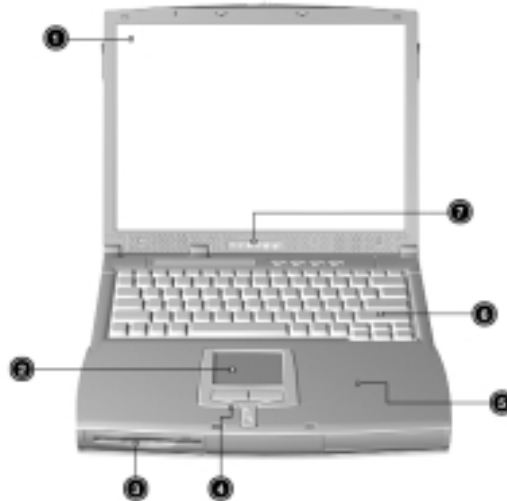


| # | Item | Description |
|---|------|-------------|
| 1 | Display screen | Also called LCD (Liquid Crystal Display), displays computer output. |
| 2 | Touchpad | Touch-sensitive pointing device which functions like a computer mouse. |
| 3 | Floppy drive | Internal diskette drive, accepts 3.5-inch floppy diskette. |
| 4 | Click button (left, center and right) | The left and right buttons function like the left and right mouse buttons, the center button serves as a scroll up/down button. |
| 5 | Palmrest | Comfortable support area for your hands when you use the computer. |
| 6 | Keyboard | Inputs data into your computer. |
| 7 | Status indicator | LEDs (Light Emitting Diodes) that turn on and off to show the status of the computer and its functions and components. |

## Left Panel



| # | Icon | Item/ Port | Connects to... |
|---|------|-----------|----------------|
| 1 | | Security keylock | Kensington-compatible key-based computer security lock. |
| 2 | | PCMCIA (PC card) Port | Two Type I/II or one Type III 16-bit PC card or 32-bit CardBus PC Card. |
| 3 | | Eject button | Eject PC cards from the card slots. |
| 4 | | Power switch | Turns on the computer power. |
| 5 | | Infrared port | Interfaces with Infrared devices (e.g., infrared printer, IR-aware computers). |
| 6 | | Speaker/ headphone-out jack | Audio line-out devices (e.g., speakers, headphones) |
| 7 | | Line-in jack | Accepts audio line-in devices (e.g., audio CD player, stereo walkman). |
| 8 | | Microphone-in jack | Accepts a mono-stereo condenser microphone. |
| 9 | | Volume control | Controls the volume of the speakers. |
| 10 | | Video capture kit slot | Accepts the video capture kit option on the left side of the computer. |

## Right Panel



| # | Icon | Item/ Port | Connects to... |
|---|------|------------|----------------|
| 1 | | Video capture kit slot | Accepts the video capture kit option on the right side of the computer. |
| 2 | | Battery bay | Houses the computer's battery pack. |
| 3 | | CD-ROM/DVD-ROM/CD-RW Drive | Houses removable media drive modules. |
| 4 | | LED indicator | Lights up when the AcerMedia drive is active. |
| 5 | | Eject button | Ejects the compact disc from the drive. |
| 6 | | Emergency eject slot | Ejects the compact discs when the computer is turned off. |
| 7 | ▬▬▬ ▭ ▭ ▭ | DC-in port | AC adapter and power outlet. |

## Rear Panel



| # | Icon | Item/ Port | Connects to... |
|---|------|------------|----------------|
| 1 | 🖱⌨ | PS/2 keyboard and mouse port | PS/2 compatible device (e.g., PS/2 keyboard/ mouse/keypad) |
| 2 | IOIOI | Serial port | Serial device (e.g., serial mouse) |
| 3 | 🖶 | Parallel port | Parallel device (e.g., parallel printer) |

| # | Icon | Item/ Port | Connects to... |
|---|------|-----------|----------------|
| 4 | | Expansion port | EasyPort port replicator |
| 5 | | USB ports | Universal Serial Bus devices (e.g., USB mouse, USB camera) |
| 6 | | External display port | Display device (e.g., external monitor, LCD projector) and displays up to 64K colors at 1280x1024 resolution). |
| 7 | | Modem port | Phone line |
| 8 | | LAN port | Ethernet 10/100 based network |

## Bottom Panel
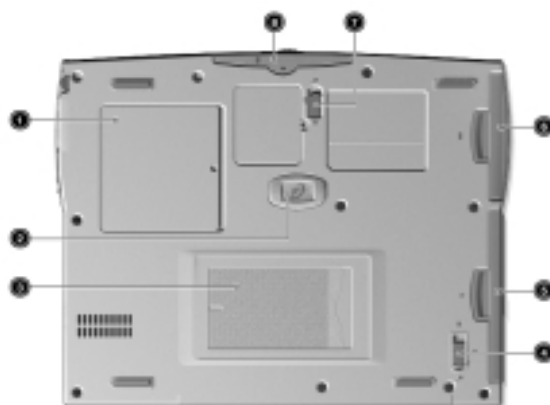


| # | Item | Description |
|---|------|-------------|
| 1 | Memory compartment | Houses the computer's main memory. |
| 2 | Hard disk anti-shock protection | Protects your hard disk against shocks. |
| 3 | Personal identification slot | Insert a business card or similar-sized identification card to personalize your computer. |
| 4 | AcerMedia bay release latch | Unlatches the AcerMedia drive for removal or swapping. |
| 5 | AcerMedia bay | Houses an AcerMedia drive module. |
| 6 | Battery bay | Houses the computer's battery pack. |
| 7 | Battery release latch | Unlatches the battery to remove the battery pack. |
| 8 | Hard disk bay | Houses the computer's hard disk (secured by a screw). |

# Indicators

The computer has six easy-to-read status icons below the display screen.

The Power and Sleep status icons are visible even when you close the display cover so you can see the status of the computer while the cover is closed.

| # | Icon | Function | Description |
|---|------|----------|-------------|
| 1 | ☼ | Power | Lights when the computer is on. |
| 2 | z^z | Sleep | Lights when the computer enters Sleep Mode. |
| 3 | ◈ | Media Activity | Lights when the floppy disk drive, hard disk drive or AcerMedia drive is active. |
| 4 | 🔋 | Battery Charge | Lights when the battery is being charged. |
| 5 | 🔒A | Caps Lock | Lights when Caps Lock is activated. |
| 6 | 🔒1 | Num Lock | Lights when Num Lock is activated. |

# Keyboard

The keyboard has full-sized keys and an embedded keypad, separate cursor keys, two Windows keys and twelve function keys.

## Special keys

### Lock keys

The keyboard has three lock keys which you can toggle on and off.
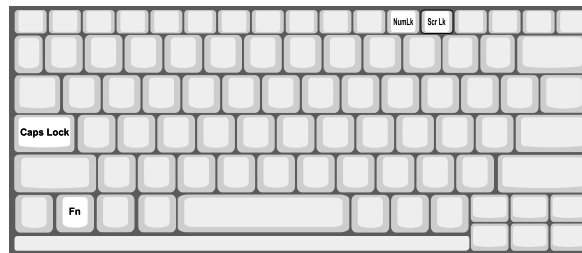


| Lock key | Description |
|---|---|
| Caps Lock | When Caps Lock is on, all alphabetic characters typed are in uppercase. |
| Num Lock (Fn-F11) | When Num Lock is on, the embedded keypad is in numeric mode.  The keys function as a calculator (complete with the arithmetic operators +, -, *, and /).  Use this mode when you need to do a lot of numeric data entry.  A better solution would be to connect an external keypad. |
| Scroll Lock (Fn-F12) | When Scroll Lock is on, the screen moves one line up or down when you press the up or down arrow keys respectively.  Scroll Lock does not work with some applications. |

### Embedded numeric keypad

The embedded numeric keypad functions like a desktop numeric keypad.  It is indicated by small characters located on the upper right corner of the keycaps.  To simplify the keyboard legend, cursor-control key symbols are not printed on the keys.
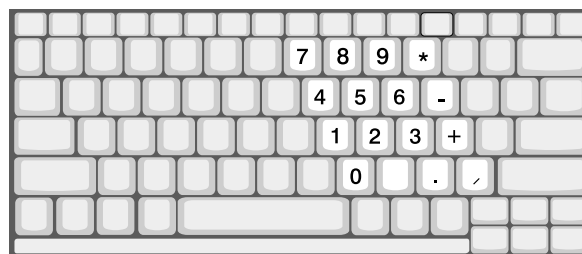


| Desired access | Num lock on | Num lock off |
|---|---|---|
| Number keys on embedded keypad | Type numbers in a normal manner. | |
| Cursor-control keys on embedded keypad | Hold Shift while using cursor-control keys. | Hold Fn while using cursor-control keys. |
| Main keyboard keys | Hold Fn while typing letters on embedded keypad. | Type the letters in a normal manner. |

**NOTE:** If an external keyboard or keypad is connected to the computer, the Num Lock feature automatically shifts from the internal keyboard to the external keyboard or keypad.

## Windows keys

The keyboard has two keys that perform Windows-specific functions.

| Keys | Description |
|------|-------------|
| Windows logo key | Start button. Combinations with this key perform shortcut functions. Below are a few examples: |
| | + Tab (Activates next taskbar button) |
| | + E (Explores My Computer) |
| | + F (Finds Document) |
| | + M (Minimizes All) |
| | Shift + + M (Undoes Minimize All) |
| | + R (Displays the Run... dialog box) |
| Application key | Opens a context menu (same as a right-click). |

## Hot Keys

The computer employs hot keys or key combinations to access most of the computer's controls like screen brightness, volume output and the BIOS Utility.

To activate hot keys, press and hold the Fn key before pressing the other key in the hot key combination.
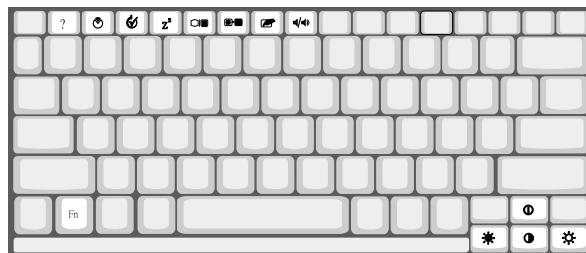
| Hot key | Icon | Function | Description |
|---------|------|----------|-------------|
| Fn-F1 | ? | Hot Key Help | Displays help on hot keys. |
| Fn-F2 |  | Setup | Accesses the computer's configuration utility. |

| Hot key | Icon | Function | Description |
|---|---|---|---|
| Fn-F3 | | Power Management Scheme Toggle | Switches the power management scheme used by the computer (function available if supported by operating system) |
| Fn-F4 | Z^z | Sleep | Puts the computer in Sleep mode. |
| Fn-F5 | | Display Toggle | Switches display output between the display screen, external monitor (if connected) and both the display screen and external monitor. |
| Fn-F6 | | Screen Blank | Turns the display screen backlight off to save power. Press any key to return. |
| Fn-F7 | | Touchpad Toggle | Turns the internal touchpad on and off. |
| Fn-F8 | | Speaker Toggle | Turns the speakers on and off. |
| Fn-← | | Brightness Down | Decreases the screen brightness. |
| Fn-→ | | Brightness Up | Increases the screen brightness. |
| Fn-↑ | | Contrast Up | Not applicable, because the contrast level of TFT display is already optimized. |
| Fn-↓ | | Contrast Down | Not applicable, because the contrast level of TFT display is already optimized. |
| Alt Gr-Euro | € | Euro | Types the euro symbol. |

### The euro symbol

If your keyboard layout is set to United States-International or United Kingdom or if you have a keyboard with a European layout, you can type the Euro symbol on your keyboard.

NOTE: For US keyboard users:  The keyboard layout is set when you first set up Windows.  For the Euro symbol to work, the keyboard layout has to be set to United States-International.

To verify the keyboard type:

1.   Click on **Start, Settings, Control Panel**.

2.   Double-click on **Keyboard**.

3.   Click on the **Language tab**.

4.   Verify that the keyboard layout used for "English (United States)" is set to United States-International.

   If not, select and click on **Properties**; then select **United States-International** and click on **OK**.

**5.** Click on **OK**.

To type the Euro symbol:

**1.** Locate the Euro symbol on your keyboard.

**2.** Open a text editor or word processor.

**3.** Hold **Alt Gr** and press the Euro symbol.


**NOTE:** Some fonts and software do not support the Euro symbol.  Please refer to  http://www.microsoft.com/ typography/faq/faq12.htm for more information.

## Launch Keys

Located at the top of the keyboard are four buttons.  These buttons are called launch keys.  They are designated as key 1, key 2, key 3 and key 4.  By default, key 1 is used to launch the internet browser and key 2 is used to launch the e-mail application.  Keys 3 and 4 starts the Launch Manager application.  All four keys can be set by the user.  To set the launch keys, run the Acer Launch Manager.

# Touchpad

The built-in touchpad is a PS/2-compatible pointing device that senses movement on its surface. This means that the cursor responds as you move your finger on the surface of the touchpad. The central location on the palmrest provides optimum comfort and support.

**NOTE:** When using an external USB or serial mouse, you can press **Fn-F7** to disable the touchpad. If you are using an external PS/2 mouse, the touchpad is automatically disabled.

## Touchpad basics

The following items teach you how to use the touchpad:

1. Move your finger across the touchpad to move the cursor.

2. Press the left (1) and right (3) buttons located on the edge of the touchpad to do selection and execution functions. These two buttons are similar to the left and right buttons on a mouse. Tapping on the touchpad produces similar results.

3. Use the center (2) buttons (top and bottom) to scroll up or down a page. This button mimics your cursor pressing on the right scroll bar of Windows applications.

| Function | Left Button | Right Button | Center Button | Tap |
|---|---|---|---|---|
| Execute | Click twice quickly | | | Tap twice (at the same speed as double-clicking a mouse button) |
| Select | Click once | | | Tap once |
| Drag | Click and hold, then use finger to drag the cursor on the touchpad | | | Tap twice (at the same speed as double-clicking a mouse button) then hold finger to the touchpad on the second tap and drag the cursor |
| Access context menu | | Click once | | |
| Scroll | | | Click and hold the up/ down buttons | |

**NOTE:** Keep your fingers dry and clean when using the touchpad.  Also keep the touchpad dry and clean. The touchpad is sensitive to finger movements.  Hence, the lighter the touch, the better the response. Tapping harder will not increase the touchpad's responsiveness.

# Hardware Specifications and Configurations

**Main board Major Chips**

| Item | Controller |
|------|------------|
| System core logic | ALi M1621/M1535 |
| Super I/O controller | ALi M1535 |
| Audio controller | ALi M1535 + Cirrus Logic CS4299 |
| Video controller | ATI Rage Mobility-M1 |
| IDE controller | ALi M1535 |
| Keyboard controller | M38867 |
| RTC | BQ3285LF |
| PCMCIA Controller | O2 OZ6933 |

**Processor**

| Item | Specification |
|------|---------------|
| CPU type | Intel Mobile Pentium III/Celeron 500/500+ MHz with 256KB/128KB on-die cache |
| CPU package | uPGA2 package |
| CPU core voltage | 1.6V / 1.35V |
| CPU I/O voltage | 1.5V |

**BIOS**

| Item | Specification |
|------|---------------|
| BIOS vendor | Acer |
| BIOS version | V3.0 |
| BIOS ROM type | Flash ROM |
| BIOS ROM size | 512KB |
| BIOS package | 32-pin TSOP |
| Supported protocols | ACPI 1.0b, APM 1.2, PC Card 95, SM BIOS 2.3, EPP/IEEE 1284, ECP/IEEE 1284 1.7 & 1.9, IrDA, PCI 2.1, PnP 1.0a, PS/2 keyboard and mouse, USB, VESA VGA BIOS, DDC-2B, CD-ROM bootable, Windows keyboard Microsoft Simple Boot Flag |
| BIOS password control | Set by switch, see SW1 settings |

**Second Level Cache**

| Item | Specification |
|------|---------------|
| Cache controller | Built-in ALi M1621 |
| Cache size | 128KB/256KB |
| 1st level cache control | Always Enabled |
| 2nd level cache control | Always Enabled |
| Cache scheme control | Fixed-in write back |

**System Memory**

| Item | Specification |
|------|---------------|
| Memory controller | ALi M1621 |
| Onboard memory size | 0 MB |

### System Memory

| Item | Specification |
|---|---|
| DIMM socket number | 2 sockets |
| Supports memory size per socket | 32/64/128/256 MB |
| Supports maximum memory size | 512 MB (256MB x 2) |
| Supports DIMM type | SDRAM |
| Supports DIMM speed | 100 MHz |
| Supports DIMM voltage | 3.3 V |
| Supports DIMM package | 144 pin so-DIMM |
| Memory module combinations | You can install memory modules in any combinations as long as they match the above specifications. |

### Memory Combinations

| Slot 1 | Slot 2 | Total Memory |
|---|---|---|
| 32 MB | 32 MB | 64 MB |
| 64 MB | 0 MB | 64 MB |
| 0 MB | 64 MB | 64 MB |
| 64 MB | 32 MB | 96 MB |
| 32 MB | 64 MB | 96 MB |
| 64 MB | 64 MB | 128 MB |
| 0 MB | 128 MB | 128 MB |
| 128 MB | 0 MB | 128 MB |
| 32 MB | 128 MB | 160 MB |
| 128 MB | 32 MB | 160 MB |
| 64 MB | 128 MB | 192 MB |
| 128 MB | 64 MB | 192 MB |
| 128 MB | 128 MB | 256 MB |
| 256 MB | 0 MB | 256 MB |
| 0 MB | 256 MB | 256 MB |
| 256 MB | 32 MB | 288 MB |
| 32 MB | 256 MB | 288 MB |
| 256 MB | 64 MB | 320 MB |
| 64 MB | 256 MB | 320 MB |
| 256 MB | 128 MB | 384 MB |
| 128 MB | 256 MB | 384 MB |
| 256 MB | 256 MB | 512 MB |

Above table lists some system memory configurations. You may combine DIMMs with various capacities to form other combinations.

### LAN & Modem Interface

| Item | Specification |
|---|---|
| Chipset | M1535/GD 82559 |
| Fax modem data baud rate (bps) | 14.4K |
| Data modem data baud rate (bps) | 56K |
| Supports modem protocol | ITU-T V.90, V.34, TIA/EIA 602 |
| Supports LAN protocol | IEEE 802.3 |
| Modem/LAN connector type | RJ11/RJ45 |

**LAN & Modem Interface**

| Item | Specification |
|------|---------------|
| Modem/LAN connector location | Rear Side |

**Floppy Disk Drive Interface**

| Item | Specification | | |
|------|---------------|---|---|
| Vendor & model name | Mitsumi D353F3X | | |
| Floppy Disk Specifications | | | |
| Media recognition | 2DD(720KB) | 2HD(1.2MB, 3-mode) | 2HD(1.44MB) |
| Sectors/track | 9 | 15 | 18 |
| Tracks | 80 | 80 | 80 |
| Data transfer rate (Kbit/s) | 1MB | 1.6MB | 2MB |
| Rotational speed (RPM) | 300 | 360 | 300 |
| Read/write heads | 2 | | |
| Encoding method | MFM/FM | | |
| Power Requirement | | | |
| Input Voltage (V) | +5V +/- 10% | | |

**Hard Disk Drive Interface**

| Item | Specification | | |
|------|---------------|---|---|
| Vendor & Model Name | IBM DARA-209000 | IBM DARA-212000 | Hitachi DK23AA-12 |
| Capacity (GB) | 9 | 12 | 12 |
| Bytes per sector | 512 | 512 | 512 |
| Logical heads | 16 | 16 | 16 |
| Logical sectors | 63 | 63 | 63 |
| Drive Format | | | |
| Logical cylinders | 16383 | 16383 | 16383 |
| Physical read/write heads | 3 | 4 | 4 |
| Disks | 2 | 2 | 2 |
| Spindle speed (RPM) | 4200 | 4200 | 4200 |
| Performance Specifications | | | |
| Buffer size (KB) | 418 | 418 | 512 |
| Interface | IDE (ATA-4) | IDE (ATA-4) | IDE (ATA-5) |
| Data transfer rate (disk buffer, MB/s) | 85.5-161.6 | 85.5-161.6 | 12.4-20.6 |
| Data transfer rate (host buffer, MB/s) | 16.6 (PIO Mode-4) 66.6 (Ultra DMA Mode-4) | 16.6 (PIO Mode-4) 66.6 (Ultra DMA Mode-4) | 16.6 (PIO Mode-4/Multiword DMA Mode-2) 66.6 (Ultra DMA Mode-4) |
| DC Power Requirements | | | |
| Voltage tolerance | 5+/-5% | 5+/-5% | 5+/-5% |

**CD-ROM Interface**

| Item | Specification | |
|---|---|---|
| Vendor & Model Name | MKE CR-176-B/D  24X | TEAC CD-224E-B26 |
| Performance Specification | | |
| Transfer rate | CAV Mode:<br>   775~1800 blocks/sec<br>Mode 1:<br>   1550~3600 kBytes/sec<br>Mode 2:<br>   1768~4106kBytes/sec | Burst:<br>   33.3 Mbytes/sec<br>Sustained:<br>   1545~3600 kBytes/sec |
| Access time (typ.) | Random: 100 ms<br>Full Stroke: 200 ms | 115 ms |
| Rotation speed | 5000 rpm | 5136 rpm |
| Data Buffer Capacity | 128 KB | 128 KB |
| Interface | IDE | IDE |
| Applicable disc format | CD-Audio, CD-ROM ( mode 1 and Mode 2 ), CD-ROM XA ( mode 2, form 1 and form 2 ), CD-I ( mode 2, form 1 and form 2 ), CD-I Ready, CD-I Bridge, Photo CD, CD-WO, Video CD, Enhanced Music CD (CD Plus), CD-RW | CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 1, form 1 and form2), Photo CD, Enhanced CD, CD-RW |
| Loading mechanism | Drawer with soft eject and emergency eject hole | |
| Power Requirement | | |
| Input Voltage | 5V+/-5% | 5V+/-5% |

**DVD-ROM Interface**

| Item | Specification | |
|---|---|---|
| Vendor & model name | MKE SR-8174-BXX | |
| Performance Specification | With CD Diskette | With DVD Diskette |
| Transfer rate (KB/s) | Average Sustained:<br>CAV mode   775~1800 blocks/sec<br>(10.3X to 24X)  1550~3600 kBytes/sec (Mode 1)<br>   1768~4106 kBytes/sec (Mode 2) | DVD-5:<br>  Normal Speed (1X)<br>    11.08 Mbits/sec<br>  CAV mode<br>    27.51~66.48 Mbits/sec<br>DVD-9:<br>  Normal Speed (1X)<br>    11.08 Mbits/sec<br>  CAV mode<br>    TBD~TBD Mbits/sec |
| Access time (typ.) | Random (*1)<br>  CAV mode   120 msec typical<br>          180 msec average max<br>Full Stroke (*2)<br>  CAV mode   210 msec typical<br>          270 msec average max | Random (*3)<br>  170 msec typical<br>  270 msec average max<br>Full Stroke (*4)<br>  320 msec typical<br>  480 msec average max |
| Data Buffer Capacity | 512 kBytes | |
| Interface | IDE | |
| Applicable disc format | DVD: DVD-5, DVD-9, DVD-10, DVD-R (3.95G)<br>CD:  CD-Audio, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), CD-I (mode 2, form 1 and form 2), CD-I Ready, CD-I Bridge, CD-WO, CD-RW, Photo CD, Video CD, Enhanced Music CD, CD-TEXT | |

**DVD-ROM Interface**

| Item | Specification |
|---|---|
| Loading mechanism | Soft eject (with emergency eject hole) |
| Power Requirement | |
| Input Voltage | 5V |

Note: (*1) Average of Data read over the whole area from 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 block more than 2000 times including latency and layered error correction time.

(*2) From 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 block including latency and layered error correction time.

(*3) Disc: MNSU-005

(*4) Average of Data read over the whole area from starting data recorded area (LBA:0) to maximum data recorded area (LBA:23197F), more than 2000 times including latency and layered error correction time.

(*5) from starting data recorded area (LBA:0) to maximum data recorded area (LBA:23197F) including latency and layered error correction time.

(*6) Disc: MKE-D551

**Audio Interface**

| Item | Specification |
|---|---|
| Audio controller | Cirrus Logic CS4299 |
| Audio onboard or optional | Built-in |
| Mono or Stereo | Stereo |
| Resolution | 20 bit stereo Digital to Analog converter |
| | 18 bit stereo Analog to Digital converter |
| Compatibility | Microsoft PC98/PC99, AC97 2.1 |
| Mixed sound source | Line-in, CD, Video, AUX |
| Voice channel | 8/16 bit, mono/stereo |
| Sampling rate | 44.1 KHz |
| Internal microphone | Yes |
| Internal speaker / Quantity | Yes/ 2 pieces |
| Supports PnP DMA channel | DMA channel 0 |
| | DMA channel 1 |
| Supports PnP IRQ | IRQ3, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11 |

**Video Interface**

| Item | Specification |
|---|---|
| Vendor & model name | ATI Rage Mobility-M1 |
| Chip voltage | Core/2.5V |
| | Memory/3.3V |
| Supports ZV (Zoomed Video) port | Yes |
| Graph interface | 2X AGP (Accelerated Graphics Port) bus |
| Maximum resolution (LCD) | 1024x768 (24 bit colors) |
| Maximum resolution (CRT) | 1024x768 (24 bit colors) |

**Video Memory**

| Item | Specification |
|---|---|
| Fixed or upgradeable | Fixed, built-in video controller |
| Video memory size | 8.0 MB |

**Video Resolutions Mode**

| Resolution | Refresh Rate | |
|---|---|---|
| | CRT Only | LCD/CRT Simultaneous |
| 640x480x256 | 85 | 60 |
| 640x480x64K | 85 | 60 |
| 640x480x16M | 85 | 60 |
| 800x600x256 | 85 | 60 |
| 800X600X64K | 85 | 60 |
| 1024x768x256 | 60, 75 | 60 |

**Parallel Port**

| Item | Specification |
|---|---|
| Parallel port controller | ALi M1535 |
| Number of parallel port | 1 |
| Location | Rear side |
| Connector type | 25-pin D-type connector, in female type |
| Parallel port function control | Enable/Disable by BIOS Setup |
| Supports ECP/EPP | Yes (set by BIOS Setup) |
| Optional ECP DMA channel (in BIOS Setup) | DMA channel 1 and 3 |
| Optional parallel port I/O address (in BIOS Setup) | 3BCh, 378h, 278h |
| Optional parallel port IRQ (in BIOS Setup) | IRQ5, IRQ7 |

**Serial Port**

| Item | Specification |
|---|---|
| Serial port controller | ALi M1535 |
| Number of serial port | 1 |
| Supports 16550 UART | Yes |
| Connector type | 9-pin D-type connector, in male type |
| Location | Rear side |
| Serial port function control | Enable/Disable by BIOS Setup |
| Optional serial port (in BIOS Setup) | 3F8h, 3E8h, 2E8h |
| Optional serial port IRQ (in BIOS Setup) | IRQ4, IRQ11 |

**USB Port**

| Item | Specification |
|---|---|
| USB Compliancy Level | 1.0 |
| HCI | OHCI 1.0a |
| Number of USB port | 2 |
| Location | Rear side |

**IrDA Port**

| Item | Specification |
|---|---|
| IrDA FIR port controller | ALi M1535 |
| Number of IrDA FIR port | 1 |
| Location | Left side |
| IrDA FIR port function control | Enable/disable by BIOS Setup |
| Optional IrDA FIR port (in BIOS Setup) | 2F8h, 3F8h, 3E8h, 2E8h |
| Optional IrDA FIR port IRQ (in BIOS Setup) | IRQ3, IRQ4 |
| Optional IrDA FIR port DRQ (in BIOS Setup) | DMA0, DMA1, DMA3 |

**PCMCIA Port**

| Item | Specification |
|---|---|
| PCMCIA controller | O2 OZ6933 |
| Supports card type | Type III/II/I |
| Number of slots | One type III or two type II/I |
| Access location | Left side |
| Supports ZV (Zoomed Video) port | Yes |
| Supports 32 bit CardBus | Yes (IRQ9) |

**Keyboard**

| Item | Specification |
|---|---|
| Keyboard controller | Mitsubishi M38867 |
| Keyboard vendor & model name | JME K9811 |
| Total number of keypads | 84/85/88-key |
| Windows 95 keys | Yes |
| Internal & external keyboard work simultaneously | Yes |

**Battery**

| Item | Specification |
|---|---|
| Vendor & model name | Sanyo BTP-34A1 |
| Battery Type | Li-Ion |
| Pack capacity | 3600 mAH |
| Cell voltage | 3.7V |
| Number of battery cell | 8 |
| Package configuration | 4S2P |
| Package voltage | 14.8V |

**DC-DC/Charger Converter**

| Item | Specification |
|---|---|
| Vendor & Model Name | Acer |
| Input Voltage | AC Adapter or Battery:  10V - 26V |

**DC-DC/Charger Converter**

| Item | Specification | | | |
|---|---|---|---|---|
| DC-DC Converter Output | | | | |
| Output Rating | 5V | 3.3V | 12V | 5V SB |
| Current (w/load, A) | 0~4.5 | 0~3.5 | 0~0.12 | 0~0.02 |
| Charger Output | | | | |
| Normal charge (charge while system is not operative) | 2.5A | | | |
| Background charge (charge even system is still operative) | 1A | | | |
| Battery-low 2 level (V) | 13.5V | | | |
| Battery-low 3 level (V) | None | | | |
| Protection | | | | |
| Charger protection | Over Current Protection | | | |
| DC/DC converter protection | OCP (Over Current Protection, A) OVP (Over Voltage Protection, V) UVP (Under Voltage Protection, V) | | | |

**DC-AC LCD Inverter**

| Item | Specification |
|---|---|
| Vendor & model name | Ambit |
| Input voltage (V) | 8 ~ 21V |
| Input current (mA) | 1A (max.) |
| Output voltage (Vrms, no load) | 1400Vrms |
| Output voltage frequency (kHz) | 40 ~ 70KHz |
| Output Current/Lamp | 5.5 mA ~ 6.5mA |

**NOTE:** DC-AC inverter is used to generate very high AC voltage, then support to LCD CCFT backlight user, and is also responsible for the control of LCD brightness. Avoid touching the DC-AC inverter area while the system unit is turned on.

**NOTE:** There is an EEPROM in the inverter, which stores its supported LCD type and ID code. If you replace a new inverter or replace the LCD with a different brand, use Inverter ID utility to update the ID information.

**LCD**

| Item | Specification | | | |
|---|---|---|---|---|
| Vendor & model name | 12.1" Hitachi TX31D35VC1CAA | 13.3" ADT L133X2-3 | 14.1" ADT L141X1-1 | 14.1" IBM ITXG76C |
| Mechanical Specifications | | | | |
| LCD display area (diagonal, inch) | 12.1 | 13.3 | 14.1 | 14.1 |
| Display technology | TFT | TFT | TFT | TFT |
| Resolution | SVGA (800x600) | XGA (1024x768) | XGA (1024x768) | XGA (1024x768) |
| Support colors | 16M | 262K | 262K | 16M |
| Optical Specification | | | | |
| Brightness control | Keyboard hot key | keyboard hotkey | Keyboard hotkey | Keyboard hot key |
| Contrast control | None | None | None | None |
| Electrical Specification | | | | |
| Supply voltage for LCD display (V) | 3.3 (typ.) | 3.3 (typ.) | 3.3 (typ.) | 3.3 (typ.) |

**LCD**

| Item | Specification | | | |
|------|------|------|------|------|
| Supply voltage for LCD backlight (Vrms) | 550 (typ.) | 601 (typ.) | 670 (typ.) | 670 (typ.) |

**AC Adapter**

| Item | Specification | |
|------|------|------|
| Vendor & model name | Delta ADT-60XB D 3P | LiteOn PA-1600-02 |
| Input Requirements | | |
| Maximum input current | 1.5A @ 90Vac<br>0.9A @ 180Vac | 1.5A @ 90Vac<br>0.95A @ 180Vac |
| Nominal frequency (Hz) | 47 - 63 | 47 - 63 |
| Frequency variation range (Hz) | 47 - 63 | 47 - 63 |
| Nominal voltages (V) | 90 - 270 | 90 - 270 |
| Inrush current | The maximum inrush current will be less than 50A and 100A when the adapter is connected to 115Vac(60Hz) and 230Vac(50Hz) respectively | The maximum inrush current will be less than 50A and 100A when the adapter is connected to 115Vac(60Hz) and 230Vac(50Hz) respectively |
| Efficiency | It should provide an efficiency of 83% minimum, when measured at maximum load under 115V(60Hz) | It should provide an efficiency of 83% minimum, when measured at maximum load under 115V(60Hz) |
| Output Ratings (CV mode) | | |
| DC output voltage | 19V - 20.5V | 19V - 20.5V |
| Noise + Ripple | 300mVp-pmax (20MHz bandwidth) | 300mVp-pmax (20MHz bandwidth) |
| Load | 0 A (min.);   3.16 A (max.) | 0 A (min.);   3.16 A (max.) |
| Output Ratings (CC mode) | | |
| DC output voltage | +12V ~ +19V | +12V ~ +19V |
| Constant output | 3.6 +/- 0.3 | 3.6 +/- 0.3 |
| Dynamic Output Characteristics | | |
| Turn-on delay time | 2 sec (@ 115Vac) | 2 sec (@ 115Vac) |
| Hold up time | 8 ms (@115Vac input, full load) | 8 ms (@115Vac input, full load) |
| Over Voltage Protection (OVP) | 24V | 24V |
| Short circuit protection | Output can be shorted without damage | Output can be shorted without damage |
| Electrostatic discharge (ESD) | 15kV (at air discharge)<br>8kV (at contact discharge) | 15kV (at air discharge)<br>8kV (at contact discharge) |
| Dielectric Withstand Voltage | | |
| Primary to secondary | 1500 Vac (or 2121 Vdc), 10mA for 1 second | |
| Leakage current | 0.25 mA max. (@ 254 Vac, 60Hz) | |
| Regulatory Requirements | Internal Filter meets:<br>1. FCC class B requirements. (USA)<br>2. VDE 243/1991 class B requirements. (German)<br>3. CISPR 22 Class B requirements. (Scandinavia)<br>4. VCCI class II requirements. (Japan) | |

**Power Management**

| Power Saving Mode | Phenomenon |
|---|---|
| **Standby Mode**<br>❏ Waiting time specified by the System Standby value or the operating system elapses without any system activity.<br>❏ Closing the display cover<br>❏ When the computer is about to enter Hibernation mode (e.g., during a battery-low condition), but the Hibernation file is invalid or not present.<br>❏ When customized functions for power management are set to Standby and the corresponding action is taken.<br>❏ Invoked by the operating system power-saving modes. | ❏ The buzzer beeps<br>❏ The Sleep indicator lights up |
| **Hibernation Mode**<br>❏ When customized functions for power management are set to Hibernation and the corresponding action is taken.<br>❏ Invoked by the operating system power-saving modes. | ❏ All power shuts off |
| **Display Standby Mode**<br>Keyboard, built-in touchpad, and an external PS/2 pointing device are idle for a specified period. | ❏ The display shuts off |
| **Hard Disk Standby Mode**<br>Hard disk is idle within a specified period of time. | ❏ Hard disk drive is in standby mode. (spindle turned off) |

**Environmental Requirements**

| Item | Specification |
|---|---|
| **Temperature** | |
| Operating | +5 ~ +35°C |
| Non-operating | -10 ~ +60°C |
| Non-operating | -20 ~ +60°C (Storage package) |
| **Humidity** | |
| Operating | 20% ~ 80% RH, non-condensing |
| Non-operating | 20% ~ 80% RH, non-condensing |
| Non-operating | 20% ~ 90% RH, non-condensing (storage package) |
| **Vibration** | |
| Operating (unpacked) | 5 ~ 25.6 Hz: 0.38 mm (peak to peak)<br>25.6 ~ 250 Hz: 0.5G |
| Non-operating (unpacked) | 5 ~ 27.1 Hz: 0.6G<br>27.1 Hz ~ 50 Hz: 0.4 mm (peak to peak)<br>50 ~ 500 Hz: 2.0G |
| Non-operating (packed) | 5 ~ 62.6 Hz: 0.51 mm (peak to peak)<br>62.6 ~ 500 Hz: 4G |

**Mechanical Specifications**

| Item | Specification |
|---|---|
| Dimensions | 310 (W) x 255 (D) x 36.6 (H) mm |
| Weight | 6.1 lbs for 12.1" TFT<br>6.39 lbs for 14.1" TFT |
| I/O Ports | One type III or two type II/I PCMCIA (PC Card) port, two USB ports, one RJ-11 port, one RJ-45 port, one DC-in port, one expansion port, one parallel port, one serial port, one external display port, one PS/2 keyboard/mouse port, one FIR port, one line-in jack, one speaker/headphone-out jack, one microphone-in jack |
| Drive Bays | One |
| Material | Plastic |
| Indicators | Power-on, Standby, Battery Status, Media Access, Caps Lock and Num Lock |
| Switch | Power |

**Memory Address Map**

| Memory Address | Size | Function |
|---|---|---|
| 00000000-0009FFFF | 640 KB | Base memory |
| 80600000-80600FFF | 4 KB | Rage Mobility-M1 AGP |
| 80620000-8063FFFF | 128 KB | |
| 81000000-81FFFFFF | 3 MB | |
| 000A0000-000CFFFF | 192 KB | |
| 000E0000-000ED7FF | 54 KB | Intel 8255X - Based PCI Ethernet Adapter |
| 80100000-80100FFF | 4 KB | |
| 80200000-802FFFFF | 1 MB | |
| 08000000-08000FFF | 4 KB | O2 Micro OZ6933 Cardbus Controller |
| 08001000-08001FFF | 4 KB | |
| 82400000-82400FFF | 4 KB | USB |
| 82200000-82200FFF | 4 KB | Audio |

**I/O Address Map**

| I/O Address | Function |
|---|---|
| 000-00F | DMA controller-1 |
| 020-021 | Interrupt controller-1 |
| 040-043 | Timer 1 |
| 060, 064 | Keyboard controller 8742 chip select |
| 061 | System speaker |
| 066 | ACPI Embedded Controller |
| 070-073 | System CMOS/RTC |
| 080 | Main board resources |
| 081-08F | DMA Controller-1 |
| 0A0-0A1 | Interrupt controller-2 |
| 0C0-0DF | DMA controller-2 |
| 0F0-0FF | Numeric data processor |
| 170-177/376 | 2nd EIDE device (CD-ROM) select |
| 1F0-1F7/3F6 | 1st EIDE device (hard drive) select |

**I/O Address Map**

| I/O Address | Function |
| --- | --- |
| 278-27F | Parallel port 3 |
| 2E8-2EF | Lucent Technologies Soft Modem AMR |
| 2F8-2FF | ALi Fast Infrared Controller |
| 378, 37F | Printer Port (LPT 1) |
| 3B0-3BB, 3C0-3DF | Video Controller |
| 3F0-3F5/3F7 | Standard Floppy Disk Controller |
| 3E8-3EF | COM3 |
| 3F8-3FF | COM1 or LT Win modem (optional) |
| 480-48F, 4D6 | DMA controller-1 |
| 4D0-4D1, CF8-CFF | PCI configuration register |

**IRQ Assignment Map**

| Interrupt Channel | Function |
| --- | --- |
| NMI | System errors |
| IRQ0 | System timer |
| IRQ1 | Keyboard |
| IRQ2 | Cascade |
| IRQ3 | IrDA |
| IRQ4 | COM1 |
| IRQ5 | Reserved |
| IRQ6 | Floppy |
| IRQ7 | LPT1 |
| IRQ8 | Real time clock |
| IRQ9 | SCI |
| IRQ10 | Audio/Modem/LAN |
| IRQ11 | USB/VGA/Cardbus |
| IRQ12 | PS2 pointing device |
| IRQ13 | Numeric data processor |
| IRQ14 | 1st IDE device (hard disk) |
| IRQ15 | 2nd EIDE device (CD-ROM drive) |

**DMA Channel Assignment**

| DMA Channel | Function |
| --- | --- |
| DRQ0 | Not used |
| DRQ1 | Not used |
| DRQ2 | Floppy |
| DRQ3 | FIR |
| DRQ4 | DMA controller |
| DRQ5 | Not used |
| DRQ6 | Not used |
| DRQ7 | Not used |

# System Utilities

## BIOS Setup Utility

The BIOS Setup Utility is a hardware configuration program built into your computer's BIOS (Basic Input/ Output System).

Your computer is already properly configured and optimized, and you do not need to run this utility. However, if you encounter configuration problems, you may need to run Setup. Please also refer to Chapter 4 Troubleshooting when problem arises.

To activate the BIOS Utility, press **F2** during POST (while the TravelMate logo is being displayed).

```
┌─────────────────────────────────────────────────────┐
│                     BIOS Utility                     │
├─────────────────────────────────────────────────────┤
│                                                       │
│                  System Information                   │
│                  Basic System Settings                │
│                  Startup Configuration                │
│               Onboard Device Configuration            │
│                   System Security                     │
│                 Loading Default Settings              │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
├─────────────────────────────────────────────────────┤
│ ↑↓ = Move highlight bar, ↵ = Select, Esc = Exit      │
└─────────────────────────────────────────────────────┘
```
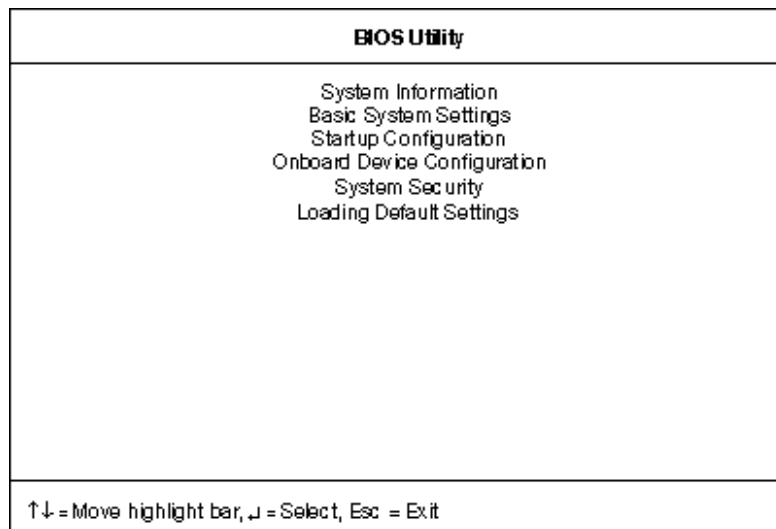
## Navigating the BIOS Utility

There are six menu options: System Information, Basic System Settings, Startup Configuration, Onboard Device Configuration, System Security and Loading Default Settings.

To enter a menu, highlight the item using the **cursor up/down** keys, then press **Enter**.

Within a menu, navigate through the BIOS Utility by following these instructions:

❑ Press the **cursor up/down** keys to move between the parameters.

❑ Press the **cursor left/right** keys to change the value of a parameter.

❑ Press the **Esc** key while you are in any of the menu options to return to the main menu.

**NOTE:** You can change the value of a parameter if it is enclosed in square brackets. Navigation keys are shown at the bottom of the screen.

## System Information

The System Information screen displays a summary of your computer hardware information.



**NOTE:** The screen above is a sample and may not reflect the actual data on your computer. "X" may refer to a series of numbers and/or characters.

The following table describes the information in this screen.

| Parameter | Description |
|---|---|
| CPU Type & Speed | Describes the type of CPU installed in the system. |
| Floppy Disk Drive | Shows the floppy disk drive type (1.44 MB, 3.5-inch). |
| Hard Disk Drive | Shows the size or capacity of the hard disk. |
| HDD Serial Number | Shows the serial number of the hard disk. |
| System with | Shows the high-capacity disc drive installed. |
| System BIOS Version | Shows the system BIOS version. |
| VGA BIOS Version | Shows the video graphics accelerator BIOS version. |
| Serial Number | Shows the serial number of the computer. |
| Asset Tag Number | Shows the asset tag number of the computer. |
| Product Name | Shows the official name of the product. |
| Manufacturer Name | Shows the manufacturer of the computer. |
| UUID | Shows the universally unique identifier of your computer. |

The items in this screen are important and vital information about your computer. If you experience computer problems and need to contact technical support, this data helps our service personnel know more about your computer.

## Basic System Settings

The Basic System Settings screen allows you to set the system date and time.



The following table describes the parameters in this screen.

| Parameter | Description | Format |
|-----------|-------------|--------|
| Date | Sets the system date. | DDD MMM DD, YYYY (day-of-the-week month day, year) |
| Time | Sets the system time. | HH:MM:SS (hour:minute:second) |

## Startup Configuration

The Startup Configuration screen contains parameter values that define how your computer behaves on system startup.

The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

| Parameter | Description | Options |
|---|---|---|
| Boot Display | Sets the display device on boot-up.<br><br>When set to **Auto**, the computer automatically determines the display device when the computer starts up. If an external display device (e.g., monitor) is connected, it becomes the boot display; otherwise, the computer's display screen is the boot display. When set to **Both**, the computer outputs to both the computer display screen and an external display device if one is connected. | **Both** or Auto |
| Screen Expansion | When set to enabled, the screen will automatically adjust the display to fit the screen when the resolution is set to 640 x 480. | **Enabled** or Disabled |
| Resume on LAN/Modem Access | When enabled, it allows your computer to resume when LAN/Modem access is active. | **Enabled** or Disabled |
| Hotkey Beep | When enabled, the computer gives off a beep when a hotkey (key combination is pressed). | **Enabled** or Disabled |
| Fast Boot | Allows you to define your system's booting process; whether to skip some POST routines or proceed with the normal booting process. | **Enabled** or Disabled |
| Boot Drive Sequence | Specifies the order in which the computer starts up from. See the section below. | 1st: Floppy Disk, 2nd: CD-ROM, 3rd: Hard Disk 4th: LANDesk (R) Service Agent |

### Setting the Boot Drive Sequence

The Boot Drive Sequence section lists boot priorities (1st, 2nd, 3rd and 4th) for bootable drives in your computer.

For example, the default value (1st:Floppy Disk, 2nd:CD-ROM, 3rd:Hard Disk and 4th:LANDesk (R) Service Agent) tells the computer to first search for a bootable floppy disk in the floppy drive. If it finds one present, it boots up from that floppy disk. If not, the computer continues to search for a bootable CD-ROM in the CD-ROM drive. If it cannot boot up from the CD-ROM drive, it continues by booting up from the hard disk.

To set the boot drive sequence, use the **cursor up/down keys** to select a priority level (1st, 2nd, 3rd and 4th), then use the **cursor left/right** keys to select the device for that priority level.

## Onboard Device Configuration

The parameters in this screen are for advanced users only. You do not need to change the values in this screen because these values are already optimized.

The Onboard Device Configuration screen assigns resources to basic computer communication hardware.



The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

| Parameter | Description | Options |
|---|---|---|
| Serial Port | Enables or disables the serial port.<br>When enabled, you can set the base I/O address and interrupt request (IRQ) of the serial port. | **Enabled** or Disabled<br>**3F8h**, 3E8h, 2F8h or 2E8h<br>**4** or 11 |
| IrDA FIR Port | Enables or disables the infrared port.<br>When enabled, you can set the base I/O address and interrupt request (IRQ) and direct memory access (DMA) channel of the infrared port. | **Disabled** or Enabled |
| Parallel Port | Enables or disables the parallel port.<br>When enabled, you can set the base I/O address, interrupt request (IRQ) and operation mode of the parallel port.<br>If operation mode is set to ECP, the direct memory access (DMA) channel of the parallel port is set to 1. | **Enabled** or Disabled<br>**378h**, 278h, or 3BCh<br>**7** or 5<br>**Bi-directional**, ECP, EPP or Standard |

## System Security

The System Security screen contains parameters that help safeguard and protect your computer from unauthorized use.

```
                        System Security              Page 1/1

      Setup Password ------------------------------ [ None  ]
      Power-on Password --------------------------- [ None  ]
      Hard Disk Password ---------------------------[ None  ]
      Processor Serial Number ----------------------- [Enabled]










      ↑↓ = Move highlight bar, ←→ = Change setting, F1 = Help
```

The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

| Parameter | Description | Options |
|---|---|---|
| Setup Password | When set, this password protects the computer and the BIOS Utility from unauthorized entry. See the following section for instructions on how to set a password. | **None** or Present |
| Power-on Password | When set, this password protects the computer from unauthorized entry. See the following section for instructions on how to set a password. | **None** or Present |
| Hard Disk Password | When set, this password protects the hard disk from unauthorized access. See the following section for instructions on how to set a password. | **None** or Present |
| Processor Serial Number | The Pentium III processor includes a unique serial number which allows individual CPUs to be identified. You can turn off this feature by setting this parameter to Disabled. This one is not available in the model with Celeron processor. | **Enabled** or Disabled |

### Setting a Password

Follow these steps:

1.  Use the cursor up/down keys to highlight a Password parameter (Setup, Power-on or Hard Disk) and press the **Enter** key. The password box appears:
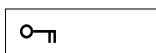
2.  Type a password. The password may consist of up to eight characters (A-Z, a-z, 0-9).

    **IMPORTANT:** Be very careful when typing your password because the characters do not appear on the screen.

3.  Press **Enter**. Retype the password to verify your first entry and press **Enter**.

4.  After setting the password, the computer automatically sets the chosen password parameter to Present.

Three password types protect your computer from unauthorized access.  Setting these passwords creates several different levels of protection for your computer and data:

❑   Setup Password prevents unauthorized entry to the BIOS Utility.  Once set, you must key-in this password to gain access to the BIOS Utility.

❑   Power-On Password secures your computer against unauthorized use.  Combine the use of this password with password checkpoints on boot-up and resume from hibernation for maximum security.

❑   Hard Disk Password protects your data by preventing unauthorized access to your hard disk.  Even if the hard disk is removed from the computer and moved to another computer, it cannot be accessed without the Hard Disk Password.

When a password is set, a password prompt appears on the left-hand corner of the display screen.

1.   When the Setup Password is set, the following prompt appears when you press **F2** to enter the BIOS Utility at boot-up.
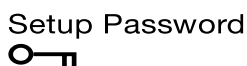
<p align="center">Setup Password</p>



Type the Setup Password and press **Enter** to access the BIOS Utility.

2.   When the Power-on Password is set, the following prompt appears at boot-up.



Type the Power-on Password (a symbol appears for each character you type) and press **Enter** to use the computer.  If you enter the password incorrectly, an **x** symbol appears.  Try again and press **Enter**.

3.   When the Hard Disk Password is set, the following prompt appears at boot-up.



Type the Hard Disk Password (a symbol appears for each character you type) and press **Enter** to use the computer.   If you enter the password incorrectly, an **x** symbol appears.  Try again and press **Enter**.

You have three chances to enter a password.  If you successfully entered the password, the following symbol appears.



If you fail to enter the password correctly after three tries, the following message or symbol appears.

| Setup | Power-on/Hard Disk |
|-------|---------------------|
| Incorrect password specified.  System disabled. |  |

To change a password, follow the same steps used to set a password.

To remove a password, follow the same steps used to set a password, except type nothing in the password boxes.

## Load Default Settings

If you want to restore all parameter settings to their default values, select this menu item and press **Enter**.  The following dialog box displays.

```
┌─────────────────────────────────────┐
│ Do you want to load default settings? │
│                                       │
│        [Yes]          [No]            │
│                                       │
└─────────────────────────────────────┘
```

If you would like to load default settings for all parameters, use the cursor **left/right** (→←) keys to select **Yes**; then press **Enter**.  Choose **No** if otherwise.

# BIOS Flash Utility

The BIOS flash memory update is required for the following conditions:

❏    New versions of system programs

❏    New features or options

Use the AFlash utility to update the system BIOS flash ROM.

**NOTE:** Do not install memory-related drivers (XMS, EMS, DPMI) when you use AFlash.

**NOTE:** This program contains a readme.txt file.  This readme.txt file will introduce on how to use AFlash utility.

# Executing Flash Program

**IMPORTANT:** If this diskette is not bootable, do the following actions before you use it:

**1.**    Create a bootable disk.

**2.**    Copy all AFlash files into this bootable diskette.

**3.**    Put the bootable disk into TravelMate 520 series module, then reboot.

**IMPORTANT:** Never turn off the system power while Flash BIOS is programming.  This will damage your system.

**4.**    After Flash BIOS is done, reboot the system.

**NOTE:** If there are any problems occurred during BIOS update, see "Index of PQA Diagnostic Error Code, Message" on page 81 for troubleshooting.

# System Utility Diskette

This utility diskette is for the Acer TravelMate 520 notebook machine.  It provides the following functions:

1.  Panel ID Utility

2.  Thermal & Fan Utility

3.  Main Board Data Utility

To use this diskette, first boot from this diskette, then a "Microsoft Windows 98 Startup Menu" prompt you to choose the testing item.  Follow the instructions on screen to proceed.

**NOTE:** This program contains a readme.txt file.  This readme.txt file will introduce each test utility and its functions.

**IMPORTANT:** If this diskette is not bootable, do the following actions before you use it:

1.  Do system transfers.

2.  Copy the following files to A:\.
    HIMEM.SYS
    RAMDRIVE.SYS

## Panel ID Read/ Write Utility

1.  Panel ID Read

This function will display the panel ID setting of Acer TravelMate 520 series, there maybe no values in inverter if no ID was found.

2.  Panel ID Write

This function will display a table of all panel IDs of Acer TravelMate 520 series, and ask to input the no. corresponding to the panel ID of the LCD.  Then, the chosen ID will be set in EEPROM.

## Thermal test Utility

1.  Read thermal setting

This function will show the current thermal setting of your system and CPU which include the status, current local temp, remote temp, conversion and configuration.

2.  Set thermal setting

This function will write the default values into EEPROM.

3.  Test fan

This function will test the fan.

Error message will be displayed when problem is found.

## Main Board Data Utility

1.  Read Main Board Data.

This function displays the MBD data.

2.  Create MBD header, product & manufacturer names.

This function will create three informations and write to EEPROM automatically:

    a.  Header information

    b.  Product name

    c.  Manufacturer name

3.  Write MBD UUID

There are two sub-functions:

    a.  Create and write a new UUID - this function is used when the original UUID is lost or damaged.

    **b.** Write UUID by user keyin - this function is used when the original UUID is kept.  User may use "Read Main Board Data" function first to keep the UUID.

**4.** Write MBD serial number - this function will write MBD serial number by user keyin.

# System Diagnostic Diskette

**IMPORTANT:** [1]The diagnostics program here that we used is called PQA (Product Quality Assurance) and is provided by Acer Headquarters.  You can utilize it as a basic diagnostic tool.  To get this program, either download it from http://csd.acer.com.tw or find it in the TravelMate 520 service CD kit.
To better fit local service requirements, your regional office MAY have other diagnostic program.  Please contact your regional offices or the responsible personnel/channel to provide you with further technical details.

**NOTE:** This program contains a readme.txt file.  This readme.txt file will introduce each test and its functions.

This diagnostic program is designed to perform the following diagnostic tools for Acer TravelMate 520 notebook machine.  It provides the following functions.

1. PQA System Diagnostics

2. Audio Resource and Loopback Test

3. IR Test

4. USB Register and Connect/ Disconnect Test

To use this diskette, first boot from this diskette, then a "Microsoft Windows 98 Startup Menu" prompts you to choose the testing item.  Follow the instructions on screen to proceed.

**IMPORTANT:** If this diskette is not bootable, do the following actions before you use it:

1. Do system transfers.

2. Copy the following files to A:\
   HIMEM.SYS
   RAMDRIVE.SYS
   CHOICE.COM
   MSCDEX.EXE

## PQA System Diagnostics

**NOTE:** This PQA diagnostics program will test Acer TravelMate 520 notebook series' hardware peripherals.

1. When you select One Test, Test command (F2 key) will only work in the first-level menu (Item Test), if you are in sub-level menu, please press ESC to return to upper-level (Item Test) menu.

2. Use Space Bar to select/ deselect a testing item.

3. When testing is done, there will be a testing report, where you could find out whether the testing is successful or not.

## Audio Resource and Speaker-Out Test

This function will test Audio Resource and Loopback of Acer TravelMate 520 notebook series.  You will see "PASS" when test is successful.

You need "Loopbacker" when you choose "Loopback Test".  Please put Loopbacker in Line-in, Line-out and Micro-in.  You will see "PASS" when test is successful.

## Infrared Ray (IR) Test

This function will test Infrared Ray of Acer TravelMate 520 series.  Following are the steps:

1. You must prepare a reflect server (another Acer TravelMate 520 notebook) which can reply to testing unit the communicated data.

2. Prepare a bootable disk for the server, choose "Make a Host Disk".

3. Insert the Host disk in Host Server, then reboot.

---

[1]   New added description. Please pay attention to it.

4. Type "Host" to run Host server first.

5. If there is no reflect server, the test program will show "IR FAIL".

## USB Register and Connect/ Disconnect Test

This function will test USB Register and Connect/Disconnect of TravelMate 520 notebook series.

1. Register test (USBCMD, USBINTR, FRNNUM, FLBASEADD, SOF) - test its own USB internal circuit.

2. UHCI/ OHCI test utility

   a. Please prepare a USB device such as USB mouse, USB keyboard or USB modem, and leave the USB port disconnected.  (Don't connect first)

   b. Program will dynamically detect the incoming device for two times, please plug the USB connector in USB port first, then plug it out.  (Connect one time, disconnect one time)

   c. The test program will show the account  of connected/ disconnected, if every steps was doing right, the screen will show "PASS", otherwise show "FAIL".

## Running PQA Diagnostics Program

```
PQA                          Vx_x    xx-xx-xx

 Diag    Result   SysInfo   Option    Exit
```
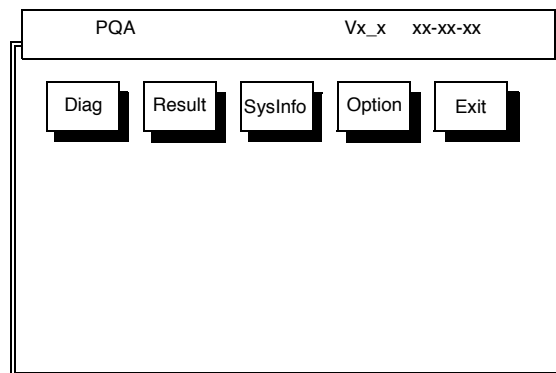
Press →←← to move around the main menu.  Press Enter to enable the selected option.  The main options are Diag, Result, SysInfo, Option and Exit.

The Diag option lets you select testing items and times.

The following screen appears when you select Diag from the main menu.

```
PQA                          Vx_x    xx-xx-xx

 Diag    Result   SysInfo   Option    Exit
         Diag
   ONE      TEST
   MULTI    TEST
   FULL     TEST
   QUICK    TEST
```
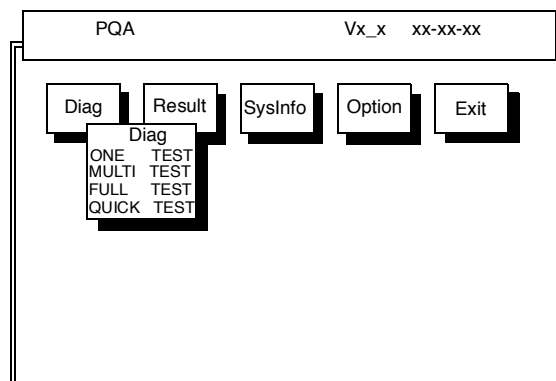
One Test performs a single test and Manual checks the selected test items in sequence.

Multi Test performs multiple tests of the selected items and check the selected test items in sequence.

Full Test performs all test items in detail  for your system.

Quick Test performs all test items quickly for your system.

The screen below appears if you select Multi Test.

```
┌─────────────────────────────────────────────────┐
│  PQA                    Vx_x    xx-xx-xx         │
├─────────────────────────────────────────────────┤
│                                                  │
│  ┌──────┐┌──────┐ ┌────────┐ ┌────────┐ ┌──────┐ │
│  │ Diag ││Result│ │SysInfo │ │ Option │ │ Exit │ │
│  └──────┘└──────┘ └────────┘ └────────┘ └──────┘ │
│      │  Diag  │                                  │
│      │ONE   TEST │                               │
│      │MULTI TEST │                               │
│      │FULL  TEST │                               │
│      │QUICK TEST │                               │
│                                                  │
│                                                  │
│         ┌──────────────────────────────┐        │
│         │ TEST COUNT VALUE (1...9999) 1 │       │
│         └──────────────────────────────┘        │
│                                                  │
└─────────────────────────────────────────────────┘
```
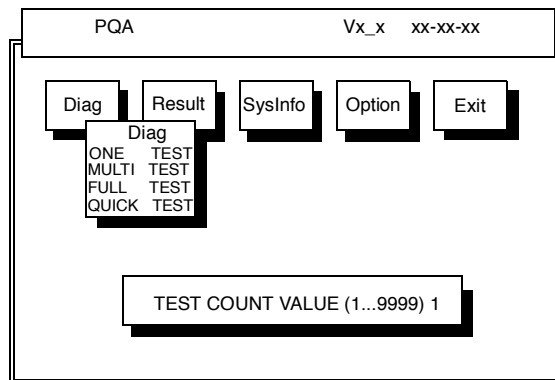
Specify the desired number of tests and press **Enter**.

After you specify the number of tests to perform, the screen shows a list of test items (see below).

```
┌─────────────────────────────────────────────────┐
│  PQA                    Vx_x    xx-xx-xx         │
├─────────────────────────────────────────────────┤
│                                                  │
│  ┌──────┐┌──────┐ ┌────────┐ ┌────────┐ ┌──────┐ │
│  │ Diag ││Result│ │SysInfo │ │ Option │ │ Exit │ │
│  │ Diag │└──────┘ └────────┘ └────────┘ └──────┘ │
│  │MA │ Test Items  │                             │
│  │AU │ [ ] System Board │                        │
│  │   │ [ ] Memory       │                        │
│  │   │ [ ] Keyboard     │                        │
│  │   │ [ ] Video        │                        │
│  │   │ [ ] Parallel Port│                        │
│  │   │ [ ] Serial Port  │ ┌─────────────────────┐│
│  │   │ [ ] Diskette Drive│ │SPACE: mark/unmark  ││
│  │   │ [ ] Hard Disk    │ │       selecting item││
│  │   │ [ ] CD-ROM       │ │ESC  : return to     ││
│  │   │ [ ] Coprocessor  │ │       upper menu    ││
│  │   │ [ ] Pointing Dev.│ │F2   : test the      ││
│  │   │ [ ] Cache        │ │       marked item(s)││
│  │   │                  │ │ENTER: open sub-item's││
│  │   │                  │ │       menu          ││
│  │   │                  │ │Test Times = 1       ││
│  │   └──────────────────┘ └─────────────────────┘│
└─────────────────────────────────────────────────┘
```
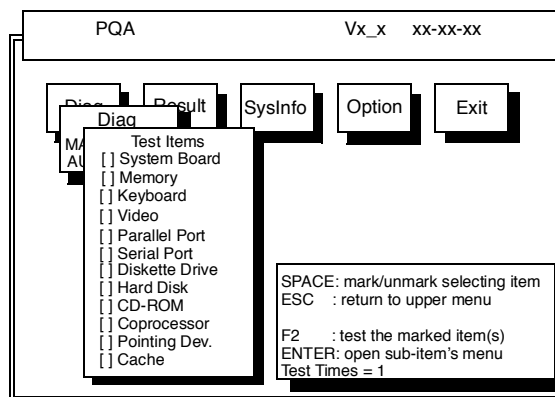
Move the highlight bar from one item to another. Press Space to enable or disable the item. Press **Enter** to view the available options of each selected item. Press **Esc** to close the submenu.

The right corner screen information gives you the available function keys and the specified test number.

- ❑   Space: Enables/disables the item
- ❑   ESC: Exits the program
- ❑   F1: Help
- ❑   F2: Tests the selected item(s)
- ❑   Enter: Opens the available options
- ❑   Test Times:  Indicates the number of tests to perform.

**NOTE:** The F1 and F2 keys function only after you finish configuring the Test option.

**NOTE:** When any errors are detected by diagnostic program, refer to "Index of PQA Diagnostic Error Code, Message" on page 81 for troubleshooting.

# Machine Disassembly and Replacement

This chapter contains step-by-step procedures on how to disassemble the notebook computer for maintenance and troubleshooting.

To disassemble the computer, you need the following tools:

❑ Wrist grounding strap and conductive mat for preventing electrostatic discharge

❑ Flat-bladed screw driver

❑ Phillips screw driver

❑ Tweezers

❑ Flat-bladed screw driver or plastic stick

**NOTE:** The screws for the different components vary in size.  During the disassembly process, group the screws with the corresponding components to avoid mismatch when putting back the components.

# General Information

## Before You Begin

Before proceeding with the disassembly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.

2. Unplug the AC adapter and all power and signal cables from the system.

# Disassembly Procedure Flowchart

The flowchart on the succeeding page gives you a graphic representation on the entire disassembly sequence and instructs you on the components that need to be removed during servicing. For example, if you want to remove the system board, you must first remove the keyboard, then disassemble the inside assembly frame in that order.
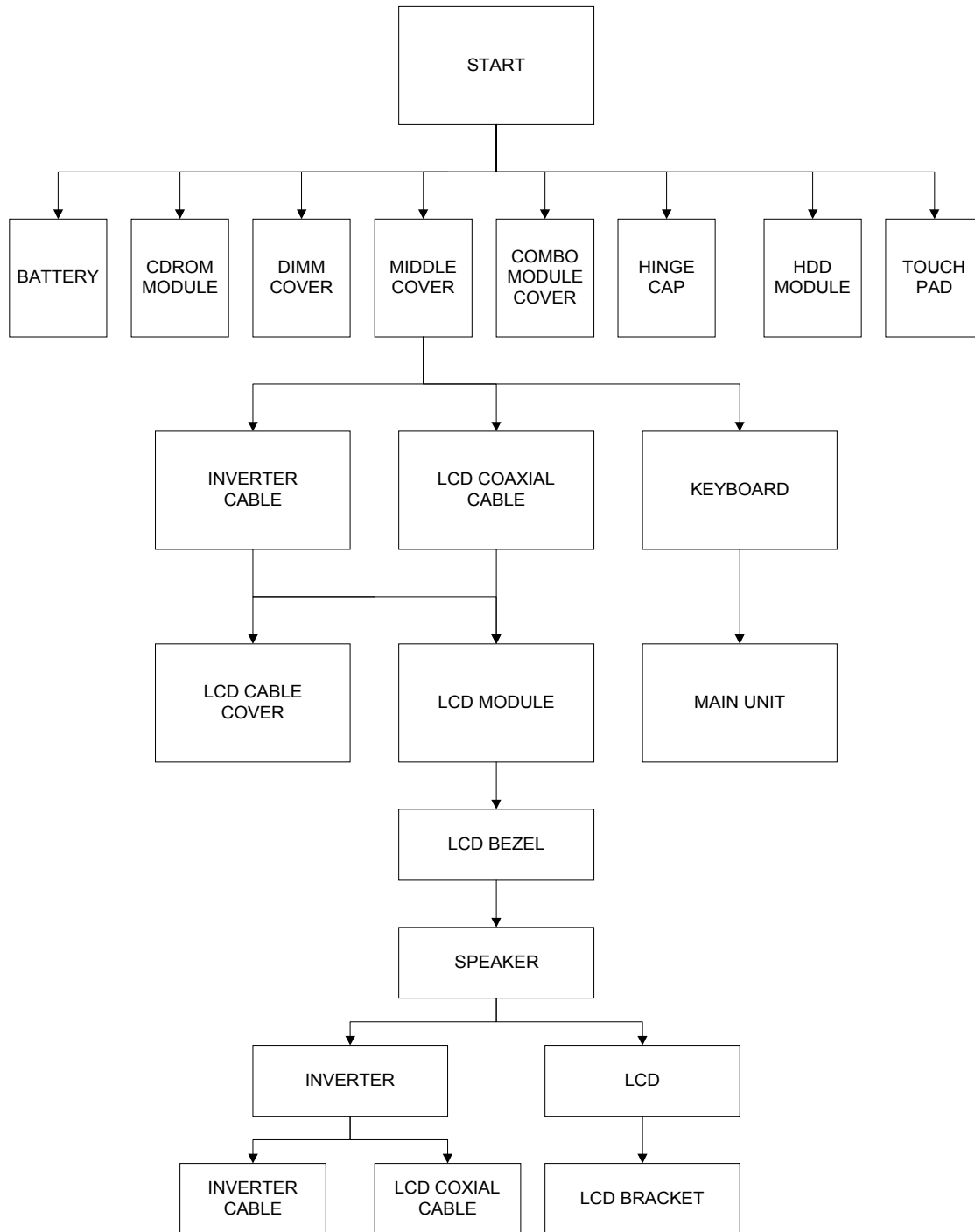
```
                              ┌─────────┐
                              │  START  │
                              └────┬────┘
                                   │
   ┌──────┬──────┬──────┬──────────┼──────────┬──────┬──────┬──────┐
   ▼      ▼      ▼      ▼          ▼          ▼      ▼      ▼
┌──────┐┌──────┐┌──────┐┌──────┐┌────────┐┌──────┐┌──────┐┌──────┐
│BATTERY││CDROM ││DIMM  ││MIDDLE││COMBO   ││HINGE ││HDD   ││TOUCH │
│       ││MODULE││COVER ││COVER ││MODULE  ││CAP   ││MODULE││PAD   │
│       ││      ││      ││      ││COVER   ││      ││      ││      │
└──────┘└──────┘└──────┘└──┬───┘└────────┘└──────┘└──────┘└──────┘
                           │
            ┌──────────────┼──────────────┐
            ▼              ▼              ▼
      ┌──────────┐  ┌──────────┐   ┌──────────┐
      │ INVERTER │  │LCD COAXIAL│   │ KEYBOARD │
      │  CABLE   │  │  CABLE   │   │          │
      └────┬─────┘  └────┬─────┘   └────┬─────┘
           │             │             │
      ┌────┴────┐        │             │
      ▼         ▼        ▼             ▼
 ┌──────────┐ ┌──────────┐       ┌──────────┐
 │LCD CABLE │ │LCD MODULE│       │MAIN UNIT │
 │  COVER   │ │          │       │          │
 └──────────┘ └────┬─────┘       └──────────┘
                   │
                   ▼
             ┌──────────┐
             │LCD BEZEL │
             └────┬─────┘
                  │
                  ▼
             ┌──────────┐
             │ SPEAKER  │
             └────┬─────┘
           ┌──────┴──────┐
           ▼             ▼
     ┌──────────┐  ┌──────────┐
     │ INVERTER │  │   LCD    │
     └────┬─────┘  └────┬─────┘
     ┌────┴────┐        │
     ▼         ▼        ▼
┌──────────┐┌──────────┐┌──────────┐
│ INVERTER ││LCD COXIAL││LCD BRACKET│
│  CABLE   ││  CABLE   ││          │
└──────────┘└──────────┘└──────────┘
```

```
                        ┌─────────────────┐
                        │                 │
                        │   MAIN UNIT     │
                        │                 │
                        └─────────────────┘
                                 │
         ┌───────────────────────┼───────────────────────┐
         ▼                       ▼                       ▼
┌─────────────────┐    ┌─────────────────┐    ┌─────────────────┐
│                 │    │                 │    │                 │
│  CPU HEATSINK   │    │   UPPER CASE    │    │   FDD MODULE    │
│     PLATE       │    │                 │    │                 │
└─────────────────┘    └─────────────────┘    └─────────────────┘
                                 │
                   ┌─────────────┴─────────────┐
                   ▼                           ▼
         ┌─────────────────┐         ┌─────────────────┐
         │                 │         │                 │
         │  CPU HEATSINK   │         │  CHARGER PLATE  │
         │                 │         │                 │
         └─────────────────┘         └─────────────────┘
                   │                           │
                   ▼                           │
         ┌─────────────────┐                   │
         │                 │                   │
         │      FAN        │                   │
         │                 │                   │
         └─────────────────┘                   │
                   │                           │
                   └─────────────┬─────────────┘
                                 ▼
                        ┌─────────────────┐
                        │                 │
                        │   MAIN BOARD    │
                        │                 │
                        └─────────────────┘
                                 │
      ┌──────────────┬───────────┼───────────┬──────────────┐
      ▼              ▼           ▼           ▼
┌────────────┐ ┌────────────┐ ┌────────┐ ┌──────────────┐
│            │ │            │ │        │ │              │
│ LOWER CASE │ │  PCMCIA    │ │  CPU   │ │ AUDIO BOARD  │
│            │ │  SOCKET    │ │        │ │              │
└────────────┘ └────────────┘ └────────┘ └──────────────┘
```
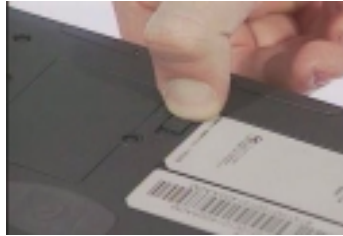
# Removing the Battery Pack

1. To remove the battery pack, push the battery release button inward.

2. Slide the battery pack out from the machine.

# Removing the Battery Cover

1. To remove the battery cover, press the cover on this side outward carefully, then remove the cover.

# Removing the CD-ROM Drive Module

1. To remove the CD-ROM drive module, push the release button outward.
2. Slide it out from the machine.



## Disassembling the CD-ROM Drive Module

1. To disassemble the CD-ROM drive module, first remove the four screws as shown.
2. Remove the CD-ROM drive module from the CD-ROM drive chassis.
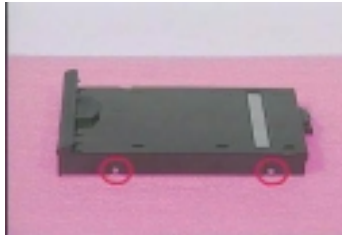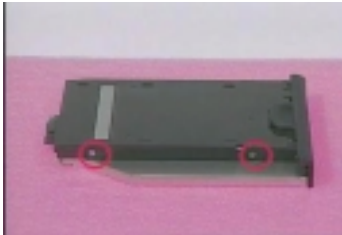


3. Remove the two screws from the CD-ROM board, then remove the CD-ROM board from the CD-ROM drive.

# Removing the Hard Disk Drive Module

1. To remove the hard disk drive, first remove the hard disk drive cover screw, then remove the cover.

2. Remove the hard disk drive module out from the machine carefully.

# Disassembling the Hard Disk Drive Module

1. To disassemble the hard disk drive module, first remove the two screws from the hard disk drive bracket.

2. Slide the hard disk drive out from the hard disk drive bracket.

3. Remove the hard disk drive connector from the hard disk drive.

# Removing the Extended Memory

1. To remove an extended memory from the machine, first remove the screw from the memory cover.

2. Push the memory cover leftward to lift the cover off, then remove the memory cover.



3. Push out the latches on both sides of the socket, and pull the memory module out from the socket.
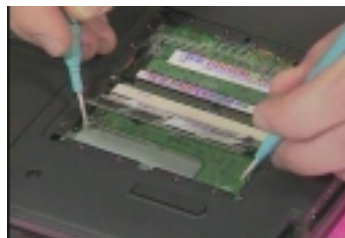
# Removing the Modem Board

1. To remove the modem board, first remove the screw from the modem cover.

2. Remove the modem cover from the machine.



3. Remove the two screws from the modem board as shown, use a plastic bladed screwdriver to remove the modem board from the main unit.



4. At CN26, disconnect the modem cable from the modem board, then remove the modem board.
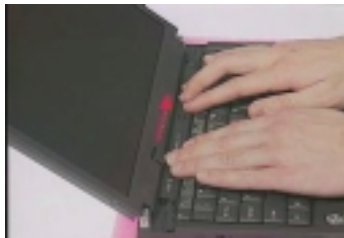
# Disassembling the LCD

## Removing the Hinge Cap

1. To remove the hinge cap, push the hinge cap outward, then slide the hinge cap out from the main unit.

## Removing the Middle Cover

1. To remove the middle cover, push the middle cover rightward and lift the middle cover away.

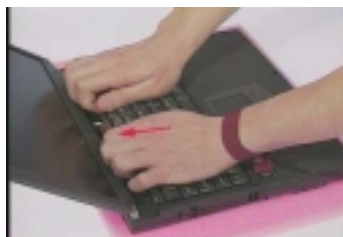2. Disconnect the launch board cable from the launch board.
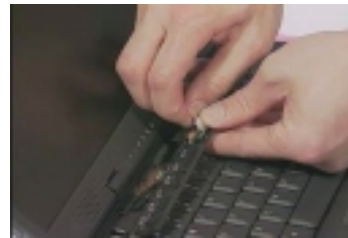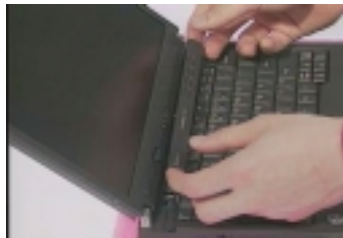
3. Remove the two screws from the launch board as shown, then remove the launch board from the middle cover.
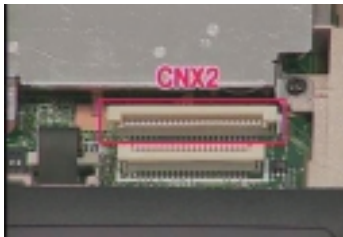
## Removing the Keyboard

1. To remove the keyboard, pull out and upward to expose the keyboard.

2. At CNX2, disconnect the keyboard cable from the main board carefully, then remove the keyboard from the main board.
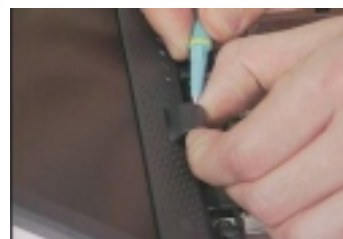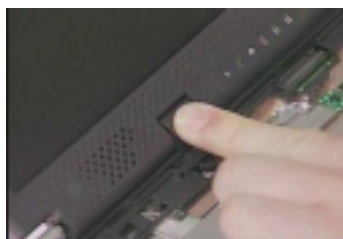


3. At CN10, disconnect the launch board cable from the main board, then remove it.



## Removing the Cable Cover

1. To remove the cable cover, push the cable cover backward then pull the cover off gently.
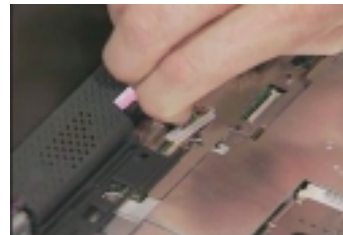


## Removing the LCD Module

1. To remove the LCD module, first remove the two screws from the rear of the unit and the two screws from the base of the unit as shown.

**2.** At CN9, remove the two screws from the LCD FPC cable, and then disconnect the LCD FPC cable from the main board.



**3.** At CN8, disconnect the inverter cable from the main board.



**4.** Remove the LCD module from the main unit.

**5.** Remove the video capture kit cover from the LCD module on each side.



**6.** Remove the three LCD cushions as shown, next remove the three screws from the LCD bezel.
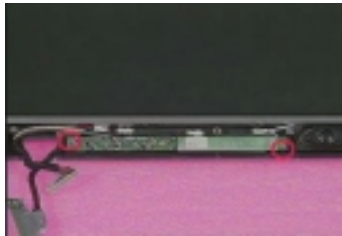


**NOTE:** If you have 12.1" or 13.3" LCD, you need to remove five LCD cushions and five screws.

**7.** Snap off the LCD bezel carefully, then remove the LCD bezel from the LCD module.
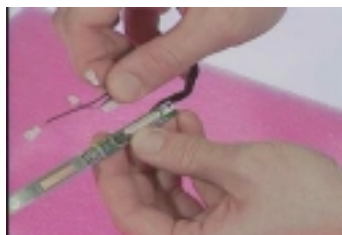


## Removing the Inverter Board

**1.** To remove the inverter board, remove the two screws from the inverter board as shown.



**2.** Disconnect the speaker cables, microphone cable and LCD power cable from the inverter board, then remove the inverter board.



**3.** Disconnect the inverter cable from the inverter board.

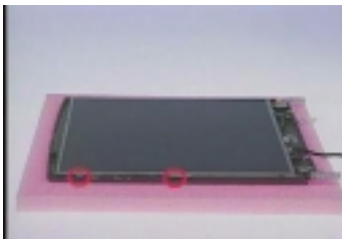## Removing the Speakers

**1.** Remove the two screws from the speakers as shown, then remove the speakers from the LCD module..
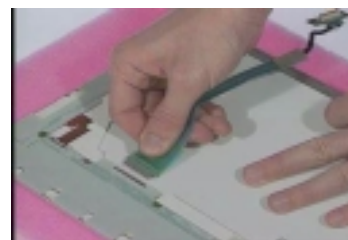
**2.** Remove the four screws from the LCD, then detach the LCD diaper from the LCD.

**3.** Remove the LCD from the LCD panel.

**4.** Remove the ESD tape, then disconnect the LCD FPC cable from the LCD.
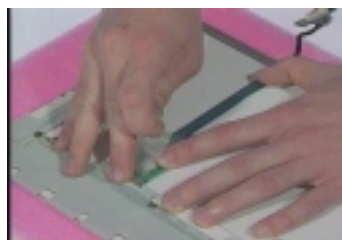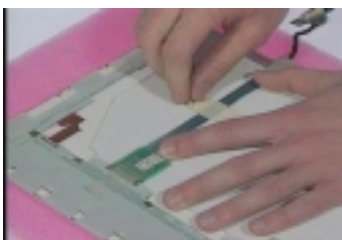
## Removing the Microphone

1. Remove the microphone from the LCD.

# Disassembling the Upper Case

## Removing the Floppy Disk Drive Module

1. To remove the floppy disk drive module, first remove the screw from the upper case.



2. At CNX1, disconnect the floppy disk drive cable from the main unit, then pull the floppy disk drive module out from the main unit carefully.





## Disassembling the Floppy Disk Drive Module

1. To disassemble the floppy disk drive module, remove the two screws from the floppy disk drive bracket.
2. Remove the bracket from the drive.
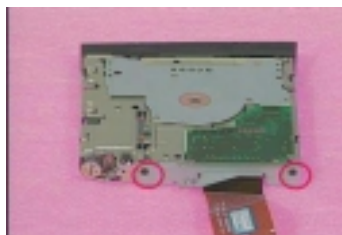
3. Disconnect the floppy disk drive FPC cable from the drive.



4. To remove the floppy disk drive bezel, remove the cushion from the drive, and then detach the bezel from the drive carefully.



## Removing the CPU Heatsink Plate

1. Remove the two screws from the CPU heatsink plate, then pull the CPU heatsink plate backward then rightward from the main unit.



## Removing the RTC Battery

1. Use the flat bladed screwdriver to remove the RTC battery gently.

**2.** Reinstall the RTC battery back into position by pressing it down to secure.



## Removing the Upper Case

1. To remove the upper case, remove the eight screws from the base of the unit as shown.
2. At CN16, disconnect the touchpad cable from the main board.
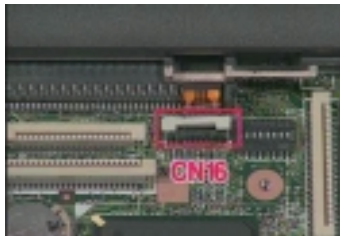


3. Pull the upper case up from rear to front of the unit gently.



4. Remove the touchpad frame from the upper case carefully.
5. Remove the touchpad scroll button from the upper case.
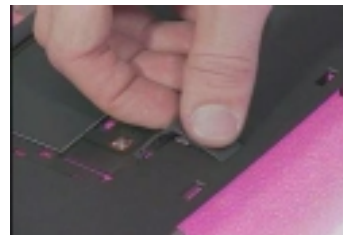
**6.** Disconnect the touchpad cable from the touchpad board, then remove the touchpad board from the upper case.

**7.** Remove the touchpad cable from the upper case carefully.

# Disassembling the Lower Case

## Removing the CPU Heatsink

1. Remove the four screws from the CPU heatsink.
2. Remove the CPU heatsink from the main unit.
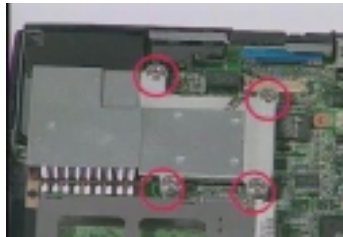
## Removing the CPU

1. To remove the CPU, use a flat bladed screwdriver to release the screw carefully, then remove the CPU from the CPU socket.

## Removing the Charger Plate

1. Remove the screw from the charger plate, then remove the charger plate from the main board.
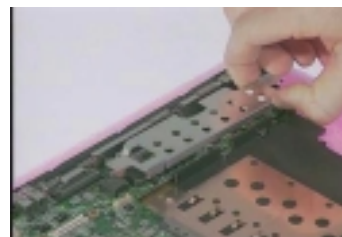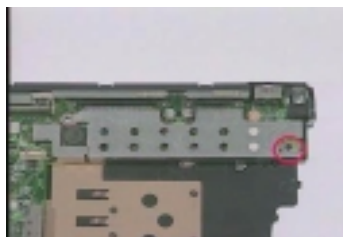
## Removing the Main Board

1. Remove the three screws from the main board as shown.
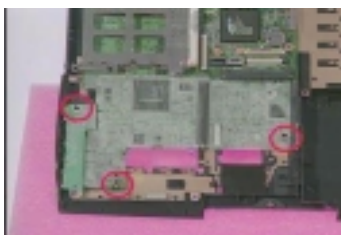
**2.** At CN11, disconnect the fan cable from the main board.



**3.** Pull the battery connector and audio jack out to remove the main board from the lower case.
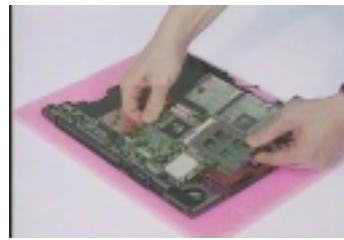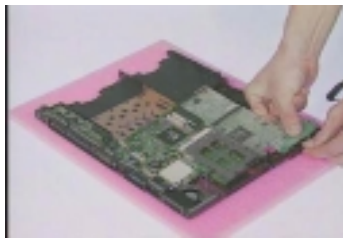


## Removing the Fan

**1.** Remove the screw from the fan, then remove the fan from the lower case.



**2.** Detach the audio board from the main board.
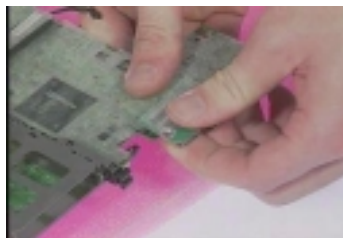
## Removing the PCMCIA Slot

1. Remove the two screws from the PCMCIA plate to remove the plate.
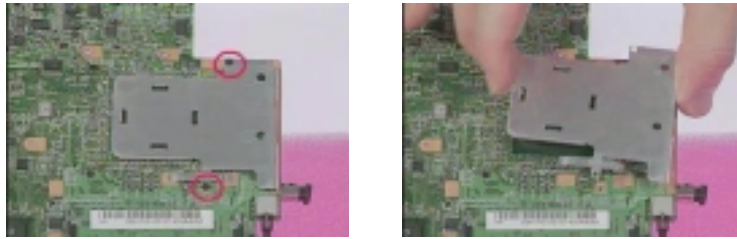


2. At CN13, remove the two screws from the PCMCIA slot, then detach the PCMCIA slot from the main board by hand gently.



## Removing the I/O Bracket

1. Remove the six hexed screws and the two screws from the I/O bracket.



2. Remove the I/O bracket from the main board.

## Removing the Modem Cable

1. At CN21 and CN22, disconnect the modem cable from the main board, then remove the modem cable from the main board.
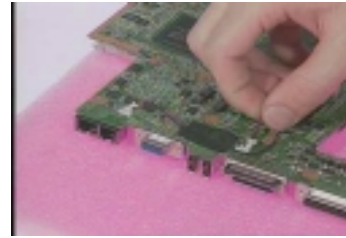
# Troubleshooting

Use the following procedure as a guide for computer problems.

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

1.  Obtain the failing symptoms in as much detail as possible.

2.  Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.

3.  Use the following table with the verified symptom to determine which page to go to.

| Symptoms (Verified) | Go To |
|---|---|
| Power failure. (The power indicator does not go on or stay on.) | Power System check |
| POST does not complete. No beep or error codes are indicated. | Symptom-to-FRU Index<br>Undetermined Problems |
| POST detects an error and displayed messages on screen. | Error Messages List |
| The diagnostic test detected an error and displayed a FRU code. | Running PQA Diagnostic Program |
| Other symptoms (i.e. LCD display problems or others). | Error Symptom-to-FRU Index |
| Symptoms cannot be re-created (intermittent problems). | Use the customer-reported symptoms and go to Error Symptom-to-FRU Index.<br>Intermittent Problems<br>Undetermined Problems |

# System Check Procedures

## Diskette Drive Check

Do the following to isolate the problem to a controller, driver, cable or diskette.  A write-enabled, diagnostic diskette is required.

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

Do the following to select the test device.

**1.** Boot from the diagnostics diskette and start the PQA program.

**2.** Go to the diagnostic Diskette Drive in the test items.

**3.** Press F2 in the test items.

**4.** Follow the instructions in the message window.

If an error occurs with the internal diskette drive, reconnect the diskette connector on the system board.

If the error still remains:

**1.** Reconnect the diskette drive.

**2.** Replace the diskette driver cable.

**3.** Replace the diskette drive.

**4.** Replace the system board.

## CD-ROM Drive Check

Do the following to isolate the problem to a controller, drive, cable, or CD-ROM.  Make sure that the CD-ROM does not have any label attached to it.  The label can cause damage to the drive or can cause the drive to fail.

Do the following to select the test device:

**1.** Boot from the diagnostics diskette and start the PQA program.

**2.** Go to the diagnostic CD-ROM in the test items.

**3.** Press F2 in the test items.

**4.** Follow the instructions in the message window.

If an error occurs, reconnect the connector on the System board.  If the error still remains:

**1.** Reconnect the CD-ROM drive.

**2.** Replace the diskette driver cable.

**3.** Replace the CD-ROM drive.

**4.** Replace the system board.

## Keyboard or Auxiliary Input Device Check

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

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

If the keyboard cable connection is correct, run the Keyboard Test.  See "Running the Diagnostics" for details.

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

**1.** Reconnect the keyboard cables.

**2.** Replace the keyboard.

**3.** Replace the system board.

The following auxiliary input devices are supported by this computer:

❑ Numeric keypad

❑ External keyboard

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

## Memory Check

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

1. Boot from the diagnostics diskette and start the PQA program (please refer to "Running PQA Diagnostics Program").

2. Go to the diagnostic memory in the test items.

3. Press F2 in the test items.

4. Follow the instructions in the message window.

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

## Power System Check

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

1. Remove the battery pack.

2. Connect the power adapter and check that power is supplied.

3. Disconnect the power adapter and install the charged battery pack; then check that power is supplied by the battery pack.

If you suspect a power problem, see the appropriate power supply check in the following list:

❑ "Check the Power Adapter"

❑ "Check the Battery Pack"

### Check the Power Adapter

Unplug the power adapter cable from the computer and measure the output voltage at the plug of the power adapter cable.  See the following figure

Pin 1: +19 to +20.5V
Pin 2: 0V, Ground
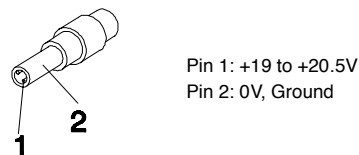
1. If the voltage is not correct, replace the power adapter.

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

❑ Replace the System board.

❑ If the problem is not corrected, see "Undetermined Problems".

❑ If the voltage is not correct, go to the next step.

**NOTE:** An audible noise from the power adapter does not always indicate a defect.

3. If the power problem occurs only when the port replicator is used, replace the port replicator.

4. If the power-on indicator does not light up, check the power cord of the power adapter for correct continuity and installation.

5. If the operational charge does not work, see "Check the Battery Pack".

**Check the Battery Pack**

To check the battery pack, do the following:

1. Power off the computer.

2. Remove the battery pack and measure the voltage between battery terminals 1(+) and 7(ground). See the following figure
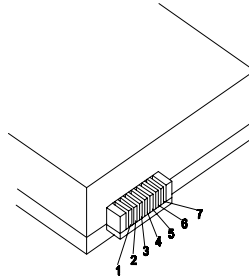


3. If the voltage is still less than 8.0 Vdc after recharging, replace the battery.

To check the battery charge operation, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

If the battery status indicator does not light up, remove the battery pack and let it return to room temperature. Re-install the battery pack.

If the charge indicator still does not light up, replace the battery pack. If the charge indicator still does not light up, replace the system board.

## Touchpad Check

If the touchpad doesn't work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU:

1. Reconnect the touchpad cables.

2. Replace the touchpad cables.

3. Replace the touchpad.

4. Replace the system board.

After you use the touchpad, 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 touchpad pointer. This symptom is not a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

# Index of Error Message

The symptom-to-FRU index lists the symptoms and errors and their possible causes. The most likely cause is listed first.

**NOTE:**  Perform the FRU replacement or actions in the sequence shown in FRU/Action column, if the FRU replacement does not solve the problem, put the original part back in the computer.  Do not replace a non-defective FRU.

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

If the symptom is not listed, "Undetermined Problems" on page 79.

The following lists the error messages that the BIOS displays on the screen and the error symptoms classified by function.

**NOTE:** Most of the error messages occur during POST.  Some of them display information about a hardware device, e.g., the amount of memory installed.  Others may indicate a problem with a device, such as the way it has been configured.

**NOTE:** If the system fails after you make changes in the BIOS Setup Utility menus, reset the computer, enter Setup and install Setup defaults or correct the error

**Error Messages List**

| Error Messages | Action in Sequence |
|---|---|
| Failure Fixed Disk | Reconnect hard disk drive connector.<br>"Load Default Settings" in BIOS Setup Utility.<br>Hard disk drive<br>System board |
| Stuck Key | "Keyboard or Auxiliary Input Device Check" . |
| Keyboard error | "Keyboard or Auxiliary Input Device Check". |
| Keyboard Controller Failed | "Keyboard or Auxiliary Input Device Check". |
| Keyboard locked - Unlock key switch | Unlock external keyboard. |
| Monitor type does not match CMOS - Run Setup | Run "Load Default Settings" in BIOS Setup Utility. |
| Shadow RAM Failed at offset: nnnn | BIOS ROM<br>System board |
| System RAM Failed at offset: nnnn | DIMM<br>System board |
| Extended RAM Failed at offset: nnnn | DIMM<br>System board |
| System battery is dead - Replace and run Setup | Replace RTC battery and Run BIOS Setup Utility to reconfigure system time, then reboot system. |
| System CMOS checksum bad - Default configuration used | RTC battery<br>Run BIOS Setup Utility to reconfigure system time, then reboot system. |
| System timer error | RTC battery<br>Run BIOS Setup Utility to reconfigure system time, then reboot system.<br>System board |
| Real time clock error | RTC battery<br>Run BIOS Setup Utility to reconfigure system time, then reboot system.<br>System board |
| Previous boot incomplete - Default configuration used | Run "Load Default Settings" in BIOS Setup Utility.<br>RTC battery<br>System board |

**Error Messages List**

| Error Messages | Action in Sequence |
|---|---|
| Memory size found by POST differed from CMOS | Run "Load Default Settings" in BIOS Setup Utility.<br>DIMM<br>System board |
| Diskette drive A error | Check that the drive is defined with the proper diskette type in BIOS Setup Utility.<br>Diskette Drive Check. |
| Incorrect Drive A type - run SETUP | Check that the drive is defined with the proper diskette type in BIOS Setup Utility<br>Diskette Drive Check. |
| System cache error - Cache disabled | CPU board<br>System board |
| CPU ID | CPU board<br>System board |
| DMA Test Failed | DIMM<br>CPU board<br>System board |
| Software NMI Failed | DIMM<br>CPU board<br>System board |
| Fail-Safe Timer NMI Failed | DIMM<br>CPU board<br>System board |
| Device Address Conflict | Run "Load Default Settings" in BIOS Setup Utility.<br>RTC battery<br>System board |
| Allocation Error for device | Run "Load Default Settings" in BIOS Setup Utility.<br>RTC battery<br>System board |
| Failing Bits: nnnn | DIMM<br>BIOS ROM<br>System board |
| Fixed Disk n | None |
| Invalid System Configuration Data | BIOS ROM<br>System board |
| I/O device IRQ conflict | Run "Load Default Settings" in BIOS Setup Utility.<br>RTC battery<br>System board |
| Operating system not found | Enter Setup and see if fixed disk and drive A are properly identified.<br>Diskette drive<br>Hard disk drive<br>System board |

**No-Beep Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| No beep, power-on indicator turns off and LCD is blank. | Power source (battery pack and power adapter). Power System Check.<br>Ensure every connector is connected tightly and correctly.<br>Reconnect the DIMM.<br>CPU board<br>System board. |
| No beep, power-on indicator turns on and LCD is blank. | Power source (battery pack and power adapter). Power System Check.<br>Reconnect the LCD connectors<br>Hard disk drive<br>LCD inverter ID<br>LCD cable<br>Inverter<br>LCD<br>System board |
| No beep, power-on indicator turns on and LCD is blank.  But you can see POST on an external CRT. | Reconnect the LCD connectors.<br>LCD inverter ID<br>LCD cable<br>LCD inverter<br>LCD<br>System board |
| No beep, power-on indicator turns on and a blinking cursor shown on LCD during POST. | Ensure every connector is connected tightly and correctly.<br>System board |
| No beep during POST but system runs correctly. | Speaker<br>Audio board<br>System board |

# Index of Symptom-to-FRU Error Message

### LCD-Related Symptoms

| Symptom / Error | Action in Sequence |
|---|---|
| LCD backlight doesn't work<br>LCD is too dark<br>LCD brightness cannot be adjusted<br>LCD contrast cannot be adjusted | Enter BIOS Utility to execute "Load Setup Default Settings", then reboot system.<br>Reconnect the LCD connectors.<br>Keyboard (if contrast and brightness function key doesn't work).<br>LCD inverter ID<br>LCD cable<br>LCD inverter<br>LCD<br>System board |
| Unreadable LCD screen<br>Missing pels in characters<br>Abnormal screen<br>Wrong color displayed | Reconnect the LCD connectors.<br>LCD inverter ID<br>LCD cable<br>LCD inverter<br>LCD<br>System board |
| LCD has extra horizontal or vertical lines displayed. | LCD inverter ID<br>LCD inverter<br>LCD cable<br>LCD<br>System board |

### Indicator-Related Symptoms

| Symptom / Error | Action in Sequence |
|---|---|
| Indicator incorrectly remains off or on, but system runs correctly. | Reconnect the LED board<br>LED board<br>System board |

### Power-Related Symptoms

| Symptom / Error | Action in Sequence |
|---|---|
| Power shuts down during operation. | Power source (battery pack and power adapter). Power System Check.<br>Battery pack<br>Power adapter<br>Audio board<br>System board |
| The system doesn't power-on. | Power source (battery pack and power adapter). Power System Check.<br>Battery pack<br>Power adapter<br>Audio board<br>System board |
| The system doesn't power-off. | Power source (battery pack and power adapter). Power System Check.<br>Hold and press the power switch for more than 4 seconds.<br>System board |

**Power-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| Battery can't be charged | Power System Check<br>Battery pack<br>System board |

**PCMCIA-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| System cannot detect the PC Card (PCMCIA) | PCMCIA slot assembly<br>System board |
| PCMCIA slot pin is damaged. | PCMCIA slot assembly |

**Memory-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| Memory count (size) appears different from actual size. | Enter BIOS Setup Utility to execute "Load Default Settings, then reboot system.<br>DIMM<br>System board |

**Speaker-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| In DOS or Windows, multimedia programs, no sound comes from the computer. | Press Fn-F8, Speaker ON/OFF control.<br>Audio driver<br>Speaker<br>Audio board<br>System board |
| Internal speakers make noise or emit no sound. | Press Fn-F8, Speaker ON/OFF control.<br>Speaker<br>Audio board<br>System board |

**Power Management-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| The system will not enter hibernation | Keyboard (if control is from the keyboard)<br>Hard disk drive<br>System board<br>Check with Sleep Manager. |
| The system doesn't enter hibernation mode and four short beeps every minute. | Hibernation Mode<br>Press Fn+F4 and see if the computer enters hibernation mode.<br>Touchpad<br>Keyboard<br>Hard disk connection board<br>Hard disk drive<br>System board |
| The system doesn't enter standby mode after closing the LCD | Standby Mode<br>LCD cover switch<br>System board |
| The system doesn't resume from hibernation mode. | Hibernation Mode<br>Hard disk connection board<br>Hard disk drive<br>System board |

**Power Management-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| The system doesn't resume from standby mode after opening the LCD. | Standby Mode<br>LCD cover switch<br>System board |
| Battery fuel gauge in Windows doesn't go higher than 90%. | Remove battery pack and let it cool for 2 hours.<br>Refresh battery (continue to use battery until power off, then charge battery).<br>Battery pack<br>Charger board<br>System board |
| System hangs intermittently. | Set Thermal Sensor Threshold.<br>Reconnect hard disk/CD-ROM drives.<br>Hard disk connection board<br>System board |

**Peripheral-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| System configuration does not match the installed devices. | Enter BIOS Setup Utility to execute "Load Default Settings", then reboot system.<br>Reconnect hard disk/CD-ROM/diskette drives. |
| External display does not work correctly. | Press Fn+F5, LCD/CRT/Both display switching<br>Running PQA Diagnostics Program.<br>System board |
| USB does not work correctly. | System Diagnostics Diskette<br>System board |
| Print problems. | Ensure that the "Parallel Port" in the "Onboard Devices Configuration" of BIOS Setup Utility is set to Enabled.<br>Onboard Devices Configuration<br>Run printer self-test.<br>Printer driver<br>Printer cable<br>Printer<br>System Board |
| Serial or parallel port device problems. | Ensure that the "Serial Port" in the "Onboard Devices Configuration" of BIOS Setup Utility is set to Enabled.<br>Device driver<br>Device cable<br>Device<br>System board |

**Keyboard/Touchpad-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| Keyboard (one or more keys) does not work. | Reconnect the keyboard cable.<br>Keyboard<br>System board |
| Touchpad does not work. | Reconnect touchpad cable.<br>Touchpad board<br>System board |

**Modem-Related Symptoms**

| Symptom / Error | Action in Sequence |
|---|---|
| Internal modem does not work correctly. | System Diagnostics Diskette |
| | Modem phone jack |
| | Modem board |
| | System board |

NOTE: If you cannot find a symptom or an error in this list and the problem remains, see "Undetermined Problems" on page 79.

# 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 an 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 FRU.

3. If any error is detected, replace the FRU.  Rerun the test to verify that there are no more errors.

# Undetermined Problems

The diagnostic problems does 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 these procedures to isolate the failing FRU (do not isolate non-defective FRU).

**NOTE:** Verify that all attached devices are supported by the computer.

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

1. Power-off the computer.
2. Visually check them for damage.  If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:

   ❑ Non-Acer devices
   ❑ Devices attached to the port replicator
   ❑ Printer, mouse, and other external devices
   ❑ Battery pack
   ❑ Hard disk drive
   ❑ DIMM
   ❑ CD-ROM
   ❑ Diskette drive
   ❑ PC Cards

4. Power-on the computer.
5. Determine if the problem has changed.
6. If the problem does not recur, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRU one at a time.  Do not replace a non-defective FRU:

   ❑ System board
   ❑ LCD assembly

## Index of AFlash BIOS Error Message

| Error Message | Action in Sequence |
|---|---|
| Hardware Error | See "System Diagnostic Diskette" on page 40 |
| BIOS Update Program Error | Turn off the power and restart the system. |
| System Error | Make sure this AFlash BIOS diskette for this model. |
| Without AC adapter | make sure to connect AC adapter |
| Battery Low | make sure to install a highly charged battery, and reboot system. |

# Index of PQA Diagnostic Error Code, Message

| Error Code | Message | Action in Sequence |
|---|---|---|
| 16XXX | Backup battery error | Backup battery |
| 01XXX | CPU or main board error | Reload BIOS default setting.<br>System board |
| 02XXX | Memory error | DIMM<br>System board |
| 03XXX | Keyboard error | Reset Keyboard<br>Keyboard<br>System board |
| 04XXX | Video error | System board |
| 05XXX | Parallel Port error | System board |
| 06XXX | Serial port or main board error | System board |
| 07XXX | Diskette drive error | Diskette drive<br>System board |
| 08XXX | Hard disk error | Reload BIOS default setting<br>Hard disk<br>System board |
| 09XXX | CD-ROM error | Reset CD-ROM cable<br>CD-ROM drive<br>System board |
| 10XXX | Co-processor error | System board |
| 11XXX | Pointing device error | Reset Keyboard<br>Keyboard<br>System board |
| 12XXX | Cache test error | System board |

# Jumper and Connector Locations

## Top View
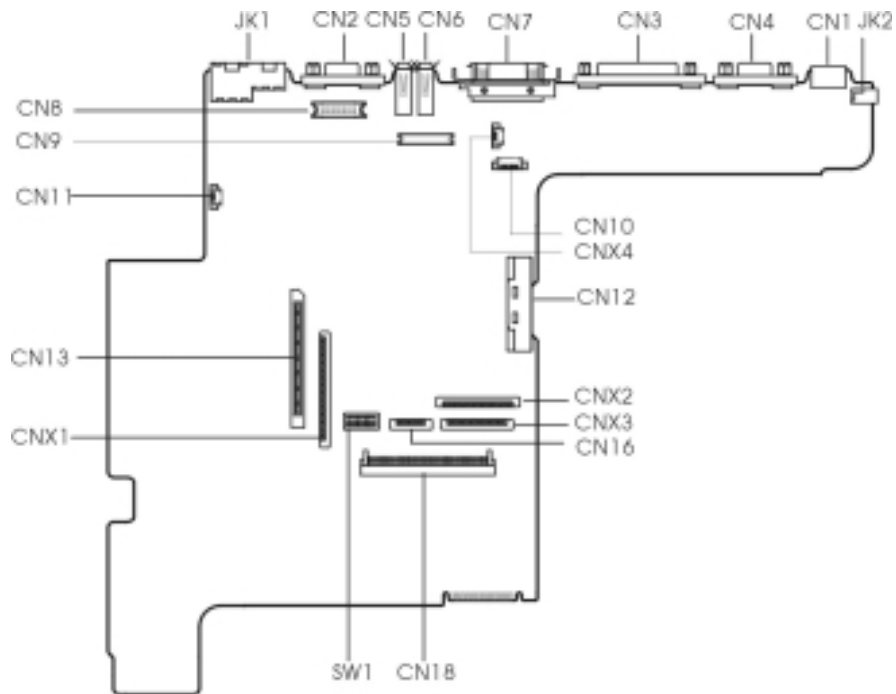


**PCB No. 99206**

| | | | |
|---|---|---|---|
| CN1 | PS/2 keyboard and Mouse Port | CN12 | CD-ROM Connector |
| CN2 | External Display Port | CN13 | PCMCIA Socket Connector |
| CN3 | Parallel Port | CN16 | Touch Pad Cable Connector |
| CN4 | Serial Port | CN18 | Hdd Connector |
| CN5 | USB Port 1 | CNX1 | Diskette Drive Connector |
| CN6 | USB Port 2 | CNX2 | Keyboard Cable Connector |
| CN7 | Expansion Port | CNX3 | Digital finger Print Sensor Connector (For castor only) |
| CN8 | LED & Inverter Connector | CNX4 | TV BD Connector |
| CN9 | LCD Connector | JK1 | Modem / Lan Port |
| CN10 | Cover Switch | JK2 | DC-in Port |
| CN11 | Launch Key Connector | SW1 | Switch |

### Keyboard Switch Settings

| | SW-1 | SW-2 | SW-3 |
|---|---|---|---|
| English | OFF | OFF | Reserved |
| Japanese | ON | OFF | Reserved |
| UK | OFF | ON | Reserved |
| English-International | OFF | OFF | Reserved |

**SW-4/5**

| | SW-4 | SW-5 |
|---|---|---|
| Acer | OFF | OFF |

**SW-6: Check Password**

SW6 = OFF, Enable

SW-6 = ON, Disable

**SW-7: Boot Block Boot**

SW-7 = OFF, Disable

SW-7 = On, Enable

# Bottom View
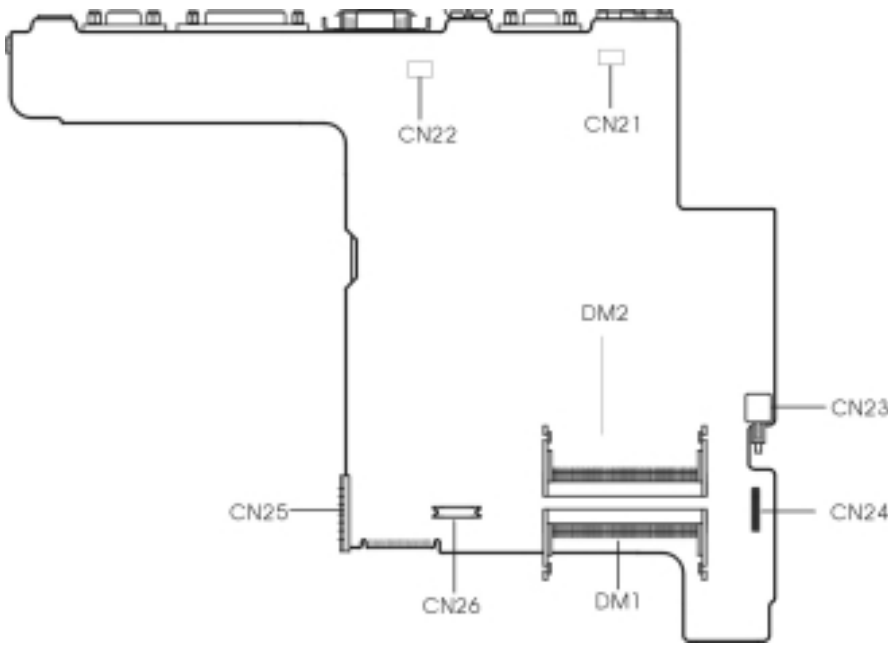


| | | | |
|---|---|---|---|
| CN21 | Modem Card Cable Connector | CN25 | Battery Connector |
| CN22 | Modem Card Cable Connector | CN26 | Modem Connector |
| CN23 | Power Push Switch | DM1 | DIMM 1 Socket |
| CN24 | Audio Connector | DM2 | DIMM 2 Socket (Reverse) |

# FRU (Field Replaceable Unit) List

[1]This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of TravelMate 520. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

Please note that WHEN ORDERING FRU PARTS, you should check the most up-to-date information available on your regional web or channel. For whatever reasons a part number change is made, it will not be noted on the printed Service Guide.  For ACER AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code from those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

**NOTE:** To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how to dispose it properly, or follow the rules set by your regional Acer office on how to return it.

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[1] The part number of the exploded drawing is for reference only, for the most updated information, please refer to the Spare Parts List database.
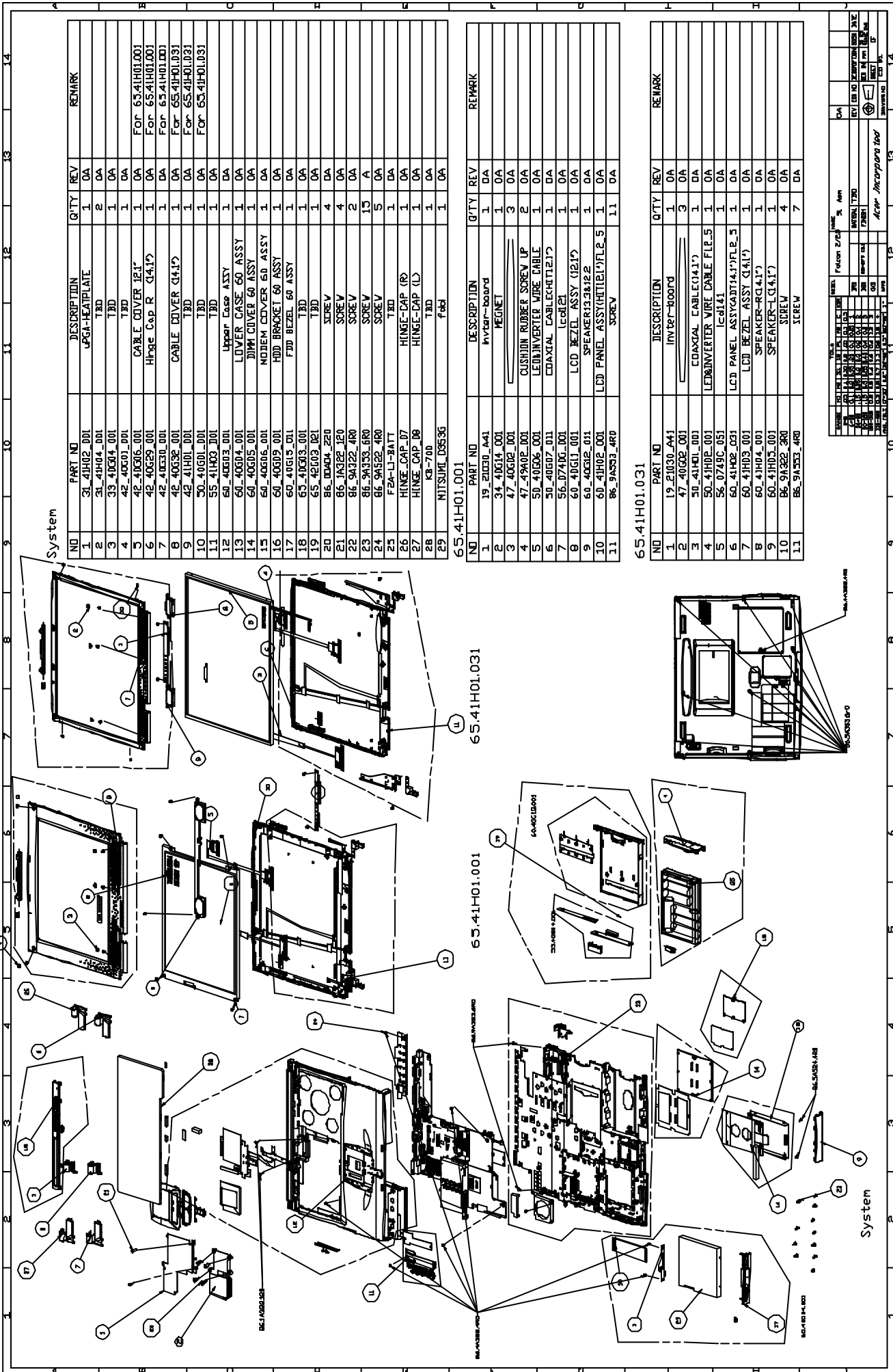
**65.41H01.001**

| NO | PART NO | DESCRIPTION | Q'TY | REV | REMARK |
|---|---|---|---|---|---|
| 1 | 31_41H02_001 | uPGA-HEATPLATE | TBD | OA | |
| 2 | 31_41H04_001 | TBD | 2 | OA | |
| 3 | 33_41DG04_001 | TBD | 1 | OA | |
| 4 | 42_40G01_001 | TBD | 1 | OA | |
| 5 | 42_40DG06_001 | CABLE COVER 12.1" | 1 | OA | For 65.41H01.001 |
| 6 | 42_40G29_001 | Hinge Cap R (14.1") | 1 | OA | For 65.41H01.001 |
| 7 | 42_41DG30_001 | TBD | 1 | OA | For 65.41H01.001 |
| 8 | 42_40G32_001 | CABLE COVER (14.1") | 1 | OA | For 65.41H01.031 |
| 9 | 42_41H01_001 | TBD | 1 | OA | For 65.41H01.031 |
| 10 | 50_40G01_001 | Upper Case ASSY | 1 | OA | For 65.41H01.031 |
| 11 | 55_41H03_001 | TBD | 1 | OA | |
| 12 | 60_40DG03_001 | LOWER CASE 60 ASSY | 1 | OA | |
| 13 | 60_40G04_001 | DIMM COVER 60 ASSY | 1 | OA | |
| 14 | 60_40G05_001 | MODEM COVER 60 ASSY | 1 | OA | |
| 15 | 60_40G06_001 | HDD BRACKET 60 ASSY | 1 | OA | |
| 16 | 60_40DG09_001 | FDD BEZEL 60 ASSY | 1 | OA | |
| 17 | 60_40G15_011 | TBD | 1 | OA | |
| 18 | 65_41DG03_001 | SCREW | 4 | OA | |
| 19 | 65_42G03_021 | SCREW | 4 | OA | |
| 20 | 86_00A04_220 | SCREW | 2 | OA | |
| 21 | 86_1A322_120 | SCREW | 15 | A | |
| 22 | 86_9A322_4R0 | SCREW | 5 | OA | |
| 23 | 86_9A353_6R0 | TBD | 1 | OA | |
| 24 | 86_9A522_4R0 | TBD | 1 | OA | |
| 25 | F2A-LI-BATT | fdd | 1 | OA | |
| 26 | HINGE_CAP_07 | HINGE-CAP (R) | 1 | OA | |
| 27 | HINGE_CAP_08 | HINGE-CAP (L) | 1 | OA | |
| 28 | K3-700 | TBD | 1 | OA | |
| 29 | MITSUMI_D353G | fdd | 1 | OA | |

**65.41H01.001**

| NO | PART NO | DESCRIPTION | Q'TY | REV | REMARK |
|---|---|---|---|---|---|
| 1 | 19_21030_A41 | Inter-board | 1 | OA | |
| 2 | 34_40DG14_001 | MEGNET | 1 | OA | |
| 3 | 47_40G02_001 | CUSHION RUBBER SCREW UP | 3 | OA | |
| 4 | 47_49A0P_001 | LED&INVERTER WIRE CABLE | 2 | OA | |
| 5 | 50_40DG06_001 | COAXIAL CABLE(HD12.1") | 1 | OA | |
| 6 | 50_40G07_011 | lcd121 | 1 | OA | |
| 7 | 56_D74DG_001 | LCD BEZEL ASSY (12.1") | 1 | OA | |
| 8 | 60_40G11_001 | SPEAKER13&122 | 1 | OA | |
| 9 | 60_40G12_011 | LCD PANEL ASSY(HD12.1")FLP_5 | 1 | OA | |
| 10 | 60_41H0E_001 | SCREW | 1 | OA | |
| 11 | 86_9A353_4R0 | | 11 | OA | |

**65.41H01.031**

| NO | PART NO | DESCRIPTION | Q'TY | REV | REMARK |
|---|---|---|---|---|---|
| 1 | 19_21030_A41 | Inter-board | 1 | OA | |
| 2 | 47_40G02_001 | | 3 | OA | |
| 3 | 50_41H01_001 | COAXIAL CABLE(14.1") | 1 | OA | |
| 4 | 50_41H0P_001 | LED&INVERTER WIRE CABLE FLP_5 | 1 | OA | |
| 5 | 56_0749C_051 | lcd141 | 1 | OA | |
| 6 | 60_41H0E_031 | LCD PANEL ASSY(ADT14.1")FLP_5 | 1 | OA | |
| 7 | 60_41H03_001 | LCD BEZEL ASSY (14.1") | 1 | OA | |
| 8 | 60_41H04_001 | SPEAKER-R(14.1") | 1 | OA | |
| 9 | 60_41HD5_001 | SPEAKER-L(14.1") | 1 | OA | |
| 10 | 86_9A322_3R0 | SCREW | 4 | OA | |
| 11 | 86_9A353_4R0 | SCREW | 7 | OA | |

| Picture | No. | Partname | Description | Part No. |
|---------|-----|----------|-------------|----------|
| **CPU/ Processor** | | | | |
| | NS | CPU, PIII-500, INTEL | IC CPU COPPERM-500 UPGA2 | 01.COPRM.50A |
| | | CPU, PIII-600, INTEL | IC CPU COPP600 W/GEY UPGA2 | 01.COPRM.60C |
| **Memory** | | | | |
| | NS | DIMM,64M,PC100, Siemens | SDIMM 64M HYS64V8220GCDL-8B(SI | 72.64820.B0N |
| | NS | DIMM,64M,PC100, Winbond | DIMM 64M 8*16 W17064IHNC86220 | 72.17064.00N |
| **LCD** | | | | |
| | NS | LCD module | LCD MODULE(HIT12.1")FL2.5 | 6M=65.41H01.001 |
| | 7 | LCD , 12.1" TFT, HITACHI | LCD 12.1SVGA HIT/ TX31D35VCICCA | 56.0740G.001 |
| | 1 | Inverter | INVERTER T62I172.00 FALCON2 | 19.21030.A41 |
| | 5 | Inverter cable | C.A LED&INV(12.1"&13.3)FL2 | 50.40G06.001 |
| | 6 | LCD  cable | COAXIALCABLE(HIT12.1") | 50.40G07.011 |

| Picture | No. | Partname | Description | Part No. |
|---------|-----|----------|-------------|----------|
|  | 8 | LCD bezel | LCD BEZEL ASSY(12.1") | 60.40G11.001 |
|  | 10 | LCD panel | LCD PANEL ASSY(HIT12.1")FL2.5 | 60.41H02.001 |
|  | NS | Hinge Bracket Pack | HINGE BRACKET PACK | 6K=34.40G07.001+34.40G08.001 |
|  | 9 | Speaker | SPEAKER13.3& 12.1 | 60.40G12.011 |
|  | NS | LCD module | LCD MODULE(ADT14.1")F2.5 | 6M=65.41H01.041 |
|  | 5 | LCD , 14.1" TFT, IBM | LCD 14.1"IBM/ITXG76C | 56.0749C.051 |
|  | 1 | Inverter | INVERTER T62I172.00 FALCON2 | 19.21030.A41 |
|  | 4 | Inverter cable | C.A LED & INV(14.1")FL2.5 | 50.41H02.001 |

| Picture | No. | Partname | Description | Part No. |
|---------|-----|----------|-------------|----------|
| | 3 | LCD cable | C.A LCD(14.1"ADT&UNI)FL2.5 | 50.41H01.001 |
| | 7 | LCD bezel | LCD BEZEL ASSY(14.1") | 60.41H03.001 |
| | 6 | LCD panel | LCD PNL ASSY(ADT14.1")FL2.5 | 60.41H02.031 |
| | NS | Hinge Bracket Pack | HINGE BRACKET PACK | 6K=34.41H01.001+34.41H02.001 |
| | 8, 9 | Speaker Pack | SPEAKER PACK | 6K=60.41H04.001+60.41H05.001 |
| **HDD/ Hard Disk Drive** | | | | |
| | NS | HDD module | ASSY HDD FALCON 2 | 6M=65.40G05.001 |
| | NS | HDD, 6G, IBM | HDD SM 9.5"6G IBM/ DARA206000 | 56.02A02.041 |
| | 16 | HDD Bracket | HDD ASSY(9.5mm) BRACKET FALCON2 | 60.40G09.001 |

| Picture | No. | Partname | Description | Part No. |
|---|---|---|---|---|
| | NS | HDD Connector | CONN CTR ML 22P HH98227-A2(HDD | 20.80056.022 |
| | NS | HDD module | ASSY HDD 9.5" 12GB IBM | 6M=65.40G05.021 |
| | NS | HDD,12G, IBM | HDD SM9.5"12G IBM/ DARA212K A51 | 56.02A24.002 |
| | 16 | HDD Bracket | HDD ASSY(9.5mm) BRACKET FALCON2 | 60.40G09.001 |
| | NS | HDD Connector | CONN CTR ML 22P HH98227-A2(HDD | 20.80056.022 |
| **FDD/ Floppy Disk Drive** | | | | |
| | NS | FDD Module, Panasonic | FDD(PANASONIC)ASSY | 6M=65.40G04.001 |
| | NS | FDD Device, Panasonic | FDD 1.44SLIM MCI/ JU226A252FC(H | 56.01041.671 |

| Picture | No. | Partname | Description | Part No. |
|---------|-----|----------|-------------|----------|
|  | 10 | FDD Cable | C.A FDD FPC FALCON2 | 50.40G01.001 |
|  | 3 | FDD Bracket | FDD REAR BRAKET FALCON2 | 33.40G04.001 |
|  | 17 | FDD Bezel | FDD BEZEL(PANASONIC) ASSY | 60.40G15.011 |
| **CD-ROM Drive** | | | | |
|  | NS | CD-ROM Module,24X,MKE | CD/DVD-ROM Module | 6M=65.40G10.001 |
|  | NS | CD-ROM Device,24X,MKE | CD ROM 24X MKE/CR176-BAA | 56.10251.031 |
|  | NS | CD-ROM Chassis Assembly | CD/DVD-ROM ASSY | 60.40G13.001 |
|  | NS | CD-ROM Board | FALCON-2 CD-ROM BD | 55.40G04.D01 |

| Picture | No. | Partname | Description | Part No. |
|---------|-----|----------|-------------|----------|
| | NS | CD-ROM Module,24X,TEAC | ASSY CDROM TEAC FALCON2 | 6M=65.40G06.001 |
| | NS | CD-ROM Device,24X,TEAC | CD ROM 24X SLIM TEAC/ CD224EB26 | 56.10061.211 |
| | NS | CD-ROM Chassis Assembly | CD/DVD-ROM ASSY | 60.40G13.001 |
| | NS | CD-ROM Board | FALCON-2 CD-ROM BD | 55.40G04.D01 |
| **Fan** | | | | |
| | NS | FAN | FAN 5V 45*45*10 AB4505MB-GD3(B | 23.10041.011 |
| **Microphone** | | | | |
| | NS | Microphone Rubber | MIC-RUBBER CR PLATINUM | 42.49A11.001 |
| | NS | Microphone with Cable | MIC CABLE | 50.40G06.011 |

| Picture | No. | Partname | Description | Part No. |
|---------|-----|----------|-------------|----------|
| **Heatsink** | | | | |
| | NS | CPU Heatsink | HEATSINK CPU FALCON2.5 | 34.41H04.001 |
| | 1 | CPU Heatsink Plate | CPU HEATSINK PLATE FALCON2.5 | 31.41H02.001 |
| | NS | PCMCIA Plate | PCMCIA PLATE FALCON 2.5 | 31.41H03.001 |
| **Pointing Device** | | | | |
| | NS | TouchPad FPC Cable | C.A TOUCHPAD FPC FALCON2 | 50.40G02.001 |
| | NS | TouchPad Frame | TOUCH PAD FRAME FALCON2 | 41.40G01.001 |
| | NS | TouchPad Board | TOUCHPAD MULTI-SWITCH SYNAPTIC | 56.1740C.001 |
| | NS | TouchPad Button | TOUCH PAD BUTTON FALCON2 | 42.40G09.001 |
| | NS | TouchPad Scroll Button | TOUCH PAD SCROLL BUTTON FLCON2 | 42.40G10.001 |

| Picture | No. | Partname | Description | Part No. |
|---------|-----|----------|-------------|----------|
| **Cables** | | | | |
| | NS | Modem Cable | C.A MODEM FALCON2.5 | 50.41H04.001 |
| | NS | Launch Board Cable | C.A LAUNCH FALCON2 | 50.40G05.001 |
| **Main board** | | | | |
| | NS | Main board/TM520 | FALCON 2.5 MB C-500 | 55.41H01.S01 |
| **Boards** | | | | |
| | 11 | Audio Board | FALCON2.5 AUDIO BD | 55.41H03.D01 |
| | NS | Launch Board | FALCON2 LAUNCH BOARD | 55.40G03.D01 |
| | NS | Modem Board | AMBIT 56K MODEM MODULE UL 3.0 | 54.09011.311 |
| **PCMCIA Slot/ PC Card Slot** | | | | |
| | NS | PCMCIA Slot | SKT PCMCIA QT611366-3110C SMD | 62.10024.111 |

| Picture | No. | Partname | Description | Part No. |
|---|---|---|---|---|
| **Battery** | | | | |
| | NS | Battery | ASSY BTY PACK BTP-34A1 FAL2.5 | 60.41H01.001 |
| | NS | RTC Battery, Li | BTY LI 3V CR1220 36MAH | 23.20004.091 |
| **Case/Cover/Bracket Assembly** | | | | |
| | 5 | LCD Cable Cover | CABLE COVER FALCON2 | 42.40G06.001 |
| | NS | Middle Cover | MIDDLE COVER FALCON2 | 42.40G04.001 |
| | 26, 27 | Hinge Cap Pack | ASSY HINGE PACK | 6K=42.40G08.001+42.40G07.001 |
| | 14 | Memory Cover | DIMM COVER ASSY | 60.40G05.001 |
| | NS | HDD Cover | ASSY HDD COVER FALCON2.5 | 60.41H14.001 |

| Picture | No. | Partname | Description | Part No. |
|---|---|---|---|---|
| | 15 | Modem Cover | MODEM COVER ASSY | 60.40G06.001 |
| | 12 | Upper Case | UPPER CASE ASSEMBLY | 60.40G03.001 |
| | NS | Lower Case | LOWER CASE(F2.5) | 60.41H06.001 |
| | NS | Charger Plate with Thermal pad | ASSY CARGER PLATE FALCON2.5 | 60.41H13.001 |
| **Miscellaneous** | | | | |
| | NS | Camera Rubber | RUBBER CAMERA TM340 | 47.40F07.002 |
| | NS | LOGO | LOGO | 40.42F09.001 |
| **Screws** | | | | |
| | 11 | Main board Screw | SCREW M2.5*4L NI | 86.9A553.4R0 |
| | 22 | Modem Cover Screw | SCREW M2.0X4(BLACK) | 86.9A322.4R0 |
| | 23 | Hinge Screw | SCREW M2.5X6 | 86.9A353.6R0 |
| | 21 | HeatSink Screw | SCREW M2.0*12 STEEL B | 86.1A322.120 |
| | NS | CD-ROM Screw | SCREW M2-3 | 86.9A522.3R0 |
| | NS | CD-ROM Mylar Screw | SCREW SPECIAL M2 FALCON2 | 86.00A03.220 |
| | 10 | LCD Screw | SCRW BIND M2*L3 B-ZN SHIVA | 86.9A322.3R0 |
| | 20 | CPU Screw | SCREW CPU FALCON 2.5 | 86.00A04.220 |
| | NS | CPU Spring | SPRING CPU FALCON 2.5 | 34.41H05.001 |

# Model Definition and Configuration

**Model Number Definitions**

| Model Number | LCD | CPU | Memory | HDD | CD | Battery |
|---|---|---|---|---|---|---|
| 520iT | 12.1" TFT | Celeron-550 | 64MB | 4.8GB | 24x | Lilon |
| 521TE | 13.3" TFT | PIII-600 | 64MB | 6GB | 24x | Lilon |
| 521TX | 14.1 TFT | PIII-600 | 64MB | 6GB | 24x | Lilon |
| 521TXV | 14.1 TFT | PIII-600 | 64MB | 6GB | 6x DVD | Lilon |
| 522TX | 14.1 TFT | PIII-600 | 64MB | 12GB | 24x | Lilon |
| 522TXV | 14.1 TFT | PIII-600 | 64MB | 12GB | 6x DVD | Lilon |
| 523TE | 13.3 TFT | PIII-600 | 64MB | 6GB | 24x | Lilon |
| 524TX | 14.1 TFT | PIII-600 | 64MB | 12GB | 24x | Lilon |
| 524TXV | 14.1 TFT | PIII-600 | 64MB | 12GB | 6x DVD | Lilon |
| 525TX | 14.1 TFT | PIII-600 | 64MB | 12GB | 24x | Lilon |
| 525TXV | 14.1 TFT | PIII-600 | 64MB | 12GB | 6x DVD | Lilon |

# Test Compatible Components

This computer's compatibility is tested and verified by Acer's internal testing department. All of its system functions are tested under Windows 95, Windows 98, Windows 2000 and Windows NT environment.

Refer to the following lists for components, adapter cards, and peripherals which have passed these tests. Regarding configuration, combination and test procedures, please refer to the TravelMate 520 Compatibility Test Report released by the Acer Mobile System Testing Department.

TravelMate 520 Compatibility Test Report is not yet ready when the service guide was released. Test Compatible Components will not be provided at this moment. Please check website for updates of test compatible components.

# Online Support Information

This section describes online technical support services available to help you repair your Acer Systems.

If you are a distributor, dealer, ASP or TPM, please refer your technical queries to your local Acer branch office.  Acer Branch Offices and Regional Business Units may access our website.  However some information sources will require a user i.d. and password.  These can be obtained directly from Acer CSD Taiwan.

Acer's Website offers you convenient and valuable support resources whenever you need them.

In the Technical Information section you can download information on all of Acer's Notebook, Desktop and Server models including:

❏    Service guides for all models

❏    User's manuals

❏    Training materials

❏    Main manuals

❏    Bios updates

❏    Software utilities

❏    Schematics

❏    Spare parts lists

❏    Chips

❏    TABs (Technical Announcement Bulletin)

The service repair section provides you with downloadable information on:

❏    Troubleshooting guides

❏    Tooling box information

❏    Repair instructions for specific models

❏    Basic repair guidelines

❏    Debug cards for Acer's latest models

For these purposes, we have included an Acrobat File to facilitate the problem-free downloading of our technical material.

 Also contained on this website are:

❏    Detailed information on Acer's International Traveller's Warranty (ITW)

❏    Returned material authorization procedures

❏    An overview of all the support services we offer, accompanied by a list of telephone, fax and email contacts for all your technical queries.

We are always looking for ways to optimize and improve our services, so if you have any suggestions or comments, please do not hesitate to communicate these to us.

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