

NEC VERSA® SXI SERIES



S E R V I C E A N D R E F E R E N C E M A N U A L

NEC

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Preface

This service and reference manual contains the technical information necessary to set up and maintain the NEC Versa[®] SXi notebook computer.

The manual also provides hardware and interface information for users who need an overview of the system design. The manual is written for NECC-trained customer engineers, system analysts, service center personnel, and dealers.

The manual is organized as follows:

Chapter 1, System Overview, provides an overview of the hardware and interface components.

Chapter 2, System Configuration and Setup, provides information on setup and how to operate the notebook.

Chapter 3, Disassembly and Reassembly, provides detailed instructions on how to disassemble the notebook.

Chapter 4, System Board Layout, shows the system boards and the board connectors.

Chapter 5, Illustrated Parts Breakdown, shows the Illustrated Parts Breakdown (IPB) and corresponding part numbers.

Chapter 6, Preventive Maintenance, lists general notebook preventive maintenance procedures.

Chapter 7, Troubleshooting, lists troubleshooting procedures as well as helpful servicing hints.

Chapter 8, Getting Services and Support, provides information as to how to contact NECC for service information and technical support.

Chapter 9, Specifications, lists physical specifications, connector locations, memory map, and interrupt controllers.

A **Glossary** and an **Index** are included for convenience.

Abbreviations

A	ampere	EDO	extended data output
AC	alternating current	EGA	Enhanced Graphics Adapter
AGP	Advanced Graphics Port	EPP	enhanced parallel port
AT	advanced technology (IBM PC)	EPROM	erasable and programmable ROM
BCD	binary-coded decimal	EVGA	Enhanced Video Graphics Array
BCU	BIOS Customized Utility	F	Fahrenheit
BIOS	basic input/output system	FAX	facsimile transmission
bit	binary digit	FCC	Federal Communications Commission
BUU	BIOS Upgrade Utility	FG	frame ground
bpi	bits per inch	FM	frequency modulation
bps	bits per second	FP	fast page
C	capacitance	FRU	field-replaceable unit
C	centigrade	GB	gigabyte
Cache	high-speed buffer storage	GND	ground
CAM	constantly addressable memory	HEX	hexadecimal
CAS	column address strobe	Hz	hertz
CD-ROM	compact disk-ROM	IC	integrated circuit
CG	character generator	ID	identification
CGA	Color Graphics Adapter	IDE	intelligent device electronics
CGB	Color Graphics Board	IDTR	interrupt descriptor table register
CH	channel	in.	inch
clk	clock	INTA	interrupt acknowledge
cm	centimeter	IPB	illustrated parts breakdown
CMOS	complementary metal oxide semiconductor	IR	infrared
COM	communication	IRR	Interrupt Request register
CONT	contrast	ISA	Industry Standard Architecture
CPGA	ceramic pin grid array	ISR	In Service register
CPU	central processing unit	I/O	input/output
DAC	digital-to-analog converter	IPC	integrated peripheral controller
DACK	DMA acknowledge	ips	inches per second
DC	direct current	IRQ	interrupt request
DIP	dual in-line package	K	kilo (1024)
DLAB	Divisor Latch Address bit	k	kilo (1000)
DMA	direct memory access	KB	kilobyte
DMAC	DMA controller	kg	kilogram
DOS	disk operating system	kHz	kilohertz
DRAM	dynamic RAM	lb	pound
DVD	digital video disk	LED	light-emitting diode
ECC	error checking and correction		
ECP	enhanced capabilities port		

LCD	liquid crystal display	S	slave
LSB	least-significant bit	SCSI	Small Computer System Interface
LSI	large-scale integration	SDRAM	synchronous dynamic random-access memory
M	mega	SG	signal ground
mA	milliamps	SIMM	single inline memory module
max	maximum	SPM	standard page mode
MB	megabyte	SRS	Sound Retrieval System
MDA	Monochrome Display Adapter	SVGA	Super Video Graphics Array
MFM	modified frequency modulation	SW	switch
MHz	megahertz	TFT	thin film transistor
mm	millimeter	TSC	Technical Support Center
ms	millisecond	TTL	transistor/transistor logic
MSB	most-significant bit	tpi	tracks per inch
NASC	National Authorized Service Center	USB	universal serial bus
NC	not connected	V	volt
NMI	Non-maskable Interrupt	Vac	volts, alternating current
ns	nanosecond	VBIII	VersaBay III
NSRC	National Service Response Center	Vdc	volts, direct current
PAL	programmable array logic	VESA	video electronics standards association
PCB	printed circuit board	VFC	VESA-compliant feature connector
PCI	Peripheral Component Interconnect	VGA	Video Graphics Array
PDA	personal digital assistant	VRAM	video RAM
PFP	plastic flat package	W	watt
PIO	parallel input/output	W	write
pixel	picture element	XGA	Extended Graphics Array
PLCC	plastic leaded chip carrier		
PLL	phase lock loop		
p-p	peak-to-peak		
PPI	programmable peripheral interface		
PROM	programmable ROM		
QFP	quad flat pack		
RAM	random-access memory		
RAMDAC	RAM digital-to-analog converter		
RAS	row address strobe		
RGB	red green blue		
RGBI	red green blue intensity		
ROM	read-only memory		
rpm	revolutions per minute		
R	read		
RTC	real-time clock		
R/W	read/write		

1

System Overview

- About the NEC Versa SXi Notebook
- Around the Front of the System
- Around the Back of the System
- Around the Left Side of the System
- Around the Right Side of the System
- Around the Bottom of the System
- Internal Components
- Chipset

About the NEC Versa SXi Notebook

The NEC Versa SXi notebook computer offers you a portable system filled with exciting resources for home, business or travel. Standard features include a powerful Intel® Pentium III 650-MHz, 700-MHz, 750-MHz, 800-MHz, or 850-MHz microprocessor with Intel SpeedStep™ technology. SpeedStep technology allows you to customize high-performance computing on your notebook system to optimize performance speed and conserve battery life. The 14.1-inch TFT XGA LCD panel provides high-resolution display for sharp, effective visuals.

In addition, your system provides a high-performance hard disk drive, a diskette drive or SuperDisk™ drive, PC card support, and either a 24X CD-ROM drive, a CD Read/Write drive, or an 8X DVD-ROM drive. To optimize your connectivity options, some models ship with an internal mini-PCI modem, internal mini-PCI LAN, or combination internal mini-PCI LAN/modem. As a multimedia system, your NEC Versa also provides the tools needed to create and present impressive images using video clips and sound.

NEC Versa SXi notebook computer



To get comfortable with your notebook, read the following sections and take a tour around your system!

Around the Front of the System

The NEC Versa is compact with features on every side. First, look at the front of the NEC Versa. The following sections describe front features, beginning with the liquid crystal display (LCD) panel.

LCD Panel

Your NEC Versa SXi comes with a 1024x768, 16 million color LCD panel that you can adjust for a comfortable viewing position. To adjust the viewing angle, gently tilt the LCD panel into position. Your system is equipped with a 14.1-inch color Thin Film Transistor (TFT) Extended Graphics Array (XGA) panel.

To adjust the LCD panel brightness press the **Fn-F8** and **Fn-F9** functions keys. For more details about using the system's function keys, see the section, "Keyboard," later in this chapter.

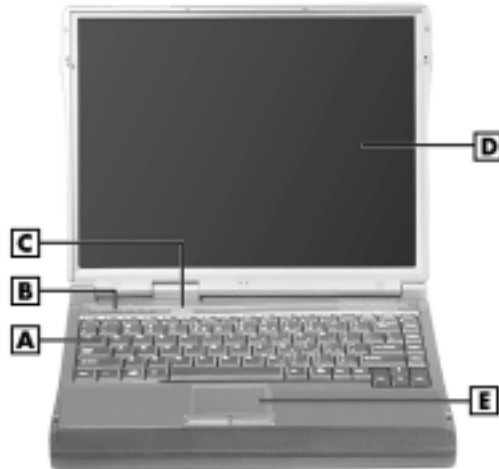
The LCD panel provides the following status LEDs.

- **Power Status LED** — lights green when the system is under AC power. When the system is under battery power, this LED lights to indicate the following:
 - Lights green when the system power is on.
 - Blinks green when the system is in Standby (Windows 98/2000) or Suspend (Windows NT) mode.
 - Lights yellow (blinks when in Windows 98/2000 Standby mode or Windows NT Suspend mode) to indicate that battery power is at 8% capacity or less.
 - Lights amber (blinks when in Windows 98/2000 Standby mode or Windows NT Suspend mode) to indicate that battery power is at 3% capacity or less.
- **Battery Charging LED** — lights to indicate battery charging activity. Lights amber when the battery is charging.

Base Unit

The base unit of your NEC Versa offers the following features, which are described after the figure.

LCD panel and base unit



- | | |
|----------------------------------|---------------------------|
| A – Keyboard | D – LCD Panel |
| B – Operating Status LEDs | E – NEC VersaGlide |
| C – Power Button | |

- Keyboard — 87 keys with the standard QWERTY-key layout. (Models purchased outside of the U.S. and Canada ship with country-specific keyboard layouts.)
- Operating Status LEDs — Keeps you informed of your NEC Versa's current operating status. See the following section for details about the operating status LEDs.
- Power Button — Press the Power button to power on, power off, and to resume from Standby (Windows 98/2000) or Suspend (Windows NT) mode.
- LCD Panel — Provides a high-resolution display for sharp, effective visuals on your NEC Versa.
- NEC VersaGlide — The NEC VersaGlide works like a standard computer mouse. Simply move your fingertip over the VersaGlide to control the position of the mouse pointer. Use the selection buttons below the VersaGlide to select menu items.

Operating Status LEDs and Microphone

Operating status LEDs and microphone



A – IDE Device	D – Caps Lock
B – VBIII Device	E – Scroll Lock
C – Microphone	F – Num Lock

- IDE Device — lights when the NEC Versa writes data to or retrieves data from the internal hard disk drive
- VBIII Device — lights when the NEC Versa writes data to or retrieves data from a device in the VersaBay III.
- Microphone — A strategically positioned built-in microphone allows you to record monophonic sound directly into your notebook computer. See Chapter 9, “Using Multimedia,” for details about recording.
- Caps Lock — lights when Caps Lock is in effect.
- Scroll Lock — lights when Scroll Lock is in effect.
- Num Lock — lights when Num Lock mode is active.

Power Button

The Power button is a “smart” switch, meaning that it recognizes when the system is in Standby mode in Windows 98/2000* or in Suspend mode in Windows NT**. If in Suspend or Standby mode, you cannot power off until you press the Power button to resume operation.

* The Advanced Power Management setting, “When I press the power button on my computer,” must be set to Standby.

** The BIOS parameter “System Switch” must be set to “Sleep.”

Put the unit in Standby or Suspend mode when you need to be away from your system for a short period of time and want to return to where you left off. Standby mode in Windows 98/2000 and Suspend mode in Windows NT shuts down all devices in the system while retaining data and system status.

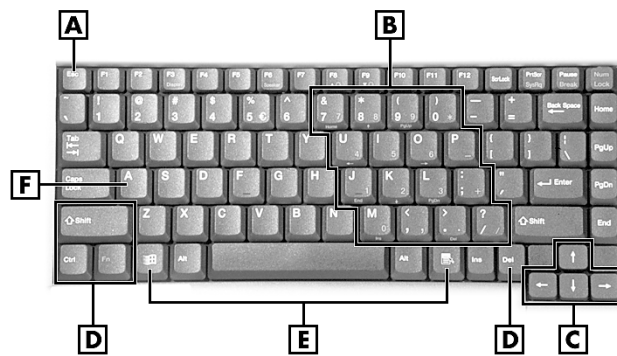
- In Windows 98/2000, go to Start, Shutdown, Standby, to put your system into Standby mode.

- In Windows NT, press the Power button for less than 4 seconds to put your system into Suspend mode. The BIOS parameter “System Switch” must be set to “Sleep.”
- Use the Power button in the following ways:
 - Press the Power button to power on.
 - Press the Power button to resume from Standby (Windows 98/2000) or Suspend (Windows NT) mode and proceed with normal operation.
 - Hold the Power button in place for 4 or more seconds to initiate power override (powers off the system). Only use this option if you cannot power off your system using Start, Shutdown.

Keyboard

The NEC Versa keyboard offers the following features, which are described after the figure.

Keyboard



- | | |
|--------------------------------|----------------------------|
| A – Function Keys | D – Control Keys |
| B – Numeric Keys | E – Windows Keys |
| C – Cursor Control Keys | F – Typewriter Keys |

- Function keys — Twelve function keys, **F1** through **F12**, are available on the NEC Versa keyboard. These keys work together with the **Fn** key to activate special functions. Several keys are preprogrammed with dual functions, some of which are printed in blue on the key.

Function keys are application-driven. See the specific application’s user guide for information about how each function key works within the application you are using.

The following function key combinations are preprogrammed for the NEC Versa SXi computer.

Fn-F3 — Toggles between three video modes; LCD, CRT, or both (LCD and CRT).

Fn-F4 — Sets Standby power management mode on, in Windows NT.

- In Windows NT, press any key to resume from Standby mode.
- No function when Windows 98/2000 configured for Advanced Configuration and Power Interface (ACPI). In Windows 98/2000, Standby is equivalent to Windows 95 Suspend mode. To resume from Windows 98/2000 Standby mode, press the Power button.

Fn-F6 — toggles the system beep on and off.

Fn-F7 — Toggles between various power management levels in Windows NT. Beeps indicate the level chosen as follows:

1 beep	Off
2 beeps	Custom
3 beeps	Highest Performance
4 beeps	Longest Life

No function when Windows 98/2000 configured for Advanced Configuration and Power Interface (ACPI).

Fn-F8 — Increases the LCD panel brightness.

Fn-F9 — Decreases the LCD panel brightness.

Fn-F10 — Toggles LCD expansion mode (DOS only).

Fn-F12 — Toggles the scroll lock off and on.

Fn-ESC — Initiates a Save-to-RAM, in Windows NT. Saves your working environment to memory.

An additional preprogrammed function key, **Fn-Left Ctrl**, simulates pressing the right control key for support of IBM 327x connections.

- Numeric keypad — Pressing NumLock on the keyboard activates the numeric keypad numbers and functions printed in blue on the keys.

The keypad lets you type numbers and mathematical operands (+, -) as you would on a calculator. The keypad is ideal for entering long lists of numbers.

When you press NumLock again, the keys revert to their normal functions as typewriter keys.

- Cursor Control keys — Cursor control keys let you position the cursor on the screen where you want. On the screen, the cursor is a blinking underline, block, or vertical line depending on the application. The cursor indicates where the next text typed is inserted.
- Control keys — **Ctrl**, **Alt**, **Fn**, and **Shift** are controls used in conjunction with other keys to change their functions. To use control keys, press and hold the control key while pressing another key. For example, “press **Ctrl c**” means to hold down the **Ctrl** key and type the letter c. How the key combination works depends on the application you are running.
- Windows keys — In Windows, you can use the following two keys to facilitate your work.



Quick access to shortcut menus



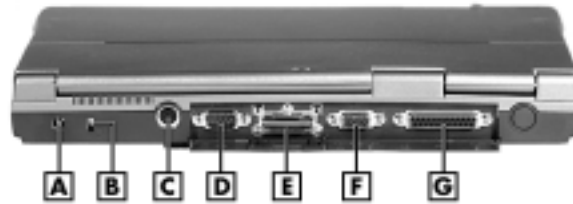
Displays the Start menu

- Typewriter keys — The typewriter keys (also called alphanumeric keys) are used to enter text and characters. Keys with blue printing on them behave differently when combined with control keys or the **Fn** key.

Around the Back of the System

You'll find system ports for connecting optional devices (like a printer, the port replicator, or an external monitor) on the back of your NEC Versa. These features are described after the figure.

Features on the back of the system



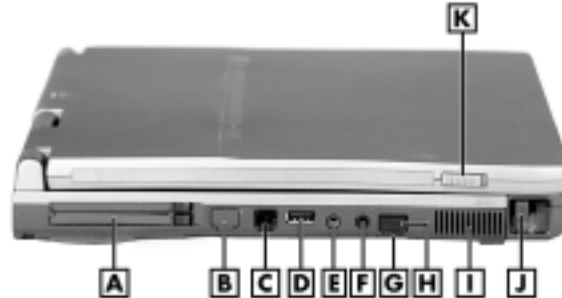
A – AC Power Port	E – Expansion Port
B – Kensington Lock	F – Video Port
C – PS/2 Port	G – Parallel Port
D – Serial Port	

- AC Power Port — Use the power jack to attach the NEC Versa to a DC power source, such as the AC adapter or the optional DC auto adapter.
- Kensington Lock — Provides added security by installing an optional Kensington Lock.
- PS/2 Port — Connects an external PS/2-style mouse or a PS/2-style keyboard to the system. With an optional Y-cable adapter, you can connect both a mouse and a keyboard at the same time.
- Serial Port — Connects an external modem or other serial device.
- Expansion Port — Use this port to connect the NEC Port Replicator.
- Video Port — Attaches an external monitor to your NEC Versa. You can run the LCD display and the external monitor simultaneously or run either alone.
- Parallel Port — Connects a parallel printer or other parallel device. The port is an Enhanced Capabilities Port (ECP). The ECP standard provides you with a greater processing speed than the conventional parallel port. It also supports Enhanced Parallel Port (EPP), bi-directional and uni-directional protocols.

Around the Left Side of the System

The left side of your NEC Versa offers the following features, which are described after the figure.

Left side features



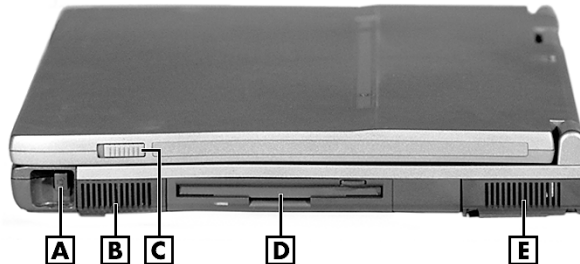
- | | |
|---|---|
| A – PC Card Slots | G – Volume Control |
| B – LAN Port (optional) | H – IR Port |
| C – Modem Port (optional) | I – Left Stereo Speaker |
| D – USB Port | J – Battery Release Latch (Left) |
| E – External Microphone | K – LCD Lid Latch (Left) |
| F – Headphones/External Speakers | |

- **PC Card Slots** — Provide two slots for inserting two Type II PC cards or one Type III PC card.
- **LAN Port** — Uses an RJ-45 cable to connect your system to a local area network. (Available if optional mini-PCI LAN or mini-PCI LAN/modem combo installed.)
- **Modem Port** — Uses an RJ-11 cable to connect your internal modem to an analog telephone line. (Available if optional mini-PCI modem or mini-PCI LAN/modem combo installed.)
- **USB Port** — The Universal Serial Bus (USB) port allows you to connect up to 127 USB-equipped peripheral devices (printers, monitors, scanners, etc.) to your NEC Versa.
- **External Microphone (MIC)** — Connects an external microphone for monophonic recording or amplification through the unit. Plugging in an external microphone disables the built-in microphone.
- **Headphones/External Speakers** — Connects external headphones or speakers to your NEC Versa. Plugging in headphones or speakers disables the built-in system speakers. The headphone/speaker port supports SP/DIF.
- **Volume Control** — Allows you to control the speaker and headphone volume.
- **IR Port** — Use this infrared (IR) port to transfer files between your NEC Versa and an IR-equipped desktop or notebook computer or to print to an IR-capable printer.
- **Left Stereo Speaker** — Provides stereo sound for your multimedia presentations or listening pleasure. The built-in sound system also supports 3D sound, which simulates the latest surround-sound technology.
- **Battery Release Latch** — Releases and removes the system's main battery.
- **LCD Lid Latch** — Secures the LCD panel when closed.

Around the *Right Side of the System*


The right side of the NEC Versa offers the following features, which are described after the figure.

Right side features



A – Battery Release Latch (Right) **D** – VersaBay III
B – Right Stereo Speaker **E** – Fan
C – LCD Lid Latch (Right)

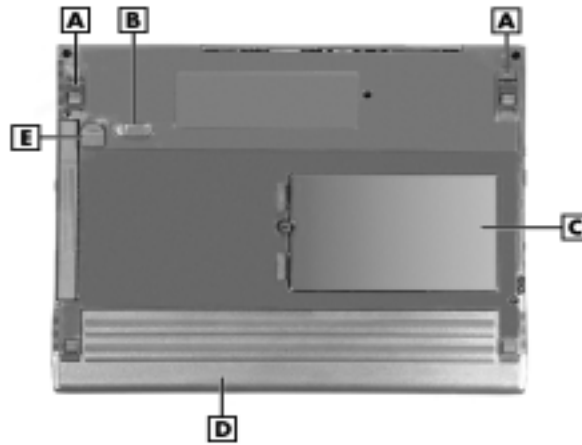
- Battery Release Latch — Releases and removes the system’s main battery.
- Right Stereo Speaker — Provides stereo sound for your multimedia presentations or listening pleasure. The built-in sound system also supports 3D sound, which simulates the latest surround-sound technology.
- LCD Lid Latch — Secures the LCD panel when closed.
- NEC VersaBay III™ — A 24X CD-ROM drive, a CD Read/Write drive, a SuperDisk drive, or an 8X DVD-ROM drive comes installed in the NEC VersaBay III on the right side of your system.
- Fan — Allows your system to cool properly and maintain a safe operating temperature.

 **CAUTION** Always keep the fan vents unobstructed to allow proper system cooling.

Around the Bottom of the System

The bottom of the NEC Versa offers the following features, which are described after the figure.

Bottom features



- | | |
|--|---|
| A – Height Adjustment Feet | D – Battery |
| B – NEC VersaBay III Release Lock | E – NEC VersaBay III Release Latch |
| C – Memory Module Bay | |

- Height Adjustment Feet — Modifies the angle of the NEC Versa for easier viewing and typing.
- NEC VersaBay III™ Release Lock — Unlocks the VersaBay III for device removal.
- Memory Module Bay — Stores the system's memory modules.
- Battery Bay — Contains the system's main, eight-cell or twelve-cell, Lithium-Ion (Li-Ion) battery.
- NEC VersaBay III Release Latch — Releases a device from the NEC VersaBay III.

Internal Components

Review the following sections for a description of the system's internal hardware.

Hard Disk Drive

A standard 2.5-inch, 9.5 mm or 12.7 mm hard disk drive ships with the system.

VersaBay III

A diskette drive, a CD-ROM drive, a DVD-ROM drive, or a CD read/write drive comes installed in the NEC VersaBay III on the right side of the system.

Main Battery

The eight-cell or twelve-cell Lithium-Ion (Li-Ion) battery provides the main power source in your NEC Versa SXi computer. See Chapter 9 for a list of battery specifications. In addition to this battery, the CMOS battery and bridge battery also provide system power.

CMOS Battery

This lithium battery provides battery backup and prevents data loss in the system's complementary metal oxide semiconductor (CMOS) RAM. This memory area contains information on the system's configuration, for example, date, time, drives, and memory. The CMOS battery charges when your NEC Versa is connected to AC power. The CMOS battery may discharge completely if the NEC Versa notebook remains unused for an extended period of time.

Bridge Battery

The bridge battery saves your system status in Suspend (Windows 95) or Standby (Windows 98) mode, giving you time to install a fully charged battery or plug in AC power when your battery charge becomes low.



CAUTION Connect your NEC Versa system to AC power for a full 24 hours before using it on battery power for the first time. Doing so insures that the bridge battery is fully charged and that no data is lost during a battery change.

Chipset

The following table provides information on the system chipset.

System Chipset		
Chip	Manufacturer	Description
Intel Pentium III 650, 700, 750, 800, 850 (with SpeedStep)	Intel	650, 700, 750, 800, 850 MHz CPU
440BX and PIIX4M	Intel	System Controller
FDC37N869	Standard Microsystems	Super I/O
Mobility-M1	ATI	Video
1978	ESS Maestro2E	Audio
M38813E4	Mitsubishi	Keyboard Controller
PC11451	Texas Instruments	PCI CardBus Controller

Operating System

Your system comes preloaded with the Microsoft® Windows® 98 operating system or the Windows 2000/Windows NT® operating system configuration.

If you have a Windows 2000/Windows NT configuration, you must choose the operating system you want to load. The operating system you choose is your only operating system and is the one that the NEC OS Restore program restores.

2

System Configuration and Setup

- Power Sources for Your NEC Versa
- BIOS Setup
- Updating the BIOS
- NEC Utilities
- Application and Driver CD

Power Sources for Your NEC Versa

The NEC Versa can be powered using two different sources, making it a truly portable system.

Operate your NEC Versa just about anywhere using one of the following power sources:


- the AC adapter connected to an electrical wall outlet (using AC power)
- the optional Auto adapter. (For details about its use, refer to the accessory sheet that ships with this option.)

Read the following sections for specific information about using the NEC power sources.

AC Adapter

Use the AC adapter and power cable that came with your NEC Versa to run your computer on alternating current (AC) power, or to recharge the battery pack. Use the AC adapter whenever a wall outlet is nearby.

Keep the adapter connected whenever possible. The AC adapter charges the battery when it is connected, whether the NEC Versa is powered on or off.


 **WARNING** Do not attempt to disassemble the AC adapter. The AC adapter has no user-replaceable or serviceable parts inside. Dangerous voltage in the AC adapter can cause serious personal injury or death. The AC adapter is intended for use with a computer and must meet EN609050 standards.

Connecting the AC Adapter

Note The AC power cable type that your system uses depends on the country where you are using it. Contact the local dealer to purchase the correct power cable.

Connect the AC adapter as follows:

1. Connect the AC adapter cable to the power port on the back of your NEC Versa.
2. Plug one end of the AC power cable into the AC adapter and the other end into a properly grounded 120- or 240-volt wall outlet.

 **CAUTION** Do not cover or place objects on the AC adapter. Keeping the adapter clear of objects lets the adapter cool properly during use.

Only use the AC adapter that comes with your NEC Versa SXi. Although other adapters look similar, using them can damage your system.

Powering On Your System

Power on the system as follows:

1. Locate the latches on the left and right side of the LCD panel, slide them toward the front of the system, and raise the panel.
2. Locate and press the Power button to turn on system power.

Powering On with Windows 2000

If you installed a generic Windows 2000 operating system or disabled hibernate support, a message about the hibernation file appears at power on. Enable Hibernate support to remove this message.

Follow these steps to enable Hibernate support:

1. On the Windows taskbar, click Start, Settings, and Control Panel.
2. Double click Power Options.
3. Select the Hibernate tab.
4. Check the box to enable Hibernate support.
5. Click OK and close Control Panel.

Main Battery Pack

The NEC Versa comes with a rechargeable Lithium-Ion (Li-Ion) battery pack that's easy to install and remove.



WARNING To prevent accidental battery ignition or explosion, adhere to the following:

- Keep the battery away from extreme heat.
 - Keep metal objects away from the battery connectors to prevent a short circuit.
 - Make sure the battery is properly installed in the battery bay.
 - Read the precautions printed on the battery.
-

Determining Battery Status

Your NEC Versa system provides tools to help you keep track of the main battery's power level. If your system is configured to display the power icon on the taskbar in the Windows environments, an electrical plug appears when the system is connected to an AC power source. A battery icon displays when the system is not connected to an AC power source.

Use the system's power meter to determine battery status. Access the system's power meter in the following ways:

- Move the cursor over the power icon on the taskbar to display the remaining battery power for the system's main battery.
- Right click the power icon on the taskbar to open the power meter or to adjust power properties.
- Double click the power icon on the taskbar to display the remaining power for the main battery.
- Go to Start, Settings, Control Panel, and double click the Power icon and select the Power Meter tab.

Systems running the Windows NT operating system use SystemSoft's PowerProfiler™ to determine battery status. Simply click the battery icon on the taskbar to launch the PowerProfiler battery page.

Low Battery Status

When battery power is low (8% or less), the power LED lights yellow. When battery power is very low (3% or less) the power LED lights amber. When your system is in a low battery status, do one of the following:

- Power off the system, remove the battery pack and replace it with a fully charged battery.
- Leave the battery pack in the system and connect your NEC Versa to the AC adapter and a wall outlet. If you connect the system to AC power and keep the system within standard operating temperatures, the battery recharges in approximately 2–3 hours whether or not you use your system.

Returning the Battery to its Normal State

To return the battery to its normal state, try the following:

- remove and then reinstall the battery
- reinstall the battery in your NEC Versa and fully recharge the battery (to 100%).

Extending Battery Life

While on the road, it is important to be aware of the simple things you can do to extend the life of the system's main battery. One way is to keep the brightness setting low. Use the **Fn+F8** and **Fn+F9** function keys to control the brightness.

Conserving Battery Power

In the Windows 98/2000 environment, the default setting for a critical low battery state is Standby. Standby does not power down your system to conserve battery power.

NECC recommends that you change the Windows 98/2000 Standby default setting for a critical low battery state to Hibernate to prevent data loss during battery-powered system operation.

The power management state, Hibernate or Save-To-File (STF), saves the system's current working environment to the system's hard drive, then powers down the system to conserve battery power. You can configure your power management settings to enter hibernation when your system reaches a critical low battery state.



CAUTION Change the Windows 98/2000 Standby default power management setting for a critical low battery state to Hibernate to prevent data loss during battery-powered system operation.

Follow these steps to modify the default setting for a critical low battery state:

1. From the Windows Start menu, select Settings and Control Panel.
2. Double click Power Options in Windows 2000 or Power Management in Windows 98 and select the Alarm tab.
3. Click the Alarm Action button in the Critical Battery Alarm section.
4. Use the dropdown box labeled, "When the alarm goes off, the computer will:" to change the default setting to Hibernate.
5. Click OK to exit Alarm Actions.
6. Click OK to exit Power Options in Windows 2000 or Power Management in Windows 98.
7. Close the Control Panel.

Battery Handling

Keep the following in mind when removing or replacing a battery.

- Turn off power to the system after use. Keeping system power on can degrade battery performance and shorten battery life.
- Clean the battery connectors with a dry cloth when they get dirty.
- Keep the battery out of the reach of children.

Replacing the Battery

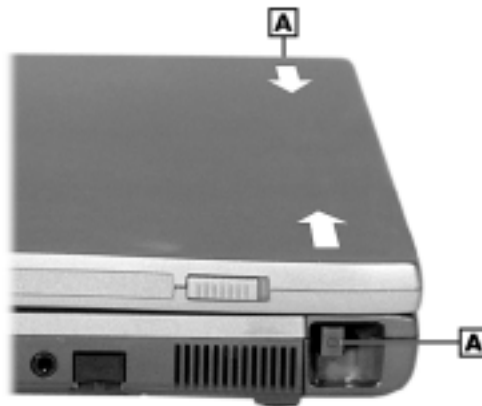
The following symptoms indicate that battery life is nearing an end. Replace batteries that display these symptoms.

- Shorter work times.
- Discoloration, warping.
- Hot to the touch.
- Strange odor.

Replace the battery installed in your NEC Versa system as follows.

1. Save your files, exit Windows, and put your system into Standby mode (Windows 98/2000), put your system into Suspend mode (Windows NT), or turn off system power.
2. Locate and press the battery release latches.

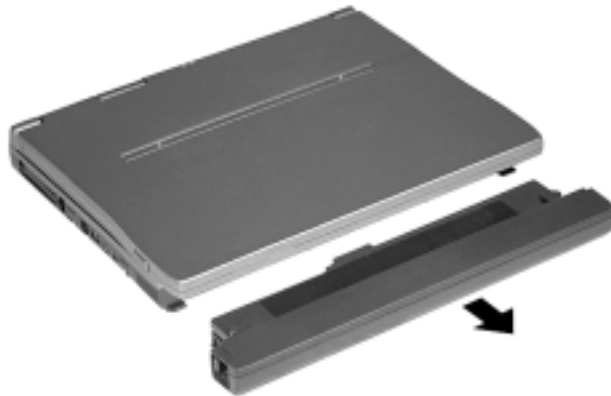
Pressing the battery release latches



A – Battery Release Latches

-
3. Slide the battery out of the system.

Removing the battery




4. Slide the battery into the bay until securely locked into place.

Inserting the battery



Battery Precautions

To prevent accidental battery ignition, rupture, or explosion, adhere to the following precautions.

 **WARNING** There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

To avoid personal injury and property damage, read these battery precautions on handling, charging, and disposing Li-Ion batteries.

- Keep the battery away from heat sources including direct sunlight, open fires, microwave ovens, and high-voltage containers. Temperatures over 140° F (60°C) may cause damage.
- Do not drop or impact the battery.
- Do not disassemble the battery.
- Do not solder the battery.
- Do not puncture the battery.
- Do not use a battery that appears damaged or deformed, has any rust on its casing, is discolored, overheats, or emits a foul odor.
- Keep the battery dry and away from water.
- Keep metal objects away from battery connectors. Metal objects in contact with the connectors can cause a short circuit and damage.

If the battery leaks:

- If the battery leaks onto skin or clothing, wash the area immediately with clean water. Battery fluid can cause a skin rash and damage fabric.
 - If battery fluid gets into eyes, DO NOT rub; rinse with clear water immediately and consult a doctor.
 - Take extra precautions to keep a leaking battery away from fire. There is a danger of ignition or explosion.
-

Precautions for Recharging the Battery

Adhere to the following precautions when recharging the main battery.

- Use only the NEC battery charger designed for your NEC Versa battery type. Different NEC Versa models require different batteries and battery chargers.
- Charge the battery for the specified charge time only.
- During charging, keep the environmental temperature between 41°F and 95°F (5°C to 35°C).
- Read the instructions that came with the battery charger before charging the battery.

System Batteries

Your NEC Versa is equipped with a main, Lithium-Ion battery and two backup batteries that help to prevent data loss.

Main Battery

The eight-cell or twelve-cell Lithium-Ion (Li-Ion) battery provides the main power source in your NEC Versa SXi computer. See Chapter 9 for a list of battery specifications. In addition to this battery, the CMOS battery and bridge battery also provide system power.

CMOS Battery

This lithium battery provides battery backup and prevents data loss in the system's complementary metal oxide semiconductor (CMOS) RAM. This memory area contains information on the system's configuration, for example, date, time, drives, and memory. The CMOS battery charges when your NEC Versa is connected to AC power. The CMOS battery may discharge completely if the NEC Versa notebook remains unused for an extended period of time.

Bridge Battery

The bridge battery saves your system status in Standby (Windows 98/2000) or Suspend (Windows NT) mode, giving you time to install a fully charged battery or plug in AC power when your battery charge becomes low.



CAUTION Connect your NEC Versa system to AC power for a full 24 hours before using it on battery power for the first time. Doing so insures that the bridge battery is fully charged and that no data is lost during a battery change.

BIOS Setup

Your NEC Versa SXi computer comes with a hardware program called BIOS Setup that allows you to view and set system parameters. BIOS Setup also allows you to set password features that protect your system from unauthorized use.

Use BIOS Setup to:

- set the current time and date
- customize your operating system to reflect your computer hardware
- secure your system with a password
- balance your performance needs with power conservation.

Access the BIOS utility at power-on. Just press **F2** when the following prompt appears.

Press <F2> to Enter BIOS Setup.

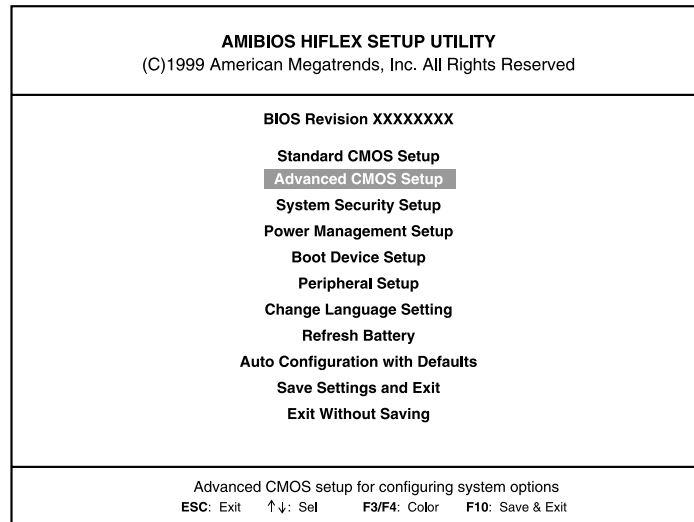
When you press **F2** to enter BIOS Setup, the system interrupts the Power-On Self-Test (POST) and displays the current CMOS RAM settings.

If the system detects an error during POST, it prompts you with a double beep and a message: "Press <F1> to resume." If you press **F1**, the system enters BIOS Setup automatically. If you want to fix the error, carefully read the error message that appears above the prompt (taking notes if you want), and press **F2**. You will see this message if your CMOS battery becomes fully discharged.

BIOS Setup Main Menu

After you press **F2**, the system displays the BIOS Setup Main Menu screen, similar to the following.

BIOS Setup Main Menu



Use the up and down arrow keys (located on the lower right corner of the keyboard) to toggle through the BIOS Setup menu items.

Looking at Screens

BIOS setup screens have three areas as described next.

- Parameters — The left side of the screen. This area lists parameters and their current settings.
- Available Options and Help — The right side of the screen. This area lists alternate settings and Help text for each parameter.
- Key Legend — The bottom right corner of the screen. These lines display the keys that move the cursor and select parameters.

Options that are grayed out are not available for the current selection.

Using Keys

The following table lists the BIOS Setup keys and their functions.

BIOS Setup Key Functions

Key	Function
↑ ↓	Moves the cursor between the displayed parameters.
PgUp/PgDn	Toggles through the current parameter settings.
Tab	For some parameter settings, moves the cursor between the subfields. Also moves the cursor to the next line or selection. For example, for System Time, Tab moves the cursor from hour to minute to second.
ESC	Exits the current screen and returns to the Main Menu screen. From the Main Menu screen, displays the prompt, "Quit without saving."
F3/F4	Changes the screen color.
F10	Saves and exits the BIOS Setup utility.

Checking/Setting System Parameters

The BIOS Setup utility consists of a number of screens, each representing a specific area of the BIOS. The following tables list the BIOS parameters, their factory default settings, alternate settings, and a description of each setting. See the item-specific help that appears on each Setup screen for more details.

The BIOS Setup utility is broken down as follows:

- Standard CMOS Setup
- Advanced CMOS Setup
- System Security Setup
- Power Management Setup
- Boot Device Setup
- Peripheral Setup
- Change Language Setting
- Refresh Battery
- Auto Configuration with Defaults
- Save Settings and Exit
- Exit Without Saving

Resetting System Parameters

To reset all parameters to the default settings, select Auto Configuration with Defaults from the BIOS Setup Main Menu. Use the arrow keys to select **Yes** and press **Enter**.

Standard CMOS Setup

Use the Standard CMOS Setup screen to view the System Time, System Date and to modify drive parameters and related settings.

Standard CMOS Setup

Parameter	Default Setting	Alternate Setting(s)
Date	mm/dd/yyyy	
System Memory		(automatically detected)
Time	hh/mm/ss	
Diskette Drive A	1.44 MB, 3 1/2	Not installed
Internal	Auto	CD/DVD, SuperDsk, Not Installed, User Defined
VersaBay	Auto	CD/DVD, SuperDsk, Not Installed, User Defined
Boot Sector Virus Protection	Disabled	Enabled

- Date — Sets your NEC Versa's calendar month, day and year. These settings remain in memory even after you turn off system power.

To set the date use the **Tab** or arrow keys to move from field to field. Use the **PgUp** or **PgDn** key to change the numbers within each field.

- System Memory — Displays the amount of system memory currently installed in your system.
- Time — Sets the time, enter the current hour, minute, and second in *hr/min/sec*, 24-hour format.

To set the time use the **Tab** or arrow keys to move from field to field. Use the **PgUp** or **PgDn** key to change the numbers within each field.

- Diskette Drive — Designates the drive type for your diskette drive.
- Internal Devices — Assigns devices to the internal drive and VersaBay device in your system.
- Boot Sector Virus Protection — Write protects the boot sector of the hard disk drive to avoid infection by some virus types.

Advanced CMOS Setup

Use the Advanced CMOS Setup to set the following functions.

Advanced CMOS Setup

Parameter	Default Setting	Alternate Setting(s)
LCD Panel View Expansion	On	Off
PS/2 Port Warm Swap	Enabled	Disabled
Internal Mouse	Enabled	Auto, Disabled
Graphics Aperture Size	256 MB	4, 8, 16, 32, 64, 128 MB

- LCD Panel View Expansion — Specifies whether the panel view is reduced/off or expanded/on.

- PS/2 Port Warm Swap — Specifies whether or not you can swap a PS/2 device during system suspension.
- Internal Mouse — Specifies whether or not you can use both the internal and the external mouse.
- Graphics Aperture Size — Selects the graphics aperture size used by the AGP video device, a memory window that optimizes access to accelerated graphics memory.

System Security Setup

Use the System Security Setup to establish system passwords.

System Security Setup

Parameter	Default Setting	Alternate Setting(s)
Assign Supervisor Password	Press Enter	
Assign User Password	Press Enter	
Boot Password Required	No (if no Supervisor Password has been set yet)	Yes
	Yes (if a Supervisor Password has already been set)	No
Resume Password Required	No (if no Supervisor Password has been set yet)	Yes
	Yes (if a Supervisor Password has already been set)	No
Assign HDD Password	Press Enter	
Internal HDD Password	Disabled	Enabled
VersaBay HDD Password	Disabled	Enabled

- Assign Supervisor Password — Establishes password protection for entering the BIOS Setup utility, booting the system, and resuming from Standby. (Resume from Standby, not applicable in Windows 98/2000 with ACPI.)
- Assign User Password — Establishes a user password once a supervisor password is set.
- Boot Password Required — Indicates whether or not a password is required during system boot.
- Resume Password Required — Indicates whether or not a password is required during system resume. Boot Password must be defined to activate this parameter.
- Assign HDD Password — Allows you to assign a password to allow or restrict access to the hard disk drive contents.
- Internal HDD Password — Enables or disables the HDD password.
- VersaBay HDD password — Enables or disables the VersaBay III password.

Establishing Passwords

To establish password protection for entering the BIOS Setup utility or accessing the system at startup, you must set the supervisor password before setting a user password.

- To enter a password simply select Assign Supervisor Password, enter the password, re-enter the password to confirm, and press any key to continue. Repeat the procedure to set the user password.
- To initiate password protection while you step away from your system, simply press **Ctrl, Alt, Backspace**. The Caps lock and Scroll lock LEDs alternately flash indicating that you must enter a password to resume operation.

In Windows 98, to establish password protection for resuming from Standby or Hibernation modes you must do the following:

- Set a Windows password in Control Panel, Password Properties, Change Passwords.
- Enable the option "Prompt for password when the computer goes off standby," in Control Panel, Power Management Properties, Advanced.

In Windows 2000, to establish password protection for resuming from Standby or Hibernation modes you must do the following:

- Press **Ctrl, Alt, Del** and select Change Password.
- Enable the option "Prompt for password when the computer goes off standby," in Control Panel, Power Options Properties, Advanced.

Hard Disk Drive Passwords

Your NEC Versa allows you to establish password protection for the internal hard disk drive and for an optional hard disk drive installed in the NEC VersaBay III. Hard disk drive (HDD) password protection restricts access to the drive, *only* if the drive is removed from your NEC Versa and installed in another system. You are not required to enter your hard disk drive passwords while the drive remains in your current system.

The HDD passwords are written to the system BIOS and to the hard disk drive to ensure that the password protection travels with the drive when moved from system to system.

Establishing Hard Disk Drive Passwords

To establish password protection for your system's hard disk drive you must establish a master password, establish a user password, and enable the established passwords for the internal HDD and for an HDD installed in the NEC VersaBay III. Follow these steps to establish HDD passwords and to enable HDD password protection.

1. Enter the BIOS setup, highlight and select the System Security Setup.
2. Highlight Assign HDD Password and press **Enter**.

The system prompts you to enter a master password.

3. Enter a master HDD password and press **Enter**.

The system prompts you to enter the password again to verify.

4. Enter the master password and press **Enter**.

The system confirms the creation of the master password and prompts you to enter a user password.

5. Enter a user password and press **Enter**.

The system prompts you to enter the password again to verify.


6. Enter the user password and press **Enter**.
7. Highlight and select Internal HDD Password and use the **PgUp/PgDn** keys to enable the selection. (Follow this step to enable password protection for the internal HDD.)
8. Highlight and select VersaBay HDD Password and use the **PgUp/PgDn** keys to enable the selection. (Follow this step to enable password protection for an HDD installed in the NEC VersaBay III.)

Changing Hard Disk Drive Passwords

To change hard disk drive passwords, enter the System Security Setup, highlight Internal HDD Password and enter the current password that you wish to change. If you enter the current master password, you are prompted to enter a new master password. If you enter the current user password, you are prompted to enter the new user password. If you do not wish to establish a new master or user password, press **Esc** instead of entering a new password. Save your changes and exit BIOS setup.

Using Hard Disk Drive Password Protection

To facilitate the transfer of one or more HDDs between systems, establish a single master password (and store the password in a secure place). Forgetting your master password results in the inability to access the data on your hard drive. Establish different user passwords to limit access to specific systems.

 **WARNING** If you set the master and user password on a hard drive, the passwords can never be removed. They can be changed. If the master password is forgotten and the drive is installed in another system, you cannot access the data on the hard drive.

If the hard drive is installed in another NEC Versa system with hard disk drive security enabled, the password must be entered to allow access to the hard drive. **If this NEC Versa system does not support hard disk drive security, you cannot access the data on the hard drive.**

With hard disk drive security enabled on the original NEC Versa system, the system boots normally.

If the hard drive is installed in another NEC Versa system with security enabled, you must enter the master password to access the hard disk drive. If the hard drive is installed in another NEC Versa system with security disabled, you are prompted to enter the master password and then a new user password.

Moving the Hard Disk Drive

When a password protected HDD is moved from its original system and installed in another system and the system is powered on, error messages appear indicating that the drive is locked. Next, the Security Setup screen appears requiring the user to enter the master password to unlock the drive. To unlock the drive, highlight the HDD password line and enter the master password, when prompted.

If you wish to move an HDD from one system to another, follow steps 1 through 6 in the section, "Establishing Hard Disk Drive Passwords," before installing the HDD in a different system. Install the HDD in the desired system, then follow steps 7 and 8, as desired, to establish HDD protection.

To take advantage of HDD password protection in another system, the system must be equipped with the same HDD password protection feature. To determine if the system has HDD password, check the System Security Setup in the BIOS setup to see if there are provisions for establishing HDD passwords.

Power Management Setup

If your Versa SXi system ships with the Windows 98/2000 operating system, the Advanced Configuration and Power Interface (ACPI) controls most power management functions through the Power Management Properties screen in Windows 98 (Power Options Properties screen in Windows 2000). For details about ACPI power management, see the section, “Managing System Power,” later in this chapter. The BIOS Power Management Setup screen is described next. Use SystemSoft’s PowerProfiler to manage power in the Windows NT environment. Access the PowerProfiler icon on the Windows NT taskbar.

Use the Power Management Setup to balance high performance and energy conservation.

Power Management Setup

Parameter	Default Setting	Alternate Setting(s)
System Switch	Power Button	Sleep Button
Power Management under AC	Off	On
Power Savings Level	Longest Life	High Perform/Custom/Off
CPU Speed Control	100%	12.5, 25, 50%
Hard Disk Timeout ¹	2 minutes	5/30/45 sec.; 1/4/6/8/10/15 min. Off
Video Timeout ¹	2 minutes	30/45 sec.; 1/4/6/8/10/15 min. Off
Peripheral Timeout ^{1,2}	On	Off
Audio Device Timeout ¹	On	Off
Standby Timeout ¹	4 minutes	Off/1/2/6/8/10/15 min.
Auto Suspend Timeout ¹	10 minutes	Off/5/15/20/25/30 min.
LCD Suspend	Disabled	Enabled
Suspend Option	Suspend	STF
Auto Save-to-File	Enabled	Disabled
Panel Brightness	Auto	User Defined
Suspend Warning Tone	Enabled	Disabled
Remote Power On	Disabled	Enabled
Wake Up Alarm	Disabled	Enabled
Resume Alarm Time ³	8:00 AM	Set time in 5 min. increments when Wake Up Alarm is set.
Intel SpeedStep Technology	Automatic	Disabled, Battery Opt

¹ Available when power savings is set to Custom.

² Also applies to the external diskette drive.

³ Resume alarm time is selectable when wake up from suspend alarm is set.

- System Switch — Sets the Power button as a power switch or a sleep button.

- **Power Management Under AC** — Specifies whether to enable power management features when AC power is in use. When AC power is connected to your NEC Versa system, power management is disabled (default setting). If you enable this parameter, the system automatically activates the power management profile you set, even when AC power is used.
- **Power Savings Level** — Specifies one of four levels of power management.
 - **High Performance** — provides good battery life and best performance with only minimal power conservation. Use while traveling short distances.
 - **Longest Life** — provides best battery life, the maximum amount of power savings, and good performance. Use while traveling long distances.
 - **Off** — disables power management and all device timeouts. Works well in an office environment while powering your NEC Versa with AC power.
 - **Custom** — lets you define power management levels and specific device timeouts according to your own needs and present environment. Custom lets you set the following timeouts.

Custom Timeout Options

Option	Definition
CPU Speed Control	Sets CPU performance at one of four levels.
Hard Disk Timeout	Sets the time delay before your hard disk powers down.
Video Timeout	Sets the time delay before your video powers off.
Peripheral Timeout	Sets the time delay before your peripherals are controlled by power management.
Audio Device Timeout	Enables and disables audio timeout.
Standby Timeout	Selects the system standby timeout period.
Auto Suspend Timeout	Defines how much time elapses from the time the system enters Standby mode to the time the system automatically enters Suspend mode.

- **LCD Suspend** — Allows you to suspend/resume when the LCD panel is closed.
- **Suspend Option** — Specifies either Suspend or Save to File (STF). For more details about using this parameter, see the section, “Conserving Battery Power,” earlier in this chapter.
- **Automatic STF** — Enables the system, after 30 minutes in Suspend mode, to save the current working environment to a special file on the hard disk and to power down the system.
- **Panel Brightness** — Selects the LCD screen brightness.
- **Suspend Warning Tone** — Specifies whether the system warning tone sounds when Suspend mode starts. It is best to keep this option enabled.
- **Remote Power On** — Allows the modem or LAN to wake the system on a ring signal.
- **Wake Up from Suspend Alarm/Resume Alarm Time** — Allows the alarm to resume the system from suspend. Designates the time parameter in five minutes increments. (Not applicable in Windows 98/2000 with ACPI.)
- **Intel SpeedStep™ Technology** — Optimizes CPU performance when the system is powered under AC or by battery.

Boot Device Setup

Boot Device Setup allows you to define the following functions.

Boot Device Setup

Parameter	Default Setting	Alternate Setting(s)
Quick Boot	Enabled	Disabled
Silent Boot	Enabled	Disabled, Black
Boot Display Device	Simul. Mode	CRT only, LCD only
BootUp NumLock	Auto	On, Off
1 st Boot Device ¹	SuperDsk	Disabled/1 st Fnd IDE/Floppy CD/DVD/SCSI/Network
2 nd Boot Device ¹	CD/DVD	Disabled/1 st Fnd IDE/Floppy/SuperDsk
3 rd Boot Device ¹	Floppy	Disabled/1 st Fnd IDE/SuperDsk CD/DVD
4th Boot Device ¹	1 st Fnd IDE	Disabled/Floppy/SuperDsk CD/DVD
Try Other Boot Devices	Yes	No
1 st IDE Hard Drive	Internal	VersaBay
2 nd IDE Hard Drive	VersaBay	Internal

¹ Bootable device when set to IDE hard drive. Only one IDE device is bootable.

- Quick Boot — Specifies whether or not the system performs all tests during system boot.
- Silent Boot — Specifies whether or not to display the NEC logo during the system boot.
- Boot Display Device — Specifies the display device(s) for system boot messages.
- BootUp NumLock — Specifies whether NumLock is On or Off at system startup.
- Boot Devices — Specifies the sequence of boot devices and whether or not the system attempts to boot from a device other than those specified.
- Other Boot Devices — Allows you to specify IDE devices as bootable devices.

Peripheral Setup

The Peripheral Setup menu displays the connection locations between the system and the Input/Output (I/O) ports and lets you specify different port assignments as needed.

Peripheral Setup

Parameter	Default Setting	Alternate Setting(s)
USB Controller	Enabled	Disabled
Internal Hard Drive	Both	Disabled, Primary, Secondary
Serial Port	Auto	Disabled COM1,IRQ4/COM2,IRQ3 COM3,IRQ4/COM4,IRQ3
Parallel Port	Auto	Disabled/LPT1/LPT2
Parallel Mode	Bi-Dir	Uni-Directional/ECP/EPP
IR Serial Port	Disabled	Auto COM2,IRQ3/COM3,IRQ4/ COM4,IRQ3

Note If you disable a device in Peripheral Setup, you cannot enable or assign it using the Windows device manager. The device will not be listed in the Windows device list. To control the device using the Windows device manager, select any setting other than Disabled in Peripheral Setup.

Peripheral Setup allows you to define the following functions.

- USB Controller — Enables or disables the USB controller.
- Internal Hard Drive — Enables or disables the IDE controller.
- Serial Port — Disables the port or changes its IRQ and COM port assignment.
- Parallel Port/Parallel Mode — Enables, disables, or reassigns the parallel port and selects a parallel port mode.
- IR Serial Port — Enables, disables or reassigns the IR serial port.

Other BIOS Setup Options

BIOS Setup offers other options, including the following:

- Change Language Setting — Controls the BIOS setup language display. English and French are the available options.
- Refresh Battery — Launches the Refresh Battery utility. Once launched, the utility fully discharges your battery to eliminate any residual memory effect. Once refreshed, your battery is conditioned to recharge to its full capacity. To recharge the battery, connect your NEC Versa to AC power. This process may take up to four hours to complete.
- Auto Configuration with Defaults — Loads default settings.
- Save Settings and Exit — Accepts changes made to current settings, saves to CMOS, and exits BIOS Setup.
- Exit Without Saving — Reverts to previously selected settings and exits Setup.

Updating the BIOS

The BIOS is code transmitted onto your system's Flash ROM. As indicated in this chapter, you use the BIOS Setup utility to configure your system's software and hardware features. Use the BIOS Update Diskette, for your specific model, to update your NEC Versa system BIOS.

To update the system BIOS you must:

- Obtain the BIOS Update
- Prepare the BIOS Update Diskette
- Perform the BIOS Update

Obtaining the BIOS Update

If you are informed that the default BIOS needs an update contact Support Services at (800) 632-4525, Fax (801) 981-3133, or access the web site, www.nec-computers.com to obtain a copy of the BIOS update.

Note If you purchased and are using this computer outside the U.S. or Canada, please contact a local NECC or dealer in your country.

Preparing the BIOS Update Diskette

Before using the BIOS update diskette you must make the diskette BIOS flash ready. Refer to the **readme.txt** file on the diskette before using the diskette.

Follow these instructions to prepare the BIOS Update Diskette.

1. Scan your hard drive for any computer viruses.
2. Unlock the write protect notch on the diskette, if necessary.
3. Insert the diskette into the file bay drive.
4. Scan the BIOS Update Diskette for computer viruses.

The diskette is ready for use.

5. Type **a:\install** (where a: is the floppy diskette drive) at the DOS prompt and follow the on-screen instructions.

Install.bat copies the DOS system files from your hard drive onto the BIOS Update Diskette to make it BIOS flash ready.

The system prompts you when the process is complete.

6. Follow the instructions later in this chapter, "Performing the BIOS Update."

Performing the BIOS Update

Follow these steps to perform the BIOS update. Before you begin, be sure to:

- Connect the computer to AC power and power off the computer.
- Configure the Boot Device Setup to boot from a diskette.
- Document all customized BIOS settings.

1. Insert the BIOS Update diskette into the diskette drive.

-
2. Power on the computer with the diskette in the drive. The computer boots and automatically loads the utility. A message similar to the following appears:

The NEC BIOS Update Utility should not be used to modify the BIOS in a Versa system which is docked. If your Versa is docked, please exit the BIOS Update Utility, power down, and undock your Versa before running the utility. Plug in your AC cable before restarting the flash utility.
 3. Press **Enter** to continue.

The utility checks the currently installed BIOS version and the diskette's BIOS version. The Main menu appears.
 4. Use the arrow keys to highlight the "Display BIOS Version" option on the Main Menu. Use this option to check the currently installed BIOS version and the version of the new replacement BIOS.

Press any key to return to the Main menu.
 5. Highlight the "Install New BIOS" option and press **Enter**.
 6. Press **Y** and then press **Enter**. After a brief pause, a message appears telling you to remove the diskette from the drive.
 7. Remove the diskette and press any key to continue. The utility updates the BIOS.

Power off your computer. The next time you power on your computer, you will have the latest NEC Versa SXi computer BIOS revision level.
 8. Power on your computer. A CMOS Checksum error message appears and prompts you to press **F1** to enter Setup.
 9. Press **F1** to enter Setup and restore the default parameter settings.
 10. Be sure to modify any custom settings that you may have configured.

NEC Utilities

NECC provides several programs and routines designed to make your NEC Versa run more efficiently.

The NEC utilities include:

- NEC Customize utility
- HDPREPEZ utility

NEC Customize Utility

In Windows 2000 systems, Windows 98 systems, and Windows NT systems, the NEC Customize utility gives you the option to install or launch:

- Application and Driver CD — You must use this option to install software applications, drivers, etc.
- NEC VersaBay III Swap utility (Windows 98 only) — You must use this option to take advantage of warm swapping your VersaBay III devices.
- NEC-supplied mouse driver (Windows NT only) — Use this option to take advantage of the VersaGlide features.

The NEC Customize utility screen consists of the following.

- A window at the top half of the screen lists the available options.
- The window below the options list displays a description of each option when the option is highlighted.
- The Launch button initiates a selected option when clicked.
- The More Info button provides an overview of the NEC Customize utility.
- The Exit button closes the NEC Customize utility.

Using the NEC Customize Utility

Follow these steps to use the NEC Customize Utility.

1. Double click the NEC Customize icon.
2. From the display window, select the desired option.
3. Click Launch to initiate the selected option.
4. Follow the on-screen instructions to process the selected option.

For some of the selected options you are prompted to reboot your system.

5. If necessary, click Exit to close the NEC Customize dialog box.

HDPREPEZ Utility

The power management state referred to as Save-To-File (STF) saves the system's current working environment to the system's hard drive, then powers down the system to conserve battery power. The HDPREPEZ utility creates a file large enough (256 MB) to accommodate the entire memory contents of your system. The STF file is created the first time that you run your system's setup program.

Note For more details about the HDPREPEZ utility, see the HDPREPEZ.TXT file in the NECUTILS/HDPREP directory.

Using HDPREPEZ with Windows 98

In Windows 98, run the HDPREPEZ utility if you increase the memory capacity in your NEC Versa beyond the factory installed base memory or if you install a generic Windows 98 operating system.

Follow these steps to run the HDPREPEZ utility.

1. Power off and restart your NEC Versa.
2. Press and hold the Ctrl key after the NEC logo screen is displayed.
3. From the Startup menu, select the "Safe Mode Command Prompt Only" option.
4. Enter MS-DOS. At the c: prompt, type **cd \necutils\hdprep** and press **Enter** to change to the \necutils\hdprep directory.
5. Type **HDPREPEZ** and press **Enter**. The utility automatically prepares your NEC Versa for the newly installed memory.
6. Power off your system and then power on. A file, large enough to accommodate your system's memory is created on the hard disk drive.

Using HDPREPEZ with Windows NT

If you install a generic Windows NT operating system on your NEC Versa SXi, use the Application and Driver (A&D) CD to load the HDPREPEZ utility to increase the size of or to create the STF file. Follow the instructions on the A&D CD to run the HDPREPEZ utility.

Application and Driver CD

Use the Application and Driver CD to install applications, drivers, utilities, Internet browsers, and the online NEC INFO Center.

Launching the Application and Driver CD

Follow these procedures to launch the Application and Driver CD using NEC Customize.

Windows 98 Environment

1. Insert the Application and Driver CD into the CD-ROM drive.
2. Double click the NEC Customize icon, if necessary.
3. Highlight Launch Application and Driver CD.
4. Click Launch.

The Application and Driver CD dialog box appears.

Note If the NEC Customize icon is not available, double click My Computer on the desktop and then click the CD icon. The Application and Driver CD dialog box appears.

Windows 2000/NT Environment

1. Insert the Application and Driver CD into the CD-ROM drive.
2. Double click the NEC Customize icon.
3. Select Launch Application and Driver CD.
4. Click Install to launch the CD.

The Application and Driver CD dialog box appears.

Note If the NEC Customize icon is not available, double click My Computer on the desktop and then click the CD icon. The Application and Driver CD dialog box appears.

Installing the Software

The Application and Driver CD dialog box consists of the following components.

- Selection Tabs — Located just below the title bar, each tab represents a software category. The selection tabs include applications, drivers, utilities, Internet browsers, and the NEC Online Documentation.
- Description — Located in the bottom portion of the dialog box, the text describes the selected or highlighted software category or application, driver, etc.
- Install — Clicking the Install button installs the selected software.
- Exit — Clicking the Exit button closes the Application and Driver CD dialog box.

Once the Application and Driver CD dialog box appears, follow these steps to install the desired software.

1. Click the selection tab of your choice.
2. Click the desired application, driver, or utility.
3. Click the Install button to install your selection.

Follow the on-screen instructions to install your selection.

4. Click Exit to close the Application and Driver CD dialog box.
5. Remove the CD from the CD-ROM drive when the installation is complete.

3

Disassembly and Reassembly

- Required Tools and Equipment
- Disassembly
- Battery
- NEC VersaBay III
- Hard Disk Drive
- Memory Module
- Mini-PCI LAN/Modem
- Keyboard
- Heatplate
- Top Cover
- LED/Button Assembly
- LCD Panel
- VersaGlide
- Bridge Battery
- CMOS Battery
- Speakers
- Connector Board
- Main Board
- LCD Panel Switch
- PC Card Assembly
- Processor
- Reassembly

Required Tools and Equipment

All NEC Versa SXi corrective maintenance procedures can be performed using the following tools:

- Tweezers
- Small flat-head screwdriver
- Small Phillips screwdrivers (# 1 and # 0)
- needle-nose pliers
- 3/16-inch nut driver
- Right-angled dentist-style probe.

Disassembly

This section contains step-by-step disassembly procedures for the system. Reassembly is the reverse of disassembly. Each procedure is supported by a simplified disassembly illustration to facilitate removal. The illustrated parts breakdown and parts lists for the system unit are shown in Chapter 5.

For complete disassembly of the system, follow the disassembly instructions that follow.

When disassembling the system unit, follow these general rules.

- Turn off the system and disconnect all power and all options, including the AC adapter (if connected) and battery pack (see the procedures that follow).
- Do not disassemble the system into parts that are smaller than those specified in the procedure.
- Label all removed connectors. Note where the connector goes and in what position it was installed.

Battery

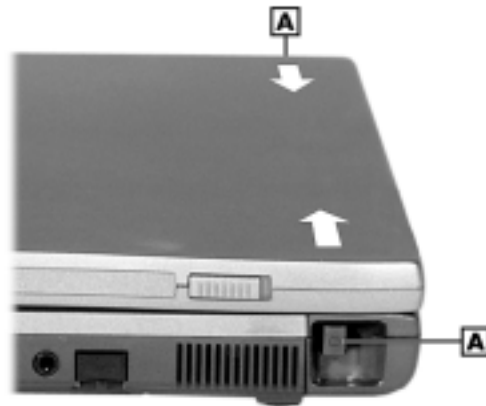
Remove the battery pack installed in your NEC Versa system as follows.

Note Use the batteries in the NEC Versa computer for which they are designed. Installing another manufacturer's battery, or using a combination of very old and new batteries can deteriorate battery and equipment performance.

1. Save your files, exit Windows, and either put your system into Standby mode (Windows 98/2000) or Suspend mode (Windows NT), or turn off system power.

-
2. Locate and press the battery release latches.

Pressing the battery release latches



A – Battery Release Latches

3. Slide the battery out of the system.

Removing the battery

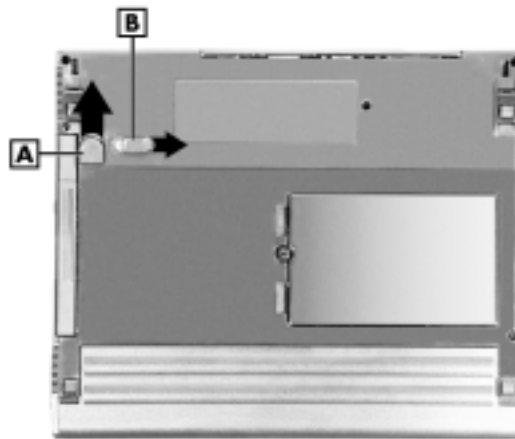


NEC VersaBay III

Use the following steps to remove a device from the NEC VersaBay III.

1. Close the LCD panel and turn the system upside down.
2. Locate the NEC VersaBay III release lock and release latch on the bottom of the unit.

Locating the VersaBay III lock and latch



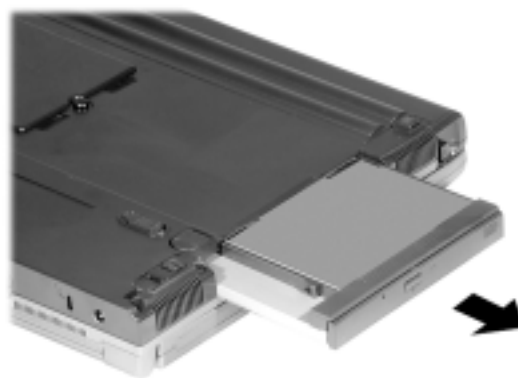
A – Latch

B – Lock

3. Slide the lock to the unlocked position before releasing the latch.
4. Slide the latch toward the rear of the system and hold it.
5. Pull the device out of the system.

Note If you release the latch before completely removing the device, the device casing catches on the inside of the latch.

Removing the device

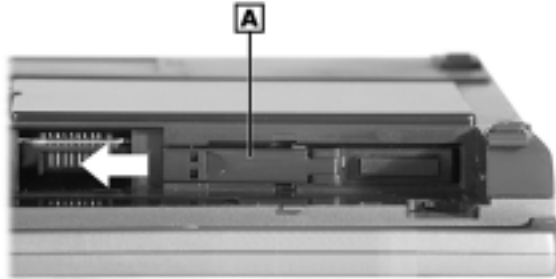


Hard Disk Drive

Remove the hard disk drive as follows.

1. Close the LCD panel and turn the system over.
2. Remove the battery.
3. Remove the disk drive as follows:
 - Locate the disk drive lock lever in the battery bay. Push the lock lever to the left.

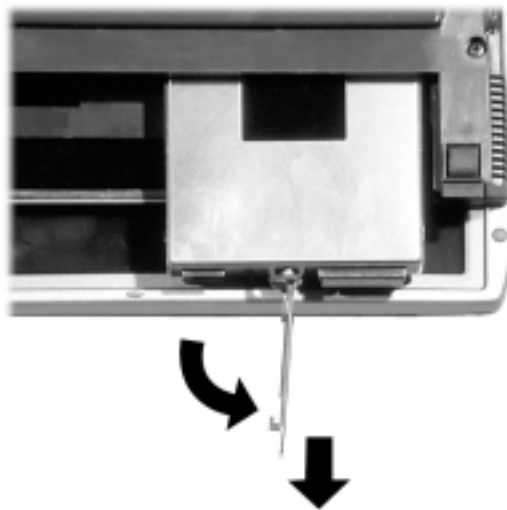
Locating the lock lever



A – Lock Lever

- Pull the lever toward the front of the system and pull the drive out of the bay.

Removing the drive

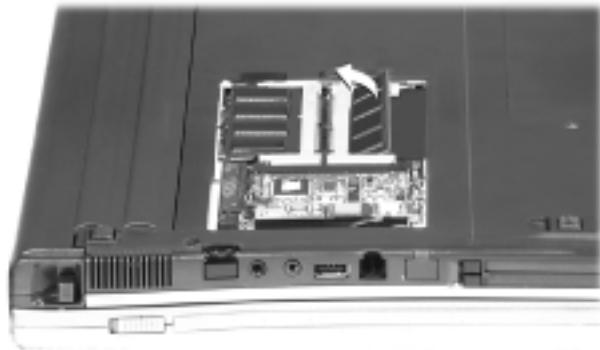


Memory Module

Follow these steps to remove a memory module.

1. Locate the memory module bay.
2. Remove the screw and bay cover.
3. Remove the memory module as follows:
 - Press the locking tabs away from the sides of the SO-DIMM and hold while gently lifting on the edge of the SO-DIMM.
 - When the edge of the SO-DIMM pops up and is at approximately a 60 degree angle, pull the SO-DIMM from the socket.

Removing an installed SO-DIMM

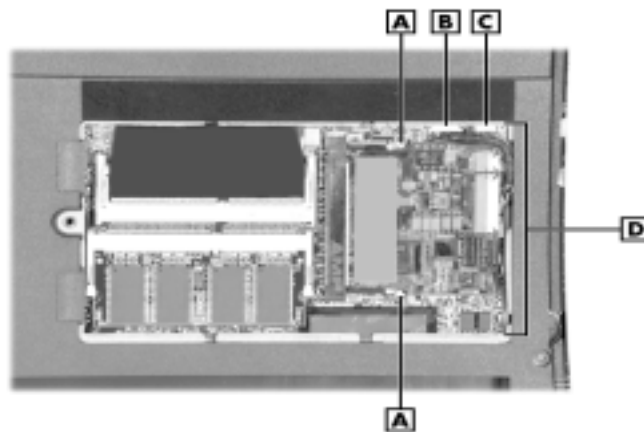


Mini-PCI LAN/Modem

Remove the mini-PCI LAN/ Modem card as follows.

1. Remove the memory module bay screw and cover.
2. Disconnect the mini-PCI LAN/modem cable from the main board.
3. Remove the mini-PCI LAN/modem card as follows:
 - Press the locking tabs away from the sides of the card and hold while gently lifting on the edge of the card.
 - When the edge of the card pops up and is at approximately a 60 degree angle, pull the card from the socket.

Removing the mini-PCI LAN/modem



A – Locking Tabs
B – Connector CN24 on Main Board

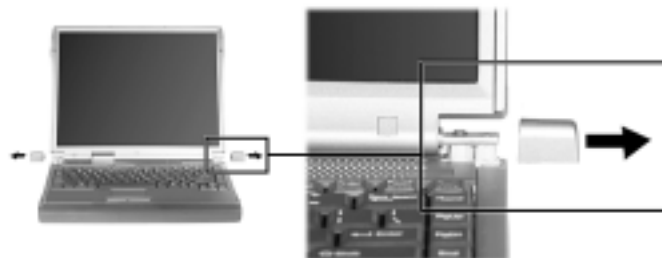
C – Connector CN25 on Main Board
D – System Board Visible Through Bay

Keyboard

Follow these steps to remove the keyboard.

1. Turn the system over and open the LCD panel.
2. Locate the two keyboard retainers, press and slide each one towards the outside edge of the system. Remove the retainers.

Removing the keyboard retainers



-
3. Slide the LED/button panel toward the left side of the system. Carefully lift the panel away from the system.

Removing the LED/button panel



4. Gently lift up the edge of the keyboard nearest the LCD. Once the keyboard is angled up, slide the its lower edge back slightly to free its tabs from the system.

Lifting the keyboard



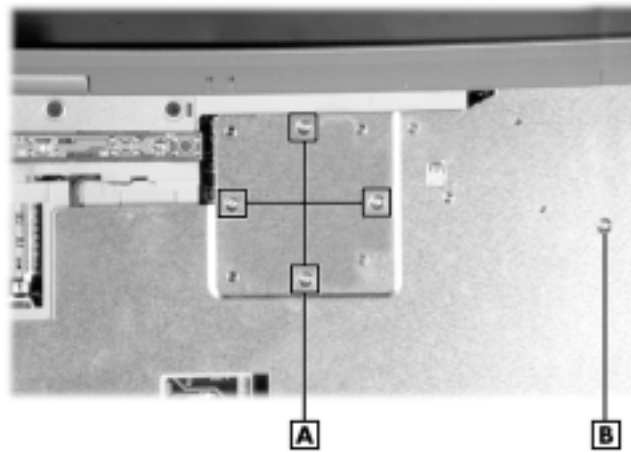
5. Disconnect the keyboard cable from connector DCN6 on the main board and remove the keyboard.

Heatplate

Remove the heatplate as follows.

1. Remove the keyboard.
2. Locate and completely loosen the four captivated screws securing the heatplate. Loosen and remove the remaining screw.

Loosening the heatplate screws



A – Captivated Screws

B – Screw

3. Disconnect the fan cable from connector CN12 on the main board.
4. Remove the heatplate assembly.

Top Cover

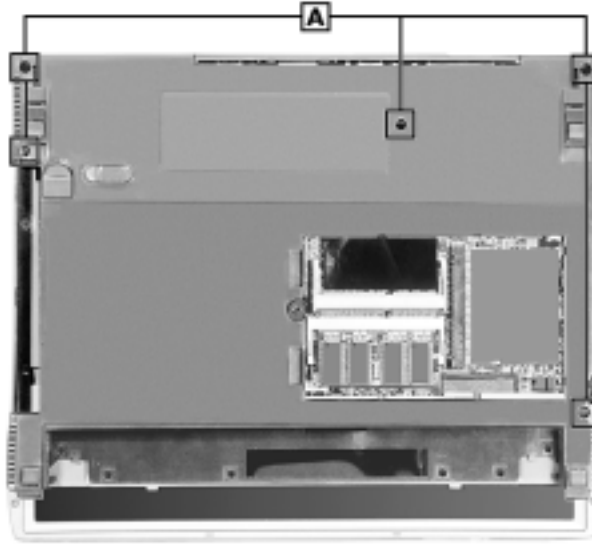
The top cover is secured by thirteen screws that are accessed from the bottom of the system. Five of these secure the lower edge of the top cover, and the other eight secure the inner surface of the top cover. (In addition, three screws secure the top cover *from* the top.)

Follow these steps to remove the top cover.

1. Close the LCD panel and turn the system over.

-
2. Locate and remove the five bottom-most screws.

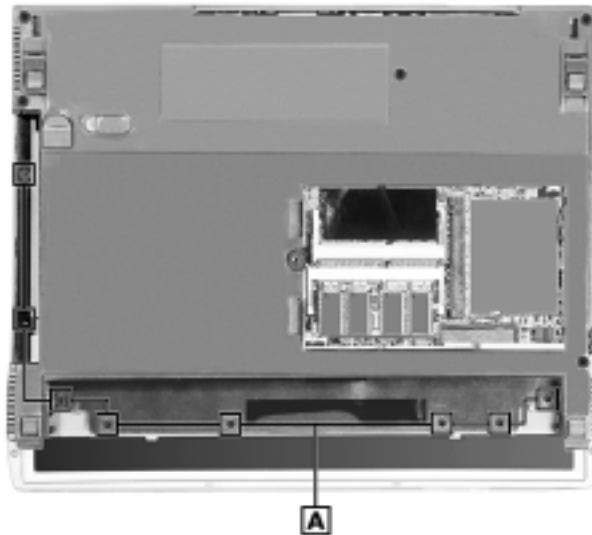
Removing the bottom screws



A – Screws

3. Locate and remove the eight screws that secure the underside of the top cover.

Removing the top cover screws - recessed



A – Screws

4. Turn the system over and open the LCD panel.
5. Locate and remove the three top cover screws on the surface of the top cover.

Locating the top cover screws on the surface of top cover

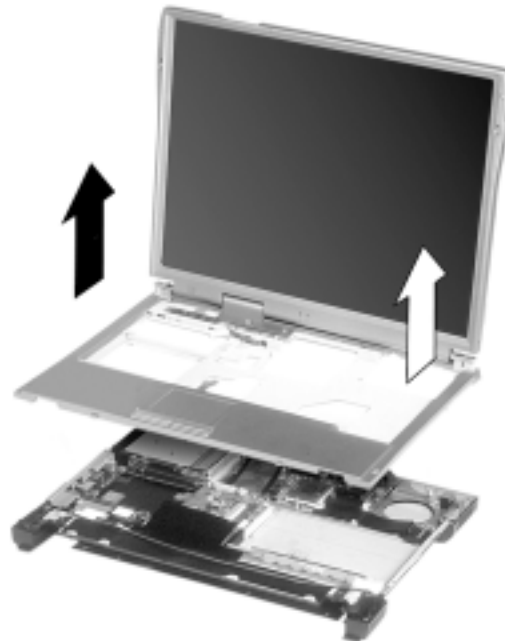


A – Screws (3)
B – LED/Button Cable

C – VersaGlide Cable Connector

6. Disconnect the VersaGlide cable from connector DCN5 on the connector board.
7. Disconnect the LED/button cable from DCN3 on the connector board.
8. Lift the top cover off of the system.

Removing the top cover

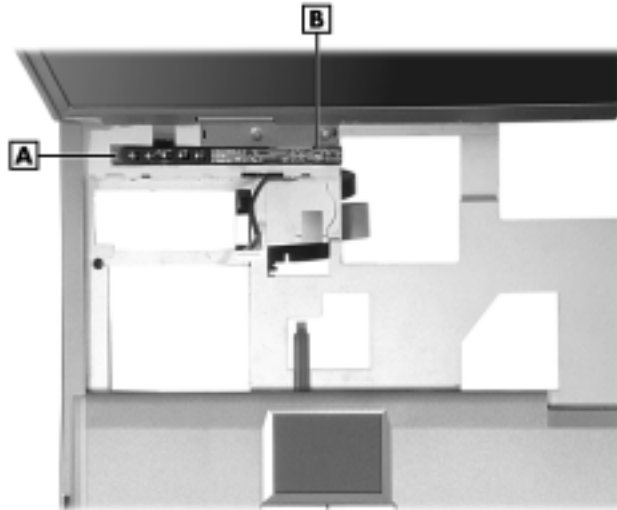


LED/Button Assembly

Remove the LED/button assembly as follows.

1. Remove the keyboard, heatplate, and top cover.
2. Locate and remove the screw securing the LED/button assembly to the top cover.

Removing the LED/button assembly screw



A – LED/Button Assembly

B – Screw

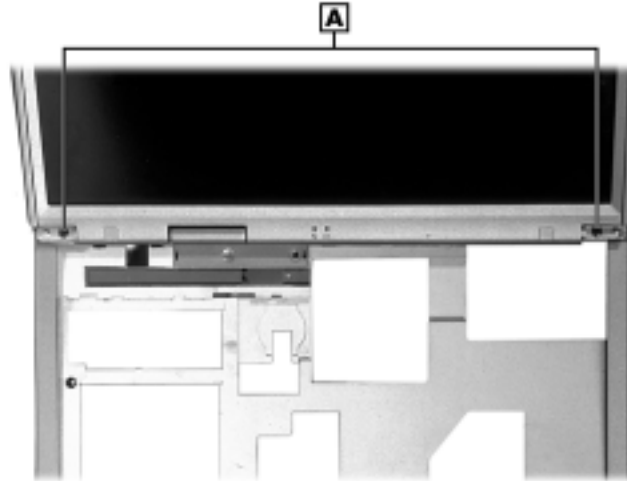
3. Lift the assembly away from the top cover. Carefully guide the cable through the cut out in the top cover.

LCD Panel

Follow these steps to remove the LCD panel.

1. Remove the keyboard, heatplate, and top cover.
2. Locate and remove the two screws securing the LCD panel to the top cover.

Removing the LDC panel screws



A – Screws

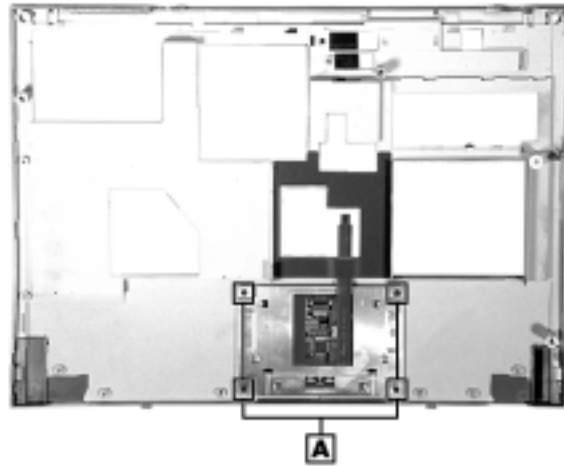
3. Pull the LCD panel up and away from the top cover.

VersaGlide

Remove the VersaGlide assembly as follows.

1. Remove the keyboard, heatplate, and top cover.
2. Turn the top cover over.
3. Locate and remove the four screws securing the VersaGlide assembly to the top cover.

Removing the VersaGlide assembly screws



A – Screws

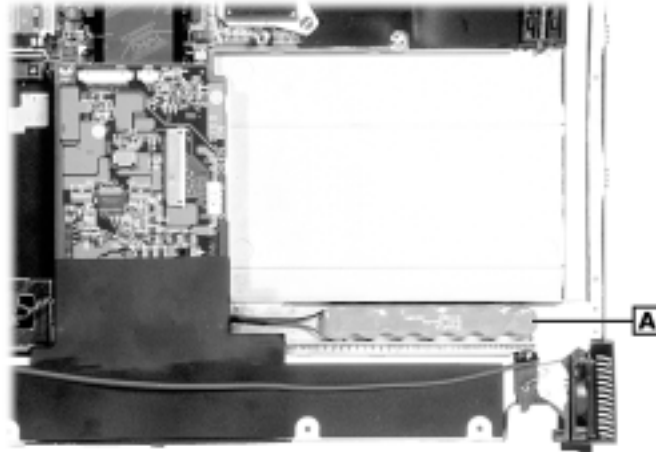
4. Lift the VersaGlide assembly away from the top cover.

Bridge Battery

Follow these steps to remove the bridge battery.

1. Remove the keyboard, heatplate, and top cover.
2. Disconnect the bridge battery from DCN7 on the connector board.
3. Remove the bridge battery. The bridge battery is secured using two-sided tape.

Removing the bridge battery

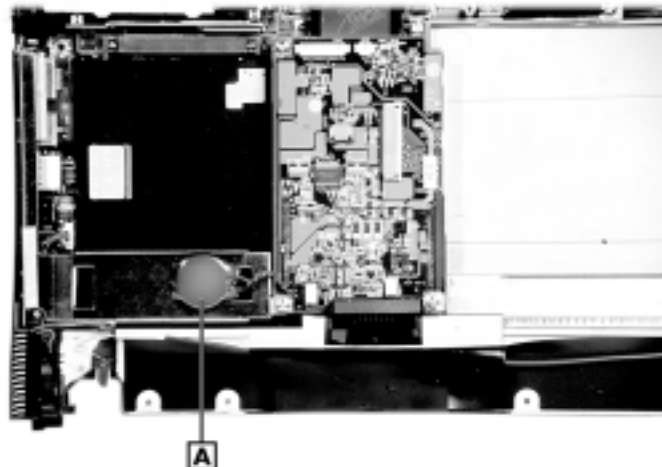


CMOS Battery

Remove the CMOS battery as follows.

1. Remove the keyboard, heatplate, and top cover.
2. Disconnect the CMOS battery from DCN4 on the connector board.
3. Remove the CMOS battery. The CMOS battery is secured using two-sided tape.

Removing the CMOS battery

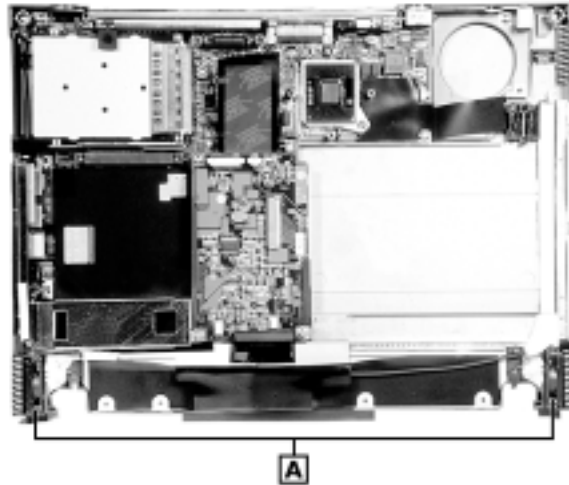


Speakers

Follow these steps to remove the speakers.

1. Remove the keyboard, heatplate, and top cover.
2. Locate the speakers and speaker cable.

Locating the speakers and cable



A – Speakers with Cables

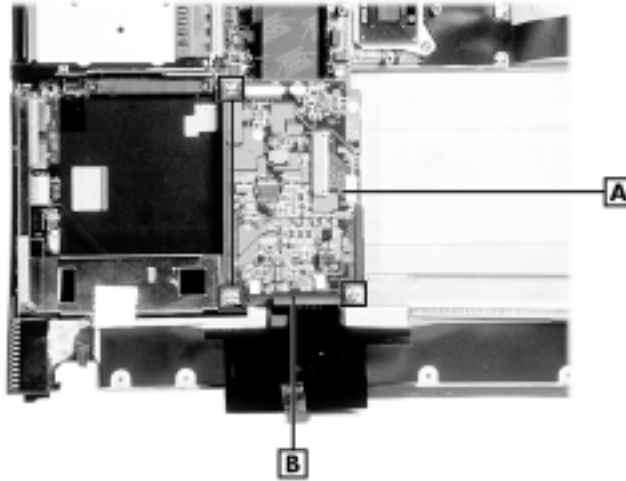
3. Disconnect the speaker cable from CN19 on the main board.
4. Carefully pull the speakers out of the system. The speakers are secured using two-sided tape.

Connector Board

Remove the connector board as follows.

1. Remove the keyboard, heatplate, top cover, bridge battery, and CMOS battery.
2. Locate and remove the three screws securing the connector board.

Removing the connector board screws



A – Connector Board

B – Screws

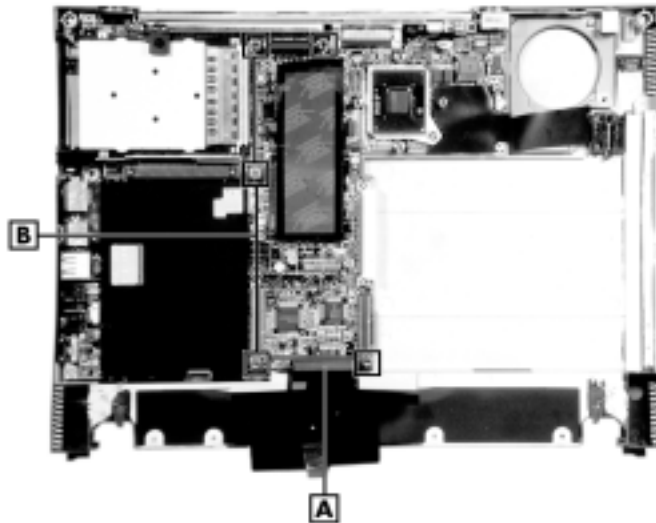
3. Lift the connector board up and away from the main board connectors.
4. Detach the brackets to the left and right of the connector board site.

Main Board

Follow these steps to remove the main board.

1. Remove the keyboard, heatplate, top cover, bridge battery, CMOS battery, connector board, and left and right internal brackets. Remove the plastic cover over the battery connector at the front of the system.
2. Using a nut driver, remove the five hex screws securing the main board.

Locating the hex screws

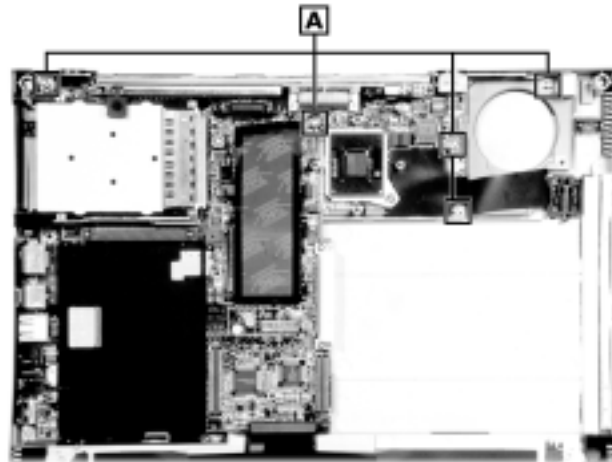


A – Plastic Cover over Battery Connector

B – Hex Screws

3. Locate and remove the five screws securing the main board.

Locating the main board screws



A – Screws

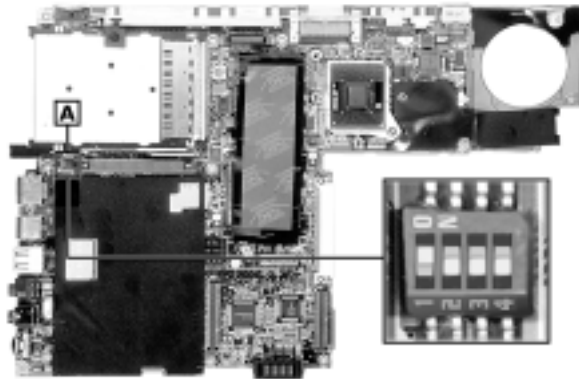
4. Carefully remove the main board from the bottom of the system.

Switch Settings

A set of four dip switches is located on the main board. The following list identifies each switch setting and its function.

- Switch 1 — Keyboard select; Default is “ON” for U.S. 85 key keyboard
- Switch 2 — Keyboard select; Default is “OFF” for U.S. 85 key keyboard
- Switch 3 — Logo select; Default is “OFF” for U.S.
- Switch 4 — Password Override Switch; Default is “OFF.” If you forget your password and cannot access the data on your NEC Versa, change the setting to “ON” to erase your current password.

Switch settings

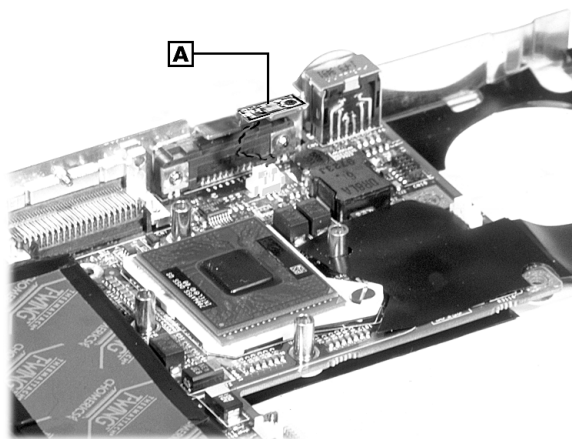


LCD Panel Switch

Remove the LCD panel switch as follows.

1. Remove the keyboard, heatplate, and top cover.
2. Disconnect the LCD panel switch cable from connector CN8 on the main board.
3. Locate and remove the screw securing the LCD panel switch.

Removing the LCD panel switch screw



A – Screw

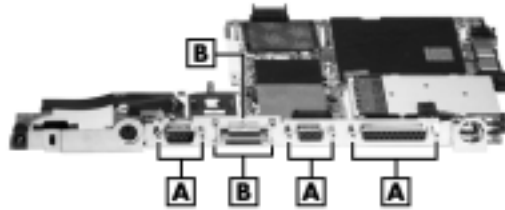
4. Remove the LCD panel switch.

PC Card Assembly

Follow these steps to remove the PC card assembly.

1. Remove the keyboard, heatplate, top cover, connector board, and main board.
2. Remove the connector bracket from the main board by removing the securing screws.

Locating connector bracket screws

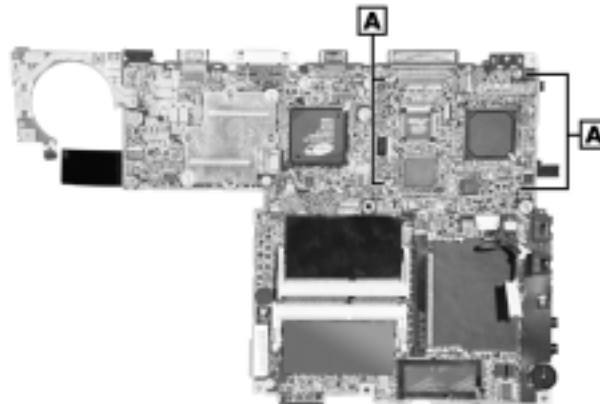


A – Hex Screws

B – Screws

3. Turn the Main board over and remove the PC card assembly screws.

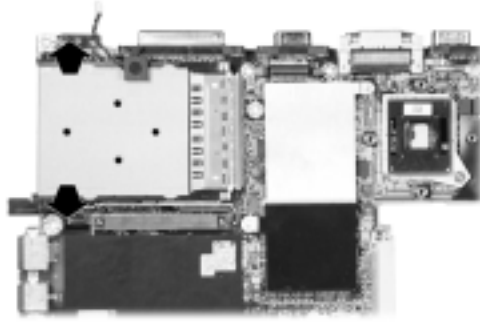
Removing PC card assembly screws



A – Screws

4. Turn the main board over. Lift the PC card assembly off the main board.

Lifting the PC card assembly

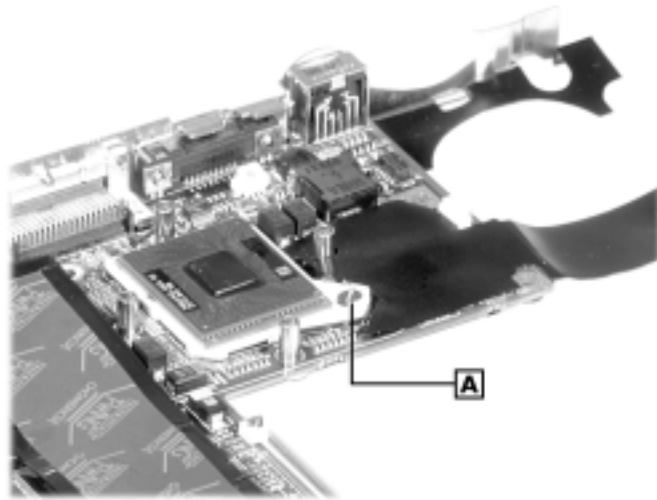


Processor

Follow these steps to remove the processor.

1. Remove the keyboard, heatplate, and top cover.
2. Locate the processor locking screw. Using a flat-head screwdriver, turn the locking screw one-half turn counter clockwise to unlock the processor.

Locating the locking screw



A – Screw

3. Lift the processor out of the socket.

Reassembly

In most cases, reassembly is the reverse of disassembly. In cases where reassembly requires additional steps or processes, they are noted in text.

4

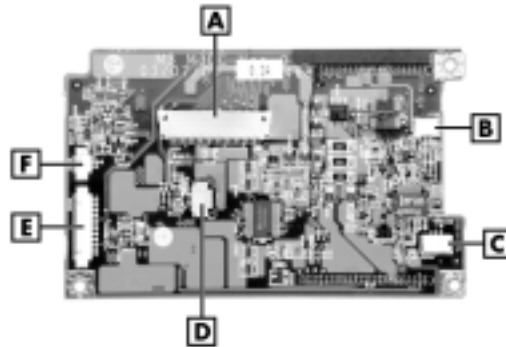
System Board Layout

- Connector Board
- Main Board

This following figures show the system boards and connector locations.

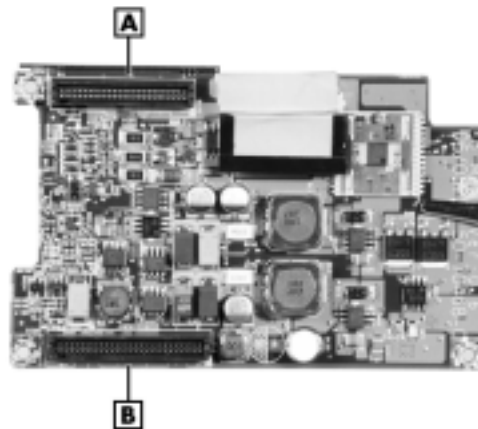
Connector Board

Connector board — front



- | | |
|--|--|
| A – Connector DCN6 (Keyboard) | D – Connector DCN5 (VersaGlide) |
| B – Connector DCN7 (Bridge Battery) | E – Connector DCN3 (LED Button Cable) |
| C – Connector DCN4 (CMOS Battery) | F – Connector DCN8 (some models only) |

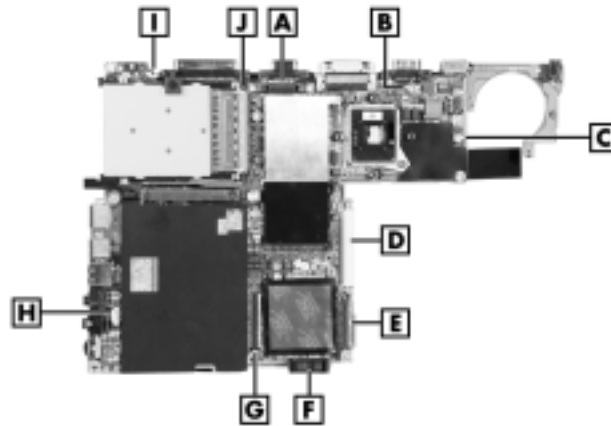
Connector board — back



- | | |
|--|--|
| A – DCN2 (Main Board Connector) | B – DCN1 (Main Board Connector) |
|--|--|

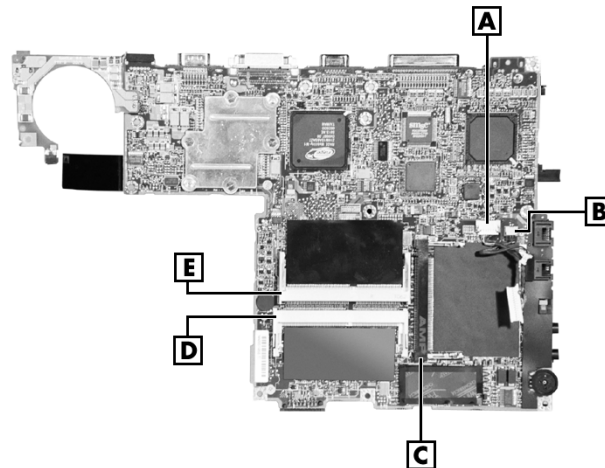
Main Board

Main board — front



- | | |
|--------------------------------------|--|
| A – Connector CN9 (LCD Panel) | F – Connector CN23 (Battery) |
| B – Connector CN8 (LCD Panel Switch) | G – Connector CN20 (Connector Board) |
| C – Connector CN12 (Fan) | H – Connector CN19 (Speakers) |
| D – Connector CN16 (VBIII) | I – Connector CN6 (Microphone) |
| E – Connector CN21 (Connector Board) | J – Connector (PC Card Assembly Connector) |

Main board — back



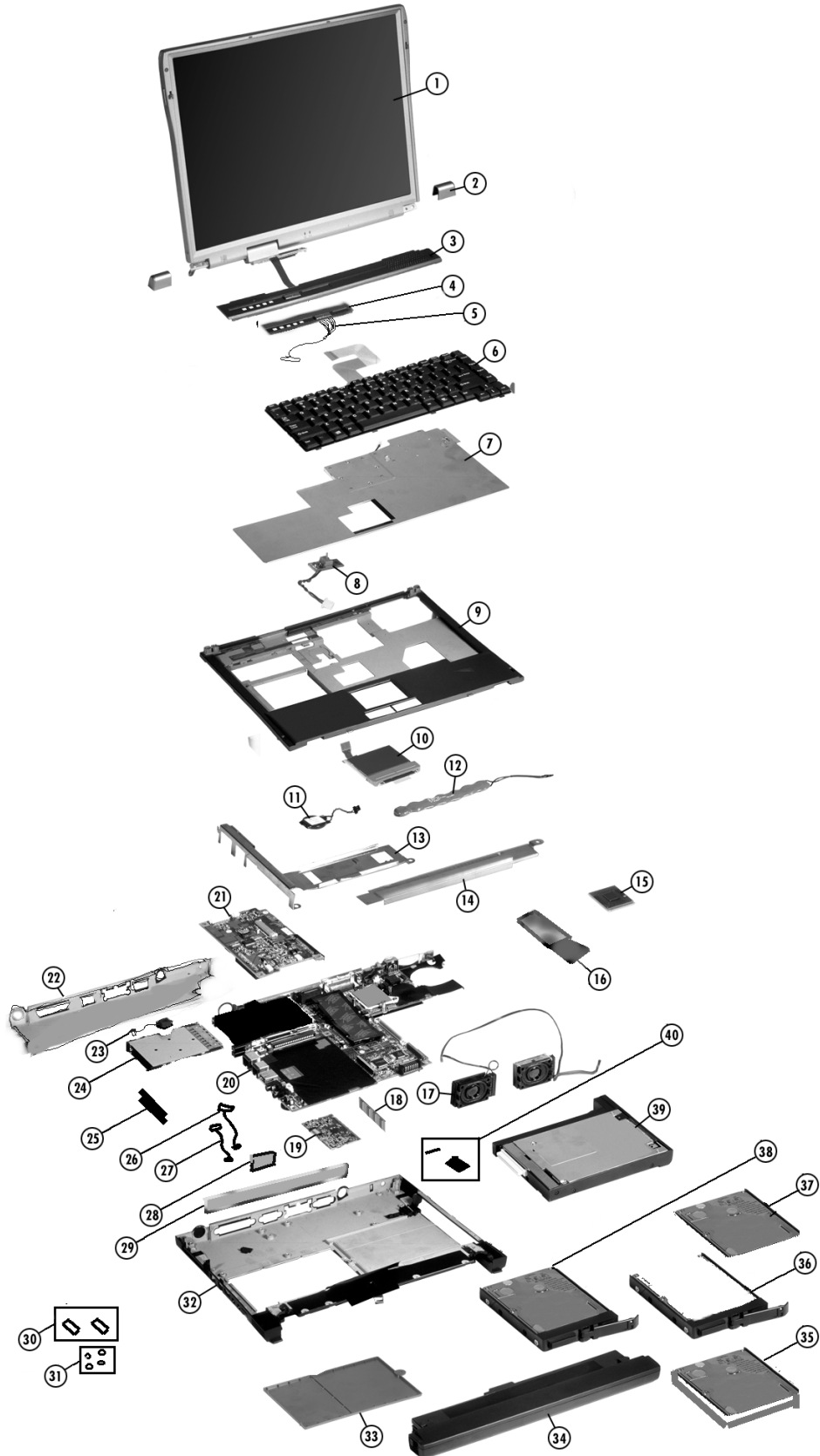
- | | |
|---|-----------------------------|
| A – Connector CN24 | D – Connector CN27 (Memory) |
| B – Connector CN25 (Mini-PCI/LAN cable) | E – Connector CN26 (Memory) |
| C – Connector (Mini-PCI/LAN Board) | |

5

Illustrated Parts Breakdown

- Illustrated Parts Breakdown
- Parts List

Illustrated Parts Breakdown



Parts List

The following table contains a listing of the field-replaceable parts and corresponding part numbers.

Field-Replaceable Parts List

Item	Description
1	14.1-inch LCD Base Assembly
2	Keyboard Retainer (left or right)
3	LED/Button Panel
4	LED/Button Assembly
5	LED/Button Cable
6	Keyboard (specify language)
7	Keyboard Heat Plate Assembly
8	Suspend Switch Board
9	Top Cover Sub Assembly
10	VersaGlide Sub Assembly
11	CMOS Battery
12	Bridge Battery
13	Left Internal Frame for AC Jack Plate
14	Right Internal Frame for Bridge Battery
15	CPU, Pentium III with SpeedStep 650-MHz 700-MHz 750-MHz 800-MHz 850-MHz
16	Chip shield
17	Speaker Assembly
18	Memory Module, 128-MB
19	Mini-PCI Board LAN Board LAN/Modem Board Modem Board
20	Main Board
21	Connector Board
22	Main Board Connector Bracket
23	Microphone
24	PCMCIA Drive
25	PCMCIA Drive doors
26	Cable—Modem Cable (main board to mini-PCI LAN/Modem Board)

Field-Replaceable Parts List

Item	Description
27	Cable—sound cable (main board to mini-PCI LAN/Modem Board)
28	Expansion Port Door
29	Connector Door (Including Expansion Port Door)
30	Tilt Feet (2) with rubber bumpers (2)
31	Rubber bumpers (4)
32	Bottom Base Sub Assembly
33	Memory Bay Cover
34	Main Battery, 8-Cell, 12-Cell
35	Hard Disk Drive Unit
36	Hard Disk Drive Plastic Casing with handle
37	Hard Disk Drive Panel
38	Hard Disk Drive Assembly 6-GB or higher (includes hard drive unit, panel, plastic casing including handle)
39	VersaBay III Device CD-Read/Write Drive SuperDisk Drive 8X DVD-ROM Drive Diskette Drive CD-ROM Drive
40	Battery latch and lock set

6

Preventive Maintenance

- Cleaning the Notebook Exterior
- Cleaning the Notebook Interior
- Protecting the Disk Drive
- Handling the Battery Pack
- Maintaining the LCD Quality

Preventive maintenance is limited to cleaning the plastic case, the keyboard, the display screen, and the diskette drive heads, as required.

Note Remove the battery and disconnect the AC adapter before performing any maintenance. Voltage is present inside the system unit and LCD even after the system is turned off.

Cleaning the Notebook Exterior

Use the steps below to clean the outer surface of the system.

1. Power off the system and remove the battery pack. Unplug all cables connected to the system.
2. Wipe the outside of the system, keyboard, and display with a soft, clean cloth. Remove stains with a damp, almost dry cloth. Use glass cleaner to clean the LCD. Apply the glass cleaner directly to the cloth and then wipe the LCD. Do not use solvents or strong, abrasive cleaners on any part of the system.
3. Clean the keys with a damp cloth. A small, soft-bristle brush may be used to clean between the keys. Make sure to use a damp cloth (not wet) to prevent moisture from seeping between the keyboard and the metal plate, possibly damaging the components under the keys. If the keyboard gets wet, thoroughly dry it before reassembling the system unit.

Cleaning the Notebook Interior

When servicing the inside of the notebook, remove dust and other foreign particles from inside the system unit as follows:

1. Remove the top cover and keyboard using the disassembly procedures discussed in Chapter 3, "Disassembly and Reassembly."
2. Dust or vacuum (with a rubber-tipped nozzle) the inside of the system, particularly the main board surface. Use care to avoid damaging or dislodging any components or cables.
3. Inspect all cables connectors for damage. Ensure that connectors are seated properly before replacing the cover.

Protecting the Disk Drive

To protect the disk drive and data, back up the system disk periodically on diskettes. Periodically use a head-cleaning diskette in the disk drive to prolong the life of the drive and to help maintain data integrity.

Here are some maintenance procedures to use when servicing a hard disk:

- Always back up the data files from the hard disk.
- Run a virus-detecting program to check for possible virus-infected areas on the hard disk.
- Use the preinstalled ScanDisk program to correct any errors found in the directory and File Allocation Table (FAT). This also frees up space from any unused sectors.
- Never turn the computer off when the hard disk is being accessed.
- Never move or raise the computer while the hard disk is being accessed. Be especially careful not to jar the hard disk during access, as this can cause a hard disk crash.

-
- Use a hard disk maintenance program like DEFRAG under DOS, or acquire and use Norton Utilities SPEEDISK programs. These programs reorganize your hard disk by eliminating fragmentation and improve the hard disk access time.

Handling the Battery Pack

The battery pack furnished with the computer requires reasonable care and handling to ensure efficient operation and maximum life. Periodically inspect the battery terminals and the batteries for evidence of corrosion and oxide build-up.

To ensure that the battery pack endures for a normal life cycle, always observe the following precautions when handling the battery pack:

- Do not drop the battery pack or subject it to excessive shock and vibration.
- Do not expose the battery pack to direct sunlight, moisture, chemical compounds, or extreme heat.
- Do not disassemble the battery pack.
- Do not use the battery pack to power other devices.
- Do not short the battery leads or connect the battery with reversed polarity.
- Never attempt to charge the battery pack in any way other than as described in this manual and the user's guide.
- Always charge the battery pack as soon as possible after a low battery indication.

Maintaining the LCD Quality

When it comes to screen problems, heat plays a big part. After a good working session, the typical routine is to shut the machine and close the cover. The display surface (no matter what type it is) radiates heat. When you close the cover, you trap the heat against the screen. Make sure to leave the computer's cover open for about ten minutes while the heat disperses, before closing the LCD.

7

Troubleshooting

- Quick Troubleshooting
- Helpful Questions

Quick Troubleshooting

This section summarizes problems that may develop during system operation and lists suggested corrective actions.

Quick Troubleshooting

Problem or Symptoms	Corrective Actions
No power	<p>Check that the AC adapter is plugged into the power port of the notebook. Also, check that the AC adapter is plugged into a properly grounded AC power outlet.</p> <p>Check if the internal DC/DC board of the notebook is correctly inserted into the main board. Otherwise, replace the DC/DC board.</p>
Power LED is on but there is no display and system does not turn on	<p>Check if the memory module is inserted properly. Also insert the module into the other slot.</p> <p>Check that the CPU is inserted properly.</p> <p>Replace the memory module, CPU, or DC/DC board.</p>
Display on the LCD is unreadable	<p>Adjust the brightness.</p> <p>Check if the installed VGA driver is correct and resolution is set according to the LCD size and type.</p> <p>Check if the LCD panel is connected properly.</p> <p>Replace the main board.</p>
LCD screen does not show display	<p>Check if the power saving mode is activated. Press any key or press the Power button to resume operation and display.</p> <p>Check if the display output is switched to the external monitor.</p> <p>Check if there is power.</p> <p>Check if the LCD panel is disconnected or loose.</p> <p>Replace the LCD inverter board found inside the LCD panel.</p>
Battery power does not last long	<p>Make sure that the power management options under BIOS Setup are enabled and set properly.</p> <p>Recharge the battery pack for at 3 least hours before using.</p> <p>Discharge and recharge the battery twice.</p> <p>Replace the battery pack.</p> <p>Connect your system to an AC power source when using some peripherals.</p>
System halts during boot sequence	<p>Check condition of the selected bootload device (diskette or hard disk) for bad boot track or incorrect O/S files.</p> <p>Try booting from a new boot diskette and recopy or repartition the hard disk.</p> <p>Check for any BIOS error messages on the display.</p> <p>Replace the main board.</p>
I/O processing malfunctions	<p>Check the connections of all internal devices.</p> <p>Replace the main board.</p>

Quick Troubleshooting

Problem or Symptoms	Corrective Actions
Diskette drive does not work	<p>Check if the diskette drive option is not installed in BIOS Setup.</p> <p>Check if the diskette drive is inserted properly.</p> <p>Check that the diskette is not faulty.</p> <p>Replace the diskette drive.</p> <p>Replace the main board.</p>
Hard disk drive malfunction	<p>Check if the hard disk drive is set properly in BIOS Setup.</p> <p>Check the connection.</p> <p>Check if the disk drive is working properly. If not, replace the drive.</p> <p>Replace the main board.</p>
CD-ROM drive malfunction	<p>Check if the drive is set properly in BIOS Setup.</p> <p>Check if the device driver is installed properly. Do not use any other CD-ROM driver.</p> <p>Check the connection.</p> <p>Replace the drive or main board.</p>
Memory malfunction	<p>Check if the memory module is inserted properly. Try to insert it into the other slot.</p> <p>Replace the memory module.</p> <p>Replace the main board.</p>
External keyboard or PS/2 mouse does not work	<p>Check if the keyboard or mouse is connected properly. Check if the PS/2 Y-cable is being used. Power off the system first before plugging in the device.</p> <p>Check if the PS/2 mouse driver is installed properly.</p> <p>Replace the keyboard or mouse.</p> <p>Replace the main board.</p>
PC card does not work	<p>Check if the PC card is inserted properly and check the connection.</p> <p>Check the PC card driver installation for an IRQ conflict. Try to disable the COM2 port in BIOS Setup menu to free up an unused IRQ.</p> <p>If the PC card is not detected, insert it in the other PC slot. Otherwise, replace the PC card.</p> <p>Contact the PC card manufacturer for support.</p> <p>Replace the main board.</p>
VersaGlide does not work	<p>Check if PS/2 or Alps mouse driver is properly installed.</p> <p>Check if the VersaGlide cable inside the system is inserted properly.</p> <p>Replace the VersaGlide module.</p> <p>Check the keyboard controller chip for any cold or loose soldering.</p> <p>Replace the main board.</p>

Quick Troubleshooting

Problem or Symptoms	Corrective Actions
Serial device does not work	<ul style="list-style-type: none">Check if the serial port is set to "Auto" in BIOS Setup.Check if the serial device is connected properly.Check if the mouse driver is installed properly.Replace the serial device.Check the I/O controller chip for any cold or loose soldering.Replace the main board.
Parallel device does not work	<ul style="list-style-type: none">Check if the parallel port is set to "Auto" in BIOS Setup.Check if all connections are properly set.Check if the external device is turned on.Check if the printer mode is set properly.Check the I/O controller chip for any cold or loose soldering.Replace the main board.
IR Port does not work.	<ul style="list-style-type: none">Check if the IR port (COM2) is enabled in BIOS Setup.Check if File Sharing and the Computer name are both set properly.Check if the Infrared Monitor is activated.Check if the IR ports on both systems are blocked or obstructed.Check the I/O controller chip for any cold or loose soldering.Replace the main board.
USB Port does not work	<ul style="list-style-type: none">Check if the USB controller in BIOS Setup is enabled.Check the USB device connection. Unplug and re-plug the device.Check if the USB port driver and the USB device driver are installed.Replace the USB device or contact the USB device manufacturer for support.Replace the main board.
Audio components do not work	<ul style="list-style-type: none">Check that the external connections and that the volume mixer are set properly.Check if the audio source (CD, tape, etc.) is faulty.Check if the audio driver is installed.Check if the internal connections for speaker and microphone are working.Check the audio board, cables, and connections.Replace the main board.

Helpful Questions

Here are some helpful questions to ask when troubleshooting the notebook:

- Is there any external power source connected to the computer?
- Is the battery fully charged?
- Is the computer turned on and the Power LED activated?
- Is the LCD display switched to the external monitor?
- Are all cables and devices connected properly and securely?
- Are all needed device drivers installed properly?
- Is the Suspend Mode activated? Press any key or press the Power/Sleep button to power on the system.

8

Getting Services and Support

- Services and Support Contact Information
- Web Site
- Email to Support Services
- Support Services

Services and Support Contact Information

NEC Computers Services and Support

Service	Contact Information
NEC Computers Web Site	www.neccomp.com
NEC Computers Support Web Site	support.neccomp.com
Email to NEC Computers Support Services through a commercial online service or the Internet.	Internet email address: tech-support@nec-computers.com
NEC Computers Support Services	In the U.S. and Canada: 800-632-4525

Note If you purchased your computer outside of the U.S. or Canada, please contact the local NEC Computers office or their dealers for support and service.

If you have access to a telephone, and/or modem, you can use these services to obtain information about your system at any time, day or night, seven days a week.

Not only do these services provide information about your NEC system, they can also be used to answer your questions and help solve any problems you may have with your system, should that ever be necessary.

Web Site

If you have a modem or a network board, you can access the NEC Computers Web site. You can do this through a commercial online service or through your Internet account. The NEC Computers Web site contains general information about NEC Computers and its products, an online store, press releases, reviews, and service and support information.

Look in the Service and Support area for the following:

- technical documentation, including Frequently Asked Questions, reference manuals, and warranty information
- BIOS updates, drivers, and Setup Disk files to download
- contact information, including telephone numbers for Technical Support and links to vendor Web sites
- a Reseller's area (password accessible).

To access The NEC Computers Home Page, enter the following Internet Uniform Resource Locator (URL) in your browser:

<http://www.neccomp.com/>

To access The NEC Computers Support Page, enter the following Internet Uniform Resource Locator (URL) in your browser:

<http://support.neccomp.com/>

Email to Support Services

The NEC Computers Support Services offers technical support by email over the Internet network if you have a modem. The Internet address is:

tech-support@nec-computers.com

When using the email support service, please include the word **Notebook** in the subject field for prompt response from the appropriate technical person.

You should provide as much specific information about your questions as possible. You should receive a response to your questions within one business day.

Support Services

NEC Computers also offers direct technical support through Support Services. (NEC Computers Support Services is for U.S. and Canadian customers only; international customers should contact the local NEC Computers office or dealer for the support and service available in your country.)

Direct assistance is available 24 hours a day, 7 days a week. Call the NEC Computers Support Services, toll free, at **1-800-632-4525** (U.S. and Canada only).

Please have the system accessible when you call the NEC Support Services so that a technician can troubleshoot the system.

For outside the U.S. or Canada, please contact your local NEC Computers office or dealer for the support and service available in your country.

9

Specifications

- System Components
- Connector Locations
- Memory Map
- Interrupt Controllers

System Components

The following system component specifications are standard except where noted.

System Processor

Intel Pentium III, 650-MHz, 700-MHz, 750-MHz, 800-MHz, or 850-MHz or higher with SpeedStep

Architecture

64-bit Peripheral Component Interconnect (PCI) bus

Random Access Memory

Standard Main Memory

- 64-MB SDRAM 3.3V SO-DIMM, 64 bit data path, 100-MHz, CBR-refresh

Optional Expansion — 1 slot

- Expandable in 64-MB, 128-MB 256-MB increments
- Maximum 512 MB

Video RAM — 8 MB SDRAM (External) 125-MHz

L1 Cache RAM — 16 KB code, 16 KB data, 4 way set associate, Write Back (data)

L2 Cache RAM — 256 KB/On-die, TAG RAM: 32K x 8 bit, Speed: 15ns

Read-Only Memory

512 KB x 8 bit, Flash ROM

Calendar Clock

Year/month/day/hour/minute/second maintained by internal back-up battery

Input/Output (I/O) Facilities

Integrated industry-standard interfaces

- Parallel — 1 port, 25-pin D-sub (ECP and EPP support)
- Serial — 1 port, 9-pin D-sub
- Infrared — 1 port, IrDA-1 compatible
- VGA — 1 port, 15-pin high-density D-sub
- External Keyboard/External Mouse — 1 port, PS/2, 6-pin MiniDin; exclusionary use or both supported with optional Y-cable adapter
- Expansion — 1 port, 100-pin for optional NEC Port Replicator
- Microphone — 1 port, Mini Jack
- Stereo Headphones — 1 port, Mini Jack, .5 watts per channel
- DC In — 1 port, for AC adapter cable
- USB port — 1 port, 4 pin
- LAN port — RJ-45 interface (optional)
- Modem port — RJ-11 interface (optional)

Speakers

Two built-in, 1.5 watts (W) each with a maximum 3W output

- 16-bit stereo, 48 Khz
- 64-Voice wave table synthesizer support
- 3D stereo sound
- Sound BlasterPRO compatible
- MIDI Roland: MPU401, UART Mode compatible
- ESS Maestro2E Rev. B (PCI Audio) + ESS 1921 (AC97 Link)

PC Card Slots

- Two 32-bit card slots for two Type II PC cards or one Type III PC card, 5 V or 3.3 V interface
- 32-bit CardBus support

LCD Panel

The LCD panel is a 14.1-inch or high resolution active matrix Thin Film Transistor (TFT), Extended Graphics Array (XGA) color display

- Resolution — 1024 x 768
- Colors — 16 million, maximum

Keyboard

Membrane 87 keys (both U.S. and International) with standard QWERTY-key layout (International keyboards are country-specific)

- Function keys — 12 keys
- Cursor Control keys — 8 keys; arrow keys arranged in inverted T layout
- Numeric keypad — embedded
- Fn key — function key for ROM-based key functions
- Stroke — 3 mm
- Height — 9.5 mm
- Pitch — 19 mm

SuperDisk™ Drive

Formatted Capacity:

- Optical diskette — 120 MB
- High Density floppy diskette — 1.44 MB
- Double Density floppy diskette — 720 KB

Data Transfer Rate

- 120-MB: 680 KB/S (max.)
- 1.44-MB: 150 KB/S (max.)
- 720-KB: 75 KB/S (max.)

Track to track seek rate

- 120-MB: 20ms (typ)
- 1.44-MB/720-KB: 25ms (typ)

Hard Disk Drive

Specifications vary depending upon model:

- Ultra DMA/33 support
- Capacity — Internal 6, 10, 12, or 20 GB, or higher
- Drive height — 9.5 mm
- Read/write track-to-track seek rate — 3 ms – 4.5 ms
- Average seek time — 12 ms – 14 ms
- Revolutions per minute — 4000 - 4200
- Data transfer rate
 - 16.6 MB/sec (PIO mode4/DMA mode2)
 - 33.3 MB/sec (ultra DMA)
- Media data rates — 88.0 bit/sec – 118.0 bit/sec
- Mean Time Between Errors (MTBF) — 300,000 hours

24X-speed CD-ROM Drive

- Type — 5-inch CD-ROM Pack
- Average Data Transfer Rates
 - 2550 KB/second (mode 1)
 - 2907 KB/ second (mode2)
- Read Rate — 3600 KB/sec max, 2550 KB/sec avg
- Burst Transfer Rate — 16.7 MB/sec, PIO mode4/DMA mode
- Average Access Time
 - 120 ms (Random)
 - 250 ms (Fullstroke)
- Memory Buffer — 128 KB
- Interface — IDE (ATAPI)
- Photo CD Compatibility — Multisession Photo CD, Video CD (CD-1, CD-I Ready, CD-G, CD-Plus, CD-DA, CD-EXTRN, and CD-ROM XA)

8X DVD-ROM Drive

Dimensions — 12.7 mm (h), 128.0 mm (w), 127.0 mm (d)

Burst Transfer Rate — 16.67 MB/sec, PIO/Multiword DMA

Read Rate

- CD, 3600 KB/sec max.
- DVD, 8115 KB/sec max.

Average Access Time

- DVD, 270 ms (Random), 480 ms (Full Stroke)
- CD, 180 ms (Random), 270 ms (Full Stroke)

Data Buffer — 512 KB

- Interface — IDE (ATAPI)

CD Compatibility — CD-Audio, CD-ROM (mode 2, form 1, form 2), CD-ROM XA (mode 2, form 1, form 2), CD-I (mode 2, form 1, form 2, Ready, Bridge), CD-WO, CD-RW, Photo CD, Video CD, Enhanced Music CD, CD-TEXT

DVD Compatibility — DVD-5, DVD-9, DVD-10, DVD-R (3.95G)

CD Read/Write Drive

Speed

- Read, max 20X
- CDRW max 14X

Read Transfer Rate

- 150 KB/s, normal speed
- 3000 KB/s, 20X, maximum speed
- 16.6 MB/s, Mode 4 PIO
- 16.6 MB/s, Multi Mode 2 DMA mode (not Ultra DMA)

Write Transfer Rate

- 150 KB/s, normal speed
- 300 KB/s, 2X speed
- 600 KB/s, 4X speed

Audio Out — 0.8 +/-0.25 Vrms

Operating Conditions

- Shock, 1G (11ms)/read, 0.5G (11ms)/write
- Vibration, 0.2G/read, 0.1G/write

Power

AC Adapter

- Input Voltage — 100 to 240 volts (V) AC, 50 or 60 Hz, 1.5 A
- Output Voltage — 19.0 V DC, 60 Watt
- Australia, Europe and Asia use an AC power cable specific to each country's standards.

Battery Pack

- Type — eight- or twelve-cell Lithium Ion (Li-Ion)
- Output Voltage — 14.4 V
- Capacity — 3600 mAh (eight-cell) or 5400 mAh (twelve-cell)
- Recharging Time — Approximately 3 hours when the system is on or off.

Bridge Battery

When fully charged, backs up memory contents and system status when in Standby (Windows 98/2000) or Suspend (Windows NT) mode, giving you time to install a fully charged main battery.

CMOS Battery

Provides battery backup and prevents data loss in CMOS RAM. Charges when system is connected to AC power.

Dimensions

System

- Width — 12.1 in. (308 mm)
- Depth — 9.9 in. (253 mm)
- Height — 1.5 in. (37.2 mm)

Weight

6.5 lb. (2.99 kg) – with 8-cell battery and CD-ROM drive
6.9 lb. (3.16 kg) – with 12-cell battery and CD-ROM drive
6.3 lb. (2.87 kg) – with 8-cell battery and diskette drive
6.7 lb. (3.04 kg) – with 12-cell battery and diskette drive

Recommended Environment

Operation

- Temperature — 41°F to 95°F (5°C to 35°C)
- Relative Humidity — 20% to 80% (Noncondensing)

Storage

- Temperature — -4°F to 104°F (-20°C to 40°C)
- Relative Humidity — 20% to 80% (Noncondensing)

Connector Locations

The following table shows the system's connectors, their locations, and which cable or component connects to each.

Connector Locations

Connector	Location	Cable or Component Connected
DCN3	Connector Board	LED Button Cable
DCN4	Connector Board	CMOS Battery
DCN5	Connector Board	VersaGlide
DCN6	Connector Board	Keyboard
DCN7	Connector Board	Bridge Battery
DCN8	Connector Board	(Not Used)
CN8	Main board	LCD Panel Switch
CN9	Main Board	LCD Panel
CN12	Main Board	Fan
CN16	Main Board	VersaBay III
CN19	Main Board	Speakers
CN20	Main Board	Connector Board
CN21	Main Board	Connector Board
CN23	Main Board	Battery
CN24	Main Board	
CN25	Main Board	Mini-PCI/LAN Cable
CN26	Main Board	Memory Module
CN27	Main Board	Memory Module

Memory Map

The system supports system and video shadowing, both controlled through complementary metal oxide semiconductor (CMOS). The system supports BIOS as a cacheable area with write protection. The following table shows the system's memory map.

System Memory Map

Memory Space	Size	Function
000000-0002FFh	768 bytes	BIOS Interrupt Vector Table
000300-0003FFh	256 bytes	BIOS Stack Area
000400-0004FFh	256 bytes	BIOS Data Area
000500-09FFFFh	639 KB	Applications Memory (used by the OS, device drivers, TSRs, and all DOS applications)
0A0000-0AFFFFh	64 KB	Video Buffer (EGA and VGA)
0B0000-0B7FFFh	32 KB	Video Buffer (monochrome, CGA color, VGA monochrome)
0B8000-0BFFFFh	32 KB	Video Buffer (CGA, EGA color, and VGA color)
0C0000-0CBFFFh	64 KB	Video ROM (EGA and VGA)
0D0000-0DFFFFh	64 KB	Used by Adapter ROMs (i.e., network controllers, hard disk controllers, SCSI host adapters)
0E0000-0EFFFFh	64 KB	Used by System ROM adapters (i.e., network controllers with boot capability)
0F0000h-0FFFFFFh	64 KB	System AMIBIOS (includes Setup and hard disk drive utilities)
100000h-1FFFFFFF	32 MB	Built-In Extended Memory
2000000-5FFFFFFF	up to 256 MB	Extended Memory

Interrupt Controllers

Using interrupts, hardware can request software services. If non-Plug and Play software is being used, the interrupt may need to be moved for software application or driver compatibility. Some interrupts cannot be moved. Fifteen interrupts can be used with a cascade connection of 8259INTC x 2. The table shows default interrupt level assignments 0 through 15, in order of decreasing priority.

System Interrupt Controllers

Controller Master/Slave	Priority	Name	Device
Master	0	IRQ00	SystemTimer 1
Master	1	IRQ01	Keyboard
Master	2	IRQ02	Programmable Controller
Slave	3	IRQ08	Real-time Clock
Slave	4	IRQ09	USB Port
Slave	5	IRQ10	Video/Sound
Slave	6	IRQ11	Available
Slave	7	IRQ12	PS/2 Mouse/NEC VersaGlide
Slave	8	IRQ13	Math Coprocessor (built into CPU)
Slave	9	IRQ14	Primary IDE
Slave	10	IRQ15	Secondary IDE
Master	11	IRQ03	Infrared Port, when enabled
Master	12	IRQ04	Serial Port
Master	13	IRQ05	PC CardBus Controller/Mini-PCI
Master	14	IRQ06	Diskette Drive Controller
Master	15	IRQ07	Parallel Port

Glossary

A

applications programs

Software designed to perform specific functions, like solving business or mathematical problems.

AC Adapter

A device that connects an NEC Versa portable computer and an AC wall outlet to provide AC power for running the system or recharging the battery.

B

base RAM

Area of system memory between 0 and 640 kilobytes available to the user for operating system and application programs.

BIOS

Basic Input Output System. A collection of primitive computer routines, usually burnt into ROM, that controls the real-time clock, keyboard, disk drives, video display, and other peripheral devices.

bit

Binary digit. The smallest unit of computer data.

bits per second

(bps) A unit of transmission. Also called baud rate.

board

Printed circuit board. Board onto which computer components are soldered and thin wires are printed to connect the components.

boot

To start up a computer. See cold boot and warm boot.

bus

An electronic circuit within a computer used for transmitting data or electrical power from one device to another.

byte

Group of eight contiguous bits.

C

CD read/write drive

The CD read/write drive loads and starts programs from a compact disc (CD) or plays your audio CDs. It also writes information to a CD.

CD-ROM drive

Compact Disc Read-Only Memory. A computer-controlled device that reads high-capacity optical discs and sends the output to the computer.

clock

Electronic timer used to synchronize computer operations.

CMOS

Complementary Metal Oxide Semiconductor. A chip that contains nonvolatile memory in the NEC Versa. CMOS is backed up by an internal lithium battery that preserves clock/calendar data and system configuration parameters stored in CMOS.

cold boot

Process of starting up the computer by turning on the power. If power is already on, the process means to turn off the computer and turn it on again. A cold boot reinitializes all devices.

crt

Cathode-Ray Tube. A type of display screen used in desktop monitors. It forms the screen image using tiny dots called pixels. See also LCD.

cursor

A movable image on the display screen that indicates where the next entered data appears.

D**diskette**

A thin flexible platter coated with a magnetic material for storing information.

diskette drive

A magnetic drive that writes on and retrieves data from a diskette.

DSTN

Double-Scan Super-Twisted Nematic. A type of technology used in some NEC Versa LCD screen displays.

E**enhanced VGA**

A video interface that offers more colors or higher resolution than VGA.

extended RAM

The area of RAM above the first megabyte of memory in the system available for enhancing system performance.

F**function key**

The set of keys on the keyboard (usually F1 through F12) that let you get help and error message information or quickly select frequently used commands.

H

hard disk

A rigid magnetic storage device that provides fast access to stored data.

hardware

The electrical and mechanical parts from which a computer is made.

hertz

(Hz) A unit of frequency equal to one cycle per second.

hot key

Combination of two or three keys (such as **Ctrl-Alt-Del**) that you press simultaneously for a particular function.

I

input/output

(I/O) The process of transferring data between the computer and external devices.

IDE

Intelligent Drive Electronics. A hard disk drive type that has controller electronics built into the drive and delivers high throughput.

interface

A connection that enables two devices to communicate.

interrupt

A special control signal from an I/O device that diverts the attention of the microprocessor from the program to a special address.

K

kilobyte

(KB) 1024 bytes.

L

LAN

Local Area Network.

LCD

Liquid Crystal Display. An LCD consists of a thin sandwich of two glass plates with sealed edges, containing nematic liquid-crystal material that forms the screen image. The NEC Versa displays are LCD type.

load

To copy a program into the computer's memory from a storage device.

M

megabyte

(MB) 1,048,576 bytes.

memory

Electronic storage area in a computer that retains information and programs. A computer has two types of memory — read-only memory (ROM) and random access memory (RAM).

menu

A video display of programs or options.

microprocessor

A semiconductor central processing unit that is the principal component of a microcomputer. Usually contained on a single chip that includes an arithmetic logic unit, control logic, and control-memory unit.

mini-PCI

A communications standard that offers smaller size, greater design flexibility, and reduced cost for mobile platforms.

mode

A method of operation; for example, the NEC Versa operates in either normal or power-saving modes.

modem

MOdulator-DEModulator. A device that links computers over a telephone line.

N

nonvolatile memory

Storage media that retains its data when system power is turned off. Nonvolatile memory in the NEC Versa is a complementary metal oxide semiconductor (CMOS) chip which is backed up by an internal battery. The backup battery preserves the clock/calendar data and system configuration parameters stored in CMOS. See volatile memory.

O

operating system

Set of programs that manage the overall operation of the computer.

overwrite

Storing information at a location where information is already stored, thus destroying the original information.

P

page

A type of message transmission in which a message is sent or received via modem to a paging device from a computer (with paging communications software) or telephone.

parallel interface

Interface that communicates eight bits at a time.

parallel printer

A printer with a parallel interface.

parameter

A characteristic of a device or system.

password

A string of characters that the user must enter before the system allows access or system privileges.

PCMCIA

A credit card sized peripheral interface standard for portable devices. Types of PCMCIA cards currently offered by major vendors include fax/modems, LAN, storage cards, and wireless communications devices.

peripheral

Input or output device not under direct computer control. A printer is a peripheral device.

pixels

Picture elements. Tiny dots that make up a screen image.

port

Provides the means for an interface between the microprocessor and external devices. A cable connector is usually plugged into the port to attach the device to the computer.

processor

In a computer, a functional unit that interprets and executes instructions.

prompt

A special symbol indicating the beginning of an input line. Also a message that appears on the screen indicating that the user must take a certain action.

Q**QWERTY**

The QWERTY keyboard, designed in the 1800s for mechanical typewriters, refers to the first six keys (QWERTY) on the top row of letters on the standard keyboard.

R**RAM**

Random Access Memory. A storage device into which data is entered and from which data is retrieved in a nonsequential manner.

read

To extract data from a storage device such as a diskette.

ROM

Read-Only Memory. Memory in which stored data cannot be modified by the user except under special conditions.

reset

The process of returning a device to zero or to an initial or arbitrarily selected condition.

resolution

The degree of screen image clarity. Video display resolution is determined by the number of pixels on the screen. Resolution is usually specified in pixels by scan lines, for example, 640 by 480. See pixels.

RS-232C

Standard interface for serial devices.

S**scanner**

An optical device that reads printed material and converts it to a computer screen image.

serial interface

An interface that communicates information one bit at a time.

serial printer

A printer with a serial interface.

software

Programs that run on a computer, such as operating systems, word processors, and spreadsheets.

SpeedStep technology

Intel's SpeedStep technology provided with some Pentium III processors that lets you customize high-performance computing on your notebook computer. When powered by a battery, the processor drops its computing speed to lower power consumption and conserve battery life.

super video graphics array (SVGA)

A color bit-mapped graphics display standard, that provides a resolution of 1024x 768 with up to 256 colors displayed simultaneously.

system board

The main printed circuit board inside the system unit into which other boards and major chip components, such as the system microprocessor, are connected.

T**TFT**

Thin Film Transistor. A type of NEC Versa LCD color screen that supports 256 colors and provides exceptional screen display.

V

VersaGlide

A small, touch-sensitive pad used as a pointing device on your NEC Versa notebook computer. With the VersaGlide, you can move your finger along the pad to move the cursor or simulate a mouse click by tapping the pad.

VGA

Video Graphics Array. Graphics technology that supports up to 256 K colors and a graphics resolution of 640 by 480 pixels.

volatile memory

Storage media that loses its data when system power is turned off. Standard memory and memory that you add to the NEC Versa are volatile memory. See nonvolatile memory.

W

warm boot

Process of resetting the computer without turning off the power through keyboard input (pressing **Ctrl**, **Alt**, and **Del** keys simultaneously) or the reset button. The system returns to an initial or arbitrarily selected condition.

write

To record or store information to a storage device.

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(For United States Use Only)

**Federal Communications Commission
Radio Frequency Interference Statement**

 **WARNING** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note This is a Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from the one to which the receiver is connected.

To meet FCC standards, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

Canadian Department of Communications Compliance Statement

This equipment does not exceed Class B limits per radio noise emissions or digital apparatus, set out in the Radio interference Regulation of the Canadian Department of Communications.

Avis de conformité aux normes du ministère des communications du Canada

Cet équipement ne dépasse pas les limites de Classe B d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique élebil par le ministère des Communications du Canada.

European Community Directive Conformance Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of laws of the Member States relating to electro-magnetic compatibility. This product satisfied the Class B limits of EN 55022.

NEC Computers Inc.
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Sacramento, CA 95828
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Battery Replacement

A lithium battery in some computers maintains system configuration information. In the event that the battery fails to maintain system configuration information, NECC recommends that you replace the battery. For battery replacement information, call your NECC dealer.

⚠ WARNING There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

⚠ AVERTISSEMENT Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Battery Disposal

The main battery is made of Lithium-Ion (Li-Ion) and the CMOS clock battery is made of Lithium.

Contact your local waste management officials for other information regarding the environmentally sound collection, recycling, and disposal of the batteries.

NEC

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