

*NEC Versa Notebook Computer*

**NEC VERSA® SX**

**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<sup>®</sup> SX 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 NEC-trained customer engineers, system analysts, service center personnel, and dealers.

The manual is organized as follows:

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

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

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

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

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

**Section 6**, Preventive Maintenance, lists general notebook preventive maintenance procedures.

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

**Section 8**, Getting Services and Support, provides information as to how to contact NEC CSD for service information and technical support.

**Section 9**, Specifications, lists physical specifications, video modes, pin assignments, connector locations, memory map and interrupt controllers.

An **Index** and **Glossary** are included for convenience.

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# Abbreviations

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

---

IPC	integrated peripheral controller	p-p	peak-to-peak
ips	inches per second	PPI	programmable peripheral interface
IRQ	interrupt request	PROM	programmable ROM
K	kilo (1024)	QFP	quad flat pack
k	kilo (1000)	RAM	random-access memory
KB	kilobyte	RAMDAC	RAM digital-to-analog converter
kg	kilogram	RAS	row address strobe
kHz	kilohertz	RGB	red green blue
lb	pound	RGBI	red green blue intensity
LED	light-emitting diode	ROM	read-only memory
LSB	least-significant bit	rpm	revolutions per minute
LSI	large-scale integration	R	read
M	mega	RTC	real-time clock
mA	milliamps	R/W	read/write
max	maximum	S	slave
MB	megabyte	SCSI	Small Computer System Interface
MDA	Monochrome Display Adapter	SG	signal ground
MFM	modified frequency modulation	SIMM	single inline memory module
MHz	megahertz	SPM	standard page mode
mm	millimeter	SRS	Sound Retrieval System
ms	millisecond	SVGA	Super Video Graphics Array
MSB	most-significant bit	SW	switch
NASC	National Authorized Service Center	TAC	Technical Assistance Center
NC	not connected	TSC	Technical Support Center
NMI	Non-maskable Interrupt	TTL	transistor/transistor logic
ns	nanosecond	tpi	tracks per inch
NSRC	National Service Response Center	USB	universal serial bus
PAL	programmable array logic	V	volt
PCB	printed circuit board	Vac	volts, alternating current
PCI	Peripheral Component Interconnect	Vdc	volts, direct current
PDA	personal digital assistant	VESA	video electronics standards association
PFP	plastic flat package	VFC	VESA-compliant feature connector
PIO	parallel input/output	VGA	Video Graphics Array
pixel	picture element	VRAM	video RAM
PLCC	plastic leaded chip carrier	W	watt
PLL	phase lock loop	W	write

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bit	binary digit	EVGA	Enhanced Video Graphics Array
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CGB	Color Graphics Board	Hz	hertz
CH	channel	IC	integrated circuit
clk	clock	ID	identification
cm	centimeter	IDE	intelligent device electronics
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COM	communication	in.	inch
CONT	contrast	INTA	interrupt acknowledge
CPGA	ceramic pin grid array	IPB	illustrated parts breakdown
CPU	central processing unit	IR	infrared
DAC	digital-to-analog converter	IRR	Interrupt Request register
DACK	DMA acknowledge	ISA	Industry Standard Architecture
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IPC	integrated peripheral controller	p-p	peak-to-peak
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kHz	kilohertz	RGB	red green blue
lb	pound	RGBI	red green blue intensity
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LSB	least-significant bit	rpm	revolutions per minute
LSI	large-scale integration	R	read
M	mega	RTC	real-time clock
mA	milliamps	R/W	read/write
max	maximum	S	slave
MB	megabyte	SCSI	Small Computer System Interface
MDA	Monochrome Display Adapter	SG	signal ground
MFM	modified frequency modulation	SIMM	single inline memory module
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mm	millimeter	SRS	Sound Retrieval System
ms	millisecond	SVGA	Super Video Graphics Array
MSB	most-significant bit	SW	switch
NASC	National Authorized Service Center	TAC	Technical Assistance Center
NC	not connected	TSC	Technical Support Center
NMI	Non-maskable Interrupt	TTL	transistor/transistor logic
ns	nanosecond	tpi	tracks per inch
NSRC	National Service Response Center	USB	universal serial bus
PAL	programmable array logic	V	volt
PCB	printed circuit board	Vac	volts, alternating current
PCI	Peripheral Component Interconnect	Vdc	volts, direct current
PDA	personal digital assistant	VESA	video electronics standards association
PFP	plastic flat package	VFC	VESA-compliant feature connector
PIO	parallel input/output	VGA	Video Graphics Array
pixel	picture element	VRAM	video RAM
PLCC	plastic leaded chip carrier	W	watt
PLL	phase lock loop	W	write

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# 1

## System Overview

- NEC Versa SX
- The Front of the System
- The Back of the System
- The Left Side of the System
- The Right Side of the System
- The Bottom of the System
- Internal Components

---

## ***NEC Versa SX***

The NEC Versa SX notebook computer is a portable system filled with exciting resources for home, business or travel. Standard features include a powerful Intel® Pentium 200-MHz or 233-MMX, or the Intel Pentium II 233-MHz, 266-MHz, 300-MHz, 333-MHz, or 366-MHz microprocessor that works together with the latest Peripheral Component Interconnect (PCI) architecture.

In addition, this system provides a high-performance hard disk drive, diskette drive or SuperDisk and PC card support. Most models are equipped with a 24X CD-ROM drive or an optional DVD module. As a multimedia system, the NEC Versa also provides the tools needed to create and present impressive images using video clips.

To get comfortable with the notebook, read the upcoming sections.

### ***NEC Versa SX notebook computer***



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# 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 SX comes with a color LCD panel that you can adjust for a comfortable viewing position. Depending on the model, the system is equipped with:

- 13.3-inch color Thin Film Transistor (TFT) Extended Graphics Array (XGA) panel.
- 14.1-inch color Thin Film Transistor (TFT) Extended Graphics Array (XGA) panel.

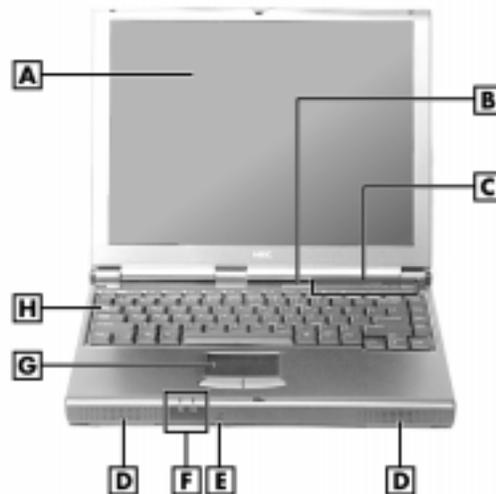
To adjust the LCD panel brightness:

- Press the **Fn-F8** and **Fn-F9** functions keys to adjust the brightness up or down. There are 8 levels of brightness.

## System Controls and Features

The NEC Versa control panel provides the features shown in the figure. These features are described after the figure.

**System Controls and Features**



- |                       |                               |                              |
|-----------------------|-------------------------------|------------------------------|
| <b>A</b> - LCD Panel  | <b>B</b> - Power/Sleep Button | <b>C</b> - LED Control Panel |
| <b>D</b> - Speaker    | <b>E</b> - Microphone         | <b>F</b> - Power Status LEDs |
| <b>G</b> - VersaGlide | <b>H</b> - Keyboard           |                              |

- 
- Operating Status LEDs — keeps you informed of your NEC Versa's current operating status. See the following figure and list for each icon's meaning.

***Operating status LEDs***



- A** - Hard Drive      **B** - VersaBay III      **C** - Caps Lock  
**D** - Scroll Lock      **E** - Num Lock

- Hard Drive — lights when the NEC Versa writes to or reads data from the hard drive.
- VersaBay III™ — lights when the NEC Versa writes data to or retrieves data from a device in the VersaBay III.
- 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.

---

## **Keyboard Panel and Base Unit**

The NEC Versa keyboard panel and base unit contain the following features that are described after the figure.

### **Keyboard panel and base unit**



**A** - Power/Sleep Button

- **Power/Sleep Button** — press the Power/Sleep button to power on, power off, and to put the computer into Suspend mode. Your NEC Versa ships with the button set to Power functionality. To use the Sleep functionality, refer to “BIOS Setup” in Chapter 2 for setting up the Power/Sleep functions.
  - Press the Power/Sleep button to power on.
  - Hold the Power/Sleep button in place for 5 or more seconds to power off.
  - Hold the Power/Sleep button in place for 4 or fewer seconds to put the system into Suspend mode.

The Power/Sleep button is a “smart” switch, meaning that it recognizes when the system is in Suspend mode. If in Suspend mode, you cannot power off until you press the Power/Sleep button again to bring it out of Suspend mode.

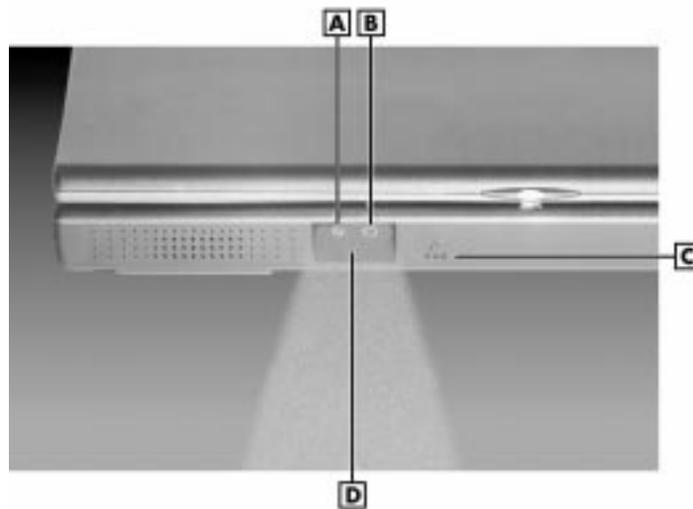
In addition, the Smart Power switch invokes an orderly shutdown in the Windows 95, Windows 98, and Windows NT environments. If you use the Power/Sleep button to turn off your system while applications are running, the Smart Power switch alerts the operating system. The operating system prompts you to save all data and invokes an orderly shutdown procedure.

---

Put the unit in 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. Suspend mode shuts down all devices in the system while retaining data and system status. Use the **Fn Power/Sleep** key combination to initiate a manual save-to-file. Press the Smart Power switch (Power/Sleep button) to resume from a save-to-file.

- **Keyboard** — 85 keys with the standard QWERTY-key layout. (Models purchased outside of the U.S. and Canada ship with country-specific keyboard layouts.)
- **NEC VersaGlide** — The NEC VersaGlide works like a standard computer mouse. Simply move your fingertip over the VersaGlide to control the position of the cursor. Use the selection buttons below the VersaGlide to select items or actions.
- **Stereo Speakers** — provide 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.
- **System Power LEDs** — keeps you informed of the system's current power status.

#### **System power LEDs**



- |                             |                                 |
|-----------------------------|---------------------------------|
| <b>A</b> - Power Status LED | <b>B</b> - Battery Charging LED |
| <b>C</b> - Microphone       | <b>D</b> - IR Port              |

— **Power Status LED** — lights green to indicate the power is on or yellow/amber to indicate low power condition when operating under battery power.

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 **Note:** When both the primary and a secondary battery are installed, the power status LED indicates the total (primary plus secondary) battery status.

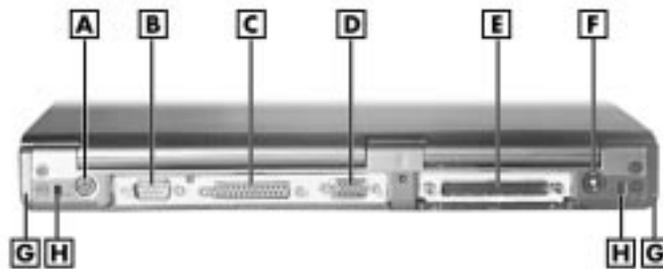
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- 
- **Battery Charging LED** — lights green for secondary battery or amber to indicate primary battery charging activity.
  - **Microphone** — A strategically positioned built-in microphone allows you to record monophonic sound directly into your notebook computer.
  - **IR Port** — Use this infrared (IR) port to transfer files between your NEC Versa and an IR-equipped desktop or notebook computer. Enable the IR port via the NEC Customize icon on the desktop to communicate with other IR-equipped devices.

## ***The Back of the System***

You'll find system ports for connecting optional devices (like printers, docking station, or external monitor) on the back of your NEC Versa. These ports are described following the figure.

***Ports on the back of the system***



- |                             |                            |                          |
|-----------------------------|----------------------------|--------------------------|
| <b>A</b> - PS/2 Port        | <b>B</b> - Serial Port     | <b>C</b> - Parallel Port |
| <b>D</b> - External Monitor | <b>E</b> - Expansion Port  | <b>F</b> - DC Power Port |
| <b>G</b> - Tilt Feet        | <b>H</b> - Docking Notches |                          |

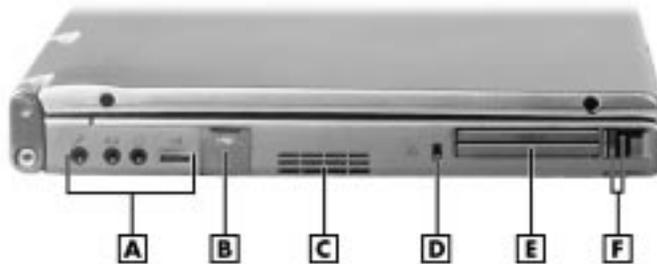
- **PS/2 Port** — Use the standard PS/2 port to connect an external PS/2-style mouse or a PS/2-style keyboard to the system. With an optional Y-cable adapter, you can connect both a mouse and a keyboard at the same time.
- **Serial Port** — Use this port to connect an external modem or other serial device.
- **Parallel Port** — Use this port to connect 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.
- **External Monitor (Video) Port** — Use this 15-pin port to attach an external monitor to your NEC Versa. You can run the LCD display and the external monitor simultaneously or run either alone.

- 
- **Expansion Port** — This port (also called the Docking port) provides a connection for NEC Versa SX options including the NEC Versa Dock, and the NEC PortBar.
  - **DC 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 car adapter.
  - **Tilt Feet** — Use to elevate the back of the notebook.
  - **Docking Notch** — Allows the notebook to be securely mated with the NEC Versa Dock and NEC PortBar.

## ***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***



- |   |                         |                                     |
|---|-------------------------|-------------------------------------|
| <b>A</b> - Audio Ports and Volume Control | <b>B</b> - USB Port     | <b>C</b> - Fan Vent                 |
| <b>D</b> - Kensington Lock Slot           | <b>E</b> - PC Card Slot | <b>F</b> - PC Card Ejection Buttons |

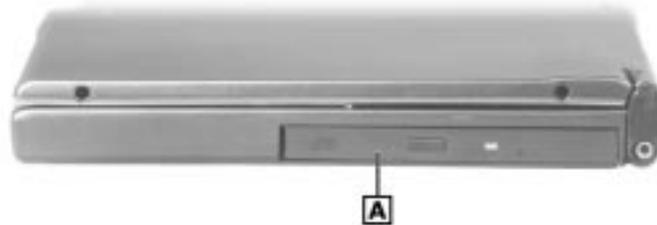
- **Audio ports and a volume control knob.**
  - **External Microphone (MIC)** — Allows you to connect an external microphone for monophonic recording or amplification through the unit. Plugging in an external microphone disables the built-in microphone.
  - **Line-In** — Lets you use another audio system, like a home stereo, as an input source. Use a cable to connect to the Line-Out port on the other audio system to record or play.
  - **Headphones/Speakers** — Lets you connect external headphones or speakers to your NEC Versa. Plugging in headphones or external speakers disables the built-in system speakers.
  - **Volume Control** — Allows you to control the internal speaker volume and headphone volume.

- 
- **USB Port** — The Universal Serial Bus (USB) port allows you to connect up to 127 USB-equipped peripheral devices (printers, monitors, scanners, etc. with optional USB hub) to your NEC Versa.
  - **Fan Vents** — Allow your system to cool properly and maintain a safe operating temperature.
  - **Kensington Lock slot** — Lets you provide added security by installing an optional Kensington Lock.
  - **PC card slots** — Provides two slots for inserting two Type II PC cards or one Type III PC card.

## ***The Right Side of the System***

The right side of the NEC Versa offers the features shown in the following figure. Features are described after the figure.

### ***Right side features***



**A** - VersaBay III

- **NEC VersaBay III** — A diskette drive, 24X CD-ROM drive, a SuperDisk drive, or a DVD module comes installed in the NEC VersaBay III on the right side of your system.

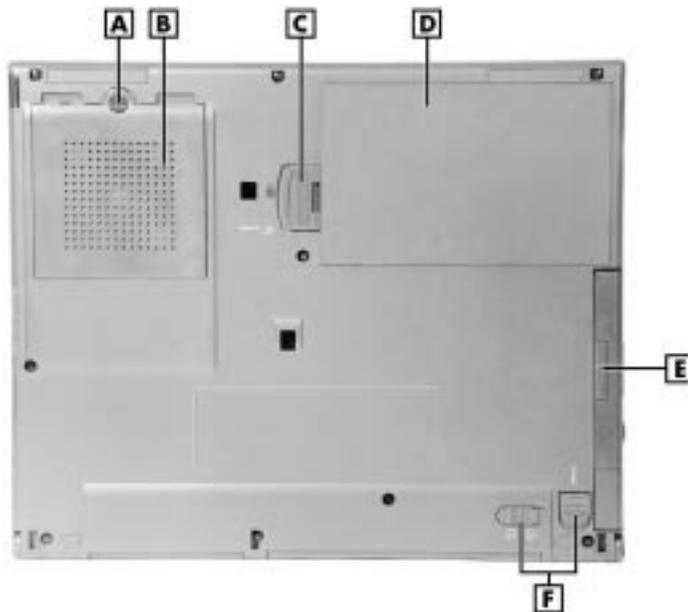
The VersaBay III allows you to interchange options, including an optional second Li-Ion battery, or an additional hard disk drive.

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## The Bottom of the System

The bottom of the NEC Versa offers the features shown next. Descriptions of the features follow the figure.

**Bottom features**



**A** - Coin Screw      **B** - Memory Expansion Bay Cover      **C** - Battery Bay Release  
**D** - Battery      **E** - VersaBay III Device      **F** - VersaBay Release Latches

- Memory Expansion Bay Cover — Opens with a coin screw to access two RAM expansion sockets for small outline double inline memory modules.
- Battery — Contains the system's main battery and is part of the exterior of the notebook. It is a nine-cell, Lithium-Ion (Li-Ion) battery with built-in battery gauge. The battery bay release allows you to remove the battery.
- NEC VersaBay III Release Latches — Allows you to remove the option currently installed in the VersaBay III.

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## ***Internal Components***

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

### ***Battery Pack***

The system uses a rechargeable Lithium-Ion (Li-Ion) battery as its transient power source. The battery pack installs in the compartment next to the VersaBay III on the bottom of the NEC Versa.

### ***Hard Disk Drive***

A standard 2.5-inch 9.5 mm (2.1-GB, 3.2-GB, 4-GB, or 6-GB) hard disk drive ships with the system.

### ***VersaBay III***

A 24X CD-ROM drive, a diskette drive, a SuperDisk drive, or a DVD-ROM drive comes installed in the NEC VersaBay III on the right side of the system.

### ***CPU Board***

The CPU board is a rectangular-shaped board located above the main board. The CPU board is part of a subassembly, which includes a heat sink and the CPU board.

### ***CMOS Battery***

The lithium battery (3 Volts, 30 mAh capacity) is attached to P13 on the main board. It 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 like date, time, drives, and memory. The CMOS battery lasts approximately three years.

### ***Bridge Battery***

The bridge battery saves the memory contents and system status for up to 5 minutes while in Suspend mode. It is connected to the main board via connector P11. The AC adapter maintains voltage in the bridge battery when the system is powered on or off. The bridge battery stores 7.2 Volts, 40 mAh.

---

# ChipSet

## Chipset

Chip	Manufacturer	Description	Technology
Intel Tillamook MMO 200/233 or Intel Mobile Pentium II MMO 233/266/300/333/366	Intel	200/233/266/300/333 /366 MHz CPU	320-pin TCP
82430TX (supporting Tillamook) 82440BX (supporting Pentium II) PIIX4E (both models)	Intel	System Controller	
PC97338VJG	National Semiconductor	Super I/O	100-pin TQFP
Cyber9388	Trident	Video	
ESS Maestro2E	ESS Technology	PCI Audio	
ES1918	ESS Technology	AC97 Link	
M38813E4	Mitsubishi	Keyboard Controller	
RB5C478	Ricoh	PCI CardBus Controller	

---

# 2

## **System Configuration and Setup**

- Power Sources for Your NEC Versa
- BIOS Setup
- NEC CSD Utilities
- Software Application and Driver

---

## ***Power Sources for Your NEC Versa***

The NEC Versa can be powered using three 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 battery pack or an optional second battery pack.
- the optional Auto adapter.

Read the following sections for specific steps on powering on the system.

### ***Using the 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 whether or not you are using the NEC Versa or have the system powered on.

---

#### **WARNING**

Do not attempt to disassemble the AC adapter. The AC adapter had 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. Both must meet EN609050 standards.

---

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## AC Adapter



A – AC Adapter      B – AC Power Cable

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 **Note:** Check that the AC outlet voltage falls in the range of 100-240 Volts AC. Verify that the cord and plug are appropriate for your AC source.

---

Connect the AC adapter as follows:

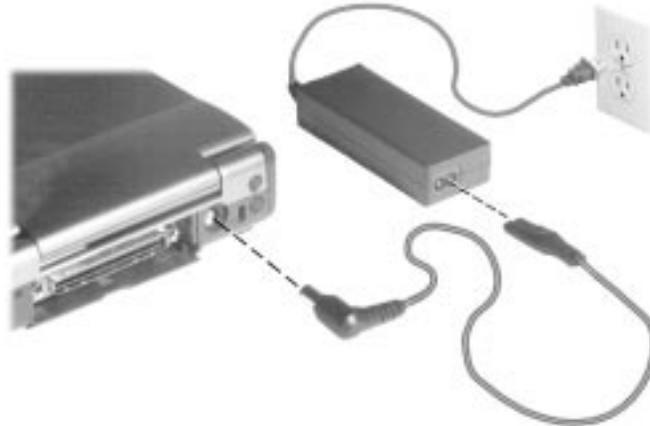
1. Connect the AC adapter cable to the power port on the back of your NEC Versa.
2. Plug one end of the AC power cable into the AC adapter and the other end into a properly grounded 120- or 240-volt wall outlet.

---

 **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.

---

## Connecting the AC Adapter



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 **CAUTION**

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

---

### *Powering On*

Power on the system as follows:

1. Locate the latch on the front of the LCD panel, slide it to the right, and raise the panel.
2. Locate the Power/Sleep button and press it to turn on system power.

### ***Using the Main Battery Pack***

The NEC Versa comes with a rechargeable Lithium-Ion (Li-Ion) battery pack. You can run your system on battery power for approximately two to four hours with power management features enabled. It's easy to install and remove.

Your NEC Versa system provides tools to help you keep track of the main (or an optional) battery's power level. These include the power status LED and SystemSoft's PowerProfiler (for Window NT systems, only) described later in this chapter. Both provide important battery status information.

When battery power is very low, the power LED flashes amber.

When battery power gets low, do one of the following:

- Press the Power/Sleep button and hold it in place for 4 or fewer seconds to put your system in Suspend mode. Remove the battery pack and replace it with a fully charged battery.
- Use operating system features to put the system in Suspend (Windows 95 and Windows NT) or Standby (Windows 98).
- 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 hours whether or not you use your system.

You can also buy an optional NEC Versa battery charger to charge your battery. See the NEC CSD web site at <http://www.nec-computers.com/>.

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## **! 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 terminals 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*

You can determine battery status via the power status LED on the Battery or via the Battery Meter provided within the Windows 95 operating system, the Power Meter within the Windows 98 operating system, and PowerProfiler in the Windows NT operating system.

- If the battery is removed from the system press the Battery test button to see the relative status of the battery. If all four LED indicators light the battery is at or near full charge and if none or one light the battery is at or near full discharge.

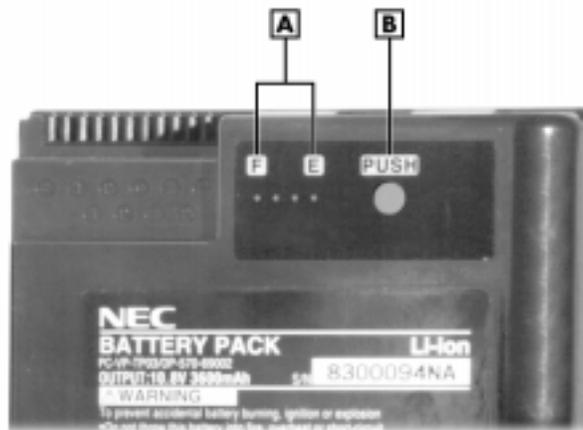
---

## **! WARNING**

If the second and fourth LEDs are on and the third is off. The battery should be charged overnight. If the LEDs are not all on in the morning after pressing the Test button, the battery may have reached its normal end of life and needs to be replaced.

---

### *Battery Status Gauge*



**A** - Status Indicator

**B** - Battery Test Button

- 
- In the Windows 95 operating system, access the Battery Meter via Start from the desktop, select Settings, select Control Panel and then the Power icon. This shows the total power remaining. Click the Show battery meter on the taskbar to have easy access to this information.
  - In the Windows 98 operating system, access the Power Meter via Start, select Settings, select Control Panel and then the Power Management icon. Select the Power Meter tab to show the Power Meter on the taskbar. Select the Advanced tab and click Show power meter on the taskbar.
  - In the Windows NT operating system, access the battery status via Start, slide to the Programs group, then slide to PowerProfiler for Windows NT. Press the VersaGlide selection button or tap the VersaGlide pad once. The main PowerProfiler screen appears.

Select the Battery tab and add the battery meter to the taskbar.

- At “Alarm Action” indicate whether to display a warning when the battery is low or very low, and whether to suspend the system when the battery is very low.
- At the right you can decide whether to display a battery meter in the task bar. You can view a graphic of current battery status.
- At “Battery Status and Alarm Settings” you can view status battery by battery or for all batteries together. You can define “low” and “very low” battery status.

### *When to Change 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.

### *Battery Handling*

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

- Use only the battery designed for your system in the NEC Versa SX. Mixing other manufacturer’s batteries, or using a combination of very old and new batteries can deteriorate battery and equipment performance.
- Turn off power to the system after use. Keeping system power on can degrade battery performance and shorten battery life.
- Clean the battery terminals with a dry cloth and be careful not to bend terminals.

- 
- Keep the battery out of the reach of children.

### *Replacing the Battery*

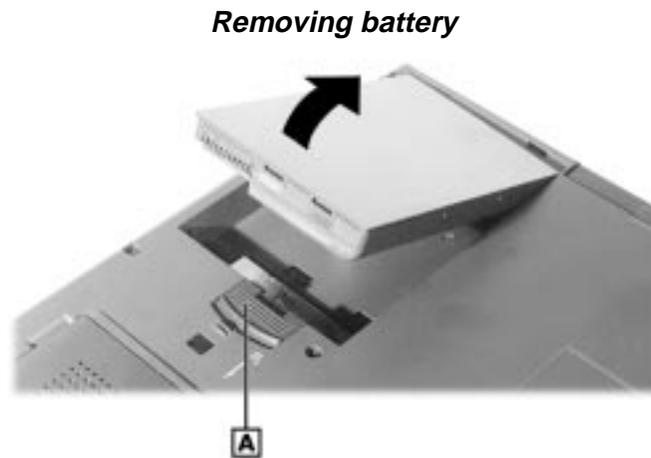
Replace the battery pack installed in your NEC Versa SX system as follows.

---

 **Note:** Use the batteries in the NEC Versa SX computer for which they are designed. Also, 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 and press the **Fn** and **Power** button to suspend to disk, or turn off system power.
2. Close the LCD and turn the system over.
3. Slide and hold the battery latch and lift the edge of the battery out of the notebook as shown below.



A - Battery Release Latch

4. Insert the new battery as follows:
  - Locate the alignment groove tabs on the end of the battery opposite the terminals.
  - Locate the alignment grooves inside the battery bay at the end opposite the terminals.
  - Fit the battery alignment tabs into the grooves inside the bay.

- 
- Lower the battery into the battery compartment while at the same time slide the battery lock lever out of the way and press gently to secure the terminal connections. Release the lock latch and your NEC Versa battery is installed.

### ***Reinstalling 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 “Battery Replacement” at the back of this manual.

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 terminals. Metal objects in contact with the terminals 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.
-

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## *Recharging Battery Precautions*

Adhere to the following precautions when recharging the primary or secondary 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 32°F and 104°F (5°C to 35°C).
- Read the instructions that came with the battery charger before charging the battery.

## *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.

## *NEC VersaBay III*

The NEC VersaBay III Battery provides a second Lithium-Ion (Li-Ion) battery to use in your NEC Versa SX computer. Inserting a second fully charged battery increases battery life to approximately 4 to 5 hours.

See the NEC CSD web site at <http://www.nec-computers.com/> for details about the NEC VersaBay III Battery.

## *Internal Batteries*

The nine-cell Lithium-Ion (Li-Ion) battery provides the main power source in your NEC Versa SX computer. In addition to this battery, the CMOS battery and bridge battery also provide power for specific system requirements.

### *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 approximately two months. The minimal CMOS battery life is 3 years.

### *Bridge Battery*

The bridge battery saves your system status in Suspend mode for up to five minutes. This gives you time to install a fully charged battery or plug in AC power when your battery charge becomes low.

---

Only an authorized NEC CSD technician should change a bridge battery.



## **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.

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## ***BIOS Setup***

Your NEC Versa SX 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
- set up power management features.

### ***How to Enter the BIOS Setup***

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

Press <ESC> for Boot Messages, <F2> for Setup.

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

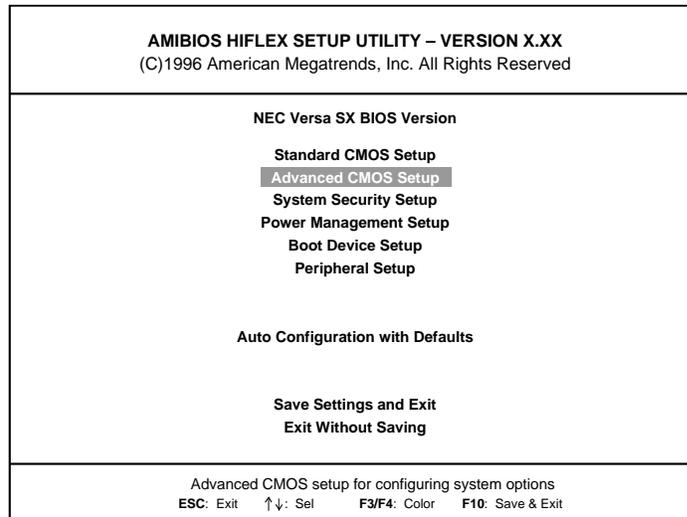
If the system detects an error during POST, it prompts you with a double beep and a message: "Press <F1> to resume." If you press **F1**, the system enters BIOS Setup automatically. If you want to fix the error, carefully read the error message that appears above the prompt (taking notes if you want),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

---

## BIOS Setup Utility 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. (The Change User Password option is only available if a Supervisor Password is defined.)

## How to Use BIOS Setup

The following sections describe how to use BIOS Setup, including these topics:

- Looking at screens
- Using keys
- Checking and setting system parameters

---

## Looking at Screens

BIOS setup screens have three areas as shown next.

### **Advanced CMOS Setup menu**

<b>AMIBIOS SETUP – ADVANCED CMOS SETUP</b> (C)1996 American Megatrends, Inc. All Rights Reserved		
LCD Panel View Expansion	OFF	Item-specific help text appears here.
PS/2 Port Hot Swap	Enabled	
Internal Mouse	Enabled	
		ESC Exit    ↑↓    Select PgUp/PgDn: Modify F3/F4: Color

- **Parameters** — The left part of the screen. This area lists parameters and their current settings.
- **Available Options** — The right part of the screen. This area lists alternate settings.
- **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**

<b>Key</b>	<b>Function</b>
↑ ↓	Moves the cursor between the displayed parameters.
PgUp/PgDn	Modifies 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.

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## Checking/Setting System Parameters

See the following table for a list of parameters, their factory default settings, and alternate settings. A description of each setting follows the table.

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

### **BIOS Setup Parameters**

<b>Parameter</b>	<b>Default Setting</b>	<b>Available Setting(s)</b>
<b>Standard CMOS Setup</b>		
System Date	mm/dd/yyyy	
System Memory	Auto detect: total memory shown in MB	Auto detected
System Time	hh/mm/ss:	hh/mm/ss:
Diskette Drive A	1.44 MB, 3.5	Not installed 1.2 MB, 5.25-inch 1.44 MB, 3.5-inch
Diskette Drive B <sup>1</sup>	Not installed	1.2 MB, 5.25-inch 1.44 MB, 3.5-inch Not installed
Internal	Auto	Not installed User defined Auto CDROM LS120
VersaBay <sup>1</sup>	Auto	Not installed User defined Auto CDROM LS120
DS VersaBay <sup>1</sup>	Auto	Not installed User defined Auto CDROM LS120
DS Internal <sup>1</sup>	Auto	Not installed/User defined CDROM/LS120
<b>Advanced CMOS Setup</b>		
LCD Panel View Expansion	Off	On Off
PS/2 Port Warm Swap	Enabled	Disabled Enabled
Internal Mouse	Enabled	Disabled Enabled
<b>System Security Setup</b>		
Change Supervisor Password		
Change User Password <sup>3</sup>		

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### **BIOS Setup Parameters**

<b>Parameter</b>	<b>Default Setting</b>	<b>Available Setting(s)</b>
Boot Password Required <sup>4</sup>	No	Yes/No
Resume Password Required <sup>4</sup>	No	Yes/No
<b>Power Management Setup</b>		
System Switch	Power Button	Sleep Button Power Button
Power Management Under AC	Off	On Off
Power Savings Level	Longest Life	Off Custom High Perform Longest Life
Hard Disk Time-out <sup>2</sup>	2 min	Off 5 seconds 30 seconds 45 seconds 1 minutes 2 minutes 4 minutes 6 minutes 8 minutes 10 minutes 15 minutes
Video Time-out <sup>2</sup>	2 min	Off 30 seconds 45 seconds 1 minutes 2 minutes 4 minutes 6 minutes 8 minutes 10 minutes 15 minutes
Peripheral Time-out <sup>2</sup>	On	Off On
Audio Device Time-out <sup>2</sup>	On	Off On
Standby Time-out <sup>2</sup>	4 min	Off 1 minutes 2 minutes 4 minutes 6 minutes 8 minutes 10 minutes 15 minutes

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### **BIOS Setup Parameters**

<b>Parameter</b>	<b>Default Setting</b>	<b>Available Setting(s)</b>
Auto Suspend Time-out <sup>2</sup>	10 min	Off 5 minutes 10 minutes 15 minutes 20 minutes 25 minutes 30 minutes
LCD Suspend	Disabled	Enabled Disabled
Suspend Option	Suspend	STF Suspend
Auto Save To File	Enabled	Disabled Enabled
Panel Brightness	Auto	User Defined Auto
Suspend Warning Tone	Enabled	Disabled Enabled
Modem Ring Resume	Enabled	Enabled Disabled
Wake Up Alarm	Disabled	Enabled Disabled
Resume Alarm Time <sup>5</sup>	8:00 AM	12:00 AM to 11:55 PM
<b>Boot Device Setup</b>		
<b>Setup Question</b>	<b>Default</b>	<b>Alternate Settings</b>
Quick Boot	Enabled	Disabled Enabled
Docking Station Video <sup>7</sup>	Dock Stn.	Portable Dock Stn.
BootUp Num-Lock	Auto	Off On Auto
1 <sup>st</sup> Boot Device	LS120	CDROM SCSI Network Disabled 1 <sup>st</sup> Fnd IDE <sup>6</sup> Floppy LS120
2 <sup>nd</sup> Boot Device	CDROM	Disabled 1 <sup>st</sup> Fnd IDE <sup>6</sup> Floppy LS120 CDROM

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### **BIOS Setup Parameters**

<b>Parameter</b>	<b>Default Setting</b>	<b>Available Setting(s)</b>
3 <sup>rd</sup> Boot Device	Floppy	LS120 CDROM 1 <sup>st</sup> Fnd IDE <sup>6</sup> Disabled
4 <sup>th</sup> Boot Device	Disabled	Floppy LS120 CDROM 1 <sup>st</sup> Fnd IDE <sup>6</sup> Disabled
Try Other Boot Devices	Yes	No
1 <sup>st</sup> IDE Hard Drive <sup>8</sup>	Internal	VersaBay DS Internal DS VersaBay Internal
2 <sup>nd</sup> IDE Hard Drive <sup>8</sup>	VersaBay	DS Internal DS VersaBay Internal VersaBay
3 <sup>rd</sup> IDE Hard Drive <sup>8</sup>	DS Internal	DS VersaBay Internal VersaBay DS Internal
4 <sup>rd</sup> IDE Hard Drive <sup>8</sup>	DS VersaBay	DS VersaBay Internal VersaBay DS Internal
<b>Peripheral Setup</b>		
<b>Setup Question</b>	<b>Default</b>	<b>Options</b>
Internal Hard Drive	Enabled	Disabled Enabled
USB Controller	Disabled	Enabled Disabled
Serial Port	Auto	Disabled COM1, IRQ4 COM2, IRQ3 COM3, IRQ4 COM4, IRQ3 Auto (PnP OS Setup)
Parallel Port	Auto	Disabled LPT1 LPT2 Auto (PnP OS Setup)
Parallel Mode	ECP	Uni-Dir Bi-Dir EPP

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## **BIOS Setup Parameters**

<b>Parameter</b>	<b>Default Setting</b>	<b>Available Setting(s)</b>
		ECP
IR Serial Port	Disabled	Disabled COM2, IRQ3 COM3, IRQ4 COM4, IRQ3 Auto (PnP OS Setup)

### **Notes:**

1. These setup items are only visible when system is cold docked.
2. These setup items are only changeable when power savings is set to custom. Otherwise, they display settings based upon the following power savings defined setting table.
3. Greyed out until supervisor password is set up.
4. Only active after a password is set up.
5. Resume alarm time is selectable when wake up from suspend alarm is set.
6. Bootable device when set to IDE hard drive. Only one IDE device is allowed to be bootable.
7. These setup items will only be selected when the system is docked.
8. Changing this setting automatically changes other settings.

## **BIOS Setup Menus**

Read the following descriptions for explanations of items that appear in the BIOS Setup menus, as listed in the preceding table. See the item-specific help that appears on the Setup screen for more details.

### *Standard CMOS Setup*

When you select the Standard CMOS Setup screen you will see System Time and System Date parameters as well as drive parameters.

- **Date** — Set your NEC Versa's calendar month, day and year. The calendar clock is year 2000-compliant. 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.
- **Time** — Set 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 Drives** — Lets you designate the drive type for your diskette drives.
- **Internal Hard Disk Drive** — Allows you to enable or disable the internal hard drive(s) in your system.

- 
- Docking Station Drives — Enable and disable the drives installed in a docking station. (These options are only available when the NEC Versa is docked.)

#### *Advanced CMOS Setup*

Advanced CMOS settings let you define the following functions.

- 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 suspend operation.
- Internal Mouse — Specifies whether or not you can use both the internal and the external mouse. Specify disabled if experiencing problems when both internal and external are enabled.

#### *System Security Setup*

- Change Supervisor Password — Allows you to establish password protection for entering the BIOS setup utility, booting the system, and resuming from suspend.
- Change User Password — Allows you establish 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.

#### *Power Management Setup*

Your NEC Versa uses the Advanced Configuration and Power Interface (ACPI) which enables the operating system to manage the power given to each attached device and to turn off a device when not in use. In addition, ACPI enables manufacturers to develop computers that automatically power up with a touch to the keyboard.

The Power Management Setup menu lets you balance high performance and energy conservation using parameters including the following.

- System Switch — Lets you use 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 usually disabled. If you enable this parameter, the system automatically activates the power management profile you set, even when AC power is used.

- 
- **Power Savings Level** — Lets you choose one of four levels of power management.
    - **High Perform** provides the greatest system performance with only minimal power conservation.
    - **Longest Life** provides the maximum amount of power savings.
    - **Off** disables power management and all device timeouts.
    - **Custom** lets you define your own power management configuration by selecting values for specific device timeouts. Custom lets you set the following timeouts.
      - **Hard Disk Timeout** — Allows you to select the amount of time before your hard disk shuts down.
      - **Video Timeout** — Allows you to select the amount of time before your video shuts down.
      - **Peripheral Timeout** — Lets you choose the amount of time before your peripherals are controlled by power management.
      - **Audio Device Timeout** — Selects the amount of time before your audio device shuts down.
      - **Standby Timeout** — Allows you to select the system standby timeout period.
      - **Auto Suspend Timeout** — Defines how much time elapses before the system automatically enters Suspend Mode.
  - **LCD Suspend** — Allows you to suspend/resume when the LCD panel is opened and closed.
  - **Suspend Option** — Allows you to specify either Suspend or Save to File (STF) as the default power management mode. In Suspend, after a specified amount of inactivity, your NEC Versa shuts down all devices as you specified in Power Management Setup or applies default timeouts. All your data is automatically recovered from where you left off when you Resume.
  - **Auto Save To File** — After 30 minutes in Suspend mode the current file is automatically saved to a special file on the hard disk and the system shuts down. To resume, you must press the power button. The system reads the saved file and sets up your system accordingly.

If Auto Save to File is set to Off and HDPREPEZ is present, pressing the **Fn-Power/Sleep** key combination puts the system into Save to File mode.
  - **Panel Brightness** — Lets you select the LCD screen backlight intensity.
  - **Suspend Warning Tone** — Specifies whether the system warning tone sounds when Suspend mode starts. It is best to keep this option enabled.

- 
- Modem Ring Resume — Lets you choose whether the system resumes automatically when an external modem receives a ring signal.
  - Wake Up from Suspend Alarm/Resume Alarm Time — Lets you set a resume time from Suspend mode.

### *Boot Device Setup*

Boot Device Setup allows you to define the following functions.

- Quick Boot — Specifies whether or not the system performs all tests during system boot.
- Docking Station Video — Selects whether or not the Docking Station video card is enabled at system boot.
- 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.

### *Peripherals Setup*

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

---

 **Note:** If you disable a device in Peripheral Setup, you cannot enable or assign it using the Windows 95 device manager. The device will not be listed in the Windows 95 device list. To control the device using the Windows 95 device manager, select any setting other than “Disable” in Peripheral Setup.

This note does not apply to USB devices.

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- Internal Hard Drive — Allows you to enable or disable the Internal Hard Drive.
- USB Controller — Allows you to enable or disable the USB controller.
- Serial Port — Allows you to disable the port or change its address assignment.
- Parallel Port/Parallel Mode — Lets you disable or reassign the parallel port and select a parallel port mode.
- IR Serial Port — Allows you to disable or reassign the IR Serial port.

---

## *Other BIOS Setup Options*

BIOS Setup offers other options, including the following:

- 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.

## *Password Protection*

Your NEC Versa supports a password for system security on several levels. Once you set a password, you must enter it before you can enter BIOS Setup, access the system at startup, or resume from Suspend, depending on your configuration selection.

Your system is not protected until you set a password and you are not prompted to enter a password until you set a supervisor password.

---

 **Note:** You must set the supervisor password before the BIOS Setup utility allows you to set a user password.

---

## ***Using BIOS Setup to Set Power Management***

Power Management Setup allows you to use the factory-defined power savings level (Longest Life), or choose between High Perform, Custom, or Off. Each provides a special value to your current work effort. These power management levels were designed with you in mind. For example, you can use them under the following circumstances:

- Longest Life — Provides best battery life and good performance. Use while traveling long distances.
- High Perform — Provides best performance and good battery life. Use while on the road or traveling short distances.
- Custom — Lets you decide! Set power management levels according to your own needs and present environment.
- Off — Works well in an office environment while powering your NEC Versa SX with AC power.

## *Using the Save to File (STF) Feature*

STF protects the integrity of your working files. For example, if you are called away from your NEC Versa and Suspend mode is selected with auto Save to File active, your system automatically goes into Suspend mode after 10 minutes. After 30 minutes, if you don't return, your working environment is saved to a special file on your hard disk.

---

Using STF can benefit you in the following ways.

- When in STF, there is no battery drain.
- Preserves the life of your NEC Versa SX.
- Saves you time. When you return from that urgent call or meeting, you don't have to reboot, just press the **Power** button to resume system operation.

To configure your NEC Versa's STF feature as the default suspend mode:

1. Access the BIOS setup utility.
2. Select Power Management from the Setup Main Menu.
3. Move the cursor down and highlight Suspend Mode.
4. Press the **PgUp** key and select STF.
5. Save the settings and exit BIOS Setup.

There are two ways to invoke the NEC Versa's STF feature, one automatic and one manual.

- With Power Management, after 30 minutes of inactivity, your NEC Versa automatically invokes STF, provided you have configured STF in the BIOS Setup utility.
- You can manually invoke STF by pressing **Fn + Power** button simultaneously, before you leave your NEC Versa.

---

 **Note:** When the status bar indicates that there is only 8% power remaining in the system, the NEC Versa automatically performs a Save to File.

---

## **Updating the BIOS**

Use the BIOS Update Diskette to update your NEC Versa system BIOS. Specifically, the BIOS is the code contained within the ROM (Read-Only Memory) on your system.

---

 **Note:** You only need to update the BIOS if NEC CSD makes significant improvements or fixes to the current system BIOS. Your authorized NEC CSD dealer or NEC CSD Support Services representative can help you determine this.

---

If you are informed that the default BIOS needs an upgrade, contact the Versa Laptop Fulfillment Hotline at (800) 842-6446, or NEC CSD Support Services at (800) 632-4525, or Fax (801) 981-3133.

---

You should only use the BIOS upgrade diskette for your specific model.

---

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

Reference the booklet, "Getting Service and Support in Asia, Australia, and Europe," to find out how to contact the local office in your country.

---

### *Performing the BIOS Update*

Use the following procedure to perform the actual BIOS update.

1. Make sure that the computer is operating under AC power, and that the power is off. Insert the BIOS Update diskette into diskette drive A.
2. Power on the computer with the diskette in drive A. 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. Connect your NEC Versa to AC power before restarting the flash utility.

Press any key to continue.

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**. Do not disturb the system while the update procedure is in progress. After the update has finished, a message appears telling you to remove the diskette in drive A.
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 SX computer BIOS revision level.

8. Enter Setup at Start up by pressing **F1** at power on, restore your CMOS settings, save your restored settings, and exit Setup.

---

## ***NEC CSD Utilities***

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

The NEC CSD utilities include:

- NEC Customize Utility
- HDPREPEZ Utility

### ***NEC Customize Utility***

In Windows 95, Windows 98, and Windows NT systems, the NEC Customize utility gives you the option to install or launch:

- NEC CSD custom wallpaper (Windows 95 and Windows NT only) — use this option to install wallpaper displaying the NEC logo.
- Application and Driver CD — must use this option to install software applications, drivers, etc.
- NEC VersaBay Swapping Utility (Windows 95 and Windows 98 only) — must use this option to take advantage of warm swapping your VersaBay devices.
- IR setup utility to enable the IR port (Windows 95 and Windows 98 only) — must use this option to enable the IR port.
- NEC-supplied mouse driver (Windows NT only) — must use this option to take advantages 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**

Using the HDPREPEZ utility automatically configures your NEC Versa's system's save-to-file (STF) area on the hard disk drive.

Procedures for using HDPREPEZ for Windows 95, Windows 98, and Windows NT systems differ. See the instructions appropriate for your system.

---

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

---

### *Using HDPREPEZ in Windows 95 and Windows 98*

In Windows 95 and Windows 98, run the HDPREPEZ utility if you increase the memory capacity in your NEC Versa beyond the factory installed base memory.

Follow these steps to run the HDPREPEZ utility.

1. Power off and restart your NEC Versa.
2. At the statement "Starting Windows 9x," press **F8**.
3. From the Startup menu, select "Safe Mode Command Prompt Only."
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 in Windows NT

In Windows NT with a system BIOS of version 1.00.01, run the HDPREPEZ utility if you increase the memory capacity in your NEC Versa beyond 256 MB of main memory.

Follow these steps to run the HDPREPEZ utility.

1. Close all background applications before running the HDPREPEZ utility.
2. Go to Start, Programs, AMI Save to File.
3. Select Undo STF File.
4. A DOS box opens and prompts for a response. Enter **Y**.
5. Go to Start, Programs, AMI Save to File.
6. Select Create STF File.

A DOS box displays and advises you to close all background applications. The message also indicates that your system will reboot when the process is complete. Finally, the message prompts you to "Proceed Y/N?"

7. Enter **Y** to create the STF file.

A file, large enough to accommodate your system's memory is created on the hard disk drive. When the process is complete, your system reboots.

In Windows NT with a system BIOS of version 1.00.02, run the HDPREPEZ utility in DOS.

Follow these steps to run the HDPREPEZ utility.

1. Create a temporary directory on the hard drive.
2. Copy all the files in [CD-ROM:]\software\both\hdppez (where [CD-ROM:] is the CD-ROM drive letter) to the newly created temporary directory.
3. Restart the system with a DOS bootable diskette.
4. In DOS, change directories to the newly created directory.
5. If you booted the system with a diskette created with MS-DOS, see the readme.txt file on how to use HDPREPEZ.

If the diskette was created with Windows 95 or Windows 98, the hard drive needs to be locked to write to it using HDPREPEZ. At the A: prompt, type **ver** to check the operating system used to create the diskette. If Windows was used to create the diskette, type **lock c:** at the A: prompt. See the readme.txt file on how to use HDPREPEZ.

---

# ***Software Applications and Drivers***

A variety of software\* applications and drivers are provided on the Application and Driver CD for the NEC Versa SX that ships with your system. Some of these applications and drivers are already installed as part of your operating system environment. These applications and drivers let you take full advantage of your system resources.

Once you have installed an application from the Application and Driver CD access the program through its desktop icon or through the Start, Programs menu.

The software\* applications available on the Application and Driver CD vary according to your operating system environment and may include:

- PowerQuest® PartitionMagic®
- Intel LANDesk® Client Manager
- SystemSoft® PowerProfiler
- SystemSoft® CardWizard
- Puma Intellisync™ 97
- McAfee VirusScan™
- Microsoft® Internet Explorer
- Netscape Navigator™
- Adobe® Acrobat® Reader

\* The software listed here is current at the time of printing and subject to change without notice.

## ***Using the Application and Driver CD***

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

### ***Launching the Application and Driver CD***

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

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

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 plus (+) box beside the desired application, driver, etc., to expand the selection.
3. Click the Installation selection to activate the Install button.
4. Click the Install button to install your selection.  
Follow the on-screen instructions to install your selection.
5. Click Exit to close the Application and Driver CD dialog box.
6. Remove the CD from the CD-ROM drive when the installation is complete.

## ***Partition Magic***

Dividing a hard disk drive into several partitions lets you efficiently organize operating systems, programs, and data. PowerQuest's Partition Magic allows you to optimize hard disk drive space with an easy click of the mouse. Visually create, format, shrink, expand, and move hard disk partitions in minutes.

### *Using Partition Magic*

Your NEC Versa Windows 95 and Windows 98 notebook computer ships with an internal hard disk drive consisting of a single FAT 32 partition, drive C:. Use Partition Magic if you want to create multiple partitions and convert any of all of these to FAT 16 on the hard disk drive.

---

 **CAUTION**

Before using Partition Magic refer to the associated cautionary notes on the Application and Driver CD. The cautionary notes contain important information about designating the partitions on the hard disk drive as primary and/or extended.

The partitions must be properly designated before using the Product Recovery CD to reinstall your operating system. *If the partitions on the hard disk drive are not properly designated, it will appear as though data loss has occurred after using the Partition Restore Choice on the Product Recovery CD.*

---

After using Partition Magic to create multiple partitions on your hard disk drive, you must perform a partial restore using the Product Recovery CD for Windows 95 and Windows 98. The partition restore process reinstalls the operating system and related drivers to drive C:.

## ***Intel LANDesk Client Manager***

Intel LANDesk Client Manager provides the capability for managing a variety of components within a PC system. These components include network interface cards, memory modules, printers, and software applications. LANDesk Client Manager uses the Desktop Management Interface (DMI) standard established by the Desktop Management Task Force (DMTF).

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 **Note:** Intel LANDesk Client Manager continuously monitors your system for optimal system performance. This monitoring function interrupts the auto suspend feature that invokes after 10 minutes of inactivity.

If you install Intel's LANDesk Client Manager the NEC Versa auto-suspend feature may be disabled.

---

Set up the LANDesk Client Manager software on your NEC Versa using the easy-to-follow setup program. Follow these installation suggestions when installing LANDesk Client Manager.

- To install on a user's system, run Client setup, only.
- To install on a system administrator's system, run Client setup first, then run Administration setup. Installing both components enables the administrator to monitor his/her own system, as well as, all network systems.
- To monitor network systems only, run Administration setup, only.

To find out more about Intel LANDesk Client Manager capabilities and uses, refer to the online help that is available when you open Client Manager.

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 **Note:** During the setup and installation of LANDesk Client Manager, you may be prompted to install Microsoft's Internet Explorer. Be sure to install Internet Explorer before installing LANDesk Client Manager.

After Internet Explorer is installed you must run the LANDesk Client Manager setup program again.

---

## ***SystemSoft PowerProfiler***

SystemSoft PowerProfiler for Windows NT lets you manage power resources, balancing performance with battery conservation. You can group power management settings into “profiles” for best performance and best conservation. You can also create custom profiles. PowerProfiler provides status information, alarms, and timers that let you easily monitor and control power consumption.

Access PowerProfiler through the Start, Programs menu.

## ***SystemSoft CardWizard***

SystemSoft CardWizard for Windows NT provides limited plug and play capability by automatically diagnosing and resolving many PC card problems.

When you insert a new PC card into a PC card slot, the Wizard displays a representation of the slot with information about the new card. If there are problems, in most cases, the Wizard automatically fixes them. Typical problems that are resolved include incorrect or missing drivers, system resource conflicts, unconfigured network and ATA cards, and memory conflicts.

Access CardWizard through the Start, Programs menu.

## ***Intellisync 97***

Intellisync 97 is a powerful PC-to-PC synchronization solution that enhances your productivity by letting you synchronize all your key data. With Intellisync 97 for Windows you can:

- Synchronize files, drives, and directories on two computers, or in different partitions on a single computer.
- Synchronize data between two Personal Information Managers (PIMs).
- Copy and move files on a remote system using an infrared device or a parallel or serial cable.
- Control access each remote system has to your data.

Before using Intellisync 97 for infrared transfer, enable the IR port on your NEC Versa.

Before using Intellisync 97 for parallel or serial communication, connect the appropriate cable to the appropriate port on the back of your NEC Versa.

For more information about Intellisync 97 refer to the online manual.

---

## **McAfee VirusScan**

The McAfee VirusScan software detects, identifies, and disinfects known computer viruses. It checks memory as well as both system and data areas of your disks for virus infections. In most cases, it eliminates and fully repairs infected programs or system areas to their original condition.

Access McAfee VirusScan through the Start, Programs menu.

## **Microsoft Internet Explorer**

Microsoft's Internet Explorer makes finding information on the Internet easy. Built-in webcasting features give you the content you want, when you want it. A integrated set of tools provides services ranging from basic email to exciting conferencing, broadcasting, and web-authoring capabilities.

## **Netscape Navigator**

Netscape Navigator is one of the most popular software for browsing information on intranets or the Internet. Information tools simplify access to favorite sites and provide one-click access to Internet searches.

Navigator's features include technology that allows you directly manipulate and move images and Java applets to create visually exciting, fully interactive pages. In addition, Navigator lets you customize for individual preferences and bookmark favorite web sites to facilitate repeated access.

## **Adobe Acrobat Reader**

Adobe Acrobat Reader allows you to view, navigate, and print PDF files from your local hard drive, your local network, or the Internet. For Windows NT only, Adobe Acrobat Reader is installed with the installation of Intel LANDesk Client Manager.

## **Enabling the IR Port**

Procedures for enabling the IR port for Windows 95, Windows 98, and Windows NT systems differ. See the instructions appropriate for your system.

### *Windows 95 and Windows 98 Systems*

In Windows 95 and Windows 98, enable the IR port using the IR port setup utility accessible through the NEC Customize icon. Follow these steps to enable the IR port.

1. Double click the NEC Customize icon.
2. From the display window, select InfraRed Setup.
3. Click Launch to initiate the InfraRed Setup.

The IR Setup Utility windows displays.

- 
4. Select Enable and click OK.

A message displays indicating that you must reboot your system TWICE to fully enable the IR port.

5. Click OK to reboot your system. *Be sure to reboot your system a second time before attempting to use the IR port for infrared communication.*
6. Click Exit to close the NEC Customize Utility window.

### *Windows NT Systems*

In Windows NT, enable the IR port using the hardware BIOS setup utility. Follow these steps to enable the IR port.

1. Access the BIOS Setup utility at power-on. Just press **F2** when the prompt, “Press Esc for Boot Messages, <F2> to enter Setup,” appears.

The BIOS Setup main menu appears.

2. Use the down arrow key to select the Peripheral Setup menu.
3. Use the down arrow key to select the IR Serial Port.
4. Use the **PgUp/PgDn** keys to change the default value to COM4, IRQ3. (Be sure to check your available resources before making a selection.)
5. Press **ESC** to return to the BIOS main menu.
6. Save your settings and exit the BIOS Setup utility.

For the infrared technology to work, you need to follow these guidelines:

- Position the NEC Versa no more than three feet way from the IR peripheral device you are using.
- Make sure there is no greater than a 30° angle between the computer and the device.

# 3

## **Disassembly and Reassembly**

- Required Tools
- Disassembly Instructions
- General Reassembly Instructions

---

## Required Tools and Equipment

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

- Tweezers
- Small flat-head screwdriver
- Small Phillips screwdriver (# 1 and # 0)
- 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 order listed below. To reassemble, follow the table in reverse order.

### *NEC Versa SX Disassembly Sequence*

<b>Level of Disassembly</b>	<b>Components Available for Disassembly (number of screws)</b>
Preparation	Battery, VersaBay III device, Memory Module Bay cover (1)
Keyboard (1)	Hard Drive (2) Switch Settings LED Status/Power Switch Board (1)
Top Cover (2)	VersaGlide Assembly (4) LCD Panel Assembly (4) Bridge Battery CMOS Battery CPU Assembly (1) Speaker Assembly
Bottom Cover	Fan Duct and Fan (1) Hard Drive Bracket (2) Main Board Microphone PC Card Assembly (4)

When disassembling the system unit, follow these general rules.

- Do not disassemble the system into parts that are smaller than those specified in the procedure.
- Use care when removing screws, note where each screw is removed as screws differ in size.

- 
- Label all removed connectors. Note where the connector goes and in what position it was installed.

## ***Preparation for Disassembly***

Turn off and disconnect all power and all options, including the AC adapter (if connected) and remove the battery, VersaBay III device and memory module bay cover to ready the notebook for disassembly.

### ***Battery***

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

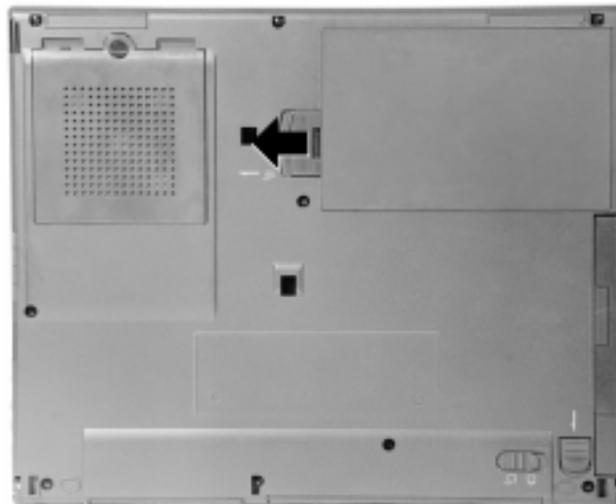
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 **Note:** Use the batteries in the NEC Versa computer for which they are designed. Also, installing another manufacturer's battery, or using a combination of very old and new batteries can deteriorate battery and equipment performance.

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1. Close the LCD panel and turn the system over.
2. Slide the battery release latch as shown below.

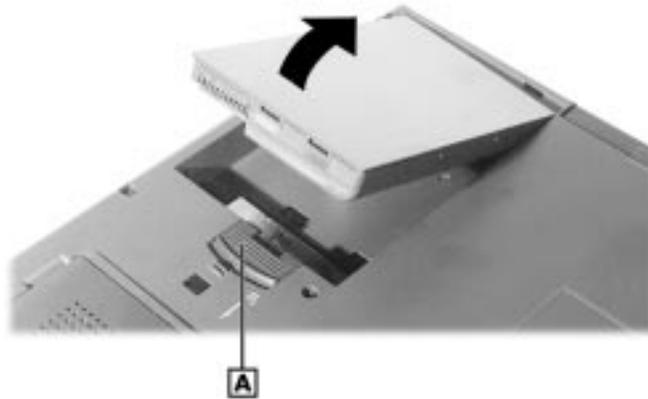
#### ***Battery release latch***



3. Continue to hold the battery latch and lift the edge of the battery out of the notebook as shown next.

---

### **Removing the battery**



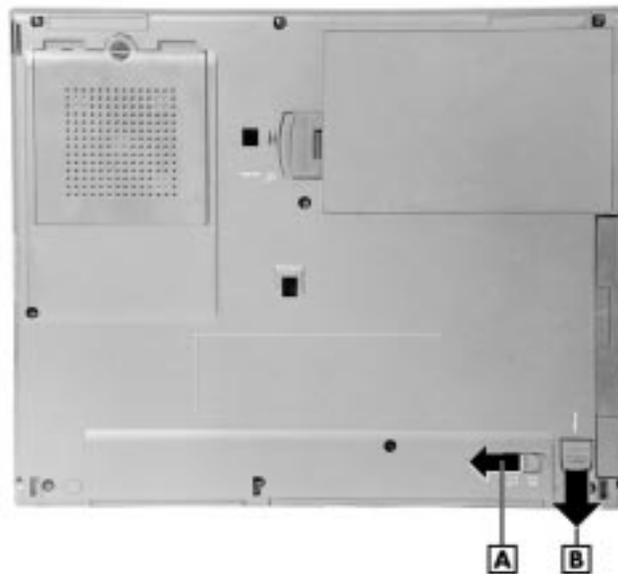
**A** – Battery Bay Release Latch

### **VersaBay III Device**

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

1. Locate the VersaBay III release lock and VersaBay III release latch on the bottom of the unit.

### **VersaBay III release lock and latch**



**A** – VersaBay III Release Lock      **B** – VersaBay III Release Latch

2. Slide the lock to the unlocked position before releasing the latch.
3. Slide the latch in the direction as show and hold it.
4. Slide 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.

---

## **Keyboard**

Use the following steps to remove the keyboard and access the dip switches.

1. Open the LCD panel.
2. Locate and remove the rubber cap (if present) and the Phillips-head screw on the upper left hand corner of the keyboard cover of the NEC Versa.

### ***Locating the rubber cap***



3. Press down using a slight pressure on the right hand side of the keyboard retainer and slide to the left.

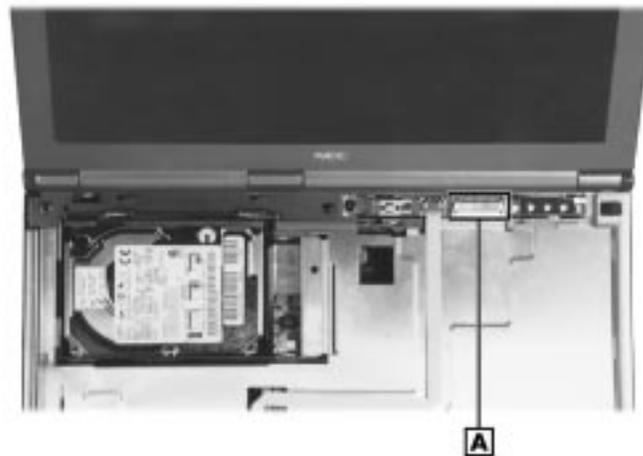
### ***Keyboard retainer***



4. Gently lift up the edge of the keyboard nearest the LCD and slide the keyboard toward the LCD screen to release the tabs that secure it.

- 
5. Carefully tilt the keyboard and place it against the LCD panel. Disconnect the keyboard cable from Connector P41 on the LED/Power switch board.

#### ***LED/Power switch board***

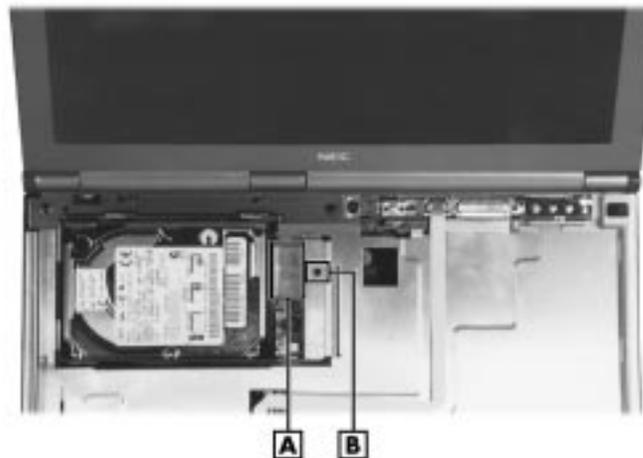


A – Connector P41

#### ***Hard Drive Assembly***

1. Disconnect the hard drive cable at P6 (A) on the main board.
2. Remove the screw (B) and lift the hard drive assembly from the hard drive bracket.

#### ***Hard Drive Assembly***



A – Connector P6

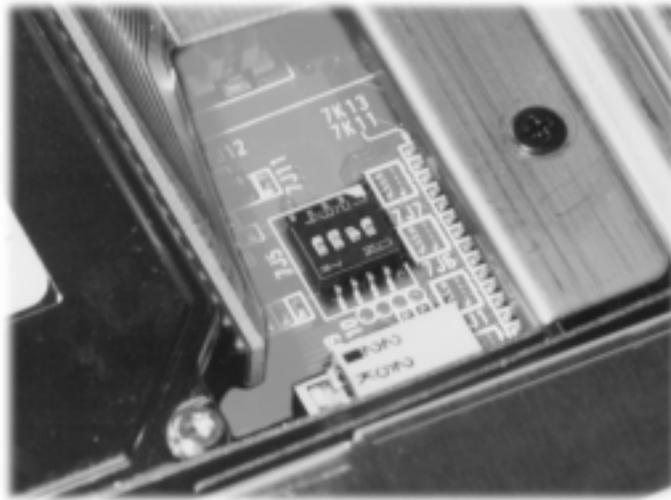
B – Screw

---

## Dip Switch

1. Locate the dip switch block. See the figure below.

### **Dip switch location**



2. Using a fine-tipped object, change the appropriate switch to the required setting. See “Switch Settings” for dip switch functions and settings.



### **CAUTION**

Never use a pencil to change switch settings. Residue from the pencil can damage the system.

---

## Switch Settings

A four-position dip switch is located underneath the keyboard. The following list identifies each switch setting and its function.

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

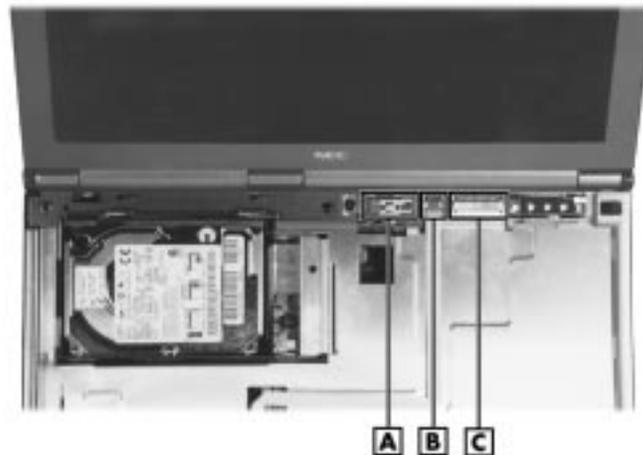
---

### *LED Status/Power Switch Board*

The LED status/power board consists of a board that contains three connectors and status LEDs. The connectors are for the VersaGlide, main board and keyboard.

1. Remove one screw and lift the LED board starting at the left and working right to disconnect the LED board from the main board.
2. Slide the LED board to the left to remove.

### *LED Status/Power Switch Board*



**A** – Connector P40 (underside)    **B** – Connector P42    **C** – Connector P41

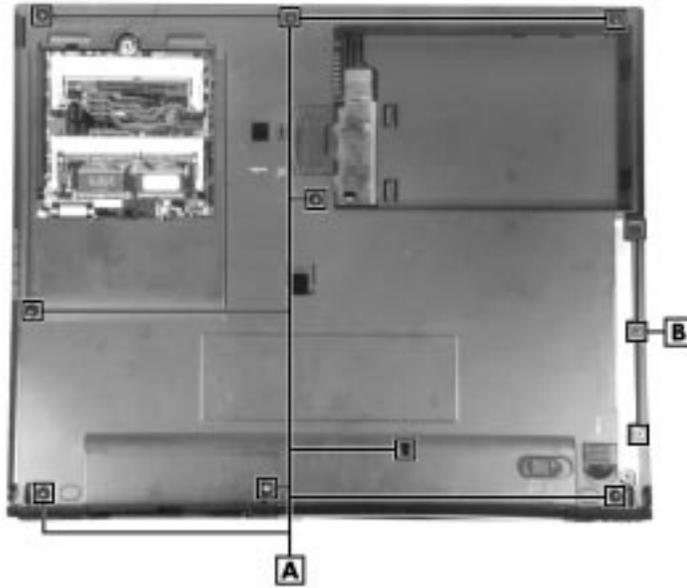
### *Top Cover*

The following describes the steps to remove the top cover.

1. Turn the system over so the bottom is facing up.
2. Remove a total of 14 screws:
  - 9 from the bottom surface (**A**)
  - 3 from the Versa Bay III Bay (**B**)
  - 2 underneath keyboard, if not already removed
3. Turn the notebook over, remove two screws, and start at the right and work left separating the top cover from the bottom assembly.

---

### ***Location of bottom screws***



**A** – Bottom Screws

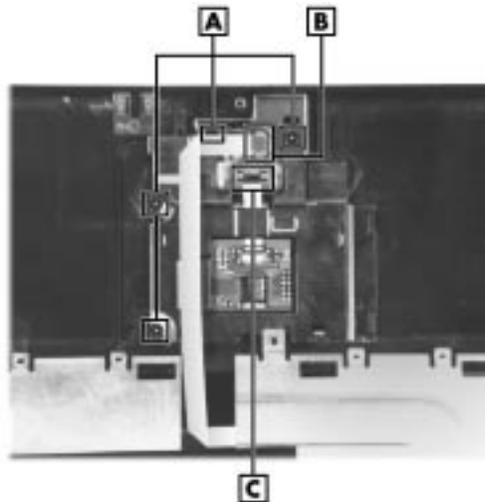
**B** – VersaBay III Screws

### ***VersaGlide Assembly***

The VersaGlide assembly is on the underside of the top cover. Follow the steps to remove the VersaGlide assembly.

1. Disconnect the cable at connector P60 and remove four screws.
2. Slide the assembly to the right and lift to remove.

### ***VersaGlide Assembly***



**A** – Screws

**B** – Connector P60

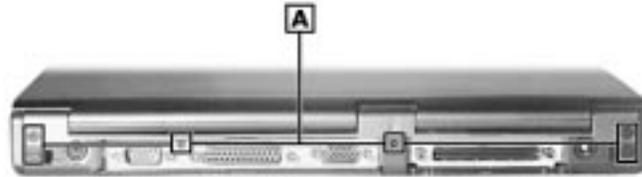
**C** – Connector P61

---

### *LCD Panel Assembly*

1. Remove six screws (**A**) on the back as shown in the following figure.
2. Disconnect the LCD panel cable at P3 on the main board.
3. Lift the LCD panel from the bottom cover assembly.

#### ***Back of system***



A – Screws

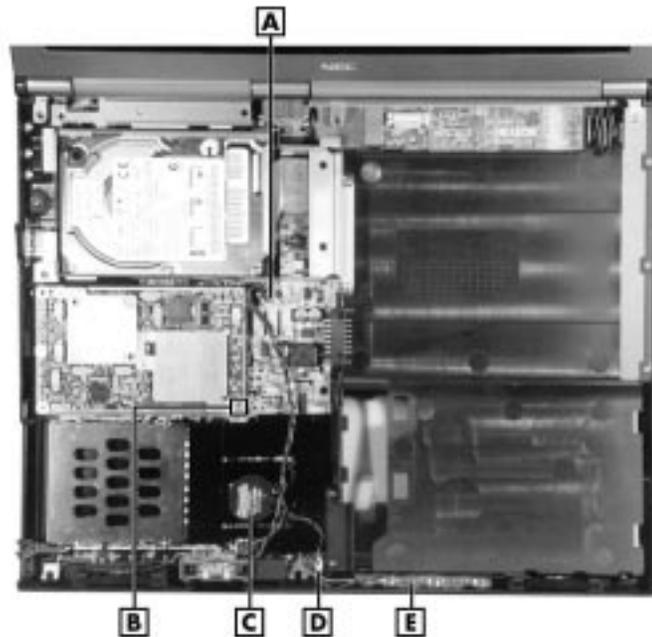
### *Bridge Battery, CMOS Battery, CPU Assembly and Speaker Assembly*

1. Disconnect the CMOS battery cable from P13 on the main board.
2. The CMOS battery (**C**) is held in place by a double-sided pressure tape. Gently pry up to remove.
3. Disconnect the Speaker assembly cable from P23 (**A**).
4. Lift the left and right speaker from the bottom assembly being careful not to stretch the cable.
5. Disconnect the Bridge battery cable from P11 (**D**) on the main board.
6. The Bridge battery (**E**) is held in place by a double-sided tape gently pry up to remove.

- 
7. Remove one screw (B) and lift to disconnect the CPU subassembly from the main board.

See the following figure.

***Internal Components***



A – Connector P23  
D – Connector P11

B – Screw  
E – Bridge Battery

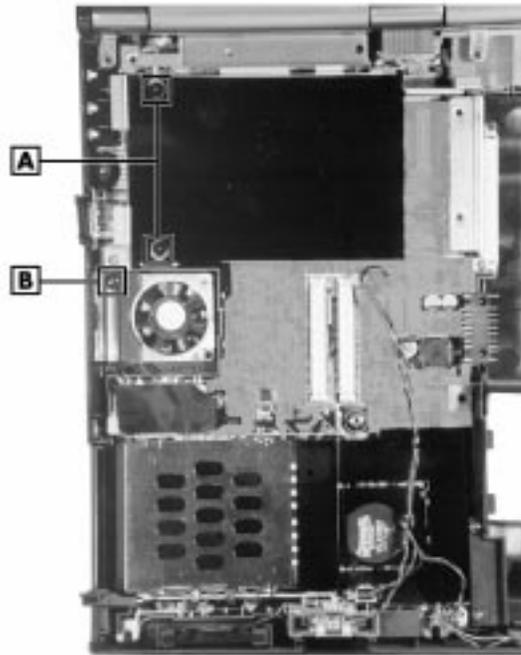
C – CMOS Battery

---

## **Main Board Assembly**

1. Disconnect the two screws (**A**) that hold the hard drive bracket in place.
2. Lift the main board from the remainder of the system, lifting from right to left and sliding to the right.
3. Disconnect the fan cable at P5 on the underside of the main board.

### **Main Board and Fan Assembly**

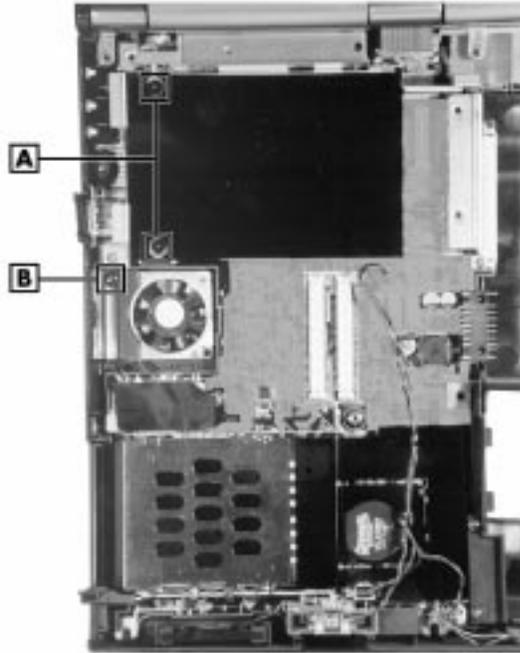


**A** – Screws      **B** – Screw

---

### *Fan and Fan Duct*

1. Remove one screw (**B**) to release the fan duct.
2. The fan is held in place via double-sided tape. To remove the fan, lift from the bottom cover.



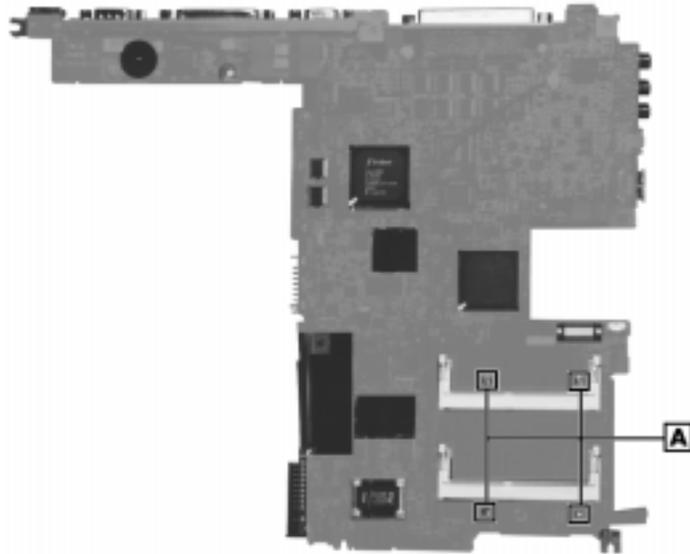
**A** – Screws      **B** – Screw

---

### *PC Card Assembly*

1. On the underside of the main board remove four screws (A).
2. Turn the main board over and disconnect the PC card assembly from the main board.

### *PC Card Assembly*



A – Screws

### *Microphone*

1. Turn the main board over; disconnect the microphone cable at P4.
2. Remove the microphone by sliding away from the main board.

This completes the disassembly process.

## ***Reassembly***

Reassembly is the reverse of the disassembly process. Use care to insure that all cables and screws are returned to their proper positions.

# 4

## System Board Layout

- LED Status Board
- Main Board
- VersaGlide Assembly

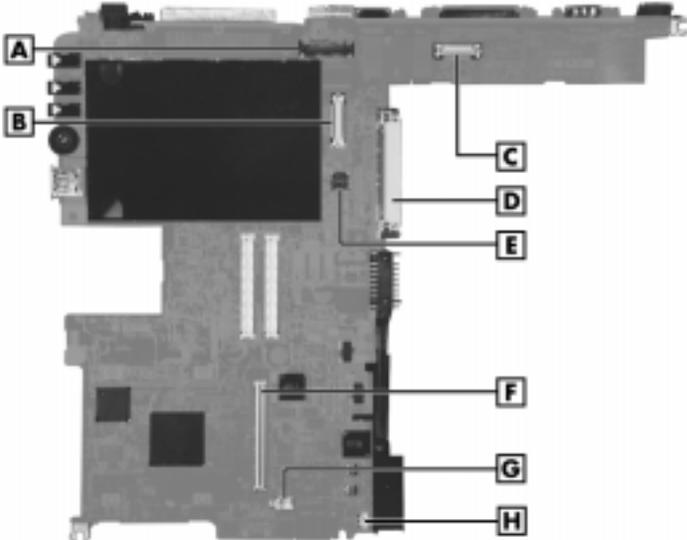
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# LED Status Board



A – Connector P40 (underside)    B – Connector P42    C – Connector P41

# Main Board

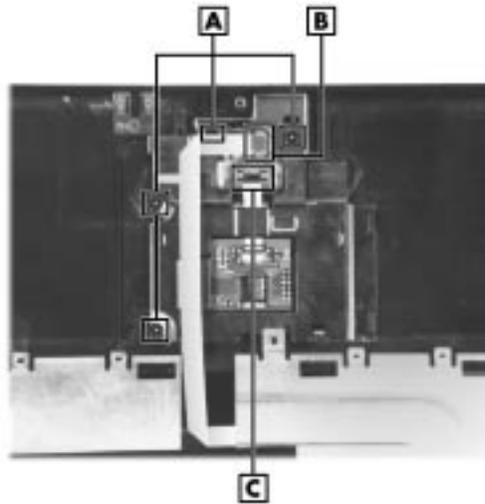


A – Connector P3                      B – Connector P6                      C – Connector P35  
D – Connector P7                      E – Dip Switch                      F – Connector PC Card  
G – Connector P13                      H – Connector P11

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# ***VersaGlide Assembly***

***VersaGlide Assembly***



**A – Screws      B – Connector P60      C – Connector P61**

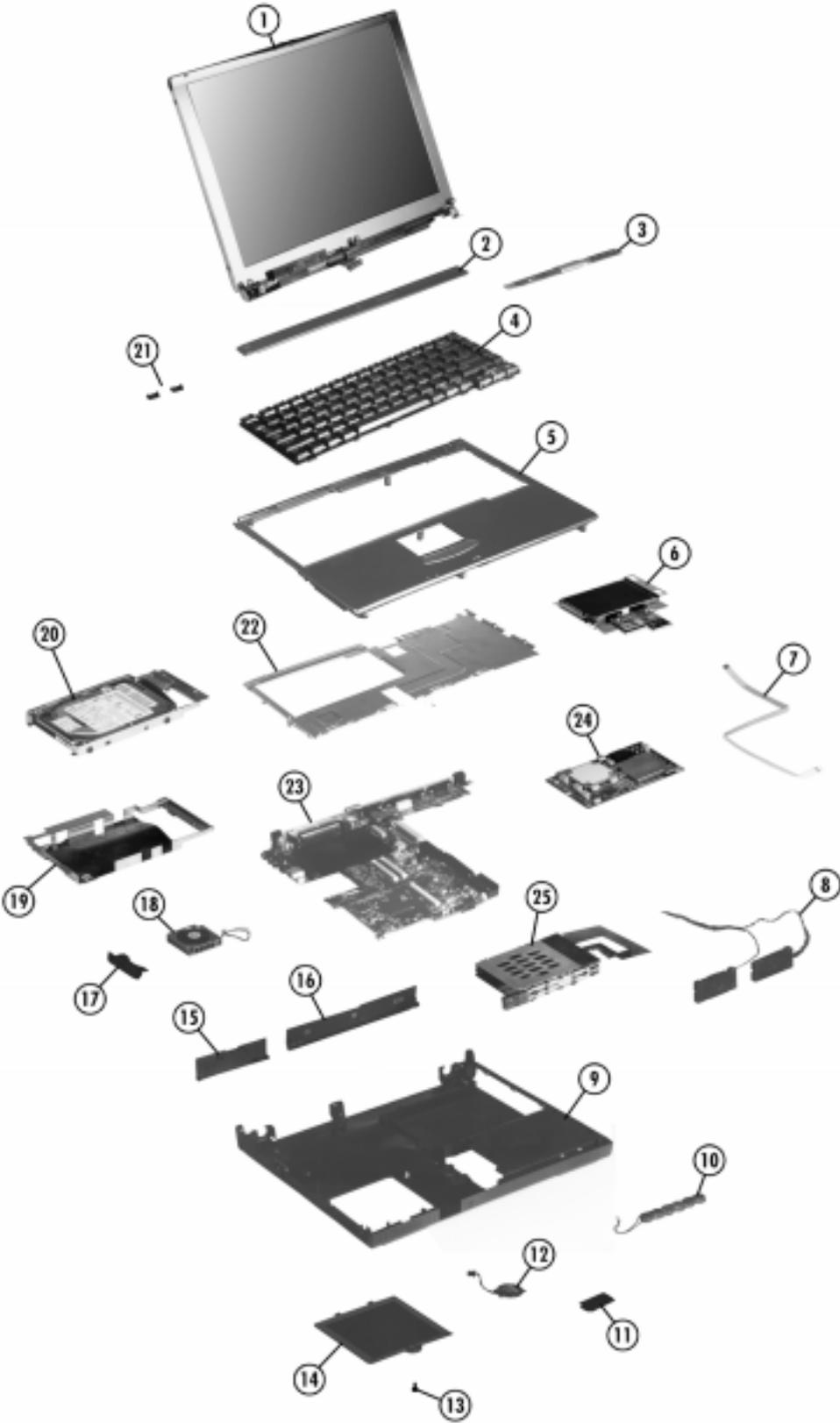
# 5

## Illustrated Parts Breakdown

- NEC Versa SX Illustrated Parts Breakdown
- Parts List

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# NEC Versa SX Illustrated Parts Breakdown



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# Parts List

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

## Parts List

Item Number	Description	Part Number
1	LCD Assembly (13.3"XGA) LCD Assembly (14.1"XGA)	158-057568-000 158-057568-001
2	Keyboard Cover Assembly	136-243287-001B
3	LED Package (R)	136-533683-004A
4	Keyboard V201 (US)	808-897359-001-A
5	Keyboard Top Cover Assembly	136-243284-001E
6	VersaGlide Sub-Assembly	158-057555-001
7	VersaGlide FCC Cable	808-742860-009A
8	Speaker Cable Assembly	808-878089-001A
9	Bottom Base Assembly	136-243285-001C
10	Bridge Battery BH072400-89	804-021205-005A
11	IRDA Lens	136-640082-001A
12	CMOS Battery (LITHIUM BATT)	804-020804-009A
13	Coin Screw (DIMM Cap)	136-640207-A
14	DIMM Cap Assembly	136-243448-001A
15	Docking Station Cap	136-640092-001A
16	I/F Cap (Serial CRT Parallel)	136-640091-001B
17	Fan Duct	136-640200-B
18	Fan	808-876742-004A
19	HDD Plate	136-644987-A
20	HDD Assembly (2-GB) HDD Assembly (3-GB) HDD Assembly (4-GB) HDD Assembly (6-GB)	136-243288-002B 136-243288-001B 136-243288-003B 136-243288-004B
21	Screw Cap (older models)	136-640066-001A
22	Top Cover Support Plate	136-640090-C
23	Main Board Assembly	136-533683-001C

## **Parts List**

<b>Item Number</b>	<b>Description</b>	<b>Part Number</b>
24	CPU Board Sub Assembly (TM200)	136-243293-002A
	CPU Board Sub Assembly (TM233)	136-243293-001A
	CPU Board Sub Assembly (MD233)	136-243294-001A
	CPU Board Sub Assembly (MD266)	136-243294-002A
	CPU Board Sub Assembly (MD300)	136-244464-001A
	CPU 400 MHz, Dixon, PII, PE-MMC1	802-143380-408A
	333MHz,CPU,DIXON,PII,PE-MMCC1	802-143380-406A
	CPU Board Sub Assembly (Dixon 366)	802-143380-707A
25	PC Card Assembly	currently unavailable
*	AC Adapter	808-892246-002A
	AC Adapter Cable	158-057544-000
*	Battery Li-Ion BL108362	804-021458-002A
*	Buzzer	802-870018-009A
*	CD-ROM Drive(24X)	136-243444-001B
*	Coupling FPC Cable	808-877616-001A
*	DVD Drive Module Pak	OP-270-69001
*	FDD Pack Assembly	158-057556-001A
*	DVD PC Card Accelerator	OP-270-69001-1
*	Gasket (HD)	136-642847-A
*	VersaGlide FFC Cable	808-742860-009A
*	VersaGlide SW I/F Cable	808-742980-003A
*	HDD I/F FPC Package	808-877604-003A
*	Insulator HDD I/F	136-642848-A
*	KMM466S424BT-F0 (Memory DIMM 32MB)	802-143004-606A
*	KMM466S823BT3-F0 (Memory DIMM 64MB)	802-143005-606A
*	Microphone Assembly	808-878088-001A
*	PCMCIA Shutter	136-640081-001A
*	Rubber, CPU (MD)	136-642740-001A
*	Rubber, CPU (TM)	136-642740-002A
*	Rubber Foot (F)	136-639217-001A
*	Rubber Foot (R)	136-639218-001A
*	Shutter Spring	136-634108-A
*	Speaker Rubber	136-640065-A
*	Sub Board Assembly	136-533683-002A
*	SuperDisk 120MB Drive Pak	OP-230-69002

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### ***Parts List***

<b>Item Number</b>	<b>Description</b>	<b>Part Number</b>
*	Tilt Foot (L)	136-640087-001B
*	Tilt Foot (R)	136-640088-001B
*	Top Cover (included with 136-243284-001-C)	136-243284-001A
*	USB Cap	136-640193-001A
*	NEC Logo Badge	136-804605-004A
*	NEC Versa SX Logo Nameplate	136-640214-003A
*	Weight Saver Pack	136-641008-001A
*	NEC Versa SX User's Guide	819-200483-001
*	NEC Versa SX Service and Reference Manual	819-200487-001

\* Item not shown on IPB

# 6

## **Preventive Maintenance**

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

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# Preventive Maintenance

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

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 **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.

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## *Cleaning the Notebook Exterior*

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

1. Power off the system and remove all battery packs. 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 damp cloth or alcohol wipe to clean 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 the Chapter 3, Disassembly and Reassembly.
2. Dust or vacuum (with a rubber-tipped nozzle) the inside of the system, particularly the motherboard surface. Use care to avoid damaging or dislodging any components or cables.
3. Inspect all cable connectors for damage. Ensure that connectors are seated properly before replacing the cover.

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## ***Protecting the Disk Drives***

To protect the disk drives 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, this can cause a hard disk crash.
- Use hard disk maintenance program like DEFRAG under DOS, or acquire Norton Utilities SPEEDISK programs. These programs reorganize your hard disk by eliminating fragmentation and improves 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 packs:

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

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- Always charge the battery packs 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

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# Quick Troubleshooting

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

## Quick Troubleshooting

Problem	Corrective Action
No power	<p>Check that the AC adapter is plugged into the power connector of the system. Also, check that the AC adapter is plugged into a properly grounded AC power outlet.</p> <p>If using the battery as the main power source, check if the battery pack is the right type, is charged, and is inserted correctly.</p> <p>Check the I/O board of the system. Is it inserted into the CPU board connector properly? Otherwise, replace the I/O board.</p>
Data on the LCD is unreadable	<p>Check LCD Panel View Expansion in BIOS, Press <b>Fn-F10</b> to toggle Panel View Expansion for DOS mode.</p> <p>Check if installed VGA driver is correct.</p> <p>Check the VGA controller chip on the I/O board for any loose soldering.</p> <p>Replace the CPU board.</p>
Battery power does not last long	<p>Make sure that the power management features are enabled.</p> <p>Recharge the battery pack for 2 hours or up to 100% before using again.</p> <p>Replace the battery pack.</p>
System halts during boot sequence	<p>Check condition of selected boot device (diskette, hard disk or CD-ROM) for bad boot track or incorrect OS files.</p> <p>Try booting from a new bootable diskette and recopy or repartition the hard disk.</p> <p>Check for any BIOS error messages on the display screen.</p> <p>Replace the CPU board or I/O board.</p>
I/O processing malfunctions	<p>Check the connections of all internal devices.</p> <p>Replace the CPU board or I/O board.</p>

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### **Quick Troubleshooting**

<b>Problem</b>	<b>Corrective Action</b>
Serial device does not work	<p>Check if the device driver is installed properly.</p> <p>Check if the serial device is connected properly.</p> <p>Check the device drive installation for any IRQ or I/O address conflict.</p> <p>Replace the serial device.</p> <p>Check the I/O controller chip on the main board for any cold or loose soldering.</p> <p>Replace the I/O board.</p>
Parallel device does not work	<p>Check all the connections.</p> <p>Check if the external device is turned on.</p> <p>Check the device drive installation for any IRQ or I/O address conflict.</p> <p>Test another parallel device.</p> <p>Check I/O controller chip on the main board for any cold or loosed soldering.</p> <p>Replace the I/O board.</p>

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## ***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?
- Have you checked the AUTOEXEC.BAT and CONFIG.SYS files for errors?
- Is the Suspend Mode activated? Press any key or press the Power switch to power on the system.

# 8

## **Getting Services and Support**

- Services and Support Contact Information
- NEC CSD Web
- NEC CSD FTP Sites
- Email/Fax to Support Services
- NEC CSD Bulletin Board
- NEC CSD Support Services
- NEC CSD Customer Assistance Center
- Versa Laptop Fulfillment Hotline

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## Services and Support Contact Information

Service	Contact Information
NEC CSD Web and FTP Sites	Web address: <a href="http://www.nec-computers.com">www.nec-computers.com</a>  FTP site: <a href="ftp://ftp.neccsdeast.com">ftp.neccsdeast.com</a>
Email to NEC CSD Support Services through a commercial online service or the Internet.	Internet email address: <a href="mailto:tech-support@neccsd.com">tech-support@neccsd.com</a>
Fax Service to NEC CSD Support Services	801-981-3133
NEC CSD Bulletin Board System	916-379-4499
NEC CSD Support Services (U.S. and Canada customers only).	800-632-4525
NEC CSD Customer Assistance Center	888-632-9128
Versa Laptop Fulfillment Hotline	800-842-6446

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

See the booklet, "Getting Service and Support in Asia, Australia, and Europe" to find out how to contact the local office in your country.

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If you have access to a telephone, modem, and/or fax machine, 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.

### NEC CSD Web Site

If you have a modem or a network board, you can access the NEC CSD Web site. You can do this through a commercial online service or through your Internet account. The NEC CSD Web site contains general information about NEC CSD 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
  - Click, the NEC CSD Customer Service newsletter
  - an automated email form for your technical support questions
  - a Reseller's area (password accessible).

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

**<http://www.nec-computers.com/>**

## ***NEC CSD FTP Site***

You can use the Internet to access the NEC CSD FTP (file transfer protocol) site to download various files (video drivers, printer drivers, BIOS updates, and Setup Disk files). The files are essentially the same files as on the NEC CSD Web site and the NEC CSD Bulletin Board System.

To access the NEC CSD FTP site, enter the following Internet ftp address through your service:

**<ftp.neccsdeast.com/>**

Once in the file menu, follow the prompts to choose and download the file(s) you want.

## ***Email/Fax to Support Services***

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

**[tech-support@neccsd.com](mailto:tech-support@neccsd.com)**

You can also fax technical questions to the NEC CSD Support Services if you have access to a fax machine or fax/modem. The fax number is:

**(801)-981-3133**

When using the email or fax support service, you should include the following words in the subject field for prompt response from the appropriate technical person:

- Desktop
- Monitor
- CD-ROM

- 
- Printer
  - Notebook.

You should provide as much specific information about your questions as possible. Also, if you are sending a fax, please include your voice telephone number and your fax number with the question. You will receive a response to your questions within one business day.

## ***NEC CSD Bulletin Board***

If you have access to a modem, you can use the NEC CSD Bulletin Board System (BBS) to get the latest information on hardware and software. The BBS allows you to download files (video drivers, printer drivers, BIOS updates, etc.) to a diskette for system enhancements and upgrades.



NEC CSD recommends that you download files from a Bulletin Board System to a diskette and not to your hard disk drive.

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Log onto the BBS as follows.

1. From the Windows desktop, click the Start button.
2. Point to Programs. Point to Accessories and then click HyperTerminal.
3. Double click the Hypertrm.exe icon. The HyperTerminal program appears.
4. Follow the instructions on the screen to set up your modem. Click the HyperTerminal help button for information about dialing the phone number.

If you need to check communications settings, check that the settings match the following BBS parameters.

- Baud rate: select any baud rate that matches your modem
  - Parity: none
  - Data bits: 8
  - Stop bits: 1
  - Flow control: Xon/Xoff (select Hardware if using 14.4 bps or higher).
5. Following the HyperTerminal instructions, enter the BBS phone number (916-379-4499). Your business phone system and/or location might require a **9 1** or **1** prefix.

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 **Note:** The first time that you use the BBS, you are requested to provide information for a new user questionnaire.

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6. Press **Enter** twice.
7. Enter your first name, last name, and password. Press **Enter** after each.
8. Follow the screen prompts until the Main menu appears.
9. At the Main menu, select **J** to join a conference. Select **Conference 2** for the laptop and portable PC conference.
10. From the Main menu, press **F** and **Enter** for the File menu.
11. At the File menu, select **F** for a list of downloadable files. Follow the prompts to select a file for downloading.

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 **CAUTION**

Executable files automatically format your diskette when you download files from the BBS. Formatting destroys any data on the diskette. Before you download files from the BBS, check that you do not have information on the diskette that you need.

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After you complete downloading your file, log off the BBS as follows:

1. Press **Enter** (to continue).
2. Press **G** (command for Goodbye/Hangup).
3. Press **Enter**.

## ***NEC CSD Support Services***

NEC CSD also offers direct technical support through Support Services. (NEC CSD Support Services is for U.S. and Canadian customers only; international customers should contact the local NEC 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 CSD Support Services, toll free, at **1-800-632-4525** (U.S. and Canada only) for the following support.

- System hardware — toll-free phone support is limited to the length of the standard warranty.

For hardware support after the standard warranty, get system hardware support for a fee.

- 
- Preinstalled software — toll-free phone support for 90 days from the time of your first call to the NEC CSD Support Services.

After the initial 90 days, get preinstalled software for a fee.

Please have available your system's name, model number, serial number, and as much information as possible about your system's problem before calling.

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

## ***NEC CSD Customer Assistance Center***

NEC CSD offers Customer Service for extended warranty and contract information, spare parts ordering, warranty claims, repair services, and service authorizations.

Direct assistance is available Monday through Friday from 8:30a.m. to 8:00p.m. EST. Call the NEC CSD Customer Assistance Center, toll free, at **1-888-632-9128** (U.S. and Canada only).

## ***Versa Laptop Fulfillment Hotline***

**(800) 842-6446**

NEC CSD provides driver files and BIOS updates free of charge through our Bulletin Board System (BBS). Also, diskettes containing these updates can be mailed at a rate of \$15/per disk for duplication, shipping and handling. Call the fulfillment center from 8:30 a.m. to 6:00 p.m. (EST), Monday through Friday.

# 9

## Specifications

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

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# System Components

The following system component specifications are standard except where noted.

## System Processor

- Intel Pentium — 200-MHz, 233-MHz MMX
- Intel Pentium II — 233-MHz, 266-MHz, 300-MHz, 333-MHz, 366-MHz

## Architecture

32-bit Peripheral Component Interconnect (PCI)

## Random Access Memory

- Standard Main Memory — 32 or 64-MB SDRAM SO-DIMM
- Optional Expansion — 1 slot
  - Expandable in 32-MB, 64-MB, or 128-MB increments
  - Maximum 256-MB
- Video Ram — 2 MB SGRAM
- L2 Cache RAM — 512-KB or 256-KB (333-MHz and 366-MHz only)

## Read-Only Memory

256 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
- 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-adaptor
- Expansion — 1 port, 240-pin for optional NEC Versa Dock, optional NEC Versa PortBar, or optional external FDD Connector Kit
- Microphone — 1 port, 3-pin, Mini Pin Jack
- Stereo Headphones — 1 port, 3-pin, Mini Pin Jack, .5 watts per channel

- 
- Stereo Line-In — 1 port, 3-pin, Mini Pin Jack
  - DC In — 1 port, for AC adapter cable
  - USB port — 1 port, 4 pin

### **Speakers**

Two built-in, 0.3 watts (W) each with a maximum 0.5 watt (W) output

- 16-bit stereo, 44 Khz
- Sound BlasterPRO compatible
- Sound Controller - ESS 1978SA (Maestro 2E)

### **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 varies, depending on the model.

- 13.3-inch high resolution active matrix Thin Film Transistor (TFT), Extended Graphics Array (XGA) color display
  - Resolution — 1024 x 768
  - Colors — 16 Million, max
- 14.1-inch high resolution active matrix Thin Film Transistor (TFT), Extended Graphics Array (XGA) color display
  - Resolution — 1024 x 768
  - Colors — 16 Million, max

### **Keyboard**

Membrane 85 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 — 2.8 mm

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### Diskette Drive

- Size — 3.5-inch
- Capacity — 1.44 MB (formatted), 2 MB (unformatted)
- Access Time (average) — 94ms
- Transfer Rate — 250 to 500 K/bps
- Interleave 1:1
- Controller — NS PC87338VJG

### VersaBay III SuperDisk™ Drive

- Formatted Capacity:
  - Optical diskette — 120 MB
  - High-Density floppy diskette — 1.44 MB
  - Double-Density floppy diskette — 720 KB
- Data Transfer Rate — 4 MB/sec
- Track to track seek rate — 3 ms

### Hard Disk Drive

- Capacity — Internal 2.1-GB, 3.2-GB, 4-GB, or 6-GB 9.5 mm removable IDE hard disk drive
- Track-to-track seek rate — 3 ms
- Average seek time — 13 ms (read), 14 ms (write)
- Revolutions per minute — 4200
- Data transfer rate — 16.6 MB/sec
- Media data rates — 69.8 bit/sec (max)
- Mean Time Between Failure (MTBF) — 300,000 hours

### 24X-speed CD-ROM Drive

- Type — 5-inch CD-ROM Pack
- Average Data Transfer Rates — 1500 KB/second (mode 1), 1710 KB/ second (mode2)
- Read Rate — 1650 KB/sec max, 1500 KB/sec avg
- Burst Transfer Rate — 11.1 MB/sec (PIO mode2);13.3 MB/sec /DMA mode; PIO Mode 3 compatible (with IORDY)
- Average Access Time — 150 milliseconds (ms)
- 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)

## **Power**

### **AC Adapter**

- Input Voltage — 100 to 240 volts (V) AC, 50 or 60 Hz, 1.0 A
- Output Voltage — 15.0 V DC, 4.0 A (60 Watts)
- Australia, Europe and Asia use an AC power cable specific to each country's standards.

### **Battery Pack**

- Type — twelve-cell Lithium Ion (Li-Ion)
- Output Voltage — 10.8 V
- Capacity — 3,600 mAH
- Battery Life — Approximately 2-4 hours under typical operating conditions.
- Recharging Time — Approximately 2 hours when the system is on or off.

### **Bridge Battery**

When fully charged, backs up memory contents and system status for up to 30 minutes under Suspend mode.

## **Dimensions**

### **System**

- Width — 12 in. (304.8 mm)
- Depth — 9.8 in. (248.9 mm)
- Height — 1.28 in. (32.5 mm)

### **Battery Pack**

- Width — 3.44 in. (87.4 mm)
- Depth — 5.63 in. (143 mm)
- Height — 0.78 in. (19.8mm)

## **Weight**

- NEC Versa — 4.74 lb (2.15 kg)
- Battery Pack — .85 lb (.38 kg)

---

## **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)

---

# Pin Assignments

## *Keyboard/Mouse Connectors*

Pin	Signal
1	Keyboard Data
2	Mouse Data
3	Ground
4	+5V
5	Keyboard Clock
6	Mouse Clock

## *Serial Port Connector Pin Assignments*

Pin	Signal
1	Data Carrier
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

## *Power Connector*

Pin	Signal
1	Ground
2	DCSYS
3	DCCHG

---

### ***Parallel Printer Pin Assignments***

<b>Pin</b>	<b>Signal</b>
1	Strobe
2	Data Bit 0
3	Data Bit 1
4	Data Bit 2
5	Data Bit
6	Data Bit 4
7	Data Bit 5
8	Data Bit 6
9	Data Bit 7
10	Acknowledge
11	Busy
12	PE
13	Select
14	Auto Feed XT
15	Error
16	Initialize
17	Select In
18 -25	Ground

---

---

### **Hard Disk Drive Connector**

<b>Pin</b>	<b>Signal</b>
1	HDD Access LED
2	+5V
3	Chip Select 0
4	+5
5	Chip Select 1
6	+5V
7	Address 0
8	+5V
9	Address 2
10	+5V
11	Address 1
12	+5V
13	Diagnostic
14	Not Used
15	IRQ
16	Not Used
17	Not Used
18	I/O Channel Ready
19	MS Select
20	I/O Write
21	I/O Read
22	Not Used
23	Data0
24	Data1
25	Data15
26	Data14
27	Data2
28	Data13
29	Data3
30	Not Used
31	Data12
32	Ground
33	Data4
34	Ground
35	Data4

---

---

### ***Hard Disk Drive Connector***

<b>Pin</b>	<b>Signal</b>
36	Ground
37	Data5
38	Ground
39	Data10
40	Ground
41	Data6
42	Ground
43	Data9
44	Ground
45	Data7
46	Not Used
47	Ground
48	Ground
49	RESET
50	Ground

### ***CRT Connector Pin Assignments***

<b>Pin</b>	<b>Signal</b>
1	Red
2	Green
3	Blue
4	OPT1
5	Ground
6	Ground
7	Ground
8	Ground
9	+5V PnP VESA Vcc
10	Ground
11	OPT2
12	PnP VESA Data
13	Horizontal Sync
14	Vertical Sync
15	PnP VESA Clock

---

---

## ***Connector Locations***

<b>Connector(Device)</b>	<b>Location</b>
P3 (LCD Panel)	Main Board
P4 (Microphone)	Main Board
P6 (Hard Drive)	Main Board
P11 (Bridge Battery)	Main Board
P12 (Fan)	Main Board
P13 (CMOS)	Main Board
P23 (Speakers)	Main Board
P25 (CPU)	Main Board
P35 (LED Board)	Main Board
P40 (Main Board)	LED Board
P41 (Keyboard)	LED Board
P42 (VersaGlide)	LED Board

---

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# 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	48 KB	Video ROM (EGA and VGA)
0CC000-0CFFFFh	16 KB	Unused. (Reserved for Adapter ROMs and other devices requiring ROMs)
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-1FFFFFFFh	32 MB	Built-In Extended Memory
200000h-FFFFFFFFh	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***

<b>Controller Master/Slave</b>	<b>Priority</b>	<b>Name</b>	<b>Device</b>
Master	0	IRQ00	SystemTimer 1
Master	1	IRQ01	Keyboard
Master	2	IRQ02	Programmable Controller
Slave	3	IRQ08	Real-time Clock
Slave	4	IRQ09	Video
Slave	5	IRQ10	USB Port
Slave	6	IRQ11	PC Card Bus Controller
Slave	7	IRQ12	PS/2 Mouse
Slave	8	IRQ13	Math Coprocessor (built into CPU)
Slave	9	IRQ14	Hard Disk Controller 1
Slave	10	IRQ15	IDE NEC Versa Dock or PC card in NEC Versa Dock
Master	11	IRQ03	Not used, available
Master	12	IRQ04	Serial Port
Master	13	IRQ05	Sound/PC CardBus Controller
Master	14	IRQ06	Diskette Drive Controller
Master	15	IRQ07	Parallel Port

---

# Glossary

## A

### **application 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

### **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. 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.

### **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 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.

**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.

**super video graphics array (SVGA)**

A color bit-mapped graphics display standard, that provides a resolution of 1024 x 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****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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## Battery Replacement

A lithium battery in some computers maintains system configuration information. In the event that the battery fails to maintain system configuration information, NEC CSD recommends that you replace the battery. For battery replacement information, call your NEC CSD dealer or the NEC CSD Customer Assistance Center.

---

### **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.

---

---

### **ATTENTION**

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. Your bridge battery (not the main battery) is made of nickel-metal hydride (NiMH).

Contact your local waste management officials for other information regarding the environmentally sound collection, recycling, and disposal of the batteries. For additional information on the proper collection or disposal of rechargeable batteries, please call 1-800-8-BATTERY.

(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.

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