NEC Versa® FXi Series Notebook Computers

VERSA FXI

SERVICE AND REFERENCE MANUAL

NEC

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Contents

Preface

This service and reference manual contains the technical information necessary to set up and maintain the NEC Versa® FXi 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:

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

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

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

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

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

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

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

Chapter 8, Getting Service and Support, provides information as to how to contact NEC Computers Inc. for service information, technical support, and product information.

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

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

Abbreviations

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

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

1

System Overview

- Getting to Know the NEC Versa
- Around the Front of the System
- Around the Back of the System
- Around the Left Side of the System
- Around the Right Side of the System
- Around the Bottom of the System
- Internal Components
- Chipset

Getting to Know the NEC Versa

The NEC Versa FXi notebook computer offers you a portable system filled with exciting resources for home, business or travel. Standard features include a powerful Intel® Pentium® III 600-MHz with SpeedStep™ microprocessor or a 500-MHz Celeron microprocessor that works together with the latest Peripheral Component Interconnect (PCI) architecture.

In addition, your system provides a high-performance hard disk drive, an external floppy disk drive, an external CD-ROM drive, and PC card support. As a multimedia system, your NEC Versa also provides the tools needed to create and present impressive images using video clips and sound.

NEC Versa FXi notebook computer

Read the following sections and take a tour around the system.

Around the Front of the System

The NEC Versa FXi 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 FXi comes with a 12.1-inch color Thin Film Transistor (TFT) Extended Graphics Array (XGA) or SuperVideo Graphics Array (SVGA) panel that you can adjust for a comfortable viewing position. To adjust the viewing angle, gently tilt the LCD panel into position.

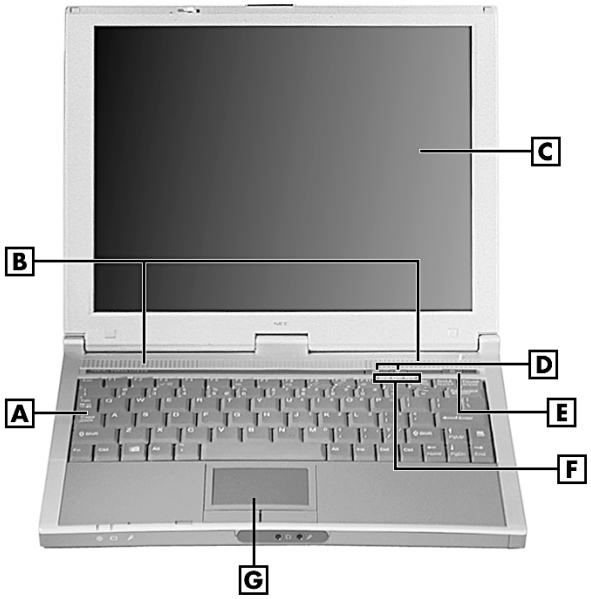
To adjust the LCD panel brightness press the **Fn-F8** and **Fn-F9** functions keys. For more details about using the system's function keys, see the topic later in this chapter, "Keyboard Panel."

If the LCD panel backlight turns off when you attempt to close the panel, toggle the **Fn-F3** function key or close and open the panel to turn on the backlight.

Base Unit

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

LCD panel and base unit

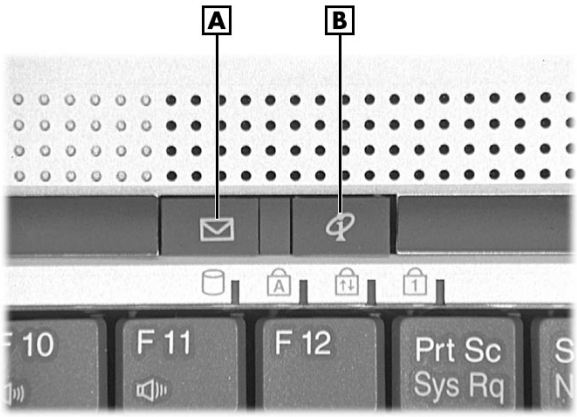


A – Keyboard
B – Stereo Speakers
C – LCD Panel
D – Email/Internet keys
E – Power Button
F – Operating Status LEDs
G – NEC VersaGlide

- Keyboard — 83 keys with the standard QWERTY-key layout. (Models purchased outside of the U.S. and Canada ship with country-specific keyboard layouts.)
- 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.
- LCD Panel — Provides a high-resolution display for sharp effective visuals on your NEC Versa.

- Email Shortcut Key — Launches your dial-up networking connection (if not connected to a LAN) and Outlook Express.
- Internet Shortcut Key — Launches your dial-up networking connection (if not connected to a LAN) and Microsoft® Internet Explorer.

Email/Internet keys



A – Email Shortcut Key

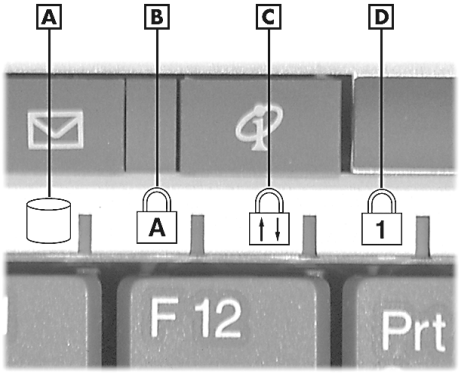
B – Internet Shortcut Key

- Power Button — Slide the Power button to the right to power on, power off, and to resume from Standby mode.

  For more information about the Power button, see the following topic, "Power Button."

- 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 Disk Drive
B – Caps Lock
C – Scroll Lock
D – Num Lock

—— Hard Disk Drive — Lights when the NEC Versa writes data to or retrieves data from the internal hard disk drive.

—— 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.

- 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 menu items.

Power Button

The Power/Sleep button is a "smart" switch, meaning that it recognizes when the system is in Standby mode. If in Standby mode, you cannot power off until you slide the Power button to the right to resume operation. (The BIOS parameter "System Switch" must be set to "Sleep.")

Put the unit in Standby mode when you need to be away from your system for a short period of time and want to return to where you left off. Standby mode shuts down all devices in the system while retaining data and system status. Go to Start, Shutdown, Standby to put your system into Standby mode.

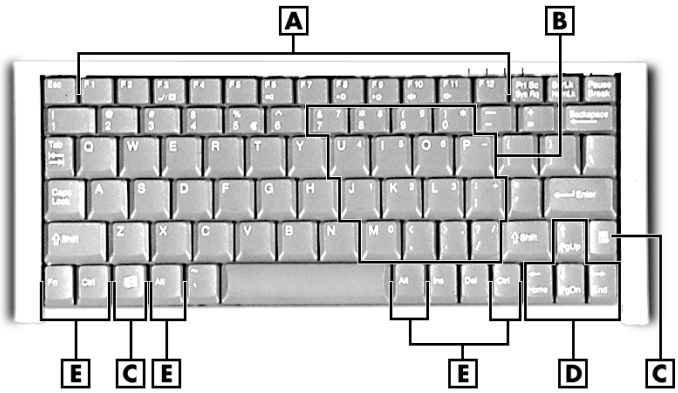
Use the Power button in the following ways:

- Slide the Power to the right to power on.
- Slide the Power button to the right to resume from Standby mode and proceed with normal operation.
- Hold the Power button in place for 4 or more seconds to power off the system (power override). Only use this option if you cannot power off your system using Start, Shutdown.

Keyboard Panel

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

Keyboard



A – Function Keys
B – Numeric Keys
C – Windows® keys
D – Cursor Control Keys
E – Control Keys

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

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

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

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

Fn-F5 — Toggles between Standard and Full backlight.

Fn-F6 — Sets the beeper speaker volume to low, medium, high, or mute.

Fn-F7 — No function when Windows is configured for Advanced Configuration Power Interface (ACPI) mode.

Fn-F8 — Increases the LCD panel brightness.

Fn-F9 — Decreases the LCD panel brightness.

Fn-F10 — Increases the system speaker volume.

Fn-F11 — Decreases the system speaker volume.

Fn-ScrLck — Toggles the Num lock function.

Fn-Pause — Break

Fn-Left Win — Right Windows key.

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

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

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

- Cursor Control keys — Cursor control keys let you position the cursor on the screen where you want. On the screen, the cursor is a blinking underline, block, or vertical line depending on the application. The cursor indicates where the next text typed is inserted.
- Windows keys — In Windows, use the following two keys to facilitate your work.

Quick access to shortcut menus

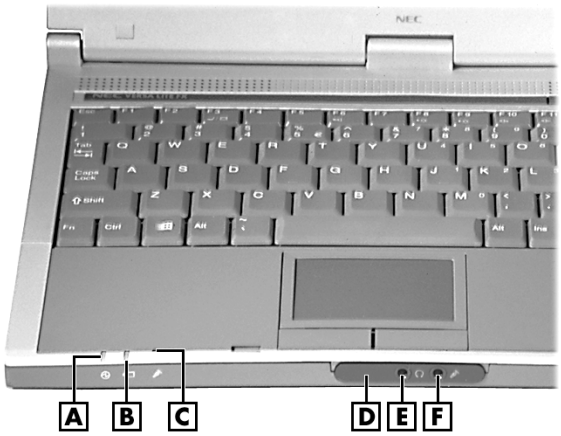
Display the Start menu

- Control keys — **Ctrl, Alt, Fn**, and **Shift** are controls used in conjunction with other keys to change their functions. To use control keys, press and hold the control key while pressing another key. For example, "press **Ctrl c"** means to hold down the **Ctrl** key and type the letter c. How the key combination works depends on the application you are running.
- Typewriter keys — The typewriter keys (also called alphanumeric keys) are used to enter text and characters. Keys with blue printing on them behave differently when combined with control keys or the **Fn** key.

Front Features

The front features of your NEC Versa are described after the figure.

Front features



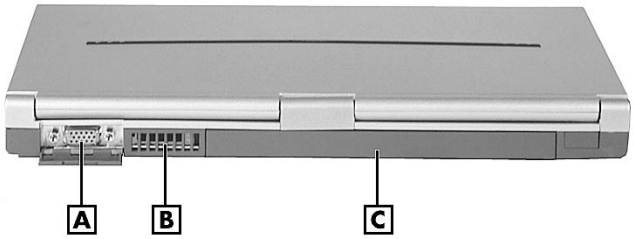
A – Power Status LED
B – Battery Charging LED
C – Microphone
D – IR Port
E – Headphone Jack
F – External Microphone Jack

- Power Status LED — This LED lights to indicate the following:
  - —— Lights green when the system power is on.
  - —— Blinks green when the system is in Standby mode.
  - —— Lights yellow (blinks when in Standby mode) to indicate that battery power is at 8% capacity or less.
  - —— Lights amber (blinks when in Standby mode) to indicate that battery power is at 3% capacity.
- Battery Charging LED — Lights to indicate battery charging activity.
  - —— Lights amber when the primary battery is charging. Blinks amber to indicate an error. The primary battery is installed in the battery bay.
  - —— Lights green when the secondary battery is charging. Blinks green to indicate an error. The secondary (optional) battery is connected to the bottom of the system.
- 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 or to print to an IR-capable printer.
- Headphone Jack — Lets you connect external headphones or speakers to your NEC Versa. Plugging in headphones disables the built-in system speakers.
- 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.

Around the Back of the System

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

Back features



A – External Monitor Port
B – Vents
C – Battery Bay

- 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.
- Vents — Allow your system to cool properly and maintain a safe operating temperature.

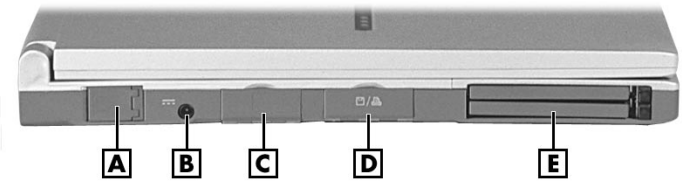
⚠ CAUTION Always keep the vents unobstructed to allow proper system cooling.

- Battery Bay — Contains the system's standard Lithium-Ion (Li-Ion) main battery or an optional Extra Life Li-Ion battery.

Around the Left Side of the System

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

Left side features



A – RJ-11 Jack
B – AC Power Port
C – LAN Cable Jack
D – Floppy Diskette Drive/Parallel Port
E – PC Card Slots

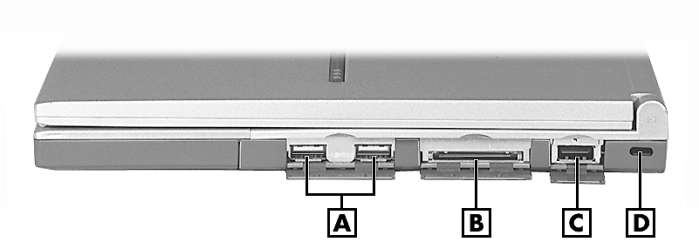
- RJ-11 Jack — Use this jack to connect the internal modem to an analog wall outlet.
- AC Power Port — Use the power jack to attach the NEC Versa to a DC power source, such as the AC adapter or the optional DC auto adapter.

- LAN Cable Jack — Connect the optional LAN adapter cable that ships with your system (if your system is equipped with a LAN cable jack), to connect your system to a local area network (LAN). (Not available in all systems.)
- External Floppy Diskette Drive/Parallel Port — Use this port to connect the external floppy diskette drive or an external parallel device using the cables that ship with your system.
- PC card slots — Provide two slots for inserting two Type II PC cards or one Type III PC card.

Around the Right Side of the System

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

Right side features



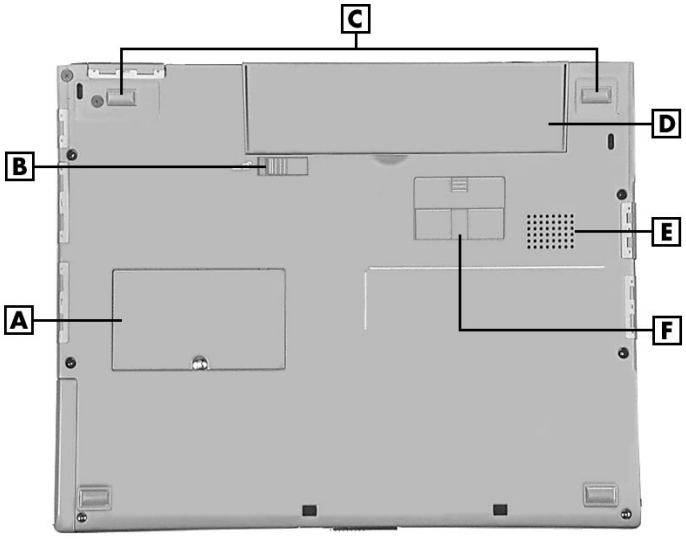
A – USB Ports
B – CD/DVD Port
C – USB Port
D – Kensington Lock

- USB Port — The Universal Serial Bus (USB) port allows you to connect up to 127 USB-equipped peripheral devices (printers, monitors, scanners, etc.) to your NEC Versa.
- CD/DVD Port — Use this port to connect the external CD-ROM drive and the optional CD/RW (CD Read/Write) or DVD drives.
- Kensington Lock — Lets you provide added security by installing an optional Kensington Lock.

Around the Bottom of the System

The bottom of the NEC Versa offers the features shown next. Features are described after the figure.

Bottom features



A – Memory Module Bay
B – Battery Release Latch
C – System Feet
D – Main Battery
E – Vents
F – Maximum Life Battery Connector

- Memory Module Bay — Stores the system's memory module.
- Battery Bay Release Latch — Allows you to release and remove the system's main battery.
- System Feet — Heightens the system to allow proper ventilation.
- Main Battery — Supplies power when the system is not connected to an AC power source.
- Vents — Allows your system to cool properly and maintain a safe operating temperature.

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

- Maximum Life Battery Connector — Attach the optional Maximum Life Battery to this connector.

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 on the bottom of the NEC Versa.

Hard Disk Drive

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

CMOS Battery

This lithium battery (3 Volts, 30 mAH capacity) 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.

Bridge Battery

The bridge battery saves your system status in Standby mode giving you time to install a fully charged battery or connect to AC power when your battery charge becomes low. The bridge battery stores 7.2 Volts, 40 mAH.

ChipSet

The following table provides information on the system chipset.

System Chipset

Chip	Manufacturer	Description
Intel Celeron 500 Intel Pentium III 600	Intel	500 MHz CPU 600 MHz CPU
82440MX	Intel	System Controller
FDC37N869	Standard Microsystems	Super I/O
SM721	Silicon Motion	Video
EV1938	Creative Technology	Audio
29F004TC-90		ROM BIOS
M38813M4	Mitsubishi	Keyboard Controller
TI1420	Texas Instruments	PCI CardBus Controller

2

System Configuration and Setup

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

Power Sources for Your NEC Versa

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

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

- AC adapter connected to an electrical wall outlet (using AC power)
- Battery pack or an optional second battery pack
- Optional Auto adapter (for details about its use, refer to the accessory sheet that ships with the option)

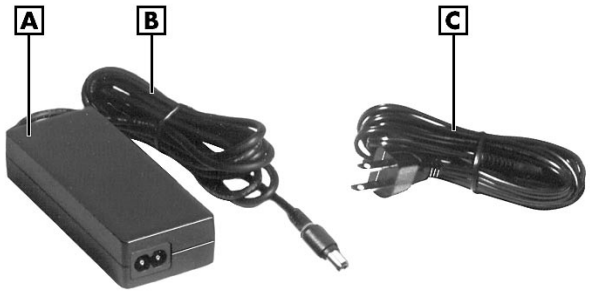
Read the following sections for specific information about using the NEC power sources.

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 when it is connected, whether the NEC Versa is powered on or off.

AC adapter



A – AC Adapter
B – Adapter Cable
C – Power Cable

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

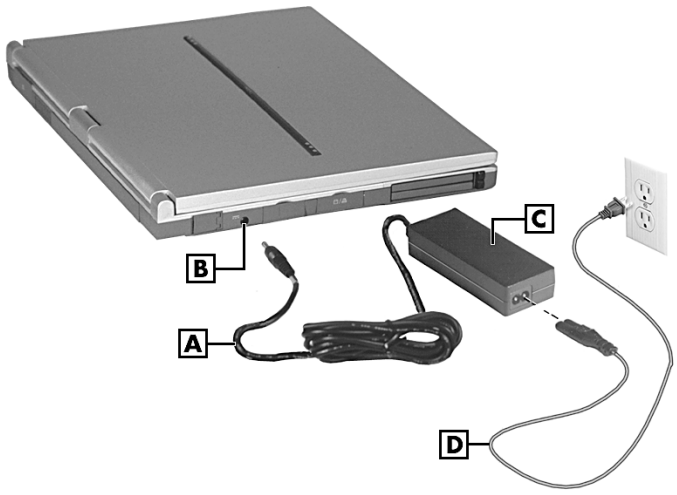
Connecting the AC Adapter

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

Connect the AC adapter as follows:

1. Connect the AC adapter cable to the power port on the left side 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, 50- or 60-Hz wall outlet.

Connecting the AC adapter



A – Adapter Cable
B – AC Power Port
C – AC Adapter
D – Power Cable

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

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

Powering On Your System

Power on the system as follows:

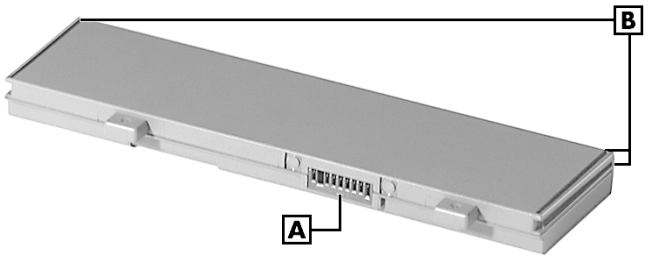
1. Locate the latch on the front of the LCD panel, slide it to the right, and raise the panel.
2. Locate the Power button and slide it to the right to turn on system power.

Note When powering on your NEC Versa running the Windows 2000 operating system, you may encounter a warning message suggesting that a problem exists with the hibernation file on your system. The warning message is inaccurate. To disable this message, simply enable hibernate support. See the section "Windows 2000 Hibernate," in Chapter 3, for details about enabling hibernate support.

Using the Main Battery Pack

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

Lithium-Ion battery



A – Battery Connectors **B** – Alignment Grooves

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

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

Determining Battery Status

Your NEC Versa system provides tools to help you keep track of the main (and an optional) battery's power level. If your system is configured (default setting) to display the power icon on the taskbar, an electrical plug displays when the system is connected to an AC power source or a battery icon displays when the system is not connected to an AC power source.

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

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

Low Battery Status

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

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

Returning the Battery to its Normal State

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

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

Extending Battery Life

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

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. Mixing other manufacturers' 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 when they get dirty.
- Keep the battery out of the reach of children.

Replacing the Battery

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

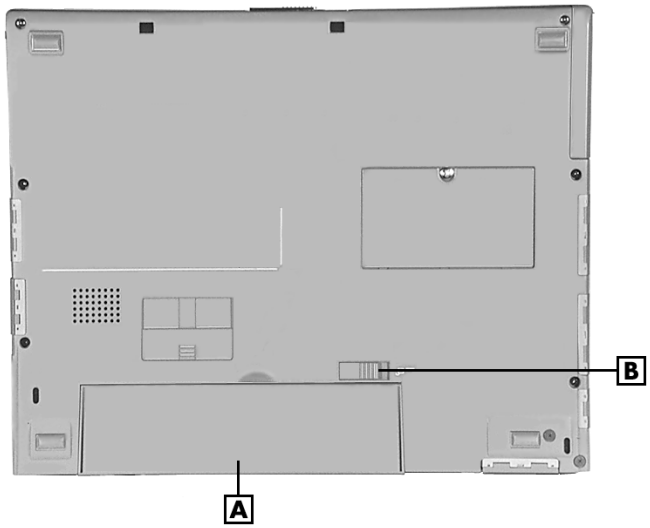
- Shorter work times.
- Discoloration, warping.
- Hot to the touch.
- Strange odor.

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

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

1. Save your files, exit Windows, and turn off system power.
2. Close the LCD panel and turn over the system.
3. Slide the battery release latch toward the right side of the system and hold firmly.

Locating the battery bay release latch

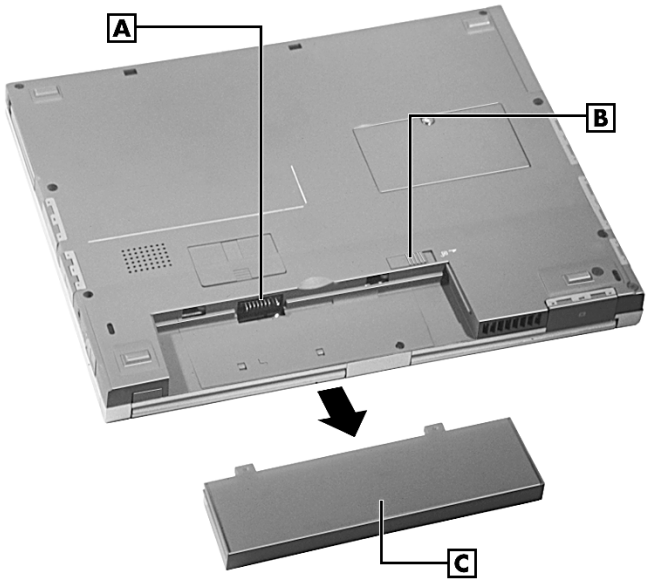


A – Lithium-Ion Battery

B – Battery Release Latch

4. Continue to hold the battery release latch as you slide the battery out of the system.

Removing the battery

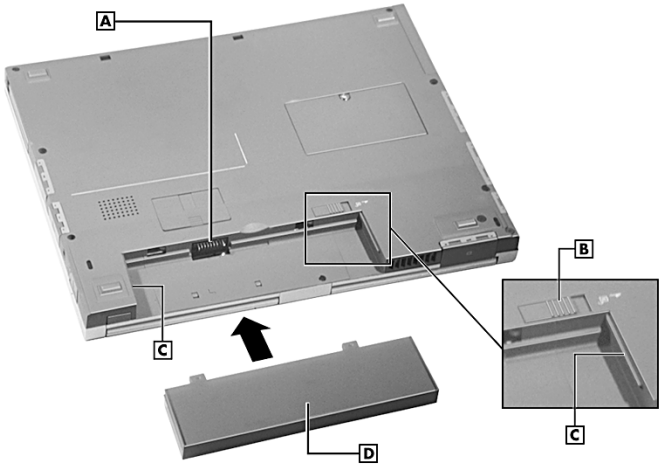


A – Battery Bay Connectors
B – Battery Bay Release Latch
C – Lithium-Ion Battery

5. Insert the new battery as follows:

- Locate the alignment groove on the edge of the battery.
- Locate the alignment groove inside the battery bay.
- Align the grooves on the battery with the grooves in the bay.
- Slide the battery into the bay until securely locked into place.

Inserting the battery pack



A – Battery Bay Connectors
B – Battery Bay Release Latch
C – Alignment Grooves
D – Lithium-Ion Battery

6. Turn over the system.

Charging the Battery

Charge the main (primary) battery and secondary (optional) battery by simply connecting your NEC Versa FXi system to an AC power source. To monitor the charging activity, observe the battery charging LED on the front of the system. The battery charging LED lights as follows:

- Lights amber when the primary battery is charging.
- Blinks amber if the primary battery encounters an error while charging.
- Lights green when the secondary battery is charging.
- Blinks green if the secondary battery encounters an error while charging.

Battery Precautions

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

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

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

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

If the battery leaks:

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

Precautions for Recharging the Battery

Adhere to the following precautions when recharging the primary or secondary battery.

- Charge the battery for the specified charge time only.
- During charging, keep the environmental temperature between 32°F and 104°F (0°C to 40°C).

System Batteries

Your NEC Versa is equipped with a main, Lithium-Ion battery, and two backup batteries that help to prevent data loss. In addition, your system provides the option to attach a second Lithium-Ion battery to the connector on the bottom of the system, extending battery life when you are away from an AC power source.

Main Battery

The standard Lithium-Ion (Li-Ion) battery provides the main power source in your NEC Versa FXi computer. See Specifications for a list of battery specifications. In addition to this battery, the CMOS battery and bridge battery also provide system power.

CMOS Battery

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

Bridge Battery

The bridge battery saves your system status in Standby mode giving you time to install a fully charged battery or connect to AC power when your battery charge becomes low.

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

BIOS Setup

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

Use BIOS Setup to:

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

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

Press <F2> to enter Setup.

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

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

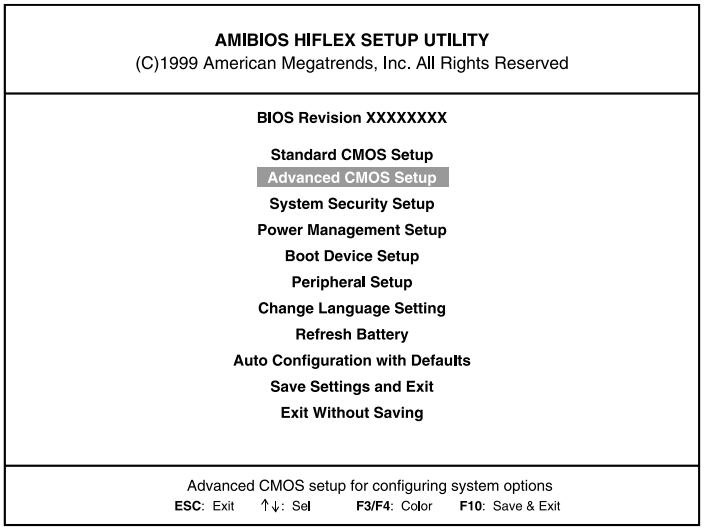
Pausing the Screen

To pause the screen during POST to view the BIOS revision number and other POST messages, press and hold the Insert key while using the Power button to power on the system.

BIOS Setup Main Menu

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

BIOS Setup Main Menu

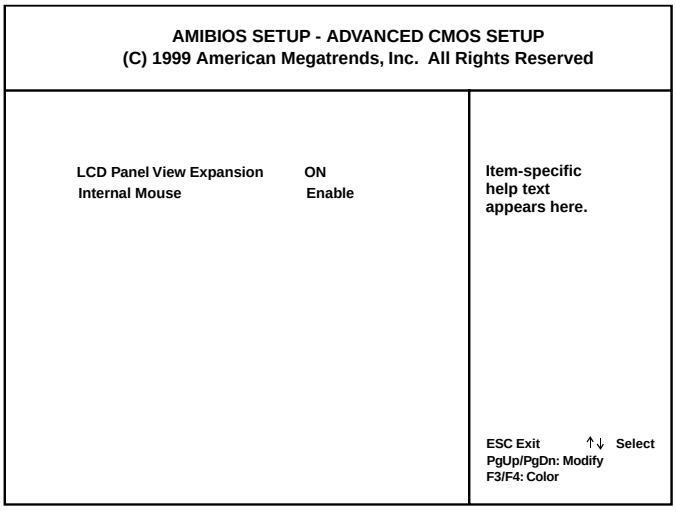


Use the up and down arrow keys (located on the lower right corner of the keyboard) to toggle through the BIOS Setup menu items.

Looking at Screens

BIOS setup screens have three areas as shown next.

Advanced CMOS Setup



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

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

Using Keys

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

BIOS Setup Key Functions

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

Checking/Setting System Parameters

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

The BIOS Setup utility is broken down as follows:

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

Resetting System Parameters

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

Standard CMOS Setup

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

Standard CMOS Setup

Parameter	Default Setting	Alternate Setting(s)
Date	mm/dd/yy	
System Memory		(automatically detected)
Time	hh/mm/ss	
Diskette Drive A	1.44 MB, 3.5	Not installed, 1.44 MB
Internal	Auto	CD-ROM/CD-RW, User Defined, Not installed
External	Auto	CD-ROM/CD-RW, User Defined, Not installed
Boot Sector Virus Protection	Disabled	Enabled

- Date — Sets 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 **Fn-PgUp** or **Fn-PgDn** key to change the numbers within each field.

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

  To set the time use the **Tab** or arrow keys to move from field to field. Use the **PgUp** or **PgDn** key to change the numbers within each field.
- Diskette Drive — Designates the drive type for your diskette drive.
- Internal Drive — Assigns devices to the internal drive in your system.
- External Drive — Assigns devices to the external drive in your system.
- Boot Sector Virus Protection — Write protects the boot sector of the hard disk drive to avoid infection by some virus types.

Advanced CMOS Setup

Use the Advanced CMOS Setup to set the following functions.

Advanced CMOS Setup

Parameter	Default Setting	Alternate Setting(s)
LCD Panel View Expansion	On	Off
Internal Mouse	Enabled	Disabled

- LCD Panel View Expansion — Specifies whether the panel view is reduced/off or expanded/on.
- Internal Mouse — Allows you to use the internal mouse (VersaGlide).

System Security Setup

Use the System Security Setup to establish system passwords.

System Security Setup

Parameter	Default Setting	Alternate Setting(s)
Assign Supervisor Password	Press Enter	
Assign User Password	Press Enter	
Boot Password Required	No	Yes
Resume Password Required	No	Yes
Assign HDD Password	Press Enter	
Internal HDD password	Disabled	Enabled

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

Security Protection

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

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

To establish password protection for resuming from Standby or Hibernation modes, you must do the following:

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

Power Management Setup

Your Versa FXi system ships with the Windows 2000 or Windows 98 operating system that uses the Advanced Configuration and Power Interface (ACPI) to control most power management functions through the Power Management Properties screen in Windows. The BIOS Power Management Setup screen is described next.

Note In Windows 2000/98, the term "Standby" is functionally the same as the term "Suspend" that is referenced in the BIOS Setup utility.

Power Management Setup

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

[1] Available when power savings is set to Custom.
[2] Resume alarm time is selectable when wake up from suspend alarm is set.

- System Switch — Sets the Power button as a power switch or a sleep button.
- Power Management Under AC — Specifies whether to enable power management features when AC power is in use. When AC power is connected to your NEC Versa system, power management is 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 — Specifies one of four levels of power management. (Not applicable in Windows 2000/98 with ACPI.)

  — High Performance — Provides good battery life and best performance with only minimal power conservation. Use while on the road or traveling short distances.

  — Longest Life — Provides best battery life, the maximum amount of power savings, and good performance. Use while traveling long distances.

  — Off — Disables power management and all device timeouts. Works well in an office environment while powering your NEC Versa with AC power.

  — Custom — Lets you define power management levels and specific device timeouts according to your own needs and present environment. Custom lets you set the following timeouts.

Custom Timeout Options

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

- LCD Suspend — Allows you to suspend/resume when the LCD panel is closed. (Not applicable in Windows 2000/98 with ACPI.)
- Suspend Option — Specifies either Suspend or Save to File (STF) as the default power management mode.
- Automatic STF — Enables the system, after 30 minutes in Suspend mode, to save the current working environment to a special file on the hard disk and to power down the system.
- Panel Brightness — Selects the LCD screen brightness.
- Suspend Warning Tone — Specifies whether the system warning tone sounds when Suspend mode starts. It is best to keep this option enabled. (Not applicable in Windows 2000/98 with ACPI.)
- Remote Power On — Allows the serial port modem or LAN board to wake the system on a ring signal.
- Wake Up from Suspend Alarm/Resume Alarm Time — Allows the alarm to resume the system from suspend. Designates the time parameter in five minutes increments. (Not applicable in Windows 2000/98 with ACPI.)

Boot Device Setup

Boot Device Setup allows you to define the following functions.

Boot Device Setup

Parameter	Default Setting	Alternate Setting(s)
Quick Boot	Enabled	Disabled
Silent Boot	Enabled	Disabled, Black
Boot Display Device	Simul. Mode	CRT only, LCD only
BootUp NumLock	Off	On
1st Boot Device[1]	CD-ROM/CD-RW	Disabled/IDE HDD/ Floppy/Network
2nd Boot Device[1]	Floppy	Disabled/IDE HDD/ CD-ROM/CD-RW
3rd Boot Device[1]	IDE HDD	Disabled/Floppy/CD-ROM/CD-RW
Try Other Boot Devices	Yes	No

[1] Bootable device when set to IDE hard drive. Only one IDE device is allowed to be bootable.

- Quick Boot — Specifies whether the system performs all tests during system boot.
- Silent Boot — Specifies whether to display the NEC logo during the system boot.
- Boot Display Device — Specifies the display device(s) for system boot messages.
- BootUp NumLock — Specifies whether NumLock is On or Off at system startup.
- Boot Devices — Specifies the sequence of boot devices.
- Try other Boot Devices — Specifies whether or not the system attempts to boot from other devices if all selected boot devices fail to boot.

Peripheral Setup

In the Windows 2000/98 environment, most device management is controlled through the Windows device manager. Use the Windows device manager to enable and disable devices on your NEC Versa FXi system.

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

Peripheral Setup

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

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

Peripheral Setup allows you to define the following functions.

- USB Controller — Enables or disables the USB controller.
- Internal Hard Drive — Enables or disables the internal hard drive.
- Parallel Port/Parallel Mode — Disables or reassigns the parallel port and select a parallel port mode.
- IR Serial Port — Enables, disables, or reassigns the IR serial port.

Other BIOS Setup Options

BIOS Setup offers other options, including the following:

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

Updating the BIOS

The BIOS is code transmitted onto your system's microprocessor, or central processing unit (CPU). As indicated in this chapter, you use the BIOS Setup utility to configure your system's software and hardware features. Only use the BIOS Update Diskette for your specific model, to update your NEC Versa system BIOS.

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

To update the system BIOS you must:

- Obtain the BIOS Update
- Prepare the BIOS Update Diskette
- Enable the BIOS Flash Switch Setting
- Perform the BIOS Update
- Disable the BIOS Flash Setting

Obtaining the BIOS Update

If you are informed that the default BIOS needs an update, contact NEC Computers Support Services at (800) 632-4525, Fax (801) 579-1552, or access the Support Services web site, **support.neccomp.com** to obtain a copy of the BIOS update.

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

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

Preparing the BIOS Update Diskette

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

Follow these instructions to prepare the BIOS Update Diskette.

1. Scan your hard drive for any computer viruses.
2. Enable the diskette for write access.
3. Insert the diskette into the external floppy diskette drive.
4. Type **a:install** (where a: is the floppy diskette drive) at the DOS prompt and follow the on-screen instructions.

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

   The system prompts you when the process is complete.
5. Scan the BIOS Update Diskette for computer viruses.

   The diskette is ready for use.
6. Follow the instructions later in this chapter, "Enabling the BIOS Flash Switch."

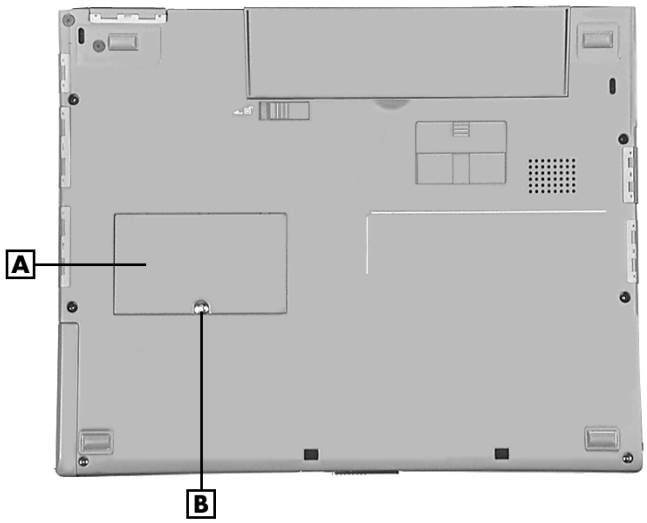
Enabling the BIOS Flash Switch

Before performing the BIOS update, be sure to enable BIOS flash switch. Set switch 5 to "ON" before performing the BIOS update.

Follow these steps to enable the BIOS flash switch.

1. Make sure the system is powered off and that no peripheral devices are attached.
2. Turn over the system and locate the memory module bay.

Locating the memory module bay

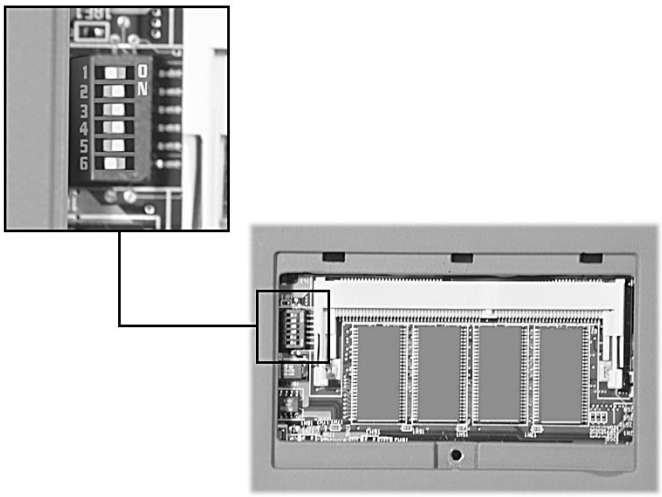


A – Memory Module Bay Cover **B** – Screw

3. Remove the screw and bay cover.
4. Locate the dip switch block. Using a fine-tipped object, change switch 5 to "ON" to enable BIOS flash.

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

BIOS flash switch enabled



Dip switches 2, 3, 4, and 5 set to “On

Note The system memory expansion slots are also located here. Therefore, if you need to install/replace SO-DIMM modules, you might want to do so while the system is already disassembled.

5. Replace the memory module bay cover and screw.
6. Turn over the system.
7. Follow the instructions later in this chapter, “Performing the BIOS Update.”

Performing the BIOS Update

Follow these steps to perform the 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 the floppy diskette drive.
2. Power on the computer with the diskette in the floppy diskette drive. The computer boots and automatically loads the utility. Read the message that displays and follow the instructions.
3. Press **Enter** to continue.

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

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

Power off your computer. The next time you power on your computer, you will have the latest NEC Versa FXi computer BIOS revision level.

8. Enter Setup to restore the default parameter settings.
9. Be sure to modify any custom settings that you may have configured.
10. Disable the BIOS flash switch. Change switch 5 back to "OFF" after completing the BIOS update. For details about enabling and disabling the BIOS flash switch, see the section earlier in this chapter, "Enabling the BIOS Flash Switch."

NEC Utilities

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

The NEC utilities include:

- NEC Customize Utility
- HDPREPEZ Utility

NEC Customize Utility

The NEC Customize utility gives you the option to install or launch:

- Application and Driver CD — Use this option to install a variety of software applications, drivers, utilities, internet browsers, and the NEC Info Center.
- NEC Versa FXi Warm Connect Utility — Use this option to take advantage of warm connecting the CD-ROM drive to your NEC Versa FXi computer.

NEC Customize Utility Screen

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 or Install to initiate the selected option.
4. Follow the on-screen instructions to process the selected option.

   For some of the selected options you are prompted to reboot your system.
5. If necessary, click Exit to close the NEC Customize dialog box.

HDPREPEZ Utility

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

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

Using the HDPREPEZ Utility

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. Go to Start, Shut Down, Restart the computer in DOS mode.
2. At the c: prompt, type **LOCK C:** and press **Enter**.

   A message displays asking you to confirm your command.
3. Press the indicated key to confirm your command.
4. 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.

SpeedStep Applet

Some processors that ship with the NEC Versa FXi notebook computer include the Intel® SpeedStep technology that allows you to customize high-performance computing on your NEC Versa, optimizing processing speed and conserving battery life.

If your processor is equipped with SpeedStep technology, an icon appears on your taskbar allowing you to adjust processing properties. However, the default settings are recommended for optimal performance and battery conservation.

Application and Driver CD

A variety of third-party software applications, drivers, utilities, internet browsers and the NEC Info Center are provided on the Application and Driver (A&D) CD for the NEC Versa FXi that ships with your system. Some of the drivers are already installed as part of your operating system environment. The additional software on the Application and Driver CD lets you take full advantage of your system resources.

Use the Application and Driver CD to install applications, drivers, utilities, internet browsers, and the NEC Info Center. Some software applications install their own desktop icon allowing quick access to the application. You can also access an application through the Start, Programs menu.

Launching the Application and Driver CD with Windows 2000

Follow these procedures to launch the Application and Driver CD using NEC Customize with Windows 2000.

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

   The Application and Driver CD dialog box appears.

Launching the Application and Driver CD with Windows 98

Follow these procedures to launch the Application and Driver CD using NEC Customize with Windows 98.

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

   The Application and Driver CD dialog box appears.

Application and Driver CD Dialog Box

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.

Installing the Application and Driver CD Software

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

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

   Follow the on-screen instructions to install your selection.
4. Click Exit to close the Application and Driver CD dialog box.
5. Remove the CD from the CD-ROM drive when the installation is complete.

3

Disassembly and Reassembly

- Required Tools and Equipment
- Disassembly
- Reassembly

Required Tools and Equipment

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

- Tweezers
- Small flat-head screwdriver
- Small Phillips screwdrivers (# 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 instructions that follow.

Note The following instructions cover two slightly different disassembly procedures. Some earlier units did not have a user-removable hard drive. Follow the instructions carefully to properly disassemble the systems.

When disassembling the system unit, follow these general rules.

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

Battery

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

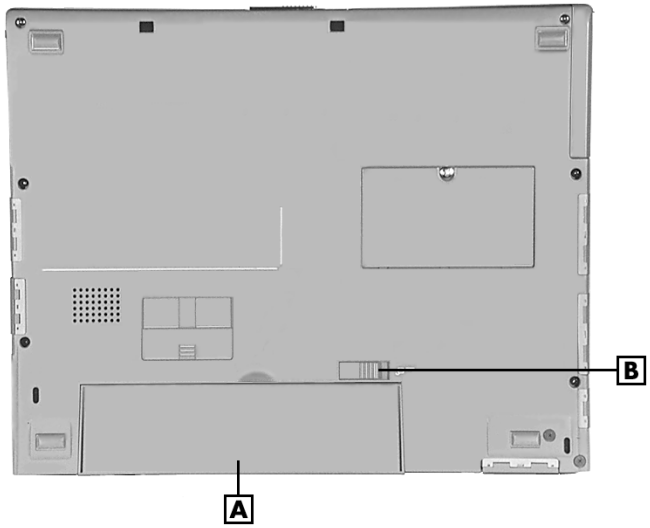
Note Use the batteries in the NEC Versa computer for which they are designed. Installing another manufacturer's battery, or using a combination of very old and new batteries can deteriorate battery and equipment performance.

---

1. Save your files, exit Windows, and turn off system power.
2. Close the LCD panel and turn over the system.

3. Slide the battery release latch toward the right side of the system and hold firmly.

Locating the battery bay release latch

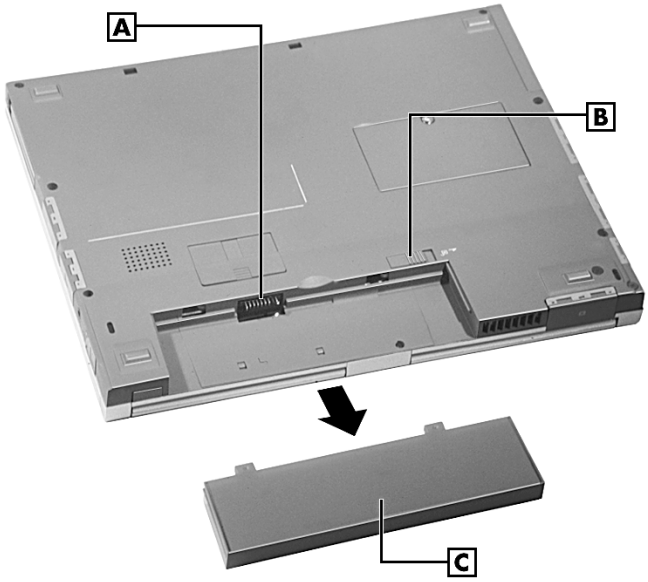


A – Lithium-Ion Battery

B – Battery Release Latch

4. Continue to hold the battery release latch as you slide the battery out of the system.

Removing the battery



A – Battery Bay Connectors
B – Battery Bay Release Latch

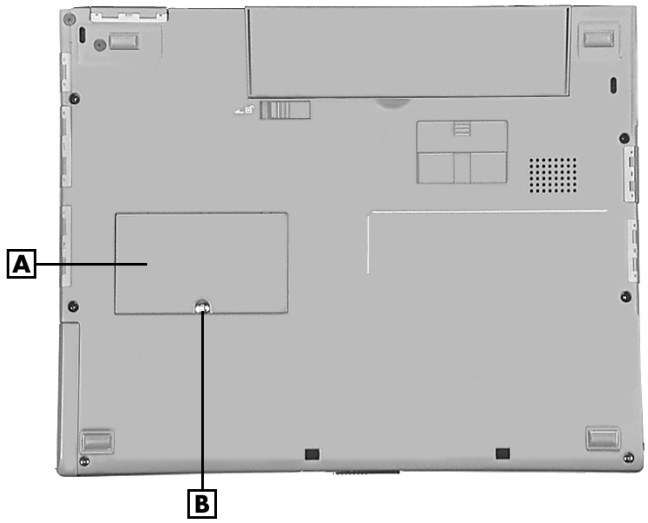
C – Lithium-Ion Battery

Memory Module and Switch Settings

Use the following steps to remove the memory module and access the switch settings.

1. Close the LCD panel.
2. Turn over the system and locate the memory module bay.

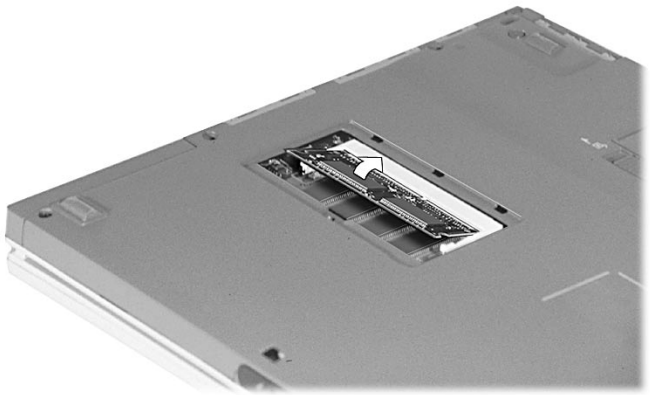
Locating the memory module bay



A – Memory Module Bay Cover **B** – Screw

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

Removing an installed SO-DIMM



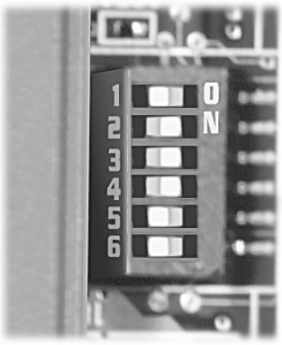
Note The system switches are also located in the memory module bay. Therefore, if you need to set any system switches, do it while the system is already disassembled.

Switch Settings

A six-position dip switch is located on the bottom of the system in the memory module bay. 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 is erased.
- Switch 2 — Keyboard select; Default is “ON” for U.S. 83-key keyboard.
- Switch 3 — Reserved for factory use; Default is “ON.”
- Switch 4 — Keyboard select; Default is “ON” for U.S. 83-key keyboard.
- Switch 5 — BIOS flash enable; Default is “OFF” (disable). Before updating your BIOS, change the setting to “ON.”
- Switch 6 — Logo select; Default is “OFF” for U.S.

Default switch settings

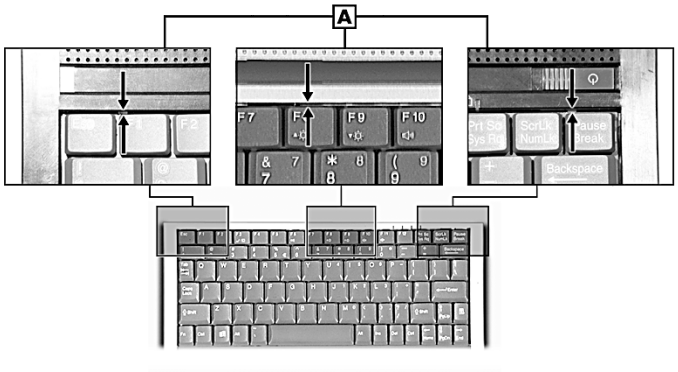


Keyboard

Use the following steps to remove the keyboard assembly.

1. Make sure that the system is powered off and that no peripheral devices are attached.
2. Open the LCD panel.
3. Locate the three keyboard locking tabs: one on the upper left of the keyboard, one above the F8 key, and the other on the upper right of the keyboard.

Locating the keyboard locking tabs



A – Locking Tab

4. Using a small flat-head screwdriver, release the locking tabs by pushing them toward the back of the system. (Release the locking tabs in the direction of the cable.)
5. With the tabs released, carefully lift the keyboard assembly out of the system. Disconnect the keyboard cable from connector P8 on the main board.

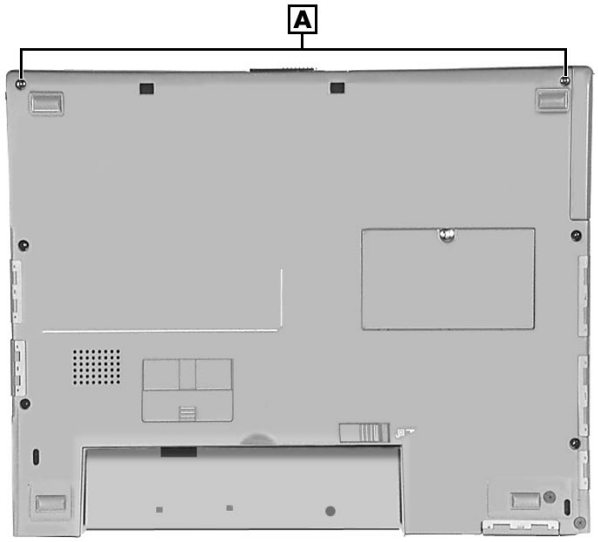
Note Remove the keyboard assembly, as directed here, before you attempt to remove any of the assemblies in the subsequent topics.

VersaGlide Assembly

Use the following procedure to remove the VersaGlide assembly.

1. Remove the keyboard, close the LCD panel, and turn the system over.
2. Locate and remove the two bottom screws securing the front cover assembly to the system.

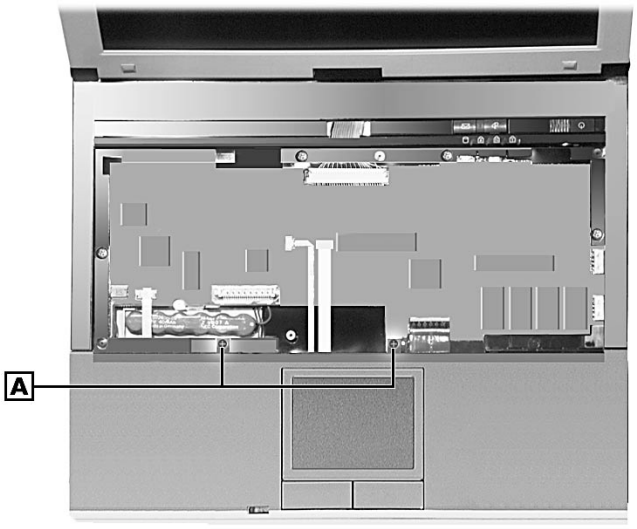
Locating/Removing the bottom screws



A – Screw

3. Turn the system over and open the LCD panel. Locate and remove the two top screws securing the front cover assembly to the system.

Locating/Removing the top screws



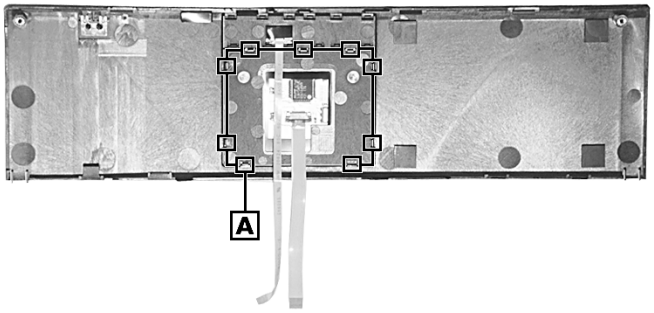
A – Screw

4. Slowly remove the front cover assembly by unsnapping the sides from the system base unit. Do not lift the front cover away from the system.

5. Disconnect the two cables from connectors P9 and P10 from the main board. Slide the cables out from under the bar and lift the front cover away from the system. (Release the locking tabs in the direction of the cable.)

6. Turn the front cover over and locate the VersaGlide locking tabs.

Locating the VersaGlide locking tabs



A – Locking Tab

7. Remove the VersaGlide from the front cover by pushing in the locking tabs.

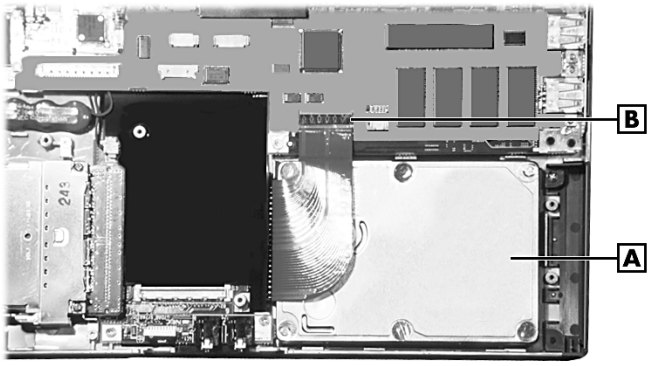
Note Remove the front cover assembly, as directed here, before you attempt to remove any of the assemblies in the subsequent topics. (You must remove the keyboard first.)

Hard Disk Drive

Use the following steps to remove the internal hard disk drive.

1. Remove the keyboard and front cover assembly from the system.
2. The hard disk drive is located in the right-side bay under the front cover. No screws secure the drive. Remove the drive as follows.
   - Disconnect the hard disk drive cable from connector P16 on the main board.
   - Slightly lift the drive out of the bay.
   - Carefully remove the drive cable connector from the main board.

Removing the hard disk drive



A – Hard Disk Drive

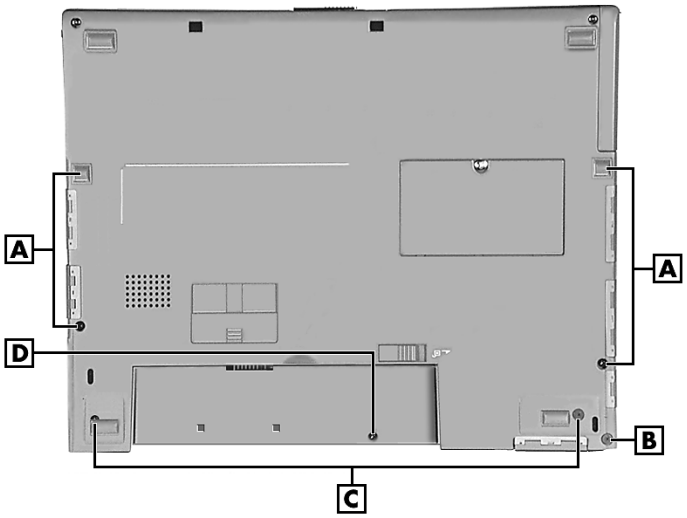
B – Hard Disk Drive Cable Connector

Top Cover

Use the following procedure to remove the top cover assembly.

1. Remove the keyboard and front cover assembly from the system.
2. Close the LCD panel and turn the system over.
3. Remove the battery, then remove the screw in the battery bay.
4. Locate and remove the screws securing the top cover to the system. Remove the feet (two at A and one at C) and remove the screws under them.

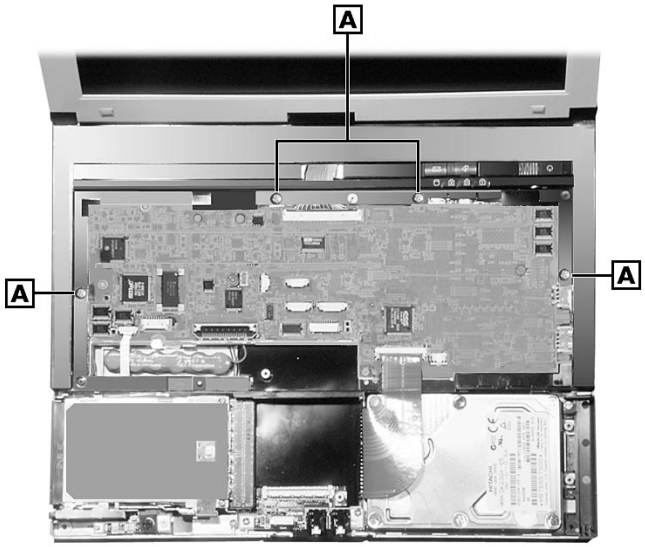
Locating/Removing the six screws



A – Screws (4)
B – Small Screw (1)
C – Large Screws (2)
D – Screw (1)

5. Turn the system over and open the LCD panel as far as it will go.
6. Remove the keyboard and front cover assembly from the system.
7. Locate and remove the four screws securing the top cover assembly.

Locating/Removing the four screws



A – Screw

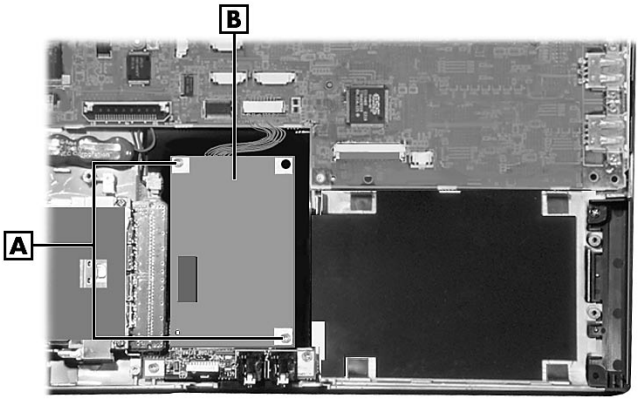
8. Remove the Internet key cable from connector P22 on the main board.
9. Remove the top cover assembly from the system.

Mini-PCI LAN

Use the following procedure to remove the mini-PCI LAN (if installed).

1. Remove the keyboard, front cover assembly, and top cover assembly from the system.
2. Disconnect the mini-PCI LAN from connector P27 on the main board
3. Locate and remove the two screws securing the mini-PCI LAN.

Removing the mini-PCI LAN



A – Screw **B** – Mini-PCI LAN

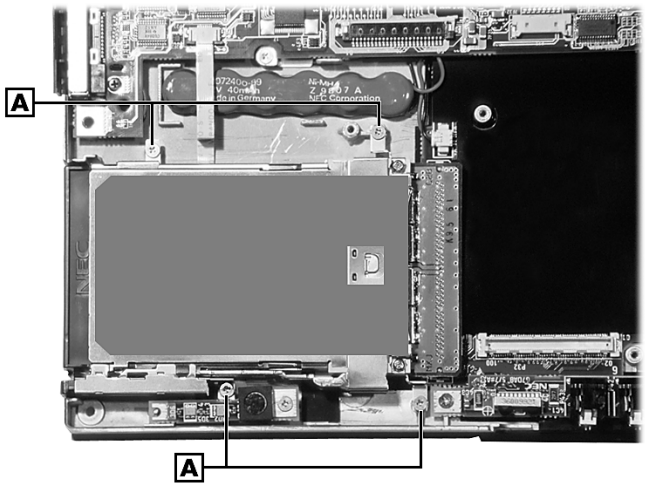
4. Remove the mini-PCI LAN from the system.

PC Card Assembly

Use the following procedure to remove the PC card assembly.

1. Remove the keyboard, front cover assembly, and top cover assembly from the system.
2. The PC card assembly is located in the left-side bay under the front cover. Remove the PC card assembly as follows:
   - Remove the four screws securing the assembly to the system.
   - Pull up the assembly to disconnect it from the I/O board (the PC card assembly's board sits directly above the I/O board connector).
   - Lift the assembly out of the system.

Removing the PC card assembly



A – Screw

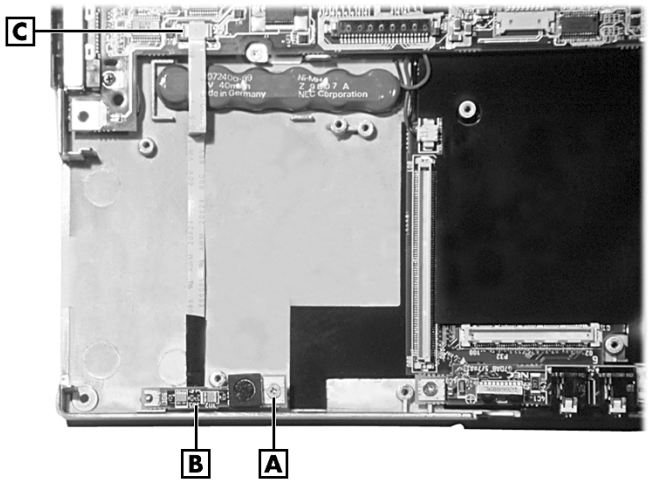
LED Status Board

Use the following steps to remove the LED status board.

1. Remove the keyboard, front cover assembly, top cover assembly, and PC card assembly from the system.
2. Disconnect the LED status board cable from connector P23 on the main board.

3. Locate and remove the screw that secures the board to the system.

Locating/Removing the LED status board screw



A – Screw
B – LED Status Board
C – LED Status Board Cable Connector

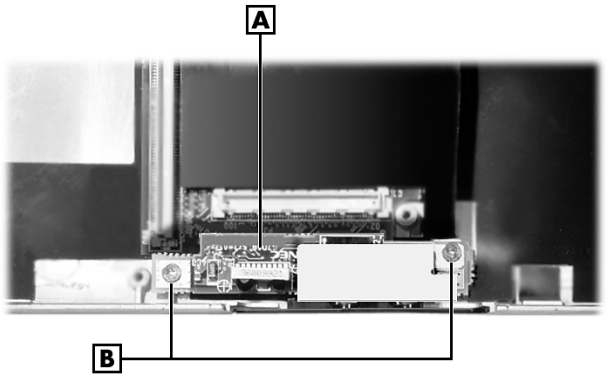
4. Lift the LED status board out of the system.

IR/Sound Board

Use the following procedure to remove the IR/sound board.

1. Remove the keyboard, front cover assembly, top cover assembly, and PC card assembly from the system.
2. Locate and remove the two screws that secure the IR/sound board to the system. (The screw to the right also secures a protective plate not shown in the diagram.) Lift the board out of the system.

Removing the IR/sound board



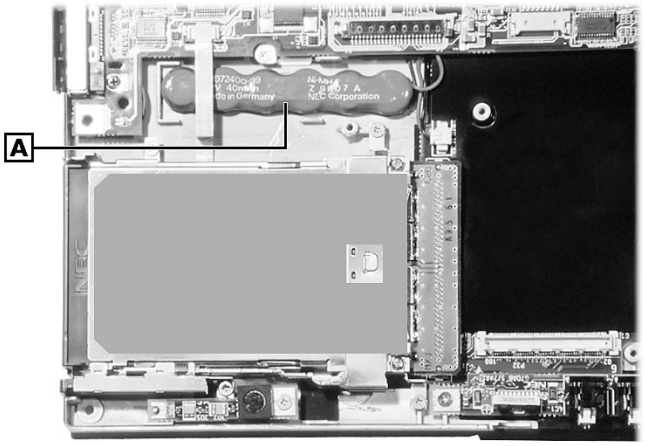
A – IR/Sound Board
B – Screw

Bridge Battery

Use the following steps to remove the bridge battery.

1. Remove the keyboard, front cover assembly, top cover assembly, and PC card assembly from the system.
2. Disconnect the battery from connector P20 on the connector board.
3. Lift the battery out of the system.

Removing the bridge battery



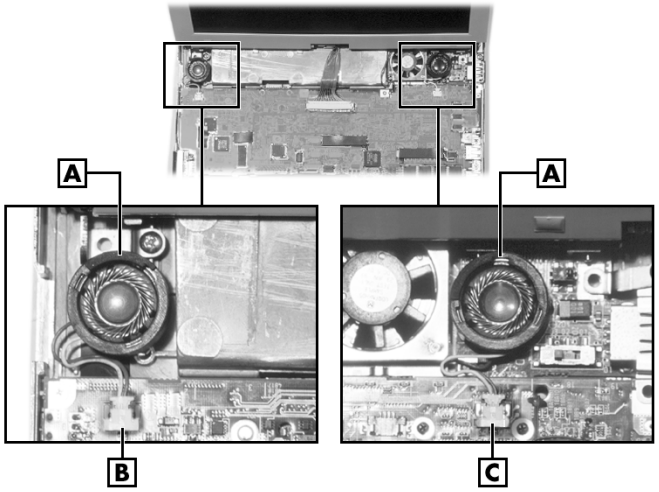
A – Bridge Battery

Speakers

Use the following procedure to remove the speakers.

1. Remove the keyboard, front cover assembly, and top cover assembly from the system.
2. Locate the two speakers in the upper left corner and upper right corner inside the system.

Locating the speakers



A – Speaker
B – Connector P18
C – Connector P19

3. Disconnect the speaker cables from connector P18 and connector P19 on the main board.
4. Lift the speakers out of the system.

Main Board, Fan/Heat Plate, Modem Board, and CMOS Battery

Use the following steps to remove the main board, modem board, and CMOS battery.

1. Remove the keyboard, front cover assembly, top cover assembly, hard disk drive, and PC card assembly from the system.
2. Disconnect the LCD panel cable from connector P2 on the main board.

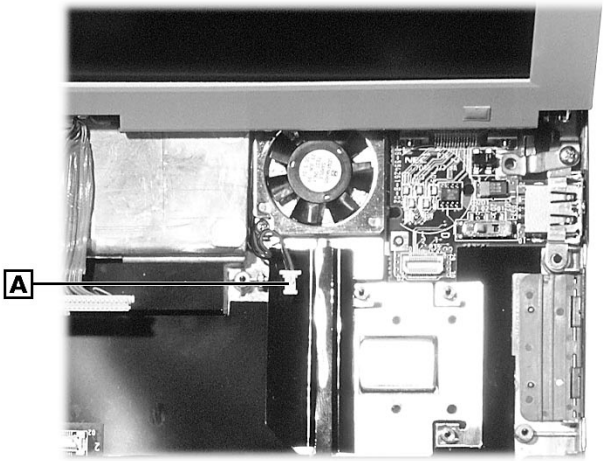
3. Locate and remove the screws that secure the LCD panel to the system.

Locating/Removing the LCD panel screws

A – Screw

4. Disconnect the fan/heat plate from connector P24 on the main board.

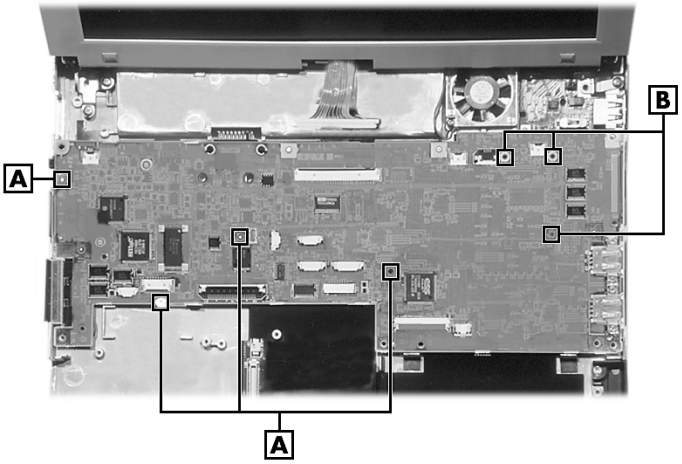
Disconnecting the fan/heat plate connector



A – Connector P24

5. Locate and remove the four screws that secure the main board in the system.
6. Locate and remove the three screws that secure the fan/heat plate to the main board.

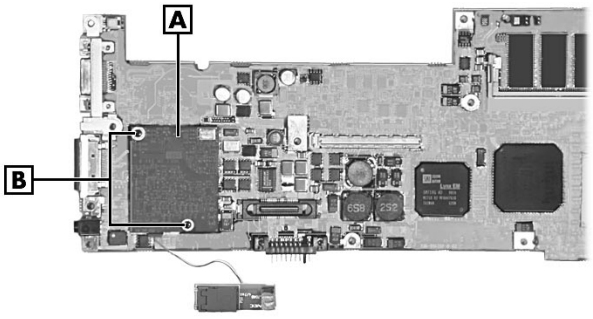
Locating/Removing the main board and fan/heat plate screws



A – Main Board Screw **B** – Fan/Heat Plate Screw

7. Separate the main board away from the video/USB board and the connector board, then lift the main board. Start lifting at the right side first, then pull to the right (to clear the AC power port jack from the bottom case).
8. Turn the main board over. Locate and remove the two screws that secure the modem board to the main board.

Locating/Removing the modem board screws

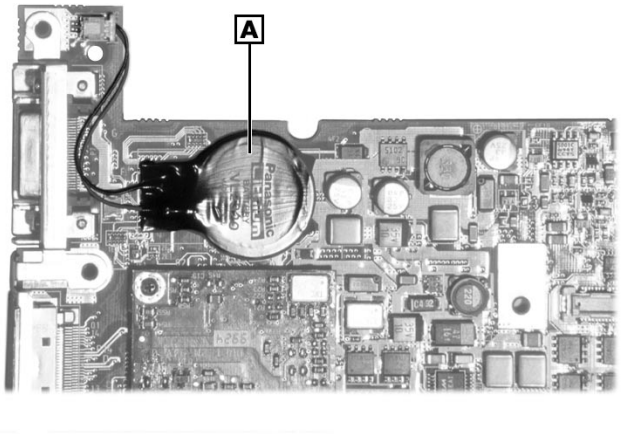


A – Modem Board **B** – Screw

9. Carefully disconnect the modem board by pulling it out of connector P3 on the main board.
10. Disconnect the modem port cable from connector J1 on the modem board.

11. Locate the CMOS battery. Disconnect the cable from connector P15 on the main board and lift the CMOS battery off of the main board.

Removing the CMOS battery



A – CMOS Battery

Reassembly

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

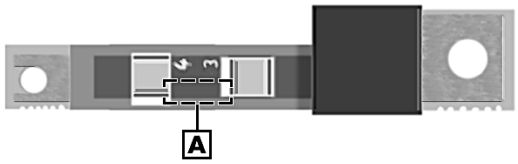
4

System Board Layout

- LED Status Board
- IR/Sound Board
- Connector Board
- Video/USB Board
- Main Board
- Mini-PCI LAN

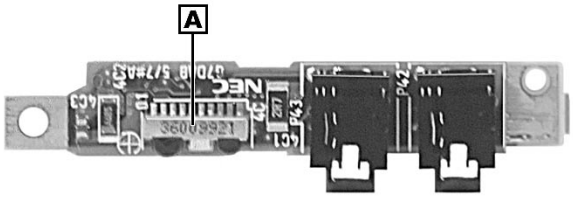
This following figures show the system boards and connector locations.

LED Status Board



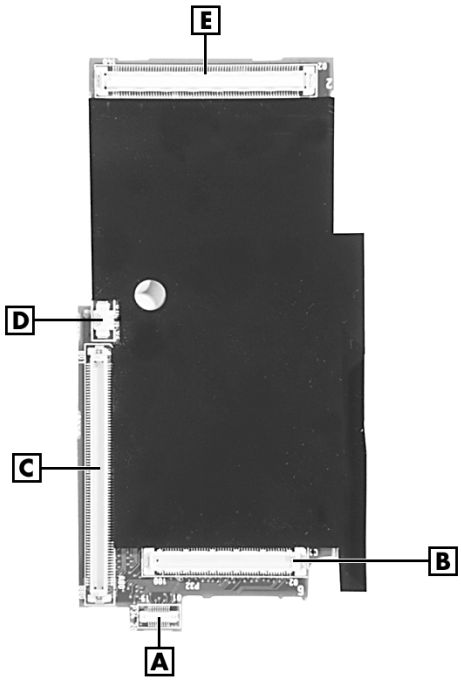
A – Connector P40 (back side)

IR/Sound Board



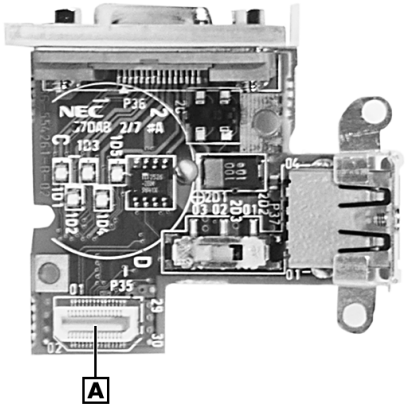
A – Connector P41 (back side)

Connector Board



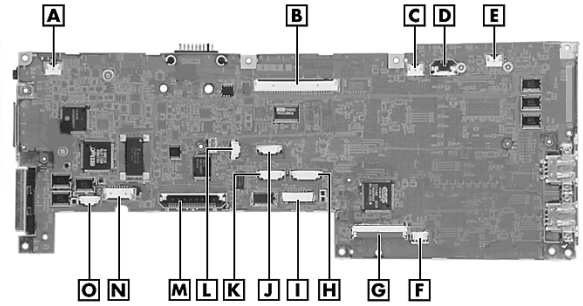
A – Connector P34
B – Connector P32
C – Connector P33
D – Connector P20
E – Connector P31

Video/USB Board

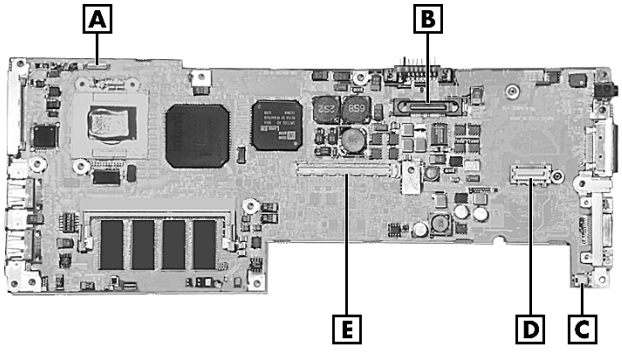


A – Connector P35

Main Board

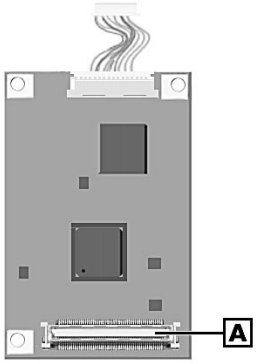


A – Connector P18
B – Connector P2
C – Connector P24
D – Connector P22
E – Connector P19
F – Connector P28
G – Connector P16
H – Connector P26
I – Connector P29
J – Connector P9
K – Connector P25
L – Connector P10
M – Connector P8
N – Connector P27
O – Connector P23



A – Connector P17
B – Connector P11
C – Connector P15
D – Connector P3
E – Connector P21

Mini-PCI LAN



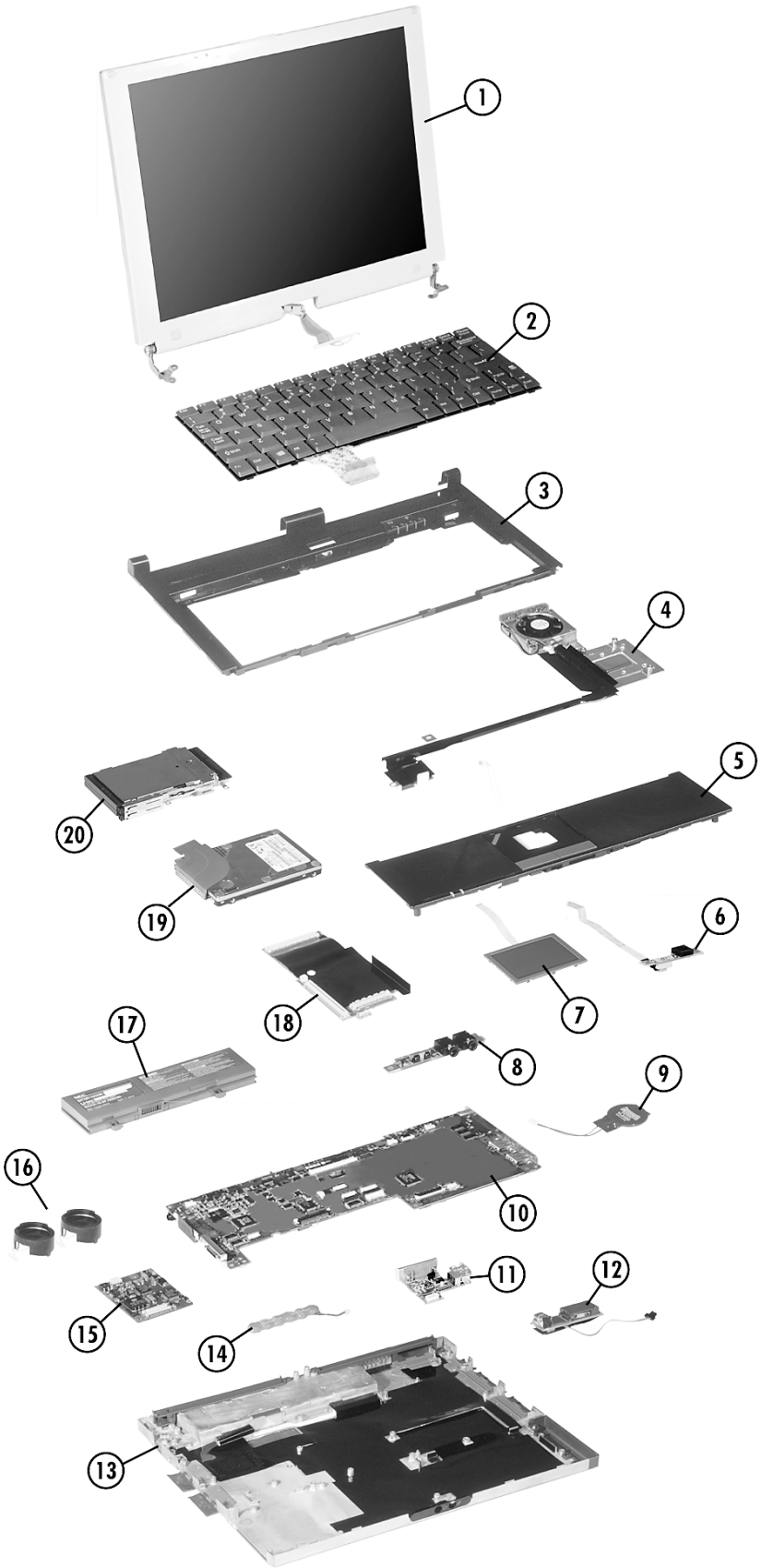
A – Connector P1

5

Illustrated Parts Breakdown

- Illustrated Parts Breakdown
- Parts List

Illustrated Parts Breakdown



Parts List

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

Field-Replaceable Parts List

Item	Description
1	LCD Panel Sub Assembly 12.1-inch SVGA 12.1-inch XGA
2	Keyboard (varies by language)
3	Top Cover Assembly
4	Fan/Heat Plate
5	Front Cover Assembly Without VersaGlide
6	LED Status Board
7	VersaGlide Assembly
8	IR/Sound Board
9	CMOS Battery
10	Main Board
11	Video/USB Board
12	Modem Cable Connector Assembly
13	Bottom Base Assembly
14	Bridge Battery
15	Modem Board
16	Speaker
17	3-Cell Battery
18	Connector Board
19	Hard Disk Drive 6GB, 10GB, 12GB, 20GB
20	PC Card Assembly
*	LCD Cable 12.1-inch SVGA 12.1-inch XGA
*	Power Button
*	Email/Internet Button
*	VersaGlide Switch FFC
*	VersaGlide FFC
*	Left Mouse Button

Field-Replaceable Parts List

Item	Description
*	Right Mouse Button
*	Hard Disk Drive FPC
*	LED Status Board FFC
*	Modem Board Cable
*	Memory Modules 32MB, 64MB, 128MB
*	Diskette Drive/Parallel Port Cap
*	External Monitor Port Cap
*	USB Cap (1 Port)
*	CD/DVD Drive Cap
*	USB Cap (2-Port)
*	Memory Module Bay Cover
*	External Diskette Drive
*	External Diskette Drive Cable
*	External CD/DVD Drive
*	External CD/DVD Drive Cable
*	6-Cell Battery
*	9-Cell Battery
*	Backup Battery
*	Hinge Cover (Left)
*	Hinge Cover (Right)
*	LCD Lock Assembly
*	LCD Hook Bracket
*	LCD Bracket (Left 12.1-inch)
*	LCD Bracket (Right 12.1-inch)
*	Tilt Unit (Left 12.1-inch)
*	Tilt Unit (Right 12.1-inch)
*	Tilt Unit (Left 10.4-inch)
*	Tilt Unit (Right 10.4-inch)
*	LCD Cover (12.1-inch)
*	LCD Cover (10.4-inch)
*	LCD Cushion (Lateral)
*	LCD Cushion (Bottom)
*	Rubber Foot

Field-Replaceable Parts List

Item	Description
*	Rubber Cap
*	Top Cover (9-Cell Battery)
*	Bottom Base (9-Cell Battery)
*	Coin Lock (9-Cell Battery)
*	Coin Lock Spring (9-Cell Battery)
*	Coin Lock Hook (9-Cell Battery)
*	Front Bracket (9-Cell Battery)
*	Connector Plate (9-Cell Battery)
*	Slide Piece (9-Cell Battery)
*	9-Cell Battery FPC
*	Rubber Foot (9-Cell Battery)
*	AC Adapter
*	LAN Board
*	LAN Board Cable
*	Parallel Transfer Cable
*	CD/DVD Drive AC Adapter
*	24X CD-ROM Drive
*	CD-ROM Drive Cable
*	CD-ROM Drive AC Adapter
*	CD-RW Drive
*	CD-RW Drive Cable
*	LAN Transfer Cable
*	Mini-PCI LAN Board
*	Mini-PCI LAN Board Cable
*	USB PortBar
*	Auto Adapter
*	Auto Adapter DC Cable

* Item not shown on IPB.

6

Preventive Maintenance

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

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

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

Cleaning the Notebook Exterior

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

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

Cleaning the Notebook Interior

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

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

Protecting the Disk Drive and Diskette Drive

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

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

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

Handling the Battery Pack

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

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

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

Maintaining the LCD Quality

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

7

Troubleshooting

- Quick Troubleshooting
- Helpful Questions

Quick Troubleshooting

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

Quick Troubleshooting

Problem	Corrective Action
No power	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. If using the battery as the main power source, check if the battery pack is charged and is inserted correctly. Replace the main board.
Data on the LCD is unreadable	Check the LCD Panel View Expansion in BIOS. Check if the installed VGA driver is correct. Check the VGA controller chip for any loose soldering. Replace the main board.
Battery power does not last long	Make sure that the power management features are enabled. Fully charge and discharge the battery pack several times to recondition it. Replace the battery pack.
System halts during boot sequence	Check the condition of the selected boot device (diskette, hard disk or CD-ROM) for bad boot track or incorrect O/S files. Try booting from a new bootable diskette and recopy or repartition the hard disk. Check for any BIOS error messages on the display screen. Replace the main board.
I/O processing malfunctions	Check the connections of all internal and external devices. Replace the main board.
Diskette drive does not work	Check that the diskette type is correct and not faulty. Replace the diskette drive. Replace the main board.

Quick Troubleshooting

Problem	Corrective Action
Hard disk drive malfunction	Check if the hard disk drive is set properly on CMOS Setup.
	Check the drive connection.
	Check if the disk drive is good.
	Replace the main board.
Memory malfunction	Check if the memory module is inserted properly.
	Replace the memory module.
	Replace the main board.
PC card does not work	Check the PC card driver installation for any IRQ or I/O address conflict.
	Check if the PC card is inserted properly and all connections are set.
	If the PC card is a Type II card, install it in the system's other PC card slot.
	Replace the PC card.
	Replace the main board.
NEC VersaGlide does not work	Check if PS/2 or Alps mouse driver is properly installed.
	Check VersaGlide cable inside the system if it is inserted properly.
	Clean VersaGlide surface.
	Check the keyboard controller chip for any cold or loose soldering.
	Replace the main board.
Parallel device does not work	Check all connections.
	Check if external device is turned on.
	Check the device drive installation for any IRQ or I/O address conflict.
	Test another parallel device.
	Check the I/O controller chip for any cold or loosed soldering.
	Replace the main board.

Helpful Questions

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

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

8

Getting Service and Support

- Service and Support Contact Information
- Web Site
- FTP Site
- Email/Fax to Support Services
- NEC Computers Support Services

Services and Support Contact Information

NEC Computers Services and Support

Service	Contact Information
NEC Computers Inc. Web Site	Web address: www.neccomp.com
Support Services Web and FTP Sites	Web address: support.neccomp.com
	FTP site: ftp.neccsdeast.com
Email to NEC Computers Support Services through a commercial online service or the Internet.	Internet email address: tech-support@nec-computers.com
Fax Service to NEC Computers Support Services	801-579-1552
NEC Computers Support Services	U.S. and Canada: 800-632-4525

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

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

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.

Web Site

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

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

http://www.neccomp.com/

To go directly to the NEC Computers Service and Support area, enter the following Internet Uniform Resource Locator (URL) in your browser:

http://support.neccomp.com/

FTP Site

You can use the Internet to access the NEC Computers 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 Computers web site.

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

ftp.neccsdeast.com/pubs/

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

Email/Fax to Support Services

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

tech-support@nec-computers.com

You can also fax technical questions to the NEC Computers Support Services if you have access to a fax machine or fax/modem. The fax numbers are:

(801)-579-1552

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
- 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 Computers Support Services

NEC Computers also offers direct technical support through NEC Computers Support Services. (This service is for U.S. and Canadian customers only; international customers should contact their 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 Computers 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.
- Preinstalled software — toll-free phone support for 90 days from the time of your first call to the NEC Computers Support Services.

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.

9

Specifications

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

System Components

The following system component specifications are standard except where noted.

System Processor

Intel 500-MHz Celeron CPU

Intel 600-MHz Pentium III CPU with SpeedStep microprocessor

Architecture

64-bit Peripheral Component Interconnect (PCI)

Random Access Memory

- Standard Main Memory
  - 64-MB SDRAM SO-DIMM
- Optional Expansion — 1 slot
  - Expandable in 32-MB, 64-MB, or 128-MB increments
  - Maximum 192 MB
- Video Ram — 4 MB SGRAM
- Cache Memory
  - L1: 16KB code, 16KB data, 4 way set associate, write back (data)
  - L2: 128KB built-in (Celeron 500-MHz) or 256KB built-in (Pentium III 600-MHz)
  - Operates at full core speed
  - 4GB cacheable range

Read-Only Memory

512 KB x 8 bit, Flash ROM

Calendar Clock

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

Input/Output (I/O) Facilities

Integrated industry-standard interfaces

- FDD/Parallel — 1 port, 26-pin
  - FDD, PC8477 compatible, 16 byte FIFO, burst and non-burst modes
  - Parallel, IEEE 1284 compatible, ECP and EPP support
- CD/DVD (IDE) — 1 port, 50-pin
- Infrared — 1 port, IrDA-1.1 compatible
- VGA — 1 port, 15-pin high-density D-sub
- Microphone — 1 port, 3-pin, Mini Pin Jack
- Stereo Headphones — 1 port, 3-pin, Mini Pin Jack, .5 watts per channel

- DC In — 1 port, for AC adapter cable
- USB port — 3 ports, 4 pin
- Modem — 1 port, 4-pin, RJ-11 modular jack

Speakers

Two built-in, 1 watt (W) each with a maximum 3W output

- 16-bit stereo, 48 Khz
- Sound BlasterPRO compatible
- MIDI Roland: MPU401, UART Mode compatible
- EV1938 SoundBlaster Audio PCI 64V or
  ESS Solo1 PCI AudioDrive + ESS 1946S

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

- 12.1-inch or high resolution active matrix Thin Film Transistor (TFT), Extended Graphics Array (XGA) color display

  — Resolution — 1024 x 768

  — Colors — 16 Million, max.

- 12.1-inch or high resolution active matrix Thin Film Transistor (TFT), Super Video Graphics Array (SVGA) color display

  — Resolution — 800 x 600

  — Colors — 16 Million, max.

Keyboard

Membrane 83 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 — 2.5 mm
- Height — 6 mm
- Pitch — 19 mm

External Floppy Diskette Drive

- Size — 3.5-inch
- Capacity — 1.44 MB (formatted), 2 MB (unformatted)
- Transfer Rate — 250 to 500 K/bps

- Number of tracks — 160

Hard Disk Drive

Specifications vary depending upon model:

- Ultra DMA/66 support
- Capacity — Internal 6.x, 10.x, 12.x, or 20.x GB
- Drive height — 9.5 mm
- Read/write track-to-track seek rate — 3 ms
- Average seek time — 12 ms – 14 ms
- Revolutions per minute — 4200
- Data transfer rate
  - 16.6 MB/sec (PIO mode4/DMA mode2)
  - 66.6 MB/sec (ultra DMA mode 4)
- Media data rates — 88.0 bit/sec – 118.0 bit/sec
- Mean Time Between Errors (MTBF) — 300,000 hours

24X-speed CD-ROM Drive

- Type — 5-inch CD-ROM Pack
- Average Data Transfer Rates — 1545 KB/second to 3600 KB/second
- Burst Transfer Rate — 16.7 MB/sec, PIO mode4/DMA mode
- Average Access Time
  - 190 ms (Random)
  - 350 ms (Fullstroke)
- Interface — IDE (ATAPI)
- Photo CD Compatibility — Single Session/Multisession Photo CD, Video CD (CD-1, CD-I Ready, CD-G, CD-Plus, CD-DA, CD-EXTRN, and CD-ROM XA mode 2)

CD Read/Write Drive

- Size — 149mm x 138mm x 18.2mm (DxWxH)
- Weight — 500g
- Buffer Size — 2MB
- Speed
  - CD-ROM Read — 3000KB/second, 20X maximum
  - CD-RW Read — 2100KB/second, 14X maximum
  - CD-RW Write — 600KB/second, 4X maximum

External DVD Drive

- IDE interface, ANSI X3T9.2791D compliant
- Buffer Size — 512KB
- Data Format — CD-DA, CD-ROM, CD-ROM XA, CD-I Bridge, CD-I Ready, Video CD, Enhanced Music CD, DVD Disc, DVD-R Disc
- Capacity
  - CD — 656MB (Mode 1), 748MB (Mode 2)
  - DVD — 4.7GB (Single Layer), 8.5GB (Dual Layer)
- Maximum Transfer Rate
  - CD — 3600KB/second (Mode 1), 4100KB/second (Mode 2)
  - DVD — 8115KB/second
- Access Time (average maximum)
  - CD — Random: 180 ms, Full Stroke: 270 ms
  - DVD — Random: 270 ms, Full Stroke: 480 ms

Mini-PCI LAN

- 10BASE-T and 100BASE-TX compatible
- IEEE 802.3 and IEEE 802.3u compliant
- 10/100 Mbps transmission
- 10/100M, LINK, and ACT diagnostic LEDs

56K Internal Modem

- V.90 data/V.17 fax, soft, MMX optimized
- K56flex™ compatible
- SmartDAA™ technology
- V.80 synchronous access mode

Power

AC Adapter

- Input Voltage — 100 to 240 volts (V) AC, 50 or 60 Hz, Maximum 2.8A
- Output Voltage — 15.0 V DC, 45 Watt
- Australia, Europe and Asia use an AC power cable specific to each country's standards.

Battery Pack

- Type — three-cell Lithium Ion (Li-Ion)
- Optional Batteries — six-cell Li-Ion and nine-cell Li-Ion
- Output Voltage — 10.8 V
- Capacity — 1,550 mAH
- Recharging Time —- Approximately 2.7 hours when the system is on or off.

Bridge Battery

When fully charged, backs up memory contents and system status, in Standby mode, giving you time to install a fully charged battery or connect to AC power when your battery charge becomes low.

Dimensions

- Width — 10.6 in. (269 mm)
- Depth — 8.8 in. (224.5 mm)
- Height — 0.9 in. (24.5 mm)

Weight

3.38 lb (1.54 kg) with the three-cell Lithium-Ion battery

Recommended Environment

Operation

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

Storage

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

Connector Locations

The following table shows the system's connector locations.

Connector Locations

Connector	Location	Connector	Location
P1	Mini-PC LAN Board	P22	Main Board, top
P2	Main Board, top	P23	Main Board, top
P3	Main Board, bottom	P24	Main Board, top
P8	Main Board, top	P25	Main Board, top
P9	Main Board, top	P26	Main Board, top
P10	Main Board, top	P27	Main Board, top
P11	Main Board, bottom	P28	Main Board, top
P15	Main Board, bottom	P31	Connector Board
P16	Main Board, top	P32	Connector Board
P17	Main Board, bottom	P33	Connector Board
P18	Main Board, top	P34	Connector Board
P19	Main Board, top	P35	Video/USB Board
P20	Connector Board	P40	LED Status Board
P21	Main Board, bottom	P41	IR/Sound Board

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
0000 0000h-0009 FFFFh	640K	System/Application Memory
000A 0000h-000B FFFFh	128K	Video Buffer RAM
000C 0000h-000D FFFFh	128K	Available for applications
000E 0000h-000F FFFFh	128K	Upper ROM, System and Video BIOS
0010 0000h-09FF FFFFh	up to 160MB	Extended Memory
000A 0000h-FFEF FFFFh	128K	Video RAM Frame Buffer
FFF0 0000h-FFF7 FFFFh	512K	1 MB Extended BIOS
FFF8 0000h-FFF9 FFFFh	256K	New Extended BIOS
FFFA 0000h-FFFB FFFFh	128K	Lower ROM, Power Management BIOS
FFFE 0000h-FFFF FFFFh	128K	System BIOS (alias)

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 Interrupts

IRQ	Device
IRQ00	Internal Timer 1
IRQ01	Keyboard
IRQ02	PIC
IRQ03	Available/IR
IRQ04	Available/Serial
IRQ05	CardBus/Sound/Modem
IRQ06	Diskette Drive
IRQ07	LPT
IRQ08	Real-time Clock
IRQ09	Available
IRQ10	PC CardBus/LAN/Video/USB
IRQ11	Available
IRQ12	PS/2 Mouse
IRQ13	Numeric Data Processor
IRQ14	IDE Controller
IRQ15	Available

Glossary

A

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

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

AGP
Advanced Graphics Port is an interface specification designed for the throughput demands of 3D graphics. AGP introduces a point-to-point channel allowing the graphics controller direct access to main memory, increases bandwidth to 266-MBps, and supports throughputs of 533-MBps and 1.07-GBps.

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. The NEC Versa displays are LCD type.

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

M

megabyte
(MB) 1,048,576 bytes.

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

menu
A video display of programs or options.

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

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

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

N

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

O

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

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

P

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

parallel interface
Interface that communicates eight bits at a time.

parallel printer
A printer with a parallel interface.

parameter
A characteristic of a device or system.

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

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

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

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

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

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

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

Q

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

R

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

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

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

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

resolution

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

RS-232C

Standard interface for serial devices.

S

scanner

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

serial interface

An interface that communicates information one bit at a time.

serial printer

A printer with a serial interface.

software

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

super video graphics array (SVGA)

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

system board

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

T

TFT

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

V

VersaGlide

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

VGA

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

volatile memory

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

W

warm boot

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

write

To record or store information to a storage device.

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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 Computers Inc. recommends that you replace the battery. For battery replacement information, call your NEC Computers dealer.

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

AVERTISSEMENT Il y a danger d'explosion s'il y a replacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut 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 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 ministere des communications du Canada
Cet equipment ne depasse pas les limites de Classe B d'émission de bruits radioelectriques pour les appareill numerique, lelles que prescribes per le Reglement sur le brouillage radioélectrique elebil por le minisieredes 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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