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Preface

This addendum to the *PowerMate® Ve Series Service and Reference Manual* (document number 819-181516-000) provides updated information on the computer's hardware for users who need an overview of system design.

This information applies to computers with the following model numbers:

- ET-1830-24813E
- ET-1830-24813CE
- ET-1860-24813E
- ET-1860-24813CE.

This addendum also includes updated procedures for setting up and installing the system and illustrated parts lists. The manual is written for NECCSD-trained customer engineers, system analysts, service center personnel, and dealers.

The manual is organized as follows:

Section 1 — Technical Information, provides information not available when the *PowerMate Ve ETC Series User's Guide* (819-181780-000) was printed. System specifications are listed including dimensions, weight, environment, safety compliance, power consumption, and memory.

Section 2 — Setup and Installation, includes procedures for installing application software and drivers and performing system backups. This section also provides information not available when the *PowerMate Ve ETC Series User's Guide* was printed.

Section 3 — Illustrated Parts Breakdown, provides an exploded view diagram of the system. Also included are updated parts lists for field-replaceable parts.

Contents

Preface.....	v
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Section 1 Technical Information

System Overview	1-1
SIMM Upgrade	1-2
Performing Memory Upgrades	1-2
Locating SIMM Sockets.....	1-2
Checking System Memory.....	1-2
Installing SIMMS.....	1-3
Interrupt Controller.....	1-4
Integrated Graphics.....	1-5
Network Interface.....	1-5
Hard Disk Specifications.....	1-6
System Specifications.....	1-7

Section 2 Setup and Installation

Section 3 Illustrated Parts Breakdown

List of Figures

1-1	Network Interface Board	1-5
2-1	Rear Panel I/O Ports	2-1
2-2	Network Interface Board Connectors	2-2
3-1	PowerMate Ve ETC Series Illustrated Parts Breakdown	3-4

List of Tables

1-1	PowerMate Ve ETC Series System Configurations	1-1
1-2	Recommended Memory Upgrade Path	1-3
1-3	Interrupt Level Assignments.....	1-4
1-3	Hard Disk Drive Specifications.....	1-6
1-4	Specifications.....	1-7
3-1	PowerMate Ve ETC Series Field-Replaceable Parts List	3-2
3-2	PowerMate Ve ETC Series Documentation and Packaging	3-5

Section 1

Technical Information

This section describes hardware features and components that are specific to the PowerMate® Ve ETC Series of NEC PowerMate Ve Series computers. For information that is general to all PowerMate Ve Series computers, see the *PowerMate Ve Series Service and Reference Manual* (part number 819-181528-000).

SYSTEM OVERVIEW

PowerMate Ve ETC Series computers are configured with a different system board and come with a network interface board installed as standard equipment in one of the system unit expansion slots.

PowerMate Ve ETC Series computers include the configurations identified in Table 1-1.

Table 1-1 PowerMate Ve ETC Series System Configurations

Model Number	Processor	Multimedia	System Memory	Video Memory	Hard Disk
ET-1830-24813E (PowerMate V133e)	133-MHz Intel® Pentium®	No	16 MB	1 MB fast video dynamic random-access memory(video DRAM)	1.2-GB IDE (WDAC21200)
ET-1830-24813CE (PowerMate V133e)	133-MHz Intel Pentium	Yes	16 MB	1 MB video DRAM	1.2-GB IDE (WDAC21200)
ET-1860-24813E (PowerMate V133e)	166-MHz Intel Pentium	No	16 MB	1 MB video DRAM	1.2-GB IDE (WDAC21200)
ET-1860-24813CE (PowerMate V166e)	133-MHz Intel Pentium	Yes	16 MB	1 MB video DRAM	1.2-GB IDE (WDAC21200)

Multimedia systems come with audio components integrated on the system board. Multimedia systems also include an eight-speed CD-ROM reader installed in the system unit, 8-watt speakers, and a microphone.

SIMM UPGRADE

PowerMate Ve ETC Series system configurations come with 16 MB of main system memory. Four sockets on the system board support up to 128 MB of high-speed memory using the following industry-standard, tin-plated, single in-line memory modules (SIMMs):

NOTE: You may install 60-ns, parity or nonparity, extended data output (EDO) SIMMs into the SIMM sockets.

- 1-MB by 32- or 36-bit (4-MB stick)
- 2-MB by 32- or 36-bit (8-MB stick)
- 4-MB by 32- or 36-bit (16-MB stick)
- 8-MB by 32- or 36-bit (32-MB stick).

CAUTION: To avoid corrosion between different metals, only use tin-plated SIMM sticks.

The system board can use 64-MB SIMMs (16-MB by 32- or 36-bit), but these SIMMs are not supported by NECCSD for the PowerMate Ve ETC Series.

Performing Memory Upgrades

Upgrade system memory as follows:

- locate memory sockets on system board
- check installed system memory
- install SIMMs.

Locating SIMM Sockets.

Remove the system unit cover and locate the six SIMM sockets on the system board (see Section 3 of the *PowerMate Ve Series Service and Reference Manual*).

If any cables block access to the SIMM sockets, label and disconnect them. If any boards block access to the sockets, remove them.

Checking System Memory

Use Table 1-2 to check the memory installed in the system and determine the SIMM configuration needed to increase memory.

NOTE: SIMM memory must be installed in pairs of the same memory type.

Table 1-2 Recommended Memory Upgrade Path

Total Memory	Bank 0		Bank 1	
	SIMM 1	SIMM 2	SIMM 3	SIMM 4
16 MB	4 MB	4 MB	4 MB	4 MB
16 MB*	8 MB	8 MB	Empty	Empty
24 MB	4 MB	4 MB	8 MB	8 MB
24 MB	8 MB	8 MB	4 MB	4 MB
32 MB	8 MB	8 MB	8 MB	8 MB
32 MB	16 MB	16 MB	Empty	Empty
40 MB	4 MB	4 MB	16 MB	16 MB
40 MB	16 MB	16 MB	4 MB	4 MB
48 MB	8 MB	8 MB	16 MB	16 MB
48 MB	16 MB	16 MB	8 MB	8 MB
64 MB	16 MB	16 MB	16 MB	16 MB
64 MB	32 MB	32 MB	Empty	Empty
72 MB	32 MB	32 MB	4 MB	4 MB
72 MB	4 MB	4 MB	32 MB	32 MB
80 MB	8 MB	8 MB	32 MB	32 MB
80 MB	32 MB	32 MB	8 MB	8 MB
96 MB	16 MB	16 MB	32 MB	32 MB
96 MB	32 MB	32 MB	16 MB	16 MB
128 MB	32 MB	32 MB	32 MB	32 MB

* = Standard configuration.

Installing SIMMS

After determining the system memory upgrade path, install SIMMs using the installation procedure provided in Section 3 of the *PowerMate Ve Series Service and Reference Manual*.

INTERRUPT CONTROLLER

The interrupt controller operates as an interrupt manager for the entire AT system environment. The controller accepts requests from peripherals, issues interrupt requests to the processor, resolves interrupt priorities, and provides vectors for the processor to determine which interrupt routine to execute. The interrupt controller has priority assignment modes that can be reconfigured at any time during system operations.

The interrupt levels are described in Table 1-3. Interrupt-level assignments 0 through 15 are in order of decreasing priority. See Section 2 of the *PowerMate Ve Series Service and Reference Manual* for information on changing the interrupts using Setup.

Table 1-3 Interrupt Level Assignments

Interrupt	Assignment
IRQ 0	Counter/Timer
IRQ 1	Keyboard
IRQ 2(9)	Cascade (INT output from slave)
IRQ 3	COM2 and COM4
IRQ 4	COM1 and COM3
IRQ 5	Parallel Port 2/Audio (if present)
IRQ 6	Diskette Drive Controller
IRQ 7	Parallel Port 1
IRQ 8	Real-time clock
IRQ 10	Available/Audio (if present)
IRQ 11	Network Interface Board
IRQ 12	PS/2 mouse
IRQ 13	Coprocessor
IRQ 14*	Primary IDE
IRQ 15*	Secondary IDE

INTEGRATED GRAPHICS

PowerMate Ve ETC Series computers have an SiS 6205 PCI graphics and video controller integrated on the system board. State of the art techniques are used for optimizing performance in computer graphic intensive applications and graphical user interfaces (GUI).

PowerMate Ve ETC Series systems have 1 MB of video DRAM on the system board. For information about graphics features and video support, see Section 1 of the *PowerMate Ve Series Service and Reference Manual*.

NETWORK INTERFACE

The computer comes equipped with a network interface board installed in one of the expansion slots in the system unit. The three connectors on the board allow connection to an Ethernet network and communication with other computers. Access to the connectors is provided at the rear of the system unit. Figure 1-1 shows the location of the network interface board and the three connectors. For more information, see Section 2 of this addendum.

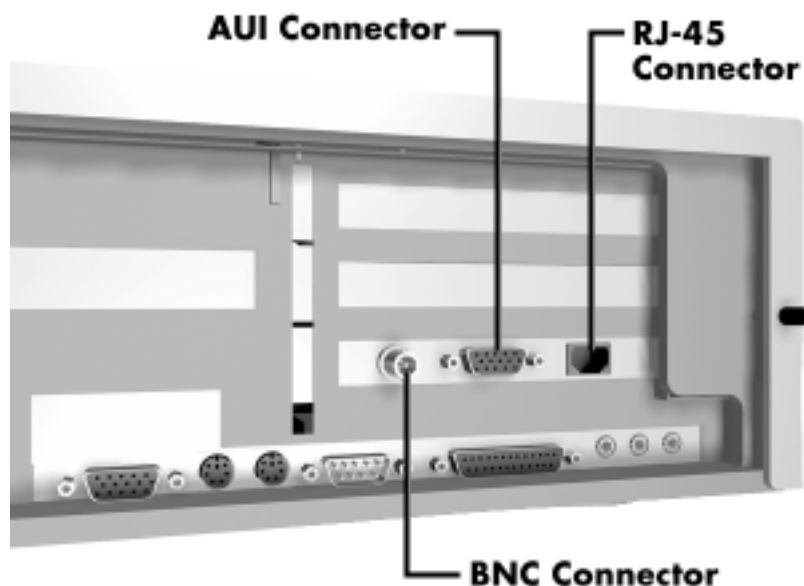


Figure 1-1 Network Interface Board

HARD DISK SPECIFICATIONS

The PowerMate Ve ETC Series computer contains a 1.2-GB Western Digital IDE hard disk. The following table provides hard disk specifications.

Table 1-4 Hard Disk Drive Specifications

Features	Specification
Physical Configuration	
Formatted Capacity	1.278 GB
Actuator Type	Rotary voice-coil
Number of Disks	3
Data Heads	6
Servo Type	Embedded
Tracks per Inch (tpi)	3,849 tpi
Bytes per Sector	512
Maximum Data Rate from Media	45.4 MB/second
Dimensions	
Height	1.00 in. (25.4 mm)
Length	5.75 in. (146.0 mm)
Width	4.00 in. (101.6 mm)
Weight	1.3 lb (589.4)
Performance	
Track-to-track seek	3.0 ms
Average seek	14 ms
Maximum seek	26 ms
Average Latency	8.3 ms
Rotation Speed	3600 rpm
Data Transfer Rate (buffer to disk)	45.4 MB/s maximum
Data Transfer Rate (buffer to host)	16.6 MB/s, Mode 4
Start/Stop Cycles	40,000 minimum
Buffer Size	64 KB
Interface	IDE

SYSTEM SPECIFICATIONS

System specifications are included in Table 1-5.

Table 1-5 Specifications

Item	Specification
Dimensions and Weight	
System Unit	Width: 17 inches (43.18 cm) Depth: 16 inches (40.64 cm) Height: 4 inches (10.6 cm) Weight: 22 lb (11.1 kg), dependent upon options
Keyboard	Width: 19.0 inches (48.3 cm) Depth: 8.4 inches (21.3 cm) Height: 1.6 inches (4.1 cm) Weight: 3.5 to 4.0 lb. (1.6 to 1.8 kg)
Device Bays	Two 5 1/4-inch front accessible bays One 3 1/2-inch front accessible bay One 3 1/2-inch internal bay
Expansion Slots	Four slots: two 16-bit ISA slots one ISA/PCI shared slot one PCI slot One ISA slot contains the network interface board.
Network Interface	3COM 3C509B ISA 10 Megabit board with adapter (RJ-45, AUI, 10BASE-T) Access to the connectors is provided at the rear of the system unit. All configurations come with Ethernet drivers preloaded on the hard drive.
Peripheral Interface	PS/2-style keyboard connector, rear panel PS/2-style mouse connector, rear panel Two RS-232C serial ports, rear panel Parallel printer port, rear panel VGA port, rear panel
Front Panel	Power button Power indicator lamp Hard disk drive busy indicator lamp Suspend button Reset button
Processor	Intel Pentium 133- or 166-MHz (dependent on system)
Cache Memory	16 KB of primary cache (8 KB data, 8 KB instruction) integrated in the processor, 256 KB secondary cache
Flash ROM	128 KB (28F001) Flash ROM
Chip Set	SiS5511+/5512/5513 PCI/ISA

Table 1-5 Specifications

Item	Specification
System Memory	16-MB EDO standard, expandable to 128 MB using SIMM sockets
Optional SIMMs	4-, 8-, 16-, and 32-MB; 32-bit, non-parity, 70-ns SIMMs
Integrated Graphics	SiS 6205 PCI Graphics & Video Accelerator 1-MB video DRAM standard Maximum resolution 1280 x 1024 pixels
Battery	Coin-type battery
Power Supply	145 Watt, 115 V/230V switch selectable
CD-ROM Reader (Multimedia only)	See Appendix D of the service manual for more specifications Disc format: ISO 9660 Data transfer rate: 600 KB/sec, PIO Mode 3 support Access time (typical): 500 msec Built-in buffer: 128 KB Host interface: IDE (ATAPI)
Integrated Sound	Standard in multimedia systems ESS1688 Sound Blaster [®] compatible Yamaha OPL3 FM Synthesis SRS [®] Labs 3D sound solution 16-bit 128x oversampling sigma-delta stereo CODEC with 85 dB S/N ratio Stereo jacks for microphone: line in and line out Wave Blaster upgradeable for wavetable synthesis
Goldtron [™] Microphone	Standard in multimedia systems Omnidirectional 30dB
8-Watt Speakers (Goldtron Speakers)	Standard in multimedia systems Magnetic shielded 8-watt stereo speakers Power on/off switch, power lamp, volume, bass and treble controls Mini-stereo headphone jack Built in stereo amplifier 9-volt AC power adapter
Operating Environment	Temperature — 50°F to 95°F (10°C to 35°C) Relative Humidity — 20% to 80%
Administrative Compliance	UL 1950 - safety CSA C22.2 No. 950-m89 TUV EN60950: 1988 FCC part 15, Subpart J, Class B - emissions FCC part 68 C.R.C., c.1374 IEC 950 - safety VDE 0871/6.78, Class B - emissions

Section 2

Setup and Installation

The following figure shows the location of the interface ports on the rear of the system unit for configuring PowerMate Ve ETC Series hardware. Use the procedures described in Section 2 of the *PowerMate Ve Series Service and Reference Manual* to set up the system hardware.

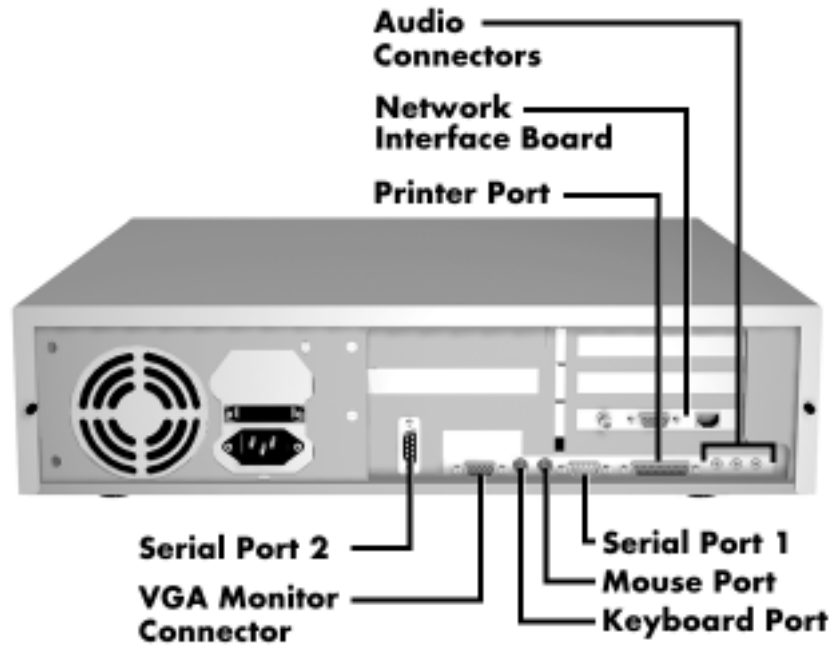


Figure 2-1 Rear Panel I/O Ports

In addition, refer to the following figure for the location of the network interface board connectors.

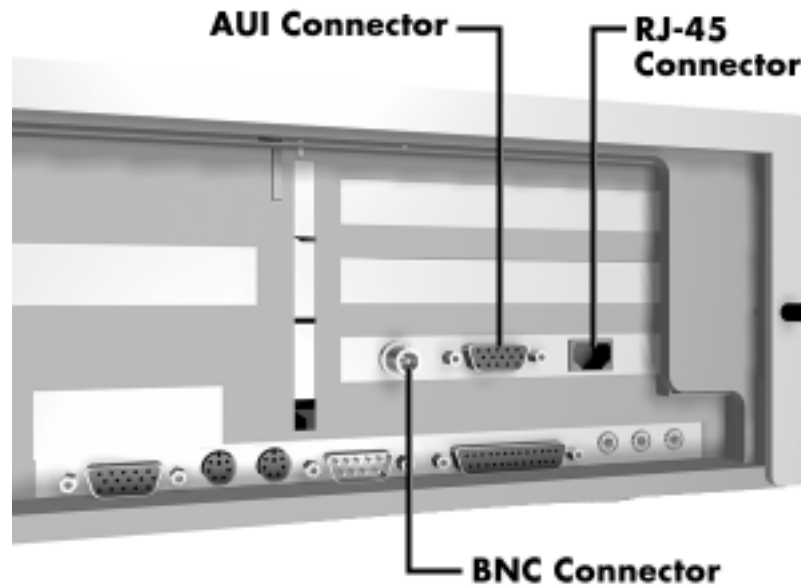


Figure 2-2 Network Interface Board Connectors

The network board has connectors for coaxial and twisted-pair network cabling:

- The BNC connector supports thin coaxial cables.
- The AUI connector supports thick coaxial cables.
- The RJ-45 connector supports twisted-pair 10BASE-T cables.

Connect the network cable to one of these connectors (depending on the type of network). The PowerMate Ve ETC Series computer has Ethernet network drivers pre-loaded on the hard disk.

Section 3

Illustrated Parts Breakdown

This section contains updated parts lists and an exploded-view diagram for the PowerMate Ve ETC Series system.

The information in this section applies to the following models:

- ET-1830-24813E
- ET-1830-24813CE
- ET-1860-24813E
- ET-1860-24813CE.

Table 3-1 lists the field-replaceable parts for the computer*. Figure 3-1 provides the illustrated parts breakdown.

To order parts or obtain technical help, call 1-888-ETC-SUPT (1-888-382-7878).

* This data was prepared July 1997. For an up-to-date listing of spare parts, please call FaxFlash™ at 1-888-329-0088 (or 1-508-635-6090 outside the U.S.) and order document number 42181819.

Table 3-1 PowerMate Ve ETC Series Field-Replaceable Parts List*

Item	Description	Part Number
1	Serial interface cable	158-050454-004
2	Fan assembly, 2-wire	158-050865-006
3	3 1/2-inch, 1.2-GB IDE hard disk, WDAC21200	158-050395-366
4	IDE signal cable, 3-connector	158-050562-008
5	Floppy drive signal cable, 3-connector	158-050503-002
6	3-1/2 inch 1.44-MB diskette drive, TEAC, DT	158-050858-000
7	CD-ROM IDE signal cable, 2-connector (multimedia models only)	158-050562-004
8	Audio cable, CD-ROM, 2-connector (multimedia models only)	158-050824-000
9	ISA/PCI backplane (desktop)	158-026204-000A
10	Network interface card (NIC)	158-050796-000
11a	I/O plate without audio (non-multimedia systems)	158-030782-003
11b	I/O plate with audio (multimedia systems)	158-030782-002
12	256 KB L2 Synchronous Pipeline Burst Cache, 15 ns	158-082737-015
13	8-MB EDO SIMM (2MB x 32)	158-082630-060
14	Heatsink w/clip	158-060324-001
15a	133-MHz Pentium processor (PowerMate V133e ETC models)	158-082502-016
15b	166-MHz Pentium processor (PowerMate V166e ETC models)	158-082502-017
16	Power supply, 145-watt, (ASTEC-SA145-3495-717)	158-050730-000
17	Speakers, 8-watt (multimedia models only)	158-050980-001
18	IDE CD-ROM reader (8-speed)	CDR-1450A/BR

* This data was prepared July 1997. For an up-to-date listing of spare parts, please call FaxFlash™ at 1-888-329-0088 (or 1-508-635-6090 outside the U.S.) and order document number 42181819.

Table 3-1 PowerMate Ve ETC Series Field-Replaceable Parts List*

Item	Description	Part Number
19a	System board, without audio (non-multimedia systems)	158-056559-000
19b	System board, with audio (multimedia models)	158-056560-000
20a	Speaker assembly, internal	158-050685-003
21	Microphone (multimedia models only)	158-052116-000
22	Front bezel without IR (PowerMate V133e, V166, V166e models)	158-050992-000
23	Keyboard, Chicony	158-052121-000
24	Mouse, PS/2-style	158-052115-000

* This data was prepared July 1997. For an up-to-date listing of spare parts, please call FaxFlash™ at 1-888-329-0088 (or 1-508-635-6090 outside the U.S.) and order document number 42181819.

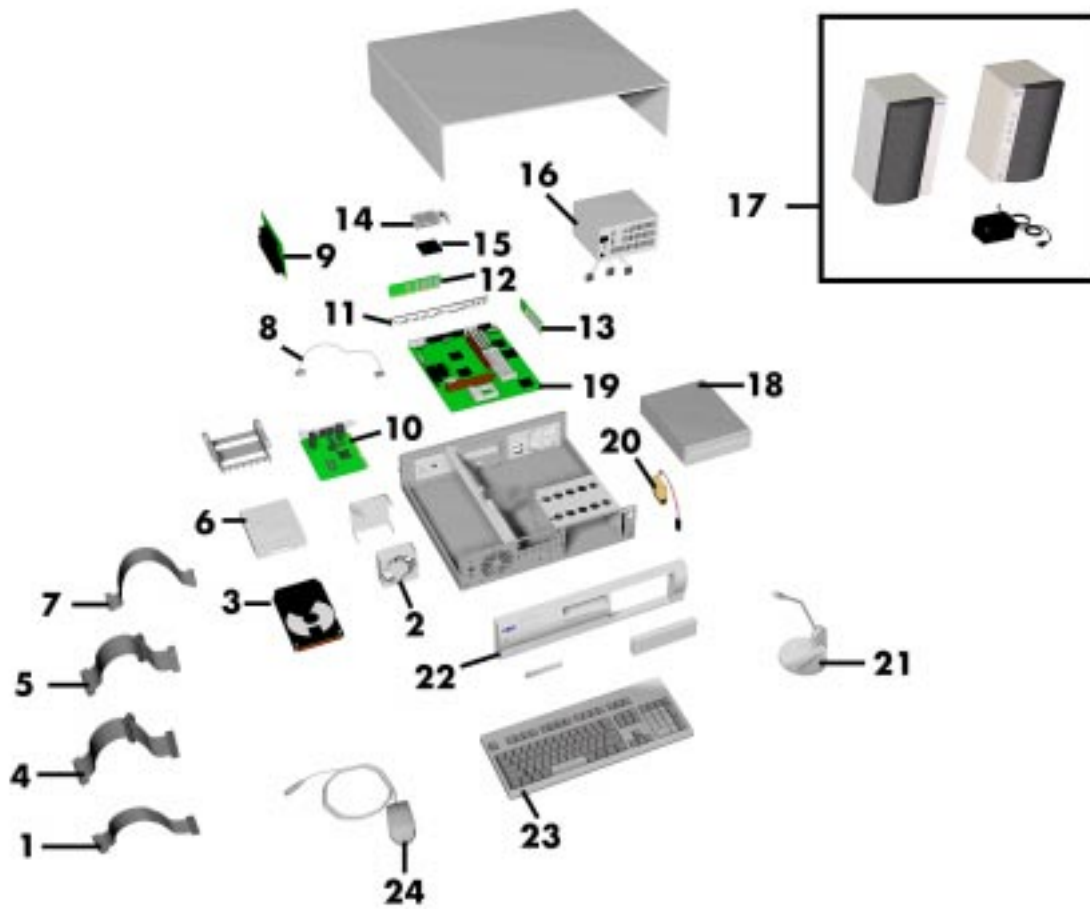


Figure 3-1 PowerMate Ve ETC Series Illustrated Parts Breakdown*

* This data was prepared July 1997. For an up-to-date listing of spare parts, please call FaxFlash™ at 1-888-329-0088 (or 1-508-635-6090 outside the U.S.) and order document number 42181819.

Table 3-2 lists PowerMate Ve ETC Series documentation and packaging part numbers.

Table 3-2 PowerMate Ve ETC Series Documentation and Packaging*

Description	Part Number
<i>PowerMate Ve ETC Series User's Guide</i>	819-181780-000
<i>PowerMate Ve Series Service and Reference Manual</i>	819-181528-000
<i>PowerMate Ve ETC Series Addendum to the PowerMate Ve Series Service and Reference Manual</i>	819-181819-000
Corner blocks (requires 4)	158-040395-004
Shipping carton (multimedia)	158-040563-001
Shipping carton (non-multimedia)	158-040562-001

* This data was prepared July 1997. For an up-to-date listing of spare parts, please call FaxFlash™ at 1-888-329-0088 (or 1-508-635-6090 outside the U.S.) and order document number 42181819.

Index

C

Configurations, 1-1

D

Document

part number, 3-5

H

Hard disk specifications, 1-7

Help, 3-1

I

Illustrated parts breakdown, 3-1

Integrated graphics, 1-5

video memory, 1-5

resolutions and refresh rates, 1-5

Interrupts, 1-5

M

Memory, 1-2

N

Network interface board, 1-6

O

Option installation

SIMM upgrade, 1-2

checking system memory, 1-2

P

Packaging

part number, 3-5

S

SIMM upgrade, 1-2

Specifications, 1-9

System board

integrated graphics, 1-5

interrupts, 1-5

Support telephone number, 3-1

T

Technical help, 3-1

(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 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.

Use shielded and properly grounded I/O and power cables to ensure compliance of this unit to the specified limits of the rules.

(For Canadian Use Only)

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

BATTERY REPLACEMENT

A lithium battery in your computer maintains system configuration information. In the event that the battery fails to maintain system configuration information, NEC recommends that you replace the battery. See Chapter 4 in the *PowerMate Ve Series Service and Reference Manual* for battery replacement information.

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

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

BATTERY DISPOSAL

Do not place used batteries in your regular trash.

The nickel-cadmium or nickel metal-hydrate batteries must be collected, recycled, or disposed of in an environmentally-approved manner.

The incineration, landfilling, or mixing of batteries with the municipal solid waste stream is **prohibited by law** in most areas.

Return batteries to a federal or state approved battery recycler. This may be where you purchased the battery or a local seller of automotive batteries. In MINNESOTA, call 1-800-225-PRBA if further disposal information is required.

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