

Computer Specifications

CPU and Memory

32-bit CPU	<p>4SX/33: Intel <i>i486SX</i>, 33 MHz microprocessor; can be replaced with optional 487SX/33 or ODP486-33 OverDrive processor</p> <p>4DX2/50: Intel <i>i486DX2</i>, 50 MHz microprocessor; supports future Intel OverDrive processor</p> <p>4DX2/66: Intel <i>i486DX2</i>, 66 MHz microprocessor; supports future Intel OverDrive processor</p>
System speed	<p>High, low, and automatic speeds available; high speed is CPU-dependent (33,50, or 66 MHz), low speed is simulated 8 MHz, automatic speed switches from high to low only for diskette drive access; speed selection through SETUP, keyboard command, or ESPEED program; 0 wait state memory access at high speed</p>

Memory	<p>4MB RAM standard soldered on main system board; expandable using 1MB, 4MB, 16MB, or 64MB SIMMs to 128MB (maximum); SIMMs must be 36-bit, fast-page mode type with 70 ns (or faster) access speed</p>
ROM	<p>128KB ROM containing system BIOS and video BIOS; 64KB ROM containing SETUP code</p>
Video RAM	<p>1MB video RAM on main system board</p>
Shadow RAM	<p>Automatic shadowing of system and VGA BIOS ROM into RAM; shadow RAM address control selectable through SETUP</p>
Cache	<p>8KB of internal cache (built into the microprocessor); cache testing and address control selectable through SETUP</p>
VirtualCache	<p>Epson proprietary VirtualCache feature automatically creates a "virtual cache" buffer the size of maximum system memory</p>
Math coprocessor	<p>On 4DX2/50 and 4DX2/66 systems, math coprocessor built into the microprocessor</p>
Clock/calendar	<p>Real-time clock, calendar, and CMOS RAM on main system board; separate battery backup</p>

Controllers

Video	<p>Chips and Technologies Wingine P64200 VGA controller on main system board; provides resolutions of 800 x 600 x 64K colors and up to 1024 x 768 x 256 colors</p>
Diskette	<p>Controller on main system board supports up to two diskette drives or one diskette drive and one tape drive</p>
Hard disk	<p>Interface on main system board supports up to two IDE hard disk drives with built-in controllers</p>

Interfaces

Monitor	<p>VGA interface built into main system board for analog or multifrequency VGA monitor; 15-pin, D-shell connector</p>
Parallel	<p>One standard 8-bit parallel, bidirectional interface built into main system board; port assignment and I/O address selectable through SETUP; 25-pin, D-shell connector</p>

Serial	Two RS-232C, programmable, asynchronous interfaces built into main system board; port assignment and I/O addresses selectable through SETUP; 9-pin, D-shell connectors
Keyboard	PS/2 compatible keyboard interface built into main system board; keyboard speed, delay, and num lock settings selectable through SETUP; 6-pin, mini DIN connector
Mouse	PS/2 compatible mouse interface built into main system board; 6-pin, mini DIN connector
Option slots	Four standard 16-bit (or S-bit) I/O expansion slots; ISA compatible; 8 MHz bus speed
Speaker	Internal; operation controllable through SETUP and volume selectable by software
Alternate VGA	IBM compatible VGA pass-through interface built into main system board; 26-pin connector

Mass Storage

Three drives maximum (two horizontal mounts and one vertical mount), configurable using the following:

Horizontal mounts	Up to two externally-accessible, half-height horizontal mounts; each horizontal bay can accommodate one 5¼-inch form factor diskette, tape, CD-ROM, or other drive, or one 3½-inch form factor hard disk, diskette, tape, CD-ROM, or other drive with 5¼-inch mounting frames attached
Vertical mount	One internal third- or half-height vertical mount; vertical bay can accommodate one 3½-inch form factor hard disk or other drive
Diskette drives	5.25-inch, 1.2MB (high-density) 3.5-inch, 1.44MB (high-density) Combo 5.25-inch, 1.2MB/3.5-inch, 1.44MB (high-density); combines two diskette drives in one
Hard disk drives	3½-inch form factor hard disk drive(s), up to half-height size; the first mounted vertically, second mounted horizontally
Other devices	Half-height tape drive, CD-ROM drive, or other storage device; 5¼-inch form factor or 3½-inch form factor with 5¼-inch mounting frames attached

Your system may also be configured to support SCSI devices, fax/modems, or multimedia packages.

Keyboard	Detachable; two-position height; 101 sculpted keys; numeric/cursor control keypad; four-key cursor control keypad; 12 function keys
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Power Supply

Type	145 Watt, fan-cooled
Input ranges	90 to 132 VAC and 180 to 264 VAC, switch selectable voltage
Maximum outputs	+5 VDC at 18 Amps, +12 VDC at 4.0 Amps, -5 VDC at 0.3 Amps, -12 VDC at 0.3 Amps
Frequency	47 to 63Hz
Cables	Two to main system board; four to mass storage devices

Option Slot Power Limits

Maximum current	+5 volts	+12 volts	-5 Volts and -12 Volts
For each slot	7 Amps	1.5 Amps	0.3 Amps
For all four slots	16 Amps	3 Amps	0.3 Amps

Environmental Requirements

Condition	Operating range	Non-operating range	Storage range
Temperature	41° to 95° F (5° to 35°C)	-4° to 140° F (-20° to 60°C)	-4° to 140° F (-20° to 60°C)
Humidity (non-condensing)	20% to 80%	10% to 90%	10% to 95%
Altitude	-300 to 9,900 ft (-100 to 3,000 m)	-300 to 11,880 ft (-100 to 3,600 m)	-300 to 39,600 ft (-100 to 12,000 m)
Maximum wet bulb	68° F (20°C)	104° F (40°C)	134° F (57°C)
Acoustical noise	37.4 dB(A)	N/A	N/A

Physical Characteristics

Width	14.8 inches (370 mm)
Depth	16.5 inches (412 mm)
Height	4.8 inches (120 mm)
weight	16.7 lb (7.6 kg), without keyboard

Extended VGA Modes

Mode	Size	Colors	Refresh rate	Mode type
60	132 × 25	16	68 Hz	NI
61	132 × 50	16	68 Hz	NI
62	132 × 43	16	68 Hz	NI
64	80 × 43	16	70 Hz	NI
65	80 × 50	16	70 Hz	NI
6A/70	800 × 600	16	56 Hz 60 Hz 72 Hz	NI
72	1024 × 768	16	60 Hz 70 Hz 72 Hz 75 Hz	I
79	640 × 480	256	60 Hz 73 Hz	NI
7C	800 × 600	256	56 Hz 60 Hz	NI

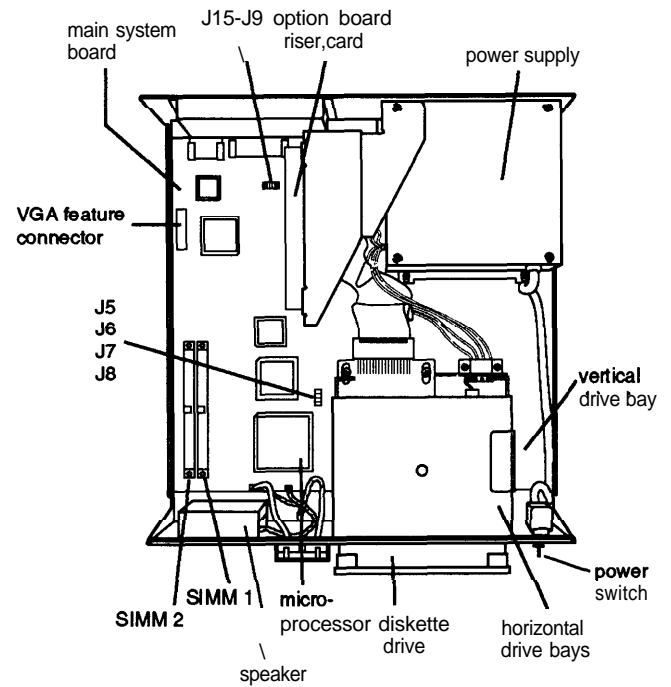
NI = Non-interlaced
I = Interlaced

Wingine Modes

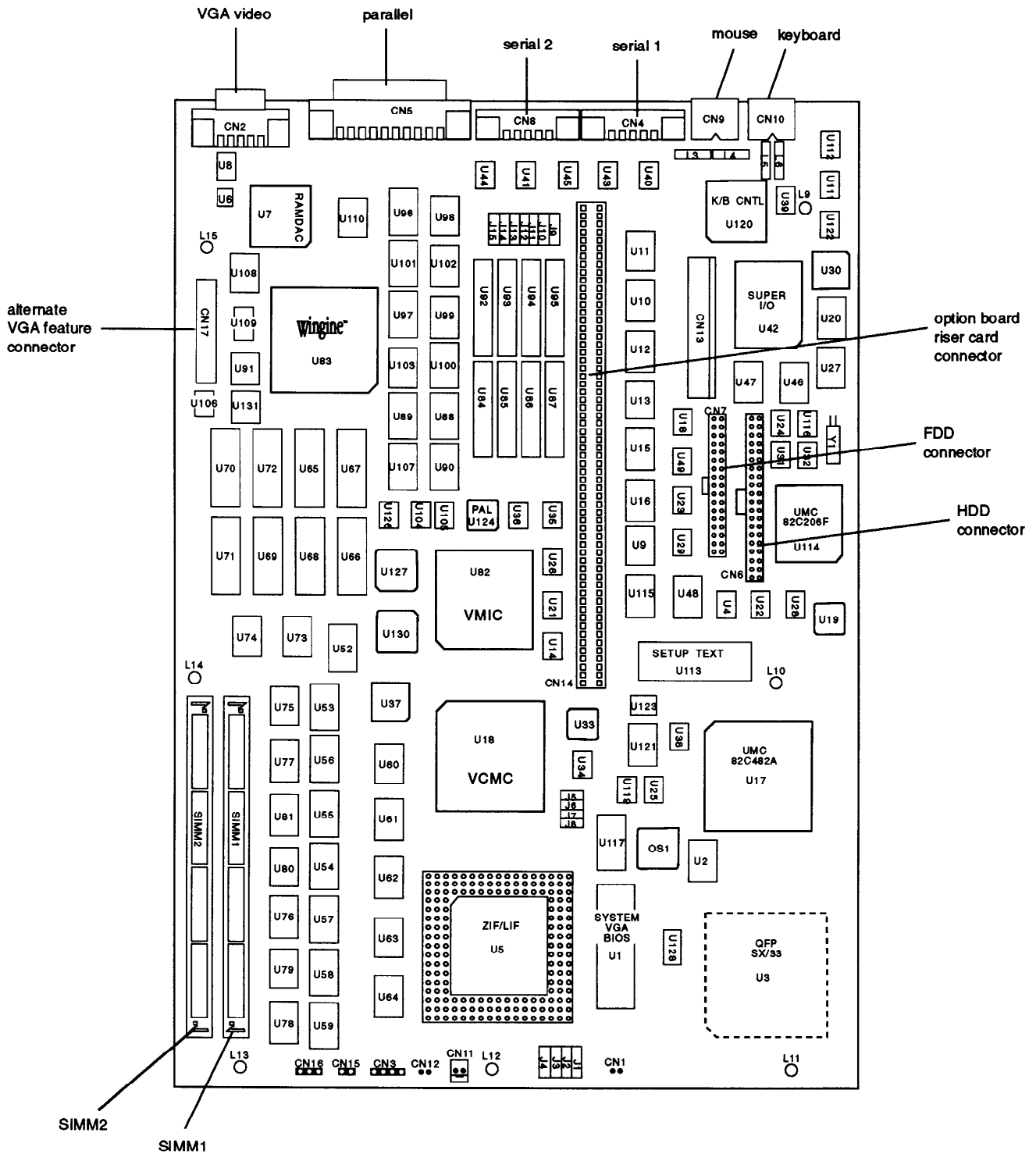
Mode	Size	Colors	Refresh rate	Mode type
30	640 × 480	256	60 Hz 73 Hz	NI
32	800 × 600	256	56 Hz 60 Hz 72 Hz	NI
34	1024 × 768	256	60 Hz 70 Hz 72 Hz 75 Hz	NI
36	1024 × 768	256	87 Hz	I
40	640 × 480	32K	60 Hz 73 Hz	NI
41	640 × 480	64K	60 Hz 73 Hz	NI
42	800 × 600	32K	56 Hz 60 Hz	NI
43	800 × 600	64K	56 Hz 60 Hz	NI

NI = Non-interlaced
I = Interlaced

Major Subassemblies

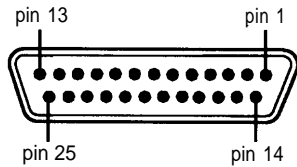


Main System Board Diagram



Connector Pin Assignments

Parallel Port Connector (CN5)



Parallel Port Connector Pin Assignments

Pin	Signal	Pin	Signal	Pin	Signal
1	Strobe	10	ACK*	19	Signal ground
2	Data 0	11	Busy	20	Signal ground
3	Data 1	12	PE	21	Signal ground
4	Data 2	13	Select	22	Signal ground
5	Data 3	14	Auto*	23	Signal ground
6	Data 4	15	Error*	24	Signal ground
7	Data 5	16	Init*	25	Signal ground
8	Data 6	17	Selectin*		
9	Data 7	18	Signal ground		

*Active low logic

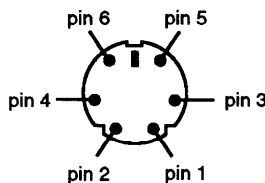
Serial Port Connectors (CN4 and CN8)



Serial Port Connector Pin Assignments

Pin	Signal	Pin	Signal
1	Data carrier detect	6	Data set ready
2	Receive data	7	Request to send
3	Transmit data	8	Clear to send
4	Data terminal ready	9	Ring indicator
5	Not used		

Keyboard Connector (CN10) and Mouse Connector (CN9)



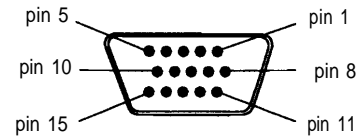
Caution

Although the keyboard and mouse connectors are physically identical, they cannot be used interchangeably.

Keyboard and Mouse Connector Pin Assignments

tin	Signal	Pin	Signal
1	Data	4	+5 VDC (fused)
2	Reserved	5	Clock
3	Ground	6	Reserved

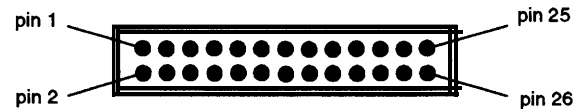
VGA Port Connector (CN2)



VGA Port Connector Pin Assignments

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	Red ground	11	NC
2	Green	7	Green ground	12	NC
3	Blue	8	Blue ground	13	Horizontal sync
4	NC	9	NC	14	Vertical sync
5	Ground	10	Ground	15	NC

VGA Feature Connector (CN17)



VGA Feature Connector Pin Assignments

Pin	Signal	Pin	Signal	Pin	Signal
1	Data 0	10	BLANK	19	EN_PCLK*
2	Data 1	11	HSYNC	20	Not connected
3	Data 2	12	VSYNC	21	Ground
4	Data 3	13	Ground	22	Ground
5	Data 4	14	Ground	23	Ground
6	Data 5	15	Ground	24	Ground
7	Data 6	18	Ground	25	Not connected
8	Data 7	17	EN_DATA*	26	Not connected
9	PCLK	18	ENSYNC*		

*Active low logic

DMA Assignments

Level	Assigned device
DMA0	Spare (&bit)
DMA1	Spare (&bit)
DMA2	Floppy disk drive controller (&bit)
DMA3	Spare (8-bit)
DMA4	Cascade to DMA controller 1
DMA5	Spare (16-bit)
DMA8	Spare (16-bit)
DMA7	Spare (16-bit)

Hardware Interrupts

IRQ no.	Function
IRQ0	Timer output
IRQ1	Keyboard
IRQ3	Serial port 2
IRQ4	Serial port 1
IRQ5	Available (parallel port 2)
IRQ6	Floppy disk drive controller
IRQ7	Parallel port 1
IRQ8	Real-time clock
IRQ9	Available
IRQ10	Available
IRQ11	Available
IRQ12	PS/2 compatible mouse or optional pointing device
IRQ13	Math coprocessor
IRQ14	Hard disk drive controller
IRQ15	Available

System I/O Address Map

Hex address*	Assigned device
000 - 01F	DMA controller 1, 8237A-5
020 - 021	Interrupt controller 1, 8259A, master
022 - 024	Epson reserved function
040 - 043	Timer, 8254-2
060 - 061, 064	8042 (Keyboard and mouse)
070 - 071 (CMOS)	Real-time clock NMI (non-maskable interrupt mask)
080 - 08F	DMA page register, 74LS612
0A0 - 0A1	Interrupt controller 2, 8259A
0C0 - 0DF	DMA controller 2, 8237A-5
0F0	Clear math coprocessor busy
0F1	Reset math coprocessor
0F8 - 0FF	Math coprocessor
1F0 - 1F8	Hard disk drive
200 - 207	Game I/O
278 - 27A	Parallel printer port 3
2B0 - 2DF	Alternate enhanced graphics adapter
2E1	GPIB (adapter 0)
2E2 and 2E3	Data acquisition (adapter 0)
2F8 - 2FF	Serial port 2
300 - 31F	Prototype card
348 - 357	DCA 3278
360 - 363	PC network (low address)
364 - 367	Reserved
368 - 36B	PC network (high address)
36C - 36F	Reserved
378 - 37A	Parallel printer port 2
380 - 38F	SDLC, bisync 2
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3B0 - 3BA	Monochrome display and printer adapter
3BC - 3BE	Parallel printer port 1
3C0 - 3CF	Enhanced graphics adapter
3D0 - 3DF	Color/graphics monitor adapter
3F0 - 3F7	Floppy disk drive controller
3F8 - 3FF	Serial port 1
6E2 and 6E3	Data acquisition (adapter 1)
790 - 793	Cluster (adapter 1)
AE2 and AE3	Data acquisition (adapter 2)
B90 - B93	Cluster (adapter 2)

Hex address*	Assigned device
EE2 - EE3	Data acquisition (adapter 3)
1390 - 1393	Cluster (adapter 3)
22E1	GPIB (adapter 1)
2390 - 2393	Cluster (adapter 4)
42E1	GPIB (adapter 2)
43C6	WINGINE/RAMDAC
62E1	GPIB (adapter 3)
82E1	GPIB (adapter 4)
83C6	WINGINE/RAMDAC
A2E1	GPIB (adapter 5)
C2E1	GPIB (adapter 6)
C3C6	WINGINE/RAMDAC
E2E1	GPIB (adapter 7)
F0A8	Epson reserved function
F0AC	Epson reserved function
F060 - F065	Epson reserved function
F069 - F06D	Epson reserved function

* Recommended addresses for installing devices

Jumper Settings

See the illustration on page 3 for the location of the jumpers on the main system board.

CPU Speed Jumper Settings

CPU speed	J1*	J2*	J3*	J4*
SX/33, DX2/66 (33 MHz)	A	A	B	A
DX2/50 (25 MHz)	B	B	A	A

* Factory setting according to processor external speed clock; do not change these jumpers unless you replace a DX2/50 chip with a DX2/66 chip.

CPU Type Jumper Settings

CPU type*	J5	J6	J7	J8
486SX/33	B	B	B	B
ODP486-33 or 487SX/33	A	A	A	A
ODP486DX50/66	A	A	B	B

* Factory-set according to system type. You need to change jumpers J5-J8 only if you have the 4SX/33 system and you remove the original microprocessor chip and install a new one, or if you install a future OverDrive processor in the 4DX2/50 or 4DX2/66.

Other Jumper Settings

Jumper number	Jumper setting	Function
J9**	A* B	Enables the built-in mouse connector Disables the built-in mouse connector
J10	A* B	Enables the built-in VGA display adapter Disables the built-in VGA display adapter
J11	A* B	A color monitor is installed A monochrome monitor is installed
J12**	A B*	Enables a mouse or other pointing device connected to an option card Disables a mouse or other pointing device connected to an option card
J13	A* B*	Disables the password Enables the password
J14, J15	A* B	Reserved

* Factory setting

**To use a mouse connected to a port on an option card, set J9 to B and J12 to A. If you connect another type of pointing device (such as a joy stick) to the option card port, set both jumpers to A.

Processor Chips

If you have the 4SX/33 system, you can install an Intel OverDrive processor (ODP486-33) or a 487SX/33 microprocessor (with built-in math coprocessor) on the main system board. Installing an OverDrive processor effectively doubles the internal clock speed of the computer's microprocessor; future OverDrive processors may be available for the 4DX2/50 and 4DX2/66 systems.

SIMM Installation

There are two SIMM sockets on the main system board. To increase the amount of memory in the computer up to 128MB, you can install 36-bit, fast-page mode SIMMs that operate at an access speed of 70 ns or faster, with a capacity of 1MB, 4MB, 16MB, or 64MB.

The following table shows the possible SIMM configurations; do not install memory in any other configuration. Make sure that both SIMMs operate at the same speed. There is 4MB of memory soldered onto the main system board.

SIMM Configurations

SIMM 1	SIMM 2	Total memory
		4MB *
1MB		5MB
	1MB	5MB
1MB	1MB	6MB
4MB		8MB
	4MB	8MB
4MB	1MB	9MB
1MB	4MB	9MB
4MB	4MB	12MB
16MB		20MB
	16MB	20MB
16MB	1MB	21MB
1MB	16MB	21MB
16MB	4MB	24MB
4MB	16MB	24MB
16MB	16MB	36MB
64MB **		68MB
	64MB **	68MB
64MB **	1MB	69MB
1MB	64MB **	69MB
64MB **	4MB	72MB
4MB	64MB **	72MB
64MB **	16MB	84MB
16MB	64MB **	84MB
64MB **	64MB **	128MB †

* Standard soldered memory

**When SIMM is available

† This memory configuration disables the 4MB of soldered memory

Hard Disk Drive Types

The table below lists types of hard disk drives you can use in the computer. Check this table and your hard disk manual to find the correct type number(s) for the hard disk drive(s) installed in the computer. You need to enter the type number(s) when you set the hard disk drive configuration in the SETUP program.

Hard Disk Drive Types

Type no.	Cylinders (CYL)	Heads (HDS)	Precomp	Landing zone	Sectors (SEC)	Size* (in MB)	Drive name/ manufacturer
1	306	4	128	305	17	10	
2	615	4	300	615	17	20	ST-225, ST-4026, WD-93024
3	615	6	300	615	17	30	ST-138A †
4	940	8	512	940	17	62	
5	940	6	512	940	17	46	
6	615	4	none	615	17	20	CP-3024, ST-125, ST-125A, ST-325A
7	462	8	256	511	17	30	
8	733	5	none	733	17	30	ST-4038
9	900	15	none	901	17	112	
10	820	3	none	820	17	20	
11	855	5	none	855	17	35	
12	855	7	none	855	17	49	
13	306	8	128	319	17	20	
14	733	7	none	733	17	42	
15							Reserved
16	612	4	0	663	17	20	
17	977	5	300	977	17	40	CDC 94205-51, CP-3044 †, CP-2044 †, 7040 †, 8051A †
18	977	7	none	977	17	56	
19	1024	7	512	1023	17	59	CP-2064
20	733	5	300	732	17	30	MK-133FA
21	733	7	300	732	17	42	MK-134FA, ST-157A †
22	733	5	300	733	17	30	
23	306	4	0	336	17	10	
24	903	4	none	902	46	81	CP-30084 ‡
25	776	8	none	775	33	100	CP-3104
26							Reserved
27	688	7	300	732	17	40	
28	976	5	488	977	17	40	
29							Reserved
30							Reserved
31	732	7	300	732	17	42	
32	1023	5	none	1023	17	42	
33	901	5	none	900	53	116	LPS120AT
34	723	13	none	722	51	234	LPS240AT ‡
35	934	16	none	933	17	124	MK2124FC
36							Reserved
37	683	16	none	682	38	202	CP-3204F
38	548	8	none	547	38	81	CP-2084
39	761	8	none	760	39	115	CP-30104 ‡
40	980	10	none	979	17	81	7080A, MK2024FC
41	1022	5	none	1022	34	84	CDC 94216-106 (ESD1)
42	1022	5	none	1022	36	89	CDC 94216-106
43	1024	8	512	1023	17	66	1325, 3085, LAN64, XT1085, NDR1085
44	828	10	none	828	34	137	MK-156F
45	1024	5	512	1023	17	42	
46	615	8	128	618	17	40	

* Actual size when formatted may be slightly different than the size listed on the drive label.

† Hard disk drive supported in translate mode

‡ Epson drives

If the computer has an Epson 120MB or 240MB hard disk drive, select the appropriate type number from the table below.

Epson Hard Disk Drive Types

Type number	Epson hard disk drive
39	120MB
34	240MB

Installation/Support Tips

Power

The computer has an input voltage selection switch on the back panel to select between 115V, for USA and Canadian use, and 230V, for use in other countries.

Mouse and Keyboard

When connecting the mouse and keyboard to the computer, be careful to plug them into the proper ports. Although the ports are physically identical, they are not interchangeable, and you can damage the main system board if you plug the connectors into the wrong ports.

Installing Diskette Drives

Make sure that the drive type has been correctly selected in the SETUP program.

Installing Hard Disk Drives

It is recommended that a 16-bit, AT-type hard disk controller be used if you are installing a drive that cannot use the embedded IDE interface. If you install a non-IDE hard disk drive and controller card, you need to use the SETUP program to disable the built-in IDE hard disk drive interface.

- ❑ See the hard disk drive type tables on page 7 and use the SETUP program to enter the correct type number(s) for the hard disk drive(s) installed in the computer. (Also be sure to use the SETUP program to set the hard disk drive configuration if you install or remove a hard disk drive.) You can select a type number that matches the parameters for the drive or a type number with parameters having lesser values, as long as they do not exceed the maximum capacity (in MB) of the drive. If there is no match for the drive, you can press Enter and then F2 at the Hard disk 1 or 2 option and enter the drive's exact parameters.

Software Problems

- ❑ If you are using a copy-protected program that can run only on a diskette or that requires a key disk, try to load the program at high speed. If you can't load the program at high speed, set the processor speed to automatic.

- ❑ If you are using a copy-protected program that does not require a key disk but requires a special procedure to install it on a hard disk, set the speed to low while you install the program. Then set the speed to high while you load and run the program. If this does not work, try installing and loading the program at low speed and then change to high speed to run it.
- ❑ You can change the processor speed using the SETUP program, the ESPEED program, or keyboard commands. See the User's Guide and *Setup Guide* for more information.

Password

Make sure that you do not forget the password you set. If you do, you must disable it by setting jumper J13 on the main system board to position A.

Information Reference List

Engineering Change Notices

None.

Technical Information Bulletins

None.

Product Support Bulletins

None.

Related Documentation

TM-ENDVRWG	EPSON Endeavor WG Service Manual
PL-ENDVRWG	EPSON Endeavor WG Parts Price List
SPKENDVRWG	EPSON Endeavor WG Self Paced Kit
400196000	EPSON Endeavor WG Setup Guide
400195900	EPSON Endeavor WG User's Guide
400193100	EPSON VGA Utilities Guide for Wingine based products