

## PCS30 - PCS40

The following personal computers belong to the PCS30-PCS40 system line:

PERSONAL COMPUTER	PROCESSOR	CLOCK	MEMORY	CACHE	SLOTS
PCS30 SX/40 Desktop slim case	80386 SX	40 MHz	2 MB to 16 MB	16 KB	5 AT 3 free
PCS30 DX/40 Desktop slim case	80386 DX	40 MHz	4 MB to 32 MB	128 KB	5 AT 3 free.
PCS40 SX/25 Desktop slim case	80486 SX	25 MHz	4 MB to 32 MB	Internal to the CPU	5 AT 3 free.
PCS40 SX/33 Minitower case	80486 SX	33 MHz	4 MB to 32 MB	Internal to the CPU	8 AT 6 free
PCS40 DX/33 Minitower case	80486 DX	33 MHz	4 MB to 32 MB	Internal to the CPU	8 AT 6 free
PCS40 D2/50 Minitower case	80486 DX2	50 MHz	4 MB to 32 MB	Internal to the CPU+ 128 KB 2 <sup>nd</sup> level	8 AT 6 free
PCS40 D2/66 Minitower case	80486 DX2	66 MHz	4 MB to 32 MB	Internal to the CPU + 128 KB 2 <sup>nd</sup> level	8 AT 6 dispo.

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### NOTE:

Nearly 5,000 systems have been manufactured specifically for the Italian Subsidiary. Following are the major differences between these models and those of the standard production:

- System board: Some systems have been equipped with a system board that can only support the 33 MHz 80386 SX CPU.
- Hard disk: These systems do not come with a hard disk installed at the factory. The first hard disk on these systems must be installed by the field engineer using one of the following kits:
  - **HDU 85/M**, 20 85 MB HDUs
  - **HDU 170/M**, 20 170 MB HDUs
  - **HDU 240/M**, 20 240 MB HDUs
- Streaming tape: These systems use an 80/120 MB streaming tape drive with a floppy interface.
- Monitors: The following monitors can be used - **DSM 25-415**, 14" color
  - **DSM 27-214**, trimode color
- Bus: Due to the problems with the casing of these systems, the joystick and I/O board second serial port connectors must be mounted on a board which is installed in one of the expansion slots. This means that the system loses one expansion slot.
- connectors: Therefore:
  - For systems with slim case, of 5 slots 2 are available.
  - For systems with minitower case, of 8 slots 5 are available.

## SYSTEM BOARD & COPROCESSOR

Different types of board are available depending on the personal computer model.

SYSTEM BOARD NAME	PROCESSOR	COPROCESSOR	PERSONAL COMPUTER
WH 386 SX	40 MHz 386 SX	40 MHz 387 SX *	PCS30 SX/40 slim
4386-VC-HD	40 MHz 386 DX	40 MHz 387 DX *	PCS30 DX/40 slim
486-VC	25 MHz 486 SX	25 MHz 487 SX 50 MHz 486 DX2	PCS40 SX/25 slim
	33 MHz 486 SX	33 MHz 487 SX 66 MHz 486 DX2	PCS40 SX/33 Minitower
	33 MHz 486 DX	66 MHz 486 DX2 replacing the installed 486 DX	PCS40 DX/33 Minitower
	50 MHz 486 DX2	NO	PCS40 D2/50 Minitower
	66 MHz 486 DX2	NO	PCS40 D2/66 Minitower

\* These coprocessors can work on these systems even though Olivetti is not planning to use them.

## SYSTEM BOARD & MEMORY

SYSTEM BOARD	MEMORY																								
WH 386 SX	Two memory banks each consisting of two sockets. These banks already host four 1MBx9 SIMMs for a total of 4 MB. Memory can be expanded at 8 MB steps:																								
	<table><tr><th>BANK 0</th><th>BANK 1</th><th>TOTAL</th><th>NOTES</th></tr><tr><td>2 MB Two 1MB x 9 SIMMs</td><td>2 MB Two 1MB x 9 SIMMs</td><td>4 MB</td><td>Standard configuration</td></tr><tr><td>2 MB Two 1MB x 9 SIMMs</td><td>8 MB Two 4MB x 9 SIMMs</td><td>10 MB</td><td>Removing the 1 MB SIMMs from bank 1</td></tr><tr><td>8 MB Two 4MB x 9 SIMMs</td><td>8 MB Two 4MB x 9 SIMMs</td><td>16 MB</td><td>Removing the SIMMs from banks 0 and 1</td></tr></table>	BANK 0	BANK 1	TOTAL	NOTES	2 MB Two 1MB x 9 SIMMs	2 MB Two 1MB x 9 SIMMs	4 MB	Standard configuration	2 MB Two 1MB x 9 SIMMs	8 MB Two 4MB x 9 SIMMs	10 MB	Removing the 1 MB SIMMs from bank 1	8 MB Two 4MB x 9 SIMMs	8 MB Two 4MB x 9 SIMMs	16 MB	Removing the SIMMs from banks 0 and 1								
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4386-VC-HD and 486-VC	Two memory banks each consisting of four sockets. Bank 0 already host four 1MBx9 SIMMs for a total of 4 MB. Memory can be expanded at 8 MB steps:																								
	<table><tr><th>BANK 0</th><th>BANK 1</th><th>TOTAL</th><th>NOTES</th></tr><tr><td>4 MB 4 1MB x 9 SIMMs</td><td>-</td><td>4 MB</td><td>Standard configuration</td></tr><tr><td>4 MB 4 1MB x 9 SIMMs</td><td>4 MB 4 1MB x 9 SIMMs</td><td>8 MB</td><td></td></tr><tr><td>16 MB 4 4MB x 9 SIMMs</td><td>-</td><td>16 MB</td><td>Removing 1 MB SIMMs from bank 0</td></tr><tr><td>4 MB 4 1MB x 9 SIMMs</td><td>16 MB 4 4MB x 9 SIMMs</td><td>20 MB</td><td></td></tr><tr><td>16 MB 4 4MB x 9 SIMMs</td><td>16 MB 4 4MB x 9 SIMMs</td><td>32 MB</td><td>Removing 1 MB SIMMs from bank 0</td></tr></table>	BANK 0	BANK 1	TOTAL	NOTES	4 MB 4 1MB x 9 SIMMs	-	4 MB	Standard configuration	4 MB 4 1MB x 9 SIMMs	4 MB 4 1MB x 9 SIMMs	8 MB		16 MB 4 4MB x 9 SIMMs	-	16 MB	Removing 1 MB SIMMs from bank 0	4 MB 4 1MB x 9 SIMMs	16 MB 4 4MB x 9 SIMMs	20 MB		16 MB 4 4MB x 9 SIMMs	16 MB 4 4MB x 9 SIMMs	32 MB	Removing 1 MB SIMMs from bank 0
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The SIMMs to be used come in the following kits:																									
<b>EXM-820/D</b> - 4 MB - four 1MB x 9 SIMMs																									
<b>EXM-821/D</b> - 16 MB - four 4MB x 9 SIMMs																									

**CHARACTERISTICS**

Architecture	AT
Memory access time	70 ns
Floppy Disk	1.44 MB 3.5" MITZUMI D359T3 1.44 MB Y-E DATA YD-702B / 702D 1.2 MB 5.25" Panasonic JU475-3 - JU475-4 1.2 MB 5.25" Toshiba ND 08 DE 1.2 MB 5.25" Panasonic JU475-5
Hard Disk	85 MB CONNER CP30084E 85 MB W.D. Caviar 280 85 MB Quantum ELS 85 AT 120 MB CONNER CP30124 170 MB CONNER CP30174E 170 MB Quantum ELS 170 AT 170 MB CONNER CFA170A 170 MB Quantum LPS170 AT (local BUS) 210 MB W.D. AC1220 210 MB CONNER CFS210A (local BUS) 240 MB Quantum LPS 240 AT 240 MB CONNER CP30254 240 MB W.D. AC2250-14F 340 MB W.D. AC2340 340 MB CONNER CFA340A 340 MB Quantum LPS340 AT (local BUS) 540 MB CONNER CFA540A (local BUS)
Streaming Tape	80/120 MB <b>Ilrwin 31250A</b> with floppy interf.
Video controller	Board to be installed on the bus: 1570 SX Rev. A 512 KB of video memory 1580 Rev.A 1 MB of video memory
HDU and FDU controller	Board to be installed on the bus. This board includes: - Two serial ports - One parallel port - One joystick port - Floppy disk controller - Hard disk interface
Mouse	400 dpi serial 3-button mouse
Keyboard	101/102-key ANK 27-102/N

**BIOS****System Board****WH 386 SX**

BIOS from American  
Megatrends Inc.

**System Board****4386-VC-HD**

BIOS from Harward

**System Board****486-VC**

BIOS from Harward

**POWER SUPPLY**

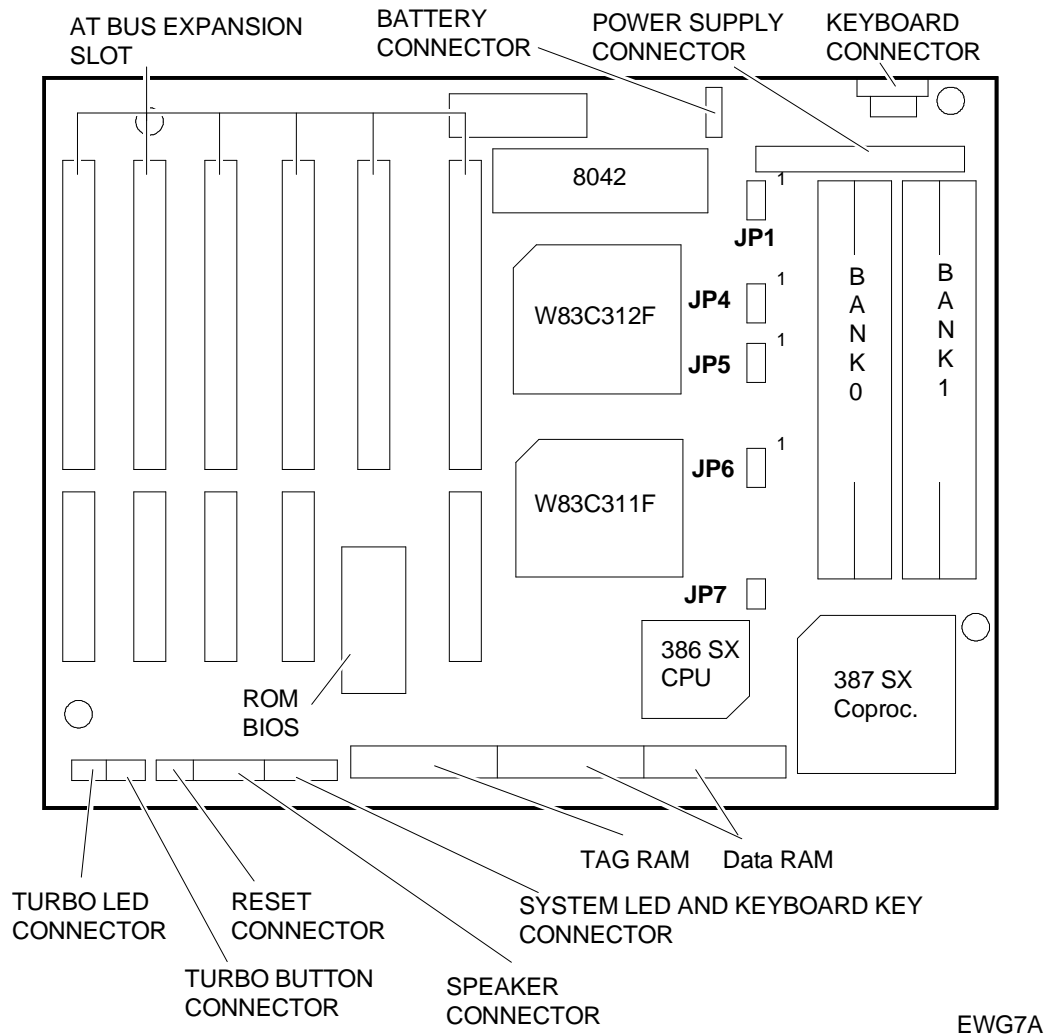
MAX POWER MPV-200

90 - 130 V

180 - 260 V

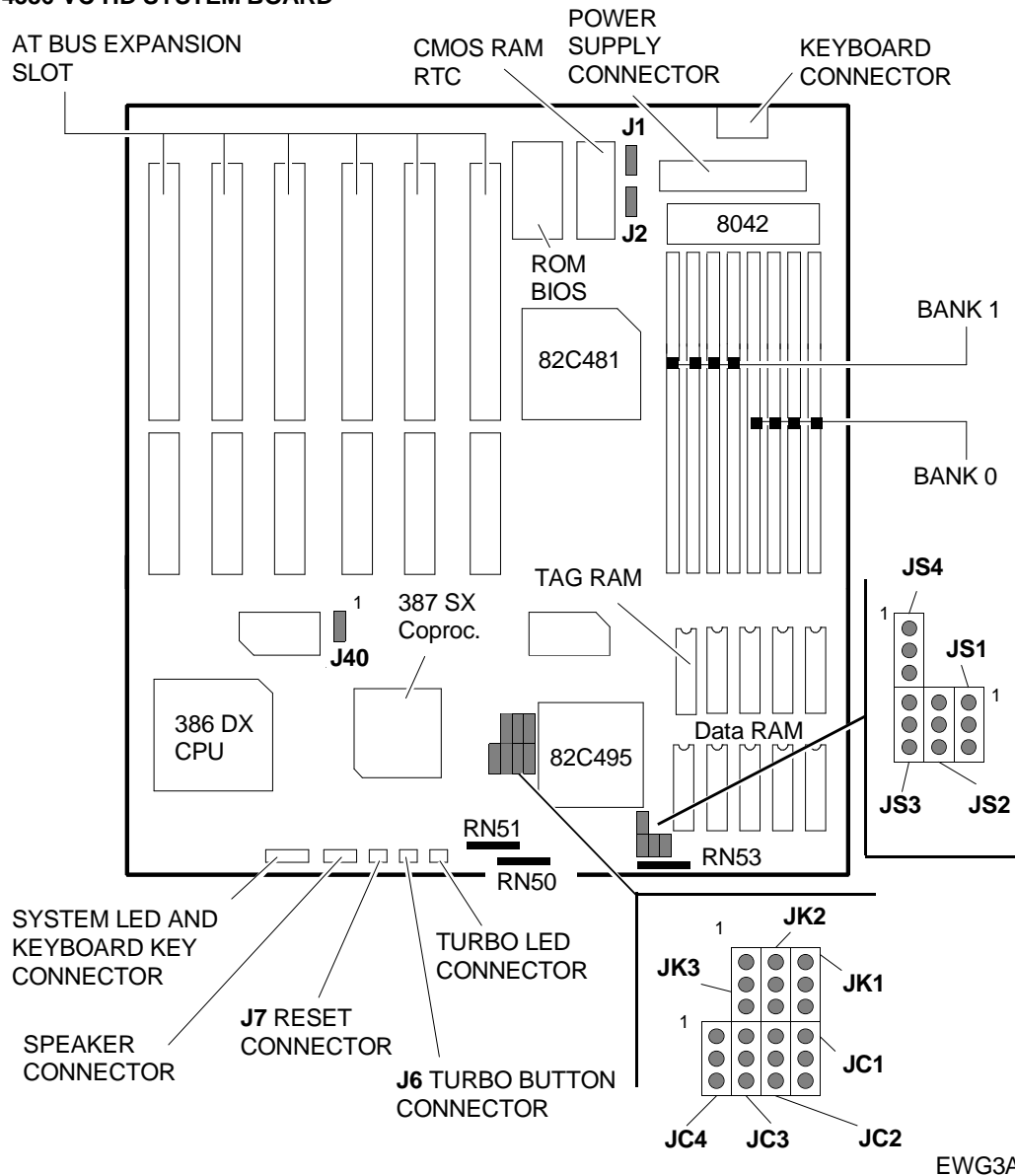
**SYSTEM TEST**

LEVEL	NOTES
Rev. 1.00 Rev. 1.01	<ul style="list-style-type: none"> <li>- Hard disk test has been added</li> <li>- Video test has been optimized</li> <li>- Some CPU tests have been modified</li> </ul>

**SYSTEM BOARD COMPONENTS AND JUMPERS****WH 386 SX SYSTEM BOARD**

JUMPER	SETTING	FUNCTION
JP1	On 1 - 2 On 2 - 3	Monochrome monitor connected to the system Color monitor connected to the system
JP7	IN OUT	Cache enabled Cache disabled
JP5	On 1 - 2 On 2 - 3	64 KB cache 16 KB cache
JP4 JP6	On 1 - 2 On 1 - 2	System clock selection: CLK2IN/4
JP4 JP6	On 2 - 3 On 2 - 3	System clock selection: CLK2IN/5
JP4 JP6	On 2 - 3 On 1 - 2	System clock selection: CLK2IN/6
JP4 JP6	On 1 - 2 On 2 - 3	System clock selection: CLK2IN/8

# 4386-VC-HD SYSTEM BOARD



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EWG3A

JUMPER	SETTING	FUNCTION
J1	IN OUT	Reset by the system Real Time Clock Normal operation (default)
J2	IN OUT	Color VGA monitor connected to the system Monochrome EGA or VGA monitor connected to the system
J6 Turbo Switch	IN OUT	System operations in normal mode System operations in turbo mode
J7 Reset Switch	IN OUT	System reset Normal operations
J40	On 1 - 2 On 2 - 3	Synchronous coprocessor clock (default) Asynchronous coprocessor clock

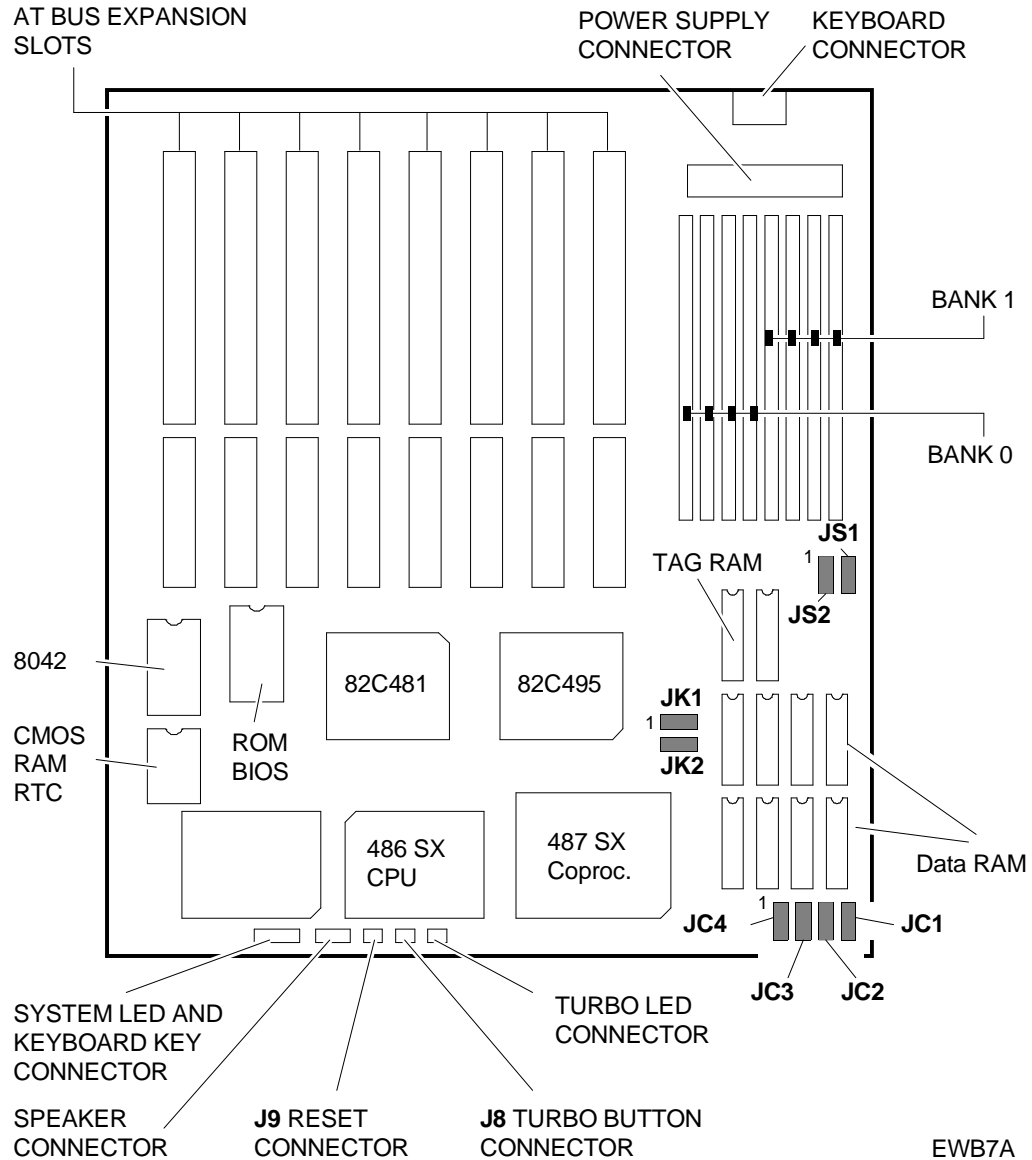
## System Board CPU Selection Jumpers

CPU	JUMPERS							1 MHz OSCILL.	0 OHM 10P5R	22 OHM 8P4R
	JK1	JK2	JK3	JK4	JC1	JC2	JC3			
486DX-50	2-3	2-3	2-3	1-2	1-2	1-2	1-2	50.00	RN51	RN10
486DX-33	2-3	2-3	2-3	1-2	1-2	1-2	1-2	33.33	RN51	RN10
486DX-25	1-2	1-2	2-3	1-2	1-2	1-2	1-2	50.00	RN51	RN10
485DX-20	1-2	1-2	2-3	1-2	1-2	1-2	1-2	40.00	RN51	RN10
486DX2-66	2-3	2-3	2-3	1-2	1-2	1-2	1-2	33.33	RN51	RN10
486DX2-50	1-2	1-2	2-3	1-2	1-2	1-2	1-2	50.00	RN51	RN10
487SX-25	1-2	1-2	2-3	1-2	1-2	1-2	2-3	50.00	RN51	RN10
487SX-20	1-2	1-2	2-3	1-2	1-2	1-2	2-3	40.00	RN51	RN10
486SX-33	2-3	2-3	2-3	1-2	2-3	2-3	OUT	33.33	RN51	RN10
486SX-25	1-2	1-2	2-3	1-2	2-3	2-3	OUT	50.00	RN51	RN10
486SX-20	1-2	1-2	2-3	1-2	2-3	2-3	OUT	40.00	RN51	RN10
<b>386DX-40</b>	<b>1-2</b>	<b>1-2</b>	<b>1-2</b>	<b>2-3</b>	<b>1-2</b>	<b>1-2</b>	<b>1-2</b>	<b>80.00</b>	<b>RN50</b>	<b>RN53</b>
386SX-33	1-2	1-2	1-2	2-3	1-2	1-2	1-2	66.66	RN50	RN53

NOTE: These jumper must not be used.

## Cache Memory Configuration and Size

	CACHE MEMORY SIZE		
	64 KB	128 KB	256 KB
DATA RAM	Eight 8 KB x 8 SRAM chips	Four 32 KB x 8 SRAM chips	Eight 32 KB x 8 SRAM chips
TAG RAM	One 8 KB x 8 SRAM chip	One 8 KB x 8 SRAM chip	One 32 KB x 8 SRAM chip
<b>PONTICELLI</b>			
JS1	On 1 - 2	On 1 - 2	On 2 - 3
JS2	On 1 - 2	On 2 - 3	On 2 - 3
JS3	On 1 - 2	On 2 - 3	On 1 - 2
JS4	On 1 - 2	On 2 - 3	On 1 - 2

**486-VC SYSTEM BOARD WITH 80486 SX**

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JUMPER	SETTING	FUNCTION
J2 (wirings)	IN OUT	Reset from system Real Time Clock Normal operation (default)
J3 (wirings)	IN OUT	color monitor connected to the system EGA, VGA and monochrome monitor connected to the system (default)
J8 Turbo Switch	IN OUT	System operations in normal mode System operations in turbo mode
J9 Reset Switch	IN OUT	System reset Normal operation

**System Board CPU Selection Jumpers**

<b>JUMPER</b>	<b>CPU</b>		
	<b>486 SX (default)</b>	<b>487 SX</b>	<b>486 DX</b>
JC1	On 2 - 3	On 1 - 2	On 1 - 2
JC2	On 2 - 3	On 1 - 2	On 1 - 2
JC3	On 2 - 3	On 2 - 3	On 1 - 2
JC4	OUT	On 2 - 3	On 1 - 2

**CPU Clock Selection**

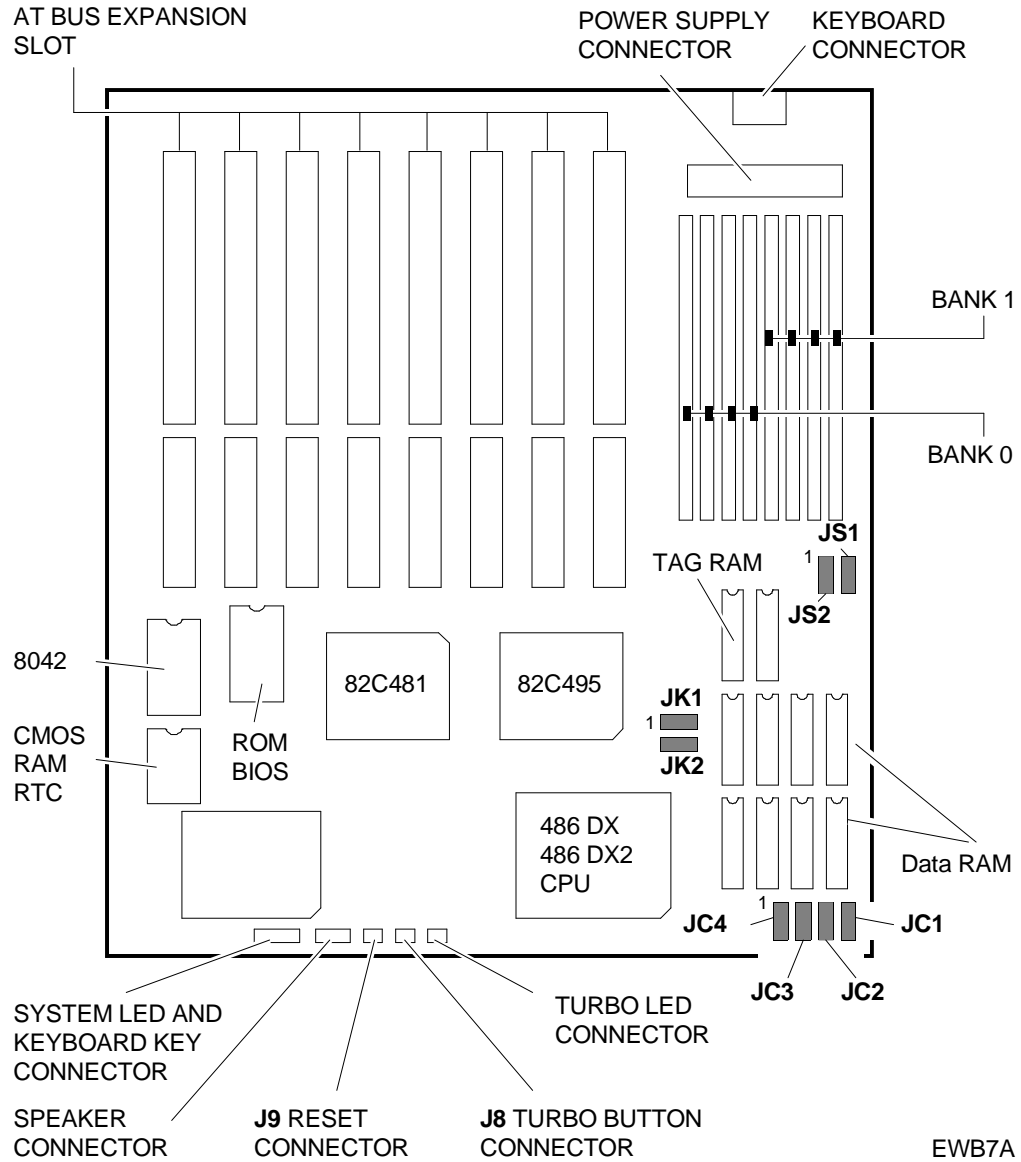
<b>JUMPERS</b>	<b>Clock x 1 (33 MHz Clock)</b>	<b>Clock x 2 (25 MHz Clock)</b>
JK1	On 2 - 3	On 1 - 2
JK2	On 2 - 3	On 1 - 2

**Cache Memory Configuration and Size**

	<b>CACHE MEMORY SIZE</b>		
	<b>64 KB</b>	<b>128 KB</b>	<b>256 KB</b>
DATA RAM	Eight 8 KB x 8 SRAM chips	Four 32 KB x 8 SRAM chips	Eight 32 KB x 8 SRAM chips
TAG RAM	One 8 KB x 8 SRAM chip	One 8 KB x 8 SRAM chip	One 32 KB x 8 SRAM chip
<b>JUMPERS</b>			
JS1	On 1 - 2	On 1 - 2	On 2 - 3
JS2	On 1 - 2	On 2 - 3	On 2 - 3



# 486-VC SYSTEM BOARD WITH 80486 DX AND 80486 DX2

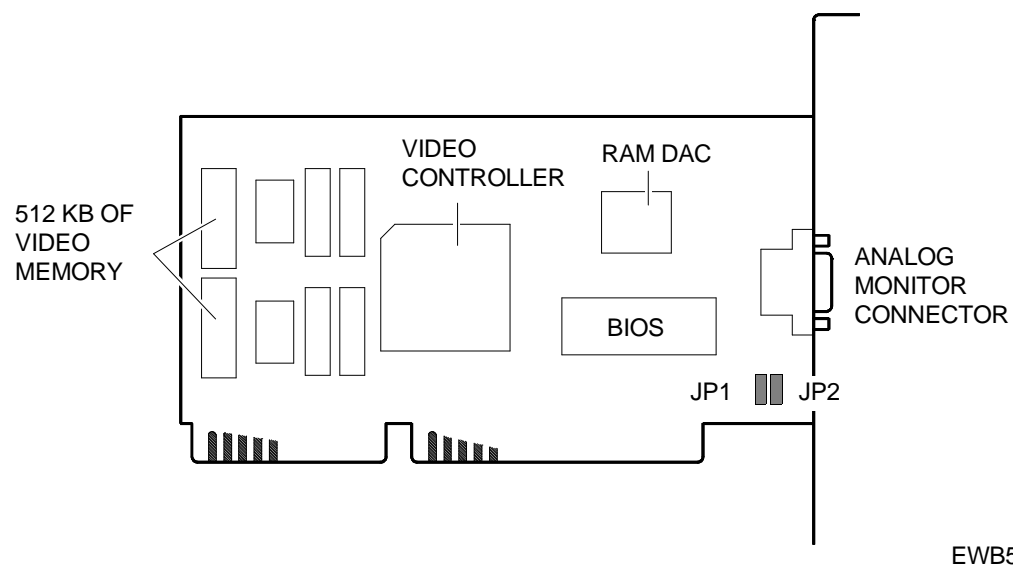


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EWB7A

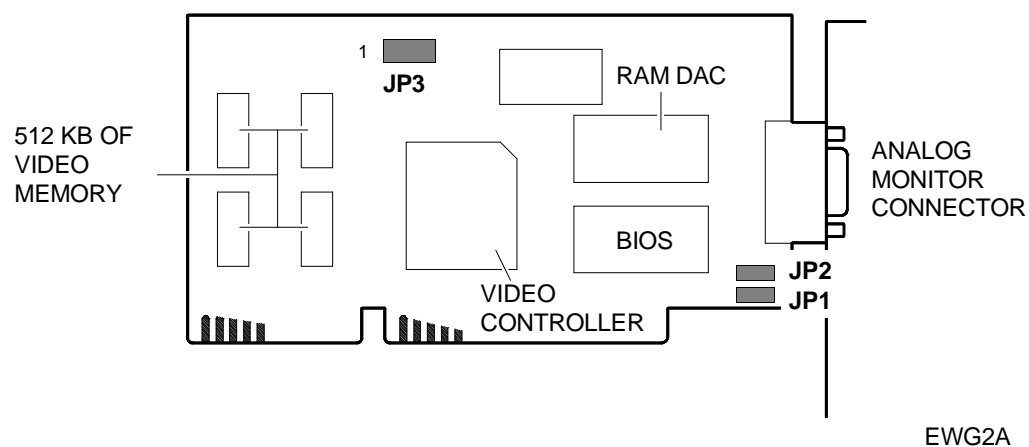
The jumpers on this board have the same meanings as those on the previous board.

## 1570 SX Rev. A VIDEO CONTROLLER

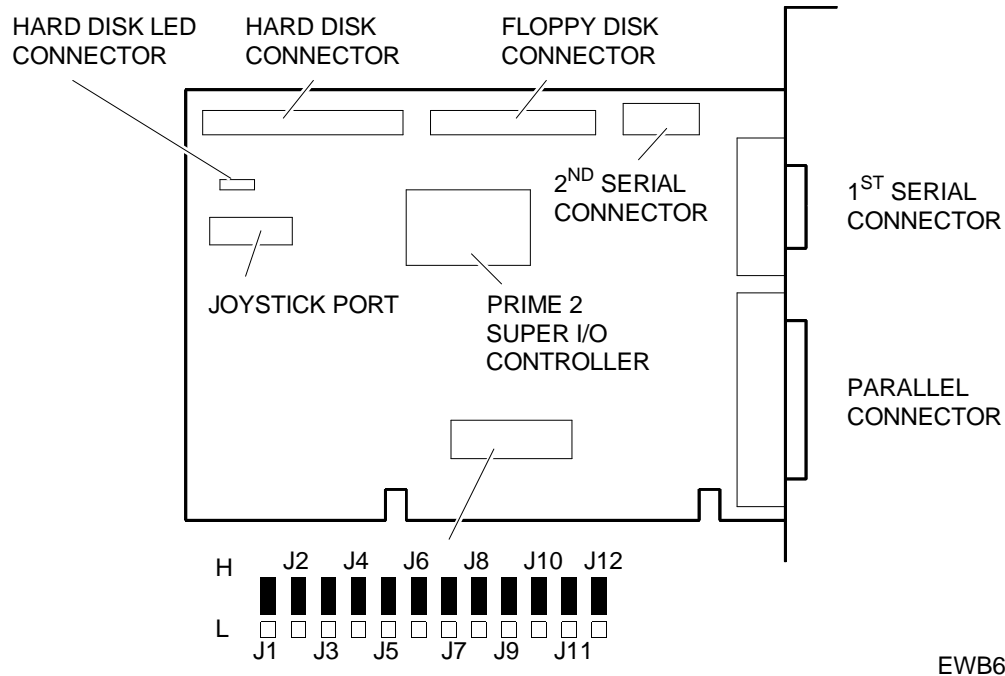


JUMPERS	SETTING	FUNCTION
JP1	On 1 - 2	Interlaced video (default)
	On 2 - 3	Non-interlaced video
JP2	Riservato (2-3 Default)	

## 1580 Rev. A VIDEO CONTROLLER



JUMPERS	SETTING	FUNCTION
JP1	On 1 - 2	VESA
	On 2 - 3	SVGA (default)
JP2	On 1 - 2	Interlaced video (default)
	On 2 - 3	Non-interlaced video
JP3	On 1 - 2	Normal (default)
	On 2 - 3	Turbo

**SUPER I/O CONTROLLER****Jumpers**

DEVICE	JUMPER	SETTING	FUNCTION
Serial port 1	J7	H L	Serial port 1 enabled Serial port 1 disabled
	J8	H L	Serial port 1 addressed at 3F8-3FF h & IRQ4 (COM1) Serial port 1 addressed at 3E8-3EF h & IRQ4 (COM3)
Serial port 2	J9	H L	Serial port 2 enabled Serial port 2 disabled
	J10	H L	Serial port 2 addressed at 2F8-2FF h & IRQ3 (COM2) Serial port 2 addressed at 2E8-2EF h & IRQ4 (COM4)
Parallel port	J11	H L	Parallel port enabled Parallel port disabled
	J12	H L	Parallel port addressed at 378-37F h & IRQ7 (LPT1) Parallel port addressed at 278-27F h & IRQ7 (LPT2)
Floppy disk interface	J1	H L	Floppy disk interface enabled Floppy disk interface disabled
	J2	H L	Floppy disk interface addressed at 3F0-3F7 h IFloppy disk interface addressed at 370-377 h
IDE AT hard disk interface	J3	H L	Hard disk interface enabled Hard disk interface disabled
AT or XT HDU selection	J6	H L	IDE AT hard disk IDE XT hard disk
AT HDU interf. address	J4	H L	AT HDU interface addressed at 1F0-1F7 h & 3F6-3F7 h AT HDU interface addressed at 170-177 h & 376-377 h
XT HDU interf. address	J5	H L	XT HDU interface addressed at 320 - 323 h XT HDU interface addressed at 324 - 327 h

**INTERRUPT LEVELS**

LEVEL	NAME	CONTROLLER	FUNCTION
1	IRQ0	1	Channel 0 timer OUT
2	IRQ1	1	Keyboard
3 to 10 *	IRQ2	1	Interrupt to Controller 1 from Controller 2
3	IRQ8	2	Real time clock
4	IRQ9	2	Available
5	IRQ10	2	Available
6	IRQ11	2	Available
7	IRQ12	2	Mouse
8	IRQ13	2	Coprocessore
9	IRQ14	2	Hard disk controller
10	IRQ15	2	Available
11	IRQ3	1	Serial port 2
12	IRQ4	1	Serial port 1
13	IRQ5	1	Parallel port 1
14	IRQ6	1	Floppy disk controller
15	IRQ7	1	Parallel port 2

\* The priority level depends on the selected interrupt. For example, if interrupt IRQ11 is selected, the priority level is 6; if interrupt IRQ15 is selected, the priority level is 10.

**DMA CHANNELS**

CHANNEL	NO. OF BITS	FUNCTION
0	8	Reserved
1	8	Available
2	8	Floppy disk transfers
3	8	Available
4	16	Used for the cascade connection of DMA 1
5	16	Available
6	16	Available
7	16	Available

**I/O ADDRESS MAPS**

ADDRESS	FUNCTION	ADDRESS	FUNCTION
0-0F h	8237A-5 DMA controller 1	F9 h	Disables chip set configuration registers
020-021 h	Interrupt controller 1	FB h	Enables chip set configuration registers
040-43 h	8254 timer	0C0-0DF h	DMA controller #2
060 h	8742 data keyboard controller	1F0-1F7 h	IDE hard disk registers
61 h	System Control Port B	201 h	Joystick port
64 h	8742 commands keyboard controller	278-27F h	Parallel port 2 (LPT2)
070 - 071 h	Real time clock, NMI Mask, CMOS RAM (write registers)	2B0-2BF h	EGA video
080-08F h	DMA page registers	2C0-2CF h	EGA video
90 h	Custom I/O port #1	2D0 - 2DF h	EGA video
91 h	Custom I/O port #2	2E8-2EF	Serial port 4 (COM4)
92 h	PS/2-compatible Fast Gate A20 and Fast Reset	2F8-2FF h	Serial port 2 (COM2)
94 h	Video controller system Setup register	378-37F h	Parallel port 1 (LPT1)
102 h	Video controller system Setup register	3B0/3BB h	MDA video
0A0-0A1 h	Interrupt controller 2	3B4/3D4	VGA video
EC - ED f	Chip set configuration port	3B5/3D5 h	VGA video
EE h	Alternative Fast A20	3BA/3DA h	VGA video
EF h	Alternative fast CPU reset port	3C0-3CF h	EGA/VGA video
F0 h	Coprocessor busy register	3D0-3DF h	Video controller
F1 h	Coprocessor reset register	3F0-3F7 h	Floppy disk drive location
F4 h	Slow CPU register	3E8-3EF h	Serial port 3 (COM3)
F5 h	Fast CPU register	3F8-3FF h	Serial port (COM1)

**39****SYSTEM MEMORY MAP**

ADDRESS RANGE	FUNCTION
00000 h - 7FFFF h	512 KB of system memory; user data area
80000 h - 9FFFF h	128 KB of memory for optional boards
A0000 h - BFFFF h	Video memory
C0000 h - CFFFF h	Video BIOS
D0000 h - DFFFF h	Extended/expanded ROM BIOS for I/O channels
E0000 h - EFFFF h	Video BIOS
F0000 h - FFFFF h	System BIOS
100000 h - 3FFFFFFh	4 MB of system memory
400000 h - 13FFFFFF h	Memory expansion SIMMs
FFFF0000 h - FFFFFFFF h	System BIOS shadow

**TABLE OF COMPATIBLE HARD DISK DRIVES**

The system's configuration utilities contain fields in which to define the type and operating parameters of the hard disk drive installed in the system.

The BIOS already contains the parameters of the different hard disk drives.

For the hard disks certified by Olivetti, you will need to select hard disk type 47, 48 or 49 and manually define the parameters of the hard disk installed using the → and ← keys.

The following table gives the different parameters of these hard disks.

TYPE	CYL	HEADS	WPCOM	LZONE	SET.	CAP.	MODEL
47-49	980	10	0	980	17	85 MB	W.D. Caviar 280
47-49	903	4	0	903	46	85 MB	CONNER Jaguar CP30084E
47-49	977	10	0	977	17	85 MB	Quantum Pioneer ELS85 AT
47-49	903	8	0	903	46	170 MB	CONNER Jaguar CP30174E
47-49	1011	15	0	1011	22	170 MB	Quantum Pioneer ELS170AT
47-49	1010	6	0	1010	55	170 MB	W.D. AC1170
47-49	895	10	0	895	55	240 MB	CONNER CP30254
47-49	723	13	0	723	51	240 MB	Quantum LPS240AT
47-49	1010	9	0	1010	55	240 MB	W.D. AC225
47-49			0			120 MB	CONNER CP30124
47-49	1010	12	0	1010	55	340 MB	W.D. AC2340

**NOTE:** The system automatically calculates the capacity of the hard disk drive.

