# 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 | IIntrnal to the CPU+ 128 KB 2nd 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 2nd level | 8 AT 6 dispo. |



**NOTE**:
Nearly 5,000 systems have been manufactured specificlly 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 connectors: 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 looses one expansion slot.
  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<br>50 MHz 486 DX2 | PCS40 SX/25 slim |
| | 33 MHz 486 SX | 33 MHz 487 SX<br>66 MHz 486 DX2 | PCS40 SX/33 Minitower |
| | 33 MHZ 486 DX | 66 MHz 486 DX2 replacig 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: | | | |
| | **BANK 0** | **BANK 1** | **TOTAL** | **NOTES** |
| | 2 MB<br>Two 1MB x 9 SIMMs | 2 MB<br>Two 1MB x 9 SIMMs | 4 MB | Standard configuration |
| | 2 MB<br>Two 1MB x 9 SIMMs | 8 MB<br>Two 4MB x 9 SIMMs | 10 MB | Removing the 1 MB SIMMs from bank 1 |
| | 8 MB<br>Two 4MB x 9 SIMMs | 8 MB<br>Two 4MB x 9 SIMMs | 16 MB | Removing the SIMMs from banks 0 and 1 |
| 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: | | | |
| | **BANK 0** | **BANK 1** | **TOTAL** | **NOTES** |
| | 4 MB<br>4 1MB x 9 SIMMs | - | 4 MB | Standard configuration |
| | 4 MB<br>4 1MB x 9 SIMMs | 4 MB<br>4 1MB x 9 SIMMs | 8 MB | |
| | 16 MB<br>4 4MB x 9 SIMMs | - | 16 MB | Removing 1 MB SIMMs from bank 0 |
| | 4 MB<br>4 1MB x 9 SIMMs | 16 MB<br>4 4MB x 9 SIMMs | 20 MB | |
| | 16 MB<br>4 4MB x 9 SIMMs | 16 MB<br>4 4MB x 9 SIMMs | 32 MB | Removing 1 MB SIMMs from bank 0 |
| | The SIMMs to be used come in the following kits:<br>**EXM-820/D** - 4 MB - four 1MB x 9 SIMMs<br>**EXM-821/D** - 16 MB - four 4MB x 9 SIMMs | | | |

## CHARACTERISTICS

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

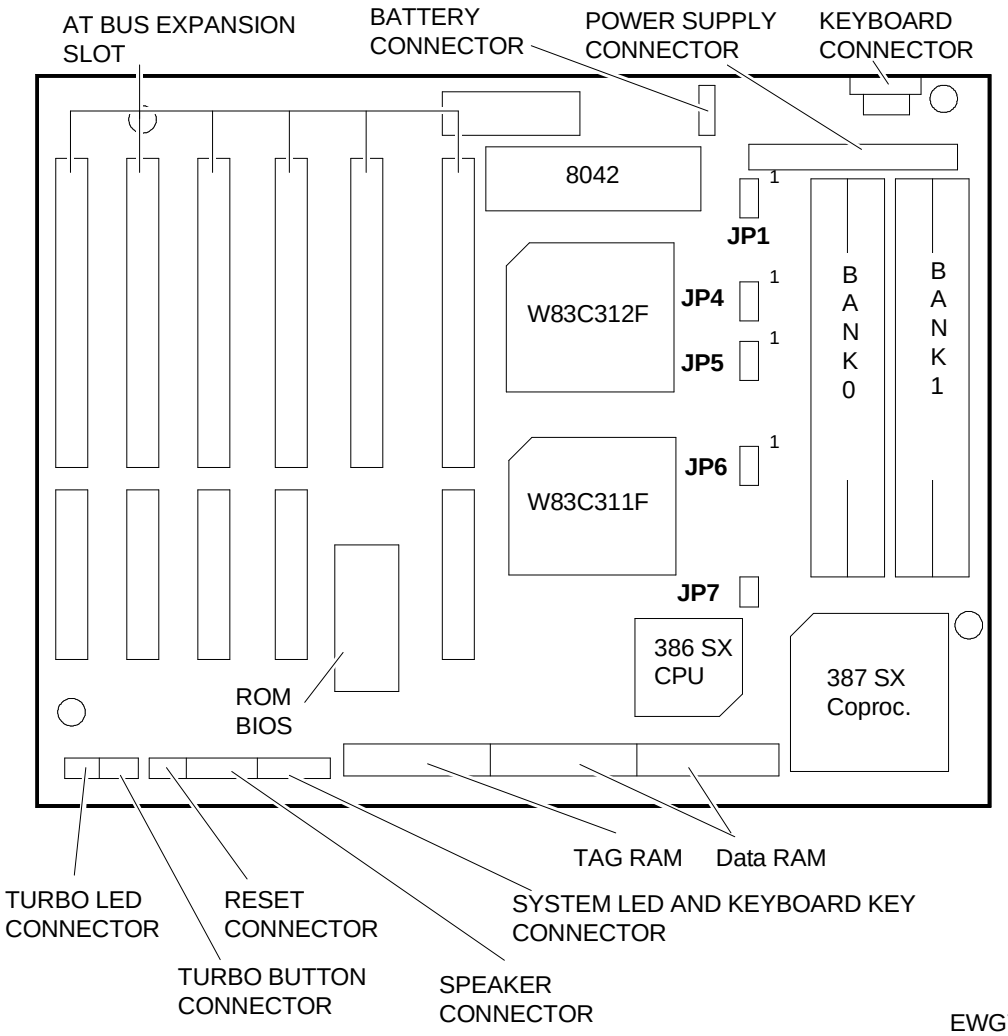


## SYSTEM TEST

| LEVEL | NOTES |
|---|---|
| Rev. 1.00<br>Rev. 1.01 | - Hard disk test has been added<br>- Video test has been optimized<br>- Some CPU tests have been modified |

**SYSTEM BOARD COMPONENTS AND JUMPERS**

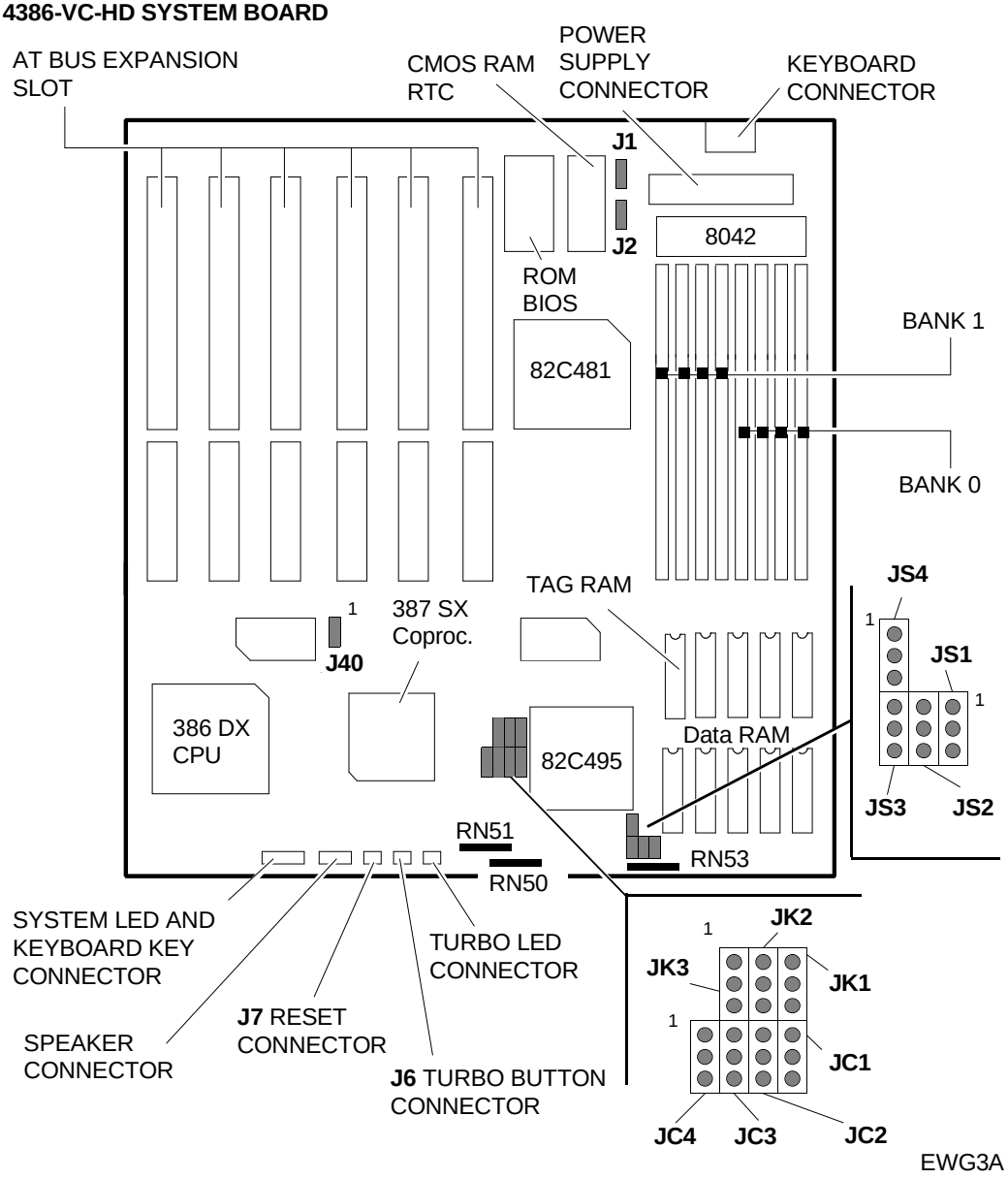
**WH 386 SX SYSTEM BOARD**




EWG7A

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

**4386-VC-HD SYSTEM BOARD**




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

**System Board CPU Selection Jumpers**

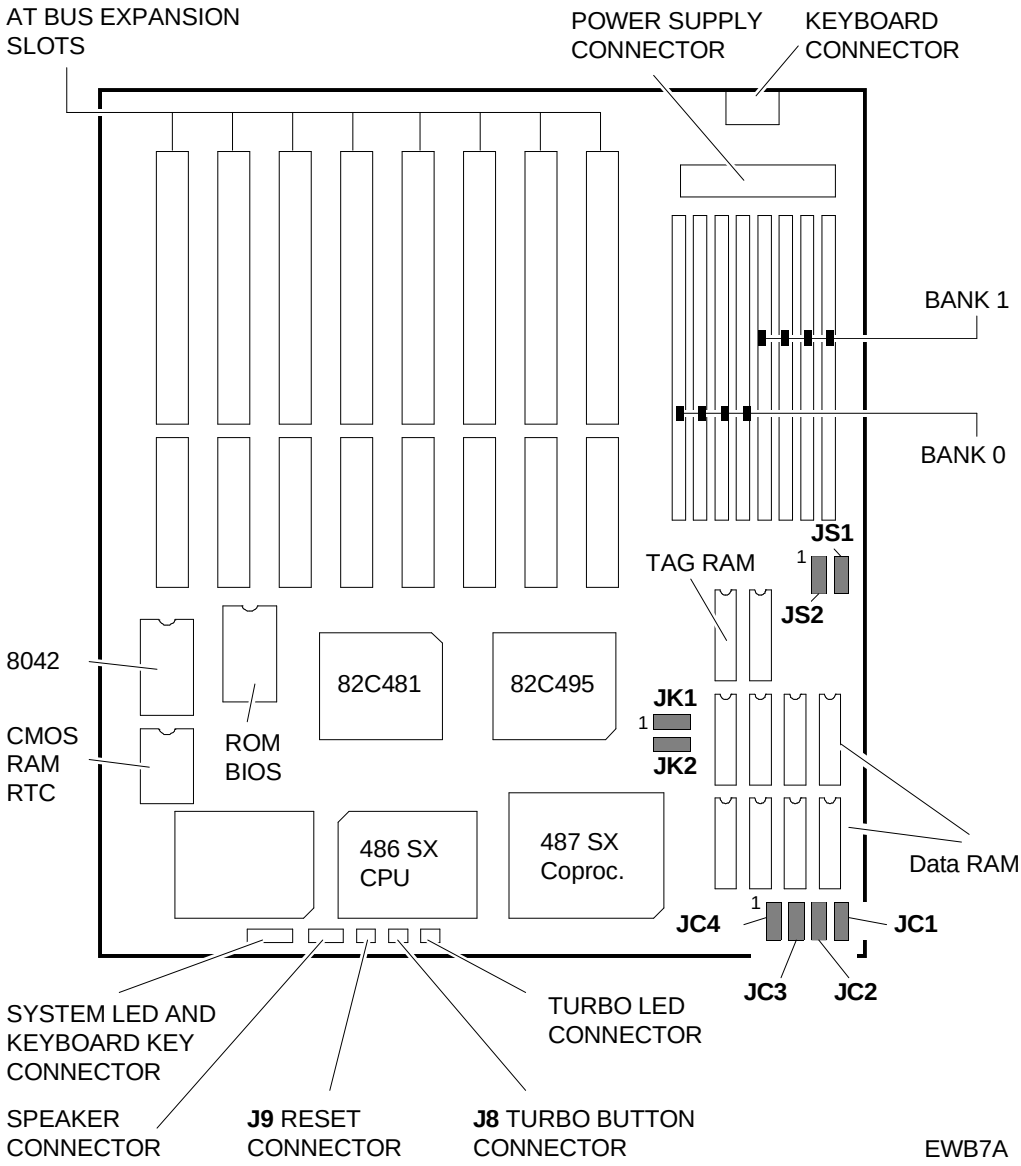
| CPU | JUMPERS | | | | | | | 1 MHz OSCILL. | 0 OHM 10P5R | 22 OHM 8P4R |
|---|---|---|---|---|---|---|---|---|---|---|
| | JK1 | JK2 | JK3 | JK4 | JC1 | JC2 | JC3 | | | |
| 486DX-50 | 2-3 | 2-3 | 2-3 | 1-2 | 1-2 | 1-2 | 1-2 | 50.00 | RN51 | RN10 |
| 486DX-33 | 2-3 | 2-3 | 2-3 | 1-2 | 1-2 | 1-2 | 1-2 | 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 |
| **386DX-40** | **1-2** | **1-2** | **1-2** | **2-3** | **1-2** | **1-2** | **1-2** | **80.00** | **RN50** | **RN53** |
| 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 |
| **PONTICELLI** | | | |
| JS1<br>JS2<br>JS3<br>JS4 | On 1 - 2<br>On 1 - 2<br>On 1 - 2<br>On 1 - 2 | On 1 - 2<br>On 2 - 3<br>On 2 - 3<br>On 2 - 3 | On 2 - 3<br>On 2 - 3<br>On 1 - 2<br>On 1 - 2 |

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




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

**System Board CPU Selection Jumpers**

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

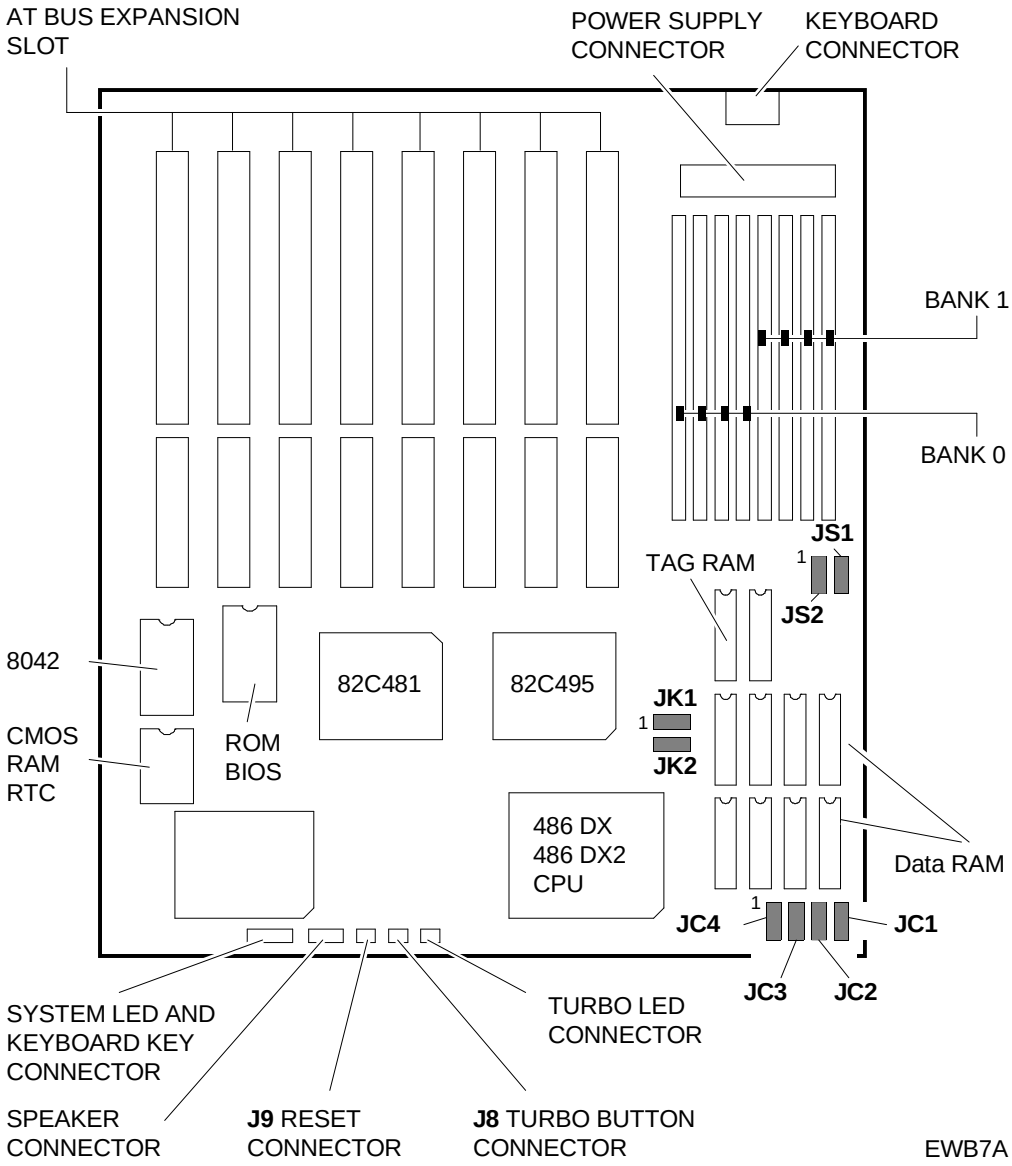
**CPU Clock Selection**

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

**Cache Memory Configuration and Size**

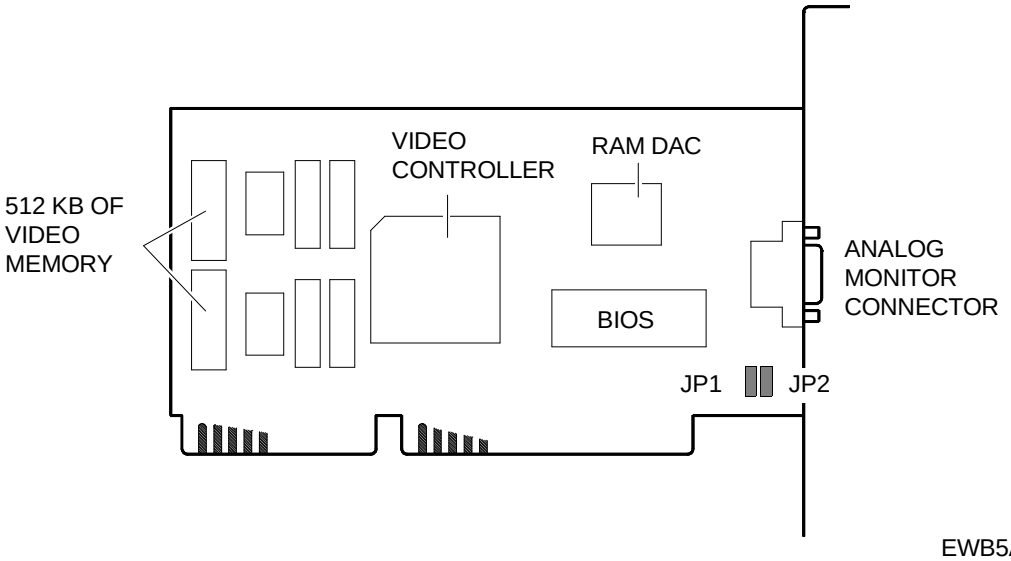
| | CACHE MEMORY SIZE | | |
|---|---|---|---|
| | **64 KB** | **128 KB** | **256 KB** |
| DATA RAM | Eight 8 KB x 8 SRAM chips | Four 32 KB x 8 SRAM chips | Eight 32 KB x 8 SRAM chips |
| TAG RAM | One 8 KB x 8 SRAM chip | One 8 KB x 8 SRAM chip | One 32 KB x 8 SRAM chip |
| **JUMPERS** | | | |
| JS1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

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




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

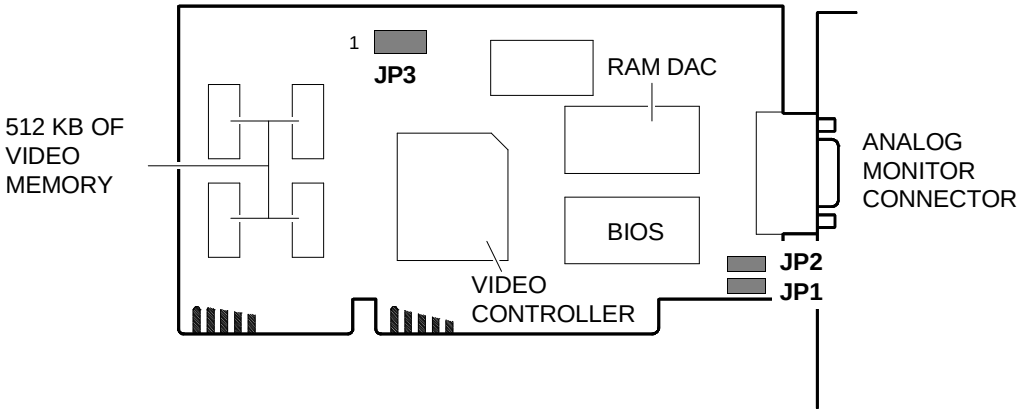
**1570 SX Rev. A VIDEO CONTROLLER**




EWB5A

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

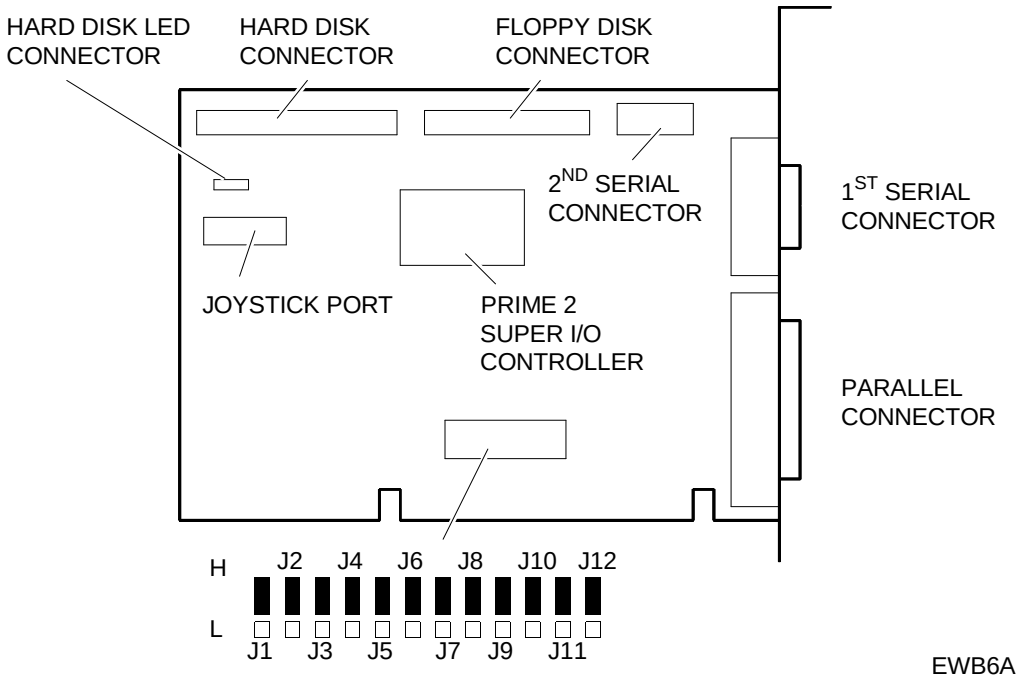
**1580 Rev. A VIDEO CONTROLLER**




EWG2A

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

**SUPER I/O CONTROLLER**




EWB6A

**Jumpers**

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



**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 - 3FFFFFh | 4 MB of system memory |
| 400000 h - 13FFFFF 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.

■