Product Support Bulletin ———————————

Subject: Proper Method for Running Benchmark and Diagnostics Programs

Date: 06/04/93   PSB No: S-0158
Page(s): 1 of 1   Originator: MWT

This bulletin describes the proper method for running any benchmark or diagnostics programs. This applies to any computer system.

In most cases, the computer should be started using an MS-DOS boot diskette that's 'clean' - in other words, one with no CONFIG.SYS or AUTOEXEC.BAT files. The appropriate executable can then be run, either from diskette or hard drive.

There will be some exceptions to the above rule. In attempting to benchmark or troubleshoot any add-on that requires a device driver (CD-ROM, local area network, etc.), obviously the necessary device driver(s) must be loaded. Also, some programs will require a minimum number of FILES or BUFFERS to be defined in the CONFIG.SYS file. Such programs will usually display this requirement if they are run without the necessary CONFIG.SYS file.

For the most consistent results, use the absolute minimal boot configuration that's allowed by the hardware being tested.

Product Support Bulletin

Subject: Equity and Apex Series Compatibility with the Sysgen OmniBridge
            Controller and BridgeFiler External Floppy Drives

Date: 04/11/90   PSB No: S-0088B
Page: 1 of 3   Originator: KAS

The purpose of this bulletin is to provide the results of compatibility testing
conducted by the Computer Product Support Center with the Sysgen
OmniBridge controller and Bridge - Filer external floppy disk drives.

Model	Comments
Equity I	The Equity I was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity II	The Equity II was found to be totally incompatible with the OmniBridge controller.
Equity III	The Equity III was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity I +	The Equity I + was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity le	The Equity le was found compatible with the OmniBridge controller. It was able to support only one external floppy drive, unlike the other models tested. The drive could be used as a high density (1.2Mb and 1.44Mb) or normal (360K and 720K) disk drive.

Equity II +   The Equity II + was found compatible with the
                         OmniBridge controller.   It was able to support one or
                         two external disk drives (daisychained) together. The
                         external drives could be used as high density (1.2M and
                         1.44M) or normal (360K and 720K) disk drives.

Equity IIe   The Equity IIe was found compatible with the
                         OmniBridge controller.   It was able to support one or
                         two external disk drives (daisychained) together. The
                         external drives could be used as high density (1.2M and
                         1.44M) or normal (360K and 720K) disk drives.

Equity III +   The Equity III + was found compatible with the
                         OmniBridge controller.   It was able to support one or
                         two external disk drives (daisychained) together. The
                         external drives could be used as high density (1.2M and
                         144M) or normal (360K and 720K) disk drives.

Equity 386SX   The Equity 386SX was found compatible with the
                         OmniBridge controller.   It was able to support one or
                         two external disk drives (daisychained) together. The
                         external drives could be used as high density (1.2M and
                         144M) or normal (360K and 720K) disk drives.

Equity 386/20   The Equity 386/20 was found compatible with the
                         OmniBridge controller.   It was able to support one or
                         two external disk drives (daisychained) together. The
                         external drives could be used as high density (1.2M and
                         1.44M) or normal (360K and 720K) disk drives.

APEX   The Epson APEX was found compatible with the
                         OmniBridge controller.   It was able to support one or
                         two external disk drives (daisychained) together. The
                         external drives could be used as high density (1.2M and
                         1.44M) or normal (360K and 720K) disk drives.

APEX +   The Epson APEX was found compatible with the
                         OmniBridge controller.   It was able to support one or
                         two external disk drives (daisychained) together. The
                         external drives could be used as high density (1.2M and
                         1.44M) or normal (360K and 720K) disk drives.

APEX 100   The Epson APEX 100 was found compatible with the OmniBridge controller.   It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.

APEX 200   The Epson APEX 200 was found compatible with the OmniBridge controller.   It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.

NOTE: The recommended switch settings for the OmniBridge controller are as follows:

1-1 DOWN	2-1 DOWN
1-2 DOWN	2-2 DOWN
1-3 DOWN	2-3 UP
1-4 DOWN	2-4 UP

These settings select NO ADDRESS for the OmniBridge BIOS and allow it to coexist with the internal FDC of the computer in which it is being installed.   This way you do not need to disable the internal FDC or connect any cables from the OmniBridge to internal floppy drives. This was found to be a universal setting for all of the computers listed above as compatible with the OmniBridge controller.

Product Support Bulletin

Subject: Apex / Apex Plus / Equity Series Keyboards

Date: 4/19/89
Page: 1 of 1

PSB No: S-0080
Originator: REM

The purpose of this bulletin is to provide information on the various keyboards used with the Apex, Apex Plus and Equity series computers and the part numbers of the keyboard subassemblies used with these keyboards.

The Apex and Apex Plus computer keyboards are to be replaced as whole units.

The Equity series keyboards are repaired to the subassembly level.   The Equity III keyboard PCB assembly is the only one that comes with the key top set attached.

Since some of the keyboards have the same model numbers, the difference can be determined by the FCC ID number in those cases.

The chart below provides a quick reference to determine the part number of the main keyboard PCB assembly, key top set, control logic subassembly, and keyboard cable.

Apex / Apex Plus

Model	Keyboard Unit
Apex	A265091A
Apex Plus	93553905410

Equity I, II, III

Model	Keyboard PCB Assy	Key Top set	Keyboard Cable
Equity I/II	Y145501001	Y145501021	Y144305000
Equity III	KAFLZ3AEPS1	attached	KACCL060UCA

Equity I +, II +, III+, 386/20

Model	Code	FCC ID	Keyboard PCB Assy	Control Board	Key Top set	Keyboard Cable
Q203A	AA	BKM9A8Q203A	Y127501001	attached	Y127501022	Y127501031
Q303A	AA	BMK9A8Q303A	Y127501001	attached	Y127501022	Y127501031
Q203A	A103A – AA	C9S4D7Q203A	Y163502001	none	Y127501022	Y163502020
Q203A	A103A – AA	C9S4D84701	Y163504007	Y171501017	Y127501022	Y163504006

Equity le

Model	Code	FCC ID	Keyboard PCB Assy	Control Board	Key Top set	Keyboard Cable
E1160A	-	C9S4D84701-201	Y163504007	Y171501017	Y171501007	Y171501006

Product Support Bulletin

Subject: Equity Series HDD Controllers Jumper Settings

Date: 6/12/89   PSB NO.: S-0070A
Page: 1 of 8   Originator: APA
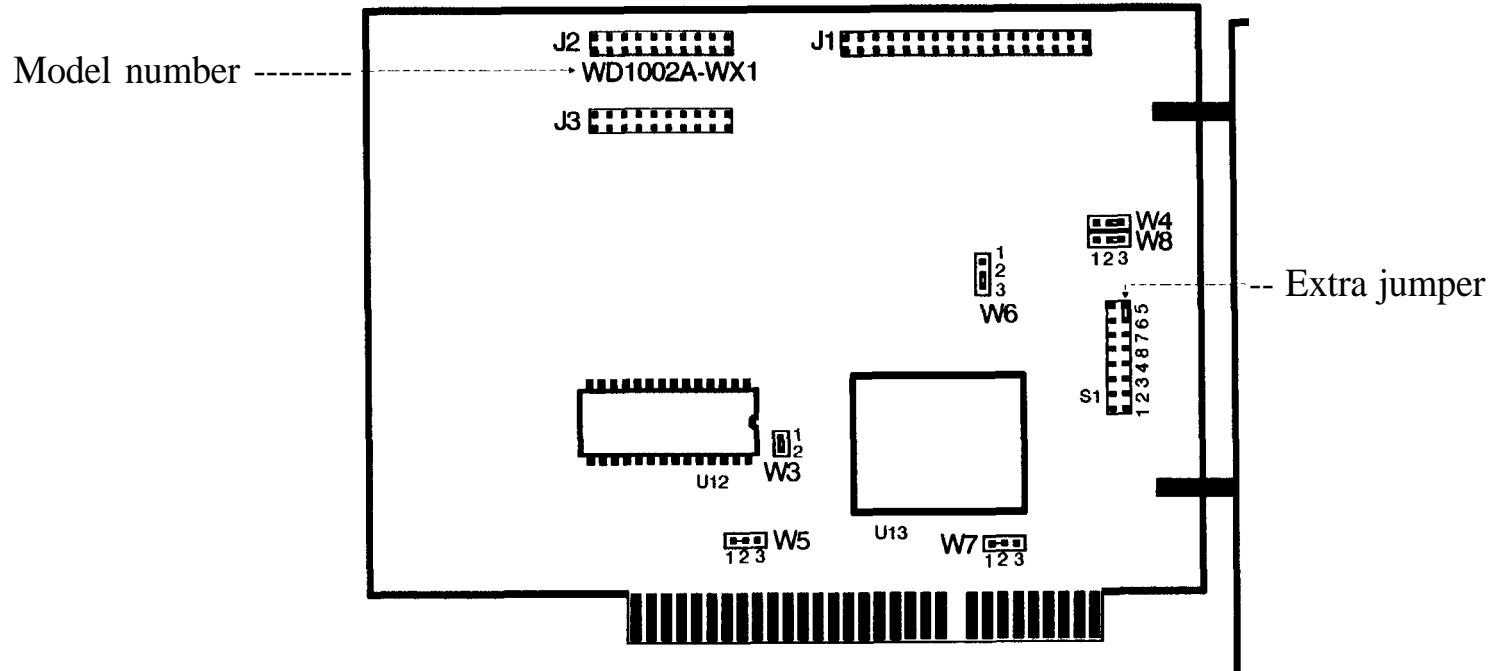
This bulletin provides information on the jumper settings for the hard
disk controllers used in Epson Equity computers.

Please refer to the following pages for information regarding specific
hard disk controllers:

HDD Controller WD1002A-WX1 (8-bit)

Model number -------- → WD1002A-WX1

J2   J1   J3

W4 W8 1 2 3

1 2 3 W6

-- Extra jumper

S1   1 2 3 4 8 7 6 5

U12   W3

W5 1 2 3   U13   W7 1 2 3

FACTORY SETTINGS

Jumper	Position	Description
W1	N / A	Not used.
W2	N / A	Not used.
W3	1 to 2	BIOS ROM is enabled (on controller).
W4	2 to 3	Device address 320H.
W5	* hard-wired 1 to 2	BIOS ROM size (32K or 64K).
W6	2 to 3	Reduced write current ($< = 8$ heads).
W7	* hard-wired 1 to 2	IRQ 5.
W8	2 to 3	Disk controller I. D. (set to be the first).

* No jumper pins - 1 and 2 are connected by a PCB board etch.
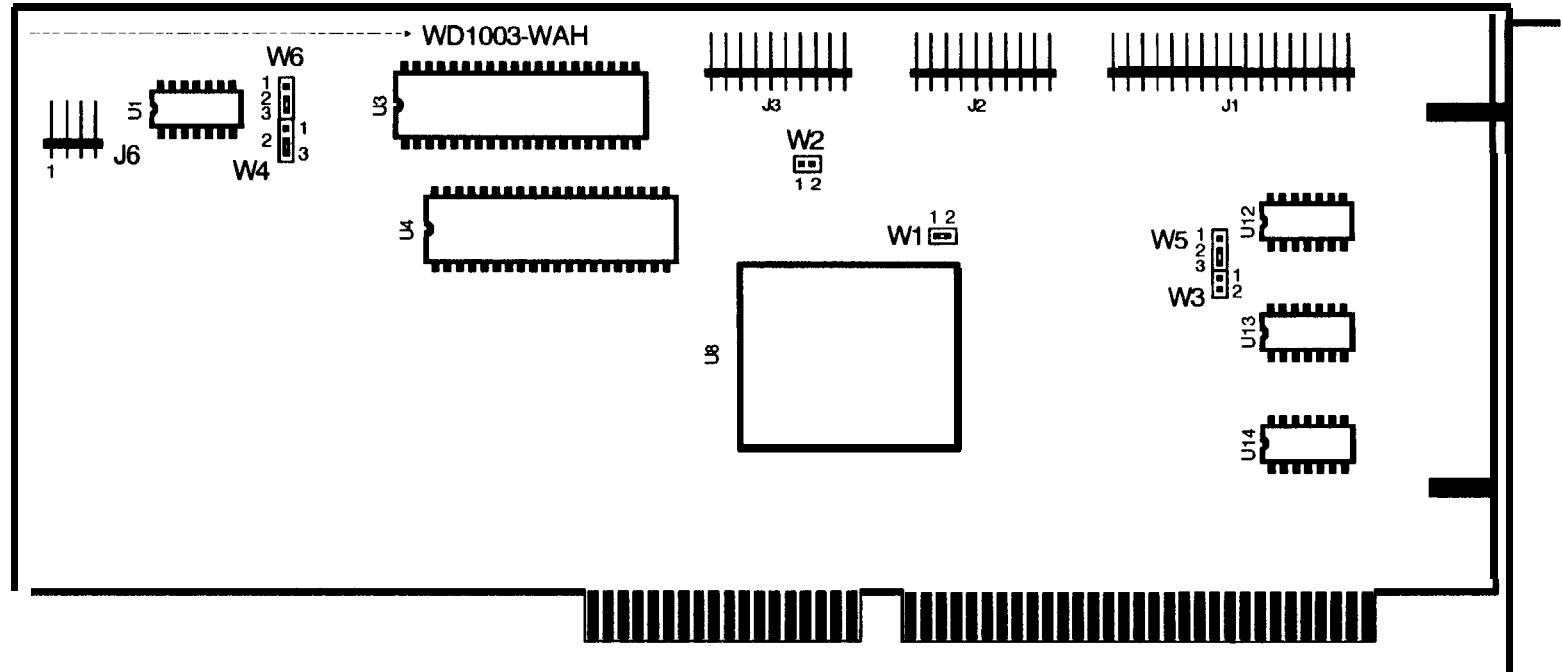
HDD Controller WD1002S-WX2 (8-bit)

'--Extra jumper

Model number--j
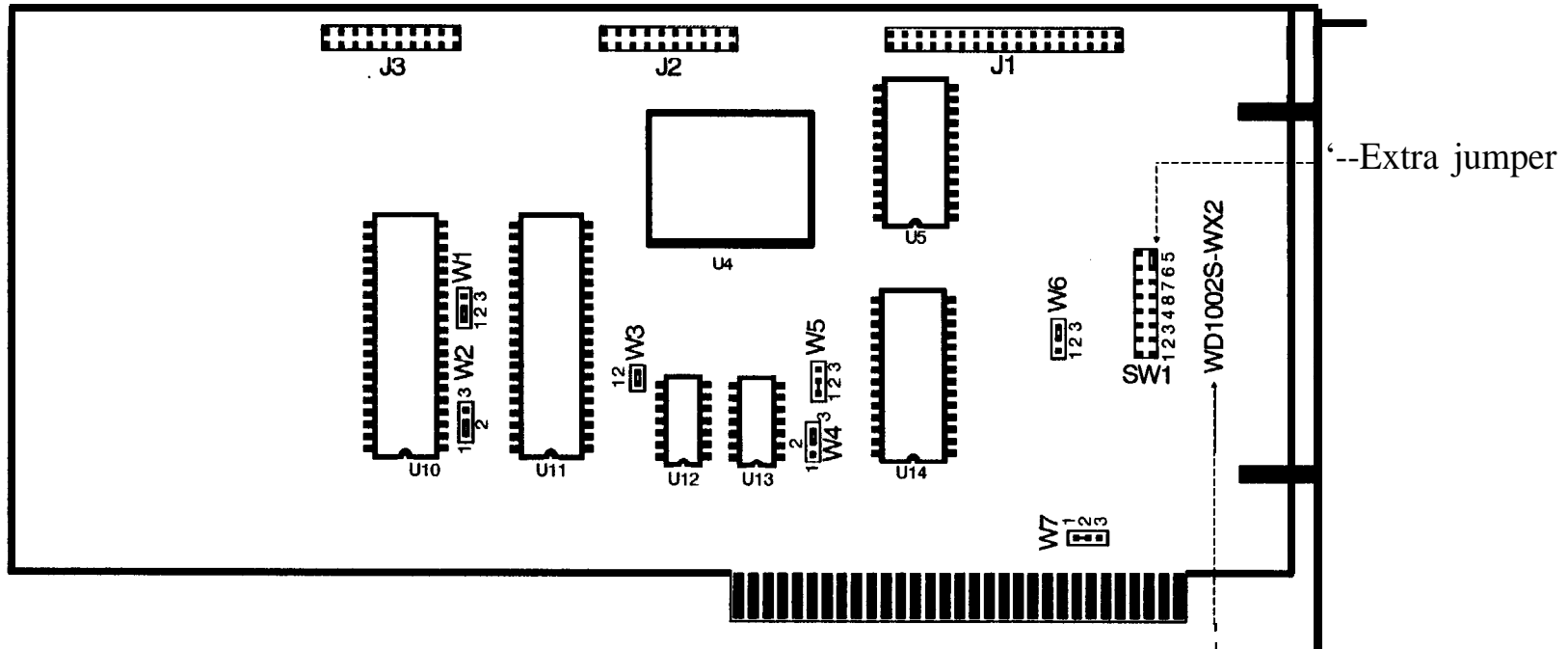
FACTORY SETTINGS

Jumper	Position	Description
W1	1 to 2	Required for this configuration.
W-2	1 to 2	Required for this configuration.
W3	1 to 2	BIOS ROM is enabled (on controller).
W4	2 to 3	Device address 320H.
W5	* hard-wired 1 to 2	BIOS ROM size (32K or 64K).
W6	2 to 3	Reduced write current ($< = 8$ heads).
W7	* hard-wired 1 to 2	IRQ 5.

* No jumper pins - 1 and 2 are connected by a PCB board etch.
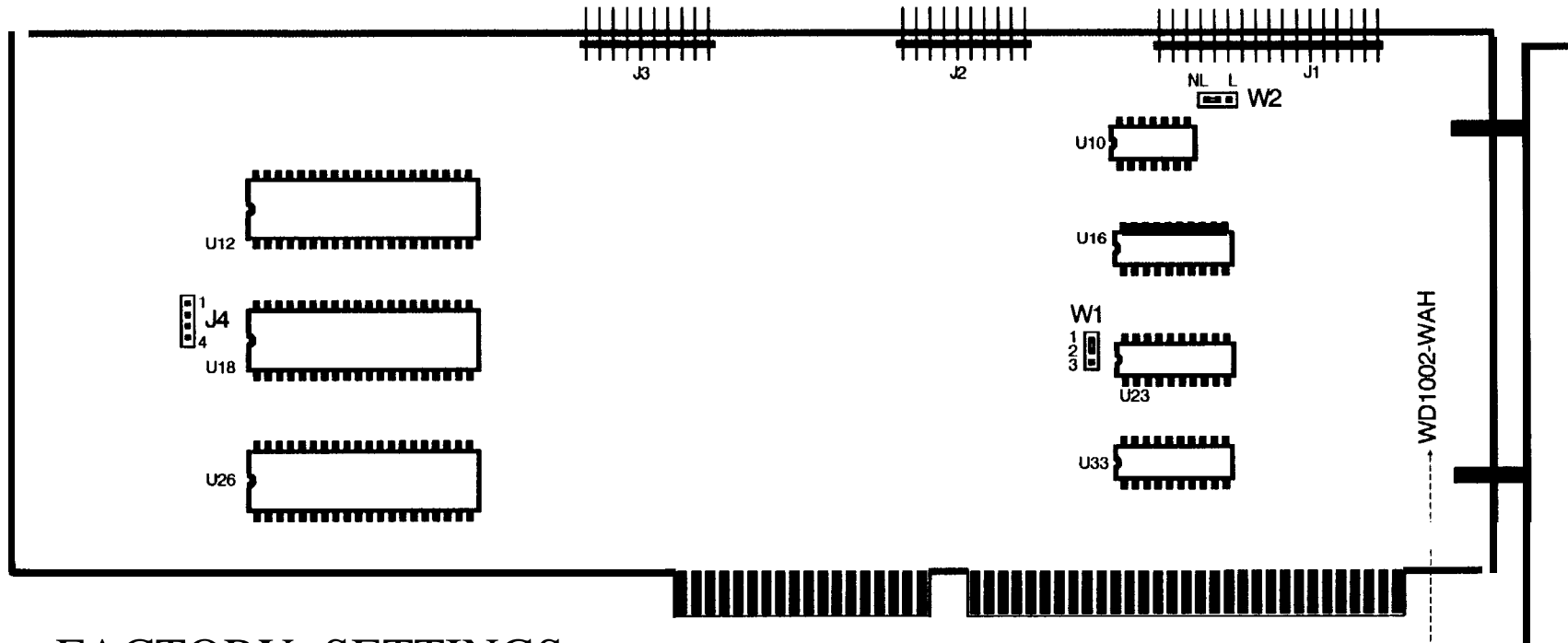
HDD Controller WD1003-WAH (16-bit)

Model number

WD1003-WAH

W6
W5
W4
W3
W2
W1
J6
J3
J2
J1
U3
U4
U5
U8
U12
U13
U14

FACTORY SETTINGS

Jumper	Position	Description
W1	1 to 2	Status read is latched.
W2	No jumper	Primary address selected.
W3	* No jumper	Required for this configuration.
W4	2 to 3	Required for this configuration.
W5	2 to 3	Standard configuration.
W6	2 to 3	Standard configuration.

* No jumper pins.

Connection of LED indicator cable :

Model	Pin 1 of J6
Equity III	Orange wire
Equity II +	Blue wire
Equity III +	Red wire

HDD Controller WD1002-WAH (16-bit)

J3 J2 NL L W2 J1

U10

U12 U16

W1
1
2
3
J4
1
4
U18 U23

U26 U33

WD1002-WAH

Model number

FACTORY SETTINGS

Jumper	Position	Description
W1	1 to 2	Primary base address.
W2	Center to NL	HDD activity LED only lights when the controller accesses the drive.

Connection of LED indicator cable :

Model	Pin 1 of J4
Equity III	Orange wire
Equity II +	Blue wire
Equity III +	Red wire

HDD Controller WHDC (16-bit)
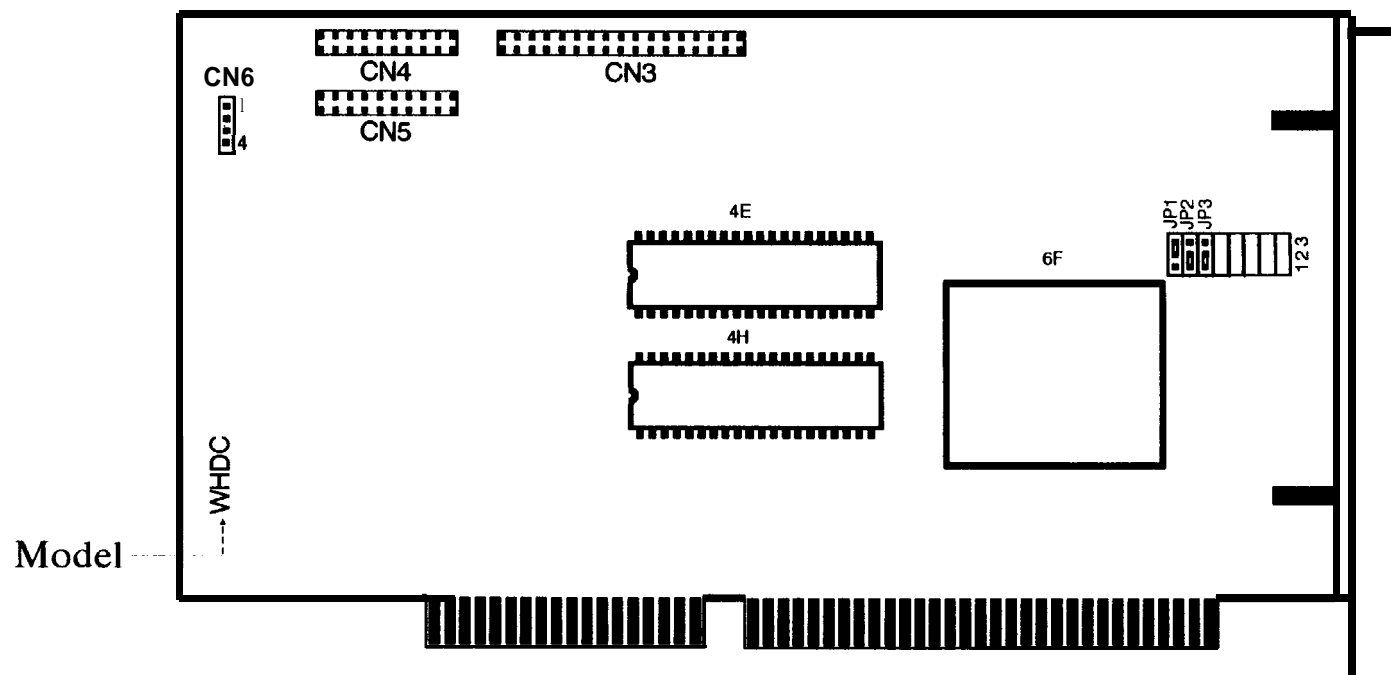
CN6

CN4

CN3

CN5

1
4

4E

4H

6F

JP1
JP2
JP3

1 2 3

WHDC

Model

FACTORY SETTINGS

Jumper	Position	Description
* JP1 (J1)	*2 to 3 (B to C)	Primary address selected.
* JP2 (J2)	* 1 to 2 (A to B)	Status read is non-latched (select = drive busy).
* JP3 (J3)	* 1 to 2 (A to B)	WAH mode (dual HDD controller).
JP4 to JP8	No jumper pins.	Hardwired to factory settings.

* "JP" may labeled as "J", "1" as "A", "2" as "B" and "3" as "C".

Connection of LED indicator cable :

Model	Pin 1 of CN6
Equity III	Orange wire
Equity I I +	Blue wire
Equity I I I +	Red wire

HDD Controller WD1006S-WAH (16-bit)
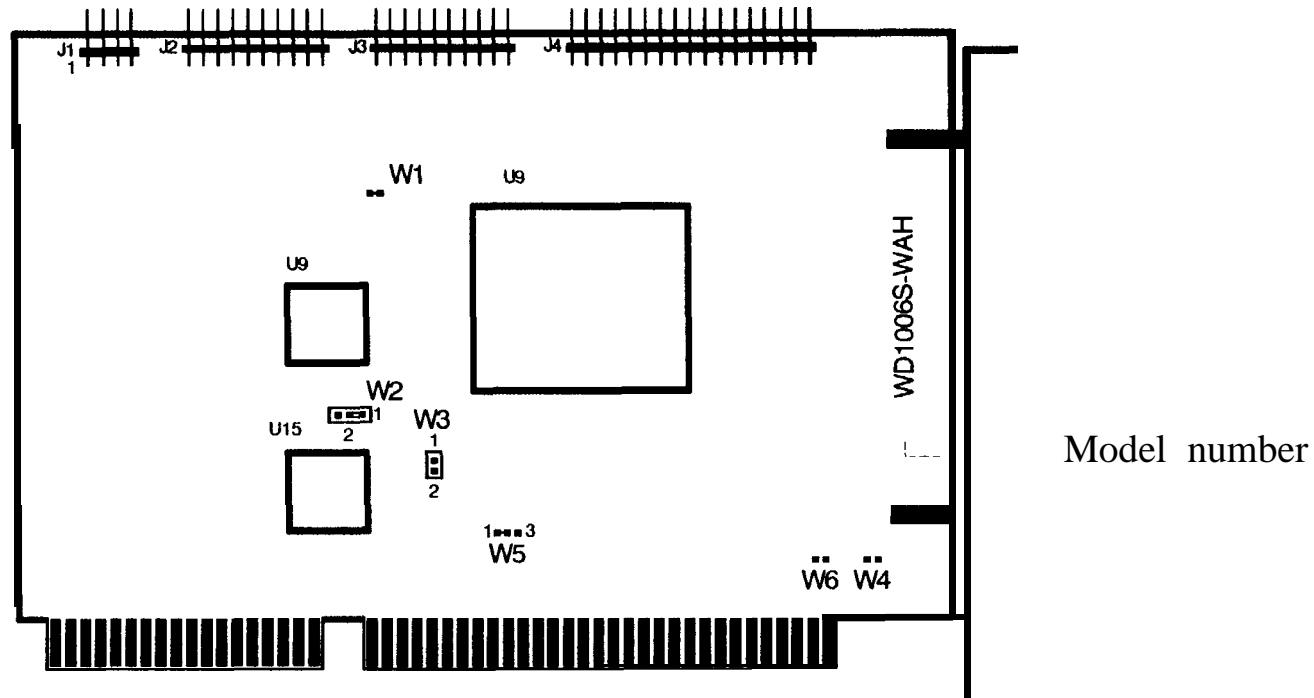
Model number

FACTORY SETTINGS

Jumper	Position	Description
W1	* 1 to 2	LED lights for drive selection (non- latched).
W2	1 to 2	No reduced write current,
W3	No jumper	Enables cacheing.
W4	* No jumper	Isolates mounting bracket from logic ground.
W5	* 1 to 2	Primary controller port.
W6	* No jumper	Non-latched mode.

* No jumper pins.

Connection of LED indicator cable :

Model	Pin 1 of J1
Equity 386/20	Red wire

HDD Controller ACB-2320 (16-bit)

Model number
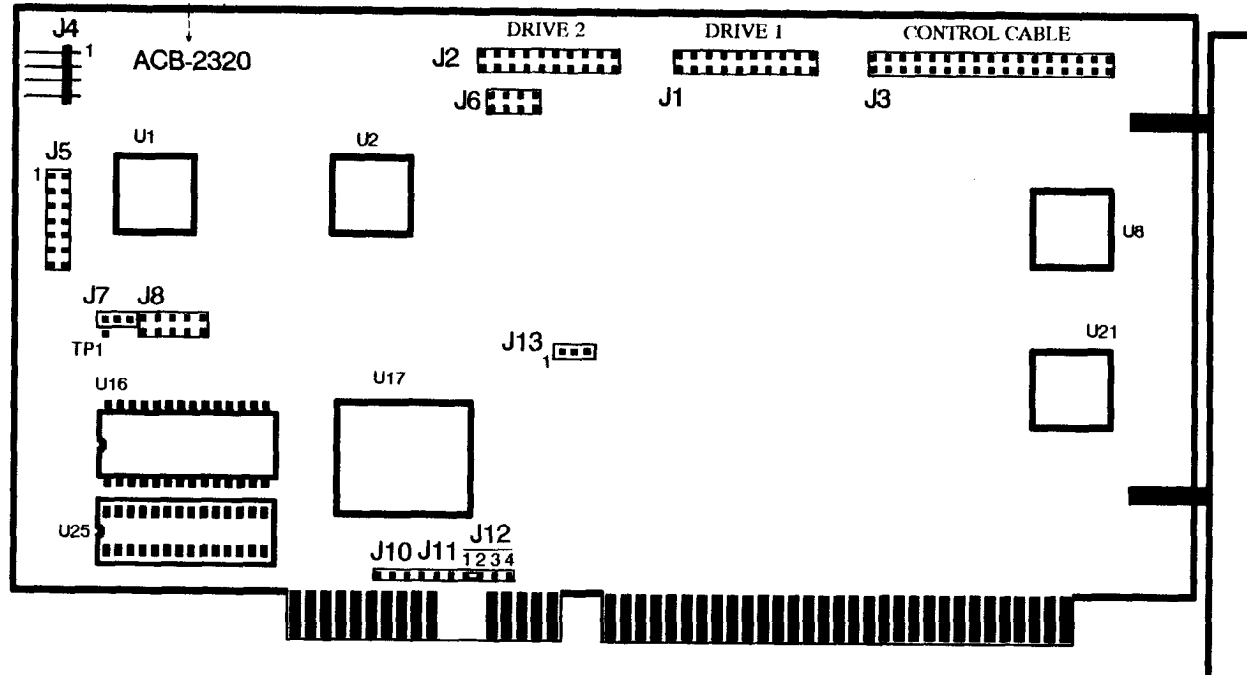
FACTORY SETTINGS

Jumper	Position	Description
J5	No jumpers	Used for hardware port addressing.
J6	No jumpers	Manufacturing test points (DO NOT JUMPER).
J7	No jumper	Serial monitor output (DO NOT JUMPER).
J8	No jumpers	Manufacturing test points (DO NOT JUMPER).
J9, J10, J11	No jumpers	Not used.
J12	1 to 2	Selects IRQ 14.
J13	No jumper	ACB-BIOS disabled (no ROM present in location U25).

Connection of LED indicator cable :

Model	Pin 1 of J4
Equity 386/20	Red wire

EPSON
EPSON AMERICA, INC.
SERVICE
PRODUCT SUPPORT BULLETIN

SUBJECT: EQUITY I, II **AND** III MAIN **BOARD** JUMPER CONFIGURATIONS

This bulletin describes the jumper locations and settings on the Equity I MRS board and Equity II MCY board used for configuring the computers for third party keyboards and for enabling an 8087 math coprocessor. It also describes the various releases of the Equity II MCY boards and the features that each version supported.

The Equity III main board dip switch settings, to set up or change system configuration, are also provided.

Index

EPSON AMERICA SERVICE, 23610 TELO AVENUE, TORRANCE, CALIF. 90505

Parallel   Serial

CN1   CN2

8250

CN3

8087 socket   3D

80C88   CPU   4D

MRS-MT BOARD

MARS BOARD

CN12   CN11

Power
CN4

FDD(B) (A)

9D   8237

[R O M O S]

J1

CN10   CN9

13D   765

14A VFO

82C59

opt. 256KB
RAM Board
CN5

82C55

82C54

J2

J3   CN6

Reset   Dip Switch   Keyboard

PLEASE NOTE

Since setting the jumpers requires almost complete disassembly of the Equity I computer it should be done only by authorized Epson Customer Care Centers.
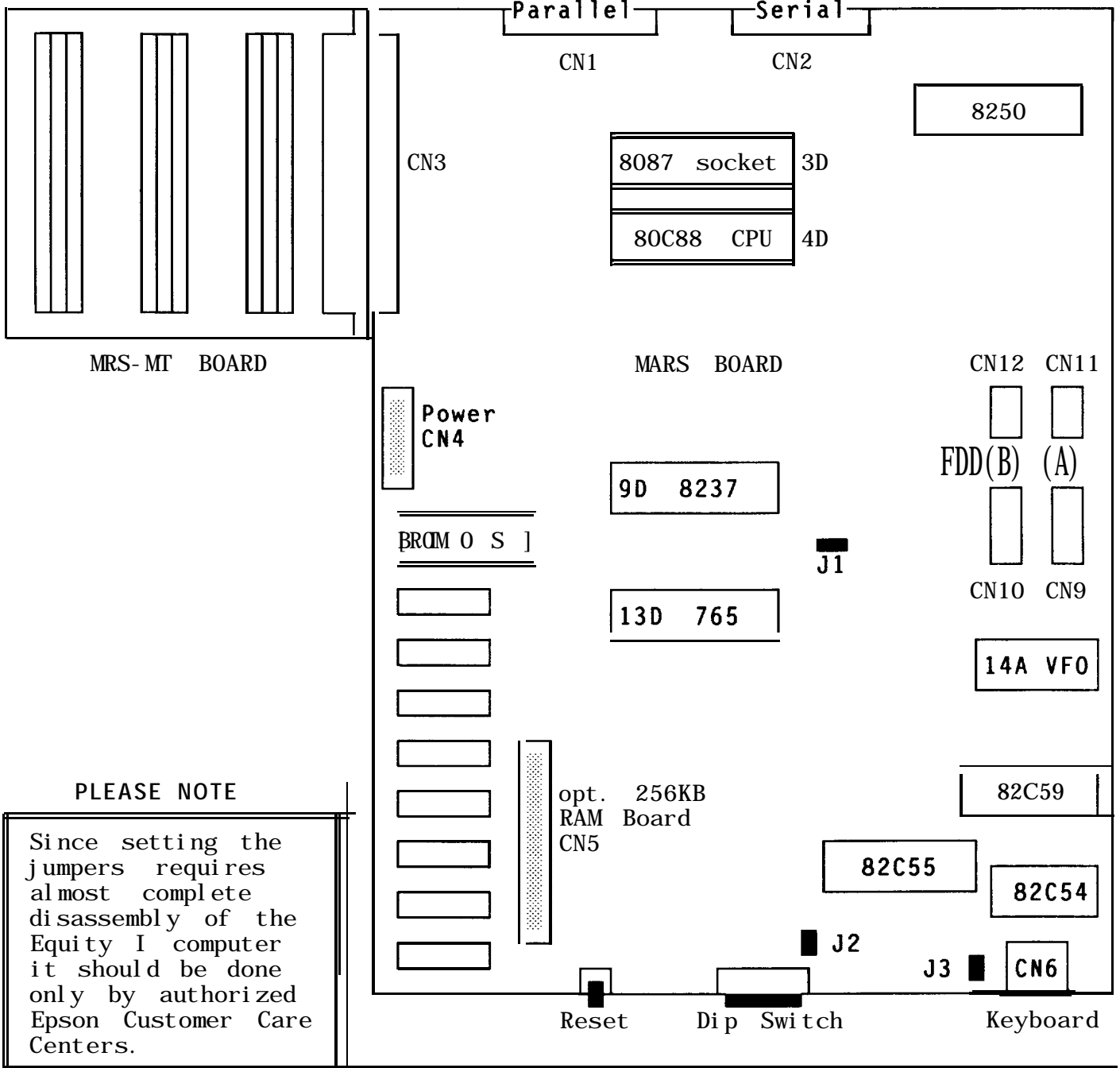
* **NON-EPSON KEYBOARD SUPPORT** - Install jumpers in positions J2 and position J3 (Early systems did not have this capability and do not have these jumper positions installed.)
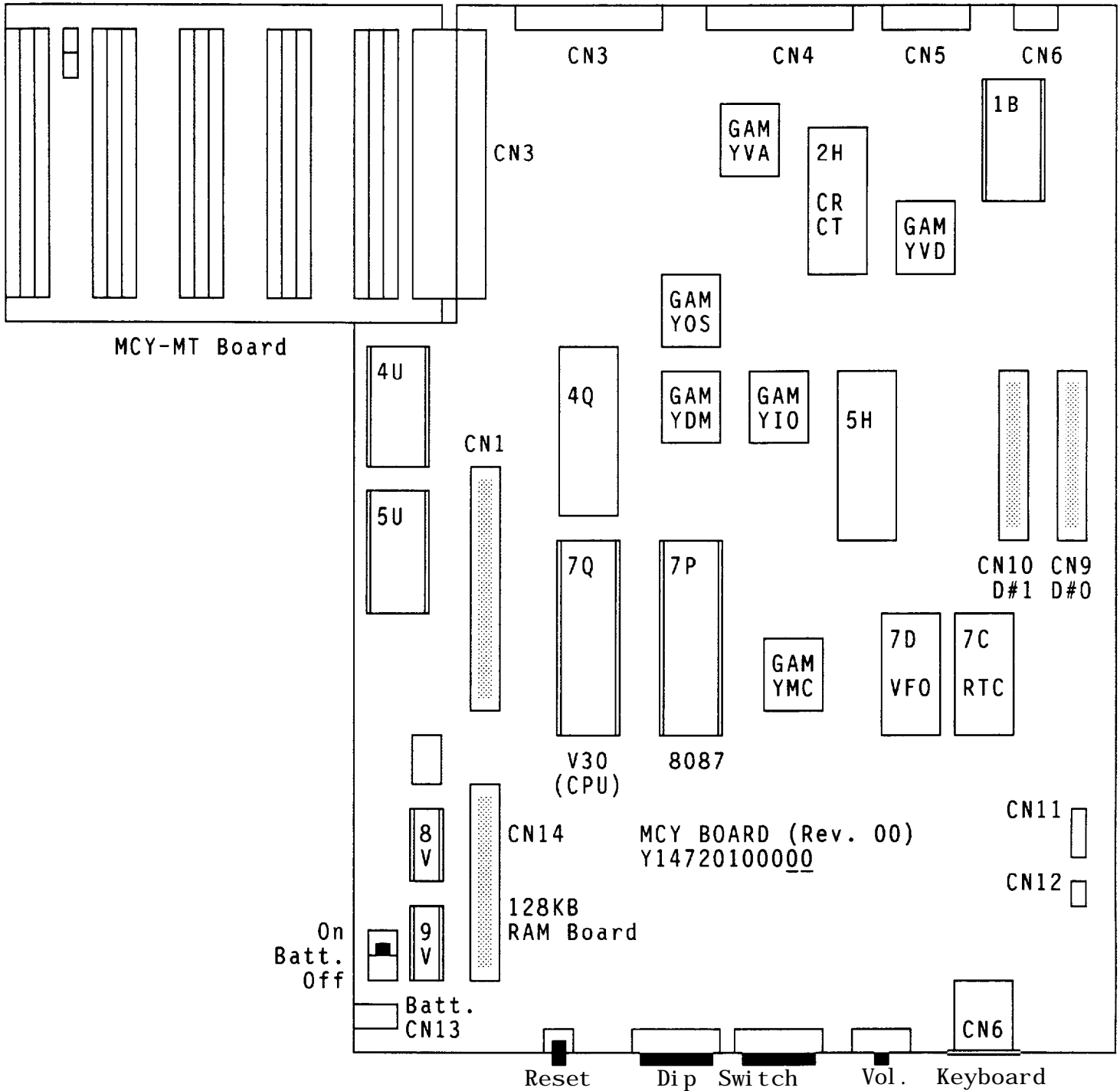
  NOTE: DO NOT ATTEMPT TO USE THE EPSON KEYBOARD WITH THESE JUMPERS INSTALLED AS DAMAGE WILL RESULT!

* **8087 SUPPORT** - Remove the jumper from position J1.

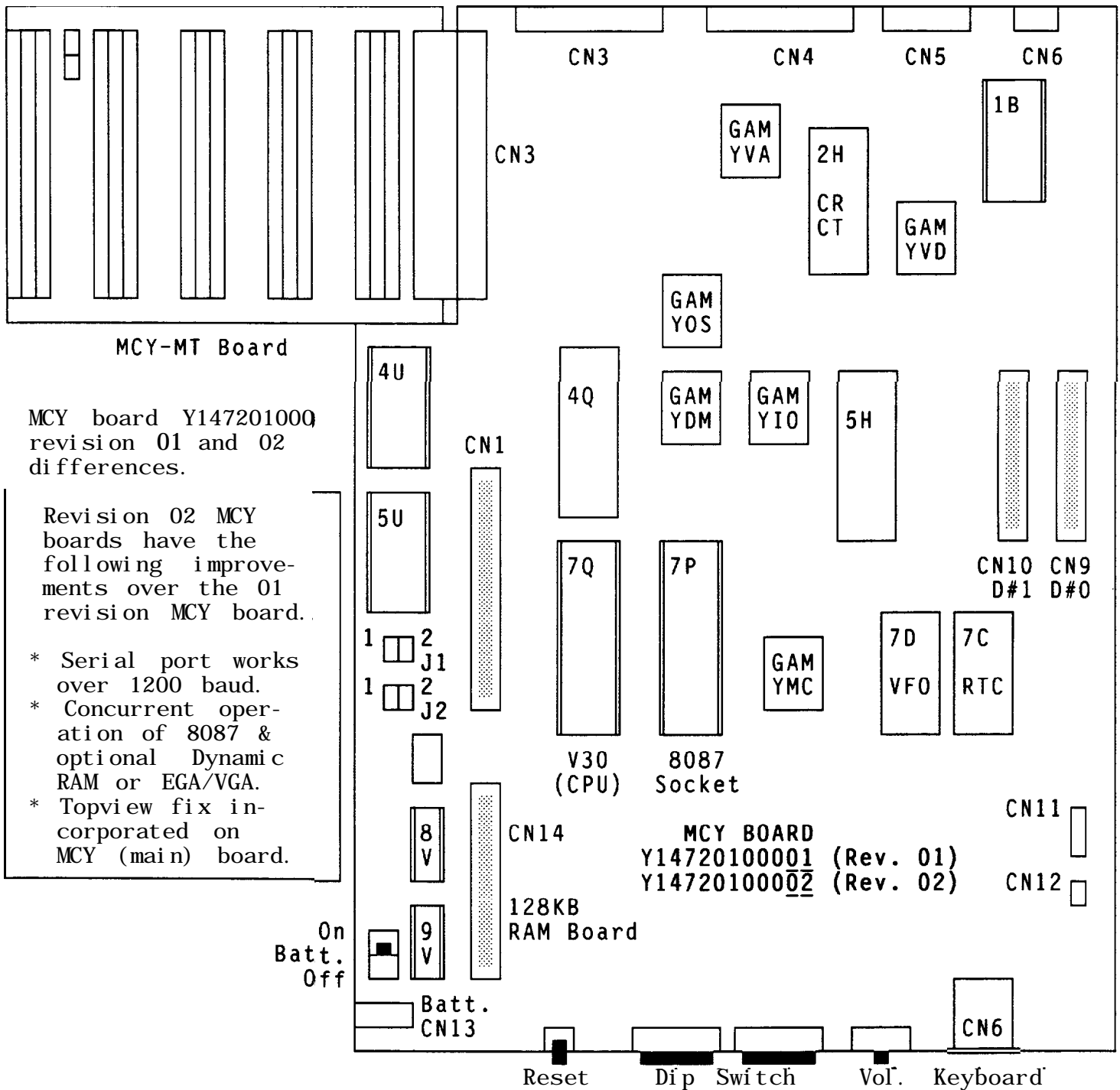* **EGA MONITOR SUPPORT** - Set dip switches 6 and 7 to the on position.

```
┌──────────────────────────────────────────────────────────────────────┐
│                                    CN3        CN4        CN5      CN6   │
│                                                                        │
│                                                                   ┌──┐ │
│                                    ┌───┐   ┌───┐                   │1B│ │
│                                    │GAM│   │2H │   ┌───┐           │  │ │
│                                    │YVA│   │   │   │GAM│           └──┘ │
│                            CN3     └───┘   │CR │   │YVD│                │
│  ┌──────────────────┐              ┌───┐   │CT │   └───┘                │
│  MCY-MT Board                      │GAM│   └───┘                        │
│                                    │YOS│                                │
│       ┌───┐                        └───┘                                │
│       │4U │      CN1       ┌───┐   ┌───┐  ┌───┐  ┌───┐  ░░  ░░          │
│       └───┐                │4Q │   │GAM│  │GAM│  │5H │  ░░  ░░          │
│       ┌───┐                │   │   │YDM│  │YIO│  │   │  ░░  ░░          │
│       │5U │                └───┘   └───┘  └───┘  └───┘  CN10 CN9        │
│       └───┐                ┌───┐   ┌───┐               D#1  D#0         │
│                           │7Q │   │7P │         ┌───┐  ┌───┐           │
│                           └───┘   └───┘   ┌───┐ │7D │  │7C │           │
│                                           │GAM│ │VFO│  │RTC│           │
│                            V30    8087    │YMC│ └───┘  └───┘           │
│                           (CPU)           └───┘                        │
│    On                     CN14    MCY BOARD (Rev. 00)         CN11 ▯   │
│   Batt.         ┌─┐              Y147201000 00                         │
│    Off    ┌──┐  │8│                                           CN12 ▯   │
│           │■ │  │V│   128KB                                            │
│           └──┘  ┌─┐   RAM Board                               ┌───┐    │
│           ┌──┐  │9│                                           │CN6│    │
│           └──┘  │V│                                           └───┘    │
│           Batt.                                                        │
│           CN13   Reset   Dip  Switch   Vol.   Keyboard                 │
└──────────────────────────────────────────────────────────────────────┘
```

JUMPER CONFIGURATIONS

* There are no jumpers on this version board. The board is hard-wired to provide RAM refresh to the option slots.

* An 8087 coprocessor cannot be used.
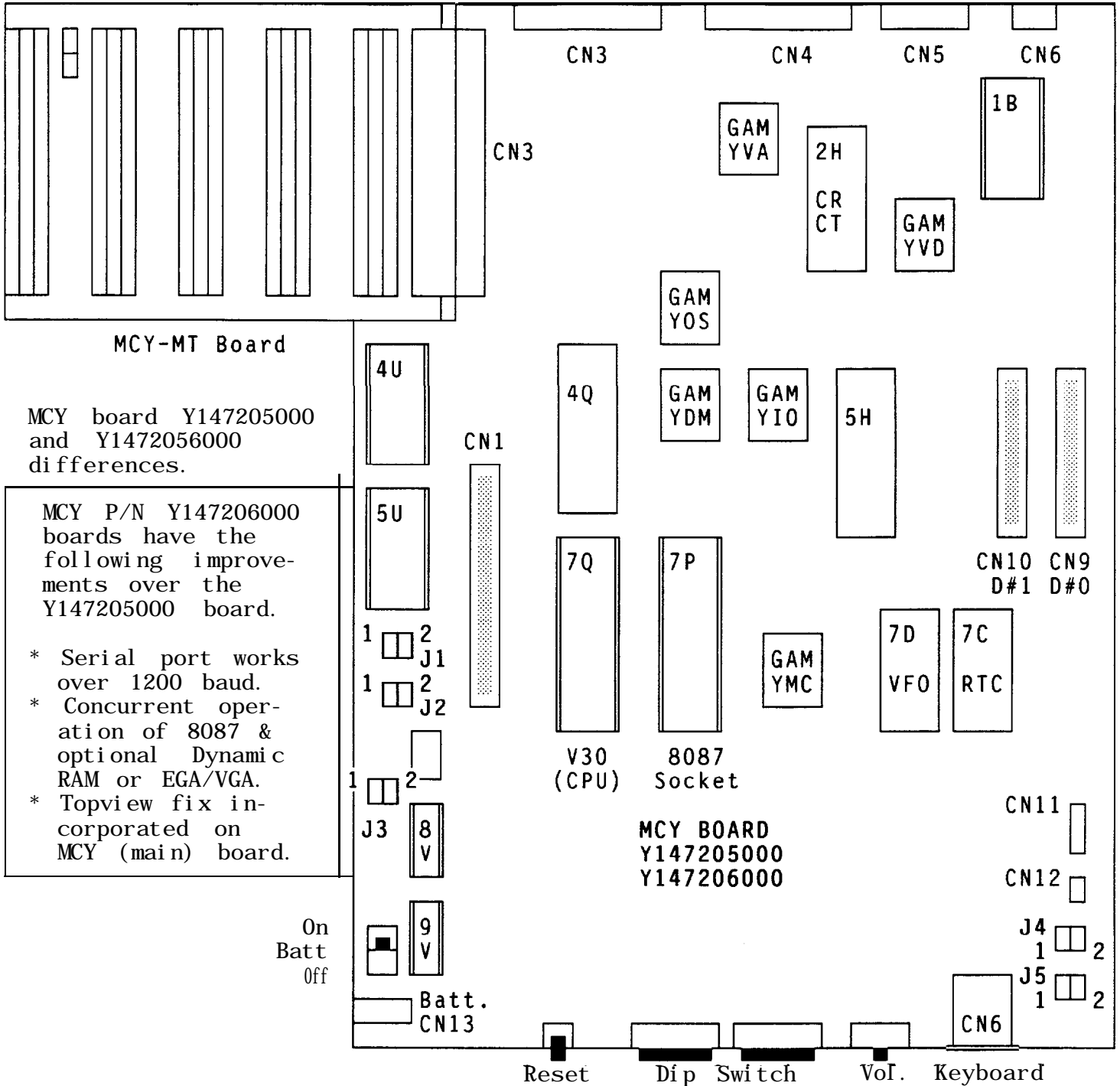
* There is no provision for using alternate keyboards.

MCY-MT Board

MCY board Y147201000 revision 01 and 02 differences.

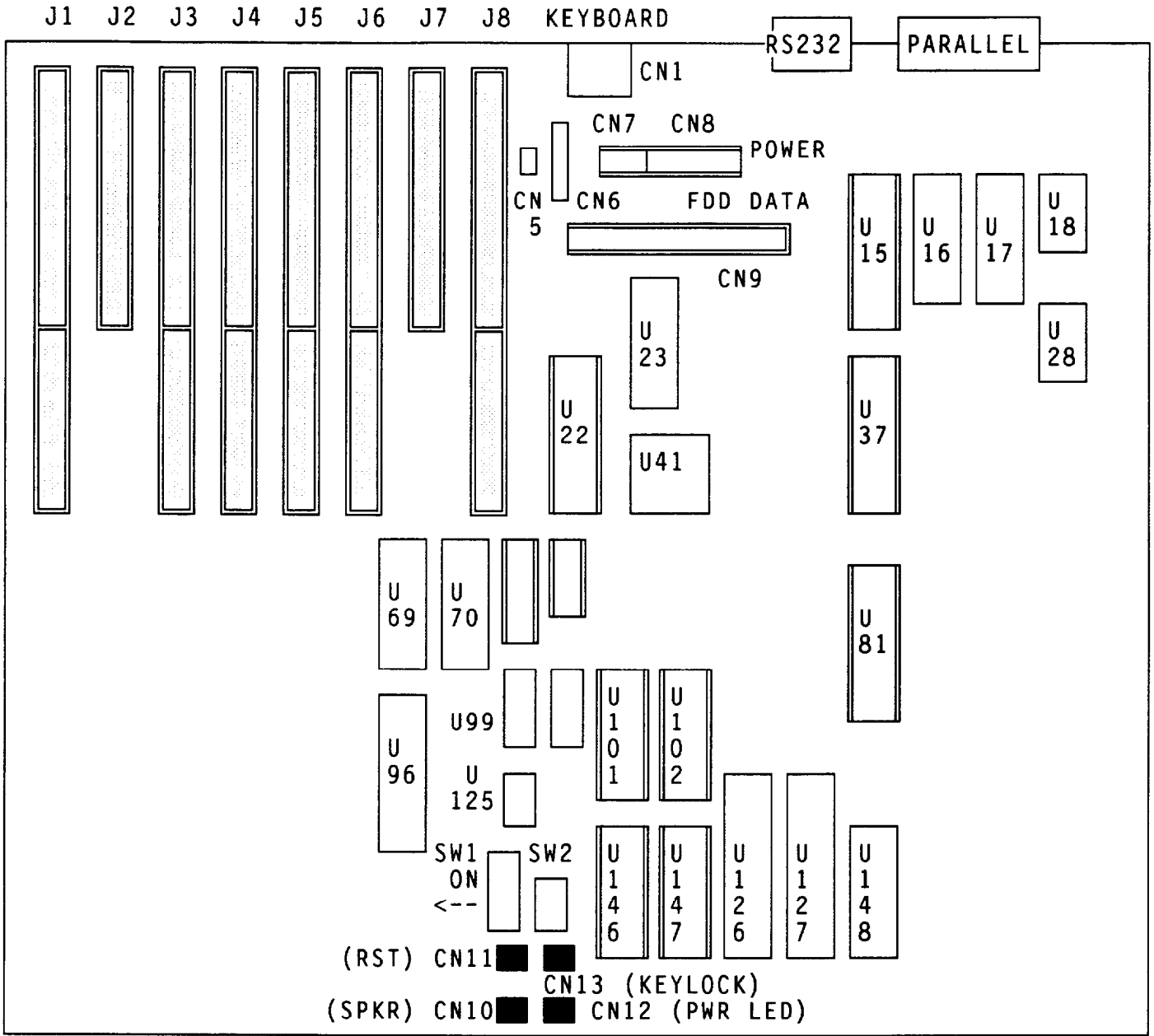**Revision 02 MCY boards have the following improvements over the 01 revision MCY board.**

* **Serial port works over 1200 baud.**
* **Concurrent operation of 8087 & optional Dynamic RAM or EGA/VGA.**
* **Topview fix incorporated on MCY (main) board.**

CN3

CN4

CN5

CN6

1B

GAM YVA

2H

CR CT

GAM YVD

GAM YOS

CN3

4U

4Q

GAM YDM

GAM YIO

5H

CN1

5U

CN10 CN9
D#1   D#0

1 J1 2

1 J2 2

7Q

7P

GAM YMC

7D VFO

7C RTC

V30 (CPU)

8087 Socket

On
Batt.
Off

8 V

9 V

CN14

128KB RAM Board

MCY BOARD
Y14720100001 (Rev. 01)
Y1472010000_2_ (Rev. 02)

CN11

CN12

Batt. CN13

Reset   Dip Switch   Vol.   Keyboard

CN6

JUMPER CONFIGURATIONS

* **J1 and J2 should be in position 2 to enable DMA RAM refresh to the option slots for expanded memory boards or EGA/VGA video boards. An 8087 will function concurrently with dynamic RAM boards on Rev. 02 boards with the jumpers in position 2.**
* **J1 and J2 should be in position 1 to disable DMA RAM refresh. The V30 runs about 20% faster in this position. 8087-2 enabled on Rev. 01 MCY board.**
* **J3 and J4 are not available on these versions of MCY board. Non-Epson keyboards cannot be used.**

MCY-MT Board

CN3

CN3 CN4 CN5 CN6

1B

GAM YVA

2H
CR CT

GAM YVD

GAM YOS

MCY board Y147205000 and Y1472056000 differences.

4U

5U

CN1

4Q

GAM YDM

GAM YIO

5H

MCY P/N Y147206000 boards have the following improve-ments over the Y147205000 board.

* Serial port works over 1200 baud.
* Concurrent oper-ation of 8087 & optional Dynamic RAM or EGA/VGA.
* Topview fix in-corporated on MCY (main) board.

7Q

7P

CN10 D#1

CN9 D#0

1 □ 2
J1

1 □ 2
J2

GAM YMC

7D VFO

7C RTC

1 □ 2

J3   8 V

V30 (CPU)

8087 Socket

CN11

On Batt Off

9 V

MCY BOARD
Y147205000
Y147206000

CN12

J4
1 □ 2

J5
1 □ 2

Batt.
CN13

CN6

Reset   Dip Switch   Vol. Keyboard

JUMPER   CONFIGURATIONS

* J1 and J2 should be in position 2 to enable DMA RAM refresh to the option slots for expanded memory boards or EGA/VGA video boards. The 8087 will work in DMA refresh mode with the Y147206000 board.
* J1 and J2 should be in position 1 to disable DMA RAM refresh. The V30 runs about 20% faster in this position. The jumpers must be in position 1 to enable an 8087 with the Y147205000 MCY board
* J3 and J4 should be in position 1 to use an IBM compatible keyboard.
* J3 and J4 should be in position 2 (default) for the Equity II keyboard.
  NOTE: DO NOT ATTEMPT TO USE THE EPSON KEYBOARD WITH JUMPERS J3 AND J4 IN POSITION 1 AS DAMAGE MAY RESULT!

EQUITY III MAIN BOARD DIP-SWITCH SETTINGS

J1 J2 J3 J4 J5 J6 J7 J8 KEYBOARD   RS232 — PARALLEL

CN1

CN7   CN8
POWER
CN6   FDD DATA
CN5

CN9

U23 U41 U22

U15 U16 U17 U18 U28 U37

U69 U70

U96 U99 U125 U101 U102 U81

SW1 ON <-- SW2 U146 U147 U126 U127 U148

(RST) CN11 ▮ ▮
CN13 (KEYLOCK)
(SPKR) CN10 ▮ ▮ CN12 (PWR LED)

DIP SWITCH FUNCTIONS (*Factory settings)			
Switch	**Function**	**On**	**Off**
1-1	RAM size	640KB*	Disable
1-2	Monitor type	Color	Monochrome*
1-3 - 1-6	PROM size	See Table	4-2 in User's Guide
2-1	Serial Port	Enable*	Disable
2-2	Unused		Disable*
2-3	Floppy Disk FDC	Enable*	Disable
2-4	Parallel Port	Enable*	Disable

EPSON

EPSON AMERICA, INC.

SERVICE PRODUCT SUPPORT BULLETIN

PSB NO.: S-0065	DATE: 1/5/89	ORIGINATOR: REM	PAGE: 1 of 1

SUBJECT: DISABLING **THE FLOPPY** DISK **CONTROLLER IN EPSON COMPUTERS**

This bulletin covers the ability or inability to disable the floppy disk controller in the Epson computers.

COMPUTER	FDC CAN BE DISABLED	HOW
Equity I	No	
Equity II	No	
Equity III	Yes	CPU Board - Switch 2-3 off
Equity I+	Yes	CPU Brd - Jumper 1 in Position B
Equity II+ 10MHz 12MHz	 No Yes	Multi-function Board - Jumper 2 in Position B
Equity III+	Yes	Multi-function Board - Jumper 1 in Position B - Jumper 2 in Position B
Apex	Yes	Motherboard - Remove Jumper El
Apex Plus	No	

EPSON AMERICA SERVICE, 23610 TELO AVENUE, TORRANCE, CALIF. 90505

EQUITY III					
VER	PART #	DESC	TYPE	LOC	REASON
L1.07 H1.07	KQQNK1019A KQQNK1020A	27128D-2 27128D-2	M27C128 M27C128	U147 U146	INITIAL RELEASE
L1.09 H1.09		27128D-2 27128D-2	M27C128 M27C128	U147 U146	To allow the use of drives with more than 8 heads.
L1.10 H1.10	KDPN0000100 KDPN0000110	27128D-2 27128D-2	M27C128 M27C128	U147 U146	Requires U99 chip upgrade to DEC01A. Fixes problems with drive type table, 3270 emulation, Novell 286 v2.0a and Thesys Fastcard III.

Product Support Bulletin

Subject: Using Expanded Memory with Equity and Apex Computers

Date: 3/2/90   PSB No: S-0047C
Page: 1 of 6   Originator: KAS

Q1.   What is Expanded Memory?

A.   Conventional memory, managed by MS - DOS, is limited to 640K. In
response to the need for greater amounts of accessible memory, the
LIM EMS (Lotus/Intel/Microsoft Expanded Memory Specification) was
introduced in 1984. EMS, version 3.2, provides usable memory
beyond the 640K limit through "bank switching". The expanded
memory is divided into 16K portions called "pages". The computer
accesses these pages through a "page frame" or "window" which is
64K of memory located between 768K and 896K in 80286 - based
systems and between 800K and 960K in 8086 - or 8088 - based
systems.   16K pages of memory are allocated for an application's
use and the EMM (Expanded Memory Manager) handles the job of
mapping the pages in and out of the page frame as they are
needed. However, in order to make use of expanded memory, the
software must be written to take advantage of the EMS. Software
such as Lotus 1 - 2 - 3, Microsoft Windows and Borland's SideKick
Plus make use of expanded memory. EMS is limited to 8Mb of
expanded memory.

Q2.   What is EEMS?

A.   A superset of EMS, AQA EEMS (AST/Quadram/Ashton - Tate
Enhanced Expanded Memory Specification) provides greater flexibility
in the mapping of expanded memory. However, it also uses the
technique of "bank switching" and has its own memory manager
which accommodates such specially written software as Quarterdeck's
DESQview. EEMS is also limited to 8Mb of expanded memory.

Q3.   What about the 155Mb RAM listed as the maximum for the Equity
         III +?

 A.   This larger amount of RAM is the maximum usable memory range
         for an 80286 microprocessor and generally refers to extended
         memory. Extended memory starts at the 1Mb boundary and extends
         out to 16Mb. As it requires a 24 - bit address to access memory in
         this range, extended memory is handled by the protected mode of
         the 80286. Examples of currently available software that can switch
         into protected mode to use extended memory are Framework II,
         AutoCAD, the VDisk RAM disk and Xenix OS.

Q4.   How does LIM EMS 4.0, the latest version, differ from the earlier
         version, LIM EMS 3.2?

 A.   EMS 4.0 supports up to 32Mb of expanded memory where EMS 3.2
         supported only 8Mb. EMS 4.0 has been changed to make it easier
         for applications to share expanded memory. In EMS 4.0, page
         mapping has been streamlined and new functions allow application
         programs to dynamically increase and decrease the amount of
         expanded memory allocated to them. In previous versions of EMS,
         the page frame was located in an unused 64K block of memory
         between 640K and 1Mb. EMS 4.0, subject to limitations in the
         system hardware, supports the page frame anywhere in the first 1Mb
         of memory. Before EMS 4.0, the page frame held four pages. Now
         you can define a page frame of up to eight pages in memory above
         640K. The size of the page frame is limited only by the amount of
         available memory.   There has also been a change to support the
         smaller than standard (16K) memory pages used by some expanded
         memory boards.

Q5.   Is EMS 4.0 compatible with my old expanded memory board?

 A.   The EMM 4.0 driver works with existing hardware. You don't need
         to buy a new expanded memory board. However, until you use
         applications that have been written to take advantage of EMS 4.0,
         you probably won't notice much improvement in performance over
         your older version.

Q6.   What memory expansion boards are compatible with the Equity I and Equity II?

A.   The following boards have been tested by Epson in the Equity I and II:

All Card w/MMU Multifunction All Computers, **Inc.**
Liberty PC   Quadram Corporation
Mini Magiccard (EV - 138)   Everex Systems, Inc.
AST SixPak Premium   AST Research
AST Rampage   AST Research

Q7.   What memory expansion boards are compatible with the Equity III?

A.   The following boards have been tested by Epson in the Equity III:

Grande Byte   STB Systems
Intel Above Board AT   Intel Corporation
Liberty AT   Quadram Corporation
AST Advantage   AST Research
AST Rampage AT   AST Research
AST Ramvantage   AST Research

Q8.   What memory expansion boards are compatible with the Equity I +?

A.   The following boards have been tested by Epson in the Equity I +:

64/256KB Expansion Option   IBM
Above Board PC (1985)   Intel Corporation
Fastcard IV (1.6)   Thesys

Q9.   What memory expansion boards are compatible with the Equity Ie?

A.   The following boards have been tested by Epson in the Equity Ie:

64/256KB Expansion Option   IBM
Quad Board II   Quadram
Fastcard IV   Thesys
RAMpage   AST Research

Note: The Intel Above Boards do not currently operate reliably with the Equity Ie.

Q10.   What memory expansion boards are compatible with the Equity II +
         and Equity III + (10MHz models)?

A.   The following boards have been tested by Epson in the Equity II +
         and Equity III + (10MHz models):

         Advantage Premium   AST Research
         Rampage 286   *   AST Research
         Above Board 286   Intel Corporation
         Above Board 286 p/s   Intel Corporation
         Grande Byte   *   STB Systems
         Rio Grande   STB Systems
         Elite 16   Profit Systems

   * Will run at 8MHz, not at 10MHt.

Q11.   What memory expansion boards are compatible with the Equity II +
         and Equity III + (12MHz models)?

A.   The following boards have been tested by Epson in the Equity II +
         and Equity III + (12MHz models):

         Rampage 286 Plus   AST Research
         Elite 16   Profit Systems
         Above Board Plus   Intel Corporation

   NOTE: Previously boards from Micron Technology were listed as compatible
         with the 12MHz models of the Equity II + and Equity III +. They
         have been removed from the list because Micron no longer produces
         ISA memory boards.

Q12.   How do you expand the memory of the Equity 386/20?

A.   Memory expansion in the Equity 386/20 can be accomplished by
         adding SIMMs (single - in - line memory modules) to the CHET - RM
         board. Both 256K and 1Mb SIMMs are available from Epson
         America. The 256K SIMMs are sold in 1Mb kits and the 1Mb
         SIMMs are sold in 2Mb kits. Compatible third party 1Mb SIMMs are
         available from Matsushita, Toshiba and CDC Enterprises. You can
         also use third party memory expansion boards such as those listed
         above for the Equity II +/III +.

Q13.   Are there any guidelines to installing the SIMMs in the Equity
        386/20?

A.   Yes, when SIMMs are installed to increase memory beyond 1Mb,
        they must be installed so that banks of SIMMs are installed as
        matched pairs.   See the matrix below:

Memory	Bank 0	Bank 1	Bank 2	Bank 3
1MB	4X256KB			
2MB	4X256KB	4X256KB		
4MB	4X256KB	4X256KB	4X256KB	4X256KB
4MB	4X1MB			
8MB	4X1 MB	4X1 MB		
10MB	4X1 MB	4X1 MB	4X256KB	4X256KB
16MB	4X1 MB	4X1 MB	4X1 MB	4X1 MB

        Note: Refer to PSB S - 0095 for 18MB RAM Setup information.

Q14.   Is there a driver supplied with the Equity 386/20 to allow the use of
        the extended memory as expanded memory?

A.   Yes, the Equity 386/20 system software includes the device driver
        EEMM386EXE. This driver emulates LIM EMS 4.0 memory using
        the extended memory supplied by the additional SIMMs. It will
        support only the onboard memory above 1 MB, up to 15MB. This is
        the maximum memory that can be installed on the CHET- RM
        board. It will not support memory installed on memory expansion
        boards.

Q15.   Are there any expanded memory boards that are compatible with the
        Equity LT?

A.   No, the option slots on the LT require a special connector. The
        hard drive controller and the LT cartridge modem are the only option
        cards currently available from Epson America.

Q16.   What expanded memory boards are compatible with the Apex by
        Epson?

A.   The Above Board PC from Intel Corporation has been tested by
        Epson in the Apex.

Q17.   Are there any general guidelines for determining the chip speed to install on the memory expansion boards?

A.   Yes, if the CPU speed is 8MHz or less, use 150ns RAM chips. If the CPU speed is 10/12MHz, use 120ns RAM chips.

Q18.   Is there anything that should be kept in mind during the installation procedure for the memory expansion boards?

A.   Yes, when installing the memory boards in the Equity II + and Equity III + (12MHz models), remember that the bus speed is 12MHz. For example, the Intel Above Board 288 and Above Board Plus allow you to set up the bus speed and chip speed in their installation programs.

Q19.   What is meant by backfilling memory when using software such as DESQview?

A.   Backfilling is a function of many expanded memory boards which allows a portion of the board's memory to be used as conventional memory. In this way, you could turn a 256K system into one with 840K memory or more.   In certain situations, you may want to disable some of the computer's conventional memory and the use the memory on the expansion board (i.e. DESQview).

Q20.   Which Epson computers have memory settings that allow backfilling memory?

A.   The Equity I, Equity I +, Equity II + and Equity III + allow backfill. The Equity I comes with 256K standard and the Apex comes with 512K, thus allowing backfill. The Equity I + has DIP switch settings allowing system memory to be disabled to 256K or 512K. The Equity II+ and Equity III + have jumpers on the system memory boards to allow memory to be disabled to 256K and 512K.

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EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 3/28/88   NUMBER: S-0041
SUBJECT: EPSON EQUITY I/II/III ENHANCED KEYBOARD COMPATIBILITY

The purpose of this bulletin is to provide information regarding the compatibility of third party enhanced "AT" style keyboards with the Equity I, Equity II and Equity III computers.

1. Keyboard Compatibility

   The enhanced Equity "Plus" series keyboard <u>cannot</u> be used on an Equity I, II or III. The enhanced Equity keyboard (as with IBM's) requires explicit ROM BIOS support which is not available in the earlier machines.

   It is possible, however, to use a third-party "enhanced-style" keyboard such as the IBM XT-101, NorthGate C/T-101, Datadesk Turbo-101, Keytronics 101, 5150 and 5151. Please note that early versions of the Equity I (serial numbers unavailable) and Equity II (below serial number 29875) were not designed to support any third party keyboards (they do not have any keyboard-select jumpers on the main board).

   The correct jumper settings for non-Epson keyboards are:

        Equity I: J2 and J3 jumpered
        Equity II: J3, J4 and J5 set for position 1

+---+
| PLEASE NOTE |
| |
| Once the above jumper changes |
| have been made, attempting to |
| use the original Epson keyboard |
| will result in damage to the |
| keyboard and Equity main board. |
+---+

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PRODUCT SUPPORT BULLETIN

DATE: 3/2/88   NUMBER: S-0037
SUBJECT: LEAP YEAR / MS-DOS 3.1 DATE CHANGE

This bulletin describes a problem identified in Epson's MS-DOS version 3.1 which was supplied with the Equity II and Equity III personal computers.

On March 1, 1988 we discovered that the system date did not change correctly to 3-1-1988, but indicated 2-29-1988. As you may have guessed, MS-DOS 3.1 did not handle the February 29th "leap day" change correctly.

Both the Equity II and Equity III use a Real Time Clock/Calendar with CMOS RAM to retain the date and time after it is set with the SETUP utility program. Even though the RTC has the correct date
(03-01-1988), DOS interprets it as 02-29-1988.

The easiest method of correcting this anomaly is to set the date in the RTC's CMOS RAM one day ahead as follows:

        1. Run the "SETUP" utility program.
        2. Select REAL-TIME CLOCK.
        3. Set the DATE to the current date + one.
        4. EXIT to save the new date.
        5. Re-boot the system!

When MS-DOS 3.1 retrieves the date from the RTC it subtracts the extra day and will display the correct date for system operation.

This problem does not exist with MS-DOS version 3.2 should the customer decide to upgrade.

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SERVICE　PRODUCT SUPPORT BULLETIN

PSB NO.: S-0028A	DATE: 6/29/88	PAGE: 1 of 1

SUBJECT: EPSON 3.5" 720KB FLOPPY DISK DRIVE COMPATIBILITY

The purpose of this bulletin is to provide information regarding the compatibility of the Epson 3.5", 720KB floppy disk drive (Product Code A112A-AA) with the Apex and Equity series computers.

The 3.5" floppy disk drive must be used with MS-DOS 3.2 or higher.

Please refer to the following table for compatibility information.

Apex	No special setup required
Equity I	Not supported
Equity II	Must include DRIVPARM = /D:1 /F:2 in CONFIG.SYS
Equity III	Not supported*
Equity I+	No special setup required
Equity II+	No special setup required
Equity III+	No special setup required

The Epson 3.5" floppy disk drive is not compatible with the Equity I or the Equity III.

* Manzana Microsystems Inc. offers a 3.5", 720KB floppy disk drive which is compatible with the Equity III computer when used with their 3FIVE device driver.

Refer to Product Support Bulletin # S-0027A for detailed information on using the DRIVPARM command to configure Equity II systems for using the 3.5" floppy disk drive.

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PRODUCT   SUPPORT   BULLETIN

DATE: 12/2/87   NUMBER: S-0019B
SUBJECT: EQUITY   SERIES/APEX   MATH   CO-PROCESSOR   SELECTION   GUIDE

The purpose of this bulletin is to assist in selecting the appropriate numeric co-processor for use in the Epson,Equity series computers and the Epson Apex computer.

Use the following table to determine which type of Numeric Co-Processor is recommended for the corresponding computer.

EPSON COMPUTER	CPU SPEED	NUMERIC CO-PROCESSOR	NXP SPEED
Equity I	4.77MHz	8087	5 MHz
Equity I+	4.77/10MHz	8087-1	10 MHz
Equity II	4.77/7.16MHz	8087-2	8 MHz
Equity II+	8/10MHz	80287-8	8 MHz
Equity III	6/8MHz	80287-6	6 MHz
Equity III+	6/8/(10/12)MHz*	80287-8	8 MHz
Apex	4.77/8MHz	8087-2	8 MHz

* Product enhanced with increased CPU speed of 6/8/12Mhz starting with all units manufactured in the U.S.A..

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT   SUPPORT   BULLETIN

DATE: 09/16/87   **NUMBER: S-0018**
SUBJECT: Equity Series Compatibility Certifications

Three more third-party vendors have published compatibility certifications for Epson Equity series PCs. Santa Cruz Operations, Fox Research Inc. and Manzana Microsystems Inc. now have certified their software and/or hardware products as specified below.

Santa Cruz Operations

SCO has tested and certified the latest versions of their implementation of Xenix System V.

Xenix System V 286AT Version 2.2.1	Equity III Equity III+
Xenix System V 86XT Version 2.2.1	Equity I+

When used with products such as the Arnet Multiport serial boards, this allows you to set up a multi-user, multi-tasking system. Many businesses have begun looking at PC-based Xenix as an alternative to a much more costly minicomputer installation.

Fox Research, Inc.

Fox Research offers a full range of hardware and software products for local area networking (LAN) solutions.

PRODUCT NAME	PRODUCT DESCRIPTION	COMMENTS
10-Net Local Area Network	Ethernet Standard or StarLan Standard	Tested on: Equity I+, III+ [1]
10-Net SNA/BSC Turbo LAN Mainframe Gateway	IBM 30xx, 43xx or 370 Communications	Tested on: Equity It, III+
10-Base	Relational Database Manager, Release 3.0	Tested on: Equity I+, III+

PRODUCT NAME	PRODUCT DESCRIPTION	COMMENTS
10-Net RS-232 Gateway	Communications bridge between LANs	Tested on: Equity It, III+
10-Net RS-232 PC Remote	Remote communications to LAN	Tested on: Equity I+, III+
10-Test Diagnostic Module	LAN Diagnostics	Tested on: Equity I+, III+
10-Net Repeater	Network extender, 2000 feet	Tested on: Equity It, III+
10-Net "Boot" ROM Chip	Auto start up for PC	Tested on: Equity It [2]

1 - Tested on both Equity I+ and III+ as fileserver and workstation.
2 - Only for PC and/or PC XT type machines.

10-Net offers the choice of either bus (Ethernet) or star (StarLan) topologies. The software supports such features as printer spooling, "CHAT" (peer-to-peer messaging), electronic mail and bulletin board and calendar.

10-Net SNA/BSC Gateway allows PCs on the LAN to emulate 3278/79 terminals. It also lets printers on the LAN emulate 3286/87/89 printers for cost-effective access to IBM mainframes.

10-Net RS-232 Gateway sets up the asynchronous "bridge" between two 10-Net LANs. The RS-232 PC Remote enables a PC in a remote location to become part of a 10-Net LAN. Simply dial up with a standard PC modem and gain access to the various LAN resources.

IO-Base is a relational database management system built around SQL (Structured Query Language). Designed specifically for the networked environment, it supports MS-DOS 3.1 or higher extended record locking calls. There is also an optional interface module for BASIC, C and Assembler code to allow further customization.

The "Boot" ROM allows an Equity I+ to load DOS and the LAN software from the fileserver - it even allows for a diskless configuration. The Diagnostic Module tests the wiring and transceiver IC integrity. The Repeater lets you expand the range of a 10-Net LAN.

Manzana Microsystems. Inc.

Manzana provides a variety of 3.5" floppy disk drive systems.

PRODUCT NAME	PRODUCT DESCRIPTION	COMMENTS
Self-Powered	720 KB External (Requires MUX Card)	Tested on: Equity II, III
Host-Powered	720 KB External (Requires MUX Card)	Tested on: Equity II, III
Internal	720 KB Internal	Tested on: Equity II, III
Self-Powered Plus *	1.44 MB External (Requires MUX Card)	Tested on: Equity III
Host-Powered Plus *	1.44 MB External (Requires MUX Card)	Tested on: Equity III
Internal Plus *	1.44 MB Internal	Tested on: Equity III

* – Requires minimum of 80286 CPU.

The MUX Adapter Card does not affect the use of existing internal drives. It also allows the Manzana external drive to mimic the "B" drive. It is not required for internal drives.

Manzana also provides the 3Five driver software which permits the use of any version of DOS from 2.xx on.

Santa Cruz Operations **400 Encinal St.** **P.O. Box 1900** **Santa Cruz, Ca. 95061** **(408) 425-7222**	**Fox Research, Inc.** **7016 Corporate Way** **Dayton, Oh. 45459** **(513) 433-2238**	**Manzana Microsystems, Inc.** **P.O. Box 2117** **Goleta, Ca 93118** **(805) 968-1387**

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PRODUCT SUPPORT BULLETIN

SUBJECT: EQUITY COMPUTERS AND FLOPPY DISK DRIVES

There is still some confusion regarding which FDDs will work with which Equity. Here is a quick reference for FDD selection (for detailed information, refer to PSB Number S-0001).

Equity I	Epson Q520A-AA (360 KB)[1]
Equity I+	Epson Q213A-AA (360 KB)
	Epson A112A-AA (720 KB, 3.5")
Equity II	Epson Q213A-AA (360 KB)
	Epson Q911A-AA (1.2 MB)[2]
Equity II+	Epson Q213A-AA (360 KB)
	Epson Q212A-AA (1.2 MB)
	Epson A112A-AA (720 KB, 3.5")
Equity III	Epson Q213A-AA (360 KB)
	Epson Q212A-AA (1.2 MB)
Equity III+	Epson Q213A-AA (360 KB)
	Epson Q212A-AA (1.2 MB)
	Epson A112A-AA (720 KB, 3.5")

1 - **This is the only FDD compatible with the Equity I.**

2 - **This is the only 1.2 MB FDD compatible with the Equity II.**

One of the key issues is: NEVER USE ANY 1.2 MB FDD OTHER THAN THE Q911A-AA IN THE EQUITY II! The interface is slightly different from the AT "standard". As a result, an AT-type drive will work erratically (if at all). One of the problems is a disk change error, or continuing to use the directory from a previous disk.

Also on the Equity II, MS-DOS 3.2 does not allow sufficient retries on diskette read/write with the Q911A-AA. Consistent "Abort, retry, ignore?" messages result when attempting to log a new disk. Typically, "r" for retry will overcome this situation. MS-DOS 3.2 operation with the Q213A-AA is correct.

EPSON AMERICA SERVICE, 23610 TELO AVENUE, TORRANCE, CALIF. 90505

E P S O N
EPSON AMERICA **INC.**
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 08/25/87   NUMBER: S-0016
SUBJECT: Equity Series Compatibility Certifications

Recently, four leading vendors of communications products have issued certifications of compatibility for the Epson Equity series of PCS. The products range from local-area networking to multi-user applications to micro-to-mainframe connectivity.

Arnet Corporation

Arnet Corporation produces multi-user expansion boards that allow terminals to be connected to PCs using multi-user operating systems. They have certified the Equity I+ and III+ for use with their products.

A typical configuration would be an Equity III+ host, the Xenix operating system, an Arnet Multiport Multi-8 board and cabling to connect other PCs (such as the Equity I+) or standard ASCII terminals. Other compatible operating systems include Microport Unix, Theos, BOS, PC MOS and Others.

The Arnet Twin port offers 2 serial ports for smaller installations. The Multiport board is available in Multi-4 or Multi-8 configurations, and the Multi-4 can be upgraded; The Smartport is an intelligent version of the Multiport that uses the 80186 processor to handle heavy data transfer. The Smartport is compatible only with the Equity III+.

Confirmation of Compatibility		
Arnet Product	Equity It	Equity III+
Twinport	Yes	Yes
Multiport	Yes	Yes
Smartport	N/A*	Yes

* Smartport is compatible only with AT type systems

IDEAssociates, Incorporated

Offering a wide range of micro-to-mainframe and other connectivity and enhancement products, IDEAssociates has certified the Equity It and III+ for use with their 327x and 525x mainframe products (both bisync and SNA/SDLC), their async 1200 baud modem, plus their range of hard disk and tape drives and memory products.

Recognized as a top alternative to **IBM** connectivity products, IDEAssociates provides a full selection of 3270/78 and 5250/51 hardware and software solutions for micro-to-mainframe applications. Please see the following list for a complete breakdown of their Epson-compatible products.

Epson-compatible Products - IDEAssociates

PRODUCT NAME	IDEA PROD. CODE	PRODUCT DESCRIPTION	COMMENTS
IDEAcomm 3278	CPR-3278	3278 COMMUNICATIONS EMULATOR SOFTWARE VER. 4.0	INTERFACE BOARD AND EMULATION SOFTWARE. TESTED ON I+ & III+
IDEAcomm 3287	CPR-3287	3287 PRINTER EMULATOR MAINFRAME PRINTER EMULATOR S/W VER. 1.01	INTERFACE BOARD AND EMULATION SOFTWARE. TESTED ON I+ & III+
IDEAcomm 5251	CPR-5251	5251 COMMUNICATIONS EMULATOR FOR IBM SYSTEM 3x. H/W REV E, S/W V4.0	INTERFACE BOARD AND EMULATION SOFTWARE. TESTED ON I+ & III+
IDEAcomm 5250/R	CPR-5250/R	5251 REMOTE COMM. EMULATOR FOR SYSTEM 3x CONNECTIVITY. S/W V1.01	INTERFACE BOARD AND EMULATION SOFTWARE. TESTED ON I+ & III+
IDEAcomm 1200S	CPR-1200/S	1200 BAUD ASYNC. MODEM. HALF SLOT. SOFTWARE V2.02	MODEM CARD AND COMM. SOFTWARE. TESTED ON I+ & III+
Backup Diskit	TEX-60	60MB STREAMING TAPE BACKUP. INTERNAL OR EXTERNAL. S/W V1.01	I/F BOARD, DRIVE AND SOFTWARE. TESTED ON I+ & III+
DISKIT 2 PLUS	D1010 PLUS	DUAL EXTERNAL REMOVABLE DISK SYSTEM. SOFTWARE V2.02	I/F BOARD, DRIVE AND SOFTWARE. TESTED ON I+ & III+
IDEAmini	YPR-SSPC	HALF SIZE I/O BOARD. 2 SERIAL PORTS, CLOCK, 1 PARALLEL. H/W REV B	TESTED ON I+ & III+
OVERBOARD	OB-EGA	ENHANCED GRAPHICS ADAP. SERIAL & PARALLEL, CLOCK H/W REV B	TESTED ON I+ & III+
IDEA SUPERMAX	EMX-4096	4MB OF RAM. 2 SERIAL, 1 PARALLEL. H/W REV E	16 BIT BOARD. TESTED ON III+

3Com Etherlink/Etherlink+

3Com Corporation has certified the entire Equity series for use with the Etherlink and Etherlink+ networks, as follows:

	Certified As	
System	Workstation	Server
Equity I	Yes	N/A*
Equity II	Yes	Yes**
Equity III	Yes	Yes
Equity I+	Yes	Yes
Equity III+	Yes	Yes

> ***** **Equity I not tested as a server. Workstation compatible.**
> ****** **Equity II has limited server capability; intended primarily as a workstation.**

We are uploading a copy of 3Com's Application Note for the Equity II to the Product Support BBS. Please feel free to read and/or download it.

Standard Microsystems Corporation

Finally, SMC has certified their ArcNet Network Controller Boards* on the Equity I+ and III+. They have verified correct operation with all hardware topologies - bus, star, and fiber optic. The software tested includes:

> **SMC NETBIOS Emulator**
> **Novell Advanced Netware/86**
> **Novell Advanced Netware/286**
> **Novell SFT Level 1**
> **Western Digital ViaNet**

* ArcNet PC100, PC200, PC300 -- Rev. D and above
ArcNet PC110, PC220, PC330 -- All

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EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 3/9/88   NUMBER: S-0014A
SUBJECT: MS-DOS 3.2 FOR THE EQUITY I/II/III

The purpose of this bulletin is to provide information on the availability of MS-DOS 3.2 for Equity I, Equity II and Equity III systems. Also included are instructions for installing MS-DOS 3.2 on hard drive systems currently using earlier revisions of MS-DOS.

The Equity I+ MS-DOS 3.2 package has been certified for use with the Equity I, Equity II and Equity III. This software is now available for customers who wish to upgrade their system.

It can be ordered under Product Code Q390A-AA - $85.00 retail. This package includes MS-DOS 3.2/GW-BASIC software with documentation for the Equity I+.

The following is a simple procedure to perform the transfer of the new MS-DOS 3.2 files to an existing hard disk system.

1. Insert the MS-DOS 3.2 diskette into drive A.

2. If the system is powered up, press RESET. If not, turn the system on.

3. At the A> prompt, type SYS C: and press ENTER. The system will respond with the message, SYSTEM TRANSFERRED.

4. At the A> prompt, type REPLACE A:*.* C:\ /S and press ENTER. This will replace the existing MS-DOS files with version 3.2 files.

5. At the A> prompt, type REPLACE A:*.* C:\[path] /A and press ENTER. This will copy new MS-DOS files to the subdirectory indicated by [path].

6. Remove the MS-DOS diskette and insert the GW-BASIC diskette into drive A.

7. At the A> prompt, type C: and press ENTER.

8. Repeat steps 4 and 5 above.   (Prompt, listed in steps 4 and 5 as A>, will now be C>.)

9. Remove the GW-BASIC diskette from the drive. Put the original diskettes in a safe place for storage.

E P S O N

EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT   SUPPORT   **BULLETIN**

DATE: 6/8/87   NUMBER: S-0012
SUBJECT: EPSON   EQUITY   ENHANCED   KEYBOARD   COMPATIBILITY

The purpose of this bulletin is to provide information regarding the compatibility of the enhanced "AT" style Equity Plus series keyboard with the Equity family of computers and a general statement on software support.

With the introduction of the Equity It and III+, Epson brought out an enhanced keyboard design - very similar to the enhanced keyboard introduced by IBM on the Model 339 AT. There are a couple of areas to make note of.

1.   Keyboard   Compatibility

The enhanced keyboard cannot be used on an Equity -'I, II or III. The enhanced keyboard (as with IBM's) requires explicit ROM BIOS support. The Equity It and Equity III+ incorporate this support; the earlier machines do not.

It is possible, however, to use a third-party "enhanced-style" keyboard (such as the Datadesk Turbo-101) which offers switch selection for PC/XT or AT usage. (Please note that early versions of the Equity I and II did not support any third party keyboards.)

The correct jumper settings for non-Epson keyboards are:

        Equity I: J2 and J3 jumpered
        Equity II: J3, J4 and J5 set for position 1

Also note that once the above jumper changes have been made, attempting to use the Epson keyboard will result in damage to the keyboard-and main board.

2.   Software   Compatibility

Not all applications "know" about the enhanced keyboard. The scan codes and mapping are subtly different. If you experience difficulties with certain applications (particularly any that re-program the keyboard), contact the software vendor and ask about enhanced keyboard support.

EPSON
EPSON AMERICA, INC.

SERVICE **P**RODUCT **S**UPPORT **B**ULLETIN

SUBJECT: **EQUITY SERIES FDD/HDD** COMPATIBILITY MATRIX

This document provides updated compatibility information on floppy disk drives, hard disk drives and hard disk controllers which have been supplied or are currently being supplied with the Equity series computers from Epson America, Inc.

Also included is information on which low level hard disk format procedures should be used with the various versions of hard disk controller boards.

Please refer to the Equity I, II, III **IBM-PC COMPATIBLE HARDWARE/ SOFTWARE DIRECTORY** supplied by Epson America's Marketing Department for information regarding third party floppy disk and hard drive compatibility.

EQUITY SERIES FLOPPY DISK DRIVE COMPATIBILITY MATRIX

PRODUCT DESCRIPTION	COMPATIBLE WITH EQUITY MODEL						COMMENTS
360KB 5.25" FDD	I	I+	II	II+	III	III+	
MDD-531-51 (CANON)	X						
MD-5201-55 (CANON)	X						C
SD-525-501 (EPSON)	X						
MDD-531-31 (CANON)			X		X		A,J
MD-5201-57 (CANON)		X	X	X	X	X	D,E
MD-5201-58 (CANON)		X	X	X	X	X	D,E,I
SD-521-506 (EPSON)		X	X	X	X	X	B
1.2MB 5.25" FDD	I	I+	II	II+	III	III+	
SD-580 (EPSON)					X		G
SD-581L-501 (EPSON)			X				B,F,G,H
JU-595-10 **PANASONIC**					X		
MD-5501-61 (CANON)				X	X	X	
FD1155C/FD1157C NEC				X	X	X	
720KB 3.5" FDD	I	I+	II	II+	III	III+	
SMD-489M (EPSON)		X	X	X		X	

COMMENT CODE EXPLANATIONS:

A. Requires insulating sheet when installed in lower position in Equity II. See TIB Equity 11-006.
B. Jumper block SS1 - Position DS0 for drive A, DS1 for drive B
C. Equity I must have ROM BIOS version 2.21(MSA-B4) and MS-DOS 2.11 Release 1.04 or higher to use this drive.
D. Must set drive select jumpers on FDD logic board for A (position S1) or B (position S2).
E. It is not necessary to remove the terminating resistor pack.
F. Handle drive with care - possibility of short circuit between screw head on frame and FDD logic board (could damage FDD)!
G. Terminator must be removed when used as 2nd floppy drive unit.
H. See Product Support Bulletin S-0020 for set-up information.
I. Same as MD-5201-57 except comes configured as 2nd drive.
J. Jumper block JJ1 - Position S1 for drive A, S2 for drive B.

EQUITY SERIES HARD DISK DRIVE COMPATIBILITY MATRIX

PRODUCT DESCRIPTION	COMPATIBLE WITH EQUITY MODEL						COMMENTS
20MB HARD DISK DRIVES	I	I+	II	II+	III	III+	
DK-505-2 (HITACHI)	X		X				C
HD-860-501/502/503	X	X	X				
HMD-720-802 EPSON	X	X	X		X		D
HMD-720-803 EPSON				X	X	X	
HD-860-504/505 EPSON	X	X	X	X	X	X	A, B
HD-860-506 EPSON	X	X	X	X	X	X	B
40MB HARD DISK DRIVES	I	I+	II	II+	III	III+	
D5146 (NEC)				X	X	X	
6053 (MINISCRIBE)				X		X	
94205-51 (CDC)				X		X	

COMMENT CODE EXPLANATIONS:

A. Comes with black front bezel.

B. When used with Equity III use format procedure #2 on page 5.

C. Follow format procedure #2 on page 5. The NCL Hard Disk Controller Board (NDC5027-49) and DK-505-2 HDD must be used together.

D. For Equity III - Only use HMD-720 hard drives NOT stamped with: "Do not use with Equity III".

EQUITY **SERIES HARD** DISK **CONTROLLER** COMPATIBILITY **MATRIX**

PRODUCT DESCRIPTION	COMPATIBLE	WITH	EQUITY	MODEL			COMMENTS
HARD DISK **CONTROLLER**	I	I+	II	II+	III	III+	
WD1002S-WX2C027 **ROM 62-000062-010**	X						**B, E**
WD1002S-WX2C027 **ROM 62-000062-010-1**	X	X	X				**B**
WD1002A-WX1E027 **ROM 62-000062-010-1** or 62-000062-13	X	X	X				**B, C, D**
NCL NDC5207-49	X		X				**A**
WD1002-WAH **ROM 62-001020-10** **AND** 62-001027-11					X		
EPSON WHDC BOARD **P/N Y127203000** **ROM VERSION** **WD1015PL-27** or -27B **62-002008-011** or -061				X		X	**F, G**

CODE EXPLANATIONS:

A. **Follow format procedure #2. NCL Hard Disk Controller Board (NDC5027-49) and DK-505-2 HDD must be used together.**

B. **Follow format procedure indicated on PSB # S-0005.**

C. **Short version Western Digital HDC board. Released late 1986.**

D. **ROM BIOS 62-000062-010-1 and 62-000062-13 are equivalent. Either ROM may be found on this board.**

E. **This version HDC ROM BIOS with WD-1015-24 firmware CPU will not allow auto-boot from hard disk. WD-1015-14 firmware CPU will work.**

F. **ROM BIOS # WD1015PL-27 is equivalent to 62-002008-011 these ROMs have been updated to # WD1015PL-27B or 62-002008-061 which are also equivalent to each other.**

G. **HDC ROM BIOS must be revision "B" to work with XENIX software.**

HARD DISK FORMATTING INFORMATION

```
*****IMPORTANT***************IMPORTANT ******************IMPORTANT*****
*                                                                    *
*     ALWAYS  FORMAT  THE  HDD  WITH  THE  SAME  VERSION  CONTROLLER *
*     BOARD  AND  HDC  CPU  FIRMWARE  VERSION  IT  WILL  BE  USED WITH. *
*     IT IS NOT  NECESSARY  TO  REFORMAT  IF THE  ROM BIOS IS         *
*     UPGRADED  AS  LONG  AS  THE  SAME  FIRMWARE  CPU  IS  USED.     *
*                                                                    *
********************************************************************
```

FOR LOW LEVEL FORMATTING:

   1. EQUITY I/II **FORMAT**

      **See PSB # S-0005 titled Equity I/II HDD intialization
procedure using software which is included with each system**

   2. EQUITY III **FORMAT**

      a. Run PFORMAT - Enter bad tracks - Time approx. 5 minutes.

      b. Run HDFMTALL - Time approx. 8 minutes.

      c. Run HDPART - Time approx. 2 minutes.

      d. Run HDFORMAT - Time approx. 5 minutes.

   3. EQUITY III+ - See Product Support Bulletin # S-0006

Notes:

   1. **Early production Equity I units without HDDs must be
upgraded with the CAC version VFO SUB-board to operate
with a hard drive.**

   2. **Equity I, DOS ver. 2.11 problem - Bad sector information
erased when HDFORMAT (MS-DOS utility) executes formatting.
Corrected in DOS version 2.2 (MSA-B3) and 2.21 (MSA-B4).**

   3. **Equity I/II - HDFMTALL erases bad sector information.
Delete HDFMTALL from the system disk.**