EPSON

Product Support Bulletin

Subject: Proper Method for Running Benchmark and Diagnostics Programs

Date: 06/04/93
Page(s): 1 of 1

PSB No: S-0158
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/Apex Compatibility with the SOTA 386si

Date: 3/02/90
Page: 1 of 3

PSB No: S-0111
Originator: KAS

The purpose of this bulletin is to provide the 80386 Accelerator board test results, conducted by the Computer Product Support Center, involving the SOTA 386si from SOTA Technology, inc.

The Equity models tested were the Equity I, Equity II Equity I + and Equity le. The Apex models tested were the Apex, Apex Plus and Apex 100. All were tested with Norton Utilities and MS - DOS.

The table below shows compatibility and the Norton SI rating of the various systems.

Model	Norton SI	Compatibility
Equity I	12.0	Functioned normally with Norton Utilities and MS- DOS 2.11
Equity I+	12.0/16.9	Functioned normally with MS - DOS 3.3 and Norton Utilities at both CPU speeds.
Equity le	NA	Unable to boot at 10MHz. Performance erratic at 4.77MHz
Equity II	14.3	Functioned normally with MS - DOS 3.2 and Norton Utilities. (Tested only at 7.16MHz.)
Apex	15.9	Unable to boot at 4.77MHz. Functioned normally at 8MHz with MS - DOS 3.2 and Norton Utilities.
Apex Plus	11.5	Unable to boot at 9.54MHz. Functioned normally at 4.77MHz with MS - DOS 3.2 and Norton Utilities.
Apex 100	12.0/16.9	Functioned normally with MS - DOS 3.3 and Norton Utilities.

Installation of the board in most of the units was quick and simple to do when following the installation instructions accompanying the boards. Installation of the SOTA 386si in the Equity I and the Equity II is rather difficult. Due to the amount of disassembly required, we strongly recommend that only Authorized Service Centers install the board in the Equity I and Equity II.

Installation Instructions

Equity I

1. Remove the following from the main unit:
   a) upper case
   b) rear panel
   c) front panel
   d) FDD/power supply block.

2. Follow instructions for a standard installation for the SOTA 386si in an 8088 - based system. Take care to fold the SOTA connector cable so as not to prevent reassembly. The cable is sturdy and will tolerate being folded.

3. Reassemble the main unit and go through the testing and initialization procedure outlined in the SOTA manual.

Equity II

1. Remove the following from the main unit:
   a) upper case
   b) rear panel
   c) front panel
   d) FDD/power supply block.

2. Follow instructions for a standard installation for the SOTA 386si in an 8086 - based system. Take care to fold the SOTA connector cable so as not to prevent reassembly. This will necessitate routing the cable so that it does not conflict with the power connection to the main system board. The cable is sturdy and will tolerate being folded.

3. Reassemble the main unit and go through the testing and initialization procedure outlined in the SOTA manual.

Our Computer Product Support Center receives numerous calls requesting information and recommendations on 80386 Accelerator boards for use with the Equity and Apex (8088- and 8086 - based) personal computers.

We have found that the SOTA 386si may meet your requirements and are competitively priced!

Although these boards were tested by qualified product support specialists, Epson America makes no representations that these third party products are compatible with all hardware configurations or software applications.

We recommend that you certify these products with your specific hardware and software requirements and consult with the third party vendor to ensure reliable operation.

SOTA Technology can be reached at:

SOTA Technology, Inc.
657 N. Pastoria Ave.
Sunnyvale, CA 94086
Phone: (408) 245 - 3366

Product Support Bulletin

Subject: Novell Netware Compatibility Test Results for the Equity I +

Date: 8/11/89
Page: 1 of 1

PSB No: S-0092
Originator: KAS

This bulletin is intended to provide a summary of the results of compatibility testing of the Equity I + with Novell local-area networking products. This information was provided to Epson by Novell's Independent Manufacturing Support Program. For complete test result reports, contact Novell, Inc.

The Equity I + was tested at 10MHz, as a workstation only.

Advanced Netware 2.0A

Network Boards		Workstation	Remote Boot
Gateway	G - Net	Passed	Failed
IBM	Token Ring	Passed	Passed
Novell	NE1000	Passed	Passed
Novell	RXNet	Passed	Passed
Proteon	Pronet	Passed	Not Tested
SMC/PD	Arcnet	Passed	Passed

Advanced Netware 2.15

Network Boards		Workstation	Remote Boot
AT&T	StarLAN	Passed	Not Tested
Gateway	G - Net	Passed	Not Tested
IBM	PC-Net II	Passed	Passed
IBM	Token Ring	Passed	Not Tested
Micom	Nl5010	Passed	Failed
Novell	NE1000	Passed	Failed
Novell	RXNet	Passed	Failed
SMC/PD	Arcnet	Passed	Failed
3Com	3C501	Passed	Passed
3Com	3C503	Passed	Not Tested

Advanced Netware 2.1

Network Boards		Workstation	Remote Boot
Novell	Intelligent NIC	Passed	Passed

Product Support Bulletin

Subject: Compatibility Information for the Equity I + and Manzana MicroSystems External 3.5" 720KB/1.44MB Floppy Drives

Date: 8/10/89
Page: 1 of 1

PSB No: S-0090
Originator: KAS

This bulletin is intended to provide the results of compatibility testing conducted by the Computer Product Support Center with the MUX Adapter card, the High Density Controller card and the 3.5" 720KB/1.44MB external floppy drive from Manzana Microsystems.

The MUX Adapter card was found to support the external floppy drive as a 720K floppy drive in the Equity I +. The instructions should be followed as described in the MUX Adapter Card Manual, supplied by Manzana. No alterations or special accommodations are necessary. Jumpers on the card should be left at the factory default settings.

The High Density Controller card was found to support the external floppy drive as a 1.44Mb floppy drive in the Equity I +. The instructions should be followed as described in the High Density Controller manual. No alterations are necessary.

The High Density Controller installation requires that the Equity I +'s built - in floppy disk controller be disabled. This is done by setting J1 on the Equity I + main board to the "B" position. The 380KB floppy drive A: is then connected to the High Density Controller, instead of the internal controller.

MS - DOS version 2.X or higher is required for installation of the High Density Controller and use of the external drive as a 1.44MB floppy disk drive. The Equity I + is shipped with MS - DOS 3.3, previously version 3.2.

Manzana includes the 3Five disk utilities with their MUX Adapter card and High Density Controller card. These utilities include a device driver for the 3.5" floppy disk drive, a format utility and information utilities for use with the external 3.5" floppy disk drives.

Manzana Microsystems can be contacted at the following address:

Manzana Microsystems
7334 Hollister Avenue, Suite B
P.O. Box 2117
Goleta, CA 93118
Tel. (805) 988 - 1387

Product Support Bulletin

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

Date: 04/11/90
Page: 1 of 3

PSB No: S-0088B
Originator: KAS 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 lle	The Equity lle 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 lll +	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: Tape Backup System Test Results

Date: 6/13/89
Page: 1 of 2

PSB No: S-0087
Originator: MWT

The Epson America Product Support Center has recently tested four tape backup systems:

Archive VP - 150i	Internal, 150MB
Mountain Series 4000 FileSafe	External, 40MB
Tallgrass TG - 4060 +	External, 60MB
Tecmar QT - 60e	External, 60MB

The tape drives were tested on a variety of systems (please see the notes below). In all cases, the drive manufacturer's documentation was used as a guide to installation and operation. Note that for 8086/88 computers, the XT- type settings were used. For the 80286/386 computers, the AT- type settings were used. This is important for correctly configuring the host adapters or controller cards for IRQ, DMA and I/O port address.

Archive VP - 150i

The VP - 150i was tested on the Equity II +, Ill + and 386/20. Due to the capacity and nature of the drive, it is not particularly suited for use in any of the 8086/88 computers. This was the only drive supplied with Unix/Xenix device drivers. It was tested under MS - DOS 3.3 and SCO Xenix 286 System V version 2.2.1 with no problems encountered. The VP - 150i is also Novell tested and certified under the NetWare operating system.

Mountain Series 4000 FileSafe

The Series 4000 FileSafe was tested on the Equity II+, III + and 386/20. Due to the use of a 16 - bit controller, it was not tested in any of the 8086/88 computers. It was tested under MS - DOS 3.3 with no problems encountered. A chapter is included in the tape software documentation on backup and restore operations on a local area network, including Novell.

Tallgrass TG - 4060 +

The TG- 4060+ was tested on the Apex, Apex +, Equity I +, II +, Ill + and 386/20. It was tested under MS- DOS 3.2 and 3.3 with no problems encountered. There is no documentation on LAN operations.

Tecmar QT - 60e

The QT- 60e was tested on the Equity I +, II +, III + and 386/20. Testing was conducted under MS - DOS 3.3 with no problems encountered. The Tecmar documentation includes extensive information on installation and operation in a LAN environment.

General Notes

Of the four units tested, the Archive and Tecmar drives offered the easiest installation. They also provided the best performance, with the Tallgrass drive giving the slowest disk-to-tape and tape - to- disk operations. All four drives were supplied with menu-driven tape utility software for the MS - DOS environment. Command-line and timed, scheduled operations are also available. As previously mentioned, the Archive drive also included device drivers for use in a Unix/Xenix environment, offering the greatest level of flexibility.

Please contact the manufacturers for additional information.

Archive Corporation
Data Storage Division
1650 Sunflower Ave.
Costa Mesa, Ca. 92626
(800) 237 - 4929

Mountain Computer, Inc.
360 El Pueblo Rd.
Scotts Valley, Ca. 95066
(408) 438 - 6650

Tallgrass Technologies Corp.
11100 West 82nd St.
Overland Park, Ks. 66214
(913) 492 - 6002

Tecmar, Inc.
6225 Cochran Rd.
Solon, Oh. 44139
(216) 349 - 1009

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 Ie

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

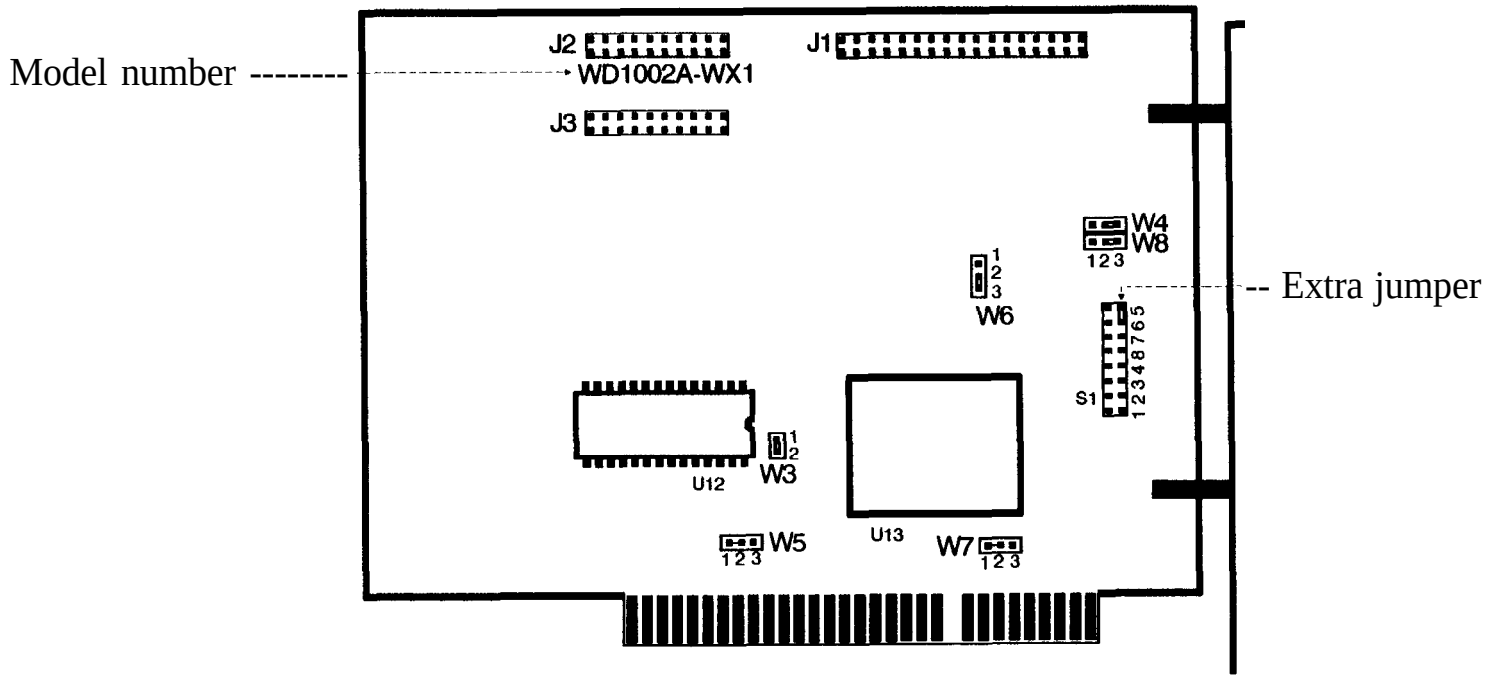
Date: 6/12/89
Page: 1 of 8

PSB NO.: S-0070A
Originator: APA 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)

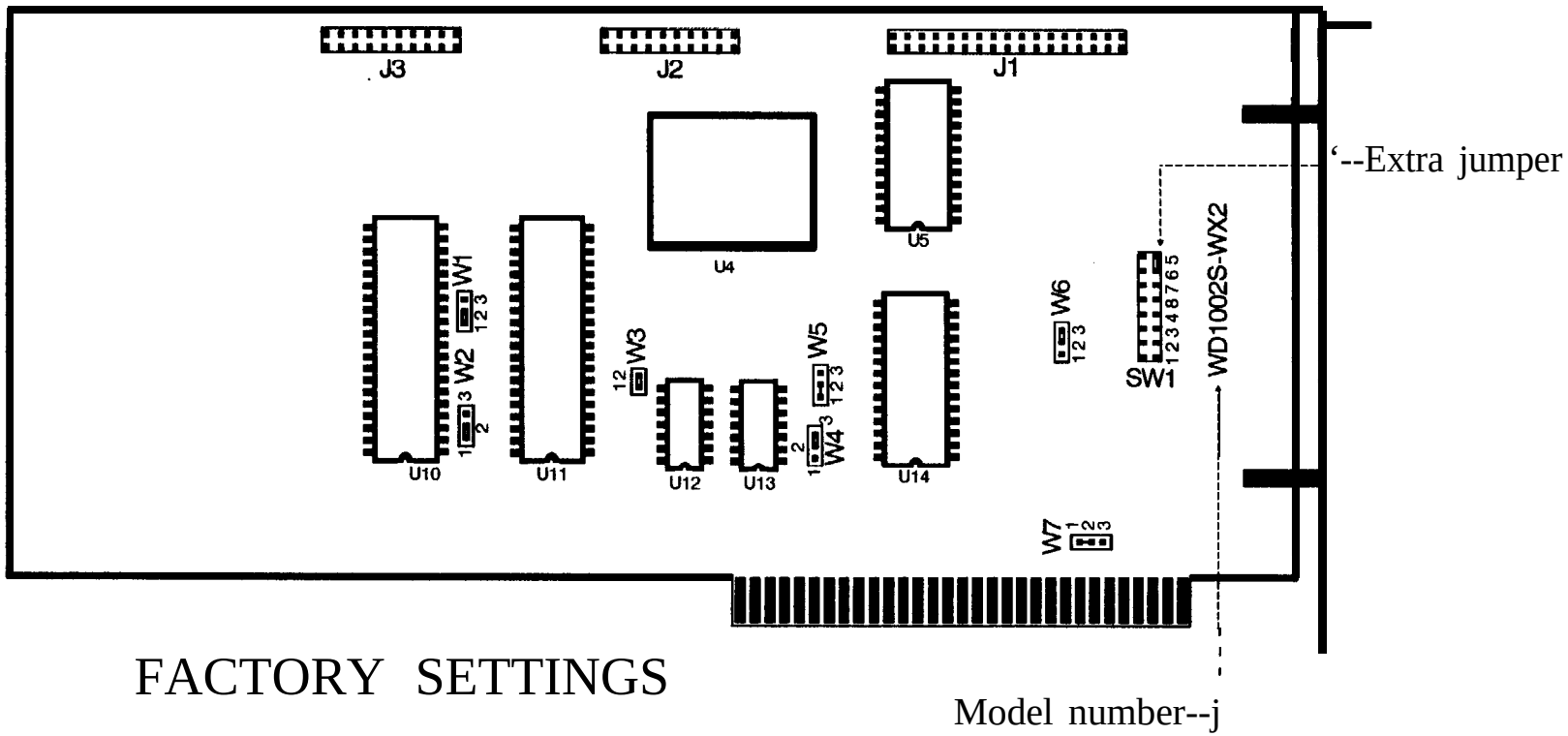


FACTORY SETTINGS

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)



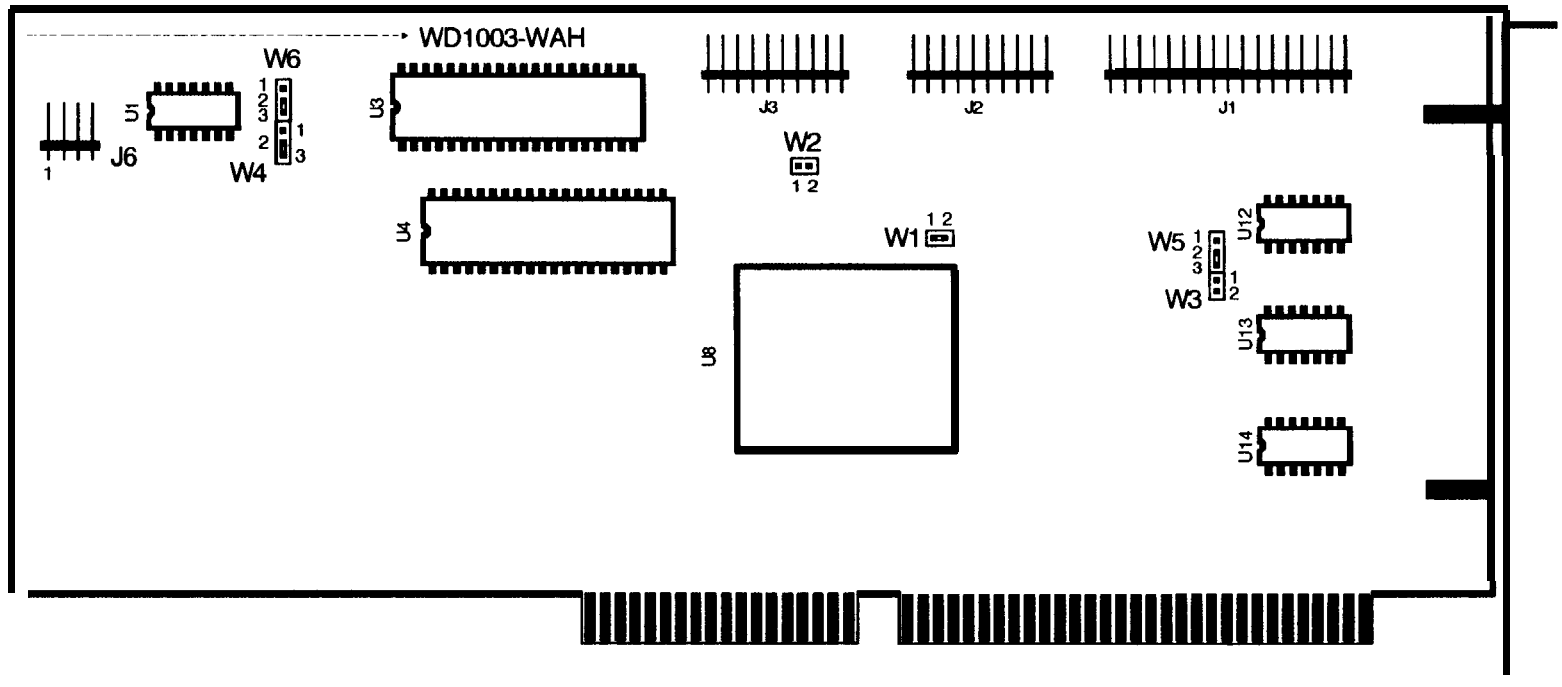
FACTORY SETTINGS

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



FACTORY SETTINGS

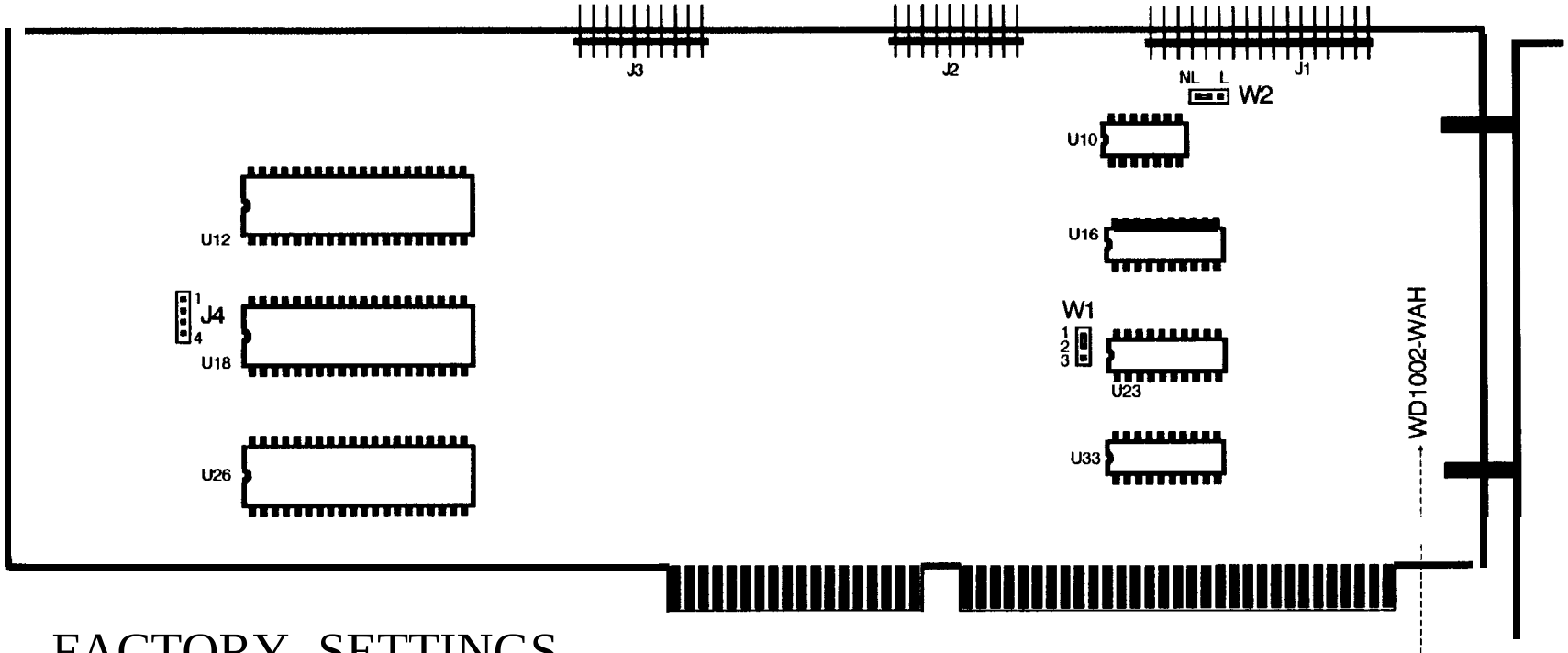
Jumper	Position	Description
W1	1 to 2	Status read is latched.
W2	No jumper	Primary address selected.
W3	* No jumper	Required for this configuration.
W4	2 to 3	Required for this configuration.
W5	2 to 3	Standard configuration.
W6	2 to 3	Standard configuration.

*** 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)



FACTORY SETTINGS

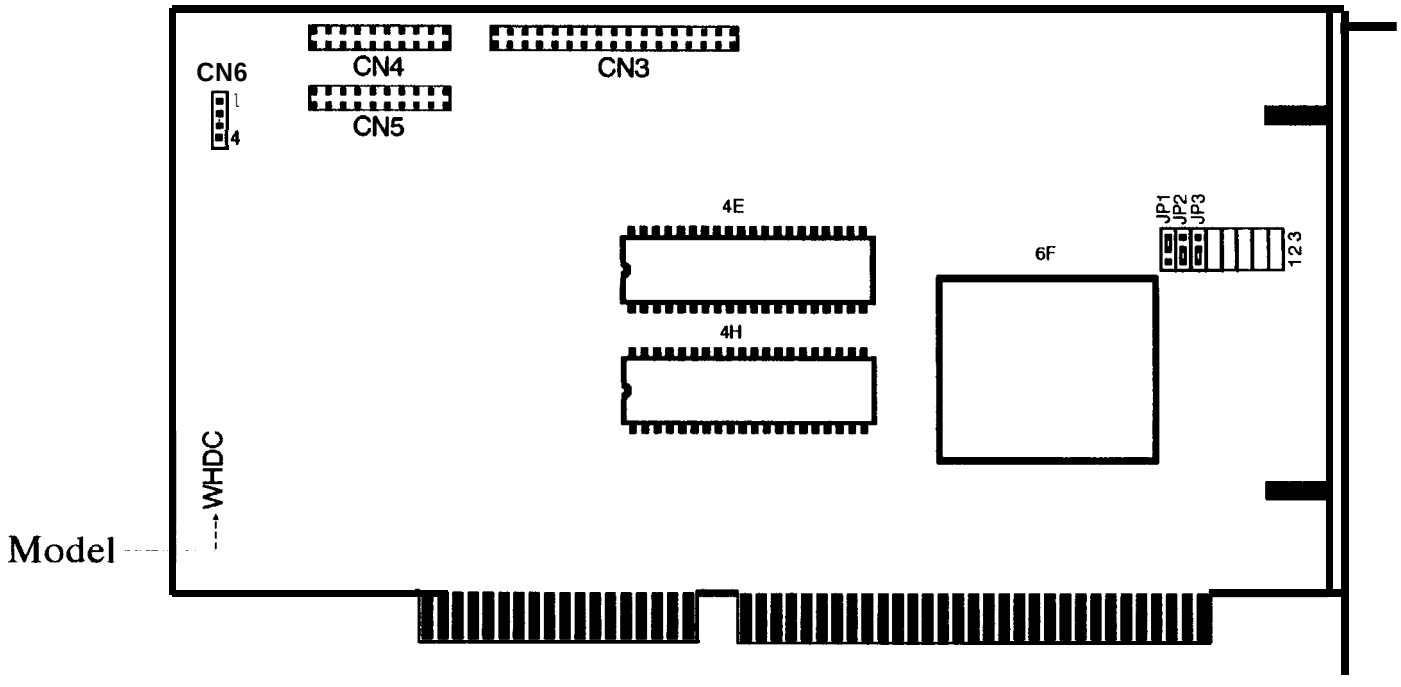
Model number

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)



FACTORY SETTINGS

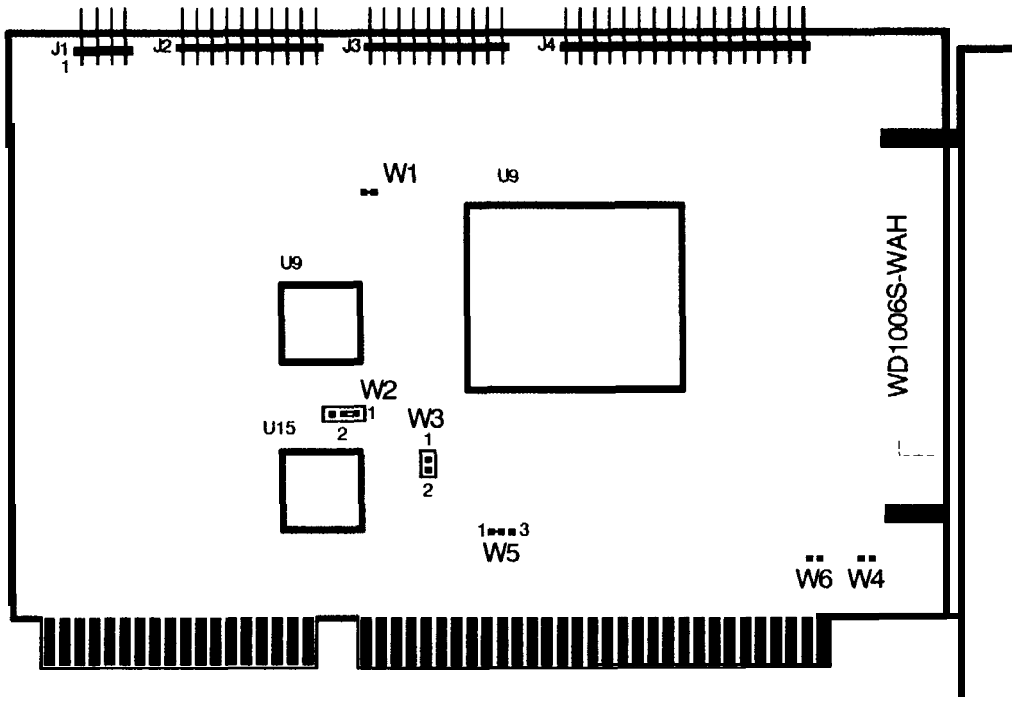
Jumper	Position	Description
* JP1 (J1)	*2 to 3 (B to C)	Primary address selected.
* JP2 (J2)	* 1 to 2 (A to B)	Status read is non-latched (select = drive busy).
* JP3 (J3)	* 1 to 2 (A to B)	WAH mode (dual HDD controller).
JP4 to JP8	No jumper pins.	Hardwired to factory settings.

* "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

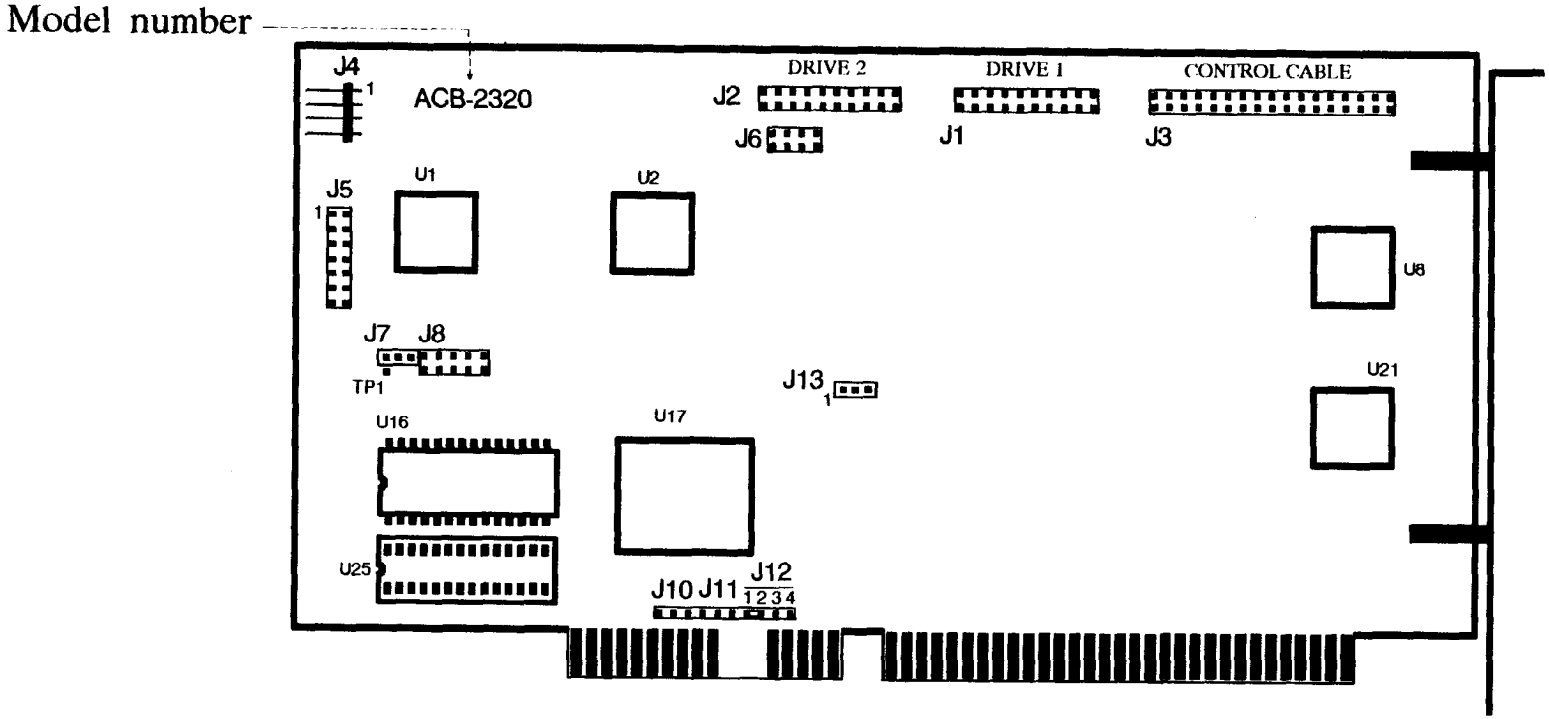
Jumper	Position	Description
W1	* 1 to 2	LED lights for drive selection (non- latched).
W2	1 to 2	No reduced write current,
W3	No jumper	Enables cacheing.
W4	* No jumper	Isolates mounting bracket from logic ground.
W5	* 1 to 2	Primary controller port.
W6	* No jumper	Non-latched mode.

*** No jumper pins.**

Connection of LED indicator cable :

Model	Pin 1 of J1
Equity 386/20	Red wire

HDD Controller ACB-2320 (16-bit)



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

PSB NO.: S-0069	DATE: 2/1/89	ORIGINATOR: REM	PAGE: 1 of 1

SUBJECT: EQUITY I+ / EGA & VGA VIDEO ADAPTERS

This bulletin provides information on the use of EGA and VGA video adapters with the Equity I+ computer.

Certain EGA and VGA video adapter's exhibit sensitivity to I/O Bus noise levels in Equity I+ computers. Random characters and/or erratic video display operation may occur.

In most cases, this problem can be eliminated by installing the video adapter in the slot closest to the power supply, marked CN2. If a hard disk controller is installed, it should be moved to the next slot (CN3).

Engineering Change Notice EQ1+-006 has been issued to reduce the I/O Bus noise levels by adding resistors on the address lines of the AGN-MT I/O expansion board.

This ECN upgrades the AGN-MT board to revision 03 and was installed in December, 1988 production units.

Field units can be upgraded per this ECN on an as-needed-basis if moving the video adapter to slot CN2 does not correct the problem.

Please contact the Computer Product Support Center if additional assistance is required.

Product Support Bulletin

Subject: Equity Compatibility with the SOTA 286i and the PC Technologies 286 Express

Date: 7/12/89 PSB No: S-0066A
 Originator: KAS

The purpose of this bulletin is to provide the 80286 Accelerator board test results, conducted by the Computer Product Support Center, involving the SOTA 286i from SOTA Technology, Inc. and the 286 Express from PC Technologies, Inc.

The Equity models tested were the Equity I, Equity II and Equity I+. All three were tested with Norton Utilities and Windows/286. (The memory of the Equity I used in the test was upgraded to 512K in order to accommodate Windows/286.)

The table below shows compatibility and the Norton SI rating of the various combinations.

Model	Accelerator	Norton SI	Compatibility
Equity I	286 Express	NA	Not able to load driver to access 80286.
Equity I	SOTA 286i	11.5	Functioned normally with Windows/286, Notion Utilities and MS-DOS 2.11.
Equity II	286 Express	NA	Not able to load driver to access 80286.
Equity II	SOTA 286i	13.7	Functioned normally with Windows/286, Norton Utilities and MS- DOS 3.1 and 3.2.
Equity I +	286 Express	16.5	Functioned normally with Windows/286, Norton Utilities and MS - DOS 3.2.
Equity I+	SOTA 286i	13.7	Functioned normally with Windows/286, Norton Utilities and MS - DOS 3.2.

Installation of either board in the Equity I + was quick and simple to do when following the installation instructions accompanying the boards.
Installation of the SOTA 286i in the Equity I and the Equity II is rather difficult. Due to the amount of disassembly required, we strongly recommend that only Authorized Service Centers install the board in the Equity I and Equity II.

Installation Instructions

Equity I

1. Remove the following from the main unit:
   a) upper case
   b) rear panel
   c) front panel
   d) FDD/power supply block.

2. Follow instructions for a standard installation for the SOTA 286i in an 8088 - based system. Take care to fold the SOTA connector cable so as not to prevent reassembly. The cable is sturdy and will tolerate being folded.

3. Reassemble the main unit and go through the testing and initialization procedure outlined in the SOTA manual.

Equity II

1. Remove the following from the main unit:
   a) upper case
   b) rear panel
   c) front panel
   d) FDD/power supply block.

2. Follow instructions for a standard installation for the SOTA 286i in an 8086 - based system. Take care to fold the SOTA connector cable so as not to prevent reassembly. This will necessitate routing the cable so that it does not conflict with the power connection to the main system board. The cable is sturdy and will tolerate being folded.

3. Reassemble the main unit and go through the testing and initialization procedure outlined in the SOTA manual.

Our Computer Product Support Center receives numerous calls requesting information and recommendations on 80286 Accelerator boards for use with the Equity I and I + (8088 - based) and the Equity II (8086 - based) personal computers.

We have found that the SOTA 286i and 286 Express products may meet your requirements and are competitively priced! They join the PC Elevator board (for use with the Equity I + and Equity II) as accelerator boards recommended for use with Epson 8088 and 8086 - based personal computers.

Although these boards were tested by qualified product support specialists, Epson America makes no representations that these third party products are compatible with all hardware configurations or software applications.

We recommend that you certify these products with your specific hardware and software requirements and consult with the third party vendor to ensure reliable operation.

Vendor Reference

** Applied Reasoning (PC Elevator)
86A Sherman St.
Cambridge, MA 02140
Phone: (617) 492-0700

PC Technologies, Inc. (286 Express)
704 Airport Blvd.
Box 2090
Ann Arbor, MI 48106
Phone: (313) 996-9690

Sota Technology, Inc. (SOTA 286i)
657 N. Pastoria Ave.
Sunnyvale, CA 94086
Phone: (408) 245-3366

** NOTE: Applied Reasoning is no longer producing the PC Elevator board that is recommended as an accelerator board for the Equity I+ and Equity II. However, it may still be available in distribution stock.

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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, INC.

EPSON

Product Support Bulletin

Subject: History of ROM Versions for the Equity Computers

Date: 12/03/93
Page(s): 1 of 18

PSB No: S-0062I
Originator: MTD

The purpose of this Product Support Bulletin is to provide a comprehensive history of the ROM versions released for use in the Equity series computers.

EQUITY I					
VER	PART #	DESC	TYPE	LOC	REASON
2.1D	Y144800101	MSA-B1	M27128	12F	INITIAL RELEASE
2.1I	Y144800102	MSA-B2	M27128	12F	
2.20	Y144800301	MSA-B3	M27128	12F	Corrects problems with EGA, PC-NET, and hardcards. Adds support for 4 FDDs. See MIB SM0003 (6/2/86) and ECN EQ1-001 (7/29/86).
2.21	Y144800401	MSA-B4	M27128	12F	Allows use of the Canon MD-5201-55 FDD. See ECN EQ1-002 (1/19/87).

EQUITY I+					
VER	PART #	DESC	TYPE	LOC	REASON
1.00	Y144519071	AGB-A1	M27128	5M	INITIAL RELEASE
1.03	Y144803000	AGB-A2	M27128	5M	Fixes serial port problem with MS Word and keyboard problem with 3COM software.

PSB NO.: S-0061	DATE: 10/12/88	ORIGINATOR: MWT	PAGE: 1 of 13

SUBJECT: NOVELL NETWARE CERTIFICATION WITH EQUITY + SERIES COMPUTERS

The purpose of this bulletin is to provide information regarding compatibility between the Epson Equity series computers and Novell local-area networking products. This information was provided to Epson by Novell's Independent Product Testing group, a part of their Services Division. The Independent Product Test (IPT) reports are available to Novell authorized dealers. The IPT numbers are as follows:

Equity I+:	IPT 1029
Equity II+ (10 MHz):	IPT 1030
Equity III+ (10 MHz):	IPT 1048
Equity III+ (12 MHz):	IPT 1082

Please contact your Novell representative to obtain these reports as required.

Definition of Terms

DCB	Disk coprocessor board
DIB	SCSI Disk interface board
INIC	Intelligent network interface card
LAN	Local-area network
ND286	Non-dedicated Advanced NetWare 286
NIC	Network interface card
SCSI	Small Computer System Interface

Testing Information

The following tests were conducted on the Equity I+, II+ and III+ computer products:

NetWare Operating System Functionality: Dedicated and non-dedicated file server tests are performed.

Network Interface Card Compatibility: All network cards supported by the tested release of NetWare are tested.

Operating System Network Driver Compatibility: All supported network cards are tested with a NetWare driver designed specifically for each card. To test accessibility of the driver to the interface card, a workstation is attached and logged into the file server and run through a series of NetWare and MS-DOS commands.

Bridging: The file server is configured with different interface cards at the same time. Whenever two or more driver configurations are listed together in this report, it is an indication of bridge testing and that the drivers and cards are functioning at the same time.

ASYNC Communications Testing: Modems and telephone lines are used to communicate between the file server and a remote workstation using an asynchronous operating system driver and shell driver controlling the serial ports.

Extended Hardware Testing: Novell Disk Coprocessor boards (DCB) and Novell SCSI disk subsystem interface boards (DIB) are used in the file server to connect Novell disk subsystems to the file server. Note that the DCBs are only tested on the II+ and III+, as they are only compatible with the 16-bit AT-type bus.

Network printing is tested by sending a print job from a workstation to a printer connected to the file server.

Workstation Testing: In situations where only a workstation driver is available, the system is tested as a workstation, such as with the Novell Network Interface Cards (NICs).

Novell Supplied Software and Hardware

The Equity I+ has been tested using the following software and hardware:

Software	Hardware
Advanced NetWare 86 2.0a	Novell-supported NICs

The Equity II+ and III+ have been tested using the following software and hardware:

Software	Hardware
Advanced NetWare 86 2.0a	Novell-supported NICs
Advanced NetWare 286 2.0a	Novell SCSI DIB
Non-dedicated Adv. NetWare 286 2.0a	Novell DCB
SFT NetWare 286 Level I 2.0a	
SFT NetWare 286 Level II 2.0a	
SFT NetWare 286 Level II 2.1	

The following pages present a summary of the Novell test reports.

Equity I+

ROM BIOS Version: 1.00
Memory: 640KB base, no extended/expanded
Clock Speeds: 4.77/10 MHz
Monitor: Color (CGA)
Video Adapter: Color (CGA)
DOS Version Tested: Epson MS-DOS 3.20
Mass Storage: 1 - 360KB FDD, 1 - 20MB HDD
Hard Disk Controller: Western Digital WD1002A-WX1

The Equity I+ is approved as a Novell file server, with the following limitations:

- The I+ will not function properly using the Orchid PC-NET NIC.
- The I+ was not tested as a non-dedicated file server.

NetWare Utilities

COMPSURF:	Passed
INSTALL:	Passed

Configurations tested with Advanced NetWare 86 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
GENBIOS (86)/IBM PC-NET:	Passed
Cold Boot:	Passed
Key Card (Critical!):	Passed
Printer:	Passed
86 SCSI DIB Configuration:	Passed
IBM CLUSTER (86):	Passed
Etherlink Plus (3C505\1194):	Passed
SMC/PD Arcnet:	Passed
Novell RX-NET:	Passed
Etherlink (3C501):	Passed
Nestar:	Passed
StarLan:	Passed
OmniNet:	Passed
Vista:	Passed
Proteon:	Passed
Micom (NI5010):	Passed
Gateway:	Passed
IBM PC-NET:	Passed
Orchid PC-NET:	Failed
Comments: Will not function properly at both 4.77 and 10 MHz.	
Etherlink Plus (3C505\2012):	Passed

Configurations tested with Advanced NetWare 86 2.0a

NetWare driver configuration for dial-in remote access:

NETWARE DRIVER CONFIGURATIONS	STATUS
GENBIOS (86):	Passed
ASYNC:	Passed

Workstation Configurations Tested

Novell INIC:	Passed
Novell INIC (Non-interrupt):	Passed
Novell NIC (w/patched shell):	Passed
Davong:	Passed

Equity II+ (10 MHz)

ROM BIOS Version: 1.55
Memory: 640KB Base, no extended/expanded
Clock Speeds: 8/10 MHz
Monitor: Mono (non-Epson)
Video Adapter: Mono (non-Epson)
DOS Version Tested: Epson MS-DOS 3.20
Mass Storage: 1 - 1.2MB FDD; 1 - 40MB HDD (Drive Type 17)
Hard Disk Controller: Western Digital WD1003-WAH

The Equity II+ (10 MHz) is approved as a Novell file server, with the following limitations:

- The II+ does not function correctly as a file server with the 3Com 3C505(2012) network card.
- The II+ does not function as a file server at 10 MHz with the Novell DCB; however, it does function correctly with the DCB at 8 MHz.
- The II+ does not function with the IBM CLUSTER board.
- The II+ does not function correctly with the GENBIOS (ND286) and GENBIOS (86) drivers.
- The Novell NIC and INIC shells will often not function in machines running faster than 8 MHz; because of that, the II+ will not run as a workstation at 10 MHz with the INIC (non-interrupt) shell driver. It will function correctly at 8 MHz.
- The typematic feature of the II+ is slow when running Advanced NetWare ND286; however, all other keyboard input functions correctly.

NetWare Utilities

COMPSURF:	Passed
INSTALL:	Passed

Configurations tested with Advanced NetWare 86 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
SMC/PD Arcnet:	Passed
GENBIOS (86)/IBM PC-NET:	Failed
Cold Boot:	Passed
Key Card (Critical!):	Passed
Printer:	Passed
86 Non-dedicated option:	Passed
86 SCSI DIB Configuration:	Passed

Comments: The II+ (10 MHz) will not function correctly with GENBIOS (ND286) and GENBIOS (86) drivers.

Configurations tested with Advanced NetWare 86 2.0a

NetWare driver configuration for dial-in remote access:

NETWARE DRIVER CONFIGURATIONS	STATUS
SMC/PD Arcnet:	Passed
ASYNC:	Passed

Configurations tested with Advanced NetWare ND286 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
SMC/PD Arcnet (ND286):	Passed
Gateway (ND286):	Passed
GENBIOS (ND286)/IBM PC-NET:	Failed

Comments: The typematic feature of the II+ (10 MHz) is slow when running Advanced NetWare ND286; however, all other keyboard input functions correctly.

Configurations tested with Advanced NetWare 286 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
Etherlink Plus (3C505\1194):	Passed
SMC/PD Arcnet:	Passed
Novell RX-NET:	Passed
Etherlink (3C501):	Passed
StarLan:	Passed
OmniNet:	Passed
Vista:	Passed
Proteon:	Passed
Micom (NI5010):	Passed
Gateway:	Passed
IBM PC-NET	Passed
Micom (NP600):	Passed
IBM Token Ring Network:	Passed
Nestar:	Passed
Orchid PC-NET:	Passed
Etherlink Plus (3C505\2012):	Failed

Comments: The II+ (10 MHz) does not function correctly as a file server with the 3Com 3C505(2012) network card.

Configurations tested with ELS NetWare 286 Level I 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
Novell Ethernet (NE1000):	Passed

Configurations tested with SFT NetWare 286 Level I 2.0a

NetWare Utilities

DISKSET:	Preset
PREPARE:	Passed
INSTALL:	Passed

NETWARE DRIVER CONFIGURATIONS	STATUS
Etherlink Plus (3C501):	Passed

Comments: The II+ (10 MHz) will not function as a file server at 10 MHz with the Novell DCB; however, it will function correctly at 8 MHz with the DCB.

Configurations tested with SFT NetWare 286 Level II 2.0a

NetWare Utilities

DISKSET:	Preset
PREPARE:	Passed
INSTALL:	Passed

NETWARE DRIVER CONFIGURATIONS	STATUS
SMC/PD Arcnet:	Passed

Comments: The II+ (10 MHz) will not function as a file server at 10 MHz with the Novell DCB; however, it will function correctly at 8 MHz with the DCB.

Configurations tested with SFT NetWare 286 Level II 2.1

NetWare Utilities

NETGEN:	Passed

NETWARE DRIVER CONFIGURATIONS	STATUS
Micom (NP600):	Passed
Novell Ethernet (NE1000):	Passed
Etherlink Plus (3C505\1194):	Passed
Etherlink Plus (3C505\2012):	Failed

Comments: The II+ (10 MHz) does not function correctly as a file server with the 3Com 3C505(2012) network card. Volume SYS shut down and many FAT and DIR errors were noted.

Workstation Configurations tested with Advanced NetWare 2.0a

WORKSTATION DRIVER CONFIGURATIONS	STATUS
Novell INIC	Passed
Novell INIC (Non-interrupt) at 8 MHz only:	Passed
Novell NIC (w/patched shell):	Passed
Davong:	Passed

Comments: The Novell NIC and INIC shells will often not function in machines running faster than 8 MHz; because of that, the II+ will not run as a workstation at 10 MHz with the INIC (non-interrupt) shell driver. It will function correctly at 8 MHz.

Workstation Configurations tested with SFT NetWare Level II 2.1

WORKSTATION DRIVER CONFIGURATIONS	STATUS
Etherlink (3C501):	Passed
Etherlink Plus (3C505\1194):	Passed
Etherlink Plus (3C505\2012):	Passed
Micom (NI5010):	Passed
Novell Ethernet (NE1000):	Passed

Equity III+ (10 MHz)

ROM BIOS Version: 1.50
Memory: 640KB Base, no extended/expanded
Clock Speeds: 6/8/10 MHz
Monitor: Color (CGA)
Video Adapter: Color (CGA)
DOS Version Tested: Epson MS-DOS 3.20
Mass Storage: 1 - 1.2MB FDD; 1 - 40MB HDD (Drive Type 17)
Hard Disk Controller: Epson WHDC

The Equity III+ (10 MHz) is approved as a Novell file server, with the following limitations:

- The III+ (10 MHz) will not function correctly at 10 MHz with the Novell DCB, Orchid PC-NET and when Nestar and StarLan cards are used together. They will function correctly at the slower speeds.
- The IBM CLUSTER card cannot be used in the III+ (10 MHz).

NetWare Utilities

COMPSURF:	Passed
INSTALL:	Passed

Configurations tested with Advanced NetWare 86 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
GENBIOS (86)/IBM PC-NET:	Passed
Cold Boot:	Passed
Key Card (Critical!):	Passed
Printer:	Passed
86 Non-dedicated option:	Passed
86 SCSI DIB Configuration:	Passed
IBM CLUSTER (86):	Failed

NetWare driver configuration for dial-in remote access:

NETWARE DRIVER CONFIGURATIONS	STATUS
GENBIOS (86)/IBM PC-NET:	Passed
ASYNC:	Passed

Configurations tested with Advanced NetWare ND286 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
GENBIOS (ND286) :	Passed
SMC/PD Arcnet:	Passed
IBM CLUSTER (ND286):	Failed

Comments: The III+ (10 MHz) will not boot DOS with the IBM CLUSTER card installed.

Configurations tested with Advanced NetWare 286 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
Etherlink Plus (3C505\1194):	Passed
SMC/PD Arcnet:	Passed
Novell RX-NET:	Passed
Etherlink (3C501):	Passed
Nestar:	Passed
StarLan:	Passed
OmniNet:	Passed
Vista:	Passed
Proteon:	Passed
Micom (NI5010):	Passed
Gateway:	Passed
IBM PC-NET:	Passed
Micom (NP600):	Passed
Orchid PC-NET (8 MHz only):	Passed
IBM Token Ring Network:	Passed
Etherlink Plus (3C505\2012):	Passed

Configurations tested with SFT NetWare 286 Level I/II 2.0a

NetWare Utilities

DISKSET:	Preset
PREPARE:	Passed
INSTALL:	Passed

NETWARE DRIVER CONFIGURATIONS	STATUS
Etherlink Plus (3C505\2012):	Passed

Workstation Configurations Tested

WORKSTATION DRIVER CONFIGURATIONS	STATUS
Novell INIC:	Passed
Novell INIC (Non-interrupt):	Passed
Novell NIC (w/patched shell):	Passed
Davong:	Passed

Equity III+ (12 MHz)

ROM BIOS Version: 2.00
Memory: 640KB Base, no extended/expanded
Clock Speeds: 6/8/12 MHz
Monitor: Monochrome
Video Adapter: Monochrome
DOS Version Tested: Epson MS-DOS 3.20
Mass Storage: 1 - 1.2MB FDD; 1 - 40MB HDD (Drive Type 45)
Hard Disk Controller: Western Digital WD1003-WAH

The Equity III+ (12 MHz) is approved as a Novell file server, with the following limitations:

- The III+ (12 MHz) will not boot to DOS using the IBM CLUSTER card.
- The III+ (12 MHz) will not function correctly at 12 MHz with NetWare SFT Level II 2.1 Proteon or IBM Token Ring Network workstation shell drivers. It will function correctly at 8 MHz with these drivers.
- The III+ (12 MHz) will not function correctly at 12 MHz with the Novell DCB; however, it will function correctly at 8 MHz with the DCB.
- The Novell NIC and INIC shells will often not function in machines running faster than 8 MHz; because of that, the III+ (12 MHz) will not run as a workstation at 12 MHz with the INIC and INIC (non-interrupt) shell drivers. It will function correctly at 8 MHz.

NetWare Utilities

COMPSURF: Passed
INSTALL: Passed

Configurations tested with Advanced NetWare 86 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
GENBIOS (86)/IBM PC-NET:	Passed
86 SCSI DIB Configuration	Passed
IBM CLUSTER (86):	Failed

Comments: The III+ (12 MHz) will not boot to DOS using the IBM CLUSTER card.

Configurations tested with Advanced NetWare ND286 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
GENBIOS (ND286) :	Passed

Configurations tested with Advanced NetWare 286 2.0a

NetWare driver configuration for dial-in remote access:

NETWARE DRIVER CONFIGURATIONS	STATUS
SMC/PD Arcnet:	Passed
ASYNC:	Passed

Configurations tested with Advanced NetWare 286 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
Etherlink Plus (3C505\2012):	Passed

Configurations tested with ELS NetWare 286 Level I 2.0a

NETWARE DRIVER CONFIGURATIONS	STATUS
Novell Ethernet (NE1000):	Passed

Configurations tested with SFT NetWare **286** Level **I/II 2.0a**

NetWare Utilities

PREPARE:	Passed
INSTALL:	Passed

NETWARE DRIVER CONFIGURATIONS	STATUS
Etherlink Plus (3C505\2012)	Passed

Comments: The III+ (12 MHz) will not function correctly at 12 MHz with the Novell DCB; however, it will function correctly at 8 MHz with the DCB.

Configurations tested with SFT NetWare 286 Level **II 2.1**

NetWare Utilities

NETGEN:	Passed

NETWARE DRIVER CONFIGURATIONS	STATUS
Etherlink Plus (3C505\1194):	Passed
Etherlink Plus (3C505\2012):	Passed
Etherlink (3C501):	Passed
Novell Ethernet (NE1000):	Passed
Micom (NP600):	Passed

Configurations tested with SFT NetWare 286 Level II 2.1 (cont.)

NETWARE DRIVER CONFIGURATIONS	STATUS
SMC/PD Arcnet:	Passed
Novell RX-NET:	Passed
StarLan:	Passed
OmniNet:	Passed
Gateway:	Passed
IBM PC-NET:	Passed
IBM Token Ring Network (8 MHz only):	Passed
Proteon (8 MHz only):	Passed

Workstation Configurations Tested

WORKSTATION DRIVER CONFIGURATIONS	STATUS
Etherlink (3C501):	Passed
Etherlink Plus (3C505\1194):	Passed
Etherlink Plus (3C505\2012):	Passed
Novell Ethernet (NE1000):	Passed
Micom (N15010):	Passed
SMC/PD Arcnet:	Passed
Novell RX-NET:	Passed
StarLan:	Passed
OmniNet:	Passed
Proteon:	Passed
Gateway:	Passed
IBM PC-NET:	Passed
IBM Token Ring Network:	Passed
Novell INIC (8 Mhz only):	Passed
Novell INIC (Non-interrupt, 8 MHz only):	Passed
Novell NIC (w/patched shell):	Passed

EPSON
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SERVICE PRODUCT SUPPORT BULLETIN

PSB NO.: S-0053	DATE: 6/1/88	PAGE: 1 of 1

SUBJECT: EQUITY **I+/II+/III+/LT** DIAGNOSTIC "EXEC failed" MESSAGE

The purpose of this bulletin is to clarify the correct usage of the DIAGNOSTIC DISK.

Many customers and dealers have contacted Epson's Technical Support because of getting a "EXEC failed" error message when trying to run the system diagnostics MEMORY test.

This occurs because many people are not booting the system with the diagnostic disk but rather loading the diagnostic program after booting from the MS-DOS system disk or hard disk drive. In the instructions for performing system diagnostics the following statement is made:

Note: To run the System diagnostics, boot your system with the diagnostics diskette in drive A. Then select option 4 from the OPERATION menu. If you start this program in any other way, some tests may produce strange results.

The "EXEC failed" error message will not occur if the diagnostic diskette is properly loaded,

Please note that the diagnostic diskette should not be modified in any way or similar results may occur.

If the diagnostics diskette was obtained through Epson America's Training Department and does not contain the system files then the system files should be copied to the diagnostics disk before attempting to run the diagnostic programs.

Product Support Bulletin

Subject: Using Expanded Memory with Equity and Apex Computers

Date: 3/2/90
Page: 1 of 6

PSB No: S-0047C
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 lll +?

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 Ill + (10MHz models)?

A. The following boards have been tested by Epson in the Equity II + and Equity Ill + (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 Ill + (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 Ill +. 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 SlMMs (single in - line memory modules) to the CHET - RM board. Both 256K and 1Mb SlMMs are available from Epson America. The 256K SlMMs are sold in 1Mb kits and the 1Mb SlMMs are sold in 2Mb kits. Compatible third party 1Mb SlMMs 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 +/Ill +.

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 Ill + (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 Ill + 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 Ill + have jumpers on the system memory boards to allow memory to be disabled to 256K and 512K.

Product Support Bulletin

Subject: Equity I+ "FILE CREATION ERROR" Update

Date: 6/7/89 PSB No: S-0045A
Page: 1 of 1 Originator: REM

The purpose of this bulletin is to update you on a hardware problem that existed on some Equity I + computers manufactured in the spring of 1988.

Systems Affected:

Equity I + systems with AGENA boards P/N Y144210000 below revision # 05, in the serial number range of 061222 to 85778 and between serial numbers 90846 - 91065 and 92846 - 93601, manufactured from 3/88 through 5/88 using Siemens manufactured 8088 - 1 microprocessor chips with date codes of 8705, 8715, 8733, 8737, 8741 and 8578 may exhibit this problem.

Note: Not all systems included in the above configuration exhibited this problem.

Problem Symptoms:

- The "FILE CREATION ERROR" message occurs when attempting to copy files at the 10MHz speed. The error does not occur at 4.77MHz.

- Directory creation fails on an FDD or HDD (File size indicates 0 Bytes).

Corrective Action:

Replace the faulty 8088 - 1 microprocessor chip only on an as needed basis if systems exhibit the described problem. Replacement CPU chips will be provided by Epson Service under warranty.

Note: In 5/88 the Equity I + AGENA board CPU clock signal was modified to allow correct operation with all Siemens CPU chips. The AGENA board was updated to Rev. 05. The revision number is located on the AGENA board following the board part number - Y14421000005. Please refer to ECN# EQI + -003 for details of the AGENA board modification. It is not necessary to replace the AGENA board.

Contact Epson Parts Services and order replacement part # X400080885. This part can be warranty pre- shipped. Return the defective Siemens 8088 - 1 microprocessor chip to Epson as a regular warranty claim.

Warranty Reimbursement for this upgrade is $35.00.

EPSON

EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 3/28/88 **NUMBER: S-0040**
SUBJECT: EQUITY I+ COMPUTER - ANSWERS TO COMMON QUESTIONS

The following questions and answers have been compiled from the thousands of support calls received at the Epson Product Support Center.

Floppy Disk Drives

Q1. What type of floppy disk drives are used on the EQUITY I+?

A. The EQUITY I+ uses the Canon (Model MD5201) half-height, 5.25", 360KB floppy disk drives.

Q2. Can I use a 3.5", 720KB Floppy disk drive?

A. Yes, the Equity I+'s ROM BIOS and MS-DOS 3.2 support 3.5", 720KB floppy disk drives. Epson offers a 3.5", half-height, 720KB floppy drive (Epson Product Code A112A-AA) which has been certified with the Equity I+.

Q3. Does the Equity I+ support the 3.5", 1.44MB floppy disk drive?

A. No, the Equity It does not support the 3.5", 1.44MB floppy disk drive..

Q4. Can I install a 1.2MB floppy disk drive?

A. No. The Equity It ROM BIOS does not support 1.2MB floppy disk drives.

Q5. What is a "601" error on power-up?

A. This is a floppy disk controller (FDC) error caused by an invalid response during the FDC status check. Refer to the Equity I+ diagnostics manual. It may also indicate that the FDD cables are not making proper connection,

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Q6. Is it possible to disable the Equity It floppy disk controller.

A. Yes, move jumper J1 on the system board to position B.

Hard Disk Drives

Q7. **The SELECT command is not working. Do you have a solution?**

A. **A documentation error was made in the MS-DOS version 3.2 manual supplied with the Equity I+ and III+ regarding the SELECT command. This error also occurs in the HELP utility data file. There are two solutions. One is to use the "traditional" method for logical formatting: FORMAT C: /S/V or use the correct SELECT syntax: SELECT A: C: 001 US**

Q8. **Are the Plus Development Hardcard 20 and Hardcard 40 compatible with the Equity It?**

A. **Yes, but the installation process is slightly different because of using MS-DOS instead of PC-DOS.**

Q9. **Will the Equity It support 2 floppy disk drives and a hardcard?**

A. **Yes, but to conserve power use a hardcard which draws less than 12 Watts.**

Q10. **Can a hardcard be installed in addition to a hard disk drive?**

A. **Yes, but you must be sure that you do not mix MFM and RLL type hard drives.**

Q11. **What type of hard disk does Epson supply with the Equity It and what is the average disk access time.**

A. **Epson supplies a 3.5", 20 MB, Epson HMD-720 hard disk with controller (Product Code Q314A-AA). The disk access time is 69ms,**

Q12. **What hard disk controllers can I use?**

A. **The Western Digital (WD1002A-WX1) hard disk controller is recommended for use in the Equity It for MFM type HDDs.**

Q13. **Can hard disks from other vendors be used with the EQUITY It?**

A. **Since the EQUITY It is an IBM PC/XT compatible computer, it is possible to use hard disks from other vendors, The customer should purchase a 1/2 height, low power unit such as the one marketed by Epson.**

Video

Q14. The MGA video board with Lotus 1-2-3 will not display graphics on the monochrome monitor.

A. Use the HGC FULL mode for Hercules graphics.

Q15. Microsoft's Flight Simulator is not working. Any suggestions?

A. Most games require a video adapter board that supports graphics. Use the Epson MGA (Q205A-AA), CGA (Q505A-AA) or EGA (Q206A-AA) boards with a CGA or EGA color monitor. Use the MGA or EGA boards in Hercules graphics mode with a monochrome monitor.

Q16. An MGA video board with color monitor isn't working. Any suggestions?

A. The Equity It is often sold with the Epson MGA Multi-Mode video adapter board. Ensure that the switch on the rear panel of the video board is set for color and not monochrome.

Q17. My color monitor display blinks on and off when in 40 column mode using an Equity It, FDD system with an Epson MRS-CR, CGA color video board.

A. This can be corrected by replacing the AGN-MT option slot board with the latest revision (Rev. 02) board, part number Y14421100002. It can also be corrected by installing an additional option card in the I/O expansion bus.

Q18. What are the dip switch settings for EGA video mode.

A. Set 1-5 and 1-6 to on.

Q19. My Boca EGA card displays angled lines with the Equity It.

Make sure the Boca ROM BIOS is not version 1.21. This version does not work at 10MHz. Install an earlier version Boca EGA ROM BIOS or contact Boca Research.

Q20. The parallel printer port does not work when I use the MGA video board.

A. Set the computer's dip switches for secondary parallel port (2-1 and 2-2 both off). This is an anomaly specific to the Equity It / MGA board configuration. Please refer to Product Support Bulletin S-0023.

General Information

Q21. How do you set the Real Time Clock (RTC) for date and time?

A. Use the SETUP utility program supplied with the MS-DOS disk.

Q22. Does The Equity It have parity check for RAM?

A. Parity check is optionally available by adding 4 RAM chips in the empty parity RAM sockets and setting jumper number 2 (located next to the speaker connector) to position "B". Insert two HM50256P-12 RAM chips in sockets 6M and 7M and two HM4864AP-12 RAM chips in sockets 6N and 7N.

Q23. Which Math-Coprocessor chip do I need?

A. An 8087-1 Math-Coprocessor chip which runs at 10MHz is recommended.

Q24. When using the Microsoft serial mouse, the Equity It won't power up until the mouse is moved and when using a Logitech serial mouse the mouse isn't recognized so the driver doesn't load.

A. Some systems have encountered a problem with not being able to initialize when a self powered serial mouse is connected to the serial port. This can be corrected by connecting the mouse to a separate serial card or by changing the main system logic board with a revision 03 board. Please refer to ECN # EQI+ - 001.

Q25. Will IBM compiled BASIC programs run on the EQUITY It?

Most BASIC programs written for the IBM PC-XT will run on the EQUITY It. As with all compatible computers, some BASIC programs will not run. This is because IBM BASICA is resident in copyrighted ROMs. All compatibles use a version of GW-BASIC which is loaded from diskette. Due to differences in the BASIC, some programs will not operate correctly.

Q26. I can't find some of the programs referred to in the MS-DOS 3.2 manual on the MS-DOS diskette. Where are they?

A. The GW-BASIC diskette contains many of the utility programs, such as EDLIN and XTree, which are referred to in the MS-DOS manual.

Q27. Can I use a third party type keyboard with the Equity It?

A. Yes, you may 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 or the standard PC/XT type 84-key keyboards by selecting the proper dip switch setting on the front panel of the Equity It.

Q28. Can the Xenix Operating System be used?

A. Yes, The Equity It has been tested and certified by Santa Cruz Operations to be compatible with the Xenix System V 86XT Operating System.

Q29. What streamer tape drives can I use for high speed backup.

A. The Equity It has been tested with the Backup Diskit - 60MB, Model TEX-60 from Idea Associates and the Everex Stream - 20MB, Model 4.02 from Everex Systems, Inc.

Q30. Is the IBM 5250 emulation board compatible with the Equity It?

A. Yes, the IBM 5250 emulation board (ver. 2.1) is certified with for use with the Equity It.

Q31. Will the Equity It work in foreign countries?

A. Yes, the Equity It computer can be used internationally by selecting the appropriate input voltage on the voltage selection switch located on the rear of the unit. It will operate on either 115VAC or 230VAC at 50/60 Hz power. One thing to be aware of is that the voltage on the power outlet on the rear of the computer is the same as the input voltage of the computer. If you have a monitor or other device plugged into this outlet make sure it is capable of operating on the same voltage and frequency that the computer is connected to. Most monitors and printers are not set up to operate on dual voltages and will be damaged if plugged into the wrong AC voltage. This applies to the Epson monitors and printers as well.

EPSON

EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 3/3/88 NUMBER: S-0039
SUBJECT: EQUITY SERIES POWER AVAILABLE & CONSUMPTION

The purpose of this bulletin is to provide information regarding the available power and the power consumption of the option boards and system subassemblies of the Equity series computers.

Page 2 provides the Equity series computer power supply available current output and typical current draw of the individual subassemblies found in each computer.

Page 3 provides information on the typical current draw of Epson supplied option boards, floppy disk drives and hard disk drives for the Equity series computers.

EQUITY SERIES COMPUTERS AVAILABLE POWER VERSUS
SYSTEM BOARD SUBASSEMBLIES CURRENT DRAW REQUIREMENTS

Output Voltage	+12V	+5V	-12V	-5
Equity I Avail. power	1.6A	6.0A	200mA	250mA
MRS Board	40mA	650mA	15mA	0
MRS-RM 256KB RAM BD	0	30mA	0	0
Keyboard	0	110mA	0	0
Equity I+ Avail. power	3A	7.5A	300mA	300mA
AGENA board	0	1.2A	0	0
Equity II Avail. power	4.4A	7.5A	300mA	300mA
MCY board	0	1.8A	0	0
Keyboard	0	110mA	0	0
Equity II+ Avail. power	4.5A	10A	300mA	300mA
ANDRO Board (Including ADR-RM3)	0	2.5A	0	0
SPFG/SPF2	0	600mA	0	0
Equity III+ Available power	4.8A	20A	300mA	300mA
ANTA Board	0	1.23A	0	0
ANT-RM	0	500mA	0	0
SPFG	0	540mA	0	0
WHDC	0	530mA	0	0

EQUITY OPTIONS POWER CONSUMPTION

OUTPUT VOLTAGE	+12V	+5V	-12V	-5V
Color Video Adapter	0	500mA	0	0
Monochrome Video Adapt.	0	270mA	0	0
MGA Multimode Video Bd.	TBA	TBA	TBA	TBA
EGA Video Adapter Bd.	TBA	TBA	TBA	TBA
Epson Mouse & Interface	0	50mA	0	0
8087/80287 Coprocessor	0	310/375mA	0	0
WD1002-WAH HDC	0.5mA	1.5A	0	0
WD1002-WX2 HDC	0	630mA	0	0
WD1003-WAH HDC	0.5mA	1.0A	10mA	0
MD5201-57/58 360KB FDD Equity II/II+/III+	250mA(Typ) 460mA(Max) 1.31A Start	140mA(Typ) 180mA(Max)	0	0
MD-5501-61 1.2MB FDD Equity II+/III+	240mA(Typ) 1.66A(Max)	150mA(Typ) 170mA(Max)	0	0
FD1155C 1.2MB FDD Equity II+/III+	210mA(Typ) 390mA(Max) 900mA Start	460mA(Typ)	0	0
SMD-489 3.5" 720KB FDD Equity I+/II+/III+	0	400mA(Typ) 1A(Max)	0	0
HMD-720 3.5" 20MB HDD	580mA(Typ) 2A Start up	200ma(Typ) 360mA(Max)	0	0
NEC D5146 (40MB) HDD (Half height) Equity III	1.2A(Typ) 2A Seek 3A Start	1A(Max)	0	0
CDC 92405 (40MB) HDD (Half height) Equity II/III+	1.5(TYP) 2A (Max) 4.5A Start	400mA(Typ) 600mA(Max) 1A Start	0	0
Miniscribe (40MB) HDD (Full Height) Equity III+	800mA(Typ) 1.8A (Max) 3.5A Start	900mA(Typ)	0	0

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EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 3/3/88 NUMBER: S-0038
SUBJECT: EQUITY SERIES FLOPPY DISK DRIVE SPECIFICATIONS

The purpose of this bulletin is to provide information on technical specifications of Epson supplied floppy disk drives used in the Equity series computers.

Also contained in this document is information on floppy disk drive adjustments, test points, and service tools.

FDD TECHNICAL SPECIFICATIONS

Rev. B '87.9

SEIKO EPSON CORPORATION
TECHNICAL SALES SUPPORT GROUP

DRIVE SIZE	FDD MODEL	MAKER	PRODUCT NAME	SPECIFICATIONS					ADJUSTMENT				TEST POINT				TOOL			
				FORMATTED CAPACITY(KB) Byte/Sector/Track	EPSON MEDIA	TPI	NUMBER OF TRACKS	TRACK TO TRACK	MOTOR SPEED(rpm) [INDEX](ms)	OFF TRACK A/B (TRACK No.)	AZIMUTH A/D B/C	INDEX POSITION (μs)	READ AMP	GND	INDEX	T00	EXTENSION CABLE	CE DISK (PARTS No.)	HEAD CLEANING DISK	GREASE
	--- NEC 1.2MB ---																			
	FD1155C	NEC	EQUITY II+ EQUITY III+	1.2(MB) 512/15/T	2HD	96	160	3 (ms)	360 166.7±2.5	NOTE 1 (32)	NOTE 1 68Tr	167±125 68Tr	TP3,TP4	G	TP5	TP6	*	NOTE 4	NOTE 4	NOTE 4
	FD1157C	NEC	EQUITY II+ EQUITY III+	1.2(MB) 512/15/T	2HD	96	160	3	360 166.7±2.5	NOTE 1 (32)	NOTE 1 68Tr	NOTE 2 68Tr	TP3,TP4	G	TP5	TP6	*	NOTE 4	NOTE 4	NOTE 4
	--- EPSON 1.2MB ---																			
	SD-581L	EPSON	EQUITY II	1.2(MB) 512/15/T	2HD	96	160	3	360 166.7	0.8 (68)	*	NOTE 3 68Tr	TP-1,3	TP1-2	TP3-1	TP3-3	*	DK-502-11D (B777701301)	3M-7440 (B777701001)	G-51 (40g) (B705100001)
	--- CANON 1.2MB ---																			
	MD5501-61	CANON	EQUITY II+ EQUITY III+	1.2(MB) 512/15/T	2HD	96	160	3	360 166.7±2.5	NOTE 1 (32)	NOTE 2 68Tr	167±100 68Tr	CK1,CK2	GND	IDX	TK00	*	NOTE 4	NOTE 4	NOTE 4
5.25"	--- CANON 360KB (NO P.C.B TYPE) ---																			
	MD531-51	CANON	EQUITY I	360(KB) 512/ 9/T	2DS	48	80	6	300 200	0.8 (16)	*	150~500 34Tr	CHK1-2,3	CHK1-4	CHK2	J1-26	#E144 (B777602201)	STA-0007 (B777601801)	STA-1003 (B777701601)	E73-113003 (B777701701)
	MD5201-55	CANON	EQUITY I	360(KB) 512/ 9/T	2DS	48	80	6	300 200±3	0.8 (16)	NOTE 2 34Tr	200±140 34Tr	CHK1-1,2	CHK1-4	J1-17	CHK2	NOTE 4	STA-0007 (B777601801)	STA-1003 (B777701601)	NOTE 4
	--- EPSON 360KB (NO P.C.B TYPE) ---																			
	SD-525	EPSON	EQUITY I	360(KB) 512/ 9/T	2DS	48	80	6	300 200	0.8 (34)	0.65 0.8	150~500 34Tr	TP1-1,3	TP1-2	J2-8	TP3	#E135 (B777601701)	DK-592-11 (B777700101)	3M-7440 (B777701001)	G-51 (40g) (B705100001)
	--- CANON 360KB (WITH P.C.B TYPE) ---																			
	MD5201-57 -58	CANON	EQ I+,II+,III+ EQ II	360(KB) 512/ 9/T	2DD	48	80	6	300 200±3	0.8 (16)	NOTE 2 34Tr	200±140 34Tr	CK1,CK2	GND	IDX	TK00	*	STA-0007 (B777601801)	STA-1003 (B777701601)	NOTE 4
	MDD-531-31	CANON	EQUITY II	360(KB) 512/ 9/T	2DS	48	80	6	300 200	0.8 (16)	*	200±50 34Tr	CHK1-2,3	CHK1-4	CHK2	CHK1-1	*	STA-0007 (B777601801)	STA-1003 (B777701601)	E73-113003 (B777701701)
	--- EPSON 360KB (WITH P.C.B TYPE) ---																			
	SD-521	EPSON	EQUITY II	360(KB) 512/ 9/T	2DS	48	80	6	300 200	0.8 (34)	0.65 0.8	150~500 34Tr	TP1-1,3	TP1-2	J2-8	TP3	*	DK-592-11 (B777700101)	3M-7440 (B777701001)	G-51 (40g) (B705100001)
	--- EPSON 720KB ---																			
3.5"	SMD-489M	EPSON	EQ I+,II+,III+ EQ II	720(KB) 512/ 9/T	2DD	135	160	3	300	*	*	*	*	*	*	*	*	*	*	*

/// NOTE DESCRIPTION ///

NOTE 1 : This depends on each CE disk.
NOTE 2 : Please refer to Technical Manual.
NOTE 3 : 250±100μs. Also, the time difference between SIDE 0 and SIDE 1 must be 130μs or less.
NOTE 4 : This part will be available soon.
* : Not applicable

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EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 12/14/87 **NUMBER: S-0031**
SUBJECT: Equity Series with Microsoft Word and Serial Printers

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This bulletin is to inform you of a potential problem when using Microsoft Word, certain Equity computers and a serial printer. The situation exists on:

Equity I	BIOS rev. 2.21 or earlier
Equity I+	BIOS rev. 1.02
Equity II+	BIOS rev. 2.00
Equity III+ (10 MHz)	BIOS rev. 1.50 or earlier
Equity III+ (12 MHz)	BIOS rev. 2.00
Apex	BIOS rev. 1.00

When Word is configured to drive a serial printer via COM1 or COM2, it will print a character every 1 to 2 seconds. A single line of text may take up to a minute to print.
Word uses BIOS interrupt 14h (serial output) function 1 (send character to port) for driving either COM port. The function number is placed in the AH register and the interrupt called. On return, AH is supposed to contain the line control status. However, AH is still set to 1, indicating that a character is ready to be received. Word then calls interrupt 14h, function 2 (receive character) and attempts to receive the character. After 1 to 2 seconds, the routine times out and transmission is resumed.

There are three methods of correcting this situation:

1) If the printer supports hardware handshaking, redirect the printer output (MODE LPT1:=COM1:) and configure Word for LPT1. This works reliably with Epson printers or similar devices.

2) Epson has developed a patch program (SERFIX.COM). This is a TSR that insures that proper status is returned from INT 14h, function 1. This program is available from CompuServe (Epson and Microsoft Forums) and the Product Support Center BBS.

3) A revised ROM BIOS has been developed for 'the above systems. This is a limited release and will only be supplied on an as-needed basis.

Method 1 is the easiest solution. Method 2 is effective and is recommended for individual users. Method 3 should be reserved for large, multi-unit upgrades on an as-needed basis.

Please contact the Systems Support Group if you need additional information.

EPSON
EPSON AMERICA, INC.
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.SYSI
Equity III	Not supported*
Equity I+	No special setup required
Equity II+	No special setup required I
Equity III+	No special setup required I

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.

EPSON

EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 11/19/87 **NUMBER: S-0026**

SUBJECT: Equity + Series Compatibility Certification

The following products have been certified for compatibility with the Equity + series computers:

Hard Disk Controllers

Manufacturer	Model#	Type	For use in
Western Digital	1002B-WX1	MFM	EQ I+
Western Digital	1003B-WAH	MFM	EQ II+, EQ III+
IBM	Enhanced AT	MFM	EQ II+, EQ III+
DTC	5160-CRH	RLL	EQ II+, EQ 111+
Western Digital	WD1003-WA2	MFM	EQ II+, EQ III+
Western Digital	1002-27X	RLL	EQ II+, EQ III+

Hard Drives

Manufacturer	Model	Type	For use in
Epson	HMD-720	MFM	EQ I+, EQ II+, EQ III+
CDC-Wren II	94205-51	MFM	EQ II+, EQ III+
Miniscribe	6053	MFM	EQ III+
Miniscribe	8438F	RLL	EQ II+, EQ III+

Memory Expansion Boards

Manufacturer	Model	For use in
AST Research	Advantage Premium	EQ II+, EQ III+
AST Research	Rampage 286	EQ II+, EQ III+
Intel Corp.	Aboveboard	EQ II+, EQ III+
Intel Corp.	Aboveboard 286 p/s	EQ II+, EQ III+
STB Systems	Grande	EQ II+, EQ III+
STB Systems	Rio Grande	EQ II+, EQ III+
Profit Systems	Elite 16	EQ II+, EQ III+

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EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 10/29/87 **NUMBER: S-0023**
SUBJECT: EQUITY It / MULTI-MODE VIDEO CARD - PARALLEL PORT SETUP

The purpose of this bulletin is to provide information on the set-up procedure which is required to allow correct operation of the parallel port when using an Epson MULTI-MODE graphics card (MGA # Q205A-AA) with the Equity It.

Although the MGA card does not have a parallel port physically located on the card, it does contain the address location for LPT1. When the system DIP switches are set to enable the primary parallel port (DIP switch set 2, 1 OFF - 2 ON), LPT1 is selected and the system tries to send the parallel printer data to the video board. In this case it would appear as though the parallel port is not working as the printer will not print.

When using the MGA video card with the Equity It, the parallel port DIP switches should be set in the SECONDARY position (DIP switch set 2, 1 OFF - 2 OFF). This will designate the Equity It built in parallel output port as LPT1 and will allow the parallel printer port to operate correctly.

An undocumented DIP switch setting exists (DIP switch set 2, 1 ON and 2 OFF) which allows the built in parallel port to function as LPT2.

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

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..

EPSON

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 II+
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+

Fox Research. Inc. continued

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.

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Fox Research, Inc.
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Manzana Microsystems, Inc.
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PRODUCT SUPPORT BULLETIN

PSB NO.: S-0017A	DATE: 6/29/88	PAGE: 1 of 1

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.

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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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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.

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 6/8/87 NUMBER: S-0011
SUBJECT: MS-DOS 3.2 SELECT COMMAND - MANUAL ERROR

A documentation error has been identified in the MS-DOS version 3.2 manual which is supplied with the Equity It and III+, there is an error in the documentation for the SELECT command. This error also occurs in the HELP utility data file.

In the respective sections on using the Equity hard disk drive, the syntax is given as:

SELECT C: 001 US

Also, in the HELP utility, the format is given as:

SELECT [DOS source d:] [target d:] xxx yy

with the square brackets indicating optional command line parameters. This turns out not to be the case; both source and destination drives are required parameters.

So - there are two solutions. One is to use the "traditional" method for logical formatting:

FORMAT C: /S/V

or use the correct SELECT syntax:

SELECT A: C: 001 US

E P S O N

EPSON **AMERICA INC.**
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 4/7/87 **NUMBER: S-0010**
SUBJECT: EQUITY I+ / EQUITY III+ WORLDWIDE POWER SELECTION

The purpose of this bulletin is to caution you on the use of the 115/230 VAC power selection on the Equity It and Equity III+ personal computer.

The new. Equity It and Equity III+ personal computers have the capability of operating both in the U.S.A. and internationally through a switch selectable 115/230 Volt, 60/50Hz power supply.

Both Equity units have a separate A.C. outlet on the rear panel for providing AC power to a peripheral device (usually a monitor). The power is controlled by the system unit on/off switch.

It is very important that you inform users who intend to use the system internationally, that any peripheral device which is connected to this outlet must be configured to operate on the same input voltage that is supplied to the Equity system unit.

In other words, you must not connect a peripheral device which requires 115 VAC to the rear panel outlet if the input voltage to the Equity system is 230 Volts or serious electrical damage to the peripheral device may occur.

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PRODUCT SUPPORT BULLETIN

PSB NO.: S-0001C	DATE: 6/29/88	PAGE: 1 of 5

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 VF0 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.