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.

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INFORMATION

Product Support Bulletin

Subject: Maximum Number of Printers Supported by Current Equity Computers

Date: 02/06/91
Page(s): 1 of 1

PSB No: S-0128
Originator: KAS

As computing environments increase in complexity, there has been an increasing number of instances that require the support of several printers by one computer. One common example is that of using Novell Netware's print server capabilities to provide printer access to a large group of users with differing printer requirements. Netware is capable of supporting three (3) parallel and two (2) serial printers on one server. Recent testing has shown that the Equity 386/25 Plus, Equity 386/25, Equity 386/20 and the Equity 386SX Plus will support three (3) parallel ports along with two (2) serial ports. The key factor in providing support for a third parallel port is the need for a parallel interface card that can be set to the IBM Monochrome Graphics/Parallel printer I/O address at 3BCh. The computer looks for this address first and, if present, will assign the parallel port on that card as LPT1. The built-in parallel port (I/O address 378h) will then be addressed as LPT2. We also had an AST I/O Mini serial/parallel card addressed at I/O address 278h, which was then reassigned to LPT3. Each of the three parallel ports was attached to a printer. There was also a printer attached to each of the two serial ports. All five printers were then set to print simultaneously under Netware Version 2.15 Rev. C using PCONSOLE. All five printers were able to print the documents assigned to them, simultaneously. The units were then tested using WordPerfect 5.1 on the network and again were successful in printing to the five (5) printers at the same time. The last tests were run with the units booting under DOS 4.01 and screen prints being directed to each of the printers. WordPerfect 5.1 was also used to direct documents to each of the printers. Again all five (5) printers were able to print the files that were sent to them.

Although not all Equity computer models were tested in this situation, the Equity models 386SX, IIe, III+ and II+ should work in a similar manner if the instructions above are used as a guide. There is one item of which to be aware when using the this setup and that is the system will complete the RAM count and lock up if using a monochrome monitor. If you need to use three parallel ports, USE A COLOR MONITOR.

Product Support Bulletin

Subject: Change to Memory Expansion Board Recommendations for Equity II+ and Equity III+

Date: 3/06/90
Page: 1 of 1

PSB No: S-0113
Originator: KAS

This bulletin provides information concerning expanded memory boards which are recommended for use in the 12MHz models of the Equity II + and III+. Please consider this information as an update to Product Support Bulletins S-0042A and S-0051.

Due to the fact that the I/O bus speed of both the Equity II + and the Equity III + is the same as the CPU speed selected, there are some problems in compatibility with expanded memory boards when operating the systems at 12MHz.

Previously, Epson recommended the use of Micron Technology memory expansion boards. These boards have been removed from our recommended product list due to the fact that Micron no longer produces ISA memory boards.

One new addition to the recommended product list is the RAMpage 286 PIus board from AST. This board was released in February 1990 and is compatible with I/O bus speeds of 12MHz.

Product Support Bulletin

Subject: Equity II+, III + and 386/20 Compatibility with New Western Digital Hard Disk Controllers

Date: 9/8/89
Page: 1 of 1

PSB No: S-0101
Originator: PNM PNM

Western Digital has introduced a new series of 16 - bit hard disk controllers that replaces the models previously certified for use in our Equity Series computers. This bulletin reports on the compatibility of the new model controllers in our 80286 - and 80386 - based computers.

Current Model	New Model
WD1003A- WAH	WD1003V- MM1

Used in the Equity II + and III +, and currently available from Epson America, the WD1003A - WAH has been replaced in Western Digital's product line by the WD1003V- MM1, The new controller is capable of providing a 2:1 interleave format. This controller card has been tested in the Equity II + and III+ with the Epson 20Mb and 40Mb hard drives as well as the Seagate ST - 251. Tests were performed using a 2:1 interleave factor and all tests were completed successfully.

Current Model	New Model
WD1006A - WAH	WD1006V- MM1

The WD1006A - WAH hard disk drive controller card, used in the Equity 386/20 and 'currently available from Epson America, has been replaced in Western Digital's product line by the WD1006V- MM1. The new controller is capable of providing a 1:1 interleave format. The controller card has been tested in the Equity II+, III+ and 386/20 with the Epson 20Mb and 40Mb hard drives as well as the Seagate ST-251. All tests were performed using a 1:1 interleave factor in the test units and were completed successfully.

Product Support Bulletin

Subject: Epson Equity III + and Seagate ST- 238R Compatibility Tests.

Date: 9/7/89
Page: 1 of 1

PSB No: S-0100
Originator: PNM PNM.

The purpose of this test is to provide information on the compatibility of the Seagate ST- 238R 30Mb hard drive with the Epson Equity Ill + Computer.

The test was conducted at 6Mhz using an Equity Ill + configured as follows:

(1) 1.2Mb Floppy Disk Drive
SPFG Multifunction Card
Epson EGA Video Card
WD1002A - 27X Controller Card (8 - bit, RLL type)
Seagate ST- 238R 30Mb Hard Disk (RLL type)

Low - level formatting was initiated from MS - DOS using the Debug command G =C800:5 after drive type “NONE” was selected in SETUP. The format was completed in less than 5 minutes with occasional short stops at listed bad tracks. FDISK was performed without a problem and the disk was then partitioned into one 30Mb bootable MS - DOS partition. A high level format was performed on the disk using Seiko- Epson MS - DOS 3.36 and the system was transferred.

The unit was then tested for it’s ability to start up from the hard drive from a cold boot, a warm boot and when the reset switch was pushed. All tests performed as they should. Files were loaded and removed from the disk and various applications were run without any problems.

After the completion of the first set of tests the Equity Ill + was set to run at 12Mhz, the drive was reformatted and all tests were performed a second time. The only problem encountered in the testing procedure was the inability to run system diagnostics on the drive and controller. The system would return the message “Hard drive not installed” and return to the main menu. When the unit was tested with IBM’s Advanced Diagnostics Version 2.01, the unit would return an “Invalid drive type” message. The HDSIT utility also failed to work correctly and locked the system up at the intro screen. Both tests were performed at 8 and 12Mhz. This problem is attributed to a limitation in the diagnostic programs inability to recognize a hard disk drive in an AT- type machine when a drive type parameter of NONE is used.

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INFORMATION

Product Support Bulletin

Subject: Using High Capacity ESDI and SCSI Hard Disk Drives with the Current Equity Series Computers

Date: 10/10/90
Page(s): 1 of 2

PSB No: S-0091A
Originator: PNM

The purpose of this bulletin is to provide some specific examples of how to install high capacity ESDI and SCSI hard disk drives in the current Equity Series computers.

The largest drive directly supported by the ROM BIOS (ver 220) in the Equity II+ and Equity Ill+ has a capacity of 130Mb, while the largest supported directly by the ROM BIOS in the Equity lIe, 386SX, 386/20 and 386/25 is 153Mb. To allow our units to be used in stand alone and especially network environments that require higher drive capacities, the use of the Adaptec ACB 2320 controller (available with the Equity 386/20) with the optional ACB-BIOS (available from Adaptec) will provide support for a variety of ESDI drives up to 314Mb. The AC&BIOS also has the ability to read the ESDI drive parameters from the drive itself. This will allow it to configure virtually any ESDI drive.

NOTE: The Adaptec BIOS ROM should be installed in location U25. In order for it to work, the jumper J13 pin 1 must be installed. Caution should be used when ordering the BIOS ROM as problems have been experienced when using version B. Versions A and C perform normally.

The WD1007V-SE1 controller is another option that can be used with high capacity ESDI drives that are not supported by the ROM BIOS drive tables. When using this controller' make sure that all pins on jumper on W1 are open. You can run SETUP and use Type 1 for the drive type or let the controller automatically set it at the end of the low level format routine provided by the controller's BIOS. To start the WD-BIOS Format Utility, run DEBUG and enter G=CC00:5. This will bring up a menu listing the operations that are available. Run the low level format and either enter the defective blocks listed on the drive by hand or let the program enter them automatically. Continue with the "Verify" and "Surface Analysis" utilities and finally finish with the "Set Drive Type and Exit". At this point there are 5 options from which to choose using the "+" and 'I-" keys to toggle through the available choices. Select the 'Translation Option-63 SPT (Sectors Per Track)" if the hard drive has more than 1024 cylinders or "Non-Translation" for drives with less than 1024 cylinders.

The next step after completing the low level format is to run the Novell COMPSURF utility. When setting up the COMPSURF Parameters it will ask if you want to “Format the drive?” where you will choose the “NO” response and proceed to the next option. When asked if you want to “Retain the Bad Track Table” answer ‘YES” and continue on with the rest of the COMPSURF options. After completion of the COMPSURF utility, continue on with the rest of the NETGEN installation.

The use of high capacity SCSI drives is another area where we are able to provide a solution for those customers who require storage capacities greater than the Epson Supplied options. When using a SCSI type hard disk drive, the hard disk controller usually is a part of the hard drive unit. The connection between the SCSI bus and the Equity’s data bus is made by installing a host adaptor into the Equity computer and connecting the SCSI drive to the host adaptor. The Seagate ST-296N, 85Mb drive, used in a stand alone configuration in the current Equity Series computers has provided favorable results.

When using SCSI drives in a Novell network, the use of the Future Domain SCSI adaptor with high capacity SCSI drives such as CDC and Maxtor has also been very successful. Future Domain recommends using Version 1.4 of their device driver when installing Novell Netware Versions 2.1-2.15. When used with the TMC-830 (use ROM Vers. 4.0L) or the TMC-840 (use ROM Vers. 5.0C) host adapters, drive sizes of up to 800Mb (CDC 94181-702) can be accommodated.

Product Support Bulletin

Subject: Western Digital XT - GEN Hard Disk Controller Anomalies

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

PSB No: S-0089
Originator: MWT

Recent reports from the field have revealed certain anomalous behavior when the Western Digital XT- GEN hard disk controller is used in the Equity II +, III + or 386/20 computers.

The XT - GEN controller is an 8 - bit, XT- type “generic” controller. As such, there would be an immediate loss of performance if it were installed in a 16 - bit, AT- type ISA bus system. However, the poor performance is not the only issue. The XT- GEN can produce addressing conflicts that do not directly point to the controller as the cause. For example:

An Equity II + was equipped with a Seagate ST- 225 hard drive and the XT- GEN controller. It was also configured with the IBM 5250 terminal emulation card and software and was connected to an IBM System/36 host. Additionally, IBM’s PC Support/36 software was correctly installed on both the II+ and System/36. This utility enables file and folder sharing as well as up- and download capability. The 5250 terminal emulation works perfectly; the PC Support/36 utility does not. This pointed to an “obvious” incompatibility.

As part of the troubleshooting procedure, a Western Digital WD1003V- MM1 16 - bit controller was substituted for the XT- GEN. With this one change, the PC Support/36 functions started operating correctly. Other similar examples have been reported.

Our recommendation is that 8- bit controllers in general should not be used because of performance losses. The XT- GEN controller should not be used at all.

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 SC0 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

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SERVICE

PRODUCT SUPPORT BULLETIN

PSB NO.: S-0073	DATE: 03/17/89	ORIGINATOR: KAS	PAGE: 1 of 1

SUBJECT: Micron Technology Expanded/Extended Memory Boards in the Equity II+ and III+ (12MHz)

This bulletin provides information concerning expanded and extended memory boards which are recommended for use in the 12 MHz models of the Equity II+ and III+.

Due to the fact that the I/O bus speed of both the Equity II+ and the Equity III+ is the same as the CPU speed selected, there are some problems in compatibility with expanded and extended memory boards when operating the systems at 12MHz.

At this time, we have found one manufacturer whose boards function reliably at all CPU speeds. They are Micron Technology.

Micron is located at:

Micron Technology, Inc.
Systems Group
2805 East Columbia Road
Boise, ID 83706

Telephone: (800) 642-7661

Micron Technology has several models of both extended and expanded type memory boards. Please contact them for specifications and pricing information.

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SERVICE PRODUCT SUPPORT BULLETIN

PSB NO.: S-0072	DATE: 03/17/89	ORIGINATOR: KAS	PAGE: 1 of 2

SUBJECT: Using Seagate ST251 and ST4096 Hard Disk Drives in the Equity II+ and III+

This bulletin provides the information required to successfully install two of the more popular hard disk drives - the Seagate ST-251 and ST-4096 - in the Equity II+ and III+ desktop computers.

ST-251

The ST-251 is a 5.25", half-height 40MB HDD. Unfortunately, the drive parameters (820 cylinders with 6 heads) are somewhat unusual and are not incorporated in the Epson ROM BIOS version 2.20, or earlier, drive type table. The closest drive type available is Type 3 (615 cylinders, 6 heads). This would yield 30MB of available disk space. Under MS-DOS, however, there is an alternative - use a third-party utility such as SpeedStor or Disk Manager. This procedure would yield 40MB of available disk space.

Here is the method used to install the drive with SpeedStor version 5.11:

1 - With the drive type in SETUP set to NONE, physically install the ST-251 as you would any other HDD.

2 - Boot the system with either MS-DOS 3.20 or 3.30.

3 - Insert the SpeedStor diskette, type INSTALL and press ENTER. Respond to the prompts regarding the drive type (Seagate, ST-251) and the size of the partitions (your choice).

4 - After the partitioning is completed, SpeedStor will prompt you to insert the DOS disk in drive A. It will then transfer the system files to the HDD. It then prompts you to re-insert the SpeedStor diskette and will copy the HARDRIVE.SYS device driver to the HDD and create the CONFIG.SYS file needed to load the driver.

5 - When the process is completed, remove the SpeedStor diskette and press CTRL-ALT-DEL to re-boot the system. If the installation was successful, a copyright notice from Storage Dimensions will appear and the system will boot up to the C> prompt.

ST-4096

The ST-4096 is a high capacity 5.25", full-height 80MB hard disk drive. The drive parameters (1024 cylinders, 9 heads) are not included in the Epson ROM BIOS version 2.20, or earlier, drive type table. Under MS-DOS, you can use the same procedure as for the ST-251 and obtain approximately 69MB of usable storage (the 9th head is ignored).

A common application for this drive is in a file server for a Novell network. This presents a problem as the NetWare operating system works exclusively from the computer's ROM BIOS drive type table, and does not honor the alternate hard disk parameter table that programs such as SpeedStor create.

Here is a solution for this situation that will yield slightly over 70MB:

1 - Prior to physically installing the drive, turn it over and locate pin 2 of the 34 pin edge connector. This will be the first pin from the left on the component side of the drive's printed circuit board, when viewed from the rear of the drive.

2 - Mask off pin 2 with a small piece of thin tape - regular adhesive tape works quite well. Do not overlap onto pin 4.

3 - Install the drive and run the Epson SETUP utility. Under MASS STORAGE, go to Drive C and select type 43 (1024 cylinders, 8 heads).

4 - Perform the low-level physical format (HDFMTALL), remembering to enter any listed bad track locations.

You are now ready to go on to the Novell installation procedure. Refer to the NetWare Installation Guide for details.

(Note: the above procedure is also useful under MS-DOS 3.30. After HDFMTALL, simply run FDISK to set up the partitions and logical drives and then FORMAT each logical partition.)

Pin 2 is the HS3 (Head Select 3) signal, which is used to select the 9th head. Masking this signal off will permanently de-select the 9th head, preventing the system from generating an error condition.

Although this procedure does not yield the full 80MB capacity of the disk drive and is not recommended as a standard practice, it may prove useful in certain situations.

Product Support Bulletin

Subject: Equity Series HDD Controllers Jumper Settings

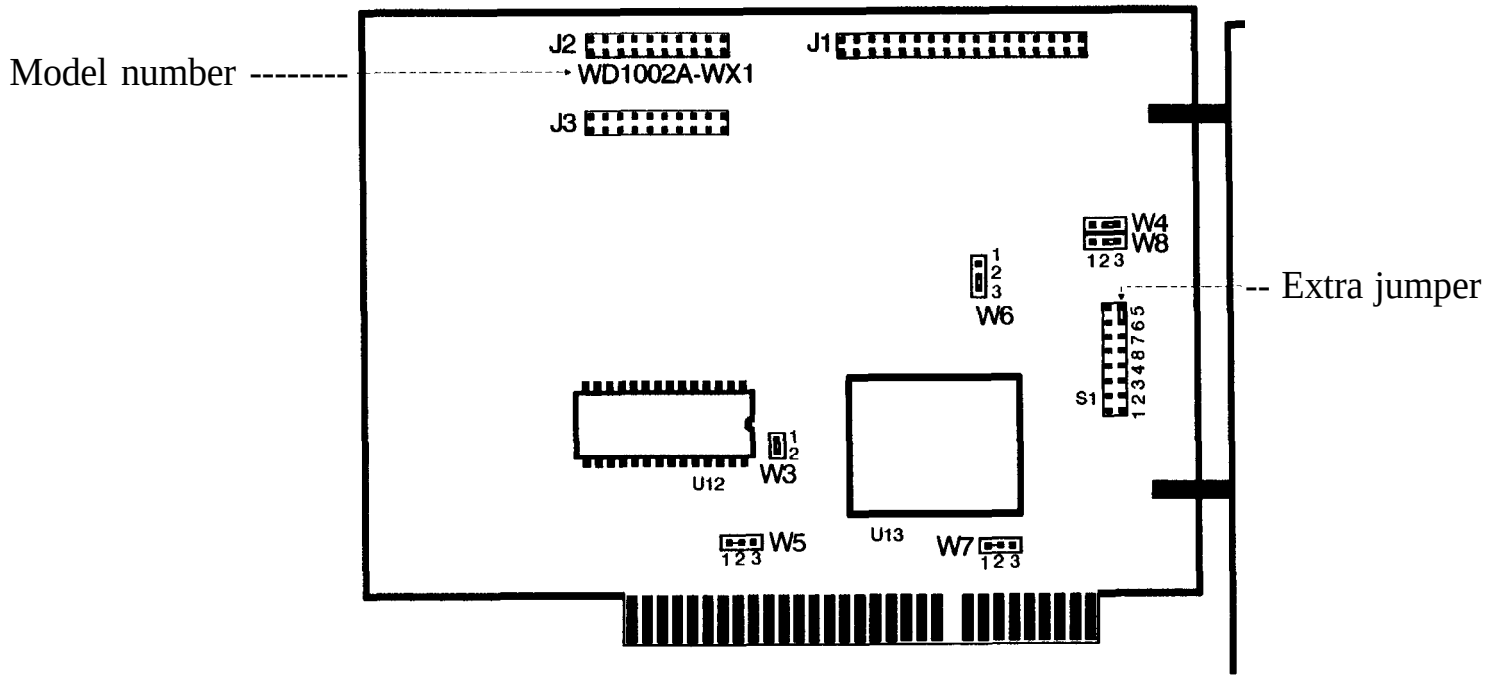
Date: 6/12/89
Page: 1 of 8

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)

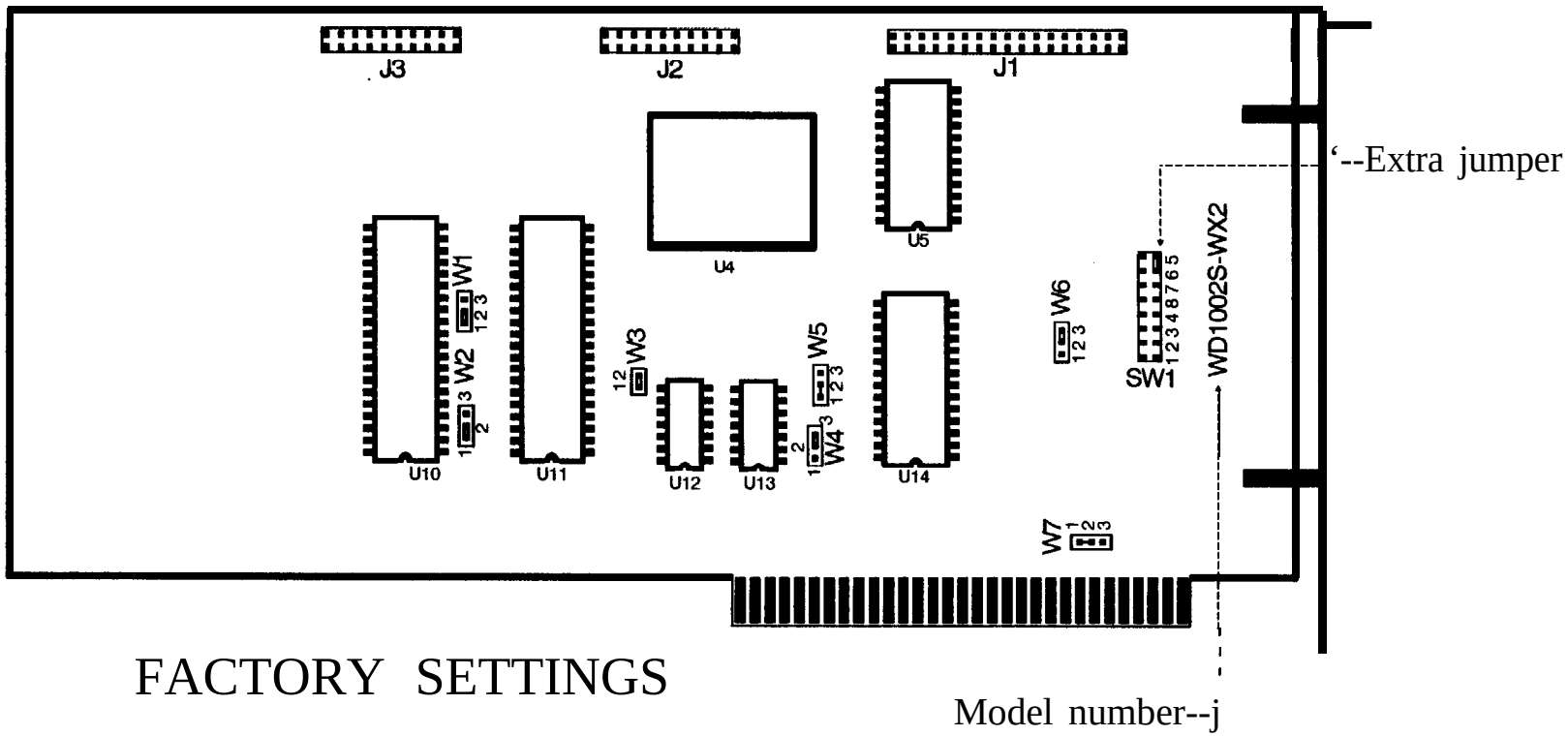


FACTORY SETTINGS

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)



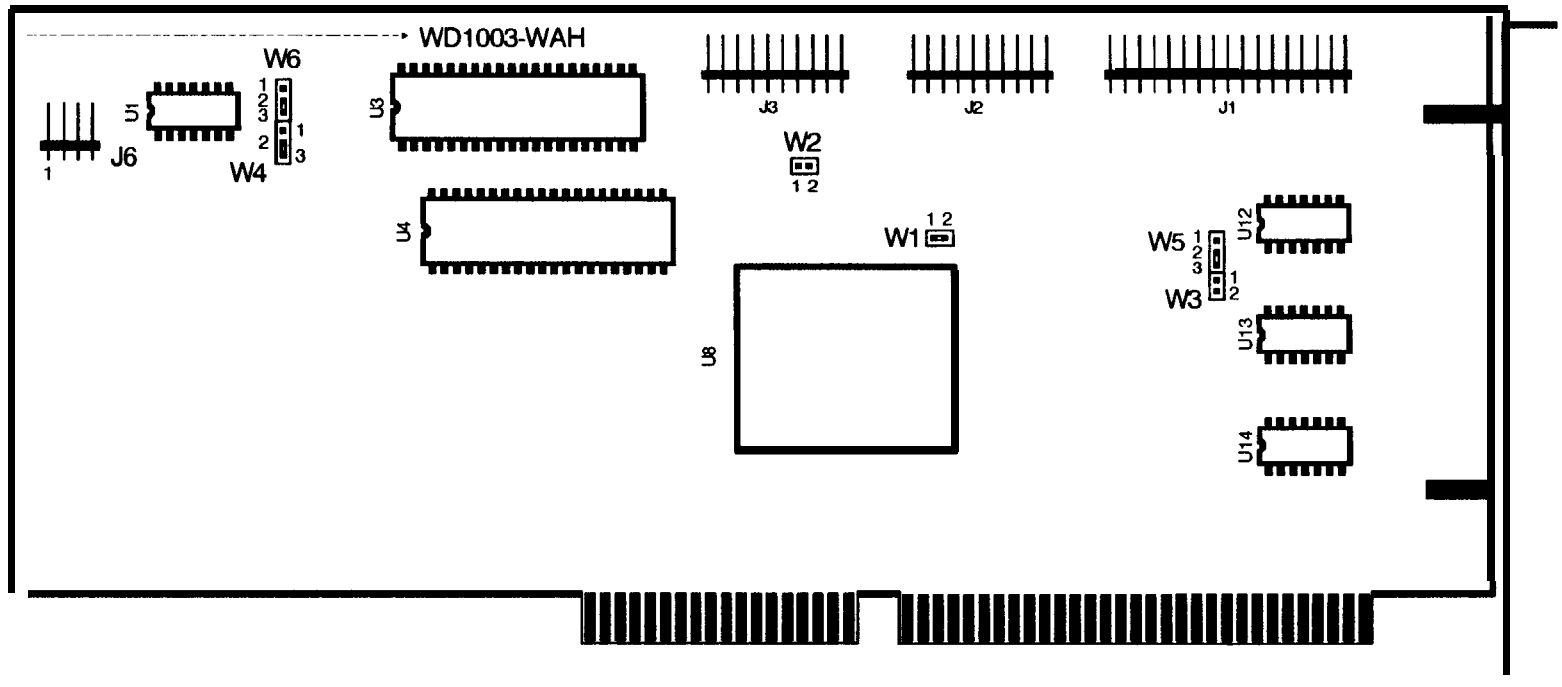
FACTORY SETTINGS

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

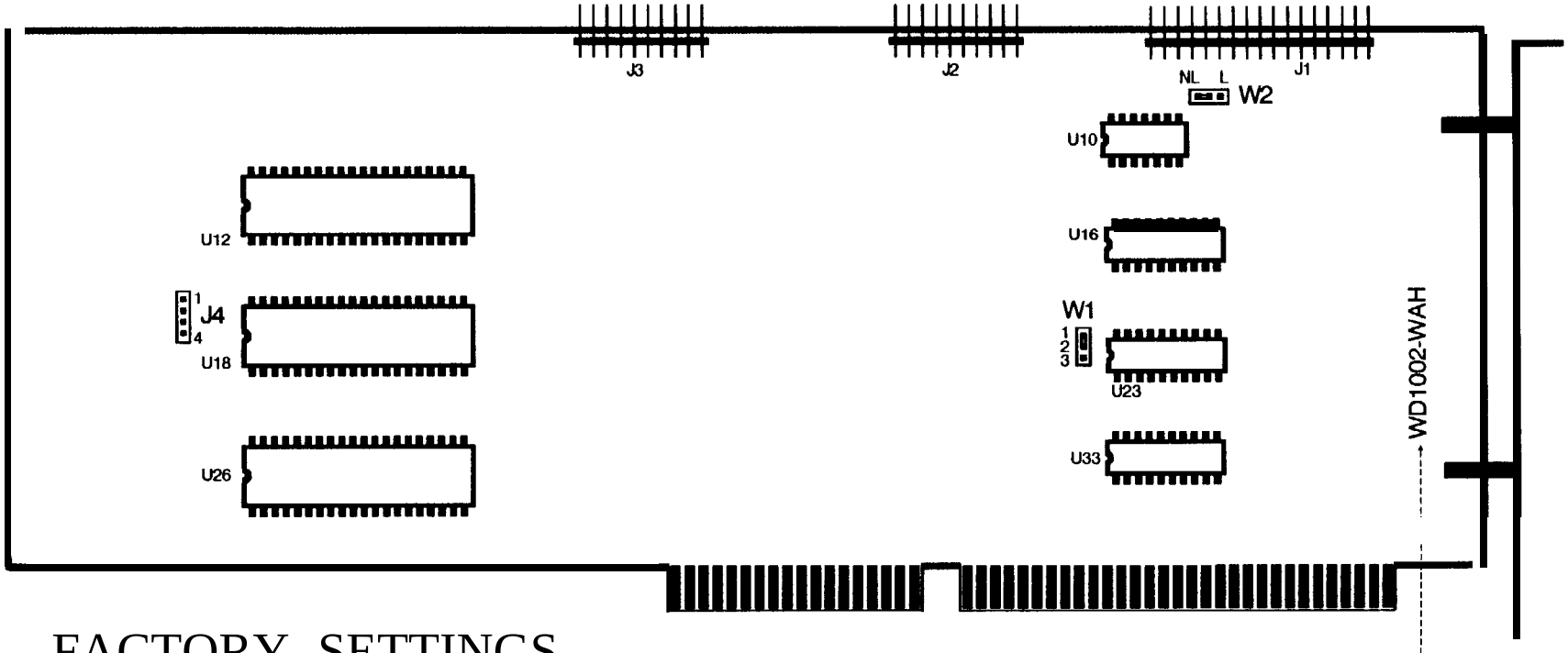
Jumper	Position	Description
W1	1 to 2	Status read is latched.
W2	No jumper	Primary address selected.
W3	* No jumper	Required for this configuration.
W4	2 to 3	Required for this configuration.
W5	2 to 3	Standard configuration.
W6	2 to 3	Standard configuration.

*** 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

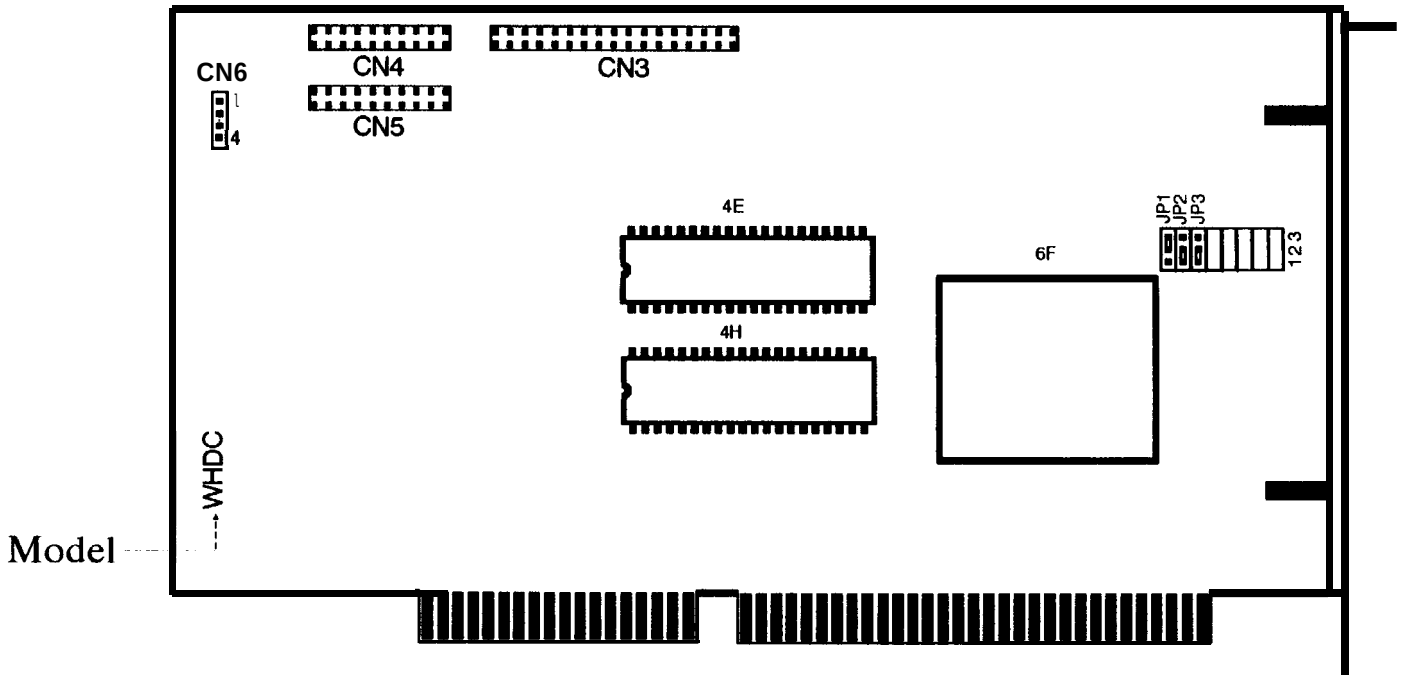
Model number

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

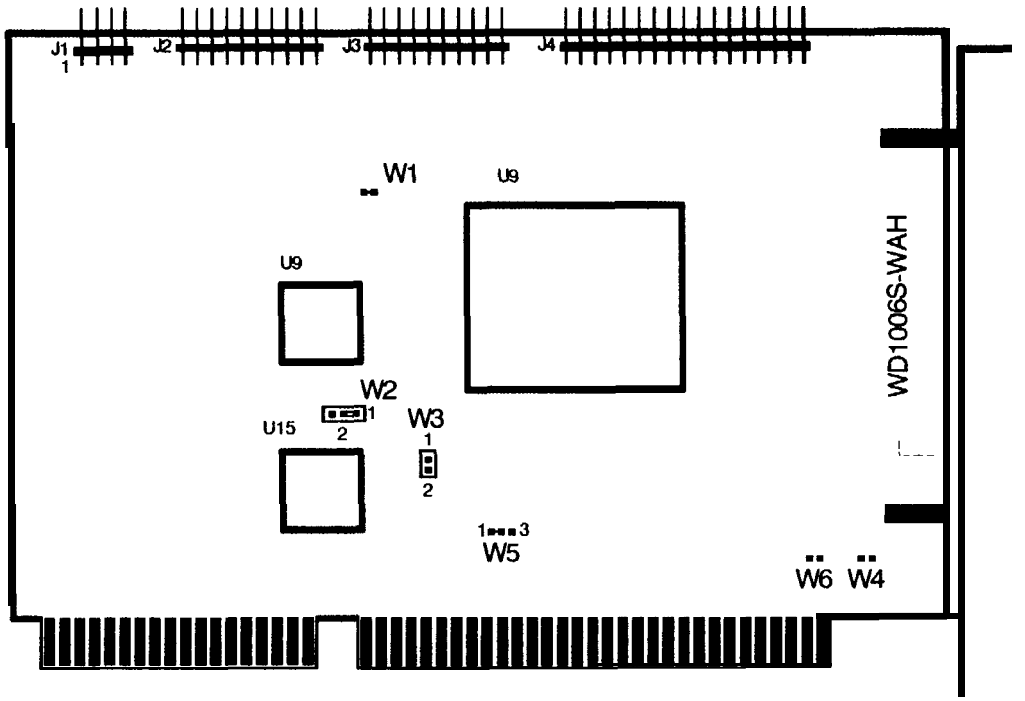
Jumper	Position	Description
* JP1 (J1)	*2 to 3 (B to C)	Primary address selected.
* JP2 (J2)	* 1 to 2 (A to B)	Status read is non-latched (select = drive busy).
* JP3 (J3)	* 1 to 2 (A to B)	WAH mode (dual HDD controller).
JP4 to JP8	No jumper pins.	Hardwired to factory settings.

* "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

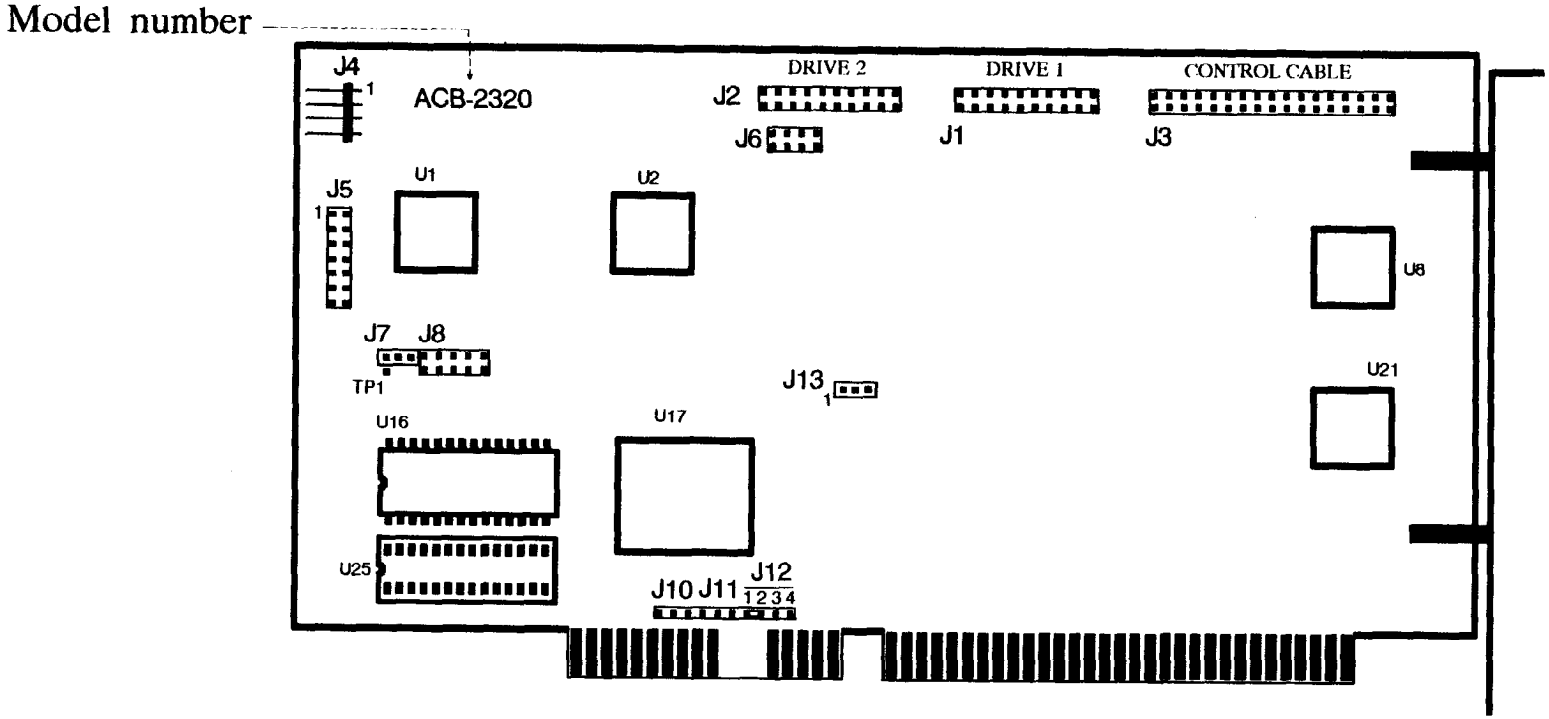
Jumper	Position	Description
W1	* 1 to 2	LED lights for drive selection (non- latched).
W2	1 to 2	No reduced write current,
W3	No jumper	Enables cacheing.
W4	* No jumper	Isolates mounting bracket from logic ground.
W5	* 1 to 2	Primary controller port.
W6	* No jumper	Non-latched mode.

*** 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

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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	

EQUITY III+ (10MHz)					
VER	PART #	DESC	TYPE	LOC	REASON
1.02 1.02	Y126815002 Y126814002	ATR-C3 ATR-B3	M27C128 M27C128	24A 24B	INITIAL RELEASE
1.50 1.50	D27128-150 D27128-150	ATR-C4 ATR-B4	M27C128 M27C128	24A 24B	Fixes problem when used as a dedicated server under Novell 286 v2.0A.
3.03 3.03	22011035 22011036	ODD303 EVEN303	M271C128 M271C128	24A 24B	To resolve the problem that causes the inability to format double density diskettes in high density FDDs with DOS 5.0 installed. See EQUITY III+ (12MHz) BIOS Upgrade. ECN EQIII+-011 (4/2/93).

EQUITY III+ (12MHz)					
VER	PART #	DESC	TYPE	LOC	REASON
2.00 2.00	Y126819002 Y126818002	ATR-C5 ATR-B5	M27C128 M27C128	24A 24B	INITIAL RELEASE
2.20 2.20	Y126815005 Y126814005	ATR-C6 ATR-B6	M27C128 M27C128	24A 24B	Fixes problem with serial port and MS Word, Intel InBoard 386 and the CTRL key. See ECN EQIII+-008 (4/15/88).
3.00 3.00	Y126815006 Y126814006	ATR-C7 ATR-B7	M27C128 M27C128	24A 24B	To allow the use of the ADAPTEC ACB-2322B ESDI controller. See ECN EQIII+-010 (2/6/91).
3.03 3.03	32011035 32011036	ODD303 EVEN303	M271C128 M271C128	24A 24B	To resolve the problem that causes the inability to format double density diskettes in high density FDDs with DOS 5.0 installed. See ECN EQIII+-011 (4/2/93).

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

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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.

EPSON

EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 04/12/88 **NUMBER:** S-0042
SUBJECT: Equity III+ - Common Questions and Answers

GENERAL

Q1. What are the Drive types for the 40MB hard drives used with the EQ III+?

A. The drive type for the 40MB HDDs depends on the amount of cylinders and heads the drive has. The two drives that are currently supplied by Epson are the Miniscribe 6053 (type 45), and the CDC 94205-51 (type 17).

Q2. Can the floppy disk drive controller be disabled in the E&III+?

A. Yes, it can be disabled on the SPFG board by changing two jumpers. Jumpers J1 and J2 (SPFG board) have to be set to BC. With the FDD) controller enabled, the jumpers are set to AC.

Q3. How do you disable the parallel port on the EQ III+?

A. To disable the parallel port on the EQ III+, jumpers J3 and J4 on the SPFG board have to be set to position BC. To enable the parallel port, set the jumpers to AC.

Q4. Are there any extension cables available for the EQ III+ enhanced keyboard?

A. Epson does not provide extension cables due to FCC restrictions. Third party extension cables will work, although they will not have a 90 degree angle connector.

Q5. Can the EQ III+ enhanced keyboard be used with the EQ III?

A. No, the EQ III ROM BIOS does not support the enhanced keyboard. We recommend a third party keyboard like the Datadesk 101. This keyboard has its own BIOS support in the keyboard and is switch selectable to operate with IBM PC/XT and AT type computers.

Q6. I lost the keys to my EQ III+, how can I get a replacement?

A. Replacement keys are not. available. The complete lock assembly must be replaced. Refer to TIB# EQIII+-002

Q7. Why has Epson stopped supplying Miniscribe 40MB drives?

A. Epson has standardized on the CDC half-height 40MB hard drive which has the same features in a half-height frame. This drive can he used in the EQ I+, II+, and III+ systems.

Q8. Can a 1.44MB, 3.5" floppy disk drive be used in the EQ III+?

A. No. The EQ III+ does not support a 1.44MB floppy drive at either the ROM BIOS or floppy disk controller level.

Q9. After installing an EGA monitor/EGA card and setting up the system correctly, I continuously get a "162" set up error when the computer boots up.

A. When setting up pour system for use with an EGA monitor, you must set the DISPLAY parameters in SETUP to "Special Options".

Q10. What is the dot pitch of the Epson 4095 EGA monitor?

A. The dot pitch is .31mm.

Q11. What hard drive controllers can be used in an EQ III+?

A. The following HDD controllers have been certified in the EQ III+ :

Western Digital	WD1002-WX1
" "	WD1003-WAH
" "	WD1003-WA2
" "	WD1002-27X (RLL)
IBM	Enhanced AT
DTC	5160-CRH (RLL)

Q12. What is the average access time of the hard drive in the E&III+?

A. Both 40MB hard drives supplied by Epson (Miniscribe, CDC) have a 28ms average access time.

Q13. Does the numeric co-processor run at 12MHz like the CPU?

A. No, the co-processor runs at 8MHz or 2/3 of the CPU speed.

Q14. Will the EQ III+ support three floppy drives?

A. No. The Epson FDD controller and ROM BIOS supports a maximum of two floppy drives. A second controller cannot be accessed.

Q15. When I press the Control key down in combination with any of the function keys, the Control key locks on and eventually locks up the system. How can I correct this?

A. There is a temporary way of solving this problem. This solution is as follows:

1. **Use the keyboard command (for example: KEYBUK) to change the keyboard function to a foreign keyboard.**
2. **Then return to the US type keyboard by pressing Ctrl (Control), Alt (Alternate), F1.**

This will solve the problem, but must be done at bootup. A ROM BIOS revision Version 2.20 has been released as a permanent solution.

Q16. Will the EQ III+ support a 3.5", 720KB floppy disk drive?

A. The EQ III+ has full support for the 3.5" 720KB floppy disk drive. Epson offers the A112A-AA for this requirement.

Q17. Is the Plus Development HARDCARD compatible with the EQIII+?

A. The Hardcard 20/40 are not compatible due to Plus Developments use of an 8 bit controller.

Q18. How do I format my 40MB hard drive so that I can get full use of the 40 megabytes?

A. Since MS-DOS 3.2 only supports 32MB, a disk manager program must be used to get full use of the 40 megabytes that are available. Epson includes Storage Dimensions' "SpeedStor" disk manager with the 40MB hard drives to provide this capability.

Q19. Are the ANTA and ANT-RM boards for the EQ III+(10MHz) and EQ III+ (12MHz) interchangeable?

A. No. The EQIII+(12MHz) requires higher speed components to operate at 12MHz. The 10MHz boards will not operate reliably in a 12MHz systems.

Q20. What RAM chips should be used on the expansion boards for the EQ III+?

A. The RAM chips used in expansion boards should have an access time of 120ns or faster.

Q21. What are the wait states for the EQ III+?

A. The default wait state for the EQ III+ 10MHz/12MHz I/O bus is 4, adjustable to 3, 2, or 1 by setting the jumpers on the ANTA board. The system memory, (RAM and ROM) defaults to two wait states adjustable to one.

OPTIONS

Q22. What extended memory boards are compatible with the EQ III+?

A. Epson recommends the following memory expansion boards:

AST Research	Advantage Premium
AST Research	Rampage 286
Intel Corp.	Aboveboard
Intel Corp.	Aboveboard 286 p/s
STB Systems	Grande Byte
STB Systems	Rio Grande
Profit Systems	Elite 16

Q23. What terminal emulation boards can be used with the EQ III+?

A. The following micro to mini/mainframe terminal emulation boards have been tested by Epson:

Idea Associates	IDEAcomm	3278
" "	" "	3287
" "	" "	5251
" "	" "	5250/R
IBM	IBM	5250
Digital Communications Associates	IRMA	3278
CXI, Inc	PCOX	3278

Q24 What type of mouse can I use with my EQ III+?

A. PC/AT compatible mice can be used with the EQ III+, for example: Microsoft Serial and Bus mouse, or the Logitech Serial and Bus mouse. Ensure the jumper settings on the BUS adapter is set for the PC/AT interrupt selection.

SOFTWARE

Q25. Is the EQ III+ compatible with OS/2?

A. Since OS/2 is much more hardware-specific than MS-DOS, an Epson version of OS/2 will be required.

Q26. I want to backup my hard disk but can't locate the Archive program. How can I backup my system?

A. Archive is no longer supplied with EQ III+ MS-DOS. Epson replaced it with the more traditional BACKUP/RESTORE program that does the same thing. Archive conflicts with the SPEEDSTOR disk manager program supplied by Epson with its 40MB hard drives.

Q27. I am running Microsoft Word on my EQ III+. When I try to print to my serial printer, it takes 1 to 2 seconds to print a character. How can I get Microsoft Word to run properly?

A. There are two ways the solve this problem:

1. **Redirect the printer output (MODE LPT1 :=COM1:).**
2. **Epson has developed a patch program (SERFIX.ARC) available through CompuServ (Microsoft and Epson Forum) or from Epson's Product Support RBRS.**

A ROM BIOS revision Version 2.20 has been released as a permanent solution.

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

EPSON

EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 1/12/88 **NUMBER: S-0033**
SUBJECT: EQUITY II+/III+ 40MB CDC HARD DRIVE INFORMATION

Epson America is now using the Control Data (CDC) 40MB hard disk drive in the EQ II+ and EQ III+ (12MHz) computers.

The CDC 40MB hard drive is a half height, high performance, highly reliable random access storage device. This device records and recovers data on three 5 1/4" fixed disks. The following features are included:

Capacity	-51MB (Unformatted)
	-43MB (Formatted
Cylinders	-989
Heads	-5
Access Time	-28ms
Power	-12VDC 4.5A
	-5VDC 1.0A

The CDC drive uses a dedicated landing zone at the inner most radius and has an automatic shipping lock that disengages when power is applied. It can be mounted either horizontally or vertically.

The CDC 40MB can be used in any of the Equity series computers providing the controller is compatible with 40MB drives.

The Epson product code for the CDC 40MB hard drive is Q218A-AB.

When installing this drive in an Equity II+ or III+ computer specify drive type 17 in the setup program. To utilize the storage capacity above the MS-DOS 32MB limit, use of a disk manager program such as SpeedStor from Storage Dimensions is needed.

EPSON

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 DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 12/10/87 **NUMBER:** S-0030

SUBJECT: Equity III+ 10MHz/l2MHz System Differences

The purpose of this bulletin is to provide information on the hardware differences, jumper settings and compatibility of spare parts between the 10MHz Equity III+ and the 12MHz Equity III+.

Please refer to the following index to find specific information.

INDEX

1.1 Differences Between 10MHz version and 12MHz version

Model: EQUITY III+ 12MHz version] [Classification: Major parts ; excluding P.C.B units]

UNIT NAME	Description	Modification 10MHZ	Modification 12MHz	Reason of modification	Substitution Possible
Switch Panel Label	Modification the de-scription of the clock speed	Switch Panel Label 01 (Y126027051) or Switch Panel Label 02 (Y126027151)	Switch Panel Label B01 (Y126042051)	Because the CPU clock speed is increased from 10MHz to 12MHz.	No
Earth Plate C	Addition of the Earth Plate C	No Earth Plate C is installed.	Earth Plate C is installed (Y126039251)	Countermeasure for FCC	NA
Hard Disk Cable	Modification of the Hard Di sk Cables	Cable set #5BX (Y126306000) Cable set #5BY (Y126310000)	Cable set #5DY (Y127300300) Cable set #5DZ (Y127300400)	Hard Disk Cables for 12 MHz version should be longer than 10MHz's one because the location to the option slot con-nector is changed.	No
Serial Number Plate	Modification of the Serial Number Plate	Serial Number Plate 03 (Y126025251)	Serial Number Plate B06 (Y126041651)	Alphabet "A" is prefixed to the serial number. [Old] 010001 --- [New] A010001 --	No
Code Label	Modification of the Code Label	(abbreviated)	(abbreviated)	(abbreviated)	No
SPFG board	Circuit design modification	SPFG board uni t (Y12720100001)	SPFG board unit (Y12720110000)	To solve the format error with the 360KB or 720KB FDD at 12MHz.	No

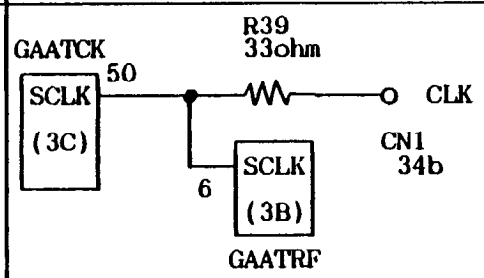
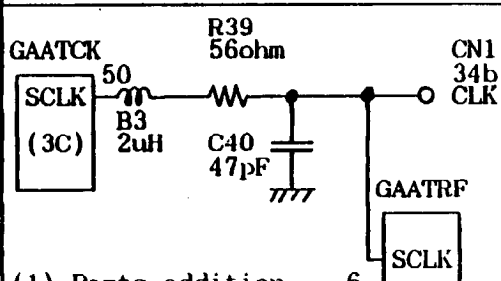
1.1 Differences Between 10MHz version and 12MHz version

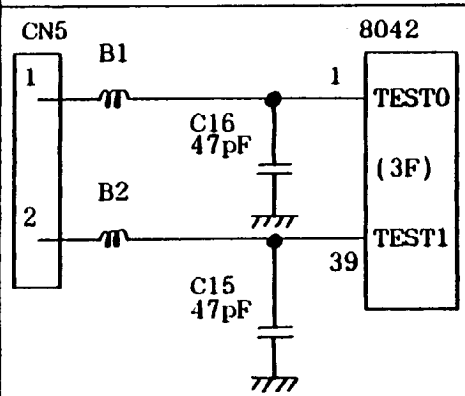
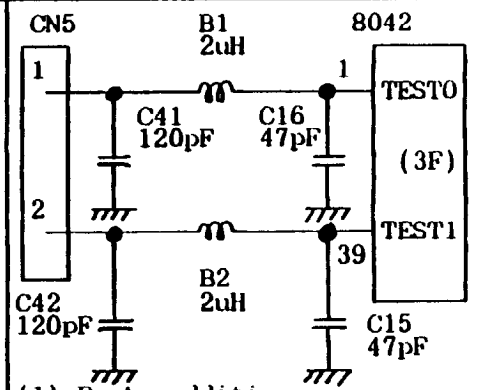
[Model: EQUITY III+ 12MHz version] [Classification: Major parts except P.C.B unit]

UNIT NAME	Description	Modification 10MHZ	Modification 12MHz	Reason of modification	Subsitution Possible
ANT-RM board	Circuit design modification	ANT-RM board unit (Y12620300000)	ANT-RM board unit (Y12620700000)	(1) To improve RAM access speed (2) To adjust signal timing	No
ANT-MT board	(1) Cable set #5BT addition (2) Modification of the location to the option slot connector	ANT-MT board unit (Y12620200000)	ANT-MT board unit (Y12620800000)	(1) Countermeasure for FCC (2) To allow to use a full length Hard Disk Controller	No
ROM BIOS	(1) New ver. (2) Modification of the ROM type	Version 1.02 ATR-B3 (Y126814002) ATR-C3 (Y126815002) ROM type : 27256-15	Version 2.00 ATR-B5 (Y126814004) ATR-C5 (Y126815004) ROM type : 27128-15	(1) New version (2) Cost reduction (ROM type: 27256 -> 27128)	No
Monitor Connector Cable	Addition of the Monitor Connector Cable	No Monitor Connector Cable is used.	Cable set #5EM (Y126311000)	Countermeasure for FCC	NA
ANT-RMA board	ANT-RMA board unit newly authorized	No ANT-RMA board unit is used.	ANT-RMA board unit (Y12620900000) * This is an alternative unit for the ANT-RM board unit.	To keep constant parts supply	No
ANTA Board	Circuit degign modification	ANTA board unit (Y12620500000)	ANTA board unit (Y12620600000)	(1)To increase CPU speed (2) Countermeasure for FCC (3) Cost reduction (4) Countermeasure for the Genius pproblem (5) To improve the execution speed of the keyboard controller	No

1.2.1 Differences Between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: ANTA board unit]

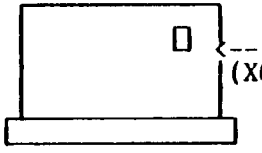
<table>
<tr><th>UNIT</th><th>Description</th><th>Modification
10MHz</th><th>12MHZ</th><th>Reason of modification</th></tr>
<tr><td>ANTA board
Y12620500000
-->
Y12620600000</td><td>(1) Addition of a filter circuit</td><td> 
</td><td> 

(1) Parts addition
B3 (Y130202002)
C40 (X221224703)
(2) Parts modification
R39 : 33ohm ----> 56ohm
(X154413302) (X154415602)</td><td>Countermeasure for FCC</td></tr>
<tr><td></td><td>(2) Improvement of the filter circuit</td><td> 
</td><td> 

(1) Parts addition
C41 (X221221213)
C42 "
(2) Parts modification
B1 (X506000029)->(Y130202002)
B2 " "</td><td>Countermeasure for FCC</td></tr>
</table>

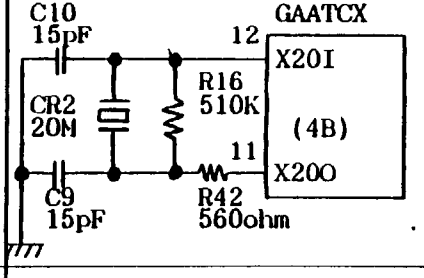
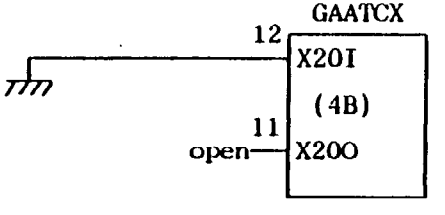
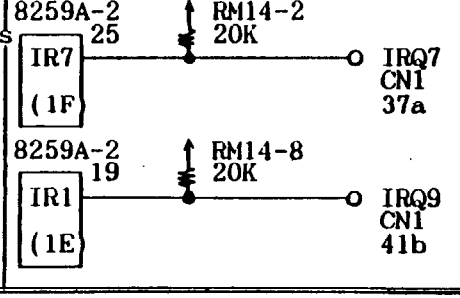
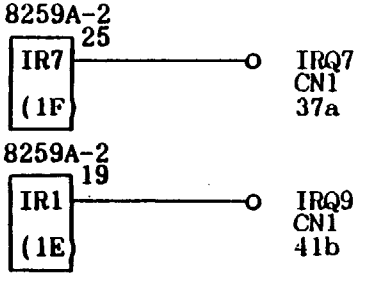
1.2.1 Differences Between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: ANTA board unit]

UNIT	Description	Modification 10MHz	12MHZ	Reason of modification
ANTA board	(3) Connector addition	No connector CN6 is installed.	Connector CN6 is installed. ANTA board unit  	Countermeasure for FCC
	(4) Modification of the DMA controller	Location : 2E and 2F Part : NEC uPD8237AC-5 (X400082374) or NEC uPD8237AC-2 (X400082371)	Location : 2E and 2F Part : FUJITSU MB89237A-P (X400892370) * 6MHz version	To improve DMAC clock speed capability.
	(5) Modification of the timer counter	Location : 3E Part : INTEL 8254-2 (X400082541)	location : 3E Part : INTEL 8254 (X400082540) or INTEL 8254-2 (X400082541) or AMD P82C54 (X400825400) or AMD P82C54-2 (X400825401)	Cost reduction

1.2.1 Differences Between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: ANTA board unit]

UNIT	Description	Modification 10MHz	Modification 12MHZ	Reason of modification
ANTA board	(6) Modification of the CPU	Location : 2A Part : SAB80286-1-R *LCC type (X400802861) or INTEL 80286-10 (X401802861) or AMD R80L286-10/C2H (X402802868)	Location : 2A Part : AMD *PLCC type N80L286-12/C2H (X402802868) or INTEL N80286-12 (X402802868)	(1) To improve CPU clock speed (2) Cost reduction (LCC -> PLCC)
	(7) Modification of the CPU socket	Location : 2A Part : LCC type (X630116802)	Location : 2A Part : PLCC type (X630116820)	Cost reduction
	(8) Deletion of the 20MHz OSC circuit			This circuit is not necessary because the computer system does not use 10MHz.
	(9) Deletion of the resistors			Countermeasure for Genius problem

1.2.1 Differences Between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: ANTA board unit]

UNIT	Modification			Reason of modification
	Description	10MHz	12MHZ	
ANTA board	(10) New Keyboard controller version	Location : 3F Part : C42051KA (Y126813000)	Location : 3F Part : C42051KB (Y126813001)	To improve the execution speed of the keyboard controller.

1.2.2 Differences between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] **[Classification: ANT-RM board unit]**

UNIT	Description	Modification 10MHz	Modification 12MHZ	Reason of modification
ANT-RM board Y12620300000 ---> Y12620700000	(1) Modification of the D-RAM chips	Location : 19B to 22B Part : FUJITSU MB81464-12P (X400584641) or NEC uPD41464C-12 (X400414642) or HITACHI HM50464-12 (X400504641)	Location : 19B to 22B FUJITSU MB81464-10P (X400584643) or NEC uPD41464C-10 (X400414641)	To improve RAM access speed.
		Location : 21A and 22A Part : NEC uPD4164C-12 (X400141645) or MATSUSHITA MN4164P-12 (X400041643)	Location : 21A and 22A Part : NEC uPD4164C-10 (X400141646)	
	(2) Modification of the delay line chip	Location : RL1 Part : 200ns type (X510000220)	Location : RL1 Part : 150ns type (X510000290)	To adjust signal timing
	(3) Modification of the P-ROM	Location : 24A and 24B Part : ATR-B3 (Y126814002) ATR-C3 (Y126815002) 27256-15 type Version 1.02	Location : 24A and 24B Part : ATR-B5 (Y126814004) ATR-C5 (Y126815004) 27128-15 type Version 2.00	(1) Cost reduction (2) New version

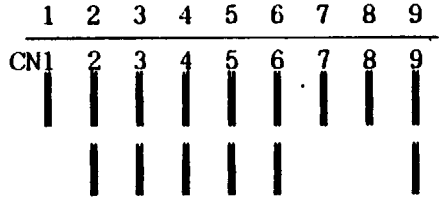
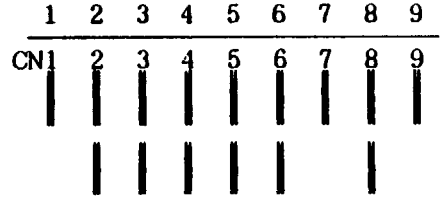
1.2.3 Differences Between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: ANT-RMA board unit]

UNIT	Modification			Reason of modification
	Description	10MHz	12MHZ	
ANT-RMA Board	ANT-RMA Board unit newly authorized	Not installed	Installed (Alternative unit for ANT-RM board.)	To keep constant parts supply

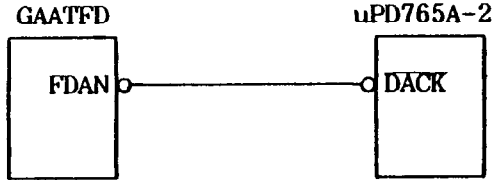
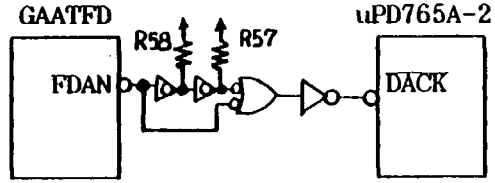
1.2.4 Differences Between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] **[Classification: ANT-MT board unit]**

UNIT	Description	Modification 10MHz	Modification 12MHz	Reason of modification
ANT-MT Board Y12620200000 --->Y12620800000	(1) Addition of the cable set #5BT	Not installed	Installed Part: Cable set #5BT (Y126303000)	Countermeasure for FCC
	(2) Modification of the slot location			To allow a full length Hard Disk Controller to be installed in connector CN8

1.2.5 Differences Between 10MHz version and 12MHz version

{Model: EQUITY III+ 12MHz version] [Classification: SPFG board unit]

UNIT	Description	Modification 10MHz	Modification 12MHZ	Reason of modification
SPFG Board '12720100001 --->' Y12720110000	(1) Addition of the delay circuit	GAATFD uPD765A-2 	GAATFD uPD765A-2  Part addition R57 (X154414720) R58 (")	To solve the format error with the 360KB or 720KB FDD at 12 MHz:

1.3.1 Differences between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] **[Classification: ANTA board Jumper settings]**

UNIT NO.	JUMPER J6	J5	J4	J3	J2	J1	FUNCTION 10MHz	FUNCTION 12MHz	Factory settings 10MHz	Factory settings 12MHz
ANTA board	-	-	-	-	-	A	Set CPU clock (6/8/10MHz)	Inhibit	J1: A	J1: B
	-	-	-	-	-	B	Inhibit	Set CPU clock (6/8/12MHz)		
	-	-	-	A	A	-	Inhibit	<---	J2: A	<---
	-	-	-	A	B	-	Use CPU clock for NPX clock	<---		
	-	-	-	B	A	-	Use 8MHz clock for NPX clock	<---	J3: B	
	-	-	-	B	B	-	Inhibit	<---		
	-	-	A	-	-	-	2 wait cycles for EPROM (note1)	<--- (note 2)	J4: A	<---
	-	-	B	-	-	-	1 wait cycle for EPROM (note1)	<--- (note 2)		
	A	A	-	-	-	-	4 wait cycles (note 3)	<--- (note 4)	J5: A	<---
	A	B	-	-	-	-	3 wait cycles (note 3)	<--- (note 4)		
	B	A	-	-	-	-	2 wait cycles (note 3)	<--- (note 4)	J6: A	
	B	B	-	-	-	-	1 wait cycle (note 3)	<--- (note 4)		

Slide switch settings

Slide switch	10MHz	12MHz
Monitor select switch	(factory setting : MONO)  MONO COLOR	(factory setting : MON0)  MONO COLOR
CPU speed select switch	(factory setting : 8 MHz)  6MHz 8MHz 10MHz	(factory setting : 8MHz)  6MHz 8MHz 12MHz

note 1 : These selectable wait cycles are available during 10MHz.
note 2 : These selectable wait cycles are available during 12MHz.
note 3 : Wait cycles for est. 16-bit device.
These selectable wait cycles are available during 10MHz.
note 4 : Wait cycles for ext. 16-bit device.
These selectable wait cycles are available during 12MHz.

: Not applicable.
<--- : Same as 10MHz

1.3.2 Differences between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: ANT-RM/RMA board Jumper setting]

UNIT	JUMPER J7	J6	J5	J4	J3	J2	J1	FUNCTION 10MHz	12MHz	Factory settings 10MHz	12MHz
ANT-RM / ANT-RMA board	-	-	-	-	A	A	A	RAM size 640KB	<---	J1: A	
	-	-	-	-	A	A	B	512KB (Disable upper 128KB)	<---		
	-	-	-	-	A	B	A	Inhibited	<---	J2: A	<---
	-	-	-	-	A	B	B	256KB (Disable upper 384KB)	<---		
	-	-	-	-	B	A	A	Inhibited	<---	J3: A	
	-	-	-	-	B	A	B	Inhibited	<---		
	-	-	-	-	B	B	A	Inhibited	<---		
	-	-	-	-	B	B	B	0KB (Disable upper 640KB)	<---		
	-	-	A	A	-	-	-	ROM size 27128	<---	J4: B	J4: A
	-	-	A	B	-	-	-	Inhibited	<---		
	-	-	B	A	-	-	-	Inhibited	<---	J5: B	J5: A
	-	-	B	B	-	-	-	ROM size 27256	<---		
	A	A	-	-	-	-	-	Select ROM sockets (24A & 24B)	<---	JG: A	
	A	B	-	-	-	-	-	Inhibited	<---		<
	B	A	-	-	-	-	-	Inhibited	<---	57: A	---
	B	B	-	-	-	-	-	Select ROM sockets (23A & 23B)	<---		

- : Not applicable.

<- : Same as 10MHz

1.3.3 Differences between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: SPFG board Jumper settings]

UNIT	JUMPER J8	J7	J6	J5	J4	J3	J2	J1	J10	J9	FUNCTION 10MHz	12MHz	Factory settings 10MHz	12MHz
SPFG board	-	-	-	-	-	-	A	A	-	-	Primary register set (AT FDC)	<---	J1 : A	<----
	-	-	-	-	-	-	A	B	-	-	Secondary register set (")	<---		
	-	-	-	-	-	-	B	A	-	-	PC register set (FDC)	<---	J2 : A	
	-	-	-	-	-	-	B	B	-	-	Disable FDC register set	<---		
-	-	-	-	-	A	A	-	-	A	-	Primary parallel I/F : IRQ7	<---	J3 : A	(----
		-	-	-	B	A	-	-	B	-	Secondary parallel I/F : IRQ5	<---	J4 : A	
	-	-	-	-	A	B	-	-	A	-	Parallel I/F on video adapter:	IRQ7 <---	J10: A	
	-	-	-	-	B	B	S	-	-	-	Disable parallel I/F	<---		
	-	-	A	A	-	-	-	-	-	A	Primary serial I/F : IRQ4	<---	J5 : A	<----
	-	-	B	A	-	-	-	-	-	B	Secondary serial I/F : IRQ3	<---	J6 : A	
	-	-	A	B	-	-	-	-	-	-	Disable serial I/F	<---	J9 : A	
	-	-	B	B	-	-	-	-	-	-	Disable serial I/F	<---		
	-	A	-	-	-	-	-	-	-	-	AT drive I/F	<---	J7 : A	<----
	-	B	-	-	-	-	-	-	-	-	EQUITY III drive I/F	<---		
	A	-	-	-	-	-	-	-	-	:	Standard settinng	<---	J8 : A	<----
	B	-	-	-	-	-	-	-	-	-	Test mode of VCO	<---		

- Not applicable

<- : Sane as 10Mhz

1.3.4 Difference between 10MHz version and 12MHz version

[Model: EQUITY III+ 12MHz version] [Classification: WHDC board Jumper settings]

UNIT	JUMPER J3	JUMPER J2	JUMPER J1	FUNCTION 10MHz	FUNCTION 12MHz	Factory settings 10MHz	Factory settings 12MHz
WHDC board	- -	- -	B A	Select primary address sets Select secondary address sets	<--- <---	J1: A	<---
	- -	B A	- -	Non-latched status Latched status	<--- <---	J2: B	<---
	B A	- -	- -	WAH mode WA2 mode	<--- <---	J3: B	<---

- : Not applicable.

<- : Same as 10MHz

2.1 Compatibility List

[Model: EQUITY III+ 12MHz version] [Classification: 'Major unit]

UNIT			10MHz	12MHz
Main unit	Power supply	ATRPZ ANPS	OK OK	OK OK
K.B. unit	-----	W-W----	OK	OK
FDD unit	360KB	MD5201-57 -58	OK OK	OK OK
	1.2MB	FD1155C FD1157C MD5501-61	OK OK OK	OK OK OK
Display adapter	Mono	MRS-MO board	OK (See *1)	OK (See *1)
	Color	MRS-CR board MGA board EGA board	OK OK OK (See *2)	OK OK OK (See *2)

Descriptions :

*1 : Unit code Y14420620000 should be used.

*2 : Unit code Y12720400001 ----Code view problem may occur.
Unit code Y12720400002 -- Code view problem is solved on this version.

2.2 Compatibility List

[Model: EQUITY III+ 12MHz version]
[Classification: P.C.B unit]

BOARD		10MHz	12MHz
ANTABOARD	Y12620100000	(See *d)	**NG**
	Y12620100001	(See *d)	NG
	Y12620100002	(See *d)	NG
	Y12620100003	OK	NC
	Y12620100004	OK	NG
	Y12620500000	**OK**	NG
	Y12620600000	NG	OK
ANT-RM BOARD	Y12620300000	OK.	**NG**
	Y12620700000	(See *a)	OK
ANT-RMA BOARD	Y12620900000	(See ***a)**	**OK**
ANT-MT BOARD	Y12620200000	OK	(See *b)
	Y12620200001	OK	(See *b)
	Y12620800000	(See ***b)**	**OK**
SPFG. BOARD	Y12720100000	OK	NG
	Y12720100001	. OK	NG
	Y12720110000	(See *a)	OK
WHDC BOARD	Y12720300000	(See *c & *d)	(See *c & *d)
	Y12720310000	(See *c)	(See *c)
	Y12720300001	(See *d)	(See *d)
	Y12720310001	OK	OK

Descriptions :

***a** : Should be **"OK"** but compatibility check is required.

*b : Location of the option slot connectors are different.

*c : XENIX problem may occur.

*d : This board may not satisfy FCC standard.

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+

EPSON

EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 11/19/87 **NUMBER: S-00255**

SUBJECT: Equity III+ (12MHz) MS-DOS 3.2 ARCHIVE Utility

Epson America is now shipping the Equity III+ (12MHz) with a new version of MS-DOS utilities (Q295A-AB).

Please be advised that the ARCHIVE utility was removed from the MS-DOS diskette but is still documented in the MS-DOS manual.

The primary reason for removing ARCHIVE was that it could not be used with the SpeedStor disk partitioning software included with the Miniscribe 40 MB drive or equivalent. Epson recommends using the BACKUP/RESTORE utilities for backing up or restoring data files,

Also, the documentation for the SELECT command in the MS-DOS manual was corrected to include all parameters.

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 10/22/87 **NUMBER: S-0021**
SUBJECT: Equity III+ (12MHz) Introduction

Epson America is now shipping the Equity III+ -(12MHz) Personal Computer. The single floppy disk drive model Q201A-AC-S1 does not include the hard disk controller or cables. The controller will only be supplied with the Q201A-AD-S1 model equipped with the factory installed hard drive. To add a hard drive to an Equity III+ (12MHz), the controller and hard drive must be ordered separately. The product codes are:

A140A-AA	**Hard Disk Controller Kit Includes:**	**HDC Board One #5DZ Cable Two #5DY Cables Installation Manual Warranty Card**
Q218A-AA	**40 MB**	**Full Height Miniscribe Disk Drive with SpeedStor Software**

All Equity III+ (12MHz) systems being shipped with HDDs also contain a new release of SpeedStor (Ver. 5.0). This version has been made more user friendly to the point that all you need to do is type the "INSTALL" command and the rest is done for you. Some of these new units still include an errata sheet that pertains to the early version of SpeedStor. Please disregard this errata when using SpeedStor ver. 5.0.

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 I+
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.

Santa Cruz Operations
400 Encinal St.
P.O. Box 1900
Santa Cruz, Ca. 95061
(408) 425-7222

Fox Research, Inc.
7016 Corporate Way
Dayton, Oh. 45459
(513) 433-2238

Manzana Microsystems, Inc.
P.O. Box 2117
Goleta, Ca 93118
(805) 968-1387

EPSON
EPSON AMERICA, INC.
SERVICE

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.

EPSON
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

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 7/28/87 **NUMBER: S-0013A**
SUBJECT: EQUITY III+ ROM BIOS NEW RELEASE

The purpose of this bulletin is to provide you with information regarding the new Equity III+ ROM BIOS and how to obtain it.

The new ROM BIOS was released primarily to correct a problem encountered when trying to use the Equity III+ as the file server with the Dedicated version of Novell Netware 286 v2.0a. Equity III+ systems (below S/N 036981), with the earlier ROM BIOS (Ver. 1.02), failed to boot and displayed the following message:

ABEND INVALID OPCODE INTERRUPT
REBOOT TO RESTART

The new ROM BIOS upgrade kit (P/N D27128B-150), which is user installable, consists of a set of two 27128 ROMs (Ver. 1.50) and installation instructions, can be ordered from Epson's Service Department on an as needed basis.

DEALERS & AUTHORIZED SERVICE CENTERS:

All dealers and ASC's can order the upgrade free of charge on an as-needed basis through the Special Order Desk using the (800) number and dealer access code. Indicate that this is part of the Equity III+ ROM BIOS upgrade program and the ROMs will be pre-shipped to the requested address.

Note: Since this is a user installable upgrade there will be no dealer reimbursement program for this upgrade.

END-USERS:

End-users should be referred to Epson's Consumer Information Department using our toll-free number (800) 421-5426 to order the ROM BIOS upgrade. They will need to provide the Customer Service Representative with their name, address and the serial number of the Equity III+.

Note: The old ROMs must be returned to Epson America, Inc. within 30 days or an invoice will be sent for the full list price of the upgrade ROMs.

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.

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 4 / 7 / 8 7 **NUMBER: S-0009**
SUBJECT: EQUITY III+ CONFIGURATION WITH THIRD PARTY OPTIONS

While we here at Epson can't possibly test all of the various third-party options with the Equity III+, we can share some basic guidelines with you. Here are some tips for easier installation of some of the more popular options.

Fixed Disk Drives

All in all, fixed disk installation in the Equity III+ is virtually the same as for the IBM PC AT. For those that don't have experience with the AT procedure, here are some guidelines:

1 - **There are certain drive parameters that have to know. These are: number of cylinders, number of heads, any recommended write precompensation value and the location of the dedicated landing zone. Once you know these facts, you can refer to Appendix B in the Equity III+ Diagnostics Manual to determine the closest possible drive type selection. The Diagnostics Manual is part of the complete software and documentation package provided with the III+.**

2 - **As for the physical installation, the drive select jumper (or switch) must be set for the second drive position (that is, if the range is DS0-DS3, pick DS1). The terminating resistor has to be installed on the first logical drive in the system - that is, if you have a physical C and D drive, you would terminate C. The 34 pin data cable from the WHDC controller is a daisy-chain configuration with 2 connectors. Please note that these are marked C (the end connector) and D (the middle or pass-through connector). Finally, there are two 20 pin control cables; the uppermost (CN4) handles drive C and the lower one (CN5) connects to drive D.**

3 - **Now for the initialization. There are a couple of ways to handle this: use the Epson-supplied utilities (from the Diagnostics diskette) or some third-party software, such as SpeedStor or Disk Manager. Be aware that most drives will require four separate steps: SETUP (to identify the drive to CMOS RAM); low-level (physical) formatting; partitioning; and then high-level (logical) formatting. The Epson-supplied programs would be (in order): SETUP.EXE, HDFMTALL.COM, FDISK.COM and either FORMAT.COM or SELECT.COM. SETUP and HDFMTALL can be accessed by simply booting up from the Diagnostics diskette. Refer to the Epson documentation for detailed instructions on the use of these programs,**

Floppy Disk Drives

Again, the AT-compatible floppy drives that have been tested have worked with no problems. (In fact, we've connected a full-height IBM labeled Control Data drive from an IBM PC and had it work!)

As with the fixed disk, the 34 pin cabling from the SPFG card is a daisy-chain configuration. The end connector attaches to drive A; the pass-through or center connector goes to drive B. Both drives again should be set for the second DS setting. Terminating resistors are installed on drive A and removed from drive B.

Once installed, boot the III+ with the Diagnostics diskette in drive A and follow the directions given in Chapter 1 in the Diagnostics Manual.

Enhanced Graphics Adapters

EGA displays have become extremely popular. EGA is just about a "must" if you're involved with desktop publishing or other graphically oriented applications.

Consult the manual that comes with your particular EGA card. Typically, DIP switches and/or jumpers have to be set (or at least checked). Also, some EGA cards will require that a driver be installed in the CONFIG.SYS or AUTOEXEC.BAT files.

As for the III+, simply make sure that the front panel MONITOR SELECT switch is set for COLOR and the Display selection in SETUP is changed to *Special Options*.

Miscellaneous Options

There are a number of optional devices (streaming tape drives, image scanners, etc.) that look for three key points: DMA channel, interrupt request level and I/O port address. The III+ follows IBM PC AT conventions regarding port, register, DMA and IRQ usage. For example, an image scanner was installed to utilize the following parameters:

IRQ=None
DMA Channel 1
I/O Port Address 220-22F Hex

This provides for a "clean" interface, with no conflicts.

******

We cannot maintain a current list of (for example) all third-party fixed disk drives available. Your best source of information would be from your supplier of choice.

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 4/3/87 **NUMBER:** S-0008
SUBJECT: EQUITY III+ CPU SPEED SELECTION ENHANCEMENT

ENHANCEMENT DESCRIPTION:

The Equity III+ computer has been enhanced to allow the selection of CPU speeds while the computer is in operation.

In earlier units, changing the CPU speed while the system was in operation was not recommended because it could cause the applications program to misexecute.

An information sheet describing the change is being included with the new Equity III+ systems to inform the user to disregard the warnings against changing the CPU speed during operation as stated in the user documentation supplied with the computer.

Equity III+ systems with the following serial numbers have the enhanced capability.

From	To
024515	024799
026770	027100
027475	027574
027576	030100
030162	031815

The Equity III+ (10MHz) main board has been modified and the part number has been changed as indicated below.

Old	New
(Y446800302)	(Y446800402)

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 3/13/87 NUMBER: S-0006
SUBJECT: EQUITY III+ / MINISCRIBE HDD INITIALIZATION WITH SPEEDSTOR

In order to utilize the full capacity of the Miniscribe 6053 that is offered with the Equity III+, Epson is including a copy of SpeedStor version 4.02. A product of Storage Dimensions, Inc., SpeedStor handles not only initialization of the hard drive, but also allows the creation of multiple partitions using the same operating system (i.e., virtual drives). The following covers two methods used for initialization.

METHOD 1:
The two programs from the SpeedStor diskette that are used are HARDPREP.EXE (HARD disk PREParation) and PARTED.EXE (PARTition EDitor). Both are menu-driven and pretty well self-explanatory. However, here are a few tips to make the procedure even smoother.

1 - When invoking either HARDPREP or PARTED, be sure and use the following command line syntax:

HARDPREP /NoCMOS or PARTED /NoCMOS

This causes the hard disk parameter table (HDPT) to be written to the hard disk instead of CMOS RAM. This allows subsequent use of the Epson SETUP utility without corrupting the HDPT.

2 - The proper order in HARDPREP is:

- Select Miniscribe 6053 from the TYPE menu.
- (Optionally) change interleave (the default is 3) from the INITIALIZE menu.
- Select StandardInit from the INITIALIZE menu. A prompt will ask if you wish to enter media defect locations; if the error list on top of the drive is empty, respond with NO and proceed with INITIALIZE. If the list contains entries, respond with YES. The Bad Track menu will appear; follow the prompts to enter the listed defects. When all bad tracks are entered, select QUIT and proceed with INITIALIZE.
- When initialization is complete, respond with YES to record the displayed bad tracks. After the bad tracks are marked, choose QUIT to return to the main menu, and QUIT again to exit to DOS. (Note that if you bring up HARDPREP again, it will show no bad tracks listed. This is normal and they have, in fact, been mapped out.)

3 - PARTED gives you three choices of partition types to create: Bootable DOS, Compatible DOS and Extension DOS. Typically, the first partition type would be Bootable DOS and the second would be Compatible DOS. Extension DOS is used for operating systems other than MS-DOS (Xenix, etc.). After creating your partitions, use the FORMAT option on all of them.

4 - Once you've exited PARTED, it's necessary to re-boot to have the partition changes go into effect. When the A prompt appears, enter the following commands:

```
SYS C:
COPY COMMAND.COM C:
```

At this point, remove the DOS diskette and insert the SpeedStor diskette and enter:

```
ADDEVICE
```

This is a .BAT file that create (or modify) a CONFIG.SYS file on the C drive containing the line:

```
DEVICE = HARDRIVE.SYS
```

Copy the HARDRIVE.SYS device driver to the root directory on C.

Now all you have to do is re-boot one more time - the device driver will be read in and you'll have a C and D partition on your HDD.

The above method works - however, there is a minor non-critical bug: if you bring up HARDPREP with the /NOCMOS parameter again, it will list a "phantom" second drive. This appears to have no effect on the operation of the machine, but questions could arise from this. Here's how to avoid it:

METHOD 2:
Invoke HARDPREP (and PARTED) with NO command line switches. Select the Miniscribe 6053 as described above. Then immediately select TYPE again and select MANUAL PARAMS. This will present you with the parameter table for the 6053 already fill in. Simply RETURN through the list to use the default (shown) values. When you come back to the main menu, you'll find that the DRIVE TYPE has changed to Table Override. You may now proceed as described above. One final note: the SpeedStor distribution diskette is copy protected. The protection scheme is such that all files may be copied to the hard disk, but to use HARDPREP the distribution diskette MUST be in the A drive.

E P S O N
EPSON AMERICA INC.
SERVICE DEPARTMENT

PRODUCT SUPPORT BULLETIN

DATE: 2/5/87 **NUMBER: S-0004A**
SUBJECT: EQUITY MONOCHROME VIDEO BOARD USE WITH THE EQUITY III+

The Q-506A-AA version of the monochrome video board may exhibit problems when used with the Equity III+ when running at 10MHz or above.

The new version Equity monochrome video board (Product Code Q-508A-AA) should be used for the Equity III+ for proper operation at 10/12MHz.

The MRS-MO board product code and part number was changed as follows:

	Product Code	
Current	Q506A-AA	(Y144206000 P/N on PCB)
New	Q508A-AA	(Y144206200 P/N on PCB)

The Q506A-AA board may be used for all Equity I, Equity II and Equity III and other PC, XT and AT (8MHz or lower) compatibles.

The new Q508A-AA board is compatible with all Equity Series computers and other PC, XT and AT compatibles.

EPSON
EPSON AMERICA, INC.
SERVICE

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.