

 Commodore

AMIGA

BRIDGEBOARD

A2088/A2286

For A2000/IBM-PC XT/AT Compatibility

**USER'S
GUIDE**

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- Reorient the receiving antenna or AC plug.
- Change the relative positions of the peripheral and the receiver.
- Plug the equipment into a different outlet so the peripheral and receiver are on different circuits.

CAUTION: Only equipment with shield-grounded cables (computer input-outlet devices, terminals, printers, etc.), certified to comply with Class B limits, can be attached to this device. Operation with non-certified equipment may result in communications interference.

Your house AC wall receptacle must be three-pronged type (AC ground). If it is not, contact an electrician to install the proper receptacle. If a multi-connector box is used to connect the computer and peripherals to AC, the ground must be common to all units.

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1. INTRODUCTION

Note: The explanations and descriptions given in this manual assume familiarity with the Amiga® 2000™ equipment, operating features and techniques, as described in the Introduction to the Amiga 2000 manual supplied with your A2000 computer.

ABOUT THE BRIDGEBOARD

The Amiga® 2088 and 2286 Bridgeboards™ give IBM® PC-XT/PC-AT® compatibility to your Amiga A2000™, while retaining all of the Amiga's advanced features.

The A2000/Bridgeboard combination gives you direct access to the wide range of software available for IBM PC-compatible computers. You can run the MS-DOS® Operating System and virtually any IBM PC-XT/AT compatible software, including such popular software products as Lotus 1-2-3®, dBASE III®, WordPerfect®, Sidekick®, and more. You can run other PC operating systems. And the Bridgeboard supports the easy installation of a variety of PC options—now, and in the future.

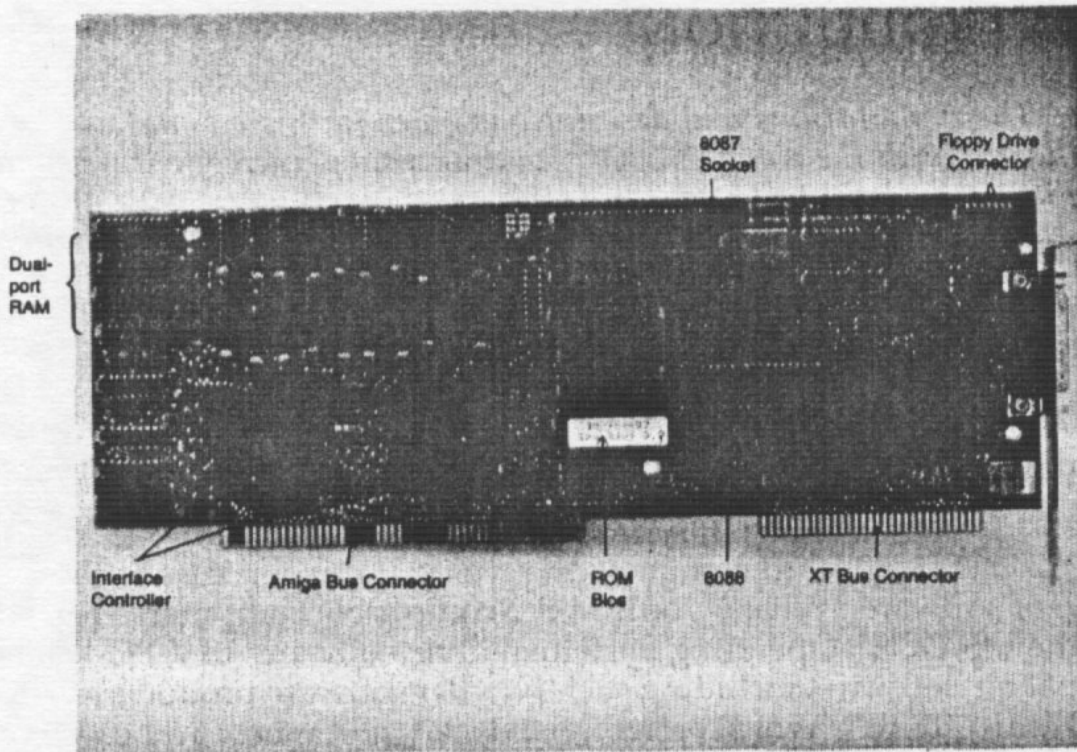
The name BRIDGEBOARD highlights the fact that the card forms a bridge between the Amiga side of the A2000 and the PC side, so that the Bridgeboard is integrated into the Amiga environment. This means, for example, that while you are running a PC-compatible software program on the Bridgeboard you can—at the same time—run one (or several) programs on the Amiga side, while using the same monitor for both the PC and Amiga programs. You can even transfer files between the Amiga and the PC.

One of the most powerful features of the Amiga/Bridgeboard design is the ability to run software tailored specifically to take advantage of the combined strengths of the Amiga and PC systems. For example, a hybrid A2286 system using 80286 and 80287 coprocessors on the PC side could be performing process monitoring while the 68XXX series processor on the Amiga side is handling real-time graphics display of the process monitoring.

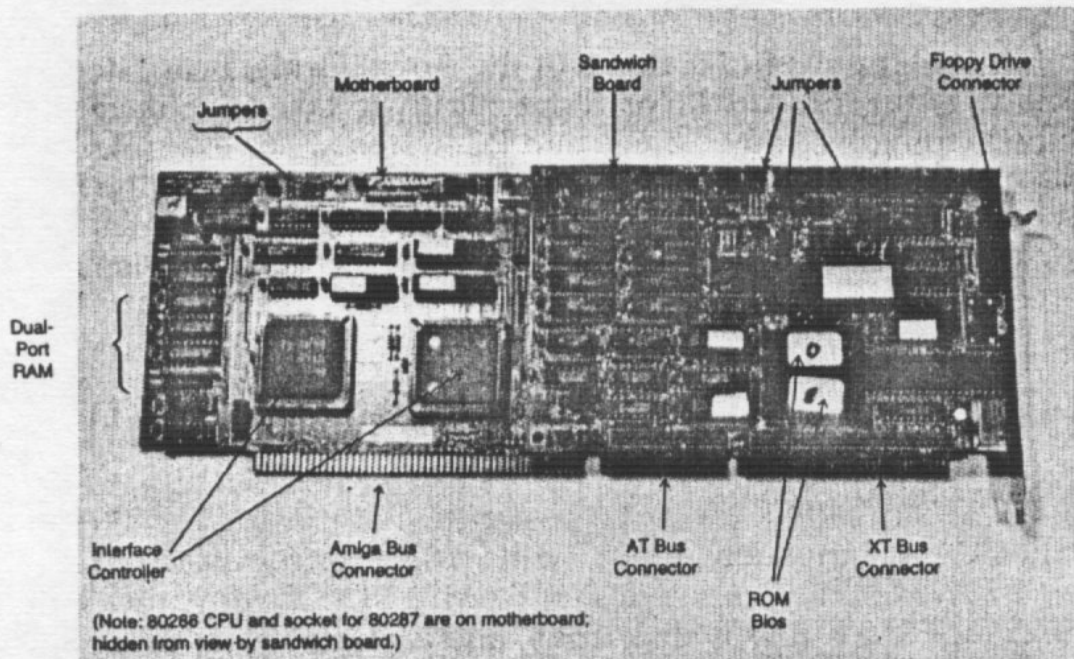
WHAT IS INCLUDED WITH THE BRIDGEBOARD

There are two Bridgeboard models:

- The PC-XT compatible A2088, with an 8088 microprocessor running at 4.77 MHz, 512 K (kilobytes) of RAM, a PC-XT compatible BIOS, a 5.25 inch 360 K floppy disk drive, and a socket for an 8087 math coprocessor.



A2088 Bridgeboard



A2286 Bridgeboard

- The PC-AT compatible A2286, with an 80286 microprocessor running at 8 MHz, 1 MB (megabyte) of RAM, a 5.25 inch high-density 1.2 MB floppy disk drive, and a socket for an 80287 math coprocessor.

Both Bridgeboard packages include MS-DOS 3.3 and GW-BASIC® on disk and a full set of documentation.

With a Bridgeboard installed, you can use up to three of the Amiga's built-in PC slots for PC peripheral cards. Standard PC monochrome and color display capabilities are provided on the Amiga monitor, and the Amiga keyboard has full PC-AT keyboard functionality.

DISPLAY MODES

The Bridgeboard provides built-in capabilities for two display modes:

PC Mono—Allows you to use up to four different colors for text display (selectable from the Amiga palette of 4096 colors). The typical IBM PC-compatible monochrome display is restricted to green or amber text on a dark background.

PC Color—Handles both text and graphics. You can use up to sixteen colors for text, and up to four colors for graphics (selectable from the Amiga palette of 4096 colors).

The Bridgeboard produces these displays on the A2000's monitor—you don't have to purchase a separate monitor for Bridgeboard operations. The PC Mono and PC Color displays can be produced simultaneously on the monitor.

Additional video displays such as EGA and VGA are possible with the addition of an optional video card and an appropriate monitor.

PERIPHERALS

The Bridgeboard can access and control a parallel printer through the parallel port of the A2000. With expansion cards installed in the PC-compatible expansion slots you can also add a variety of PC peripherals (added memory, I/O ports, video cards, modem, serial printer, LANs, etc.).

VIRTUAL DRIVES

For Bridgeboard use, you can create as many as five virtual drives, with the data stored on any of the Amiga disk resources—RAM disk, hard disk or floppy disk. The virtual drives can give you extra-high-speed access to file information. You can set up *one* of the virtual drives to automatically boot the PC.

ADVANTAGES OF THE BRIDGEBOARD SYSTEM

The A2000 with the Bridgeboard not only functions as a PC compatible, but it also gives the user access to the Amiga's unique capabilities in software applications like desktop publishing, graphics, animation, music, desktop video, etc.

Running MS-DOS applications on the Bridgeboard has a number of advantages over using a typical PC-Compatible system:

- An MS-DOS application can run in parallel with several AmigaDOS™ programs running in multitasking mode. The Bridgeboard CPU and the A2000 CPU are able to operate fully independently as parallel processors.
- An MS-DOS application may use both color and monochrome screens simultaneously (for example, Lotus 1-2-3 in dual-monitor configuration). Both screens can be displayed on a single Amiga monitor in separate windows, on separate Workbench screens, or on separate monitors.
- A hard disk installed on the PC bus (e.g., a hardcard, or an ST506 controller with separate drive) may be set up to include an AmigaDOS portion accessible to Amiga programs. Access to the PC side hard disk by Amiga programs does not interfere with any MS-DOS application running on the Bridgeboard.
- Bridgeboard Software lets you create an autobooting PC Hard drive as a file on an Amiga hard disk. This autoboot software is automatically disabled when a PC hard disk is present, thus allowing normal PC autobooting to occur.

HYBRID SYSTEMS

Unlike simple post-processors which read MS-DOS data files and then create graphs, Amiga graphics applications can be written to be operational while the user is running the MS-DOS application in a color or monochrome PC window.

Other potential hybrid applications include:

- Using the Bridgeboard as a parallel processor to do background sorting, searching, number crunching, spelling or style checking.

- Using the Bridgeboard as an I/O device for data acquisition, data reduction, videotext terminal emulation, or other pre-processing applications.
- Allowing AmigaDOS applications to utilize ultra-high resolution PC-compatible display adapters, image processors and other special-purpose hardware. The entire processing power of the Bridgeboard's CPU can be dedicated to providing an intelligent interface to the A2000.

KEY FEATURES OF THE A2088 AND A2286 BRIDGEBOARDS

Here's a summary of the major features of the A2088 and A2286 Bridgeboard systems:

A2088-Specific Features

- 8088 microprocessor, running at 4.77 MHz clock speed
- 512 K internal RAM
- PC-XT compatible BIOS
- 5.25 inch 360 K floppy disk drive
- Socket for 8087 math coprocessor
- External floppy drive connector

A2286-Specific Features

- 80286 microprocessor, running at 8 MHz clock speed
- 1 Mb internal RAM
- PC-AT compatible BIOS
- 5.25 inch high density 1.2 MB floppy disk drive
- Battery-backed-up real-time clock/calendar
- Socket for 80287 math coprocessor

Shared Features

- 128 K dual-port memory accessible from Amiga and PC sides
- Built-in PC MDA Mono / PC CGA Color video displays available simultaneously, using the A2000's monitor
- All PC-AT keyboard functions on Amiga keyboard
- Up to 3 full-size slots (2 XT®, 1 AT) available for PC expansion in Amiga expansion slot area
- Simultaneous MS-DOS/AmigaDOS processing
- Up to five virtual drives possible on Amiga disk devices
- Transfer of files between operating systems (e.g., MS-DOS and AmigaDOS)
- Ability to run MS-DOS applications in an Amiga window with full sizing/resizing and color selection features
- Hard disk support, either through a PC hard disk/controller, or a PC virtual hard disk on any Amiga disk device (floppy, ram or hard)

- Shared hard disk, either by sharing a virtual disk on the Amiga side or by partitioning a hard disk on the PC side
- Microsoft Mouse® support using Amiga mouse
- Potential for uniquely powerful hybrid PC/Amiga applications

ABOUT YOUR BRIDGEBOARD USER DOCUMENTATION

The documentation supplied with your Commodore Bridgeboard includes the following:

- ***Amiga A2088/A2286 Bridgeboard User's Guide***

This is the manual you are now reading. It introduces the Bridgeboard and shows how to install the Bridgeboard hardware and connect peripheral equipment, how to install the Bridgeboard PC software, how to load the MS-DOS Operating System and MS-DOS applications, and how to use the menus and options available with the Bridgeboard PC display modes. This book also tells how to use virtual drives and how to install selected expansion devices (such as a hard disk drive and a math coprocessor).

- ***Commodore PC MS-DOS User's Guide / User's Reference***

These two books (which may be bound together in one volume) define the major elements of MS-DOS, tell you what you need to know to load prepackaged software products (such as Lotus 1-2-3) and give detailed information on all MS-DOS commands and functions. (For details on running a specific software product, see the instructions supplied with that product.)

- ***Commodore PC GW-BASIC Interpreter User's Guide / User's Reference***

These two books (which may be bound together in one volume) provide detailed information on all the elements of GW-BASIC. This material is primarily a reference tool for GW-BASIC users, and assumes some prior knowledge of the BASIC programming language.

2. INSTALLING THE BRIDGEBOARD HARDWARE

IMPORTANT

- Before you install the Bridgeboard in your A2000, TURN OFF ALL POWER. Disconnect the power cable and any equipment (e.g., monitor, printer) connected to the A2000.
- Before you try to operate the unit, be sure to read ALL the installation and setup instructions in this chapter, and re-connect any equipment you have disconnected.

CHECKING WHAT YOU RECEIVED

MAKE SURE you received the following items in the Bridgeboard box:

A2088 Bridgeboard

- *The A2088 Bridgeboard (single board)*
- *One 5.25 inch 360 K floppy disk drive*
- *Four machine screws and four washers, used to mount the 5.25 inch drive to the A2000 chassis*
- *One ribbon cable, used to connect the 5.25 inch drive to the Bridgeboard*
- *One 3.5 inch floppy disk containing the Bridgeboard PCInstall program**
- *Three 5.25 inch floppy disks containing MS-DOS System Software, GW-BASIC and other special software for use with the Bridgeboard*
- *MS-DOS User's Guide/MS-DOS Reference manual*
- *GW BASIC User's Guide/User's Reference manual*

A2286 Bridgeboard

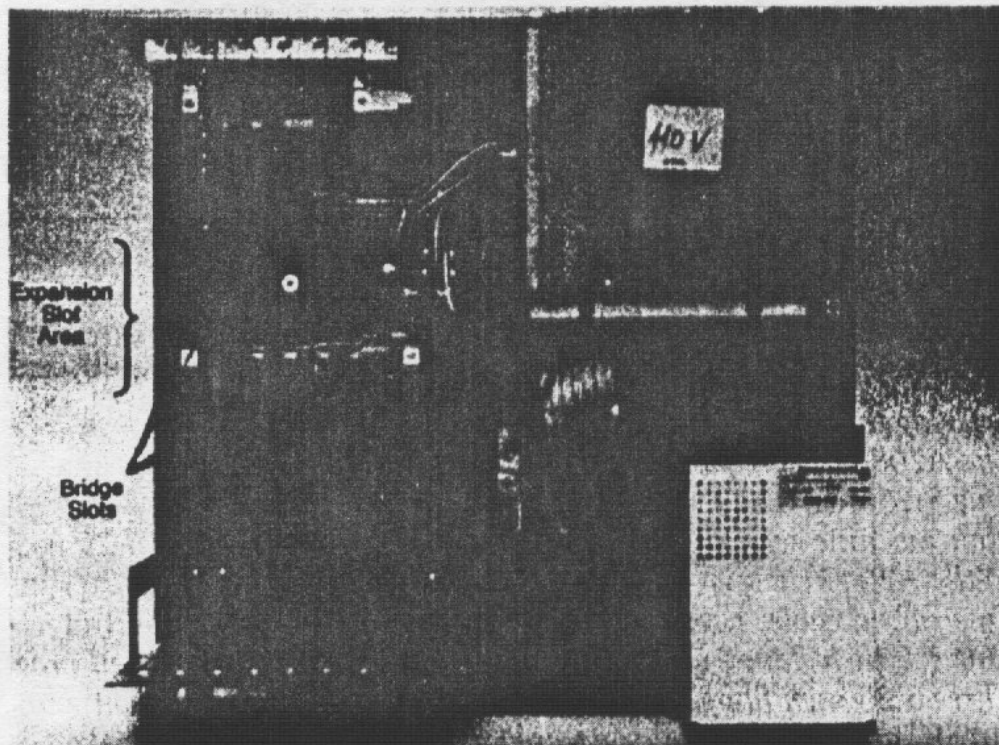
- *The A2286 Bridgeboard (main board and sandwich board)*
- *One 6.8 V lithium battery*
- *One 5.25 inch high density floppy disk drive*
- *Four machine screws and four washers, used to mount the 5.25 inch drive to the A2000 chassis*
- *One ribbon cable, used to connect the 5.25 inch drive to the Bridgeboard*
- *One 3.5 inch floppy disk containing the A2286 Bridgeboard PCInstall program**
- *Three 5.25 inch floppy disks.*
- *MS-DOS User's Guide/MS-DOS Reference manual*
- *GW BASIC User's Guide/User's Reference manual*

If any of the above items is missing, contact your dealer immediately. Save the box and packing material for possible later use.

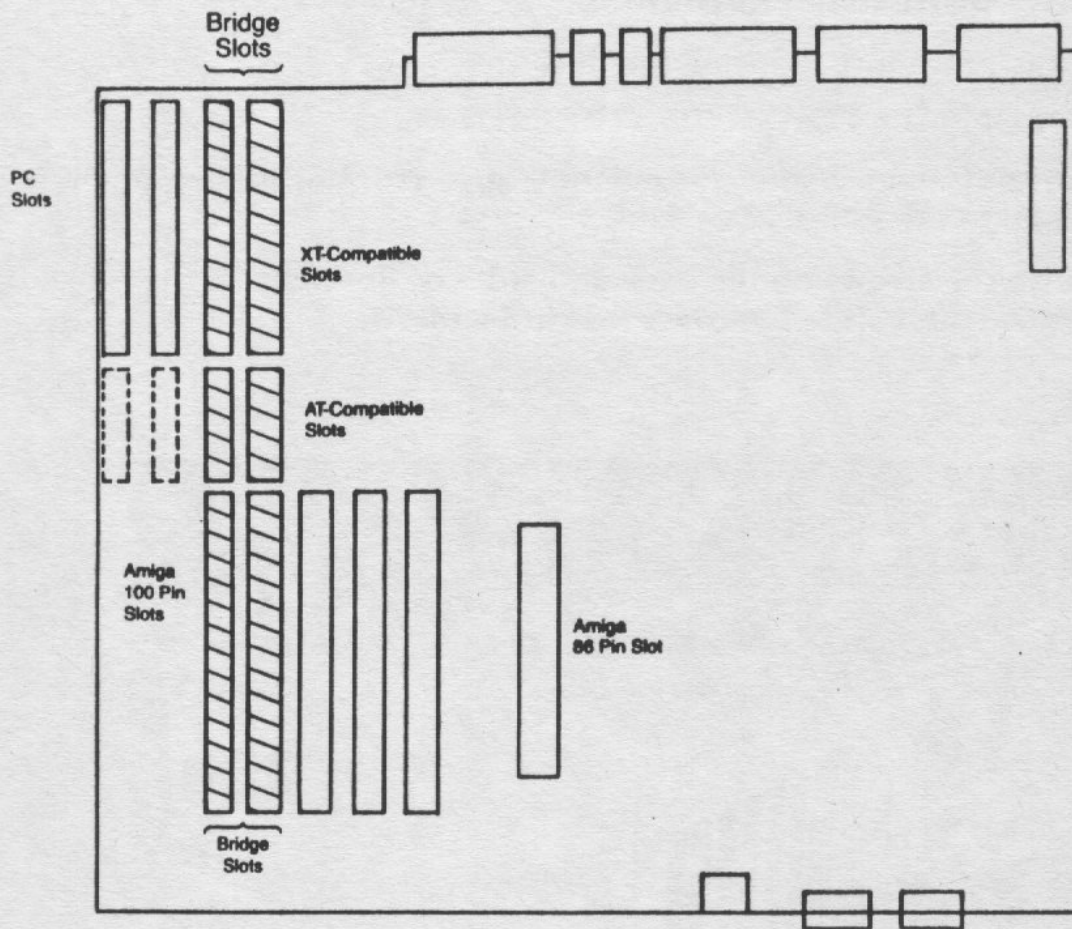
* NOTE: In some countries you may receive a special PC Workbench disk in place of (or in addition to) the Install disk listed here. In this case you will not need to go through the process of installing the PC software on a copy of your Workbench disk, as described in Chapter 3. However, you will find Chapter 3 useful if you want to create a personalized PC Workbenchdisk for some special use.

WHERE THE BRIDGEBOARD GOES

The Bridgeboard plugs into the internal expansion slot area located at the left of the A2000.



There are five slots on the Amiga system bus and four slots on a secondary bus that is IBM PC XT/AT compatible. Two pairs are *bridge* slots, which consist of one slot on the Amiga bus and one slot on the IBM bus. (See illustration on next page).



The Amiga Bridgeboard can be installed in either of the bridge slots, depending on your needs. You can position the Bridgeboard so that three slots are available for Bridgeboard PC bus peripheral cards (leaving three slots for Amiga use). Or you can position the Bridgeboard so that four slots are available for Amiga bus peripheral cards (leaving two slots for PC use).

HOW TO INSTALL THE BRIDGEBOARD HARDWARE

Installing the Bridgeboard hardware in the Main Unit of the A2000 involves two main steps:

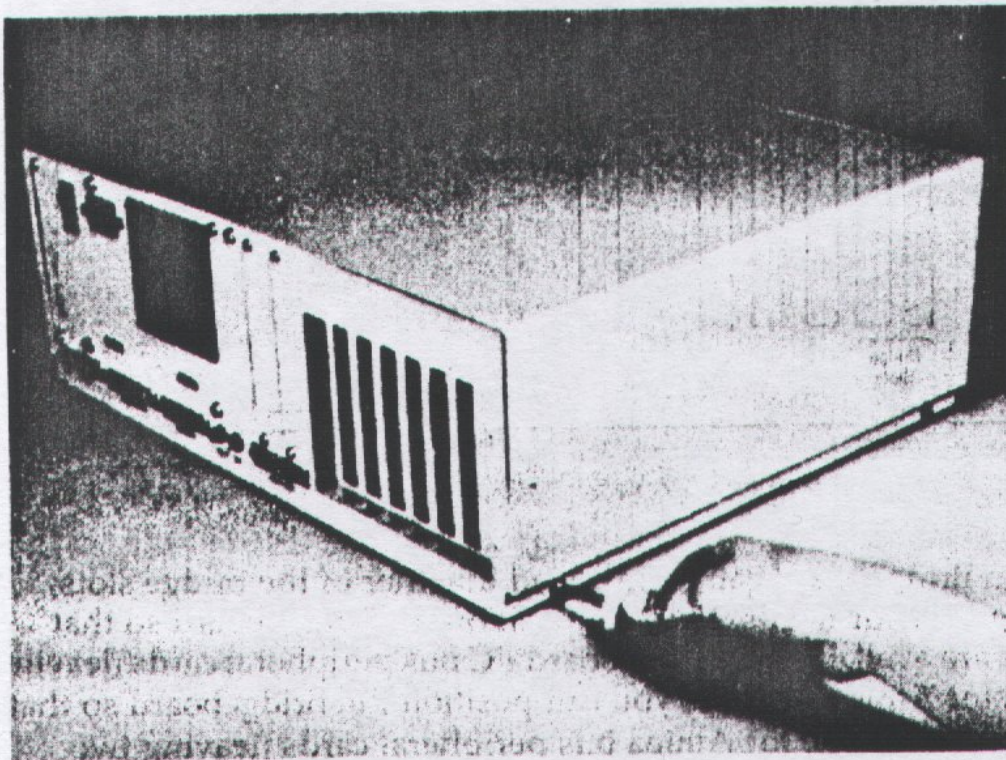
- *Installing the internal 5.25 inch floppy drive and inserting the cables that connect it to the Bridgeboard and to power.*
- *Inserting the Bridgeboard in one of the bridge slots and connecting it to the cable from the disk drive. (For the A2286, you must also connect the battery for the real-time clock).*

Install the disk drive first; this will give you more room to work when you are inserting and tightening screws.

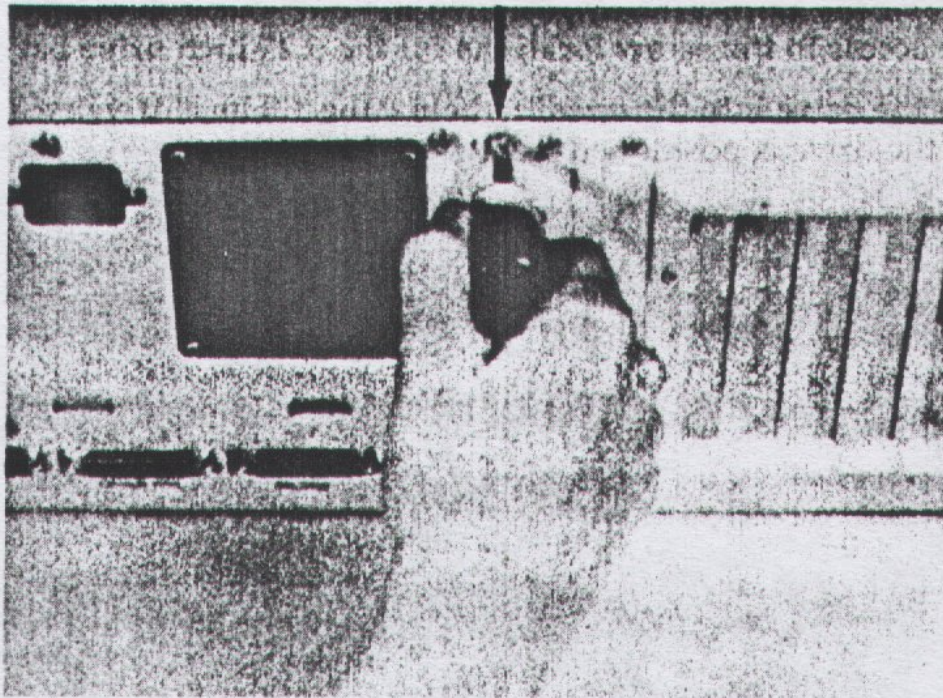
Disk Drive Installation Procedure

Follow this procedure to install the disk drive:

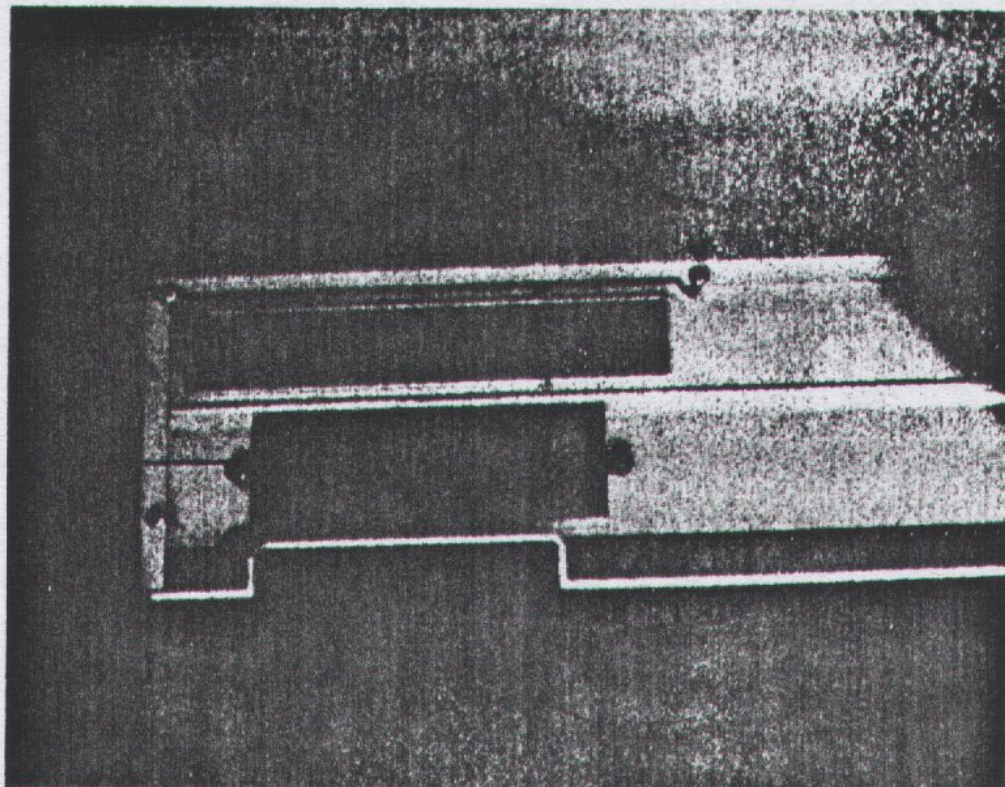
1. **TURN OFF ALL POWER TO THE SYSTEM.**
2. **Remove/disconnect any equipment (e.g., a monitor) sitting on or attached to the A2000 Main Unit.**
3. **Remove the screws on the back and sides of the cover of the A2000 Main Unit and slide the cover forward and off.**



Note: Be sure to remove the center screw in the back (indicated in the photo on the following page by the arrow).

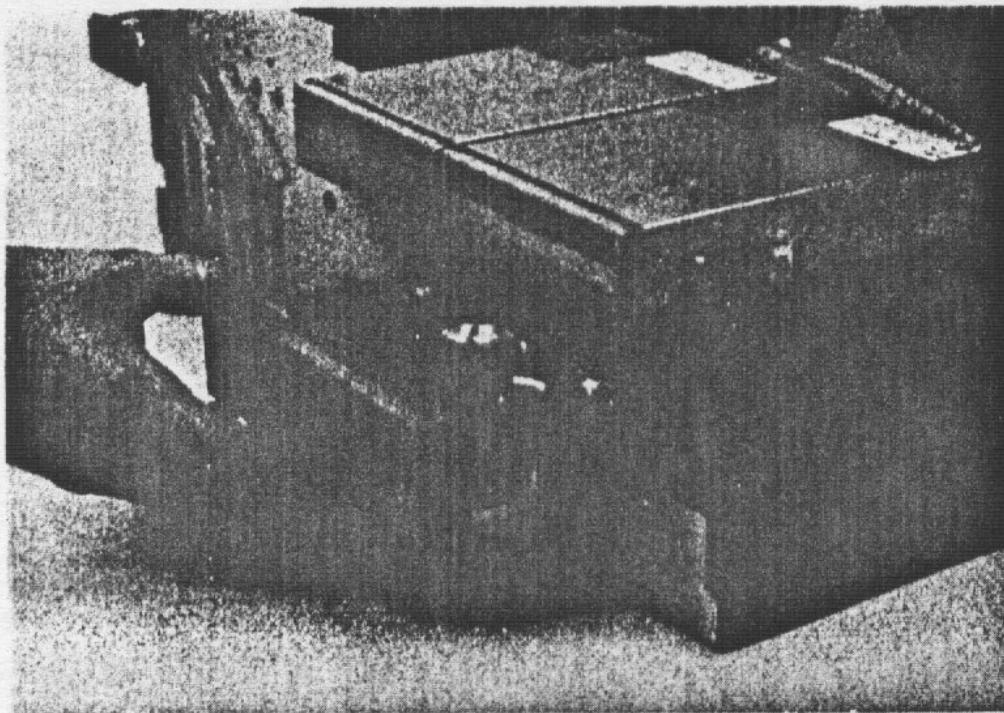
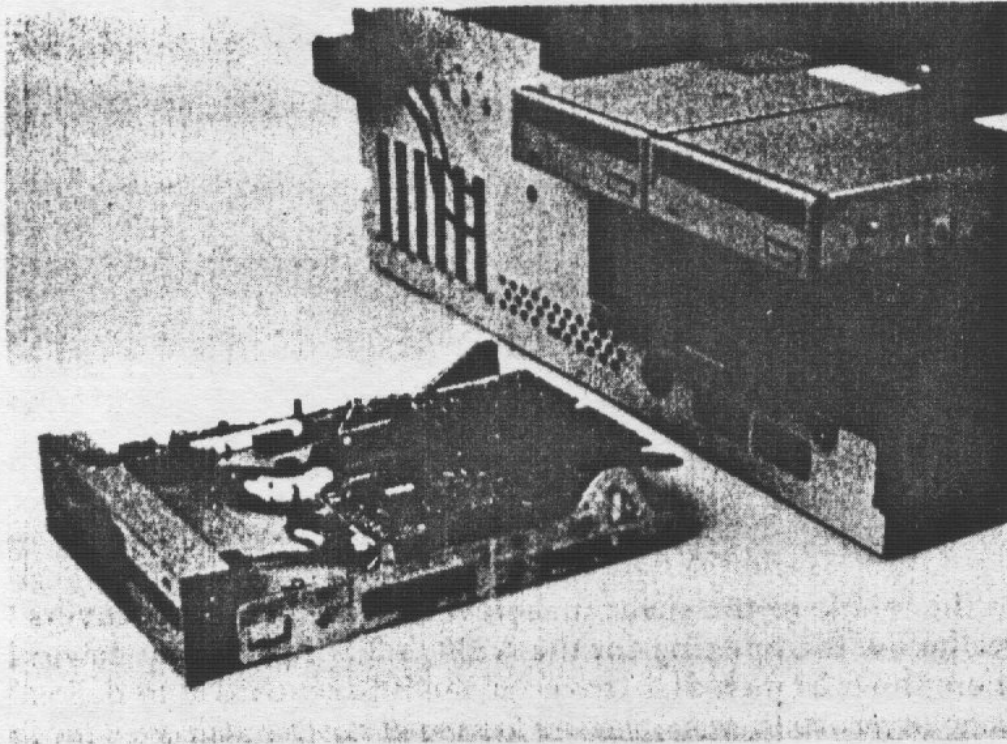


4. On the inside of the cover, unscrew the face plate that covers the area below the opening for the A2000's 3.5 inch floppy drive. This is where the 5.25 inch disk drive for the Bridgeboard is to be installed. (Note: In the photo below, you are looking at the face plate from the inside of the cover.)

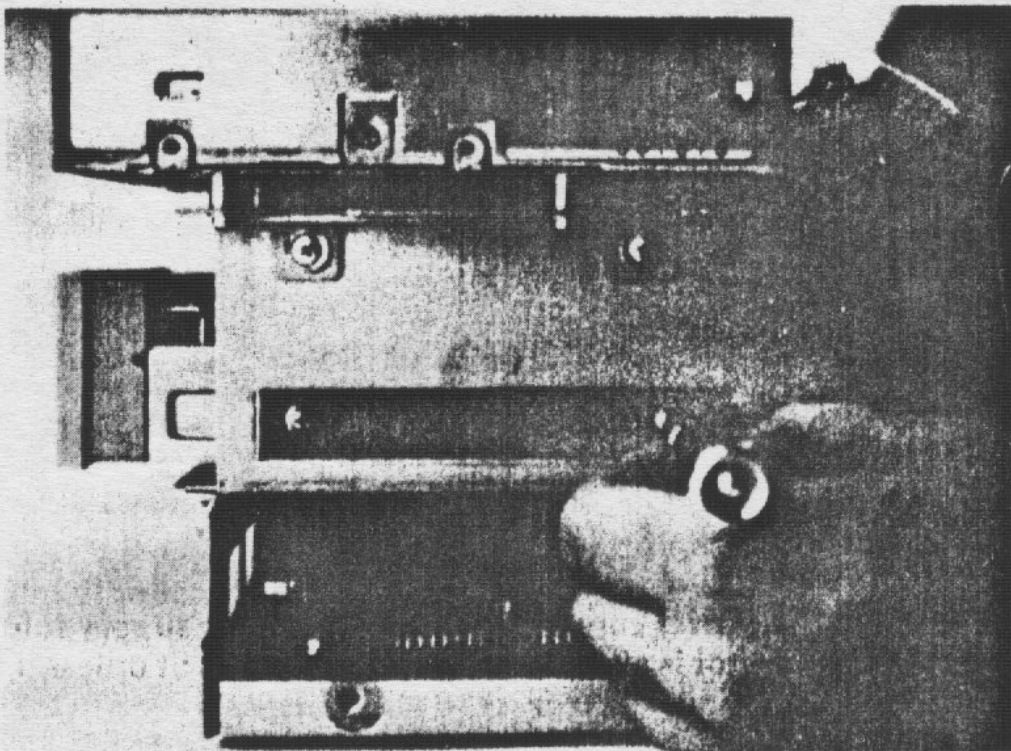


Face plate

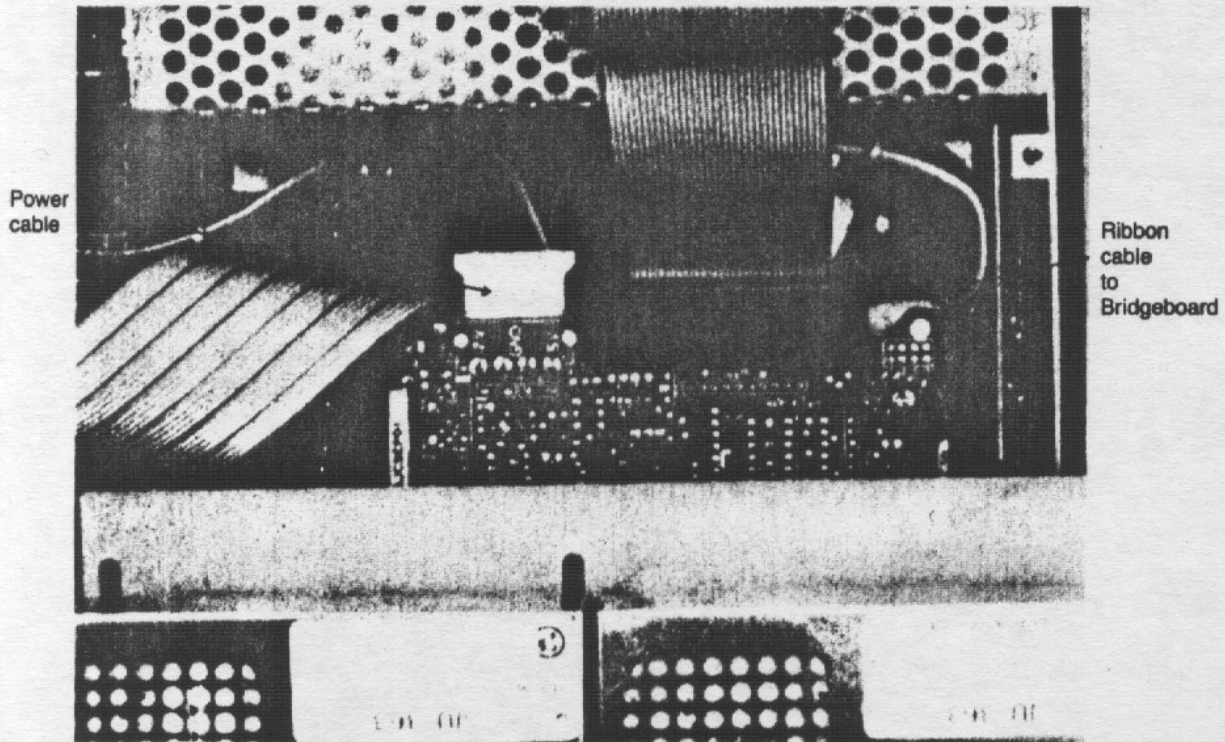
5. Remove any cards already installed in your A2000 so that you can have access to the screw locations for the 5.25 inch drive bay.
6. Slide the drive into the opening below the 3.5 inch drive area. Make sure the drive is positioned right-side up as shown.



7. **Secure the drive in place with two screws and washers on each side.** Working through the rectangular openings on each side of the enclosure, insert the screws loosely. Do not screw them all the way in.
8. **Make sure that the drive is flush with the face of the Amiga.** To do this, slide the drive forward and then place the cover over the top of the machine, without replacing any screws. If the drive is not flush with the face of the Amiga, gently slide the drive back until it is in place. Carefully lift off the cover and finish tightening the screws.



9. **Connect one end of the ribbon cable to the disk drive, as shown in the following photo. The disk drive end of the cable is keyed so that it will not fit unless it is in the proper orientation. (You must connect the other end of this cable to the Bridgeboard, as shown later in the Bridgeboard installation procedure.)**

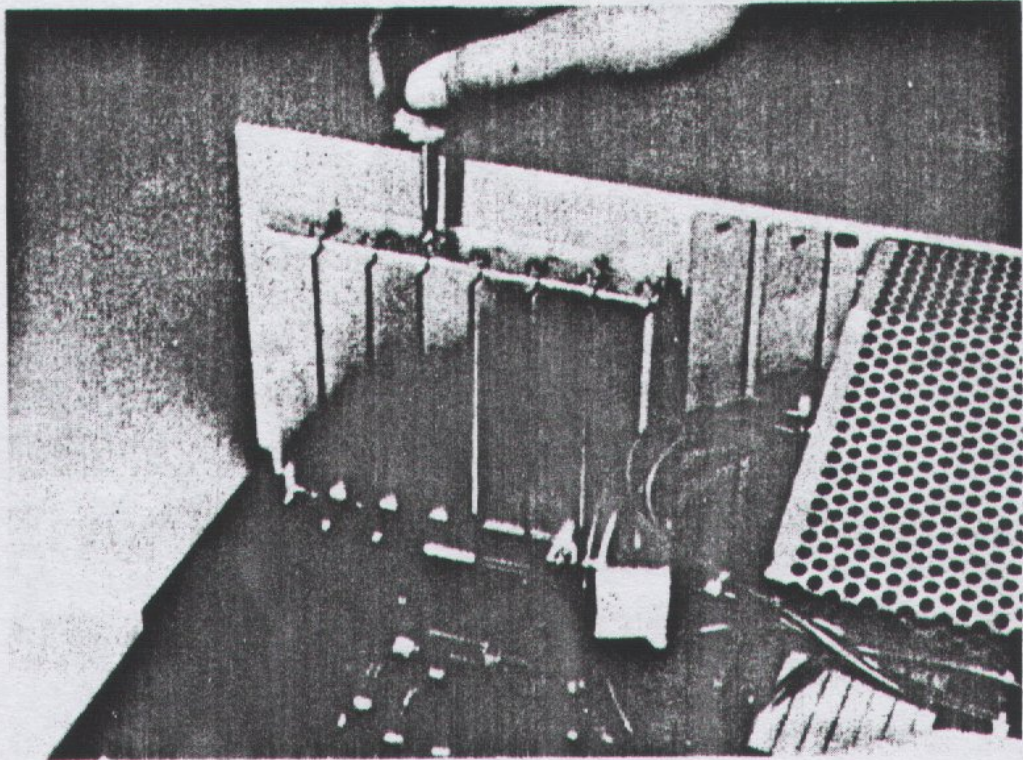


10. **Insert one of the power connectors from the power supply into the drive. This connector is also keyed so that it will not fit unless it is in the proper orientation.**

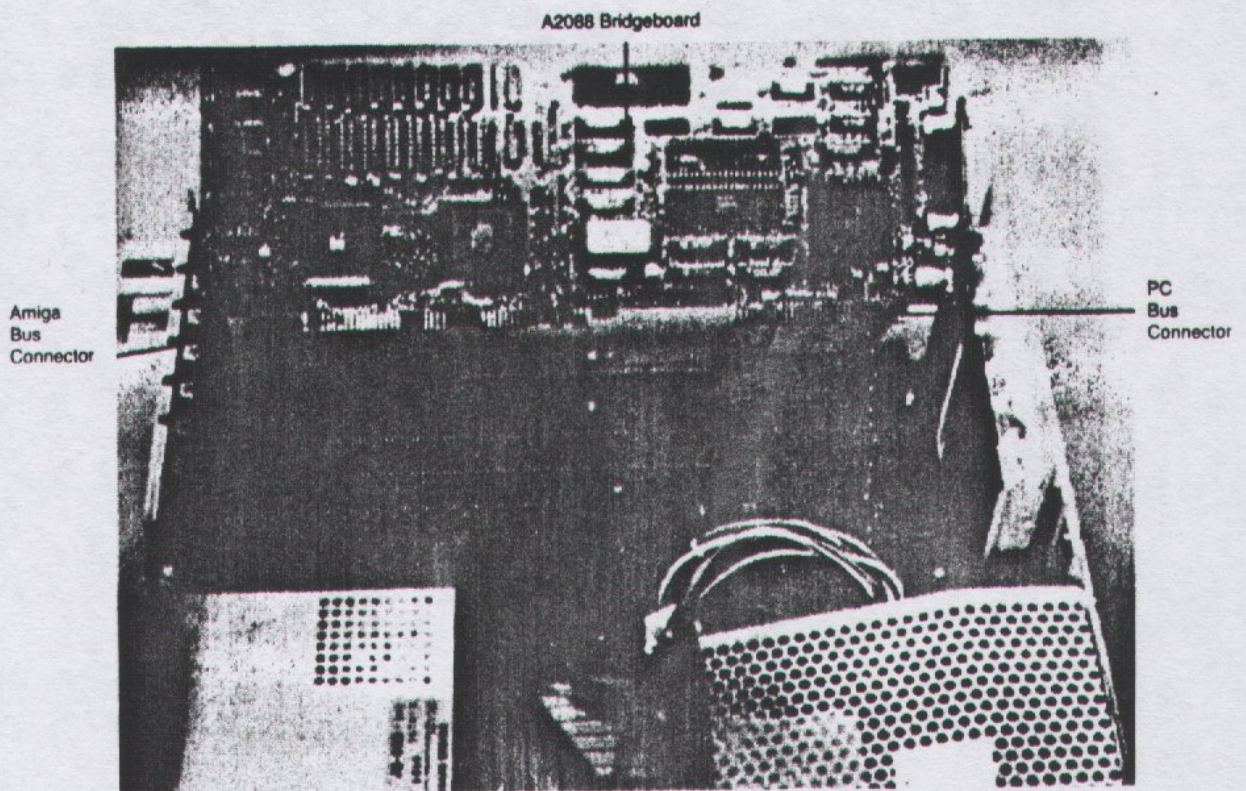
Bridgeboard Installation Procedure

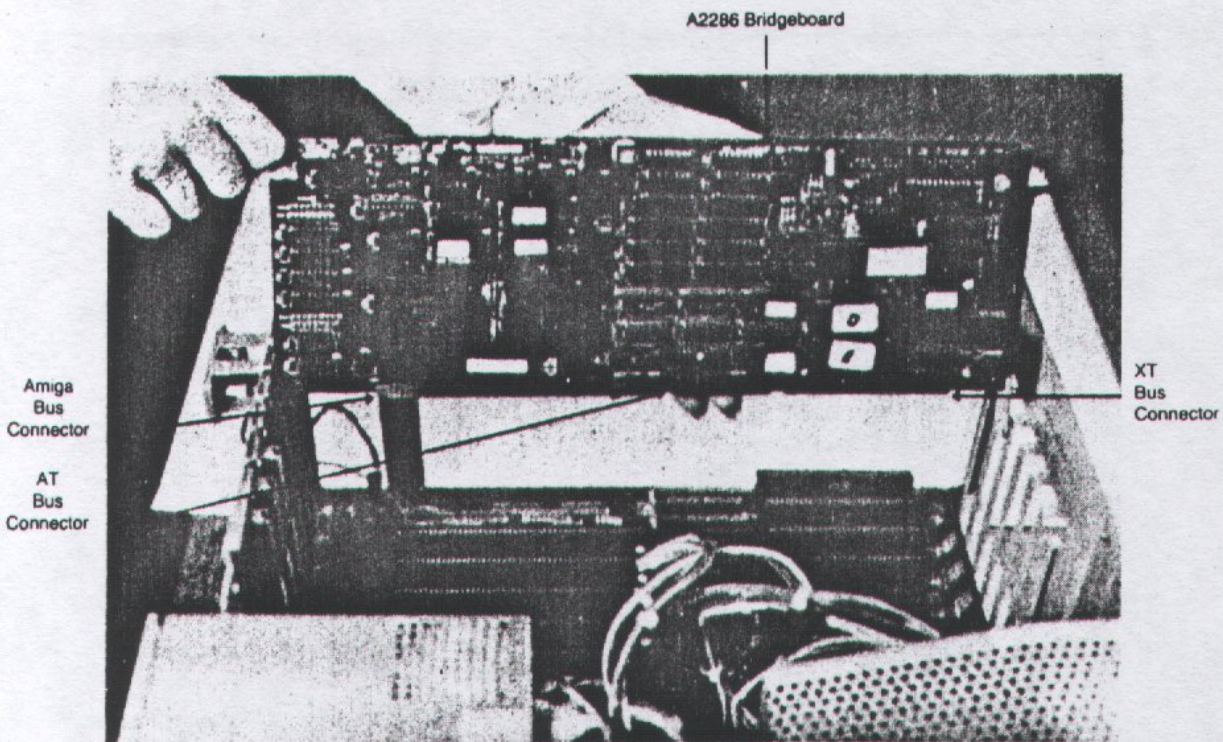
Follow this procedure to install the Bridgeboard itself. **ALL POWER MUST BE OFF!**

1. **Locate the two bridge slots in the expansion area at the left rear of the A2000 chassis. (See figures on pages 8 and 9.)**
2. **Select which bridge slot you will use for the Bridgeboard. Choose the right slot if you want the maximum number of expansion slots for PC use; choose the left slot if you want the maximum number of expansion slots for Amiga use.**
3. **Remove the screw from the top of the plate covering the back of the selected expansion slot. Save the screw for use in step 5 below.**

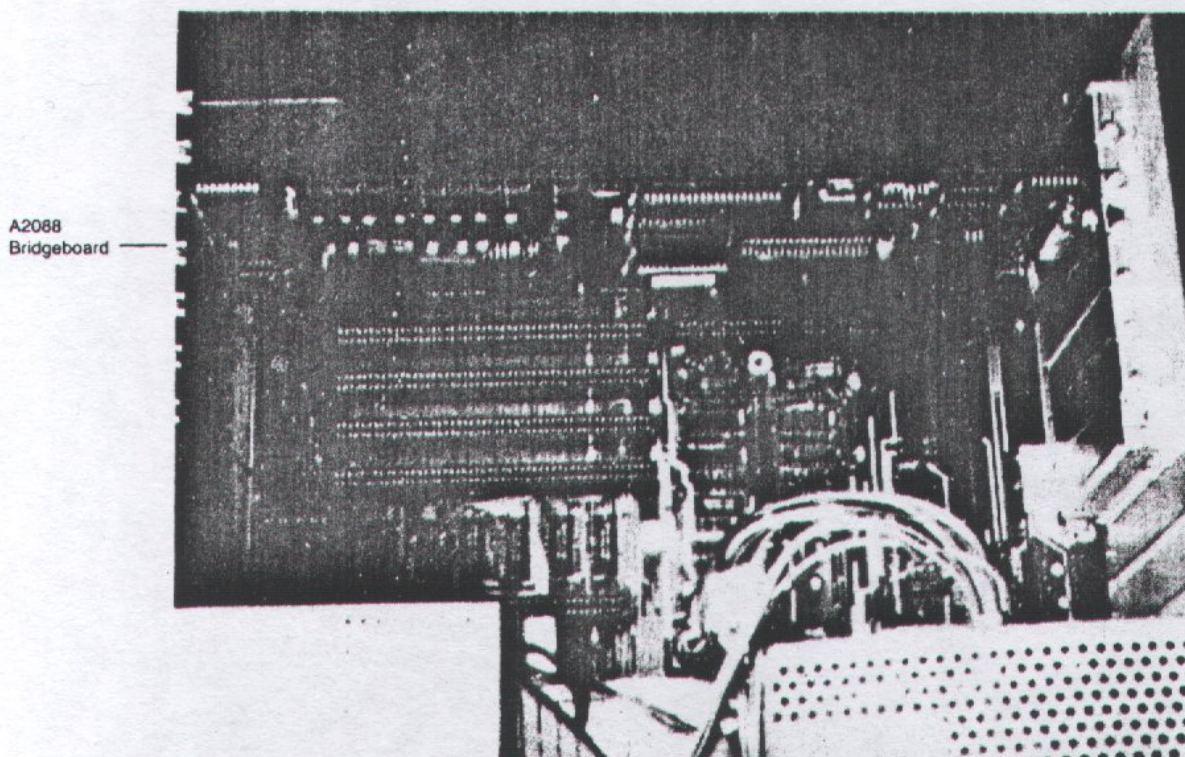


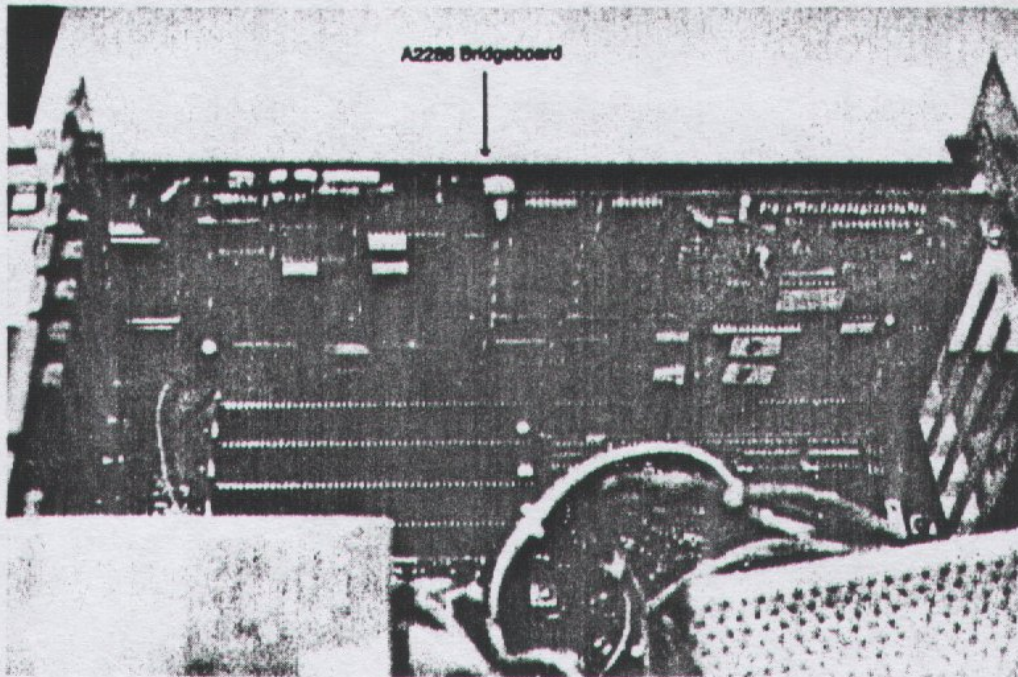
4. Position the Bridgeboard over the selected bridge slot. Note that the connector that goes in the Amiga bus side of the bridge slot is larger than the connector on the PC bus side. Be sure that the connectors are pointed down.





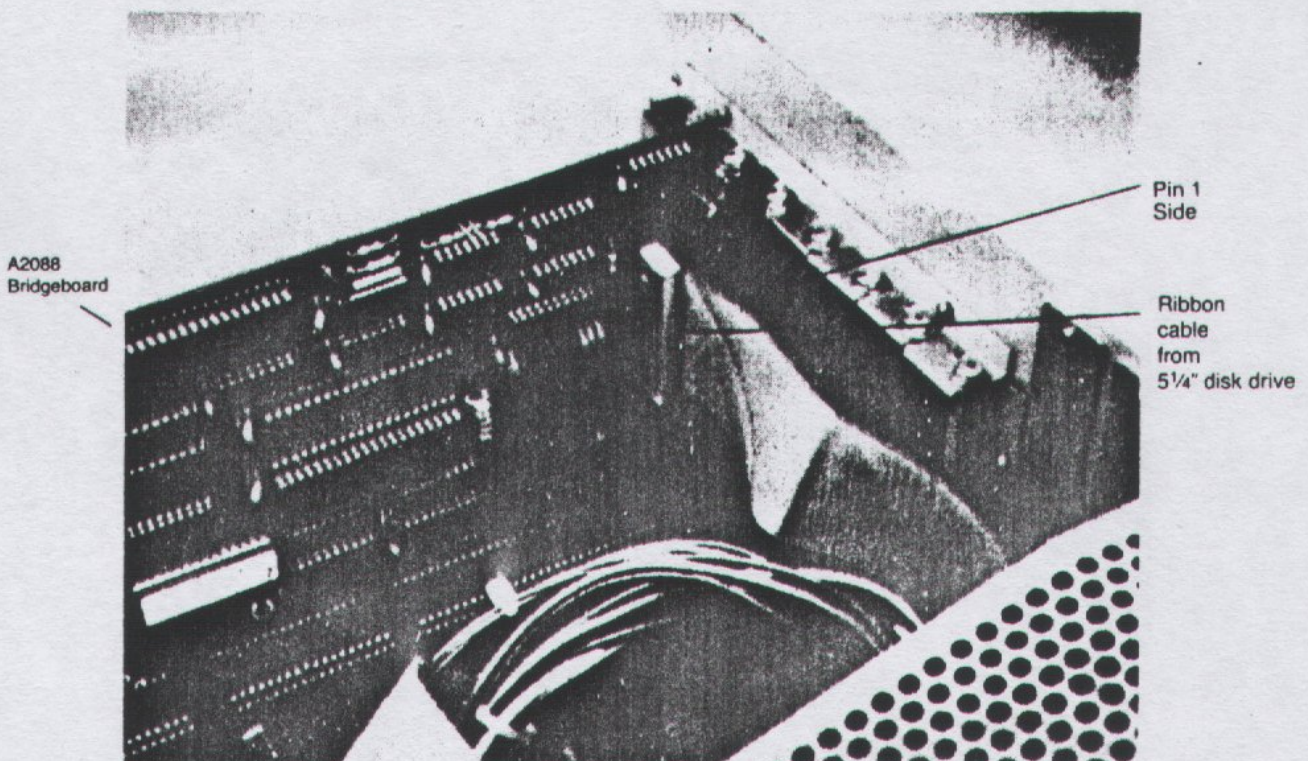
5. Firmly but carefully insert the Bridgeboard into the selected bridge slot. **DO NOT FORCE!** Secure with the screw removed in step 3.



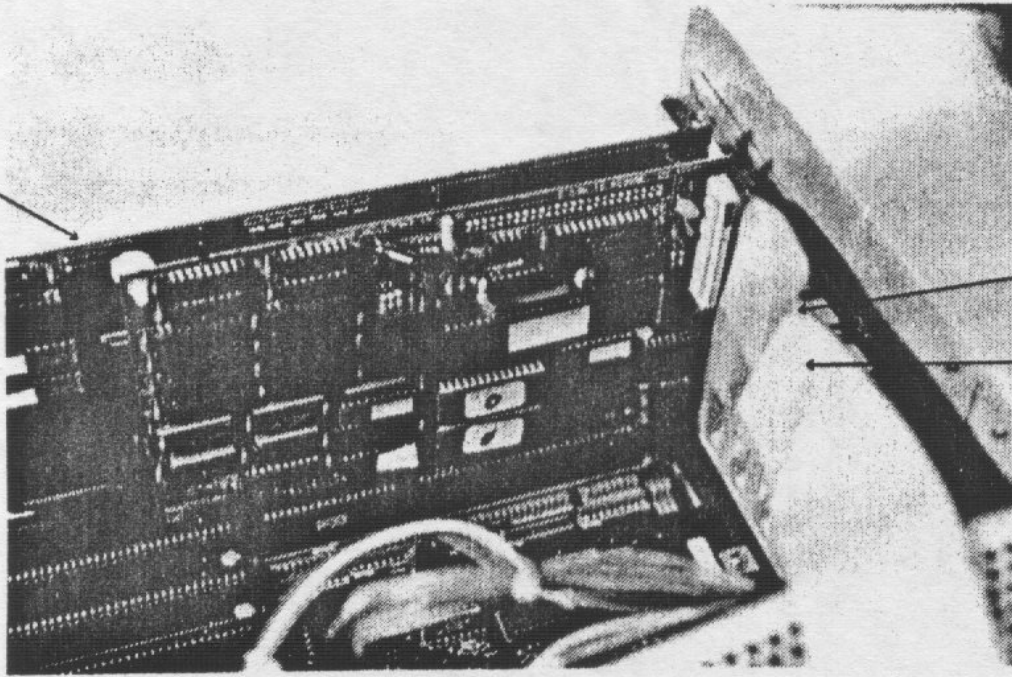


6. Insert the ribbon cable from the disk drive into the connector near the rear of the Bridgeboard, as shown. Be sure that pin 1 of the cable is matched to pin 1 at the top of the connector.

NOTE: In the photo, the dark (right) side of the cable indicates the pin 1 side. It is possible that different cables may be used in manufacture. In any case, pin 1 will be highlighted or identified in some way.



A2286
Bridgeboard



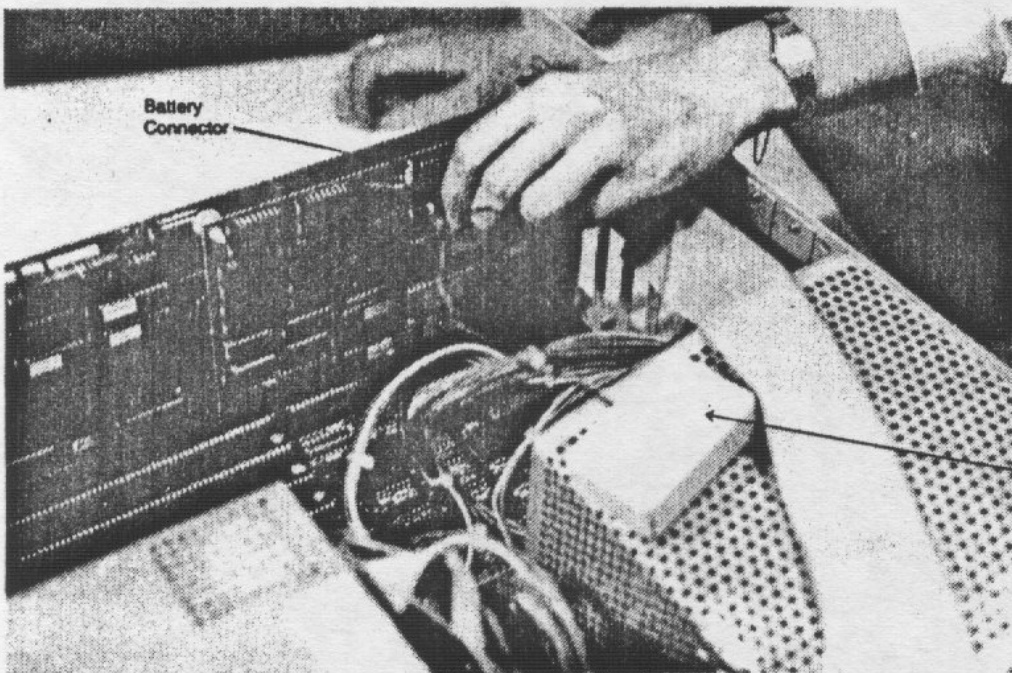
Pin 1
Side

Ribbon
Cable
from
5 1/4" disk drive

7. (THIS STEP IS FOR THE A2286 ONLY!)

Attach the lithium battery to the connector located on the sandwich board, as shown in Figure 2-13. Remove the paper from the bottom of the battery and attach the battery to a convenient spot on the A2000 chassis.

Battery
Connector



Lithium
Battery

8. Reassemble the A2000 Main Unit and reconnect the monitor and any peripheral equipment.

Your Bridgeboard hardware should now be properly installed.

ADDING TO YOUR BRIDGEBOARD

The following paragraphs discuss the installation or connection of internal expansion cards and external peripherals. These devices can greatly expand the range of uses for your Bridgeboard.

Adding PC Expansion Cards

You can install a variety of standard IBM PC-Compatible peripheral cards in the PC expansion slots assigned to the Bridgeboard PC side of the system. These expansion cards include the following:

- AST Advantage Premium®
- Hayes Smartmodem® 1200 internal modem
- Mountain 20 MB Drive Card®
- Plus Hardcard® (10 MB)
- Taurus® LAN card
- Video cards, including:
 - ATI EGA Wonder®
 - Orchid® VGA card
 - Paradise VGA Plus®
 - Tecmar® VGA card

Check with your dealer for other expansion hardware devices.

Adding Floppy Disk Drives

Both the Amiga A1010 3.5 inch and the Amiga A1020 5.25 inch drives may be connected to the external floppy disk connector on the A2088 Bridgeboard. (This is not to be confused with the Amiga floppy drive connector on the back of the A2000.) When connected in this way, these drives are accessible only by the Bridgeboard, and cannot be used for AmigaDOS storage.

There is no external floppy disk connector on the A2286 Bridgeboard. However, additional floppy disk drives (360K and 1.2MB 5.25 inch types and 720K and 1.44MB 3.5 inch types) can be connected internally.

See your dealer for details on adding floppy drives to the A2286 Bridgeboard. See Appendices A and H for more information on installing additional floppy disk drives for Bridgeboard use.

Adding a Hard Disk

As the list above shows, you can install and use a hard card in a PC slot or a hard disk/controller combination for operation on the PC side of the system. See Appendix E for details on hard disk installation and use.

Video Modes—Adding External Video Adapters

The Amiga provides MDA- and CGA-compatible video modes for the Bridgeboard on the standard Amiga color monitor. Chapters 4 and 6 explain how to use these modes.

You can obtain additional PC display modes adding a special video adapter (such as an EGA or VGA card) in one of the PC expansion slots, and then connecting an appropriate monitor to the video adapter.

NOTE: In order to use an external PC video adapter installed in a Bridgeboard expansion slot, the special Bridgeboard Preferences tool known as PCPrefs may need to be reset to recognize the video adapter. See Appendix I for instructions on how to do this.

Adding a Numeric Coprocessor

A numeric coprocessor (NCP), a chip which processes complex mathematical calculations, can be installed on the Bridgeboard PC and used in combination with it, thus extending the command and arithmetic capabilities on the Bridgeboard side of the system.

Each processor executes its own tasks. For math-intensive applications like CAD, the two processors work together to considerably accelerate the running speed of the program. The installation procedure for a numeric coprocessor is described in Appendix F.

USING EXTERNAL PERIPHERALS WITH THE BRIDGEBOARD

In addition to internal expansion cards, you can also use various types of external peripherals with the Bridgeboard. Some of these are described in the following paragraphs. For specific information on connecting a particular device, see the technical or installation manuals supplied with that equipment.

Using a Parallel Printer

It is possible to access for Bridgeboard use any parallel printer connected to the Amiga's parallel port. Before you access the printer you must assign the Amiga's parallel port to the Bridgeboard. However, the assignment is not permanent. The procedure for assigning the port to the Bridgeboard is explained in Chapter 4.

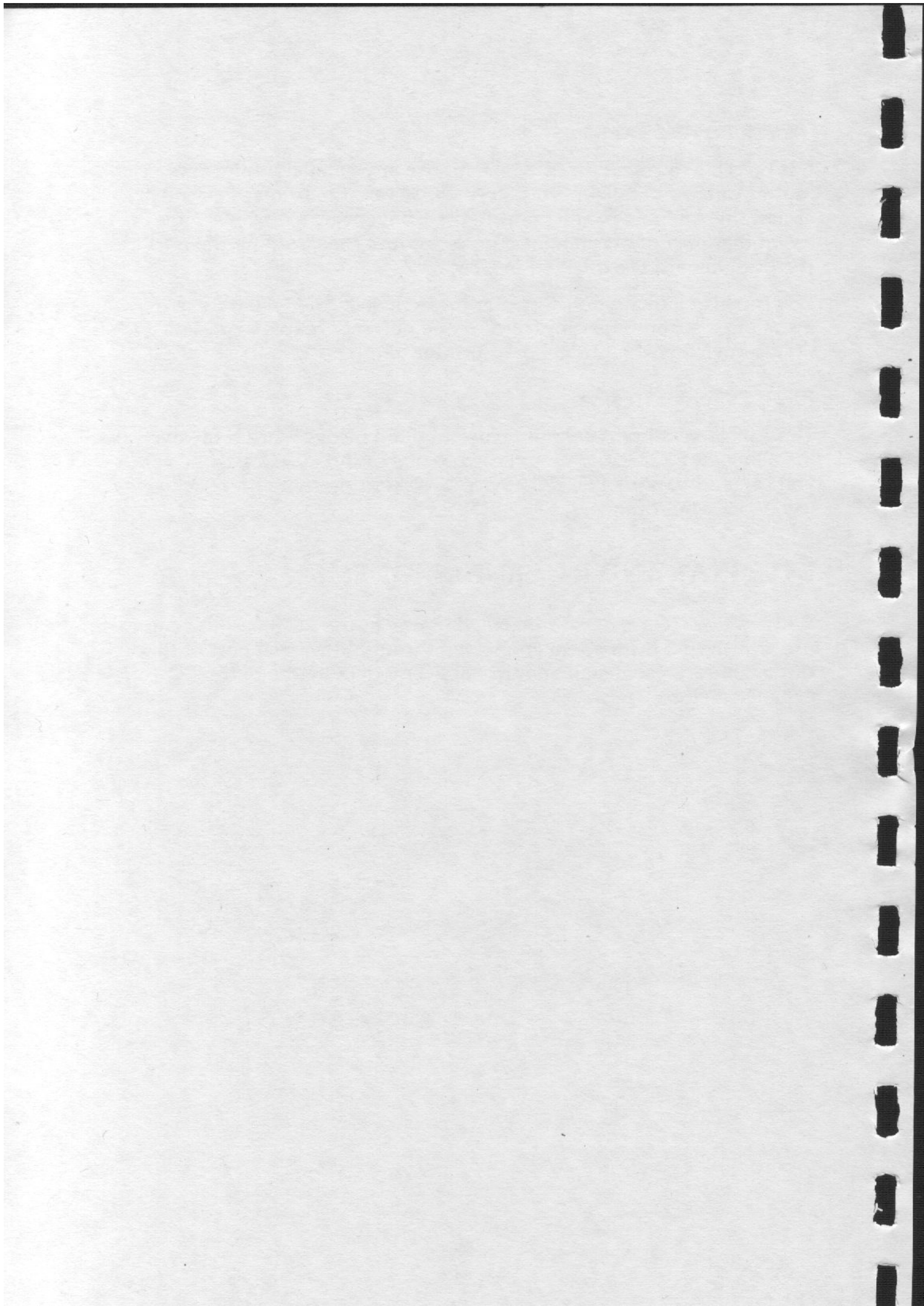
You can also add a parallel printer for exclusive Bridgeboard use by installing a separate parallel card in one of the PC expansion slots and then connecting the Bridgeboard printer to the port on this card.

RS232C (Serial) Devices

The Amiga serial port cannot be used by the Bridgeboard. However, by installing an RS232c peripheral card in one of the PC expansion slots, you can add various RS232C devices (serial printer, etc.) for exclusive use by PC applications.

EXTERNAL AND INTERNAL MODEMS

With an RS232C serial card installed in one of the PC bus slots, you can use an external PC modem connected through the serial port of this card. You can also install an internal PC modem in one of the PC expansion slots.



3. INSTALLING THE BRIDGEBOARD PC SOFTWARE*

The Install disk provided with your Bridgeboard contains special software that you must add to your Workbench in order to use the Bridgeboard. The Install process is used to copy the Bridgeboard software from the Install disk to the Workbench. (*Note that the PC Workbench can be created on either a floppy or hard disk.*)

IMPORTANT: Before you begin the installation procedure you should read the *About This Disk* file on the PCInstall disk. This file may contain important additions or changes to the installation procedure. To open this file just double-click on the **READ ME FIRST** icon in the PCInstall window.

GENERAL INSTALL PROCESS

The Install process involves these general steps:

- *You make a copy of your Workbench and the PCInstall disk supplied with the Bridgeboard.*
- *You select the appropriate Install program on the Install disk to select which PC files you want to copy from the Install disk to the Workbench copy.*
- *Unless you are going to install the PC files on a hard disk, some Workbench files must be selected for deletion. This is because the PC files (which take up about 220 KB) and the Workbench files together require more space than is available on a single 3.5 inch disk. However, if you have a hard disk, the hard disk will probably have enough space to accept all the PC files plus all the Workbench files.*
- *The selected Workbench files (if any) are deleted and the PC files are copied to the PC Workbench.*

If the PC Workbench is created on a floppy disk you can then boot the Bridgeboard PC by inserting this disk when the Amiga asks for the Workbench disk during the booting process. If you are placing the PC Workbench on an Amiga hard disk, you should see Appendix K for important information on setting up your Amiga hard disk.

There are two procedures you can use to install the PC software on a 3.5 inch floppy disk or a hard disk. In the default procedure, you accept those file choices (i.e., defaults) selected automatically by the Install program. In the user-controlled customized installation procedure, you control the file selections yourself.

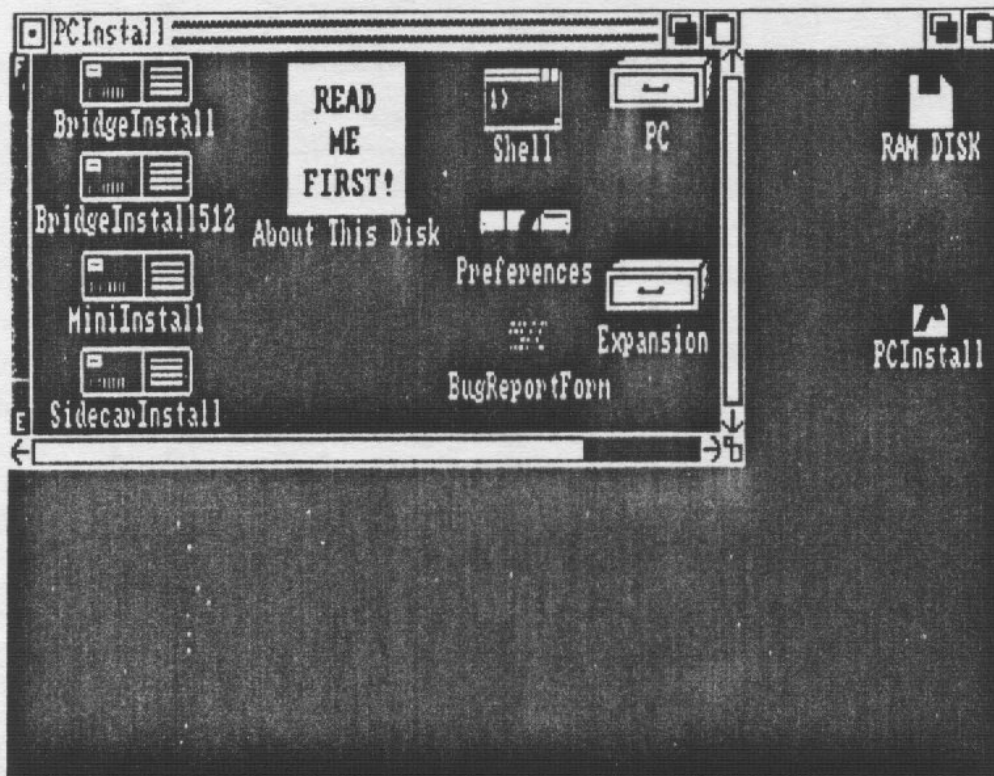
Since the PCInstall disk is also a bootable Workbench disk, a quick way to start using the Bridgeboard is to simply boot the Bridgeboard from this disk. (You should copy this disk first and boot from the copy. Keep the original in a safe place in case your copy becomes damaged.)

*NOTE: If your Bridgeboard package includes a special PCWorkbench disk in place of (or in addition to) the Install disk referred to in this chapter, you do not need to go through the PC software installation process. You can simply skip this chapter and go directly to Chapter 4. However, you will find the installation information useful if you want to create a personalized PC Workbench for some special purpose.

DEFAULT INSTALLATION PROCEDURE

The following description assumes you are installing the PC files on a floppy disk. If you are using a hard disk, in Step 7 you should select the dho: drive and then answer the screen prompts accordingly.

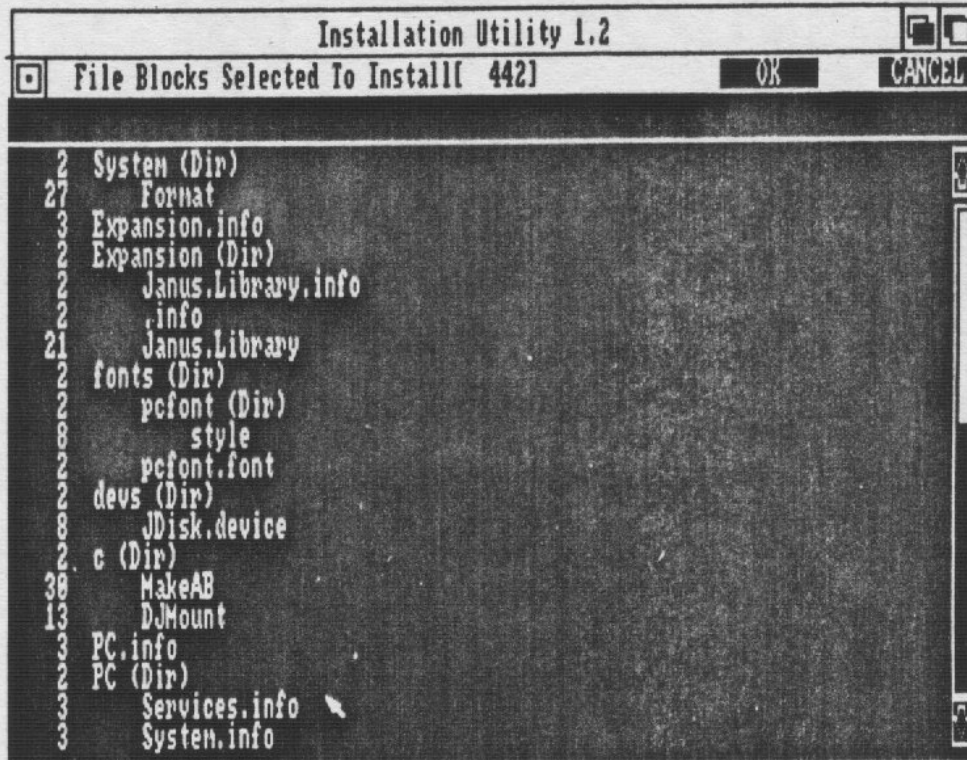
1. Turn on your A2000 and make copies of your Workbench and PCInstall disks.
2. Reboot your A2000, using the new Workbench copy or the PCInstall disk.
3. If the PCInstall disk is not already in a drive, insert the disk and open it now. A screen like the following will appear:



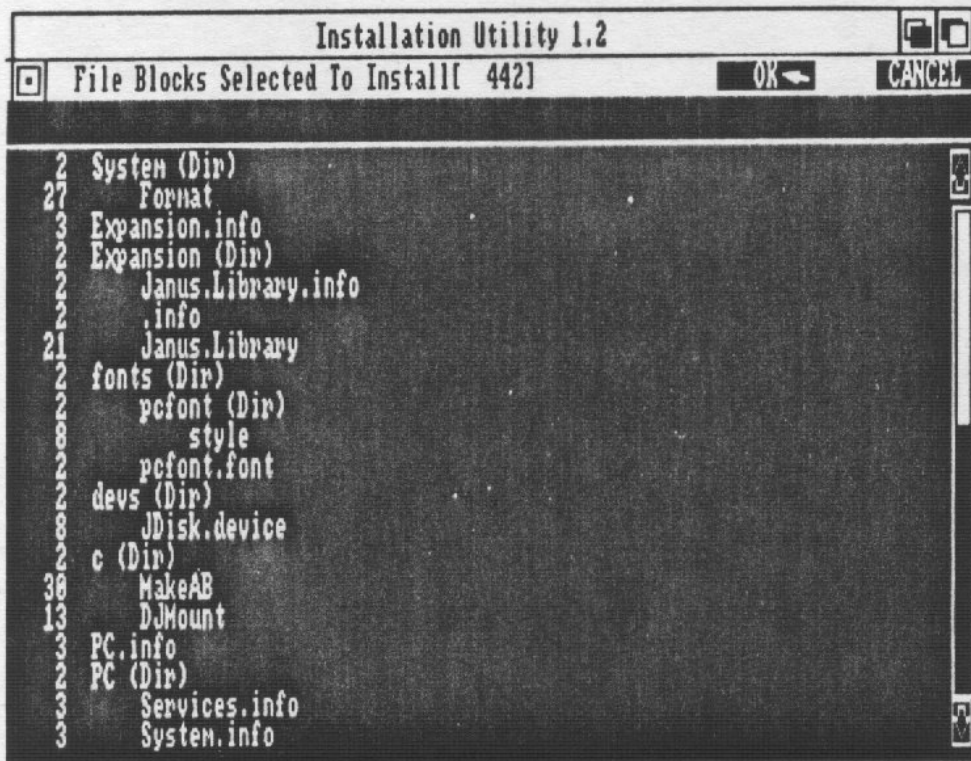
4. Select the BridgeInstall icon.

Note: There are a number of installation icons in the Install window. Some of these are not for use with the A2000 computer and Bridgeboard combination. For example, the Sidecar icon is used only with the A1000 computer and the Amiga 1060 Sidecar combination, while the BridgeInstall 512 icon is used if you have only 512 KB of RAM.

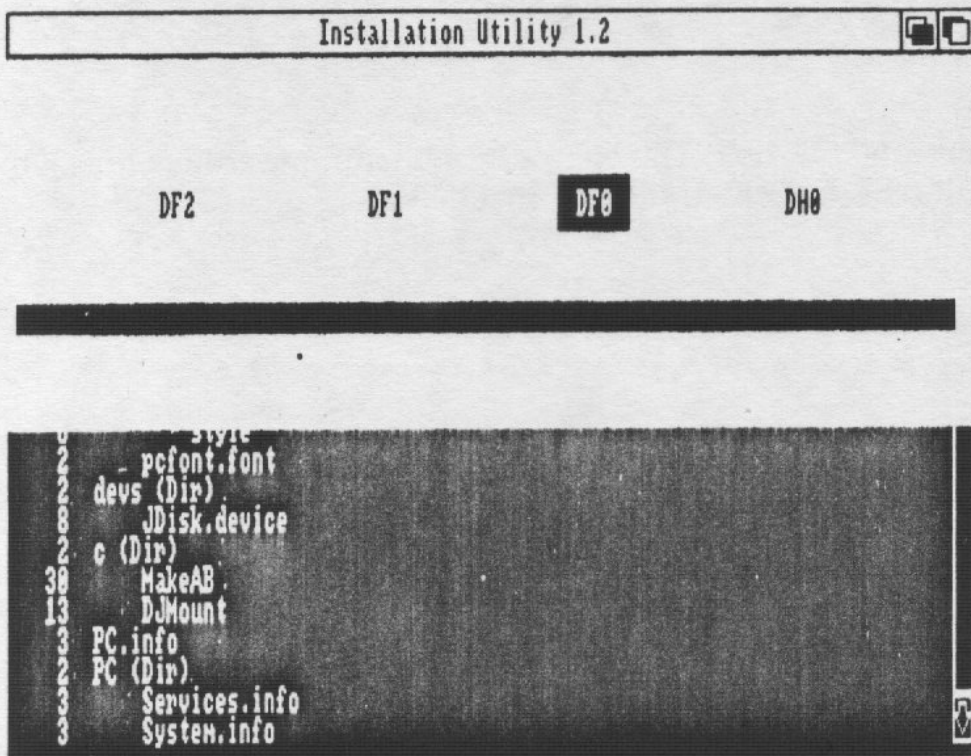
5. A few preliminary messages appear on the Installation screen, and then a list of all the files on the Install disk is displayed. Note the checkmarks in front of some filenames. These checkmarks indicate the default file choices for installation.



6. Click on the OK box. The computer will automatically choose the default (checkmarked) files for installation.



7. Next, a requester appears, asking you to INSERT the disk to be used for the PC Workbench in one of the floppy drives, and to SELECT the drive in which the disk is being inserted. Select a drive and click on the OK box in the requester. *(If you have a hard disk you can select it as the drive on which the files will be installed.)*

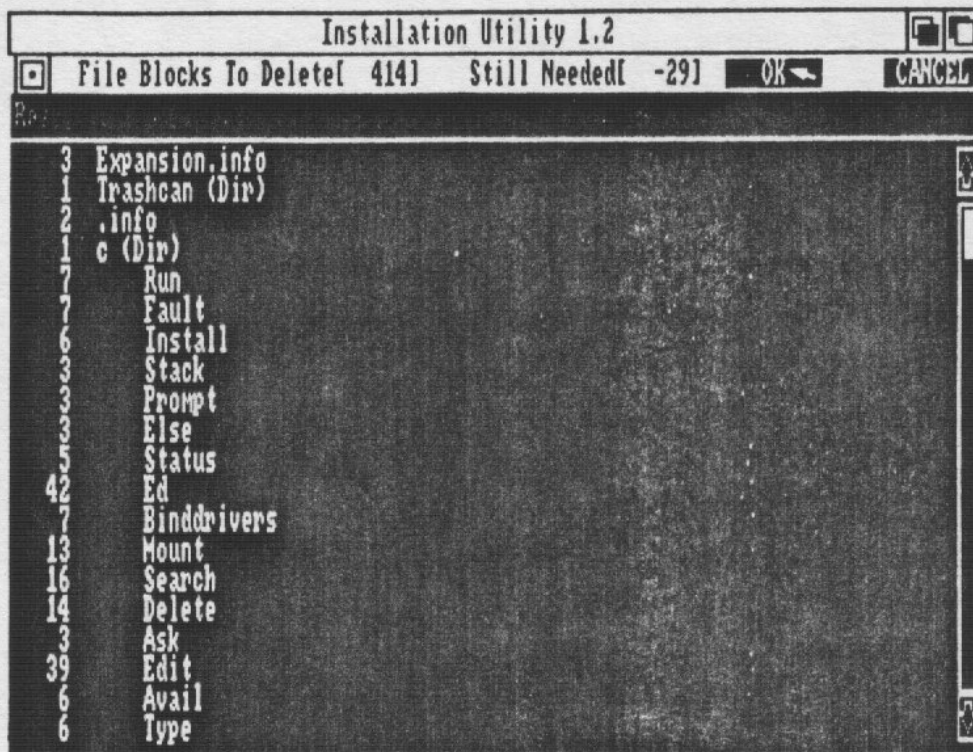


Note: You can click on the CANCEL box in the requester if you make a mistake or change your mind.

- When you select the OK box in the requester, a message tells you how many blocks must be deleted to make room for the PC files that were selected in Step 6. A list of all the files on the Workbench is also displayed. *The X in front of some filenames indicates the default choices for deletion. An X in front of a directory indicates that some or all of the files are to be deleted.*

(NOTE: If you have a customized startup sequence, be sure that the files in the S directory are not checked for deletion. In this case you may want to delete some other files instead, such as unneeded printer drivers. See Appendix A for details how to select files for deletion or inclusion.)

- Click on the OK box in the second line of the Installation screen. The computer will automatically delete the default files and copy the remaining Workbench files and the PC files to the new AT Workbench.



When the file copying process is completed, you are returned to the Install window.

You now have a Workbench that includes the software necessary for Bridgeboard PC operations.

CUSTOMIZING YOUR BRIDGEBOARD SOFTWARE

You can use the following procedure to control the process of selecting and transferring the Bridgeboard software from the Install disk to the Workbench.

1. Turn on your A2000 and make copies of your Workbench and PCInstall disks.
2. Reboot your A2000, using the new Workbench copy or the PCInstall disk.
3. If the PCInstall disk is not already in a drive, insert and open it now.
4. When the PCInstall window appears, select one of the BridgeInstall icons.

Note: As noted in the default procedure, there are a number of installation icons in the PCInstall window. Choose the appropriate icon for the custom installation you want to do.

The screen shown on page 25 will appear.

5. Once you select the installation that matches your computer setup, a few preliminary messages appear near the top of the Installation screen, and then a list of all the files on the Install disk appears.
6. Note the checkmarks in front of some filenames. A checkmark (or lack of a checkmark) indicates the default file status, as follows:
 - Any file with a checkmark will be selected for installation.
 - Any file without a checkmark will not be copied to your new Workbench disk.

You can toggle a checkmark on or off by moving to the filename line and clicking on the left mouse button.

7. You can make your own file selection by following these guidelines:
 - If you agree with the default status of a given file, do nothing. The file will be selected or ignored automatically, depending on whether or not it is checkmarked.
 - If you want to change the status of a file, move the cursor to the line on which the filename appears and click once on the left mouse button. The status will change to the opposite of what it was.

If you change your mind about a file's status, just click on the left mouse button until you get the proper status (checkmark or no checkmark).

You can scroll through the list of filenames by using the vertical scroll bar on the right side of the Installation screen.

8. When you have selected the files you want, click on the OK gadget near the top of the Installation screen . A message appears telling you that the files are being copied to the RAM disk.
9. Next, a requester appears on the screen, asking you to INSERT the Workbench disk copy to be used for the PC Workbench, and to SELECT the drive in which the disk is being inserted. When you have made your drive selection, click on the OK box in the requester.

Note: You can click on the CANCEL box if you make a mistake or change your mind.

10. When you select the OK box in the requester, a message tells you how many blocks must be deleted to make room for the PC files that were selected for installation in Step 6. A list of the files on the Workbench disk is also displayed; the list includes the number of blocks occupied by each file.

11. Note the X that appears before some filenames. An X (or lack of an X) indicates the default file status, as follows:

- Any file with an X will be deleted.
- Any file without an X will be selected for installation.

As with the checkmarks used with the PC files, you can toggle an X on or off by moving to the filename line and clicking on the left mouse button.

12. Select the Workbench files to be deleted or installed by following these guidelines:

—If you agree with the default status of a given file, do nothing. The file will be deleted or left undisturbed automatically, depending on whether or not it is marked with an X.

—If you want to change the status of a file, move the cursor to the line on which the filename appears and click once on the left mouse button. The status will change to the opposite of what it was.

Again, if you change your mind about a file's status, just click on the left mouse button until you get the proper status (X or no X). You can scroll through the list of filenames by using the vertical scroll bar on the right of the Installation screen.

(NOTE: If you have a customized startup sequence, be sure that the files in the S directory are not checked for deletion. In this case you may want to delete some other files instead, such as unneeded printer drivers.)

13. As you are selecting and deleting files, a running total of how many blocks have been selected and how many are still required to be deleted appears on the second line. You must continue to delete files until the "Still Required" value on this line reaches a negative value before the actual file deletion can be performed.
14. When you finish selecting the files to be deleted, click on the OK gadget near the top of the Installation screen. A message appears telling you that the selected files are being copied to the new PC Workbenchdisk.

Note: You can click on the CANCEL box near the top of the screen if you make a mistake or change your mind.

When the file copying process is completed, the PCInstall window reappears on the Workbench screen. *You now have a customized Workbench disk that includes the software you have chosen for your Bridgeboard PC operations.*

SETTING THE BRIDGEBOARD MEMORY WINDOW

After you have installed the Bridgeboard software and *before you attempt to load MS-DOS software*, you **MUST** set the memory window for your Bridgeboard model, as follows:

- Boot the Amiga with the new PC Workbench that you have just created and double click on the PC drawer icon.
- Double click on the PCPrefs icon to open PCPrefs.
- Use the mouse to select the correct memory window value in PCPrefs for your Bridgeboard model. **Do this even if the proper memory window is already selected!** The correct values for the Bridgeboard models are as follows:

A2088 XT Bridgeboard and Sidecar = E000

A2286 AT Bridgeboard = D000

- Click on the Save gadget to make the selection permanent.
- ReBoot the Amiga using Ctrl-Amiga-Amiga.
- Open the PC Workbench and the PC drawer. Then double click on the PC Mono icon.

When the PC boots you should see the message

Janus Handler Version x.xx

Janus Library Version xx.x

*You **MUST** see this message on the PC screen for the Janus (Bridgeboard) software to function properly!* If you do not see the message check that the memory window in PCPrefs is set to the proper value for your model Bridgeboard. (See Chapter 4 for information on using PCPrefs.)

4. GETTING STARTED WITH THE BRIDGEBOARD PC

Note: Before you try to use the Bridgeboard, be sure all equipment is properly installed and connected, including any internal or external disk drive(s) you will be using with the Bridgeboard.

This chapter gives the step-by-step instructions for loading MS-DOS on the Bridgeboard in a normal session, describes the PC Mono and PC Color screen displays available with the Bridgeboard, and tells how to use the icons in the drawers of the PC window.

THE KEYBOARD

You communicate with PC programs through the Amiga keyboard. All of the functions on a PC-AT keyboard are available on the A2000 keyboard. However, some keys on the A2000 keyboard are located in different positions than on the PC-AT keyboard. If a key is defined differently for Bridgeboard use, the specific PC key designation is shown on the front of the key. See the *MS-DOS User's Guide* for information on keys that have special uses in MS-DOS.

STARTING MS-DOS ON THE BRIDGEBOARD

How you start up MS-DOS depends on whether you have installed the Bridgeboard PC files on a 3.5 inch Workbench floppy disk or on a hard disk. The methods for starting MS-DOS with each type of disk are described in this chapter.

LOADING MS-DOS FROM A FLOPPY DISK

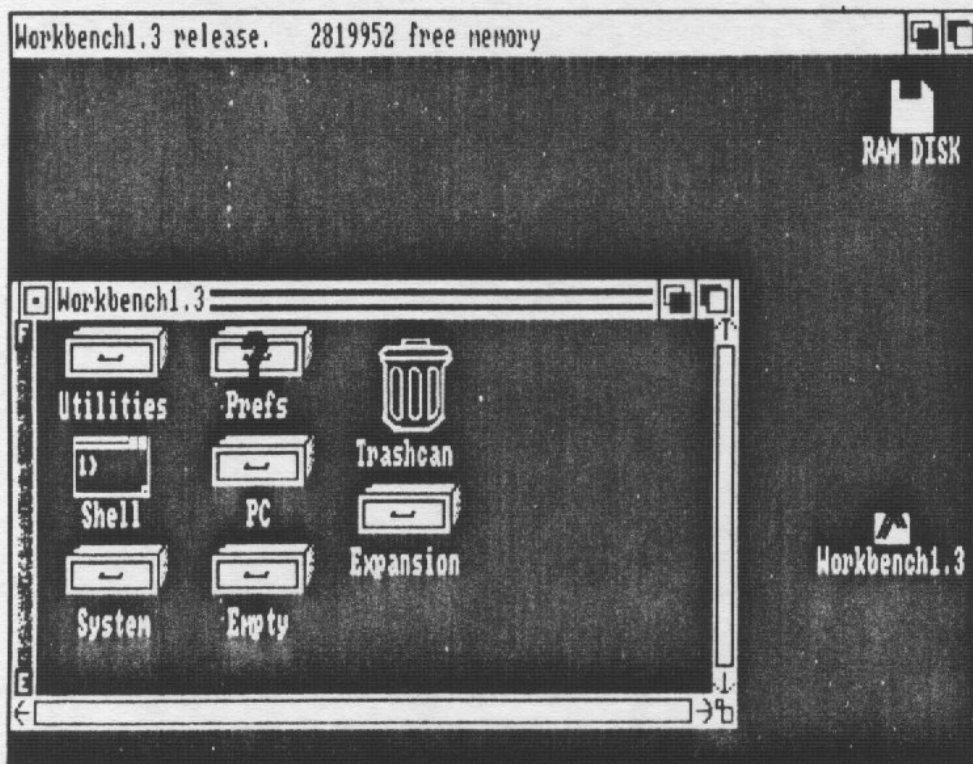
The following description assumes that you are beginning your computing session from a cold start—that is, with the computer turned off—and are booting from a floppy disk. However, you can boot MS-DOS at any time. If the Amiga is running, you can just skip to Step 3 below and insert the PC Workbench disk; it is not necessary to turn off and reboot the Amiga to load MS-DOS.

1. Insert the MS-DOS system disk in the 5.25 inch drive that you installed in the A2000 Main Unit.
2. Turn on the Amiga and wait for the screen to ask for the Workbench disk.

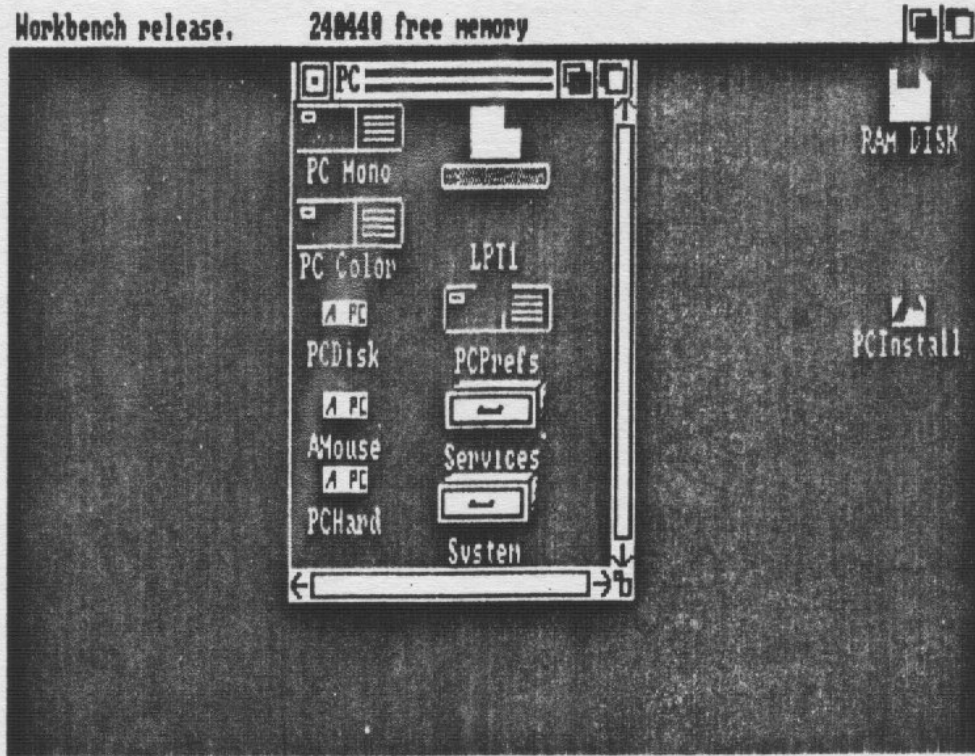
3. Insert the special PC Workbench disk (the one you created with the Install program) into drive df0: (the built-in 3.5 inch disk drive in the Amiga 2000).

NOTE: You should make a copy of the Bridgeboard Workbench and all other Bridgeboard disks; use the copies for everyday operation and store the originals in a safe place.

4. When the PC Workbench disk icon appears, double-click on it and the following Workbench window will appear:



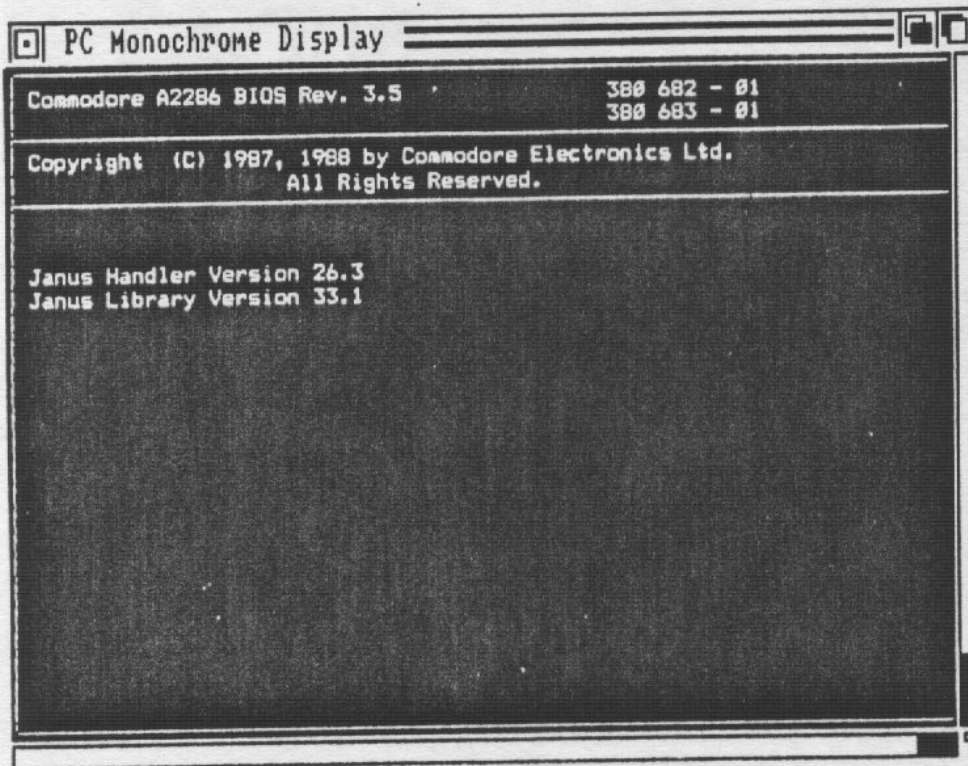
5. Double-click on the PC drawer in the window. The following window will be opened:



Nine icons are displayed in this window: *PC Mono*, *PC Color*, *LPT1*, *PCDisk*, *PCPrefs*, *AMouse*, *PCHard*, *Services* and *Systen*.

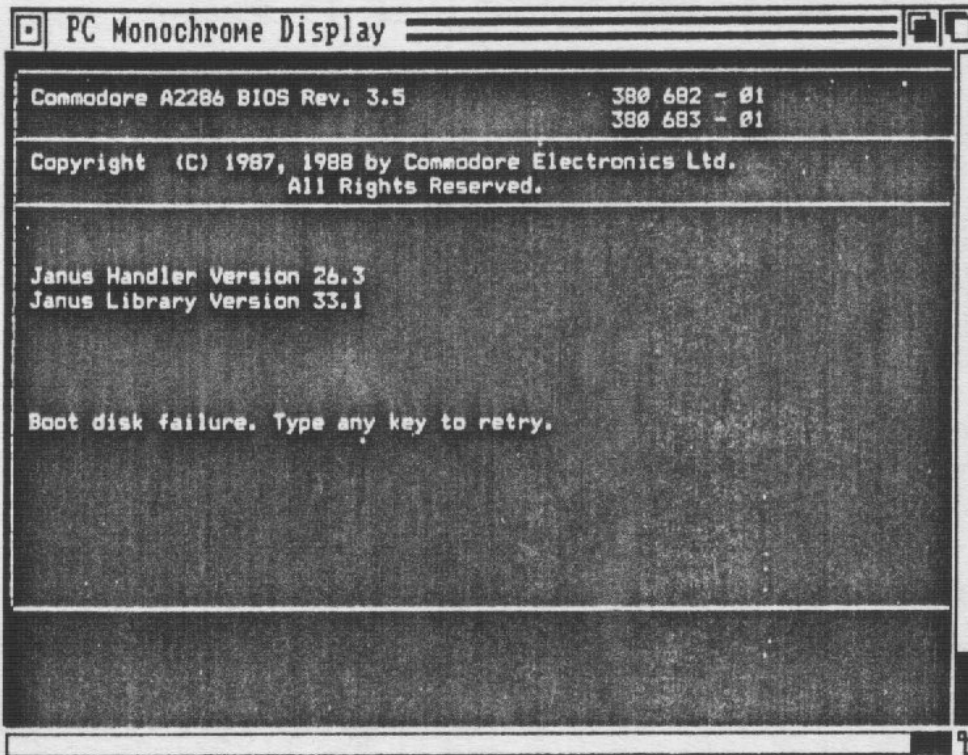
6. Double-click on the PC Mono icon. A window will appear on the Workbench screen showing typical PC power-up messages and memory test results.

Note: If your Bridgeboard is jumpered to Color display, the PC Mono window will be blank. Close the PC Mono window, and double-click on the PC Color icon.



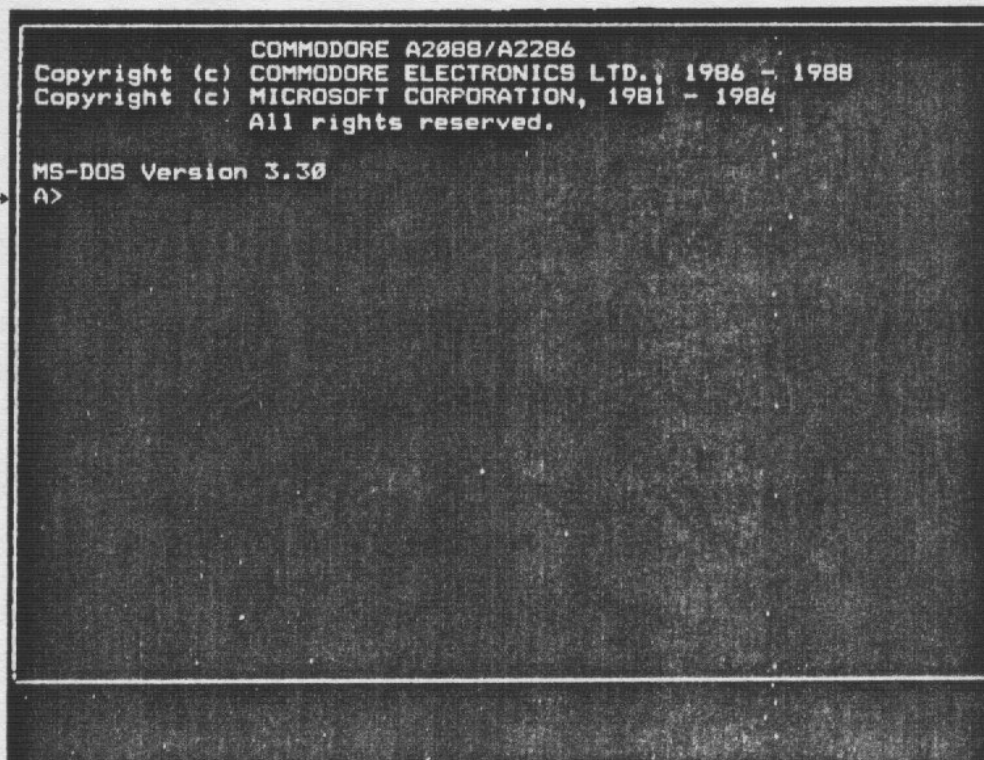
(If at this point you get a message indicating that the system has failed to find the MS-DOS disk, check to see that the MS-DOS system disk is in the drive. If the drive is empty, insert the disk now and press any key to continue.)

Message
indicating
MS-DOS
disk
not inserted



7. The screen will then display the MS-DOS prompt:

MS-DOS
prompt



You can then start using MS-DOS commands, run an application program, etc. If you are not familiar with MS-DOS procedures, see the *MS-DOS User's Guide/User's Reference* manual. If you will be using an application program, the program manual should give you detailed instructions for loading and running the program.

LOADING MS-DOS FROM A HARD DISK

If you are using a hard disk, **first make sure the MS-DOS System disk is NOT in the 5.25 inch PC drive!** The system will always check that drive first; if an MS-DOS disk is found in the drive, the system will boot from that disk rather than from the hard disk. When the Workbench screen appears, open the Workbench, open the PC drawer, select the icon for whichever type of PC display you want to use—monochrome or color—and wait for the initial PC screen display to appear. The C> prompt will be displayed.

Once the PC screen display appears with the MS-DOS prompt (A> or C>) showing, you can operate the Bridgeboard like a standard PC-XT® (if you have installed an A2088 Bridgeboard) or a PC-AT® (if you have installed an A2286 Bridgeboard).

ABOUT HARD DRIVES

Hard drives can be used with the Amiga/Bridgeboard combination in a wide variety of ways. You can use a PC hard drive as an Amiga hard disk, and you can use an Amiga hard disk as a PC drive—you can even boot the PC off of it.

You can also create *pseudo* or *virtual* hard drives by using the AutoBoot system software, which allows the Bridgeboard to use an Amiga file as if it were a PC hard drive. On the Amiga side the file can be located on any Amiga device and directory you choose. To the PC, the Amiga file appears as a normal PC hard drive. The storage capacity of the PC pseudo hard drive is limited to the space available for the Amiga file. Once created, an AutoBoot hard drive can be used exactly like an actual PC hard drive: it can be partitioned with the FDISK command, formatted with the FORMAT command, and can be set up to boot the PC at power up.

Appendix B provides step-by-step instructions on how to use the AutoBoot system software. Appendix C tells how to set up MS-DOS virtual drives on any Amiga disk resource. Appendix E provides information on installing a true PC-side hard disk.

Note: If you have a true PC hard drive and controller installed (that is, a hardware drive and a controller installed in one of the PC expansion slots), AutoBoot will automatically be disabled!

WHAT TO DO IF YOU HAVE A PROBLEM

If the system does not respond at all or if a "library open failure" message appears on the screen, most likely the hardware is at fault. Check to make sure you followed the installation procedures correctly and check all cables and connectors. If the hardware is functioning properly you should see the MS-DOS A> prompt in the MS-DOS screen display.

Reboot the PC by holding down the CTRL-ALT-DEL keys simultaneously. You should see a screen containing a Commodore copyright notice, a ram test, some messages, and then the following lines:

Janus Handler Version x.xx
Janus Library Version xx.x

IF YOU DO NOT SEE THIS MESSAGE DO THE FOLLOWING:

1. Open the PC drawer and double click on the PCPrefs icon. Select the proper memory window for your Bridgeboard model, as follows:

E000 for A2088 XT and Sidecar
D000 for A2286 AT

2. Select the Save gadget in PCPrefs. After PCPrefs exits, reboot the Amiga with the PC Workbench by holding down the CTRL-AMIGA-AMIGA keys simultaneously.

Your Bridgeboard should now be functioning and you can load and use MS-DOS by booting with the PC Workbench and opening the PC drawer in the PC Workbench window.

ABOUT THE DISPLAY MODES

The Bridgeboard emulates two standard IBM PC® display modes: MDA (monochrome text), and CGA (color text and graphics). The PC Mono and PC Color icons correspond to these two display modes. Here's a summary of each mode:

PC Mono Mode

PC Mono mode (equivalent to IBM MDA mode) can display text only. On a standard IBM PC, the MDA monochrome mode is normally limited to a text display of green or amber lettering on a black background, or vice-versa. In the Bridgeboard PC Mono mode, however, you can use two or four colors for display. The color of the text, the background and intensified color can be changed independently of each other. Any color from the Amiga palette of 4096 colors can be used. Colors can be changed using the Color option in the Display menu of the PC window (see the next chapter for details).

If you choose to use four colors for the PC Mono display (the same number of colors used in the Workbench screen), the PC display appears as a window on the Workbench screen. If you choose to use only two colors, the PC Mono display will move to its own screen.

PC Color Mode

PC Color mode (equivalent to the IBM CGA mode) can display both text and graphics. Text can appear in two, four, eight or sixteen colors, while graphics can utilize two or four colors. In PC Color mode the default number of text colors is sixteen, which of course cannot be displayed on the four-color Workbench screen; therefore, for the default Color display a new screen is created. However, as with the PC Mono mode, you can use the Number of Text Colors menu option to modify the PC screen colors. This can allow you to select four colors and thus be able to open a PC Color window on the Workbench screen.

Selecting the icon for either of these two modes is comparable to turning on a PC monitor. The difference is that a standard PC requires a separate monitor for each display mode, while the Amiga Bridgeboard system can create windows and display screens that enable both display modes to appear on a single monitor, at the same time.

Some IBM-PC applications support only one display mode (either color or monochrome). Some programs may support both modes. The instructions for the particular program will make it clear which display mode to use.

Selecting the PC Mono Display Mode

At power-up, the Bridgeboard PC is automatically set to the default display mode (factory set to mono). However, you must *select* this mode

in order for a display to appear. Follow this procedure to select PC Mono mode when you first power up or reboot:

1. Open the Bridgeboard Workbench PC drawer (if it is not already open).
2. Double click on the PC Mono icon.

The PC Mono screen will then appear.

Selecting the PC Color Display Mode

On power-up or reboot you can select a PC Color display by following this procedure:

1. Open the Bridgeboard Workbench PC drawer (if it is not already open).
2. Double click on the PC Mono icon.
3. When the screen for PC Mono mode appears:
 - a. Type:

MODE CO80 <RETURN>

Note that you must type the letters CO, followed immediately by the numerals 80 (no space).

- b. Click on the Close gadget to close the PC Mono window.
4. Double click on the PC Color icon in the PC drawer window.

The PC Color screen will appear with the usual MS-DOS prompt, and you can begin entering commands.

Returning to Monochrome Display

If you are in PC Color mode and want to return to the PC Mono display, follow this procedure:

1. Type:

MODE MONO <RETURN>
2. Click on the Close gadget to close down the PC Color window.
3. Double click on the PC Mono icon.

Note: Most PC software packages include a command to activate the appropriate display mode for that package.

USING PCPREFS

PCPrefs activates the Bridgeboard hardware which allows either the mono or color displays (or both) to be shown on the Amiga monitor, and activates the default memory control settings built into the Bridgeboard hardware. These settings are:

- E000 for the A2088 Bridgeboard or Sidecar
- D000 for the A2286 Bridgeboard

You can use PCPrefs to change the location of the address sector for the RAM used to interface between the Amiga and the Bridgeboard, or to disable emulation of either display mode if a display adapter card is to be used with a second monitor.

Using PCPrefs, you can change these default settings for the current session only, or you can save the changed settings to the PC Workbench disk as the new default settings. In most cases there will be no need to change the default settings; *it is therefore recommended that you make no attempt to alter the standard default settings provided by PCPrefs, unless you are using a second monitor and display adapter.*

The default power-up display settings (monochrome, 80 column) can also be changed by resetting jumpers on the Bridgeboard; this is described in Appendix H.

USING LPT1 TO ACCESS THE AMIGA PARALLEL PORT

The third PC icon, LPT1, is the MS-DOS acronym for *Line Printer #1*. Selecting this icon temporarily assigns the Amiga parallel port for Bridgeboard use with a PC-compatible printer. While the port is assigned to the Bridgeboard, the Amiga side does not have access to the port (and vice-versa).

When you select the LPT1 icon, the Amiga checks whether the parallel port is in use by an Amiga-side application. If the port is not in use by the Amiga side, a title bar appears on the screen, telling you the parallel port has been allocated to LPT1 on the PC side.. Once assigned to LPT1, the parallel port is used exclusively by the PC side until you select the Close gadget on the LPT1 title bar. At that point, control of the parallel port is returned to the Amiga side.

NOTE: If you select the LPT1 icon and the parallel port is in use by an Amiga-side application, you will receive an error message indicating that the port is unavailable to the Bridgeboard.

USING PCDISK

PCDisk must be opened if you want to use certain special programs for the creation of virtual drives and for Amiga/Bridgeboard file transfer operations. Note that no window appears when you open PCDisk, but the icon changes color.

You must open PCDisk to use the AutoBoot program and the JLink program that allow you to create virtual drives on any AmigaDOS disk volume, including floppy disks, RAM disks and hard disks. (See Appendix B for details on AutoBoot and Appendix C for details on JLink.)

You must also open PCDisk if you want to use the ARead and AWrite programs to transfer files between MS-DOS on the PC side and AmigaDOS on the Amiga side. (See Appendix D for details.)

PCDisk can be opened from the Amiga side by double-clicking on the PCDisk icon in the PC drawer or by using the following command from a CLI:

```
run > nil: PC/PCDisk
```

USING AMOUSE

AMouse lets you use a mouse with the Bridgeboard. You can use AMouse to change the mouse port assignments for both the PC and Amiga sides.

AMouse can be started from the Amiga side by double-clicking the AMouse icon in the PC drawer or by using the following command from a CLI:

```
run > nil: PC/AMouse
```

When started, AMouse uses the right mouse (joystick) port for the PC Mouse. If you want to use two mice, insert the second mouse into the right port. To use just one mouse, use the combination LEFT AMIGA Key + P to switch the ports. This places the PC mouse on the left and Intuition (the Amiga) on the right port. To switch the Intuition mouse back to the left port just use the combination LEFT AMIGA Key + P again. AMouse tells you which port the PC mouse is on by writing a comment into the title bar of all windows whose titles start with "PC".

AMouse can be started from the PC side by typing:

```
AMouse <Return>
```

at the MS-DOS command level or by adding the line "AMouse" to your AUTOEXEC.BAT file. *The PC AMouse will not be activated unless the Amiga AMouse is running.* If the Amiga AMouse is not running, the PC Amouse will output a message to this effect and wait until you start

AMouse on the Amiga, or until you press a key (while the PC Window is active).

For details on using AMouse see Appendix J. This appendix includes important information on using Amouse with popular application programs and programming environments like MS-Windows®, MS Mouse®, Excel®, Gem®, and WordPerfect.

USING PCHARD

PCHard can be used to reset the PC to a power up condition. This program is very useful should the PC ever become severely locked up, i.e., if *Ctrl-Alt-Del* will not work. This program may not always work. If the PC resets but still fails to work properly it may be necessary to reboot the Amiga.

To invoke PCHard from a CLI, type:

```
PC/PCHard <Return>
```

To invoke PCHard from the PC Workbench, double click on the PCHard icon in the PC drawer.

USING SERVICES

The Services drawer contains TimeServ, which sets the PC system's date and time by reading the date and time from the Amiga's real-time clock/calendar. To run TimeServ from a CLI, type:

```
run > nil: PC/Services/TimeServ <Return>
```

To run TimeServ from the Workbench, double click on the TimeServ icon in the Services drawer.

ABOUT SYSTEM

The System drawer contains certain system files not usually accessed by the user, plus the ABoot.Ctrl file used in the AutoBoot procedure described in Appendix B.

OPENING A PC WINDOW FROM CLI

If you prefer, you can use an AmigaDOS CLI to open a PC window, rather than using a PC Mono or PC Color icon from the Workbench. (See the *Introduction to the Amiga 2000* manual or *The AmigaDOS Manual* for information on opening and using a CLI.)

For a monochrome display, type:

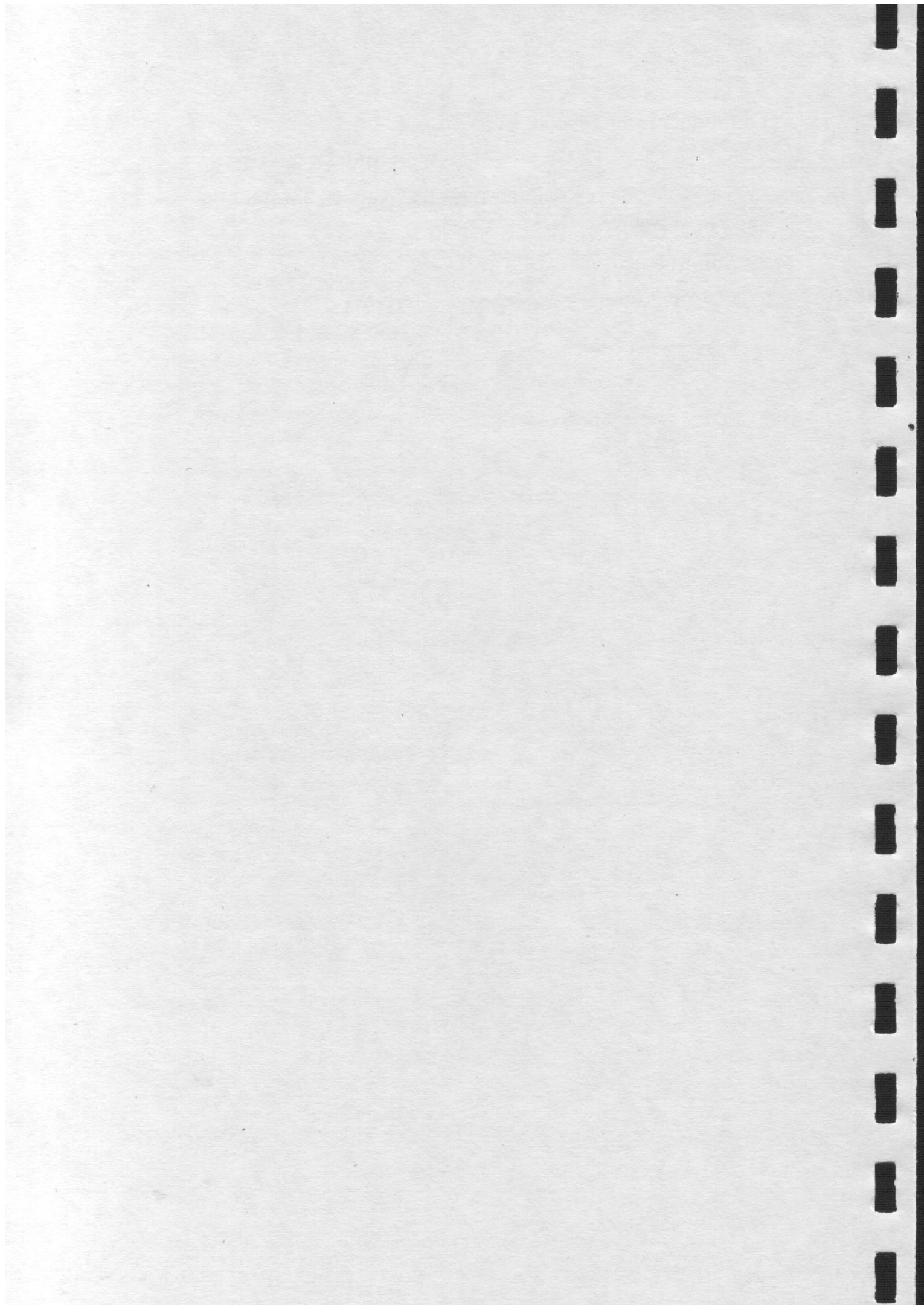
```
RUN PC/PCWINDOW MONO <RETURN>
```

or, since PC Mono is the default mode, you can simply type:

```
RUN PC/PCWINDOW <RETURN>
```

For a color display, enter:

```
RUN PC/PCWINDOW COLOR <RETURN>
```



5. CONFIGURING THE A2286 BRIDGEBOARD WITH THE SETUP UTILITY

The A2286 has a special Setup utility that allows you to give the system detailed information on your Bridgeboard configuration. Once MS-DOS has finished booting and the MS-DOS prompt has appeared, you can call up the Setup utility by holding down the Control and Alt keys and simultaneously pressing the Esc key. The main menu of the Setup utility will appear and will look like this:

Commodore Setup Utility Ver. 1.2		Hard Disk Type Information						
Date	23.08.88	Type	Cyln	Head	Sect	W-pc	L-zone	Size
Time	14:23:08	1	306	4	17	128	305	10 MB
Diskette 1	1.2M	2	615	4	17	300	615	20 MB
Diskette 2	NONE	3	615	6	17	300	615	30 MB
Hard Disk 1	NONE	4	940	8	17	512	940	62 MB
Hard Disk 2	NONE	5	940	6	17	512	940	46 MB
Video	Mono	6	615	4	17	NONE	615	20 MB
Coprocessor	NONE	7	462	8	17	256	511	30 MB
Base Memory	640 KB	8	733	5	17	NONE	733	30 MB
Extended Memory	384 KB	9	900	15	17	NONE	901	112 MB
Base memory found:	640 KB	10	820	3	17	NONE	820	20 MB
Extended memory found:	384 KB	11	855	5	17	NONE	855	35 MB
Use ↑, ↓ to select items		12	855	7	17	NONE	855	49 MB
Use →, ← to select predefined values		13	306	8	17	128	319	20 MB
		14	733	7	17	NONE	733	42 MB
Press <V> to view more hard disk types		15	0	0	0	0	0	0 MB
Press <Q> to abort SETUP		16	612	4	17	0	663	20 MB
Press <E> to exit and update								

A2286 BRIDGEBOARD SETUP UTILITY

As noted on the Setup screen, you can use the cursor keys and the keyboard to define or change the system configuration, as follows:

- Use the up and down cursor keys to move from option to option in the main menu.
- Use the left and right cursor keys to select the predefined entries for each option.
- Use the Q key to abort the Setup program.
- Use the E key on the numeric keypad to exit the program and activate the selections you have made.

Following is specific information about the various Setup menu options.

SETTING THE DATE AND TIME FOR THE A2286 REAL-TIME CLOCK/CALENDAR

One way of setting the date and time in MS-DOS is to use the MS-DOS DATE and TIME commands. However, A2286 Bridgeboard has a real time clock/calendar with a battery backup. This means that once set, the clock/calendar will keep the correct date and time on the PC side of the system even when the computer is turned off. You use the first two lines of the Setup utility to set the real-time clock/calendar, as follows:

Date: Allows you to set the correct date into the real-time calendar. This option does not have any predefined entries; simply enter the date from the keyboard, in the format *dd. mm. yy* (day/month/year).

Time: Allows you to set the correct time into the real-time clock, without invoking MS-DOS. This option also does not have any predefined entries; simply enter the time from the keyboard, in the format *hh:mm:ss* (hour/minute/second).

SETTING THE FLOPPY DISK DRIVE OPTIONS

You can have a maximum of two floppy disk drives configured into your A2286 Bridgeboard. The next two Setup menu options, Diskette 1 and Diskette 2, allow you to tell the system the number and type of floppy drives you have installed. Possible drive types include 360k and 1.2M 5.25 inch drives and 720K and 1.44M 3.5 inch drives. Here's how to set your floppy drive options:

Diskette 1: Predefined entries: None, 360K, 1.2M, 720K, 1.44M.

The 5.25 inch floppy drive connected supplied with your A2286 Bridgeboard is considered Diskette 1. Since this is a high density drive, select *1.2M* for Diskette 1.

Diskette 2: Predefined entries: None, 360K, 1.2M, 720K, 1.44M.

If you **have not** installed a second floppy drive for your A2286 Bridgeboard, select *None* for Diskette 2. If you **have** installed a second floppy drive, select whichever drive type applies to the installed drive.

SETTING THE HARD DISK DRIVE OPTIONS

Hard Disk 1 and Hard Disk 2, the next two options in the SETUP utility, define how many hard disk drives are available and what kind of hard disk drives they are. Hard disk drives are identified by a pre-assigned manufacturer's ID number (1, 2, etc.). This number tells the *drive manufacturer* and the *drive capacity*.

Note: The default values for Hard Disk 1 and Hard Disk 2 entries in the setup utility are NONE and NONE. Essentially, this part of the setup utility is applicable only if you have installed one AT-type hard disk controller.

Here's how to define your hard disk configuration:

Hard Disk 1:

- **Select NONE if you have installed:**

- no hard drive at all, or

- a PC/XT filecard (a filecard has to be placed in one Amiga-PC/XT expansion port), or

- the AutoBoot System Software (see *Using AutoBoot System Software* in Appendix B).

- **If you have installed a PC/AT hard disk/controller, check the Hard Disk Type Information table and enter the number for the hard disk type that matches your hard disk. (If you can't find an exact match, pick the type number for the next smaller drive.)**

Hard Disk 2: If you have installed a second hard disk, use the same procedure as for Hard Disk 1 to identify the type of hard disk being used.

Other Setup Options

Base memory: Tells you what the base memory is.

Factory-set default is 640 KB.

Extended Memory: Tells system how much extended memory is available. **Factory-set default is 384 KB.**

Video: Tells system what the default video is. **Factory-set default is MONO.**

Coprocessor: Tells system if an 80287 Numeric Coprocessor (NCP) is installed. **Factory-set default is NONE.** Select **INSTALLED** if you have installed an 80287 Numeric Coprocessor (see Appendix F for information on using an 80287 Numeric Coprocessor with an A2286 Bridgeboard).

BOOTING MS-DOS

When you have completed answering the prompts for the Setup program, the computer boots MS-DOS from the System disk in drive A:. The screen next displays a message telling which MS-DOS version is running on the Bridgeboard; then the MS-DOS prompt appears, as follows:

A>

When this prompt appears, MS-DOS is waiting for you to tell it what to do. See Chapter 4 for information on loading MS-DOS; for complete details on how to use MS-DOS, see the *MS-DOS User's Guide/User's Reference* manual included as part of the Bridgeboard package.

CHANGING YOUR SETUP SELECTIONS

You can recall the Setup program to examine or change your selections by pressing CTRL-ALT-ESC.

6. THE BRIDGEBOARD PC DISPLAY

This chapter discusses the characteristics and capabilities of the Bridgeboard display windows and tells how to use the on-screen Bridgeboard menus to set or alter these characteristics.

CHARACTERISTICS OF THE PC WINDOW

A Bridgeboard PC window, when full-sized, covers an 80 column by 25 line area and, depending on the display mode, can display up to sixteen colors. You can modify various elements of the Bridgeboard PC display (e.g., borders, window size, number and shades of colors, number of windows, display task priority) by using the options of the PC screen menus.

USING THE PULLDOWN MENUS OF THE PC WINDOW

There are three menus available on the main menu bar at the top of the Bridgeboard PC Window screen :

- Project
- Display
- Edit

Menus and options are selected in the same way that they are selected for any Amiga window.

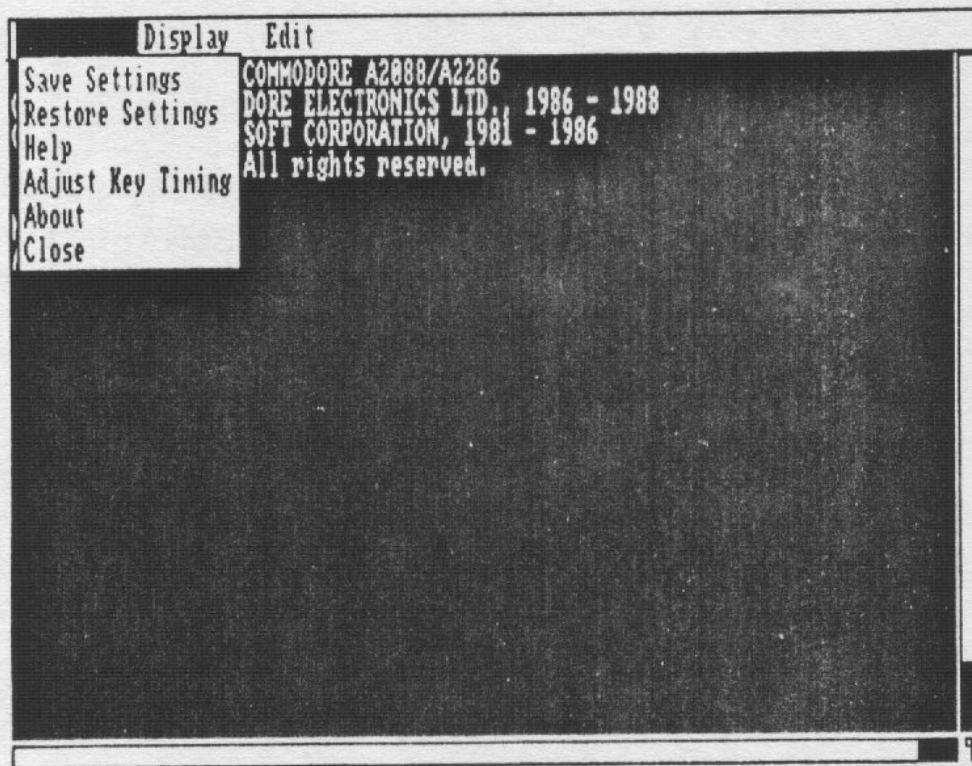
The options apply to whichever type of Bridgeboard window display you've selected: Mono or Color. There are some minor differences among the options, depending on the display mode. For example, Mono mode allows a maximum of four colors, while Color mode allows as many as sixteen colors.

The following pages tell how to use the three main PC screen menus and options.

Note: To obtain the Break function in PC operations, use the CTRL/ ScrollLock key combination.

Project Menu Options

The Project menu has six options, as shown below:



Save Settings—After you have configured the display to your liking (by using the Color option of the Display menu to make color selections), you can use this command to permanently record these settings on the Bridgeboard system disk. Thereafter, whenever you boot the Bridgeboard system, your selected display colors will automatically be used.

Restore Settings—This option restores the color display to the settings that are currently saved on disk—either by you, or in the form of the factory defaults.

Help—This provides an additional window giving brief information and help on how to use a number of the Bridgeboard features.

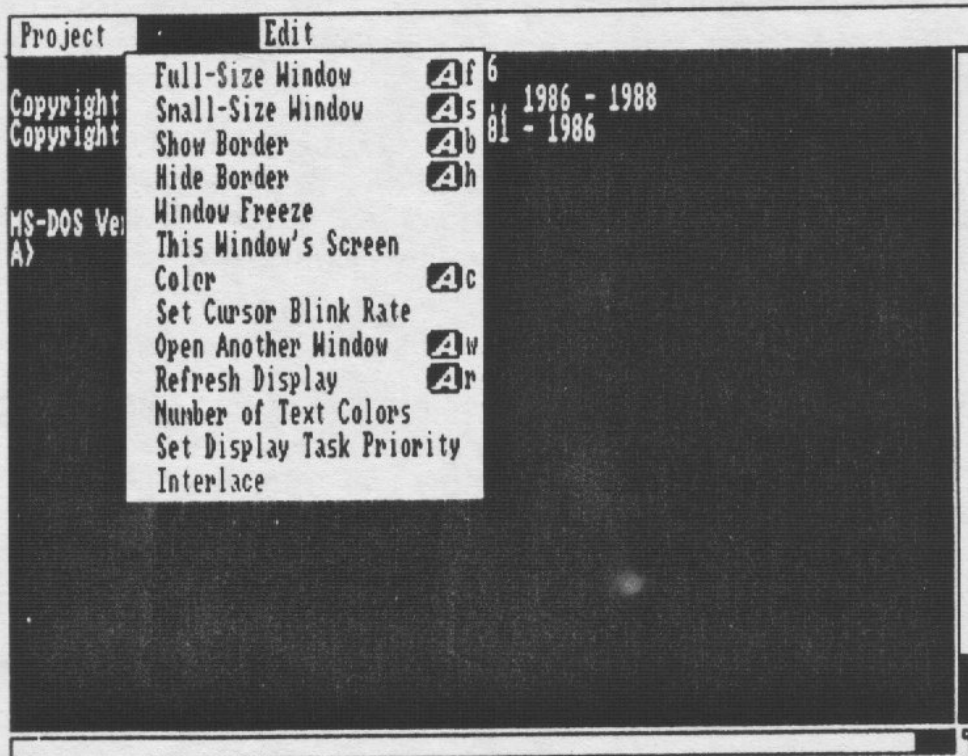
Adjust Key Timing—This allows you to adjust the speed at which the keyboard reacts to keys being pressed.

About—This identifies the author and version of the Project Menu programs.

Close—Selecting this option is the same as selecting the Window Close gadget in the upper left-hand corner of the screen (i.e., this option closes a Bridgeboard window).

Display Menu Options

The Display menu has thirteen options: *FULL-SIZE WINDOW*, *SMALL-SIZE WINDOW*, *SHOW BORDER*, *HIDE BORDER*, *WINDOW FREEZE*, *THIS WINDOW'S SCREEN*, *COLOR*, *SET CURSOR BLINK RATE*, *OPEN ANOTHER WINDOW*, *REFRESH DISPLAY*, *NUMBER OF TEXT COLORS*, *SET DISPLAY TASK PRIORITY*, and *INTERLACE*. Each option is described below.



Full Size—causes the current active window to be sized to 80 columns by 25 lines. The borders, if visible, become hidden automatically.

Small Size—reduces a full-size window to its last less-than-full size dimensions and locations.

Show Border—makes the window borders visible.

Hide Border—makes the window borders invisible. (You can still use the menus even if the borders are hidden.)

Note: You can also show or hide the borders simply by positioning the pointer inside the PC Window and double-clicking on the left mouse button. This resizes the window and will change the current border setting. For example, if the borders are visible, they become invisible and vice-versa. (The double-click method may not work with certain PC programs. In these cases resize the window with the window sizing gadget.)

Window Freeze—lets you stop and hold the contents of an active PC window. Turning Window Freeze on “freezes” the processing of a PC window. To return control of that window to the PC, simply turn Window Freeze off. When used in combination with the Open Another Window option, Window Freeze lets you view the contents of one window while working in another.

Note that MS-DOS is not a multi-tasking environment, since only one PC application may be active at a time. However, the multiple window and window-freeze capabilities of the Bridgeboard allow you considerable leeway in manipulating displays within a single program.

This Window's Screen—controls whether the PC Window is displayed on the Workbench screen or on a newly created screen (the PC screen). Normally, whether you are in either PC Mono or PC Color, if you have your screen set to four colors, the PC Window will share the Workbench screen. However, you can use “This Window's Screen” to move your PC window to its own screen if you so desire.

If you are in PC Mono mode and the number of text colors is set to two, or in the PC Color mode with the number of text colors set to two, eight, or sixteen, the PC Window will automatically move to its own screen.

Both the Workbench screen and the PC screen work equally well in providing an environment for the PC Window. However, if the PC Window is on the Workbench screen, the Workbench applications are accessed more conveniently.

Color—You can change any of the colors of your display window by selecting the COLOR menu option. A special requester will appear with these features:

In the lower left area of the requester there are rectangles of color, each representing one of the colors of the display. Select one of these rectangles to choose a particular color to be changed. That color then fills the box at the top left of the requester.

To modify the selected color, use the three color sliders (the wide boxes with small rectangles inside) at the top of the requester. The sliders are labeled “R” for red, “B” for blue, and “G” for green (the three components of Amiga color). Whenever you select a color, the sliders reflect the amount of red, green, and blue in the color you've chosen.

To adjust a slider, move the pointer over the slider's *knob* (the small rectangle inside the box), and then hold down the left button while moving the mouse to the left or right. Moving the mouse to the left means that less of that particular color component will be added to the final color; moving the mouse to the right adds more of that

component. For instance, moving the "R" knob all the way to the left removes all red from the current color. Moving the knob all the way to the right adds as much red as possible.

In the lower right corner of the requester there are three command boxes:

COPY—select to copy the current color to a selected rectangle. When you click on Copy then click on the target color rectangle, the selected color replaces the existing color in the target rectangle.

OK—select to approve the color change. When you click on OK, the color requester is closed and the color change is carried out.

CANCEL—select to cancel any changes you've made. When you click on Cancel, the color requester is closed, and the original colors are restored.

To save a color setting for future use, select **SAVE SETTINGS** from the Project menu. The current settings are then saved on your Bridgeboard Workbench disk. The next time you enter a PC display mode the screen will be set up according to these saved settings.

Set Cursor Blink Rate—(1/2, 1, 2, or 4)—controls how many times per second the cursor will blink.

Open Another Window—You can have multiple windows in either display mode (PC Mono or PC Color). When you select "Open Another Window", control is transferred to the new window. If you wish to freeze the display in the first window you must choose "Window Freeze On" before opening another window. When you select this option, the new window appears as a full-sized window, and is placed over the window you were using. The original window is still there—it's just behind the new one. You can resize the new window to make both windows visible.

Refresh Display—If anything disrupts the display, choose this option to have the entire window redrawn.

Number of Text Colors—(2 Colors, 4 Colors, 8 Colors or 16 Colors)—sets the maximum number of colors for the text.

In PC Mono mode you can select from 2-color and 4-color options. The 2-color option limits the display to foreground and background colors, while the 4-color option adds two additional colors to the display.

In PC Color mode you can select from all four options (2, 4, 8 and 16). These color options are for text only; they have no effect on the graphics display which is always 2 or 4 colors, depending on the type of display created by a particular application.

As a general rule, the fewer colors you use in your display, the faster the computer is able to work. Fewer colors use less of the computer's

memory. Conversely, the more colors you use, the slower the text display and the computer's efficiency. The improvement in performance going from a 16-color to an 8-color display is significant.

If the number of colors of the PC screen is equal to the number of colors of the Workbench screen (i.e., if there are four colors on either a mono or color display), the PC display appears as a window on the Workbench screen. If the number of colors is not equal, the PC display will appear as a window on a newly created screen (the PC screen).

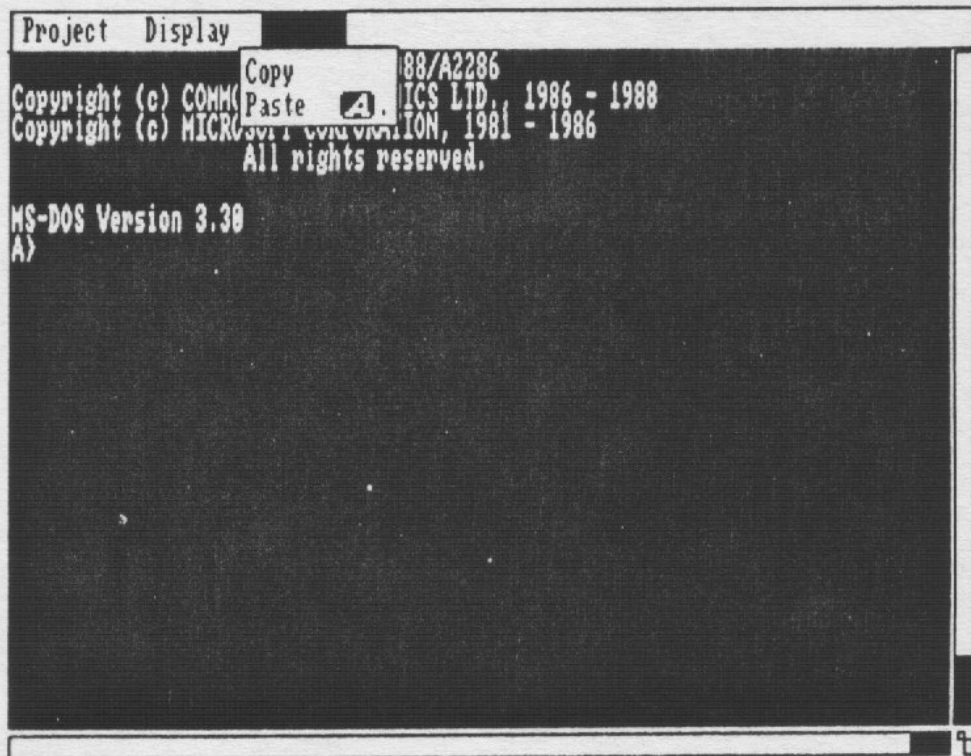
Set Display Task Priority—(+10, +5, 0, -5, -10)—sets the priority in which tasks shown on the display will be performed. The more positive, higher number designates a higher priority. Usually there is no need to alter this option.

All of the Amiga programs—including Bridgeboard programs—run at a specified priority. The Bridgeboard display task runs at priority 0 which is the normal Workbench priority. If the PC display is changing frequently, the Bridgeboard PC display may require a large portion of the system time and resources. If the display priority is set too low, the display may be degraded. If the display priority is set too high, then the performance of other tasks may be affected.

Interlace—(On, Off)—turns the Amiga interlace mode on and off. The interlace mode increases the number of lines displayed on the screen. If you have a high persistence monitor like the Amiga 2080, the display is sharpened when you turn on the interlace. However, conventional monitor displays are not designed to take advantage of the improved resolution afforded by the interlace capability, and turning the interlace on may cause a distracting "flicker." Use of a high resolution, long-persistence monitor will fix this problem.

Edit Menu Options

The Edit menu controls a clipboard, an area in which selected text may be held. This clipboard is the same one used by Notepad on your Amiga Workbench disk, and by some other Amiga applications as well. Its use is explained in your Introduction to the Amiga 2000 manual. With the COPY and PASTE options of the Edit menu, text can be copied from or inserted into (pasted into) the PC window.

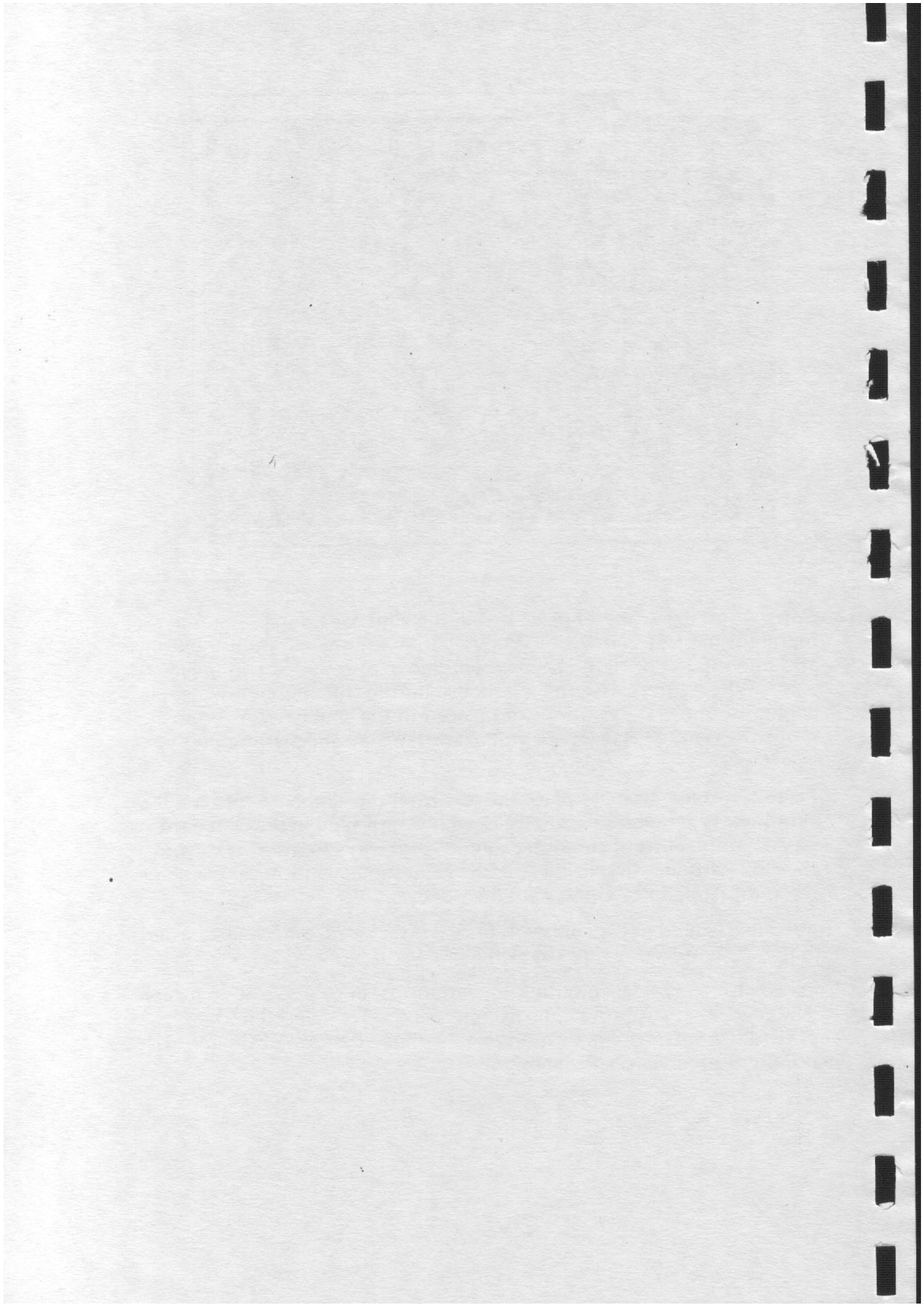


Copy—You use Copy to place text in the clipboard. First, you must highlight the text you wish to copy by pressing the left mouse button and moving left or right. The text you move over appears in reversed color. When you release the left mouse button, the highlighted text is copied from the PC Window and placed in the clipboard. You must move the pointer at least one full character from the starting point to select text.

Paste—You use Paste to place the text from the clipboard into the PC Window. When you select PASTE, whatever is held in the clipboard is pasted at the current cursor location. Other ways to insert text from the clipboard are double-clicking the right mouse button, or pressing the right Amiga key along with the '.' key.

Copied text is held in the clipboard until it is replaced, and can be pasted into the PC window as often as you like.

You can also copy text from the clipboard into Amiga applications, such as Notepad, that support clipboard operations. Text placed in the clipboard from Amiga applications can be moved into the PC window using the Bridgeboard's Paste option.



APPENDIX A: ADDING FLOPPY DISK DRIVES

Note: Make sure that all power to the Amiga and peripherals is turned OFF.

CONNECTING EXTERNAL FLOPPY DRIVES TO THE A2088 BRIDGEBOARD

Connecting one or more external disk drives to the A2088 Bridgeboard is very simple. An external drive may be connected to either the Amiga side or the Bridgeboard side of the system. There is no need to make any changes to the hardware (e.g. change the drive number).

Your Commodore dealer offers two different external drives:

Amiga 1010 — uses 3.5 inch diskettes with a capacity of 360K, 720K or 880K.

Amiga 1020 — uses 5.25 inch diskettes with a capacity of 360K. This unit has its own power supply.

The A1010 is capable of reading either AmigaDOS or MS-DOS formats, depending on the side of the system to which it is connected. For example, if an A1010 is connected to the Amiga side of the system (that is, to the external drive port on the back of the Amiga 2000), you can use it for AmigaDOS disks such as the Workbench and its capacity will be 880K bytes. If it is connected to the Bridgeboard side of the system (that is, to the external drive port on the A2088 Bridgeboard), you can use it for MS-DOS disks, with a capacity of 360 or 720K.

CONNECTING INTERNAL FLOPPY DRIVES TO THE A2286 BRIDGEBOARD

The A2286 Bridgeboard does not have an external floppy drive port like that on the A2088 Bridgeboard. However, you can connect additional floppy drives internally. See Appendix H for a description of jumper locations and functions for floppy disk drives.

See your dealer for details on the available drive types and the proper installation procedure.

APPENDIX B: USING AUTOBOOT SYSTEM SOFTWARE TO CREATE A PSEUDO PC HARD DRIVE

The AutoBoot system software allows the Bridgeboard to use an Amiga file as if it were a PC hard drive. This *pseudo* hard drive is emulated at the PC's BIOS level for 100% compatibility. To the PC, the AutoBoot volume appears as a normal PC hard drive. On the Amiga side the hard drive exists as an AmigaDOS file, which can be located on any Amiga device and directory you choose. The storage capacity of the PC pseudo hard drive is limited to the space available for the Amiga file. Once created, an AutoBoot file can be used exactly like a normal PC hard drive: it can be partitioned with the FDISK command, formatted with the FORMAT command, and can be set up to boot the PC at power up.

Note: If you have a true PC hard drive and controller installed (that is, a hardware drive and a controller installed in one of the PC expansion slots), AutoBoot will automatically be disabled!

SETUP

You set up an AutoBoot volume as follows:

1. Edit your startup-sequence to include the following line after binddrivers:

```
run >nil: sys:PC/PCDisk
```

AutoBoot uses PCDisk to access the Amiga file; therefore, PCDisk must be running when the Bridgeboard PC begins its boot procedure. (See Chapter 5 for more information on PCDisk.)

2. Create the AutoBoot file on the Amiga. To do this, you use the makeab command included with the PCInstall disk. Decide where you want the file to be located and issue the command:

```
makeab drive:directory/filename
```

Makeab will now ask for the number of heads, sectors/track, and number of cylinders to emulate. AutoBoot can emulate any type and size of PC hard drive—even hard drive configurations that do not actually exist!

For example, to set up a 10 Mb PC pseudo hard drive on an Amiga hard drive, you would type the following command :

```
makeab dhO :fakec
```

In response, you would be prompted to specify the parameters for the pseudo hard drive, as follows:

```
enter number of heads : 4  
enter sectors/track: 17  
enter number of cylinders: 306
```


Makeab will now print the size of the proposed hard disk file and ask you to accept it. You can then either go ahead and create the file, or restart and choose different parameters. If you accept the parameters, makeab will generate the file in the proper format for AutoBoot.

Note: Because makeab creates the file *full-sized*, it may take some time to create large volumes.

3. Once the file is created, you must tell the system where to find it. The system looks for the file ABOOT.CTRL in the SYS.PC/System directory. This file should contain the full path-filename of the file you created with makeab. For the example given above, you could use AmigaDOS ED or a suitable editor to create the file SYS:PC/System/Abboot.ctrl. In this file there should be the following line, plus a carriage return:

```
dhO: fakec
```

This is actually the name of the file just created. Save this file; this step completes work on the Amiga side.

Note: You can have multiple AutoBoot volumes and you can switch between them by changing the contents of Abboot.Ctrl. You must reboot the Amiga to have the Abboot.Ctrl change take effect. Only one AutoBoot volume can be active at any one time. You can only assign one AutoBoot volume as the volume from which the PC boots automatically.

USING A PC AUTOBOOT VOLUME

To use a PC AutoBoot volume that you have created, you will first need to boot the PC with the MS-DOS System disk. Then you follow the normal procedure for initializing a PC hard drive, i.e., you execute the FDISK and FORMAT commands.

First, run FDISK on the PC side to partition the pseudo hard drive. In most cases you will want to use the entire disk for the DOS partition. To do this, you select item 1 when the FDISK menu appears on the screen. However, you may use the other options to partition the hard drive in any way you like.

Next, format the pseudo hard drive, using the MS-DOS FORMAT command. *NOTE: IF YOU WISH TO MAKE THE PSEUDO DRIVE BOOTABLE YOU MUST USE THE /S OPTION IN THE FORMAT COMMAND, as follows:*

```
FORMAT C: /S
```

After the hard drive is formatted, remove the floppy MS-DOS disk and reboot the PC. The PC will boot from the AutoBoot volume. You can copy files onto it and use it just as you would use a normal PC hard drive.

NOTE: If your AutoBoot file resides on an FFS (Fast Filing System) partition, you MAY need to add the following line to the FFS partition's mountlist entry:

Mask = 0

Since this will slow down all file access to the partition it is recommended that you create a separate partition for the AutoBoot file.

(See the *Amiga Enhancer Software Version 1.3* manual for information on FFS and Mask.)

APPENDIX C: ADDING VIRTUAL DRIVES TO MS-DOS

The JLink program, included on the PC MS-DOS System Disk, lets you add up to four virtual drives to your MS-DOS system. A JLink virtual drive acts just like a PC drive you would add to your computer, except that all the data (files, directories, etc.) are stored, internally, as one file on any Amiga disk device.

Note: A JLink virtual drive is different from an autobooting virtual hard drive. JLink virtual drives can be used only with MS-DOS, whereas the AutoBoot PC pseudo hard drive can function with other operating systems. See Appendix B for information on installing a PC pseudo hard drive suitable for autobooting.

The JLINK command may be used to create a virtual MS-DOS drive on any AmigaDOS disk volume, including RAM: (RAM disk), floppy drives (DF0:,etc.), or hard disks (DH0:,etc). A hard disk on the Amiga side can thus be shared between Amiga applications and MS-DOS. Unlike sharing a PC side hard disk (see Appendix E), it is not mandatory to partition the Amiga hard drive. The MS-DOS virtual drive is simply a file in the directory specified when the virtual drive is created with the JLINK command.

CAUTION: *to avoid the danger of accidentally erasing this file (which could be very large), it is recommended that you create a separate AmigaDOS partition on your Amiga hard drive and reserve this partition for the MS-DOS virtual drive file. See the Amiga 2090 Hard Disk/SCSI Controller User's Guide for directions on how to set up multiple AmigaDOS partitions on an Amiga hard drive.*

Unless you have the appropriate hard disk, you must insert the PC System Disk into a 5.25 inch disk drive and the PC Workbench diskette into the Amiga's 3.5 inch internal disk drive before running the JLink program. Open the PC drawer on the Workbench, and double-click on the PCDisk icon. *PCDisk must be running in order for the JLink program to work.*

Then open the PC Window and add the following line to the CONFIG.SYS file on the MS-DOS system disk:

```
DEVICE = JDISK.SYS
```

(See the *MS-DOS User's Guide/User's Reference* manual if you need instructions on how to add this line to the CONFIG.SYS file.) Make sure the files JDISK.SYS and JLINK.COM are on your MS-DOS system disk. Reboot MS-DOS on the Bridgeboard by pressing the CTRL/ALT/DEL keys simultaneously. (See the *MS-DOS User's Guide* for more information about rebooting MS-DOS.)

If you simply type "JLink" without any arguments, your screen will show the following display:

VDrive	Status	Linked to
d:		
e:		
f:		
g:		

Before you can use a virtual drive you have to link it with the Amiga file in which the data is going to be stored.

You can create new files to be linked to the virtual drive, and you can also link existing Amiga files to a drive. To link a virtual drive to an Amiga file, use the JLINK command. The syntax of this command is as follows:

```
JLINK n: filename /sw
```

where n is the virtual drive to use, filename is a standard Amiga path specifying a file, and sw is one of the following switches:

- /n – all messages suppressed except errors
- /c:n – create that volume on Amiga side. Here, n is the size in kilobytes
- /u – unlink that volume
- /r – link read only (all write access will fail)

Note: If you do not specify a switch, JLINK will attempt to link to an existing file. If the file does not exist, the link will be unsuccessful. If you use /n with /c, existing volumes are deleted without any warnings.

For example,

```
JLINK e: ram:vd /c:1000
```

This command creates an Amiga file vd in the root directory of the Amiga RAM disk. The file contains the necessary MS-DOS structures like File Allocation Tables and an empty root directory. The **maximum** size of this file is approximately 1000 KB. The file can grow as data is added, but it will never get smaller.

The specified size is the maximum size a volume can grow to. If the number is less than 160, the size is set to 160 kilobytes.

After the file has been created, it is linked (in this example) to the virtual drive e:. If the file already exists, you will be asked if you want to continue. By continuing, you will destroy all previous data stored on that volume.

After the Amiga file vd is created and linked to the MS-DOS virtual drive e:, the display will show:

VDrive	Status	Linked to
d:		
e:	R/W	vd
f:		
g:		

The status of a file will be either R/O, for read only, or R/W, for read and write.

To unlink a virtual drive, specify the MS-DOS drive you want to unlink and the /u switch.

The Amiga files of virtual drives contain no information that could be used on the Amiga side. However, they can be copied, renamed and deleted as usual files. When a file is linked to the virtual drive and written, the AmigaDOS cannot access that file until it is unlinked by JLink.

JLINK Error Messages

JDISK.SYS not installed: The driver JDISK.SYS has not been found at MS-DOS boot time. Check the CONFIG.SYS file.

Amiga Service not available: The program PCDisk is not running on the Amiga side. Double click on the PCDisk icon.

Open File %s failed: The requested Amiga file could not be opened. It either does not exist or is already in use.

Syntax Error: Something is wrong with your command line.

Illegal Switch specified: %c: A switch was given that JLink does not support.

JLink Error: Drive is already linked, unlink first: The drive has a linked file already.

JLink Error: Close Error on virtual volume: This error occurs if you removed the Amiga disk before unlinking the virtual drive on it.

JLink Error: Nothing linked: Attempt to unlink an empty drive.

File %s exists, continue ? [Y/N]: Attempt to create an existing volume. This message is suppressed if /n switch is given. The program continues.

Write Error %X during format on drive %c:/n: This error can occur if the Amiga volume is full or has a problem.

If there are problems accessing a linked volume, the usual MS-DOS error handling takes place. Accessing a drive with no volume linked generates an MS-DOS "Drive not Ready" error.

APPENDIX D: TRANSFERRING FILES BETWEEN MS-DOS AND AMIGADOS

You can transfer files to AmigaDOS from MS-DOS and vice-versa, using two programs included on the 5.25 inch MS-DOS System Disk included with the Bridgeboard. The programs are:

- ARead, which allows you to copy an AmigaDOS file to a PC file
- AWrite, which allows you to copy a PC file to an AmigaDOS file

Note: You must open PCDisk first before using ARead or AWrite, or an error message will appear on the screen. If this happens, return to the Workbench window and double-click on the PCDisk icon. A window does not appear when PCDisk is opened, but the icon changes color.)

Unless you have a hard disk with all MS-DOS commands available, before using either program you must insert the MS-DOS System Disk into the 5.25 inch floppy disk drive (designated as MS-DOS drive A:) and insert the PC Workbench disk (which you created using the Install program) into the Amiga's internal 3.5 inch disk drive (designated Amiga drive df0:). Open the PC drawer on the Workbench, and double-click on the PCDisk icon.

USING AREAD TO COPY FROM THE AMIGA TO THE PC SIDE

AREAD.EXE is a PC program that will allow you to transfer Amiga-DOS files on the Amiga to MS-DOS files on the PC. The command format is:

Aread Amiga-filespec PC-filespec [/b] [/nc] [/cr]

where:

Amiga-filespec Is any valid Amiga file specification such as df0:text, dh0:docs/userdocs/textfile, ram:textfile, etc.

Note: You must include the directory path in the Amiga-filespec. Example: textfile is not a valid Amiga-filespec since no directory path is given.

PC-filespec Is any valid MS-DOS file specification. If no directory path is given the file will be read from the current directory. See the *MS-DOS User's Reference* for a description of valid MS-DOS filespecs.

/b Is an option which if given will disable LF to CRLF conversions. If not given the default is to translate line feeds to carriage return/linefeed pairs and to convert Amiga special characters into their MS-DOS equivalents. This switch is the same as specifying both /cr and /nc. Use this switch when transferring binary files.

/cr Is an option which if given will disable LF to CRLF conversions. If not given the default is to translate linefeeds to carriage return/linefeed pairs.

/nc Is an option which if given will disable conversion of Amiga special characters to their MS-DOS equivalents. If not given the default is to convert Amiga special characters to their MS-DOS equivalents.

The following table lists the Amiga character set and the resulting PC character codes returned if file conversion is enabled.

Amiga Input Char (Hex)	Converted to PC Output Char (Hex)	Amiga Input Char (Hex)	Converted to PC Output Char (Hex)
00-7F	No Conversion	00-7F	
80-A0	7F	B0	F8
A1	AD	B1	F1
A2	9B	B2	FD
A3	9C	B3-B4	7F
A4	7F	B5	E6
A5	9D	B6	7F
A6-A9	7F	B7	F9
AA	A6	B8-B9	7F
AB	AE	BA	A7
AC	AA	BB	AF
AD-AE	7F	BC	AC
AF	FE	BD	AB
		BE	7F
		BF	A8

Amiga Input Char (Hex)	Converted to PC Output Char (Hex)	Amiga Input Char (Hex)	Converted to PC Output Char (Hex)
C0-C3	7F	E8	8A
C4	8E	E9	82
C5	8F	EA	88
C6	92	EB	89
C7	80	EC	8D
C8	7F	ED	A1
C9	90	EE	8C
CA-D0	7F	EF	8B
D1	A5	F0	EB
D2-D5	7F	F1	A4
D6	99	F2	95
D7-DB	7F	F3	A2
DC	9A	F4	93
DD-DE	7F	F5	7F
DF	E1	F6	94
E0	85	F7	F6
E1	A0	F8	ED
E2	83	F9	97
E3	7F	FA	A3
E4	84	FB	96
E5	86	FC	81
E6	91	FD-FE	7F
E7	87	FF	98

Note: The /lcr and /lnc options work independently of one another and either or both can appear on the command line in any order as long as they follow the Amiga and PC filespecs. Therefore it is possible to do CRLF translations while not converting special characters, to disable CRLF and special character translations, etc. Also, a considerable speed increase can be realized by specifying both /lcr and /lnc.

If ARead fails for any reason, an error code will be returned at the DOS error level. You can use the error return in .BAT files to detect and handle any error that might occur.

USING AWRITE TO COPY FROM THE PC SIDE TO THE AMIGA

AWRITE.EXE is a PC program that will allow you to transfer MS-DOS files on the PC side of the Bridgeboard to AmigaDOS files on the Amiga side.

The command format is:

AWrite PC-filespec Amiga-filespec [/b] [/nc] [/cr]

for single file transfers, or:

AWrite PC-wild-card Amiga-Directory-Spec [/b] [/nc] [/cr]

where:

PC-filespec Is any valid MS-DOS file specification. If no directory path is given the file will be read from the current directory. See your *MS-DOS User's Reference* for a description of valid MS-DOS filespecs.

Amiga-filespec Is any valid Amiga file specification such as df0:text, dh0:docs/userdocs/textfile, ram:textfile, etc.

Note: You must include the directory path in the Amiga-filespec. Example: textfile is not a valid Amiga-filespec since no directory path is given.

PC-wild-card Is any valid MS-DOS wild card expression such as *.c, *.* , test.* , test?.c, etc. Consult your *MS-DOS User's Reference* for a complete description of valid wild card expressions.

Amiga-Directory-Spec

Is any valid AmigaDOS directory specification such as ram:, ram:filedir/, df0:s/. Note that a valid directory spec must end in a : or / character. Awrite appends the name of the file being transferred to the directory spec given.

Example: Awrite *.c ram:

If there is a PC file named test.c the output filename will be ram:test.c.

- /b** Is an option which if given will disable CRLF to LF conversions. If not given the default is to translate carriage return/linefeed pairs to linefeeds and to convert Amiga special characters into their MS-DOS equivalents. This switch is the same as specifying both /cr and /nc. **Use this switch when transferring binary files.**
- /nc** Is an option which if given will disable conversion of MS-DOS special characters to their Amiga equivalents. If not given the default is to convert MS-DOS special characters to their AmigaDOS equivalents.
- /cr** Is an option which if given will disable conversion of CRLF to LF. If not given the default is to convert CRLF pairs to LF.

The following table lists the MS-DOS character set and the resulting Amiga character codes returned if file conversion is enabled.

PC Input Char (Hex)	Converted to AMIGA Output Char (Hex)	
00-7F	No Conversion	00-7F
80	C7	
81	FC	
82	E9	
83	E2	
84	E4	
85	E0	
86	E5	
87	E7	
88	EA	
89	EB	
8A	E8	
8B	EF	
8C	EE	
8D	EC	
8E	C4	
8F	C5	
90	C9	
91	E6	
92	C6	
93	F4	
94	F6	
95	F2	
96	FB	

PC Input Char (Hex)	Converted to AMIGA Output Char (Hex)
97	F9
98	FF
99	D6
9A	DC
9B	A2
9C	A3
9D	A5
9E-9F	7F
A0	E1
A1	ED
A2	F3
A3	FA
A4	F1
A5	D1
A6	AA
A7	BA
A8	BF
A9	7F
AA	AC
AB	BD
AC	BC
AD	A1
AE	AB
AF	BB
B0-E0	7F
E1	DF
E2-E5	7F
E6	B5
E7-EA	7F
EB	F0
EC	7F
ED	F8
EE-F0	7F
F1	B1
F2-F5	7F
F6	F7
F7	7F
F8	B0
F9	B7
FA-FC	7F
FD	B2
FE	AF
FF	7F

Note: The /cr and /nc options work independently of one another and either or both can appear on the command line in any order as long as they follow the Amiga and PC filespecs. Therefore, it is possible to do CRLF translations while not converting special characters, to disable CRLF and special character translations, etc. Also, a considerable speed increase can be realized by specifying both /cr and /nc.

If AWrite fails for any reason an error code will be returned at the DOS error level. You can use the error return in .BAT files to detect and handle any error that might occur.

APPENDIX E: INSTALLING AND USING A HARD DISK ON THE PC SIDE

Whatever type of hard disk you use with the Bridgeboard (either a separate hard disk with a controller card, or a combined disk/controller on a card) you must install, format and partition the disk before it can be used.

In installing a hard disk, follow any specific instructions included with the product. General instructions for installing each type of hard disk are given below.

Installing a Hard Disk/Controller

1. Turn off all equipment.
2. Remove the screws on the back and sides of the A2000 main unit and remove the unit's cover, as described in Chapter 2.
3. Insert the hard disk chassis in the left 3.5 inch drive location. Fasten in place with supplied bolts and washers.
4. Insert the controller card in one of the PC expansion slots, preferably as close to the right as possible.
5. Connect the two cables running from the controller card to the disk drive.
6. Connect the disk drive to power supply line.
7. Check all connections.
8. Replace the cover of the main unit.

Installing a Combined Disk/Controller on a Card

1. Turn off all equipment.
2. Remove the screws on the back and sides of the main unit and remove the unit's cover.
3. Select the PC expansion slot into which the hard disk card is to be inserted. (If the card takes up two slots, use the second and third slots from the edge of the expansion slot area.)
4. Insert the hard disk card carefully but firmly into the slot(s).
5. Check all connections.
6. Replace the cover of the main unit.

Partitioning and Formatting a PC-Side Hard Disk

The system disk contains the following two programs that allow you to partition and format a hard disk drive for use with MS-DOS only, or for both MS-DOS and AmigaDOS:

- FDISK (used for setting up the MS-DOS drive sectors)
- ADISK (used for setting up the AmigaDOS drive sectors)

Note that you can have up to four partitions on the hard disk drive, one of which can be an MS-DOS partition.

To create two partitions of the same capacity, one MS-DOS and one for AmigaDOS, follow these steps:

1. Insert the PC Workbench disk in the Amiga's 3.5" drive (drive df0:) and insert the MS-DOS disk supplied with the Bridgeboard in the 5.25" drive.
2. Open an MS-DOS window and run the program FDISK. When you have decided on the size (for two equal partitions on most 20 Mb hard disks, choose 307 cylinders), follow the instructions on the screen. (Use FDISK to make the partition active. Active means that MS-DOS can be booted from this partition.)When FDISK is finished it may automatically reboot the Bridgeboard. If it doesn't, reboot the Bridgeboard by simultaneously pressing CTRL, ALT, and DEL.
3. Format the PC partition of the hard disk using the MS-DOS format command. If you want to boot from the hard disk, you must specify the /s option. See the MS-DOS manual for more information on the FORMAT command.
4. Run the program ADISK to create an AmigaDOS partition. The following menu appears on the screen:

Copyright © 1986 Commodore Electronics Limited

AMIGA PARTITION SETUP VER 1.2

Current drive: 00 Total space : 614 cylinders

Partition	Status	Type	Start	End	Size
1	A	DOS	0	306	307

- <1> change current drive
- <2> change partition status
- <3> create a new Amiga partition
- <4> delete the Amiga partition
- <ESC> return to DOS

(Note that the ADISK program offers the same options for dividing the capacity as the FDISK program. However, it is not necessary to make an Amiga partition "active" because the Amiga partition is only used by the Amiga side.)

5. After the partition setup comes to an end, you must format the Amiga partition. Leave the PC Window open and open a CLI window from the Workbench. Then execute the following command:

DJMOUNT <RETURN>

for a standard AmigaDos partition or

DJMOUNT FFS <RETURN>

for an AmigaDos partition using FastFileSystem under Workbench V1.3.

Note: Ignore all the error messages and cancel all the requesters that appear. These occur because the system knows that a hard disk exists, but the device is not yet formatted.

6. Now type:

FORMAT DRIVE JHO: NAME "drivename" <RETURN>

7. The system now displays a requester that asks you to insert a disk. Ignore this and simply press <RETURN>. The system then formats the AmigaDOS partition.
8. When formatting is complete, an icon appears on the screen indicating the new device. You are now able to use this new drive just like any other drive on the Amiga.
9. To use any AmigaDOS function or command with the hard disk, specify the designation:
JHx:

where x is the number given to the AmigaDOS partition.

Note: Commodore recommends that you set up all partitions on the hard disk at one time.

How to Automatically Mount the Hard Disk at Startup

You can install the DJMOUNT command into the startup sequence after the partitions are created. This will automatically mount the hard disk when the Amiga is booted. Here's how to do this:

1. Type the following from a CLI:

ED S/STARTUP-SEQUENCE <RETURN>

2. When a new window opens containing the script for the startup sequence, insert the following command on its own line following the BINDDRIVERS command:

DJMOUNT <RETURN>

or

DJMOUNT FFS <RETURN>

3. Now press the ESCAPE key. An asterisk (*) appears on the screen.

- 4a. If your startup sequence is correct, type:

X <RETURN>

This will save the sequence and return you to the CLI.

- 4b. If your startup sequence is not correct, type:

Q <RETURN>

This will abort the edit session and leave your file unchanged.

When the DJMOUNT command is part of the startup sequence, there will be a delay of about half a minute while the disk is mounted and the Bridgeboard initialized.

If you do not wish to change the sequence to mount the hard disk, you must open a CLI and type DJMOUNT (or DJMOUNT FFS) whenever you start up your system.

APPENDIX F: INSTALLING A NUMERIC COPROCESSOR

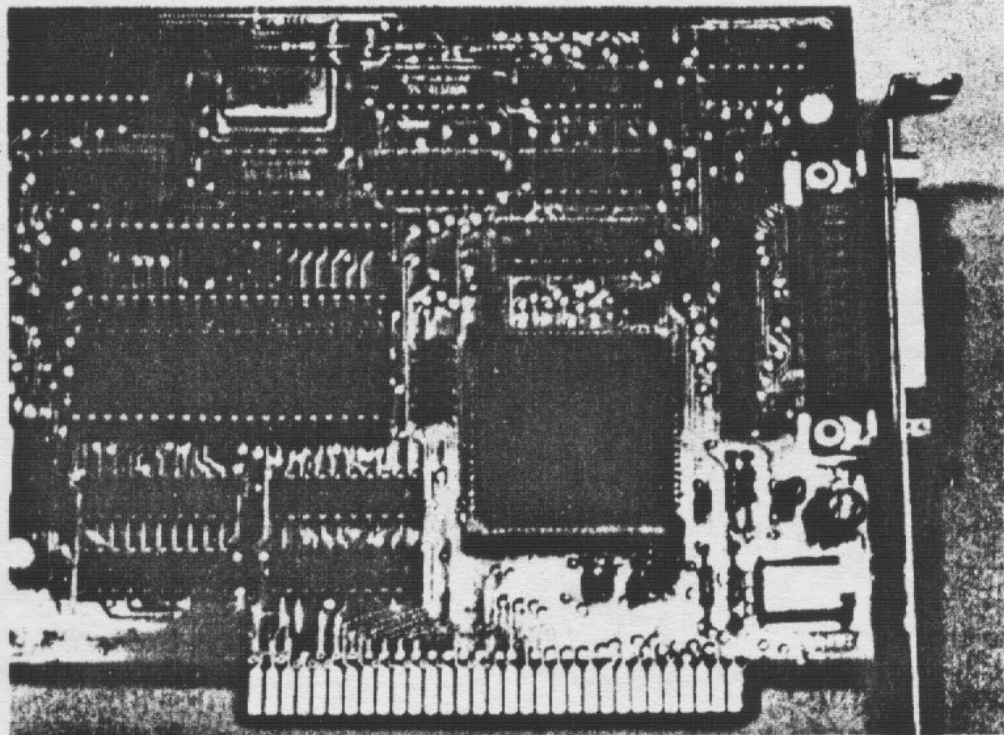
Note: Make sure that all power to the Amiga and peripherals is OFF before attempting the following installation.

A2088 Bridgeboard: Installing an 8087 Numeric Coprocessor

The installation procedure for the 8087 is as follows:

- Disconnect the power to the Amiga 2000.
- Remove the cover of the Amiga 2000 as described in Chapter 2. The Bridgeboard is then visible.
- Disconnect the disk drive cable from the Bridgeboard and carefully remove the Bridgeboard.
- Place the Bridgeboard on a clean flat surface.
- Insert the 8087 on the bridgeboard, in the socket above the CPU. The chip must be facing toward the connector side of the Bridgeboard. (The notch or pin 1 indicator must face toward the connector side).

8087 math coprocessor socket



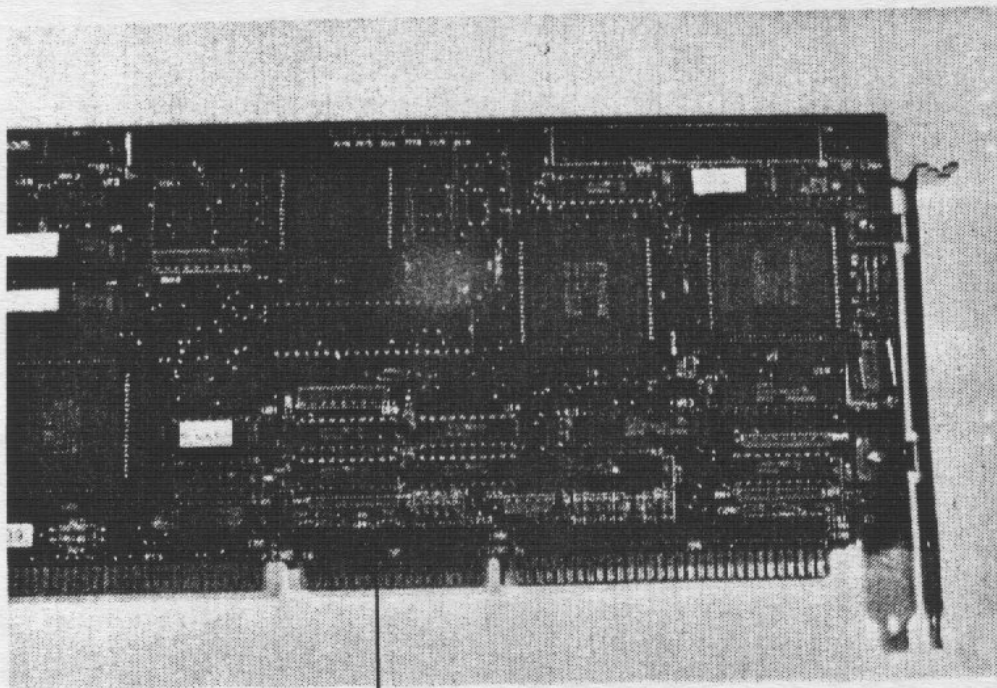
- Re-install the Bridgeboard and reconnect the disk drive cable.
- Reassemble the Amiga 2000.

A2286 Bridgeboard: Installing an 80287 Numeric Coprocessor

The installation procedure for the 80287 is as follows:

- Disconnect the power to the Amiga 2000.
- Remove the cover of the Amiga 2000 as described in Chapter 2. The Bridgeboard is then visible.
- Disconnect the disk drive cable from the Bridgeboard and carefully remove the Bridgeboard from its slot.
- Place the Bridgeboard on a clean flat surface.
- Carefully disassemble the sandwich board from the motherboard.
- Insert the 80287 on the motherboard, in the socket indicated below. (The notch or pin 1 indicator must face forward).

Right side of A2286 motherboard



80287 math
coprocessor socket

- Re-install the sandwich board on the motherboard.
- Re-install the Bridgeboard in the A2000 and reconnect the disk drive cable.
- Reassemble the Amiga 2000.

APPENDIX G: RAM EXPANSION FOR THE BRIDGEBOARD

Note: Make sure that all power to the Amiga and peripherals is OFF before attempting the following installation.

A2088 Bridgeboard RAM Expansion

RAM (memory) expansion for the A2088 Bridgeboard can be carried out using a PC-XT compatible RAM expansion card (available from most suppliers). It is inserted into one of the XT slots on the A2000 motherboard. With the base memory of 512 K on the Bridgeboard, another 128 K can be added via expansion card(s).

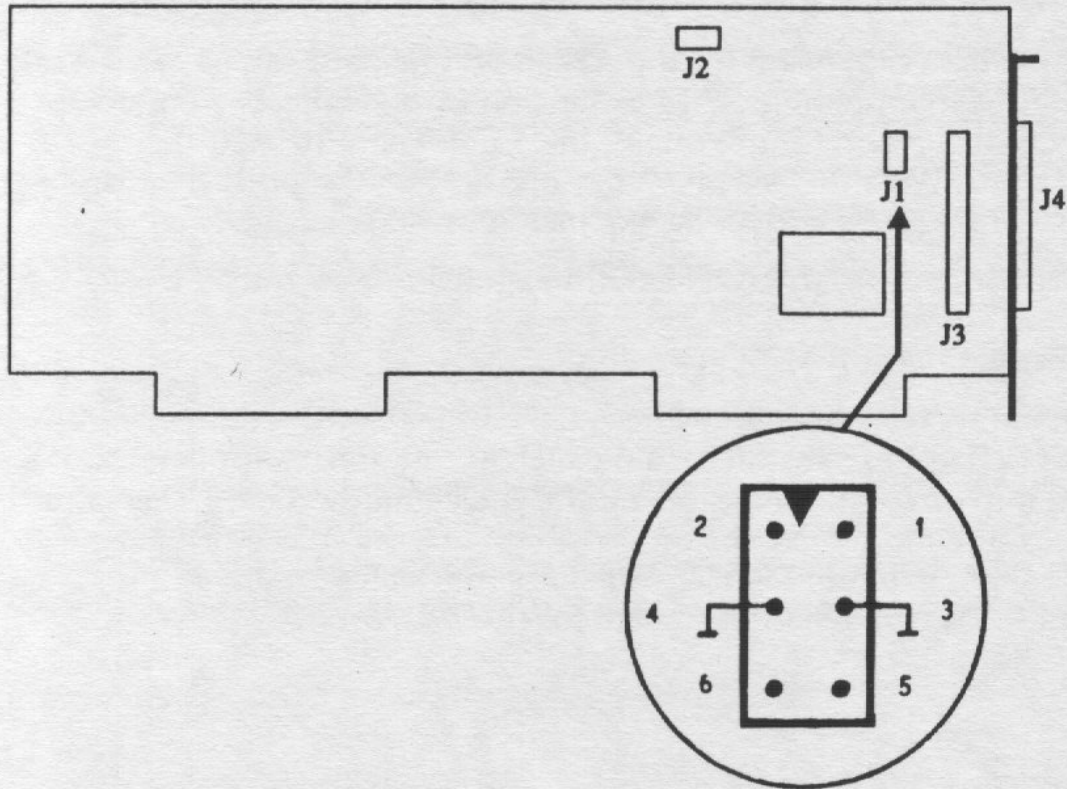
The start address for any A2088 RAM expansion card must be \$8000.

A2286 Bridgeboard RAM Expansion

RAM (memory) expansion for the A2286 Bridgeboard requires an AT compatible RAM expansion card (available from most suppliers). It is inserted into one of the AT slots on the A2000 motherboard. There are two types of memory expansion possible with the A2286 Bridgeboard: expanded and extended RAM. Consult your dealer for advice on selecting RAM expansion hardware for the A2286.

APPENDIX H: USER-ACCESSIBLE JUMPERS AND CONNECTORS

A2088 Bridgeboard



J1 Default display jumper pair near the rear center of the Bridgeboard. (Two sets of three pins)

Startup-Mode

Jumper Setting

Monochrome (default)



Color 40 × 25



Color 80 × 25



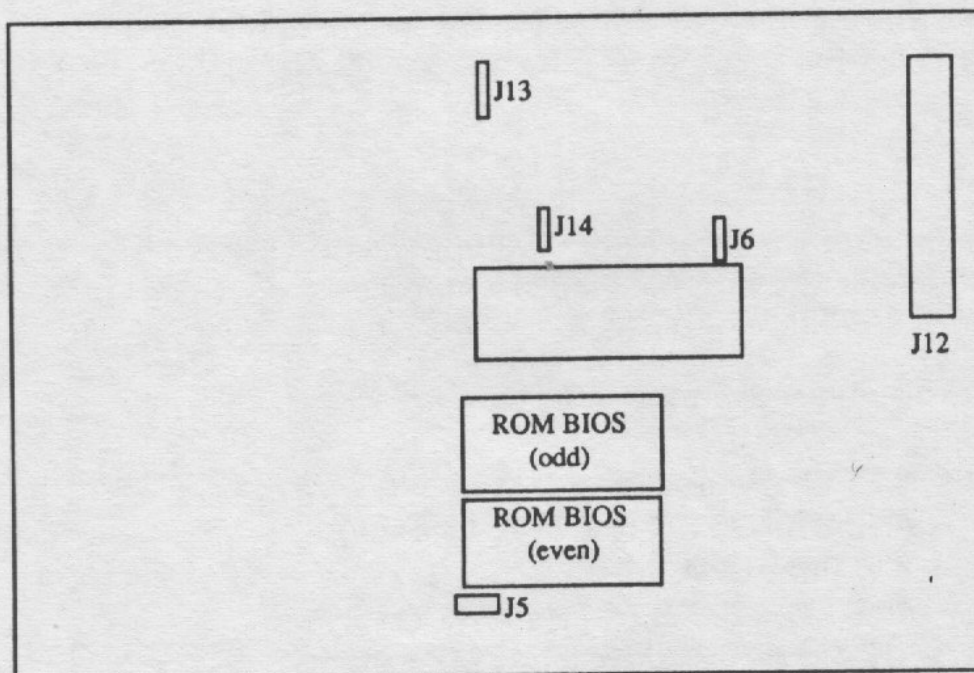
None



- J2 External speaker connector located at the top of the Bridgeboard towards the rear. (Two pins)
- J3 Internal 5.25" floppy drive connector located toward the rear center of the Bridgeboard. (34-pin connector arranged as two rows of 17 pins)
- J4 External floppy drive connector located on the rear end of the Bridgeboard. (23-pin connector).

A2286 Bridgeboard


Jumper Positions and Descriptions on A2286 Sandwich Board



Connecting the Battery to the Sandwich Board Connector J13

In the figure, locate the battery connector J13 on the A2286 sandwich board. Attach the connector from the lithium battery (supplied as part of the Bridgeboard package) to the J13 connector on the A2286 sandwich board. There is only one way the battery connectors will fit together.

J5 RAM configuration: default = 1024 kBytes

1024 KBytes 

640 KBytes 

J14 Video mode configuration: default = Mono

Color 

Mono 

Connector J12 : Floppy disk connector on the sandwich board

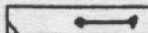
J4 Internal floppy disk controller (on Bridgeboard mainboard): default = Enabled

Disabled 

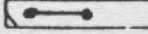
Enabled 

Note: When you install the external Floppy/Hard Disk controller, you must first disable the internal Floppy controller.

J6 Internal disk type: default = 'AT mode'

'AT mode': 5.25" floppy disk drive
(360 KB, 720 KB or 1.2 MB capacity) 

3.5" floppy disk drive
(360 KB, 720 KB or 1.44 MB capacity)

'PS/2 mode': 3.5" floppy disk drive (1.44 MB capacity) 
(not yet implemented)

APPENDIX I: RESETTING PCPREFS FOR AN EXTERNAL VIDEO ADAPTER

If you install an external video adapter in a Bridgeboard expansion slot, you can use the video supplied by that adapter simultaneously with the built-in PC Mono or PC Color displays, or you can switch off the built-in displays and use only the external video adapter display.

Install the external video adapter in one of the PC expansion slots, using the installation procedure provided with the video adapter hardware package.

You will need a second monitor connected to the external video adapter.

NOTE: PCPrefs may need to be reset to recognize the external video adapter. If you experience display errors with your display adapter, follow this procedure to reset PCPrefs :

1. Open the PC drawer.
2. Open PCPrefs.
3. Turn off Mono and Color video by clicking on these items.
4. SAVE your Preferences selections so they will take effect the next time you boot the Bridgeboard.
5. Power off the system.

APPENDIX J: USING AMOUSE FOR AMIGA/PC MOUSE CONTROL

AMouse consists of four files :

1. AMOUSE - The mouse controller on the Amiga.

This should be in your PC Drawer.

2. AMOUSE.COM - The mouse driver for the PC.

This should be in a directory which is on your load path for the PC. See the description of the PATH command in the *MS-DOS User's Reference manual*.

3. AMOUSE.DRV - The MS® Windows mouse driver.

This is only needed while doing Windows Setup. For Windows version 1 it must be on the diskette which contains the other xxMOUSE.DRV files (copy it onto a backup). For Windows version 2 you can put it where you like; just tell Setup where to find it.

4. AMOUSEX.DRV - The MS-Windows mouse driver for SideCar.

See comments above for AMOUSE.DRV.

USING AMOUSE

On the Amiga:

AMouse is in the PC drawer. It can be started by double-clicking the AMouse icon or by using the CLI Run command:

```
run >nil: PC/AMouse
```

This can be input in a CLI window or added to your StartUp-Sequence file. It must come after the binddrivers call which starts up your Bridgeboard.

When started, AMouse uses the right mouse (joystick) port for the PC Mouse. If you want to use two mice, insert the second into the right port. If, like most people, you want to use just one mouse then you can use the combination LEFT AMIGA key + P to switch the ports. This places the PC mouse on the left and Intuition (the Amiga) on the right port. To switch the Intuition mouse back to the left port just use the combination LEFT AMIGA key + P again. AMouse tells you which port the PC mouse is on by writing a comment into the title bar of all windows whose titles start with " PC ".

On the PC:

AMouse can be invoked by typing:

```
AMouse <Return>
```

at the MS-DOS command level or by adding the line "AMouse" to your AUTOEXEC.BAT file. AMouse on the PC will not initialize unless AMouse on the Amiga is running. If the Amiga AMouse is not running, the PC AMouse will output a message to this effect and wait until you start AMouse on the Amiga or you press a key (while the PC Window is active).

Parameters:

-cText Certain programs (e.g., CodeView) look for specific but totally meaningless text strings in the driver code. You can use the -c parameter to supply such a string, should you wish to do so. An example of a meaningless text string is :- .

```
AMOUSE -c"***Copyright 1983 Microsoft***"
```

-i AMouse uses the timer interrupt(8). Some programs treat this as their own. Should you encounter such a program (for example, WordPerfect when used with the Microsoft Mouse® Menu program), the -i parameter causes AMouse to use "user" timer interrupt (1c). Avoid using -i as the mouse seems to run slower when using it.

-tn Outputs video information to the screen when called. Also turns on tracing to the printer if n is not 0. The trace is not printable!

-x This is needed by SideCar users. (For Windows, the equivalent is to use driver AMOUSEX.DRV)

You should separate multiple parameters with a space character, e.g.:

```
AMOUSE -c"Have a nice day!" -i
```

If you call AMouse when it is already loaded it passes the supplied parameters to the already loaded version.

CAUTION : AMouse also passes the *omission* of parameters (i.e., if you omit a parameter, AMouse resets to the default).

MS Windows or EXCEL®:

AMOUSE.DRV is the Windows mouse driver. Put it where Setup can find it and do the normal installation. When you come to pointing devices, AMOUSE.DRV should appear in the list. For Windows version 2 change the mouse selection from the default (Microsoft) and select "Other".

When Setup asks for the Mouse driver disk, enter the full path name of the directory which contains the file AMOUSE.DRV. (You may need to delete the "A:" supplied as default by Setup). Setup will recognise that AMOUSE.DRV is a Mouse driver and allow you to select it.

The "x" driver is for SideCar users only.

You do not need to call AMouse.com to use Windows. However, if you want to run a Standard Application (i.e. an MS-DOS program) from Windows and to use the mouse from this program, you must call AMouse before the program is invoked.

GEM:

The easiest way to install GEM is to copy AMOUSE.COM to a floppy disk and call it MOUSE.COM. When installing GEM use this disk when asked for the Microsoft Mouse disk. Example:

```
COPY C:/AMIGA/AMOUSE.COM A:MOUSE.COM
```

Another way to install GEM is to :

1. Make a dummy MOUSE.COM on a disk, e.g.:
ECHO DUMMY >A:MOUSE.COM
2. Install GEM to use the Microsoft Bus Mouse and, when asked for the MOUSE.COM disk, insert the disk with the MOUSE.COM created in Step 1.
3. When GEM is installed, edit the GEM.BAT file to replace the call of MOUSE with a call of AMOUSE.
4. Delete the dummy MOUSE.COM from GEMBOOT.

APPENDIX K: SETTING UP YOUR AMIGA HARD DISK

Adopting a Standard

Setting up a hard disk can be tedious. To help make this task less difficult, this appendix suggests some standard ways of partitioning Amiga hard disks and then installing Version 1.3 system software and application software such as the Bridgeboard program on the hard disk.

The Basics

For both the 2090 non-autoboot controller and the 2090A autoboot controller, the basic setup procedure is the same.

The first step is to set up the hardware. Plug in your 2090 or 2090A controller, run the cables to your drive and apply power. Remember to set the drive unit number to 1.

Next, boot the 2000 with a copy of 1.3 Workbench. When Workbench has booted insert the 2090(A) software disk, open the disk icon, and double-click on the HDInstall program. HDInstall will add some entries to your mountlist file, add the HDisk.device to your expansion drawer, and then ask you if you want to proceed with prepping your drive.

Press Y and prep will run. You should have the documentation for your particular hard drive handy. Prep will ask you what type of drive you have (ST506, SCSI or user defined). Give the appropriate response.

It is recommended that you make two partitions on your hard disk. Follow the 2090 manual for prepping your first partition. When prep asks you what the last cylinder used by the first partition is, answer 9. This will make a small 50-150K partition for dh0:. (Making the dh0: partition small lets you use the rest of your drive as a Fast Filing System (FFS) partition. FFS is a replacement file handler that provides superior hard disk performance under AmigaDOS.)

Prep ends by telling you to reboot the Amiga. If prep appears to hang, you probably have a hardware problem. Check your cable connections or try re-seating the 2090 in the expansion slot. You can also try re-seating the chips on the 2090 board.

If prep displays the message:

prep complete

and asks you to reboot, your hardware is OK. Reboot by holding down CTRL and the two Amiga keys at the same time. Leave your copy of Workbench 1.3 in the boot drive.

After the system has rebooted, you can format the dh0: partition by giving the format command at the CLI prompt:

format drive dh0: name DH0 noicons

The old filing system partition, dh0:, is now ready for use.

The next step is to setup the rest of the harddrive as an FFS partition. Edit your devs:mountlist file and search for the FAST: entry. This entry should show the correct number of heads for your hard drive. The name to use is up to you. For example, you could use FHx: for fast filing system drives.

Next, edit the first and last cylinder fields. The first cylinder of your fast partition should be 10 if you set up dh0: to end at cylinder 9 as suggested above. The last cylinder of the fast partition should be set to one less than the last cylinder your drive can support. Save the new mountlist and return to the CLI. Now type the command:

mount fh0:

to mount the fast partition. To format the partition, type:

format drive fh0: name FH0 ffs noicons

For more detail on the prepping, mounting and formatting procedures see your 2090 or 2090A hard disk controller manual.

Adding System Software to Your Hard Drive

Now that the hardware is all set up, you can start adding files. Insert the Extras 1.3 MASTER disk and enter the command:

copy "Extras 1.3:" fh0: all

then insert the Workbench 1.3 MASTER (not the boot disk you just made) and type the same line.

copy Workbench1.3: fh0: all

Now all your Amiga system software is on the FFS partition, where you can access it with maximum speed.

The next step is to edit the startup-sequence of your boot disk. The idea here is to minimize boot time by quickly transferring control from the boot floppy to the FFS partition. Edit the startup-sequence on your boot disk so that it looks exactly like this, but without the comments:

```

c:SetPatch >NIL:                ; Patch system functions
Sys:System/FastMemFirst        ; Move C00000 memory to last in
                                ; list
BindDrivers                    ; This makes the hard drive
                                ; available
mount fh0:                     ; Mount the FFS partition
assign sys: fh0:               ; Transfer all logical
                                ; assignments to fh0:

assign c: sys:c
assign l: sys:l
assign s: sys:s
assign devs: sys:devs
assign libs: sys:libs
assign fonts: sys:fonts
execute s:startup-sequence     ; Since S: now points to
                                ; fh0:s, you can execute
                                ; s:startup-sequence here and
                                ; the system will act as if it
                                ; was booted from fh0:

```

Now reboot the system with the new boot floppy you have created. The system will appear to boot from fh0:. If you have the 2090A controller, the boot sequence is a little different, as described below.

The 2090A and Autoboot Controllers

With the 2090A controller, you can autoboot from a hard disk. The only problem is that the autoboot protocol passes control to the first partition on the hard disk dh0:, but you want to boot from fh0:, which is the FFS partition. You can solve this problem by using the same technique used above to pass startup control from the floppy to the hard disk. To do this, make the following six directories in the root of dh0:

```

S   DEVS
L   LIBS
C   FONTS

```

From your boot disk copy the following files to dh0:

```

C:          assign      cd          binddrivers
            setpatch   execute     echo
            mount      run
system/     FastMemFirst
l:          FastFileSystem
            Disk-Validator

```

libs:	icon.library info.library	diskfont.library version.library
devs:	mountlist	system-configuration
s:	startup-sequence	

The startup-sequence should be the same as the one listed below. Using this method, your auto-boot hard disk will come up quickly and automatically pass control to the large fast filing system partition.

Upgrading From The 2090 To The 2090A

You should set up your floppy boot to first transfer control from df0: to dh0:, and then from dh0: to fh0:. This extra step is not necessary, but if you do this then upgrading to an autoboot controller is as easy as plugging it in and throwing away the boot floppy, since dh0: will already be set up. This arrangement also has the advantage that the mountlist containing the fh0: mounting information now resides on the hard disk, and not on some floppy that can be lost or go bad.

Startup-Sequences

Here are the startup-sequences to use to make your system work with both the 2090 controller and the 2090A autoboot controller:

DF0:S/Startup-Sequence

```

c:SetPatch >NIL:           ; Patch system functions
Sys:System/FastMemFirst    ; Move C00000 memory to last in
                           ; list
BindDrivers                 ; This makes the hard drive
                           ; available
assign sys: dh0:           ; Transfer all logical
                           ; assignments to dh0:

assign c: sys:c
assign l: sys:l
assign s: sys:s
assign devs: sys:devs
assign libs: sys:libs
assign fonts: sys:fonts
execute s:startup-sequence ; Since S: now points to
                           ; dh0:s you can execute
                           ; s:startup-sequence and the
                           ; Amiga will act as
                           ; if it was booted from dh0:.

```

dh0:S/Startup-sequence

```

c:SetPatch >NIL:           ; Patch system functions (Can be
                           ; run twice)

```



```

Sys:System/FastMemFirst      ; Move C00000 memory to last in
                              ; list.
                              ; We are on the harddrive so
                              ; binddrivers is not needed.
mount fh0:                   ; Mount the FFS partition
                              ; Mount fh0: from
dh0:devs/mountlist and not   ; df0:devs/mountlist. This keeps
                              ; the partition information on
                              ; the harddrive where it won't
                              ; get lost.
assign sys: fh0:             ; Transfer all logical
                              ; assignments to fh0:
assign c: sys:c
assign l: sys:l
assign s: sys:s
assign devs: sys:devs
assign libs: sys:libs
assign fonts: sys:fonts
execute s:startup-sequence   ; Since S: now points to
                              ; fh0:s, control passes
                              ; to the startup-sequence
                              ; script on fh0:

```

Isolating Non-System Software

In setting up application software like the Bridegeboard PC software on hard drive systems, follow this simple rule: isolate your non-system software. Here are some suggestions on how to do this.

First, make a directory called SYS:user and put your software in this directory ONLY. Second, add this line to the startup-sequence on fh0: before the LoadWB command:

```
execute sys:user/user.startup-sequence
```

Put all your paths and assigns in the file user.startup-sequence as well as anything else that only needs to be run once. Since paths are saved at LoadWB time, the user.startup-sequence must be executed before LoadWB is run, or the path changes will not be permanent in other CLI windows.

Finally, you should add the following line to your s:shell-startup file on fh0:

```
execute sys:user/user.shell-startup
```

Put any aliases or shell startup commands in user.shell-startup, but remember that this will be executed EACH time a shell is opened.

The idea here is to isolate NON-SYSTEM software in its own directory. If the software requires paths or logical assignments, make these in the user.startup-sequence and user.shell-startup files. With this setup, you can safely copy new system software to sys: without worrying about overwriting custom startup-sequences or mountlists.

If you need a custom mountlist, put it in the user directory and use the FROM option to the mount command. When adding software to the system, pretend that the system boots from fh0: and install the software there. Device drivers can be put in fh0:expansion and binddrivers will find them when fh0:s/startup-sequence is executed.

Following the above suggestions can help simplify the installation of the V1.3 Workbench, the Bridgeboard software and other future system upgrades.

APPENDIX L: BRIDGEBOARD TECHNICAL SPECIFICATIONS

A2088 PRODUCT SPECIFICATION

Secondary Processor System (8088) for Amiga 2000, IBM-PC/XT compatible

- Card Type: — Uses both Amiga bus (100 pin) and IBM-PC/XT bus system of the Amiga A2000 (goes into combined position).
- Function: — Provides an 8088 co-processor system with IBM-PC/XT compatibility. Socket for 8087 math co-processor.

DATA—8088 SIDE

- Clock Speed: — 4.77 MHz
- Memory: — 512 KByte RAM
- ROM: — 16 KByte BIOS
- Interfaces: — 1 internal floppy disk drive 5 1/4"
— 1 external floppy disk drive 5 1/4" ←
(each MS-DOS formatted; capacity 360 or 720 kBytes)
- Parallel Port (Centronics™, IBM-PC compatible) emulated on Amiga parallel port.
- Slots: — 3 IBM-PC compatible full size slots available for:
• hard disk controller
• communication adapter
• graphics adapter
• etc.
- Keyboard: — IBM-PC/XT keyboard emulated on the Amiga keyboard
- Video Display: — IBM-PC monochrome text mode and color mode are emulated in separate AmigaDOS windows simultaneously
- System Software: — MS-DOS
- Inter-System Communication: — Interrupt logic
— Janus emulation software

BUS INTERFACE

- Type: — Fast dual-port memory, full speed CPU access during system DMA
- Card Size: — Full size Amiga 2000 card
- Power: — Supplied by system
- Included Items: — Janus emulation software on 3 1/2" floppy disk

A2286 PRODUCT SPECIFICATION

Secondary Processor System (80286) for Amiga 2000—IBM-PC/AT compatible

- Card Type: — Uses both Amiga bus (100 pin) and IBM-PC/AT bus system of the Amiga A2000 (goes into combined position).
- Function: — Provides an 80286 coprocessor system with IBM-PC/AT compatibility. Socket for 80287 math coprocessor.

DATA—80286 SIDE

- Clock Speed: — 8 MHz
- Memory: — 1024 KByte RAM
- ROM: — 16 KByte BIOS
- Interfaces:
- 1 internal floppy disk drive 5.25", high density 1.2 MB capacity
 - 1 internal floppy disk drive 3.5", 720 KB capacity (optional)
 - 1 internal floppy disk drive 5.25", 360 KB capacity (optional)
 - Parallel Port (Centronics®, (IBM-PC compatible) emulated on Amiga parallel port.
 - 1 internal floppy disk drive 3.5", high density 1.44 MB capacity (optional)
 - 1 internal floppy disk drive 3.5", 360 KB capacity (optional)
- Slots: — 1 IBM-PC/AT compatible
2 IBM-PC/XT compatible; full size slots available for:

- floppy/hard disk controller
- communication adapter
- video adapter
- etc.

Keyboard: — IBM-PC/AT keyboard emulated on the Amiga keyboard

Video Display: — IBM-PC MDA monochrome text mode and CGA color mode; can be emulated in separate AmigaDOS windows simultaneously

System Software: — MS-DOS 3.3

DATA—AMIGA SIDE

Inter-System Communication: —Interrupt logic
—Janus emulation software

BUS INTERFACE

Type: — Fast dual-port memory, full speed CPU access during system DMA

Card Size: — Full size Amiga 2000 card

Power: — Supplied by system

Included Items: — Janus emulation software on 3.5" floppy disk
— Internal 5.25" floppy disk drive, 1.2 MB capacity
— MS-DOS and GW-BASIC on 5.25 disks

 **Commodore**