

 Commodore®  
***AMIGA***® 590

***HARD DRIVE PLUS***

**USER'S GUIDE**

## DRIVE INFORMATION

For later reference, please record the information listed on the bottom of the A590 in the spaces provided below.

TYPE: \_\_\_\_\_

MANUFACTURER: \_\_\_\_\_

MODEL: \_\_\_\_\_

NUMBER OF CYLINDERS: \_\_\_\_\_

SECTORS PER TRACK: \_\_\_\_\_

NUMBER OF HEADS: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

DRIVE TYPE: (Circle one)

XT / SCSI

 **Commodore**<sup>®</sup>  
**AMIGA**<sup>®</sup> 590

***HARD DRIVE PLUS***

**USER'S GUIDE**

## COPYRIGHT

This manual © 1989 Commodore-Amiga, Inc., All Rights Reserved. This document may not, in whole or in part be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine readable form, without prior consent, in writing, from Commodore-Amiga, Inc.

With this document, Commodore-Amiga makes no warranties or guarantees, either expressed or implied, with respect to the products described, their functionality, compatibility, or availability. Further, Commodore-Amiga assumes no responsibility or liability for statements or representations made by itself or by third party vendors or in the publications reproduced herein. IN NO EVENT WILL COMMODORE-AMIGA BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY CLAIM ARISING OUT OF THE REPRESENTATIONS MADE HEREIN, EVEN IF IT HAS BEEN ADVISED OF THE POSSIBILITIES OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF SUCH WARRANTIES OR DAMAGES, SO THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY.

Information in this document is subject to change without notice and does not represent a commitment on the part of Commodore-Amiga. The software described in this document is furnished under a license agreement or nondisclosure agreement. It is against the law to copy this software on magnetic tape, disk, or any other medium for any purpose other than the purchaser's personal use.

Amiga is a registered trademark of Commodore-Amiga, Inc. Commodore and the Commodore logo are registered trademarks of Commodore Electronics Limited. MS-DOS is a registered trademark of the Microsoft Corporation. PC/XT is a registered trademark of International Business Machines, Inc. UNIX is a registered trademark of AT&T. Epson is a registered trademark of Epson America, Inc. Seagate is a registered trademark of Seagate Technologies, Inc.

**WARNING:** This equipment has been certified to comply with the limits for a Class B computing device, pursuant to subpart J of Part 15 of the Federal Communications Commissions rules, and Standard C108.8-M1983 of the Canadian Standards Association's regulations. These rules and regulations are designed to provide reasonable protection against radio and television interference in a residential installation. If not installed properly, in strict accordance with the manufacturer's instructions, it may cause interference. If you suspect interference, you can test this equipment by turning it on and off. If this equipment does cause interference, correct it by doing any of the following:

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

**CAUTION:** Only equipment with shield-grounded cables (computer input-output 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 a three-pronged type (AC ground). If 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.

If necessary, contact your Commodore dealer or an experienced radio-TV technician for additional suggestions. You may find the following FCC booklet helpful: "How to Identify and Resolve Radio-TV Interference Problems." The booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, stock no. 004-000-00345-4.

# Contents

INTRODUCING THE A590 .....	1
INSTALLING THE A590 .....	3
Installation Procedure .....	3
Connecting External SCSI Devices .....	8
Installing Random Access Memory (RAM) Chips .....	8
USING THE HARD DISK .....	15
Copying Programs to Your Hard Disk .....	15
Saving/Retrieving Files .....	19
Backing Up Your Hard Disk .....	19
Recoverable Errors .....	20
Nonrecoverable Errors .....	20
CHANGING THE STARTUP-SEQUENCE .....	23
THE A590 SETUP DISK .....	25
Kickstart 1.3 Users .....	25
Kickstart 1.2 Users .....	26
Quick Installation .....	26
Using the A590 Setup Disk .....	27
Using the Installation Software .....	28
Using the HDToolbox Program .....	34
Hard Drive Preparation, Partitioning and Formatting .....	35
Change Drive Type .....	39
Define/Edit Drive Type .....	41
Bad Blocks .....	43
Partitioning .....	44
File System Characteristics .....	49
File System Maintenance .....	51
APPENDIX A TROUBLESHOOTING .....	53
APPENDIX B DIP SWITCH SETTINGS .....	54
APPENDIX C TECHNICAL SPECIFICATIONS .....	55
APPENDIX D SOME USEFUL TERMS .....	61



# Introducing the A590

The **A590 Hard Drive Plus** is an external hard disk drive *plus* a controller card and expansion memory unit for the Amiga 500. The A590 connects to the side of the Amiga 500 and comes with a disk containing all the software required for operation.

The A590 includes the following features:

- 20 MB of disk storage.
- Sockets for 512KB, 1MB, or 2MB of fast random access memory (RAM) chips.
- Direct Memory Access (DMA) for fastest possible operation.
- Connector for the use of Small Computer Standard Interface (SCSI) expansion devices.
- Autoboot ROMs to allow you to boot your system from the hard drive, if you are using Kickstart™ 1.3.

**Note:** To obtain the full potential of the A590, you will want to have the Kickstart 1.3 ROM upgrade installed in your Amiga 500. With the Kickstart 1.3 ROMs you will be able to automatically boot your system from the A590, providing faster access to all your files.

You can determine whether your Amiga has Kickstart 1.2 or 1.3 by starting your system without a disk in the floppy drive. The screen will show a hand holding a Workbench disk, with the version number below it. If the version number is 1.2, your Amiga is using Kickstart 1.2. Please see your Amiga dealer concerning the ROM upgrade. If the version number is 1.3, your Amiga already has Kickstart 1.3.

This user's guide explains how to:

- connect and set up the A590.
- connect external SCSI devices.
- install RAM chips on the A590 board.
- use the **HDToolbox** software to set up and configure your hard disk.
- use the reinstallation software to rebuild your hard disk in the event of a catastrophic loss of data.

Note that with the addition of the A590, your system will still operate normally using the floppy disk drive.





# Installing the A590

**WARNING:** Commodore will not be responsible for any injury or damage resulting from improper installation. Such improper installation will also void the warranties on the A590 and the Amiga 500. Read this manual before attempting to install the A590. Turn the computer off and unplug the power cord before proceeding. Installing the A590 with the power on could cause personal injury to yourself and damage to the equipment. Make sure that nothing is attached to the computer. Disconnect all peripherals and power cords, and put them aside. The A590 requires adequate ventilation. Do not block the openings in the A590 or place it in an enclosure or on a carpet.

**Most hard disk failures occur due to improper handling: never subject the A590 to electrical or physical shock.**

Unpack the A590 and make sure that you have all the required parts:

- A590 hard disk drive.
- ground clip.
- power supply.
- A590 setup disk
- warranty card.

Record the information listed on the bottom of the A590 on the inside cover of this manual.

## Installation Procedure

The following steps, required to install the A590, are explained in detail, beginning on the next page.

1. Turn off and disconnect the A500.
2. Set the DIP switches at the back of the A590.
3. Open the side panel of the Amiga 500.
4. Connect the ground clip to the Amiga 500.
5. Connect the A590 to the Amiga 500.
6. Connect the power supply to the A590 and AC outlet.

# 1. Turn off and disconnect the A500.

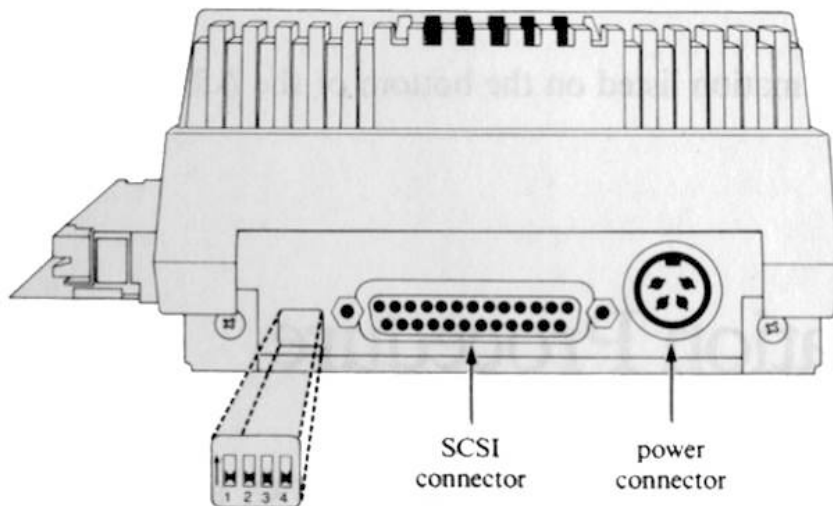
Turn off the A500, and unplug the power cable. Disconnect all peripherals and cables from the A500.

# 2. Setting the DIP switches.

There are four DIP switches located at the back of the A590. The switches are shipped in the off position. If you are using Kickstart 1.3 you will want to set DIP switch 1 to **on**. If you are using Kickstart 1.2 you can connect the A590 with the DIP switches in the current positions.

**Note:** If your Workbench™ prompt requests Workbench 1.3, you are using Kickstart 1.3. If it requests Workbench 1.2, you are using Kickstart 1.2.

DIP switch 1 enables and disables the Autoboot ROMs. DIP switch 2 controls whether the system will look for more than one drive at each logical SCSI address. DIP switch 3 sets a long or short delay between when you turn the power on and when your system checks the drives. DIP switch 4 is reserved for later use. DIP switches 2 and 3 are only used with external SCSI drives. For more information on the DIP switches refer to **Appendix B**.

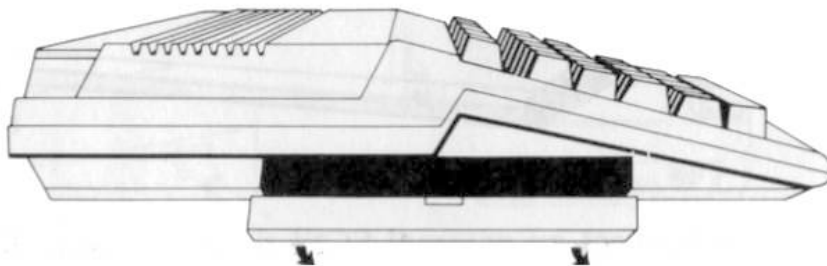


Note: Each switch is **off** when in the down position, and **on** when in the up position.

The A590 is supplied with all switches off. The Autoboot ROMs are disabled; the system will look for only one device at each physical address; and the system will allow a short amount of time between when it powers up and when it checks the drives.

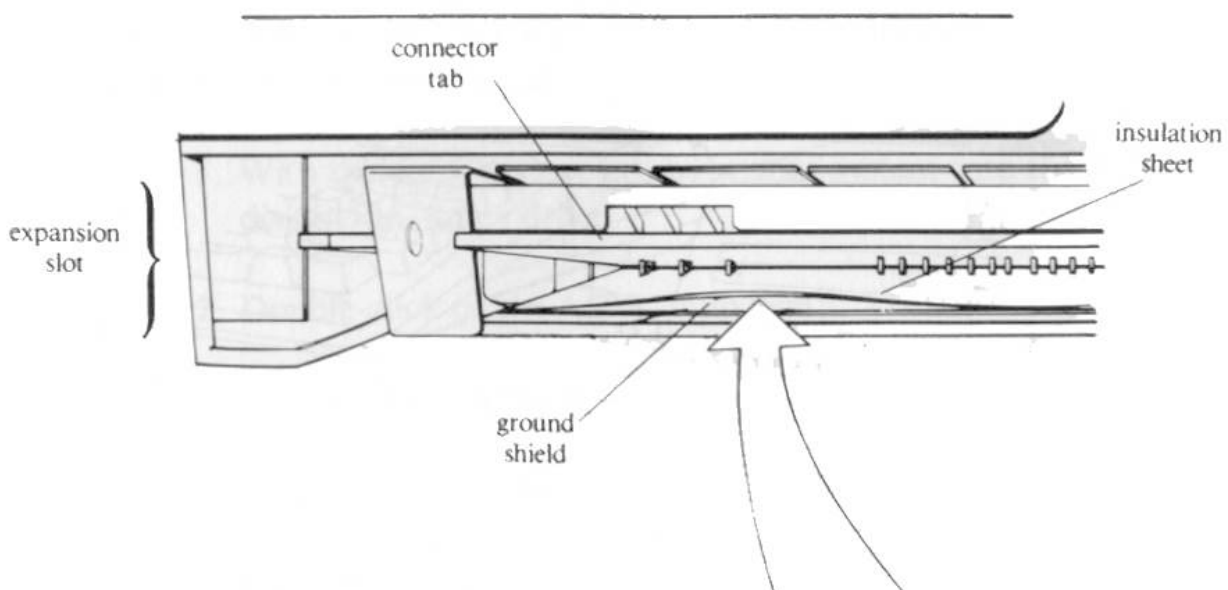
### 3. Opening the Amiga 500.

There is a panel on the left side of the computer that must be removed to expose the connector tab to be used by the A590. Insert a small screwdriver in the slot, and pull the panel down and away from the computer.

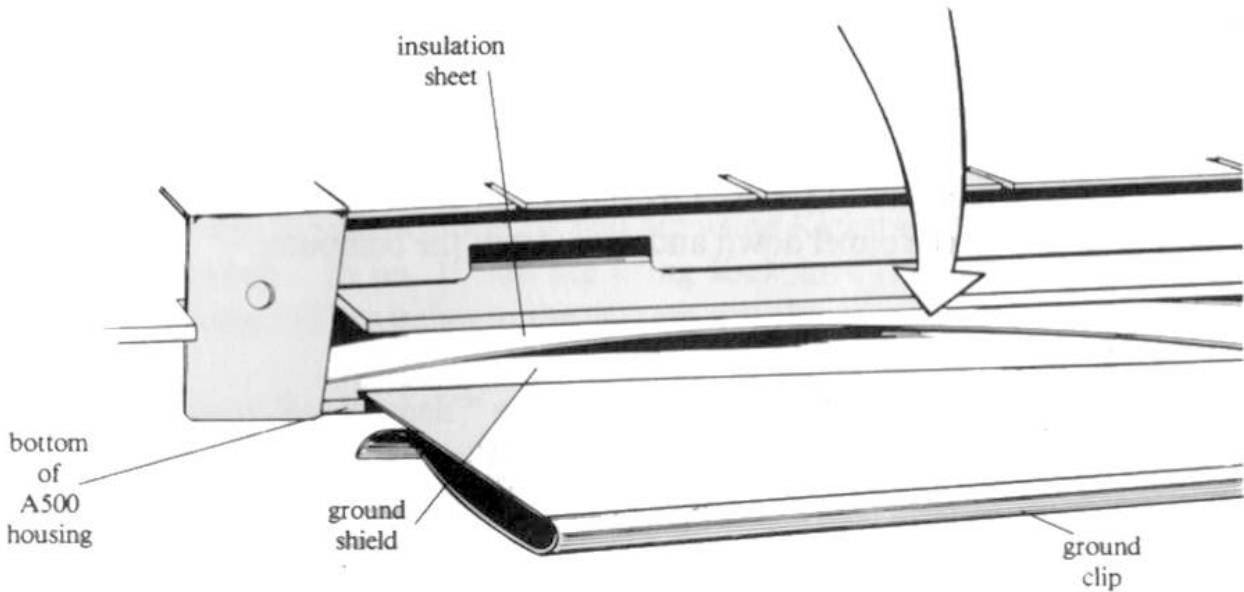


### 4. Connecting the ground clip.

The ground clip must be connected to the ground shield of the A500. The ground shield is a thin sheet of metal located in the expansion slot, between the connector tab and the plastic housing on the bottom of the A500. There is a thin sheet of plastic or cardboard insulation on top of the ground shield.



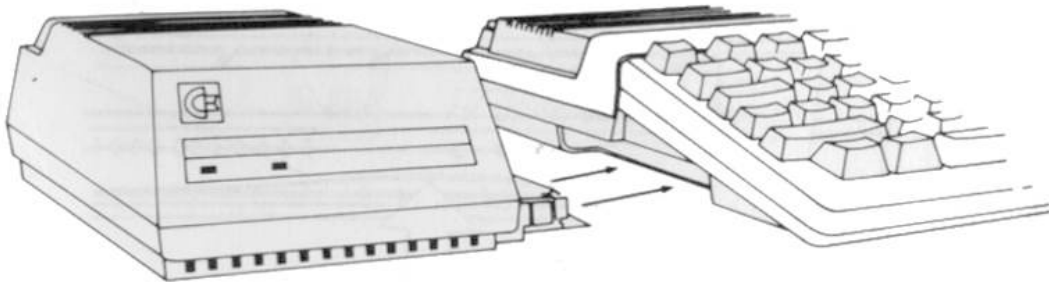
Insert the top of the ground clip, the side with the red insulation, between the plastic or cardboard sheet and the ground shield, as shown below. Note that the bottom of the ground clip fits under the housing of the A500.



**Note:** If you wish to connect an external SCSI drive or install RAM chips please refer to the appropriate section before connecting the A590 to the A500.

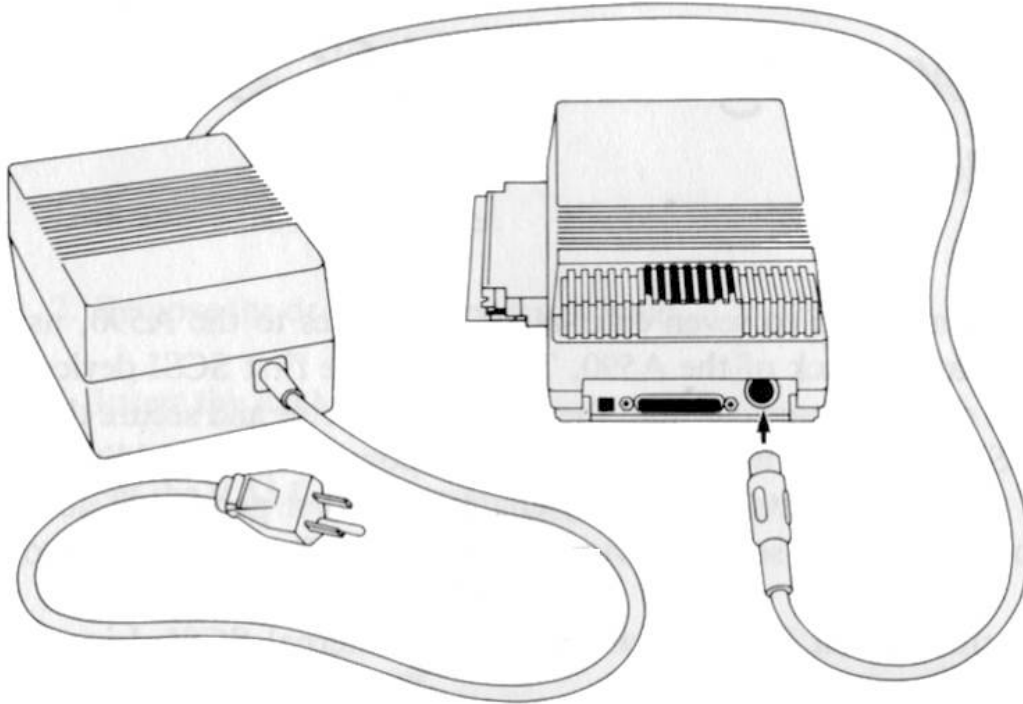
## 5. Connecting the A590 to the Amiga 500.

Align the connector on the side of the A590 with the tab on the left side of the computer. Slide the A590 directly towards the computer until the casings almost touch. Do not force the A590. If the A590 seems to be stuck, pull it directly away from the computer and realign the connector.



## 6. Connecting the power supply.

The A590's power supply brick has a AC power cable and a 4-pin cable attached to it. The 4-pin cable connects to the back of the A590. Align the pins with the socket on the A590 and insert the cable. Connect the power cable to a grounded AC outlet.



Reconnect all cables and peripherals to the computer. Turn the power on to the Amiga 500. The A590 has been designed so that the A590 turns on and off with the Amiga 500.

Note: Before using the A590 for the first time you should run **Verify Data on Drive** from **HDTtoolbox** on the A590 Setup disk. This will check to see if any disk blocks have been damaged during shipment.

1. With the A590 connected, boot your system with the **A590 Setup** disk in the floppy drive.
2. Double-click on the **A590 Setup** icon.
3. Double-click on the **HDTtoolbox** icon.
4. When the **Hard Disk Preparation, Partitioning and Formatting** screen appears, click on **Verify Data on Drive**. When prompted by the requestor, click on **Continue**.

5. If the verification finds no errors, you can click on **Exit** and continue normally. If any errors are found you should **Exit** and then run **PrepHD** and **FormatHD** as described under **Using the Installation Software, on page 28.**

Your A590 is now installed. If you are not going to connect an external SCSI drive, or add RAM chips, please go to **The A590 Setup Disk on page 25.**

## Connecting External SCSI Devices

You can connect up to seven external SCSI devices to the A590, using the connector at the back of the A590. To connect the first SCSI device, gently insert the device's connector into the A590's connector and secure the screws. The SCSI device will need to have its own power supply. Additional SCSI devices can be connected in a daisy-chain. (The first peripheral device connects to the A590, the second device connects to the first device, and so on.)

For information on DIP switch settings for external SCSI drives refer to **Appendix B.**

## Installing Random Access Memory (RAM) Chips

You can install RAM chips in the A590 to increase the memory available to your Amiga 500. You can install 512KB, 1MB or 2MB of additional memory.

**Note: Use only CMOS 256k x 4 DRAMs, with an access speed of 120 ns or faster. Slower DRAMs will not work properly. Do not use NMOS DRAMs. The use of NMOS DRAMs will damage the A590 and void your warranty.**

**RAM chips are sensitive to static electricity. Contact with a chip when high levels of static electricity are present could ruin a chip. Touching a nearby grounded metal surface before touching the chip can help reduce static levels.**

**Installation of RAM chips should be performed by an authorized Commodore Service Center, or by your Commodore dealer. Commodore will not be responsible or liable for any damages caused by improper installation of RAM chips.**

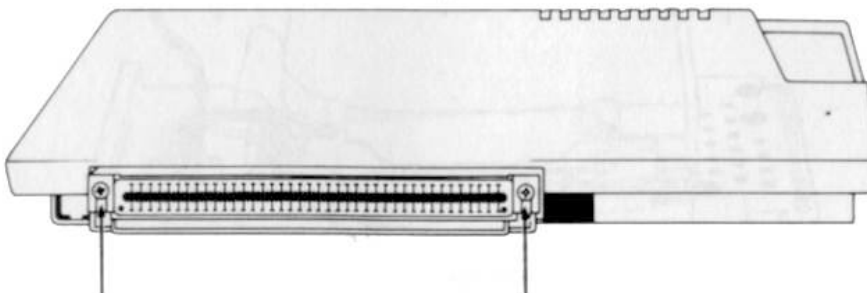
**WARNING:** If your A590 is connected to the computer, you must first turn off the power, disconnect all cables and peripherals, and detach the A590 from the computer by carefully pulling the A590 directly away from the A500.

The following steps, required to install RAM chips, are explained in detail below.

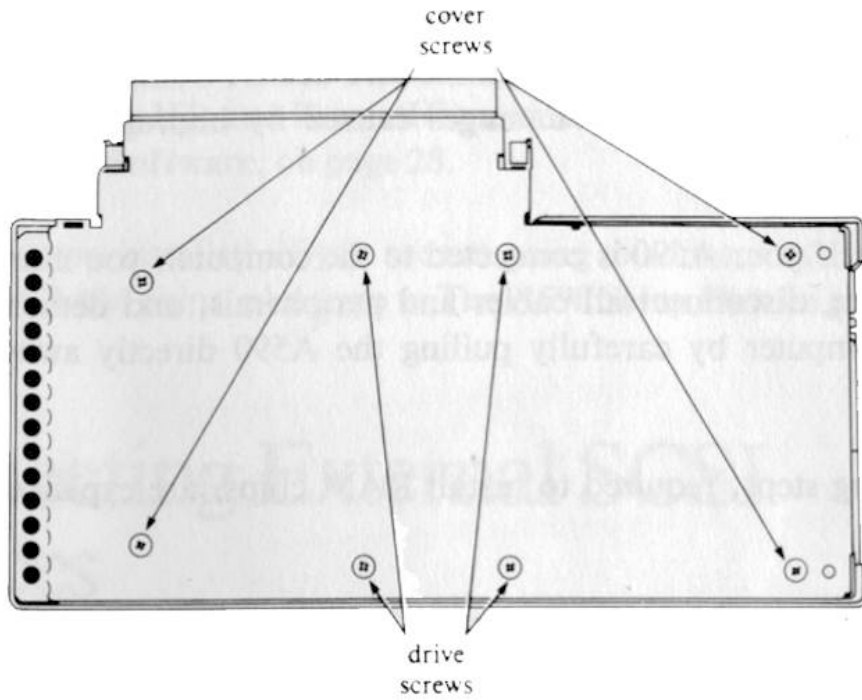
1. Remove the A590's cover.
2. Remove the drive and the drive shield.
3. Insert the RAM chips.
4. Set the RAM size jumper.
5. Replace the drive and the cover.

## **1. Removing the A590's cover.**

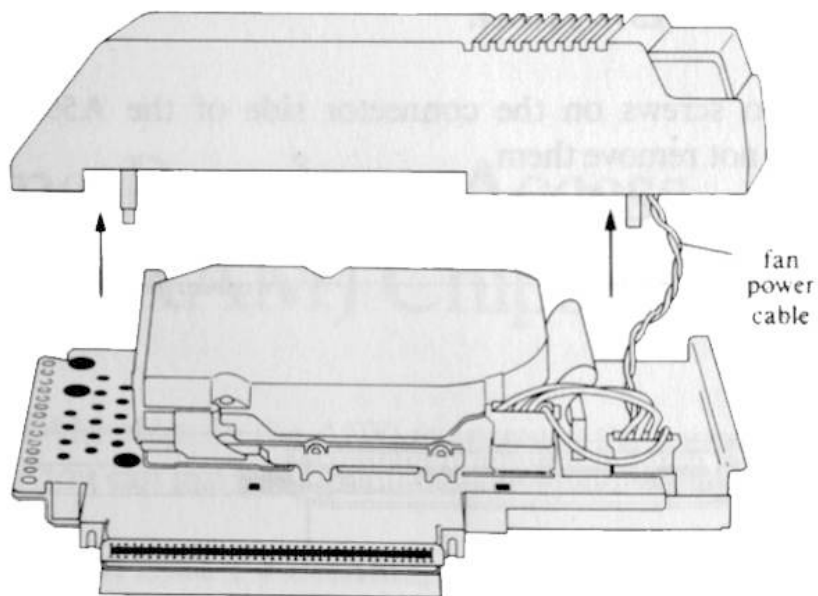
Locate the two screws on the connector side of the A590. Loosen these screws, but do not remove them.



Locate the eight screws on the bottom of the A590. The outer four connect the cover to the base and the inner four connect the drive and the drive shield to the base. Remove the outer four and set these screws aside.



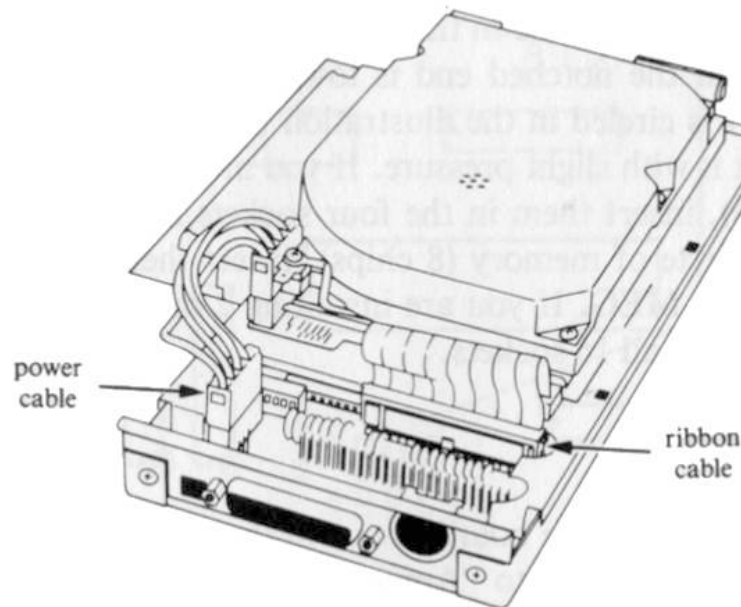
Place the A590 on a flat surface and carefully lift the cover straight off. Disconnect the fan power cable from the printed circuit board in the base of the A590. Note the alignment of the LED cable if there is one, so that it can be reconnected properly. Disconnect the LED cable and put the cover aside.



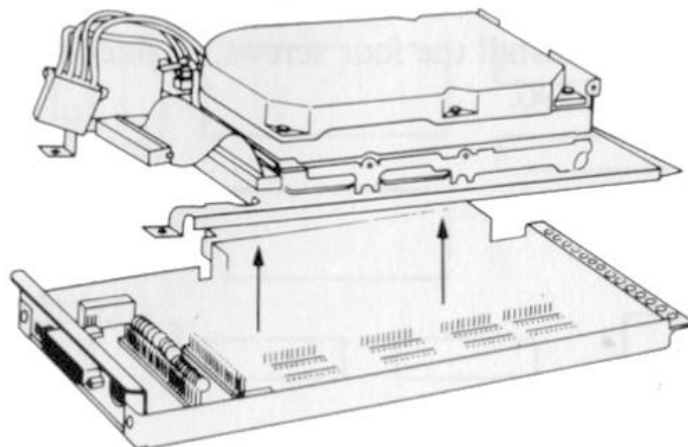


## 2. Removing the drive and the drive shield.

Locate the ribbon cable connector and the power cable connector and note how they connect to the board, so you can reconnect them properly. Disconnect them from where they attach to the board. Always handle each cable by the plastic connector.



Remove the four remaining screws, and put them aside, separate from the first four screws. Lift the drive and shield off and put them aside in a safe place. Place the drive on a soft, non-conductive surface. **Do not subject the drive to shock.**



### **3. Inserting the RAM chips.**

**Note: Be careful to properly align the chips before inserting them. Do not force them or bend the pins.**

Turn the A590's board so that it matches the illustration on the next page. It is important that the chips be inserted properly. Each chip has a notch or dot on one end to show the location of pin 1. When the end with the notch or dot is held to the left, pin 1 will be in the lower left corner. The chip should then be inserted so that the notched end is towards the left of the board. The location for pin 1 is circled in the illustration below. Align the chip with the socket and insert it with slight pressure. If you are installing 512 kilobytes of memory (4 chips), insert them in the four sockets labeled **512K**. If you are installing 1 megabyte of memory (8 chips), insert them in the eight sockets labeled **512K** and **1 MEG**. If you are installing 2 megabytes of memory (16 chips), insert them in all 16 sockets.

### **4. Setting the jumper.**

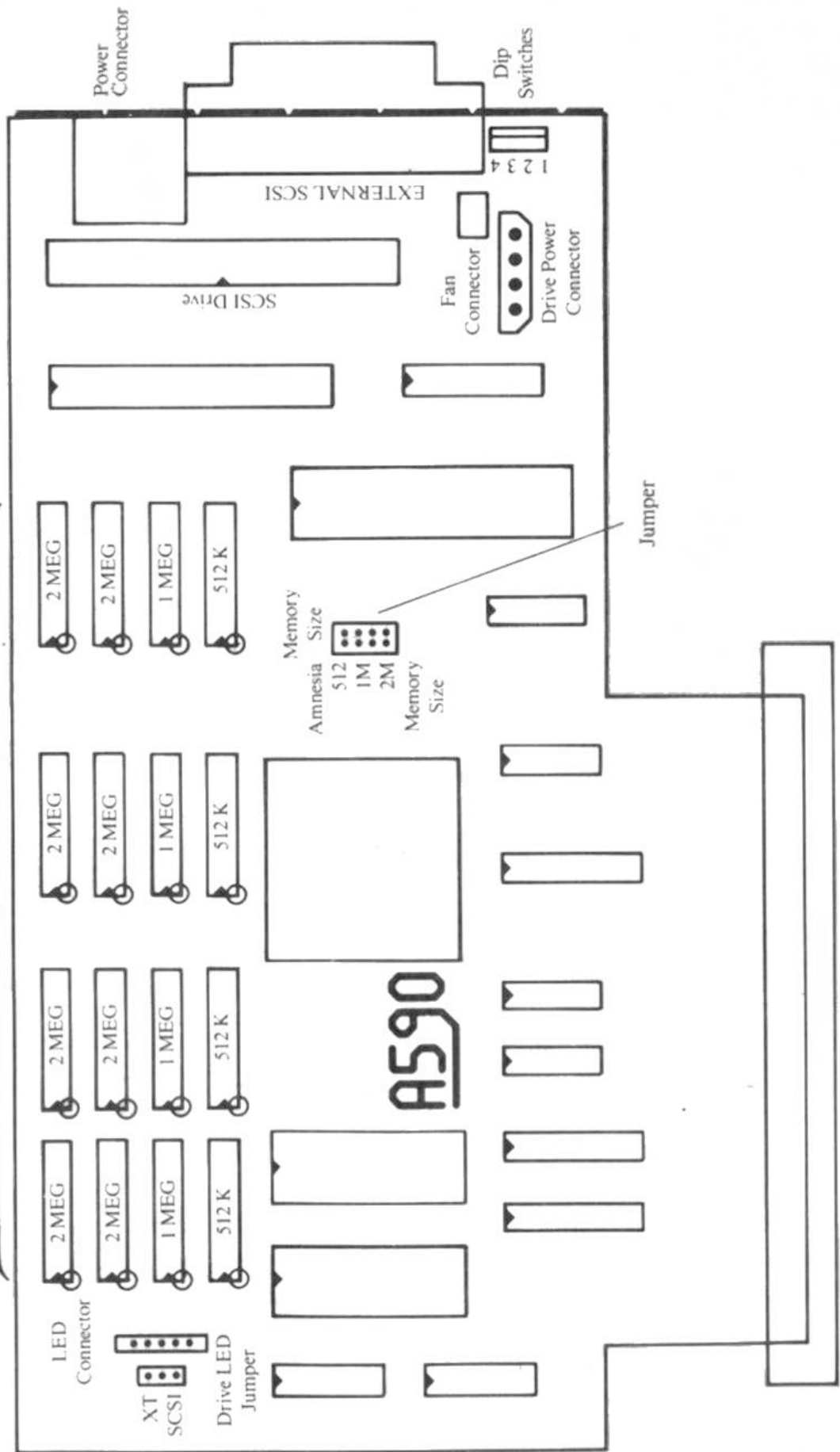
You must set a jumper on the board to match the amount of RAM installed. As shipped, the jumper is set to "Amnesia", or no RAM installed. Lift the jumper straight off and replace it on the set of pins labeled the same as the amount of RAM installed.

### **5. Replacing the drive and the cover.**

Replace the drive and the drive shield. Reconnect the ribbon cable and the power cable. Make certain that the connectors and the pins are aligned properly. The power cable connector is shaped so that it can only fit the correct way. Replace the four screws to hold the drive and shield in place. Reconnect the fan's power cable to the board. Reconnect the LED cable if there is one. Replace the cover and install the four screws. Tighten the two screws on the connector side of the A590.

# A590 Board

RAM Chip Sockets





# Using the Hard Disk

This manual assumes that you are familiar with the operation of the Amiga 500 as described in the **Introduction to the Amiga 500 manual**.

The device name of the A590, as shipped, is **DH0:**. The partition on the A590 is **Workbench:**. It contains the directories and files that are on the Workbench and the Extras diskettes.

The Workbench partition is formatted using the Fast File System (FFS). The Fast File System is solely for use with a hard drive system. It differs from the standard file system in that it increases data transfer speed and allows more data to be stored on the disk. For more details on FFS, see **Appendix A** of the **1.3 Enhancer** manual.

**WARNING:** To protect the A590, always park the drive heads before turning your system off. To park the drive heads, locate the Park icon on the A590 Setup disk, and double click on it. Always wait thirty seconds before turning the system off.

## Copying Programs to Your Hard Disk

In addition to working with the utilities on Workbench and Extras, you will want to transfer other software programs to your hard disk. Note that most commercial software packages have instructions for installing the software on the hard disk.

This section demonstrates how to copy a generic software program to your hard drive. Since this procedure involves the CLI/SHELL and some basic AmigaDOS commands, you should refer to Chapter 7 of the Introduction manual if you are not familiar with using the CLI.

1. The Workbench partition is large enough to store dozens of floppy disks worth of information. To do this efficiently you should organize the partition into drawers. The easiest way to create a new drawer, and at the same time a new directory, is to make a copy of the **Empty** drawer by using **Duplicate** from the Workbench menu.

Open the hard disk's window by double-clicking on its icon. Click once on the **Empty** drawer, then select **Duplicate** from the Workbench menu. A new drawer called **Copy of Empty** will appear in the window.

2. Rename **Copy of Empty** using the Workbench menu's **Rename** item. For this example, we are going to call the drawer **Drawer**. Select the drawer, choose **Rename** from the menu, and a string gadget appears. Delete the old name with the **Del** key, and type in the new name.

You can name it anything you'd like, but you should use a name that reminds you of the contents. Also, if there are spaces in the name (i.e., if it is more than one word), you must put quotation marks around the entire name when using it in CLI/Shell commands.

3. Now that you have a new directory, you can copy your software disks to the hard drive. To do this you must open the CLI or Shell. We'll assume that the software is on a disk called DISK1 and that you are inserting it into the Amiga's internal floppy drive, DF0:.

Here are some general guidelines for copying programs to your hard disk partition:

- A. Copy any files and directories that are on DISK1 but are not already in the Workbench partition to your new directory. Usually your software will contain many of the files that are already on Workbench, such as the Trashcan, the system directory, etc. Do not copy these files into your new directory.

To look at the files on DISK1 and on the Workbench partition, use the AmigaDOS **DIR** command. Simply type, **DIR DISK1:** and **DIR Workbench:**, and compare the files and directories that appear in the output win-

dow. (You can also refer to Appendices B and C of the Enhancer manual for a list of the files on Workbench and Extras.) Any files that are on DISK1 but are not in the Workbench partition should be copied to the new directory.

- B. Examine the following directories of DISK1 to see if there are any files or subdirectories included on the disk that do not appear in the Workbench partition. (Again, use the **DIR** command to do this.) If you find any, copy them into the corresponding directories of the Workbench partition. The directories to examine include:

**floppy disk**

FONTS  
L  
LIBS  
S  
DEVS  
DEVS/KEYMAPS  
DEVS/PRINTERS  
C  
SYSTEM  
UTILITIES  
EXPANSION

**hard disk**

FONTS:  
L:  
LIBS:  
S:  
DEVS:  
DEVS:KEYMAPS  
DEVS:PRINTERS  
C:  
SYSTEM:  
UTILITIES:  
EXPANSION:

Most programs will not have any non-standard files in these directories. The directory most likely to contain non-standard files is FONTS:. If you have difficulties running a program you may wish to examine FONTS: and the other directories for special files.

- C. To copy a file or directory, you must use the AmigaDOS **COPY** command. For instance, to copy a file from DISK1 to the **Drawer** directory of DH0:, you would type:

**COPY DISK1:filename DH0:Drawer**

To copy all the files from a directory on DISK1 to an equivalent directory within the **Drawer** directory, you would type:

**COPY DISK1:directory DH0:Drawer ALL**

The **ALL** keyword tells the system to copy all the files and subdirectories in the directory. Please refer to the Enhancer manual for more information on using the **COPY** command. Before copying any software to your hard drive, check the documentation packaged with the program. It may include instructions for installing and using the software on a hard drive.

4. You may have to set up some special **ASSIGN** statements in order for your software to work correctly from the hard drive. The **ASSIGN** command allows you to assign a logical device name to a directory. In this case the device is DISK1, and the directory is **DH0:Drawer**. Be sure to remove DISK1 from the floppy drive before attempting to run the software from the hard drive.

For example, suppose you copy a program into the directory **DH0:Drawer**, and when you attempt to run the software a requester appears saying:

**Please insert Volume DISK1 into any drive**

This indicates that the software is looking for files on the original disk (volume) on which it was distributed. By assigning the volume name to your new directory, the software will be routed to the correct location. To do this, open a CLI/Shell window, and type:

**ASSIGN DISK1: DH0:Drawer**

If the requester is still on the screen, click on **RETRY**. If the requester does not reappear, the **ASSIGN** worked. You may want to add this command to the Workbench partition's StartupII file (Workbench:s/StartupII) so that the assignment is made when you boot the Amiga. For information on changing your startup-sequence please refer to the chapter **Changing Your Startup Sequences**.



5. Double-click on the new drawer. All the icons that normally appear on the software disk will now appear in the drawer. However, if you copied more than one disk to the drawer, it may be quite cluttered. To straighten up the display, select **Clean Up** from the Workbench menu.

6. After **Clean Up** organizes the drawers, save the display. To do this, use multiple selection to mark the position of each icon, then select **Snapshot** to save the positions. Hold down the **Shift** key and click once on each of the icons. Release the **Shift** key and select **Snapshot** from the Workbench menu.

## Saving/Retrieving Files

You can save files to and retrieve files from the hard drive just as you would a floppy disk. For instance, if you want to save a file created with the **Notepad** to the Workbench's Utilities drawer, you would type:

**Workbench:Utilities/newfile**

in the Notepad's **Save** requester. The generic path for accessing files on the hard disk is:

**Partition:Drawer/file**

Partition is the name assigned to the particular area of the hard disk, for example **Workbench**. **Drawer** represents a directory on the partition, and file is the name of the file you are creating or retrieving.

## Backing Up Your Hard Disk

Before adding new data to your A590, it is strongly suggested that you purchase a hard disk backup program for copying the information stored on the hard disk to floppy disks. (Please see your local software dealer for information on the available programs.) You should backup the hard disk frequently, daily or weekly depending on how often it is used. Without a floppy disk backup, it will be impossible for you to replace any files that may be lost due to user error or system failure.

Each time you backup your hard disk you should also run **Verify Data on Drive** from the **HDTtoolbox program**. This will often locate blocks on the disk that may later develop problems.

## Recoverable Errors

When the verify program locates a block that may eventually become unreadable, it copies the information from that block onto a new block. This will be reported as a **recoverable error**. By marking a questionable block as bad and storing the information from that block to another location, you will avoid losing that information when the block becomes unreadable. In this case there is no need to format the hard disk and restore the file from the backup copy.

## Nonrecoverable Errors

When the verify program locates a block that cannot be read, the system reports it as **Bad block found**. This is known as a **nonrecoverable error**. The information stored on that block has been lost.

When a either a recoverable or nonrecoverable error is found, the system will display the location of the block. You must then choose one of three options:

1. Have the system add the block to the **Bad Block List** and then continue.
2. Ignore the block and continue verifying the data on the disk.
3. Stop the verification.

You should add the block to the **Bad Block List**. After the verify is finished click on **Save Changes to Drive** and then **Exit**. You will then reboot the system.

If the system reported a single nonrecoverable error, you should follow the procedure explained below. If the system reports more than one nonrecoverable errors you should format the hard disk using **FormatHD** from the **A590 Setup** disk, and restore your files from your backup disks.

The lost block will be one of three types:

- a directory block
- a file data block
- an unused block

To determine if the block was a directory block:

1. Open the CLI/Shell.
2. Type: **Dir Workbench: all**
3. If a requester appears stating that there is a read/write error, or if any file names appear corrupted, the damaged block was a directory block.

If the damaged block was a directory block you must format the hard disk and restore your files from your backup.

If the damaged block was not a directory block but was in a file, you can restore that file from your backup by copying that file to the hard disk. If you cannot determine which file the damaged block was in, you may wish to continue to use your system normally. If you later find a file that does not function normally, restore that file from your backup.



# Changing the Startup-Sequence

When you boot your computer, AmigaDOS executes the file called Startup-Sequence in the Workbench's S directory. If you feel comfortable using the CLI or Shell, you can change the Startup-Sequence to suit your needs.

To make the most of the speed of resident commands, most of the 1.3 Startup-Sequence has been moved to a second file named StartupII. This file is executed by the initial startup-sequence.

## Workbench:s/StartupII

```
1  resident c:Resident pure
2  resident c:List pure ;pre-load LIST and CD
3  resident c:CD pure
4  resident c:Mount pure ;the next 3 are loaded for
   speed during startup
5  resident c:Assign pure
6  resident c:Makedir pure
7  ;make IF, ENDIF, ELSE, SKIP, ENDSKIP, and
   ECHO resident if
8  ;you use scripts much, and can afford the ram.
9  ;also make Failat, WAIT, and ENDCLI resident if
   you use IconX a lot
10 makedir ram:t
11 assign T: ram:t ;set up T: directory for scripts
12 makedir ram:env ; set up ENV: directory
13 assign ENV: ram:env
14 makedir ram:clipboards ;set up CLIPS: assign
15 assign CLIPS: ram:clipboards
16 mount speak: ;just mounting doesn't take much
   ram at all
17 mount aux:
18 mount pipe:
19 resident Mount remove ;if you have enough ram,
   keep these resident
```

```
20    resident Assign remove ;by removing these lines
21    resident Makedir remove
22    ;
23    break 1 C ;signal to other process its ok to finish
```

## **Workbench's StartupII file**

All of these S directory startup sequence files may be edited with a text editor, such as ED, MEMACS, or a similar ASCII text editor, to create your own customized startup sequence. This allows you to set up a preferred working environment or to take advantage of additional hardware or RAM.

Remember that the system generally looks for scripts in the S: directory. If you assign S: to a different device (such as a hard disk or ramdrive) during or after your startup, you must also place your modified scripts in that S: directory. We suggest that you keep backup copies of all of your modified startup files on a floppy disk.

# The A590 Setup Disk

The A590 is already formatted, and has Workbench and Extras installed on it. If you have Kickstart 1.3 installed in your Amiga, and you have enabled the autoboot ROMs in your A590 by setting DIP switch 1 to **on**, you can boot directly from the A590. You can tell which Kickstart is installed in your Amiga by turning on the system without a disk in the floppy drive. The screen will display a prompt requesting Workbench 1.2 or 1.3. If it requests Workbench 1.2 you have Kickstart 1.2, and if it requests Workbench 1.3 you have Kickstart 1.3.

**Note:** The A590 should be formatted and ready for use. Occasionally a drive will lose some data during shipment. If the drive is not recognized by your system you may need to prepare it, by reformatting it and reinstalling Workbench and Extras. Refer to **Using the Installation Software**.

The A590 is installed with either the standard U.S. Workbench or the German Workbench, depending on where you purchased it. If you wish, you can install your language specific Workbench by running the **InstallHD** and inserting your Workbench and Extras at the request. This will automatically change the keymap. You can also change your keymap by changing your startup-sequence. The **InstallStartup** program copies your startup-sequence from the Workbench 1.3 disk to the hard disk.

**Note:** Keep the original disk write-protected leaving the write-protect tab in the open position. Make a copy of the A590 Setup disk and put the original in a safe place. Always use the copy instead of the original.

## Kickstart 1.3 Users

If you have Kickstart 1.3 installed in your machine, and have enabled the ROMs on the A590, you can boot your system directly from the A590. When you start your system, the A590 will automatically boot Workbench 1.3. If you wish you may still boot from the floppy drive, rather than from the A590, by placing a bootable disk in the floppy drive at start-up.

# Kickstart 1.2 Users

If your Amiga uses Kickstart 1.2, you will need to make a bootable copy of the Setup disk specifically for use with Kickstart 1.2. This copy will transfer control of most operations to the A590. To do this you will want to make a backup copy of the **A590 Setup** disk, and then run the **MakeBootDisk** program on the copy. **Never run this program on the original disk.**

To make a bootable copy of the **A590 Setup** disk:

1. Boot your system with the **A590 Setup** disk.
2. If you have a second floppy disk drive connected to your system, insert a blank disk in this drive. If you have only one drive, remove the **A590 Setup** disk and replace it with a blank disk. The blank disk will appear as blank icon labeled **BAD**.
3. Position the mouse pointer over the **A590 Setup** disk icon, hold down the left mouse button, drag the icon over the blank disk, and release the mouse button. Follow the requester instructions to make the copy.
4. Insert the original **A590 Setup** disk in df0:. Double click on the **MakeBootDisk** icon. At the request insert the copy in df0: and press **Return**. You can now use this disk to boot your system.

**Note:** This copy is named **BOOT**, although the icon displayed will still have the old name until you remove the disk and reinsert it.

## Quick Installation

If your system cannot find the A590, and you have connected it correctly, your drive may have lost some data during shipment. You may need to prepare the A590 following the steps below. Please refer to the section **Running the Installation Software** for more information.

1. Boot your system with the **A590 Setup** disk. Do not boot from the hard disk.



2. Double-click on the **A590 Setup** icon.
3. Double-click on the **PrepHD** icon, and follow the instructions on the screen.
4. When **PrepHD** has finished, reboot the system.
5. Double-click on **FormatHD** and follow the instructions on the screen.
6. Insert Workbench and Extras when requested by the system.
7. Your A590 is ready for use. After saving a change or writing to the disk, wait at least ten seconds before parking the drive heads and another ten seconds before turning off the power to the computer.

## Using the A590 Setup Disk

The **A590 Setup** disk included with the A590 permits you to add additional drives to your system, and to modify the partitions and filing systems on the A590 and additional drives.

The disk contains:

- The **A590HD** driver (in the Expansion Drawer)
- The current **Fast Filing System** (FFS) which supercedes the FFS from Workbench 1.3.
- **PrepHD**
- **FormatHD**
- **InstallHD**
- The **HDToolbox** hard disk preparation program
- **Park**
- **Drive Definitions** file for **HDToolbox**
- **InstallStartup**
- **MakeBootDisk**

# Using the Installation Software

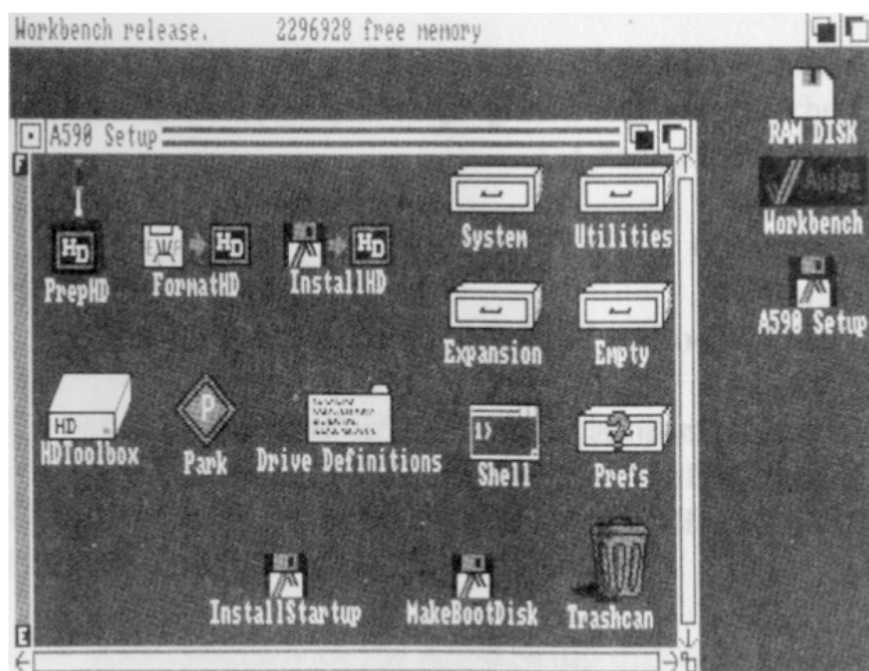
The programs included on this disk allow you to reconstruct the original files included on your hard drive in case of a catastrophic failure, provided you have Workbench 1.3.

**WARNING: This disk can only replace the files that were stored on the hard drive at the time of purchase. It cannot recover programs and data that were later stored on the hard drive. For this reason it is EXTREMELY IMPORTANT to perform regular backups of the hard drive's contents.**

Please keep in mind that you should only use the **PrepHD**, **FormatHD** and **InstallHD** programs as a last resort. If only a few files or directories on your disk have been corrupted, you should restore the corrupted files from your regular backups.

If you decide to proceed with the Installation programs, please follow the instructions below.

Turn off the power to your Amiga 500. Wait at least 30 seconds, insert the A590 Setup disk into the internal floppy drive (df0:), and turn the machine back on. **Do not boot from the hard disk.** When the system boots, you will see a A590 Setup icon on the screen. Double-click on the icon, and the following window appears:



The programs included on A590 Setup are listed below. You may need to run one or more of these programs, depending on the severity of the damage.

**PrepHD**



Under severe conditions, your A590 may be so damaged that a complete reconstruction is necessary. **PrepHD** sets up the disk information required to manage the disk as a whole prior to a complete reformatting. This program should be run only as a final resort, as it will destroy all information stored on the hard disk.

**FormatHD**



This procedure reformats the A590 and should be used only when a complete reconstruction is required. Again, this program should only be used as a last resort, as it will destroy all information stored on the hard disk.

**InstallHD**



This program installs Workbench and Extras on the A590.

**HDToolbox**



This initiates the program which allows you to add additional drives to your system, and to modify the A590 and additional drives. Please see the section describing **HDToolbox** for more information.

**Park**



This program parks the drive heads on the A590. To prevent possible damage to the hard disk you should always park the drive heads before turning off your system.

**InstallStartup**



This program copies the startup-sequence from the Workbench 1.3 floppy disk to the A590.

**MakeBootDisk**



This program creates a bootable A590 Installation disk for user's with Kickstart 1.2.

You should always try to recover your disk by using the least severe procedures first. Use the chart below as a guideline to help you determine which steps to take:

Problem	Solution
1. When you boot your system from the hard disk, you see a screen holding a Workbench disk (shown on page 3-6 of the Introduction to the Amiga manual).	Try to reboot your system by pressing Ctrl, left Amiga, right Amiga simultaneously. If this does not work, you may need to rebuild your hard disk, by running <b>PrepHD</b> , <b>FormatHD</b> , and <b>InstallHD</b> .
2. You receive a read/write error on your hard disk.	Click on <b>Retry</b> and attempt to finish your current task. Attempt to <b>Retry</b> at least twice.  Whether or not the system successfully recovers, you should run <b>Verify Data on Drive</b> from <b>HDToolbox</b> . Refer to the section <b>Backing Up Your Hard Disk</b> for more information.
3. During startup you receive a requester stating "Not a DOS disk in Unit 1".	Run <b>FormatHD</b> and then run <b>InstallHD</b> .

## PrepHD



To prepare the entire hard disk, double-click on the **PrepHD** icon, and a new window will appear. The system will prompt:

This will low-level format your hard disk. The drive will be re-partitioned to the standard configuration.

This operation can take up to half an hour. Any information on the hard disk may be lost! Are you sure you want to continue?

Type a **Y** for yes or an **N** for no. If you type **Y**, the Amiga automatically begins the **PrepHD** process. When **PrepHD** is complete, the system will display the message:

Hard disk prep completed.  
Reboot the machine and run the **FormatHD** utility.

Reboot the machine by pressing the Ctrl, left Amiga, and right Amiga keys simultaneously. Be sure to leave the A590 Setup disk in the disk drive when you reboot. When the Workbench screen reappears, open the A590 Setup window and proceed with the formatting process as described below.

## Format HD



To reformat the entire hard disk, double-click on the **FormatHD** icon, and a new window appears. The system will prompt:

This will reformat your hard disk.  
All information on the hard disk will be lost!  
Are you sure you want to continue?

Again, type either a **Y** for yes or an **N** for no.

The system must format the partition cylinder by cylinder, so do not be alarmed if it seems to be taking a long time. You will be able to follow the progress on the screen. The system displays which cylinder is being formatted/verified and how many cylinders are left to be formatted.

When formatting is complete, the following message appears:

Hard disk format complete.  
The software will now be installed on your hard disk.

The **FormatHD** program automatically executes **InstallHD** (described below). You do not need to double-click on the **InstallHD** icon.

## InstallHD



To reinstall the Workbench and Extras files on the entire hard disk, double-click on the **InstallHD** icon. (If you have run **FormatHD** first, you do not need to do this.) This program recopies the original files from the Workbench and Extras disks onto the hard disk. You will have to insert the diskettes into the disk drive at the proper time. Be sure to keep unaltered copies of the Workbench disk and the Extras disk for this purpose.

After double-clicking on the **InstallHD** icon, you will be prompted:

This will reinstall the system software on your hard disk.  
Files on the hard disk will be overwritten.  
Are you sure you want to continue?

Type **Y** for yes or **N** for no. If you type Y, watch the screen for requesters that ask you to insert a disk into the floppy drive so that the appropriate files can be copied to the hard drive. Be sure to use Workbench 1.3 and Extras 1.3.

The first requester that appears asks you to insert your Workbench 1.3 disk into any drive. Do so, and the program will continue. After several minutes, you will be prompted to insert your Extras 1.3 disk into any drive.

When the system has been properly configured, you will see:

Software installation is now complete.

Reboot the machine. When the Workbench screen appears, the Workbench and RAM DISK icons should appear.

## HDToolbox



Double-click on this icon to run the program. For more information please see the section entitled **HDToolbox**.

## Park



Double-click on this icon to park the drive heads on the A590. In order to protect the hard disk, you should park the drive heads before turning your system off.

If you have additional drives connected to the A590 you will need to modify Park in order to park the additional drives.

The partition on the A590 defaults to DH0:. For each additional partition you will need to add that partition to the list of partitions to be parked. You can do this through Workbench or through the CLI or Shell.

From Workbench:

You must add a tool type by clicking once on the Park icon and then selecting **Info** from the Workbench menu. Click on **ADD** and then type:

```
PARTITION = partitionname1:|partitionname2:
```

Click on **SAVE**.

Note that PARTITION must be upper case.

If you wish to shut down the partition so that it cannot be accessed, add a tool type:

```
INHIBIT
```

Note that INHIBIT must be upper case.

From CLI or Shell:

```
park partition1: partition2:"
```

If you wish to shut the partition down so that it cannot be accessed, type:

```
"park partition1: partition2: INHIBIT"
```

Park defaults to DH0: unless otherwise specified.

## InstallStartup



If you wish to change your keymap you can use this program can be used to install your language specific Workbench. If you wish to copy the startup-

sequence from your Workbench 1.3 floppy disk to your hard disk, click on this icon. The system will prompt:

This will change the Startup-Sequence on your hard disk.  
Are you sure you want to continue?

If you want to continue type **y**, and if you do not want to continue type **n**. If you continue you will need to insert Workbench 1.3 at the request.

## MakeBootDisk



For a full description of **MakeBootDisk** please refer to **Kickstart 1.2 Users**.

## Using the HDToolbox Program

There are seven screens which you will use to modify the drives in the system.

- **Hard Drive preparation, Partitioning and Formatting**
- **Change Drive Type**
- **Define/Edit Drive Type**
- **Bad Blocks**
- **Partitioning**
- **File System Characteristics**
- **File System Maintenance**

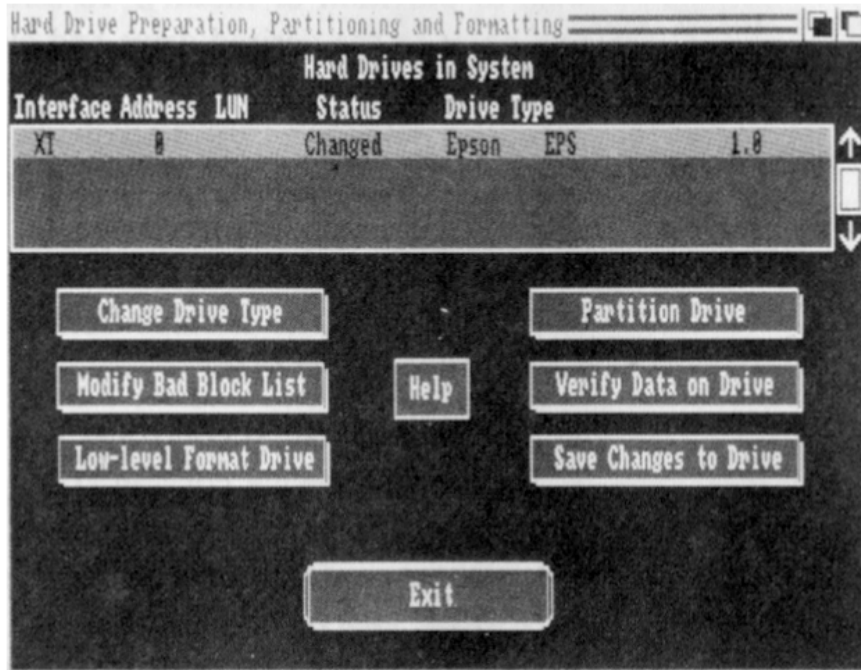
**Note:** You will use the left mouse button during the software configuration. To use the **HDToolbox** software:

1. Boot your system.
2. Insert the **A590 Setup** disk in df0:.
3. Double-click on the **A590 Setup** disk icon.
4. Double-click on the **HDToolbox** icon.



There is a menu in the upper left corner of each screen that allows you to shrink any screen from the **HDTtoolbox** in order to use your Workbench. Move the pointer to the upper left corner of the screen, and click the right mouse button. Dragging the pointer to the first option reduces the screen, while dragging the pointer to the second option restores the screen to full size.

## Hard Drive Preparation, Partitioning and Formatting



The **Hard Drive Preparation, Partitioning and Formatting** screen is the first screen you will see when you run the **HDTtoolbox** software. You can use this screen to add or change drive types, to keep a list of bad sections on the drive, to partition the drive (divide the space on the disk into smaller sections), to check the drive for errors, to low-level format the drive, and to save any changes made to the hard disk software.

### Help

Click on this box to receive brief instructions explaining how to set up a new, blank drive.

### Hard Drives in System

The list at the top of the screen is titled: “**Hard Drives in System:**”. It lists the hard drives connected to the system, with the selected drive highlighted. The type of drive in the A590 is listed on the bottom of the A590. To select a different drive from this list, click on the desired drive in this window. This window can display up to four drives at a time. If there are more than four drives connected to the system you

will need to scroll the contents of this window by clicking on the up and down arrows at the right side of the window, or by dragging the bar between the arrows. To drag a scroll bar just point to the bar, press the left mouse button and hold it while moving the mouse up or down, and then release it.

You can use this window to select the drive you wish to partition or modify. To select a drive, just point to the desired drive and click the left mouse button.

#### **Interface**

Shows the type of drive, either SCSI or XT.

#### **Address**

Shows the bus location of the drive. SCSI drives can be jumpered to a value between 0 and 7. The XT drive is set to 0.

**Note:** The A590 SCSI controller is set as device 7. Each SCSI device connected to the system must have a different device number. Most hard drives come configured as device 0, so the first SCSI drive can be connected as is. Additional drives will need to be reset to different device numbers. If two or more devices are jumpered to the same identification number, the system will lock up. This has no effect if you are only using an XT drive.

#### **LUN**

Shows the Logical Unit Number of the drive. The LUN of a SCSI drive will usually be 0, but you can attach controller cards capable of controlling multiple drives. In this case the LUN value can range from 0 to 7. See the controller card's documentation for more information.

**Note:** Each SCSI device attached to the SCSI port must have a different address. Each device attached to a specific SCSI controller will have a different LUN.

#### **Status**

Shows whether or not you have made any changes to a drive that have not been saved by clicking on **Save Changes to Drive**.

## Drive Type

Shows the drive's manufacturer, name, and revision.

**Note:** This may not correspond exactly to the name and number listed in the drive's documentation, as it is the name reported by the drive to the A590.

If the drive is listed in this window as **Unknown**, it is unformatted, and will have to be installed through the **Change Drive Type** screen, as explained below.

## Change Drive Type

Click on this box to open the **Change Drive Type** screen. You can use this screen to select the drive type you are using. You can also record the specifications of new drive types, or change the specifications of previously recorded drive types.

## Modify Bad Block List

Click on this box to open the **Bad Blocks** screen. You can use this screen to keep a list of areas on the hard disk that have developed errors. For complete instructions please see the explanation of the **Bad Blocks** screen.

## Low-level Format Drive

Click on this box to perform a low-level format of the selected drive. This procedure will erase all information on the drive.

When preparing an external drive for the first time you will select **Low-level Format**. A low-level format will erase all the information on the disk. A low-level format will take up to ten minutes on a 20 MB XT drive.

## Partition Drive

Clicking on the box labeled **Partition Drive** opens the **Partitioning** screen. This screen allows you to divide the space on the hard disk into smaller sections with individual device names, to set partitions as bootable with individual boot priorities, and to change each partition's file system. For complete instructions please see the explanation of the **Partitioning** screen.

### Verify Data on Drive

Clicking on the box labeled **Verify Data on Drive** performs a slow scan of the selected drive in order to locate any bad sectors. This procedure will mark as unusable the blocks listed in the **Bad Block List**.

### Save Changes to Drive

Clicking on the box labeled **Save Changes to Drive** will save all changes made to the software configuration. These changes will overwrite the previous configuration. When you click on **Save Changes to Drive**, you will receive a warning. If you wish to save your changes, click on **Continue**. If you wish to discard your changes, click on **Cancel**.

**Warning:** After saving a change or writing to the disk, wait at least ten seconds before turning off the power to the computer, or rebooting.

### Exit

Clicking on the box labeled **Exit** will return you to the Workbench screen. If you have not saved changes made to the software configuration you will receive the following warning:

**Some disks have changes that have not been saved. Do you really want to exit the program?**

If you wish to exit without saving the changes, click on **Continue**. If you wish to save your changes, click on **Cancel**, and then click on **Save Changes to Disk**. After saving your changes you can click on **Exit**. You will receive a prompt if you need to reboot the system.

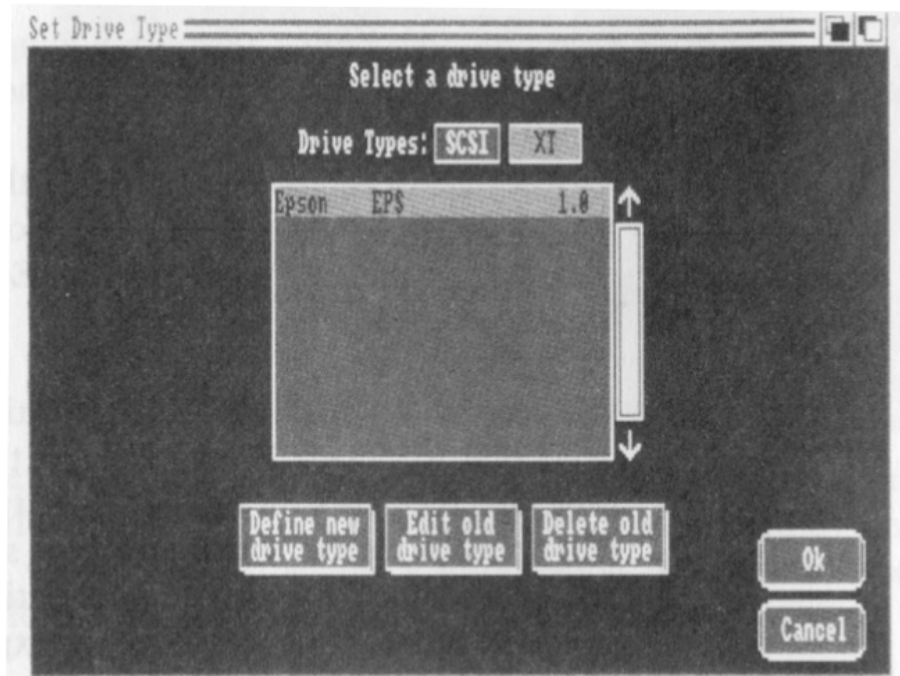
**Note:** If you have just created a new partition, you will need to format it. You can format each partition using the AmigaDOS **Format** command, or use the **Initialize** command from the Workbench screen, just as if it were a floppy disk. Each partition has to be treated as a separate storage device, using the same procedure used to format a blank disk. For further information please refer to the Workbench documentation.

To format the partition from the CLI or the Shell type:

```
format drive (device name): name (volume name) quick
```

The (device name) is the name you entered under **Partition Device Name** on the **Partitioning** screen, and (volume name) is the name you wish to give to the partition.

## Change Drive Type



This screen lists the types of drives whose specifications are stored on the disk. You can use this screen to define, edit, or delete types of drives.

### Select a drive type

The list titled **Select a drive type** lists the names of the hard drives whose specifications are stored on the disk. After clicking on the drive to be identified or modified from the **Hard Drives in System** list, you must click on **SCSI** or **XT** to select the list that corresponds to the type of drive being defined. If you are adding a drive which is listed, you need only click on the name of the drive to prepare it for use. If you are changing drive types from one to another, you will receive the following warning after you click on **OK**:

**Are you sure that you want to change the drive type for the current drive? (All partition information for the drive will be lost!)**

If you wish to change to that drive type, click on **Continue**. If you do not wish to change to that drive type, click on **Cancel**.

If there are more drives types listed than can be displayed in the list at one time, you will need to scroll the list up or down. To scroll the contents you can either click on the arrows at the right of the window, or drag the scroll bar located between the arrows.

**Define new  
drive type**

Click on this box if you are adding a drive which is not listed. This will open the **Define/Edit Drive Type** screen, so you can input the drive's specifications as supplied by the drive's manufacturer. For complete instructions please see the explanation of the **Define/Edit Drive Type** screen.

**Edit old  
drive type**

If you wish to change the specifications of a drive that is already listed, click on that drive type, and then click on **Edit old drive type**. This will open the **Define/Edit Drive Type** screen, so you can change the listed specifications. For complete instructions please see the explanation of the **Define/Edit Drive Type** screen.

**Delete old  
drive type**

If you wish to delete a drive from the **Drive Types** list, click on the drive type to be deleted, and then click on **Delete old drive type**.

**Ok**

Click on this box to save the changes to this screen and to return to the **Hard Drive Preparation, Partitioning and Formatting** screen.

**Cancel**

Click on this box to return to the **Hard Drive Preparation, Partitioning and Formatting** screen without saving your changes.

## Define/Edit Drive Type

Define a New Drive Type

Filename: drive definitions

Manufacturers name:

Drive Name:

Drive Revision:

Read Configuration From Drive

Cylinders: 620

Heads: 4

Size: 21046K (20 Meg)

Blocks per Track: 17

Supports reselection? No

Reduced Write Current

Cylinder: 621

Write Precomp

Cylinder: 621

Park head where (cylinder): 621

Ok

Cancel

This screen allows you to define a new type of hard drive by storing the name and specifications in the **drive definitions** file. These specifications should be provided with the manufacturer's information. Please read the manufacturer's information before attempting to define a new drive type.

### Read Configuration From Drive

If you are installing a SCSI (Small Computer Standard Interface) drive, you can click on this box to have the computer attempt to read the drive's specifications and input them to this screen.

**Note:** The information received by this operation may not be completely accurate. Compare the manufacturer's specifications to the information displayed on the screen. It may be necessary to correct some specifications by clicking on the appropriate box, deleting the existing information, typing in the correct information, and pressing **Return**.

If you are installing the specifications of a new drive type you will need to click on the appropriate box, delete the existing information, type the correct information, and press return. Always press **Return** after typing in new information.

**Note:** When revising a previously saved drive type, the computer will use the version with the most recent date. In order to save the correct change, make sure that your system clock shows the current date and time.

**Filename:**

This is the name of the file containing the drive specifications. Since you can save multiple drive types and their specifications in this file, you do not need to change the filename.

**Manufacturers name:**

Type the name of the drive manufacturer, using up to eight characters.

**Drive Name:**

Type the name of the drive, using up to sixteen characters.

**Drive Revision:**

Type the number of the drive revision, using up to four characters.

**Cylinders:**

Type the number of drive cylinders.

**Heads:**

Type the number of drive heads.

**Blocks per Track:**

Type the number of blocks (512 bytes per block) on each track. Some manufacturers may list this as sectors.

**Size:**

This displays the amount of memory space on the drive in kilobytes (K) and megabytes (Meg). After you type information into the **Cylinders**, **Heads**, and **Blocks per Track** boxes, and press return, the value listed after **Size** will change. When you are finished, compare the listed size to the drive specification, to insure that it is close to the value given by the drive manufacturer.

**Reduced Write Current  
Cylinder:**

This is not used with the A590.

**Write Precomp  
Cylinder:**

This is not used with the A590.



**Supports reselection?**

Refer to the manufacturer's documentation to determine whether or not a SCSI device supports reselection. Click on the box to change it.

**Park head where (cylinder):**

Type in the number of the cylinder recommended by the manufacturer. This function is not needed with drives that automatically park the drive head. Please refer to the manufacturer's documentation. If no value is given by the manufacturer, use the number of the last cylinder.

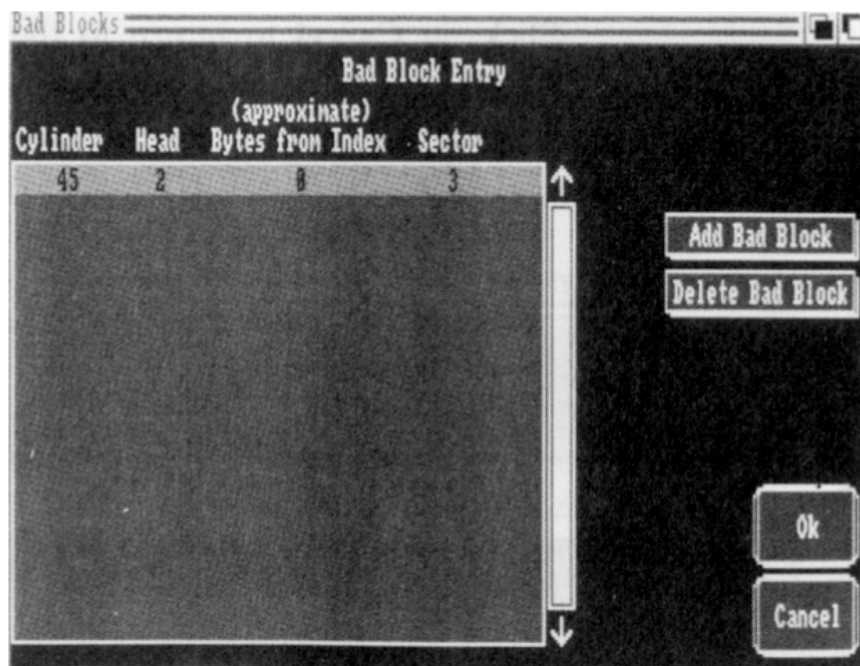
**Ok**

Click on this box to save the changes to this screen and to return to the **Change Drive Type** screen.

**Cancel**

Click on this box to return to the **Change Drive Type** screen without saving your changes.

## Bad Blocks



The **Bad Blocks** screen allows you to keep a list of any blocks on the hard disk that might develop read/write errors. The computer will use this list when formatting the drive to avoid using these areas.

The list shows the location of the bad blocks by cylinder, head, bytes from index, and sector. Note that the system will list a range for the approximate number of Bytes from Index, and you will only be able to list one error per sector. Once a sector has an error, the entire sector will be marked as bad. If you scroll a selected block off the screen, it will become unselected.

### Add Bad Block

To add a new block to the list, click on this box. A smaller screen will open, requesting the location of the bad block. Click on each area and type in the **Cylinder, Head, and Bytes from Index** or **Sector** of the block. Click on **OK** to add this block to the list, or **Cancel** to delete it.

### Delete Bad Block

To delete a block from this list, click on the block to be deleted. That block will be highlighted to show that it is selected. Click on **Delete Bad Block**.

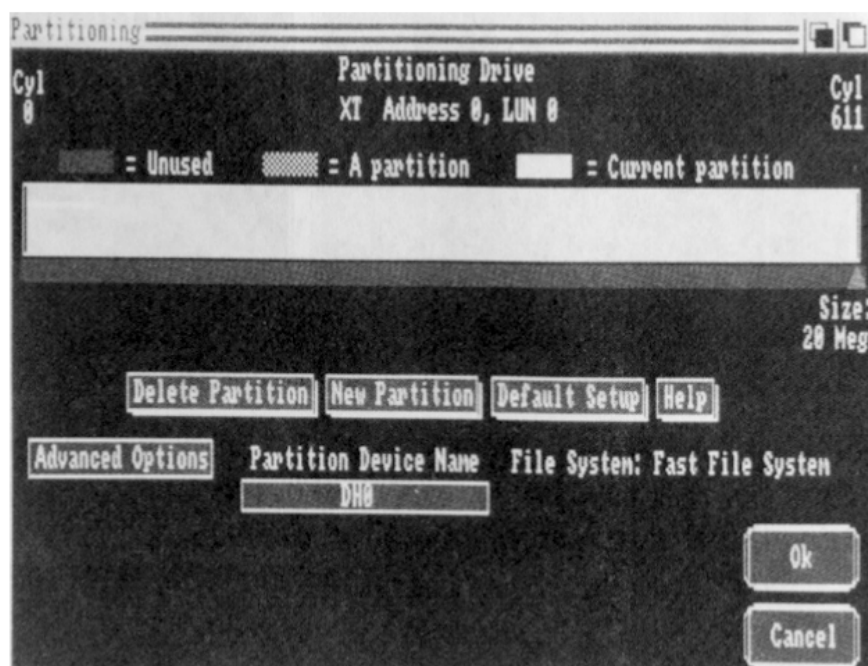
Ok

Click on **OK** to retain your changes and return to the first screen. Click on **Save Changes to Drive**.

Cancel

Click on **Cancel** to return to the first screen without retaining your changes.

## Partitioning



The Partitioning screen allows you to partition (divide) the hard disk into smaller sections. By using the **Advanced Options** you can modify drive access time by changing the number of sector cache buffers, change the file systems on the partitions, and set partitions as bootable with separate boot priorities.

The space on the drive is displayed as a horizontal bar with the number of the first and last cylinder listed above. With the default Workbench colors, the current partition is displayed in white, with the size of the partition listed below it. Other partitions are shaded, with dark lines as divisions. Unused areas are displayed in blue.

The partitions can be modified by using the mouse to adjust the partition bar and clicking on the options. When using the **Advanced Options** you can type the desired partition sizes into the cylinder boxes in the lower left of the screen. The **Advanced Options** will only be visible after you click on the box.

## Partitioning with the mouse

### **Help**

To receive a brief explanation of how to partition the hard disk, click on **Help**.

To adjust the size of a partition click and hold the left mouse button on the orange triangle under the right edge of the bar. Slide the triangle to the new position and release the button. The new size will be displayed.

To move a partition, either click on the partition, hold the button down, and drag the partition to the new location, or click on the unused area on either side of the current partition.

### **Delete Partition**

To delete a partition, click on the partition to select it, and then click on **Delete Partition**. The leftmost partition will become the selected partition.

### **New Partition**

To create a new partition, click on **New Partition** and then click on a unused area of the bar.

## **Default Setup**

Selecting **Default Setup** creates a single partition on 20 MB or smaller drives, and two partitions on larger drives. The first partition will be named **xDH0:**, and the second partition will be named **xDH1:**, where **x** is the first letter of the name of the drive manufacturer. When a new drive is added to the system, the default name will be **xDH0:**

If a partition is too small to conveniently click on, you can also move left and right through the partitions by using the left and right cursor keys respectively.

## **Partition Device Name**

This displays the name of the selected partition. If you wish to change the name of the partition, click in the box, delete the existing name, type the new name, press **Return**.

## **File System:**

This displays the file system of the selected partition.

**Ok**

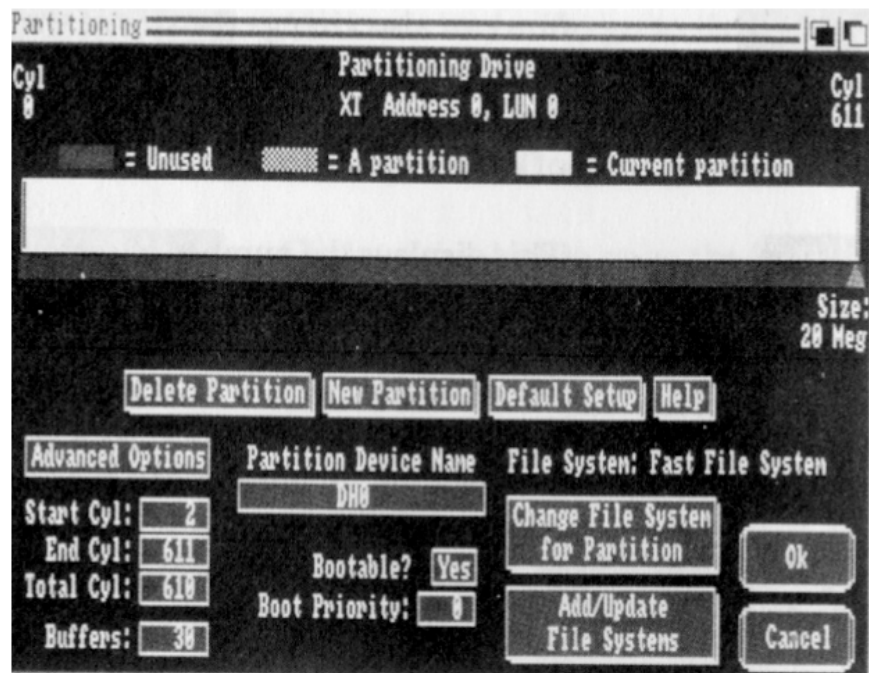
Click on this box to retain your changes and return to the **Hard Drive Preparation, Partitioning and Formatting** screen. To write these changes to the disk click on **Save Changes to Drive**.

**Cancel**

Click on this box to return to the **Hard Drive Preparation, Partitioning and Formatting** screen without retaining your changes.

## **Advanced Options**

Experienced users may wish to modify their systems by using the **Advanced Options**. Most users will not need to use these options.



## Partitioning with the keyboard

For more precise control of the partitions, you can also modify partitions using the mouse and the keyboard with the **Advanced Options**. Once you have selected a partition you can change the size of the partition by changing the number of the first and last cylinder of that partition.

### **Start Cyl:**

To change the number of the first cylinder of the partition, click on the **Start Cyl:** box, delete the existing number, and type in the number of the desired cylinder. This number can be any cylinder in the current partition except for the last cylinder, or any cylinder in the unused area before the partition.

### **End Cyl:**

To change the number of the last cylinder of the partition, click on the **End Cyl:** box, delete the existing number, and type in the number of the desired cylinder. This number can be any cylinder in the partition except for the first cylinder, or any cylinder in the unused area after the partition.

**Total Cyl:**

You can also change the size of the selected partition by clicking on the **Total Cyl:** box, deleting the existing number, and typing in the number of cylinders desired.

**Buffers:**

This displays the number of sector cache buffers being used. Buffers improve disk access time but use 512 bytes of memory per buffer. You can use as many buffers as you wish provided you have enough free memory. As a general rule you can use 30-50 buffers for every megabyte of RAM in your system.

**Bootable?**

This displays whether or not the selected partition can be used to boot the system. The **Bootable** selector defaults to **Yes** for the first partition and **No** for all other partitions. To use a partition as the boot partition you will need to format the partition or initialize it from Workbench, copy your Workbench to the partition and then reboot your system. Run **HDTtoolbox** and return to the **Partitioning** screen. Set **Bootable?** to **Yes**, and click on **OK**. Click on **Save Changes to Drive**.

**Boot Priority:**

This allows you to determine which drive or partition will boot your system. This will only apply to bootable partitions. If you use a hard drive partition to boot, you should copy your Workbench into that partition.

The value of the **Boot Priority** can range from 127 to -128. A larger value has a higher priority than a lower value. The Amiga's floppy disk drive (df0:) has a **Boot Priority** of 5.

Never set a partition's boot priority above 4. It is suggested that you set your boot partition's priority to 1, and any other bootable partitions to a priority of 0.

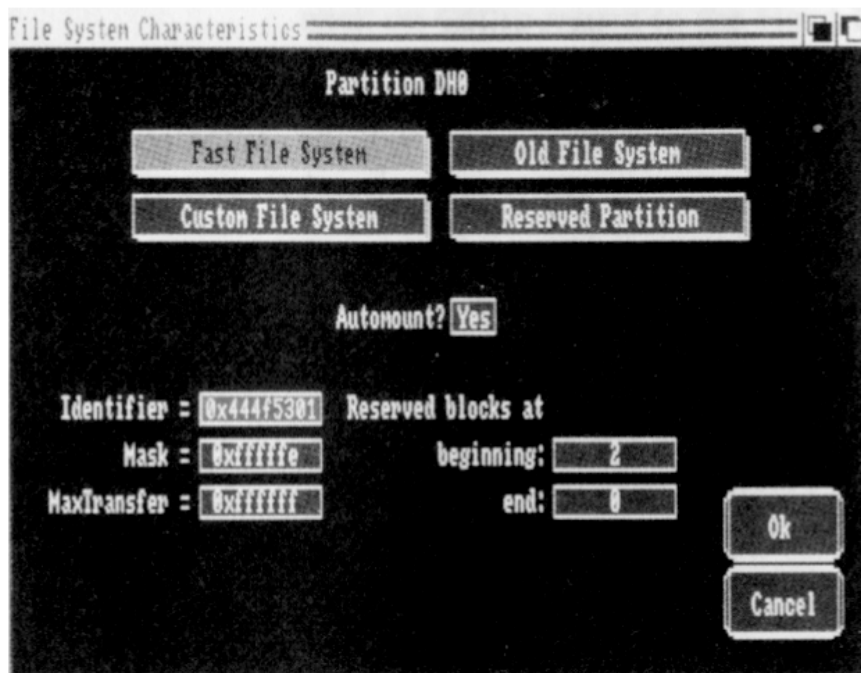
### Change File System for Partition

Click on this box to go to the **File System Characteristics** screen. This screen will allow you to change the filing system on the selected partition. The default setting is the Fast File System.

### Add/Update File Systems

Click on this box to go to the **File System Maintenance** screen. This screen will allow you to add, delete, and modify File Systems.

## File System Characteristics



This screen is provided because some experienced users may wish to modify a partition's filing system under special circumstances. Most users can safely ignore this screen.

### Partition

This shows the name of the selected partition, and allows you to choose the filing system for the that partition. You can choose a filing system, and then set the values for **Identifier**, **Mask**, and **MaxTransfer**.

### Fast File System

This is the default filing system.

### Old File System

This filing system trades speed for recoverability. If part of the disk were to become unreadable, it might be easier to recover information stored with this filing system.

### Custom File System

This allows you to install your own filing system.

### Reserved Partition

This will allow you to reserve an area on the disk without a partition. This area can be set aside for some special use, such as for a UNIX® operating system.

### Automount?

To have the selected partition accessible after booting up, this must be set to Yes. If set to **No** the selected partition will exist, but will not be accessible.

**Note:** If you are using Kickstart 1.3 ROMs, the partitions will be automatically mounted at power up, unless Automount is set to **No**.

If you are using Kickstart 1.2, The partitions will be mounted during **binddrivers** in the startup-sequence.

**Note:** To change any of the following values, click on the box, delete the existing information, type the new number, and press **Return**.

### Identifier

This hex number is a code that tells AmigaDOS what filing system is being used. The **Identifier** can only be modified when using a **Custom Filing System**. Hex numbers must begin with **0x**.

### Mask

This hex number defines which areas of memory can be used with Direct Memory Access (DMA). **Mask** is available when using **Fast Filing System** and **Custom Filing System**. For further information please see the **Commodore Amiga Enhancer Software 1.3 manual**.

### MaxTransfer

This hex number determines the maximum number of bytes to be moved during each DMA transfer. **MaxTransfer** is only available when using **Fast Filing System** and **Custom Filing System**.



Reserved blocks at beginning:

This is the number of blocks reserved at the beginning of the selected partition for DOS usage. This value defaults to 2, and should not normally be set to less than 2.

Reserved blocks at end:

This is the number of blocks reserved at the end of the selected partition, for DOS usage. This value defaults to 0.

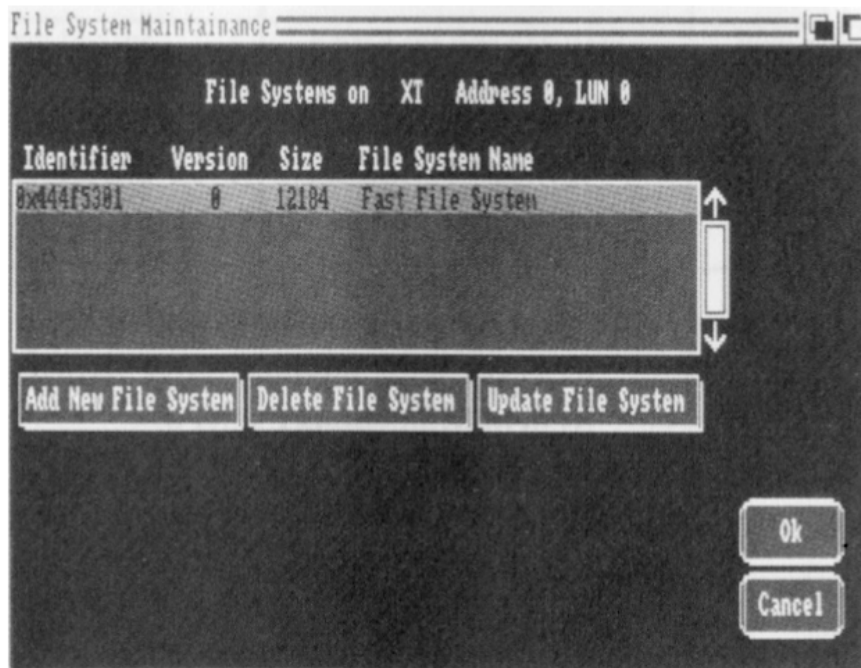
Ok

Click on this box to save your changes and return to the **Partitioning** screen. You will then click on **OK** to return to the **Hard Drive Preparation, Partitioning and Formatting** screen. Click on **Save Changes to Drive**.

Cancel

Click on this box to return the **Partitioning** screen without saving your changes.

## File System Maintenance



This screen allows you to modify the list of available filing systems by adding new file systems, deleting file systems, and modifying existing file systems.

The selected drive is displayed by address and LUN at the top of the screen. Each file system stored on that drive is displayed, showing its **Identifier** hex number, **Version** number, **Size** in bytes, and **File System Name**.

The selected file system is highlighted. To select a different file system, click on the desired file system, click on the up and down arrows at the right of the screen, or click and drag the bar located between the arrows.

### Add New File System

To add a new file system, click on this box, and a smaller window will appear. Type in the filename of the new file system.

Click on the second box, delete the existing hex number and type the hex number of the Dos-Type of the new file system. The system defaults to Fast Filing System with DosType 0x44f5301.

Click on the third box and type in the version number of the new file system.

Click on **OK** to retain your changes, or **Cancel** to erase your changes, and return to the **File System Maintenance Screen**.

### Delete File System

To delete the selected file system, click on this box.

### Update File System

To update an existing file system, click on this box, and a small window will appear. Click on the boxes that need to be changed, delete the existing information, and type the new information.

Click on **OK** to record your changes, or **Cancel** to erase your changes, and return to the **File System Maintenance** screen.

Ok

Click on **OK** to record your changes and return to the **Partitioning** screen. You will then have to click on **Ok**, and then **Save Changes to Drive** on the **Hard Drive Preparation, Partitioning and Formatting** screen.

Cancel

Click on **Cancel** to return to the **Partitioning** screen without saving your changes.

# Appendix A

## Troubleshooting

With the power off, make sure that all cables are connected correctly, and that the A590 is properly connected to the Amiga.

Symptom	Cause	Solution
Power light is not on.	Power supply not plugged into wall. Power supply not plugged into A590. A500 power supply not turned on.	Check connections to wall and A590.
A500 power light blinks, or system fails with the A590 connected.	A500 is running with Kickstart 1.2, and DIP switch 1 is set to autoboot enabled.	Set DIP switch 1 to OFF.
System cannot find the A590.	A500 is running Kickstart 1.3, and DIP switch is set to autoboot disabled.	Set DIP switch 1 to ON.
System cannot find the A590.	A500 is running Kickstart 1.2 and the device driver was not copied to expansion drawer.	Boot with disk created with <b>MakeBootDisk</b> .
Not a DOS disk in Unit 1. Unit appears as <b>NDOS</b> on Workbench screen.	Hard drive Prepped but not formatted.	Format the hard disk from CLI/Shell or initialize hard disk from Workbench.
Read/Write error.	Bad block on hard drive.	Run <b>Verify Data on Drive</b> from <b>HDDToolbox</b> . For more information refer to the section <b>Backing Up Your Hard Disk</b> .
During format system reports <b>Can't find handler</b> .	System not using most recent Fast File System from the A590 Setup disk.	Copy Fast File System from the L directory on the A590 Setup disk to your boot disk.
You have an external Seagate drive attached, and when you boot from the A590 the system displays the Workbench request.	If you can reboot the system and it functions normally after reboot, the time-out is too short.	Set DIP switch 3 to the on position.
An external hard disk appears multiple times on the screen.	The hard disk responds to all logical addresses.	Set DIP switch 2 to the off position.
When you attempt to access the hard disk, the hard disk light turns on and stays on, but the system locks up and permits no further actions.	Drive does not generate a standard parity signal	Set DIP switch 3 to the on position.

# Appendix B

## DIP Switch Settings

**Switch 1: Autoboot Enable** If you are using Kickstart 1.3, you can set Switch 1 to the **on** position. This will allow you to boot your system from the A590.

**Switch 2: LUN Enable** This switch only affects SCSI drives. If you have more than one device at a physical address, set Switch 2 to **on**. When this switch is in the **off** position, the system only looks for one Logical Unit Number (LUN), or one drive, at each physical SCSI address. When this switch is in the on position the system will attempt to open Logical Units 0 through 7 at each physical SCSI address.

**Note:** Some SCSI drives, such as certain Seagate™ and Epson™ drives, respond to more than one logical address. Such drives will appear on the Workbench screen and the **Hard Drive Preparation, Partitioning and Formatting** screen in **HDToolbox** multiple times, at the same Address but at LUN 0 through 7. If this occurs, set switch 2 to **off**.

**Switch 3: Time-out Length** If you are using a SCSI drive that takes longer than thirty seconds to start up when you turn the system on, such as some Seagate drives, you may wish to set Switch 3 to **on**. When the switch is in the **off** position the time-out period, (the time between the start-up and when the system checks the drive), is short. When the switch is in the on position the system will wait a longer time before checking the drive.

**Switch 4: Reserved**

# Appendix C

## Technical Specifications

- 20 MB hard disk
- sockets for 2 MB of fast RAM
  - CMOS 256K x 4 DRAMs 120 ns or faster
  - RAM can be installed as 512K, 1MB or 2MB.
- Autoboot ROMs 16 kilobytes
- SCSI Interface
  - ANSI X3T9.2 compatible
  - DB-25 SCSI connector
  - 50-pin internal SCSI connector
- XT Interface 40-pin internal XT connector
- Host Interface connects to 86 pin connector on the Amiga 500
- Power requirements
  - 117/220/240 VAC
  - 50 watts maximum

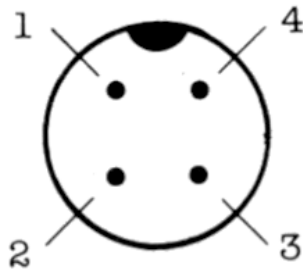
### DIP Switch Settings

Switch 1	off	Disables Autoboot ROMs	Kickstart 1.2
	on	Enables Autoboot ROMs	Kickstart 1.3
Switch 2	off	LUN disabled	One drive at each address.
	on	LUN enabled	Multiple drives at each address.
Switch 3	off	Time-out disabled	Short wait period for drive.
			Parity checking enabled.
	on	Time-out enabled	Long wait period for drive.
			Parity checking disabled on message-in phase.
Switch 4		Reserved for future enhancements.	

Note: Parity checking is not supported on some Seagate drives. With these drives set the switch to the on position.

## 4 Pin Power Connector

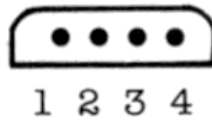
1. +5 VDC
2. ground
3. power sense
4. +12 VDC



## Hard Disk Power Connector

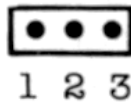
- .85 A Maximum Continuous Current at 12V
- 2.6 A Maximum Startup Current at 12V
- 1.0 A Maximum Continuous Current at 5V

1. +5 VDC
2. ground
3. ground
4. +12 VDC



## Fan Connector

1. +12 VDC
2. ground
3. +12 VDC



## Jumper Settings

Note: The A590 is shipped with all jumpers set to 1.

Jumper	Setting	Notes
JP1	<ol style="list-style-type: none"><li>1. Amnesia</li><li>2. 512K</li><li>3. 1MB</li><li>4. 2MB</li></ol>	RAM memory installed on the A590 board.
JP3	<ol style="list-style-type: none"><li>1. XT drive</li><li>2. SCSI drive</li></ol>	Sets LED for XT or SCSI drive.
JP4	<ol style="list-style-type: none"><li>1. Interrupt 2</li><li>2. Interrupt 6</li></ol>	Interrupt level. Not user adjustable.

## Internal XT Connector

		<b>Pin</b>	<b>Name</b>
● 40	● 39	39	<u>Not used</u>
● 38	● 37	37	Select
● 36	● 35	35	Addr 1
● 34	● 33	33	Addr 0
● 32	● 31	31	<u>Int</u>
● 30	● 29	29	<u>Data-Req</u>
● 28	● 27	27	<u>Data-Ack</u>
● 26	● 25	25	<u>IORead</u>
● 24	● 23	23	<u>IOWrite</u>
● 22	● 21	21	Not used
● 20	● 19	19	Ground
● 18	● 17	17	Data 0
● 16	● 15	15	Data 1
● 14	● 13	13	Data 2
● 12	● 11	11	Data 3
● 10	● 9	9	Data 4
● 8	● 7	7	Data 5
● 6	● 5	5	Data 6
● 4	● 3	3	<u>Data 7</u>
● 2	● 1	1	<u>Reset</u>

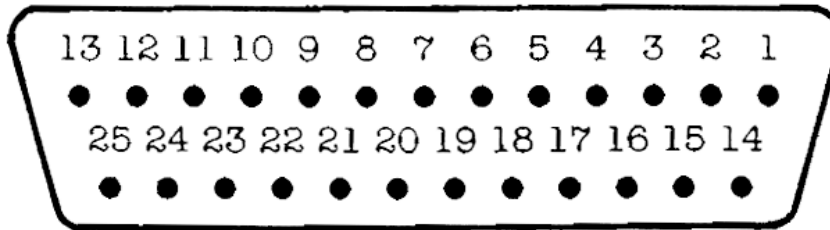
Pins 18 and 34 are not used.

All other even pins are ground.



## External SCSI Connector (DB-25)

(Female Connector)



<b>Pin</b>	<b>Name</b>	<b>Pin</b>	<b>Name</b>
1	<u>REQ</u>	14	Ground
2	MSG	15	C/D
3	<u>I/O</u>	16	Ground
4	<u>RST</u>	17	ATN
5	<u>ACK</u>	18	Ground
6	<u>BSY</u>	19	<u>SEL</u>
7	Ground	20	<u>Parity</u>
8	<u>Data 0</u>	21	<u>Data 1</u>
9	Ground	22	<u>Data 2</u>
10	<u>Data 3</u>	23	Data 4
11	<u>Data 5</u>	24	Ground
12	<u>Data 6</u>	25	Termination Power
13	<u>Data 7</u>		

## Internal SCSI Connector

		Pin	Name
● 50	● 49	50	<u>I/O</u>
● 48	● 47	48	<u>REQ</u>
● 46	● 45	46	<u>C/D</u>
● 44	● 43	44	<u>SEL</u>
● 42	● 41	42	<u>MSG</u>
● 40	● 39	40	<u>RST</u>
● 38	● 37	38	<u>ACK</u>
● 36	● 35	36	<u>BSY</u>
● 34	● 33	34	N.C.
● 32	● 31	32	<u>ATN</u>
● 30	● 29	30	Ground
● 28	● 27	28	Ground
● 26	● 25	26	Termination Power
● 24	● 23	24	Ground
● 22	● 21	22	Ground
● 20	● 19	20	Ground
● 18	● 17	18	<u>Parity</u>
● 16	● 15	16	<u>Data 7</u>
● 14	● 13	14	<u>Data 6</u>
● 12	● 11	12	<u>Data 5</u>
● 10	● 9	10	<u>Data 4</u>
● 8	● 7	8	<u>Data 3</u>
● 6	● 5	6	<u>Data 2</u>
● 4	● 3	4	<u>Data 1</u>
● 2	● 1	2	<u>Data 0</u>

All odd pins, except pin 25, are ground. Pin 25 is open.

# Appendix D

## Some Useful Terms

<b>block</b>	512 bytes
<b>boot</b>	To start or initialize the system from a reset condition, loading part of the operating system into memory.
<b>buffer</b>	A temporary data storage space used to increase device access speed.
<b>cylinder</b>	Used with a hard drive with multiple disks. The same numbered track on each disk surface.
<b>daisy-chained</b>	A method of connecting multiple peripherals from a single connector, where each peripheral is connected to the previous one.
<b>file system</b>	Software that controls how data is organized on a disk.
<b>format</b>	To prepare a disk for storing data.
<b>head</b>	The device that reads, writes and erases data on a magnetic surface.
<b>partition</b>	An area of storage space created on a hard disk.
<b>sector</b>	A specific section of a track on the surface of the hard disk.
<b>track</b>	A circular path on the surface of a hard disk, where data is stored.



Commodore Business Machines, Inc.  
1200 Wilson Drive • West Chester, PA 19380

Commodore Business Machines, Inc.  
3470 Pharmacy Avenue • Agincourt, Ontario M1W 3G3