DAVONG

Davong Mac Disk™

Apple®
Macintosh™
Computer

User's Guide

B0185-03-200043

Copyright notice

Printed in U.S.A.

Compliance with FCC Regulations

Instructions to User

This equipment generates and uses radio frequency energy. If it is not installed and used properly; i.e., in strict accordance with the operating instructions and reference manuals, it may cause interference to radio or television reception. It has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a residential installation. Operation with non-certified equipment is likely to result in interference to radio and TV reception.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.
- Ensure that card mounting screws, attachment connector screws, and ground wires are tightly secured.
- Ensure that card slot covers are in place when no card is installed.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. It is the responsibility of the user to correct such interference.

If necessary, consult your dealer or an experienced technician for additional suggestions, or refer to the following booklet prepared by the Federal Communications Commission:

- 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

Appendixes

About This User's Guide

This user's guide provides simple and comprehensive information about installing and using your Davong Mac Disk™ with your Apple® Macintosh™ computer.

Before continuing, you should feel comfortable with your ability to:

- Use the Macintosh operating system (Finder™ version 1.1 or later)
- Control the Macintosh desktop, including opening and copying documents
- Use the mouse

No Macintosh operating instructions are included in this guide, since we assume that you are familiar with basic Macintosh terms and techniques. If you need help operating your Macintosh, see your *Macintosh* operator's manual.

Chapter 1, *Getting Started*, provides important information about your Mac Disk. It tells you what equipment you need to install your Mac Disk and what precautions you should observe to protect your warranty and take good care of your Mac Disk.

Chapter 2, *Setting Up Your Hardware*, shows you how to connect Mac Disk to your Macintosh computer.

Chapter 3, *Turning Your System On and Off*, contains the system on/off procedures and discusses the Auto-Park feature.

Chapter 4, *Installing the Software*, describes the Mac Disk system software and tells you how to install it using your **Mac Disk System Diskette**. Separate installation procedures are given for users installing their software for the first time, users who are upgrading their software, and users who want to copy the Mac Disk system software to a special system diskette.

Chapter 5, *Volume Manager*, describes the Volume Manager application and tells you how to use it to add, delete, and activate volumes and gather free space on your Mac Disk.

Appendix A, *Voltage Setting and Fuse Changes*, shows you how to change the switch setting and fuse in Mac Disk if your power requirements are not standard.

Appendix B, *Trouble?*, explains the error messages you may receive when operating your Mac Disk. Diagnostic solutions are offered where appropriate.

Appendix C, *Technical Notes*, contains technical information about the applications software interface to Mac Disk via the Macintosh operating system. Electrical, performance, and environmental specifications are included.

See the Glossary for definitions of many important Mac Disk and Macintosh terms.

Please pay special attention to the precautions and warnings throughout this guide. Davong includes them to protect your equipment and the valuable information you store on your Mac Disk volumes.

Reading Guidelines

This chart shows you the chapters of special interest to you, depending upon what you have to do with the Mac Disk.

If you are:	Read Chapter:							
	1	2	3	4	5	A	B	C
the Mac Disk hardware and software installer	✓	✓	✓	✓	✓	✓	✓	
a new Mac Disk user	✓		✓	✓	✓		✓	
an experienced Mac Disk user	✓			✓	✓		✓	
a troubleshooter						✓	✓	✓
an applications programmer				✓	✓		✓	✓

Chapter 1

Getting Started

Changing from diskettes to the Davong Mac Disk is like moving from a cramped studio apartment into a large, comfortable home with room to spare! Your Mac Disk provides:

- *Speed*—Mac Disk eliminates long waits for your folders and documents to open and close
- *Ease of Use*—Mac Disk minimizes inserting, swapping, removing, and storing of diskettes
- *Dependability*—Mac Disk information storage is much more reliable than diskette storage

Figure 1-1. Using Mac Disk

About Your Mac Disk

Your Mac Disk has two *volumes* for storage of your documents and applications. A volume is a designated storage area with a name and size. The volumes on your Mac Disk are a 1-megabyte volume named System and a 2-megabyte volume named User. When you have connected your Mac Disk to your Macintosh and started up with the **Mac Disk System Diskette**, the icons for these volumes will appear on the desktop.

The System volume is intended for storage of your Mac Disk system software and the User volume for storage of your applications and documents. If you want separate volumes for your documents and applications, you can add them using the Volume Manager application that Davong provides on your **Mac Disk System Diskette**.

Once you have copied your folders, applications, and documents to your Mac Disk volumes, you can operate directly from your Mac Disk. You will probably need diskettes only to *start up* your system, *back up* (copy) important information, or run copy-protected software (applications that cannot be copied to the hard disk).

Saving Packing Materials

When you unpack your Mac Disk, be sure you save the packing material. If you ever change locations or need to send your Mac Disk for repair, you will need this packing material.

Equipment Required to Install Mac Disk

Make sure you have the following equipment before starting to install your Mac Disk.

Hardware

- Macintosh computer
- Davong Mac Disk unit and power cable
- Davong interface cable
- Small flat-blade screwdriver

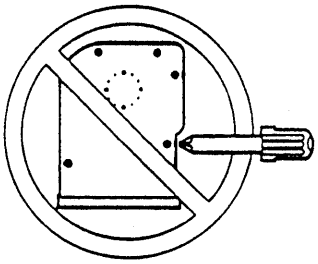
Software

- Standard Macintosh System Disk with Finder version 1.1 or later
- Blank diskette for copying the system diskette
- Davong **Mac Disk System Diskette**, version 1.1 or later

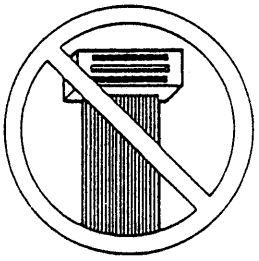
Precautions to Follow

Some of these precautions keep you from voiding your warranty. Others help your Mac Disk operate more effectively or protect you against injury.

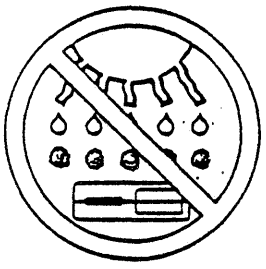
Dropping voids your warranty!



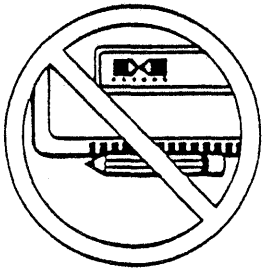
Opening the disk drive assembly voids your warranty!



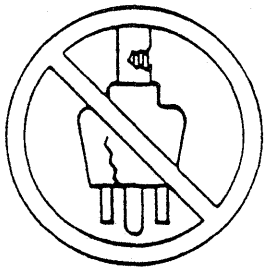
Using an unshielded interface cable violates FCC-Class B requirements and voids the warranty.



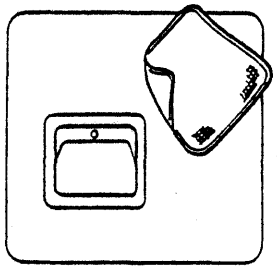
Moisture, dust, or direct sun can harm Mac Disk.



Blocking ventilation may damage Mac Disk.



Frayed cords, broken plugs, and overloaded circuits can hurt you.



Turning off power before cleaning protects both you and your Mac Disk.

Chapter 2

Setting Up Your Hardware

Attaching your Mac Disk to your Macintosh computer is a very simple task. You only need to connect one cable and plug in the power cord.

Voltage Setting

If you have 115 VAC voltage at your wall outlet, go on to *Connecting the Interface Cable* in this chapter.

If you have 230 VAC voltage, see Appendix A for instructions on changing the Mac Disk voltage setting and fuse. If you do not know what the voltage is in your geographical area, your Davong dealer can tell you which setting to use.

WARNING:

Using the wrong voltage setting will damage your equipment and void the warranty.

Connecting the Interface Cable

The interface cable in your adapter kit can be connected to either the modem or printer port on the back of your Macintosh. If it is connected to the printer port, printer output will be redirected to the modem port.

Be certain that your application will redirect printer output before you connect to the printer port. If it will not, you could lose data or your Mac Disk data could become corrupted.

If you are not certain about your application, connect Mac Disk to the modem port. If you have to use a modem that will only connect to the modem port, you can connect Mac Disk to the printer port long enough to use the modem, then switch back to the modem port. Power off before you disconnect your Mac Disk. After you switch ports, power on and start up your system again.

WARNING:

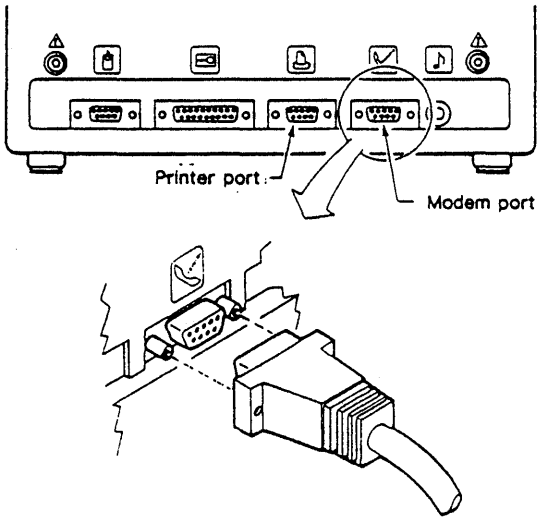
Use the shielded interface cable you received with your Mac Disk. Use of an unshielded cable violates the FCC-Class B requirements and voids your warranty.

Follow these steps to connect the interface cable:

1. Turn off your Macintosh and any equipment connected to it. For your safety, remove the AC power cord from the wall outlet.

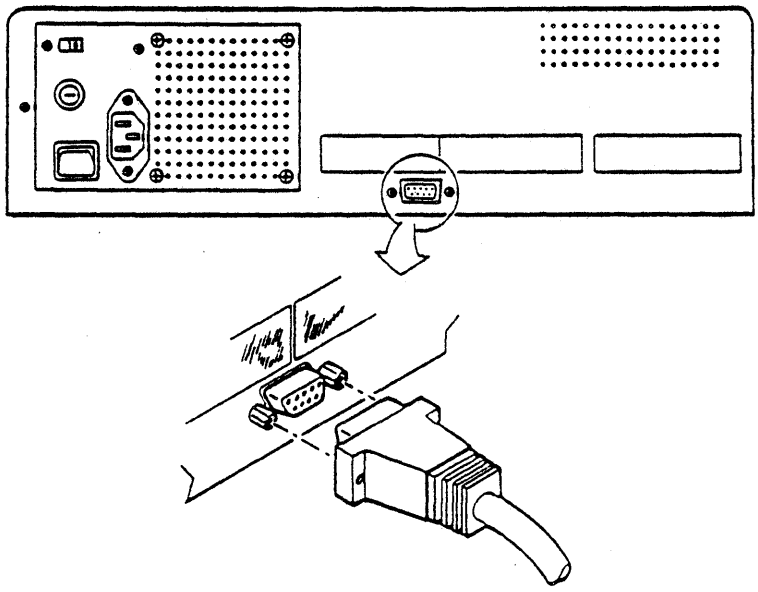
2. Connect one end of the Mac Disk interface cable to the modem or printer connector on the back of your Macintosh, as shown in Figure 2-1. It does not matter which end of the cable you connect to Macintosh.

Figure 2-1. Connecting Cable to Macintosh



3. Connect the other end of the interface cable to its connection on the back of your Mac Disk. See Figure 2-2.

Figure 2-2. Connecting Cable to Mac Disk



4. With a screwdriver, tighten the screws on the two connectors evenly.

Connecting the Power Cord

If you have 115 VAC at your wall outlet, use the black AC power cord that came with your Mac Disk. If your voltage is 230 VAC, do not use this power cord; use one that meets your local electrical codes.

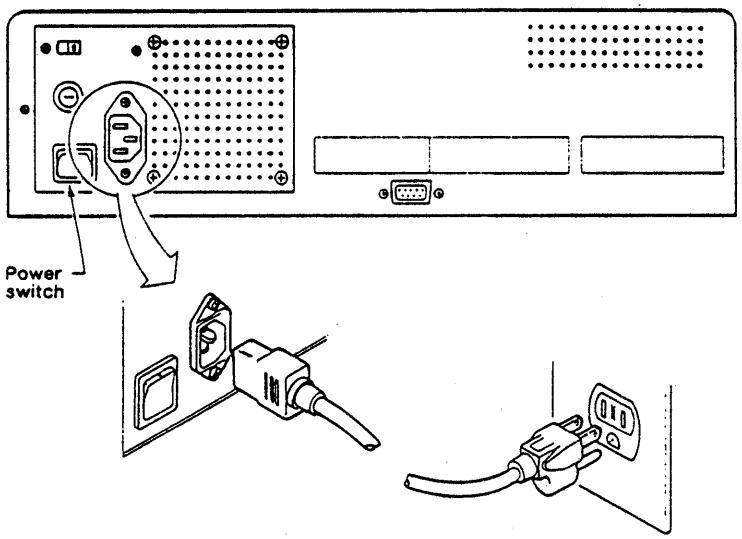
Follow these steps to connect the power cord:

1. Check that the Mac Disk is switched off. The power switch is on the lower right side of the back panel (see Figure 2-3). The **O** on the power switch shows when the power is off.

2. Plug the AC power cord into the power receptacle on the back panel of Mac Disk. Plug the other end of the cord into a grounded 3-prong wall outlet.

3. Reconnect the Macintosh AC power cord to the computer and the wall outlet to complete the installation.

Figure 2-3. Plugging in Mac Disk



Chapter 3

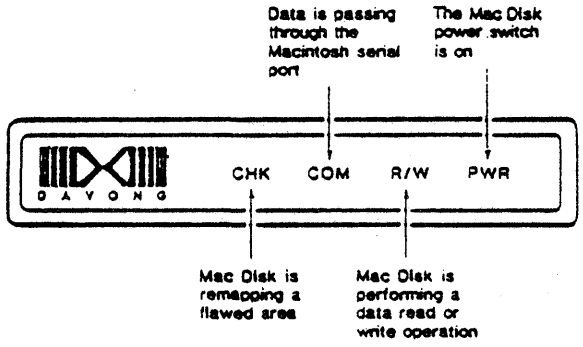
Turning Your System On And Off

When turning on your system, turn on the Mac Disk first and then the Macintosh. The Mac Disk power switch is on the lower right side of the back panel, as shown in Figure 2-3.

Indicator Lights

When the power is on, the **PWR** indicator on the front panel lights (Figure 3-1). If the light does not come on, check the power cord connections.

Figure 3-1. Indicator Light Panel



As indicated in Figure 3-1, the indicator lights keep you informed of the operating status of Mac Disk. A complete description of indicator light functions is included in Appendix B.

Parking

The heads on a hard disk "float" just above the surface of the disk when the hard disk is in operation and rest on the surface when the hard disk is turned off. To prevent damage to the data when the heads are resting on the disk, the heads are usually *parked* before the hard disk is turned off; that is, they are moved to an unused area of the disk.

Parking is often initiated by the user, but Mac Disk does it automatically with the **Auto-Park** feature. Auto-Park parks the heads after 7 seconds of inactivity. It is important to wait about 10 seconds after your last access to Mac Disk to give Auto-Park a chance to park the heads before you turn off your system.

WARNING:

You can damage Mac Disk and lose your information if you turn the Macintosh or Mac Disk off while Mac Disk is performing read or write operations.

Turning Off Your System

Give Auto-Park about 10 seconds to park the heads. Turn off the Macintosh, then turn off the Mac Disk.

Chapter 4

Installing the Software

Now that your Mac Disk and your Macintosh are physically connected, you are ready to introduce them formally with the Davong **Mac Disk System Diskette.** The system diskette contains all the software you need (including the Finder) to start up your system and store information on your Mac Disk.

Section 1 of this chapter describes the Davong Mac Disk software. Section 2 tells you how to install it using the **Mac Disk System Diskette**. There are three installation procedures: one for first-time users, one for users who are upgrading their Mac Disk software, and one for users who want to install the Mac Disk software on a special diskette, for example, one with a new release of the Finder.

Section 1

Davong Mac Disk Software

The Davong **Mac Disk System Diskette** contains the following folders and applications:

- System Folder
- Davong Initialize Disk Contents application
- Davong Install Drivers application
- Davong Volume Manager application
- Davong Mac Disk Diagnostic application

System Folder contains the System and Finder files for operation of your Macintosh; the Note Pad, Scrapbook, and Clipboard files for the desk accessories; and the Imagewriter file for the printer (if installed).

Initialize Disk Contents prepares your Mac Disk to store information. Use this application only when you are upgrading your Mac Disk software.

Install Drivers is required for permanent installation of the Davong Mac Disk software on a special Macintosh system diskette.

Volume Manager, described in Chapter 5, allows you to add, delete, and activate volumes and gather free space on the Mac Disk. This application helps you make the most efficient use of your Mac Disk.

Mac Disk Diagnostic, described in Appendix B, checks out your Mac Disk and gives you a report.

Section 2

Software Installation Procedures

Before you do anything else you should copy your original **Mac Disk System Diskette.** Use your copy to start up your system. If for any reason the copy becomes defective, you will have your original diskette as a backup and source from which to make other copies. See Chapter 3 of your *Macintosh* manual if you need help in copying.

We recommend that you lock your original Mac Disk System Diskette to keep it from being altered by mistake (see Chapter 3 of your *Macintosh* manual for locking instructions).

When you have copied your system diskette, you are ready to install the Mac Disk software. Use the installation procedure that applies to you. If you are installing Mac Disk software for the first time, use the *Initial Installation* procedure; if you are upgrading, see *Upgrade Installation*; and if you are installing the Mac Disk software on a special diskette, skip to *Installation on Special Diskette*.

Initial Installation

These are the basic steps in the initial installation of your Mac Disk software:

1. Start up with your copy of the **Mac Disk System Diskette.**

2. Copy your Mac Disk software to the System volume on your Mac Disk.

3. Transfer control from the **Mac Disk System Diskette** to your Mac Disk (optional).

4. Copy your applications and documents to the User volume, or to volumes you create using Volume Manager (Chapter 5).

Starting Up

Follow these instructions to start up your system:

1. Turn on your Mac Disk, if it is not already on.

2. Insert your copy of the **Mac Disk System Diskette** in the Macintosh disk drive and turn on your Macintosh.

3. The following icons will appear on the desktop: Mac Disk System, System, and User. Mac Disk System is the icon for your **Mac Disk System Diskette;** System and User are the icons for the volumes on your Mac Disk.

Copying System Software to Mac Disk

Open the Mac Disk System icon and copy your Mac Disk system software to the System volume on your Mac Disk. Copying from a diskette to a volume is essentially the same process as copying from one diskette to another. The only difference is that you do not use the Disk Copy application and you do not have to switch diskettes. See Chapter 3 you *Macintosh* manual for help with copying.

Transferring Control to Mac Disk

Your next step is to tell the Finder that the system files are on the Mac Disk. The Finder will then bypass the system diskette and go directly to the Mac Disk. You can transfer control by opening Volume Manager from your System volume. Follow these steps:

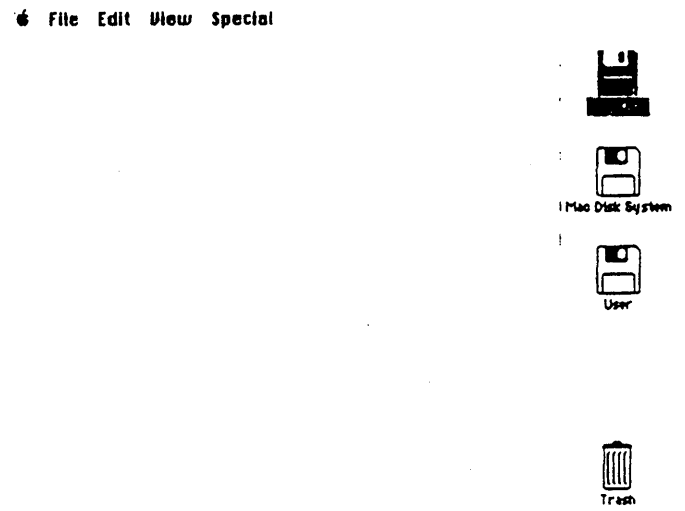
1. Select the System volume icon and open the window.

2. Open the Volume Manager application.

3. Quit Volume Manager and return to the desktop. The System icon should now be first on the desktop, as in Figure 4-1. This indicates that you are operating from the Mac Disk.

4. Eject the **Mac Disk System Diskette**.

Figure 4-1. Mac Disk Icons



You will find that your Mac Disk operates faster without a diskette in the Macintosh disk drive. For maximum efficiency and benefit from your Mac Disk, make it a practice to transfer control to your Mac Disk and eject your system diskette as soon as possible after starting up.

Copying Documents and Applications to Volumes

You can now go ahead and copy your applications and documents to the User volume on your Mac Disk or to volumes you create using the Volume Manager application described in Chapter 5. Use the standard copying techniques given in Chapter 3 of your *Macintosh* manual.

Upgrade Installation

These are the basic steps in upgrading your Mac Disk software:

1. Back up your Mac Disk documents to diskettes.

2. Reinitialize your Mac Disk using the Davong Initialize Disk Contents application.

3. Start up with your copy of the new **Mac Disk System Diskette.**

4. Using the Volume Manager application, create Mac Disk volumes for your Mac Disk system software and your applications and documents.

5. Copy the Mac Disk system software to your system volume.

6. Transfer control from the **Mac Disk System Diskette** to the Mac Disk (optional).

7. Copy your applications and documents to the volumes you created for them.

WARNING:

Initialization erases all documents and applications on the Mac Disk. Back up your Mac Disk before you begin.

Backing Up

Back up the documents and applications on your Mac Disk by copying them to diskettes. Use standard copying techniques given in Chapter 3 of your *Macintosh* manual.

Initializing Mac Disk

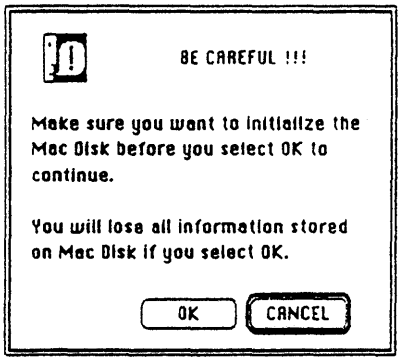
Initializing takes about one minute per megabyte, or about as many minutes as the size of your Mac Disk. Follow this procedure:

1. Insert your copy of the new **Mac Disk System Diskette** in the Macintosh disk drive.

2. Select the **Mac Disk System** icon and open the window.

3. In the Mac Disk System window, select the Initialize Disk Contents icon and open the window. Read Be Careful!

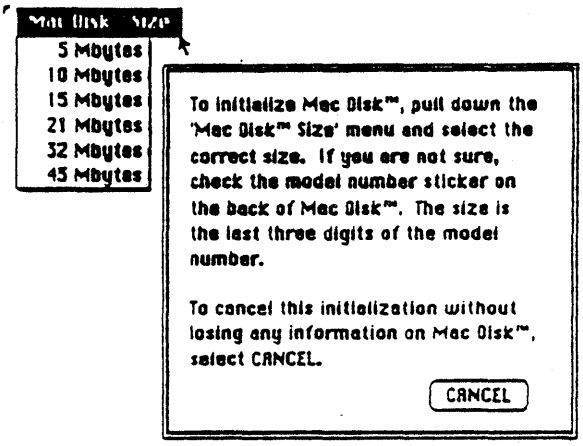
Figure 4-2. Be Careful!



4. Click on OK when you are ready to start initializing your Mac Disk.

5. Pull down the Mac Disk Size menu (Figure 4-3) and select your Mac Disk size. The last three digits of the model number indicate the size.

Figure 4-3. Mac Disk Size



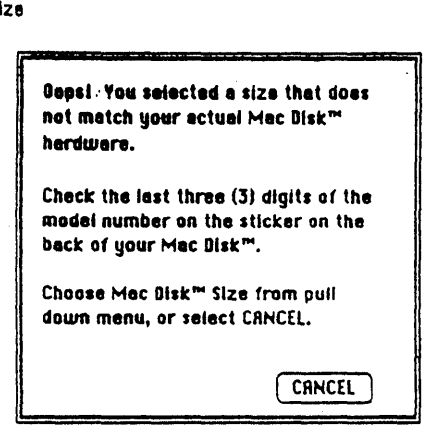
If the size you select is correct, you will be advised that initialization is underway. If the size is not correct, you will receive an error message (Figure 4-4). Select the correct size from the size menu.

As the Mac Disk is initialized, the **COM** and **R/W** indicator lights blink. The mouse cursor does not move.

When initialization is successfully completed, a message appears. Click on OK and return to the desktop.

If initialization is discontinued for some reason, an error message will appear. The message will include an error code and a brief description of possible solutions, if applicable. Appendix B contains complete descriptions of the errors.

Figure 4-4. Storage Capacity Error



Starting Up

When you start up your system after reinitializing your Mac Disk, be sure you use your copy of the new **Mac Disk System Diskette.** If you inadvertantly start up with an old system diskette, a Mac Disk icon called Wrong Version will appear on the desktop. Simply eject the old diskette, insert your copy of the new **Mac Disk System Diskette**, and start up again.

Creating Volumes

Open the Volume Manager application from your Mac Disk system icon and go on to Chapter 5, *Volume Manager*. Follow the instructions given in the section *Adding Volumes*. Add a volume for your Mac Disk system software and as many volumes as you need for your applications and documents. Make the volumes active, as instructed in Chapter 5; then quit Volume Manager and return to the desktop.

Copying System Software to Mac Disk

Now you are ready to copy your Mac Disk system software to your system volume. When the system files are on the Mac Disk, you can transfer control to the disk and eject the system diskette.

Transferring Control to Mac Disk

To transfer control, open the Volume Manager application from your system volume. This will instruct the Finder to bypass the system diskette and go directly to your Mac Disk. Quit Volume Manager and eject the system diskette.

The icon for your system volume will appear at the top of the desktop, indicating that you are operating from your Mac Disk. You will find that your Mac Disk operates faster without a diskette in the Macintosh disk drive.

Go ahead and copy your documents and applications to the Mac Disk volumes you created for them.

Installation on Special Diskette

If you want to access your Mac Disk using a special Macintosh system diskette (for example, one with a new release of the Finder) you must copy the Davong Install Drivers and Volume Manager applications to your diskette. Then run Install Drivers to add the Mac Disk software permanently to your special diskette.

The installation takes four steps:

1. Copy your special diskette and rename the copy.

2. Copy Mac Disk applications to your copy of the special diskette to create an alternate Mac Disk system diskette.

3. Run the Davong Install Drivers application from your alternate Mac Disk system diskette.

4. Start up your system again using your alternate Mac Disk system diskette.

Copying Your Special Diskette

Use the standard copying techniques given in Chapter 3 of your *Macintosh* manual. Rename the copy and store the original diskette. From now on we will refer to the copy as the "alternate Mac Disk system diskette" or "alternate system diskette".

Copying Mac Disk Applications

Copy Install Drivers, Volume Manager, Mac Disk Diagnostic (optional), and Initialize Disk Contents (optional) from your **Mac Disk System Diskette** to your alternate Mac Disk system diskette.

If there is not enough room on your alternate diskette for both Install Drivers and Volume Manager, you can copy and run Install Drivers, delete Install Drivers, and then copy Volume Manager.

Running Install Drivers

Run Install Drivers as follows:

1. Turn off your Mac Disk or disconnect it from your Macintosh.

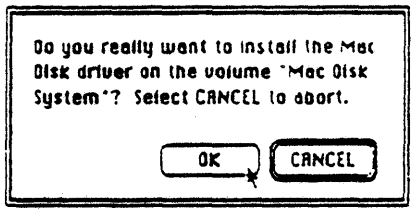
2. Turn off your Macintosh.

3. Insert the alternate system diskette in the Macintosh disk drive and turn on your Macintosh.

4. Select the alternate system diskette icon and open the window.

5. Select Install Drivers and open the window. Read the Install Drivers alert message.

Figure 4-5. Install Drivers



6. Click on OK to run Install Drivers.

7. When a dialog box tells you the drivers are installed, click on OK.

8. If you get an error message, follow the instructions.

9. Turn on or reconnect your Mac Disk, as applicable.

10. Turn your Macintosh off, then on again. The Mac Disk system icon should appear on the desktop.

Using the Volume Manager application, you can add volumes to your Mac Disk and copy your applications and documents to them. See Chapter 5 for instructions.

You are strongly advised to have at least two alternate system diskettes for each special system, as well as multiple copies of your original special system diskette.

Chapter 5

Volume Manager

The **Mac Disk Volume Manager** application on your Mac Disk System Diskette lets you partition your Mac Disk so you can use it more efficiently and economically. With Volume Manager you can:

- Add volumes
- Delete volumes
- Gather free space
- Make volumes active or inactive
- Make volumes auto-active

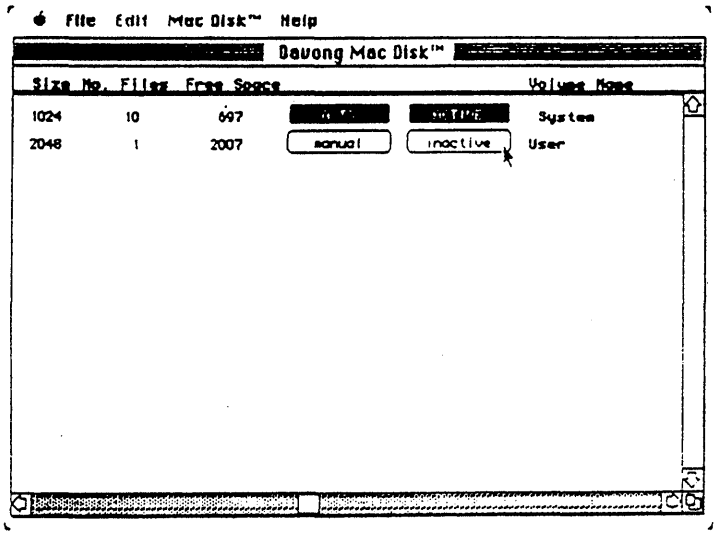
Volume Manager has two windows and five menus:

- Davong Mac Disk window with volume directory
- File window with file directory
- Apple menu
- File menu
- Edit menu
- Mac Disk menu
- Help menu

Opening Volume Manager

On the desktop, select your Mac Disk system icon (preferably the icon for your system volume if you have one) and open the window. Select and open Volume Manager. The Davong Mac Disk window with the volume directory will appear.

Figure 5-1. Volume Directory



Reading the Volume Directory

The volume directory supplies eight items of information about each volume on the Mac Disk. To see all the information, scroll the window horizontally. Reading from right to left, the items are:

- Volume name (listed alphabetically)
- Volume status (active/inactive)
- Volume startup status (auto/manual)

	Note:
	Volume startup status buttons appear only
	when there is an unlocked Mac Disk system
	diskette in the Macintosh disk drive.

- Amount of free space in the volume, in kbytes
- Number of files in the volume
- Size of volume, in kbytes
- Date and time last modified
- Date and time created

Active/Inactive Status Buttons

The active/inactive status buttons show the current status of the volumes on the Mac Disk. When a volume's status button reads ACTIVE, the volume icon will appear on the desktop when you quit Volume Manager. If the status button reads inactive, the volume is not currently available to Macintosh. No icon will appear on the desktop.

To change the active/inactive status of a volume, click once on the status button.

You cannot change the status of the system volume and the volume with Volume Manager.

Automatic/Manual Startup Buttons

The buttons to the left of the active/inactive status buttons show the startup status of the volumes. They only appear when an unlocked Mac Disk system diskette is in the Macintosh disk drive.

If a volume's startup status button is highlighted and reads AUTO, the volume becomes active automatically on startup. If the button reads manual, you have to use Volume Manager to make the volume active.

You can change startup status by clicking once on the button. The change will not be effective until you save it to your Mac Disk system diskette, as explained in *Making Volumes Auto-Active* in this chapter.

Using Volume Manager Menus

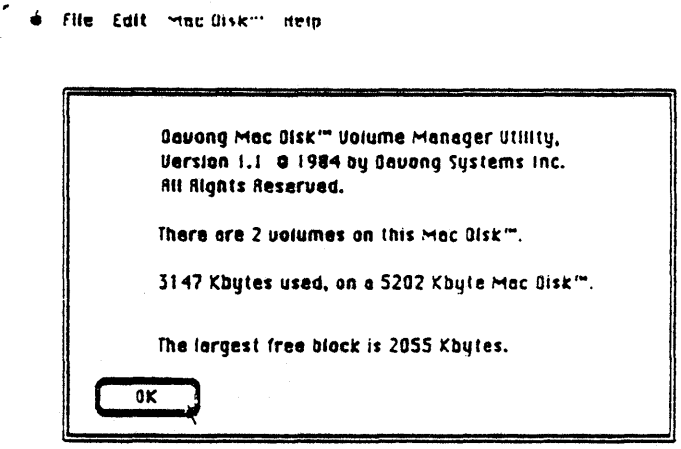
Volume Manager has five menus: Apple, File, Edit, Mac Disk, and Help.

Apple Menu

The Apple menu offers desk accessories and information about Volume Manager. All the desk accessories function when you are in Volume Manager, but you cannot cut, copy, or paste between a desk accessory and Volume Manager. See your *Macintosh* manual for descriptions of the desk accessories.

About Volume Manager is a dialog box that tells you how many volumes are currently on the Mac Disk, how many kilobytes of disk space have been used, and how many kilobytes remain in the largest free block of space.

Figure 5-2. About Volume Manager

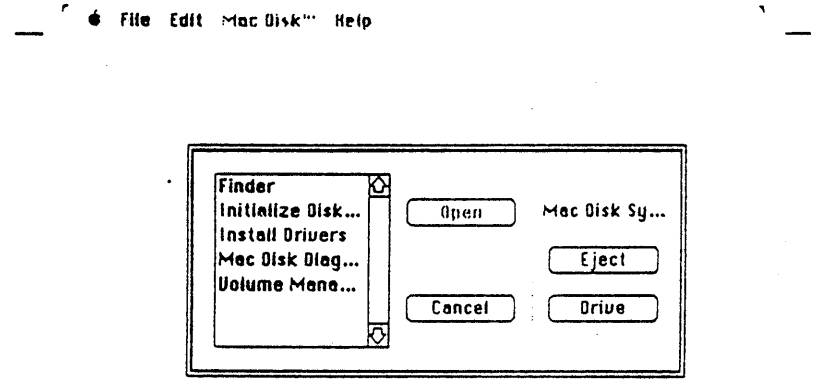


File Menu

From the File menu you can open and close windows, eject the diskette, open another application, and quit Volume Manager.

Open Another Application is a great time-saver. It allows you to transfer to another application without going through the Finder. You pick the application from a dialog box like the one in Figure 5-3.

Figure 5- 3. Open Another Application



Edit Menu

Except for Undo, the items on the Edit menu are for use with the desk accessories. They do not function in Volume Manager.

Undo functions only when you make an auto/manual startup change. It allows you to "undo" all your auto-manual choices and restore the default selections from your **Mac Disk System Diskette.**

Auto/manual startup changes do not become effective until you save them to your system diskette (see *Making Volumes Auto-Active* in this chapter).

Mac Disk Menu

From the Mac Disk menu you can select Add Volume, Delete Volume, or Gather Free Space. These functions are described in the following sections of this chapter.

Help Menu

Help displays a series of handy references on volumes and tips on adding volumes, making volumes active and inactive, and changing auto/manual startup status.

It is a good idea to review the information in the Help menu before you go on to the next section.

Adding Volumes

Adding a volume to Mac Disk allocates space for the volume on the disk and creates the volume statistics that appear in the volume directory.

If your Mac Disk is not already partitioned into volumes, you should add a system volume for your Mac Disk system software and additional volumes for your documents and applications.

Determining the Number of Volumes

The number of additional volumes you need depends on the number of applications, folders, and documents you have to store and the way you want to store them.

You can think of Mac Disk as a filing cabinet that can be partitioned in a number of ways. It can have one or two very large drawers with a large number of documents per drawer, or it can have many small drawers and a few documents per drawer. Obviously, it will take less time to find what you want if you can go to a small drawer and search through a few documents.

The more applications, folders, and documents you have on a Mac Disk volume, the longer it will take the Finder to retrieve what you want. You will get the best performance if you partition the Mac Disk into many small volumes, each containing about 40 documents.

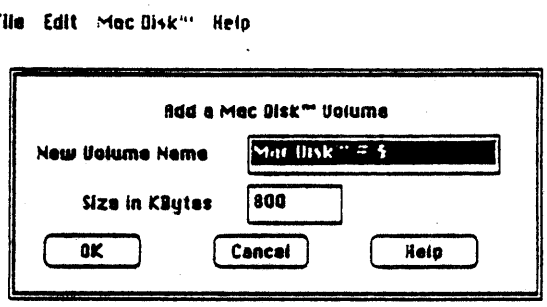
WARNING:

It is dangerous to have more than 200 documents on a volume, especially if you have a 128K Macintosh. Under certain circumstances, the Finder can lock you out of your data.

Determining Volume Name and Size

Select Add Volume from the Mac Disk menu to get the Add a Mac Disk Volume dialog box.

Figure 5-4. Add a Mac Disk Volume



The volume name and size you see in the dialog box are the *default* name and size. You can accept these defaults by clicking on OK, or you can enter another name and/or size.

Renaming

If you want to rename the volume, pick a name you have not used before. You can have two volumes with the same name, but it might be confusing.

The name you choose should identify the contents of the volume. The volume that contains your Mac Disk system software, for example, should be called "System" or have "System" in its name.

Although volumes are listed alphabetically in the volume directory, you can force a volume like "System" to the top of the list by entering a blank space before the name. Hold down the <**Option**> key as you press the space bar, then type the name. For additional tips on naming, pull down the Help menu and click on About Volumes.

Names can be changed any time a volume is active. See *Renaming* in Chapter 3 of your *Macintosh* Manual.

Resizing

A volume can be as small as 100 kbytes or as large 16 megabytes. To find out how much space is available, pull down the Apple menu and click on About Volume Manager.

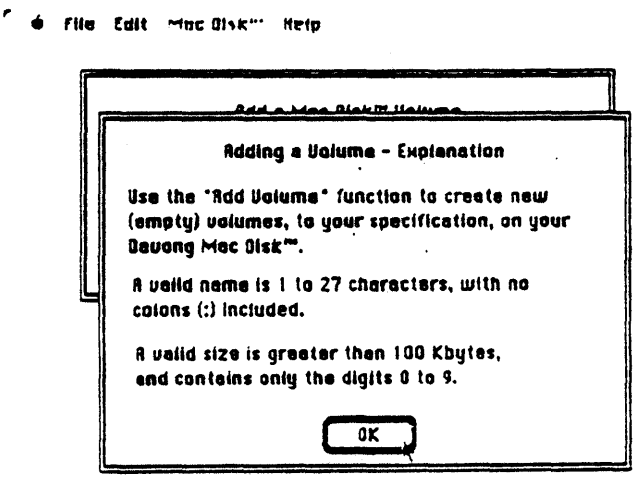
The default size, 800 kbytes, is more than adequate for your system volume and most volumes. A volume of 800 kybtes will accommodate two single-sided diskettes.

Once the volume is added, the size cannot be changed. If a volume proves to be too small, you can add a larger volume and delete the old one. For instructions, pull down the Help menu and click on About Volumes.

Adding Volume Explanation

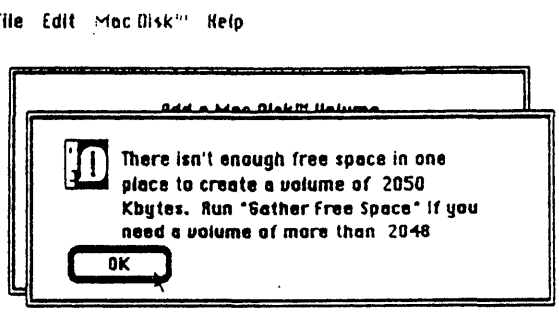
Before you enter anything in the dialog box, click on Help in the dialog box and read Adding Volume Explanation.

Figure 5-5. Adding Volume Explanation



If the name or size you enter does not meet the specifications shown in Figure 5-5, you will get an error message. Figure 5-6 will appear if you attempt to add a volume larger than the largest free block of space.

Figure 5-6. Gather Free Space Advice



Gathering free space is discussed later on in this chapter.

When you are ready to enter a new name and size, click on OK in Adding Volume Explanation and return to Add a Mac Disk Volume.

Entering Name and Size

Press the <**Backspace**> key to delete the default name. Enter a new name as instructed in your *Macintosh* manual.

To erase the default size, press the <**Tab**> key. Enter a new size with numerals only, no commas.

When you are ready to add the volume, click on OK. The volume statistics will appear in the volume directory.

The next step is to make the volume active so you can use it.

Making Volumes Active

To make a volume active, click once on the volume's status button and turn on ACTIVE. The volume icon will appear on the desktop when you quit Volume Manager.

There is no fixed limit to the number of volumes you can activate at one time; however, you cannot activate a volume if it would leave too little memory for Volume Manager to operate. If there is insufficient memory, you will be informed when you attempt to activate the volume.

Some applications may not run if you activate too many volumes. Others, like the Finder, may allow you to activate some but not all of the volumes. In any event, if you need more memory to activate volumes, you can obtain it by making volumes you are not currently using inactive.

Making Volumes Inactive

To make a volume inactive, click once on the ACTIVE button and change it to inactive. The volume icon will be removed from the desktop when you quit Volume Manager.

You cannot make the system volume or the volume containing Volume Manager inactive.

Making Volumes Auto-Active

An active volume will become inactive when you start up again, unless the volume has AUTO startup status. In that case, the volume becomes active automatically. Its icon appears on the desktop when you start up your system with your system diskette; you do not have to use Volume Manager to activate it.

To give a volume AUTO startup status, click once on its startup status button and change manual to AUTO.

Auto/manual startup changes are not effective until you save them to your startup diskette. When you select Eject Internal Diskette, Open Another Application, or Quit from the File menu, you will be asked:

Save Auto/manual changes to diskette?

Click on Yes if you want to make the change; click on No if you change your mind.

You can request AUTO status for any number of volumes; however, the number that will actually become active when you start up will depend on the amount of memory available to activate the volumes. If there is insufficient memory, you will be informed during startup.

Customing Diskettes with Auto-Active

The auto-active feature can be used to customize Mac Disk System diskettes. For example, if you are in charge of a shared Macintosh, you can configure a startup diskette for each user, making the user's System, application, and data volumes automatically active.

This technique not only saves time, it also offers a measure of data security. If the users' volumes are automatically active, you can eliminate Volume Manager from their startup diskettes and volumes. Users would then have no access to each other's volumes.

Deleting Volumes

Deleting a volume deallocates the space for it on the Mac Disk; in effect, it erases the volume from the space. Deleting does not compact or *gather* the deallocated space.

WARNING:

Deleting a volume destroys all documents on the volume.

You can delete up to 20 volumes at a time. If you try to delete more, you will receive an error message.

Before you delete a volume, remember to back up (copy) onto diskettes or onto another volume any documents you want to save.

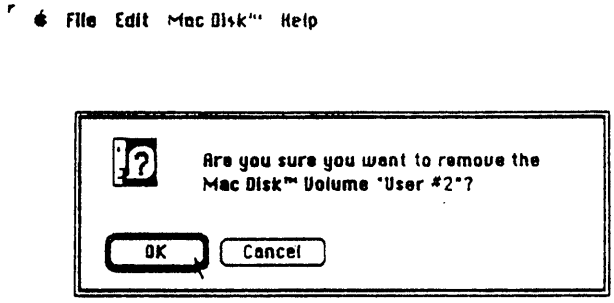
When the backup is completed, delete the volumes as follows:

1. In the Davong Mac Disk window, check that every volume you want to delete is inactive. If you attempt to delete an active volume, you will get an error message.

2. Select the volumes to be deleted by clicking on the volume names. You can shift-click or drag the mouse to select more than one volume.

3. Pull down the Mac Disk menu, select Delete Volume, and read the Delete Volume alert box.

Figure 5-7. Delete Volume Alert



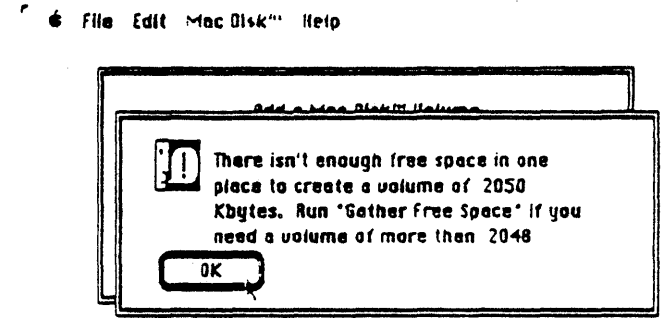
4. Click on OK to delete the volume. The volume will disappear from the directory, unless it has AUTO status.

A deleted volume with AUTO status will remain in the directory in dimmed type. On startup, the Finder will look for the volume and then display a "volume not found" message. When the volume is no longer auto-active, it is dropped from the volume directory.

Gathering Free Space

Gathering free space is the process of moving volumes closer together in order to consolidate free space between the volumes. There is no reason to gather free space unless you receive a Gather Free Space Advice message.

Figure 5- 8. Gather Free Space Advice



WARNING:

If a power failure occurs while a volume is being moved, the volume and all the data on it will be lost. Be sure you back up all your applications and documents onto diskettes before you begin.

When you have backed up all your documents and applications, proceed as follows:

1. Insert your copy of the **Mac Disk System Diskette** in the Macintosh disk drive.

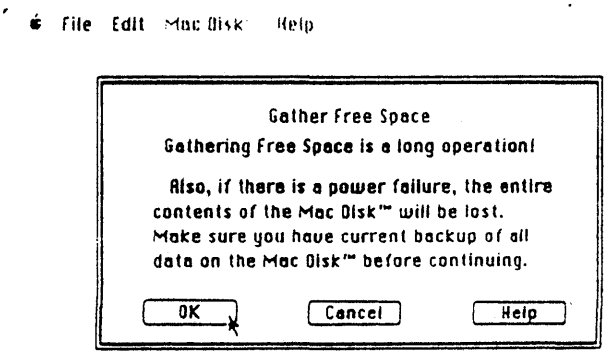
2. Open Volume Manager from the system diskette.

3. Make every volume in the volume directory inactive. An error message will appear if any volume remains active.

4. Pull down the Mac Disk menu, click on Gather Free Space, and read the alert message (Figure 5-9).

5. Click on OK to start the operation.

Figure 5-9. Gathering Free Space



To abort the operation, press the <⌘> <.> keys simultaneously.

	Note:
	It may take a minute to actually stop the
	operation. This delay ensures that no data
	is lost.

6. When a Free Space Collected dialog box appears, click on OK and return to the Davong Mac Disk window.

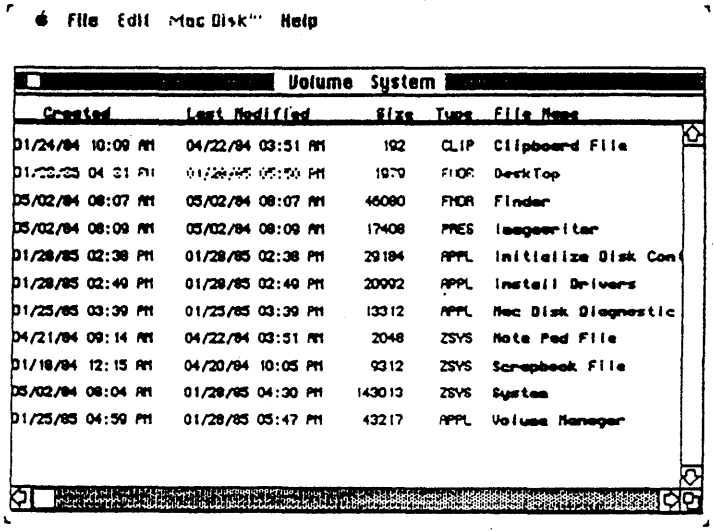
7. Select Add Volume from the Mac Disk menu and add your volume.

Opening File Windows

Each volume contains a file directory, which gives information on the files in the volume. The directory provides information only; you cannot access your files from it.

To open the file directory window, double-click on a volume name in the volume directory. Select only one volume; you cannot open more than one file directory window at a time.

Figure 5-10. File Directory



The file directory window displays five columns of information about each file on the volume. Reading from right to left, the columns are:

- File name (listed alphabetically)
- Type of file (text, application, etc.)
- Size in kbytes
- Date and time last modified
- Date and time of creation

Folders are not listed, only individual files. Listings in dimmed type are *invisible files* that your applications use to perform certain functions. The Desktop file on your system volume, for example, keeps track of icons, folders, and documents for the Finder. You have no access to invisible files.

Appendix

A Voltage Settings and Fuse Changes

You may need to change the voltage setting and fuse on your Mac Disk if your power requirements are not standard. Both of these tasks are quick and easy to accomplish.

Davong shipped your Mac Disk with the 115 VAC setting, for the standard United States outlet voltage. If your voltage is 115 VAC, you may discard the additional 1.5 Amp fuse shipped with your Mac Disk and begin setting up your hardware as instructed in Chapter 2.

Installations outside of the United States sometimes require the 230 VAC setting. If your voltage is 230 VAC, you must change the voltage switch setting and the fuse. Discard the fuse shipped in your Mac Disk, and remove the 115 VAC sticker from the back of your Mac Disk unit. *Do not use the power cord shipped with your Mac Disk. Use a power cord that meets your electrical codes.*

Contact your Davong dealer if you have any questions about the correct setting in your area.

Changing the Voltage Setting

Table A-1 shows the settings you should use for the voltage ranges given.

Table A-1. Voltage Settings

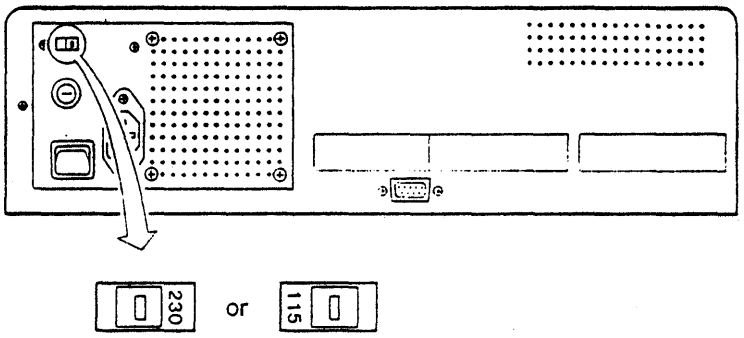
Setting	Voltage Range
115	90–132 VAC
230	198–264 VAC

To change the voltage setting:

1. Turn off your Mac Disk and remove all cords from it.

2. Slide the voltage switch, on the right side of the back panel, to the 230 VAC setting (see Figure A-1).

Figure A-1. Setting the Switch



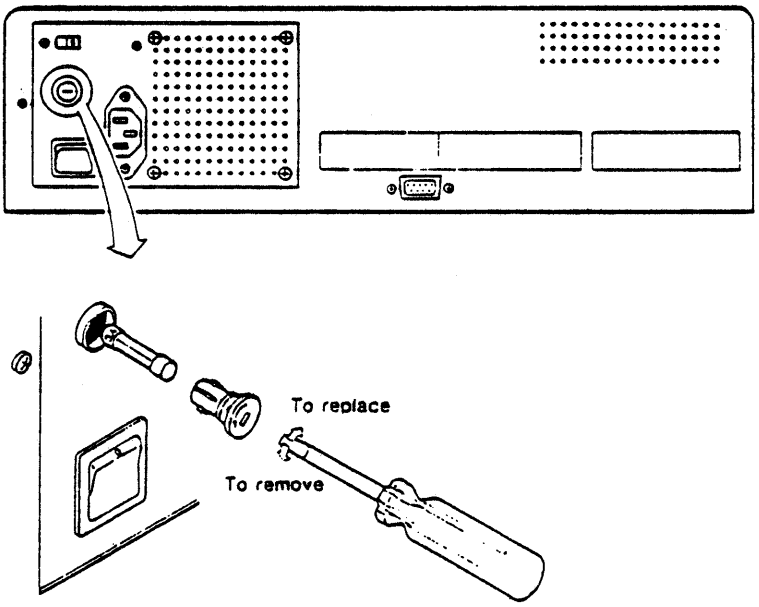
Voltage selection switch

Changing the Fuse for 230 VAC

1. Turn off Mac Disk. Disconnect all cords and cables from the back panel of Mac Disk and from the wall outlet.

2. Locate the fuse holder on the back of the Mac Disk unit. Use a screwdriver to turn the holder counterclockwise and remove it from the back of the unit. Refer to Figure A-2.

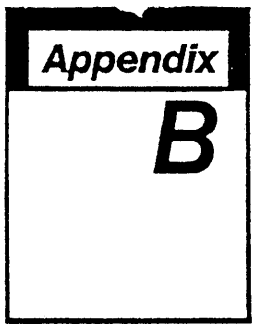
Figure A-2. Changing the Fuse



3. Remove the existing fuse and discard it.

4. Place the 1.5 Amp fuse in the holder. It does not matter which end goes first.

5. Reinsert the fuse holder into the unit and turn it clockwise.



Trouble?

If you have trouble with your Macintosh or Mac Disk, the information in this appendix should help you identify your problem and may show you how to fix it. If you cannot find a solution, call your Davong dealer for assistance.

Troubleshooting suggestions are included in these four major sections:

- Symptoms and Possible Solutions
- Error Messages
- Mac Disk Indicator Lights
- Mac Disk Diagnostic

The error messages and the Mac Disk Diagnostic application are your primary troubleshooting tools. The diagnostic allows you to test Mac Disk operations without destroying the volumes and files on your Mac Disk.

Section 1

Symptoms and Possible Solutions

If something goes wrong, the first thing you should do is check the following list of symptoms. These explanations suggest possible solutions or direct you to further information in this appendix.

Hardware Symptoms

Nothing works.
Check that the interface cable is securely connected to the Macintosh and Mac Disk. Start up again.

The Mac Disk PWR light is not on.
Check the following and remedy if necessary:

1. Mac Disk power switch is in the on position.
2. Voltage selection is correct for your wall outlet.
3. Power cord is securely connected.
4. Power is supplied to the wall outlet. Test the outlet using another electrical appliance.
5. Fuse is good.

The indicator lights show that Mac Disk does not get through its powerup sequence.
Perform the following checks:

1. Turn the Macintosh off, then turn the Mac Disk off and on again.

2. Watch the indicator lights during powerup and check that they light up in the correct sequence. See *Indicator Lights During Powerup* in this appendix. If a powerup error occurs, take the Mac Disk to your dealer.

3. If the lights indicate that the disk has not been initialized, run the Initialize Disk Contents application. If the problem recurs, take the Mac Disk to your dealer.

Software Symptoms

Error message appears during Mac Disk installation or when running Volume Manager.
Note the code number of the message, the application you are using, and the operation in progress when the message appeared. Turn to *Error Messages* in this appendix and find the error message in the appropriate table. If the tables do not help, try the *Advanced Communications Checks* in this appendix or contact your Davong dealer for assistance.

Error occurs when running an application.
The problem may be due to the application, not the Mac Disk. Try using a different application to do a similar task. If the error repeats, restart and run the application again to rule out transient error. If the error recurs, replace the original application from its backup and retest. If the problem persists, try the *Advanced Communications Checks* in this appendix or contact your Davong dealer for assistance.

Error occurs when running various applications.
The Mac Disk system file you are using is corrupted. Replace it. If the bad file is on a Mac Disk volume, use your copy of the **Mac Disk System Diskette** or alternate system diskette to replace it. If the file is on a copy of the **Mac Disk System Diskette**, use your original **Mac Disk System Diskette** to replace it. Replace the system file as follows:

1. Start up with your good **Mac Disk System Diskette** (copy or original).

2. Open the icon for the volume or diskette with the corrupted system file. Open the System Folder, drag System to the trash, and empty the trash.

3. Replace System from the System Folder on the diskette you used in step 1.

If the problem persists, try the *Advanced Communications Checks* or contact your Davong dealer for assistance.

Application will not run from the Mac Disk.
Refer to the manual for the application for the requirements to make the application run from a hard disk. Or ask your dealer. If the application is supposed to run from a hard disk but you are unable to run it from Mac Disk, try recopying the application from the original diskette. If the problem persists, try the *Advanced Communications Checks* in this appendix or contact your Davong dealer for assistance.

Fatal system error ("bomb") message is displayed while running system software.
Record the error ID code, your application, and the operation in progress when the error occurred. Isolate the error as follows:

1. Restart the system and try the operation again, using the same diskette, to rule out a transient error.

2. Restart the system and try a similar operation using another application. If the error does not occur, then your first application diskette has become corrupted. Replace it from a backup copy and try the operation again. If it still does not work, check with the application dealer.

3. Restart the system and repeat the original operation without using the Mac Disk. If this works, then your Mac Disk system file may be corrupted. Throw the old system file in the trash and replace it with the System file from the System Folder on your original **Mac Disk System Diskette** (see *Error occurs when running various applications* above). It may be a good idea to replace the applications from backup too.

4. If none of the above remedies work, check the error codes listed in Table B-3. If this does not help, try the *Advanced Communication Checks* in this appendix or contact your Davong dealer for assistance.

Advanced Communication Checks

One or more of these guidelines may isolate communications reliability problems. You need additional equipment to run these tests. If you do not have it, contact your dealer.

- Run the Mac Disk Diagnostic application. See *Mac Disk Diagnostic* in this appendix.
- Try a different Macintosh with your Mac Disk.
- Try a different Mac Disk with your Macintosh.
- Try a different interface cable between your Macintosh and your Mac Disk.
- Reinstall your Mac Disk Install Drivers application on your copy of your **Mac Disk System Diskette**, using the instructions in Chapter 4.

Section 2

Error Messages

When you receive an error message, write down the code number, your current application, and the operation in progress when the message appeared. Use the following tables to explain the error. Steps to isolate and remedy problems are included in the tables where applicable.

Communication messages (Table B-1) are identified by a **COM** number. They appear when Macintosh and Mac Disk are not communicating properly. Mac Disk error messages (Table B-2) are identified by a **MAC** code and appear when the Mac Disk cannot carry out a Macintosh instruction. Fatal system error messages (Table B-3) are identified by a bomb and an **ID** code.

Table B-1. Communication Errors

Code	Explanation
COM1	Bad data received
	Macintosh received a message from Mac Disk but could not understand it.
COM2	Bad data received
	Macintosh received a message from Mac Disk, but a data error was detected by the Macintosh serial communications chip.
COM3	Bad data received
	Macintosh received a message from Mac Disk but could not understand it.
COM4	Bad data received
	Macintosh received a message from Mac Disk but the message was longer than expected.
COM5	Incoming data lost
	Macintosh detected a message from Mac Disk but lost part of the message.
COM6	Transmission error
	Macintosh failed to transmit a message correctly.
COM7	No response received
	Macintosh sent a request to Mac Disk but did not receive a response. (Check your cable connections. Be sure that Mac Disk is turned on.)
COM8	No poll received
	Macintosh attempted to send a message to Mac Disk but did not receive a go-ahead signal from Mac Disk. (Check your cable connections. Be sure that Mac Disk is turned on.)

Table B-2. Mac Disk Errors

Code	Explanation
MAC1	Disk not initialized
	Read and write operations cannot proceed until Mac Disk is properly initialized. (Review Chapter 4 and reinstall if necessary.)
MAC2	Disk operation timeout
	Mac Disk attempted to perform a disk operation, but the operation did not complete in the expected time. (Your disk drive may need repair.)
MAC3	Flaw table overflow
	Mac Disk found too many flawed areas on the disk. (Attempt to back up important folders to a diskette. If you cannot back up your folders, reinitialize the Mac Disk contents. If the problem recurs, your Mac Disk may need repair.)
MAC4	General disk error
	Requested disk operation was attempted but not successfully completed by the disk drive on the disk controller. (The disk drive may need repair.)
MAC5	Illegal request received by Mac Disk
	(Reinstall the Install Drivers application as instructed in Chapter 4, or use a backup copy. If the problem recurs, run the Mac Disk Diagnostic application.)
MAC6	Read error on remapped block
	An error occurred and automatic remapping was done, but Mac Disk has only been able to write back part of the information to the disk. (Try recopying from diskette all information that may be corrupted, especially any application or document that caused you to run Mac Disk Diagnostic.)
MAC7	Disk heads error
	This can occur only if you are reinitializing your Mac Disk. A zero head count means that the disk is not responding to the controller's query regarding the number of heads on the disk. This indicates that your Mac Disk may need repair.

Table B-3. Fatal System Errors

Code	Explanation
ID = 13	Uninstalled Interrupt Error
	If Mac Disk starts up at all, it is not at fault. If the programmer's switch is installed, you may have hit the interrupt button.
ID = 25	Out of Memory Error
	Document has grown too big for application, error in application, or system heap is set too large for application. Reduce document size and inactivate unused volumes. Changing the system heap requires Apple programmer utility "Boot Configure". Check with your dealer.
ID = 26	Can't Launch Application
	Finder cannot open application. If this happens during startup, check that a good copy of the Finder exists on the startup diskette. If it occurs after startup, the application or file directory has become corrupted. Try replacing the application on the volume. If all else fails, erase the volume and make a fresh copy from backup.
ID = 28	Stack Moved Into Application Heap
	You have run out of memory, and your application may have corrupted parts of the data in memory before the system error occurred. Handle the error as described in ID = 25. Then check the document you were working with to make sure it is not also corrupted.

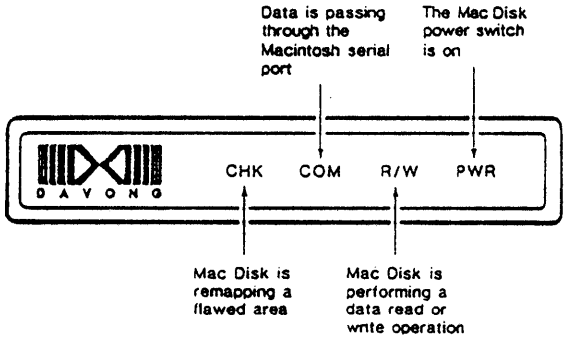
Section 3

Mac Disk Indicator Lights

There are two modes of operation for the indicator lights:

- During power up
- During normal operation.

Figure B-1. Indicator Light Panel



Indicator Lights During Powerup

During powerup, the lights function as follows:

1. **PWR** light comes on when Mac Disk is turned on.

2. **CHK** light blinks until powerup completes.

3. **R/W, COM,** and **CHK** lights blink in succession five times if Mack Disk has been initialized.

   or

   R/W, COM, and **CHK** lights blink together 12 times if Mac Disk has not been initialized, or if there is some problem reading the disk.

If an error occurs after you first turn on your Mac Disk, the **CHK** and/or **COM** lights will come on and stay on. The **CHK** light stays on if there is a processor error; the **COM** light stays on if there is a ROM checksum error; and **CHK** and **COM** both stay on if there is a RAM error.

Indicator Lights During Normal Operation

During normal operation, the indicator lights function as follows:

1. **PWR** light comes on when the Mac Disk is turned on and remains on until Mac Disk is turned off.

2. **CHK** light comes on when a disk sector is being remapped.

3. **COM** light comes on when Mac Disk receives a request from Macintosh and stays on for the period of time that it takes to process the request.

4. **R/W** light comes on whenever the disk drive is selected and goes off when the disk drive is deselected.

Section 4

Mac Disk Diagnostic

The Mac Disk Diagnostic application performs a simple test of the Mac Disk and displays a message indicating the results of the test. The program will not destroy volumes and documents on the Mac Disk.

To use the Mac Disk Diagnostic application, follow these steps:

1. Turn your Macintosh off and then on again.
2. Start up with a copy of your **Mac Disk System Diskette.**
3. Select and open the Mac Disk Diagnostic icon.

The Mac Disk Diagnostic application performs the following functions:

1. Checks version number and drivers status
2. Runs diagnostic tests
3. Verifies disk.

If no errors are found, a dialog box is displayed, confirming that Mac Disk appears to be functioning correctly.

One of several dialog boxes may appear on your screen during each phase of the checkout. If the message indicates an error, select Cancel from the dialog box to stop the diagnostics run. If there is no error (or no excessive error), select OK and go on to the next phase of the diagnostic checkout.

Version Number and Drivers Status

The Mac Disk Diagnostic application first gets the version number of your Mac Disk and checks to see if the drivers are installed. If Figure B-2 is displayed, you may select OK to continue. If Figure B-3 is displayed, select CANCEL and check the Mac Disk installation.

Figure B-2. Drivers Status

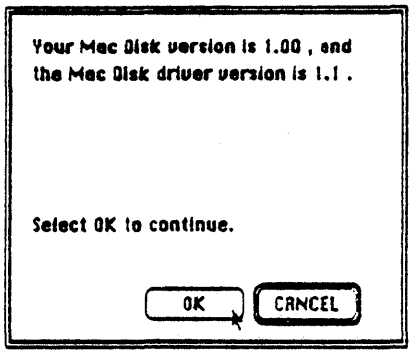
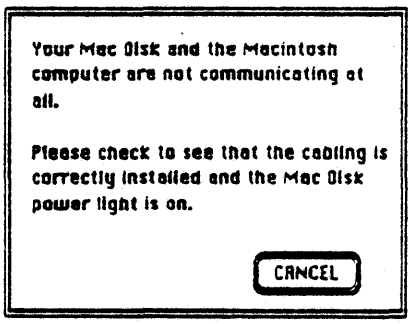


Figure B-3. Not Communicating



Diagnostic Tests

In these tests, the Mac Disk Diagnostic application writes and reads to disk locations reserved for diagnostic analysis. The indicator lights blink while these tests are being performed. If the errors shown in Figures B-4 through B-9 are not found, the diagnostic continues to the verification phase.

If Figure B-4 appears and more than two or three blocks have been remapped, your Mac Disk may need repair. Follow the instructions on the screen.

Figure B-4. Bad Spots

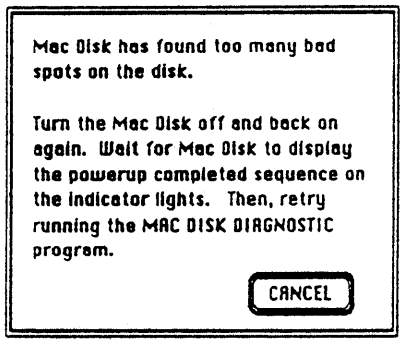


Figure B-5. Cannot Read and Write

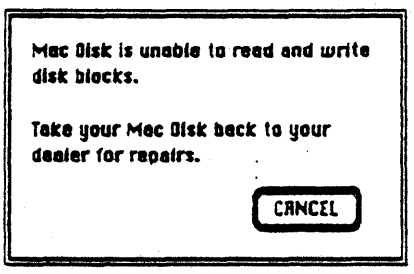


Figure B-6. No Mac Disk Response

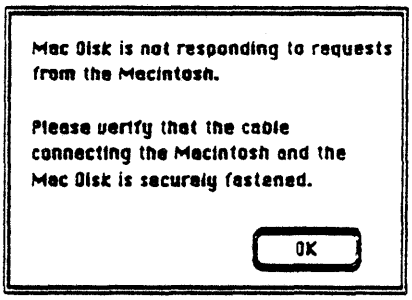


Figure B-7. Uninitialized Mac Disk

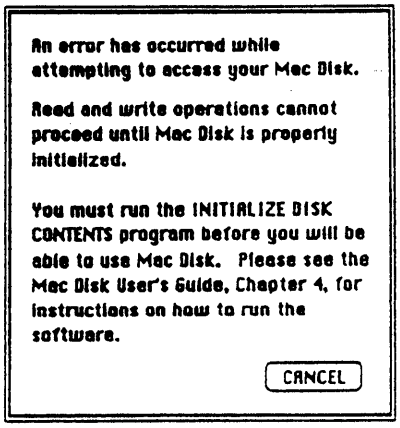


Figure B-8. Equipment Cannot Communicate Reliably

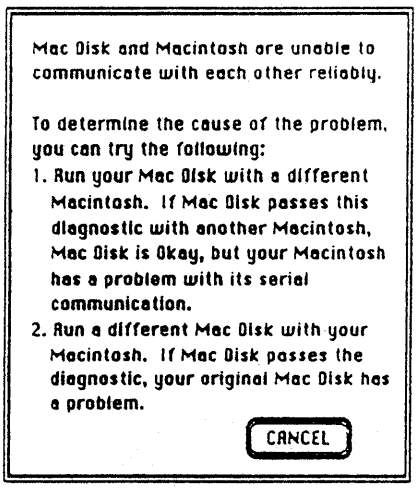
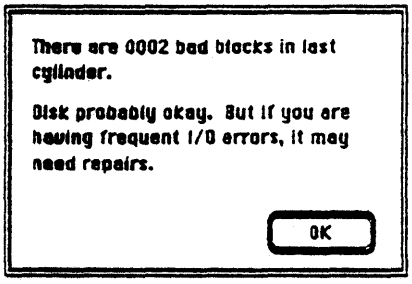


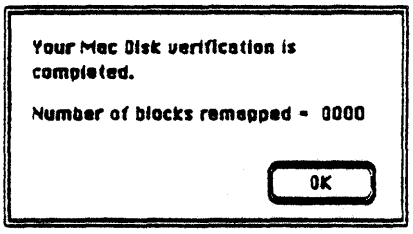
Figure B-9. Bad Blocks in Last Cylinder



Disk Verification

Figure B-10 shows the verification screen. If there are many errors, a specific error message may be displayed.

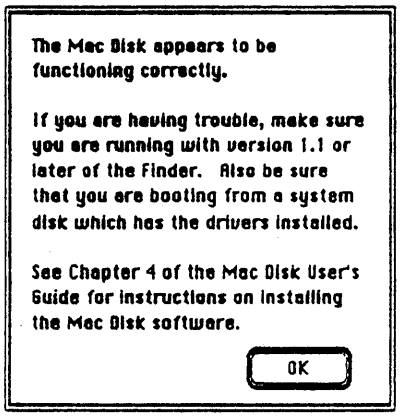
Figure B-10. Verification Screen



Confirmation Status

If your Mac Disk passes all diagnostic tests, Figure B-11 is displayed. Select OK to exit the Mac Disk Diagnostic application and return to the desktop.

Figure B-11. Mac Disk Appears to Function Correctly



Diagnostic Summary

If your Mac Disk passes the Mac Disk Diagnostic checkout but you have errors when you try to use your Mac Disk with your applications, try starting up from another copy of the **Mac Disk System Diskette**, or rerun the Install Drivers application as instructed in Chapter 4. If your Mac Disk still does not work, contact your Davong dealer.

Applications

Most applications will use the default volume or will name a volume when accessing a file. No special Mac Disk handling is required from applications that use volumes this way. Applications which eject disk volumes should be written so that they can gracefully handle an error return if they attempt to eject a Mac Disk volume. The application can check to see if a drive is ejectable by calling the Mac Disk driver (see *Mac Disk Characteristics* below).

Mac Disk Characteristics

Davong's Mac Disk is a block-oriented device handled by the Macintosh file system. To bypass the file system and talk directly to Mac Disk, call the Mac Disk driver via the Device Manager read and write traps, specifying the drive number of the volume you want to access.

The driver is always open. It supports calls to read and write one or more sequential 512-byte blocks of the disk. (The Mac Disk does not support file tags; therefore your I/O request is truncated to a 512-byte multiple.) You can only access the disk space of volumes that can be read by the Macintosh operating system.

The disk driver is loaded from SYSTEM.RSRC at boot time. It is a resource of type DRVR named **.Mac Disk.** The Davong disk driver occupies about 2K bytes of the system heap. The driver refnum, resource ID, and size are all subject to change.

Mac Disk resident volumes are identical to diskette-based volumes with two exceptions:

- Volumes are not ejectable
- Version 1.1g of the Finder does not write out boot block data to nondiskette devices; therefore, copying a system file from a Mac Disk volume to diskette does not produce a bootable diskette.

How to Recognize a Mac Disk Volume

You rarely need to know if a volume is on the Mac Disk, but if you do need to know, follow this procedure:

1. From the VCB and/or Drive Queue entry, get the driver reference number.

2. Use the driver reference number to find the driver code in memory (via the Unit Table and DCE).

3. Look at the driver name, which will be **.Mac Disk.**

   For each mounted Mac Disk volume there will be an entry in the drive queue. The drive number of each mounted volume will be greater than or equal to 3. If a Driver Status call (CSCode = DrvrStsCode) is made to the Mac Disk driver, information about the driver will be returned. This information will include a status byte indicating that the disk is not ejectable. The information returned in the status call parameter block is as follows:

Table C-1.

CSParam + 0	undefined (word)
CSParam + 2	bit 7 equals 1 if write- protected (byte)
CSParam + 3	set to 8 for nonejectable disk (byte)
CSParam + 4	1 to indicate drive installed (byte)
CSParam + 5	bit 7 set to 1 since not a one-sided Sony (byte)
CSParam + 6	drive number greater than or equal to 3 for Mac Disk (word)
CSParam + 8	driver refnum (word)
CSParam + 10	File system to use is 0 (word)

Note that this differs from Apple's Drive Status call. Contact Apple for a full definition of the fields in the status call. CSCode and CSParam are defined in Apple's SysEqu.Text file on the Macintosh development system. The drive number and device refnum for mounted volumes are available in the Volume Control Block queue.

The Mac Disk driver also supports a special status call which returns a four-character version number. This call uses CSCODE $81 and returns the version number in CSPARAM.

Attempting Mac Disk Volume Eject

An attempt to eject a Mac Disk volume (via trap $AO17) will result in an error code being returned to the caller in DO. The volume will remain mounted.

The Standard File package will allow a user to attempt to eject a Mac Disk volume from inside an application, but the attempt will be unsuccessful and the Standard File package will be exited with no harm done.

Serial Port Usage

Davong's Mac Disk can be attached to either Macintosh port A or B. The port will be unavailable to any other device while the Mac Disk is attached or its drivers are being loaded into Macintosh memory. The Mac Disk drivers will be loaded into memory at boot time if the Mac Disk is powered on and the boot diskette is an appropriately modified system diskette (see Chapter 4 for installation directions).

To talk to the Mac Disk, calls should be made to the file system or to the Davong disk driver (described in *Disk Driver and Volume Characteristics* in this appendix).

The status bit that directs printer output to a port (SPPrint) is set to the port that is not used by the Mac Disk. Always check this bit before writing to a printer directly.

Version 1.1 of the Davong Mac Disk software recognizes the port the Mac Disk is connected to at boot time and monopolizes only that port. The user will have to reboot after changing ports.

Disk Driver and Volume Characteristics

The Mac Disk has no fixed volume configuration. The user can create volumes of any size, from 100 Kbytes to 16 Mbytes. Volumes can be created and mounted only via Davong's proprietary Volume Manager application. Developers who need to mount volumes directly should contact Davong for details and a nondisclosure agreement.

Version 1.1 of the Davong Mac Disk software supports multiple volumes and includes the utilities to add, delete, crunch, mount, dismount, and list Mac Disk volumes.

Davong Use of System Resource File

Davong's Mac Disk places several resources in the System Resource file, via the Davong Install Drivers application. The resource ID of the driver is assigned dynamically, based on the current state of the System Resource file. All other resources are owned by the driver except the type INIT resources (see the Resource Manager documentation for details).

If you need extra space in the System Resource file, you can remove all resources owned by the Mac Disk driver (name is **.Mac Disk**). However, this will remove the activate-on-startup feature, so it is not recommended or supported.

Specifications

Electrical	
	Power 90 to 132 VAC or 198 to 264 VAC
	50/60 Hertz
	200 VA
	230 VAC fuse = 1.5 amp
	115 VAC fuse = 3.0 amp

Performance	
Data Transfer Rate	800 kbit/sec.
Access Times On Disk	35–110 msec.
Access Time When Reading/Writing Sequential Blocks	12 msec./block

Environmental		
	Operating	**Nonoperating**
Temperature	4° to 50° C	−40° to 60° C
Gradient	10° C/hr	N/A
Humidity	8% to 80% noncondensing	
Altitude	0 to 8000 ft.	−1000 to 50,000 ft.
Vibration (5–500 Hz sinewave along each orthogonal axis)	.25g	1.0g
Shock (half sinewave 10ms duration)	3g	20g

Glossary

active volume A hard disk volume to which you can read and write data; its icon appears on the desktop.

Add Volume A Volume Manager command that allows you to create volumes and add them to the Mac Disk; selected from the Mac Disk menu. See also *volume*.

application A computer program that enables you to accomplish one or more tasks; for example, the Volume Manager application for creating, deleting, and managing Mac Disk volumes.

auto-active volume A Mac Disk volume that becomes active automatically when you start up your system; its icon appears on the desktop during startup. You can make a volume auto-active by turning on its AUTO control in the Volume Manager Davong Mac Disk window.

Auto-Park A Davong feature that parks the Mac Disk heads automatically after 7 seconds of inactivity. See also *park*.

back up The process of copying Mac Disk data onto diskettes to protect against data loss.

button A control that initiates a function. Examples of software controls are the OK and Cancel buttons on a dialog box and the ACTIVE/inactive status buttons in the Volume Manager Davong Mac Disk window. The mouse button is a hardware control.

connector A plug, socket, or jack which allows the connection of one hardware component to another.

cursor See *pointer.*

Delete Volume A Volume Manager command that allows you to erase a volume from the Mac Disk; selected from the Mac Disk menu.

desk accessories Mini-applications chosen from the Apple menu. Examples: the Calculator, Control Panel, and Scratchpad.

desktop Consists of the menu bar and the screen on which icons appear after startup; the working environment of the Macintosh.

dialog box A message or request for information requiring some user response; usually requires you to select a control button such as OK or Cancel.

disk platters Flat rigid recording surfaces, coated with magnetic material, inside the sealed portion of a hard disk drive.

document A body of information created using an application such as MacWrite™ or MacPaint™; the equivalent of a "file" in the vocabulary of other computer systems.

double-clicking A shortcut method of opening a window by pressing the mouse button twice.

dragging Moving an item by moving the mouse with the mouse button depressed; for example, moving an icon from one window to another.

drivers Special computer programs that command or "drive" a hardware device such as the Mac Disk.

file directory A Volume Manager window which gives information about each file on a Mac Disk volume; accessed by selecting and opening a volume from the volume directory.

Finder The Macintosh application that manages applications and documents. For a complete list of functions, see Chapter 4 of your *Macintosh* manual.

folder A holder for applications and documents. The icon for a Macintosh folder is a Manila file folder.

Gather Free Space A Volume Manager command that allows you to consolidate the free space between volumes so you can add another volume to the Mac Disk.

hard disk A high-capacity random access mass storage device which reads, writes, and erases data on nonremovable magnetic disk platters. See also *disk platters* and *Winchester hard disk*.

hardware The physical computer equipment, consisting of electronic and mechanical devices. Contrast with *software*.

heads The hard disk read/write recording mechanism inside the sealed portion of the drive unit.

icon A graphic symbol for an item such as a Mac Disk volume, application, document, folder, or the "trash". Whenever the icon is visible, you can select and open the item.

inactive volume A hard disk volume that is not currently available for your use; its icon does not appear on the desktop.

initialize To prepare a disk to receive data.

interface The hardware and software components that connect the system and allow transfer of information; also the cable connecting Macintosh and Mac Disk.

Input/Output (I/O) The means (device or channel) of transferring data into or out of storage for processing.

K (kilo) A unit of measure for memory capacity: 2 to the 10th power (1024 in decimal).

M (mega) A unit of measure for memory capacity: 2 to the 20th power (1,048,576 in decimal).

menu bar The strip of menu titles at the top of the screen.

mouse A palm-sized peripheral device that controls pointer movement on the screen.

mouse button The control on the top of the mouse; used to select items and initiate functions.

park To move the heads to an unused area of a hard disk when they are not in operation. See also *Auto-Park*.

pointer The arrow shape on the screen, positioned by moving the mouse; a "cursor" in the vocabulary of other computer systems. Becomes an I-beam when positioned over revisable text and a wristwatch when Macintosh is doing something that takes a little time.

port See *connector.*

read To obtain data from a storage device or data medium such as the Mac Disk or a diskette.

select To choose or activate an item by moving the pointer to it and clicking the mouse button once. The item selected is highlighted.

software The nonhardware components of the computer system, including sets of programmed instructions and procedures that control the computer. Contrast with *hardware*.

start up To start the Macintosh system by inserting a system diskette and turning on the power.

system Consists of the Macintosh and any peripheral devices connected to it, such as Mac Disk.

system diskette In this user's guide, a diskette containing the Mac Disk software for starting up your system and running Macintosh and Mac Disk applications.

system file Data required to start up your system. The system file is stored in the System Folder on your system diskette.

system volume The Mac Disk volume which stores your Mac Disk system software; also the volume called System installed at the factory.

transferring control to Mac Disk Accomplished by opening an application from your Mac Disk system volume and then ejecting the system diskette; lets you work directly from Mac Disk, with no diskette in the Macintosh disk drive, for faster, more efficient operation.

trash A Macintosh storage area for (unlocked) documents and folders you want to discard. The icon is a trash can on the desktop. Selecting Empty Trash from the Special menu on the desktop erases the data and its icon from memory.

Undo A Volume Manager command that lets you "undo" your auto/manual startup changes before they are saved to your system diskette; selected from the Edit menu.

User volume A Mac Disk volume installed at the factory for storage of your documents and applications.

volume A hard disk partition, with a specific name and size, created for storage of applications and documents. On Mac Disk, a volume is created using the Add Volume command of the Volume Manager application.

volume directory A Volume Manager window that gives information about each volume on the Mac Disk; accessed by opening the Volume Manger application.

volume startup status The manual or AUTO status of a volume; determines whether the volume becomes active automatically on startup or must be made active using the Volume Manager application; controlled by means of the volume startup status buttons in the Volume Manager Davong Mac Disk window.

volume status The active or inactive state of a Mac Disk volume; controlled by means of the volume status buttons in the Volume Manager Davong Mac Disk window. See also *active volume* and *inactive volume*.

Winchester hard disk A hard disk system with head assemblies that are continuously loaded, low mass, and highly compliant; features a completely sealed, contamination-free environment that allows the disk heads to float a few microns above the disk platters.

write To record data onto storage media such as a hard disk or diskette.

Index

Note:

Limited warranty

This is to certify that Davong Systems, Inc. (DSI) warrants this Product to be free from all defects in material and workmanship for a period of one hundred eighty (180) days from the date of purchase from DSI or an authorized DSI dealer.

Within the period of this warranty DSI shall be obligated to replace or repair this Product should it prove to be defective in material or workmanship. Repair parts and replacement products will either be reconditioned or new and all parts so exchanged or replaced will become the property of DSI.

Warranty service may be obtained by delivering the Product during the warranty period to an authorized DSI dealer. You may contact DSI for the name of the authorized DSI service center closest to you. If this Product is returned for repair, it must be accompanied by proof of purchase indicating the date of purchase and dealer's name from whom it was purchased. All returns must be prepaid and insured by you and must be appropriately packaged for safe shipment since DSI will not accept responsibility for loss or damage in transit.

This warranty does not apply to defects caused by negligence, misuse, accidents, or modifications.

DSI reserves the right to make changes and improvements in our Product without any obligation to similarly alter products previously purchased. DSI neither assumes nor authorizes any representative or other person to assume for us any other liability in connection with the sale of our products.

Warranties for this Product including any implied warranties of merchantability and fitness for a particular purpose, are limited in duration to a period of 180 days from the data of purchase. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

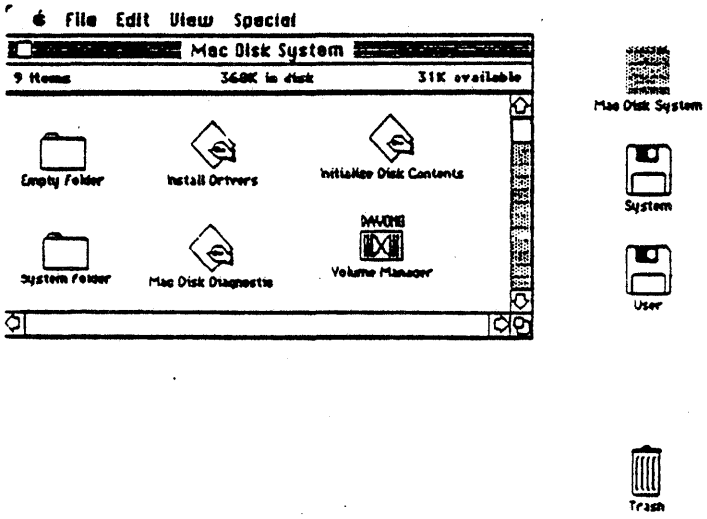
Your sole remedy shall be repair or replacement as provided above. In no event will DSI be liable to you for any damages, including any lost profits, lost savings, or other incidental or consequential damages arising out of the use of or inability to use such product, even if DSI or an authorized DSI dealer has been advised of the possibility of such damage, or for any claim by any other party.

Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer products, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

Software Installation

1. Make a copy of your **Mac Disk System Diskette**. Lock and store the original.

2. Start up from your copy of the **Mac Disk System Diskette**. The System and User volume icons will appear on the desktop along with the icon for the system diskette.



3. Copy the Mac Disk system software to your System volume.

4. To transfer control to your Mac Disk (optional), open the Volume Manager application on your System volume. Quit Volume Manager and eject the system diskette.

5. Copy your documents and applications to the User volume or to volumes you create using Volume Manager (Chapter 5).

When you have completed the Mac Disk software installation, you can store your application and data disks and access your applications and documents directly from your Mac Disk volumes. You will find that your system operates faster without a diskette in the Macintosh disk drive.

Welcome to the world of high-speed Mac Disk data storage!

Valid Drives for Davong Mac Disk units

Cylinders	Heads	Sectors/Track	Formated Sectors	Manufacturer	Model #
306	2	17	10329	Tandon	501
306	4	17	20658	Tandon	502
306	6	17	30988	Tandon	503
153	4	17	10295	Tandon	602
230	6	17	23266	Tandon	602
306	2	17	10329	Disctron	507
306	4	17	20658	Disctron	514
306	6	17	30988	Disctron	519
306	8	17	41317	Disctron	526
306	2	17	10329	CMI	5206
306	4	17	20658	CMI	5412
306	6	17	30968	CMI	5619
640	2	17	21641	CMI	6213
640	4	17	43282	CMI	6426
640	6	17	64923	CMI	6640
511	8	17	69224	Quantum	540
230	2	17	7755	Rodime/Ampex	p7
320	4	17	21607	Rodime/Ampex	p13
320	6	17	32410	Rodime/Ampex	p20
320	8	17	43214	Rodime/Ampex	p27
320	4	17	21607	Rodime	202
320	6	17	32410	Rodime	203
320	8	17	43214	Rodime	204
640	6	17	64923	Rodime	203E
640	8	17	86564	Rodime	204E

R.A.L. CONSULTING
ELECTRONICS MARKETING

Phone:
(408) 559-6459

14805 COLE DRIVE • SAN JOSE, CA 95124
408-559-6459

MACINTOSH SERIAL HARD DISK SYSTEM

Installation Considerations

MOUNTING

* Mounting must be in case with fan.
* There should be some type of air intake holes in the front or bottom front of cabinet with exhaust fan (3" Boxer type) mounted in rear of cabinet.
* Please allow ½" air space above, below, and around edges of controller to insure proper ventilation.
* The 4 LED's mentioned in the operation manual are not required for operation. If you wish to install them, refer to Figure 1 for cable connection and schematics for LED connections.

POWER REQUIREMENTS

* Power Supply must be minimum 65 watt +5 @ 5 a.
  +12 @ 2.5 a. (4 a. surge)
* +5 is for the controller and hard disk.
* +12 is for the hard disk only (consult +12 requirements for your particular hard disk)
* The controller does not use +12.
* Most fans run off AC, however, if you use a DC fan, its power requirements must be added to the system power requirements.

CABLES

* Hard Disk - Standard IBM ST-506 type cables (20 pin and 34 pin).
* Controller Power - 4 pin molex (same as used to hook up hard disk power.
* Interface Cable from Controller to Macintosh - DB-9 to DB-9 shielded cable wired pin for pin (i.e., 1 to 1, 2 to 2, etc.)
* LED Cable - 2 x 5 header plug, 10 wire flat ribbon cable.

CONNECTIONS

* Refer to Figure 1 (page attached).

WARRANTY

* R.A.L. Consulting will repair or replace this Macintosh Hard Disk Controller board that has been found to be defective in materials or workmanship for a period of 90 days from date of purchase. Please ship prepaid and packed well to the address listed above. We do not cover physically damaged boards or boards that have had incorrect voltages applied (please pay careful attention to power hookups).

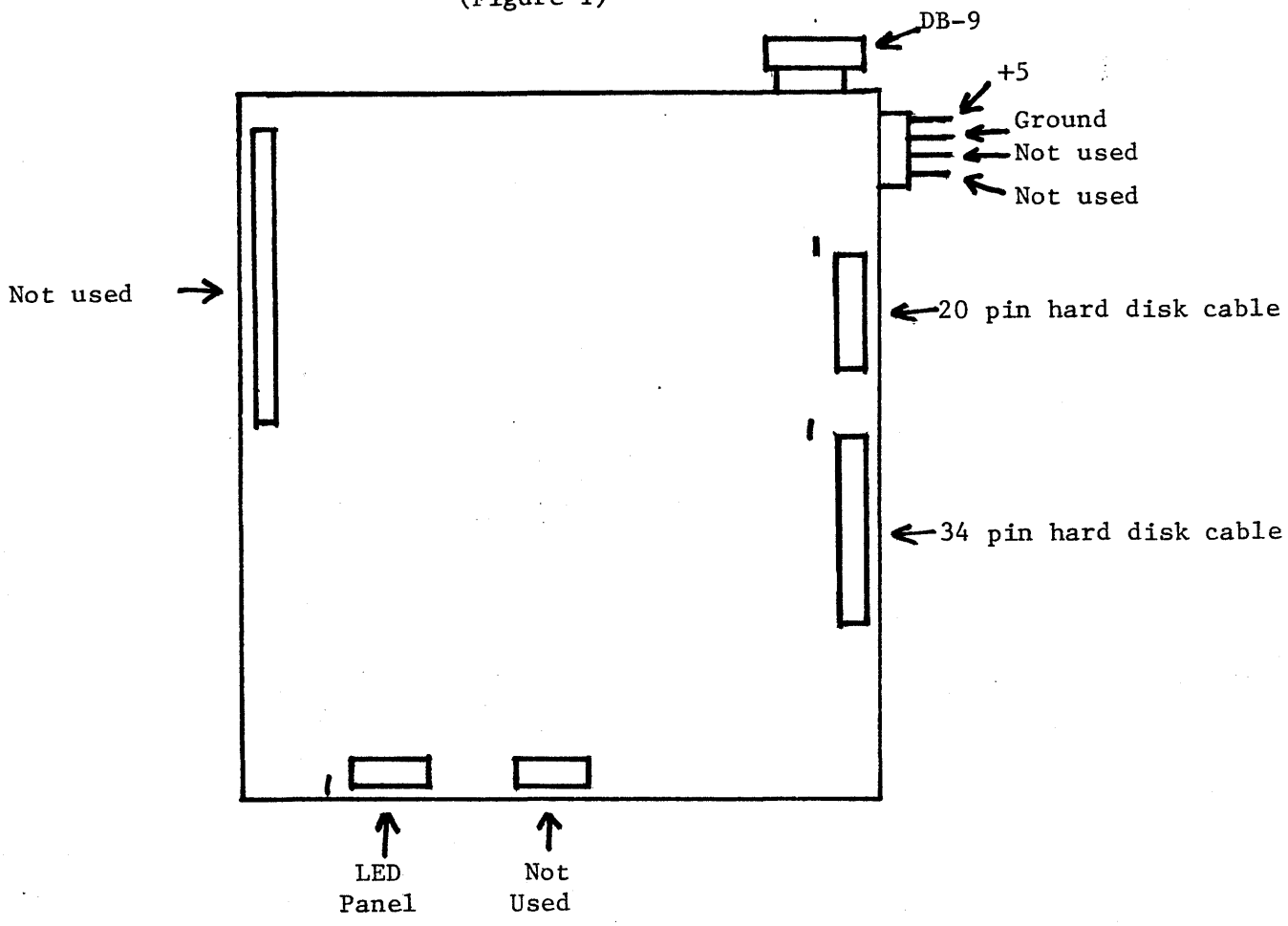
R.A.L. CONSULTING
ELECTRONICS MARKETING

Phone:
(408) 559-6459

14805 COLE DRIVE • SAN JOSE, CA 95124
408-559-6459

MACINTOSH SERIAL HARD DISK SYSTEM

Connection Layout
(Figure 1)



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CORRECTION TO MACINTOSH HARD DISK CONTROLLER INSTALLATION CONSIDERATIONS

CABLES

Interface cable from Mac to Controller wiring was listed to be pin to pin. This is incorrect. The correct wiring is as follows:

1	to	1
3	to	3
7	to	7
4	to	8
5	to	9
8	to	4
9	to	5

In other words, 4 & 8 are swapped, 5 & 9 are swapped.

Pins 2 to 2 & 6 to 6 should have no connection.

***** ATTENTION MAC-PLUS USERS *****
(Mac-Enhanced also)

In order to get the best use of the new ROMs, you may need a modified disk from us. If you would like one at NO CHARGE:

Make a copy of the software disk you received from us for your archive. Mail us the original disk we sent along with a note indicating you want the Mac-Plus disk. That's it!!

Yellow Red W/ Blank Black

1 2 3 4

REV	PCO/ECN	DFTG/DATE	CHECK/DATE	ENG/DATE
X6	699			
X7	725	LAW 5/1/84		
X8	734	LAW 5/17/84		
X9	747	LAW 5/29/84		
X10	759	FA 6/21/84		
X11	772	LAW 6/22/84		
X12	775	LAW 6/27/84		
X13	787			LOSS 7-9-84
X14	793	LAW 7/24/84	JK 7-24-84	TKW 7-24-84
X15	805	JK 8-1-84		TKW 8-1-84
X16	836	LAW 8/24/84	JK 8-24-84	
X17	845	JK 9-25-84		
X18	970	JK 5-1-85		JK 5-1-85

SHEET

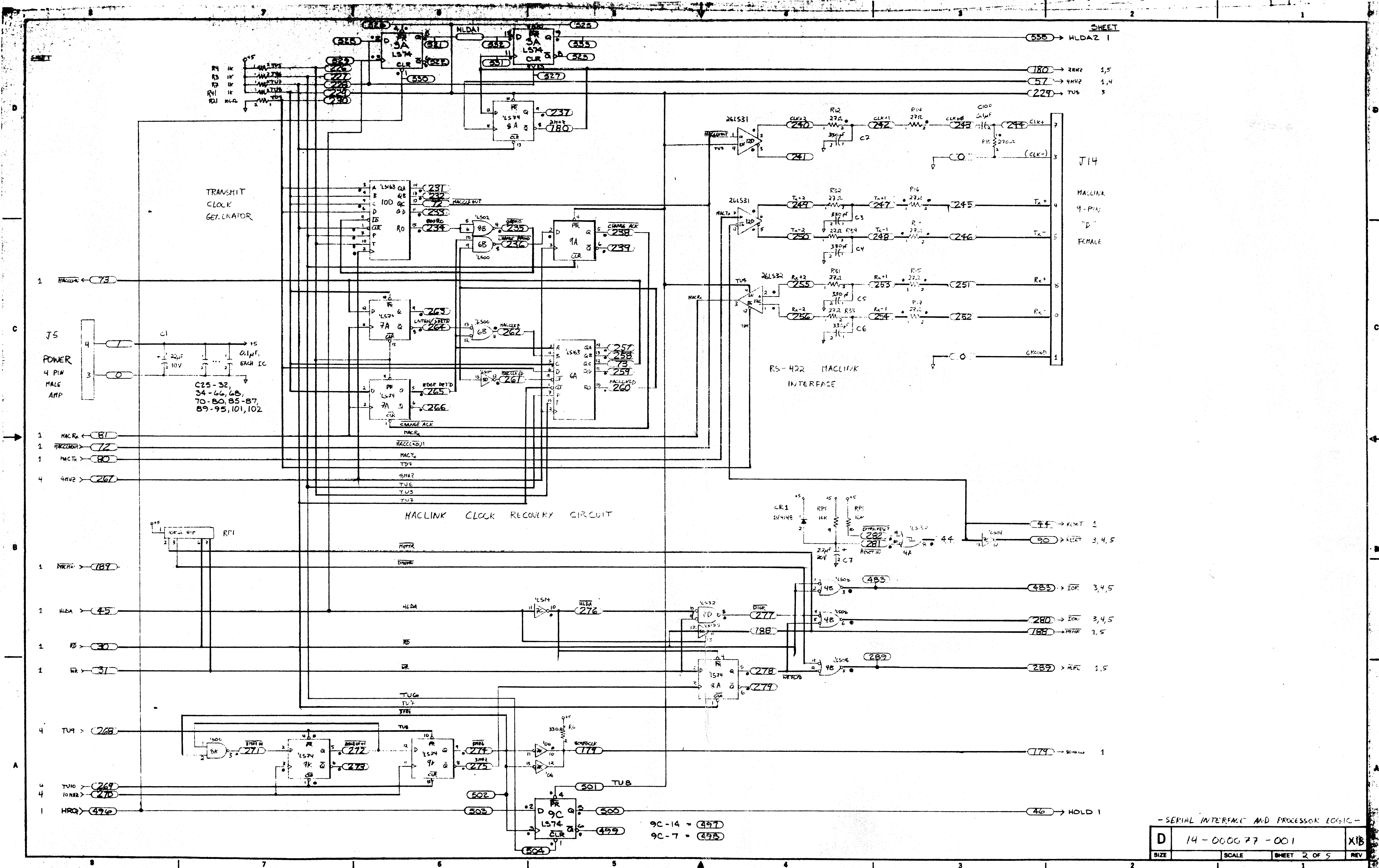
— PROCESSOR AND SERIAL CONTROLLER —

AVONG SYSTEMS, INC.

		DFTG/DATE
		CHECK/DATE
		ENG/DATE 4D Analysis 1/6/85
NEXT ASM	USED ON	

TITLE
MACDISK
INTELLIGENT DISK CONTROLLER

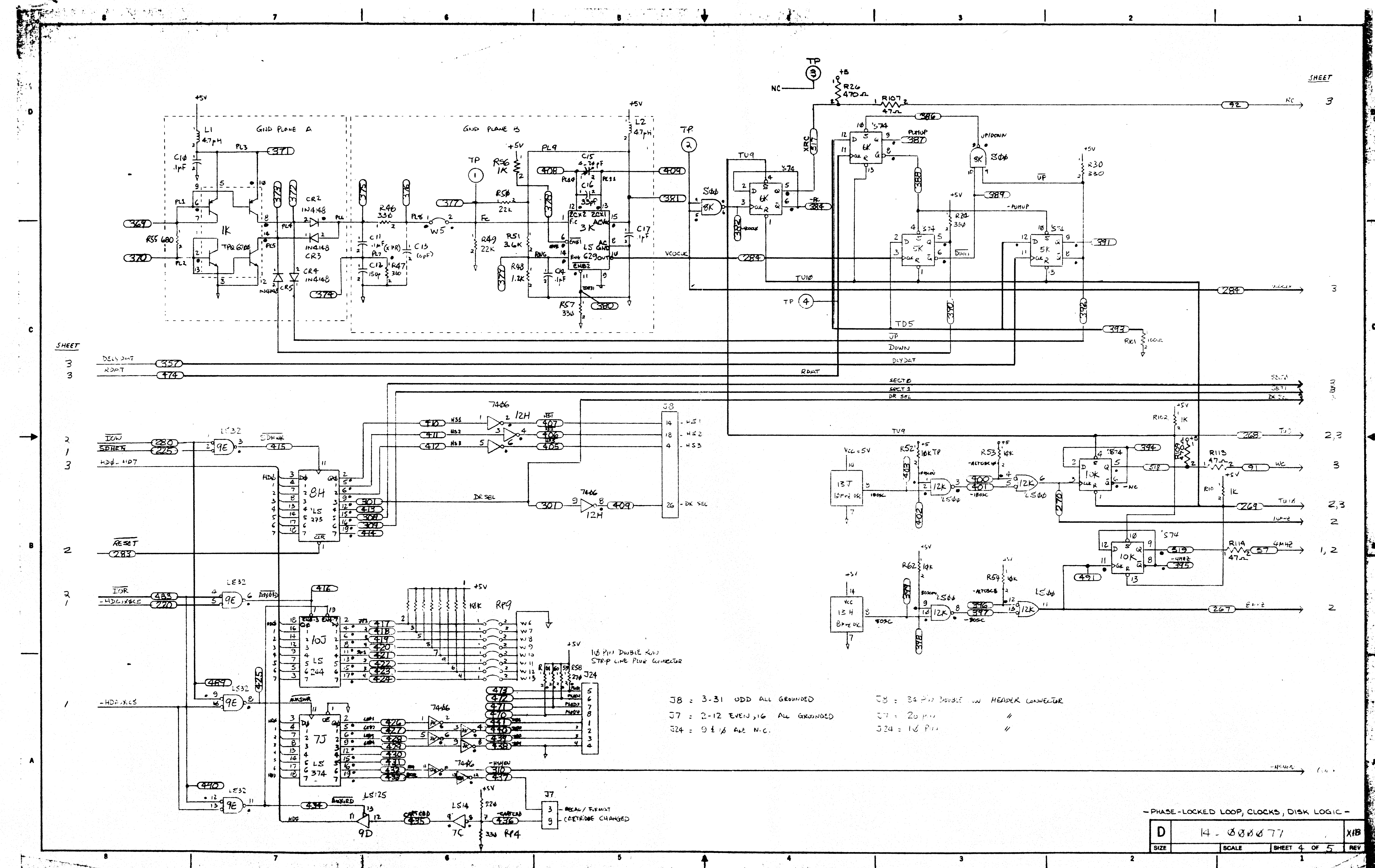
SIZE		SCALE	SHEET 1 OF 5	REV
D	14-000077-001			X18

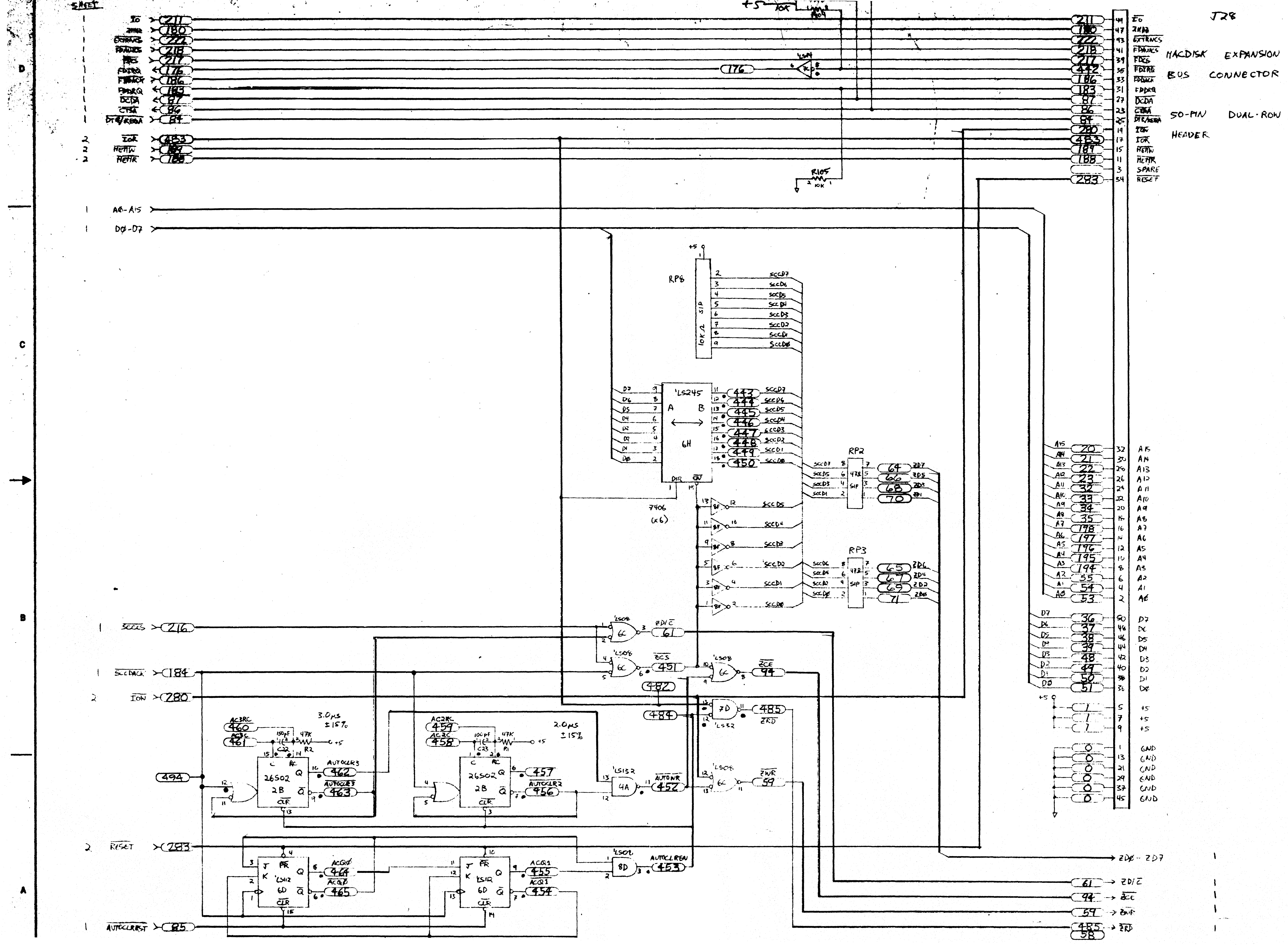


TRANSMIT CLOCK GENERATOR
J5 POWER 4 PIN MALE AMP
C25-32, 34-66, 68, 70-80, 85-87, 89-95, 101, 102
0.1µF, EACH IC
MACLINK CLOCK RECOVERY CIRCUIT
RS-422 MACLINK INTERFACE
J14 MACLINK 9-PIN "D" FEMALE
HLDA2 1
HOLD 1
TU8
9C-14 = 497
9C-7 = 498
- SERIAL INTERFACE AND PROCESSOR LOGIC -
D 14-000077-001 X1B
SIZE SCALE SHEET 2 OF 5 REV

- DISK CONTROLLER AND LOGIC -

SIZE		SCALE	SHEET 3 OF 5	REV
D	14-000077			X1B


GND PLANE A
GND PLANE B
J8 : 3-31 ODD ALL GROUNDED
J7 : 2-12 EVEN, 16 ALL GROUNDED
J24 : 9 & 10 ARE N.C.
J8 : 34 PIN DOUBLE ROW HEADER CONNECTOR
10 PIN DOUBLE ROW STRIP LINE PLUG CONNECTOR
RECAL / FORMAT
CARTRIDGE CHANGED
PHASE-LOCKED LOOP, CLOCKS, DISK LOGIC
D
14-000077
X1B
SIZE
SCALE
SHEET 4 OF 5
REV



J28
MACDISK EXPANSION BUS CONNECTOR
50-PIN DUAL-ROW HEADER
SHEET
A0-A15
D0-D7
RP8
'LS245
6H
7406 (x6)
RP2
RP3
26S02
2B
3.0μs ±15%
2.0μs ±15%
'LS08
6C
'LS32
7D
'LS132
4A
'LS112
6D
8D
AUTOCLREN
RESET
ZD0 - ZD7
ZD/C
SPARE
GND
+5