



Apple® 3.5 Drive Owner's Guide



Apple IIgs®, Macintosh®

LIMITED WARRANTY ON MEDIA AND REPLACEMENT

If you discover physical defects in the manuals distributed with an Apple product or in the media on which a software product is distributed, Apple will replace the media or manuals at no charge to you, provided you return the item to be replaced with proof of purchase to Apple or an authorized Apple dealer during the 90-day period after you purchased the software. In addition, Apple will replace damaged software media and manuals for as long as the software product is included in Apple's Media Exchange Program. While not an upgrade or update method, this program offers additional protection for up to two years or more from the date of your original purchase. See your authorized Apple dealer for program coverage and details. In some countries the replacement period may be different; check with your authorized Apple dealer.

ALL IMPLIED WARRANTIES ON THE MEDIA AND MANUALS, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO NINETY (90) DAYS FROM THE DATE OF THE ORIGINAL RETAIL PURCHASE OF THIS PRODUCT.

Even though Apple has tested the software and reviewed the documentation, **APPLE MAKES NO WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO SOFTWARE, ITS QUALITY, PERFORMANCE, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. AS A RESULT, THIS SOFTWARE IS SOLD "AS IS," AND YOU THE PURCHASER ARE ASSUMING THE ENTIRE RISK AS TO ITS QUALITY AND PERFORMANCE.**

IN NO EVENT WILL APPLE BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE SOFTWARE OR ITS DOCUMENTATION, even if advised of the possibility of such damages. In particular, Apple shall have no liability for any programs or data stored in or used with Apple products, including the costs of recovering such programs or data.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, ORAL OR WRITTEN, EXPRESS OR IMPLIED. No Apple dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

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

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 FCC Rules. See instructions if interference to radio or television reception is suspected.



Apple® Apple 3.5 Drive
Owner's Guide



🍏 APPLE COMPUTER, INC.

This manual is copyrighted by Apple or by Apple's suppliers, with all rights reserved. Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of Apple Computer, Inc. This exception does not allow copies to be made for others, whether or not sold, but all of the material purchased may be sold, given, or lent to another person. Under the law, copying includes translating into another language.

© Apple Computer, Inc., 1986
20525 Mariani Avenue
Cupertino, California 95014
(408) 996-1010

Apple, the Apple logo, Disk II, ProDOS are registered trademarks of Apple Computer, Inc.

AppleWorks, Apple Writer, DuoDisk, and UniDisk are trademarks of Apple Computer, Inc.

AppleCare is a registered service mark of Apple Computer, Inc.

Macintosh is a trademark of McIntosh Laboratories, Inc., and is being used with express permission of its owner.

Catalyst is a trademark of Quark Inc.

ITC Garamond, ITC Avant Garde Gothic, and ITC Zapf Dingbats are registered trademarks of International Typeface Corporation.

Microsoft is a registered trademark of Microsoft Corporation.

POSTSCRIPT is a trademark of Adobe Systems Incorporated.

Simultaneously published in the United States and Canada.



Contents

Figures v

Radio and television interference vi

Preface vii

Chapter 1 Setting Up and Using Your Drive With an Apple IIgs 1

Setting up 1

Using your drive 2

 Inserting a disk 2

 Removing a disk 3

 Formatting a disk 4

 Starting up from your 3.5 Drive 4

Copying programs: troubleshooting 5

Installing a second external drive 6

Chapter 2 Setting Up and Using Your Drive With a Macintosh 7

Setting up 7

Software you need 10

Using your drive 10

 Inserting a disk 11

 Removing a disk 11

 Initializing a disk 12

Transferring data from 400K to 800K disks 13

Troubleshooting 13

Chapter 3 Care and Handling of Disks and Drives 17

Write protecting a 3.5-inch disk 18

Care and handling of 3.5-inch disks 19

Caring for your disk drive 21

Chapter 4 Troubleshooting 23

General tips for all users 23

Service and support 24

Appendix A Daisy-Chain Drive Combinations for the Apple IIs 25

Chaining 25

Startup drive selection 26

Appendix B Apple 3.5 Drive Specifications 29

Figures

Chapter 1 Setting Up and Using Your Drive With an Apple IIGs 1

- Figure 1-1 Connecting the Apple 3.5 Drive to an Apple IIGS 1
- Figure 1-2 Inserting a 3.5-inch disk 2
- Figure 1-3 Removing a 3.5-inch disk 3
- Figure 1-4 Removing a 3.5-inch disk manually 3
- Figure 1-5 Daisy-chaining a second drive 6

Chapter 2 Setting Up and Using Your Drive With a Macintosh 7

- Figure 2-1 The drive port 8
- Figure 2-2 Correct drive placement 9
- Figure 2-3 Inserting a 3.5-inch disk 11
- Figure 2-4 Removing a 3.5-inch disk manually 11
- Figure 2-5 Giving your Macintosh the space it needs 14

Chapter 3 Care and Handling of Disks and Drives 17

- Figure 3-1 The 3.5-inch disk 17
- Figure 3-2 Using the write-protect tab 18
- Figure 3-3 The front of the Apple 3.5 Drive 19
- Figure 3-4 Care and handling of 3.5-inch disks 20

Appendix A Daisy-Chain Drive Combinations for the Apple IIGs 25

- Figure A-1 Theoretical drive configurations 27

Radio and television interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with our instructions—it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a "rabbit-ear" television antenna is used. (A rabbit-ear antenna is the telescoping-rod type usually found on television receivers.)

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem, disconnect the peripheral devices and their input/output (I/O) cables one at a time. If the interference stops, it was caused by either the peripheral device or the I/O cable. These devices usually require shielded I/O cables. For Apple peripheral devices, you can obtain the proper **shielded cable** from your dealer. For non-Apple peripheral devices, contact the manufacturer or authorized Apple dealer for assistance.

A **shielded cable** uses a metallic wrap around the wires to reduce the potential effects of radio-frequency interference.

Important

This product was FCC-certified under test conditions that included use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radio, television, and other electronic devices.

If your computer does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit than the television or radio. (That is, make certain the computer and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with a coaxial cable lead-in between the antenna and television.

If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions.



Preface



Your new Apple® 3.5 Drive gives you fast performance and 800 kilobytes (800K) of data storage on each 3.5-inch double-sided disk.

You'll get maximum performance from your drive if you copy all the applications you can from your smaller-capacity disks to a double-sided disk.

The Apple 3.5 Drive works with these systems:

- Apple IIGS
- Macintosh™ Plus
- Macintosh 512K with ROM upgrade
- Macintosh 512K *enhanced*
- Macintosh 512K

If you're an Apple IIGS owner, turn directly to Chapter 1 for setting-up instructions.

If you're a Macintosh owner, begin with Chapter 2.

The "Troubleshooting" section in Chapter 2 has information about Macintosh upgrades and enhancements. If you're not sure whether you have the correct system software, check with your authorized Apple dealer.



Figure 1-1

Connecting the Apple 3.5 Drive to your Macintosh

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
606 S. EAST ASIAN BLDG.
CHICAGO, ILL. 60607
TEL: 773-936-3700
FAX: 773-936-3701
WWW: WWW.CHEM.UCHICAGO.EDU

1
2

Chapter 1

Setting Up and Using Your Drive With an Apple IIgs

This chapter explains how to set up and use your Apple 3.5 Drive with an Apple IIgs. If you are connecting the drive to a Macintosh, see Chapter 2.

Setting up

1. Turn off your computer.

Warning

Leaving your computer on while you connect the disk drive to it could damage the circuits of both the computer and the drive.

2. Touch one of the metal connectors on the back of the computer to discharge any static electricity that may be on your body.
If you don't discharge static electricity, the drive could be permanently damaged.
3. Plug the Apple 3.5 Drive cable into the disk drive port on the back of the computer and tighten the retaining screws.

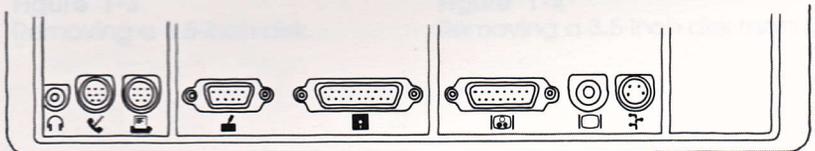


Figure 1-1
Connecting the Apple 3.5 Drive to an Apple IIgs

4. Turn on the computer's power switch.

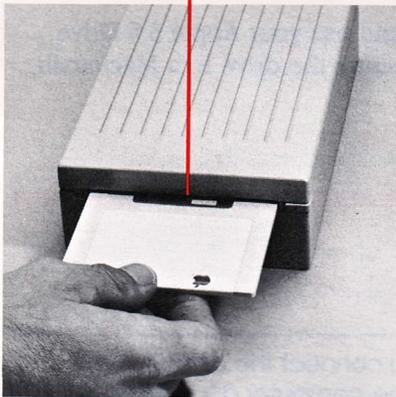
A yellow plastic packing disk will eject. This disk was inserted at the factory to protect the drive mechanism during shipment.

See "Removing a Disk" if the yellow packing disk doesn't eject automatically. You must remove it before you can operate your drive.

5. Gently pull the packing disk all the way out of the drive and keep it for later use.

Use this disk to protect your drive mechanism whenever you transport your drive.

Disk insertion slot



Using your drive

Now that you've set up your drive, here's how to use it.

Inserting a disk

Insert your disk into the slot on the front of your drive, metal end first, label side up. When you have pushed the disk nearly all the way in with your thumb, the drive's internal mechanism automatically locks it into place.

Figure 1-2
Inserting a 3.5-inch disk

Removing a disk

Before you remove a 3.5-inch disk, make sure the drive's "in use" light is off so you won't lose any data.

To remove a disk when your computer is on, push the eject button. Then gently pull the disk out of the slot. The eject button works only when the power is on.

When the power is off: If there is a power failure, or if the eject button doesn't release a disk, you can remove the disk from the drive manually. To remove a disk manually, use a straightened-out paper clip or similar object. Insert it into the access hole on the eject button. Push hard on the paper clip until the mechanical eject mechanism releases the disk. (If the disk doesn't come out, push harder so you release the spring inside the drive.)

Your disks are designed to be easily removable. You should not have to use force. If a disk gets stuck, see your dealer. You can lose data and damage both the disk and the drive mechanism by forcing a disk out.

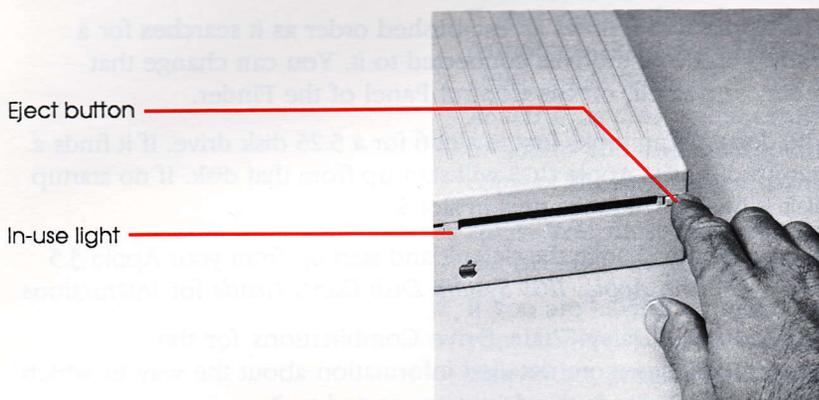


Figure 1-3
Removing a 3.5-inch disk

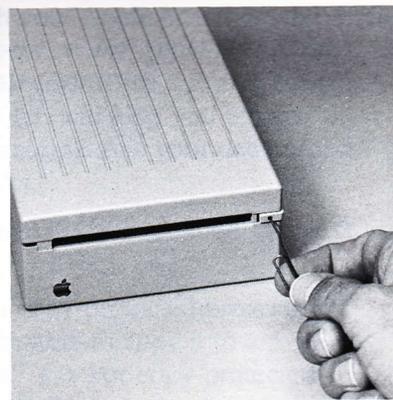


Figure 1-4
Removing a 3.5-inch disk manually

Formatting a disk

You have to format (initialize) disks before you can store data on them. You can also format a disk if you want to erase it and reuse it. See the *Apple IIGS System Disk User's Guide* for instructions on formatting disks.

When you insert a new disk in the Apple 3.5 Drive, you use the Check Drive option in the Finder to indicate the slot and drive location of the disk. Then you use the Format option to choose an operating system for formatting. The *Apple IIGS Owner's Guide* has information about operating systems.

❖ *Note:* The Macintosh uses a different operating system than your Apple IIGS. If you are using 3.5-inch disks on both machines, be sure to keep the disks separate. A 3.5-inch disk formatted in your Apple IIGS won't work in your Macintosh, and vice versa.

Starting up from your 3.5 Drive

The Apple IIGS follows an established order as it searches for a startup disk in the drives connected to it. You can change that order, or default, on the Control Panel of the Finder.

The default scan looks first in slot 6 for a 5.25 disk drive. If it finds a startup disk, the Apple IIGS will start up from that disk. If no startup disk is in slot 6, it looks next in slot 5.

If you want to change the default and start up from your Apple 3.5 Drive, see the *Apple IIGS System Disk User's Guide* for instructions.

Appendix A, "Daisy-Chain Drive Combinations for the Apple IIGS," has more detailed information about the way in which the Apple IIGS reads the drives connected to it.

Copying programs: troubleshooting

Use the *Apple IIGS System Disk* (version 2.1.2 or greater) to copy programs to your 3.5-inch disks. See the *Apple IIGS System Disk User's Guide* for information about the Finder and about transferring programs and documents from 5.25-inch to 3.5-inch disks.

You can use your Apple 3.5 Drive with either the Pascal 1.3 or the ProDOS® operating system. See the *Apple IIGS Owner's Guide* for information about operating systems.

If you have trouble copying some of your files or programs to your 3.5-inch disks, you may have compatibility problems. Here are some suggestions about what to do:

- DOS 3.3 files must be converted to ProDOS format before they can be used on 3.5-inch disks. Use the Filer in your System Utilities to convert the files. (Some DOS 3.3 programs may not start up or run properly after you convert them.)
- AppleWorks™, Apple Writer™, and Access II have been updated to work with Apple 3.5 disks.

If your version doesn't work with your Apple 3.5 Drive, the Apple pamphlets titled *Using AppleWorks on the Apple II UniDisk 3.5*, *Using Apple Writer II on the Apple II UniDisk 3.5*, and *Using Access II on the Apple II UniDisk 3.5* will help you transfer these programs and find out about upgrading. Ask your dealer for a copy of the appropriate pamphlet.

- ❖ *Note:* You must have a Super Serial Card installed in slot 2 to use Access II with an Apple IIGS.
- If you are having trouble using a copy-protected program on your Apple 3.5 Drive, you may be able to copy it to a 3.5-inch disk with a program like Catalyst™ 4.0. For copy-protected programs that can't be copied with Catalyst, check with the program developer or the company that markets your software to find out whether you can use the copy-protected program on your Apple 3.5 Drive.

Installing a second external drive

When you want to connect another disk drive to your Apple IIGS, you connect it to your first drive in what's called *daisy-chain* fashion. Your second drive can be any of the following:

- Apple 3.5 Drive (800K)
- UniDisk™ 3.5 Drive (800K)
- Apple 5.25 Drive (143K)
- UniDisk Drive (143K)
- DuoDisk™ Drive (contains two 143K drives)

The power for the disk drives comes from your Apple IIGS, so we do not recommend that you daisy-chain more than four drives to it. See Appendix A for recommended daisy-chain drive combinations.

To connect a second drive to your Apple 3.5 Drive, follow these steps:

1. Turn off your computer.
2. Remove the plastic plug from the back of your first Apple 3.5 Drive with a flat, slotted screwdriver.
Pry the plug up to loosen it.
3. Plug the second drive's cable into the connector on the back of the first Apple 3.5 Drive.
4. Tighten the retaining screws on the drive cable connector.
5. Attach the drive identification label 2 to the recess in the upper-left corner (next to the "in use" indicator light) of your second disk drive.

See Figure 3-3 if you're not sure where to attach the label.

If you have a hard disk: See *Setting Up Your Apple IIGS* for information on using the slots in your Apple IIGS.

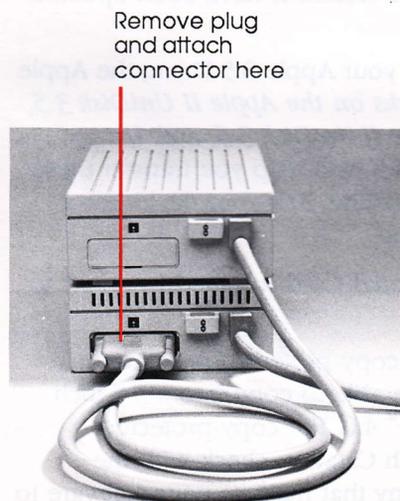


Figure 1-5
Daisy-chaining a second drive



Chapter 2



Setting Up and Using Your Drive With a Macintosh

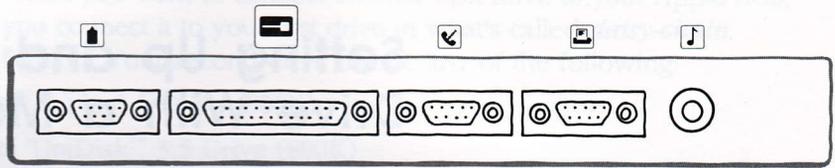
This chapter explains how to set up and use your Apple 3.5 Drive with a Macintosh Plus, a Macintosh 512K *enhanced*, a Macintosh 512K with ROM upgrade, and a Macintosh 512K. If you are connecting the drive to an Apple IIGS, see Chapter 1.

Setting up

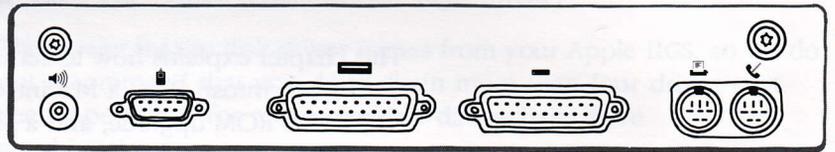
1. Turn off the Macintosh.
2. Touch one of the metal connectors on the back of the Macintosh to discharge any static electricity that may be on your body.

Warning If you don't discharge static electricity, the drive could be permanently damaged.

3. Plug the drive cable into the disk drive port on the back of the Macintosh.



Macintosh



Macintosh Plus

Figure 2-1
The drive port

4. Place the drive next to the Macintosh, not on top of it.

Magnetic interference from the upper-left corner of the Macintosh can affect how the drive works. Placing the drive too close to the Macintosh can obstruct the air vents and keep your Macintosh from cooling properly.

5. Turn on your Macintosh.

A yellow plastic packing disk will eject automatically. This disk was inserted at the factory to protect the drive mechanism during shipment. You must remove it before you can operate your drive.

- ❖ *Note:* The Macintosh won't eject the yellow disk automatically if you have a startup disk in the internal drive. If you see a dialog box, click on Eject. Then the yellow disk will be ejected.
6. Gently pull the packing disk all the way out of the drive and keep it for later use.

Use this disk to protect your drive mechanism whenever you transport your Apple 3.5 Drive.

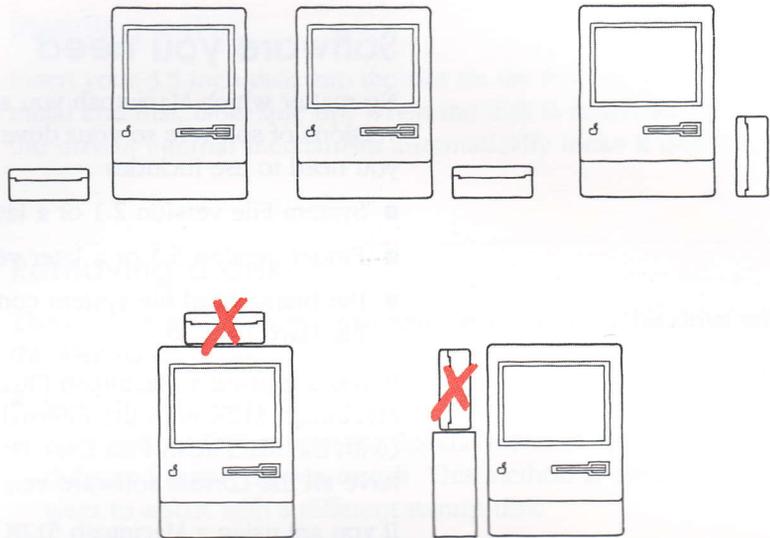
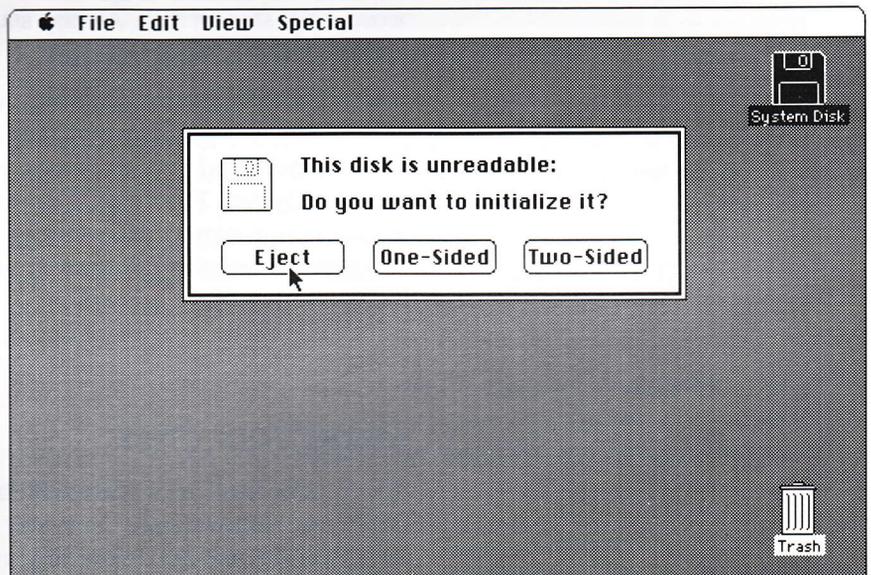


Figure 2-2
Correct drive placement



Software you need

No matter which Macintosh you are using, you must use specific versions of software so your drive will work correctly. The software you need to use includes

- System File version 2.1 or a later version
- Finder version 5.1 or a later version
- the hierarchical file system contained in the new ROM or in the file Hard Disk 20

If you are using a Macintosh Plus, a Macintosh 512K *enhanced*, or a Macintosh 512K with the internal drive upgraded to double-sided (with the Macintosh Plus Disk Drive Kit, Part Number M2516), you have all the correct software versions on your *System Tools* disk.

If you are using a Macintosh 512K with no upgrades, you need new software. The Macintosh System Software Update, Part Number M0560, contains the correct software as well as instructions for updating all your startup disks. You'll need to put the System File, the Finder, and the Hard Disk 20 file in the System Folder on your 400K startup disk. Always start up with this disk in your internal (400K) drive.

Use the new software to update your startup disks: No matter which Macintosh system you are using, be sure to replace any old versions of the Finder and System File on your startup disks with the versions on your *System Tools* disk. You need both of these system files on each of your startup disks to give you greater speed, the hierarchical file system, and the ability to use double-sided disks in your 800K drive.

Using your drive

If you have used your Macintosh before, you already know how to insert and remove disks. You may want to skip the next two sections and read the section "Initializing a Disk" to see how you can use both 400K and 800K disks.

Metal end first

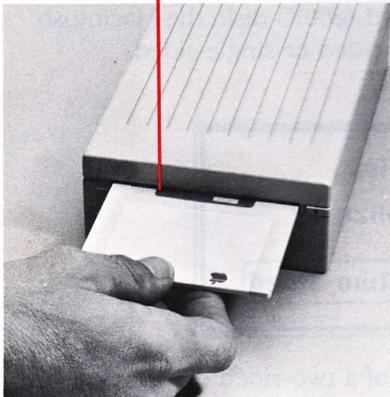


Figure 2-3
Inserting a 3.5-inch disk

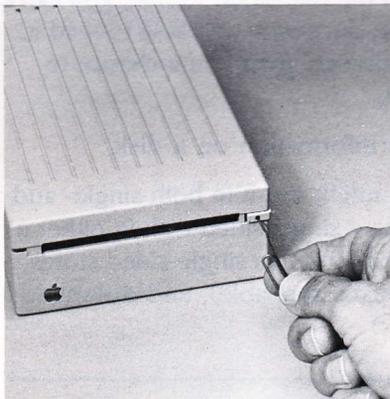


Figure 2-4
Removing a 3.5-inch disk manually

Inserting a disk

Insert your 3.5-inch disk into the slot on the front of your disk drive, metal end first, label side up. When the disk is nearly all the way in, the drive's internal mechanism automatically locks it into place.

Removing a disk

There are several ways you can remove a disk from this drive when the Macintosh is on:

- Choose Eject from the File menu to eject the selected disk.
- Choose Shut Down from the Special menu to eject any inserted disks and restart the Macintosh. This method is useful when you want to restart with a different startup disk.
- Press Command-Shift-2. (You may lose any unsaved changes if you eject disks this way.)

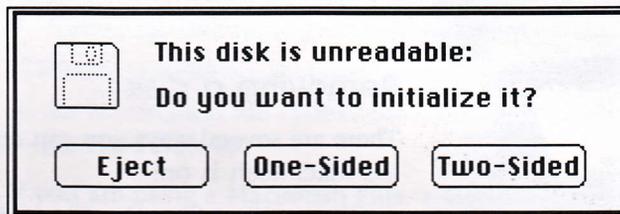
❖ *Note:* When you plug your Apple 3.5 Drive into a Macintosh, the eject button on the front of the drive is automatically deactivated because Macintosh software controls disk ejection. The eject button works only when the drive is connected to an Apple IIGS.

When the power is off: If there is a power failure, you can remove the disk from the drive manually. To remove a disk manually, use a straightened-out paper clip or similar object. Insert it into the access hole on the eject button. Push hard on the paper clip until the mechanical eject mechanism releases the disk. (If the disk doesn't come out, push harder so you release the spring inside the drive.)

Your disks are designed to be easily removable. You should not have to use force. If a disk gets stuck, see your dealer. You can lose data and damage both the disk and the drive mechanism by forcing a disk out.

Initializing a disk

When you insert a blank double-sided (800K) disk, the Macintosh lets you initialize the disk as double-sided or single-sided.



Normally, you'll initialize both sides of a two-sided disk to take advantage of increased speed and capacity, and the hierarchical file system. A disk initialized double-sided lets you use folders within an application as well as in the Finder. The Apple 3.5 Drive uses both sides of the disk, giving you 800K of storage on a disk initialized double-sided.

Once you have initialized a disk with the two-sided format, you can't use it in a 400K disk drive because the drive won't be able to read it. When you insert such a disk, the Macintosh gives you a chance to (re)initialize the disk as single-sided.

❖ *Remember:* Initializing erases all information on a disk.

Initialize a disk as single-sided if you might use it in both single- and double-sided disk drives. You can use a single-sided disk in either a 400K or an 800K disk drive. A disk initialized as single-sided stores only 400K of information (half the space available), and doesn't let you use folders within applications.

Warning If you initialize a single-sided disk as double-sided, you could lose all your data.

Transferring data from 400K to 800K disks

You may want to copy applications you have on 400K disks to double-sided 800K disks. You can do this by using normal Macintosh disk-copying procedures. See “Copying an Entire Disk” in *Macintosh*, your owner’s guide.

Be sure to start your Macintosh by using a disk other than the one whose contents you want to replace; you can’t replace the contents of the current startup disk. The Macintosh will tell you if there’s not enough room on the destination disk—if you’re trying to copy a full 800K disk to a 400K disk, for example.

If an application is copy protected, you may not be able to copy it to an 800K disk. You can continue to use the application from a single-sided 400K disk.

Troubleshooting

This section is for Macintosh users. Chapter 4 contains general troubleshooting tips for all Apple 3.5 Drive users.

The yellow disk doesn’t eject.

Press and hold the mouse button down while you switch the Macintosh off and then on again. This should eject all disks.

As a last resort, remove the yellow packing disk manually. Insert a straightened paper clip or similar small object in the access hole on the eject button. Push hard on the paper clip until the mechanical eject mechanism releases the disk.

You’re trying to install a second external drive.

You cannot install a second external 800K drive on a Macintosh. Although it is physically possible to connect one, a second external drive won’t work.

You can, however, connect a single Apple 3.5 Drive to an Apple Hard Disk 20 or to a chain of Hard Disk 20’s.

Don’t remove the plastic cap covering the connector on the back of the drive. That port is for Apple IIGS users who want to install more than one external drive.

Your drive is making lots of errors.

Make sure you have not blocked the air vents or placed the drive on top of the Macintosh where the electromagnetic field will interfere with the drive operation.

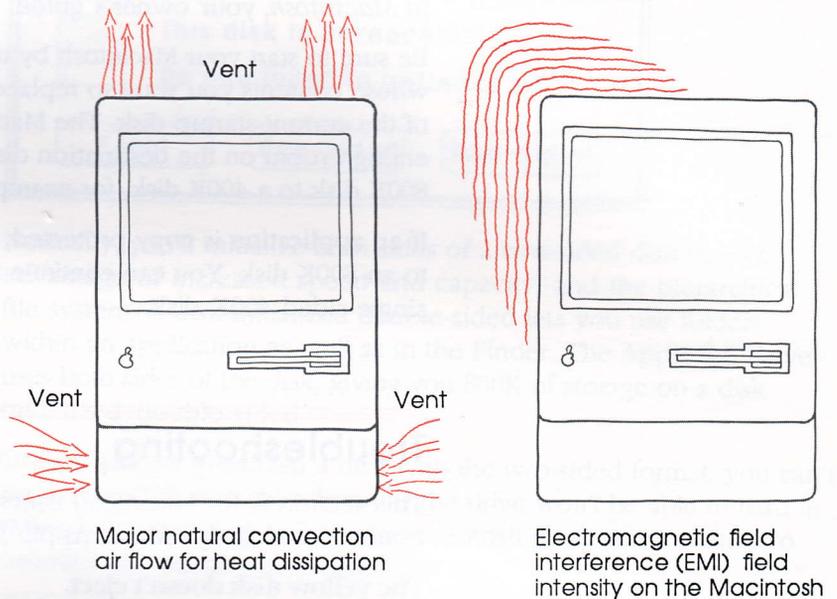


Figure 2-5

Giving your Macintosh the space it needs

You don't know if you have a ROM upgrade.

The Macintosh Plus Disk Drive Kit changes the built-in drive from single-sided to double-sided, gives you the new ROM, and provides the correct (Finder version 5.1, System File version 2.1) *System Tools* disk to use.

The Macintosh 512K *enhanced* has the new ROM and a double-sided built-in drive, and provides the correct (Finder version 5.1, System File version 2.1) *System Tools* disk to use.

The Macintosh Plus Logic Board Upgrade Kit, Part Number M2518, adds 1 megabyte of memory to the logic board. You must already have, or simultaneously purchase, the disk drive upgrade.

You're trying to use an 800K external drive with a 400K built-in drive.

You must use version 5.1 or a later version of the Finder, version 2.1 or a later version of the System File, and the file called Hard Disk 20. You must always start up from the internal drive. See your dealer for the Macintosh System Software Update, Part Number M0560.

We highly recommend that you purchase the Macintosh Plus Disk Drive Kit rather than continuing to use your 400K built-in drive.

Your Apple II Plus or IIx uses a 5.25-inch floppy disk. Each disk is mounted in a cartridge. The cartridge protects the disk and provides a mechanism that keeps the disk clean and allows it to spin freely. The cartridge has a mechanical shutter that closes automatically to protect the recording surface when the disk is not in use.



Figure 3-1
The 5.25-inch disk

Chapter 3

Care and Handling of Disks and Drives

Your Apple 3.5 Drive uses removable, double-sided 3.5-inch disks. Each disk can store up to 800 kilobytes of formatted data. The disk is enclosed in a rectangular cartridge. The cartridge protects the disk and contains materials that keep the disk clean and allow it to spin freely. The cartridge has a mechanical shutter that closes automatically to protect the recording surface when the disk is not in the drive.

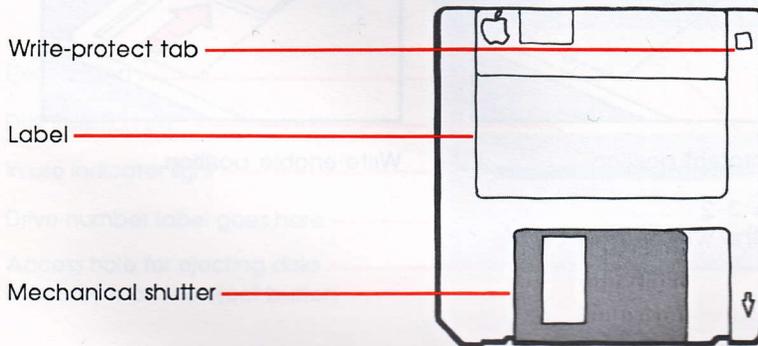


Figure 3-1
The 3.5-inch disk

Write protecting a 3.5-inch disk

When a disk is write protected, the computer cannot change information or write new information on the disk, but it can read any information that is already there. Use the write-protect tab when you want to protect information on your disk. Put the tab in the write-enabled position when you want to save or change information on your disk.

- To write-protect your disk, turn the disk over and slide the tab toward the edge of the disk as shown in Figure 3-2.
- To write-enable your disk, slide the tab away from the edge of the disk to the write-enabled position.
- ❖ *Note:* When you purchase 3.5-inch disks, they aren't write protected. You don't have to write-enable your disks in order to use them.

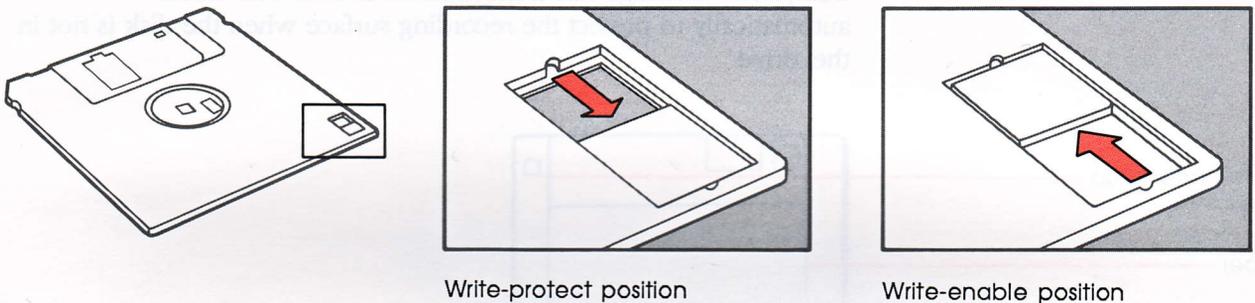


Figure 3-2

Using the write-protect tab

Care and handling of 3.5-inch disks

Your 3.5-inch disks are quite sturdy. However, you should follow a few general rules when handling the disks:

- Don't remove a disk from the drive when the red in-use light is on. The light indicates that the drive is reading information from or writing to the disk.
- Never use force to remove a disk from a drive. Follow the instructions in "Removing a Disk" in Chapter 1 or 2.
- Never open the disk shutter while your disk is out of the drive. Doing so will expose the data surface to dirt, dust, fingerprints, and other contamination.
- Avoid attaching more than three labels to a disk. Too many labels will make a disk stick in the drive.
- Replace loose labels. Don't force a disk with a loose label into a drive.

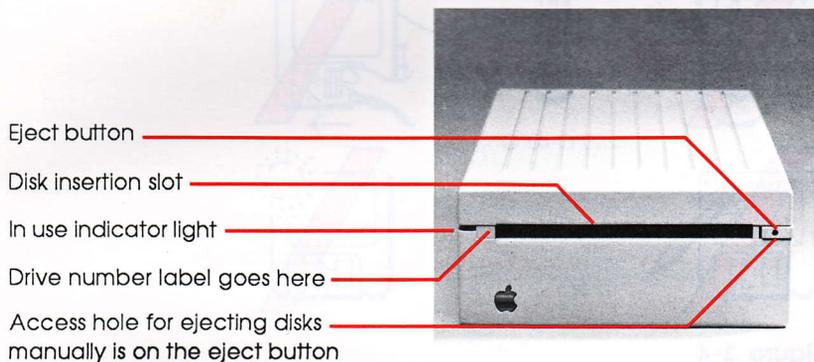


Figure 3-3
The front of the Apple 3.5 Drive

- When a label is already attached to a disk, use a felt-tip pen to write on it. You can use any kind of pen or pencil to write on an unattached label.
- Do not use an eraser on the label. Eraser dust is abrasive and can contaminate the disk surface or the drive mechanism.
- Do not place disks on dirty or greasy surfaces; do not let them collect dust.
- Store disks in protective boxes and away from direct sunlight, moisture, and extremes of heat and cold.
- Keep disks away from magnets or electrical devices.

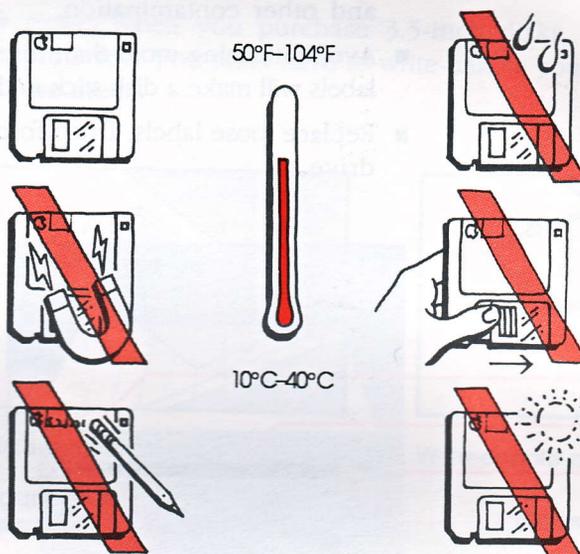


Figure 3-4
Care and handling of 3.5-inch disks

Caring for your disk drive

Your Apple 3.5 Drive is a precision, electromechanical data storage device. It has motors and moving parts that make it somewhat more delicate than your computer. Follow these precautions to keep your drive in good working order:

- Never touch the metal pins inside the disk drive connector.
- Unplug the drive or plug it in only when your computer is turned off.
- Whenever the disk drive is not attached to the computer, cover the disk drive connector with its anti-static bag.
- When you transport the disk drive, insert the yellow packing disk to protect the drive's internal mechanism. (The magnetic heads in the drive have hard ceramic surfaces that could crack if they contact each other.) If you lose the yellow disk, use a blank disk during transport.
- Before you reattach the disk drive to your computer, discharge any static electricity on your body by touching one of the metal connectors on the back panel.



Chapter 4



Troubleshooting

This chapter is a general troubleshooting guide for both Macintosh and Apple IIGS users. There are further troubleshooting tips in Chapter 1 for Apple IIGS users, and in Chapter 2 for Macintosh users.

General tips for all users

If you try to use your Apple 3.5 Drive but it does not work, make sure that you have

- Plugged the cable from the Apple 3.5 Drive into the computer.
- Plugged your computer's power cord into an outlet or a power strip.
- Removed the yellow packing disk from the drive.
- Left some space between the drive and the monitor. Non-Apple monitors connected to the Apple IIGS may cause the drive to have errors because of the electromagnetic interference (EMI) field emitted by the monitor. Apple monitors are shielded to contain the EMI. The left side of the Macintosh emits some EMI. See Figure 2-5.
- Turned on your computer.
- Correctly inserted a 3.5-inch disk into your Apple 3.5 Drive.

If your Apple 3.5 Drive still doesn't work, contact your dealer.

Do not attempt to open your Apple 3.5 Drive; opening the drive will void your warranty.

Service and support

To help you get the best performance from your system, Apple Computer, Inc. has established a worldwide network of full-support authorized Apple dealers. If you need answers to technical questions or information about product updates, your authorized Apple dealer can help you. Apple's Technical Support organization backs each dealer and international technical support group via AppleLink, a state-of-the-art on-line electronic information service, to ensure prompt, reliable assistance.

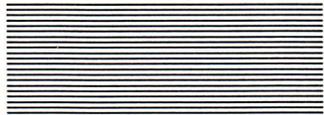
Your dealer has the latest information on new hardware and software products as well as product updates. If you wish to upgrade your system, your dealer can help you select compatible components.

If your product requires service, your local authorized Apple dealer is trained and ready to support you. Apple provides factory-quality parts and the latest available diagnostic equipment to the more than three thousand authorized Apple service centers throughout the world. Apple guarantees parts and warranty labor. (Regulations in each country determine the length of warranty. Some restrictions may apply, depending on the country of original purchase.)

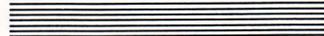
If for some reason you cannot return to the authorized dealer from whom you purchased your system, go to the nearest service location. For the location nearest you, in the United States, call (800) 538-9696; in Canada, call (800) 268-7796 or (800) 268-7637. For locations in other countries, either call the Apple headquarters in your country or write to

Apple Computer, Inc.
Attn: Customer Relations
20525 Mariani Avenue
Cupertino, CA 95014
USA

Apple also offers service options designed to meet your needs. They range from carry-in contracts like the AppleCare[®] Service Agreement (U.S., Canada, and Australia only), which extends full warranty coverage up to three years, to self-service plans designed to allow large installations to repair their own equipment. Whether you use your computer at home, in the office, or at school, Apple has a low-cost service plan for you. For details, please visit your authorized Apple dealer.



Appendix A



Daisy-Chain Drive Combinations for the Apple IIGs

This appendix discusses all the possible daisy-chain drive combinations for the Apple IIGs.

It is possible to daisy-chain more than four disk drives on your Apple IIGs. Remember, however, that the computer supplies all the power for your drives. If you try to daisy-chain more than four drives, there may be too much drain on the power supply, and the long cable length may pick up electrical signal noise that could affect how your drive works.

Chaining

In a chain of up to four drives, you can connect

- 0, 1, or 2 Apple 3.5 Drives. They should be the first in the chain.
- 0, 1, or 2 UniDisk 3.5 Drives. They should precede any 5.25-inch drives in the chain.
- 0, 1, or 2 Apple 5.25 Drives (including the UniDisk, the DuoDisk, and the Apple IIc external drive).

- ❖ *Note:* The Apple 3.5 Drives should come first in any chain, and all 3.5-inch drives should come before any 5.25-inch drives in the chain.

The Apple IIc external drive or the DuoDisk must be the last in a chain because neither has a daisy-chain port.

To daisy-chain a DuoDisk with a serial number below 433754, you must insert the DuoDisk controller card in slot 6.

The Disk II® drive cannot be chained because it doesn't have a DB-19 connector.

You may wish to install an optional fan if your system is heavily loaded with cards and other devices.

Startup drive selection

You can select a startup drive by using the Control Panel. The Apple IIGS follows this default scan as it searches for a startup disk in the drives connected to it:

1. It looks in slot 6 for a disk in a 5.25-inch drive.
2. It looks in slot 5 for a disk in a 3.5-inch drive.

The Apple IIGS tries to start up only from the first device in any slot. The Apple IIGS reads from an Apple 3.5 Drive before it reads from a UniDisk 3.5 Drive.

The Apple IIGS reads a disk in the 5.25-inch drive first, even if it is not the first drive in the chain. If no disk is found in the 5.25-inch drive, the Apple IIGS looks for a disk in the Apple 3.5 Drive connected to slot 5, drive 1. If the Apple IIGS can't find an Apple 3.5 Drive, it will start up from a UniDisk 3.5 Drive.

If you chain an Apple 3.5 Drive and a UniDisk 3.5 Drive, the Apple IIGS will read the disk in the Apple 3.5 Drive. The Apple IIGS will not try to start up from the UniDisk 3.5 if an Apple 3.5 Drive is connected.

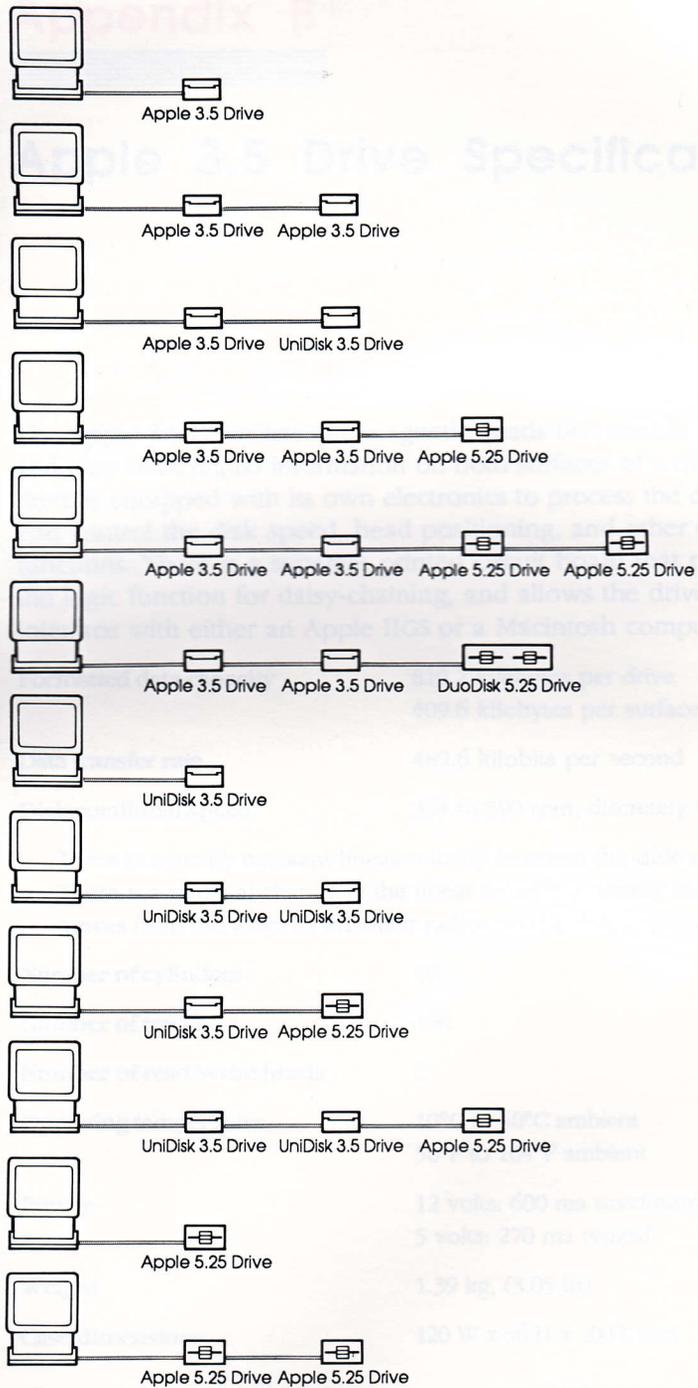


Figure A-1
Theoretical drive configurations





Appendix B



Apple 3.5 Drive Specifications

The Apple 3.5 Drive has two magnetic heads that enable it to record and play back digital information on both surfaces of a disk. The drive is equipped with its own electronics to process the data signal and control the disk speed, head positioning, and other drive functions. There is a separate printed circuit board that performs the logic function for daisy-chaining, and allows the drive to interface with either an Apple IIGS or a Macintosh computer.

Formatted data capacity	819.2 kilobytes per drive 409.6 kilobytes per surface
Data transfer rate	489.6 kilobits per second
Disk rotational speed	394 to 590 rpm, discretely variable

There is a nearly constant linear velocity between the disk and the head. There is a minimal change in the linear recording density as the head moves from the inner to the outer radius on the disk.

Number of cylinders	80
Number of tracks	160
Number of read/write heads	2
Operating temperature	10°C to 40°C ambient 50°F to 104°F ambient
Power	12 volts: 600 ma maximum 5 volts: 270 ma typical
Weight	1.39 kg, (3.05 lb)
Case dimensions	120 W x 56 H x 200 L mm

THE APPLE PUBLISHING SYSTEM

This Apple manual was written, edited, and composed on a desktop publishing system using the Apple Macintosh™ Plus and Microsoft® Word. Proof and final pages were created on the Apple LaserWriter™ Plus. POSTSCRIPT™, the LaserWriter's page-description language, was developed by Adobe Systems Incorporated.

Text type is ITC Garamond® (a downloadable font distributed by Adobe Systems). Display type is ITC Avant Garde Gothic®. Bullets are ITC Zapf Dingbats®. Program listings are set in Apple Courier, a monospaced font.

Limited Warranty

APPLE COMPUTER, INC.

("Apple") warrants this hardware product against defects in material and workmanship for a period of NINETY (90) DAYS from the date of original retail purchase.

If you discover a defect, Apple will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided you return it during the warranty period, transportation charges prepaid, to the authorized Apple dealer from whom you purchased it or to any other authorized Apple dealer within the country of original retail purchase. (You can obtain additional information from Apple directly at the address printed on this certificate.) Please attach your name, address, telephone number, a description of the problem, and a copy of a bill of sale bearing the appropriate Apple serial numbers as proof of date of original retail purchase, to each product returned for warranty service.

This warranty applies only to hardware products manufactured by or for Apple, which can be identified by the "Apple" trademark, trade name, or logo affixed to them. Apple software is warranted pursuant to a separate written statement packed with the software; Apple does not warrant any products that are not Apple products. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication; has been modified without the written permission of Apple; or if any Apple serial number has been removed or defaced.

ALL IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO NINETY (90) DAYS FROM THE DATE OF ORIGINAL RETAIL PURCHASE OF THIS PRODUCT.

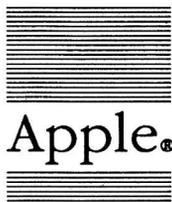
THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, ORAL OR WRITTEN, EXPRESS OR IMPLIED.

No Apple dealer, agent or employee is authorized to make any modification, extension, or addition to the warranty.

APPLE IS NOT RESPONSIBLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, OR UNDER ANY OTHER LEGAL THEORY, INCLUDING LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE TO OR REPLACEMENT OF EQUIPMENT AND PROPERTY, AND ANY COSTS OF RECOVERING, REPROGRAMMING, OR REPRODUCING ANY PROGRAM OR DATA STORED IN OR USED WITH APPLE PRODUCTS.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
TLX 171-576



Apple 3.5 Drive

Packing List

This package contains the following items:

1	Apple 3.5 Drive	603-6101
1	Manual: <i>Apple 3.5 Drive Owner's Guide</i> With Tell Apple Card	030-0126 030-1372
1	Drive label	825-1305
1	Warranty card	030-0967

If you have any questions, please contact your authorized Apple dealer.



Limited Warranty

APPLE COMPUTER, INC. ("Apple") warrants this hardware product against defects in material and workmanship for a period of NINETY (90) DAYS from the date of original retail purchase.

If you discover a defect, Apple will, at its option, repair, replace or refund the purchase price of this product at no charge to you, provided you return it during the warranty period, transportation charges prepaid, to the authorized Apple Dealer from whom you purchased it or to any other authorized Apple Dealer within the country of original retail purchase. (You can obtain additional information from Apple directly at the address printed on this certificate.) Please attach your name, address, telephone number, a description of the problem and a copy of a bill of sale bearing the appropriate Apple serial numbers as proof of date of original retail purchase, to each product returned for warranty service.

This warranty applies only to hardware products manufactured by or for Apple, which can be identified by the "Apple" trademark, trade

name or logo affixed to them. Apple software is warranted pursuant to a separate written statement packed with the software; Apple does not warrant any products that are not Apple Products. This warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication, has been modified without the written permission of Apple, or if any Apple serial number has been removed or defaced.

ALL IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO NINETY (90) DAYS FROM THE DATE OF ORIGINAL RETAIL PURCHASE OF THIS PRODUCT.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, ORAL OR WRITTEN, EXPRESS OR IMPLIED. No Apple Dealer, agent or employee is authorized to make any modification, extension or addition to this warranty.

APPLE IS NOT RESPONSIBLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, OR UNDER ANY OTHER LEGAL THEORY, INCLUDING LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE TO OR REPLACEMENT OF EQUIPMENT AND PROPERTY, AND ANY COSTS OF RECOVERING, REPROGRAMMING OR REPRODUCING ANY PROGRAM OR DATA STORED IN OR USED WITH APPLE PRODUCTS.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, California 95014
(408) 996-1010
TLX 171-576

Garantía Limitada

APPLE COMPUTER, INC. («Apple») garantiza este producto de hardware contra defectos de material y de mano de obra por un periodo de NOVENTA (90) DIAS a partir de la fecha de la compra del producto.

Si el comprador descubriera algún defecto, Apple tendrá la opción de reparar o reemplazar este producto sin cargo o de reembolsar el importe de su precio de venta, siempre que se devuelva el producto durante el periodo de la garantía al Distribuidor Autorizado de quien lo adquirió o a cualquier otro Distribuidor Autorizado dentro del país donde se efectuó la compra. (Se puede obtener información adicional al respecto escribiendo directamente a la dirección consignada en este certificado.) Sírvase adjuntar su nombre, dirección completa, teléfono, la descripción del problema y una copia de la nota de venta con el correspondiente número de serie de Apple, como prueba de la fecha de la compra original, por cada producto que se devuelva para el servicio de garantía.

Esta garantía cubre solamente a los productos de hardware (circuitaría) manufacturados por Apple y que pueden ser identificados por

la marca registrada «Apple», su denominación comercial o su logotipo fijados en ellos («Productos Apple»). Los productos de software de Apple tienen garantías separadas incluidas en el paquete de cada software; Apple no garantiza ningún otro producto que no sea un producto Apple. Esta garantía perderá todo su efecto si el producto fue dañado por accidente, abuso, mal uso o mala aplicación, si fue modificado o si algún número de serie de Apple fue quitado o alterado.

TODA GARANTÍA IMPLÍCITA, INCLUYENDO GARANTÍAS IMPLÍCITAS DE COMERCIALIZACIÓN Y CONVENIENCIA PARA ALGUN PROPOSITO EN PARTICULAR, ESTA LIMITADA EN SU DURACIÓN A NOVENTA (90) DIAS A PARTIR DE LA FECHA DE LA COMPRA ORIGINAL DE ESTE PRODUCTO AL MINORISTA.

ESTE GARANTÍA Y LOS RECURSOS ESPECIFICADOS SON EXCLUSIVOS Y SUBSTITUYEN A TODA OTRA GARANTÍA ORAL O ESCRITA, EXPRESA O IMPLÍCITA. Ningún representante o distribuidor, agente o empleado de Apple está autorizado para modificar, extender o efectuar agregados a esta garantía.

APPLE NO ASUME NINGUNA RESPONSABILIDAD POR DAÑOS ESPECIALES, INCIDENTALES O INDIRECTOS RESULTANTES DE INFINGIR CUALQUIER GARANTÍA, O POR CUALQUIER OTRO SUPUESTO LEGAL, INCLUYENDO PERDIDAS DE BENEFICIOS, PAGOS ADELANTADOS, CLIENTELA, DAÑOS A O POR REEMPLAZO DE EQUIPOS Y PROPIEDADES Y POR TODO COSTO DE RECUPERACION, REPROGRAMACION O REPRODUCCION DE CUALQUIER PROGRAMA O DATOS ALMACENADOS EN O USADOS CON PRODUCTOS APPLE.

En algunos estados no se permite la exclusión o limitación de daños incidentales o indirectos, o términos sobre la duración de una garantía implícita, de forma que las anteriores limitaciones o exclusiones en ciertos casos podrían no ser procedentes. Esta garantía da derechos legales específicos al comprador, quien también podría tener otros derechos que varían de país en país.

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, California 95014
(408) 996-1010
TLX 171-576



Garantie Limitée

Les garanties sous-entendues sont limitées à la durée de la garantie formelle

Apple Canada Inc. («Apple») garantit ce produit contre tout défaut de matière première ou vice de fabrication pendant une période de quatre-vingt-dix jours à partir de la date de l'achat initial. Cette garantie ne s'applique qu'aux composantes et aux produits fabriqués par Apple et qui peuvent être identifiés par la marque de commerce, le nom de commerce ou le logotype «Apple» qui leur est apposé. Apple ne garantit aucun produit qui n'est pas fabriqué par Apple.

Durant la période de la garantie, Apple réparera (ou remplacera, à son choix), sans frais, ce produit Apple ou n'importe quelle composante fabriquée par Apple qui s'avérerait défectueuse, pourvu que le produit Apple soit retourné à un Centre de service Apple autorisé.

Pour faire appel à la garantie, obtenez les nom et adresse du Centre de service Apple autorisé le plus rapproché en vous adressant à votre concessionnaire Apple local

ou directement d'Apple à l'adresse ci-dessous. Joignez au produit Apple vos nom, adresse, numéro de téléphone, une description du problème et la preuve de la date d'achat au détail (tel que votre chèque payé ou la facture). Expédiez le produit Apple au Centre de service Apple autorisé le plus rapproché, port payé.

Cette garantie ne s'applique pas si le produit a été endommagé par un accident, s'il a été abusé ou employé improprement, ou suivant un service ou une modification par autre qu'un Centre de service Apple autorisé.

APPLE N'ASSUME AUCUNE RESPONSABILITÉ POUR LES DOMMAGES, DIRECTS ET INDIRECTS QUI POURRAIENT DÉCOULER D'UN MANQUEMENT AUX CONDITIONS DE TOUTE GARANTIE EXPRESSE OU SOUS-ENTENDUE, Y COMPRIS LE DOMMAGE MATÉRIEL AUX BIENS ET, DANS LA MESURE QUE LA LOI LE PERMET, À LA PERSONNE.

CETTE GARANTIE REMPLACE TOUTE AUTRE GARANTIE. TOUTES GARANTIES SOUS-ENTENDUES, Y COMPRIS LES GARANTIES DE VALEUR COMMERCIALE ET D'UTILITÉ POUR SERVIR À UN OBJET QUELCONQUE, SONT LIMITÉES À LA DURÉE DE QUATRE-VINGT-DIX JOURS DE LA DATE DE L'ACHAT DE CE PRODUIT AU DÉTAIL.

Cette garantie ne s'appliquera pas dans les cas où n'importe quelle de ces conditions soit interdite par des juridictions auxquelles on ne peut pas déroger. Cette garantie vous accorde des droits spécifiques et il est possible que vous ayez d'autres droits que pourraient varier d'un endroit à l'autre.

Apple Canada Inc.
7495 Birchmount Road
Markham, Ontario
L3R 5G2
Telephone: (416) 477-5800

Limited Warranty

Implied warranties limited to duration of express warranty

Apple Canada Inc. ("Apple") warrants this product against defects in material and workmanship for a period of ninety days from the date of original retail purchase. This warranty applies only to products and components manufactured by Apple, which can be identified by the "Apple" trademark, trade name or logo affixed to them. Apple does not warrant any products not manufactured by Apple.

During the warranty period, Apple will repair (or at its option replace), at no charge, this Apple product or any Apple-manufactured components that prove to be defective, provided the Apple product is returned to an authorized Apple Service Center.

In order to obtain warranty performance, obtain the name and address of the nearest authorized Apple Service Center from your local Apple dealer or from Apple directly at the

address printed below. Attach to the Apple product your name, address, telephone number, a description of the problem and proof of date of retail purchase (such as a bill of sale or cancelled check). Return the Apple product to the nearest authorized Apple Service Center, transportation charges prepaid.

This warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication, or as a result of service or modification by other than an authorized Apple Service Center.

APPLE IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING DAMAGE TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY. THIS WARRANTY IS IN LIEU OF

ALL OTHER WARRANTIES. ANY IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO NINETY DAYS FROM THE DATE OF RETAIL PURCHASE OF THIS PRODUCT.

This warranty shall not be applicable to the extent that any of its provisions are prohibited by any jurisdictions which cannot be preempted. This warranty gives you specific legal rights, and you may also have other rights which vary from place to place.

Apple Canada Inc.
7495 Birchmount Road
Markham, Ontario
L3R 5G2
Telephone: (416) 477-5800



Apple Computer, Inc.

20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
TLX 171-576

030-0126-A
Printed in U.S.A.