

Lisa 2
Owner's Guide

Lisa 2
Owner's Guide

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A. Getting Ready — LisaGuide

Instructions for getting started on the Lisa 2 and for using the LisaGuide tutorial that comes with your Lisa.

B. Desktop Manager Reference Guide

Detailed instructions for using the desktop, disks and micro diskettes, and the Lisa 2 filing system.

C. Troubleshooting

A step-by-step guide to identifying and correcting problems that occur when your Lisa doesn't do what you expect it to do.

D. Maintenance

A guide to routine maintenance on your Lisa.

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F. Calculator

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Instructions for setting up your Lisa.

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H. Index

Preface

The *Lisa 2 Owner's Guide* presents information in the order you are likely to need it. The first section gets you started using the Lisa for practice. The next section is a reference guide to be used much as you use a dictionary -- that is, only when you need to look something up. Remaining sections provide information on diagnosing and correcting problems, on keeping the system maintained and trouble free, and on Lisa hardware specifications.

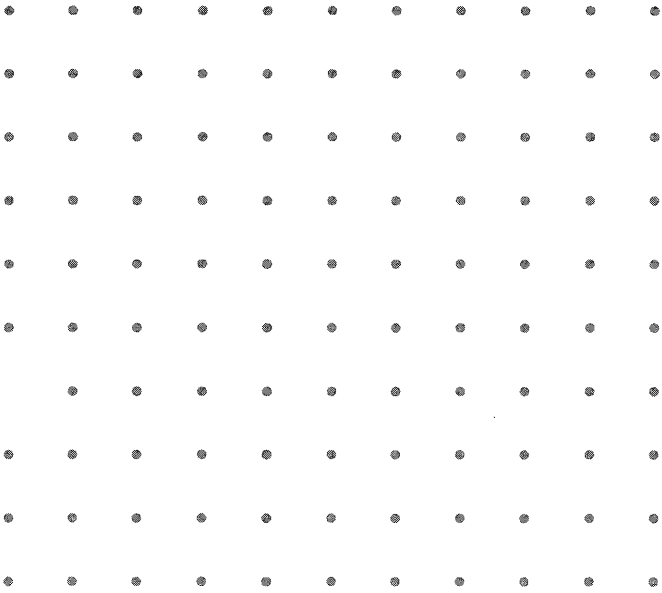
To make it easy to look up different topics, each section begins with its own table of contents. Many subjects also have multiple entries in the Index. These multiple entries are designed to help you find the topic you're looking for even if you're not sure what it's called.

The *Lisa 2 Owner's Guide* contains:

- Instructions for setting up the Lisa system.
- Instructions for using the LisaGuide micro diskette, which contains a series of tutorials designed to give you practice on the Lisa system.
- A general reference guide for using the Lisa system.
- A detailed section on how to use the Lisa calculator.

- Detailed instructions for diagnosing and correcting problems.
- Maintenance requirements for the Lisa.
- Hardware specifications.

Scan the *Lisa 2 Owner's Guide* to become familiar with what's available here. You'll notice that the owner's guide provides information about the system as a whole, but not about specific Lisa tools, such as LisaCalc and LisaGraph. When you're ready to do your own work, refer to the manuals that come with the tools for detailed instructions.



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LisaGuide

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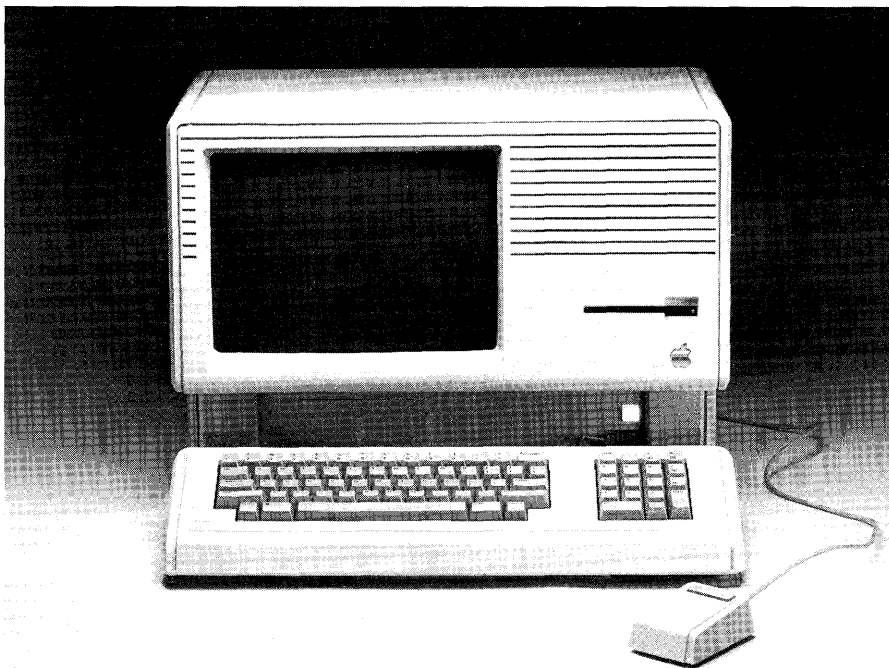
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Congratulations . . .

. . . You're a new Lisa user! By just following the easy instructions in this brief section, you'll soon have the Lisa working for you.



Setting Up Your Lisa

Your Lisa dealer or Lisa service representative probably has already set up your Lisa system. If not, please refer to Appendix 1, Setup Procedures.

Turning the Lisa On and Off

Simple! Just press the on-off button. The button is lit when the system is on.



Pressing the on-off button tells the Lisa to prepare for working or to put your work away. After pressing the button, there's a slight delay as the system readies the Lisa to work for you or prepares to shut down.

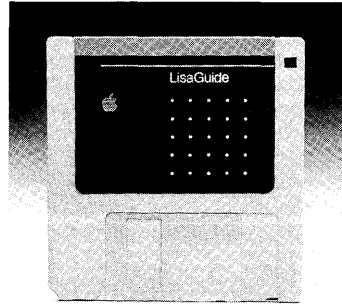
There's another reason for the delay when you turn on the Lisa. The system runs a series of internal tests to make sure the Lisa is ready to go to work. If you're interested, Appendix 4, Automatic Startup Tests, gives the details. If you encounter a problem during the startup procedures, refer to Section C, Troubleshooting.

Warning

The Lisa on-off button is a "soft" switch; that is, it turns off the system but does not cut off the power supply. If you need to service the Lisa, be sure to unplug the system.

LisaGuide: An Introduction to the Lisa

LisaGuide is the micro diskette that teaches you how to use the Lisa system. From LisaGuide, you'll learn about using the mouse, using menus, and doing work -- that is, creating documents -- on the system. You'll find the LisaGuide diskette in the Lisa Office System binder. Get the LisaGuide diskette out now, and then go to the next page for instructions on how to get started.

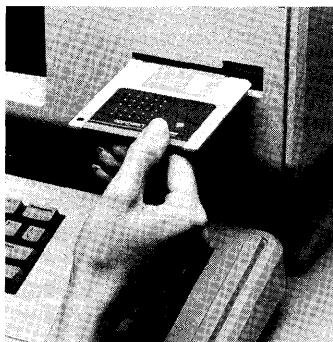


STARTING LISAGUIDE

To start LisaGuide for the first time:

1 ► Be sure the Lisa is turned off. If the on-off button is lit, press it once. Wait until the light in the on-off button goes out. This will take a minute or so because the Lisa must put away the things on the desktop before turning off.

2 ► Insert the LisaGuide micro diskette into the drive. Make sure the arrow embossed on the diskette is pointing toward the drive. Push the diskette into the drive until you hear a click.



3 ► Turn the Lisa on: Press the on-off button once. The power will go on, and the button will light up.

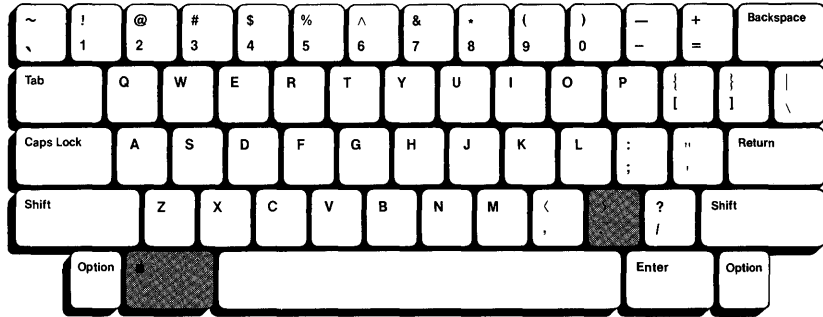
4 ► After a few minutes, you'll see the phrase, "Welcome to LisaGuide," on the screen. Now just follow the instructions on the screen.

To stop or interrupt LisaGuide, follow the instructions on the next page.

STOPPING LISAGUIDE

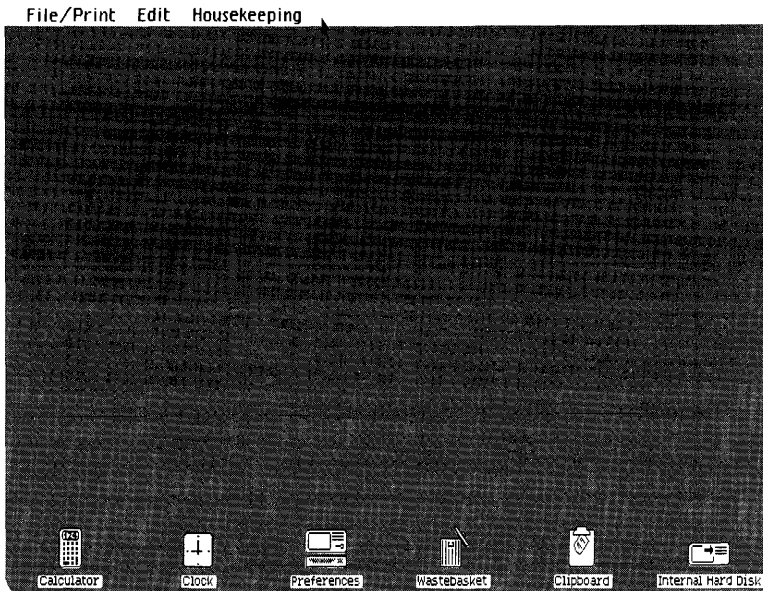
To stop LisaGuide at any time:

- 1 ► Press the Apple key while typing a period.



Wait for the LisaGuide diskette to be ejected from the drive. Before the diskette is ejected, the system puts the LisaGuide lessons and your work in an order the system can retrieve when you want to start again.

- 2 ► When the diskette is ejected, remove it and put it away. After a few minutes you'll see the Lisa's "usual" desktop.



Lisa desktop

If you're going to use the Lisa within a day, leave your system on. Otherwise, turn off the system by pressing the on-off button once.

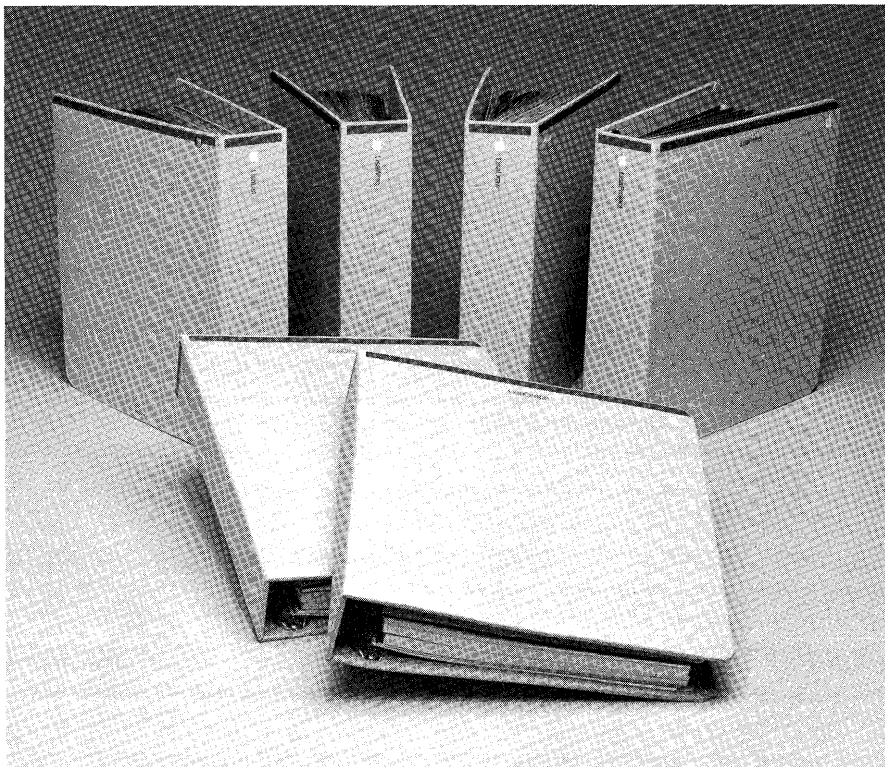
RESTARTING LISAGUIDE

To restart LisaGuide:

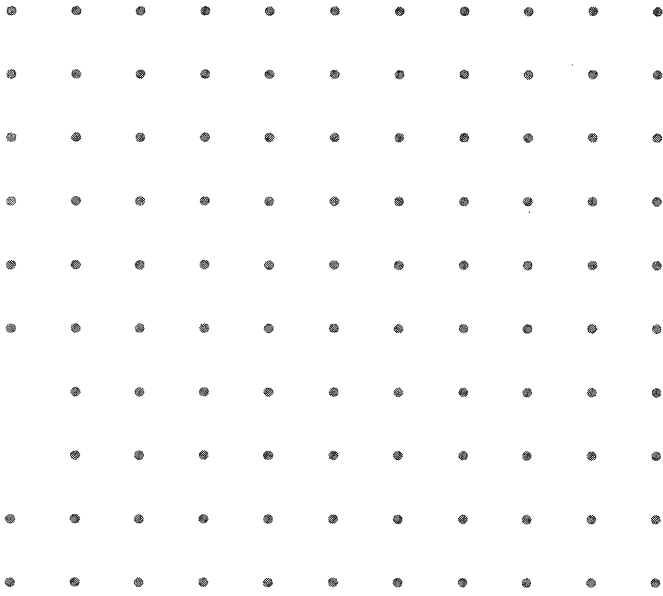
- 1 ► Follow steps 1 through 3 under Starting LisaGuide.
- 2 ► When "Welcome to LisaGuide" appears, choose the topic you're interested in from the **Topics** menu.

After LisaGuide

Now you're ready to do your own work. Decide which Lisa tool -- LisaCalc or LisaWrite, for example -- you'll need. Refer to that tool's manual to help you get started. Come back to the *Lisa 2 Owner's Guide* and refer to Section B, Desktop Manager Reference Guide, for answers to general questions about the Lisa system.



Lisa tool manuals



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Desktop Manager
Reference Guide

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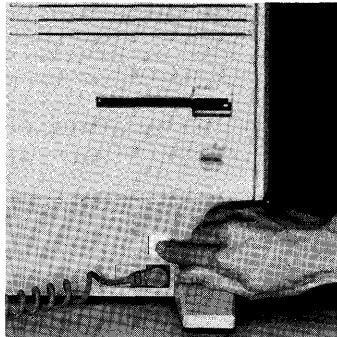
Starting and Stopping

If your Lisa 2 system is not yet set up, refer to Appendix 1, Setup Procedures.

TURNING THE LISA 2 ON AND OFF

Simple! Just press the on-off button. The button is lit when the system is on.

Pressing the on-off button tells the Lisa to prepare for working or to put your work away. After pressing the button, there's a slight delay as the system shuts down or readies the Lisa to work for you.



For a more detailed account of what your system is doing during startup see Appendix 2, On-Off Procedures, and Appendix 3, Automatic Startup Tests.

Warning

The Lisa on-off button is a "soft" switch; that is, it turns off the system but does not cut off the power supply. If you need to service the Lisa, be sure to unplug the system.

PROBLEMS STARTING UP

If you encounter a problem while starting the Lisa, refer to Problems during Startup, in Section C, Troubleshooting.

STARTING THE LISA 2 FROM AN EXTERNAL HARD DISK

Use this procedure if you have attached an external hard disk to your Lisa system and designated the external hard disk as your startup device in Preferences.

To turn on the Lisa:

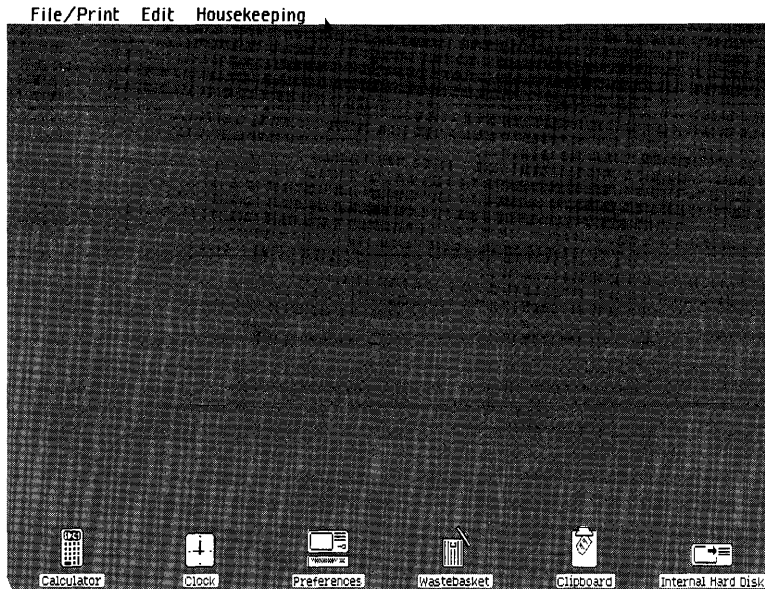
- 1 ► Turn on the external disk drive.
- 2 ► Turn on the Lisa by pressing the on-off button once.

Reverse this process when turning off the Lisa:

- 1 ► Turn off the Lisa by pressing the on-off button once.
- 2 ► Wait until the power light goes out in the on-off button.
- 3 ► Turn off the external disk drive.

The Desktop (Screen)

If you've gone through LisaGuide (See Section A, Getting Ready -- LisaGuide), you know that the Lisa screen is an electronic desktop. You can think of it as you would of any desktop: A place where you do your work.



The icons (symbolic pictures) and menus and the messages that occasionally appear on your desktop help you to do work using the Lisa system. Manipulating icons replaces executing complicated keyboard commands required to use other systems.

In this section you will find information about:

- How to use specific icons.
- How to use menus.
- Kinds of screen messages.
- How to print screen displays (screen dumps).
- Common new user problems.

ICONS

The symbolic pictures on the desktop are called icons. The icons represent common office objects and objects used by the Lisa Office System. Refer to Section A, Getting Ready — LisaGuide, to learn the basics about operating icons.



The following pages explain the function of each desktop icon and refer you to sections in this manual that explain the specific use of each function.

Disks and Micro Diskettes

The Lisa 2 internal hard disk, any external disk drive that may be attached, and each micro diskette inserted into the disk drive shows up on the desktop as an icon like the ones shown here.



A disk icon opens into a disk window. At the top of an active disk window is a Status panel, which tells you how much space is available on the disk and when the disk was last backed up. (See Disk Window Status Panel, under Disks and Micro Diskettes.) The disk window can display either a collection of icons or a list of names representing all objects stored on that disk. The text list includes information on the size of documents and when they were last updated. (See Disk Window Status Panel, under Disks and Micro Diskettes.)

If a disk that is attached to your Lisa does not show up on your desktop, check the Device Connections portion of the Preferences window. See Setting Startup Specifications, in Appendix 1, Setup Procedures.

Documents

The documents you create on your Lisa are represented in their storage locations by document icons. The design on the icon matches the design on the tool that was used to create the document.



Memo

Stationery Pads

Each stationery pad represents an infinite supply of either blank or customized paper, which you use for creating new documents. The design on the pad matches the design on the tool and on documents associated with the pad.



LisaWrite Paper

Each tool comes with a pad of blank stationery. You can also make your own custom stationery pads. Instructions for making a new stationery pad are given in Creating a Stationery Pad, under Documents and Folders.

Folders

Each disk initialized by the Lisa Office System comes with a pad of empty folders. At your option, you can use this pad to create new folders for holding the objects stored on your disks.



The reason for folders on storage disks is the same as the reason for folders in your filing cabinets: Organization makes it easier to find things.

Wastebasket

The Wastebasket is used to discard old documents or objects you no longer need. See Discarding (Throwing Away) a Document, under Documents and Folders.



Tools

These tool icons represent the instructions the Lisa needs to work on your documents. The other tools, including the Clock and the Calculator, look like the tools they represent.



The tool icons are stored on your disk in a folder called Tools. Ordinarily, you do not need to do anything with the tool icons, but a copy of the tool used to create a document must be present on one of the disks on the desktop before you can work on that document.

Preferences

Using this icon you can specify your convenience settings, startup device, and other device connections. See Setting Startup Specifications, in Appendix 1, Setup Procedures.



Clock/Calendar

A clock/calendar inside the Lisa keeps track of the date and time. Using information supplied by the clock/calendar, the Lisa tags each document with the date you created it and the date you last worked on it.

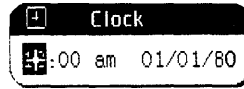


When you first start up your Lisa 2, the clock should appear on the gray area of the desktop. If you choose **Save & Put Away** from the **File/Print** menu, the clock is stored in the Tools folder on your startup disk. You can move the clock to another folder, but you should not move it to another disk.

Once you set the clock/calendar, it will continue running as long as the Lisa is plugged into a working outlet. If the system is unplugged, the Lisa resets the clock to 12 a.m., 1/1/80.

To set the clock/calendar :

- 1 ▶ Open the clock icon. If it's not on the desktop, look in the Tools folder on your startup disk.
- 2 ▶ Place the pointer over the hour and click the mouse button once.
- 3 ▶ Type in the correct hour.
- 4 ▶ Press [TAB] and type in the correct minutes.
- 5 ▶ Continue tabbing and correcting each part of the time and date until the display is correct.
- 6 ▶ Choose **Set Aside "Clock"** from the **File/Print** menu.



Clipboard

The Clipboard holds the material that you cut or copy when editing documents or object names. The Clipboard always contains the last text or graphic that was cut or copied. When you choose **Paste** from the **Edit** menu, the contents of the Clipboard are inserted at the selected location.



You can open the Clipboard to see its contents, but you cannot edit the contents. Leave the Clipboard window open at the bottom of the screen if you need to refer to the material you've cut or copied.

Calculator

The Calculator icon represents the Lisa desktop Calculator.



Open the icon to use the Calculator.

When you first start using the Lisa, the Calculator appears at the bottom of the desktop. If you put it away through the **File/Print** menu, the Calculator is stored in the Tools folder on the startup disk.

Detailed instructions for using the Calculator appear in Section F, Calculator.

MENUS

A menu is a list of items that represent commands you can choose to get the Lisa to do certain tasks.

The names of Lisa Office System menus appear in the menu bar along the top of the desktop (screen). The available menus change depending on whether you are working in a document window or on the desktop.

File/Print Edit Housekeeping

Desktop menu bar

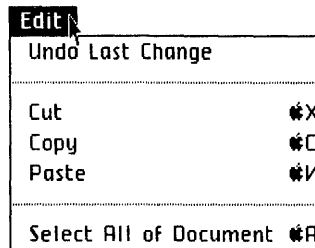
File/Print Edit Search Type Style Format ¶ Page Layout

Document menu bar

To choose a menu item, move the pointer to the menu title. Press and hold down the mouse button. When the menu items appear, continue to hold down the mouse button while moving the pointer to the item you want. When the item is selected, release the mouse button.

If items within menus are gray, they are not available as commands. For example, if no window is activated, the **Set Aside** item in the **File/Print** menu is not available. When you activate a window, however, the item becomes available again. If a menu item you want to use is grayed, you've probably forgotten to select the icon or window.

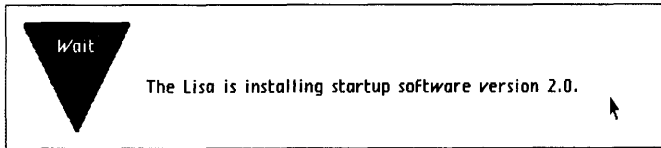
To the right of many menu items is an Apple symbol and a letter like those shown.



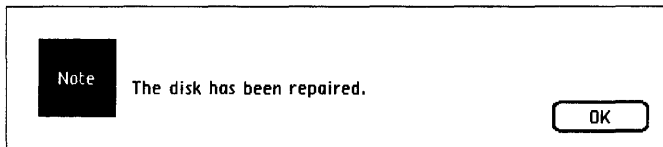
This means that pressing the Apple key and the letter will have the same effect as selecting the menu item with the mouse. The Apple key/letter options represent shortcuts through the menus.

SCREEN MESSAGES

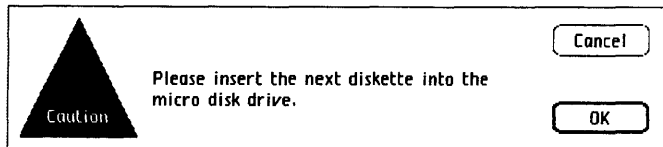
The Lisa Office System displays several different types of messages from time to time. Some messages, such as the Wait message, merely give you information.



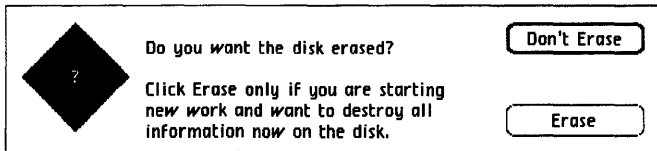
Other messages give you information, but require that you acknowledge that you have read the message before the system will continue. The Note message below is an example.



Other messages require that you make a choice to direct the system as to what to do next. Here is an example.



Some messages that require a choice have a default, or automatic, selection. The default selection has a heavier outline around it than the other choice. In the example below, Don't Erase is the default selection.



If you want to choose the default selection, don't bother selecting its box. Instead, just position the pointer anywhere outside the alert message and click the mouse button; the default option is automatically selected. The other choice (Erase in the previous message) is selected only if you position the pointer over its box before clicking the mouse.

To learn more about specific messages, use the index to look up the procedure where the message appears.

SCREEN DUMPS -- PRINTING SCREEN DISPLAYS

The following procedure works only if you have a dot matrix printer such as the Apple Imagewriter. If you have a parallel dot matrix printer, it must be connected to a parallel interface card. Also be sure that the printer is listed in the Device Connections portion of the Preferences window.

To print the screen display:

- 1 ► Arrange the screen the way you want.
- 2 ► Hold down the right-hand [OPTION] key and the [SHIFT] key while pressing the 4 on the numeric keypad, and then release the keys. The printer will begin printing.

In some cases, you may need to keep the mouse button depressed with one hand while holding down the keys mentioned above with the other hand. For example, if you want to print an open menu, keep the mouse button depressed to keep the menu open and press [OPTION], [SHIFT], and the 4 key on the numeric keypad all at the same time.

To stop the printing procedure before it's completed, press and hold down the Apple key while pressing the period key on the numeric keypad.

COMMON NEW USER PROBLEMS

Although the desktop makes the Lisa system easier to use than other computer systems, there are a few minor problems that new users may encounter while working on the Lisa desktop. These common desktop problems include the following:

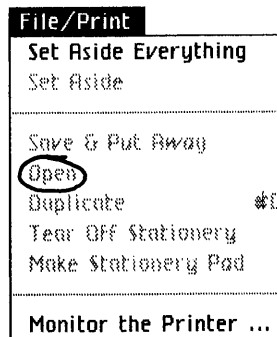
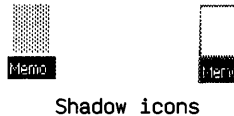
- Can't open an icon.
- Can't find the menu.
- Can't choose the menu item.
- Can't find a disk, document, or folder icon or window.

In this section you will find some suggestions for solutions to these problems. If the solutions suggested do not work, your system may need attention. If this seems to be the case, refer to Section C, Troubleshooting.

Can't Open an Icon

- 1 ► First make sure you are trying to open the icon and not its shadow. Shadows are only placeholders for opened documents. A gray shadow holds the document's place in a disk or folder window; a white shadow holds the document's place on the desktop.

2 ► Make sure you've selected the icon; that is, make sure you've clicked on the icon so that it's highlighted. If the icon is not selected, the **Open** item in the **File/Print** menu will be gray and you won't be able to choose it.



- 3 ► If neither of these procedures works, the disk on which your documents are stored may be damaged. See Disk Repair, in Section C, Troubleshooting.

Can't Find the Menu

The menus in the menu bar change according to whether a window is activated or an icon is selected. If you can't find a menu, the object you want to work on may not be selected. To activate a window or to select an object, place the pointer on the object and click the mouse button once.



Selected icon



Internal Hard Disk

Icon not selected



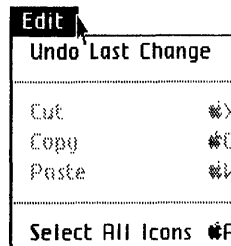
Activated window

Internal Hard Disk

Inactive window

Can't Choose the Menu Item

If a menu item is gray, like the cut, copy, and paste items in the **Edit** menu shown here, then you won't be able to select the item.

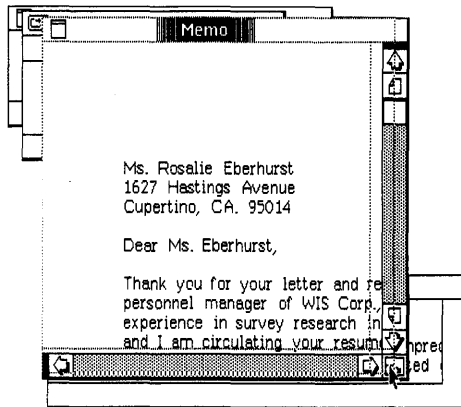


One of the reasons an item is gray is that the object you want to work on is not selected. Another reason may be that the menu item isn't appropriate for the object selected or is not appropriate for the object in the form selected. For example, **Duplicate** in the **File/Print** menu works on document icons but not on open document windows.

Place the pointer on the icon or in the window you want to work on and click the mouse button once. With the object selected, the menu item should no longer be gray and you should be able to choose it.

Can't Find a Disk, Document, or Folder Icon or Window

- 1 ► If you can't find an icon, it may be hidden under something else on the desktop. Look under open windows by moving or resizing them. (See Viewing Documents through Their Windows, under Documents and Folders.)



- 2 ► If you have many windows open on the desktop, choose **Set Aside Everything** from the **File/Print** menu. After the windows have been reduced to their icons, scan them to find your document quickly.

- 3 ► If your desktop has only an open disk or open folder window, and you can't find the document among the icons, choose **Alphabetical** from the **Housekeeping** menu to get an alphabetical listing of the documents in the window. If the document appears in the alphabetical list, go back to the **Housekeeping** menu, choose **Pictorial**, and look again for the document's icon.
- 4 ► Look in folders. Choose **Straighten Up Icons** from the **Housekeeping** menu.

Disks and Micro Diskettes

Disks and micro diskettes are the storage devices for the Lisa system. You can think of them as filing cabinets. After finishing a document, you file it away on a disk or diskette. If you need to work with the document again, you simply retrieve it from the disk.

How do disks differ from micro diskettes? Disks have a much larger capacity, allowing you to file more of your work than you can on a diskette. However, micro diskettes are pocket-sized and therefore more portable. The differences between disks and micro diskettes will become obvious as you learn to use the Lisa system.

The rest of this section covers disks in detail. Here you will find information about:

- Startup disks.
- Disk icons.
- Disk windows.
- Care of micro diskettes.
- Inserting and ejecting micro diskettes.
- Initializing disks.
- Backing up disks.
- Reinstalling Office System software.
- Installing tools.

For information regarding disk repair or disk restoration, see Procedure E, Disk Repair, in Section C, Troubleshooting.

BASIC OPERATIONS

If you've gone through LisaGuide (see Section A, Getting Ready — LisaGuide) you're familiar with how easy it is to use the Lisa system. The basic operations for the system involve manipulating icons and windows. This section does not repeat the elementary operations presented in LisaGuide but does cover the following topics:

- Disk and micro diskette icons.
- View controls in disk windows.
- Reading the Status panel in a disk window.

Disk and Micro Diskette Icons

Icons are symbolic pictures that appear on the desktop. The Lisa 2 internal hard disk, any external disk added to the basic Lisa system, and any micro diskette in the Lisa 2 disk drive has its own icon, which appears on the Lisa desktop to indicate the presence of the device or micro diskette.



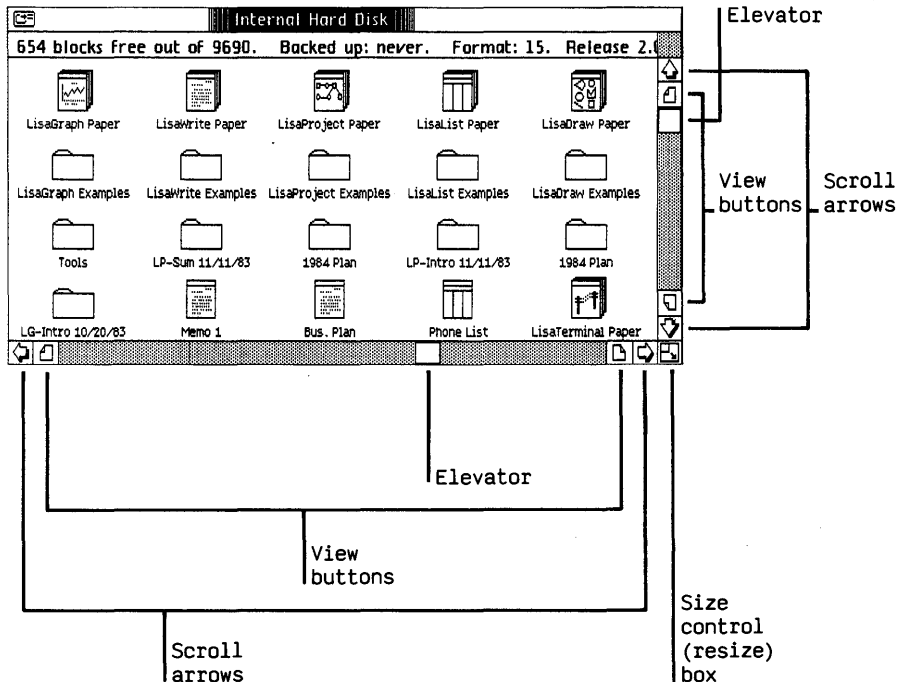
To open the icon, either click twice on the icon or select the icon and use the **Open "disk name"** item in the **File/Print** menu.

Opening the icon provides a window through which you can see the contents of the disk or micro diskette.

LisaGuide (see Section A, Getting Ready — LisaGuide) will give you first-hand experience manipulating icons and their windows.

Controlling the View in Disk Windows

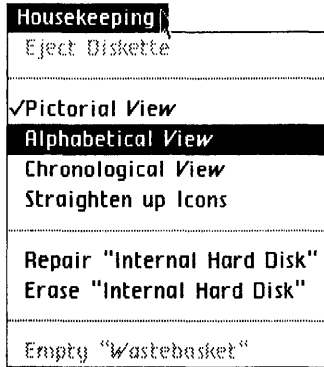
A disk or micro diskette opens into a window through which you can see the documents and folders that are stored there. If you have many document icons, they cannot all be viewed through the window at the same time. Use the view controls set in the window frame to scroll documents into view.



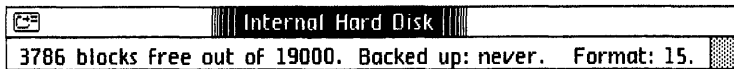
The view controls for a disk window work in exactly the same way as the view controls for a document window. Click on the directional arrows or view buttons to scroll the view in the indicated direction a line or a windowful at a time. Move the elevator up and down its shaft for longer scrolls. Move the size control box diagonally to resize windows. For detailed instructions on how to use these controls, see *Viewing Documents through Their Windows*, under *Documents and Folders*.

Alphabetical and Chronological Views

Ordinarily the documents you see through the disk window are represented by icons. Sometimes, however, you may want to have an alphabetical or chronological listing of the documents. You can do this by choosing **Alphabetical** or **Chronological** from the **Housekeeping** menu.



Disk Window Status Panel



When you open a disk or micro diskette icon, the Status panel at the top of the window provides useful information, including the amount of space still left on the disk (blocks available) and when the last backup copy of the disk was made.

The window for the startup disk shows the version (release number) of the Office System software installed on the startup disk. To see the release number you must completely open the window.



The format information tells you the format version of the Office System that was used to initialize a disk. The word *old* in parentheses indicates that the disk was formatted (initialized) by a version of the Office System software that is older than the one on the startup disk. You can improve the performance of your system by moving the documents from the original disk to one initialized by the Office System currently on the startup disk.

Warning

After you have updated the format of your disk or micro diskette, you will not be able to use the disk in a Lisa with an earlier format version. If you cannot update the Office System software on all of the Lisas in which the disk will be used, retain a copy of your disks in their original format.

To improve the performance of the Lisa 2 on old disks or micro diskettes :

- 1 ► Initialize a disk using a Lisa with the current Office System.
 - 2 ► Open the newly initialized disk.
 - 3 ► Open the old disk and choose **Select All Icons** from the **Edit** menu.
 - 4 ► Move the icons to the new disk.
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USING HARD DISKS

You can get a Lisa 2 system with an internal hard disk and you can add external disks through the systems expansion slots. (See *Installing the Disk Drive Module* and *Installing an External Hard Disk*, in Appendix 1, Setup Procedures.)

Generally, the internal hard disk is the disk used as the startup device -- that is, the disk where the Office System software is stored. The Office System software makes the Lisa's electronic desktop possible. Your startup disk probably came initialized, with the Office System software and Lisa tools already installed. If not, refer to *Installing the Office System Software*, in Appendix 1, Setup Procedures.

Hard disks can either be used as startup devices or merely as storage devices. A startup disk contains the Office System software and tools, and you can store documents on it as well. A storage disk lacks the Office System software and so cannot be used to start the system. As the term *storage disk* implies, you can only *store* documents and folders on the disk.

The rest of this section covers the following topics:

- Initializing (getting the disk surface ready to use in the Lisa) and naming disks.
- Making backup copies of disks (so you have an extra copy if the original disk is damaged beyond repair).
- Erasing, reinitializing, and renaming disks if you want to recycle an old disk.

For information regarding disk repair or restoration, see Procedure E, *Disk Repair*, in Section C, Troubleshooting.

Initializing and Naming Disks

Initializing erases the disk and prepares the disk surface for use in the Lisa. When a disk is new or hasn't been used on a Lisa, the system will ask you if you want to initialize the disk.

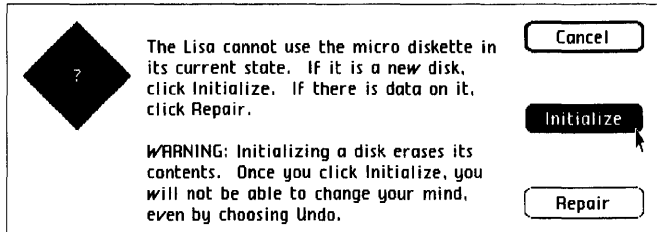
If the disk is to be used as a startup device, you'll need to initialize it before installing the Office System software. (See *Installing the Office System Software*, in Appendix 1, *Setup Procedures*. See also, if applicable, *Installing an External Hard Disk*.)

Each disk initialized by the Lisa Office System contains a pad of empty folders, which you can use to organize your documents.

Because the initialization process takes up a small amount of the total disk space, the Status panel on a newly initialized disk shows that some of the disk space has already been used.

To initialize and name a new disk:

- 1 ► When this message appears, click Initialize.



- 2 ► When the Wait message disappears, name the new disk by typing a name under the disk icon.

If you want to make only a small change in the name, you can use the same text editing procedures you use within a document. Cutting, copying, pasting, and inserting text all work for editing object names.

Backing Up Disks

Because disks can be damaged or erased accidentally — during a power failure, for example — you should make backup copies of your disks.

There are two different ways to backup your disks. Choose the one that is most convenient to the way you work.

You can back up folders or documents on your disk to a micro diskette. Depending on the volume and variety of work you do, you might choose to do this a few times during the day, once at the end of the day, or only once a week.

A second way to back up your disk is to make one full backup of your hard disk to micro diskettes and then back up the disk periodically. In the periodic (incremental) backup, only documents revised or created since the last full backup are copied onto the micro diskette.

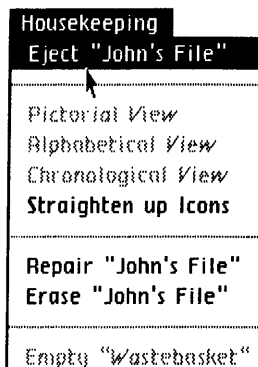
Procedures to back up documents on a disk or to make a full disk backup and then back up incrementally follow. Keep in mind that the restore feature of the Lisa system, which allows rebuilding a disk that won't repair, can only be used if you choose the full backup method. (See Restoring a Startup Disk, under Procedure E, Disk Repair, in Section C, Troubleshooting.)

To back up documents from the hard disk to micro diskettes:

- 1 ► If you want to back up more than one document, tear off an empty folder. Otherwise, go to step 3.
- 2 ► Move all the documents you want backed up onto the folder.
- 3 ► Insert a micro diskette in the drive. Initialize it if prompted.
- 4 ► Select the document or folder that contains the documents you want backed up.
- 5 ► Choose **Duplicate** from the **File/Print** menu.



- 6 ► Move the blinking duplicate document or folder to the micro diskette icon.
- 7 ► Choose **Eject "name of diskette"** from the **Housekeeping** menu. Put the diskette in a safe place.



If the documents you want to back up are grouped together in the diskette window, you can use this shortcut:

- 1 ► Insert the micro diskette in the drive. Initialize it if prompted.
 - 2 ► Select the group of icons. Press and hold down the mouse button and pull the pointer across the icons until a box forms around the group; release the mouse button, and all the icons are selected.
 - 3 ► Choose **Duplicate** from the **File/Print** menu.
 - 4 ► Move the blinking duplicates to the micro diskette icon. Position the pointer on any of the blinking icons and move them to the diskette icon. Moving one icon automatically moves all selected icons.
 - 5 ► Eject the diskette and store it in a safe place.
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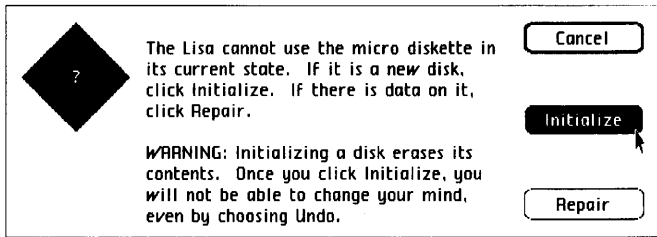
To make a full or incremental hard disk backup to diskettes:

Note: Depending on how full your disk is, this procedure will take a number of micro diskettes and some time. However, you must use this full disk backup method to take advantage of the restore feature. (See Restoring a Startup Disk, under Procedure E, Disk Repair, in Section C, Troubleshooting.)

- 1 ► Insert the first backup diskette into the micro disk drive.



- 2 ► If the diskette hasn't been initialized, the system will prompt you to do this.



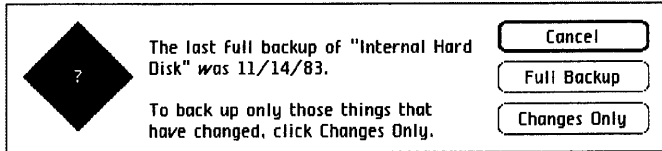
- 3 ► Select the internal hard disk icon.
- 4 ► Choose Duplicate from the File/Print menu.



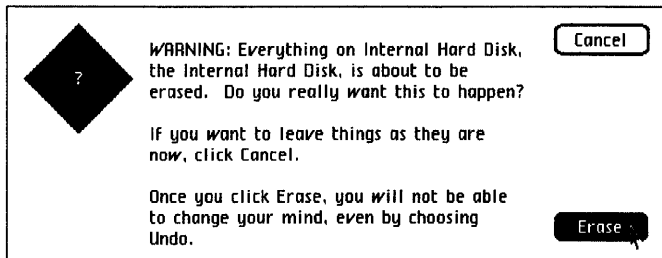
- 5 ► Move the blinking duplicate onto the diskette icon.



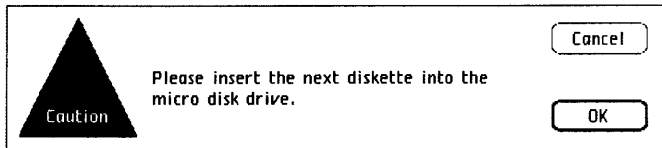
- 6 ► If this message appears, click Full Backup to back up the entire disk or Changes Only to back up only the information that has changed since the last full backup.



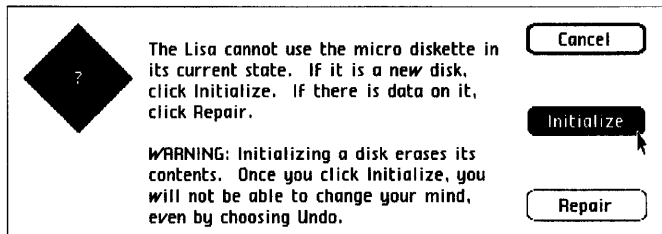
- 7 ► When this warning appears, click Erase.



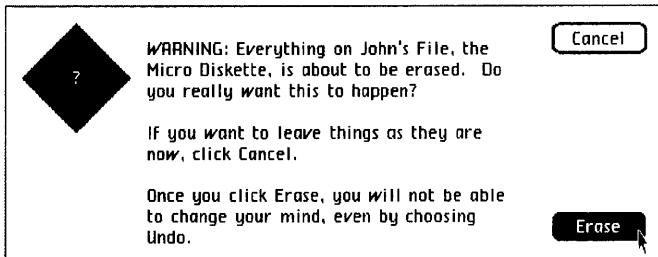
- 8 ► When this message appears, remove the first diskette and insert another diskette.



- 9 ► If this message appears, click Initialize.



10 ► If this message appears, click Erase.



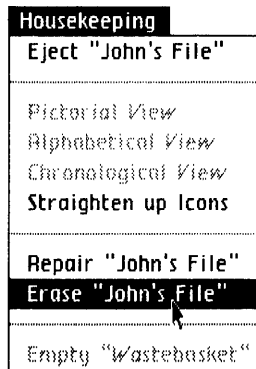
11 ► Continue removing diskettes and inserting additional diskettes until the Lisa ejects a disk without requesting another.

Erasing, Reinitializing, and Renaming Disks

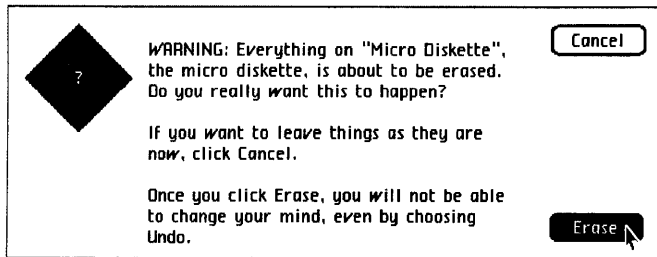
You can erase a disk if you no longer need the information stored there. Erasing automatically initializes the disk. If necessary, you can then rename the disk.

To erase, reinitialize, and rename a used disk:

- 1 ► With the disk icon or its window selected, choose **Erase** from the **Housekeeping** menu.



- 2 ► When this message appears, check to make sure that this is the disk you want to erase. If so, click **Erase**.



- 3 ► Rename the disk by typing a new name under the disk icon.
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USING MICRO DISKETTES

The Lisa 2 uses 3-1/2-inch micro diskettes. When you buy blank diskettes, be sure they are compatible with the Lisa 2 micro disk drive. Lisa micro diskettes are enclosed in plastic and are therefore less sensitive than "floppy" diskettes, but there are a few things to keep in mind when handling them; see *Caring for Micro Diskettes*.

Using micro diskettes with the Lisa 2 involves the following procedures:

- Inserting and ejecting micro diskettes.
- Initializing and naming diskettes.
- Making backup copies of diskettes.
- Erasing and renaming diskettes.

Information on repairing and restoring diskettes is given in Procedure E, Disk Repair, in Section C, Troubleshooting.

Inserting, Initializing, Naming, and Ejecting a Micro Diskette

To use a micro diskette in the Lisa 2, you simply insert the diskette in the drive and, if the diskette has never been used in a Lisa, initialize it.

Initializing prepares the surface of the diskette to accept the information you send to it through the Lisa. If the diskette needs to be initialized, the Lisa will ask you if you want this done right after you insert the diskette in the drive. After the diskette is in the drive and initialized, name (label) it according to your own filing system.

Each micro diskette initialized by the Lisa Office System contains a pad of empty folders, which you can use to organize your documents.

Because the initialization process takes up a small amount of the total disk space, the Status panel on a newly initialized diskette shows that some of the diskette space has already been used.

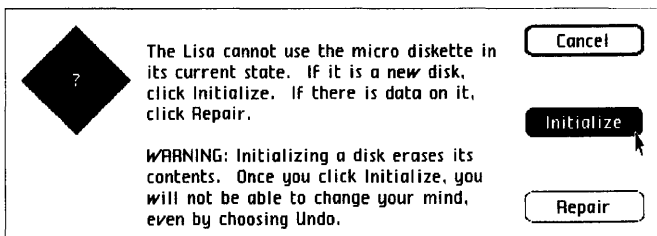
After you've finished with the diskette, eject it from the drive and store it in a safe place.

To insert, initialize, and name a micro diskette:

- 1 ► Insert the diskette in the drive. Make sure the arrow embossed on the diskette is pointing toward the drive. Push the diskette into the drive until you hear a click.



- 2 ► If the diskette is new, the system will ask if you want your diskette initialized. Click Initialize when this message appears.



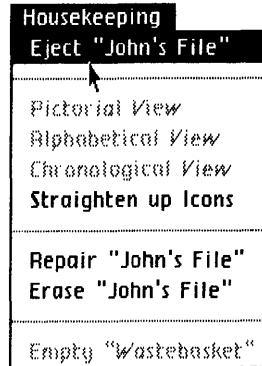
- 3 ► When the Wait message disappears, name the new micro diskette by typing a name under the diskette icon.

If you want to make only a small change in the name, you can use the same text editing procedures you use within a document. Cutting, copying, pasting, and inserting text all work for editing object names.



To remove the diskette from the drive:

- 1 ► Select the diskette icon or the diskette window.
- 2 ► Choose Eject "name of disk" from the Housekeeping menu.



More about Ejecting Micro Diskettes

Pushing the on-off button also automatically ejects any diskette that is in the drive. Before the micro diskette is released, the Lisa records which objects on the diskette have been moved to the desktop, left open as windows, or revised.

When you reopen the disk, documents are displayed as you left them before you chose Eject or pressed the on-off button.

If you have problems ejecting a disk, see Procedure M, Ejecting Micro Diskettes, in Section C, Troubleshooting.

Backing Up Documents on Micro Diskettes

You'll probably do all of your work on a hard disk -- either the internal hard disk or a hard disk added to your Lisa system. Micro diskettes serve as backups to your hard disk.

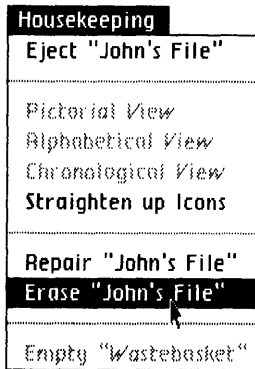
Micro diskettes can be damaged or erased accidentally, however, and they eventually wear out with use. You should keep backup copies of all critical documents stored on diskettes. See *Making Duplicates (Copies) of Documents*, under *Documents and Folders*.

Erasing, Reinitializing, and Renaming a Diskette

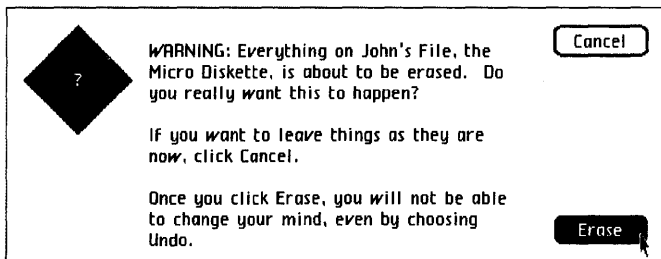
You can recycle used micro diskettes by erasing and reinitializing them. When the Lisa Office System erases a diskette, it automatically reinitializes it, but the reinitialized diskette retains its old name.

To erase and reinitialize a used diskette:

- 1 ► With the disk icon or its window selected, choose **Erase** from the **Housekeeping** menu.



- 2 ► When the alert message appears, check to make sure that this is the diskette you want to erase. If so, click Erase.



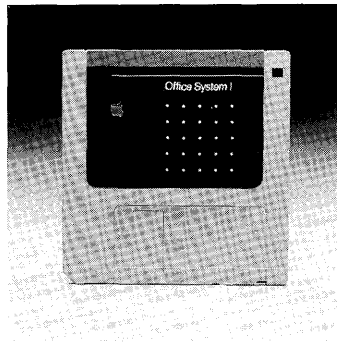
To rename a used diskette:

- 1 ► Select the disk icon or its shadow.
 - 2 ► Type the new name.
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CARING FOR MICRO DISKETTES

The plastic-encased diskettes that come with your Lisa 2 are less sensitive than "floppy" disks, but you must still be careful about a few things.

- Keep micro diskettes away from magnetic fields. Note that a number of articles common in office environments emit electromagnetic fields strong enough to erase a disk. Avoid leaning diskettes against, for example, high-intensity desk lamps, electric staplers, clocks, magnetic paper clip holders, telephones, or printers.
- Store diskettes at temperatures between 10 and 52 degrees Celsius (between 50 and 125 degrees Fahrenheit). Do not leave diskettes on top of the Lisa or in direct sunlight.
- A micro diskette has no exposed recording surface. Instead, the metal slide on the top of the diskette opens when the diskette is inserted in the drive. To keep the recording surface protected, do not open the slide yourself.
- The write-protect tab must be closed or the Lisa cannot use the diskette. If the micro diskette is inserted in the drive with its write-protect tab open, the system ejects the disk and asks that you close the write-protect tab.



Note: Because diskettes can be damaged or erased accidentally — and because they eventually wear out with use — you should keep backup copies of all critical documents that are stored on diskettes. See Making Duplicates (Copies) of Documents, under Documents and Folders.

Documents and Folders

The work you do on the Lisa is contained in documents. For example, a spreadsheet created in LisaCalc is a LisaCalc document, and a report done in LisaWrite is a LisaWrite document.

If you've gone through LisaGuide (see Section A, Getting Ready — LisaGuide), you are familiar with how to manipulate the document and folder icons.

In this section, you'll find information about:

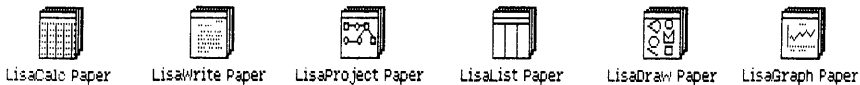
- Working with documents and folders on the desktop (moving, layering, and viewing them through their windows).
- Creating and naming documents and folders.
- Saving documents.
- Revising and renaming documents.
- Making backup copies of documents.
- Discarding old documents.
- Creating stationery pads.

WORKING WITH DOCUMENTS ON THE DESKTOP

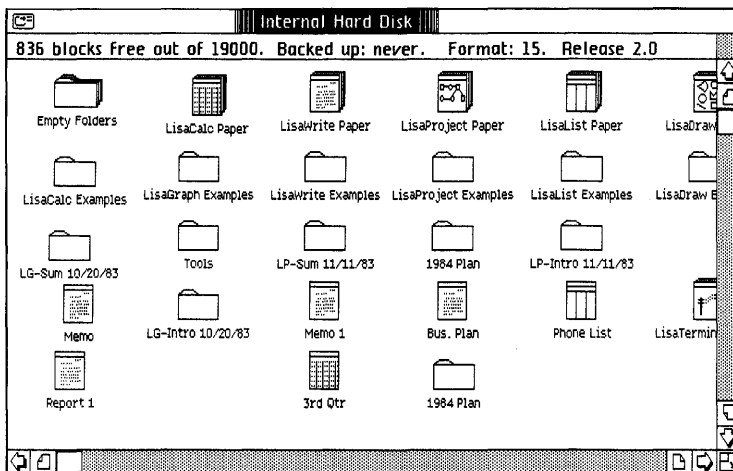
If you've gone through LisaGuide, you're familiar with how to move document icons and manipulate their windows on the desktop. The following pages review some of these basic procedures.

Document and Folder Icons

Documents are represented by icons (symbolic pictures) on the Lisa desktop (screen). If you look closely at the design on a document icon, you'll be able to tell which Lisa tool -- LisaCalc or LisaWrite, for example -- was used to create the document.



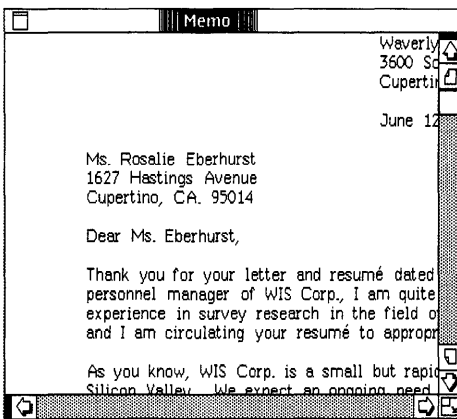
If you open any disk initialized by the Lisa Office System, you'll see a pad of folders in the disk window. This pad represents an unlimited supply of folders. Use these folders in the same way you would use folders in an office -- to file your documents.



To open a document or folder icon, click on the icon twice or choose **Open** from the **File/Print** menu.

Viewing Documents through Their Windows

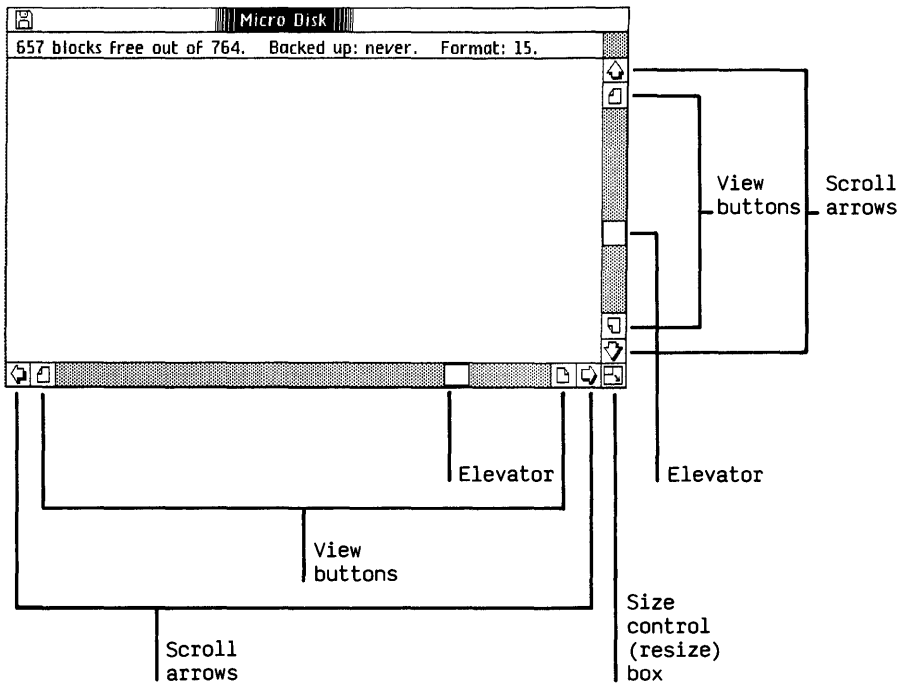
The frame around an open document or folder creates a window through which you can see what is stored there. If the folder holds many documents or if the document is long, you will not be able to see all the information at once. Use the view controls set in the window frame to scroll information into view.



The arrows and view buttons in the window frame scroll the view up, down, and across, a line or a windowful at a time. The elevator scrolls to the point in the document or folder relative to the point on the elevator shaft. The top, middle, and bottom of the shaft are approximately relative to the beginning, middle, and end of a document or folder.

The resize, or size control, box allows you to shrink or enlarge a window. You can reduce the size of two windows so that both can be seen at once. The resize box can also be used to layer windows so you can conveniently activate any one window.

The Lisa allows as many as 20 windows to be open at one time. For both you and the Lisa to work more efficiently, however, it is better to save or set aside documents you don't need immediately.



To use scroll arrows or view buttons :

- 1 ► Place the pointer on the scroll arrow or view button.
 - 2 ► Press the mouse button once.
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To use the elevator :

- 1 ► Place the pointer on the elevator.
 - 2 ► Press and hold down the mouse button.
 - 3 ► While holding down the mouse button, move the pointer in the direction you want the elevator to go.
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To make the window smaller or larger :

- 1 ► Place the pointer on the size control box.
 - 2 ► Press and hold down the mouse button.
 - 3 ► While holding the mouse button down, move the pointer diagonally. Moving the pointer diagonally upward will shrink the window, and moving the pointer downward will enlarge the window.
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Moving Document Windows on the Desktop

You can move documents around, arranging them to get the best view of those you'll use simultaneously.

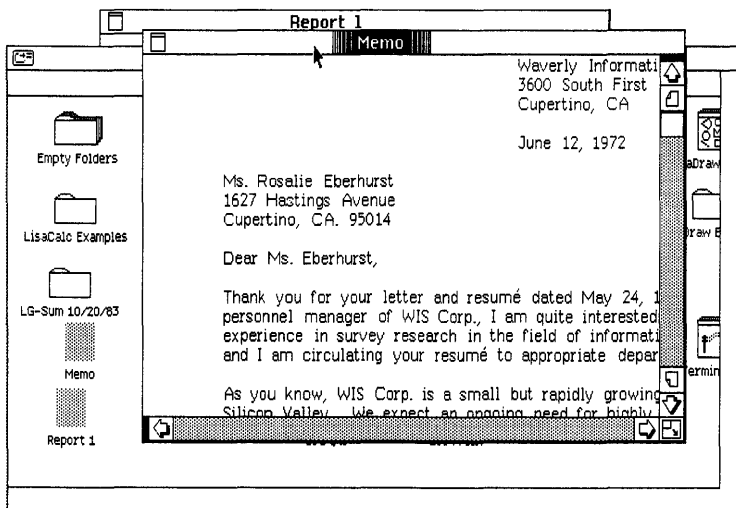
To move documents on the desktop :

- 1 ► Place the pointer anywhere in the title bar except over the small icon in the left corner.
- 2 ► Press and hold down the mouse button while moving the window to where you want it.



Layering Windows

When you have many documents out on the desktop, it is a good idea to layer them so that a corner of each is showing. Then it's easy to activate any one document. Remember, though, that the document you activate will be brought to the top of the pile of documents on the desktop. If the documents are sized so that no activated document covers all the other documents, you will be able to activate any one easily. (See Viewing Documents through Their Windows.)



Move and resize all the documents you'll be using so that a corner of each document is available to activate. (See Moving Document Windows on the Desktop; see also Viewing Documents through Their Windows.)

CREATING AND NAMING A DOCUMENT OR FOLDER

If you've been through LisaGuide (see Section A, Getting Ready -- LisaGuide), you know that doing work on the Lisa is easy. Simply tear off a piece of stationery from the tool pad you need (LisaCalc or LisaWrite, for example) and name (label) it according to your filing system. After completing these procedures you're ready to type information on the document stationery or store documents in the folder.

To start a new document or folder:

- 1 ► Select the paper of the tool you want to use; for example, LisaCalc paper. For a folder, select the empty folder icon.



- 2 ► Choose **Tear Off Stationery** from the **File/Print** menu, or click twice on the stationery icon. Either way, stationery is torn off for you.

- 3 ► Name the new document or folder by typing the name you want to use.



- 4 ► Move the new document or folder to the disk or folder window where you intend to store it.
 - 5 ► Open the new document to begin working.
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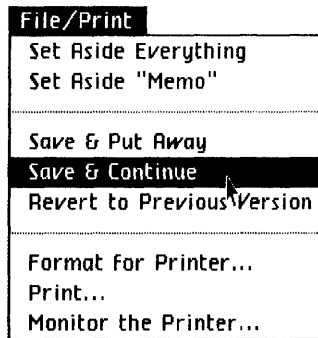
SAVING A DOCUMENT

When you save a document, it is filed permanently on the Lisa disk. The document remains on the disk unless you throw it away. If you've not saved a document, the Lisa has no permanent record of the document. If there is a power failure, the most recent revisions or additions to a document may be lost.

You should save your documents while you work and after you've completed or updated work. If the system should then fail, you are less likely to be caught without a stored copy of your work.

To save a document while you are working:

- 1 ► With the document open and active, choose **Save & Continue** from the **File/Print** menu.



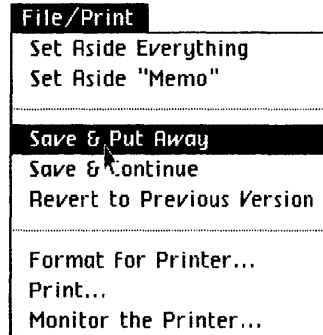
Save & Continue updates the document stored on the disk to match the document on your desktop, but it leaves the document open and active. You should save the document you are working on any time you feel that it's important to save your recent changes or additions. Some people save periodically -- after, for example, 15 minutes of work.

The next time you choose **Revert to Previous Version** (see **Reverting to a Previous Version**), the document on your desktop reverts to the state it was in when you last saved it.



To save a document and put it away:

- 1 ► With the document window active, choose **Save & Put Away** from the **File/Print** menu, or click twice on the document icon in the title bar.



More about Saving a Document

After you save a document, it reduces to an icon and returns to its storage location on the desktop.

Using the **Save & Put Away** menu item puts the document in its most recent storage location in a disk or folder. Double-clicking the document icon in the left-hand corner of the title bar puts the document in its most recent location, and therefore not necessarily in a disk or folder.

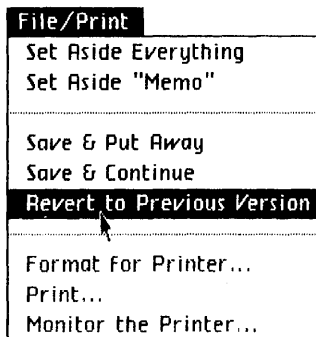
REVERTING TO A PREVIOUS VERSION

Using the **Save & Continue** or **Save & Put Away** item in the **File/Print** menu stores a document with all of its latest revisions. The **Revert to Previous Version** item in the **File/Print** menu allows you to retrieve to the desktop (screen) a copy of the version last saved.

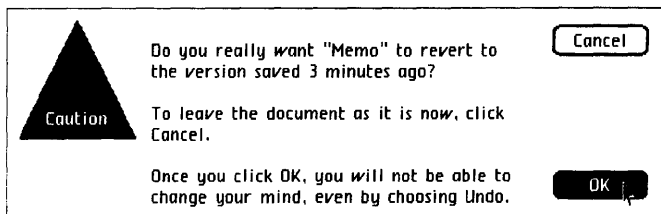
If you edit (revise) a document and later find the revisions are not valid, you can use **Revert to Previous Version** to restore your original document. **Revert to Previous Version** also allows you to experiment with extensive revisions. If you change your mind, you can go back to the previous version.

To revert to a previous version:

- 1 ► Select the document and choose **Revert to Previous Version** from the **File/Print** menu.



- 2 ► In response to the Caution alert message, click OK.

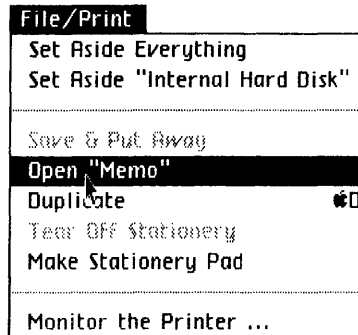


GETTING (RETRIEVING) A DOCUMENT

When you need to add to or revise a document, use the following procedure to retrieve the document to your desktop (screen). You can rename the document to reflect the latest revisions if you wish.

To get (retrieve) a document :

- 1 ► Select the icon that represents the document you want to work on.
- 2 ► Choose **Open** from the **File/Print** menu or click twice on the icon.



To rename a document or folder :

- 1 ► Select the icon or any shadow of the icon that represents the object.
- 2 ► Type the new name.



If you want to make only a small change in the name, you can use the same text editing procedures you use to work in tools such as LisaWrite. Cutting, copying, pasting, and inserting text all work for editing object names.

MAKING DUPLICATES (COPIES) OF DOCUMENTS

The purpose of duplicating documents is to save you time and lost information on the rare occasions when one of your disks becomes unreadable. A duplicate can also be used as a working document, leaving the original intact.

The specific backup strategy you use may depend on how often you update your documents and how you want to organize them on diskettes. You may find it most convenient to back up each document as you complete it, to back up a folder full of documents when you are through with the documents, or to back up everything periodically — at the end of the day, for example.

You can duplicate individual icons or groups of selected icons. If you duplicate more than one icon at once, moving any one of the blinking duplicates moves all of them. You cannot duplicate a document while it is open.

To make a duplicate (copy) of a document, folder, or stationery pad:

- 1 ► If the document is open, choose **Set Aside** or **Save & Put Away** from the **File/Print** menu.
- 2 ► Make sure the icon for the object you want to copy is selected.
- 3 ► Choose **Duplicate** from the **File/Print** menu.



If you prefer to use the keyboard instead of the mouse, you can hold down the Apple key while pressing *D* instead of choosing **Duplicate** from the **File/Print** Menu. Remember that the object must be selected before it can be duplicated.

- 4 ► Move the blinking copy of the icon to its storage location.

If you do anything else before you move the blinking duplicate, an alert message appears. The alert message reminds you that duplication will be cancelled if you do not move the duplicate to a new location.

If you are copying a single document because you want a backup copy, you may want to modify the name of the duplicate. If you habitually duplicate documents for the purpose of backing up, you will begin to accumulate old versions of the backup copies. When you are sure you don't need them, simply discard the outdated copies.

DISCARDING (THROWING AWAY) A DOCUMENT

When you discard a document, it is eliminated from the disk where it was stored. Getting rid of documents frees up disk space so you can store other documents.

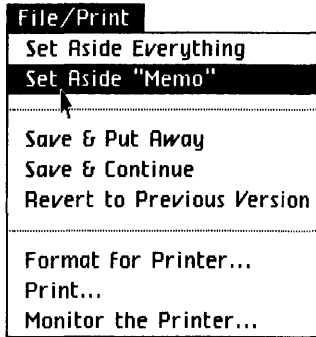
The procedure for throwing away a document is the same procedure used for throwing away any object in the Lisa system.

The Wastebasket accepts either individual icons or groups of selected icons. If you discard a folder, everything contained in that folder is also discarded.

As you discard icons, they remain inside the Wastebasket until something else that resides on the same disk is also discarded. If you are trying to make more room on a disk, choose **Empty "Wastebasket"** from the **Housekeeping** menu after you have moved the document to the Wastebasket.

To discard an object:

- 1 ► If the object you want to discard is open, reduce it to an icon by choosing **Set Aside** from the **File/Print** menu. You can also double-click on the icon in the left-hand corner of the title bar.



- 2 ► Move the pointer into the icon of the document you want to discard.
- 3 ► Press and hold down the mouse button as you move the pointer, and the icon along with it, to the Wastebasket.
- 4 ► Release the mouse button when the Wastebasket is highlighted.



To retrieve an object from the Wastebasket:

- 1 ► Open the Wastebasket by double-clicking on the icon or by selecting the icon and choosing **Open "Wastebasket"** from the **File/Print** menu.
 - 2 ► Move the icon of the object out of the Wastebasket window.
You can only retrieve the last thing from each disk you threw away, and you can only retrieve that if you have not emptied the Wastebasket.
-
-

To empty the Wastebasket:

- 1 ► Select the Wastebasket icon.
 - 2 ► Choose **Empty "Wastebasket"** from the **Housekeeping** menu.
-
-

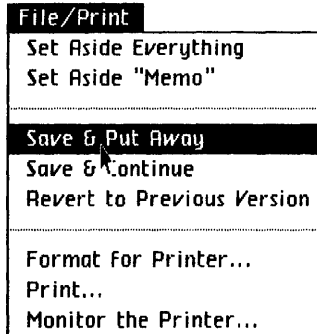
CREATING A STATIONERY PAD

You can make a stationery pad for documents you use frequently; for example, a form letter or monthly expense report form. A common approach is to create a stationery pad of letterhead paper, memo forms, spreadsheets, or line drawings that are used often. You can make a stationery pad out of any document or folder.

To make a new pad of stationery:

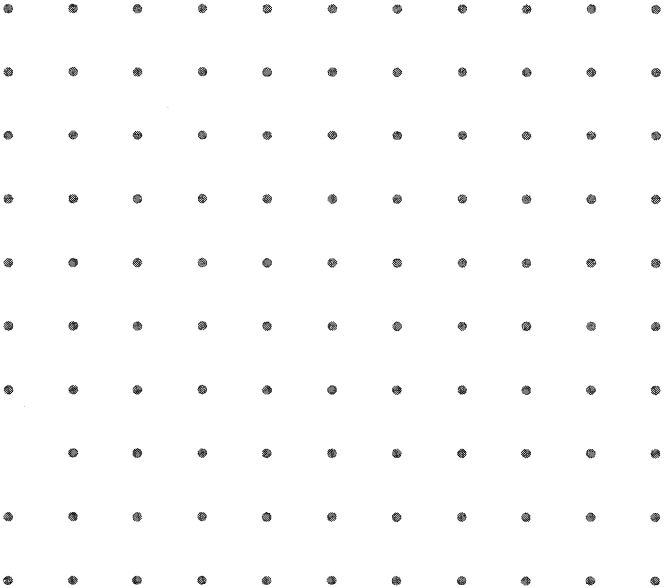
1 ► Prepare the document or folder that you want to make into a stationery pad.

2 ► Reduce the object to an icon by choosing **Save & Put Away** from the **File/Print** menu. You can also double-click on the icon in the left-hand corner of the title bar.



3 ► With the document icon selected, choose **Make Stationery Pad** from the **File/Print** menu.





Section C
Troubleshooting

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What's in Troubleshooting?

This section contains suggested troubleshooting paths to help you identify the problem when your Lisa seems not to be working properly.

This troubleshooting guide can be used in two ways:

- If you need help identifying which part of the system is causing the problem, start by answering the first question on the next page. Each possible answer directs you either to another question or to a diagnostic procedure.
- If you think you already know which module is at fault, skip the troubleshooting guide and go to the diagnostic procedure for that module.

Every time you turn on the Lisa, it automatically tests enough of the system to verify that startup is possible. For a complete description of the startup tests, see Appendix 3, Automatic Startup Tests.

This troubleshooting guide covers only the most likely problems. If the procedures suggested here do not solve your problem, take the system to a qualified service representative for more thorough testing.

Start Here

WHEN DID THE PROBLEM ARISE?

- While you were starting up the Lisa. Go to Problems during Startup, below.
- While you were working on the Lisa. Go to Problems while Working, page C9.
- While you were turning off the Lisa. Go to Problems while Powering Off, page C11.

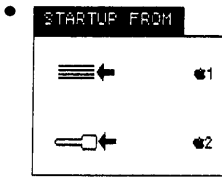
PROBLEMS DURING STARTUP

Did the On-Off Button Light Up?

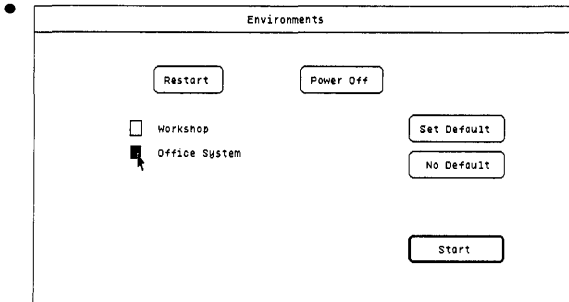
- Yes. Go to What Is on Your Screen?, below.
- No. Go to Procedure A, Power Problems, page C13.

What Is on Your Screen?

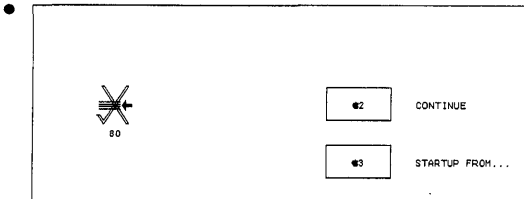
- Nothing. Go to Procedure N, Startup Symptoms and Error Messages, page C48.



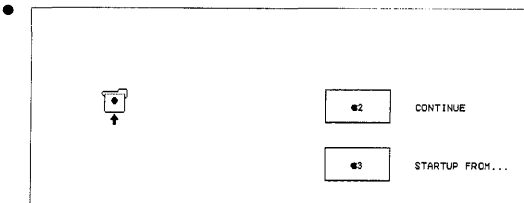
Go to Procedure O, Startup From Menu, page C56.



Go to Procedure Q, Environments Window, page C59.

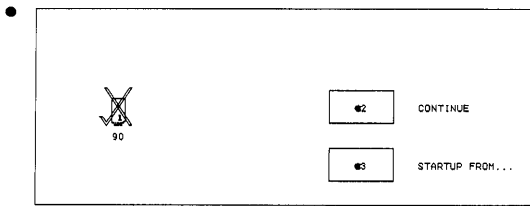


Go to Procedure J, Startup Disk Problems, page C41.



Go to Procedure K, Startup Micro Diskette Problems, page C43.





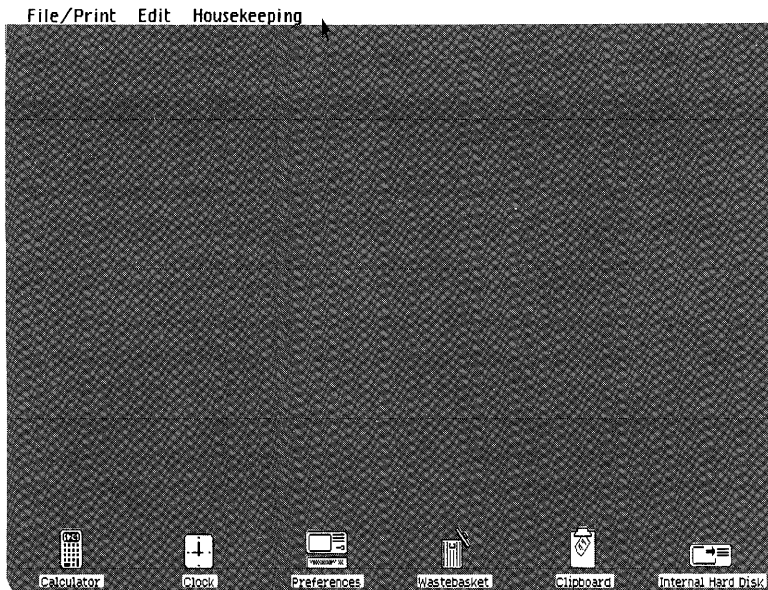
Go to Procedure L, Startup Expansion Card Problems, page C45.

- Some other unexpected display.

Go to Procedure N, Startup Symptoms and Error Messages, page C48.

- Normal desktop display, something like the screen below.

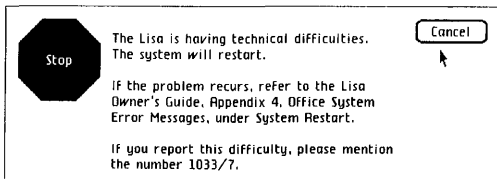
Go to How Does the System Respond to Input from You?, page C10.



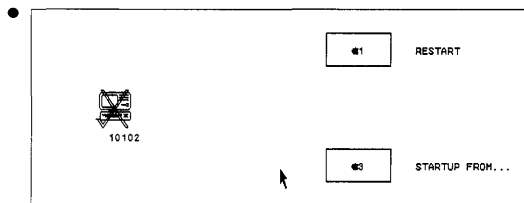
PROBLEMS WHILE WORKING

What Is on Your Screen?

- Nothing.
- An error message, such as the one shown here.



- Unstable picture, lines on screen, or display at an angle.



Go to **What Happened When You Pressed the On-Off Button?**, page C11.

Go to **Appendix 4, Office System Error Messages**.

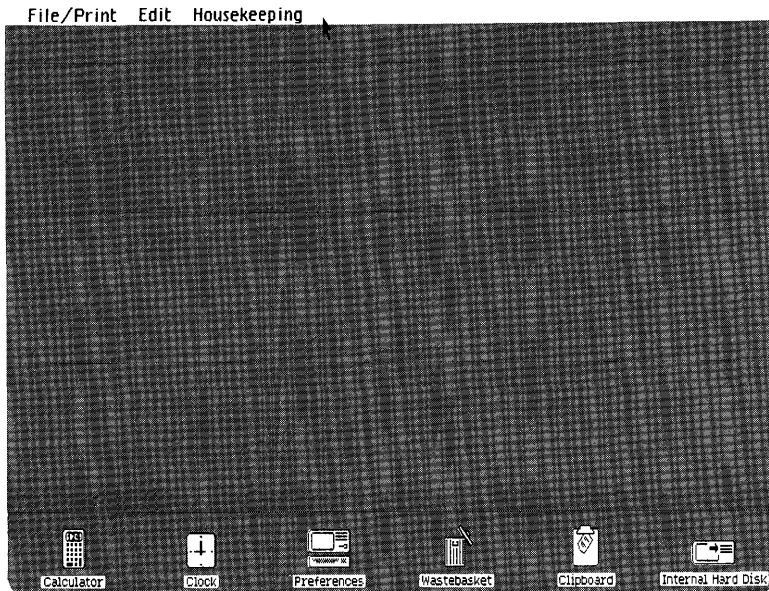
Go to **Procedure B, Specific Video Problems**, page C15.

Go to **Procedure P, Operating System Errors**, page C57.



- Normal desktop display.

Go to How Does the System Respond to Input from You?, below.



How Does the System Respond to Input from You?

- It ignores everything: Keyboard, on-off button, Eject "name of disk" menu item, and mouse button (though moving the mouse may still move the arrow on the screen).
- Responds correctly to everything except mouse.

Go to Procedure D, System Hangs, page C20.

Go to Procedure F, Mouse Problems, page C34.

- Responds correctly to everything except keyboard.
- Responds correctly to everything except Eject "name of disk" menu item.
- Will not print.

Go to Procedure G, Keyboard Problems, page C35.

Go to Procedure M, Ejecting Micro Diskettes, page C47.

Go to Procedure H, Daisy Wheel Printer Problems, page C36, or Procedure I, Imagewriter Printer Problems, page C38.

PROBLEMS WHILE POWERING OFF

What Happened When You Pressed the On-Off Button?

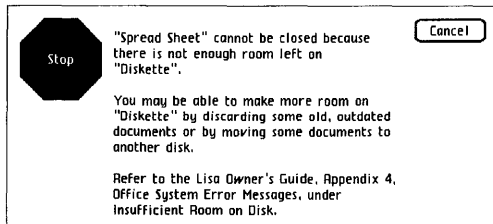
- The system did not respond at all.
- Power-down proceeded normally, but the micro diskette was not released from the drive.

Go to Procedure D, System Hangs, page C20.

Go to Procedure M, Ejecting Micro Diskettes, page C47.



- An error message appeared, such as the one shown here.



- An alert message appeared and the screen darkened, but the on-off button is still lit.

Go to Appendix 4, Office System Error Messages.

Move the mouse to brighten the screen. Follow the instructions given in the alert message.

Procedure A

Power Problems

This procedure diagnoses problems where the system does not seem to be getting any power. For what to do after a power failure, see *After a Power Failure*, under Procedure E, Disk Repair.

- 1 ► Check to make sure that all cables are firmly in place and that the system is plugged in. If the power cord is loose, insert it correctly and try to start the system again.

Warning

This equipment is intended to be electrically grounded. This product is equipped with a three-wire grounding-type plug, a plug having a third grounding pin. This plug will fit only into a grounding-type AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, have a licensed electrician replace the outlet and, if necessary, install a grounding conductor. **DO NOT DEFEAT THE PURPOSE OF THE GROUNDING-TYPE PLUG.**

- 2 ► Verify that both front and back panels are installed securely. Each panel is equipped with a safety interlock switch that automatically turns off all power if the panel is not in place.
- 3 ► Verify that the wall outlet is actually receiving electricity. Try plugging in a lamp and turning it on. If the lamp works, you know that the outlet is working.
- 4 ► Verify that there are at least two inches of air space on all sides of the Lisa and that nothing is blocking the flow of air around the bottom edge of the cabinet.

A thermostat in the power supply shuts off the system automatically if the temperature surpasses about 90 degrees Centigrade (195 degrees Fahrenheit). If the system may have overheated, unplug the Lisa, remove any obstructions to air flow, and let the system cool down for 10 minutes. Try again to turn it on after everything has cooled.

If this procedure reveals a temperature problem, rearrange your system setup to allow for adequate ventilation.

If the system setup, the electrical supply, and the cables all check out, the likely sources of the problem, in order of probability, are

- A bad power supply.
- A bad I/O board.
- A bad on-off switch.

The power supply is the most likely cause of the problem, but the only way to verify the diagnosis is to replace the old power supply. You'll probably need to take the system in for repair. Call a qualified service specialist.

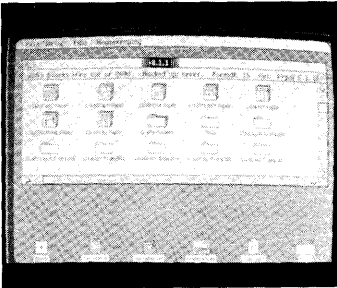
Procedure B

Specific Video Problems

The symptoms listed in Table 1 indicate specific problems, mostly with the video system. Except for adjusting the screen brightness, all the repairs shown in this table must be done by a qualified service technician. Do not try to service the video system yourself; it can be dangerous even when the Lisa is unplugged.

Table 1. Specific Video Problems

If Your Screen Looks like This Follow This Procedure



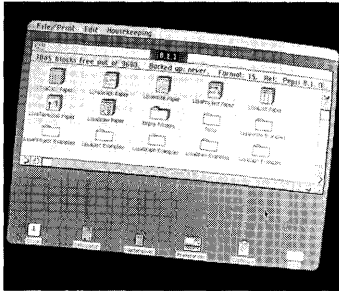
Too bright

Adjust the screen
brightness. (See Procedure
C, Dark Screen.)



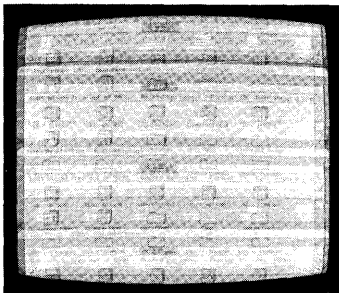
Table 1. Specific Video Problems, continued

If Your Screen Looks like This Follow This Procedure



Crooked picture

Take the system to a qualified service specialist.



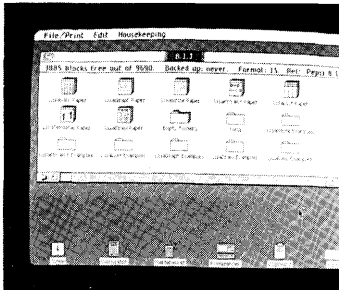
Rolling picture

Take the system to a qualified service specialist.



Table 1. Specific Video Problems, continued

If Your Screen Looks like This Follow This Procedure



Picture off center

Take the system to a qualified service specialist.

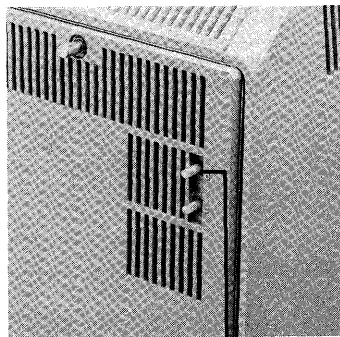
Procedure C

Dark Screen

If your screen goes blank while you are working, your video system may have failed. Before you conclude that there is a hardware problem, however, you should check for other causes.

- 1 ► Try moving the mouse or pressing the [SHIFT] key. The Lisa screen automatically dims if no activity has taken place for several minutes. If this automatic dimming is the cause of your dark screen, moving the mouse or pressing any key should return the screen to its normal contrast level.

- 2 ► Try adjusting the screen brightness, using the higher of the two white knobs extending from the back of the Lisa. Follow the procedures given in Setting Brightness and Contrast, in Appendix 1, Setup Procedures.



Brightness
control

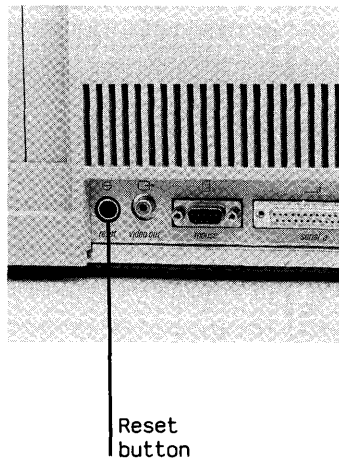
- 3 ► Try turning off the system to let it cool. If the system gets overheated, the screen darkens. If the problem recurs, move the system to a spot where it will get proper ventilation.

If none of these procedures solves the problem, have the Lisa serviced by a qualified service center. Working on the video system can be dangerous, even when the Lisa is turned off and unplugged.

Procedure D ***System Hangs***

Sometimes, usually because of software failures, a computer "hangs" — that is, it ignores all input. The usual solution is to turn off the system and start over. Because the Lisa on-off button is channeled through the computer, however, turning the system off is not always possible.

Pushing the reset button on the back of the Lisa is one technique for restarting the system when the software hangs.

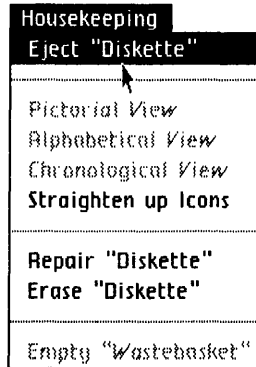


Warning

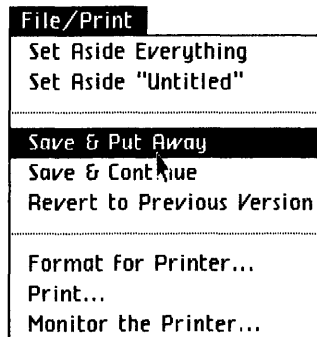
Pushing the reset button clears the computer's memory and reinitiates the system startup procedures. This means that anything on the desktop that has not been saved on a disk is lost during a reset.

Before you push the reset button, make sure you have made every effort to save any work that was on the desktop by using the following procedures.

- 1 ► If documents from a micro diskette are on the desktop, select the micro diskette window and try choosing **Eject "name of disk"** from the **Housekeeping** menu. That should cause the Lisa to save the documents stored on this disk.



- 2 ► If documents from the hard disk are on the desktop, try selecting the documents and choosing **Save & Put Away** from the **File/Print** menu.



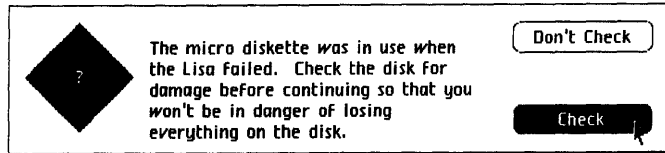
- 3 ► Try again to turn off the system by pressing the on-off button.

If the system does not respond to any of these steps, you will not be able to recover whatever you were working on when the system failed. However, the disk should still contain the most recently saved version of each document.

To reset the system:

- 1 ► Press the reset button once.

If you see a message something like the one shown here, you probably do not have a hardware problem.



Because you pressed the reset button, your disks may have been left in a state the Lisa cannot use. For more information about how a sudden shutdown affects disk organization, see Appendix 2, On-Off Procedures. For the procedures for repairing your disks — that is, returning the disks to a state the system can use — see Repairing a Disk Damaged while Working, Procedure E, Disk Repair.

- 2 ► If the Lisa displays any other error message or error tones, you may have a hardware problem. Refer to Procedure N, Startup Symptoms and Error Messages.
- 3 ► If the Lisa doesn't respond even to the reset button, unplug the system from the wall outlet. Plug it back in, turn it on, and listen carefully for error tones. If the system starts, see items 1 and 2 in this list.

Procedure E

Disk Repair

Sometimes, during a power interruption, for example, the information on a disk gets out of order. When this happens, the Lisa cannot find the information it needs to reconstruct the desktop or to display documents on the screen.

Repairing the disk is a way of attempting to reorganize the disk into a state the Lisa can use. When you repair a disk, some information may be altered or removed, but this is preferable to not being able to use the disk at all.

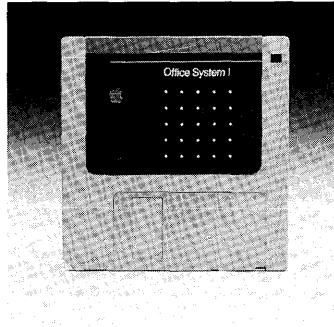
This section gives the procedures for:

- Repairing a Startup Disk and Reinstalling the Office System.
- Restoring a Startup Disk.
- Repairing a Disk Damaged while Working.
- Repairing a Disk after a Power Failure.

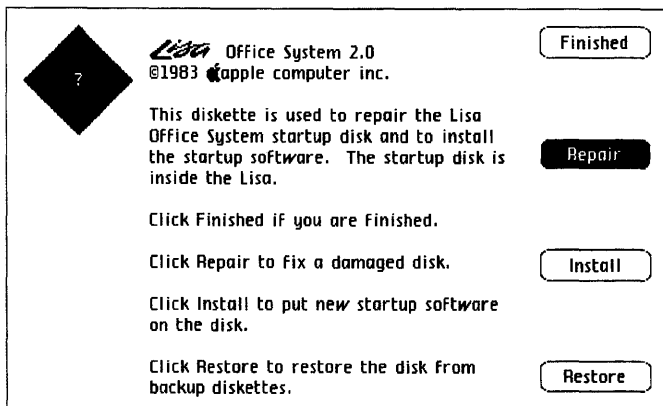
REPAIRING A STARTUP DISK AND REINSTALLING THE OFFICE SYSTEM

If the startup disk is damaged, you'll need to repair the disk *and* reinstall the Office System software.

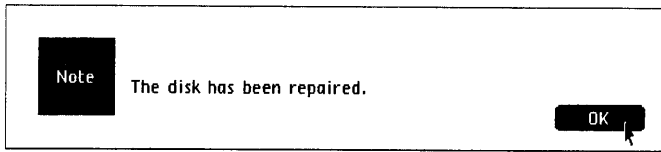
- 1 ► If the Lisa is on, turn it off.
- 2 ► Insert the micro diskette labeled Office System 1 into the disk drive.



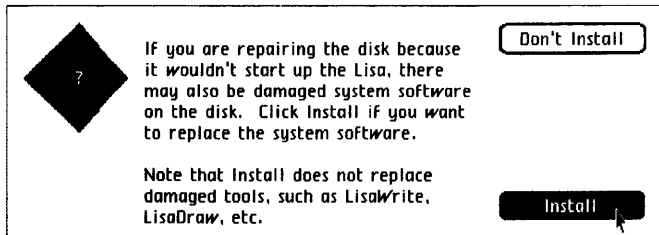
- 3 ► Turn the Lisa on.
- 4 ► When you hear a click from the cabinet, hold down the Apple key while pressing the 2 on the main keyboard, not the 2 on the numeric keypad.
- 5 ► When this message appears, click Repair.



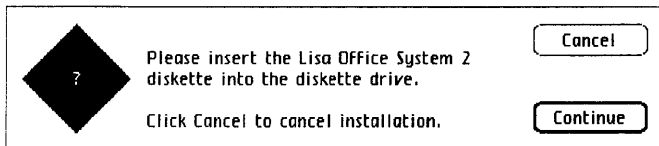
- 6 ► When this message appears, click OK.



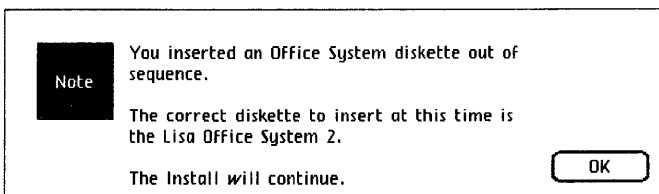
- 7 ► When this message appears, click Install.



- 8 ► When this message appears, take out the Office System 1 diskette that has been ejected from the drive and insert the Office System 2 diskette.



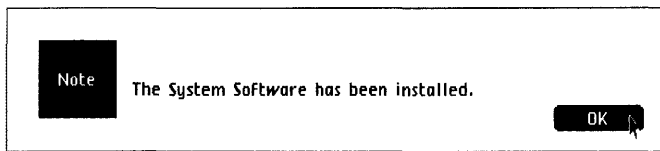
- 9 ► Insert the remaining Office System diskettes as you are prompted. Don't worry if you insert an Office System diskette out of sequence. If you do, this message appears on the screen.



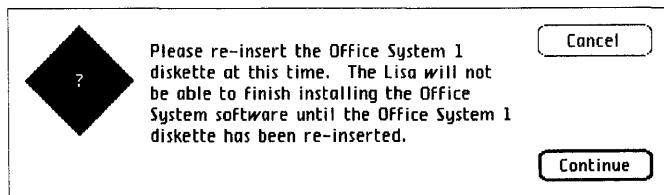
Simply put in the disk as requested in the message. Click Continue and the install procedure continues.

Note: If you cancel the Office System installation procedure before transferring software from all four micro diskettes, your Lisa will not have all the information it needs to work. If for some reason you have to interrupt installation and then want to try again, you won't need to repair the disk again, but you will have to start with the Office System 1 micro diskette (steps 1 through 4). This time, however, when the main menu appears, click Install instead of Repair. Click Don't Erase in the next alert message, and then start with step 7 above.

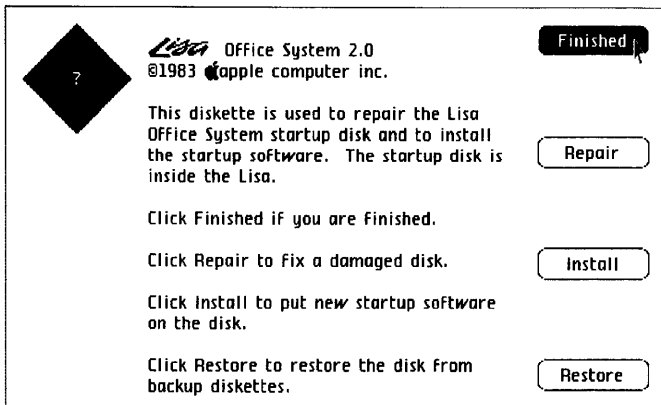
- 10 ► When this message appears, click OK.



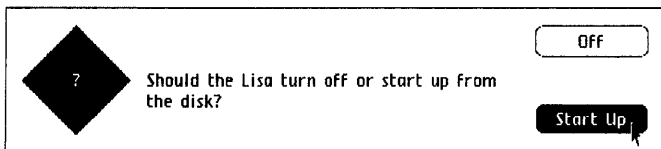
- 11 ► After the software from the Office System 4 diskette is transferred, this message tells you to reinsert the Office System 1 diskette.



12 ► When this message appears, click Finished.



13 ► When this message appears, click Start Up.



If, after repairing a startup disk and reinstalling the Office System software, your disk is still damaged, an error message appears on the screen. If this happens, see Restoring a Startup Disk, below. If you suspect a hardware problem, call a qualified service representative.

RESTORING A STARTUP DISK

You can try restoring a startup disk, but only if

- You have a full backup copy of your disk (see **Backing Up Disks**, under **Disks and Micro Diskettes**, in **Section B**, **Desktop Manager Reference Guide**).
- Documents from the latest backup are what you need.

A repaired disk is still damaged if it won't start up the Lisa -- that is, the Lisa desktop won't come up on the screen -- or if some of the documents on the disk are missing.

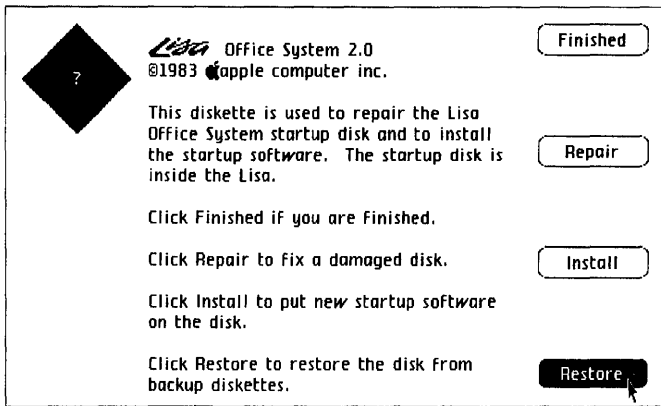
If only a few documents are missing, simply locate the copies of the missing documents on the backup micro diskettes and duplicate them onto your disk.

If the Lisa desktop won't come up on the screen, do the restore procedure given here. In this procedure, the entire startup disk is erased and replaced by a copy of the contents of the backup diskettes. The backup diskettes include the version of the Office System software, Lisa Tools, and documents that were on the startup disk when it was last backed up.

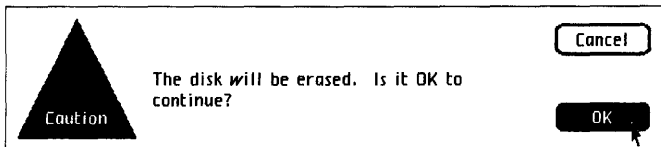
To restore a disk that won't start the Lisa even after a repair:

- 1 ► If the Lisa is on, turn it off.
- 2 ► Reinsert the Office System 1 micro diskette into the drive.
- 3 ► Turn the Lisa on.
- 4 ► When you hear a click from the cabinet, hold down the Apple key while pressing the 2 on the main keyboard, not the 2 on the numeric keypad.

- 5 ▶ When this message appears, click Restore.

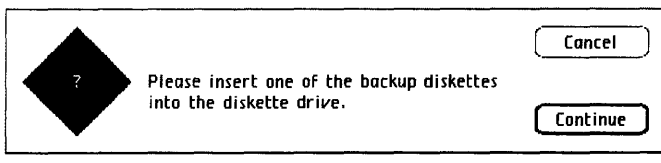


- 6 ▶ When this message appears, click OK.

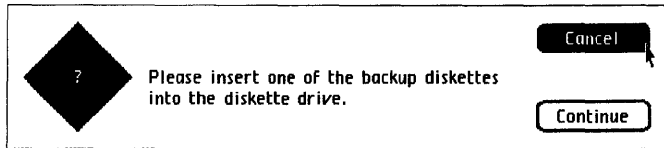


It will take a little time for the disk to be initialized.

- 7 ▶ When this message appears, insert one of the micro diskettes from the most recent backup. In the restore procedure, you don't need to be concerned about the order in which you insert backup diskettes. The procedure automatically restores information to the disk in the right sequence.



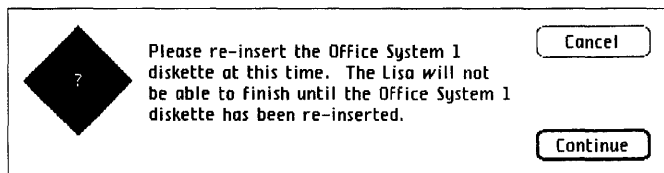
- 8 ▶ Continue inserting diskettes when prompted. When you have finished inserting all diskettes from the last backup, insert the diskettes from the last full backup.
- 9 ▶ After the last diskette is copied onto the startup disk, click cancel.



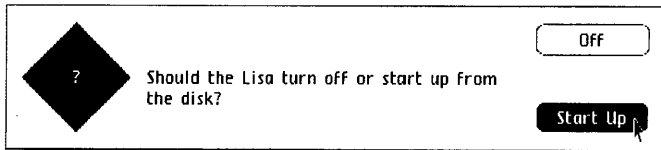
- 10 ▶ When the Main Menu appears, click Finished.



- 11 ▶ When this message appears, insert the Office System 1 diskette.



12 ► When this message appears, click Start Up.

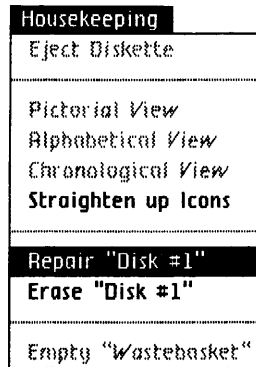


REPAIRING A DISK DAMAGED WHILE WORKING

The Lisa may tell you that one of your disks or micro diskettes is damaged. This could mean either that some of the information stored on the disk has been altered or that the disk itself is physically damaged. First try repairing the disk, following the procedure given here.

To repair a disk:

- 1 ► Select the disk icon.
- 2 ► Choose **Repair "name of disk"** from the **Housekeeping** menu.



During a repair, the Lisa compares the actual contents of a disk with the record of where things are stored on the disk surface. The computer also checks to see that all information on the disk is readable. Unreadable information may be altered or removed; the names of some documents may change to previous names or to numbers indicating when the documents were created.

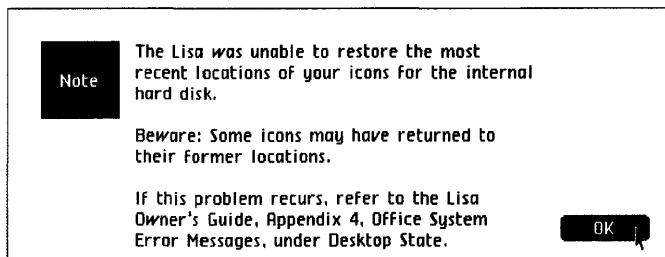
You should try repairing a disk any time it is not working as you expect it to. If, for example, the Lisa cannot find a document that you know is on the disk, repairing the disk may solve the problem.

If you have already repaired a disk once and it still works oddly, there may be a physical problem with the disk itself. In this case, make a copy of the disk and use the copy instead of the original.

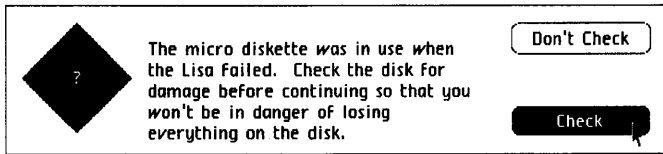
REPAIRING A DISK AFTER A POWER FAILURE

To repair your storage disks or micro diskettes after a power interruption:

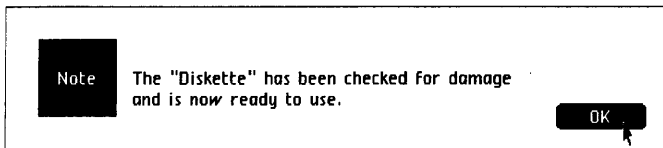
- 1 ► Turn the Lisa back on.
- 2 ► If the Lisa displays this message, click OK.



- 3 ► When the Lisa suggests you check the disk or diskette, click Check.



- 4 ► When the Lisa displays the results of the check, click OK.



- 5 ► Allow the Lisa to check all disks and diskettes that were in use when the power failure occurred.

The interaction described above is normal after a sudden power loss. See Appendix 2, On-Off Procedures, for an explanation of how a sudden power loss affects disk organization.

In the course of checking for damage, the Lisa may alter the organization of the disk. Documents may be removed from folders, for example, or the names of some documents or stationery pads may change. After the Lisa has checked your disks, open them and refile any documents that have been removed from their folders.

If any of the repair messages appear at any time other than after a power loss, see Appendix 4, Office System Error Messages.

Procedure F ***Mouse Problems***

If the screen pointer doesn't respond at all, check to make sure the mouse is securely connected to the Lisa. Other mouse problems fall into two categories.

Generally Sluggish Response If the screen pointer responds sporadically or unevenly to mouse movement, there is probably dirt inside the mouse. Clean the mouse, following the instructions in Section D, Maintenance. While you have the mouse open, check to see if the ball is damaged. If the ball has been gouged, replace it.

If the ball is neither dusty nor worn, and response is still sluggish, the surface on which you are using the mouse may be too uneven. If your desk or table has a particularly uneven surface finish, you can put a clipboard or other flat object under the mouse. If none of these efforts solves the problem, call a qualified service specialist.

Sluggish Response in One Direction Only, or No Response If the pointer moves in one direction only, or if the mouse button doesn't seem to work at all, the mouse probably has a mechanical problem. First, make sure that the mouse cable is plugged securely into the back of the cabinet. If this does not solve the problem, call a qualified service specialist.

Procedure G

Keyboard Problems

- 1 ►** First, verify that the keyboard is plugged securely into the cabinet. Pull out the plug entirely and replace it; don't just jiggle it in the socket.
- 2 ►** If the keyboard still does not respond, call a qualified service specialist.

Procedure H

Daisy Wheel Printer Problems

- 1 ►** Check the power to the printer and be sure the printer is turned on.
- 2 ►** Check the cable connecting the Lisa to the printer and be sure the cable is installed securely.
- 3 ►** Check the Device Connections portion of the Preferences window to verify that the Lisa knows where your printer is attached. A daisy wheel printer must be attached to a serial connector.

Be sure you've turned off and then turned on the system after setting the device connections in Preferences. New information set in Preferences takes effect only after the system has gone through a startup sequence.

Be sure the Preferences settings match the actual setup of the printer, including print wheel, paper type, and paper size.

- 4 ►** Check that the front panel is securely in place on the printer. The printer will not run if the front panel is askew.
- 5 ►** Check the ribbon and paper. The daisy wheel printer will not run if the ribbon or paper has run out.
- 6 ►** Check the internal configuration settings on Switch 1, which is in the back of the printer. Be sure Switch 1 is set as shown on the next page.

Procedure I

Imagewriter Printer Problems

- 1 ► Check that the power to the printer is on and that the green select light is on. If the select light is not lit, press the select button.
- 2 ► Check that the cable connecting the Lisa to the printer is installed securely.
- 3 ► Check the Device Connections portion of the Preferences window to verify that the Lisa knows where your printer is attached.

Warning

This equipment is intended to be electrically grounded. This product is equipped with a three-wire grounding-type plug, a plug having a third grounding pin. This plug will fit only into a grounding-type AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, have a licensed electrician replace the outlet and, if necessary, install a grounding conductor. **DO NOT DEFEAT THE PURPOSE OF THE GROUNDING-TYPE PLUG.**

An Imagewriter printer must be connected to a serial port. The older dot matrix printers may require connection to a parallel port. Check the manual that came with your printer.

Check that the Preferences settings match the actual paper type and paper size you have loaded in the printer.

Examine the test pattern. All the characters should be complete (no dots missing) and neatly aligned. The lines should appear equally black from end to end. Spacing between characters and between lines should be even. If this is not the case, check for correct ribbon insertion, paper loading, and thickness setting.

- 6 ► If printer problems persist, call a qualified service specialist.

Procedure J

Startup Disk Problems

The presence of this icon on your screen means that the Lisa is looking unsuccessfully for the startup instructions on the internal hard disk.



If you ordinarily use the internal hard disk as your startup device, read step 1, below. If you ordinarily use some other disk as your startup device, read step 2, on the next page.

- 1 ► For some reason, the Lisa is having trouble reading your startup disk.
 - a. Turn off the Lisa.
 - b. Turn on the Lisa.

If the problem recurs, note the error message number that appears under the icon. Error message number 75 or 84 indicates a possible software problem. Try reinstalling the Office System software. (See *Repairing a Software Disk and Reinstalling the Office System*, under *Procedure E, Disk Repair*.) If reinstalling the system software doesn't solve the problem, call a qualified service specialist.

Any error number other than 75 or 84 indicates a possible hardware problem. Contact a qualified service specialist.



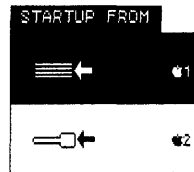
For a list of error message numbers and what they indicate, see Appendix 4, Office System Error Messages.

- 2 ► If you are trying to start up from any device other than the internal hard disk, the Lisa is looking for the startup instructions in the wrong place.

- a. Click Startup From.



- b. When the **Startup From** menu appears, use the mouse to select the startup device you are trying to use.

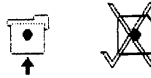


The internal hard disk is the default startup device -- that is, the device the Lisa uses if you do not specify otherwise. If you usually start up from a different device, the startup specifications in your system Preferences may have been forgotten. When you have started the system, open the Preferences icon and check your startup specifications.

Procedure K

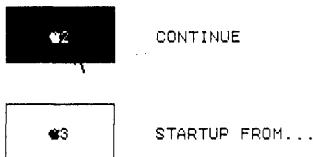
Startup Micro Diskette Problems

The presence of either of these icons means that the Lisa is looking unsuccessfully for a startup micro diskette (left) or is having a problem reading the startup diskette (right).



If you are trying to start up from a micro diskette, read step 1, below. If you are trying to start up from the internal hard disk, read step 2, below.

- 1 ► Verify that the micro diskette is properly inserted. Check that the diskette is a startup micro diskette (a Lisa Office System disk or a Development System disk, for example).
 - a. After inspecting the micro diskette, reinsert it and click Continue.



- b. If the same message appears, eject the diskette and try it in another Lisa or try using another micro diskette in your Lisa. If you determine that your disk drive needs servicing, call a qualified service specialist.

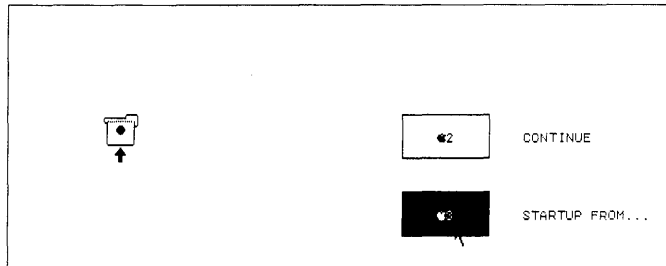
If the other Lisa displays the same message, your micro diskette may be damaged. Repair the disk by following Procedure E or use a backup copy of the disk.



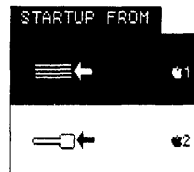
- 2 ► If you are not trying to start up from a micro diskette, the presence of its icon on your screen means that the Lisa is trying to start up from the wrong device.

To start up from your usual device:

- a. Click Startup From.



- b. When the **Startup From** menu appears, use the mouse to select your startup disk drive.



If this procedure works, the specifications in your system Preferences have probably been altered. Open the Preferences icon and check the startup specifications. If they are correct, the Lisa probably received an alternative startup command during the initial startup. You may have caused this inadvertently by pressing keys while the system was starting up.

Procedure L

Startup Expansion Card Problems

The presence of this icon on your screen means that the Lisa is looking unsuccessfully for the system startup software on a device connected to an expansion card. If your startup device is in fact attached to an expansion card, read step 1, below. If your startup device is not attached to an expansion card, read step 2, below.



- 1 ►** Check to verify that the expansion card is securely in place and that the cable between the expansion card and the startup device is firmly attached. Verify that the startup device is turned on. Try again to start up the Lisa.

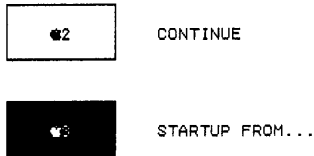
If the same message appears, call a qualified service specialist.

- 2 ►** If your startup device is not attached to an expansion card, the presence of the expansion card icon on your screen means that the Lisa is trying to start up from the wrong device.

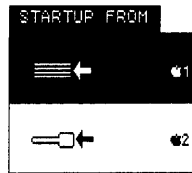


To start up from your usual device:

- a. Click Startup From.



- b. When the **Startup From** menu appears, use the mouse to select your startup drive.



If this procedure works, the specifications in your system Preferences have probably been altered. Open the Preferences icon and check the startup specifications. If they are correct, then the Lisa probably received an alternative startup command during the initial startup. You may have caused this inadvertently by pressing keys while the system was starting up.

Procedure M

Ejecting Micro Diskettes

The Lisa should automatically release a micro diskette before powering off. If something goes wrong and your diskette is trapped in the drive, follow this procedure:

- 1 ► Turn the Lisa on.
- 2 ► Select the micro diskette icon.
- 3 ► Choose **Eject "name of disk"** from the **Housekeeping** menu. The diskette should be ejected.

If this doesn't work, turn off the Lisa and unplug it from the wall socket. Next, remove the front panel and push the manual disk-eject button.

To take off the front panel, refer to *Installing the Disk Drive Module*, in Appendix 1, *Setup Procedures*, or call a qualified service specialist to help you.

If neither of these procedures works, the disk drive probably has a mechanical problem. Do not try to pry the diskette out of the drive. Because the diskette is clamped in place, forcing it out of the drive will probably destroy the diskette. Call a qualified service specialist.

Procedure N ***Startup Symptoms*** ***and Error Messages***

Every time you turn on the Lisa, the system automatically runs a series of internal tests. These tests fall into two categories:

- The *kernel* tests, which are designed to catch problems serious enough to interfere with the rest of the sequence. After the kernel tests, the Lisa emits one click.
- The *module* tests, which may result in specific error messages. After the module tests, the Lisa emits a double click.

Errors detected during the tests can result in screen messages, error tones, or both. If your screen shows a dialog box, read the discussion following the tables below.

Table 2 lists the error tones generated by various startup tests and their meanings. If you do not remember whether or not the Lisa sounded any error tones during startup, press the reset button once to repeat the tests.

Table 2. Startup Error Tones




Tones	Icon	Meaning
Lo	No icon	CPU or memory error. Must be diagnosed by a qualified service specialist.
Lo,Lo	No icon	Memory failure in preliminary test. Call a qualified service specialist to replace one or both memory boards.
Lo,Hi	Card cage 	A problem somewhere in the card cage. Call a qualified service specialist to run a complete system check to identify which board is causing the problem.
Lo,Lo,Hi	CPU board 	Call a qualified service specialist to run CPU board diagnostic.
Lo,Hi,Lo	I/O board 	Call a qualified service specialist to run I/O board diagnostic.



Table 2. Startup Error Tones, continued






Tones	Icon	Meaning
Lo,Hi,Hi	Memory board	Call a qualified service specialist to replace specified memory board.
		
Hi,Lo,Lo	Expansion card	Call a qualified service specialist to replace expansion card in specified slot.
		
		
		
Hi,Lo,Hi	Keyboard	Call a qualified service specialist to run keyboard diagnostic.
		



Table 2. Startup Error Tones, continued

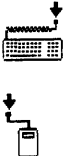
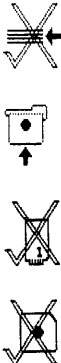



Tones	Icon	Meaning
Hi,Hi,Lo	Keyboard/ mouse disconnected 	Keyboard or mouse disconnected. Continue without keyboard or mouse, or attach keyboard or mouse. If both are attached, call a qualified service specialist to run keyboard or mouse diagnostic.
Hi,Hi,Hi	Disk drive, disk, or expansion card    	Startup failure. Insert startup disk, specify a different startup drive, or check startup drive. See Procedure J, K, or L.

Table 3 lists the most common kernel test failures and the likely solutions. For a more complete discussion of the kernel tests and a list of the specific error messages and their meanings, see Appendix 3, Automatic Startup Tests.

Table 3. Kernel Test Failures

Symptom	Possible Fix*
Blank screen, no error tones	Call a qualified service specialist to <ol style="list-style-type: none">1. Replace CPU board.2. Replace I/O board.3. Replace card cage.
White screen with white lines showing, no error tones	Call a qualified service specialist to replace CPU board.
Random display, no error tones	Call a qualified service specialist to replace CPU board.
Random display, two low error tones	Call a qualified service specialist to <ol style="list-style-type: none">1. Replace memory board.2. Replace CPU board.3. Replace card cage.

* In order of probability.



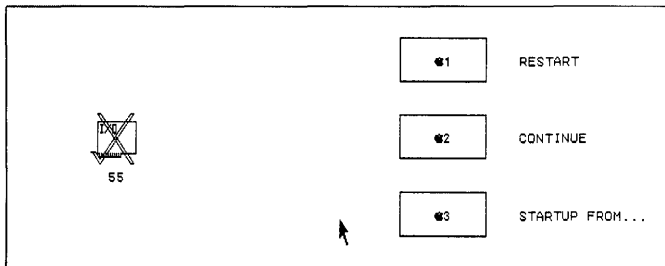
Table 3. Kernel Test Failures, continued

Symptom	Possible Fix*
Flashing screen and repeated error tone, alternating low and high pitch	Call a qualified service specialist to <ol style="list-style-type: none">1. Replace I/O board.2. Replace CPU board.3. Replace card cage.
Blank screen or random display, with error tones	Call a qualified service specialist to replace board according to error tone sequence. See Table 2, Startup Error Tones.

* In order of probability.

Some of the error messages indicate hardware problems with the Lisa; others indicate a problem with the system setup. In general, the presence of an icon with or without a numeric code means that the module represented by the icon should be checked.

Some startup error messages are presented to you in a dialog box, which offers you up to three choices, as shown here.



Make your choice either by clicking one of the boxes or by holding down the Apple key while pressing the number displayed in the box.

RESTART

If you click Restart, the Lisa repeats the startup tests. Choose Restart if you want to verify the test results.

CONTINUE

The Continue option appears only if the problem is one that allows startup to continue. If, for example, your system is set to start up from a micro diskette and you've forgotten to insert the diskette, simply insert the diskette and click Continue. The Lisa continues the startup procedures.

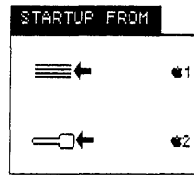
STARTUP FROM

When you click Startup From, the Lisa displays the **Startup From** menu and waits for you to specify a startup device. Choose this option when you want to use a startup device different from the one specified in your system Preferences or when your system Preferences have been forgotten.

If the Lisa has been unplugged, then the Preferences, usually stored in parameter memory, have been forgotten. In this case, the Lisa automatically looks for a startup internal hard disk. If your startup device is anything else, you will have to tell the Lisa where to find it through the **Startup From** menu.

To choose a startup device:

- 1 ► Click on the device you want to use, or hold down the Apple key while pressing the key listed in the menu next to the device you want to use.

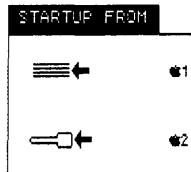


As soon as you choose a device, the Lisa continues the startup procedures.

Procedure O

Startup From Menu

The **Startup From** menu appears any time you press any key except [CAPS LOCK] or click the mouse button during the module test sequence of the automatic startup tests.



The **Startup From** menu allows you to specify a different startup device from the one you usually use.

If you unintentionally interrupted the startup sequence by pressing a key, simply select your startup device from the **Startup From** menu. The Lisa will continue normal startup procedures.

To use the **Startup From** menu during startup :

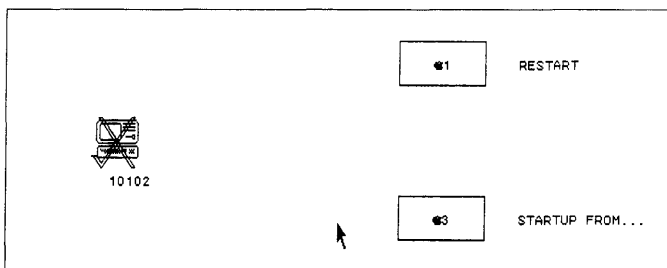
- 1 ► Turn on the Lisa.
- 2 ► When the cabinet emits a single click, and before it emits a double click, press any key except [CAPS LOCK] or click the mouse button.

Procedure P Operating System Errors

This icon on your screen means that the Lisa Office System has failed. There is probably nothing wrong with your hardware; you have encountered a problem with the software.



When the Operating System failure icon appears, as shown here, your only option is to restart the system using another startup device.



Try restarting the system using the Office System 1 micro diskette that came with your system. To do this, insert the Office System 1 micro diskette into the disk drive. Select the box Startup From. When the **Startup From** menu appears, choose the micro disk drive.

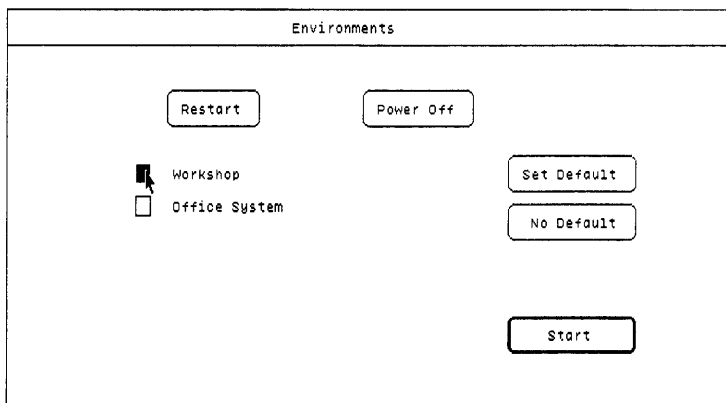
If the same icon appears after this restart attempt, you may have a hardware problem. Call a qualified service representative.

If the system starts using the Office System 1 micro diskette, this may indicate that your original disk needs repair. Follow Procedure E to repair your startup disk. If after the repair procedure you still get the operating system error icon, then your disk is probably permanently damaged. Use the backup copy of the disk.

If you have a support agreement on your Lisa system, call Apple and report the failure. Write down the number under the icon before you restart the system, and report that number to your service representative.

Procedure Q ***Environments Window***

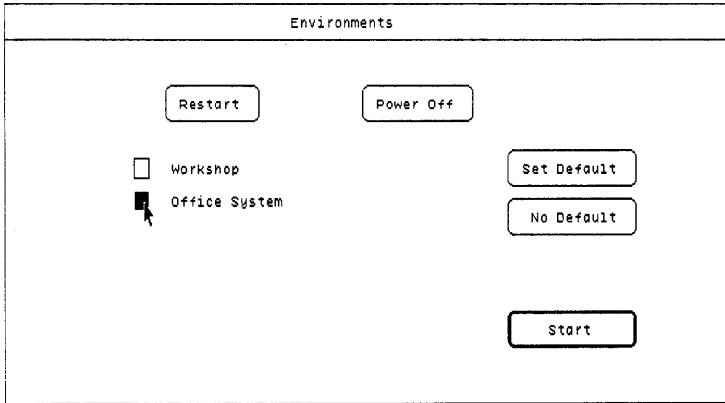
If your startup disk contains any software other than the Lisa Office System, you may encounter a screen similar to the one shown here when you start up the Lisa.



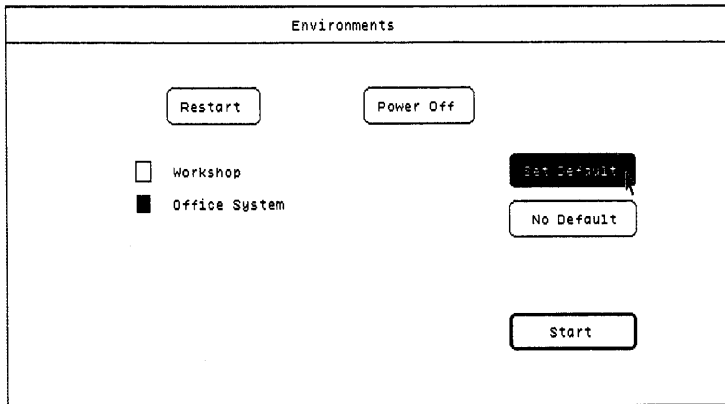
This display, known as the Environments window, allows you to specify which software you want to use. To start up the Lisa Office System, click Office System, and then click Start.

If you always want to use the Lisa Office System:

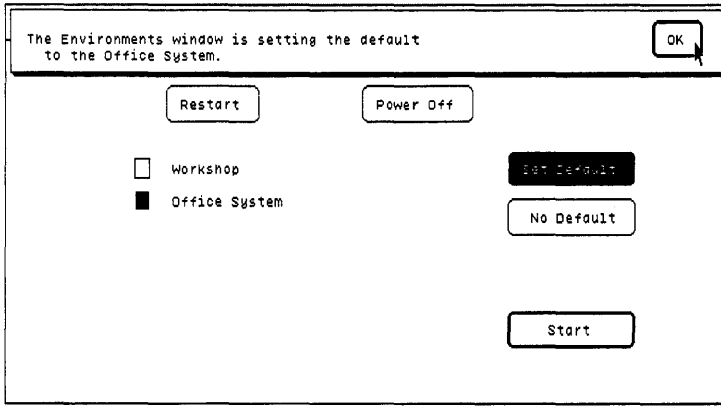
1 ► Click Office System.



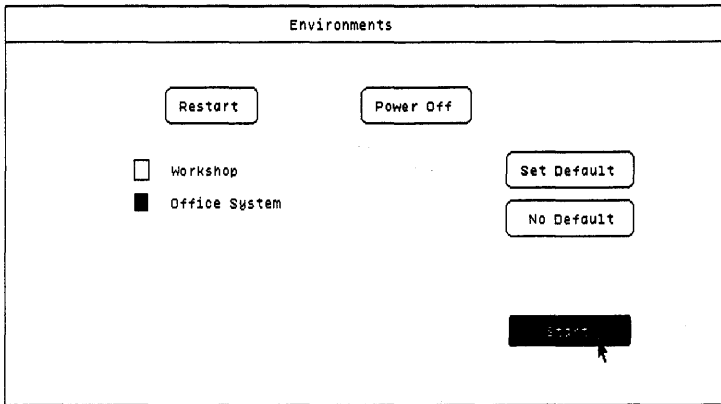
2 ► Click Set Default.



3 ► Click OK.



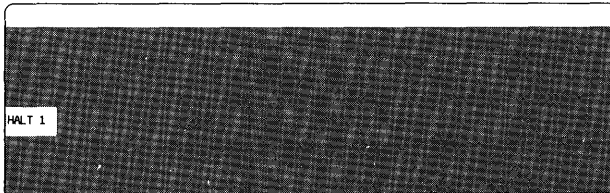
4 ► Click Start.



Once you have set the default, you will never see the Environments window unless you specifically request it. To call up the Environments window from the Lisa Office System, hold down the Apple key while pressing the on-off button. To call up the Environments window during system startup, press the Apple and [SHIFT] keys simultaneously after you hear the double click from the cabinet.

For more information on the Environments window, see the *Workshop User's Guide for the Lisa* or the manual that came with the other software on your disk.

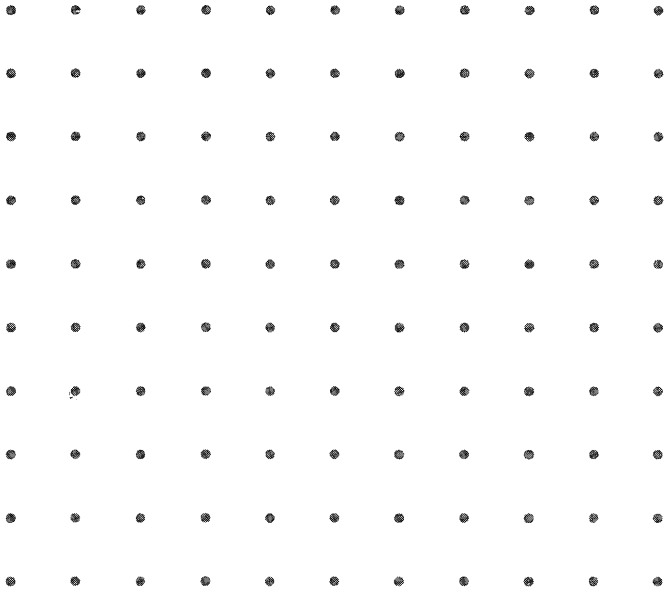
If you see the message shown below before the Environments window appears on the screen, follow the procedure given here.



If you can't remember whether or not the message appeared, turn the system off and then on again. The message will stay on your screen for 10 seconds before the Environments window appears.

If the number in the Halt message is 1, then you are trying to start up the Office System from a disk that does not have the Office System software installed. Start up from an appropriate disk or install the Office System on the disk you want to use as a startup device. See *Installing the Office System Software*, in Appendix 1, Setup Procedures.

If the number in the halt message is greater than 1, repair the startup disk. See *Repairing a Startup Disk and Reinstalling the Office System*, under Procedure E, Disk Repair.



Section D
Maintenance

Contents

What's in Maintenance? D5

Clean Glare Filter D6

Clean or Replace Mouse Ball D13

Clean Housing D16

What's in Maintenance?

The Lisa requires almost no day-to-day maintenance. Most of the procedures recommended in this section, such as cleaning the glare filter, are for your comfort and convenience.

It's a good idea to review Table 1, Suggested Maintenance, soon after you set up your system so that you will know which parts of the Lisa you can clean. Later, when you have spilled something on the housing or you think the mouse may be dirty, look up the procedures in this section.

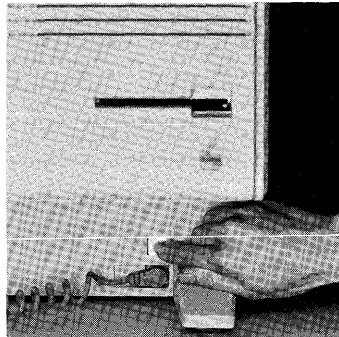
Table 1. Suggested Maintenance

What	When	Page
Clean glare filter	Screen dusty	D6
Clean mouse ball	Mouse response unreliable; ball sticky or dusty	D13
Clean housing	Housing dirty	D16

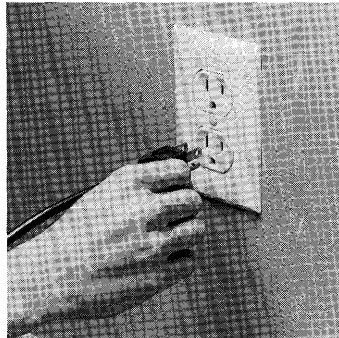
Clean Glare Filter

Whenever the Lisa's video display is on, the screen has a slight static charge, which acts as a dust magnet. The accumulated dust will eventually make the display hard to read. You can keep the screen fairly dust free by wiping it gently every few weeks with the specially treated cloth that came with your Lisa. If dust has worked its way under the glare filter, or if the screen has spots from liquid spills, use the following procedure to clean the glass and filter.

- 1 ► If the Lisa is on, turn it off. If there is a micro diskette in the drive, remove it.



- 2 ► Unplug the Lisa at either the back panel or the wall outlet.

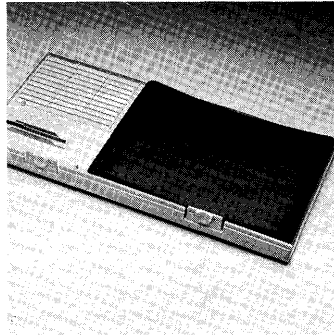


3 ► Remove the front panel, following this procedure:

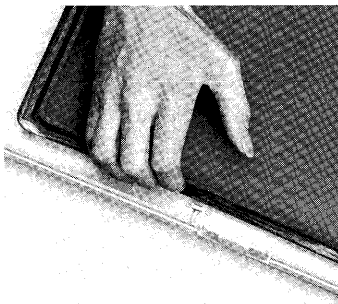
- a. Place one finger on each of the two finger pads beneath the front panel.
- b. Push the pads up to unlatch the panel.
- c. Pull the panel forward and down.



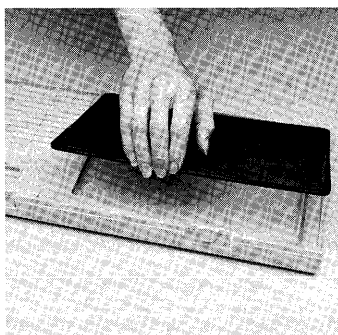
4 ► Set the panel on a flat surface, face down.



- 5 ► Push the frame of the glare filter out from under the metal clip at the bottom center of the frame.



- 6 ► Grasp the frame by the lower edge and lift the lower edge up until the top edge pops out from beneath the upper clip.

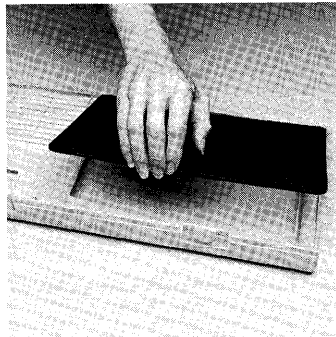


- 7 ► Wipe both the front and the back of the glare filter with the treated cloth that came with your Lisa.

- 8 ► Shake out the cleaning cloth to remove the dust. Do not wash the cloth.
- 9 ► If the glare filter has spots from liquid spills, clean it in warm, soapy water. The filter can be torn, so treat it gently. Dry the filter with a towel before installing it over the video screen. (Do not use the treated cleaning cloth to dry the filter.)
- 10 ► Clean the glass on the video screen with any glass cleaner and a soft cloth (don't use the specially treated cleaning cloth). Do not spray any liquid directly onto the glass because stray drops could get into other parts of the cabinet. Instead, spray the cleaner onto the cloth, and then wipe the glass.
- 11 ► Replace the glare filter, following this procedure:

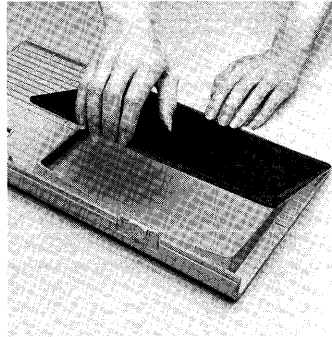
- a. Center the glare filter over the opening inside the front panel.

Hold the glare filter against the clip along the upper edge of the front panel, at a 45-degree angle.



- b. While pressing down on the frame at the upper clip, rotate the lower edge until the frame slides under the upper clip.

Continue rotating the screen until it lies flat against the panel.



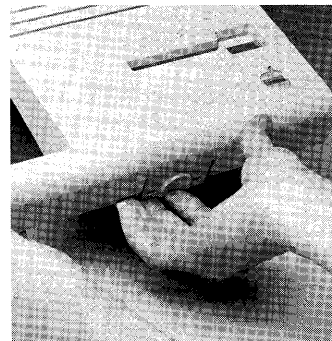
- c. Push the lower edge of the frame in until it clears the lower clip, and then let it slide into place behind the clip.

Make sure the filter fits neatly around the frame and under the clips.

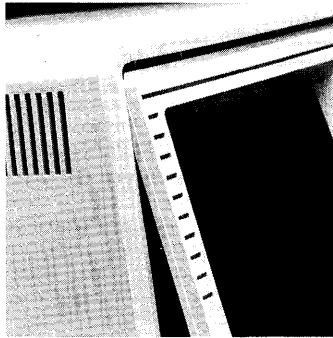


12 ► Replace the front panel, following this procedure:

- a. Hold the panel with one finger on each pad along the bottom edge.



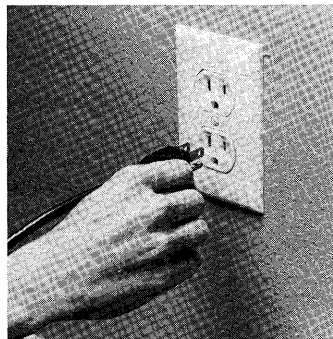
- b. Insert the upper edge of the panel behind the lip of the top housing on the cabinet.



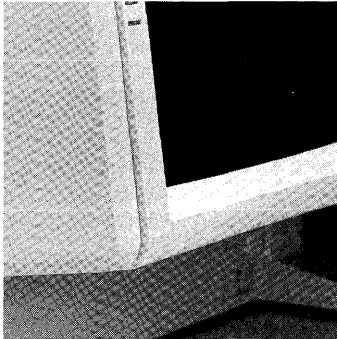
- c. Pressing the pads up, push the bottom edge of the panel against the cabinet until the panel clicks into place.



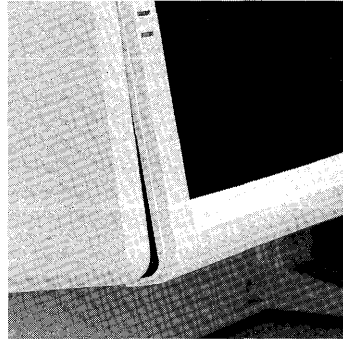
13 ► Plug in the power cord.



If the front panel is not securely in place, a safety interlock switch prevents you from turning the Lisa on. If you cannot turn the system back on after reinstalling the front panel, check to make sure the panel is securely in place.



Correct installation



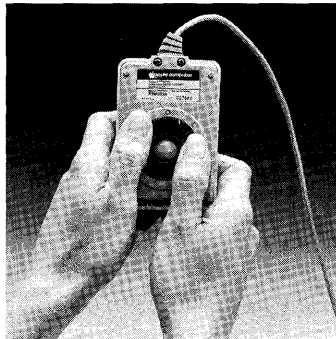
Incorrect installation

Clean or Replace Mouse Ball

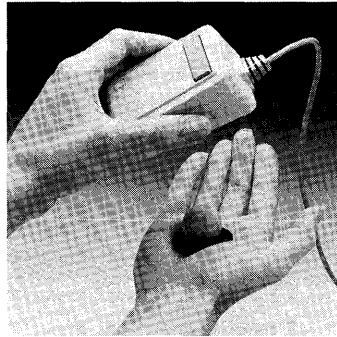
If the mouse runs over a sticky spill, or if it is in an environment with a lot of dust or eraser crumbs, dirt may accumulate inside the mouse and make it unreliable. A simple cleaning of the ball will eliminate the problem.

- 1 ► Detach the mouse cord from the Lisa, following this procedure:
 - a. Loosen the two screws that hold the mouse cord connector to the back of the Lisa.
 - b. Pull the cord free from the Lisa.

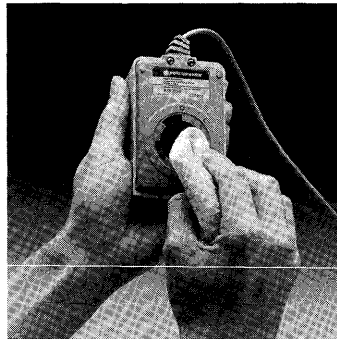
- 2 ► Open up the mouse, following this procedure:
 - a. Turn the mouse over, exposing the black plastic ring around the ball.
 - b. Pressing down on the ring, turn it counterclockwise 45 degrees until the notch lines up with the *O* (for *open*) on the mouse case.



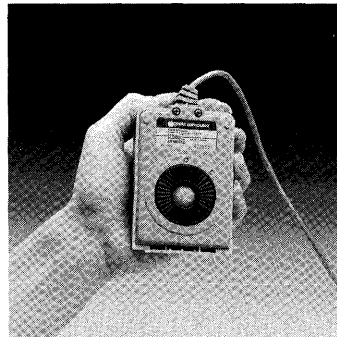
- 3 ► Turn the mouse over and let the ring and ball fall into your hand.



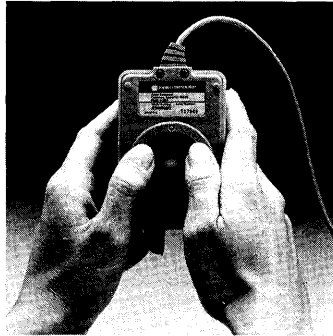
- 4 ► If the ball is sticky, rinse it off gently and dry it thoroughly. Wipe the inside of the case with a clean, dry cloth.



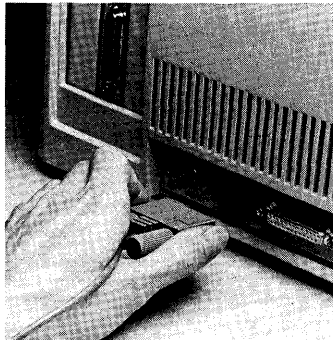
- 5 ► Reassemble the mouse, following this procedure:
- a. Drop the ball gently into the hole.
 - b. Place the ring over the ball, lining up the notch with the *O* on the case.



- c. Pressing down on the ring, turn it clockwise 45 degrees until the notch lines up with the *L* (for *locked*) on the mouse case. You can feel the ring click into place.



- 6 ► Reattach the mouse cord to the back of the Lisa and tighten the two screws.



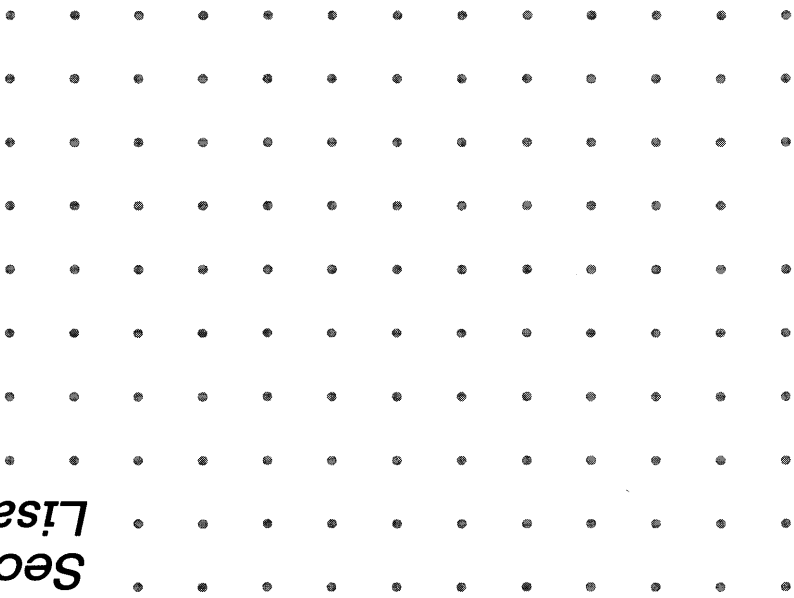
Clean Housing

The cabinet, keyboard, and mouse housing can be cleaned with most commercial cleaning solutions, but don't use any solvent containing kerosene or pine oil. These chemicals will damage the plastic.

When you clean the housing, follow these safety procedures:

- Turn off and unplug the Lisa before using any liquid on it.
- Don't spray anything into or near the air vents or the slot of the micro disk drive.
- Don't spray solvents on the keys.
- Don't try to clean anything inside the housing or the keyboard. You can clean the inside of the mouse, following the procedure given earlier in this section.

Section E
Lisa 2 Hardware



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What's in Lisa 2 Hardware?

This section introduces the Lisa 2's major components, explains how they interact, and gives Lisa 2 hardware specifications. The individual discussions in this section include hardware details that will help you use the Lisa easily and comfortably.

This section is concerned only with the physical parts of the Lisa. If you are using the Lisa Office System, you will find the background information on using your system in Section B, Desktop Manager Reference Guide. If you are a programmer using the Development System, refer to the System Manager section of the *Workshop User's Guide for the Lisa* for detailed descriptions of utility programs and standard interfaces.

Directions for setting up your Lisa are in Appendix 1, Setup Procedures.

System Parts

The Lisa 2 system consists of three separate parts: The keyboard; the mouse; and the cabinet containing the computer itself, the video screen, the internal hard disk, and the micro disk drive. Figures 1 and 2 show the front and back of the Lisa.

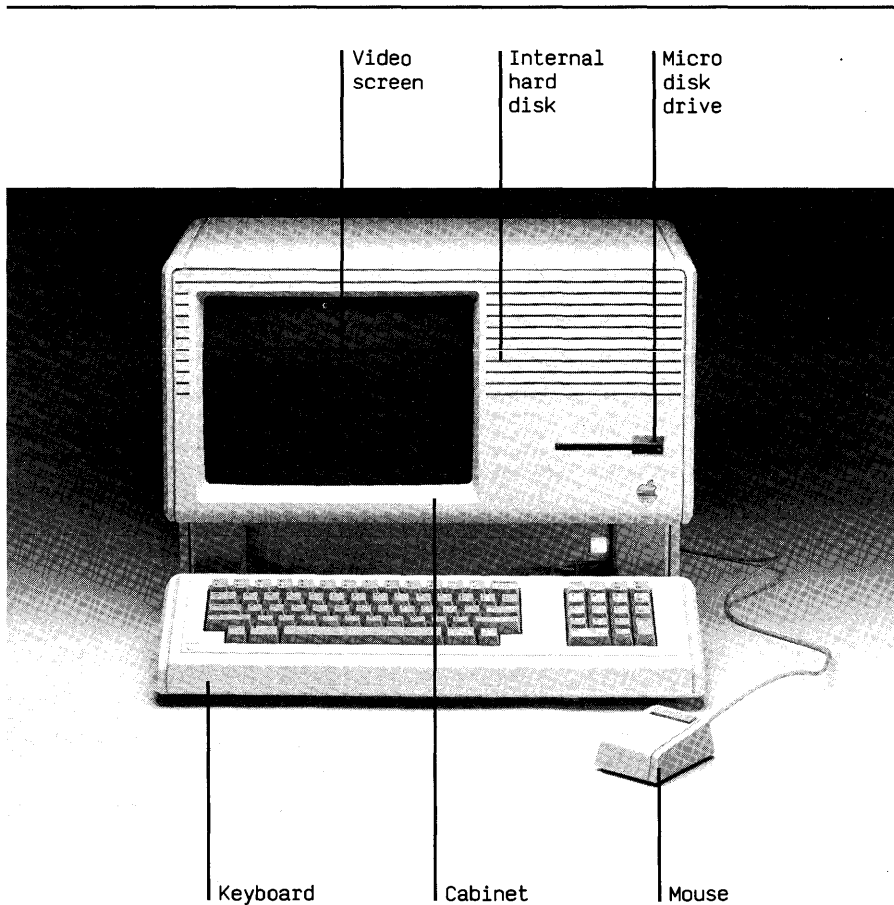


Figure 1. Lisa 2, Front View

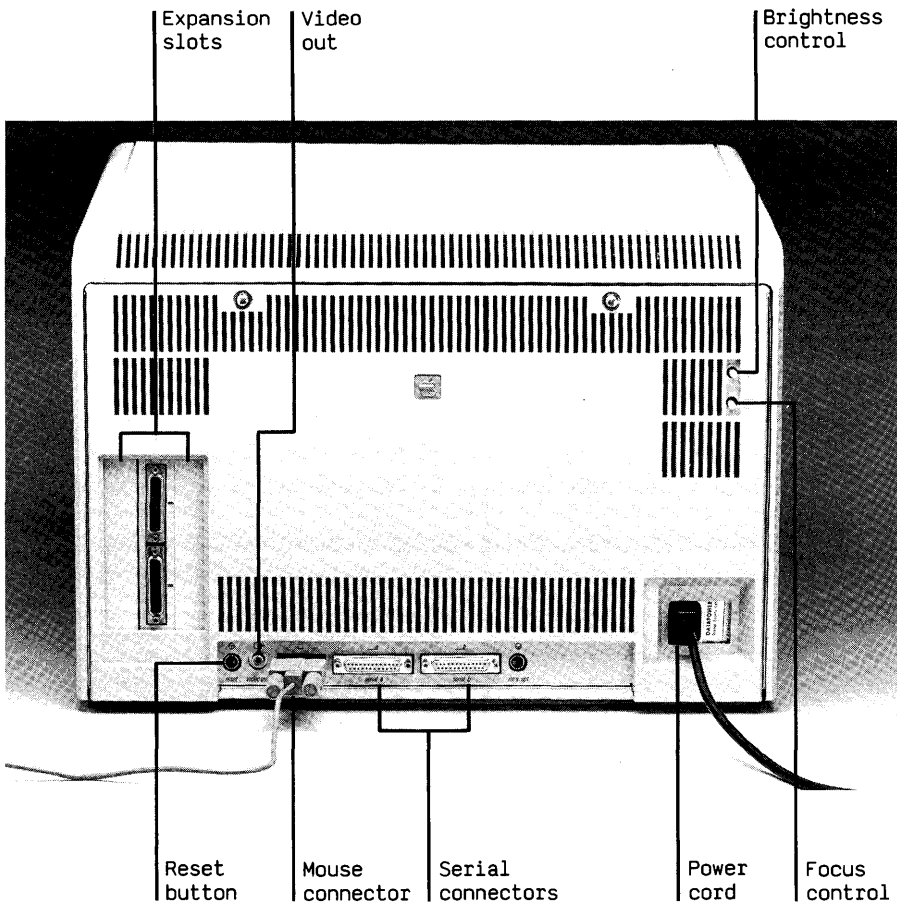
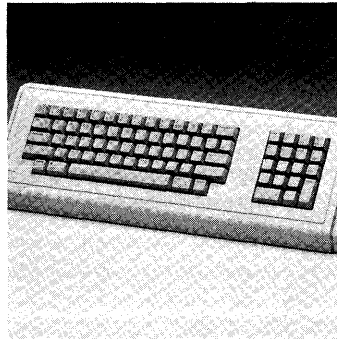


Figure 2. Lisa 2, Back View

KEYBOARD

The Lisa keyboard is much like a typewriter keyboard, with a few additional keys.



The functions of the [CLEAR], [ENTER], Apple, and arrow keys ([UP ARROW], [DOWN ARROW], [LEFT ARROW], [RIGHT ARROW]) depend on the tool you're using. These functions are described in the manuals that come with the Lisa tools. The [CAPS LOCK] key is like a shift lock key, except that the [CAPS LOCK] key affects only the letter keys, not the number or punctuation keys.

The [OPTION] keys, which work like the [SHIFT] keys, give you access to a set of special symbols and international characters. These characters are shown in Figure 3. To type one of the special characters, hold down either [OPTION] key while pressing the key for the character you want.



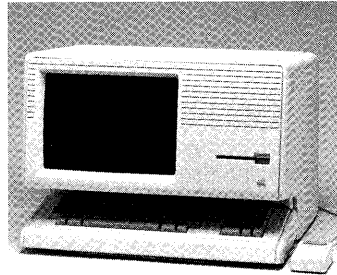
Figure 3. Lisa Keyboard

All letter and number keys on the Lisa keyboard repeat automatically when held down. You can specify the time lag before the keys start to repeat and the rate at which they repeat. Instructions for making these adjustments appear in *Setting Convenience Settings*, in Appendix 1, *Setup Procedures*, and in the *System Manager* section of the *Workshop User's Guide for the Lisa*.

The keyboard is attached to the Lisa by a flexible cable so that you can put the keyboard on your lap or wherever the keyboard is most comfortable and convenient while you're working. The maximum safe extension of the cable is 4 feet.

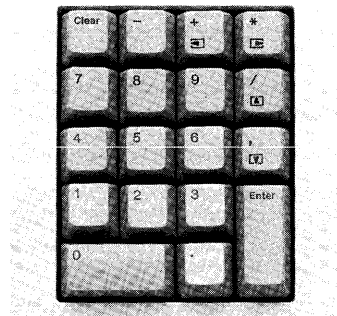


When you are not using the Lisa, you can save space and protect the keyboard by sliding it under the front of the cabinet.



Numeric Keypad

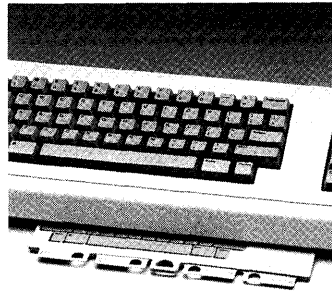
The numeric keypad on the right side of the keyboard is for your convenience when entering numbers and equations. The [CLEAR], [ENTER], and arrow keys are discussed in the tool manuals.



Reference Cards

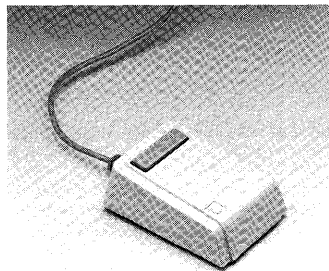
The reference cards are designed to pull out from the Lisa keyboard. Information on these cards includes the following:

- The option keyboard layout, discussed above.
- Details about your Lisa and your support agreement. If your dealer did not fill in this card when you purchased your Lisa, you should fill the card in now so that the information will be handy when you need it.



MOUSE

Like the keyboard, the mouse is a device for communicating with the Lisa. Rolling the mouse along a flat surface moves a pointer on the video screen; pressing the button on top of the mouse signals the Lisa that the pointer is in the location you want. Use of the mouse is covered in detail in the LisaGuide. See Section A, Getting Ready -- LisaGuide.

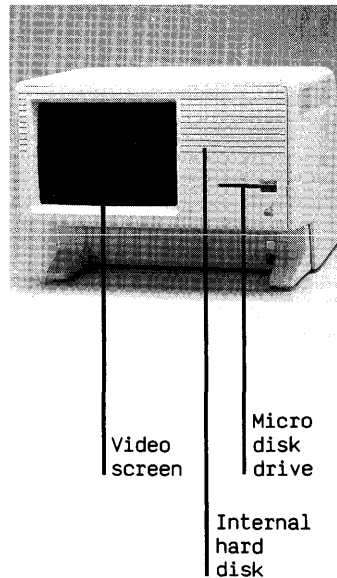


The mouse is quite sturdy and can tolerate a lot of rolling and button-pressing. However, a sudden impact could damage the sensors inside. Avoid dropping the mouse or hitting it against hard objects.

After several hundred hours of use, the inside of the mouse can accumulate enough dust to make pointer control uneven. Instructions for cleaning the mouse appear in Section D, Maintenance.

CABINET

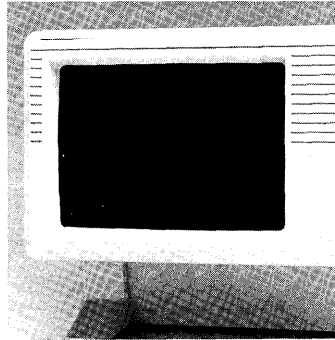
The cabinet contains the computer itself, the video screen, and the internal hard disk, and the micro disk drive. The cabinet also contains the power supply. To prevent electrical accidents, both the front and the back panels of the cabinet are equipped with safety interlock switches. If you remove either panel while the Lisa is running, the safety switches immediately cut off power to the system. Without power, the computer loses everything in its memory, including any documents you were working on.



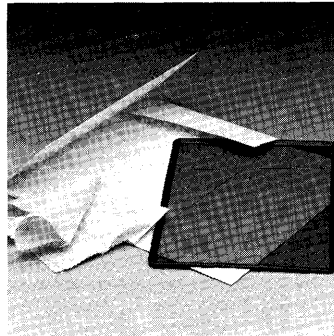
Note: The safety interlock switches do not cut off power to the power supply. You should always turn off and unplug the Lisa before opening the cabinet.

Video Screen

The brightness and focus of the Lisa video screen are controlled mechanically; the contrast is set through software. Instructions for setting the focus appear under Screen Controls, later in this section. Instructions for setting the brightness and contrast appear in Setting Screen Brightness and Contrast, in Appendix 1, Setup Procedures, and in the System Manager section of the *Workshop User's Guide for the Lisa*.



A special glare filter comes in the Lisa accessories box. In most environments the filter is unnecessary, but sometimes windows or overhead lights can cause irritating reflections on the screen. If screen glare is a problem for you, install the filter according to the instructions in Appendix 1, Setup Procedures. After you install the filter, you will have to readjust the screen contrast and brightness.

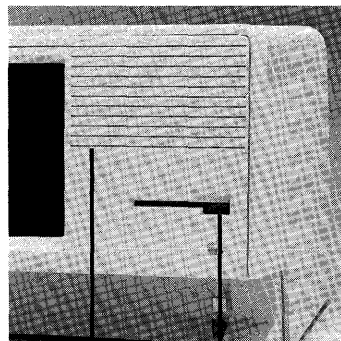


After many hours of exactly the same display, screens are subject to burn-in: The screen picks up a permanent image that is the negative of the display. To protect against burn-in, the Lisa dims the screen if no activity has taken place for several minutes. Once the screen has dimmed, any key press or mouse movement returns the screen to the normal contrast level. Instructions for setting the time lag before dimming and the contrast level of the dim display appear in Setting Convenience Settings, in Appendix 1, Setup Procedures, and in the System Manager section of the *Workshop User's Guide for the Lisa*.

You can dim the screen yourself at a moment's notice, invoking the screen's privacy feature. To dim the screen, hold down both the right-hand [OPTION] key and the right-hand [SHIFT] key while pressing the 0 on the numeric keypad. To return the screen to its normal contrast level, press the same combination of keys.

Internal Hard Disk

The Lisa's internal hard disk stores the Lisa software and the documents you create with the Lisa. Refer to Section B, Desktop Manager Reference Guide, for a discussion of software and documents, and to Appendix 1, Setup Procedures, for more information on the internal hard disk.



Internal
hard
disk

Micro
disk
drive

Micro Disk Drive

The Lisa's micro disk drive accepts special 3-1/2-inch micro diskettes. When you buy blank diskettes, be careful to get diskettes that are compatible with the Lisa's micro disk drive.

Insert a diskette into the drive slot with the label facing up and the metal plate at the top. The arrow on the diskette points toward the drive.



Note: See Section B, Desktop Manager Reference Guide, for recommended procedures for handling and storing micro diskettes.

Push the diskette into the micro disk drive until it clicks into place. When the diskette is in place, you can hear the micro disk drive clamp onto the diskette. Once a diskette is in place and clamped, do not try to pull it out.



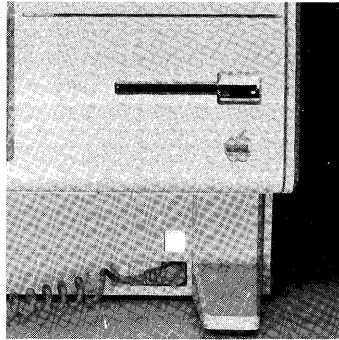
There are two ways to release a micro diskette from the drive. You can either choose **Eject** from the **Disk** menu or, if you're through with your work, press the on-off button. Either way, there may be a delay while the computer updates and releases the micro diskette.

On-Off Button

Press the on-off button when you want to turn the Lisa on or off.

Warning

The Lisa on-off button is a "soft" switch; that is, it turns off the system but not the power supply. If you intend to service the Lisa, unplug it from the wall socket.

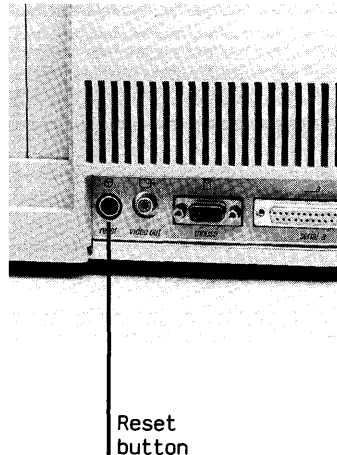


When the Lisa is on, the on-off button is lit. To prolong the life of the power system, leave the Lisa on continually as long as you are using it every day. Turn it off on weekends or any other time you will not be using it for a day or more.

Generally, pressing the on-off button when the Lisa is on does not instantly shut the Lisa off. The on-off button triggers a series of disk-storage procedures, followed by a cutback of power to standby levels. As long as the Lisa is plugged into a working outlet, the system draws a small amount of current, whether or not the on-off button is lit. See Appendix 2, On-Off Procedures, for a description of the startup and shutdown sequences.

Reset Button

The reset button is a backup device for use when the normal shutdown procedures go awry or when the Lisa doesn't respond to the keyboard, mouse, or on-off button. The use of the reset button is discussed in Section C, Troubleshooting, and in the *Workshop User's Guide for the Lisa*. Under ordinary circumstances, do not press the reset button.

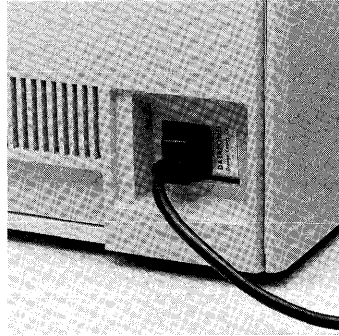


Power Cord

Warning

This equipment is intended to be electrically grounded. This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will fit only into a grounding-type AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, have a licensed electrician replace the outlet and, if necessary, install a grounding conductor. **DO NOT DEFEAT THE PURPOSE OF THE GROUNDING-TYPE PLUG.**

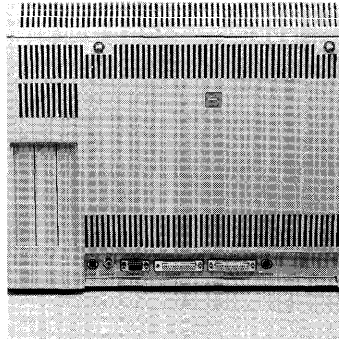
As long as the Lisa is plugged into a working outlet, it draws a small amount of current, which it uses to keep the clock/calendar up to date and to power a small amount of memory known as parameter memory. Parameter memory contains your specifications regarding external devices, repeating keys, and screen contrast.



When you must unplug the Lisa, make sure the light in the on-off button is out before you pull the plug.

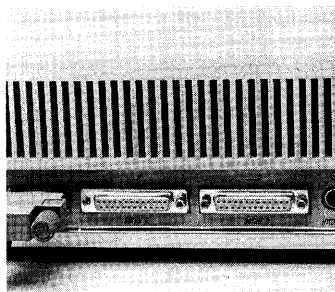
Connectors for Extra Devices

The Lisa is equipped with built-in connectors for attaching extra devices: Printers, additional disk drives, telephone-connect modems, and any other equipment that interacts with the Lisa. See *Installing Other Peripheral Devices*, in Appendix 1, *Setup Procedures*, for instructions on telling the Lisa that you have attached a piece of equipment.

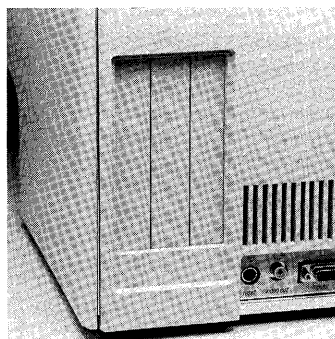


Serial Connectors The two serial device connectors accept 25-prong, D-shaped plugs for devices that use serial signals. If you do not know whether a device you want to attach is serial or parallel, see the manual that came with the device.

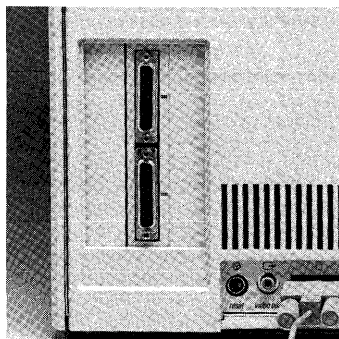
If you are using a high-speed modem (9600 baud), attach the modem to the connector labeled Serial Device A.



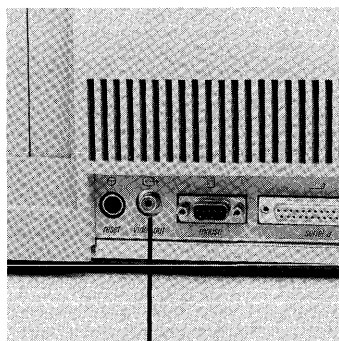
Expansion Slots The three expansion slots accommodate expansion cards for a variety of general and special functions. Special instructions for installing expansion cards come with all Apple-supplied cards. The general procedure for installing and removing cards appears in Appendix 1, Setup Procedures.



Parallel Connectors If you have parallel devices, you can add parallel connectors through the expansion slots on the left side of the back panel. The parallel device connectors accept 25-prong, D-shaped plugs for parallel devices.



Video Out The video out connector is compatible with standard video plugs. You can use this connector to send the screen display to an external high-resolution video monitor. The monitor must be compatible with the Lisa video specifications listed later in this section under Lisa 2 Hardware Specifications.



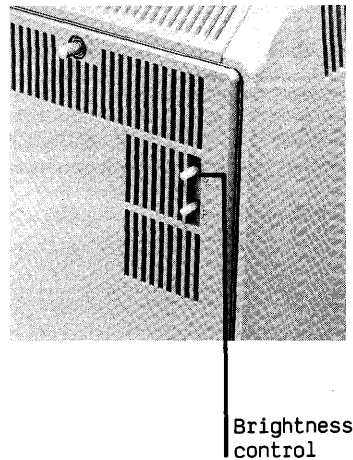
Video
out

Screen Controls

You can adjust three aspects of your screen display: Brightness, contrast, and focus. The exact setting of each depends on lighting conditions, the age of the video tube, and your personal preference.

You can avoid eye strain by keeping your screen adjusted at all times and by occasionally looking away from the screen and focusing on something across the room.

Brightness The brightness control knob is the higher of the two white knobs extending from the top right corner of the back panel.

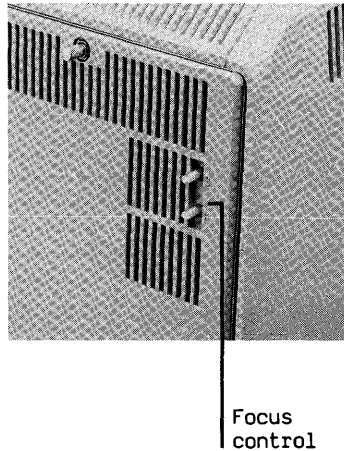


To set the screen brightness:

- Turn the brightness control knob until your screen is entirely black.
- Turn the knob back up just until the black rectangle turns to gray.
- Slowly turn the knob back down, just until the rectangle is distinctly black, with no video scan lines visible, and there is a clean line on all borders.

Contrast Screen contrast is controlled through software. Instructions for setting the contrast appear in Setting Screen Brightness and Contrast, in Appendix 1, Setup Procedures, and in the System Manager section of the *Workshop User's Guide for the Lisa*.

Focus The focus control knob is the lower of the two white knobs extending from the top right corner of the back panel.



EXTRA DEVICES (PERIPHERALS)

Extra devices (peripherals) for the Lisa include external hard disks, micro disk drives, and printers. Instructions for connecting some of these devices are included in Appendix 1, Setup Procedures. If setup procedures for the device you want to connect are not included there, follow the instructions provided in the box that came with that device.

Lisa 2 Hardware Specifications

SHAPE AND SIZE

Cabinet

Height: 350 mm (13.8 in.)

Depth: 388 mm (15.2 in.)

Width: 475 mm (18.7 in.)

Weight: 22 kg (48 lbs.)

Cord length: 1.8 m (6 ft.)

Keyboard

Height: 68 mm (2.7 in.)

Depth: 165 mm (6.5 in.)

Width: 475 mm (18.7 in.)

Weight: 18 kg (4 lbs.)

Cord length: 1.2 m (4 ft.) safe extension

Mouse

Height: 38 mm (1.5 in.)

Depth: 94 mm (3.7 in.)

Width: 62 mm (2.4 in.)

Cord length: 1.2 m (4 ft.)

CAPACITY -- INTERNAL MEMORY SIZES

Micro disk drive: 400 kilobytes

Internal hard disk: 10 megabytes

POWER LEVELS

European/Asian Systems

Voltage: 180 to 260 V.AC

Cycles: 48 to 68 Hz

Power: 150 watts

United States Systems

Voltage: 90 to 130 V.AC

Cycles: 48 to 68 Hz

Power: 150 watts

TEMPERATURE RANGES

Storage: -22°C to 65°C (-8°F to 149°F)

Operation: 5°C to 40°C (40°F to 104°F)

HUMIDITY RANGES

Storage: 5% to 95% noncondensing

Operation: 10% to 80% noncondensing

VIDEO

Screen dimensions: 30 cm diagonal (15 cm by 22 cm active)
12 in. diagonal (6 in. by 8.5 in. active)

Resolution: 364 lines by 720 dots per line

Screen refresh rate: 60 Hz

Horizontal line rate: 22,900 Hz

Dot rate: 20 MHz

COMPATIBILITIES

Format: Standard ASCII plus additional Apple characters
Recommended printers: Apple Imagewriter and Apple Daisy Wheel

RADIO AND TELEVISION INTERFERENCE

Warning

This equipment generates and uses radio frequency energy and, if not installed and used properly (that is, in strict accordance with instructions given in the *Lisa 2 Owner's Guide*), may cause harmful interference to radio communications. This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when equipment is operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at his or her own expense will be required to take whatever measures may be required to correct the interference.

You can determine whether your computer is causing interference by turning it off.

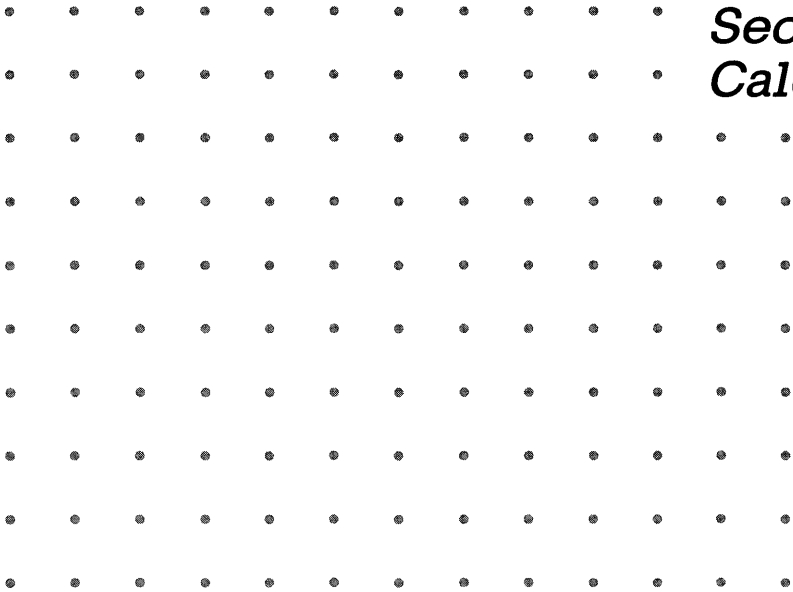
If the interference stops, it was probably caused by the computer or its peripherals.

To further isolate the problem, disconnect the peripheral devices and their I/O cables one at a time. If the interference stops, it is caused by either the peripheral or its I/O cable. These devices usually require shielded I/O cables. For Apple peripherals, you can obtain the proper shielded cable from your dealer. For non-Apple peripherals, contact the manufacturer or your dealer for assistance.

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

If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet, prepared by the Federal Communications Commission: *How to Identify and Resolve Radio-TV Interference Problems*. This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock Number 004-000-00398-5.



Section F
Calculator

Contents

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What's in the Calculator?

This section introduces the components of the Calculator and explains how they are used. Problem examples are included that will help you use the Calculator easily and comfortably.

Organization of the Calculator

The Calculator can imitate three different types of calculators: A standard four function calculator, a reverse Polish calculator, and a financial adding machine.

The Calculator appears on the screen as a drawing of a pocket calculator. You can "push" the buttons on the screen image by clicking them with the mouse. You can also select the functions displayed next to the keys by clicking them with the mouse.

To use the Calculator:

- 1 ► Open the Calculator by clicking twice on the Calculator icon.



Calculator

To specify which kind of calculator you want to use:

- 1 ► With the Calculator active, choose **Four Function**, **Reverse Polish**, or **Adding Machine** from the **Customize** menu.

If you want to display a record of your calculations, you can choose **Show Tape** from the **Customize** menu. The tape is not a document and cannot be printed as it is. It can, however, be copied and pasted into a LisaWrite or LisaDraw document, which can be printed. The result displayed on the Calculator itself can be copied and pasted into most other documents.

When you put away the Calculator, the tape and the display are cleared.

Each kind of calculator uses its own set of registers to hold the numbers you are manipulating. The registers are discussed in the descriptions of the calculators. You can choose to display or hide the registers by using the **Customize** menu. You can also specify how the results are to be displayed through the **Format** menu.

The menu bar shown in Figure 1 appears when the Calculator is active. The **Edit**, **Format**, and **Customize** menus have specific menu items for the Calculator. These menu items are discussed at the end of this section.

File/Print Edit Format Customize

Figure 1. Calculator Menu Bar

As an alternative to clicking on the keys and functions of the Calculator's displayed image, you can use the corresponding keys on the Lisa's numeric keypad. You can select the functions that are shown above or to the side of a key on the Calculator by holding down the [SHIFT] key while pressing the number on the keyboard that is next to the function displayed on the Calculator. For example, the +/- function can be selected from the keyboard by pressing [SHIFT] and 0.

If one of your calculations results in an infinite value or register overflow, the Calculator displays an error message and locks the keyboard. Click the CE/C key to clear the error and unlock the keyboard.

The Calculator as initially displayed does not contain a scroll bar, an elevator, or any other devices for manipulating the window. The size of the Calculator cannot be changed. If the transaction tape is displayed, a scroll bar containing an elevator, scroll arrows, and view buttons appears. The size and proportions of the view cannot be adjusted, so there is no size control box.

Four Function Calculator

The four function calculator is the most common type of pocket calculator. The only functions that are not obvious are the constants and the percentage calculations, which are explained below. For most simple calculations, you enter the numbers and symbols in the order in which you would write them.

For example, to divide 355 by 113:

- 1 ► Type 355
- 2 ► Click \div
- 3 ► Type 113
- 4 ► Click =

To calculate the previous problem using the numeric keypad instead of the mouse:

- 1 ► Press 355 on the numeric keypad.
- 2 ► Press /
- 3 ► Press 113
- 4 ► Press the [ENTER] key.

Figure 2 shows the result of either calculation. Both **Show Tape** and **Show Registers** have been chosen from the **Customize** menu.

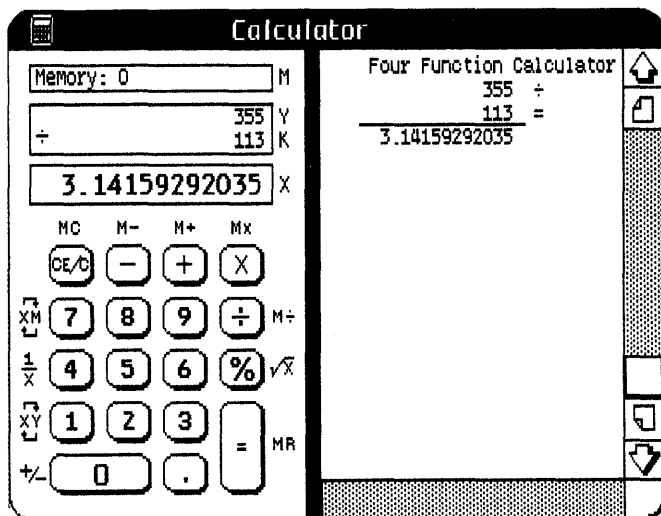


Figure 2. Four Function Calculator

Notice that the transaction tape contains a new symbol, the solid underscore, which indicates the final total of a calculation. In the four function calculator, this is shown each time you click the = key.

Figure 2 shows the registers used by the four function calculator. The K register always contains the current value of the constant. Each time you do a calculation, one of the numbers is stored in the K register as a constant, which can be used repeatedly in other operations of the same kind.

Table 1 shows which number is the constant when you enter two numbers; the constant number is underlined in the column labeled Example.

Table 1. Use of Constants

Function	Example	Operation
Addition	$50 + \underline{25} =$	$50 + 25 = 75$
	$75 + \underline{25} =$	$75 = 100$
Subtraction	$50 - \underline{25} =$	$50 - 25 = 25$
	$75 - \underline{25} =$	$75 = 50$
Multiplication	$\underline{25} \times 7 =$	$25 \times 7 = 175$
	$\underline{25} \times 9 =$	$9 = 225$
Division	$100 \underline{25} =$	$100 \div 25 = 4$
	$200 \underline{25} =$	$200 = 8$

The constant is also replaced when a new function is entered. After a calculation, the Y register contains the other number that was used. The X register, which is always displayed, contains the result.

The percentage key performs the following four functions: (1) Finds the specified percentage of a number, (2) finds the percentage of one number relative to another, (3) calculates percent markups, and (4) calculates percent discounts.

To find 25% of 1,200:

- 1 ► Type 1200
- 2 ► Click \times
- 3 ► Type 25
- 4 ► Click %; 300 is displayed.

To find 108 as a percentage of 360:

- 1 ► Type 108
- 2 ► Click \div
- 3 ► Type 360
- 4 ► Click %; 30 is displayed.

To find the retail price of a \$50 item to be marked up 60%:

- 1 ► Type 50
- 2 ► Click +
- 3 ► Type 60
- 4 ► Click %; 80 is displayed.

To find the price of an \$80 item that is discounted 30%:

- 1 ► Type 80
- 2 ► Click -
- 3 ► Type 30
- 4 ► Click %; 56 is displayed.

The four function calculator is shown in Figure 3.

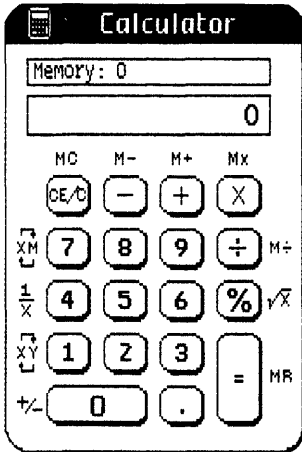


Figure 3. Four Function Calculator

The following brief descriptions explain the functions of the keys on the four function calculator.

Clears the number displayed when pushed once;
clears the entire calculator when pushed twice.




Clears the memory.

MC


Totals the pending operation and causes the next
number entered to be subtracted from the total.




Subtracts the number displayed from the number in memory. M-

Totals the pending operation and causes the next number entered to be added to the total. 


Adds the number displayed to the number in memory. M+


Totals the pending operation and causes the next number entered to be multiplied by the total. 


Multiplies the number in memory by the number displayed. Mx

Totals the pending operation and causes the next number entered to be divided into the total. 

Divides the number in memory by the number currently displayed. M÷

Finds percentages and performs add-on discount calculations. 

Finds the square root of the number displayed. 

Totals the pending operation. 

Recalls the number in memory and displays it in the register displayed, that is, the X register. MR

Changes the sign of the number displayed. +/-

Exchanges the number displayed, X, with the number entered last, Y. $\begin{array}{c} \updownarrow \\ XY \\ \updownarrow \end{array}$

Finds the reciprocal of the number displayed, X. $\frac{1}{X}$

Exchanges the number displayed, X, with the number in memory, M. $\begin{array}{c} \updownarrow \\ XM \\ \updownarrow \end{array}$

Reverse Polish Calculator

The reverse Polish calculator uses a four-register stack and a mathematical convention known as Reverse Polish Notation for entering equations. This calculator is a bit tricky to get used to, but it is often more convenient when you are working with long or complex equations.

With Reverse Polish Notation, you first enter the numbers you are working with and then press the function key. The calculator executes the function immediately and stores the results automatically. These results are used in subsequent calculations, if appropriate. You can work through an equation the same way you would by hand, without working out the order of calculations ahead of time. The example below illustrates how you enter equations.

To divide 355 by 113:

- 1 ► Type 355
- 2 ► Click Enter
- 3 ► Type 113
- 4 ► Click ÷

To calculate the previous problem using the numeric keypad instead of the mouse:

- 1 ► Press 355 on the numeric keypad.
- 2 ► Press the [ENTER] key.
- 3 ► Press 113
- 4 ► Press /

Figure 4 shows the result of either calculation. Both **Show Tape** and **Show Registers** have been chosen from the **Customize** menu.

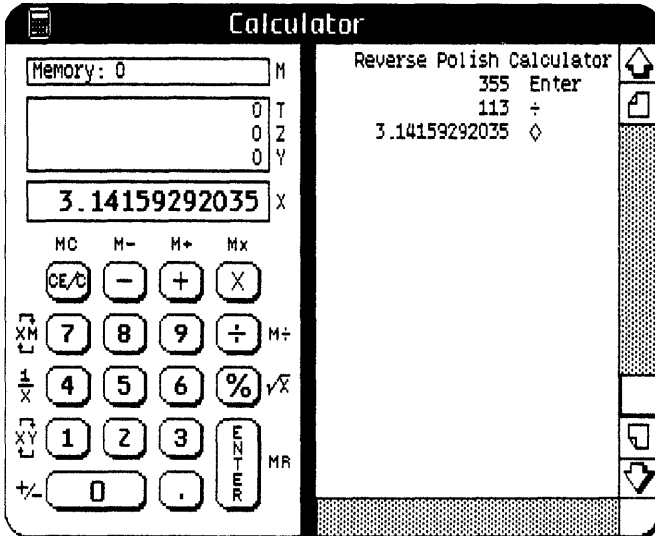


Figure 4. Reverse Polish Calculator, Example 1

The stack consists of the X, Y, Z, and T (top of stack) registers, which function as if they were stacked one on top of the other, with the X register on the bottom. The X register contains the result of the last operation or the last value you typed in. Clicking Enter pushes everything one register up the stack. That is, the contents of the X, Y, and Z registers are copied to the Y, Z, and T registers, respectively; the contents of the T register are lost off the top of the stack.

Clicking on any of the four basic functions (+, −, ×, ÷) drops everything one register down the stack. The result of the operation is stored in the X register and the contents of the Z and T registers are copied to the Y and Z registers, respectively. The T register is not changed.

The four basic functions always operate on the contents of the X and Y registers. Though the results are initially stored only in the X register, the results are pushed onto the stack if you enter a number immediately afterward. The reciprocal and square-root functions operate on the contents of the X register only; the calculator will still push the results onto the stack if you enter a number immediately afterward.

The transaction tape shows the numbers you enter, the functions and operations you request, and the resulting values. The results of any calculation are identified by a diamond (◇) on the tape.

To solve $7+3/(17\times 34)$:

- 1 ► Type 7; 7 is displayed.
- 2 ► Click Enter
- 3 ► Type 3; 3 is displayed.
- 4 ► Click Enter
- 5 ► Type 17; 17 is displayed.
- 6 ► Click Enter
- 7 ► Type 34; 34 is displayed.
- 8 ► Click ×; 578 is displayed.
- 9 ► Click ÷; .005190311419 is displayed.
- 10 ► Click +; 7.00519031142 is displayed.

Figure 5 shows this calculation on the transaction tape.

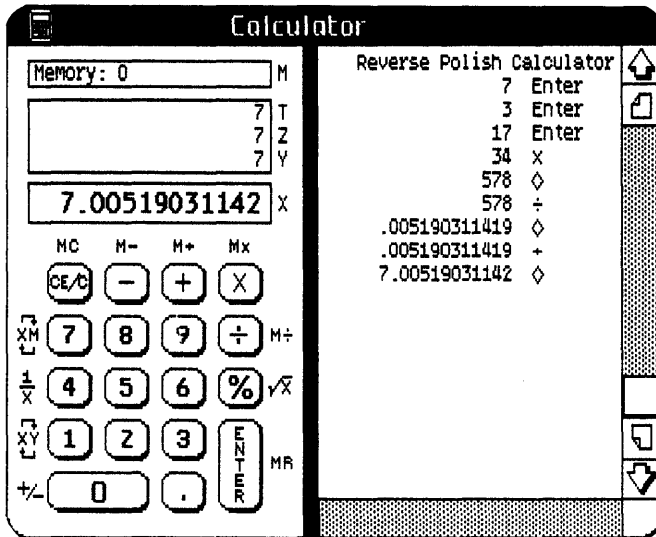


Figure 5. Reverse Polish Calculator, Example 2

To find 25% of 200:

- 1 ► Type 200
- 2 ► Click Enter
- 3 ► Type 25
- 4 ► Click %; 50 is displayed.

To find the retail price of a \$75 item to be marked up 30%:

- 1 ► Type 75
- 2 ► Click Enter
- 3 ► Type 30
- 4 ► Click %; 22.5 is displayed.
- 5 ► Click +; 97.5 is displayed.

To find the price of a \$90 item discounted by 35%:

- 1 ► Type 90
- 2 ► Click Enter
- 3 ► Type 35
- 4 ► Click %; 31.5 is displayed.
- 5 ► Click -; 58.5 is displayed.

The reverse Polish calculator is shown in Figure 6.

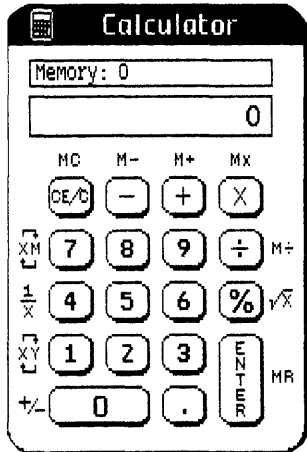


Figure 6. Reverse Polish Calculator

The following brief descriptions explain the functions of the keys on the reverse Polish calculator.

Clears the number displayed when pushed once;
clears the entire calculator when pushed twice.



Clears the memory.

MC

Subtracts the number displayed from the number
in the Y register.



Subtracts the number displayed from the number in memory. M-

Adds the number displayed to the number in the Y register.



Adds the number displayed to the number in memory. M+

Multiplies the number displayed by the number in the Y register.



Multiplies the number in memory by the number displayed. MX

Divides the number in the Y register by the number displayed.



Divides the number in memory by the number currently displayed. M÷

Finds the percentage represented by the number displayed divided by the number in the Y register with add-on discount calculations.



Finds the square root of the number displayed. \sqrt{x}



Enters or "pushes" the number displayed onto the four-level stack. All numbers in the stack are also pushed up one level, and the last number in the stack is lost.



Recalls and displays the number in memory.	MR
Changes the sign of the number displayed.	+/-
Exchanges the number displayed, X, with the last number entered, Y.	$\begin{array}{ c} \hline \updownarrow \\ \hline XY \\ \hline \downarrow \uparrow \\ \hline \end{array}$
Finds the reciprocal of the number displayed, X.	$\frac{1}{X}$
Exchanges the number displayed, X, with the number in memory, M.	$\begin{array}{ c} \hline \updownarrow \\ \hline XM \\ \hline \downarrow \uparrow \\ \hline \end{array}$

Adding Machine

This calculator is like a financial adding machine. The adding machine adds and subtracts long strings of numbers, computes credit balances, and performs percent markup and discount calculations. The adding machine calculator has a subtotal key and a calculation register containing the current value of chain operations. It also can print numbers, such as dates and codes, on the transaction tape without using them in the calculation. These features are shown in the following example.

To solve $11+22+44+55+66$ with a subtotal taken after the second addition and the number 55 printed before it is entered into the calculation:

- 1 ► Type 11
- 2 ► Click +=
- 3 ► Type 22
- 4 ► Click +=
- 5 ► Click #/◇; see Figure 7 now.
- 6 ► Type 44
- 7 ► Click +=
- 8 ► Type 55
- 9 ► Click #/◇
- 10 ► Click +=; see Figure 8 now.
- 11 ► Type 66
- 12 ► Click +=
- 13 ► Click Total; see Figure 9 now.

In Figure 7, the subtotal 33 has been stored in the calculation register (labeled \diamond), displayed in the X register, and shown on the transaction tape. The dotted underscore indicates that a subtotal was taken; the actual value of the subtotal is labeled \diamond Total.

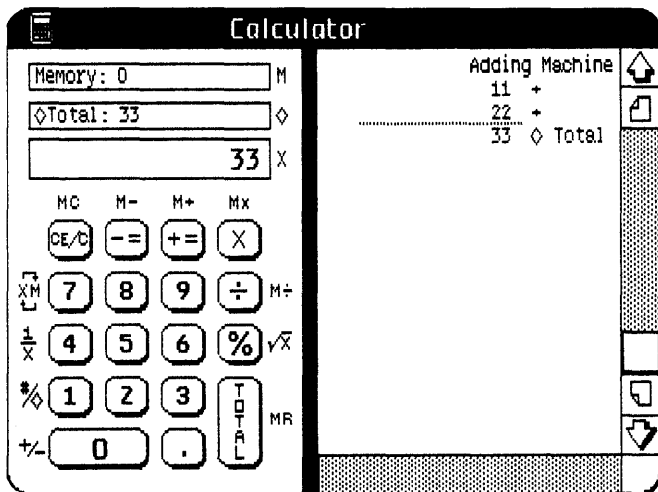


Figure 7. Adding Machine, Example 1

In Figure 8, the number 55 has been shown and then entered into the calculation. A number that is shown without being entered into a calculation is labeled #.

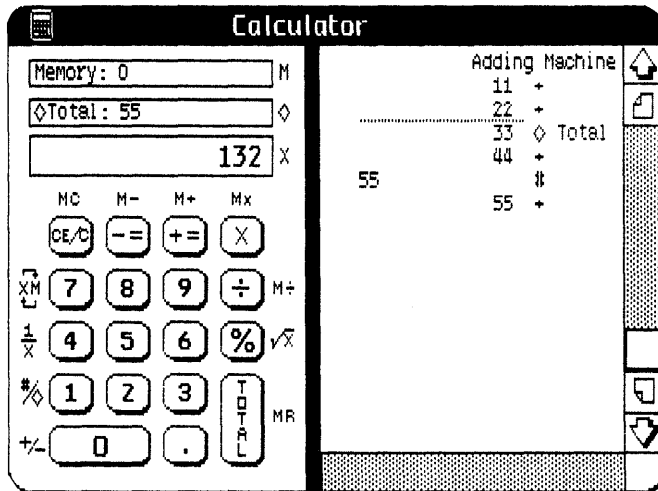


Figure 8. Adding Machine, Example 2

In Figure 9, the final result is displayed in the X register and shown on the tape. The solid underscore indicates that a total was taken; the value is labeled Total. The calculation register is cleared and the calculator is ready to begin another problem.

Remember that an alternative to using the mouse is the numeric keypad. Pressing a key on the keypad temporarily highlights the corresponding calculator key on the screen.

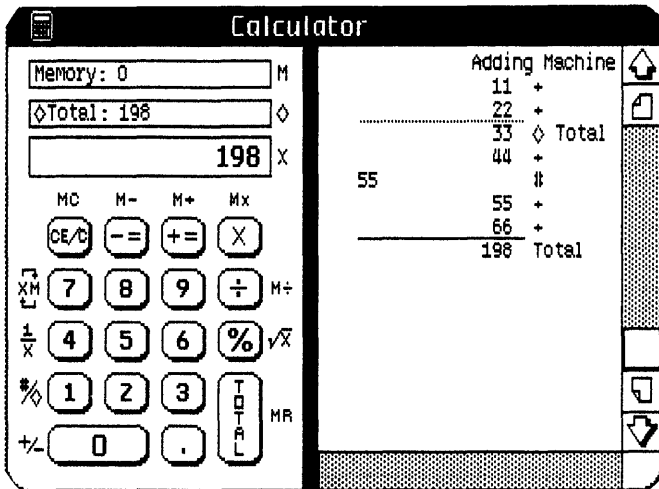


Figure 9. Adding Machine, Example 3

Clicking Total affects only addition and subtraction and will not give you the answers to multiplication or division problems.

To solve $(10+2) \times 5$:

- 1 ► Type 10
- 2 ► Click +=
- 3 ► Type 2
- 4 ► Click +=
- 5 ► Click X
- 6 ► Type 5
- 7 ► Click +=; 60 is displayed.

To solve $5 \times 2 + 12$:

- 1 ► Type 5
- 2 ► Click \times
- 3 ► Type 2
- 4 ► Click $+=$ to perform the multiplication.
- 5 ► Click $+=$
- 6 ► Type 12
- 7 ► Click $+=$; 22 is displayed.
- 8 ► Click Total to print 22 on the tape.

Percentage calculations on the adding machine are similar to those on the four function calculator. Percent markup and discount calculations must be entered differently.

To find 25% of 175:

- 1 ► Type 175
- 2 ► Click \times
- 3 ► Type 25
- 4 ► Click %; 43.75 is displayed.

To express 125 as a percentage of 500:

- 1 ► Type 125
- 2 ► Click \div
- 3 ► Type 500
- 4 ► Click %; 25 is displayed.

To find the total cost of a \$69.95 item, given 6.5% sales tax:

- 1 ► Type 69.95
- 2 ► Click \times
- 3 ► Type 6.5
- 4 ► Click $\%$
- 5 ► Click $+=$; 74.49675 is displayed.

To find the price of a \$79.95 item that is discounted 30%:

- 1 ► Type 79.95
- 2 ► Click \times
- 3 ► Type 30
- 4 ► Click $\%$
- 5 ► Click $-=$; 55.965 is displayed.

The adding machine is shown in Figure 10.

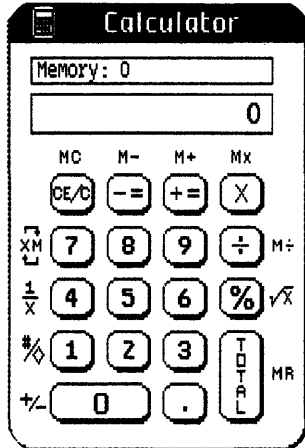


Figure 10. Adding Machine

The following brief descriptions explain the functions of the keys on the adding machine.

Clears the number displayed when pushed once;
clears the entire calculator when pushed twice.



Clears the memory.

MC

Subtracts the value displayed from the contents
of the calculation register; obtains the product or
quotient in negative multiplication and division.



Subtracts the number displayed from the number in memory.

M-

Adds the value displayed to the contents of the calculation register; obtains the results in multiplication and division.



Adds the number displayed to the number in memory.

M+

Completes any pending multiplication or division and specifies that the next number entered is to be multiplied by the total.



Multiplies the number in memory by the number displayed.

MX

Completes any pending multiplication or division and causes the next number entered to be divided into the total.



Divides the number in memory by the number displayed.

M÷

Finds percentages and performs add-on discount calculations.



Finds the square root of the number displayed.



Displays the total and clears the calculation register.



Recalls and displays the number in memory.	MR
Changes the sign of the number displayed.	+/-
Immediately after an operation, displays the subtotal. Otherwise, displays on the left side of the tape any keys pressed since the last operation. Can be used to show dates or codes, which can then be cleared before calculations are continued.	#/□
Finds the reciprocal of the number displayed, X.	$\frac{1}{X}$
Exchanges the number displayed, X, with the number in memory, M.	$\begin{array}{c} \updownarrow \\ XM \\ \updownarrow \end{array}$

Calculator Menus

EDIT MENU

Restores the Calculator to its state before the last operation. If you undo a Cut or Copy, the previous contents of the Clipboard are restored; however, the value in the Calculator is lost.

Copies the Calculator's display value onto the Clipboard and clears the Calculator's display.

Copies the Calculator's display value onto the Clipboard.

Enters the number currently on the Clipboard into the Calculator's display.

Clears the Calculator's display and all of its registers. This is equivalent to clicking the CE/C key twice.

Erases the Calculator's transaction tape, if it is being displayed.

Edit	
Undo Last Change	
Cut	⌘X
Copy	⌘C
Paste	⌘V
Clear All	
Clear Tape	

FORMAT MENU

Displays all digits to the left of the decimal point and as many digits to the right of it as there is room for.

Displays zero, one, two, three, or four digits to the right of the decimal point, if there is room.

Turns on or off rounding the results to the number of digits specified in the display format.

Automatically enters the decimal point in the location indicated by the display format, or allows you to enter the decimal point yourself.

Format

Floating Decimal

0.

0.0

0.00

0.000

0.0000

Rounding of Results

No Rounding of Results

Automatic Decimal Point

Keypad Decimal Point

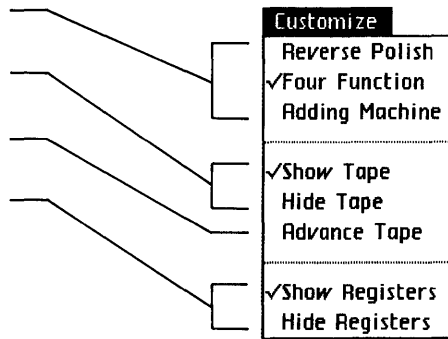
CUSTOMIZE MENU

Selects type of calculator to be used.

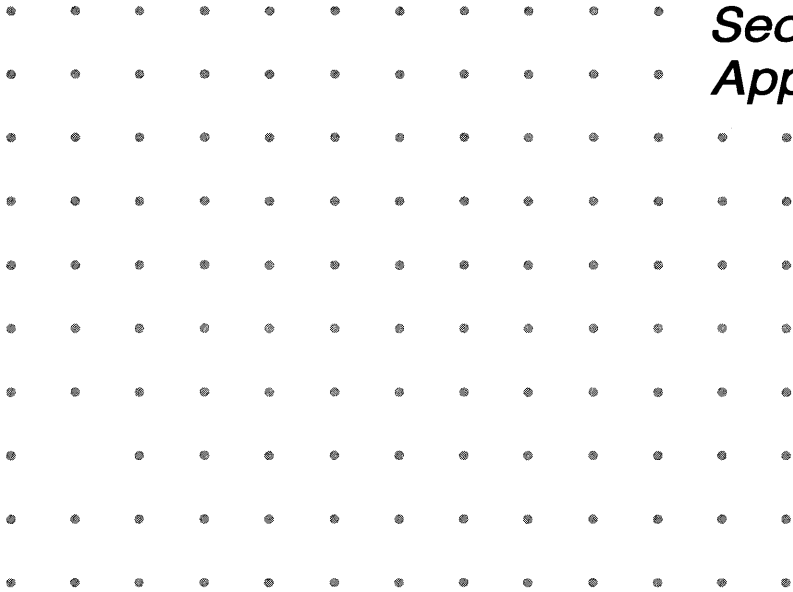
Displays or hides the transaction tape.

Advances the transaction tape by one line.

Shows or hides registers.



Section G
Appendixes



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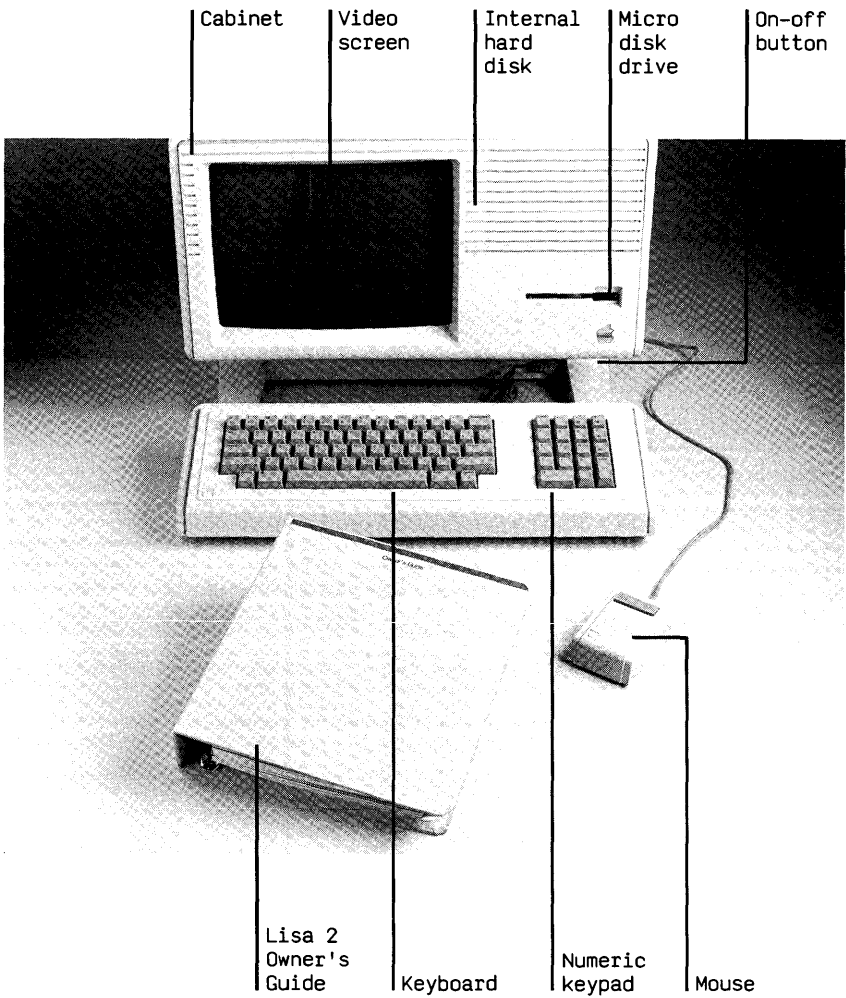
Appendix 1

Setup Procedures

UNPACKING THE LISA

The Lisa 2 system comes in several boxes. The system includes:

- Lisa 2 cabinet.
- Disk drive module (either installed in the cabinet or packaged separately).
- Add-on memory card (optional).
- Keyboard.
- Mouse.
- *Lisa 2 Owner's Guide*.
- Four micro diskettes containing the Office System software.
- Two blank micro diskettes.
- The LisaGuide micro diskette, which contains a tutorial on the Lisa desktop.



Cabinet

Video
screen

Internal
hard
disk

Micro
disk
drive

On-off
button

Lisa 2
Owner's
Guide

Keyboard

Numeric
keypad

Mouse

To unpack your Lisa:

- 1 ► Following the instructions printed on the large box, slide the Lisa cabinet out of the box. Remove the foam padding.
- 2 ► Set the cabinet on a hard, flat surface. Leave at least 2 inches of clearance on each side to allow for proper ventilation.
- 3 ► Unpack the keyboard and mouse from the accessories box.
- 4 ► Unpack the two smaller boxes containing the disk drive module and the add-on memory board.

Retain the disk drive module carton, which can be used to transport the module if it needs servicing.

INSTALLING THE DISK DRIVE MODULE

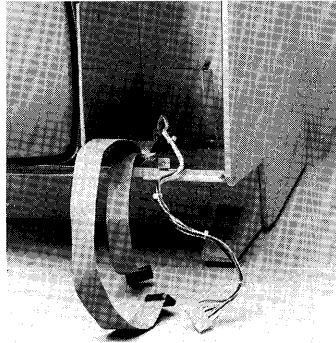
If your disk drive module has already been installed in the Lisa cabinet, skip this part.

- 1 ► Remove the front panel, following this procedure:

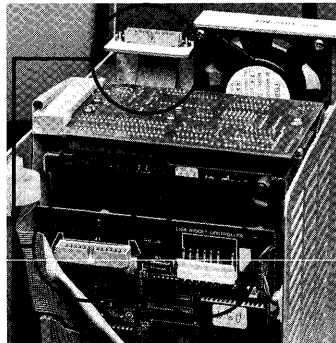
- a. Place one finger on each of the two finger pads beneath the front panel.
- b. Push the pads up to unlatch the panel.
- c. Pull the bottom of the panel forward and out.



- 2 ► Unfasten the two ribbon cables and the power cable.



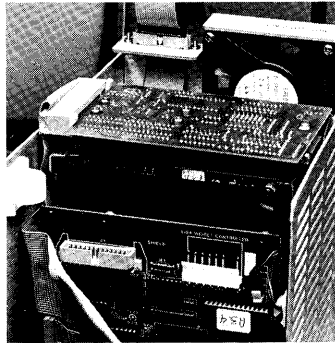
- 3 ► Position the disk drive module as shown in the photo. Your module may look slightly different. Just be sure that you position your module with its connectors in the same relative position.



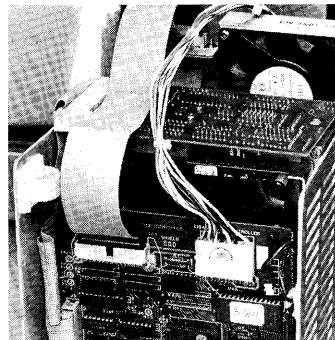
Ribbon
cable
connectors

Power
connector

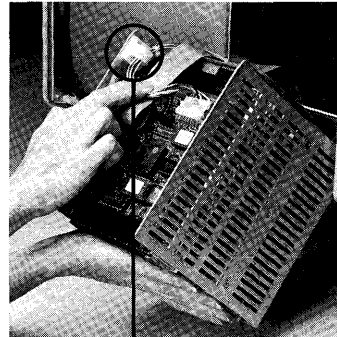
- 4 ► Make sure the ejection latches on either side of the shorter ribbon cable are open (pointing away from each other). Connect the shorter ribbon cable to the connector closest to the cabinet. Press down firmly on the cable connector until the ejection latches click into place.



- 5 ► Make sure the ejection latches are open on the long ribbon cable. Connect the long ribbon cable to the connector closest to you on the left side of the module. Press down firmly on the cable connector until the ejection latches click into place.
- 6 ► Stretch the power cable over the module and connect it.

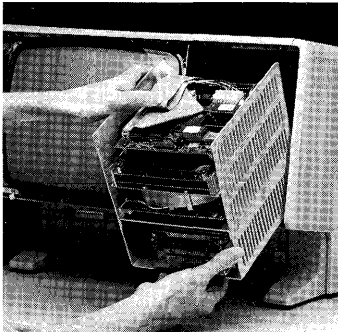


- 7 ► Rotate the disk carrier into the cabinet until there is enough slack in the power cable to tuck the cable under the power cable clamp.

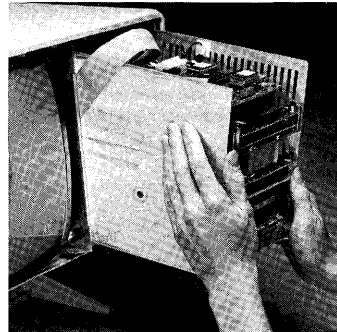


Power
cable
clamp

- 8 ► To avoid catching the long ribbon cable, fold it over the top of the module before pushing the module back into its compartment.



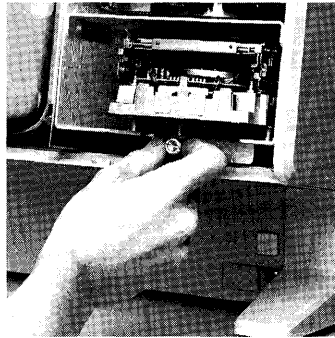
Ribbon cable folded correctly



Folded incorrectly

- 9 ► Carefully slide the module all the way back into its compartment.

- 10 ► Locate the thumbscrew at the base of the module. To secure the module, push in on the screw and turn it clockwise until it is snug.



If you want to install the glare filter, follow the instructions that come next. Otherwise, follow the instructions in step 8, under Installing the Glare Filter, to replace the front panel.

INSTALLING THE GLARE FILTER

Under some lighting conditions, reflections can make the video screen hard to read. If glare is a problem on your Lisa, install the glare filter. (If you are installing the glare filter during the initial setup, skip steps 1 through 3 and begin with step 4.)

- 1 ► If the Lisa is on, turn it off by pressing the on-off button. Wait until the power light is off.
- 2 ► Unplug the Lisa at either the back panel or the wall outlet.

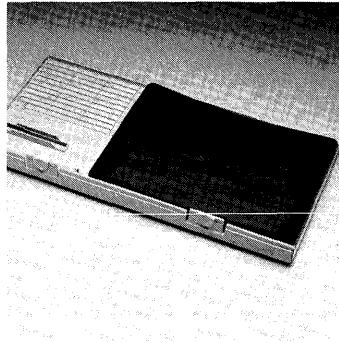


3 ► Remove the front panel, following this procedure:

- a. Place one finger on each of the two finger pads beneath the front panel.
- b. Push the pads up to unlatch the panel.
- c. Pull the panel forward and out.

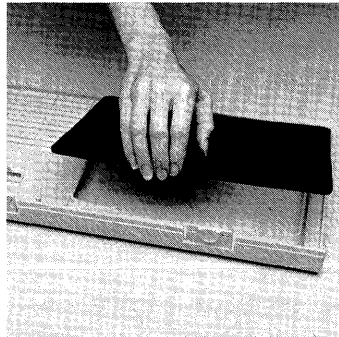


4 ► Set the panel on a flat surface, face down.

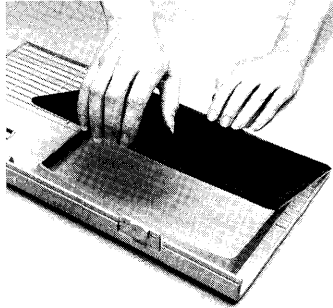


5 ► Center the glare filter over the opening inside the front panel.

Hold the glare filter against the clip along the upper edge of the front panel, at a 45-degree angle.

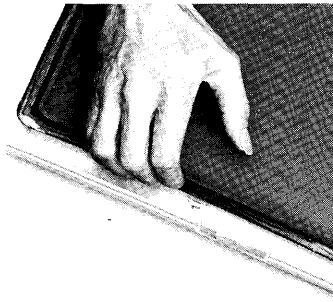


- 6 ► While pressing down on the frame at the upper clip, rotate the lower edge until the frame slides under the upper clip.



Continue rotating the screen until it lies flat against the panel.

- 7 ► Push the lower edge of the frame in until it clears the lower clip, and then let it slide into place behind the clip.

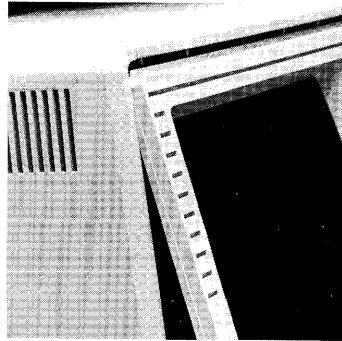


Make sure the filter fits neatly around the frame and under the clips.

- 8 ► Replace the front panel, following this procedure:
- a. Hold the panel with one finger on each pad along the bottom edge.



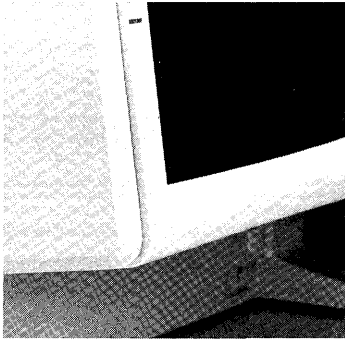
- b. Insert the upper edge of the panel behind the lip of the top housing on the cabinet.



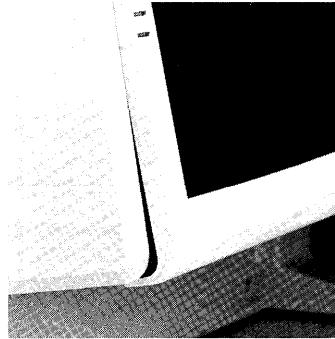
- c. Pressing the finger pads up, push the bottom edge of the panel against the cabinet until the panel clicks into place.



Make sure the front panel is securely in place as shown in the photo. If the front panel is not securely in place, a safety interlock switch will prevent you from turning the Lisa on.



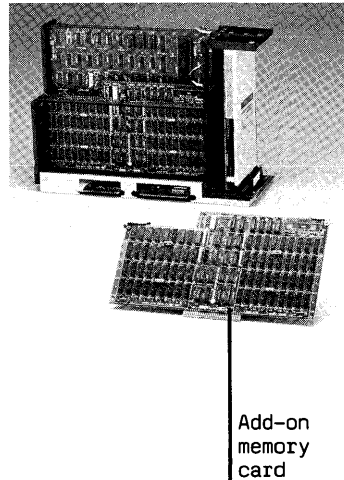
Correct installation



Incorrect installation

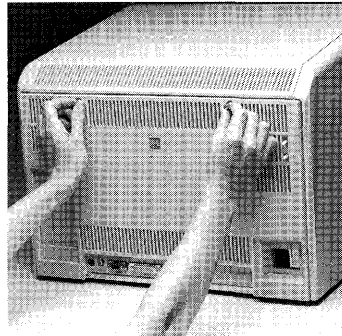
INSTALLING THE MEMORY CARD

Your Lisa system comes with a 1/2-megabyte memory card already installed in the card cage. To increase the capacity of your system, you can purchase an add-on memory card.

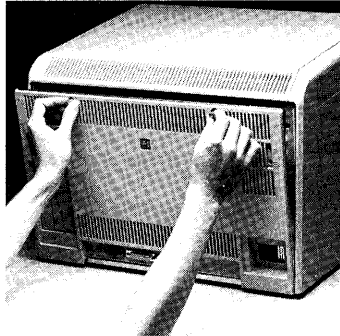


To install an add-on memory card:

- 1 ► Remove the back panel, following this procedure:
 - a. Turn the two thumbscrews along the upper edge counterclockwise until they won't turn any further. These screws loosen but do not come free from the back panel.

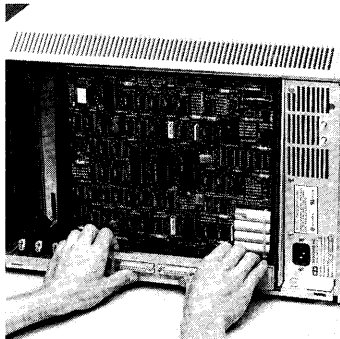


- b. Pull the panel slightly toward you and up.



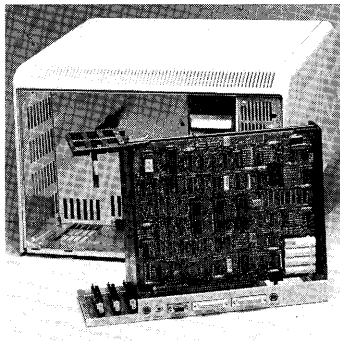
- 2 ► Remove the card cage by pulling the bar that runs just above the row of connectors along the bottom of the cage.

Brace your thumbs against the lower edge of the cabinet and pull hard on the bar to free the card cage from the interior connectors.

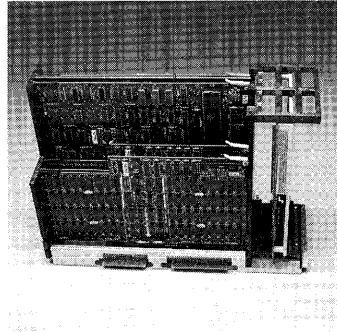


Be careful not to put any pressure on the small components just behind the bar.

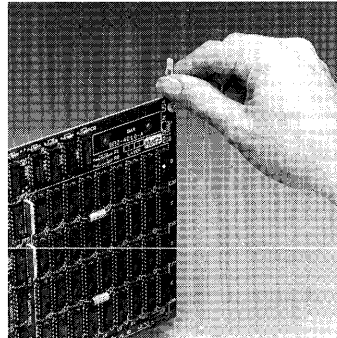
- 3 ► Pull the cage out and set it upright on the table.



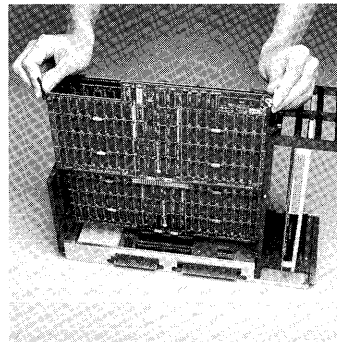
- 4 ▶ Turn the cage around so that the preinstalled memory board is facing you.



- 5 ▶ If the two colored levers on either side of the memory board you are going to install are not already in an up position, flip them up. Handle the board by these levers and the board's plastic edges only.

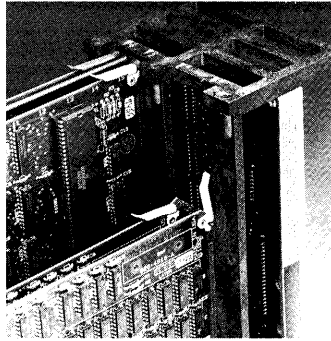


- 6 ▶ Match the colored lever to the same colored triangle on the card cage. Slide the board into the thin grooves along the sides of the card cage.



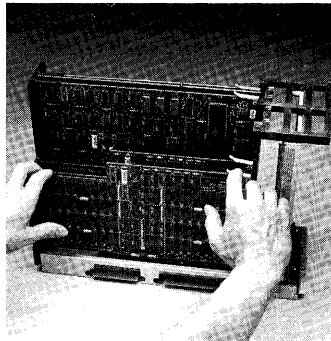
Match the colors

The tabs on the memory boards should be resting on the black plastic frame.

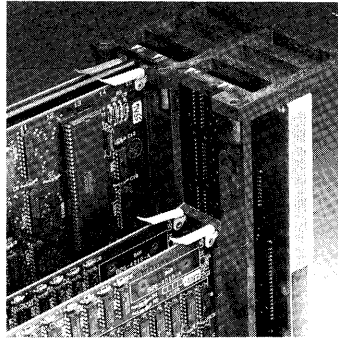


- 7 ► Carefully push down the levers simultaneously to lock the board into place.

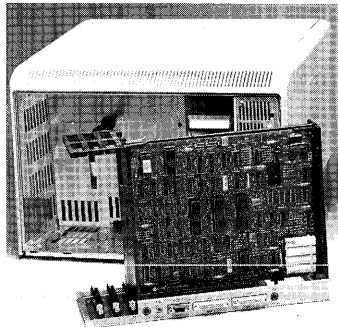
Caution: If the board doesn't lock easily, make sure the board is centered over the slot. Don't touch the gold fingers; use your finger to move the board so that the gold fingers are aligned over the slot, as shown in the photo.



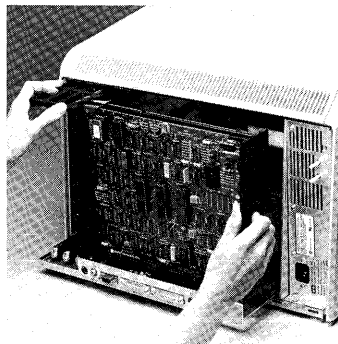
- 8 ► At this point, the rounded tabs below the levers should be set in the lower notches on the plastic card cage.



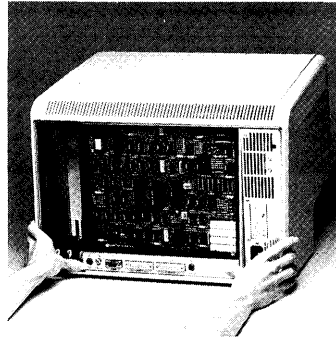
- 9 ► Turn the card cage around again so that the memory board you just installed is away from you and closer to the cabinet.



- 10 ► Holding the card cage by the plastic frame, slide it back into the cabinet.



- 11 ► The cage will offer some resistance for the last 1/4 inch as the card cage connectors slide into their slots inside the cabinet. Hold the frame with your fingers and press with your thumbs against the bottom of the cage. The cage is installed when the panel along the bottom is just inside the bottom edge of the cabinet.



If you are installing peripheral devices that connect to the Lisa through expansion cards, install the cards before replacing the back panel. Look at the documentation that came with the device to determine whether or not the device requires an expansion card. Instructions for installing an expansion card are given below and also come packaged with the card.

Note: Neither the Apple Daisy Wheel nor the Apple Imagewriter printer requires an expansion card. Brief instructions for installing these printers come later in this section. More detailed documentation comes packaged with the printers.

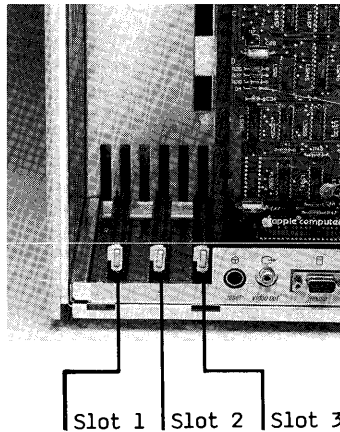
- 12 ► If you don't need to install an expansion card, replace the back panel following the instructions given in Installing an Expansion Card, step 9.

INSTALLING AN EXPANSION CARD

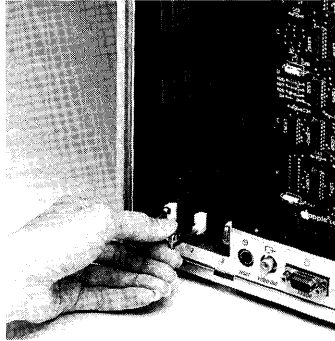
If you want to connect a peripheral device such as another hard disk, you may first need to add an expansion card to the Lisa to accommodate the device. Expansion cards are installed in the expansion slots in the card cage.

- 1 ► Before replacing the back panel of the Lisa, determine if your peripheral device requires an interface card. The documentation that comes with the device should tell you this. If you don't need an expansion card, skip these instructions.
- 2 ► Determine which of the three expansion slots on the lower left of the card cage will hold the card.

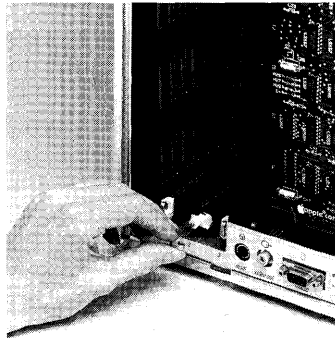
In general, parallel interface cards should be installed in slot 2 or slot 3. See the documentation that came with your expansion card.



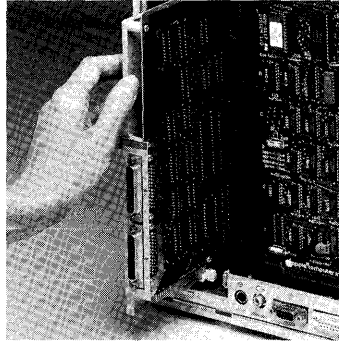
- 3 ► Pull out the metal lever extending from the plastic cap in front of the card slot.



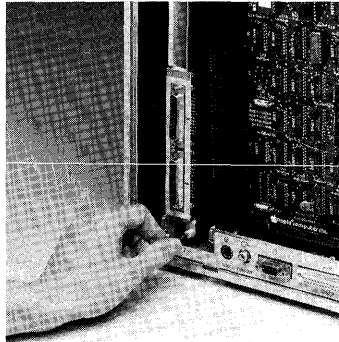
- 4 ► Turn the lever clockwise 90 degrees, to the 3 o'clock position. In a new system, this lever is very tight, and you may need small pliers to turn it.



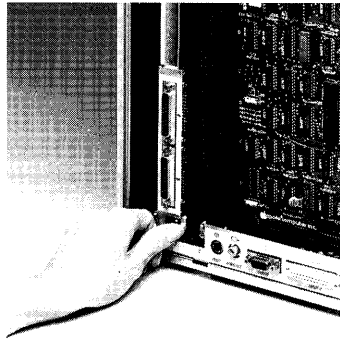
- 5 ► Hold the expansion card by the metal edge, with the green plastic card facing right and the white cover facing left. Insert the bottom of the green card into the connector slot and the top of the green card into the plastic slot above the connector. Slide the card evenly into the cage as far as it will go.



- 6 ► Turn the metal lever counterclockwise 90 degrees, back to the 12 o'clock position.



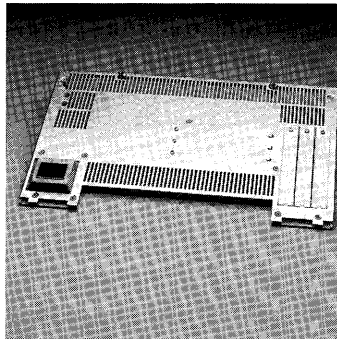
- 7 ► Push the lever back into the plastic cap.



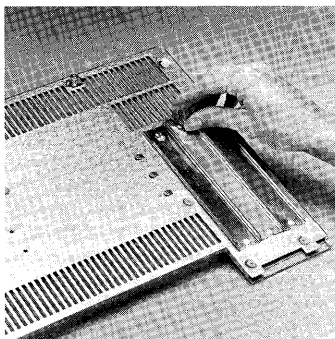
- 8 ► A set of slot covers on the Lisa's back panel blocks the electromagnetic emissions from inside the cabinet. If you have just installed a card into a slot that did not previously contain a card, follow steps a through f for removing the cover that protects that slot.

Otherwise, skip the lettered instructions and go to step 9 to replace the back panel.

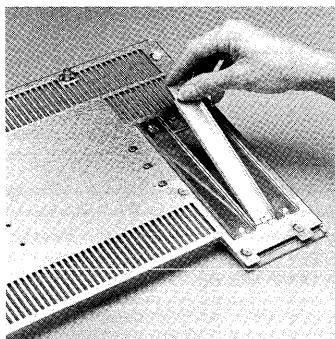
- a. On the back panel, locate the slot cover for the slot in which you just installed a card.



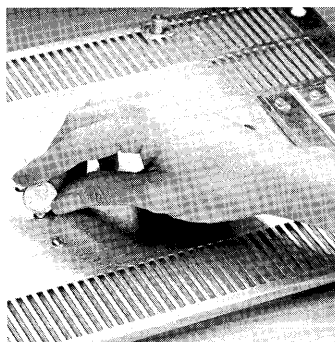
- b. Loosen the screw at the top of the metal plate. (If you don't have a screwdriver, a coin will work nicely.)



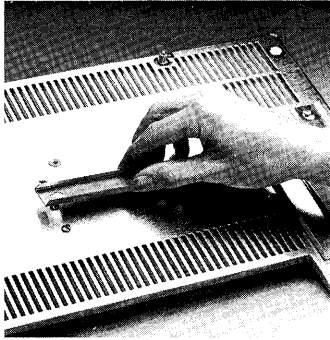
- c. Pull the plate over the screw head and out from behind the retaining tab.



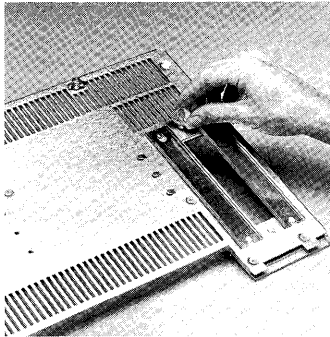
- d. Loosen one of the three screws in the middle of the back panel.



- e. Slide the metal plate behind the retaining tab and over the head of the screw.

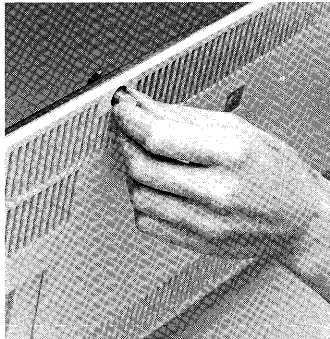


- f. Tighten both screws.

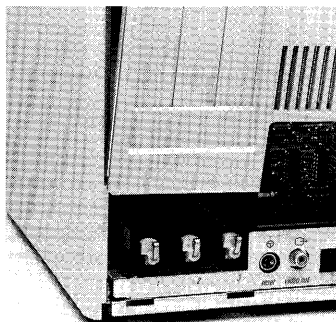


9 ► Replace the back panel, following this procedure:

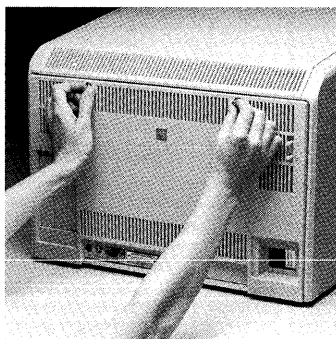
- a. Make sure the metal prongs attached to the two screws on the panel are pointed to the left.



- b. Insert the four tabs along the lower edge of the back panel into the slots at the base of the cabinet.

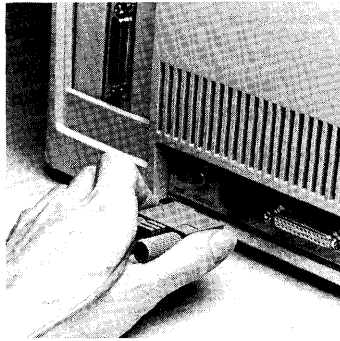


- c. Push the panel flat against the back of the cabinet. Turn the two thumbscrews clockwise until they are snug.

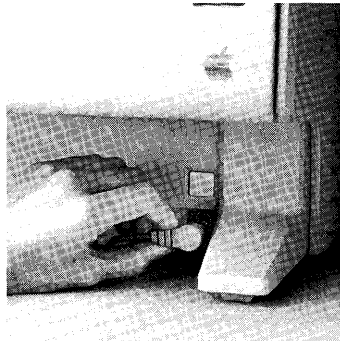


INSTALLING THE MOUSE, KEYBOARD, AND POWER CORD

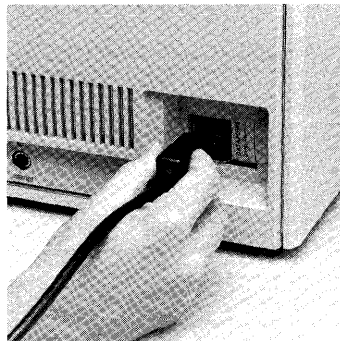
- 1 ► Plug the mouse cord into the back of the cabinet and tighten the two screws.



- 2 ► Plug the keyboard cord into the front of the cabinet.



- 3 ► Plug the power cord into the back of the Lisa, and then into a grounded, 115-volt electrical outlet.



Warning

This equipment is intended to be electrically grounded. The Lisa is equipped with a three-wire grounding-type plug, which is a plug having a third (grounding) pin. This pin will fit only into a grounding-type AC outlet. If you are unable to insert the plug into the outlet, have a licensed electrician replace the outlet and, if necessary, install a grounding conductor. **DO NOT DEFEAT THE PURPOSE OF THE THREE-WIRE PLUG.**

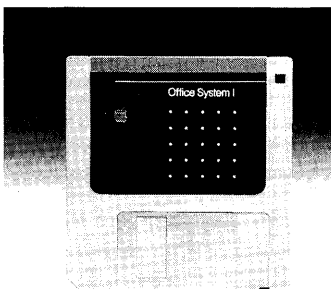
INSTALLING THE OFFICE SYSTEM SOFTWARE

The following procedures are applicable only if you are installing the Office System software on a new (blank) disk or if you want to replace or reinstall all the Office System software while at the same time eliminating all documents. This procedure will erase all documents you have on the disk. To reinstall the Office System software without erasing existing documents, see *Disks and Micro Diskettes, Using Hard Disks*, in Section B, *Desktop Manager Reference Guide*.

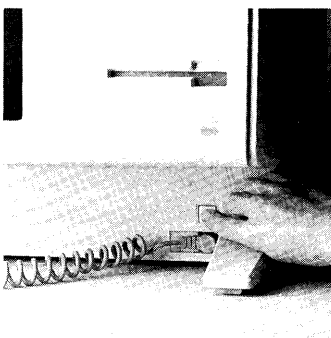
You don't need to reinstall the Office System software if you only want to reinstall or add Lisa tools (for example, LisaCalc or LisaList). You'll find the instructions for installing tools later in this section.

The Lisa Office System is transferred to the hard disk from the four micro diskettes, called Office System 1, 2, 3, and 4. These come packaged in the Office System binder. You will need to install software from all four Office System disks before you can begin your work on the Lisa.

- 1 ► Get out the four Office System micro diskettes.



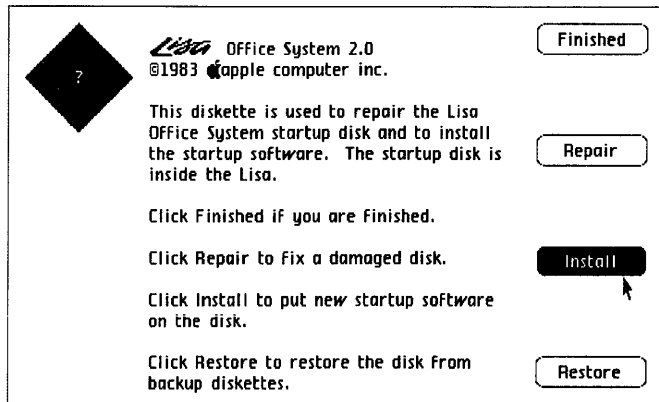
- 2 ► If the Lisa is on, turn it off by pressing the on-off button once.



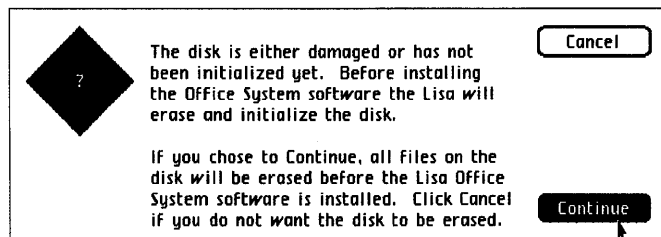
- 3 ► Insert the Office System 1 micro diskette into the drive. Make sure the arrow embossed on the diskette points toward the drive.



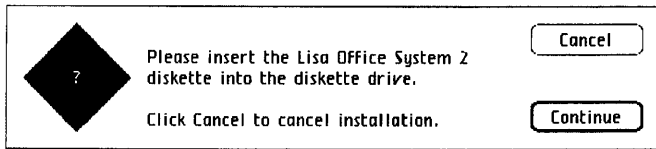
- 4 ▶ Turn the Lisa on by pressing the on-off button once. After a few seconds, you'll hear a click. Immediately press and hold down the Apple key and the 2 on the main keyboard, not the 2 on the numeric key pad.
- 5 ▶ The Lisa goes through a self-test. When this main menu appears, move the mouse on your desk until the pointer is over the box that says Install. Click the mouse button once to select the Install box.



- 6 ▶ If this message appears, move the mouse until the pointer is over the box that says Continue. Click the mouse button once to select the box.

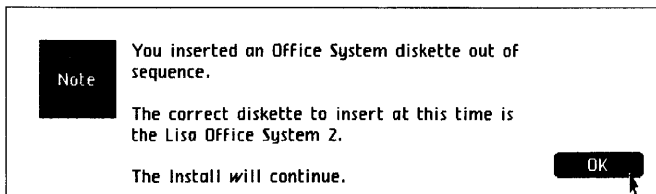


A Wait message appears, telling you that the diskette is being erased and initialized. After a couple of minutes, another Wait message tells you that the Lisa is installing software. In a few seconds, the diskette is ejected from the drive. The message on the screen tells you to load the next Office System diskette.



- 7 ► Take out the Office System 1 diskette from the drive and insert the Office System 2 diskette as prompted.
- 8 ► Insert the remaining diskettes when you are prompted. If you cancel the Office System install procedures before installing software from all four diskettes, you will have to repeat the procedure beginning with Office System 1. You won't be able to do work on the system until software from all four diskettes has been installed.

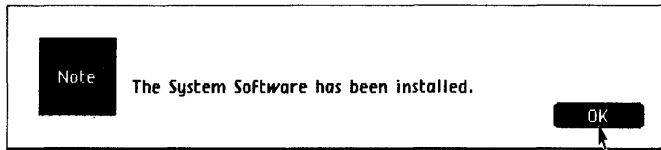
If you insert an Office System diskette out of sequence, the diskette is ejected and this message appears.



If this happens, replace the diskette that is out of sequence with the right one. Click Continue; the install procedure continues automatically.

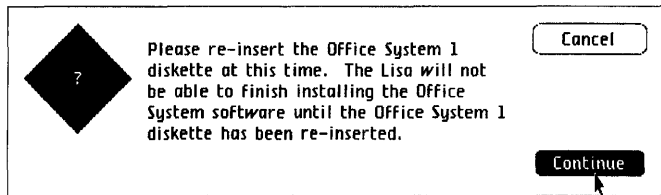


- 9 ► After the Lisa has installed the software from the Office System 4 diskette, this message appears.

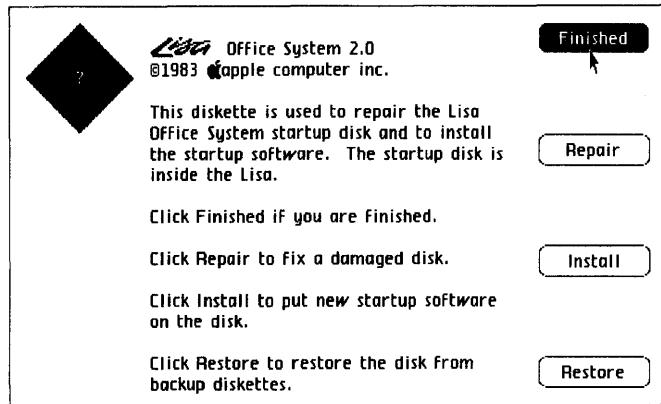


Click OK.

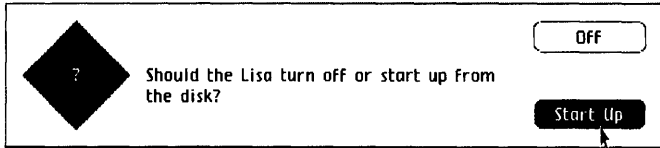
- 10 ► When prompted, reinsert the Office System 1 diskette.



- 11 ► When the main menu appears, click Finished.



- 12 ► When this message appears, click Start Up. In a few minutes your desktop appears on the screen with various icons. Now you are ready to install the Lisa tools you purchased for your system.



- 13 ► The next message reminds you to set your clock / calendar. Click OK.

- 14 ► To set the clock / calendar :

- a. Open the internal hard disk icon by clicking twice on the icon.
- b. Find the Tools folder in the disk window and open it.
- c. Find the clock / calendar icon and move it next to the Preferences icon on the desktop. To do this, position the pointer on the clock icon, press and hold down the mouse button, and move the pointer to the left of the Preferences icon.
- d. Open the clock / calendar icon by choosing **Open "Clock"** from the **File/Print** menu.
- e. Click on the hour and then type the correct hour.
- f. Press [TAB] and correct the minutes.
- g. Continue tabbing and typing until the time and date are correct.
- h. Close the clock icon by choosing **Set Aside "Clock"** from the **File/Print** menu.




- 15 ► To put the Calculator on the desktop:
 - a. Find the calculator in the Tools folder window, and move it onto the desktop, next to the clock icon.
 - b. Put the Tools folder away by activating its window and choosing **Save & Put Away "Tools"** from the **File/Print** menu.

INSTALLING/DUPLICATING TOOLS

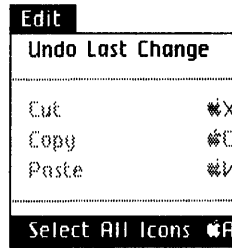
Each of the Lisa master tool micro diskettes comes packaged with individual manuals. It is a good idea to make a backup copy of these tool masters. The following procedures tell you how to install a tool and how to make a backup copy of the tool. After the initial installation of a tool, use the backup copy to reinstall the tool if needed.

Note: Once the master tool is copied, the copy can only be used on the Lisa on which the copy was made. The master tool itself, while usable on any Lisa, can only make tool copies for the Lisa on which the first tool copy was made.

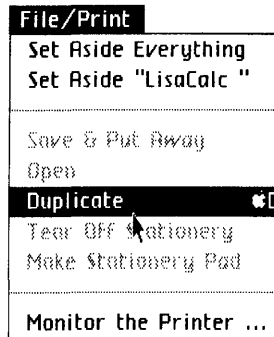
To install a Lisa tool:

- 1 ► Make sure your Lisa is on and the screen shows the desktop.
- 2 ► Insert the master tool micro diskette into the disk drive. The icon for the disk appears on the screen.
- 3 ► Open the tool icon. To do so, position the pointer on the disk icon and press (click) the mouse button twice in quick succession.

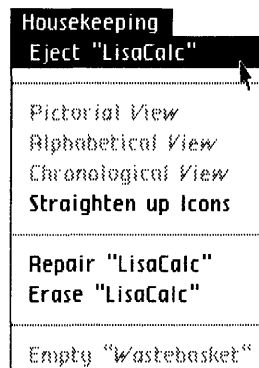
- 4 ► Open the **Edit** menu and choose **Select All Icons**. The tool icon, tool paper, and the tool example folder are highlighted.



- 5 ► Make duplicates of the tool disk icons. Choose **Duplicate** from the **File/Print** menu. Blinking duplicate copies of the icons appear on your screen.



- 6 ► Move the duplicates of the icons to the hard disk window. Move the duplicate of the tool icon to the Tools folder.
- 7 ► Eject the master tool diskette from the disk drive. Choose **Eject "tool name"** from the **Housekeeping** menu. Remove the diskette from the drive and put it in a safe place.



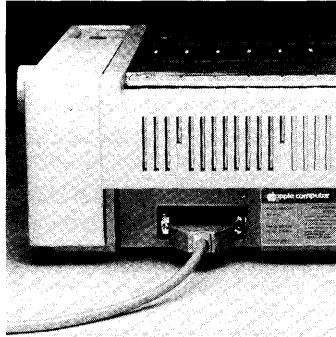
- 8 ► Insert a blank micro diskette into the drive. If you get a message asking whether you want the disk initialized, click **Initialize**. Wait for the disk's icon to appear on the desktop.
- 9 ► Open the **Tools** folder on the internal hard disk. Find the tool you just duplicated and select it.
- 10 ► Choose **Duplicate** from the **File/Print** menu.
- 11 ► Move the blinking tool duplicate to the micro diskette icon.
- 12 ► Locate the tool's example folder and the tool paper. Press and hold down the mouse button and pull the pointer so that both icons are selected.
- 13 ► Choose **Duplicate** from the **File/Print** menu.
- 14 ► Move the blinking tool paper and the examples folder duplicates to the micro diskette icon.
- 15 ► Name the new tool diskette by typing a name under the micro diskette icon.
- 16 ► Choose **Eject** from the **Housekeeping** menu. Store the tool copy in a safe place.

SETTING UP THE APPLE IMAGEWRITER PRINTER

Skip this part if you are not connecting an Imagewriter printer.

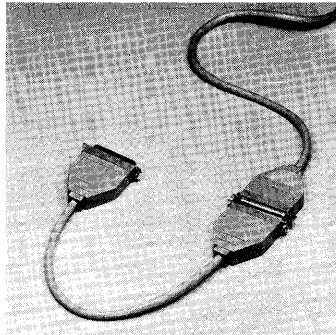
A brief outline for how to set up your printer follows. If you need more detailed instructions, refer to the documentation that came with your printer. Put the printer documentation in the empty binder that comes with the Lisa.

- 1 ► Unpack the printer and its power cable. Unpack the modem eliminator cable and printer connector cable from the accessories box.
- 2 ► Attach the printer connecting cable (the longer of the two cables) to the serial interface connector, which is at the lower left corner of the back when you are facing the back of the printer.

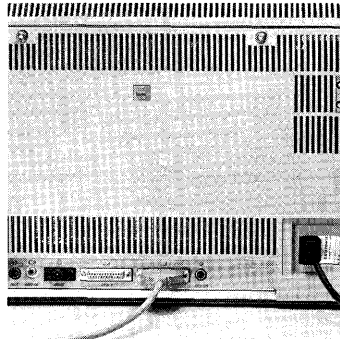


Note: A shielded interface cable must be used when attaching devices to the Lisa. Use only the cables that come with the Apple device.

- 3 ► Attach the other end of the printer cable to the modem eliminator cable (the shorter cable).



- 4 ► Plug the modem eliminator cable into either of the serial ports in the back of the Lisa.



- 5 ► Check the DIP switch settings. You'll find the DIP switches just inside the carrier cover on the right side. Set the switches as shown here.

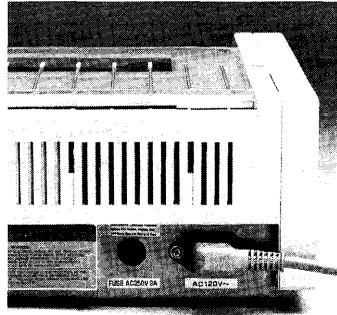
Switch 1

<u>Number</u>	<u>Position</u>
1-1	Open
1-2	Open
1-3	Open
1-4	Open
1-5	Open
1-6	Closed
1-7	Open
1-8	Open

Switch 2

<u>Number</u>	<u>Position</u>
2-1	Closed
2-2	Closed
2-3	Open
2-4	Open

- 6 ► Make sure the printer is off. Do not run the printer without installing ribbon and paper or you may damage the print head. Attach the power cable to the back of the printer and plug it into a standard three-prong electrical outlet.



For your own safety, and to protect your Lisa and printer, always make sure that your printer is grounded. If you don't have a three-prong grounded wall outlet, then use a three-prong to two-prong adapter, making sure to connect the ground wire on the adapter to the metal mounting screw on the wall outlet. If you must use an extension cord, make sure it's a three-wire cord.

- 7 ► Tell the Lisa you have connected an Imagewriter printer by setting Preferences.

- a. Open the Preferences icon.



- b. Check Device Connections.
- c. Select the port, either Serial A or Serial B, to which you connected the printer. (Serial port A is the one next to the mouse port.)
- d. Check Imagewriter Printer.
- e. Check the type of paper you'll be using.
- f. Put away Preferences.



- 8 ► Turn off the Lisa and restart it.
- 9 ► Load the paper.
- 10 ► Find the on-off switch on the top panel of the printer.
- 11 ► Run the printer self-test to make sure the printer, independent of the Lisa, will run correctly. To run the self-test, turn the printer on while holding down the form feed button.

SETTING UP THE DAISY WHEEL PRINTER

Skip this part if you are not installing a daisy wheel printer.

Brief instructions for setting up the Apple Daisy Wheel printer with the Lisa are given here. If you need more detailed instructions, see the documentation that came with the printer. Put the printer documentation in the empty binder that comes with the Lisa.

- 1 ► Unpack the printer.
- 2 ► Remove the shipping restraints.
 - a. Remove the metal shipping strip.
 - b. Remove the protective paper covering under the access cover.
 - c. Remove the package of water-absorbing material from the inside of the printer. Also remove the sheet of paper that shows a test printout; you will want to refer to the printout later.
 - d. Cut and remove the rubber bands that serve as tie-downs to hold the paper bail and carriage in place.
 - e. Remove the yellow nylon restraining bar from the metal track the carriage rides on.

- 3 ► Find internal configuration Switch 1 in the back of the printer.
 - a. If the printer is on, turn it off.
 - b. Remove the access cover.
 - c. Undo the two top screws under the access cover that hold the top panel.
 - d. Undo the two back screws that hold the top panel.
 - e. Take off the platen knob.
 - f. When facing the printer, Switch 1 is the left switch on the back of the printer.

- 4 ► Reset Switch 1 to match this configuration.

Switch 1

<u>Number</u>	<u>Position</u>
1	Closed
2	Closed
3	Closed
4	Open
5	Open
6	Closed
7	Closed
8	Closed

- 5 ► Install the print wheel.
- 6 ► Install the ribbon.
- 7 ► Replace the top panel and the access cover.
- 8 ► Attach the platen knob to the printer.

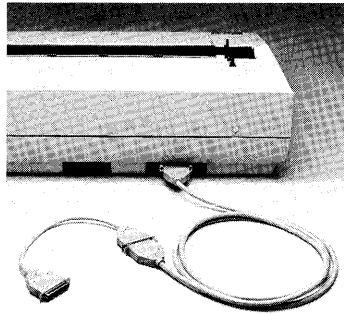


9 ► Connect the printer.

- a. If you haven't already done so, unpack the communications interface cable and, if there is one, the modem eliminator cable from the accessories box.

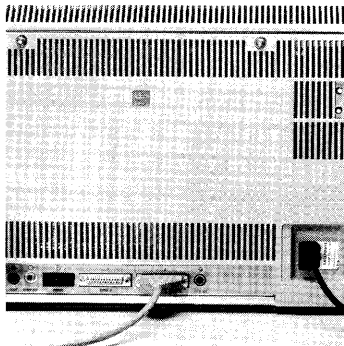
If you have a modem eliminator cable, attach it to the communications interface cable. (If there is no modem eliminator cable, it is because the communications interface cable works also as a modem eliminator.) For the purpose of this installation procedure, these two connected cables are referred to simply as the communications interface cable.

- b. Connect one end of the communications interface cable to the back of the printer.

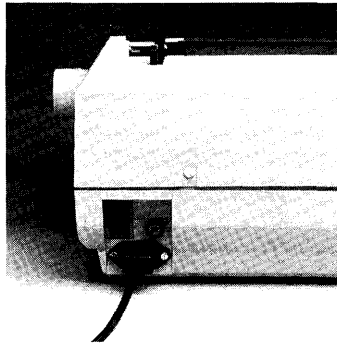


- c. Plug the other end of the printer connecting cable into the Serial B port in the back of the Lisa.

Note: A shielded interface cable must be used when attaching devices to the Lisa. Use only the cables that come with the Apple device.



- d. Attach the power cord to the back of the printer.



- 10 ► Tell the Lisa that you have connected a daisy wheel printer by setting Preferences.
 - a. Open the Preferences icon.
 - b. Check Device Connections.
 - c. Check Serial B.
 - d. Check Daisy Wheel.
 - e. Check the type of paper you'll be using.
 - f. Set aside Preferences by choosing **Set Aside** from the **File/Print** menu.
- 11 ► Find the printer's on-off switch, which is next to the power cord connector, and turn on the printer.
- 12 ► Run the printer self-tests.

INSTALLING AN EXTERNAL HARD DISK

If you are installing an additional hard disk as a storage device, follow the instructions that come with the device. Be sure to set Device Connections in Preferences to let the Lisa know that you've added a device.

If you intend to use the added hard disk as a storage device, you'll also need to install the Office System software and tools. See *Installing the Office System Software*.

INSTALLING OTHER PERIPHERAL DEVICES

To connect other peripheral devices to the Lisa, follow the instructions that come with the devices. File the documentation for other devices in the empty binder that comes with the Lisa.

Remember to tell the Lisa what devices you have connected by setting Preferences.

Note: A shielded interface cable must be used when attaching devices to the Lisa. Use only the cables that come with the Apple device.

SETTING CONVENIENCE SETTINGS

When you first open Preferences, each convenience setting already has one option marked; these prechosen options are known as default settings. Whenever you check the first item in the list, Set All Convenience Settings to Lisa Defaults, the default settings are chosen.

- 1 ► Open the Preferences icon.
- 2 ► Check Convenience Settings.
 - Convenience Settings Startup Device Connections
- 3 ► Check the box for each setting you want. For more details about these settings, see below.
- 4 ► Choose **Set Aside** from the **File/Print** menu.

For instructions for setting the screen brightness and contrast, see Setting Screen Brightness and Contrast. The other convenience settings are described here.

Speaker Volume

From time to time, the Lisa communicates by sounding various beeps and tones. The meanings of these signals are explained in Startup Symptoms and Error Messages, in Section C, Troubleshooting. The Speaker Volume setting controls the loudness of these beeps and tones.

Speaker Volume

Silent (Flash menu bar) Soft Loud

Each time you check one of the boxes, the Lisa sounds two tones, at the low and high extremes of the level you have chosen. Experiment with different settings until you find one you like.

Repeating Keys

Most of the Lisa keys repeat automatically when held down. The two lines under Repeating Keys control how long you have to hold a key down before it starts repeating and how fast it then generates additional characters.

Repeating Keys

Delay

Short Long

Rate

Fast Slow

The correct settings depend on your typing speed and the ways you use the Lisa. If you find that the Lisa often generates multiple letters when you intended to type only one, change the repeat delay to a setting nearer the long end of the scale. If you use the repeating keys often, you probably want to specify a short delay and a fast repeat speed.

Whenever you check one of the delay or rate boxes, the Lisa puts a few asterisks on the screen to demonstrate the interval you have chosen.

Mouse Double-Click

Some of the desktop functions are accomplished by clicking the mouse button twice rapidly, or double-clicking. The Mouse Double Click Delay setting determines the maximum time lag between two clicks that the Lisa interprets as one double-click.

Mouse Double Click Delay

Short Long

Like the keyboard repeat delays, this setting should reflect your habits and work style. If the Lisa often interprets your double clicks as two single clicks, try adjusting the delay to a longer setting. If the Lisa often interprets two single clicks as one double-click, try adjusting the delay to a shorter setting.

SETTING STARTUP SPECIFICATIONS

1 ► Open the Preferences icon.

2 ► Check Startup.

Convenience Settings Startup Device Connections

- 3 ▶ Make sure that the proper startup device is selected.

Start Up From:

- Internal Disk
- Diskette
- Disk Attached to Lower Connector of Expansion Slot 2

- 4 ▶ Check either Thorough or Brief memory test. The memory test setting determines how thoroughly the Lisa's memory is tested during the automatic startup test. If you check Thorough, the test takes about a minute. If you check Brief, the test takes about 30 seconds.

Memory Test

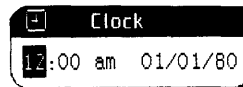
- Brief
- Thorough

SETTING CLOCK/CALENDAR

The Lisa uses the setting of the clock/calendar to tag each of your documents with the date you created it and the date and time you last worked on it. The Lisa also tags each disk with the date it was last backed up.

To set the clock/calendar:

- 1 ▶ Open the clock icon.



- 2 ▶ Place the pointer over the hour and click once.
- 3 ▶ Type in the correct hour.
- 4 ▶ Press [TAB] and type in the correct minutes.
- 5 ▶ Continue tabbing and correcting each part of the time and date until the clock is set correctly.



- 6 ▶ Choose **Set Aside "Clock"** from the **File/Print** menu.



SETTING SCREEN BRIGHTNESS AND CONTRAST

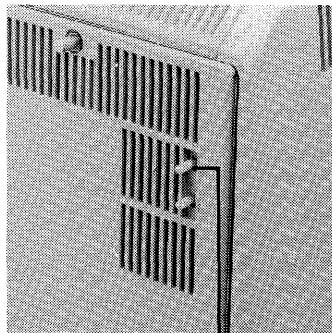
Always set the screen brightness before adjusting the contrast. The brightness is adjusted through the brightness control knob; contrast is adjusted through Preferences.

To set the screen brightness and contrast:

- 1 ▶ Open Preferences.
- 2 ▶ Check Convenience Settings.

Convenience Settings Startup Device Connections

- 3 ▶ Locate the brightness control knob (the higher of the two white knobs extending from the back of the cabinet).



Brightness control

- 4 ▶ Turn the brightness control down until your screen is entirely black.

- 5 ▶ Turn the knob back up just until the black rectangle turns to gray.
- 6 ▶ Slowly turn the knob back down, just until the rectangle is distinctly black, with no video scan lines visible, and there is a clean line on all borders.
- 7 ▶ Set the Normal level by checking different boxes until the screen is at a comfortable contrast level for you.

Screen Contrast

Normal Level

dark bright

- 8 ▶ Set Minutes Until Screen Dims by checking the box for the delay you want.

Minutes Until Screen Dims

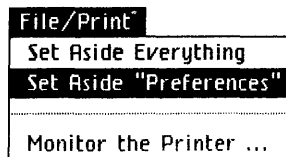
1-2 2-4 5-10 10-20 15-30 30-60

- 9 ▶ Set the Dim Level by checking the box for the dim contrast level you want.

Dim Level

dark bright

- 10 ▶ Choose Set Aside "Preferences" from the File/Print menu.



Appendix 2

On-Off Procedures

The single button that turns the Lisa on and off is a "soft" power button that does not directly control power to the computer. When you press the button to turn the Lisa on, you bring the system up from a standby condition to a fully active state. When you press the button to turn the Lisa off, you trigger a series of verification and storage procedures that eventually return the system to standby status. This appendix summarizes the on-off procedures and describes the Environments window, which may appear if you occasionally use any software other than the Lisa Office System.

STANDBY STATUS

As long as the Lisa is plugged in, it draws a small amount of current, which it uses to keep the clock/calendar up to date and to remember your Preferences. When you must unplug the Lisa, push the on-off button and wait for the light to go out before removing the plug from the wall outlet. The next time you use the Lisa, you will have to reset the clock and calendar. The system will give you a message to remind you to do this. You should also check Preferences to make sure that convenience settings, startup device, and device connections are set correctly.

TURNING ON THE LISA

When you press the on-off button to bring the Lisa from the standby condition to an active state, the computer runs a series of self-tests to verify that startup is possible. These tests and related error messages are described in Appendix 3, Automatic Startup Tests, and in Startup Symptoms and Error Messages, in Section C, Troubleshooting.

Each time you turn the Lisa on, the system must read a collection of startup instructions. When you are using the Lisa Office System, the internal hard disk is generally used as the system's startup device. Therefore, the startup instructions are usually stored on this disk.

Your dealer or service representative should have installed the Office System software, including the startup instructions, on your startup disk. This software is stored on the four micro diskettes labeled Office System 1, 2, 3, and 4. These diskettes are packaged in the Lisa accessories box. If your internal hard disk is still blank, follow the software installation instructions in Appendix 1, Setup Procedures.

Unless you specify otherwise, the Lisa looks for the startup instructions on the internal hard disk. Instructions for specifying another startup device appear in Setting Startup Specifications, in Appendix 1, Setup Procedures, and in the utilities section of the *Workshop User's Guide for the Lisa*.

If later you want the system to start up from a different device, you can specify the change after turning the system on. This procedure is also described in Setting Startup Specifications, in Appendix 1, Setup Procedures.

ENVIRONMENTS WINDOW

If your startup disk contains any software other than the Lisa Office System, you may encounter a screen something like the one shown in Figure 1 when you start up the Lisa.

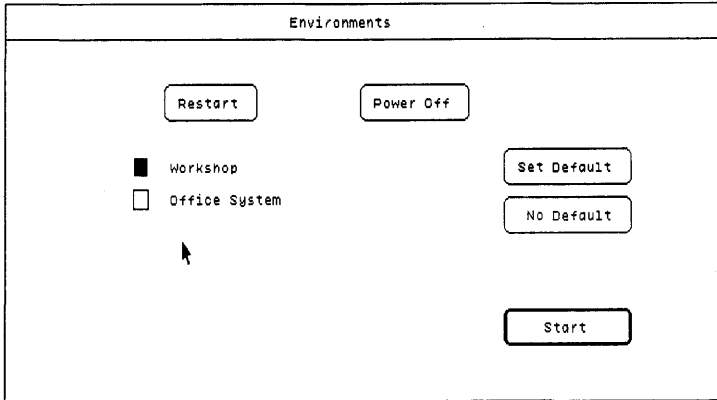


Figure 1. Environments Window

This display, known as the Environments window, allows you to specify which software you want to use. To start up the Lisa Office System, click Office System, and then click Start.

You can specify a default, or automatic, environment so that the same environment will be in effect every time you turn on the Lisa.

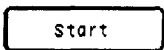
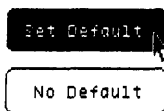
If, for example, you always want to use the Lisa Office System:

1 ► Click Office System.

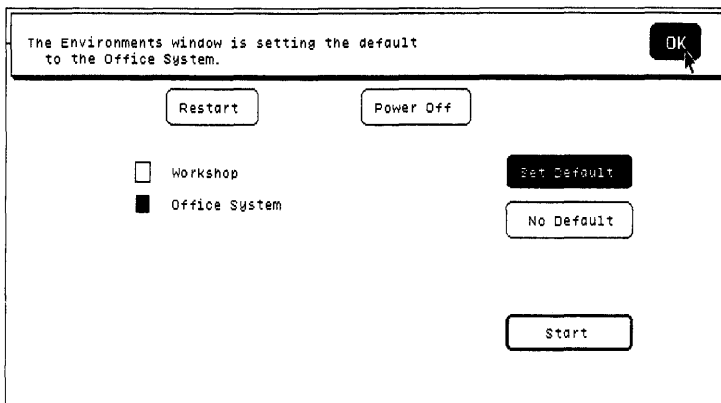
- Workshop
- Office System



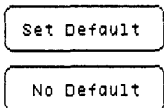
2 ► Click Set Default.



3 ► When this message appears, click OK.



4 ► Click Start.



If you normally want the Lisa to start up a different software environment, see the manual that came with that software.

Once you have chosen the default setting, you will never see the Environments window unless you specifically request it. To call up the Environments window from the Lisa Office System, hold down the Apple key while pressing the on-off button. To call up the Environments window during system startup, press any key except [CAPS LOCK] after you hear the double click from the cabinet.

TURNING OFF THE LISA

When you push the on-off button once to turn the Lisa off, the computer does not instantly shut down. Instead, it begins a series of verification and storage procedures.

The point of this complex power-down procedure is that the computer can reconstruct the desktop exactly as you left it the next time you turn the Lisa on. During the next startup, the Lisa checks all storage devices and puts all documents that were on the desktop back on the desktop again. The power-down procedure may take several minutes.

First, the Lisa saves the "desktop state" of each document open on the desktop. The desktop state includes the size and location of the document window, all changes to the document since it was last saved, and the current selection or insertion point. Except for LisaList and LisaWrite documents, the disk copy of the document itself is not updated. As the desktop state of each document is stored, the document disappears from the screen.

If there is not enough room on a disk to record the desktop states for all the open documents from that disk, the Lisa terminates the power-down procedure. You can then make more room on the disk in two ways:

- Put away some of the documents yourself so that the Lisa does not have to keep two versions.
- Remove some old documents from the disk so that there is enough space for all the documents on the desktop.

When the desktop states of all of the documents on a micro diskette are stored, the micro diskette is released from its disk drive.

Finally, when the desktop is clear, the screen goes blank, and the power light -- that is, the light in the on-off button -- goes out.

If you have any external disk drives attached to the Lisa, don't turn them off until the light in the Lisa on-off button goes out.

Appendix 3

Automatic Startup Tests

Every time you turn the Lisa on, the system runs a series of tests to verify that startup can proceed. This appendix describes the tests in the order in which they are run and provides a table explaining the detailed error messages generated by the tests. A less detailed table of the most common messages and a discussion of the procedures for responding to startup test error messages appear in Section C, Troubleshooting.

STARTUP TEST SEQUENCE

If everything is working correctly during startup, the tests proceed in the following sequence.

ROM Checksum

This test computes a 16-bit checksum of the entire ROM to check its validity. If the checksum is successful, the system passes on to the next test.

If the system fails the ROM checksum, the system hangs. The screen may be blank, or it may display a random pattern at a very bright contrast level.

MMU Register Test

This is a read/write and address test of the static RAMs in the memory management unit. Successful completion is followed by the next test.

An early failure causes the test to repeat indefinitely, with a blank display on the screen.

If this test reaches its final stages and then encounters a failure, the screen displays the CPU board icon, with error code 40.



40

Memory Sizing

This test determines the amount of memory in your system to facilitate further testing. If an error is found, the error is saved but testing continues. If memory cannot be accessed at all, the speaker beeps once with a low tone and the system hangs with a series of vertical lines on the screen.

Preliminary Memory Test

Next the system tests the first 2048 bytes of memory to ensure that some memory is available for use by the startup ROM. If an error occurs, the Lisa sounds the speaker twice and then hangs in a test loop, with a random display on the screen.

VIA Test

This test verifies that the I/O board can be accessed. Failure results in the appearance of either the I/O board icon, with error code 58, or the CPU board icon, with error code 41.



58



41

If this test proceeds without problems, the Lisa turns the screen contrast all the way down.

Screen Memory Test

This test facilitates the reporting of errors that are found during other tests. Errors do not interrupt the tests but are reported at the end of startup as a memory failure.

I/O Board Tests

The contrast is set to midrange, and the keyboard and mouse connections are checked. If either the keyboard or the mouse is not connected, the Lisa alerts you to the situation at the end of the startup sequence. If those tests proceed normally, a click is emitted from the speaker. This click tells you that all tests up to this point have been executed and that the keyboard is ready to accept alternative startup device commands. The procedure for giving an alternative startup command is described in Setting Startup Specifications, in Appendix 1, Setup Procedures.

From this point, the screen displays a series of icons showing which test is in progress, as shown in Figure 1. While a board is being tested, its icon is highlighted on the screen. As each board passes the tests, the Lisa displays a check mark over the icon. Usually, the video screen has not had time to warm up at this point, so you may not see this display.

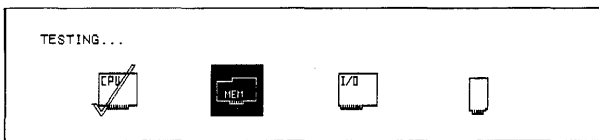


Figure 1. Startup Module Test Display

Errors detected during the following tests are reported both by a screen message and by a two- or three-note error tone. A table of error tones appears in Startup Symptoms and Error Messages, in Section C, Troubleshooting.

CPU Board Test Completion

The remaining two CPU board tests partially check the video circuitry and record wrong parity circuitry. If either test fails, testing is terminated, and the CPU board icon is displayed with one of two error codes:

42 -- Video logic error

43 -- Parity logic error



42

Memory Test

The final memory check is a full read/write and address check of all RAM not yet tested. The brief test takes about 18 seconds for a full megabyte of memory. If you have specified a thorough test in your startup specifications, the test takes twice as long.

Errors detected in this test are displayed at the end of the startup sequence. The memory board icon with error code 70 indicates read/write errors, and the memory board icon with error code 71 indicates parity errors.



70

I/O Board Test Completion

This test verifies that the disk controller is ready, checks shared memory, and then disables the disk interrupts until startup is complete. Errors are displayed as an I/O board icon with error code 57.



57

The Lisa then tests the serial port controller. Errors are displayed as an I/O board icon, with error code 55 for port A errors and error code 56 for port B errors.



55

After these tests, the speaker emits a double click and the Lisa scans the keyboard for any keystrokes entered since the first click. The Lisa then reads the clock/calendar and saves the time and date information for later use.

Errors in reading the keyboard or the clock are displayed as an I/O board icon, with error code 52 for the I/O board COPS, which controls the keyboard and mouse interfaces, or with error code 54 for the clock/calendar.



52

Expansion Slot Configuration Check

Finally, the system scans each expansion slot to see if a card is present. The results are stored for future use but are not compared with the information in parameter memory.

If this check uncovers a bootable device in any slot, the Lisa scans the required ROM on the card to ensure that it can be read properly. An error here is displayed as an expansion card icon, with error code 92.



STARTUP ERROR MESSAGES AND TONES

Each startup error message can consist of three parts:

- An icon representing the module that caused the problem.
- A numeric code indicating the kind of problem.
- A one-, two-, or three-note error tone indicating either which module caused the problem or what kind of problem it is.

Some of the error messages indicate a physical problem with the Lisa; others indicate a problem with the system setup. In general, the presence of an icon with or without a numeric code means that the module represented by the icon should be checked or replaced. For recommended troubleshooting procedures, see Section C, Troubleshooting.

The meanings of the numeric codes are summarized in Table 1. The meanings of the error tones are summarized in Startup Symptoms and Error Messages, in Section C, Troubleshooting.

Table 1. Startup Error Messages




Icon	Code	Meaning
Disk drive		No diskette in startup drive.
		
Diskette	23	Unable to read diskette.
	38	No startup file on diskette.
	39	Disk controller timeout.
CPU board	40	MMU error.
	41	CPU selection logic error.
	42	Video circuitry error.
	43	Parity circuitry error.
	44	Unexpected NMI interrupt.
	45	Bus error.
	46	Address error.
	47	Other unexpected exception.
	48	Illegal instruction error.
	49	Line 1010 or 1111 trap.



Table 1. Startup Error Messages, continued




Icon	Code	Meaning
I/O board	50	COPS VIA error.
	52	I/O board COPS error.
	53	Keyboard COPS error.
	54	Clock error.
	55	Serial port A (RS232) error.
	56	Serial port B (RS232) error.
	57	Diskette controller error.
	58	I/O board access error.
	59	I/O board COPS code error.
	60	I/O or keyboard error.
Memory board	70	Memory read/write error.
	71	Memory parity error.
		



Table 1. Startup Error Messages, continued






Icon	Code	Meaning
Startup device 	75	Startup failure; startup file on disk probably bad.
		
		
Hard disk	80	Hard disk not attached.
	81	Disk not ready.
	82	Bad response from disk.
	83	Non-zero status bytes returned from disk.
	84	Invalid boot file on disk.
	85	Disk timeout.



Table 1. Startup Error Messages, continued

Icon	Code	Meaning
Expansion card	90	No expansion card installed.
	91	Expansion card not bootable.
	92	Bad ROM checksum on expansion card.
	93	Bad status returned from expansion card.

Appendix 4

Office System Error Messages

This appendix contains a series of discussions covering the error messages generated by the Lisa Office System. The discussions are grouped into four general categories, with specific entries under each major heading. If you have encountered an error message, go to the specific entry mentioned in that message. If you think you may have a physical problem with your system, refer to Section C, Troubleshooting.

DISK PROBLEMS

Insufficient Room on Disk

Many common desktop operations -- opening or saving documents, for example -- require a certain amount of free disk space. When your disks get too full, you can make more room in several ways.

Discarding Obsolete Documents You can discard obsolete documents by moving their icons to the Wastebasket. The last thing you discard from a disk stays in the Wastebasket, and on the storage disk, until something else from the same disk is also discarded or you choose the **Empty "Wastebasket"** item from the **Housekeeping** menu after discarding the documents. Sometimes the Lisa destroys objects in the Wastebasket if it needs the disk space. Usually, however, the space occupied by an object is not actually reclaimed until you have thrown away another object from the same disk or chosen **Empty "Wastebasket"** from the **Housekeeping** menu. If you are discarding a group of documents in order to make more room on the disk, choose **Empty "Wastebasket"** from the **Housekeeping** menu afterward.

Moving Objects You can move some objects to a different storage disk. Do not duplicate the objects because that will not remove the copy from the original disk.

Repairing the Disk You can repair the disk, following Procedure E, Disk Repair, in Section C, Troubleshooting. During the repair process, the Lisa reclaims any disk space that may have been lost during previous software failures or power losses.

Special Case If you are using LisaList, choose **Show Entire List** from the **List** menu.

If, after you have made more space on the disk that holds the document, the Lisa still indicates that there is not enough room on the disk, check the Status panel of the startup disk window to verify that there is also space available on the startup disk.

Damaged Disk

The Lisa may tell you that one of your disks is "damaged." This could mean either that some of the information stored on the disk has been altered or that the disk itself is physically damaged.

First, repair the disk, following Procedure E, Disk Repair, in Section C, Troubleshooting. The repair process verifies that all information on the disk is usable and that the record of where things are stored on the disk surface matches the actual contents of the disk. Unreadable information may be altered or removed; the names of some documents may change.

If the Lisa is unable to repair the disk, either the disk or the disk drive probably has a physical problem. If the disk in question is a micro diskette, try inserting it in another Lisa. If the other machine has no trouble with the diskette, then there may be something wrong with the disk drive in your Lisa. Call a qualified service representative for service. If the other Lisa cannot read the disk either, then the disk may have suffered physical damage. Use a backup copy of the disk.

Difficulty Accessing Disk

First, try restarting the system: Put away all open documents, and then turn the Lisa off and back on again. When the desktop returns, try again to access the disk.

If this procedure works, your system was probably in a temporary error condition caused by the interaction of different tools and documents.

If restarting the system doesn't solve the problem, the most likely cause is a damaged document, disk, or tool. If you are trying to access a document, see *Damaged Documents*. If that discussion does not address your problem, see *Damaged Disk*, and then, as a last resort, see *Tool Failure and Disk Drive Problems*.

Disk Drive Problems

Sometimes a mechanical failure in a disk drive results in errors that appear to come from your documents or disks. You can verify that the drive in question is working properly by trying the disk in another Lisa.

If you find that the disk drive and not the micro diskette is at fault, have the drive repaired or replaced by a qualified service specialist. After the drive is repaired, repair any disks that were used in the damaged drive. A faulty disk drive could have permanently damaged a disk. If this is the case, you'll need to use the backup copy of the disk.

DOCUMENT PROBLEMS

Damaged Documents

A document can be damaged in a number of ways. The disk on which the document is stored could be wearing out, for example, or the document may have been damaged during a power failure. Sometimes a software failure leaves a document unreadable.

First, restart the system if you have not already done so: Put away all documents, and then turn the Lisa off and on again. Try again to open the document.

If the document still won't open, try to duplicate the document and put the duplicate on a different disk. If this works, the original disk is probably not damaged. Try to open the copy. If the Lisa reports that the copy is also damaged, the document itself probably contains some inconsistent or unreadable information. If you are using LisaList, repair the document with the LisaList repair feature.

If you cannot make a duplicate of the document, try to make a copy of the entire disk. Whether or not the copy procedure works, repair the original disk, following Procedure E, Disk Repair, in Section C, Troubleshooting. If you are using LisaList, you will probably have to repeat the LisaList repair procedure. Be sure to make a new backup of the list first.

If the document is still damaged after the disk is repaired, discard the document and replace it with a backup copy.

Difficulty Opening Document

Check the Status panel of the document's storage disk to see how much free space is left on the disk. If the number of free blocks is approaching 200 or fewer, see *Insufficient Room on Disk*.

If the disk contains adequate free space, your document or the tool used to create it could be damaged. See *Damaged Document*; see also *Tool Failure*.

Difficulty Saving Document

Check the Status panel of the document's storage disk to see how much free space is left on the disk. If you have saved an earlier version of the document, change the disk display to an alphabetical view, and see how many blocks the document required in its earlier version. Estimate how much space the document now needs, on the basis of whether you have added or removed information. If there is inadequate space available, see *Insufficient Room on Disk*.

If disk space is not the problem, or if you do not want to remove anything to make room on the storage disk, you may be able to save the document by setting it aside and then moving it to another disk. Because some tools will not let you move a document that has not been saved, you may not be able to use this technique.

Difficulty saving a document could also indicate a damaged document. See *Damaged Document*.

TOOL PROBLEMS

Tool Failure

Before you conclude that a tool is actually damaged, restart the system and try to repeat the failure. To restart the system, put away all documents and then turn the Lisa off and on again. If the procedure works after a restart, the system was probably in a temporary error condition caused by the interaction of various tools and documents.

If the tool still fails, discard the working copy from your internal hard disk and replace it with a duplicate of the master tool. If your dealer set up your startup disk, the working copies of all tools are stored in the folder labeled Tools on your startup disk. A micro diskette containing the master tool is stored in the manual that comes with each tool.

The calculator, the clock, the Preferences, and some of the printing routines are all part of the system software. If replacing the tool doesn't work, or if the problem was caused by this software in the first place, reinstall the system software on your startup disk. Instructions for reinstalling system software appear in *Repairing a Startup Disk and Reinstalling the Office System*, in Section C, Troubleshooting.

Difficulty Starting Tool

Check the Status panel in the window of the disk that holds the tool and, if it is different, in the window of your startup device. If the number of free blocks is approaching 200 or fewer, see *Insufficient Room on Disk*.

If disk space is not the problem, see *Tool Failure*.

Incompatible Version

From time to time, Apple releases updated versions of the Lisa software. If you buy an additional Lisa system more than 6 months after you bought your first Lisa system, the computers may come with different versions of the software. (If you have a support agreement, you will always have the most recent updates of all software.)

Old documents are usually compatible with new revisions of the tools. New documents, however, may not be compatible with old versions of the tools; once you have worked on an old document with a more recent version of the tool, you may no longer be able to work on that document with the old tool. If the Lisa cannot work on a document because the tool and the document are incompatible, take the document to a Lisa that has a more recent revision of the tool. To find out the release date of a tool, display an alphabetical or chronological view of the folder in which the tool is stored.

SYSTEM PROBLEMS

Insufficient Memory

Insufficient room in memory usually means either that too many documents are open on the desktop or that the document you are actually working on has gotten too big.

First, put away all documents with which you are not currently working, especially if the documents were created with a tool different from the one you are using.

If the Lisa still cannot perform the task, restart the system. Put away all documents, and turn the Lisa off and on again. Then open only the document you want to work on, and try the operation again.

If you are using LisaList, try changing to a larger font or shrinking the document window.

If none of these techniques works, your document is probably too big. Split it into two smaller documents if possible.

System Restart

Sometimes the Lisa Office System encounters an error condition it cannot handle. In this case, the Lisa shuts down the desktop and starts over. If possible, any open documents are suspended in their current states so that you can continue where you left off after the system started again.

If the problem recurs, either your software or your hardware may be damaged.

Try reinstalling your system software and replacing the working copies of the tools you were using when the Lisa shut down the desktop. Instructions for reinstalling system software appear in Procedure E, Disk Repair, in Section C, Troubleshooting. If your dealer transferred the software to your startup disk, the working copies of all tools are stored in the folder labeled Tools. A micro diskette containing the master copy of the tool is stored in the manual that comes with each tool.

If the problem recurs after reinstalling your system software, your system hardware may need repair. Call a qualified service representative.

Desktop State

When you are using the Lisa Office System, pressing the on-off button triggers a series of storage procedures for all the disks on the desktop. If there is a micro diskette in the drive, the computer records the "desktop state" of the micro diskette before ejecting it. The desktop state includes a list of all documents from that disk that are currently on the desktop, the size and location of any open windows, all changes to the documents since they were last saved, and the current selection or insertion point in each open document.

If the Lisa is unable to save the desktop state for a disk, check the Status panel of the disk to see how much space is available. If you have several open documents and not much disk space left, see *Insufficient Room on Disk* for suggestions on how to make more room on the disk. Alternatively, you can put away some of the documents by choosing **Save & Put Away** from the **File/Print** menu or by clicking twice on the document's title bar icon. This way the Lisa has less information to record on the state of the desktop.

If disk space is not the problem, you may have a faulty disk drive. See *Disk Drive Problems*.

During a sudden power loss or an unexpected software failure, the normal power-down and disk-release procedures described above do not occur. The disks are left in an in-between state, which requires repair. See *Procedure E, Disk Repair*, in Section C, *Troubleshooting*.

Usually, losing the desktop state is not a problem. Simply open the disks yourself, and then open any documents you want to work on. Remember, however, that you may have lost any work you have done since last saving your documents.

Difficulty Printing

The Lisa can have difficulty printing a document for a number of reasons, from simple mechanical problems to software failures.

First, verify that the printer is turned on and that all connections are secure. See Section C, Troubleshooting, for a checklist of possible mechanical problems.

If your system setup checks out, the Lisa may have insufficient room in memory or insufficient free space on the startup disk. See *Insufficient Memory* and *Insufficient Room on Disk*.

If none of these strategies solves the problem, either the tool you were using or your system software may have failed. See *Tool Failure*.

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Lisa 2 *Owner's Guide*

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Update Lisa 2 Owner's Guide Release 2.0

Read This First

Before setting up or using your Lisa 2, please read the information below.

THE LISA 2 SYSTEM

The Lisa 2 system can be one of several combinations of basic and optional parts. These different part combinations are known as *configurations*. The *Lisa 2 Owner's Guide* describes the most comprehensive configuration, a Lisa 2 with

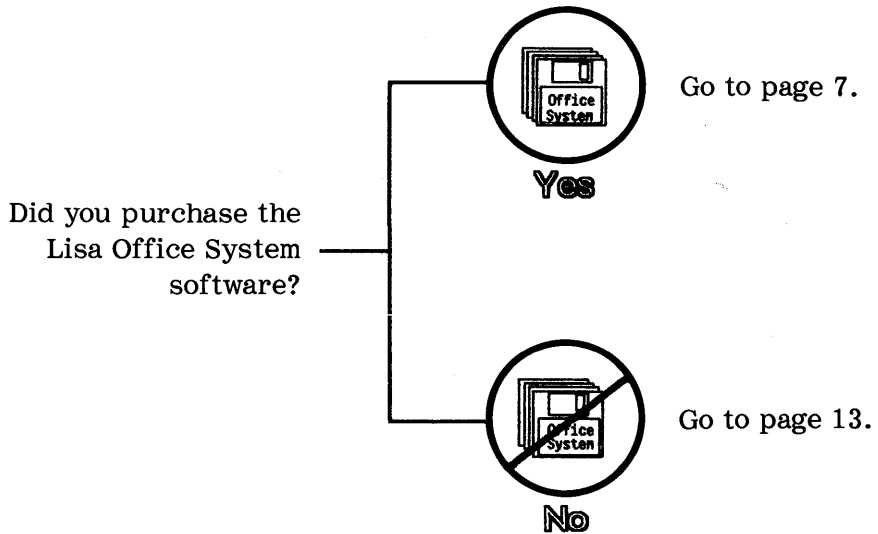
- An internal hard disk, and
- The Lisa Office System software.

Before referring to the *Lisa 2 Owner's Guide* to set up and use your Lisa, you need to know if your system configuration is different. The next few pages will help you determine which configuration you have and direct you to a few notes about your system. The notes add to or revise information in the *Lisa 2 Owner's Guide* so that it accurately documents your system configuration.

When you're ready, turn the page to identify your Lisa 2 system configuration.

Which Lisa 2 System Do You Have?

Before proceeding, put pages 3 through 5 in the front of your *Lisa 2 Owner's Guide*.



Notes to the Lisa 2 Office System Software

Insert this page in the front of your *Lisa 2 Owner's Guide*.

BE AWARE

Unused Disk Space

Leave at least 200 blocks free on each hard disk. If your disk has fewer than 200 blocks free, and you want to open a document that is on the disk, first move the document to a disk with enough free blocks, and then open it. If you need to save a document, and its original disk does not have enough free blocks, first set the document aside, and then move it to another disk.

Backing Up the Office System

Do not back up a hard disk to micro diskettes by dragging the hard disk icon to the diskette icon. Instead, make duplicates of the tools or documents you want to back up, and then move the duplicates to the micro diskette icon.

Ejecting Diskettes

The **Eject Diskette** menu item may not be selectable even if the diskette is selected. If this happens, click on the desktop and then again on the diskette. You then should be able to select **Eject Diskette** from the **Housekeeping** menu.



Discarding Clock, Calculator, or Tools

Don't discard the Clock, the Calculator, or any tool unless you are going to replace it with a newer version of the tool.

Unclear Window Display

If the contents of your window look garbled, move the window so that the garbled part is off the desktop, and then release the mouse button. When you move the window back onto the desktop, the contents of the window should be clear.

Technical Difficulties

If you get an alert message that says the Lisa is having technical difficulties, **Save & Put Away** the document you're working on before you continue working.

LisaGuide

In LisaGuide, use the Clipboard only according to instructions and don't resize the window unnecessarily. When you use the Clipboard according to the exercise instructions, the Clipboard contents update automatically as the window changes size. If you don't use the Clipboard according to the exercise instructions and instead resize it yourself, the Clipboard contents will not update properly. If you continue to resize it, LisaGuide may stop.

Printing Alerts

If you get an alert message that says you should check such things as your printer cables, you may need to check Preferences also.



Whistle or Musical Sound when Printing

If you hear a whistle or a musical sound while printing from your Lisa, choose **Monitor the Printer** from the **File/Print** menu for more information.

Disconnecting the Printer

Never disconnect your printer cables or cords without turning off the printer first. If you do so, you may cause a fuse to blow.

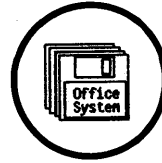
Landscape Printing

Landscape printing with low resolution automatically shrinks everything by one-third. This allows more information to fit on a single page.

Printwheel Notes

The Modern PS plus Italics printwheel for the Apple Daisy Wheel Printer does not include all the characters printed on the keyboard. It does not include the following: " @ % { } < > [] \.

Lisa 2 with Office System Software



If your Lisa doesn't come with the Lisa Office System software, go to page 13.

Which Do You Have?

LISA 2/5

Lisa 2 with external hard disk: Go to page 9.



LISA 2/10

Lisa 2 with internal hard disk: You can use the *Lisa 2 Owner's Guide* as is. For any device you add to your system, refer to the documentation that comes with the device.

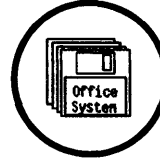


Notes to the Lisa 2 Owner's Guide

Insert this page in the front of your *Lisa 2 Owner's Guide*.

Lisa 2/5

(with Office System software)



SETTING UP YOUR SYSTEM

Refer to Appendix 1, Setup Procedures. Your system has a ProFile, which is an external, not internal, disk drive. Ignore the procedure for installing an internal disk. Instead, connect the ProFile after you've completed the procedures to connect the Lisa mouse, keyboard, and power cord, and before the procedure to install the Office System software.

Instructions for connecting your ProFile come in the ProFile's accessory kit. After connecting your ProFile, turn it on and wait for the ready light to shine steadily. Then follow the procedures in the owner's guide to install the Office System software. After installing the software, be sure to indicate that a ProFile is connected to the parallel port by setting Device Connections in Preferences. You must then turn off the Lisa and turn it on again; the system searches for connected devices only during the startup sequence.



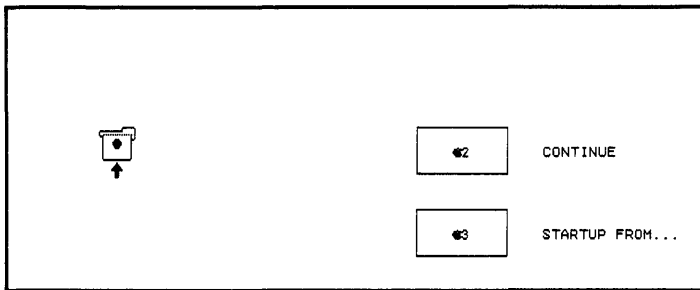
TURNING THE LISA ON AND OFF

Section A, Getting Ready -- LisaGuide, tells you how to turn the Lisa on and off. Since you'll need to turn the ProFile on or off before turning the Lisa on and off, instructions for your system are slightly different. To turn on your Lisa, turn on the ProFile and then the Lisa. To turn off your Lisa, first turn off the Lisa and wait till the light goes off in the on-off button. Then turn off the ProFile.

See also, Starting the Lisa 2 from an External Hard Disk, under Starting and Stopping, in Section B, Desktop Manager Reference Guide.

TROUBLESHOOTING

If you get the following startup error message, your ProFile may not be connected correctly. Check the cable and power cord and make sure you've turned off the Lisa once after setting the Device Connections in the Preferences window.



When you start up your Lisa system, it searches for a ProFile, and, if one is not connected, for a startup diskette in the micro disk drive. If the Lisa doesn't find a startup diskette, the error message shown above appears.



HARDWARE SPECIFICATIONS

Your Lisa 2, unlike the Lisa documented in the owner's guide, has a parallel port on the back. Your ProFile connects to this port. For hard disk specifications, refer to the documentation that comes with the ProFile. For all other hardware information, refer to Section E, Lisa 2 Hardware, in the *Lisa 2 Owner's Guide*.

THE LISA DESKTOP

Section B, Desktop Manager Reference Guide, provides general information about your system. Keep in mind that your ProFile, and not the internal disk mentioned in the *Lisa 2 Owner's Guide*, is the startup disk for your system.

The ProFile icon looks different from the Internal Hard Disk icon. Both disk icons operate in the same way, though, so the operating instructions for the internal hard disk can be applied to the ProFile, too.

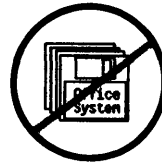


Disk



Internal Hard Disk

Lisa 2 without Office System Software

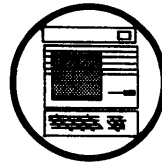


If your Lisa comes with the Lisa Office System software, go to page 7.

Which Do You Have?

LISA 2/5

Lisa 2 with external startup hard disk: Go to page 15.



LISA 2

Lisa 2 with no hard disk: Go to page 17.



LISA 2/10

Lisa 2 with internal hard disk: Go to page 19.



Notes to the Lisa 2 Owner's Guide

Insert this page in the front of your *Lisa 2 Owner's Guide*.

Lisa 2/5

(without Office System software)



SETTING UP YOUR SYSTEM

Refer to Appendix 1, Setup Procedures. Your system has a ProFile, which is an external, not internal, disk drive. Ignore the procedure to install an internal disk. Instead, connect the ProFile after you've completed the procedures to connect the Lisa mouse, keyboard, and power cord. Instructions for connecting your ProFile come in the ProFile's accessory kit.

Ignore procedures to install the Office System software. To install your software, refer to the documentation that comes with it.

TURNING THE LISA ON AND OFF

Section A, Getting Ready — LisaGuide, tells you how to turn the Lisa on and off. Since you'll need to turn the ProFile on or off before turning the Lisa on and off, instructions for your system are slightly different. To turn on your Lisa, turn on the ProFile and then the Lisa. To turn off your Lisa, first turn off the Lisa and wait till the light goes off in the on-off button. Then turn off the ProFile. See also, Starting the Lisa 2 from an External Hard Disk, under Starting and Stopping, in Section B, Desktop Manager Reference Guide.



REFERENCES TO THE LISA OFFICE SYSTEM SOFTWARE

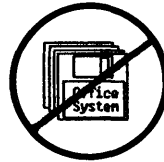
Since your system does not come with the Lisa Office System software, ignore any references to it. That means information regarding the *desktop*, the Office System interface, won't apply to your system configuration. You can ignore the desktop tutorial, Section A, Getting Ready -- LisaGuide, as well as Section B, Desktop Manager Reference Guide, and Section F, Calculator.

Notes to the *Lisa 2 Owner's Guide*

Insert this page in the front of your *Lisa 2 Owner's Guide*.

Lisa 2

(without Office System software)



SETTING UP YOUR SYSTEM

Refer to Appendix 1, Setup Procedures. Ignore references to installing a hard disk and the Office System software. To install other software, refer to the documentation that comes with it.

TURNING THE LISA ON AND OFF

Section A, Getting Ready — LisaGuide, tells you about the Lisa on-off button. You'll need to refer to the documentation that comes with your software for instructions on how to start up your Lisa 2 system.

HARDWARE SPECIFICATIONS

Unlike the system documented in the *Lisa 2 Owner's Guide*, your Lisa 2 has no hard disk, but it has a parallel port located to the left of the mouse connector. You later can connect an external disk or other parallel device using this parallel port.



REFERENCES TO THE LISA OFFICE SYSTEM SOFTWARE

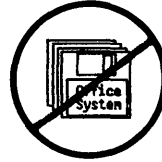
Your system does not come with the Lisa Office System software, so you can ignore any references to it. That means information regarding the *desktop*, the Office System interface, won't apply to your system configuration. You can ignore the desktop tutorial, Section A, Getting Ready -- LisaGuide, as well as Section B, Desktop Manager Reference Guide, and Section F, Calculator.

Notes to the Lisa 2 Owner's Guide

Insert this page in the front of your *Lisa 2 Owner's Guide*.

Lisa 2/10

(without Office System software)



SETTING UP YOUR SYSTEM

Refer to Appendix 1, Setup Procedures. Ignore references to installing the Office System software. To install other software, refer to the documentation that comes with it.

REFERENCES TO THE LISA OFFICE SYSTEM SOFTWARE

Your system does not come with the Lisa Office System software, so you can ignore any references to it. That means information regarding the *desktop*, the Office System interface, won't apply to your system configuration. You can ignore the desktop tutorial, Section A, Getting Ready -- LisaGuide, as well as Section B, Desktop Manager Reference Guide, and Section F, Calculator.