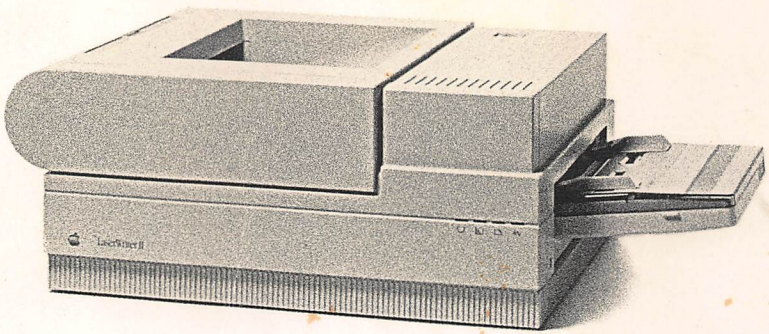
LaserWriter® IINT/NTX Owner's Guide



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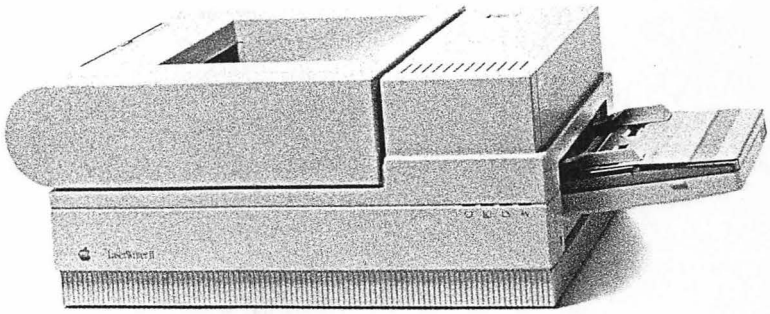

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- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is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

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About This Manual

This manual is your introduction to the Apple® LaserWriter® IINT and LaserWriter IINTX printers. All directions for setup, operation, and maintenance pertain to both printers.

The LaserWriter II works with any Macintosh® or Apple IIGS® computer, and with any Apple IIe computer equipped with an Apple II Workstation Card. If you're new to the Apple world, read the documentation that came with your computer before proceeding. You'll need to know basic operations and vocabulary to set up and print with the LaserWriter II.

You can also use the LaserWriter II with a non-Apple computer. Be sure to familiarize yourself with your computer's basic operations before setting up your LaserWriter II.

How to use this manual

Use this manual now to set up and begin working with your printer. Use it later as a reference for day-to-day routines and as a guide for maintenance and troubleshooting.

If you have just purchased a LaserWriter II and are using a Macintosh computer, you should read Chapters 1 through 3 to get started with your LaserWriter II. Turn to Chapters 4 and 5 when you're ready to learn more about typography and desktop publishing. Read Chapter 6 to learn how to care for your printer.

If you have joined a network that includes LaserWriter IINT or LaserWriter IINTX printers, read Chapters 2 and 3 first, and turn to Chapters 4 and 5 as your needs require.

If you'll be using your LaserWriter II with an Apple II, read Appendix A. If you're connecting your LaserWriter II to an MS-DOS or other non-Apple computer, read Appendix C. If you are not using a Macintosh, the chapters on fonts and design may or may not be relevant, depending on the type of system you have.

If you have upgraded a LaserWriter IINT to a LaserWriter IINTX, all setup, operation, and maintenance procedures should be familiar to you. Read Appendix B to find out about additional upgrades for your printer.

- Chapter l, "Setting Up," gives step-by-step instructions on setting up the LaserWriter II and connecting it to your computer.
- Chapter 2, "Software Installation," introduces you to the printer software that controls the LaserWriter II, tells you how to install it, and explains the various options you have for managing disk space.

- Chapter 3, "Using the LaserWriter II," tells you how to operate the LaserWriter II in day-to-day use.
- Chapter 4, "All About Fonts," covers the basics of Macintosh typography: screen fonts and printer output, the POSTSCRIPT® page-description language, the LaserWriter II fonts, and sources for additional fonts.
- Chapter 5, "Designing With the LaserWriter II," is an introduction to desktop publishing. The chapter includes guidelines for font selection and page organization, followed by examples of documents created with the LaserWriter II.
- Chapter 6, "Maintenance," covers routine maintenance procedures.
- Chapter 7, "Troubleshooting," includes solutions for problems you may have using your printer.
- Appendix A, "Connecting to an Apple II," gives instructions for connecting the LaserWriter II to an Apple IIGS or an Apple IIe with an Apple II Workstation Card.
- Appendix B, "Optimizing Performance—LaserWriter II Upgrades," covers upgrading a LaserWriter IINT to a LaserWriter IINTX and adding additional random access memory (RAM) and a hard disk to the LaserWriter IINTX.
- Appendix C, "Connecting To and Printing With an MS-DOS Computer," gives details on connecting the LaserWriter II to a non-Apple computer.

The rest of the appendixes provide background information on the printer itself and on Apple service and support.

- Appendix D, "How the LaserWriter II Works," covers the basics of laser printing.
- Appendix E, "Specifications and Parts List," contains a physical description of the printers and a list of parts.
- Appendix F, "Ports and Switches," describes the printers' warning lights, input ports, expansion slot, and controls.
- Appendix G, "LaserWriter II Fonts," shows the complete character sets for the fonts on the *LaserWriter IINT/NTX Fonts Disk.*
- Appendix H, "Service and Support," tells you what you have to do if you need repairs or assistance or want to extend your warranty coverage.

The glossary gives definitions of terms used in this manual. Definitions for terms in **bold** in the text can be found in the glossary.

If you want programming or additional technical information about the LaserWriter II, contact:

APDA
Apple Computer, Inc.
20525 Mariani Avenue, M/S 33-G
Cupertino, CA 95014-6299

800-282-APDA (800-282-2732)
Fax: 408-562-3971
Telex: 171-576
AppleLink: APDA

APDA™ (Apple Programmers and Developers Association) provides a wide range of development products and documentation, from Apple and other suppliers, for programmers and developers who work on Apple equipment.

About the LaserWriter II

The LaserWriter IINT and LaserWriter IINTX belong to the second generation of Apple laser printers. They can produce both text and graphics at near typeset quality.

You can develop your documents using any application designed for the Macintosh, including all page-layout and graphics programs. With the appropriate connections, you can also use all such programs designed for other computers.

You can use the LaserWriter II to produce

- **camera-ready** masters for copying or instant printing
- transparencies for overhead projection
- detailed layouts and proofs of work that will eventually be typeset.

Chapter 5, "Designing With the LaserWriter II," has more information on document design.

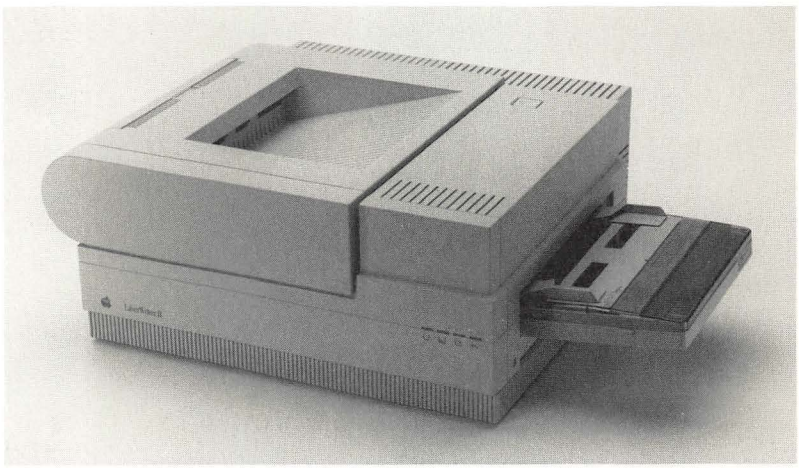


Figure P-1 The LaserWriter II

Eleven font families are built into the LaserWriter II: ITC Avant Garde®, ITC Bookman®, Courier, Helvetica®, Helvetica Narrow, New Century Schoolbook, Palatino®, Symbol, Times®, ITC Zapf Chancery®, and ITC Zapf Dingbats®. You can also choose from a wide array of fonts available both commercially and as **shareware** or **freeware.** See Chapter 4, "All About Fonts," for details.

You can easily upgrade a LaserWriter IINT to a LaserWriter IINTX. You can also expand the RAM of the LaserWriter IINTX up to 12 megabytes (MB), and connect a hard disk to the printer for optimum performance. See Appendix B, "Optimizing Your Performance—LaserWriter II Upgrades," for more information.

Setting Up

In addition to this manual, the accessory kit inside the Apple® LaserWriter® II shipping carton should contain the *LaserWriter II Installation Disk,* the *LaserWriter IINT/NTX Fonts Disk,* a product registration card, and a power cord. You should also find

- a U.S. letter-size paper cassette (for 110V printers) or an A-4 paper cassette (for 220V printers), except in Japan, which receives an A4 cassette with a 110V printer.
- a cassette top with sliding guides for manual feed

You should also have obtained a LaserWriter II Toner Cartridge from your authorized Apple dealer.

If you're connecting to a Macintosh®, Apple IIGS®, or Apple IIe computer, you'll need a LocalTalk™ Locking Connector Kit to connect the printer to a LocalTalk cable system, and, unless you're connecting your printer to an existing network, you'll need an extra LocalTalk connector box to connect your computer to the cable system. For the Apple IIe connection, you'll also need an Apple II Workstation Card. See Appendix A for details on connecting Apple II–family computers.

You can connect the LaserWriter II printer to an IBM PC or compatible computer by using **serial cables** (RS-232 or RS-422), or by using LocalTalk. See Appendix C for full information. Your authorized Apple dealer can supply the appropriate serial cables.

The LaserWriter II controller board has already been installed. For this reason the shipping carton may have been opened, and the protective plastic bag around the printer may have been opened or removed. You should have all the packing material, however.

Choosing a place for the LaserWriter II

Before you set up, choose a work area that's efficient for you and that meets the physical requirements of the printer.

The LaserWriter II runs on ordinary household current. If you haven't experienced electrical problems, such as lights flickering when you use a photocopier or turn on an air conditioner, your electrical service is probably adequate.

Choose a well-ventilated area away from direct sunlight and obvious sources of heat, cold, or humidity. The printer provides optimum performance in temperatures ranging between 64 and 77 degrees Fahrenheit (18 and 25 degrees Celsius) and relative humidity between 30 and 70 percent.

Don't use devices that produce open flames, such as Bunsen burners or welding torches, near the LaserWriter II. Don't use ammonia-based cleaners, which can react chemically with the toner, on or around the LaserWriter II.

Choose a flat, stable surface for the printer. Be sure to leave adequate room to load and unload the paper cassette and to open the **face-up tray** (the tray at the left end of the LaserWriter II). Figure 1-1 shows the dimensions of the LaserWriter II and the recommended minimum dimensions of the work area.

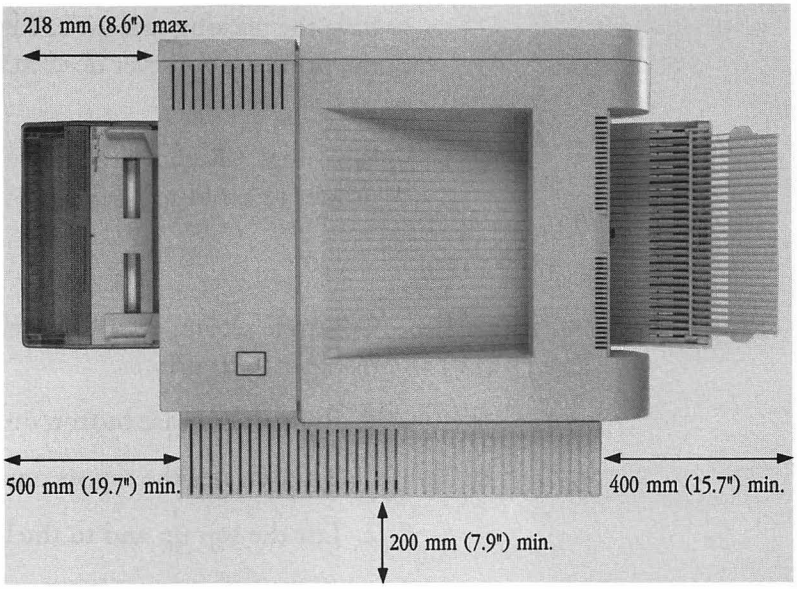


Figure 1-1 Dimensions of the LaserWriter II and the work area

Setting up

Setting up the LaserWriter II is simple and straightforward. The first step is to take the printer out of the box and to remove the packing materials.

▲ **Warning:** To prevent back injury, bend your knees when lifting the LaserWriter II, and get help if you need it. The LaserWriter II weighs about 45 pounds (20.5 kilograms). ▲

Once you have the printer out of the box and the plastic bag, pull the packing materials out of the paper cassette slot.

Save the packing materials. They provide the best protection for the printer if you ever need to move it.

▲ **Warning:** Remove the toner cartridge before transporting the printer to avoid spilling toner in the printer. ▲

Preparing the inside of the LaserWriter II

Continue setting up by following these steps to prepare the inside of your printer.

1. **Press the release button on the top of the printer.**

   This releases the top section of the printer. (See Figure 1-2.)

2. **Lift the top up and to the left as far as it will go.**

▲ **Warning:** Don't touch the exposed electrical contacts or gears shown in the boxed areas of Figure 1-3. ▲

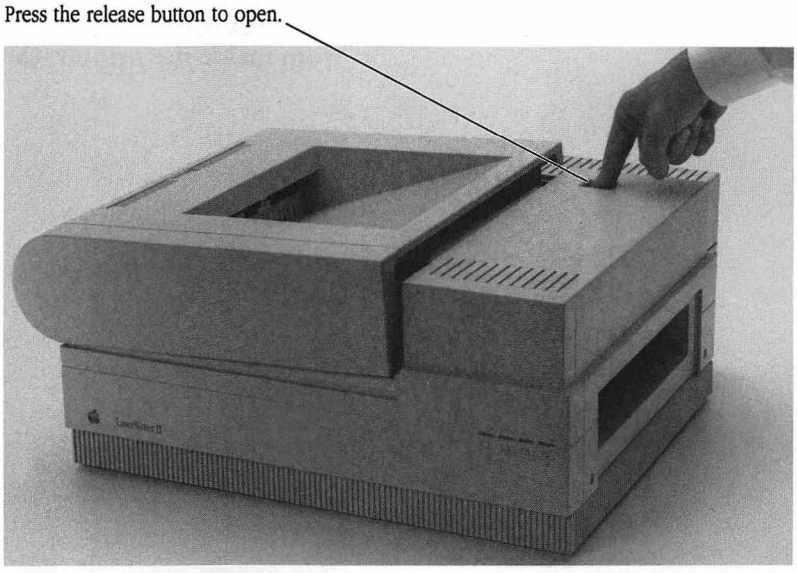


Figure 1-2 Opening the LaserWriter II

Don't touch the areas within boxes.

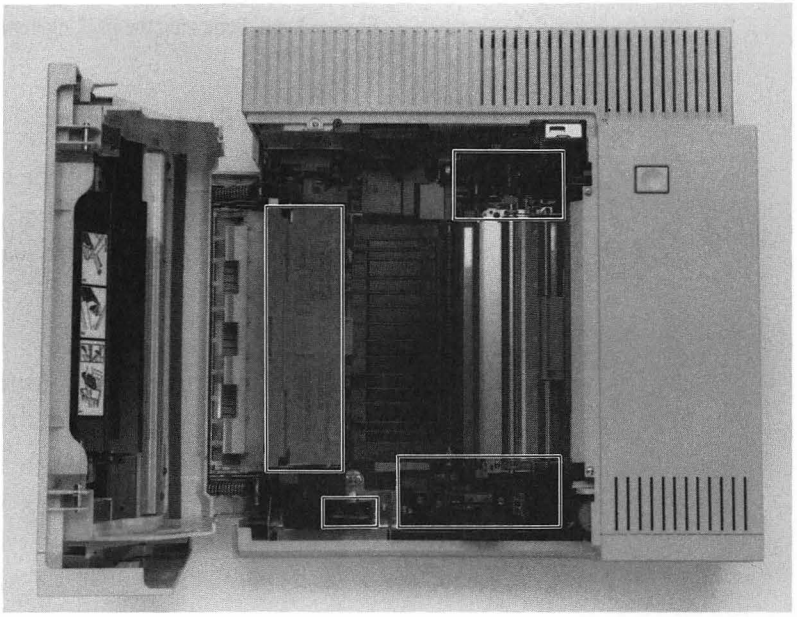


Figure 1-3 The interior of the LaserWriter II

3. **Peel off the filament tape and remove the packing material from inside the printer. (See Figure 1-4.)**

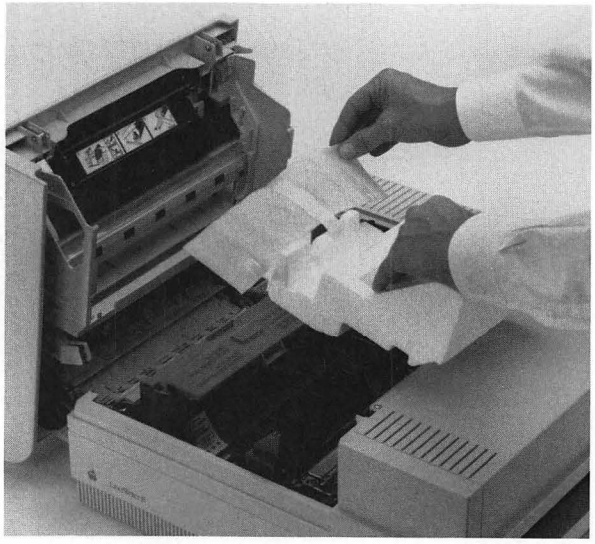


Figure 1-4 Removing the packing material from inside the printer

4. **Remove the orange tabs.**

   Toward the left side of the unit you'll see two orange tabs extending back from either side of a green felt cover. (See Figure 1-5.) Remove the tabs and store them with the rest of the packing material.

Installing the first toner cartridge

The first time you install a toner cartridge, follow the steps provided here. After that, each time you install a cartridge, use the instructions in Chapter 6, "Maintenance."

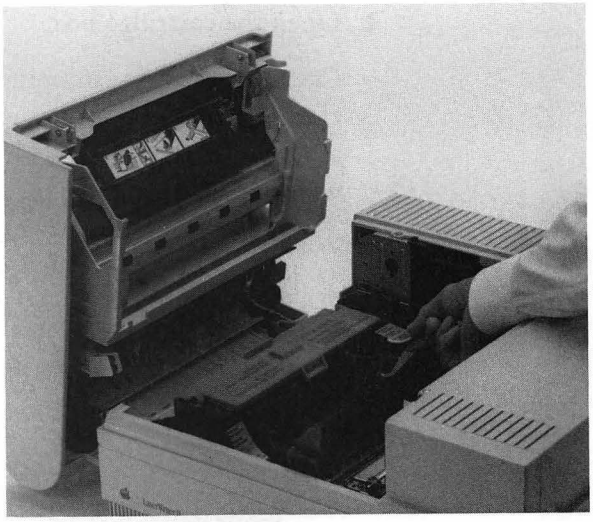


Figure 1-5 Removing the orange tabs

The toner cartridge contains the printer's powdered "ink." Each cartridge lasts for approximately four thousand pages, depending on the kind of printing you do. If you use the LaserWriter II to produce a lot of graphic images, as opposed to text, you may find that you need to change cartridges more often.

△ **Important:** Use only a LaserWriter II Toner Cartridge with the LaserWriter II. Other cartridges will not fit.

Follow these steps only if you are installing the first toner cartridge in a new LaserWriter II. If you are installing a replacement cartridge, follow the steps in Chapter 6 or those provided with the cartridge. Those instructions provide additional information about cleaning the LaserWriter after it has been in use. △

1. **Open the cartridge box.**

   Open the cartridge shipping carton, take out the wrapped cleaning pad, and put it aside. Open the sealed metallic bag and remove the cartridge, holding it by the indentation at its wide end. *Do not touch the area shown in Figure 1-6.*

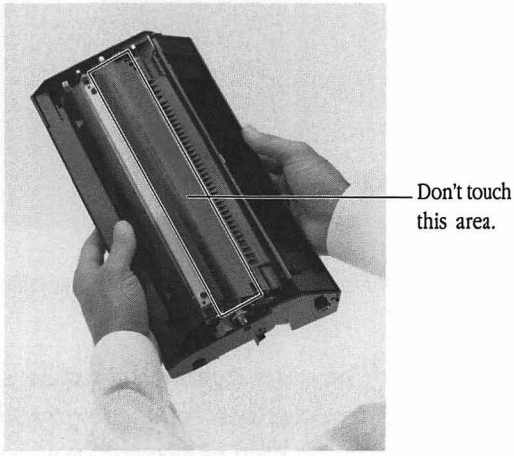


Figure 1-6 The toner cartridge

2. **Distribute the toner powder.**

   Holding the cartridge horizontally (see Figure 1-7), slowly rock it back and forth to a 45-degree angle four or five times to distribute the toner powder.

3. **Insert the cartridge.**

   The cartridge fits into a slot in the top section of the LaserWriter II, as shown in Figure 1-8. Insert it narrow end first, using the directional arrows on the cartridge as a guide. Slide it in as far as it will go. Be sure that it is seated firmly.

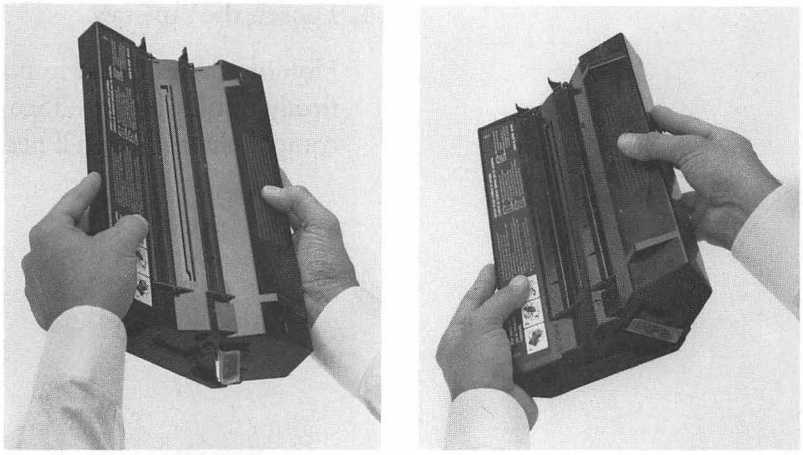


Figure 1-7 Distributing the toner powder

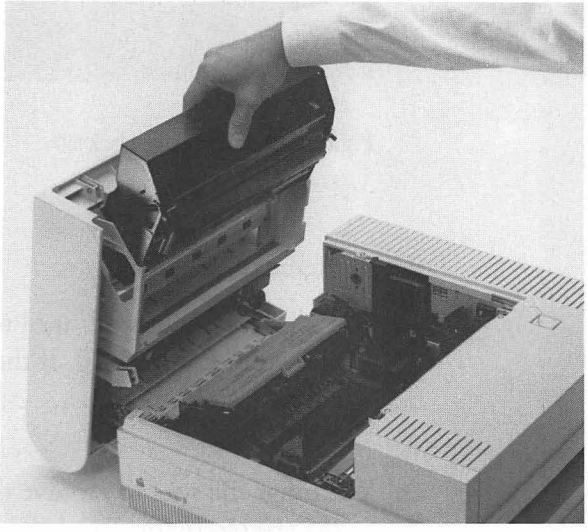


Figure 1-8 Inserting the toner cartridge

4. **Loosen the tape tab.**

   Holding the cartridge in place, flex the black tab gently but firmly until it loosens. (See Figure 1-9.) Don't tear it completely away; you'll need it to pull out the sealing tape.

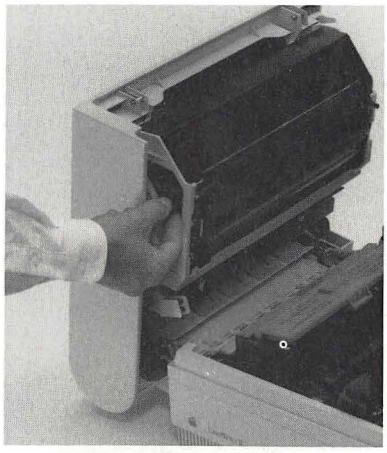


Figure 1-9 Flexing the black tab

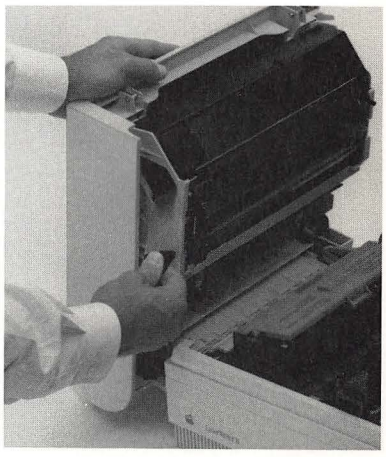


Figure 1-10 Removing the tape from the toner cartridge

5. **Remove the tape.**

   Pull the tab outward until the tape is completely removed, as shown in Figure 1-10. If the tab comes off, grasp the tape directly and pull out.

▲ **Warning:** Be sure to remove the sealing tape *with the cartridge in the printer.* If you insert the cartridge with the tape removed, toner may spill into the printer. For the same reason, avoid transporting the printer with a cartridge installed, and always remove cartridges carefully. ▲

Installing the cleaning pad

The cleaning pad that comes with the toner cartridge continuously cleans the **fixing rollers** (which fuse the toner to the paper) while you print.

1. **Remove the felt tip from the end of the cleaning pad.**

   When you change the cartridge and cleaning pad, you'll use the felt tip to clean the fixing rollers. Because the printer is new and doesn't need cleaning, just remove the tip, as shown in Figure 1-11, and discard it.

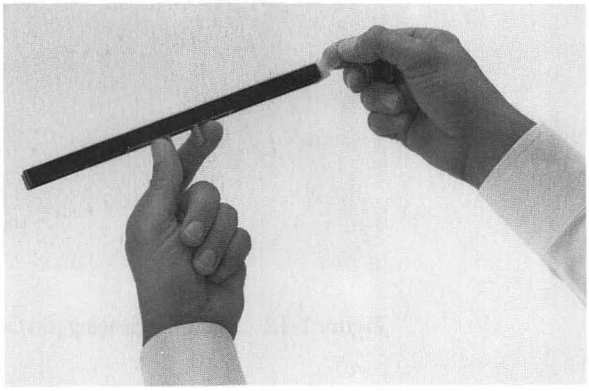


Figure 1-11 Removing the felt tip from the cleaning pad

2. **Lift the green felt cover that protects the fixing rollers.**

3. **Fit the pad into the groove as shown in Figure 1-12.**
4. **Close the cover.**

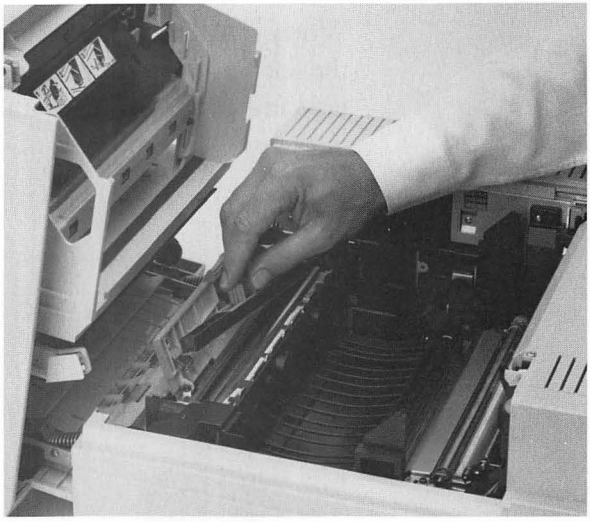


Figure 1-12 Fitting the cleaning pad the under the fixing roller cover

5. **Check the print density dial.**

   This is a convenient time to check the print density setting. The print density dial is inside the printer as shown in Figure 1-13.

   The dial should be set to 5. Position it there if necessary. (You'll use this dial later if your prints are too light or too dark. See Chapter 6 for details.)

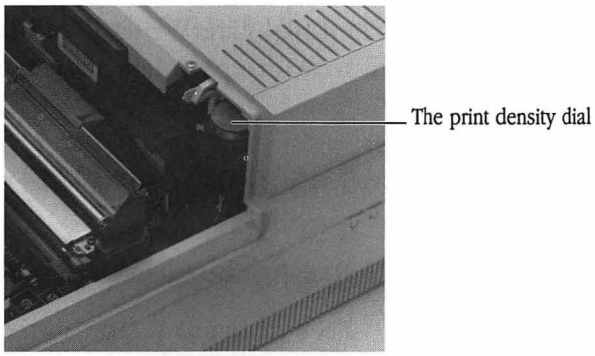


Figure 1-13 The print density dial

6. Close the printer.

Lower the top gently, pushing in its center to close. (See Figure 1-14.) You'll hear a click when it's secure.

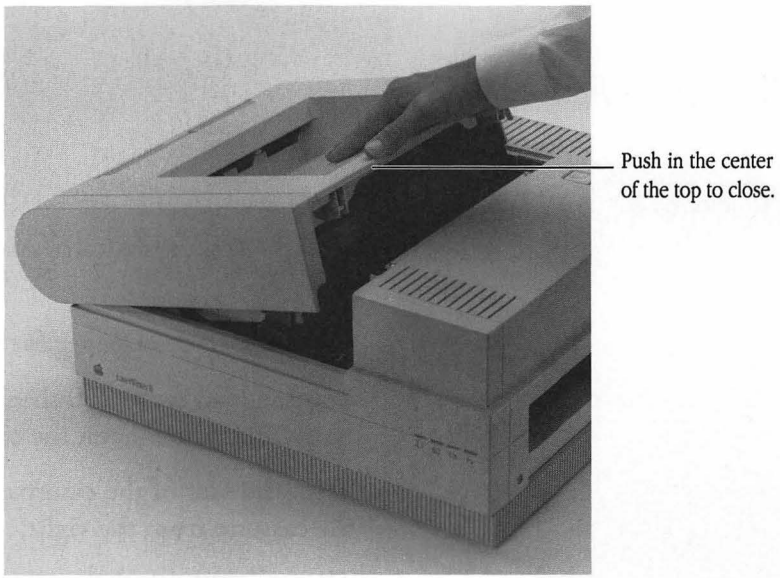


Figure 1-14 Closing the printer

Loading the paper cassette

The 110V LaserWriter II comes with one U.S. letter-size paper cassette (except in Japan, where the 110V printer comes with an A4 paper cassette). The 220V LaserWriter II comes with one A4 paper cassette. You can order additional letter-size cassettes, as well as legal-size, international-size, and envelope cassettes, from your authorized Apple dealer.

1. **Remove the packing material from the cassette.**

   Peel the filament tape off the cassette, take the top off, and remove the packing material. (See Figure 1-15.)

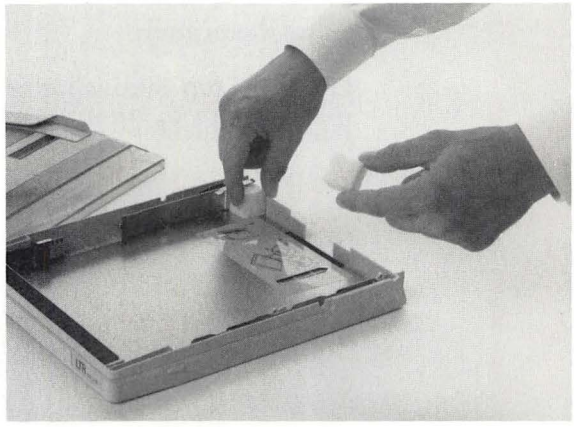


Figure 1-15 Removing the packing material from the cassette

2. **Prepare a stack of paper for insertion.**

   You can load up to 200 sheets of 20-pound photocopier or typewriter paper. Even the edges on all sides before inserting.

3. **With the rear of the cassette toward you, slide the stack into the cassette from the right.**

   The rear of the cassette is wider and solid. The front is narrower and has a cutaway. (See Figure 1-16.)

4. **Slide the paper beneath the clip at the left front of the cassette.**

   Push the paper down if necessary, but don't overload the cassette.

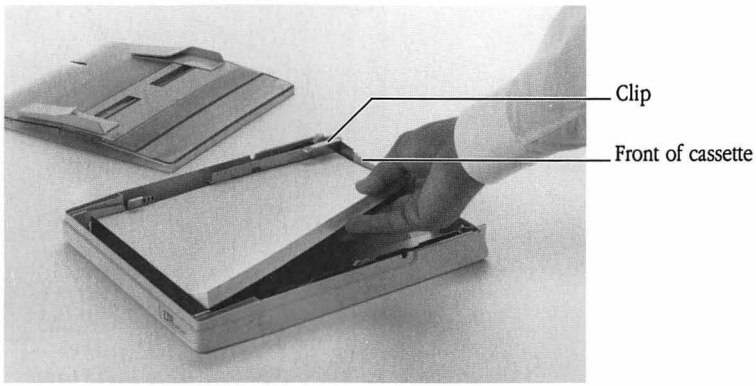


Figure 1-16 Loading the cassette

Load three-hole paper with the holes toward the front (the Apple logo side) of the printer. Use the directional arrows on the cassette as a guide.

Load letterhead paper face up, with the letterhead toward the front of the cassette.

You can expect excellent printing results if you use photocopier paper or most standard typewriter stocks. See "About Paper" in Chapter 3 for details.

5. **Put the cover on the paper cassette.**

Installing the paper cassette

1. **Slide the front of the cassette into the slot on the right side of the LaserWriter II. (See Figure 1-17.)**

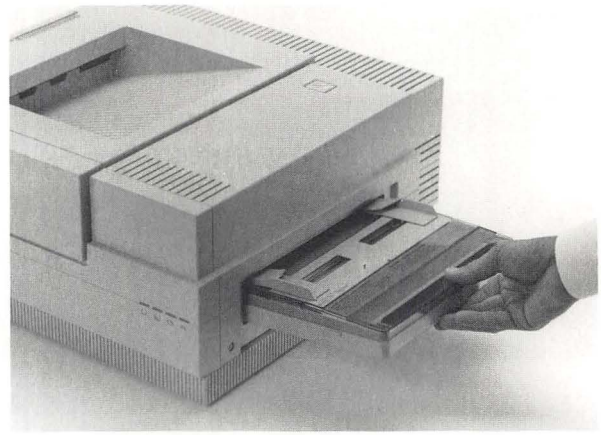


Figure 1-17 Inserting the loaded cassette

2. **Push the cassette in until it locks into place.**

▲ **Warning:** Never try to load a cassette with the wrong paper size. Doing so could cause a paper jam, or damage the printer drum, or cause toner to spill into the printer. ▲

Connecting to a Macintosh

You connect the LaserWriter II to a Macintosh with **LocalTalk cables** and **LocalTalk connector boxes**—the same connectors that link computers and **peripheral devices** in an **AppleTalk® network system.**

If you are connecting the printer to an Apple II computer, see Appendix A. If you are connecting the printer to another kind of computer, see Appendix C.

❖ *Not on a network?* Even if you intend to connect just one Macintosh computer to one LaserWriter II printer, you still connect the devices using LocalTalk cables. (The connected computer and the printer form a small network.) ❖

1. **Make sure both the printer and the computer are switched off.**
2. **Plug a LocalTalk connector box into the LocalTalk port on the LaserWriter II.**

   As shown in Figure 1-18, the LocalTalk port is on the right side of the connector panel on the back of the LaserWriter II.
3. **Plug a second LocalTalk connector box into the printer port on the Macintosh.**
4. **Connect the two connector boxes with a LocalTalk cable. (See Figure 1-18.)**

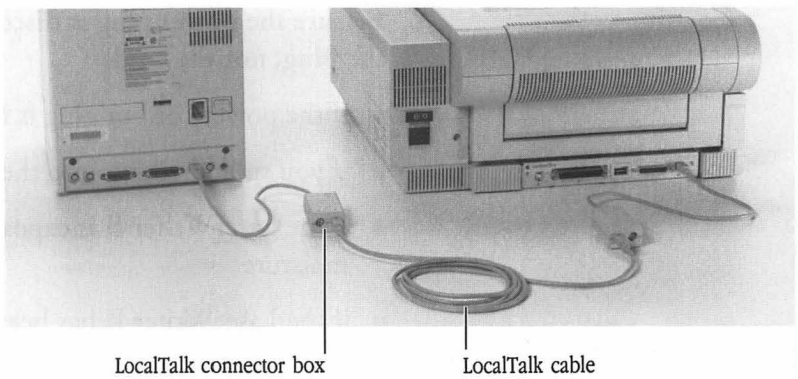


Figure 1-18 The LaserWriter II connected to a Macintosh

Important safety instructions

You're almost ready to plug in your LaserWriter II, but first read these important safety instructions.

▲ **Warning:** This equipment is intended to be electrically grounded.

The LaserWriter II is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounding-type AC outlet. This is a safety feature.

If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet.

Do not defeat the purpose of the grounding plug! ▲

For your own safety and the safety of your equipment, always take the following precautions.

Be sure the power plug is disconnected (disconnect by pulling the plug, not the cord)

- if the power cord or plug is frayed or otherwise damaged
- if you spill anything into the case
- if the LaserWriter II is exposed to rain or any other excess moisture
- if the LaserWriter II has been dropped or if the case has been otherwise damaged
- if you suspect that the LaserWriter II needs servicing or repair
- whenever you clean the case (use only the recommended procedure given below)

Be sure that you always do the following:

- Keep the LaserWriter II away from sources of liquids, such as wash basins, bathtubs, shower stalls, and so on.
- Protect the LaserWriter II from dampness or wet weather.
- Read all the installation instructions carefully before you plug the LaserWriter II into a wall socket.
- Ask your authorized Apple dealer to replace the ozone filter once a year as part of regular maintenance. The new filter ensures continued low ozone emissions in your LaserWriter II.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

▲ **Warning:** Electrical equipment may be hazardous if misused. Operation of the LaserWriter II or similar products must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables. ▲

To clean the case, do the following:

1. **Disconnect the power plug. (Pull the plug, not the cord.)**
2. **Wipe the surfaces lightly with a clean, soft cloth dampened with water.**

   Use a mild soap or detergent if necessary. Do not use ammonia-based cleaners on or around the LaserWriter II.

Starting up

Now that you have set up your printer and read the safety instructions, you're ready to start up the printer. Follow these steps to make sure everything is working correctly.

1. **Make sure that the printer is switched off.**

   The on/off switch is on the left rear corner of the printer. (See Figure 1-19.)

2. **Plug the printer in and turn it on.**

   Insert the power cord into the receptacle. Plug the other end into a grounded three-hole AC outlet, and turn the printer on. (See Figure 1-19.)

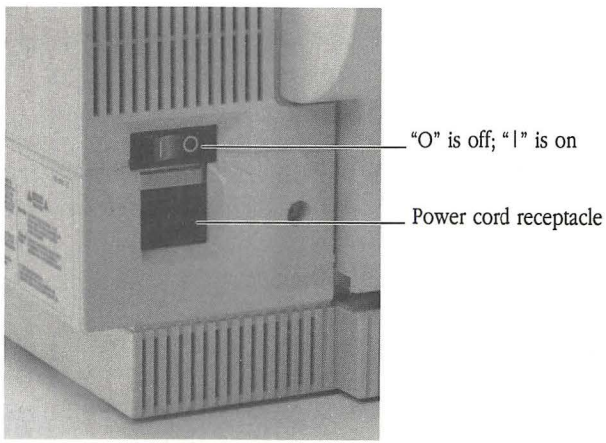


Figure 1-19 The on/off switch and the power cord receptacle

3. **Check the startup page.**

   The printer takes a minute or two to warm up, and then it automatically prints a startup page. (It prints the startup page every time you restart it.)

   The startup page should look as clear as the example in Figure 1-20.

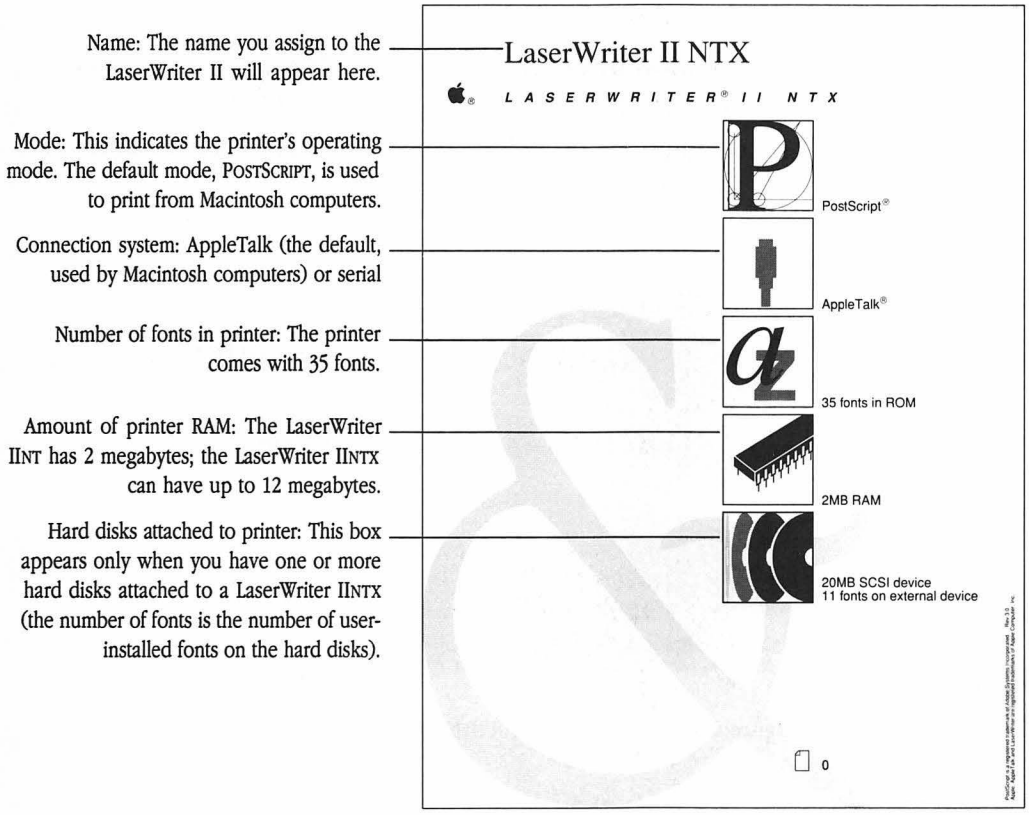


Figure 1-20 The LaserWriter II startup page

The startup page shown is from a LaserWriter IINTX connected to a Macintosh, with a hard disk attached to the printer. For this configuration, the top icon should say POSTSCRIPT®, and the second icon from the top should say *AppleTalk*. If not, check the switch settings. See Appendix F for full information.

If the startup page is spotty, switch the printer off and on again to print a second page. Try this two or three times if necessary.

If the output doesn't improve, if it's too light or too dark, or if the printer won't print the startup page, refer to Chapter 7, "Troubleshooting."

4. **Check the status lights.**

The green Ready/In Use light will flash until the startup page is printed. It then glows steadily. All other lights should be off (see Figure 1-21). If any other lights are on, see Chapter 7, "Troubleshooting."

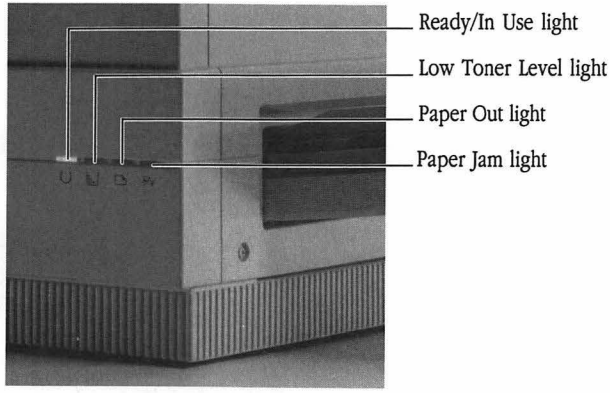


Figure 1-21 The LaserWriter II status lights

Software Installation

In your LaserWriter II accessory kit you will find the *LaserWriter II Installation Disk* and the *LaserWriter IINT/NTX Fonts Disk.*

The *LaserWriter II Installation Disk* contains the **printer driver,** the software that controls printer operation. The other disk, *LaserWriter IINT/NTX Fonts Disk,* contains the LaserWriter II screen fonts.

You install the fonts, the LaserWriter driver, and the Laser Prep file in the System Folder on your startup disk.

See the documentation that came with your Macintosh if you have any questions about creating startup disks.

△ **Important:** As a precaution, be sure to make backup copies of the *LaserWriter II Installation Disk* and the *LaserWriter IINT/NTX Fonts Disk* to use in the installation process. Store the originals in a safe place. See the documentation that came with your Macintosh for instructions on copying disks. △

Installing the printer driver

You can install the printer driver on as many startup disks as you need. It's a good idea to update all disks at the same time to avoid having disks with different versions of printing software.

1. **Start the Macintosh and wait until the desktop appears.**
2. **Insert the *LaserWriter II Installation Disk* and open the disk icon.**

   Select the icon and choose Open from the File menu, or double-click the icon. You'll see the icons shown in Figure 2-1.

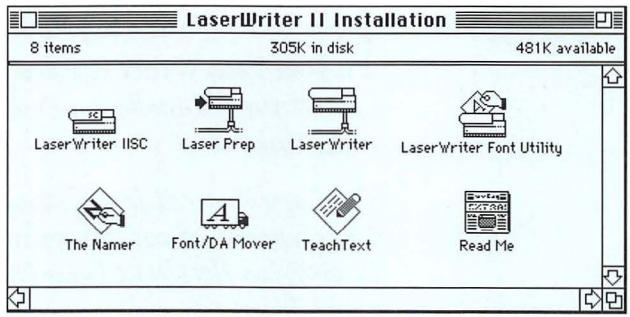


Figure 2-1 Contents of the LaserWriter II Installation Disk

3. **Drag the LaserWriter and Laser Prep icons to your startup disk.**
4. **If necessary, open the startup disk icon.**

   You'll see the LaserWriter and Laser Prep icons in the window. (See Figure 2-2.)

Figure 2-2 The LaserWriter and Laser Prep icons

5. **Drag the LaserWriter and Laser Prep icons to the System Folder.**

   This completes the installation procedure. You can now repeat it with another startup disk or proceed to name the LaserWriter II and to install fonts.

Naming the LaserWriter II

If your printer is part of a network that includes other LaserWriter printers, you should give each one a distinguishing name. These names appear in the Chooser desk accessory whenever you choose LaserWriter as the printer type.

1. **Start the Macintosh and wait for the desktop to appear.**
2. **Insert the *LaserWriter II Installation Disk.***
3. **Open the Namer application.**

4. **Click the LaserWriter icon (see Figure 2-3).**

   You'll see the LaserWriter II listed (as *LaserWriter IINT* or *LaserWriter IINTX*) in the Namer dialog box. (See Figure 2-3.)

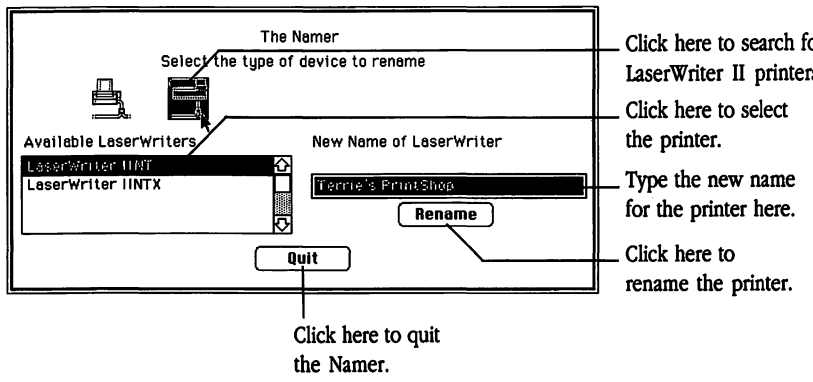


Figure 2-3 The Namer dialog box

4. **Click the name LaserWriter IINT or IINTX.**
5. **Type the new name, and click Rename.**
6. **Click Quit to return to the desktop.**

   The new name appears in the Chooser desk accessory. See "Using the Chooser," later in this chapter.

You can use this procedure to name (or rename) all LaserWriter II printers on the network. Be sure to tell everyone who uses the network what the new names are, so that they can find the printers in the Chooser.

Installing fonts

The *LaserWriter IINT/NTX Fonts Disk* contains the LaserWriter II **font file.** The file includes the screen versions of eight widely used font families—ITC Avant Garde®, ITC Bookman®, Courier, Helvetica®, Helvetica Narrow, New Century Schoolbook, Palatino®, and Times®—as well as three special-purpose fonts: Symbol, ITC Zapf Chancery®, and ITC Zapf Dingbats®. For samples of the fonts, see Chapter 4, "All About Fonts."

The printer fonts (fonts the printer uses to print) are already installed in the printer's memory, but you need to install the screen fonts (fonts that the computer uses to display text on the screen) so that you can use these fonts to create documents.

You install screen fonts in the System file on your startup disks. The font file contains screen fonts in 9-, 10-, 12-, 14-, 18-, and 24-point sizes.

Your documents will look best on the Macintosh screen if you use one of the installed font sizes. Although you can use fonts in sizes you have not installed, using screen fonts in one of the installed sizes produces these improvements:

- clearer screen displays
- better line spacing in the printout
- more accurate on-screen representation of the printout.

But if you aren't concerned with screen quality, you can use the fonts in any point size. The LaserWriter II can print fonts in a range of sizes limited only by resolution (too small and there isn't enough detail to differentiate between characters) and by the size of the paper, with no loss of print quality.

See Chapter 4, "All About Fonts," for more information.

You install fonts on your startup disks using the Font/DA Mover. This application is contained on the *LaserWriter II Installation Disk*. It's easier to install fonts after you have copied the Font/DA Mover to your startup disk. The following instructions assume that you have done so.

▲ **Warning:** Use only the version of the Font/DA Mover contained on the installation disk. If you have an earlier version on a startup disk, replace it with the new version from the installation disk. ▲

1. **Start the Macintosh with a disk that includes the LaserWriter II printer driver, Laser Prep file, and the current Font/DA Mover.**

2. **Insert the *LaserWriter IINT/NTX Fonts Disk* and open the disk icon.**

   You'll see a "suitcase" icon for the LaserWriter II font file, as well as the icon for the Font/DA Mover.

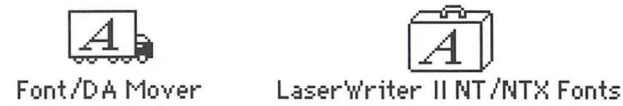


Figure 2-4 The LaserWriter II font file and the Font/DA Mover

3. **Open the icon labeled LaserWriter IINT/NTX Fonts.**

   Opening the font file automatically opens the Font/DA Mover. All the fonts in that file are listed on the left. (See Figure 2-5.)

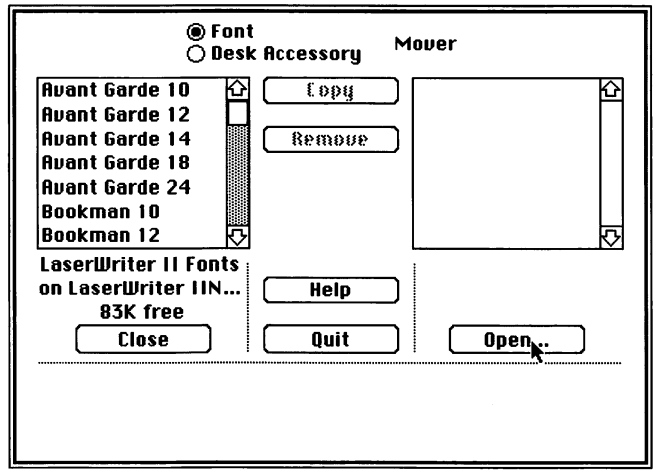


Figure 2-5 The LaserWriter II fonts in the Font/DA Mover

4. Click the Open button.

A dialog box appears with a list of folders on your startup disk. (See Figure 2-6.) You should see the name of your startup disk in the top-right corner. If you see the name of the fonts disk instead, click the Drive button.

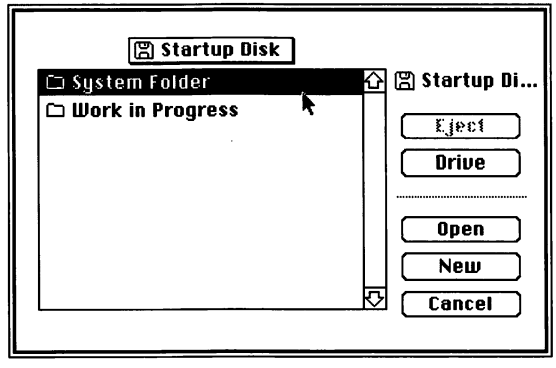


Figure 2-6 The list of folders on the startup disk

5. **Open the System Folder.**

   The System file is now listed, as shown in Figure 2-7. You install fonts in the System file, which is contained in the System Folder.

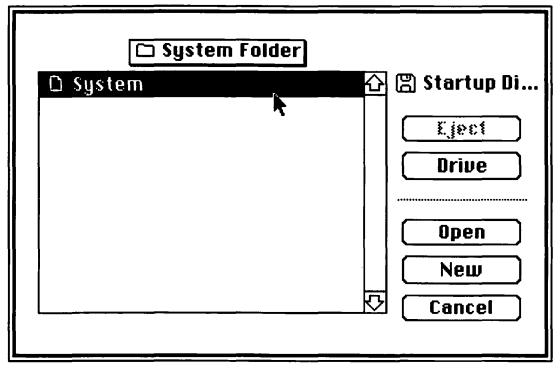


Figure 2-7 The System file

6. **Open the System file.**

   The dialog box disappears, and the fonts currently in the System file are now listed in the column on the right. (See Figure 2-8.)

7. **Select the fonts you want.**

   Select a single font by clicking its name. (See Figure 2-9.) When you select a single font, the Font/DA Mover displays a sample at the bottom of the dialog box and tells you how much disk space the font occupies.

   Select additional fonts by holding down the Shift key while you click each name. You won't see a sample, but you will see a running total of space required.

   Select a group of fonts or the entire file by dragging through the group or file.

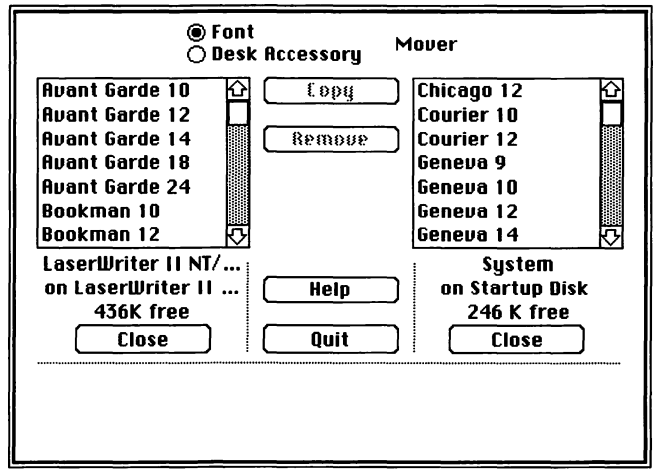


Figure 2-8 The LaserWriter II and System fonts in the Font/DA Mover

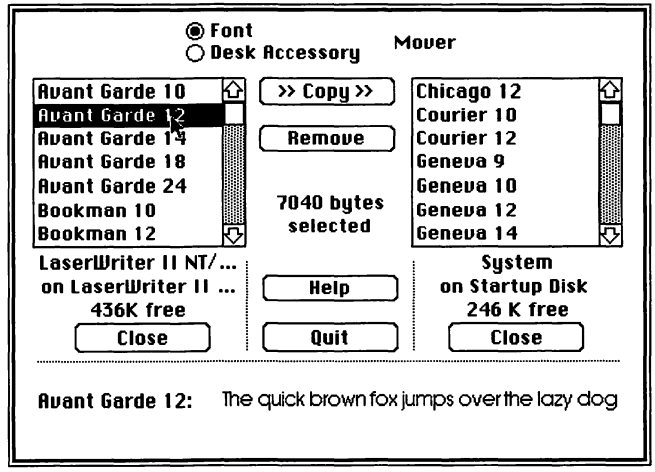


Figure 2-9 Selecting a single font

8. Click Copy to copy the selected fonts to your System file.

When you select one or more fonts, the Copy and Remove buttons become highlighted and ready to use. Clicking Copy adds these fonts to the System file on the startup disk.

9. Click Quit to close the Font/DA Mover.

Using the Chooser

When you want to print with the LaserWriter II for the first time or after using another printer, you need to select the LaserWriter II in the Chooser desk accessory.

1. **Start the Macintosh with a startup disk that includes the LaserWriter II printer driver.**
2. **Choose Chooser from the Apple menu.**

   You'll see an icon representing the LaserWriter II, as well as icons for any other printer drivers on the startup disk. (See Figure 2-10.)
3. **Click the LaserWriter icon.**

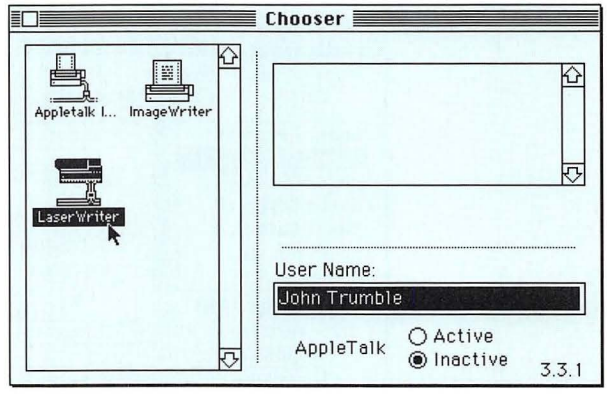


Figure 2-10 The Chooser with the LaserWriter icon selected

4. **If necessary, activate the AppleTalk software.**

   If the AppleTalk software is not activated, you'll see a message reminding you to activate it. (See Figure 2-11.) Click OK, then click the Active button in the Chooser window.

   A few seconds later, you'll see the name of your LaserWriter II. (See Figure 2-12.) For instructions on naming your printer, see "Naming the LaserWriter II" earlier in this chapter.

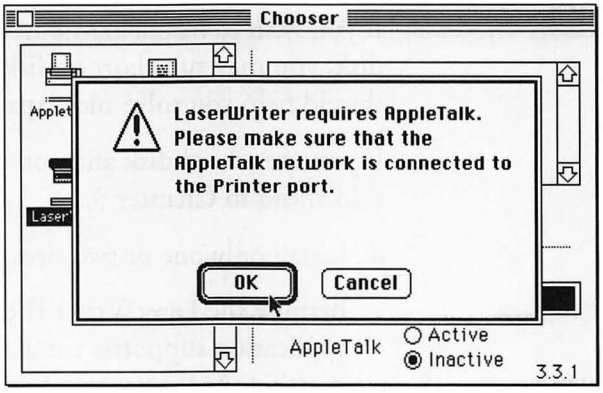


Figure 2-11 The AppleTalk dialog box

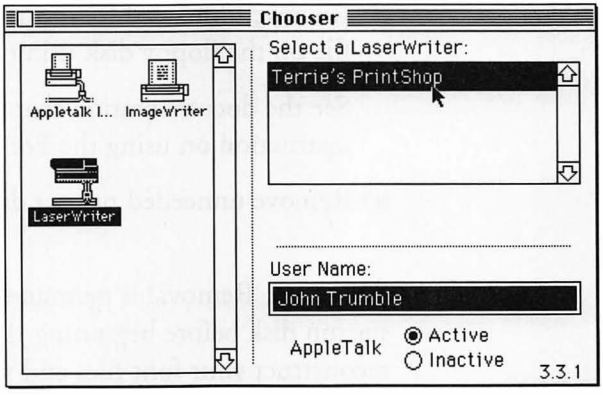


Figure 2-12 The Chooser with the LaserWriter II listed by name

5. **Click the appropriate name in the printer list.**
6. **Type your name in the space below User Name.**

   Your name will automatically appear in the Chooser from now on, unless you change startup disks.
7. **Close the Chooser.**

Managing disk space

If you wish to install all the LaserWriter II fonts on a floppy disk, you may run short of disk space. The suggestions below should help you solve most space problems.

If you use a hard disk and you aren't concerned with disk space, skip ahead to Chapter 3.

- Install only one or two sizes of each font family.

  Because the LaserWriter II can scale fonts to any size an application supports, you'll still have the full range for printing. As long as you have at least one size of a font family installed as a screen font, your output will print clearly in all sizes. The only difference is that your screen displays may not be as clear.

- Remove unneeded fonts and desk accessories from the System file on the floppy disk using the Font/DA Mover.

  See the documentation that came with your Macintosh for instruction on using the Font/DA Mover.

- Remove unneeded printer drivers.

▲ **Warning:** Removal is permanent. Be sure to make a copy of the startup disk before beginning these procedures so that you can reconstruct your font files and your printer drivers if you make a mistake or change your mind. ▲

Removing printer drivers

Unless you are using more than one type of printer, the new LaserWriter printer driver and Laser Prep files are the only files you need. These files also work with earlier LaserWriter and LaserWriter Plus printers. You do not need the old LaserWriter driver or Laser Prep files if you have installed the new files.

1. **Start the Macintosh and, if necessary, insert the startup disk you're going to alter.**
2. **Open the System Folder.**
3. **Drag the unneeded printer files to the Trash.**

Using the LaserWriter II

Before printing with the LaserWriter II for the first time, check to make sure that the printer is properly connected and that the switches are properly set. Refer to "Connecting to a Macintosh" in Chapter 1 (or to Appendix A, "Connecting to an Apple II" or Appendix C, "Connecting to and Printing With an MS-DOS Computer") if you need more information about connections.

Printing from the paper cassette

To print using the paper cassette, follow these instructions:

1. **Start the Macintosh.**

   Make sure your startup disk contains the LaserWriter printer driver and any fonts you intend to use.

2. **Open the document you want to print.**

3. **If necessary, choose Page Setup from the File menu.**

   Choose Page Setup for either of the following reasons:

   - You are changing printers or using the LaserWriter II for the first time.
   - You're changing the paper size, percentage of reduction or enlargement, or page orientation. See "About the Page Setup Dialog Box" later in this chapter for more information. (This example presumes that you are not going to change the preset options.)

4. **Click OK.**

   Or press Return. This confirms the preset options.

△ **Important:** Even if you don't want to change any of the preset options, don't skip these steps if you're changing printers or are using the LaserWriter II for the first time. The default settings may be incorrect, and your document may not print correctly. △

5. **Choose Print from the File menu.**

6. **Make sure that Paper Cassette is selected.**

   If necessary, click the Paper Cassette button.

7. **Click OK.**

   Or press Return. The LaserWriter II will now print one copy of every page of the document, automatically feeding paper from the paper cassette. See "About the Print Dialog Box" later in this chapter for more information.

8. **Check your output.**

   If there are any problems with the output, see Chapter 7, "Troubleshooting."

Face-up delivery and heavy-stock paper or envelopes

Most applications print first page first, so that face-down delivery collates properly. Some print first page last, so that face-up delivery is appropriate. You'll need to experiment to determine which is true for a given application.

If you need face-up delivery, simply open the face-up tray, pictured in Figure 3-1. It can hold up to 20 sheets of 20-pound paper.

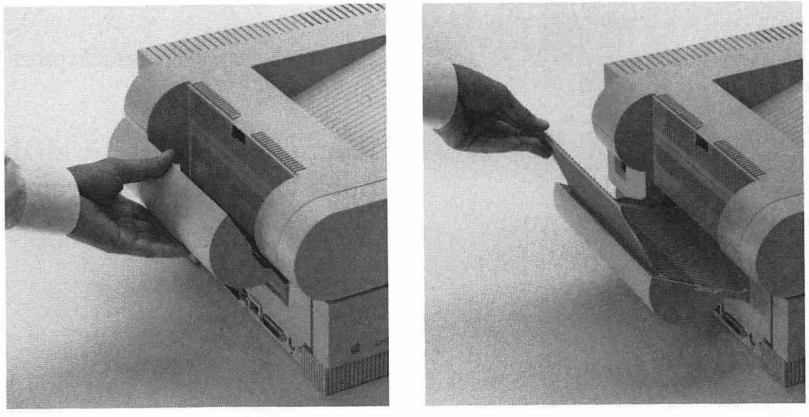


Figure 3-1 The face-up tray

In addition to face-up delivery, the face-up tray also allows you to print on envelopes and paper stock of up to 36 pounds. See "About Paper" later in this chapter for more information.

▲ **Warning:** Never open or close the face-up tray when printing is in progress. Changing the position of the tray during printing can cause a paper jam.

Always open the face-up tray before printing on paper heavier than 20 pounds, or on envelopes, labels, or transparencies. ▲

Letterhead and three-hole paper

Insert letterhead paper face up with the letterhead entering the printer first. (See Figure 3-2.)

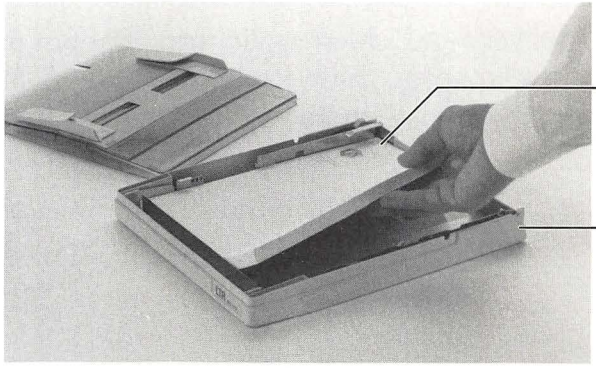


Figure 3-2 Inserting letterhead paper

Insert three-hole paper with the holes toward the front (the Apple logo side) of the printer. (See Figure 3-3.)

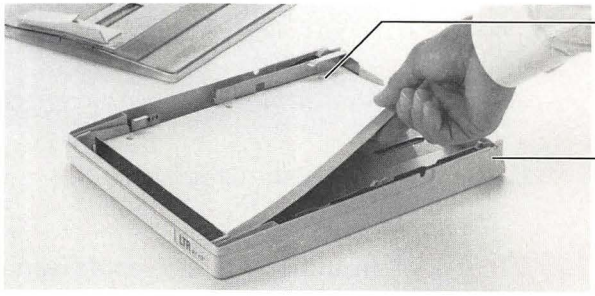


Figure 3-3 Inserting three-hole paper

Using an envelope cassette

You can obtain an envelope cassette from your authorized Apple dealer that allows you to print on envelopes (or envelope-shaped paper) using automatic feed.

- *Envelope quality:* Some envelopes come unglued when subjected to the high temperature inside the LaserWriter II. Use high quality envelopes to help ensure that your envelopes will hold up during the printing process. ❖

For best results, be sure to position your address block properly. (See Figure 3-4.)

▲ **Warning:** To prevent a paper jam do not use envelopes that are bent or wrinkled. ▲

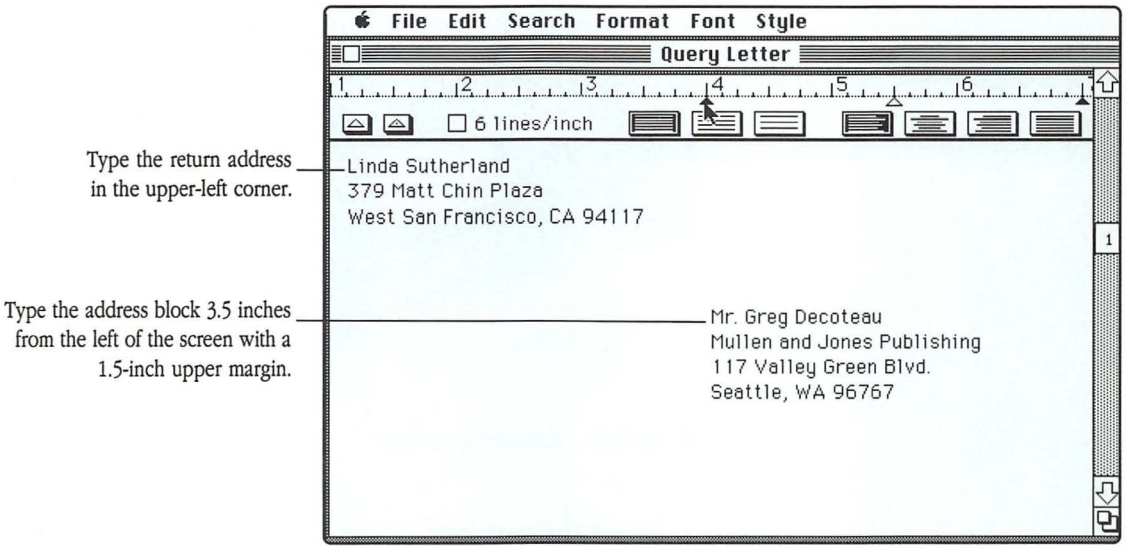


Figure 3-4 Positioning the address block

1. **Take out the standard cassette.**
2. **Tuck the flap of each envelope inside the envelope.**

   This will help prevent the flap from causing a paper jam.
3. **Load up to 15 envelopes in the envelope cassette.**

   Stack the envelopes face up and with the top of the envelope toward the rear as they enter the printer.
4. **Adjust the envelope cassette to the size of the envelope.**

   Adjust the sliding guides so that the envelopes fit snugly but do not bow. (See Figure 3-5.)

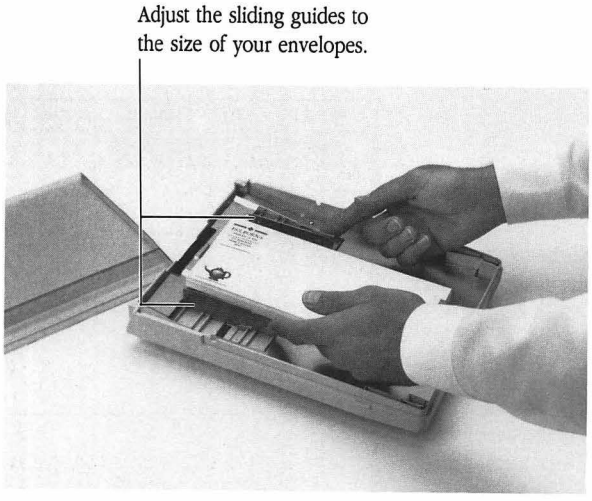


Figure 3-5 The envelope cassette

5. **Insert the envelope cassette.**
6. **Open the face-up tray.**
7. **Open the application and choose Page Setup from the File menu.**
8. **Select the landscape icon. (See Figure 3-6.)**
9. **Print.**

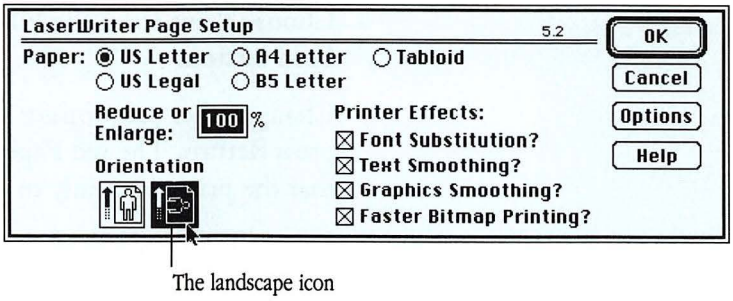


Figure 3-6 Selecting the landscape icon

Manual feed printing

Use manual feed when you want to print on a few sheets of paper that are different from the kind of paper in the cassette.

▲ **Warning:** Before you print, make sure the paper selection in the Page Setup dialog box matches the type of paper on which you'll be printing. Printing with the selection set incorrectly could cause a paper jam, damage the printer drum, or cause toner to spill into the printer. ▲

1. **Open a document and choose Page Setup from the File menu.**
2. **Change the page setup options as needed and click OK or press Return.**
3. **Adjust the manual feed guide to fit your paper.**

   The cover of the paper cassette is also the manual feed guide. Adjust the sliding paper guides so that your paper fits snugly. Be sure that the paper is not so loose that it can slide around, or so tight that it bows. Either situation can cause paper jams.

4. **Choose Print from the File menu and click the Manual Feed button.**

   Change other print options if you wish, and then click OK or press Return. The red Paper Out light will flash, indicating that the printer is ready to accept paper.

5. **Insert the first sheet of paper.**

   Slide the paper in until you feel it stop. When the light flashes again, the printer is ready for the next sheet.

Printing envelopes using manual feed

If you don't have an envelope cassette, use manual feed to print envelopes. Be sure to start from within an application, rather than from the Finder™, so that you can change Page Setup.

△ **Important:** For best results, be sure to position your address block properly. For guidelines, see Figure 3-4. △

1. **Choose Page Setup from the File menu, and select the landscape icon.**
2. **Open the face-up tray.**
3. **Adjust the manual feed guide to fit the envelope.**
4. **Choose Print from the File menu and click Manual Feed.**
5. **Tuck the envelope flap inside the envelope.**

   This helps prevent the flap from causing a paper jam.

6. **Insert the envelope face up with the top edge to the rear as it enters the printer. (See Figure 3-7.)**

❖ *Envelope quality:* Some envelopes may come unglued when subjected to the high temperature inside the LaserWriter II. Use high quality envelopes to help ensure that your envelopes will hold up during the printing process. ❖

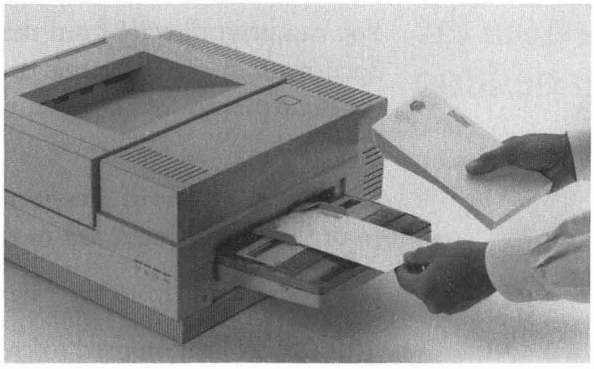


Figure 3-7 Inserting envelopes

Two-sided (duplex) printing

Follow these steps when you want to print on both sides of the paper.

1. **Open the face-up tray to minimize paper curling.**
2. **Following the directions for manual feed, print a page and take it out of the output tray.**
3. **Insert the paper again, printed side down, with the top of the printed side entering the printer first. (See Figure 3-8.)**

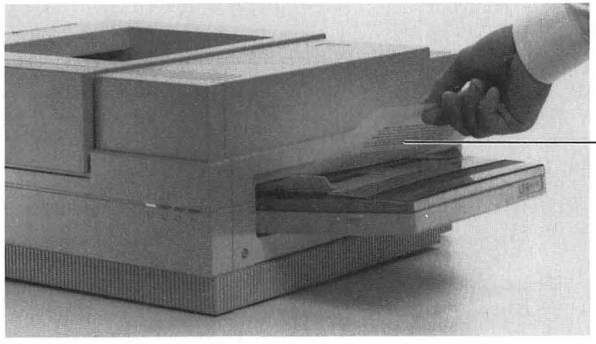


Figure 3-8 Inserting paper for duplex printing

Printing from the Finder desktop

You can print directly from the desktop, without opening a document, in either manual or automatic mode. You follow all the same procedures, but you can't change the Page Setup settings.

1. **Select the icons of one or more documents to print. The order of printing is left to right, top to bottom.**
2. **Choose Print from the File menu.**

   If the application used to create the document is already open, you may see a message telling you to open the document from within the application.

   Unless you are using MultiFinder™, all documents must have been created with the same application. Otherwise, the Macintosh will not process the Print command when it encounters a document created with a different application.

About the Print dialog box

When you choose the Print command, you'll see a dialog box that allows you to adjust your printing options. Change the settings in the Print dialog box as necessary. (The dialog box may not look exactly like the one pictured in Figure 3-9, but in most applications it will include all the options shown.)

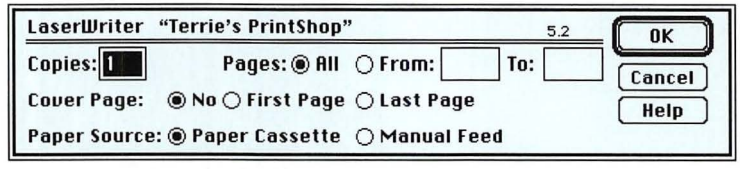


Figure 3-9 The Print dialog box

For more than one copy: Type the number of copies you want.

For a specified page range: Click the From box and type the number of the first page you want printed. Press Tab to move to the To box (or click it), and type the number of the last page you want printed.

To print a single page: Type the same page number in both boxes.

To print a cover page at the beginning or end of the print job: Click the First Page or Last Page button. The cover page lists your name, the application, the document, the date, the time, and the printer used.

To choose manual feed or paper cassette: Click the Manual Feed or Paper Cassette button.

About the Page Setup dialog box

The Page Setup dialog box gives you additional ways to control your printed output. To see the page setup options, choose Page Setup from the File menu.

You can change page setup as necessary, or you can confirm the default settings by clicking OK or pressing Return. (The Page Setup dialog box may not look exactly like the one pictured in Figure 3-10, but in most applications it will include all the features listed below. Some applications may offer additional options.)

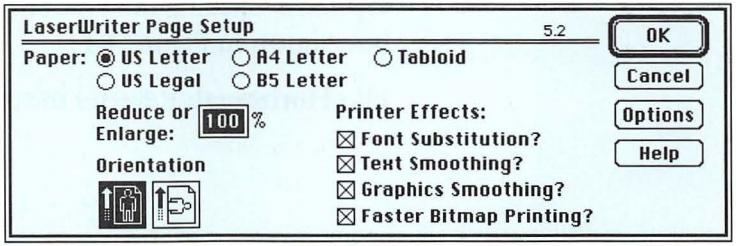


Figure 3-10 The Page Setup dialog box

Paper: Click the button that matches the paper size you're using.

Orientation: Click the landscape icon for horizontal output.

Font Substitution: This option converts the Macintosh fonts Geneva, New York, and Monaco into the LaserWriter II fonts Helvetica, Times, and Courier. (The word spacing will be better if you choose the LaserWriter II fonts directly. See Chapter 4, "All About Fonts," for more information.)

Text Smoothing: This option minimizes jagged edges on Macintosh screen fonts printed with no corresponding printer fonts. There is no need to use this option if you are printing Geneva, New York, or Monaco text with the Font Substitution option selected. See Chapter 4, "All About Fonts," for details about fonts.

Graphics Smoothing: This option minimizes jagged edges on printed graphic images.

Faster Bitmap Printing: This option speeds the printing of graphic images.

(The four preceding options are turned on in the default setting. If you experience difficulty printing bitmaps, turn off Faster Bitmap Printing and Graphics Smoothing. If you still have trouble printing, try turning on Precision Bitmap Alignment.)

Reduce or Enlarge: Type any percentage of reduction or enlargement from 25 to 400 percent. Your output is automatically scaled to that size.

Options: Clicking the Options button presents a new dialog box, shown in Figure 3-11.

Flip Horizontal: Reverses the page left to right.

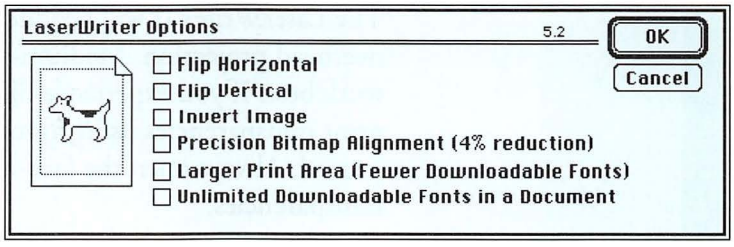


Figure 3-11 The Options dialog box

Flip Vertical: Reverses the page top to bottom.

Invert Image: Prints white on black.

Precision Bitmap Alignment: Reduces the size of the printed page by 4 percent for better representation of graphic images.

Larger Print Area: This expands the print area by allowing you to print farther into the margins on a page. This option uses more of the LaserWriter's memory, thereby reducing the number of downloadable fonts your printer can store at one time.

Unlimited Downloadable Fonts in a Document: This option allows you to use as many downloadable fonts in a document as you wish, but it takes longer to print.

About paper

The LaserWriter II gives the best results on standard photocopier or typewriter paper (16- to 20-pound stock). With the face-up tray open, the printer can accept stock of up to 36 pounds. See "Face-Up Delivery and Heavy-Stock Paper" earlier in this chapter for more information.

You can also expect excellent results on most colored paper and letterheads.

The LaserWriter II will produce high-quality transparencies for overhead projection. Medium-weight photocopier transparencies work best. If you experience difficulties when attempting to print transparencies using automatic feed, use manual feed instead. Always open the face-up tray before printing transparencies.

▲ **Warning:** Do not use heat-transfer (thermal) transparencies in the LaserWriter II. They will not print properly and may separate in the printer. ▲

To avoid paper problems, be aware of the following potential trouble sources:

- Temperature. Some letterheads are printed using low-temperature dyes that vaporize and smear at the temperatures inside the LaserWriter II. Some glossy, coated letterheads may come undone in the LaserWriter II. Similarly, some envelopes can come unglued during printing. Using high quality envelopes helps ensure satisfactory results.
- Paper texture. The LaserWriter II may not print sharply on highly textured paper. Try a few sheets to test the quality.
- Paper finish. Some paper with glossy finish will not perform well in a LaserWriter II. Again, try a few sheets and see what happens.

All About Fonts

This chapter explains how various kinds of fonts work with your Macintosh and LaserWriter II to produce a printed page. It also shows you samples of the fonts built into the LaserWriter II to help you choose fonts for your documents. Brief descriptions of the Key Caps desk accessory, a tool for previewing fonts on your Macintosh, and the Font/DA Mover, an application that allows you to add and remove fonts from your System file, appear at the end of the chapter.

How printing works

You don't need to know how printing works to use your LaserWriter II, but knowing how printing works can help you to understand why you get better results when you print certain fonts, why some documents take longer to print than others, and how the optional features available for the LaserWriter IINTX enhance your printer. This section describes the printing process from the computer's point of view.

Step 1: You create a document using screen fonts

When you create a document, you choose screen fonts to display text on the screen. Screen fonts reside in your Macintosh System file. They contain the information the system needs to display text on the Macintosh screen. When you choose a font from a menu, or use the Font/DA Mover to add or remove fonts from your system, you are working with screen fonts.

When you issue the Print command, a program called a printer driver, in this case a LaserWriter driver, looks at the document you have on the screen and begins to convert it to POSTSCRIPT, the language that the LaserWriter II understands.

Step 2: The printer driver checks to see what printer fonts are available

The printer driver first checks to see what printer fonts are built into the printer. Each time it encounters a new screen font in the document, the printer driver checks to see if the screen font is also stored in the printer as a printer font.

A printer font is stored in the LaserWriter's memory as a mathematical formula. Fonts stored in the printer can be processed very quickly; the printer doesn't have to wait for the font information to be sent over cables from the computer. The fact that the font is stored as a mathematical formula means that it can be scaled to any size very quickly and very accurately; the printer uses a page description language called POSTSCRIPT, which is designed to work with such formulas.

Step 3: If the printer driver finds a matching printer font, the font is printed

If the screen font in the document matches one of the printer fonts, the driver switches the printer to that font, and the printer prints the text. When you choose fonts to use in your documents, remember that screen fonts that have a corresponding printer font will print more quickly and will give higher quality results than screen fonts that do not have matching printer fonts.

Even if you install only a few sizes of a screen font, you can print in a much wider range of sizes. The LaserWriter II can scale a printer font to any size, even if you only install one size of the corresponding screen font. The only limitations are **resolution** (below a certain size all parts of a letter run together) and the size of the paper.

Although you usually install screen fonts in plain style only, you can print them in **bold**, *italic*, or ***bold italic***. Depending on the application you're using, you may have access to some of the styles shown here:

underline

outline

shadow

SMALL CAPS

condensed

e x t e n d e d

superscript and subscript

The Symbol, ITC Zapf Chancery, and ITC Zapf Dingbats fonts may not print in the full range of styles. (Sometimes you can change the style on the screen, but the variation won't show up in your output.)

Samples of the printer fonts that come built into the LaserWriter II appear later in this chapter. Appendix B lists optional features that allow you to add more printer fonts to a LaserWriter IINTX.

Step 4: If the printer driver does not find a matching printer font, it looks for a downloadable font

If the printer driver encounters a screen font that is not stored in the printer as a printer font, the driver checks to see if the font is available as a downloadable font.

Downloadable fonts are like printer fonts in that they are stored as a mathematical formula that the LaserWriter can process quickly and accurately. The difference is that downloadable fonts are not installed in the printer. They must be sent to the printer (downloaded) each time they are printed.

A number of companies sell downloadable fonts that you can use to increase your printer's repertory of high-quality type faces. See your authorized Apple dealer for information.

Once the driver finds that a screen font does not have a matching printer font, it begins searching the disks available to the computer to see if there is a downloadable font that matches the screen font.

Step 5: If the printer driver finds a matching downloadable font, it downloads the font and the document is printed

If the driver finds a matching downloadable font, it sends (downloads) the font to the printer, where the font temporarily resides in memory. Once in the printer's memory, it acts just like a printer font. Since downloading a font takes some time, however, it usually takes a bit longer to print using downloadable fonts than with built-in printer fonts.

Downloadable fonts can be stored in three ways:

- You can store them in the System Folder on your startup disk.
- On a LaserWriter IINTX, you can download the fonts to the printer's RAM, where they will be stored until the printer is turned off.
- On a LaserWriter IINTX with an attached hard disk, you can download the fonts to the hard disk, where they will be stored until you remove them. See Appendix B for more details.

Downloading fonts to the printer's RAM or to an attached hard disk improves printing speed, because the printer does not need to retrieve the fonts over network cables. It also improves network performance by decreasing traffic on the network.

Step 6: If the printer driver finds no matching downloadable font, it creates a bitmap of the font

If the printer driver does not find a printer font or a downloadable font that matches the screen font, the driver begins converting the image on the screen into a dot-by-dot representation (bitmap) for the LaserWriter II to print.

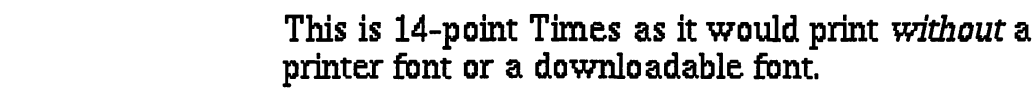
Printing using bitmapped representations of fonts has two drawbacks:

First, since the screen font is not a mathematical formula, it takes longer to compute how the image will print.

Second, when the image is converted from the relatively low resolution required for screen displays to the much higher resolution needed for LaserWriter output, rough edges and bumpy curves appear.

For example, here are two sentences printed with the same font. The first is printed with a printer font and the second is printed without the printer font.

This is 14-point Times printed *with* a printer font or a downloadable font.



The smoothing option in the Page Setup dialog box can help to smooth some of the rough edges in text printed without a printer font, but the print quality still will not approach that of the printer font. (See "About the Page Setup Dialog Box" in Chapter 3.)

This example demonstrates the benefit of creating your documents using screen fonts that have matching printer fonts. The next section shows you the printer fonts that are built into every LaserWriter II.

Standard LaserWriter II fonts

The eleven font families built into your printer's **read-only memory (ROM)** should satisfy most of your business and professional printing needs. The collection is introduced briefly here. Turn to Chapter 5 to see examples of the fonts in use. Appendix G contains the full character sets.

Serif fonts

Although there are thousands of type designs, all Latin alphabet font families can be classified as either **serif** or **sans serif.**

Serifs are the strokes at the ends of letterforms. Although they can add to the appearance of a font, they're not just for decoration. Serifs guide the eye along the printed line, increasing legibility.

The LaserWriter II serif fonts are Courier, ITC Bookman, New Century Schoolbook, Palatino, Times, and ITC Zapf Chancery.

Courier

Courier is the only **monospaced** LaserWriter II font family. All the letters occupy the same amount of space on the line. In **proportionally spaced** fonts, different letters have different spacing according to their size and shape.

Note how in the monospaced Courier font the letters *l* and *m* take up the same amount of space. Contrast that with the letters *l* and *m* in the Times font.

```
Courier (monospaced):   llll
                        mmmm
```

Times (proportionally spaced): llll
mmmm

Use Courier if you want your correspondence to look as if it were produced on a typewriter.

```
This is a sample of 12-point Courier.
```

ITC Bookman

ITC Bookman is a classic text font. It's easy to read because even large quantities don't look crowded.

This is a sample of 12-point ITC Bookman.

New Century Schoolbook

New Century Schoolbook is a highly readable font design originally developed for school textbooks.

This is a sample of 12-point New Century Schoolbook.

Palatino

If you want a formal, weighty look—in a proposal or an annual report, for example—Palatino is an excellent choice.

This is a sample of 12-point Palatino.

Times

The Times font family is a standard choice for newspapers and other periodicals. Its compact design makes it ideal when space is at a premium. Notice that it takes up less space on the line than the other font samples.

This is a sample of 12-point Times.

ITC Zapf Chancery

ITC Zapf Chancery is designed to look handwritten instead of printed.

This is a sample of 12-point ITC Zapf Chancery.

Sans serif fonts

Sans serif means "without serifs." These fonts are particularly appropriate for titles and headings, or wherever large type is needed. They are also well adapted to spreadsheets and charts. Some designers like the clean, modern look they give to text, but the serif styles are probably more readable in longer passages.

The LaserWriter II sans serif fonts are ITC Avant Garde, Helvetica, and Helvetica Narrow.

ITC Avant Garde

ITC Avant Garde is a popular choice for display text.

This is a sample of 12-point ITC Avant Garde.

Helvetica

Helvetica is compact and simple. It is probably the most widely used sans serif design in the world.

This is a sample of 12-point Helvetica.

Helvetica Narrow

Because it is compact, highly legible, and has an especially clear number set, Helvetica Narrow is an ideal choice for spreadsheets.

This is a sample of 12-point Helvetica Narrow.

Specialty fonts

The LaserWriter II font file also includes two specialty fonts: Symbol and ITC Zapf Dingbats. Use the Key Caps desk accessory to find the keyboard equivalents for characters in both of these fonts. See "Checking Your Screen Fonts (Finding a Character)" later in this chapter for instructions.

Symbol

The Symbol font family is particularly useful if your work involves science or mathematics.

Τηισ ισ α σαμπλε οφ 12–ποιντ Σψμβολ.

ITC Zapf Dingbats

ITC Zapf Dingbats is a collection of bullets, boxes, and symbols you can use to create decorative borders, icons, and bulleted text lists.

Checking your screen fonts (finding a character)

The Key Caps desk accessory is a fast and easy way to see what screen fonts are installed in your Macintosh system file, to see what characters are mapped to each key, and to see what the fonts look like.

1. **Choose Key Caps from the Apple menu.**

   The Key Caps window appears and Key Caps appears in the menu bar.

2. **Choose a font from the Key Caps menu.**

   You'll see a complete list of all the fonts in your System file. (See Figure 4-1.)

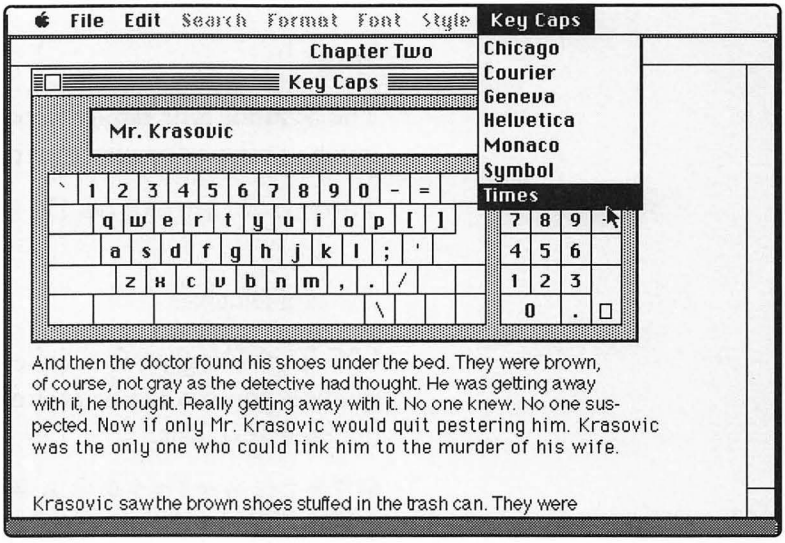


Figure 4-1 The Key Caps window and menu

When you choose a font, the characters on the Key Caps keys and the text in the Key Caps window are converted to the font you've chosen. (See Figure 4-2.) Note that you can't specify the font size in Key Caps.

3. **To see what the font looks like, type a phrase for display in the Key Caps window. To find a particular character, watch the Key Caps keyboard as you press the Shift and Option keys. Try pressing them separately and together.**

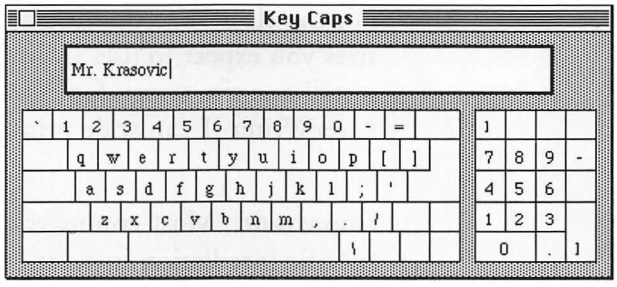


Figure 4-2 Key Caps in Times

Obtaining additional fonts

In addition to the fonts available from Apple, you can obtain screen fonts and downloadable fonts from numerous software developers. You can choose from a wide variety of Latin and non-Latin alphabet fonts, symbol fonts for specialized purposes, and novelty fonts for display and decoration.

You can obtain new fonts from a wide variety of commercial sources. You can also choose from a huge array of public domain fonts. Some of these are **freeware.** You can use them with no obligation to anyone. Others are **shareware.** There is no purchase price, but if you continue to use a font, you're honor-bound to pay the developer a fee or a donation.

For best results, all fonts you install should be designed for LaserWriter II compatibility.

Installing and removing screen fonts with the Font/DA Mover

If you purchase screen fonts that do not have installation instructions, follow the general steps provided here. To install fonts on a SCSI hard disk attached to a LaserWriter IINTX, see Appendix B, "Optimizing Performance—LaserWriter II Upgrades." To add or remove screen fonts on any startup disk, use the Font/DA Mover as described in the following steps.

For the clearest screen displays, install screen fonts in all the sizes you expect to use. If disk space is an issue, however, install one size screen font for each printer font. The LaserWriter II can scale printer fonts to any size.

△ **Important:** Most commercially available fonts come with specific installation instructions. Be sure to follow those instructions if you have them, rather than the more general directions given here. △

1. **Start the Macintosh with the startup disk you want to alter.**
2. **If necessary, insert a disk containing Font/DA Mover and the fonts you want to add.**

   If your startup disk does not contain Font/DA Mover and you are removing fonts, insert any disk that includes Font/DA Mover.

   If you are adding fonts, insert the disk containing the fonts.
3. **Open a font file or the Font/DA Mover.**

   Opening a font file automatically opens the Font/DA Mover. All the fonts in that file appear in the list on the left.

   If you are removing fonts, open the Font/DA Mover. All fonts in the System file on the current startup disk are shown on the left. (See Figure 4-3.)
4. **If you are adding fonts, click the Open button beneath the box on the right.**

   A dialog box appears listing the folders on the startup disk.

   Open the System Folder and then the System file. (See Figure 4-4.) The dialog box disappears, and the fonts in the System file are listed on the right.

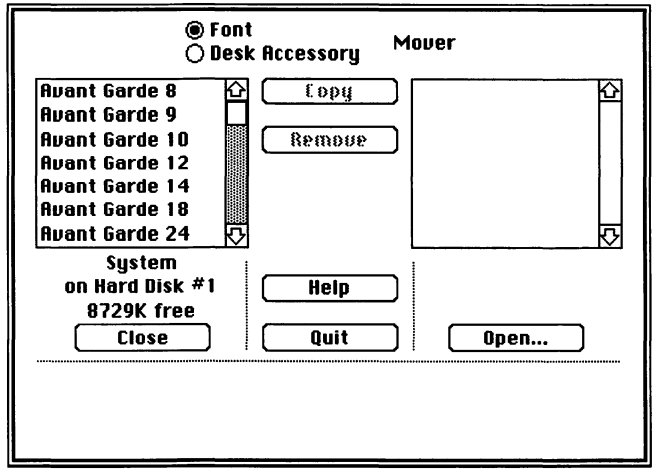


Figure 4-3 The Font/DA Mover window

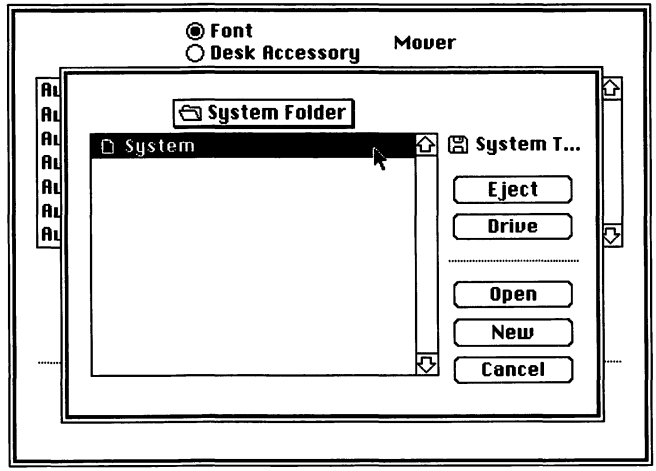


Figure 4-4 Opening the System file

5. **Select the fonts you want to add or remove.**

   Click to select a single font; hold down the Shift key as you click additional single fonts; or drag to select a group of fonts.

   When you select a single font, its name, size, and the space it occupies on the disk are shown, along with a sample of the font.

   When you select more than one font, only the total amount of disk space the fonts use is shown.

   The Copy and Remove buttons become highlighted when you select one or more fonts.

6. **Click Copy or Remove to add or remove the selected fonts.**

   If you copy a font with the same name as one that is already in the opposite list, the font you're copying will replace the font already in the list.

   You cannot remove 12-point Chicago, 9-point Monaco, or 9-point or 12-point Geneva from a System file because the Macintosh uses these fonts for its screen displays.

▲ **Warning:** Removal is permanent. Before removing fonts, be sure to make a copy of the System file on the startup disk, so that you can reconstruct your font files if you make a mistake or change your mind. ▲

Designing With the LaserWriter II

With the LaserWriter II you can print high-quality **camera-ready** masters for publishing projects such as presentations, reports, newsletters, and long documents such as brochures or even books. You can also develop accurate layouts and proofs of documents that will eventually be typeset. Proofs for this book, for example, were printed on the LaserWriter IINTX. You can take the work from rough concept to near-final form with your in-house desktop publishing system, going to an outside supplier only for the finished product.

This chapter introduces some basic guidelines for font selection and page organization, followed by examples of documents created for a hypothetical company. The examples were developed with a LaserWriter IINTX and a Macintosh IIx, using a variety of page-layout, word-processing, and spreadsheet applications. The illustrations featured in the examples are either images produced with a **scanner,** a device that converts images into computer-readable form, or original art developed with representative graphics applications.

The guidelines, examples, and accompanying notes should give you an idea of the kinds of decisions you need to make to see a document from preliminary layout to final production.

Font selection

The font selection provided by the LaserWriter II provides a number of choices for text and display type. Here are a few ideas to keep in mind as you pick fonts for your documents.

Pick a text font that's easy to read

Readability is probably the most important consideration in choosing a text font. In addition, the font should look attractive and balanced even in lengthy passages, and it should be reasonably compact.

Although some designers choose a sans serif font for text, most opt for a serif design such as Times or ITC Bookman. Serifs enhance readability by guiding the reader's eye along the line. Also, many people find that reading long passages in sans serif type leads to eyestrain.

The particular choice depends on the document. New Century Schoolbook is an excellent face for a training manual. Palatino, with its chiseled edges, could be perfect for a prospectus or an annual report.

Choose an eye-catching font for heads

A main head summarizes an entire page or section. Subheads are reference points that pull the reader through the text. To do their job, these heads must stand out.

The simplest choice is to use the same font family as for text, but in bold or italic, and perhaps in a larger size.

The clean, geometric lines of sans serif type can make heads stand out even more. Helvetica bold, for example, is a visually striking, easy-to-read font family that's excellent for heads. So is ITC Avant Garde bold.

Avoid mixing similar font families

In general, similar font families don't work well together. Setting some heads in ITC Avant Garde and others in Helvetica would almost certainly be a mistake. So would using one serif font family, such as Times, for text, and another, such as ITC Bookman, for heads.

Use a minimum of font families, sizes, and styles

It's best to pick one font for text and one or two sizes of that family or another for heads, and leave it at that. Too many fonts tend to result in a disorganized layout that distracts your reader.

Bold and italic can sometimes be useful in text. The first time you use a term, for example, you might want to set it off with one or the other. Sometimes a particular style is called for by the rules of usage. (Book titles, for example, are often set in italic.) But keep style variations to a minimum.

Styles like outline and shadow sometimes work well in heads, but in text they interfere with readability and visual balance.

Keep text in charts, graphs, and tables simple

Charts, graphs, and tables present complicated information in condensed form, so it's important that they be as easy to follow as possible.

Helvetica is simple and readable, and its number set is very clear. Helvetica Narrow allows you to condense a large amount of information into a small space without sacrificing readability.

Document organization

Successful design depends first on organization. Visual flair, while important, is secondary.

Make a plan

Decide which elements are the most important, and develop a layout plan that reflects that ranking. You may want to make a rough layout on paper before you start work at the computer.

Think visually Design should communicate your message, not distract from it. All design elements, including illustrations, should be chosen because they reinforce your ideas, not for appearance alone.

Keep it simple A simple layout is not only easier for you to handle, it's also easier for the reader to take in.

Design the parts with the whole in mind You want everything the reader sees at one time to work together, and you want all parts of the document to coordinate. A successful design integrates all elements, so that each contributes to communication. Think at least in terms of a page, or better yet, in terms of two-page spreads, and use those basic units to build the whole.

Don't be afraid to borrow ideas Look at layouts you like, think through what you like about them, and then put what you've learned to use.

Get help if you can If possible, find someone who knows about design to give you feedback on your preliminary layout. Then incorporate that feedback into your final version.

Experiment Try different fonts and different layouts until you arrive at the combination that works best. You can preview your work on the screen and print samples to see how your choices actually look.

Letters and memos

The variety of fonts and excellent print quality of the LaserWriter II make it ideal for producing letters and memos. You can print a few copies or you can produce masters for photocopying or offset printing.

The letterhead shown in Figure 5-1 includes a variant of the logo seen in all the other examples in this series. The logo is set in Helvetica bold, with the subhead in Helvetica italic.

The electrical pulse extending out from the name reduces in intensity across the page.

You can produce your own logo using any of a number of graphics programs. You can then store the logo in the computer or have it preprinted on your stationery.

The text of this letter is set in Times, without right **justification.** As a result, the letter looks printed but not overly formal. If you wanted a typewritten look, you could choose Courier instead. Or you could print the letter in Helvetica to match the logo. Experiment to find the effects you want.

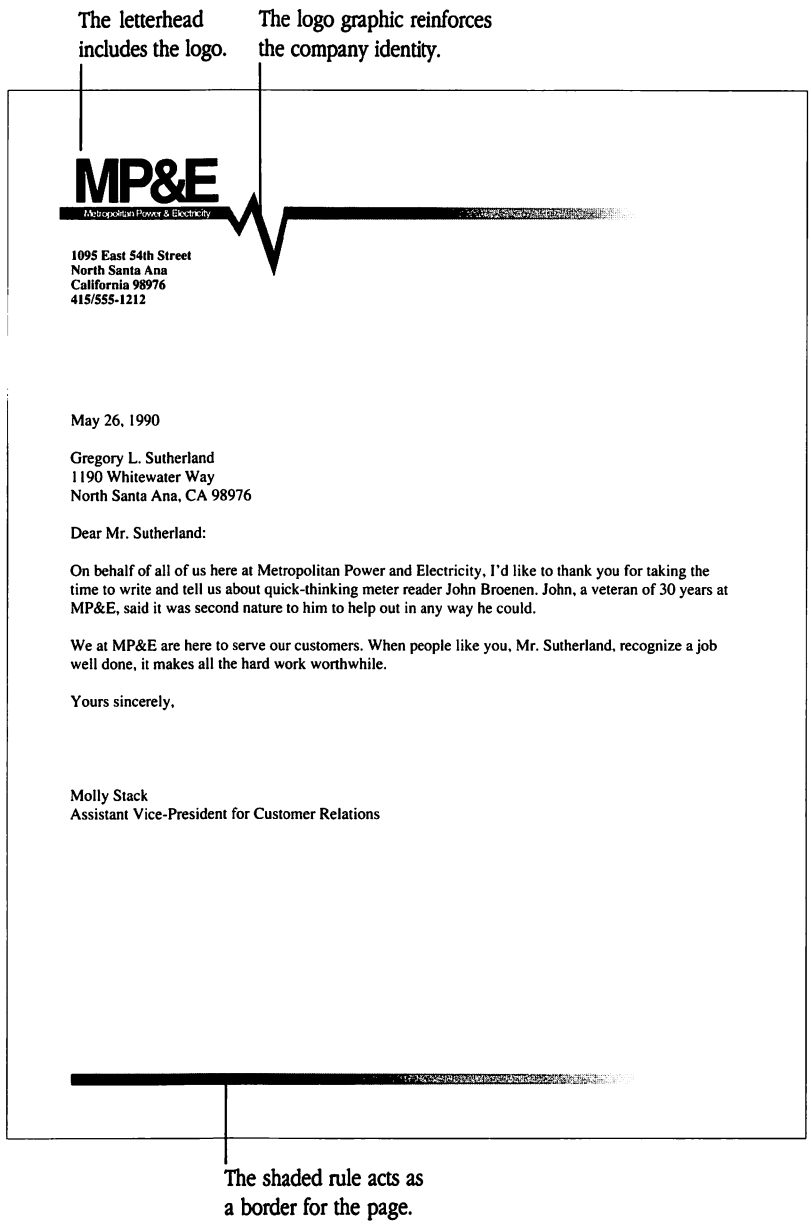


Figure 5-1 A letter

Presentations

With the LaserWriter II you can quickly and easily create high-quality transparencies for overhead projection. You can combine text and graphics as you wish. With high-resolution printing, your presentation will be easy to see, even from across the room. You can print directly on the transparency.

The overhead in Figure 5-2 was created with a Macintosh application that allows you to turn a routine bar chart into a striking graphic. You can obtain comparable programs from your authorized Apple dealer.

The electrical pulse on the top is derived from the logo. Because the transparency was developed for an internal presentation, there was no need to include the company name. The visual device, however, helps to reinforce company identity. Combined with the surrounding border, the graphic helps make every transparency look like part of a series.

The title summarizes the message, and explanatory text is kept to a minimum, making it easy to understand at a glance. For this kind of document, simplicity is essential.

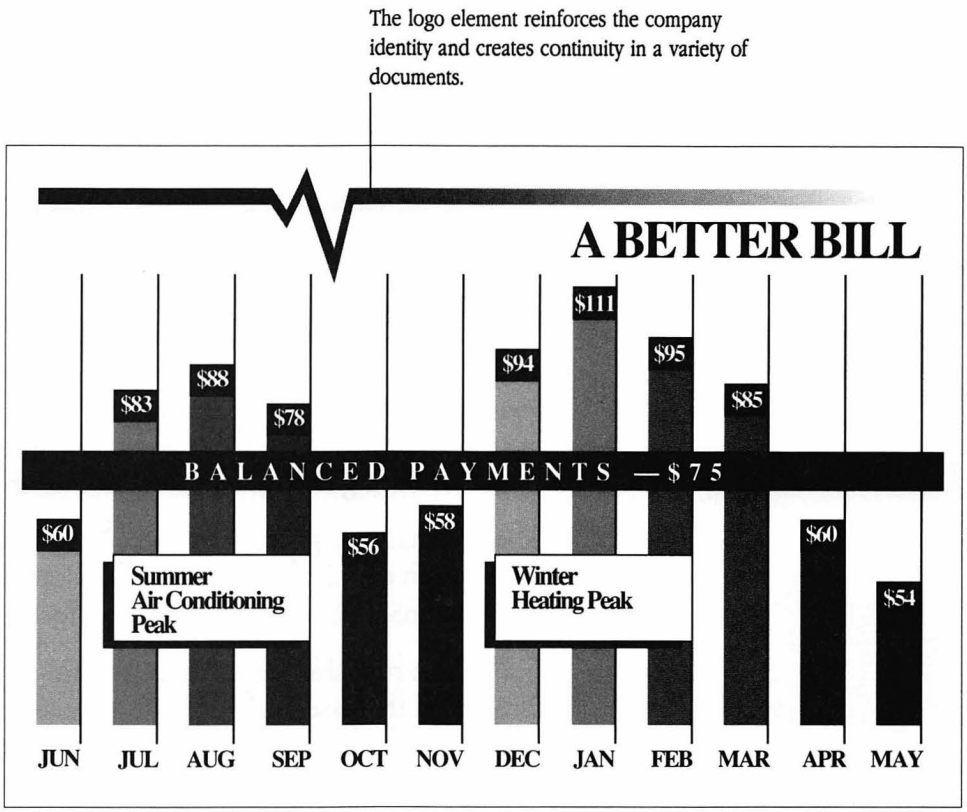


Figure 5-2 An overhead transparency

Reports

Business software applications let you create reports that combine text, charts, and graphics to communicate far more effectively than you can with words or numbers alone.

The report in Figure 5-3 features the company logo, with the department name as a subhead. The text is New Century Schoolbook, a highly readable font family, and the captions are Helvetica.

The chart on the first page summarizes the financial impact of the project. The graphics on the reverse side telegraph the qualities of the product. A real report might include considerably more text, but the example shows how a message can be condensed using readily available Macintosh applications.

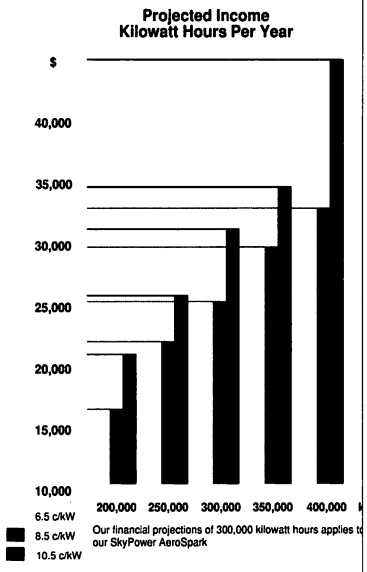
The schematic diagram was created with a drawing program. A photograph could be imported with a scanner, a device that converts images into computer-usable form.

For a short run, this report could be printed on both sides directly on the LaserWriter II. Or it could be printed on two separate sheets and then photocopied on both sides.

MP&E
Metropolitan Power & Electricity

To: Program Assessment Committee
From: Stephanie Jones, Project Evaluator
Subject: Windpower Sales

Since MP&E is required to purchase available wind p
avoided cost basis, it has been suggested that we can
the alternative power supply by direct sale of windmi
investors. This report examines one proposed windm
Aerospark, which could be produced in volume by S
under contract to our Western California subsidiary.
below show the projected income per windmill per y
projected avoided cost from now until the year



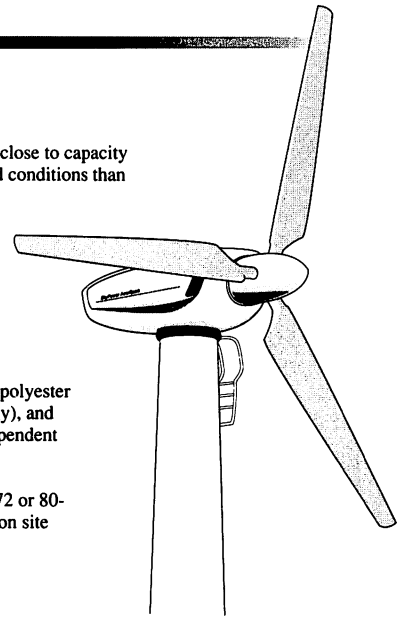
DESIGN

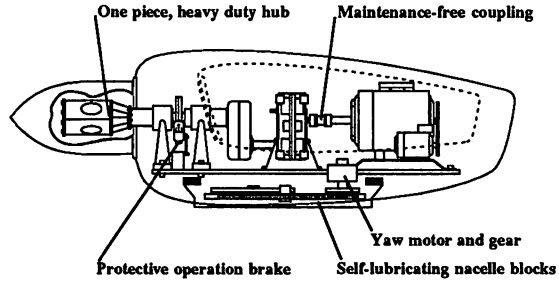
The Skypower Aerospark sustains close to capacity output under a wider range of wind conditions than earlier designs allowed.

The turbine shaft is mounted on sperical roller bearings to permit fine adjustment of tip angle, while an auxiliary yaw motor and yaw gear keep the windmill precisely oriented.

The blades are made of reinforced polyester (a proprietary Skypower technology), and each blade is equipped wit an independent aerodynamic spoiler brake.

The unit can be mounted on a 60, 72 or 80-foot steel lattice tower, depending on site conditions.





Charts and illustrations summarize the message.

Figure 5-3 A report

Newsletters

Newsletters are an important communication tool for many organizations. The LaserWriter II offers a convenient and economical way to produce the camera-ready masters.

The newsletter in Figure 5-4 was created with a page-layout program. This kind of application allows you to wrap text around graphics and from column to column or page to page.

The masthead is adapted from the company logo. It illustrates the many ways a graphic can be modified without destroying its basic identity.

The headline is set in Helvetica to match the logo. The text is Times. This font family was designed specifically for newspapers and periodicals. It's easy to read, and it's also very compact.

The three-column format and the single, centered illustration (created with a drawing program) give the page an appearance that is inviting to the reader. You might opt for a two-column layout, or include additional graphic elements, but it's best not to overload the page.

A three-column layout uses the space most efficiently.

The company logo is adapted for the masthead.

The text is Times, for compactness and readability.

CURRENTS

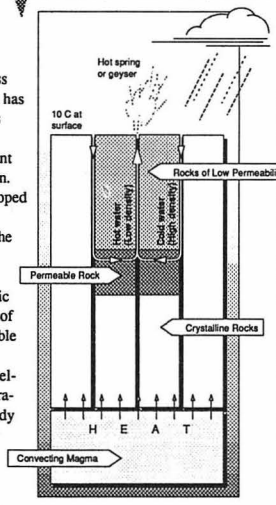
PARAMOUNT PASS PLANT TOPS EXPECTATIONS

MP&E's Paramount Pass Geothermal Pumping Station has been in full operation for less than a year, but it's already taking its place as an important link in the power supply chain.

Using technology developed at the MP&E Boswell Memorial Research Center, the Paramount Pass installation turns geothermal power, locked in the earth by volcanic forces dating back to the age of the dinosaurs, into clean, usable electricity.

According to Tom Llewellyn, chief of operations at Paramount Pass, the plant is already producing at a rate of 10,000 megawatts of electricity per year, and is expected to produce double that when peak capacity is reached in 1998. It would take approximately 100 million tons of coal to match that output, say resource development experts, so the new plant helps California and MP&E meet their goals of environmental quality and stability.

Charles Walter Hanrahan, MP&E CEO, notes that progress at Paramount Pass is exceeding expectations. "Thanks to the hard work and skill of everyone involved, we have a plant on-line that will serve us well now and for years to come. Add this to our continuing emphasis on conservation, and MP&E should be able to meet the energy needs of Western California at our present rates for the foreseeable future," Hanrahan maintains.



ALSO IN THIS ISSUE:

- *Looking toward the future of wind power*
- *Is solar energy today's answer to the power crisis?*
- *The MP&E trivia contest of the year!*

DEBORAH MARTIN MARKS 30 YEARS IN FOOD SERVICES

For thirty years Deborah Martin has been the smiling face at the steam table in MP&E's HQ Cafe. Now all her friends have decided to honor her by declaring December 1 as Deborah Martin Day. According to event organizers Carol Gossard and Cathy Hubley, everybody who wants to participate should come to work in an apron and carrying a spatula.

Although Mrs. Martin has put five children through medical school, she has no intention of retiring. "It's a great life," she says. "Everybody, high and low, comes to the HQ Cafe, and I get to meet them all."

For more information about this gala event, contact Carol or Cathy H. in the Retro-Engineering Department on the sixth floor.

PROMOTIONAL EXAMS SCHEDULED

Personnel Services has scheduled open promotional exams in three job categories: Administrative Supervisor II, Security Specialist III, and Engineering Technician IV.

The Written exams will be held Tuesday, December 12 from 8:00 to 11:00 A.M. in the Boswell Memorial Auditorium.

Figure 5-4 A newsletter

Multipage documents

You can use your Macintosh to design multipage documents ranging from simple pamphlets to entire books—such as this manual. You can use the LaserWriter II to produce the masters, or you can print proofs and send the completed text out for typesetting. The text for a project might be laid out electronically and printed on a LaserWriter II, with photographs and color elements added manually.

The eight-page brochure in Figure 5-5 was first designed with paper and pencil. The designer first decided where to position text and graphics on each page and then implemented her design with a page-layout program. The illustrations and charts were created electronically.

The brochure incorporates the logo element and uses fonts that are in keeping with it. The logo appears on the back cover, and the screened bar at the bottom of each page is derived from the logo's electrical pulse.

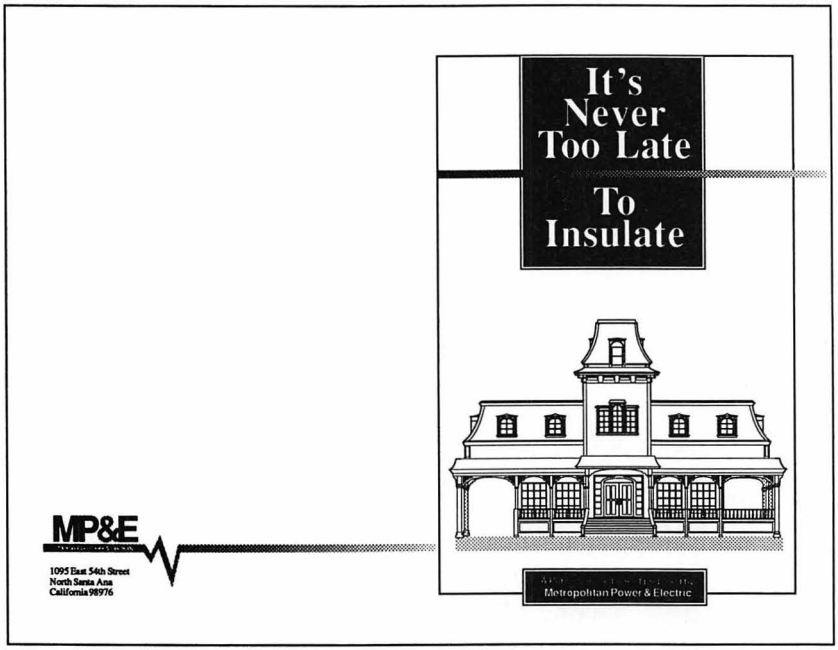
The headlines and text are set in New Century Schoolbook. The headlines are in bold and use the same point size as the text.

The printed masters (often called *printer's flats*) are four 8½ x 11 pages. Each is divided horizontally, with one brochure page per half. The two-column layout leaves enough space in the center so that no type is lost or cramped when the pages are folded.

Flats are printed by offset lithography on both sides of two sheets, instead of four. The finished brochure is then produced by folding the sheets and stapling them together.

To see the individual pages of the brochure, turn to Figure 5-6 on the next two pages.

Figure 5-5 A brochure



Headline text summarizes content, for information at a glance.

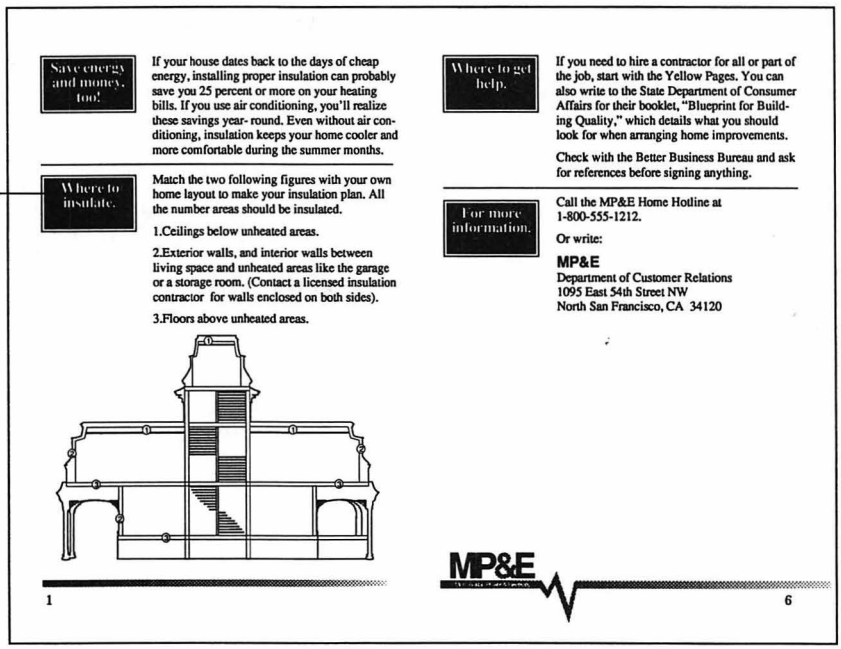
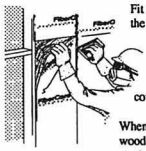


Figure 5-6 The brochure layout

A center margin allows ample room for binding.

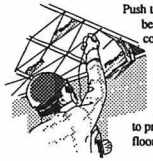
Use an insulation blanket to insulate walls.



Fit one end of the blanket against the top of the framing. Work downward, stapling the edges of the blanket to the wall studs. Make sure the blanket is tight against the framing at the top and bottom. If the blanket has a foil or paper cover, the cover should face toward the interior.

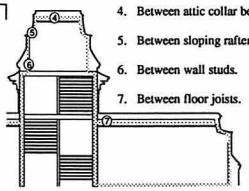
When insulating walls without studs, first attach wooden strips 16 to 24 inches apart, and then staple the blanket to them just as you would with regular studs.

Use batts or blankets to insulate floors.



Push the insulation between the floor joists from below. If it has a foil or paper cover, the cover should face upwards.

Support the insulation by driving nails about two feet apart into the bottoms of the joists and lacing wire around the nails. Seal the insulation against all walls to prevent air circulating between it and the floor.



4. Between attic collar beams.
5. Between sloping rafters.
6. Between wall studs.
7. Between floor joists.

What to use.

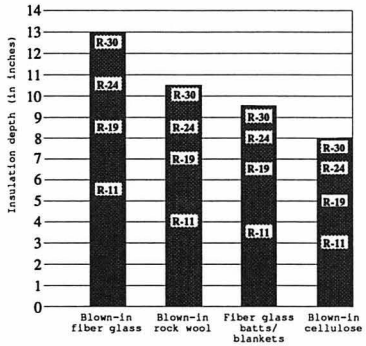
The two main choices for insulating an existing home are mineral wool and cellulose.

Mineral wool is made out of fiber glass or rock. You buy it in rolls, called *blankets*, or in precut lengths, called *batts*. It's also available in loose fill for pouring or blowing into ceilings, floors, and walls. (If you want to use blowing wool, contact a licensed contractor who has the necessary equipment.)

Cellulose is made from treated scrap paper, and it is designed to be either blown or poured into place. Cellulose is an excellent insulator, but it's harder to work with than mineral wool products.

The chart below gives you an idea of how the different choices compare. R-values measure the resistance to heat loss and gain. Never buy insulation that isn't plainly marked with its R-value.

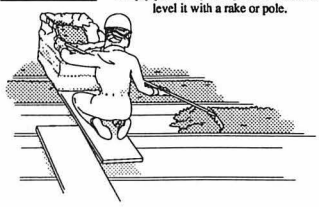
Higher R-values are recommended for colder climates. In moderate weather areas, we recommend R-19 insulation for ceilings and R-11 for walls and floors.



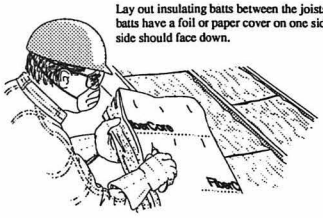
How to do it.

Use batts, pouring wool, or cellulose to insulate your attic.

Simply pour out pouring wool or cellulose and level it with a rake or pole.



Lay out insulating batts between the joists. If the batts have a foil or paper cover on one side, that side should face down.



Maintenance

The LaserWriter II is designed for trouble-free service. Maintenance involves little more than putting in a new toner cartridge every 4,000 pages or so and performing a few minor cleaning tasks. The recommended service interval is 100,000 pages. This service can be arranged through your authorized Apple dealer.

Ask your authorized Apple dealer to replace the ozone filter once a year as part of regular maintenance. The new filter ensures continued low ozone emissions in your LaserWriter II.

Safety first

The fixing roller assembly (see Figure 6-1) in the LaserWriter II operates at very high temperatures—around 400 degrees Fahrenheit. If possible, allow the rollers to cool before performing maintenance and troubleshooting.

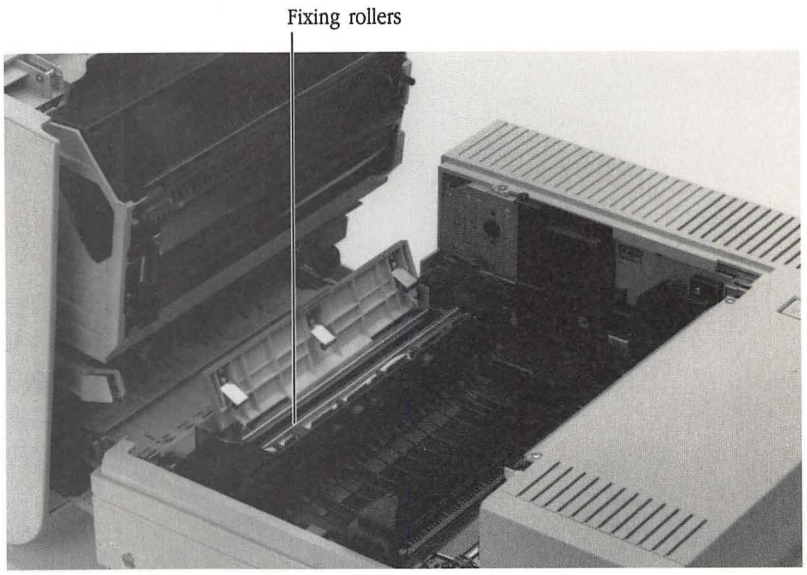


Figure 6-1 The fixing rollers

To prevent damage to the printer, observe the following precautions:

- Don't touch the exposed gears or electrical contacts in the boxed areas of Figure 6-2.
- Don't open the light-blocking shutters on the toner cartridge. (See Figure 6-3.)
- Don't open the drum protection shutter on the toner cartridge.

Don't touch the areas within boxes.

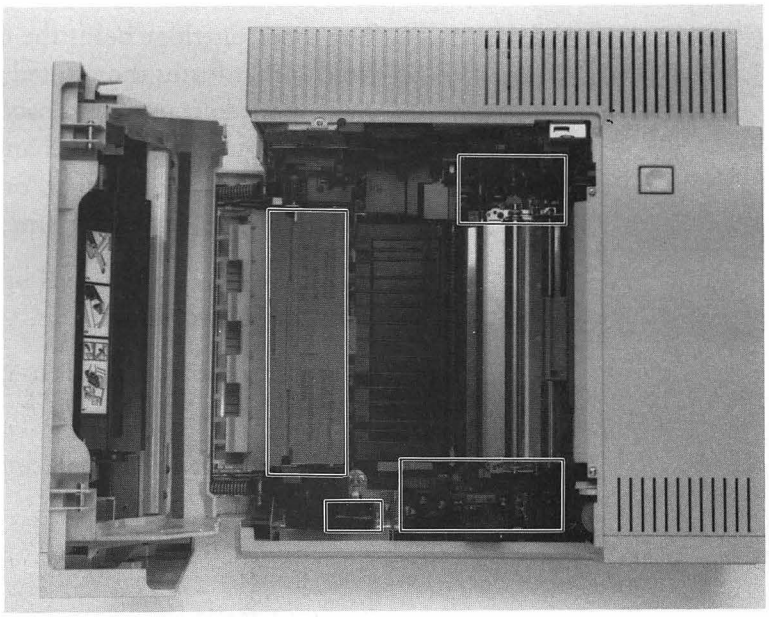


Figure 6-2 Exposed gears and electrical contacts

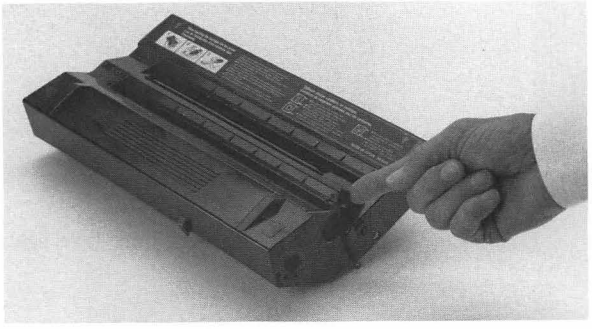


Figure 6-3 The light-blocking shutters

- Don't lubricate the printer.
- Don't attempt to disassemble the printer.
- Don't place anything on top of the printer.

Regular maintenance

The toner cartridge holds the toner powder—the printer's "ink"—that forms the printed images. Each cartridge should yield about four thousand pages. If you print a lot of graphic designs, you may need to change cartridges more often. If your pages start to look too light, or if you see thin vertical white lines in dark images, it may be time to change the cartridge.

When the Low Toner Level light (see Figure 6-4) glows orange it can mean two things:

- the toner powder needs to be redistributed inside of the toner cartridge
- the cartridge needs replacing

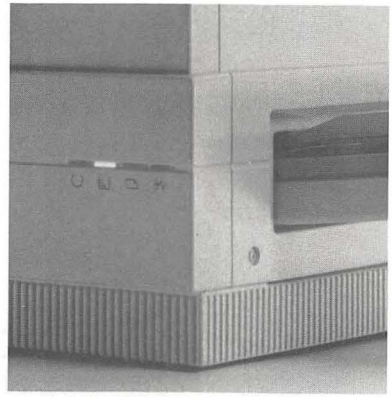


Figure 6-4 The Low Toner Level light

△ **Important:** If the light comes on in the middle of a printing job, and the output is still satisfactory, continue printing if you wish. You won't harm the printer by doing so. △

When the light comes on, take the cartridge out, rock it gently back and forth a few times to redistribute the toner, and reinsert it. (See Figure 6-7.) If the light goes out, continue to use the cartridge for the time being.

If the light stays on, change the cartridge and perform the routine maintenance procedures described in the following sections.

△ **Important:** Use only a LaserWriter II Toner Cartridge with the LaserWriter II. △

Installing a new toner cartridge

To install a new toner cartridge, follow these steps and the steps in "Interior Cleaning," later in this chapter.

1. **Remove and discard the used cartridge.**

   Pull out the cartridge. (See Figure 6-5.) Be careful to keep it horizontal so that no toner powder spills into the printer.

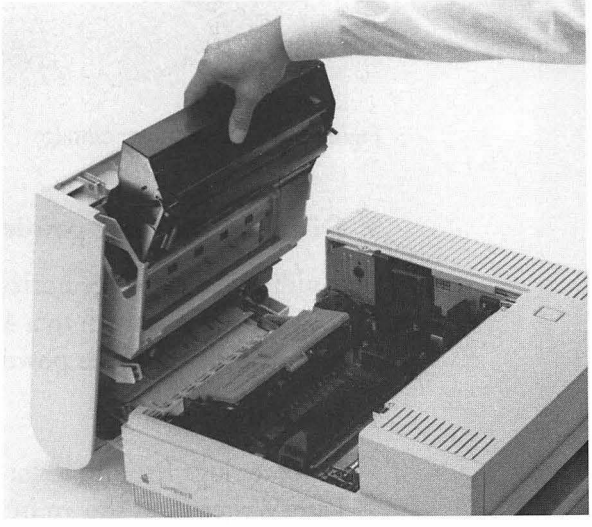


Figure 6-5 Removing the old toner cartridge

2. **Open the cartridge box.**

   Open the cartridge shipping carton, take out the wrapped cleaning pad, and put it aside. Open the sealed metallic bag and remove the cartridge, holding it by the indentation at its wide end. *Do not touch the area shown in Figure 6-6.*

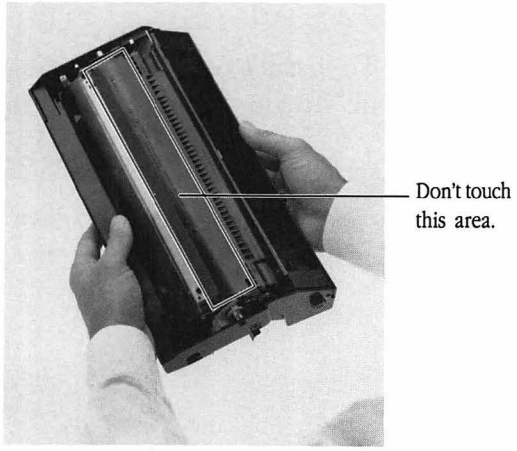


Figure 6-6 The new toner cartridge

3. **Distribute the toner powder.**

   Holding the cartridge horizontally (see Figure 6-7), slowly rock it back and forth to a 45-degree angle four or five times to distribute the toner powder.

4. **Insert the cartridge.**

   The cartridge fits into a slot in the top section of the LaserWriter II, as shown in Figure 6-8. Insert it narrow end first, using the directional arrows on the cartridge as a guide. Slide it in as far as it will go. Be sure that it is seated firmly.

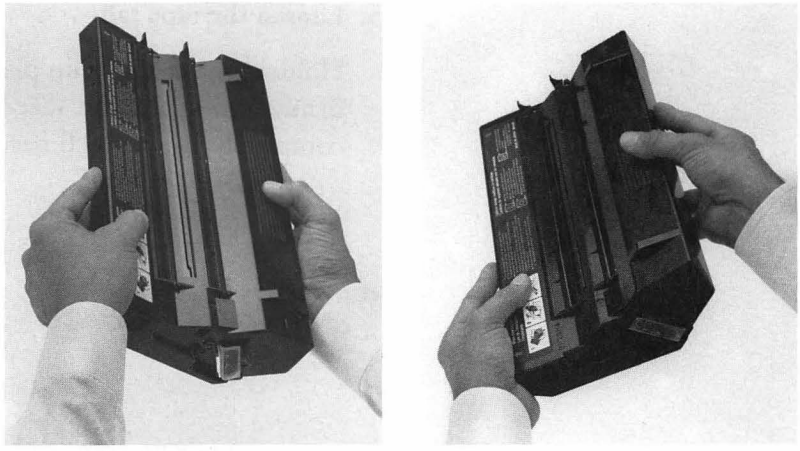


Figure 6-7 Distributing the toner powder

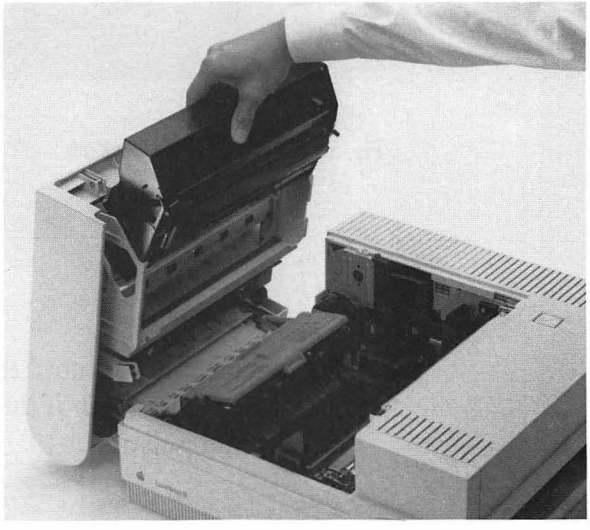


Figure 6-8 Inserting the toner cartridge

5. **Loosen the tape tab.**

Holding the cartridge in place, flex the black tab gently but firmly until it loosens. (See Figure 6-9.) Don't tear it completely away; you'll need it to pull out the sealing tape.

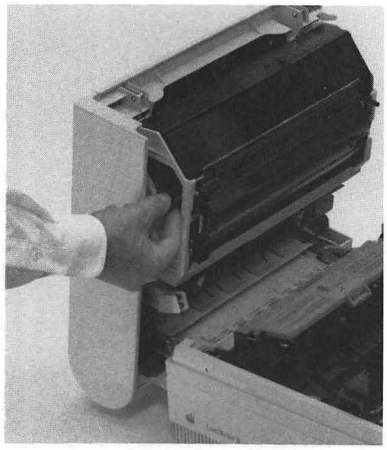


Figure 6-9 Flexing the black tab

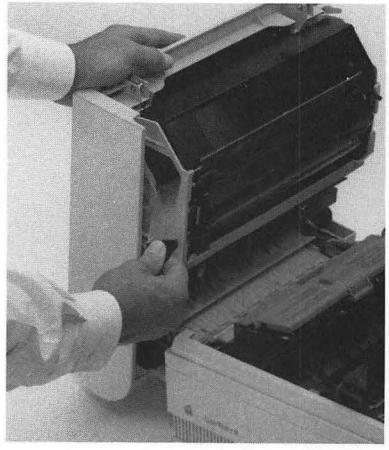


Figure 6-10 Removing the tape from the toner cartridge

6. **Remove the tape.**

Pull the tab outward until the tape is completely removed, as shown in Figure 6-10. If the tab comes off, grasp the tape directly and pull out.

▲ **Warning:** Be sure to remove the sealing tape *with the cartridge in the printer.* If you insert the cartridge with the tape removed, toner may spill into the printer. For the same reason, avoid transporting the printer with a cartridge installed, and always remove cartridges carefully. ▲

Interior cleaning

Whenever you install a new toner cartridge, you should also clean the interior of the LaserWriter II and replace the cleaning pad. A replacement pad is supplied with each cartridge.

▲ **Warning:** Be very careful during all cleaning operations not to break any of the wires inside the printer. ▲

1. **Open the green felt cover that protects the fixing rollers.**

▲ **Warning:** If you have not allowed the LaserWriter II adequate time to cool, the felt cover may be hot, and *the fixing rollers will be very hot.* ▲

2. **Remove and discard the used cleaning pad.**
3. **Unwrap the new cleaning pad.**

   Remove and put aside the cotton swab attached to the pad by a rubber band. You'll use the swab for cleaning the printer wires.

4. **Use the white felt tip on the end of the new pad to clean the fixing rollers.**

   Before you install the new pad, clean the fixing rollers by wiping them with the white felt tip at the end of the pad. (See Figure 6-11.)

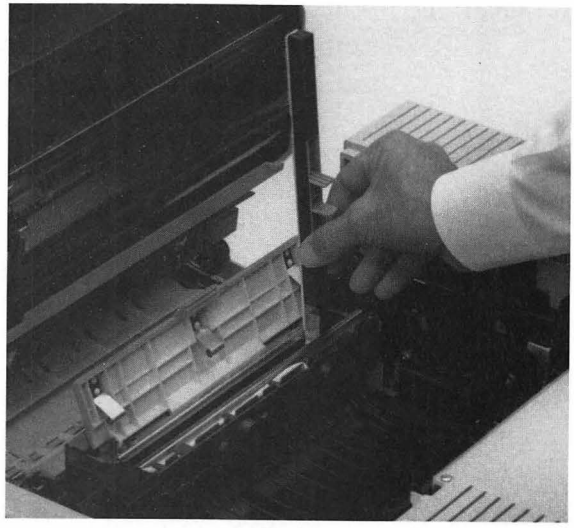


Figure 6-11 Cleaning the fixing rollers

5. **Remove and discard the white felt tip. (See Figure 6-12.)**
6. **Insert the new cleaning pad into the fixing roller assembly. (See Figure 6-13.) Then close the green cover.**

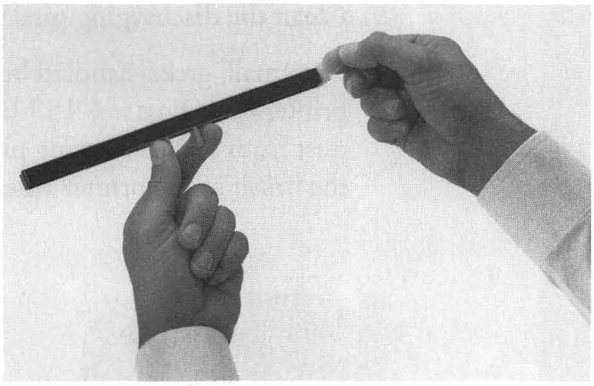


Figure 6-12 Removing the felt tip

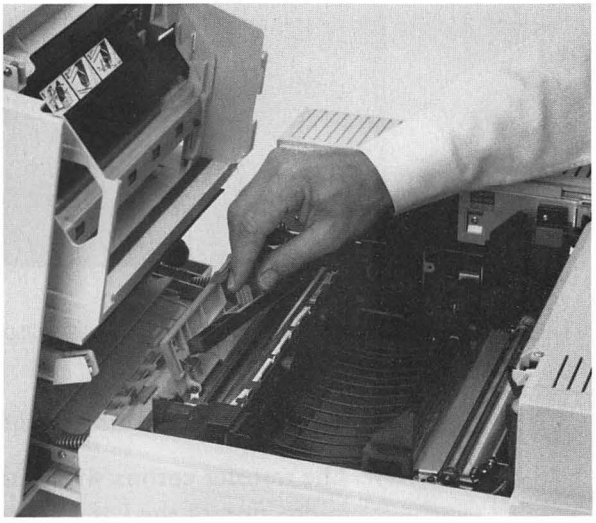


Figure 6-13 Installing the new cleaning pad

7. **Clean the discharging pins with the cleaning brush.**

   The small, green-handled brush snaps into a holder inside the printer. (See Figure 6-15.) Use the cleaning brush to remove dust from the discharging pins. (See Figure 6-14.) Replace the brush in the printer when you're finished.

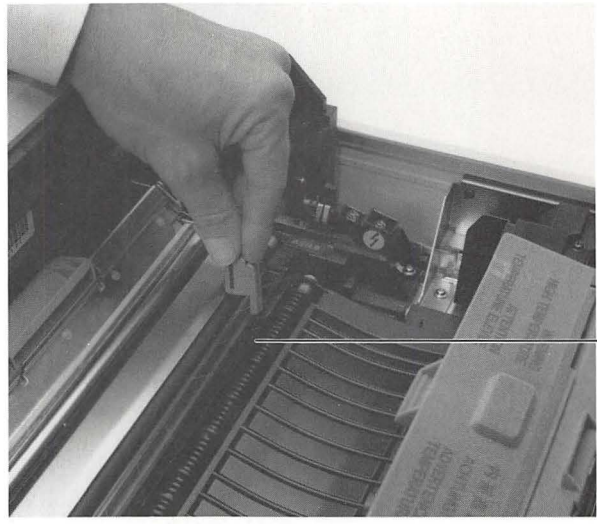


Figure 6-14 Cleaning the discharging pins

8. **Gently wipe the transfer corona wire with the cotton swab.**

   The transfer corona wire is the very thin wire in the midsection of the LaserWriter II. (See Figure 6-15.) Wipe it and the diagonal wires above it very gently with the cotton swab supplied with the new cleaning pad.

▲ **Warning:** The transfer corona wire is fragile. Be careful not to break it when cleaning. ▲

Figure 6-15 Wiping the transfer corona wire

9. Wipe the transfer guide with a soft cloth.

Use a clean, soft, slightly damp cloth to wipe off the transfer guide. (It's the metal plate behind the transfer corona wire, shown in Figure 6-16.)

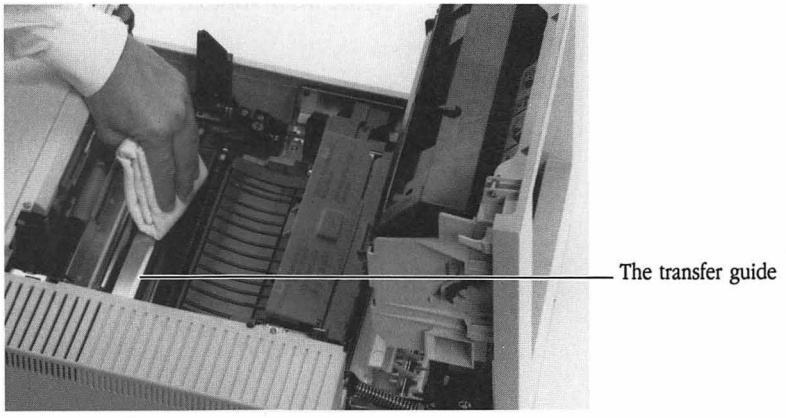


Figure 6-16 Wiping the transfer guide

10. Close the LaserWriter II and resume printing.

Exterior cleaning

Unplug the power cord (see Figure 6-17) and then wipe the exterior of the printer with a clean, soft, damp cloth. Use a mild soap or detergent if necessary, but *never* an ammonia-based cleaner. Be careful not to get any liquid in the power cord port.

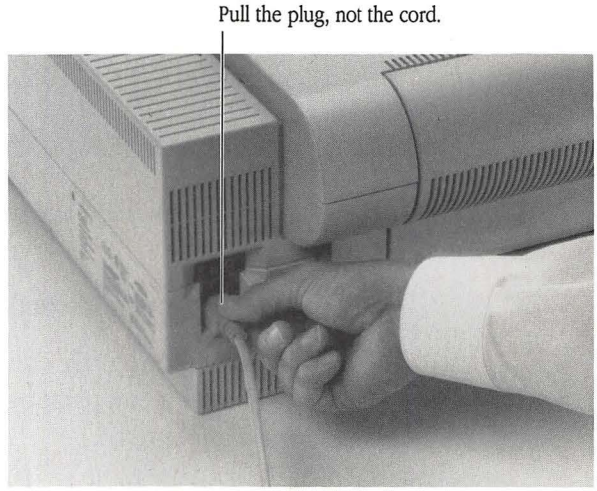


Figure 6-17 Disconnecting the power cord

▲ **Warning:** Never use ammonia-based cleaners on or around the LaserWriter II. They may react chemically with the toner. ▲

Troubleshooting

This chapter provides solutions to some common problems that you might encounter while using your LaserWriter II. The first section provides general troubleshooting techniques to help you identify and solve problems. The rest of the chapter covers specific problems that you might have when

- starting up the printer
- choosing a printer from a Macintosh
- printing a document

In general, as long as you follow the maintenance instructions in Chapter 6, you're not likely to have any problems with your LaserWriter II. The most common source of trouble is incorrect software installation. To avoid these problems follow the instructions in "Installing the Printer Driver" and "Installing Fonts" in Chapter 2.

General troubleshooting

This section gives you some techniques to help identify and solve common problems. Specifically it tells you how to

- read the status lights
- check for and clear paper jams
- check for problems in the network

Reading the indicator lights

You can use the lights on the front panel of the LaserWriter II to check the status of the printer. The lights are identified in Figure 7-1.

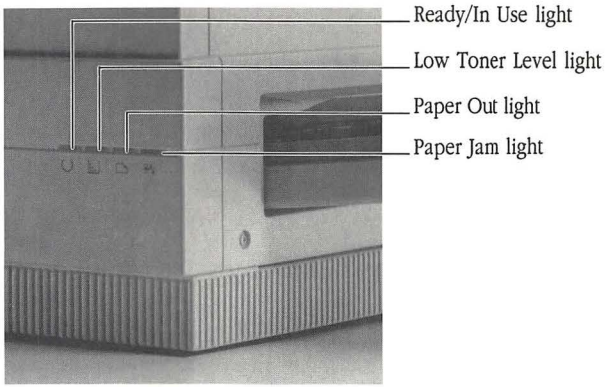


Figure 7-1 The status lights

Use Table 7-1 to identify the status of your LaserWriter II.

Table 7-1 Printer status

Light	On	Off	Flashing
Ready/In Use	Printer is ready to use.	Printer cannot print due to an error condition, or the cover is open.	Printer is warming up, printing a startup page, or processing data for the next print job.
Low Toner Level	Toner is low or needs to be redistributed.	Toner level is OK.	Toner cartridge is installed incorrectly.
Paper Out	Paper cassette is empty.	Paper supply is OK.	Ready for next sheet of manual-feed paper. Or printer may require service.
Paper Jam	There is a paper jam.	Paper is OK.	Printer requires service.

If the Paper Out and Paper Jam lights both flash, or if they both stay on, the printer requires service.

Checking for and clearing paper jams

Occasionally a piece of paper may get stuck inside the printer during the printing process. Follow these steps to find and clear a paper jam:

1. **Open the printer to see where the jam is.**
2. **If the jam is in the paper cassette area, pull the cassette out of the printer and release the paper. (See Figure 7-2.)**

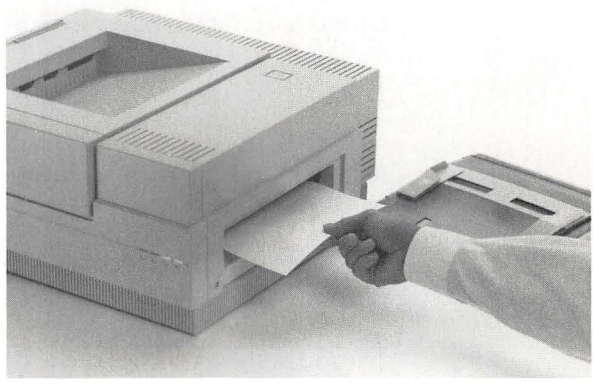


Figure 7-2 Releasing jammed paper from the cassette

3. **If the jam is around the print feed area, open the transfer paper lock and free the paper. (See Figure 7-3.)**
4. **If the jam is in the fixing rollers, open the green felt cover and pull the paper out. (See Figure 7-4.)**

▲ **Warning:** If the printer has been in use, the felt cover may be hot, and *the fixing rollers will be very hot.* ▲

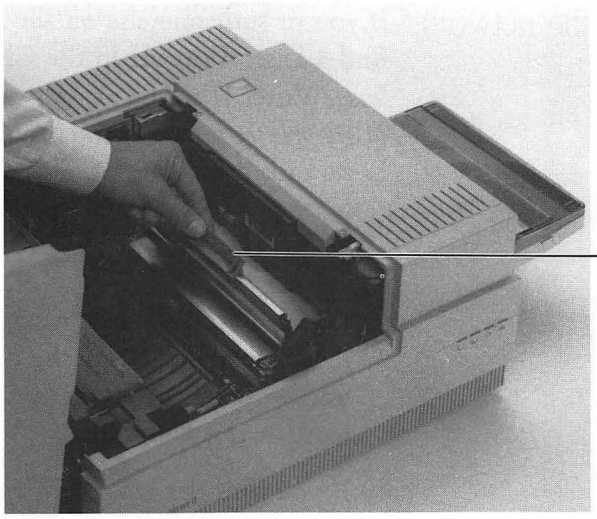


Figure 7-3 Opening the transfer paper lock

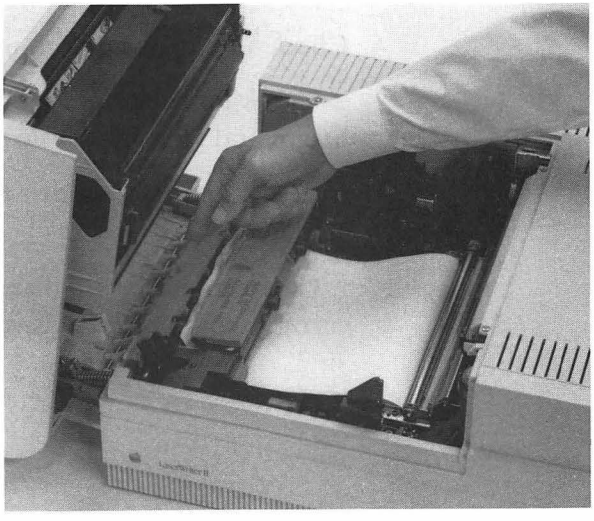


Figure 7-4 Removing jammed paper from the fixing rollers

Checking the network

If you or someone else on the AppleTalk network system can't find a LaserWriter II in the Chooser after selecting the LaserWriter II as the printer type, *and if everyone is using the latest printer software,* the problem is usually with the LocalTalk cable system. Try the following steps:

1. **Check to see that the LocalTalk connector box is firmly attached to the Macintosh.**
2. **Using a startup disk with the LaserWriter II printer driver installed, start the computers on either side of the one with the problem, and check for the LaserWriter II icon in the Chooser.**

   If you find the LaserWriter II, the problem lies between the computer that shows the LaserWriter II and the computer that does not.
3. **Check all connections in the affected section of the network.**
4. **Check the layout of the network.**
   - □ Check for cables not attached to a LocalTalk connector box, and reconnect as necessary.
   - □ Check to make sure that the network forms a line, not a loop.
   - □ Check to make sure that the first and last LocalTalk connector boxes each have only one cable.

Trouble starting up the LaserWriter II

This section provides information that should help when something unexpected happens after you turn on your LaserWriter II.

No startup page prints when you turn on the printer

Unless you change the POSTSCRIPT parameters, the LaserWriter II will print a startup page every time you turn it on. If it doesn't, check the status lights (as described earlier in this chapter), and take the appropriate steps.

- If the Ready/In Use light is off, then the printer is disconnected or switched off, the cover is open, or an error condition exists. Check the power cord, the cover, and the on/off switch.
- If the Paper Out light is on, the printer is out of paper or the paper tray is not in place. Refill and replace the paper tray. See "Loading the Paper Cassette" in Chapter l.
- If the Paper Jam light is on, see "Checking for and Clearing Paper Jams" earlier in this chapter.
- If the Paper Jam and Paper Out lights are flashing or steady, the printer requires service. See your authorized Apple dealer.

The startup page is blank

Check the toner cartridge. If the Low Toner Level light is on, the cartridge may be out of toner powder, or the powder may need redistribution. If you have just changed the cartridge, check to make sure that you have removed the sealing tape. (See "Installing a New Toner Cartridge" in Chapter 6 for instructions.)

Trouble using the Chooser

This section provides information to help you solve problems you might run into while trying to use the Chooser desk accessory to pick a printer.

The Chooser does not appear in the Apple Menu

If the Chooser isn't listed in the Apple menu, the System file on your startup disk is outdated, or you have removed the Chooser from the System file on your startup disk. You can obtain the current system software from your authorized Apple dealer.

You should also check to make sure that you have only one System Folder on your Startup disk.

No LaserWriter icon appears in the Chooser

Check that the LaserWriter II printer driver and the Laser Prep file are in your System Folder. See "Installing the Printer Driver" in Chapter 2 for more information.

The printer driver and Laser Prep file may be on your startup disk, but they may not be in the System Folder. If necessary, drag both files into the System Folder.

Make sure you have only one System Folder on the disk. If you have more than one, consolidate everything you need in the folder with the more current version of the System file and discard the other folder.

The printer is not listed in the Chooser

If you've selected the LaserWriter icon but no LaserWriter II is named in the list of printers, one of the following may be the cause:

- The printer has been turned off. Make sure it is plugged in and turned on, and wait for the startup page to print.

- The switches are not set correctly. See Appendix F, "Ports and Switches," for more information.
- Someone renamed the printer. If you are on a network with several printers, choose another printer or check with your network administrator to see if the printer has been renamed.
- There's a problem in the LocalTalk cable system somewhere between your computer and the LaserWriter II you want to use.

  Check to make sure that all the cables are properly connected. See "Connecting to a Macintosh" in Chapter 1, Appendix A, "Connecting to an Apple II," or Appendix C, "Connecting to and Printing With an MS-DOS Computer."

  If your printer is part of a network, see "Checking the Network" earlier in this chapter.

If you still can't resolve the problem, the printer's electronics or the LocalTalk connector boxes may not be functioning properly. Call your authorized Apple dealer.

Trouble printing a document

This section provides information to help you work through problems that can occur while you are printing a document. Scan the headings to find the information that addresses your problem.

Nothing is printed, no paper comes out of the printer

If you don't seem to get any response from the printer after you try to print a document, try the following:

- Check Print Monitor if you are using background printing with MultiFinder.
- Check the Paper Out light. If it is on, add paper and replace the paper cassette.

- Check the Chooser to be sure the printer is selected. Be sure to select the printer's name as well as the LaserWriter icon.
- Check for a paper jam as described earlier in this chapter.
- Check the LocalTalk cables as described earlier in this chapter.
- Check the position of the switches as described in Appendix F. (If you are printing from a Macintosh, all switches should be in the up position.)
- Turn the printer off and then back on. Check the startup page.
- Reinstall the printer driver and the Laser Prep file on the startup disk.

A message on the screen says the printer can't print

If you get such a message, try the following:

- Make sure that the printer is turned on.
- Check the LocalTalk cables as described earlier in this chapter.
- Make sure your startup disk has the LaserWriter II printer driver and the Laser Prep file in the System Folder.
- Check the Chooser to make sure the printer is selected. Be sure to select the printer's name as well as the LaserWriter icon.

Documents print very slowly

If you're using cables other than those recommended for use on an AppleTalk network system, it might take longer for a document to be printed. Check with your authorized Apple dealer to obtain appropriate cables.

Paper curls when you print on it

Use only 16-lb. to 20-lb. photocopy or typewriter bond paper for automatic feed and 16-lb. to 36-lb. paper for manual feed printing. If you are using the correct weight and the paper curls, try using paper from a different manufacturer.

Toner does not stay fixed on the paper

If the toner does not seem to stick well to the paper, try using different paper. Be sure to use only photocopy or typewriter bond paper.

The printer only prints on part of the paper

Make sure that you have selected the appropriate paper size in the Page Setup dialog box. If you want a narrower margin (to print on more of the page), you can select Larger Print Area in the Options portion of the Page Setup dialog box.

The printing is off center or images are out of place

One of three things could be causing this problem:

- You are not using the recommended paper (16- to 20-lb. photocopy or typewriter bond).
- The paper cassette is too full.
- The margins are incorrect in the document you are printing.

Nothing is printed on the paper

If you get a blank document, check the following:

- Make sure that the sealing tape has been removed from the toner cartridge (see "Installing a New Toner Cartridge" in Chapter 6 for details).
- Check the Low Toner Level light. If it's on, the toner needs to be redistributed or the cartridge needs replacing.

Image is too light

If the printed images are too light, try the following:

- Check the Low Toner Level light. If it's on, you may need to replace the toner cartridge. See Chapter 6, "Maintenance."
- If the Low Toner Level light is not on, turn the print density dial one step counterclockwise (one number *lower*).

  The print density dial is inside the printer, in the lower-left corner. (See Figure 7-5.)
- Make sure that you are using the correct kind of paper. (See "About Paper" in Chapter 3.)

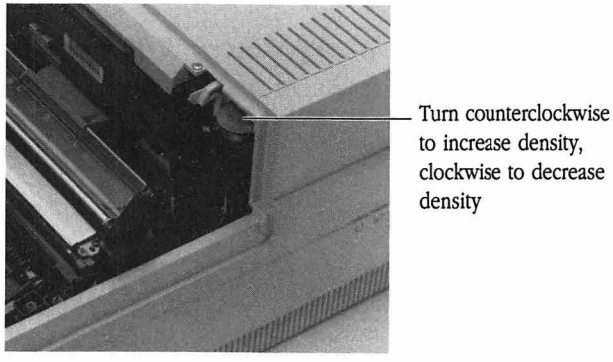


Figure 7-5 Adjusting the print density dial

Image is too dark

If the image is too dark, try one of the following:

- Turn the print density dial one step clockwise (one number *higher*).
- Replace the toner cartridge.

Page prints solid black

If your document prints black, you need to replace the toner cartridge. See Chapter 6, "Maintenance."

Unwanted lines or stripes appear

If white or dark vertical or horizontal lines or stripes appear on the page, try one of the following:

- Clean the transfer guide, transfer corona wire, and discharging pins exactly as you would if you were installing a new toner cartridge. See Chapter 6, "Maintenance."
- Clean the primary corona wire. See Chapter 6, "Maintenance."
- Redistribute the toner in the cartridge.
- Replace the toner cartridge.
- If you are printing bitmapped images, try selecting Precision Bitmap Alignment in the Options dialog box accessible through the Page Setup dialog box.

  If you continue to experience trouble, try turning off Faster Bitmap Printing and Graphics Smoothing.
- If you are using a serial cable to connect the printer to your computer, make sure that your communications parameters are set properly. See Appendix C, "Connecting to and Printing With an MS-DOS Computer."

Image prints wavy or distorted

Wavy or distorted images usually mean your LaserWriter requires service. Call your authorized Apple service representative.

Stains appear on output

If stains appear on the paper, try one of the following:

- Clean the transfer guide, transfer corona wire, and discharging pins exactly as you would if you were installing a new toner cartridge. See Chapter 6, "Maintenance."
- Clean the primary corona wire. See Chapter 6, "Maintenance."

Figure 7-6 Cleaning the primary corona wire

Trouble printing from an Apple IIGS

Here are the most common trouble spots for Apple IIGS users. This section assumes that you are using Apple IIGS system software version 5.0 or later. For older versions of system software, see the documentation that came with your computer and system software.

- You haven't installed the LaserWriter update on your startup disk. Follow the instructions in Appendix A, "Connecting to an Apple II."

- The computer's slot settings are incorrect in the Control Panel. If your computer is connected to the printer via the printer port, Slot 1 should be set to Your Card. If your computer is connected to the printer via the modem port, Slot 2 should be set to Your Card. For an Apple IIGS with ROM version 01, you need to set Slot 7 to AppleTalk as well.
- You are using an application that prints to the LaserWriter II as if it were an ImageWriter® printer, and the ImageWriter Emulator is not installed. See Appendix A for more information. The emulator must be reinstalled each time the printer is turned off and back on.
- You don't have a connector box connected to both the computer and the printer. You cannot connect a LocalTalk cable directly to a computer or a peripheral device—you must attach a connector box to each device and then connect the boxes with a LocalTalk cable.

Connecting to an Apple II

Connecting an Apple II computer to a LaserWriter II involves these steps:

1. Connecting the cables
2. Setting the Control Panel (Apple IIGS users only)
3. Installing the LaserWriter update (Apple IIGS users only)
4. Naming the LaserWriter II
5. Installing fonts (Apple IIGS users only)
6. Choosing the printer

This appendix provides a quick summary of the necessary steps. For more detailed instructions, see the documentation that came with your computer and system software.

Connecting the cables

Here are the general steps for connecting the printer to your computer. See the documentation that came with your computer, system software, and (for Apple IIe users) Apple II Workstation Card for more detailed instructions.

If you are connecting the LaserWriter II to an Apple IIe, you must install the Apple II Workstation Card before you can connect the LaserWriter II to your computer. See the *Apple II Workstation Card Owner's Guide* for instructions.

To connect the LaserWriter II to an Apple II computer:

1. **Make sure both the printer and the computer are off.**
2. **Plug a LocalTalk connector box into the LocalTalk port on the LaserWriter II.**

   As shown in Figure A-1, the LocalTalk port is on the right side of the connector panel.
3. **Plug a second connector box into the AppleTalk port on the workstation card installed in your Apple IIe, or into the printer port on your Apple IIGS.**

   If the printer port on your Apple IIGS is already in use, you may connect the box to the modem port instead.
4. **Connect the two connector boxes with a LocalTalk cable. (See Figure A-1.)**

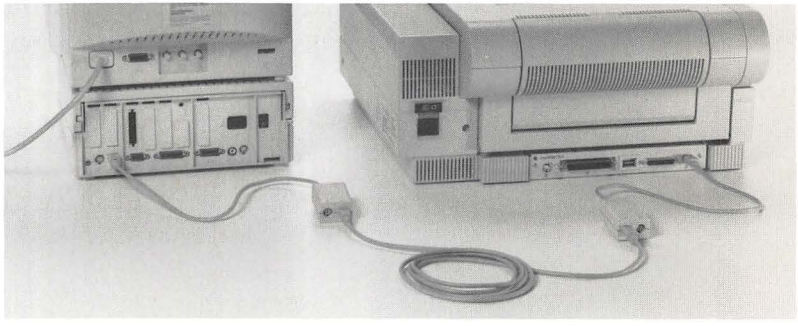


Figure A-1 Connecting an Apple IIGS computer

Setting the Apple IIGS Control Panel

If you are connecting the LaserWriter II to an Apple IIe, you can skip these steps. Turn to "Naming the LaserWriter II" later in this appendix.

If you are connecting the LaserWriter II to an Apple IIGS, the next step is to set the Control Panel for AppleTalk. There are two versions of the Apple IIGS (ROM 01 and ROM 03) and they have slightly different setup procedures.

If you are not sure which version of the Apple IIGS you have, watch the bottom of the screen as you start up or restart the computer.

Apple IIGS (ROM 01)

1. **Open the Control Panel.**

   See the *Apple IIGS Owner's Guide* for detailed instructions.

2. **Choose Slots from the Control Panel menu.**

3. **If you connected the LocalTalk box to the printer port, set Slot 1 to Your Card.**

   If you connected the LocalTalk connector box to the modem port instead of the printer port, you must set Slot 2 to Your Card and Slot 1 to Printer Port. See the documentation that came with your computer for more information.

4. **Set Slot 7 to Built-in AppleTalk.**

   Although the LaserWriter II is physically connected to slot 1 (the printer port) or slot 2 (the modem port), the Apple IIGS now acts as though the printer were connected to slot 7.

5. **If you connected the LaserWriter II to the printer port, select Printer Port in the Control Panel.**

   If you connected the LocalTalk connector box to the modem port instead, select Modem Port instead.

6. **Set Device Connected to Printer.**

7. **Set LF after CR to Yes.**
8. **Close the Control Panel.**

Apple IIGS (ROM 03)

1. **Open the Control Panel.**

   See the *Apple IIGS Owner's Reference* for detailed instructions.
2. **Choose Slots from the Control Panel menu.**
3. **If you connected the LaserWriter II to the printer port, set Slot 1 to AppleTalk.**

   If you connected the LocalTalk connector box to the modem port instead, set Slot 2 to AppleTalk.
4. **Set LF after CR to Yes.**
5. **Close the Control Panel.**

Installing the Apple IIGS LaserWriter Update

If you are using a version of Apple IIGS system sofware earlier than version 4.0 or if you are connecting the LaserWriter II to an Apple IIe, you can skip this step. Go to the next section, "Naming the LaserWriter II."

If you are an Apple IIGS user, the next step is to use the Installer to install the LaserWriter update on your startup disk. It's a good idea to update all disks at the same time, to avoid having some disks with outdated software. See the documentation that came with your computer and system software for details on using the Installer.

Naming the LaserWriter II

If your AppleTalk network system includes more than one LaserWriter II, you'll find it convenient to give each one a distinguishing name. These names appear in the Chooser desk accessory on the Macintosh, in the LaserWriter icon found in the Apple IIGS Control Panel, in the Apple IIGS Chooser program, in the Apple IIe Chooser.II application, or in the dialog box that appears after you choose Choose Printer from the File menu of some applications.

Follow the instructions below to open and use the Namer.

Opening the Namer

The first step in naming your printer is to open the namer application. How you do that depends on what kind of computer you have.

Apple IIe users

If you are using an Apple IIe, follow these steps:

1. **Start up the Apple IIe with the *Apple II Workstation Card* disk.**
2. **Select the Printer Namer application from the menu.**

   This starts the Namer.II application.
3. **Go to the section called "Using the Namer."**

Apple IIGS users

If you are using an Apple IIGS, follow these steps:

1. **Start the Apple IIGS with a startup disk.**
2. **Open the AppleTalk folder on the startup disk.**

   If you haven't installed the Namer on your startup disk, you can open the AppleTalk folder on the *System.Tools* disk.

If you are using a version of Apple IIGS system software earlier than version 4.0, you need to open the Namer application on the *Apple IIGS Workstation Disk.*

3. **Open the Namer folder and the Namer.II application.**
4. **Go to the next section, "Using the Namer."**

Using the Namer

Once the Namer is open, follow these steps to rename the printer:

1. **Choose the LaserWriter as the device type.**

   You'll see a list of printers of this type on the right side of the dialog box.

2. **Select the name LaserWriter IINT or IINTX from the list on the right.**

   The printer name automatically moves to the New Name box.

3. **Type the new name, and click Accept.**

   You can use this procedure to name (or rename) all LaserWriter II printers on the network.

4. **Quit the Namer.II application.**

If you change the name of any printer, be sure to tell everyone else who uses the network.

Installing fonts

If you are connecting the LaserWriter II to an Apple IIe, this section does not apply to you. Continue reading with the next section, "Choosing the Printer."

If you are using an Apple IIGS you may install additional fonts on your startup disks with the Installer application or you may copy additional fonts into the Fonts folder, which is inside the System folder on the startup disk.

If you are using a version of Apple IIGS system software earlier than 4.0, you must copy fonts you want to install into the Fonts folder.

See the documentation that came with your computer and system software for details on adding fonts and using the Installer.

Choosing the printer

The next step is to tell your computer which printer to use. The way you do that differs for different computers. Follow the steps for the kind of computer you are using.

Apple IIGS users

If you are using a version of system software older than 5.0, you need to use the Chooser.II application, or the Choose Printer menu item in your application's File menu to choose the printer. See the documentation that came with your computer, system software, and applications for instructions.

If you are using an Apple IIGS with system software 5.0 or later, follow these steps:

1. **Start the Apple IIGS with a startup disk that includes the LaserWriter update.**
2. **Choose Control Panel from the Apple menu.**
3. **Select the LaserWriter icon.**

   You may have to scroll through the list of icons to see the LaserWriter icon.

4. **If necessary, choose the correct AppleTalk zone.**

   If your network is divided into several AppleTalk zones, choose the zone your printer belongs to by clicking its name.

5. **Choose the printer you want to use.**

   All LaserWriter printers on the network will be listed on the right side of the dialog box. Click the name of the printer you want.

6. **If necessary, click the ImageWriter Emulator button.**

   If your applications print to the LaserWriter II as if it were an ImageWriter printer, you'll need to download the ImageWriter emulator software before you print. Most applications written for the Apple IIGS do not need the ImageWriter emulator to print on a LaserWriter II. Check the documentation for your applications to see if the emulator is required.

   If you do click the emulator button, you'll see the message "Checking for presence of the ImageWriter emulator." If no Apple IIGS user has printed with that LaserWriter II since it was last turned on, you'll also see the message "Downloading the emulator." The printer will print a page informing you that the emulator is installed.

7. **Type your name in the space after User Name.**

   Your name will automatically appear in the LaserWriter Control Panel from now on, unless you change startup disks.

8. **Close the Control Panel.**

Apple IIe users

If you are using an Apple IIe, follow these steps:

1. **Start up the Apple IIe with the *Apple II Workstation Card* disk.**

2. **Select the Chooser application from the menu.**

   This starts the Chooser.II application.

3. **Choose LaserWriter as the device type.**

4. **If necessary, choose the correct AppleTalk zone.**

   If your network is divided into several AppleTalk zones, choose the zone your printer belongs to by clicking its name.

5. **Choose the printer you want to use.**

   All LaserWriter printers on the network will be listed on the right side of the dialog box. Click the name of the printer you want.

6. **Click the ImageWriter Emulator button.**

   You'll see a message saying "Checking for presence of ImageWriter emulator." If no Apple IIGS has printed with that LaserWriter II since it was last turned on, you'll also see the message "Downloading ImageWriter emulator," and the printer will print a sheet informing you that the emulator is installed.

   The ImageWriter emulator is software that allows the Apple II to communicate with the LaserWriter II as if it were an ImageWriter. This allow applications that only work with ImageWriter printers to print to a LaserWriter.

7. **Type your name in the space after User Name.**

   Your name will automatically appear in Chooser.II from now on, unless you change workstation disks.

8. **Quit the Chooser.II application.**

Printing

Different applications have different procedures for printing and different ways of asking for information about the printer. The documentation that came with the application should provide full details. The fonts you can print with will also depend on the application.

If your application asks for the printer's slot number, respond according to the kind of computer you have:

- If you are using an Apple IIGS with ROM version 01, choose slot 7.
- If you are using an Appe IIGS with ROM version 03, choose slot 1 or 2 (whichever is set to AppleTalk).
- If you are using an Apple IIe with a workstation card, choose whatever slot the workstation card is in.

Optimizing Performance—LaserWriter II Upgrades

To upgrade a LaserWriter IINT to a LaserWriter IINTX, have your authorized Apple dealer install a LaserWriter IINTX controller board. (The dealer keeps the used LaserWriter IINT controller board.)

When you upgrade to a LaserWriter IINTX, you also have the option of increasing the printer's memory and of adding one or more dedicated hard disks for font management. The benefits and procedures for doing so are described in this appendix.

Memory upgrades

You can install up to 12 MB of RAM in the LaserWriter IINTX. You can also add a font expansion card. These memory upgrades are not possible with the LaserWriter IINT.

RAM upgrades for the LaserWriter IINTX provide the following benefits:

- the ability to print very complex documents (graphics and CAD documents, for example) that might not print on printers with less memory
- faster performance on complex documents
- faster performance when using downloaded fonts
- faster performance when printing documents that have been scaled down from larger originals (organization charts, maps, flow charts, for example)
- the ability to increase the imageable area of a document (you can use more of a sheet of legal paper, for example).

Adding RAM provides these benefits in three ways:

- More RAM allows more fonts to be **downloaded** (sent over the network) to the printer at any one time. The printer is less likely to need to retrieve large font files over busy network cables, saving you time and improving the performance of the entire network.
- More RAM increases the space available for **font caching.** Before the LaserWriter IINTX can print, it converts the POSTSCRIPT outline fonts into bitmaps, which it stores (caches) in RAM. When the demand for RAM exceeds the supply, the printer discards the less recently used bitmaps in favor of the newer ones. When the discarded bitmaps are needed again, the printer must rebuild them. With additional RAM, the printer will need to rebuild bitmaps less often.

- Finally, more RAM gives your printer more space to store the calculations it uses to compute large or complex page layouts. This is why you can print more complex documents and use a larger imageable area when you install more RAM.

RAM expansion

You can purchase RAM for the LaserWriter IINTX in packages of 1 MB or 4 MB, up to the 12 MB maximum. Upgrade kits should be installed by your authorized Apple dealer.

△ **Important:** The RAM used in the LaserWriter II is not the same type of RAM used in Macintosh computers. The two are not interchangeable. △

The possible memory configurations for the LaserWriter IINTX are

- 2 MB
- 3 MB
- 4 MB
- 5 MB
- 8 MB
- 9 MB
- 12 MB

The expansion slot

To expand font capacity in ROM, you can insert an add-on circuit board into the expansion slot of the LaserWriter IINTX. See your authorized Apple dealer for details.

Adding hard disks

You can attach one or more SCSI hard disks to the LaserWriter IINTX. The hard disk provides space for font storage and font caching.

There are several benefits of connecting one or more hard disks to your LaserWriter IINTX.

- You'll have a large, permanent storage space for downloadable fonts.
- Background art (watermark images and letterhead backgrounds that you use on many of your print jobs, for example) can be stored at the printer.
- By storing downloadable fonts on your printer's hard disk instead of in your Macintosh System Folder, you save disk space.
- Because hard disks work over a very fast SCSI connection, you'll get fast performance on documents that use downloadable fonts.
- You'll improve network performance because less information is tranferred over network cables.

When you download a font, you can choose to download it either to a hard disk or to the LaserWriter's RAM. Downloading it to a disk stores it there permanently (or until you remove it). You initialize the disks and download fonts to them using the LaserWriter Font Utility application on the *LaserWriter II Installation Disk.* The application's help screens contain all the information you need.

When a LaserWriter II encounters a screen font that has no corresponding printer font or downloadable font, it creates a bitmap (dot-by-dot representation) of the font, and uses that bitmap to print the document. After it creates the bitmap, the printer stores it for future use. This is called font caching. Font caching saves printing time because the printer can reuse existing bitmaps, rather than recreating them.

The LaserWriter II will use up to 80 percent of the startup disk for font caching. The remainder of the disk space on the startup disk, as well as all of the space on additional hard disks attached to the printer, is available for storing downloadable fonts or background art that you intend to use frequently.

Tips for using multiple hard disks

Attaching multiple hard disks to your LaserWriter IINTX not only increases the amount of space you have for storing fonts and background art, it also increases your options in managing those fonts and art works. You can group art and fonts on different disks in whatever way makes the most sense to you. Here are a few examples:

- If you print several publications, each with its own art and font set, you could store the art and fonts for each publication on a separate hard disk.
- If you print documents for different clients, or your printer is used by different departments, each client or department could have its own hard disk. You can update one group's fonts and art without having to search through all of the fonts and art on all of the disks.
- If you need to take one set of fonts and art to another location (to be used on another printer or to be typeset, for example), you could remove the hard disk pertaining to that particular job, leaving the remaining hard disks behind for other users.

Connecting the disks

You connect hard disks to the LaserWriter IINTX following the standard SCSI procedures. For each hard disk you're connecting, you'll need a **SCSI peripheral cable,** which links two SCSI devices. You'll also need a **SCSI cable terminator** (a device that reduces interference on a SCSI network) for the first hard disk, and another terminator if you connect two or more hard disks. You put one terminator at the beginning of the SCSI chain, and one at the end. (No system should include more than two terminators.) Figure B-1 shows the required cables; Figure B-2 illustrates a correctly connected system.

Before you connect your hard disks, make sure that each one has a unique SCSI ID number. Do not turn on or attempt to use the printer or any attached hard disk until each disk has been assigned its own number.

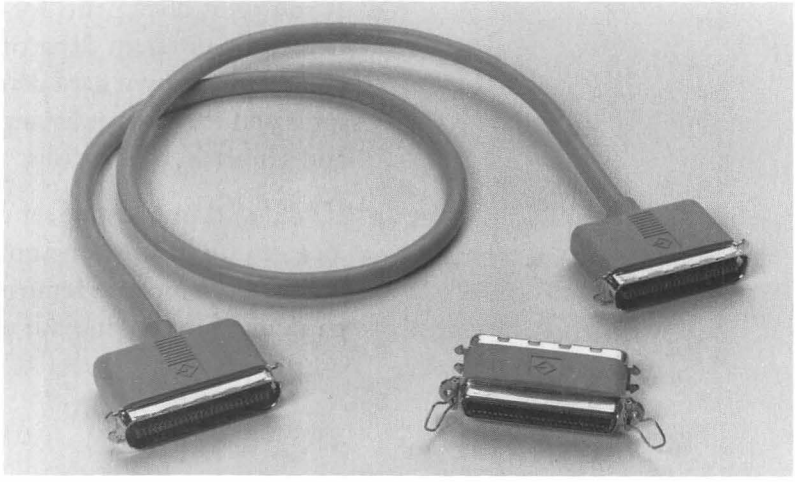


Figure B-1 A SCSI peripheral cable and a SCSI cable terminator

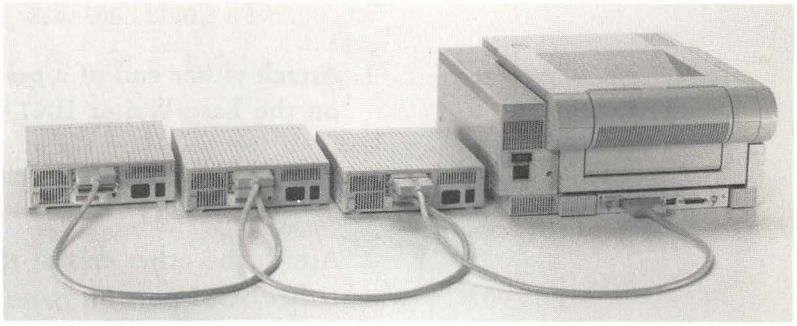


Figure B-2 Three hard disks connected to a LaserWriter IINTX

Setting the ID number

Each SCSI device attached to the printer must have a unique ID number. The hard disk with the lowest ID number is the startup disk. The LaserWriter will assign up to 80% of the space on this hard disk for font caching. The space on other hard disks attached to the printer is available for storing downloadable fonts and background art.

You assign a SCSI ID number by setting the SCSI ID switch on the back panel of the disk. Follow these steps:

1. **Make sure the hard disk is turned off.**
2. **Insert the point of a pushpin or a straightened paper clip into the hole below the SCSI ID indicator.**
3. **Push gently until the number you want appears in the indicator.**
4. **If you go past the number you want, keep pushing until it comes around again.**

▲ **Warning:** In order for the LaserWriter to use attached hard disks, the hard disks must be turned on before the LaserWriter is started up. Wait at least 10 seconds after turning on the hard disks before you turn on the LaserWriter II. ▲

To connect a single hard disk

1. **Attach either end of a peripheral cable to the SCSI port on the LaserWriter IINTX.**

   Be sure to snap the wire clips into the clip brackets to secure the connection.

2. **Attach the other end of the peripheral interface cable to either SCSI port on the hard disk.**

3. **Attach the end of a cable terminator without clips to the other SCSI port on the hard disk.**

To connect multiple hard disks

1. **Attach either end of a peripheral cable to the SCSI port on the LaserWriter IINTX.**

2. **Attach the other end of the peripheral cable to the clip end of a cable terminator.**

3. **Insert the other end of the cable terminator into either SCSI port on the hard disk.**

4. **Attach a second peripheral cable to the other SCSI port on the hard disk.**

5. **Attach the other end of the peripheral cable to either SCSI port on the next hard disk.**

6. **Repeat steps 4 and 5 for each additional hard disk.**

7. **Attach a cable terminator to the unused SCSI port on the last hard disk.**

Using hard disks from manufacturers other than Apple

If you are considering connecting non-Apple hard disks to your LaserWriter II, keep these points in mind:

- The LaserWriter IINTX must be able to tell how much storage space a disk has. This is not possible with some hard disks from manufacturers other than Apple. These disks cannot be connected to the LaserWriter IINTX.
- There should be no more than two terminators in any SCSI chain. Some non-Apple hard disks have internal terminators. If yours does, put it at the beginning or end of the chain and do not use a terminator at that end.

Initializing hard disks

To initialize a hard disk connected to a LaserWriter IINTX, open the Font Utility on the *LaserWriter II Installation Disk,* and choose Initialize disk from the File menu.

Connecting to and Printing With an MS-DOS Computer

With the right hardware and software, you can use the LaserWriter IINT or LaserWriter IINTX printer with a computer running the MS-DOS or OS/2 operating system. There are two ways to connect your LaserWriter II to these computers:

- Install a LocalTalk peripheral card in one of the expansion slots of your computer; connect the computer to an AppleTalk network system; and connect the printer to the same network.
- Connect a cable to the serial port on your computer and to the 25-pin connector on your printer.

❖ *Note:* The information in this and following sections applies generally to any computer that you connect to your LaserWriter II through the printer's serial port. ❖

Using LocalTalk

The easiest way to connect an MS-DOS computer to a LaserWriter II is to use a LocalTalk peripheral card in your computer. The LocalTalk card automatically manages the communications between your computer and the printer.

Obtaining the necessary equipment

To connect a LaserWriter II to an MS-DOS computer you'll need

- an Apple LaserWriter II printer
- an MS-DOS-compatible computer
- an Apple LocalTalk PC Card (or equivalent)
- an Apple LocalTalk Locking Connector Kit-DB9 (part number M2065)
- an Apple LocalTalk Locking Connector Kit (part number M2068)

The Apple LocalTalk PC card

You can obtain a LocalTalk PC Card from your authorized Apple dealer or representative. This card is a half-size printed circuit board that fits into one of the slots in your computer.

The LocalTalk PC Card comes with the AppleShare® PC or PC LaserWriter program, which allows your computer to work with LocalTalk.

- If your application program produces files in POSTSCRIPT format, the AppleShare PC program or PC LaserWriter Program lets you send those files directly to the LaserWriter II.
- With some application programs, such as Lotus 1-2-3, MultiMate, or WordStar, the AppleShare PC or PC LaserWriter Program lets you specify the format for each file before printing it on the LaserWriter II.

- If your application program creates ASCII files (text files), you can print those files using the AppleShare PC or PC LaserWriter program.

Other LocalTalk peripheral cards

Other suppliers sell peripheral cards that allow you to install a LocalTalk port in your MS-DOS computer.

Before installing such a card, make sure it comes with software that allows you to translate and format your documents for printing on the LaserWriter II.

Making the connection

To connect a computer to your LaserWriter II through a LocalTalk cable system, follow these steps:

1. **Install a LocalTalk PC Card or a peripheral card that adds a LocalTalk port, along with supporting circuitry, to the computer.**

▲ **Warning:** If you have previously connected the LaserWriter II to a computer using the serial port, disconnect the serial cable from the printer before you go on. ▲

2. **Connect a LocalTalk connector box to the LocalTalk port on your computer.**
3. **Plug another LocalTalk connector box into the 8-pin socket on the left side of your printer.**
4. **Connect the two connector boxes with a LocalTalk cable.**

   Or, if you are adding the LaserWriter to an existing network, connect the connector box on the printer to a LocalTalk cable already on the network.

5. **To activate the AppleTalk software on the LaserWriter II, set switches 1 and 2 to the up position.**

   The switch panel is on the left side of the printer. The LaserWriter IINT has two switches; the LaserWriter IINTX has six.

Now you're ready to use your LaserWriter II. Read the documentation that came with your computer and application programs for more information.

Using the 25-pin connector

It is possible to connect a LaserWriter II to your computer without using a LocalTalk card, but you'll need to match the communications settings on your computer and printer. (The LocalTalk card does this matching for you.)

To connect your computer to the LaserWriter II, you connect the 9-pin or 25-pin serial port on the back of your computer to the 25-pin socket on the printer.

This connection lets you send files directly to the LaserWriter II from your computer.

Connecting an MS-DOS computer to a LaserWriter II involves

- obtaining the necessary equipment
- connecting the cables
- setting the dip switches to pick POSTSCRIPT or an emulator
- configuring your computer's serial port
- matching communication parameters

Step 1: Obtaining the necessary equipment

To connect an MS-DOS computer to the LaserWriter II 25-pin connector, you'll need

- an Apple LaserWriter II
- an MS-DOS computer with a serial port
- an Apple Modem Eliminator
- an RS-232C serial cable (DB9 or DB25)

Depending on your configuration of serial ports, cables, and modem eliminators, you may also need one or more of the following:

- a 25-pin to 9-pin serial port adapter (if you need to connect a 9-pin cable to the LaserWriter 25-pin serial port)
- socket to plug or plug to socket adapters (if the ends of your cables and adapters don't match up)
- a 9-pin to 25-pin serial cable (depending on your configuration)

Different serial cables are wired differently. Get help from your authorized Apple dealer or service representative when purchasing a cable.

If your computer has a standard serial port, such as those supplied with the IBM PC, you should be able to use standard cables. If not, you may have to purchase a special cable or have a cable built for you. Table C-1, on the next page, provides a description of the pin assignments on the RS-232 port of the LaserWriter II. The person who builds your cable will need this information.

Table C-1 Pin assignments for the 25-pin serial port on the LaserWriter II

Pin	Circuit	Description
1 or 7*	SGnd	Signal ground
2*	Txd	Transmit data
3*	Rxd	Receive data
4	Rts	Request to send
5	Cts	Clear to send
6	DSR	Data set ready
8	DCD	Data carrier detect
20	DTR	Data terminal ready
22	Ring	Ring indicator

*Your LaserWriter II needs only pins 1 (or 7), 2, and 3, but a connected device may require the others. For example, to exchange information with an MS-DOS computer using the DSR/DTR handshake, pins 6 (DSR) and 20 (DTR) on the RS-232 port of the LaserWriter II must be connected to their counterparts on the serial port of the MS-DOS computer.

Step 2: Connecting the cables

Follow these steps to connect your computer to the 25-pin socket on your printer. The 25-pin socket and the switch panel are on the left side of your printer.

1. **Make sure that both the LaserWriter II and your computer are switched off.**
2. **If a LocalTalk cable is connected to your printer, disconnect it.**
3. **Connect a cable to the COM1 serial port on your computer and to the printer's 25-pin socket (the RS-232 port).**

   If another device is already connected to the COM1 port, use the COM2 port.

Your cable or cables should include one modem eliminator. Some serial extension cables have built-in modem eliminators.

If your computer has a 9-pin serial port, use a 9-pin to 25-pin adapter cable.

Step 3: Selecting an operating mode

The next two sections tell you how to choose an operating mode for your LaserWriter II. Each operating mode is then described in its own section. To set the operating mode, follow the directions for the type of printer you have.

❖ *Note:* For a complete description of LaserWriter II DIP switch settings, see Appendix F, "Ports and Switches." ❖

If you have a LaserWriter IINT

You can set the LaserWriter IINT to work in POSTSCRIPT mode or to emulate a Diablo 630 printer. Set the switches on a LaserWriter IINT as follows.

POSTSCRIPT mode: If you plan to use software that supports POSTSCRIPT, switch 1 should be up and switch 2 should be down.

Diablo emulation: If you plan to use the Diablo emulator, switch 1 should be down and switch 2 should be up.

If you have a LaserWriter IINTX

There are two ways to set the LaserWriter IINTX operating mode:

- You can use the DIP switches to set the mode.
- You can use software switching (sending a program to the printer) to set the mode. Software switching only works with LaserWriter IINTX printers that use POSTSCRIPT Rev 3.0 or later. Check your printer's startup page to see what Rev it uses.

If you plan to set the printer mode once or infrequently, use the DIP switches to set the mode. If you plan to change operating modes frequently, you should use software switching to set the mode. Both methods are described here.

Setting the mode with DIP switches: You can set the LaserWriter IINTX to work in POSTSCRIPT mode, to emulate a Diablo 630 printer, or to emulate a Hewlett-Packard LaserJet+ printer. Set the switches on the LaserWriter IINTX as follows.

POSTSCRIPT mode: If you plan to use software that supports POSTSCRIPT, switch 2 should be down, and switches 3 and 4 should both be up. Switch 1 can be up or down.

Diablo emulation: If you plan to use the Diablo emulator, switches 2 and 3 should be down and switch 4 should be up. Switch 1 can be up or down.

LaserJet+ emulation: If you plan to use the LaserJet+ emulator, switches 2, 3, and 4 should be down. Switch 1 can be up or down.

Setting the mode with software switching: Software switching can be used to set both the software mode used by the printer (POSTSCRIPT or an emulator), and the hardware mode used by the printer (serial or AppleTalk).

To change the software mode using software switching, you send a program to the printer that changes a value called *softwareiomode.* To change the hardware mode using software switching, you send a program to the printer that changes a value called *hardwareiomode.*

The LaserWriter IINTX supports four values for softwareiomode:

0 (POSTSCRIPT batch mode),

1 (POSTSCRIPT interactive mode)

2 (Diablo 630 emulation)

5 (HP LaserJet+ emulation)

The LaserWriter IINTX supports two values for hardwareiomode:

0 (serial communication)

2 (the AppleTalk communication protocol)

To use software switching to select a hardware and software operating mode, type the following POSTSCRIPT program at the DOS prompt and send the program to the LaserWriter IINTX:

```
cd\
copy con set.mod
serverdict begin 0 exitserver
statusdict begin
S setsoftwareiomode
H sethardwareiomode
^Z
```

Instead of typing S in the line where it appears in the program, type the value for the software mode you want to set (0, 1, 2 or 5).

Instead of typing H in the line where it appears in the program, type the value for the hardware mode you want to set (0 or 2).

The program that changes your hardware and software modes is now saved in a file called *SET.MOD*. To send the program to the LaserWriter IINTX, type this line at the DOS prompt:

```
type SET.MOD > COM1
```

Substitute COM2 for COM1 in the line above if the LaserWriter II is connected to the COM2 port on your computer.

Typing the line given above and pressing Return sets the software and hardware operating modes on the LaserWriter IINTX.

▲ **Warning:** Changing your printer's operating mode from AppleTalk to serial while the printer is connected to an AppleTalk network system could cause the printer to send serial information out over the AppleTalk network system. This can result in damage to both the printer and the network. *Before* you switch from AppleTalk operation to serial operation, be sure to either disconnect the AppleTalk network from the printer, or disable the printer's RS-422 port.

If you have disabled the RS-422 port in order to use the printer with the serial and AppleTalk cables connected, do *not* reactivate the RS-422 port, using either software switching or DIP switches, while the printer is operating in serial mode. ▲

Preventing damage when switching between hardware operating modes

If you intend to use your LaserWriter II to print using both AppleTalk and serial connections, you need to take some precautions to avoid damaging the printer and the network. To avoid damaging the printer and the network, you must do one of the following *before* switching your printer to serial mode:

- disconnect the AppleTalk network
- disable the RS-422 port

If you find it more convenient to leave both LocalTalk and serial cables connected to your printer, follow these instructions to disable the RS-422 port before you switch the printer to serial mode. Never reactivate the RS-422 port (using either software switching or DIP switches) while the printer is in serial mode.

To disable the RS-422 port, you set the port to operate at 0 baud. To do this, put the following POSTSCRIPT commands into a file and send them to the LaserWriter IINTX (followed by a Control-D if entered in POSTSCRIPT interactive mode):

```
serverdict begin 0 exitserver
statusdict begin
9 0 0 setsccbatch
9 0 0 setsccinteractive
```

When you send this file, the printer disables the RS-422 port by setting its baud rate to 0. You can now use software switching (as described in the previous section) safely with both serial and AppleTalk cables connected.

To reactivate the RS-422 port, send the program to the printer again, but substitute the desired baud rate for the first zero, and substitute an options number for the second zero. Use Table C-5 to determine the appropriate options number.

Switching from an emulator to POSTSCRIPT on the LaserWriter IINTX

There is a quick way to switch from either the Diablo 630 emulation or the LaserJet+ emulation and go into POSTSCRIPT batch mode. Simply type into a file the command sequence Escape-Delete-Zero, followed by a Control-D, and print the file to the LaserWriter II. When you send this file, the LaserWriter II will reset itself to POSTSCRIPT batch mode.

POSTSCRIPT documents

If you're using an application program that produces POSTSCRIPT files, install the POSTSCRIPT **printer driver** in your application. The printer driver translates your print files into POSTSCRIPT, the page description language that the LaserWriter II understands. The installation process varies with the application program. See the manual that came with your application program for instructions.

If you run into trouble while using an application to produce POSTSCRIPT documents, make sure you have a version of the application that supports POSTSCRIPT *and* that you have the correct version of the printer driver.

Diablo emulation

In this mode, the LaserWriter II prints text only, entirely in 12-point Courier.

```
This is an example of 12-point Courier.
All characters and spaces take up the same
amount of space on the line.
```

The LaserWriter II also prints bold characters identified by the proper Diablo 630 command sequence (Esc-O), in boldface Courier. Although there is no way for a laser printer to darken a character by double-striking, some applications reinterpret the double-striking command, causing the LaserWriter II to darken characters by widening each stroke.

If you're using the DSR/DTR handshake, be sure to reset the handshake using the POSTSCRIPT program specifically designed for changing the parameters with LaserWriter IINT Diablo 630 emulation. See "Step 7: Adjusting Communication Parameters on the Printer," later in this appendix.

Install the Diablo 630 printer driver following the instructions that came with your application program.

The LaserWriter II interprets the Control-D key combination as an end-of-file command. If you can, insert the Control-D character at the end of your file. When the printer receives the Control-D character, it immediately prints the last page in your document.

If your application program does not allow you to insert the Control-D character at the end of your file, the LaserWriter II does not immediately print the last page of a document unless the page is full or ends with a form feed (end-of-page) character. Instead, the page is printed as part of the next document (at the top of the first page).

When you're printing documents in close succession, make sure that each one has a final form feed, so they won't run together. If no other document is ready to print, the LaserWriter II waits for thirty seconds—after last receiving data—before it prints the last page.

The following Diablo 630 features are not supported by the LaserWriter II:

- print suppression
- HY-plot
- extended character set
- the ability to download information for print wheels, including program mode
- the ability to override print wheel spacing (for proportional spacing), although the offset between characters can be changed
- page lengths other than 11 inches
- paper feeder control
- hammer energy control
- remote diagnostic
- reverse printing

LaserJet+ emulation

In this mode you can print text and bitmapped graphics, using the LaserJet's font selection and positioning commands.

Install the LaserJet+ printer driver following the instructions in the manual that came with your application program.

The LaserWriter IINTX interprets the Control-D key combination as an end-of-file command. If you can, insert the Control-D character at the end of your file. When the printer receives the Control-D character, it immediately prints the last page in your document.

If your application program does not allow you to insert the Control-D character at the end of your file, the LaserWriter II does not immediately print the last page of a document unless the page is full or ends with a form feed (end-of-page) character. Instead, the page is printed as part of the next document (at the top of the first page).

When you're printing documents in close succession, make sure that each one has a final form feed, so they won't run together. If no other document is ready to print, the LaserWriter II waits for thirty seconds—after last receiving data—before it prints the last page.

The LaserJet+ emulator of the LaserWriter IINTX allows you to print just about anything you can print on the LaserJet+, with these minor differences:

- The LaserJet+ omits characters that overlap the left margin of the paper, but the emulator prints the portion of the character that does not extend into the margin.
- The LaserJet+ allows you to insert commands to halt printing so that you can insert paper or envelopes manually. The emulator interprets those commands as form feeds.
- The emulator does not print nine characters from the LaserJet+ Roman-8 symbol set. These characters are shown in Table C-2.

Table C-2 Characters the LaserJet+ emulator does not print

Decimal code	Symbol description
176	overline*
179	degree symbol
227	uppercase D with stroke (Eth)
228	lowercase D with stroke (eth)
240	uppercase Thorn
241	lowercase thorn
247	one-fourth symbol
248	one-half symbol
254	plus/minus sign

* The emulator *will* print the overline symbol in the Courier typeface

- Applications that produce justified text with the LaserJet+ versions of Helvetica (Helv) and Times Roman (Tms Rmn) fonts may generate slightly ragged output on the emulator.
- While the LaserJet+ prints characters in the closest available point size and pitch for each typeface, the emulator scales the font to the specified size.
- The line printer font, which is 16.67 pitch Courier, appears with a height of 7.2 points when printed with the emulator, rather than 8.5 points as printed by the LaserJet+.
- The Control-C and Control-T key combinations, which you can normally use to interrupt printing or query the status of the LaserJet+, cannot be used with the emulator.

Step 4: Configuring your computer's serial port

You have now completed the physical connection between your computer and your printer. The remaining steps, configuring the serial port, setting communications parameters, and checking those parameters, set the software in the computer and printer so that the two can interact.

The first step is to tell the computer how to configure the serial port. If you're using MS-DOS, you do this by typing commands at the DOS prompt as described in this section.

1. **Switch on the printer.**

   The LaserWriter II prints a startup page, indicating the mode—POSTSCRIPT, Diablo 630, or LaserJet+—that you've selected. In addition, the page reports which connector or connectors are set to receive information.

   If you've followed the instructions in this appendix, the page should say *RS-232 9600 Baud.* If the mode or connector is not what you want, switch off the printer, reset the switches, and switch on the printer again.

2. **Start up your computer.**

3. **Type the following two MS-DOS commands.**

   ```
   MODE COM1:96,N,8,1,P
   MODE LPT1:=COM1:
   ```

   If your printer is connected to the COM2 port, substitute COM2: for COM1:.

   This sets the data transfer rate at 9600 baud with no parity check, 8 data bits, and 1 stop bit. You don't need to know what these parameters mean. The important thing is that the computer and the printer have the same settings.

   The command you typed matches the computer's serial port settings to the LaserWriter II default settings. If someone has previously changed the settings in the printer, you'll need to type a different Mode command to match the computer to the settings in the printer.

If you change the printer's data transfer rate, parity check, data bits, or stop bits, be sure to type a new Mode command to change the parameters on your computer. (See your MS-DOS documentation for a full description of the Mode command.)

❖ *Note:* You can include the two Mode commands in your AUTOEXEC.BAT file, the program that runs every time you start up your computer. This sets the printing parameters automatically each time you start up. (For more information about the AUTOEXEC capability, see the documentation for your computer or operating system.) ❖

You have now made the connection and prepared the computer's serial port to communicate with the printer. All that remains is to ensure that all of the communications parameters in the printer and the computer match. If the settings don't match, you're likely to get printing errors.

Matching the parameters involves three steps:

- Find out how your printer is set.
- Set your computer software to match the printer's settings.
- If you cannot adjust the settings using software on the computer, you must adjust the settings on the printer.

The first of these steps is covered in the next section.

Step 5: Checking your printer's settings

It's easiest to set your computer to match the settings on the printer. If you need to reset parameters on the printer, you need to write and send programs from your computer to the printer.

Many software applications let you make the settings easily by picking them from menus, or simply by choosing the LaserWriter as the printer. See the documentation that came with your application software to see if any provisions for setting communications parameters are provided.

The first step in matching the settings is to find out what the printer's settings are.

If you followed the steps in this appendix to configure your printer's DIP switches, the default parameters given in Table C-3 should be in effect.

Table C-3 Default communication parameters

Parameter	Default
data transfer rate	9600 baud
parity check	none
number of data bits	8
number of stop bits	1
handshake	XON/XOFF

However, it is possible to reassign settings to switch positions by sending a program from the computer to the printer. If someone has redefined any of the switch settings in this way, the default switch settings may not provide the default communications parameters.

If you are not sure whether the switch settings have been redefined through software, you have two choices:

- you can reset the switches to their default settings (so that you can adjust your software settings to match), as described in the steps that follow, or
- you can write your own POSTSCRIPT program to change the printer's settings internally, as described later in this appendix.

Because most people would rather avoid writing POSTSCRIPT programs, one set of switch positions has been provided that cannot be redefined. You should use these settings if you're not sure whether someone has redefined the switch settings.

If you're setting up the printer for first time and you're sure that the switch settings have not been redefined, skip ahead to "Setting Your Application Software to Match the Printer's Settings," later in this appendix.

If you need to reset the switches, follow these steps.

1. **Turn the printer off and then on.**

   This resets the printer's memory.

2. **Check to make sure that the DIP switches are in the correct position.**

   The positions of the switches and the resulting settings are listed after step 3.

3. **Reset switch 1 by moving it to the position opposite the one you want, waiting 30 seconds, and moving it back to the desired position.**

   Moving any of the switches away from and then back to the desired setting erases any software changes.

   - If you are using a LaserWriter IINT, set both switches to the down position. The resulting settings are listed in Table C-4 on the next page.
   - If you are using a LaserWriter IINTX, set switch 1 to the down position, and set switches 2 through 6 in the up position. The resulting settings are shown in Table C-4 on the next page.

Table C-4 Resulting settings from LaserWriter II fall-back switch positions

Parameter	Setting
port	DB25 serial port
mode	PostScript batch mode
data transfer rate	1200 baud
parity check	none
number of data bits	8
number of stop bits	1
handshake	XON/XOFF

Step 6: Setting your application software to match the printer's settings

At this point you have either set your printer to the default settings listed in Table C-3, or you have set the switches to obtain the settings listed in Table C-4.

Next you need to match the settings on your application software to the settings you have made on the printer.

Methods for adjusting communications settings will vary from application to application. Consult the documentation that came with your application to find out how to make these settings.

Match the settings in the software to the printer's default settings or to the settings you used to configure the printer. If any of the settings does not match, communication between the printer and the computer can break down, causing printing errors.

If your application automatically adjusts communications settings to match the printer, or if you are able to match all of the application's settings to your printer's settings, you are ready to print! In that case, skip the rest of this appendix.

Some applications may not allow you to set communications parameters, or may not provide for one of the settings you have made on the printer. In that case, you can set the printer to match the parameters specified by the application. See the next section.

Step 7: Adjusting communication parameters on the printer

If you have already matched the communications settings on your application software to those of the printer, you do not need to read this. However, if your application does not allow you to adjust communications parameters to match the printer's settings, you will have to adjust the printer's settings.

The settings that need to match are:

- handshake
- data transfer rate
- data bits
- stop bits
- parity

Adjusting parameters on the LaserWriter IINT

Your LaserWriter IINT is preset to receive information with no parity check, 8 data bits, and 1 stop bit, with the XON/XOFF handshaking protocol. If both DIP switches are down, the data transfer rate is 1200 baud. If both switches are up, the 25-pin port is disabled. In any other switch configuration, the rate is whatever was last specified by the computer connected to the printer. If no setting was made by a computer, the default setting is 9600 baud.

❖ *Note:* If you change any switch setting while your LaserWriter IINT is printing, the printing stops immediately. ❖

You can change any of those settings by typing the following POSTSCRIPT program at the DOS prompt and sending the program to the LaserWriter IINT:

```
cd\
copy con set.pst
statusdict begin 25 sccbatch exch pop
OPTIONS eq {stop} if
serverdict begin 0 exitserver
statusdict begin 25 BAUD OPTIONS setsccbatch
^Z
```

This saves the commands that change the parameters in a file named *SET.PST.*

- *Note:* The ^*Z* characters in the above program indicate that you should press and hold the Control key while you press the Z key and then release both keys together.

- *Note:* To change settings for use with the Diablo emulation mode, substitute the characters `interactive` for `batch` in the two words where `batch` appears.

In place of **BAUD**, type the data transfer rate, which can be 300, 600, 1200, 2400, 3600, 4800, 9600, 19200, 38400, or 57600.

Use Table C-5 to determine the options number. Type that number in the two places **OPTIONS** appears in the program.

- *Note:* Because the LaserWriter IINT component that registers the options can wear out with after several thousand changes, change the options only when necessary. The first two lines in the POSTSCRIPT program for resetting the LaserWriter IINT help protect that component by stopping the process if the Options number is already set the way you want it.

Table C-5 The options number

Parity	Handshake	1 stop bit 7 data bits	1 stop bit 8 data bits	2 stop bits 7 data bits	2 stop bits 8 data bits
None (Space)	XON/XOFF	32	64	160	192
	DSR/DTR	36	68	164	196
	ETX/ACK	40	72	168	200
Odd	XON/XOFF	33	65	161	193
	DSR/DTR	37	69	165	197
	ETX/ACK	41	73	169	201
Even	XON/XOFF	34	66	162	194
	DSR/DTR	38	70	166	198
	ETX/ACK	42	74	170	202
None (Mark)	XON/XOFF	35	67	163	195
	DSR/DTR	39	71	167	199
	ETX/ACK	43	75	171	203

To send the POSTSCRIPT program, type this line at the DOS prompt:

```
type SET.PST > COM1
```

Substitute COM2 for COM1 in the above line if the LaserWriter II is connected to the COM2 serial port on your computer.

Typing the line given above and then pressing the Return key sends the program to the printer.

If you're interested in exactly how these programs work, see "A Sample POSTSCRIPT Program" later is this chapter.

Adjusting parameters on the LaserWriter IINTX

Your LaserWriter IINTX is preset to receive information with no parity check, 8 data bits, and 1 stop bit. If switch 2 is in the up position, the data transfer rate is 1200 baud (unless you have disabled the 25-pin port by placing switches 1 and 2 in the up position to use the printer on a LocalTalk network). If switch 2 is down, the rate is whatever was last set from the computer. If the setting has not been changed by the computer, the default setting is 9600 baud.

Setting the handshake parameter on the LaserWriter IINTX involves setting switches 5 and 6. To set the XON/XOFF handshake, place both switches 5 and 6 in the up position. For DSR/DTR, place switch 5 in the up position and switch 6 in the down position. For ETX/ACK, set switch 5 down and switch 6 up.

❖ *Note:* If you change any switch setting while your LaserWriter IINTX is printing, the printing stops immediately. ❖

You can change the handshake, or any of the other communications settings, by typing the following POSTSCRIPT program at the DOS prompt and sending it to the LaserWriter IINTX:

```
cd\
copy con set.pst
serverdict begin 0 exitserver
statusdict begin 25 BAUD OPTIONS setsccbatch
^Z
```

❖ *Note:* The ^*Z* characters in the above program indicate that you should press and hold the Control key while you press the Z key and then release both keys together. ❖

In place of **BAUD**, type the data transfer rate, which can be 300, 600, 1200, 2400, 3600, 4800, 9600, 19200, 38400, or 57600.

Use Table C-5 (earlier in this appendix) to determine the Options number. Type that number where **OPTIONS** appears in the program.

When you have finished the program and pressed the Control-Z key combination at the end of the program, you have saved the new settings in a file named *SET.PST.*

To send the program to the LaserWriter IINTX, type this line at the DOS prompt:

```
type SET.PST > COM1
```

Substitute COM2 for COM1 in the line above if the LaserWriter II is connected to the COM2 port on your computer.

Typing the line given above and pressing Return sends the changes to the LaserWriter IINTX.

If you're interested in exactly how these programs work, see the following section, "A Sample POSTSCRIPT Program."

The changes take effect at the end of the current job, and they remain in effect until you change them again, even if you restart your printer.

❖ *Note:* You can change the settings as often as you like. Unlike the LaserWriter IINT, the component in the LaserWriter IINTX that registers the options does not wear out. ❖

Your MS-DOS computer normally uses a handshake known as DSR/DTR (also known as *DSR* or *DTR*), but your application program may automatically change the handshake or allow you to reset it. If so, reset the handshake to match the printer's setting, XON/XOFF.

If you cannot reset the handshake setting in your application software, reset the printer using the program listed above.

A sample POSTSCRIPT program

Here is a sample program to illustrate how to change the printer's settings.

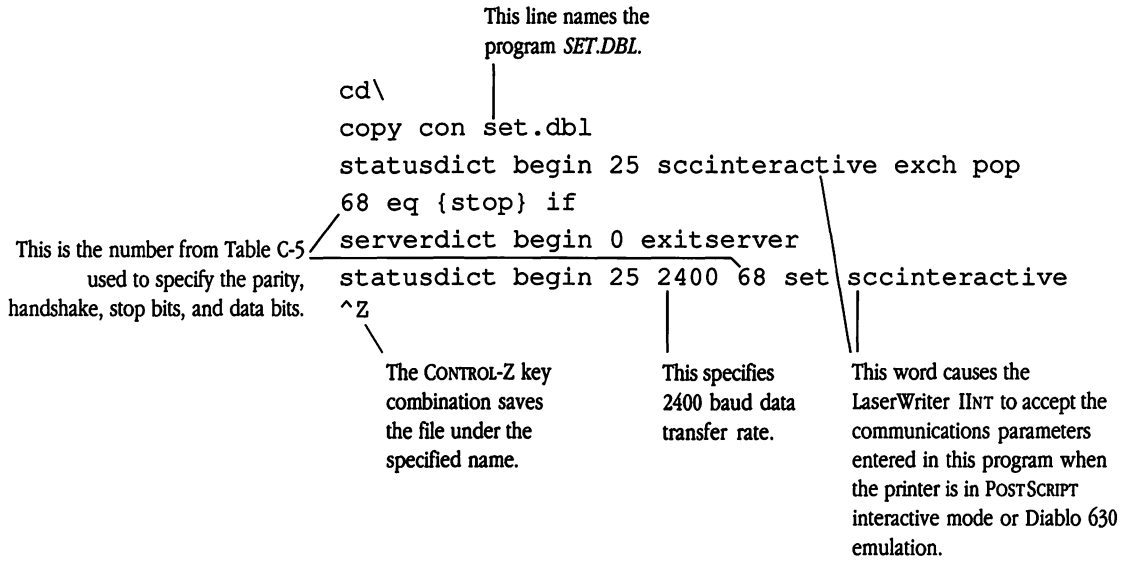


Figure C-1 Annotated sample program

You type the program listed in Figure C-1 if you want to use the LaserWriter IINT in Diablo emulation mode with an application that requires the following parameters:

Parameter	Setting
mode	Diablo emulation
data transfer rate	2400 baud
parity check	none
number of data bits	8
number of stop bits	1
handshake	DSR/DTR

After you enter this program and finish it by pressing the Control-Z key combination, you send it to the printer by typing the following command:

```
type SET.DBL > COM1
```

Substitute COM2 for COM1 in the above line if the LaserWriter II is connected to the COM2 serial port on your computer.

Pressing the Return key after this command sends the changes to the printer.

Reactivating AppleTalk

If the LaserWriter II is part of an AppleTalk network system, you may wish to reactivate the printer's AppleTalk software after you have reset the printer, so that computers on the network can use the printer. To do so,

1. **Switch off the printer.**
2. **Set switches 1 and 2 in the up position.**
3. **Disconnect the serial cable.**
4. **Reconnect the LocalTalk cables.**
5. **Switch on the printer.**

Checking the parameters

There are two methods of determining the current parameter settings for the LaserWriter II by sending a POSTSCRIPT program.

Printing the options number

You can have the LaserWriter II print the options number, as defined earlier, by typing this program at the DOS prompt and sending it to the printer. When you get the printout, look up the options number in Table C-5 to determine the settings.

```
copy con short.pst
/Helvetica findfont 14 scalefont setfont
30 500 moveto
(The options number for the 25-pin port is )show
statusdict begin 25 sccbatch 10 string cvs show
pop showpage
^Z
```

This program contains the commands that tell the printer to print the options number. When you type this program, you save the commands in a file named *SHORT.PST*.

- *Note:* The ^*Z* characters in the above program indicate that you should press and hold the Control key while you press the Z key, and then release both keys together.
- *Note:* To check the settings to be used in the Diablo emulation mode on the LaserWriter IINT, substitute the word `sccinteractive` for `sccbatch`.

To send the file to the printer, type this command:

```
type SHORT.PST > COM1
```

If you connected the LaserWriter II to the COM2 port on your computer, substitute *COM2* for *COM1* in the command.

Printing the communications parameters

You can have the LaserWriter II print the data transfer rate, parity, handshake, data bits, and stop bits by typing this program at the DOS prompt and sending it to the printer.

```
copy con long.pst
/Helvetica findfont 14 scalefont setfont
/cr{show 182 currentpoint 20 sub exch pop moveto}def
/tb{show 300 currentpoint exch pop moveto}def
/Which{5 -1 roll 4 exch sub -1 roll cr
3{pop}repeat}def
statusdict begin 25 sccbatch end 182 650 moveto
exch (Baud :)tb 10 string cvs cr
(Parity:)tb dup 30 bitshift -30 bitshift
(none-space)(odd)(even)(none-mark) Which
(Handshake:)tb dup 27 bitshift -29 bitshift
(XON/XOFF)(DSR/DTR)(ETX/ACK)(bad value) Which
(Data bits:)tb dup 25 bitshift -30 bitshift
(standard)(7)(8)(bad value) Which
(Stop bits:)tb -7 bitshift 0 eq{(1)}{(2)}ifelse
show showpage
^Z
```

When you type this program, the commands that tell the printer to print the communications parameters are saved in a file named *LONG.PST*.

- *Note:* The ^*Z* characters in the above program indicate that you should press and hold the Control key while you press the Z key, and then release both keys together. ❖
- *Note:* To check the settings to be used in the Diablo emulation mode on the LaserWriter IINT, substitute the word `sccinteractive` for `sccbatch`. ❖

To send the file to the printer type this command:

```
type LONG.PST > COM1
```

If you connected the LaserWriter II to the COM2 port on your computer, substitute *COM2* for *COM1* in the command.

How the LaserWriter II Works

The LaserWriter II is a laser printer. It uses laser light, electric charges, and plastic toner powder to produce a page of text and graphics.

When you choose Print on your Macintosh, the computer sends a description of the page through the LocalTalk cable system to the printer. It is sent in POSTSCRIPT, the language the printer uses to recreate the page.

The internal computer in the LaserWriter II uses these commands to create a full-page **bitmap**, a dot-by-dot "guide" to each letter or image. The LaserWriter II then activates the laser, and the pulses of the beam match the map dot for dot.

Through a series of mirrors, the laser light is reflected onto a rotating photosensitive drum. The drum has a negative charge. When the laser light scans the drum, it gives what will be printed areas a neutral charge, leaving the surrounding areas negative.

The toner is also negatively charged. As the drum rotates through it, the toner particles stick to the neutral (black) areas but avoid the negative (white) areas.

Paper acquires a positive charge when it enters the printer. Opposites attract, so the negatively charged toner jumps onto the paper when the drum rotates over the paper.

The paper then passes through the fixing rollers, which generate a temperature of about 400 degrees Fahrenheit to fuse the dots onto the paper.

The LaserWriter II forms about 300 dots per inch (90,000 dots per square inch), or about 7.4 million dots per page. That's why your finished copy looks as good as it does. And once the printer has the bitmaps in its memory, it can produce page after page at a rate of about eight per minute.

Specifications and Parts List

Specifications

Marking engine

Canon LBP-SX laser-xerographic.

Controller

LaserWriter IINT controller hardware contains an 11.5 MHz 68000 CPU, 1 MB of ROM, 2 MB of RAM, LocalTalk interface, RS-232 serial interface, and Apple Desktop Bus™ (ADB) interface.

LaserWriter IINTX controller hardware contains a 16.7 MHz 68020 CPU, 1 MB of ROM, 2 MB of RAM (expandable to 12 MB), LocalTalk interface, SCSI interface, RS-232 serial interface, Apple Desktop Bus (ADB), and one slot for ROM expansion.

Print quality

Approximately 300 dots per inch for text and graphics.

Apple fonts

ITC Avant Garde, ITC Bookman, Courier, Helvetica, Helvetica Narrow, New Century Schoolbook, Palatino, Symbol, Times, ITC Zapf Chancery, and ITC Zapf Dingbats.

The LaserWriter II supports printing in plain, bold, italic, and bold italic, with additional styles depending on the application.

Font sizes are limited only by the resolution of the printer and the size of the paper.

Additional fonts

The LaserWriter II can support additional POSTSCRIPT fonts from other suppliers.

Speed

Eight pages per minute maximum. Actual speed depends on the images printed.

Interfaces

LocalTalk, RS-232, and RS-422.

Recommended duty cycle

Minimum life expectancy is 300,000 pages, with no monthly page limit. Recommended service interval is 100,000 pages.

Print feed

Automatic with 200-sheet paper cassette. Manual with single-sheet feeder.

Printing materials

16-lb. to 20-lb. photocopy or typewriter bond (60 to 80 g/m^2) in normal mode; up to 36-lb. (135 g/m^2) stock in manual mode with face-up tray open. Accepts most letterhead and colored stock. Accepts medium-weight photocopier transparencies. Envelopes can be printed with manual feed or from the envelope cassette. Labels can be printed using manual feed.

If the paper you are using adheres to these standards but you still have problems printing, try using paper from a different manufacturer.

The paper you select should not scorch, melt, transfer material, or release hazardous emissions when heated to 200° C (393° F) for 0.1 seconds.

Box-shaped envelopes will be pressed flat when run through a LaserWriter II. The heat inside the printer may unglue some envelopes.

Paper sizes and capacity

Supports U.S. letter, U.S. legal, A4, B5, and envelope cassettes. Each paper cassette holds 200 sheets of 20-lb. (80 g/m^2) paper. Envelope cassette holds 15 envelopes.

Dimensions

Height	22 cm (8.6 in.)
Width	51.3 cm (20 in.)
Width with letter-size cassette	67.8 cm (26.4 in.)
Depth	47.5 cm (18.5 in.)

Weight

20.5 kg (45 lbs.)

Imageable area

Maximum printable line: 205.9 mm (8.1 in.).
Minimum top and bottom margins: 5.0 mm (0.197 in.).
Minimum left margin: 5.0 mm (0.197 in.).
Minimum right margin: 5.0 mm (0.197 in.).

The printer senses cassette size and adjusts to maintain these margins. In the manual feed or envelope cassette mode, the operator must prevent printing beyond the margin to avoid depositing toner on the transfer corona.

Actual imageable area may vary depending on the application and the installed RAM.

Operating environment

Temperature	10° to 32° C (50° to 90° F)
Humidity	20 to 80 percent
Toner cartridge transit environment	-20° to +40°C (-4° to +104°F)

Voltage requirements

U.S./Japan	90V to 126V AC 50 to 60 Hz
Europe/Australia	198V to 264V AC 50 Hz

Power consumption

Standby	170 W average
Operating	900 W maximum at 115V 780 W maximum at 220V 880 W maximum at 240V

Parts list (including options)

LaserWriter IINT

LaserWriter IINTX

LaserWriter II Toner Cartridge

LaserWriter II Letter Cassette

LaserWriter II Legal Cassette

LaserWriter II A4 Cassette

LaserWriter II B5 Cassette

LaserWriter II Envelope Cassette

LaserWriter IINTX 1 MB RAM Expansion Kit

LaserWriter IINTX 4 MB RAM Expansion Kit

LaserWriter IINTX Upgrade Kit

LocalTalk Locking Connector Kit (DB9 or din-8)

LocalTalk Locking Cable Kit (10 meters or 25 meters)

LocalTalk Custom Wiring Kit

Apple SCSI Peripheral Interface Cable

Apple SCSI Cable Terminator

Ports and Switches

Ports

The LaserWriter IINT and LaserWriter IINTX connector panels have three ports in common. (See Figures F-1 and F-2 on the next page.)

- The Apple Desktop Bus port may be used for future expansion.
- The 25-pin serial port is for non-LocalTalk serial connections.
- The LocalTalk port is for connecting to any computer in a LocalTalk cable system. (This port can also be used as a serial port.)

In addition, the LaserWriter IINTX connector panel includes a 50-pin SCSI port for attaching a dedicated hard disk. (See Figure F-2.) This port is not to be used for connecting the printer directly to a Macintosh.

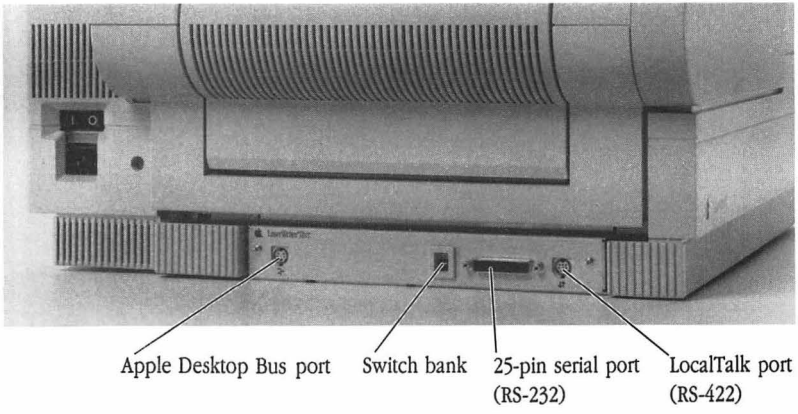


Figure F-1 The LaserWriter IINT connector panel

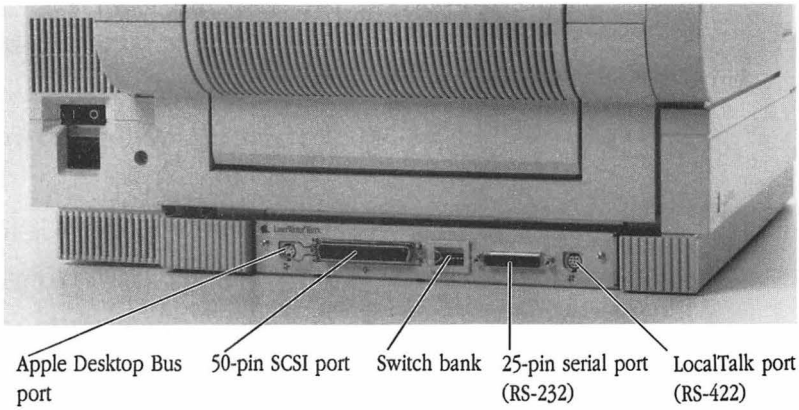


Figure F-2 The LaserWriter IINTX connector panel

Switch configurations

LaserWriter IINT

Table F-1 LaserWriter IINT switch configurations

Switch 1	Switch 2	Meaning
Up	Up	LocalTalk (RS-232 port disabled)
Down	Down	Serial ports (RS-232 and RS-422) 1200 baud only
Up	Down	Serial ports (RS-232 and RS-422) 9600 baud (can be changed by software)
Down	Up	Special Diablo 630 emulation RS-232

On the LaserWriter IINTX, downloading a POSTSCRIPT program can change the switch configuration. If any switches are subsequently changed, the configuration changes to match the new switch settings. If the LaserWriter IINT will not print, check the switch settings and change them as required. If the settings are correct, reverse the switch 1 setting, wait 30 seconds, and switch it back. Then turn the power off and on again. The startup page should show the correct choice (either POSTSCRIPT or emulation) and the correct port (either LocalTalk or serial). Do not connect LocalTalk if using the serial port configuration.

LaserWriter IINTX

Table F-2 LaserWriter IINTX switch configurations

Switch 1	Switch 2	Meaning
Up	Up	LocalTalk (RS-232 port disabled)
Down	Up	Serial ports (RS-232 and RS-422) 1200 baud
Up	Down	Serial ports (RS-232 and RS-422) 9600 baud
Down	Down	RS-232 serial port 9600 baud; (can be changed by software) RS-422 serial port 0 baud

Switches 3 through 6 are used only for non-LocalTalk configurations.

Switch 3	Switch 4	Meaning
Up	Up	POSTSCRIPT batch
Down	Up	Diablo 630
Down	Down	HP LaserJet+
Up	Down	POSTSCRIPT interactive

Switch 5	Switch 6	Meaning
Down	Down	XON/XOFF
Up	Up	XON/XOFF
Down	Up	Etx/Ack
Up	Down	DSR

On the LaserWriter IINTX, downloading a POSTSCRIPT program can change the switch configuration. If any switches are subsequently changed, the configuration changes to match the new switch settings. If the LaserWriter IINTX will not print, check the switch settings and change them as required. If the settings are correct, reverse the switch 1 setting, wait 30 seconds, and switch it back. Then turn the power off and on again. The startup page should show the correct choice (either POSTSCRIPT or emulation) and the correct port (either LocalTalk or serial).

LaserWriter II Fonts

These samples show the full character sets, including option characters, in plain style and 10-point size, for all fonts in the LaserWriter II font file.

All fonts can be scaled to any size compatible with the resolution of the printer and the size of the paper.

ITC Avant Garde

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ITC Zapf Chancery

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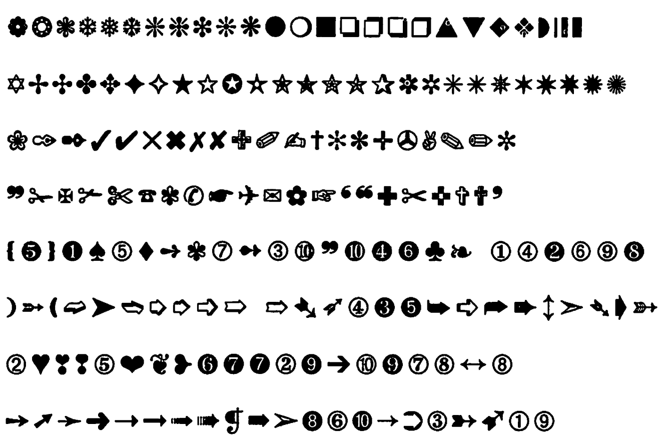
ITC Zapf Dingbats



Service and Support

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

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

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

If for some reason you cannot return to the authorized dealer from whom you purchased your system, go to the nearest service location. For the location nearest you, in the United States or Canada, call or write to one of the following:

Apple Computer, Inc.
Customer Relations
20525 Mariani Avenue
Cupertino, CA 95014
USA
800-538-9696

Apple Canada, Inc.
7495 Birchmount Road
Markham, Ontario, L3R 5G2
Canada
800-268-7796 or
800-268-7637

For locations in other countries, either call the Apple headquarters in your country or write to the United States address given above.

Apple also offers service options designed to meet your needs. One of these is the Apple*Care*® Service Agreement (available in the United States, Canada, and Australia only), which extends full warranty coverage up to three years. Your Apple*Care* contract will be honored at any participating authorized Apple dealer within the country of purchase—an added benefit if you relocate. Local service means time saved in getting your Apple system back to work.

You can purchase Apple*Care* at any time, but it's a good idea to purchase it with your system, or at least before your warranty has expired, to avoid an inspection at your own expense.

A

AppleTalk network system A networking system (and any software that supports it) linking computers and peripheral devices such as the LaserWriter II.

ascent line The line defined by the tops of the capital letters in text.

ASCII Acronym for *American Standard Code for Information Interchange;* pronounced "ASK-ee." A code in which the numbers from 0 to 127 stand for text and control characters.

B

back panel See **connector panel.**

back up To make a spare copy of a disk or of a file on a disk. Backing up your disks and files ensures that you won't lose information if the original is lost or damaged.

bitmap A dot-by-dot representation of a text character or graphic image.

black tab A tab on the LaserWriter II toner cartridge that you loosen in order to pull out the tape attached to it. The tape seals the toner into the cartridge and must be removed before the LaserWriter II can print.

button A visual device, resembling a pushbutton, in a dialog box. You click a button to designate, confirm, or cancel an action.

C

cable See **LocalTalk cable** and **SCSI peripheral cable.**

cable terminator See **SCSI cable terminator.**

camera-ready Ready for offset reproduction with no modification.

central processing unit (CPU) The "brain" of the computer; the microprocessor that performs the actual computations in machine language.

choose (1) To pick a command in a menu. (2) To designate a printer in the **Chooser.**

Chooser A desk accessory that lets you print from any attached printer for which you have a printer driver on the startup disk. You also use the Chooser to designate the port to which a printer is attached.

cleaning pad A part you install with the toner cartridge to clean the fixing rollers used in the printing process.

connector panel The rear surface of a computer or peripheral device, which includes the connectors for peripheral devices or for the computer. Also called the **back panel.**

CPU See **central processing unit.**

current startup disk The disk that contains the system files the computer is currently using. The startup disk icon always appears in the upper-right corner of the Finder desktop.

D, E

default A preset setting or response to a question or prompt. The default is automatically used by the computer if you don't supply a different setting or response.

desk accessories "Mini-applications" that are available from the Apple menu regardless of which application you're using—for example, the Scrapbook, Key Caps, and the Chooser.

desktop The Macintosh's working environment—the menu bar and the gray area on the screen. You can have a number of documents on the desktop at the same time.

desktop publishing A system that provides you with the ability to produce publication-quality documents. A Macintosh, an Apple LaserWriter or LaserWriter II, and page-formatting software provide this capability.

device Frequently used as a short form of **peripheral device.**

dialog box A box that contains a message requesting more information from you or warning you that you're asking your computer to do something it can't do or that you're about to destroy some information.

disk space The amount of space available on a disk for storing or processing a document or application.

display What you see on the screen of your computer.

document Whatever you create with application programs—a file you can open, modify, view, or save. Compare **file.**

double-click To position the pointer where you want an action to take place, and then press and release the mouse button twice in quick succession without moving the mouse.

download To load a font into the RAM of the LaserWriter II.

drag To position the pointer on something, press and hold the mouse button, move the mouse, and release the mouse button. When you release the mouse button, you either confirm a selection or move an object to a new location.

driver See **printer driver.**

F

face-up tray The tray at the left end of the LaserWriter II that you open for face-up collation or for printing on envelopes, transparencies, or paper stock heavier than 20 pounds.

file Any named, ordered collection of information stored on a disk. Application programs and operating systems are files. You also make a file when you create a **document**, give it a name, and save it on a disk.

Finder The application that creates the desktop. You use it to manage documents and applications, and to get information to and from disks.

firmware Programs stored permanently in read-only memory (ROM). Such programs are built into the computer at the factory. They can be executed at any time but cannot be modified or erased.

fixing rollers The rollers inside the LaserWriter II (under the green felt cover) that fuse toner to paper. The rollers should be cleaned when the toner cartridge is changed.

font A collection of letters, numbers, punctuation marks, and other typographical symbols with a consistent appearance, size, and style.

font caching Storage, either in RAM or on a hard disk, of the bitmapped characters developed by the LaserWriter II from outline font descriptions.

Font/DA Mover An application (on the *LaserWriter II Installation Disk*) that allows you to add fonts and desk accessories to or remove them from a disk's System file.

font family A font in various sizes and styles.

font file A file used with the Font/DA Mover. You copy fonts to and from this file to the System file of the startup disk.

font size The size of a font of characters in points; equivalent to the distance between the ascent line of one line of text and the ascent line of the next line of (single-spaced) text. Examples of font sizes are 12-point and 18-point.

font storage Downloading fonts to a hard disk attached to a LaserWriter IINTX.

Font Utility An application supplied on the *LaserWriter II Installation Disk* which is used to initialize and operate a hard disk attached to a LaserWriter IINTX, or to download fonts to RAM.

freeware Software that is available for anyone to use at no charge.

G

graphics (1) Information presented in the form of pictures or images. (2) The display of pictures or images on a computer's display screen. Compare **text.**

H

handshake A protocol that allows devices to exchange information about the connection between them and that helps them determine when to start exchanging data.

hard disk A disk made of metal and sealed into a drive or cartridge. A hard disk can store very large amounts of information.

I

icon An image that graphically represents an object, a concept, or a message.

ImageWriter emulator An application that allows an Apple II computer to communicate with a LaserWriter or LaserWriter II as if it were an ImageWriter.

install To add information to the System file or to add new system files, such as the LaserWriter II printer driver, to the System Folder of a startup disk.

installed font A font in a specific size that you install with installation software or with the Font/DA Mover.

J, K

justification Making all full lines of text the same length in order to create an even edge.

L

LocalTalk cable The insulated wire used to join LocalTalk connector boxes.

LocalTalk cable system One type of cable system used to link computers and peripheral devices in an AppleTalk network system.

LocalTalk connector box A small white box with a built-in cable that links a device to a LocalTalk cable system.

M

megabyte (MB) A unit of measurement equal to 1024 kilobytes, or 1,048,576 bytes.

monospaced font Any font in which the width of characters is always the same. Compare **proportionally spaced font.**

MS-DOS Short for *Microsoft Disk Operating System.* An operating system used by IBM PC and compatible computers.

N

Namer An application that allows you to name (or rename) a printer on an AppleTalk network system.

O

open To make available. You open files or documents in order to work with them. When you open an icon, you cause a window with the contents of that icon to come into view. You may then perform further actions in the window.

outline font A POSTSCRIPT font from which the LaserWriter II produces the bitmapped fonts used for printing. Outline fonts can be scaled to any size.

P, Q

parity The sameness of level or count, usually the count of 1 bits in each character, used for error checking in data transmission.

peripheral card A removable printed-circuit board that plugs into one of the computer's expansion slots, allowing the computer to use a peripheral device or to perform some subsidiary or peripheral function.

peripheral device Any device (such as a printer) that you attach to your computer.

peripheral interface cable See **SCSI peripheral cable.**

point A unit of measurement for sizing type. 12 points equal 1 pica, and 6 picas equal 1 inch; thus, 1 point equals ½ inch.

port A socket on the connector panel of the computer or peripheral device where you can plug in a cable connected to another computer or device, or to a network.

POSTSCRIPT The page-description language in which a computer communicates to the LaserWriter and the LaserWriter II.

primary corona wire A wire inside the toner cartridge, to be cleaned if the printed output shows streaks or stains.

print density dial A dial on the inside of the LaserWriter II that allows you to vary the darkness of printing.

printer driver A program that translates the file you're printing into the language the printer understands. You cannot use a printer unless the correct driver is installed on the current startup disk.

printer fonts Those fonts resident in the printer's ROM.

printer software The software that controls the interaction of the computer and the printer. This includes the printer driver, the font software, and the Font Utility.

proportionally spaced font Any font in which different characters have different widths; thus, the space taken up by words having the same number of letters varies. Compare **monospaced font.**

R

random-access memory (RAM) Memory in which information can be referred to in an arbitrary or random order. As an analogy, a book is a random-access storage device in that it can be opened and read at any point. RAM usually means the part of memory available for programs from a disk; the programs and other data are lost when the computer is turned off. Compare **read-only memory.**

read-only memory (ROM) Memory whose contents can be read but not changed; used for storing **firmware.** Information is placed into read-only memory once, during manufacture; it remains there permanently, even when the computer's power is turned off. Compare **random-access memory.**

resolution The degree of precision with which an object is represented. A printer's resolution is determined by the number of dots per inch.

ROM See **read-only memory.**

rules Lines dividing or bordering a page.

S

sans serif Without serifs. Helvetica is a sans serif font family. The Helvetica *M* looks like this: M. See also **serif.**

scanner A device that converts images into computer-readable form.

screen fonts The fonts you see on the Macintosh screen.

SCSI Acronym for **Small Computer System Interface.** Pronounced "SKUH-zee."

SCSI cable terminator A device that reduces interference on the SCSI network.

SCSI ID number The identifying number of a SCSI device. Each linked SCSI device must have a unique SCSI ID number.

SCSI peripheral cable A cable linking two SCSI peripheral devices.

SCSI port The connection point for SCSI cables on SCSI devices.

serial cable A cable that connects the serial ports of two devices, such as those of a computer and a printer. Information transmitted over serial cables is transmitted sequentially, one bit at a time, over a single wire or channel.

serif One of the lines that finish off the main strokes of a letter. The "feet" at the bottom of this letter *M* are serifs. See also **sans serif.**

shareware Software you can try out without purchasing, but which you are honor-bound to pay for if you continue to use.

slot A narrow socket inside the computer where you can install peripheral cards.

Small Computer System Interface (SCSI) A specification of mechanical, electrical, and functional standards for connecting peripheral devices such as hard disks, printers, and optical disks to personal computers.

smoothing A printer effect in the Page Setup dialog box that improves the appearance of graphic images and downloaded bitmap fonts.

start up To get the system running. Starting up is the process of first reading the operating system program from the disk, and then running an application program.

startup disk A disk with all the necessary program files—such as the Finder and the System file contained in the System Folder—to set the computer into operation.

status lights Lights on the front of the LaserWriter II that indicate the status of the printer—on, paper jam, out of paper, processing a job, and so on.

status message A message the LaserWriter II sends to the computer when you confirm the Print command. The message appears on the screen to tell you the status of your job or alert you to a problem with the printer.

style A stylistic variation of a font, such as italic, underline, shadow, or outline.

System file A file that Macintosh computers use to start up and to provide system-wide information.

T, U, V

text (1) Information presented in the form of readable characters. (2) The display of characters on a display screen. Compare **graphics.**

text file A file containing information expressed in text form, with the contents encoded in the **ASCII** format.

toner cartridge A cartridge that contains the toner powder used in the printing process. Only a LaserWriter II toner cartridge will work with a LaserWriter II.

toner powder The plastic powder in the toner cartridge that serves as the LaserWriter II's "ink."

transfer corona wire The wire in the midsection of the printer, to be cleaned as part of regular maintenance.

transfer guide An area behind the transfer wire, to be cleaned as part of regular maintenance.

W, X, Y, Z

white space That area of a layout that contains no text or graphics, but is nonetheless used as an active design element.

O

P, Q

Apple® LaserWriter® II

Packing List

This package contains the following items:

1	LaserWriter, 100-120v*	699-8027
1	Letter paper cassette	699-8030
1	Warranty Card	PA030-0967

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

* The proper power cord for connecting the LaserWriter II to the service outlet is provided in the LaserWriter II accessory kit. The detachable power cord meets all the following UL requirements. It is a UL Listed cord, Type SJT16AWG or SVT18AWG, rated min. 125V, min. 10A. The cord is provided on one end with an IEC appliance coupler. The other end has a molded-on, parallel-blade grounding-type attachment plug or a Recognized Component attachment plug rated 15A, 125V.

Lista de empaque

Este paquete contiene los siguientes ítems:

1	LaserWriter II, 100-120v	699-8027
1	Cassette para papel tipo carta	699-8030
1	Tarjeta de Registro de Garatia	PA030-0967

Si tiene alguna duda, por favor, comuníquese con su distribuidor autorizado Apple.

Liste du contenu

Ce colis contient les éléments suivants:

1	LaserWriter II, 100-120v	699-8027
1	Cassette à papier Lettre	699-8030
1	Carte de Garantie	PA030-0967

En cas de problème, veuillez contacter votre concessionnaire agréé Apple.

030-3189-B 4/90

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Packing List for Apple® LaserWriter® IINT/NTX

This package contains the following items:

2	Disks:	*LaserWriter II Installation Disk* *LaserWriter IINT/NTX Fonts*	690-5170 690-5171
1	Manual:	*LaserWriter IINT/NTX Owner's Guide*	030-3450
1	Power cord		590-0573
1	Product registration card		030-1539
1	Software license agreement		001-0100

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

030-3211-A 4/90

SAFETY INFORMATION

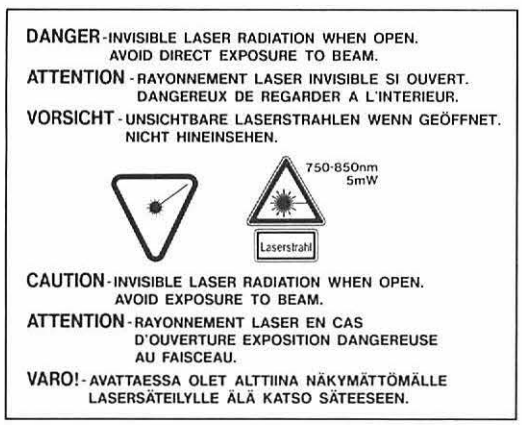
A. Laser Safety

This printer is complied with 21CFR Chapter 1 Subchapter J as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

B. CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.



CERTIFIED TO COMPLY WITH THE LIMITS FOR A CLASS B COMPUTING DEVICE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES. SEE INSTRUCTIONS IF INTERFERENCE TO RADIO RECEPTION IS SUSPECTED.

C. FCC Notice

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.

Relocate the computer with respect to the receiver.

Move the computer away from the receiver.

Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

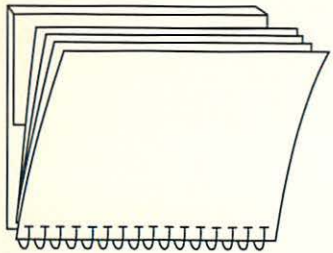
If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"Interference Handbook"

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00450-7.

Use of shielded cable is required to comply with Class B limits in Subpart J of Part 15 of FCC Rules.

CAUTION: Use of controls, adjustments or performance of procedures other than those specified in the manual may result in hazardous radiation exposure.



Tuck end flap inside back cover when using manual.

The Apple Publishing System

This Apple® manual was written, edited, and composed on a desktop publishing system using Apple Macintosh® computers and Microsoft® Word. Proof pages were created on the Apple LaserWriter® printers; final pages were printed on a Varityper® VT600™. POSTSCRIPT®, the LaserWriter page-description language, was developed by Adobe Systems Incorporated.

Display type is Apple's corporate font, a condensed version of Garamond. Text type is Adobe Garamond. Bullets are ITC Zapf Dingbats®. Some elements, such as program listings, are set in Apple Courier, a fixed-width font.

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