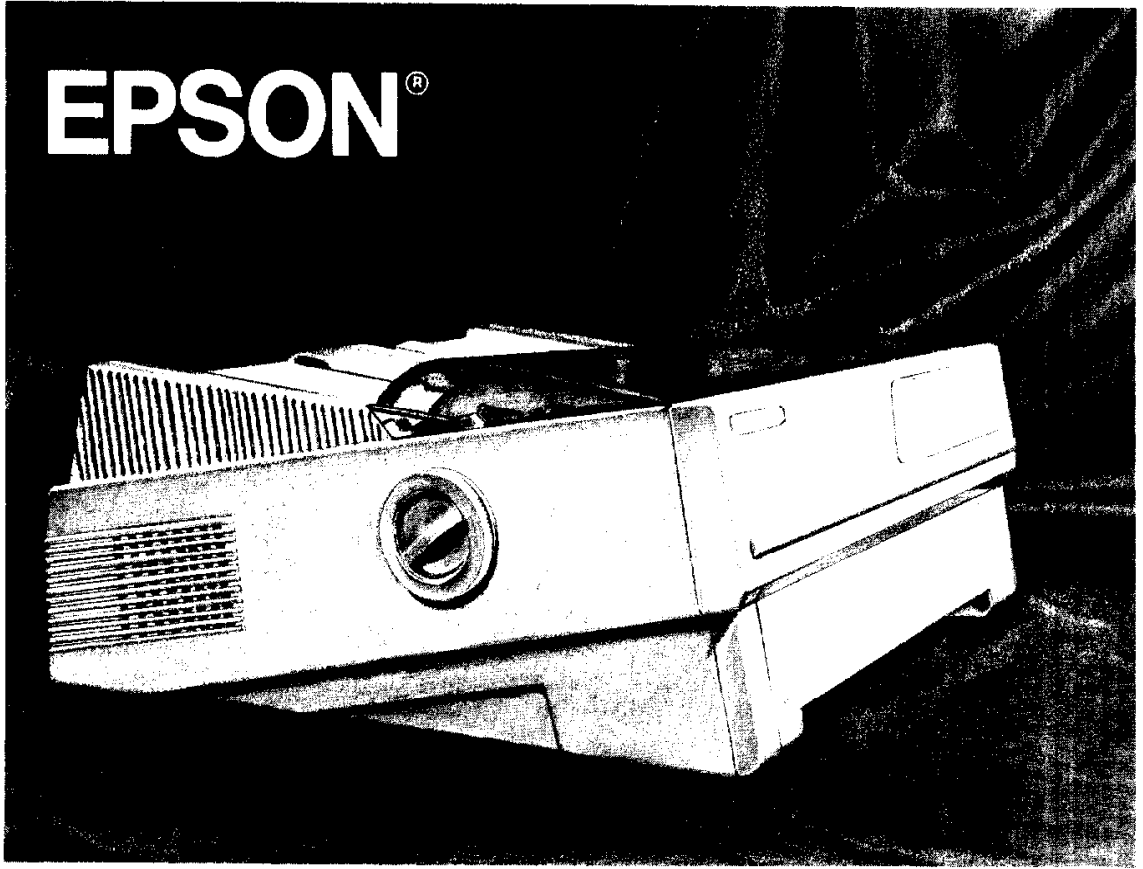


EPSON®



LQ-870/1170

U s e r ' s M a n u a l

EPSON®

LQ - 870 / 1170

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User's Manual

For United States Users

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and 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 or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

WARNING

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

For Canadian Users

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Tips for printing on single sheets

There are a few things you should know about printing on single sheets as opposed to continuous paper. When you print on single sheets, you may notice that your printer prints the first page of your file correctly but then prints too low on the next page, or that it prints the last few lines from one page onto the next.

These differences in print position are easy to adjust; you can simply change some of the settings in your application program as described below to get the right results.

1. When you install an application program, it normally asks you what printer you are using. Make sure you choose the correct printer. See Chapter 1 for the right printer to choose.
2. Many programs include an option to set the maximum lines per page. If your program has a lines-per-page setting and you are using standard $8\frac{1}{2}$ x 11-inch paper, set the lines per page to 61.

Note: To find the right lines-per-page setting for paper that is not $8\frac{1}{2}$ x 11, create a test document using your application program. Set your top and bottom margins to 0 and then create a file of numbered lines from 1 to 66. When you print your file, notice the last number printed on the first page. This is your maximum lines-per-page setting.

3. If your program doesn't have a lines-per-page setting, try decreasing the top margin or increasing the bottom margin, or both, until you get the results you want.
4. You can also try adjusting the form length setting. For a standard $8\frac{1}{2}$ x 11-inch page, try setting the form length at 10 inches.
5. Some programs also let you indicate whether you are using single sheets or continuous paper. Make sure you choose single sheets.

Where to Get Help for United States Users

Epson America provides local customer support and service through a nationwide network of authorized Epson dealers and Service Centers.

Epson also provides the following support services through the Epson Consumer Resource Center at (800) 922-8911:

- Assistance in locating your nearest Authorized Epson Reseller or Service Center**
- Technical assistance with the installation, configuration, and operation of Epson products**
- Information on application software drivers**
- Sales of the Epson ESC/P Reference Manual, which has comprehensive information on all commands, including ESC/P 2**
- Epson technical information library fax service**
- Product literature with technical specifications on our current and new products**
- Sales of ribbons, supplies, parts, documentation, and accessories for your Epson product**
- Customer Relations.**

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Introduction

Your new Epson® 24-pin dot matrix printer combines a compact design and high performance with a wide range of features.

Features

These features make your Epson printer an outstanding value:

- **Fast printing speed.** Print up to 330 characters per second in 12 cpi draft mode.
- **Easy paper handling.** Four paper paths to suit your printing needs: top, rear, bottom, and front loading.
- **Flexibility.** Load single sheets from the top or front paper slots without removing your continuous paper supply.
- **Epson's ESC/P 2.** The first dot matrix printer control language to offer scalable fonts and enhanced graphics.
- **Compatibility.** Supports the Epson ESC/P commands widely used in application programs written for other Epson LQ printers.

More about ESC/P 2

Epson's enhanced printer control language, ESC/P 2, offers two scalable fonts in sizes from 8 to 32 points. You can use this feature if your application program supports scalable fonts. For DOS-based word processing programs, new ESC/P 2 drivers may be available to enable your program to use your printer's scalable fonts. Call (800) 922-8911 to ask about special ESC/P 2 drivers.

For many graphics-based programs, such as Microsoft Windows, ESC/P 2 works with your software to provide enhanced graphics printing capability. In the Windows environment, you'll be able to print the Microsoft scalable fonts instead of the Epson fonts.

If you're an experienced printer user, you may also want to order the Epson ESC/P Reference Manual for complete programming information. Call the number above to purchase the reference manual.

Options

For additional information on these options, see Chapter 4.

- **Single-Bin Cut-Sheet Feeder**
(C806371 for LQ-870, C806391 for LQ-1170)
This economical cut-sheet feeder automatically feeds up to 50 sheets of paper into your printer without reloading.
- **High-Capacity Cut-Sheet Feeder**
(C806381 for LQ-870, C806401 for LQ-1170)
This cut-sheet feeder automatically feeds up to 150 sheets of paper or 25 plain bond envelopes without reloading. You can create a double-bin cut-sheet feeder by connecting this cut-sheet feeder to the single-bin model.
- **Additional Tractor Unit**
(C800201 for LQ-870, C800211 for LQ-1170)
This option improves the performance of continuous-paper handling. It is especially useful with continuous multi-part forms. You can also use it to load two types of continuous paper in the printer at the same time.
- **Film Ribbon Cartridge**
(#7768 for LQ-870, #7770 for LQ-1170)
A film ribbon cartridge produces even higher quality printing than the standard fabric ribbon.
- **Interface Card**
(C823051/C823071)
Optional interface cards are available to supplement the printer's built-in parallel interface.

Finding Your Way Around

This manual provides fully illustrated, step-by-step instructions for setting up and operating your printer.

- Chapter 1 contains information on unpacking, setting up, testing, and connecting the printer. Be sure to read this chapter first.
- Chapters 2 and 3 include important information on paper handling and day-to-day operation of your printer.
- Chapter 6 contains troubleshooting information. If the printer does not operate properly or the printed results are not what you expect, see Chapter 6 for a list of problems and solutions.
- Other chapters contain information on installing options, general maintenance, specifications, and printer commands. There is also a glossary of printer terms and an index.

Warnings, Cautions, and Notes



WARNINGS must be followed to avoid bodily injury.

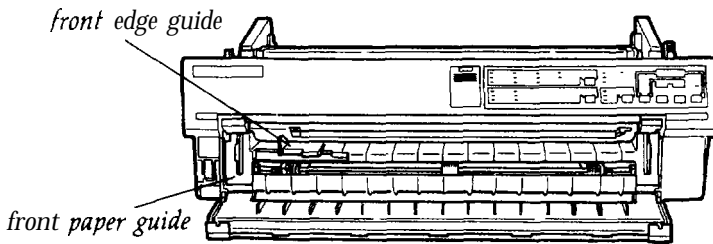
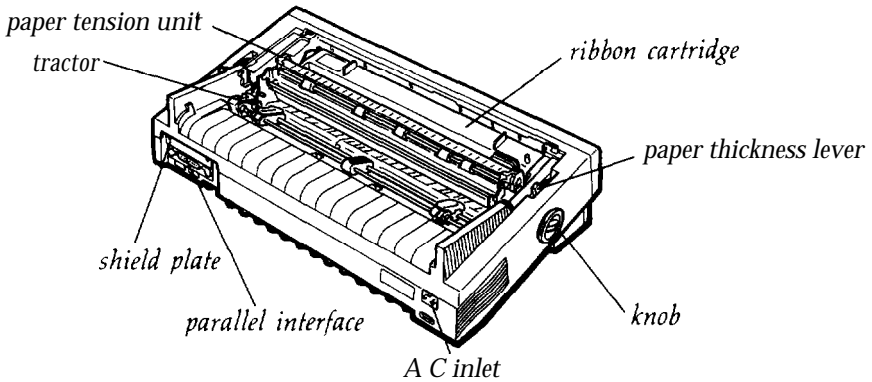
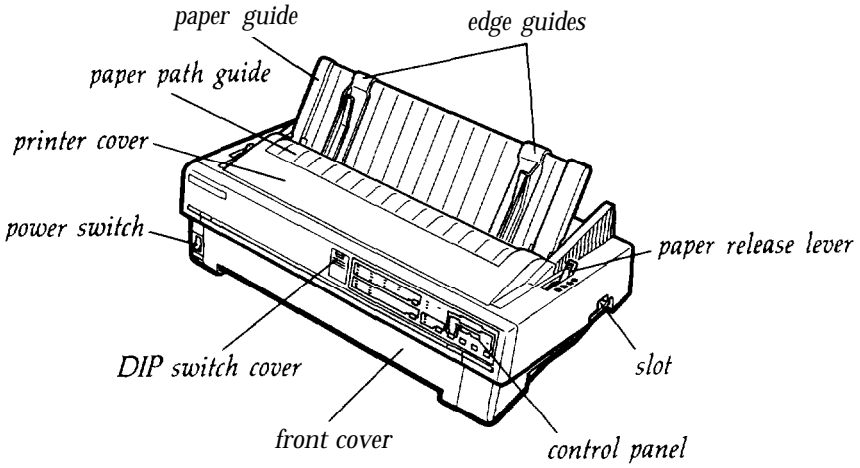


CAUTIONS must be observed to avoid damage to your equipment.

Notes contain important information and useful tips on the operation of your printer.

Introduction

Printer parts



Note: In some countries, the power cord is attached.

IMPORTANT SAFETY INSTRUCTIONS

- 1. Read all of these instructions and save them for later reference.**
- 2. Follow all warnings and instructions marked on the product.**
- 3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.**
- 4. Do not use this product near water.**
- 5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.**
- 6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.**
- 7. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.**
- 8. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.**
- 9. Do not locate this product where the cord will be walked on.**

- 10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.**
- 11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.**
- 12. Except as specifically explained in the User's Manual, do not attempt to service this product yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.**
- 13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:**
 - A. When the power cord or plug is damaged or frayed.**
 - B. If liquid has been spilled into the product.**
 - C. If the product has been exposed to rain or water.**
 - D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.**
 - E. If the product has been dropped or the cabinet has been damaged.**
 - F. If the product exhibits a distinct change in performance, indicating a need for service.**

Chapter 1

Setting Up the Printer

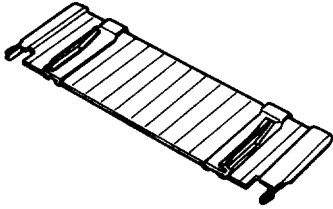
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Unpacking the Printer

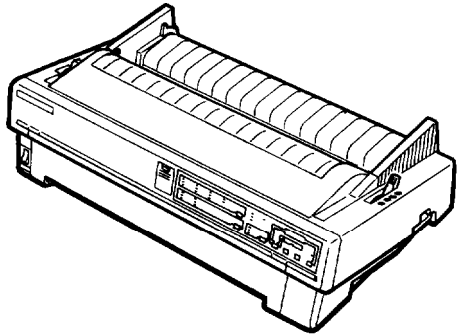
Checking the parts

When you unpack the printer, make sure that you have all the parts shown below and that none has been damaged.

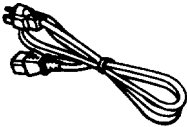
Paper guide



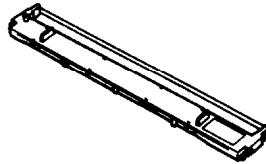
Printer



Power cord



Ribbon cartridge



Note: In some locations, the power cord is attached to the printer.

Store the packing materials in case you ever need to transport your printer.



CAUTION: It is not possible to adjust voltage of the printer for use at another voltage. If the label on the back of the printer does not show the correct voltage for your country, contact your dealer.

Removing the protective materials

To prevent damage during shipping, several pieces of protective material are packed with your printer. You must remove these before you put your printer together.

Follow the directions on the Notice Sheet inserted in your printer when removing the protective material.

Note:

- **Make sure you remove all packing and protective materials from your printer before turning on the power.**
- **Save all packing and protective materials to protect your printer should you need to transport it elsewhere in the future.**

Choosing a Place for the Printer

When selecting a place to set up your printer, keep the following in mind:

- Place the printer on a flat, stable surface.
- Place the printer close enough to the computer for the printer cable to reach.
- Leave adequate room around the printer to allow for easy operation and maintenance.



CAUTION: Avoid locations that are subject to direct sunlight, excessive heat, moisture, or dust.

- Use a grounded outlet; do not use an adapter plug.
- Avoid electrical outlets controlled by wall switches or automatic timers. Accidental disruption of power can wipe out information in the memory of your computer or your printer.
- Avoid outlets on the same circuit with large motors or other appliances that might cause fluctuations in line voltage.
- Keep the entire computer system away from potential causes of electromagnetic interference such as loudspeakers or the base units of cordless telephones.

Note: If you plan to use a printer stand, follow these guidelines:

- **Use a stand that supports at least twice the weight of the printer.**
17.8 kg (39.3 lbs) for the LQ-870
24.6 kg (54.2 lbs) for the LQ-1170
- **Never use a stand that tilts the printer at an angle of more than 15 degrees from horizontal. If you install a cut-sheet feeder, keep your printer absolutely level.**
- **If you position the paper supply below the printer stand, make sure that you allow enough clearance (1.2 inches or 30 mm) between the underside of the stand and the top of the paper supply to keep the paper from catching on the underside of the stand. Also check that the distance between the stand's supports is at least 280 mm (11 inches), to accommodate any paper size you may use.**
- **Position your printer's power cord and interface cable so that they do not interfere with paper feeding. If possible, secure the cables to the printer stand.**
- **Align the paper stack with the tractor sprocket units, so that the paper has a straight path into the printer.**

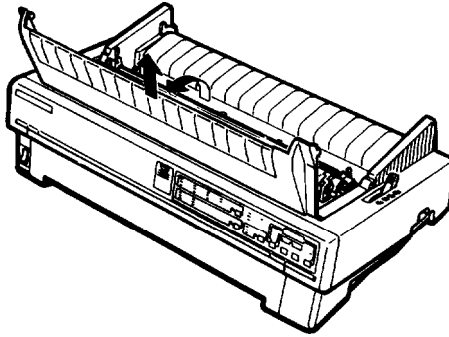
Assembling the Printer

After choosing a good place for your printer, you install the ribbon cartridge and paper guide.

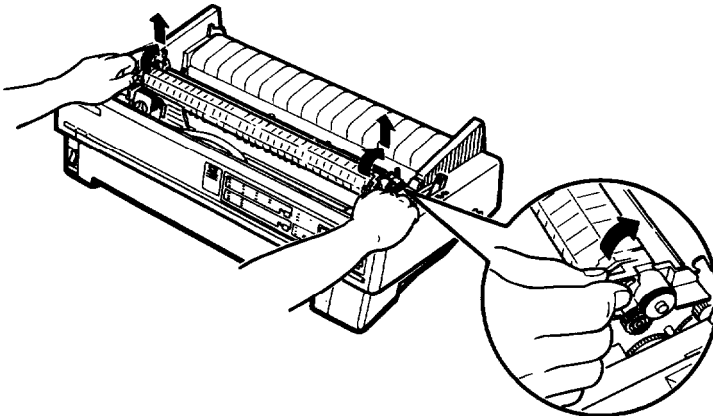
Installing the ribbon cartridge

Before installing the ribbon cartridge, make sure that the printer is not plugged into an electrical outlet.

1. Lift the printer cover straight up and off.



2. Grasp the tabs on each side of the paper-tension unit as shown below. Press up firmly with your thumbs to lift the front of the unit; then pull the paper-tension unit and off of the printer.

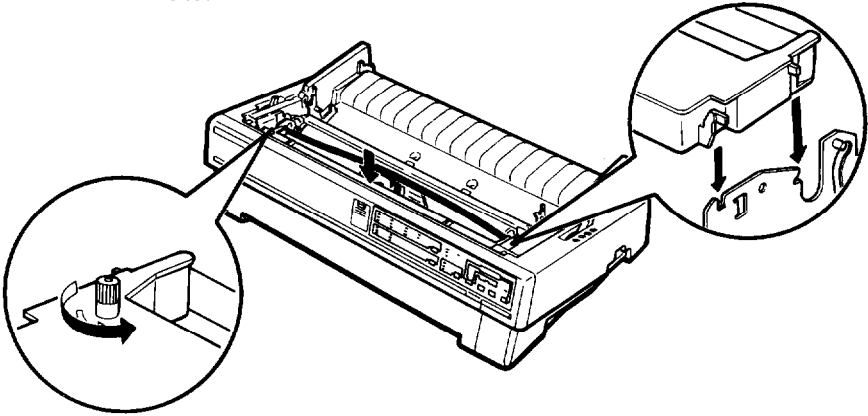


3. Slide the print head to the middle of the printer.

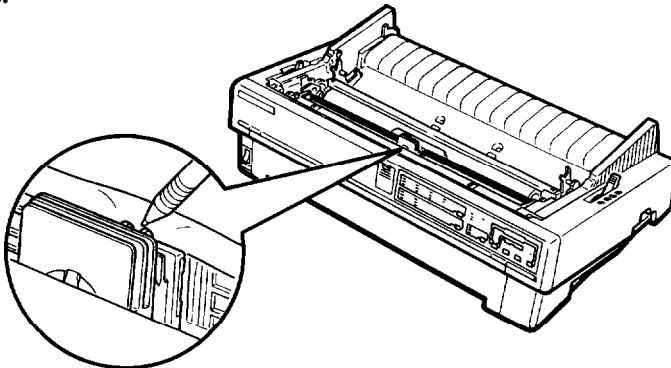


CAUTION: Never move the print head while the printer is turned on or you might damage the printer. Also, if you just used the printer, the print head may be hot; let it cool for a few minutes before touching it.

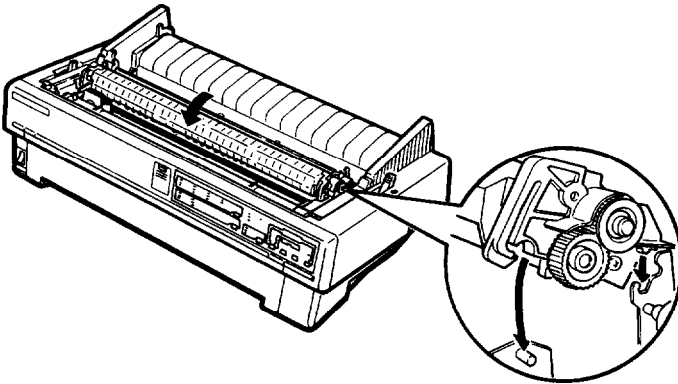
4. Turn the ribbon-tightening knob in the direction of the arrow to remove any slack in the ribbon. Next, hold the ribbon cartridge by its handle and push it firmly down into position; then press on both ends of the cartridge to fit the plastic hooks into the slots.



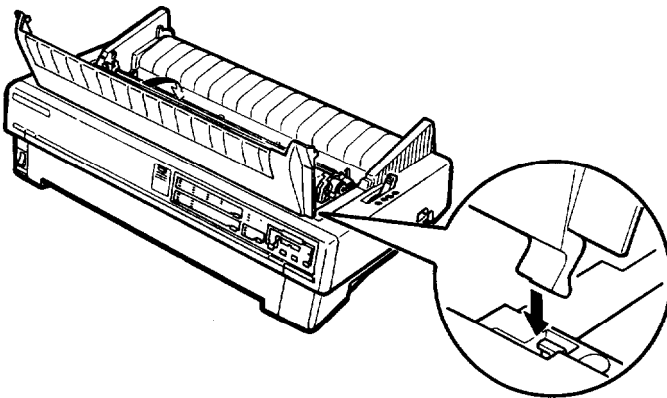
5. Use a pointed object, such as a ball point pen, to guide the ribbon between the print head and ribbon guide while you turn the ribbon-tightening knob to help feed the ribbon into place.



6. Slide the print head from side to side to make sure it moves smoothly. Also check that the ribbon is not twisted or creased.
7. Replace the paper-tension unit by placing it on the printer's mounting pegs; then lowering it into place. Press down both ends of the paper-tension unit firmly until you feel it snap click into place.



8. Replace the printer cover by first inserting the front tabs into the slots on the printer, then lowering it into place.

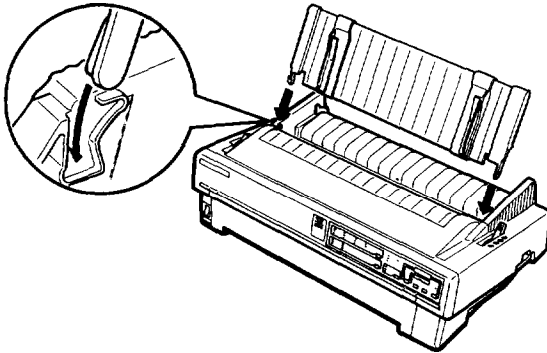


Attaching the paper guides

Your printer comes with two paper guides so you can load single sheets from the top or front of the printer.

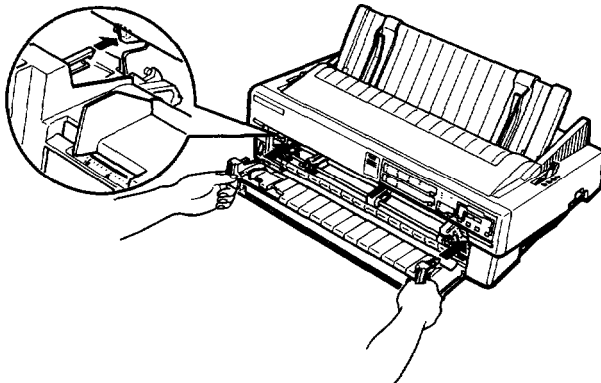
Top paper guide

Place the notches on the paper guide straight down into the mounting slots on the printer. You can stand the paper guide in an upright position or lower it back to lie flat on the printer.



Front paper guide

The front paper guide fits inside the front of the printer, and may be installed over the tractor unit. Hold the paper guide as shown and slide it into place between the metal slots on either side of the opening, fitting the plastic notches over the mounting posts.



Testing the Printer

Before connecting your printer to a computer, use the built-in self-test function to see that the printer is working properly.

Plugging in the printer

1. Make sure the printer is turned off.
2. Check the label on the back of the printer to make sure the voltage required by the printer matches that of your electrical outlet.



CAUTION: If the rated voltage and your outlet voltage do not match, contact your dealer for assistance. Do not plug in the power cord.

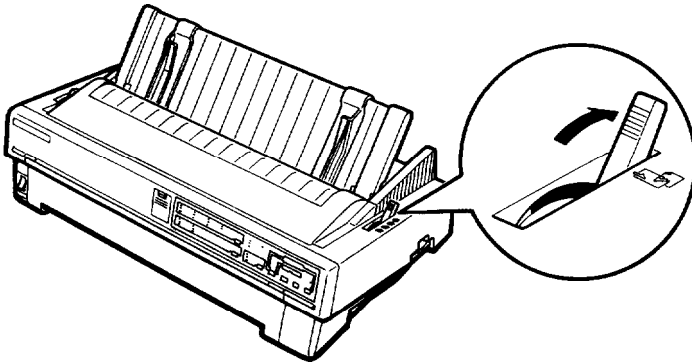
3. If the power cord is not attached to the printer, connect it to the AC inlet on the printer's rear panel.
4. Plug the power cord into a properly grounded electrical outlet.

Running the self test

You can run the self test with either continuous paper or single sheets. Also, you can load paper for the test from the rear, front, top, or bottom. The following steps describe how to run the test on single-sheet paper, loaded from the top. See Chapter 2 for full details on paper handling.

The printer prints the self test in the currently selected font.

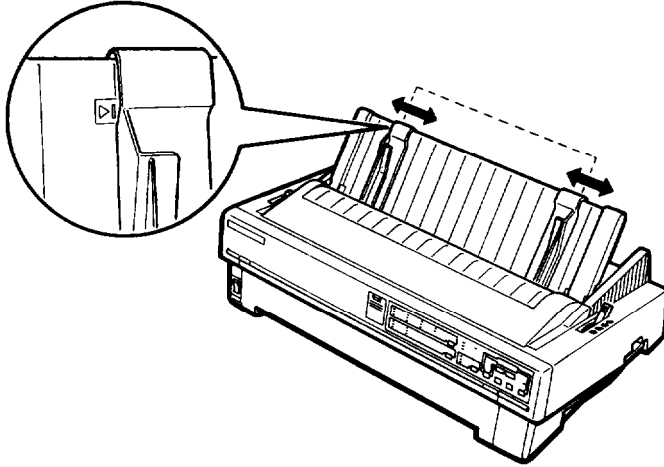
1. **Make sure that the printer is turned off. Move the paper-release lever to the single-sheet position.**



2. **Hold down the LF/FF button while you turn on the printer. The printer beeps several times and the POWER and PAPER OUT lights come on.**

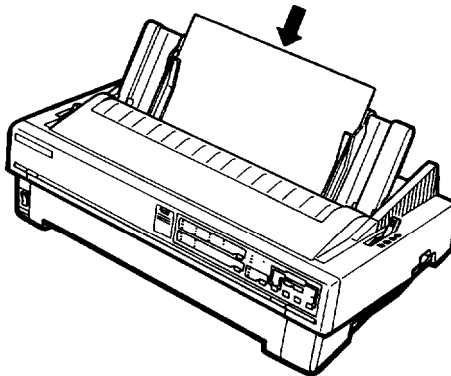
The self test begins by printing on the first and last lines of page 1. The printer then prints the DIP-switch settings and character samples on page 2.

3. Move the left edge guide until it locks in place next to the arrow guide mark. Then adjust the right edge guide to match the width of your paper.



CAUTION: Run the self test using paper at least 210 mm ($8\frac{1}{4}$ inches) wide for the LQ-870 or 360 mm (14 inches) wide for the LQ-1170; otherwise the print head prints directly onto the platen.

4. Insert a sheet of paper down between the edge guides until it meets resistance. After about two seconds, the printer loads the paper automatically and starts the self test.



The self test prints the current DIP-switch settings, followed by font samples for each of the printer's available fonts.

5. The self test continues until the paper runs out or until you press the PAUSE button. When the printer beeps, you can load another sheet of paper to continue printing font samples. When you wish to stop the test, press the PAUSE button. To resume the test, press the PAUSE button again.
6. Press the LOAD/EJECT button to eject the paper. Then turn off the printer to end the self test.

Here is part of a typical self test:

Roman

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOQP

Sans Serif

'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQR
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRS
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRST
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTU
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUV

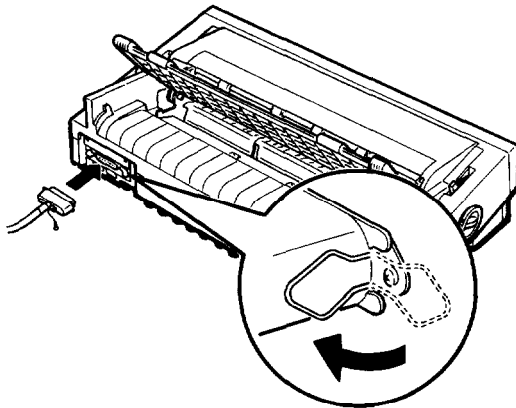
Note: If the self test does not print properly, see Chapter 6.

Connecting the Printer to Your Computer

If the self test printed correctly, you are ready to connect your printer to the computer. Use a shielded twisted-pair parallel cable to connect your computer to your printer's built-in parallel interface.

Connect the parallel interface cable as described below:

1. Make sure both the printer and computer are turned off; then plug the cable connector securely into the printer. Squeeze the wire clips together until they lock in place on either side of the connector.



Note: If your cable has a ground wire, attach it to the ground connector beneath the interface connector.

2. Plug the other end of the cable into the computer. (If there is a ground wire at the computer-end of the cable, attach it to the ground connector at the back of the computer.)

Configuring Your Software for the Printer

Most application programs let you specify the type of printer you use so that the program can take full advantage of the printer's features. Many of these programs provide an installation or setup section that presents a list of printers.

Choosing from a menu

Although you can use an application program even if it does not list your printer on its printer selection menu, to take full advantage of your printer's features (including ESC/P 2), choose the LQ-870/1170 or LQ-570/1070 when you set up your program. If your printer is not listed, call the software manufacturer or call Epson at (800) 922-8911 to see if an update is available. Until you receive an update choose from the following list (the printers are listed in the order of preference):

**LQ-850/1050
LQ-510/1010
LQ-500
LQ-2550
LQ-2500
LQ-800/1000
LQ-1500
LQ**

If none of these printers is listed, select the first one available from the following list: FX, LX, RX, MX, Epson printer, Standard printer, Draft printer. Because the printers in this list are 9-pin printers, your graphics printing will not be correct.

Chapter 2

Paper Handling

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Selecting a Paper Feeding Method

Your printer comes with four paper paths so that you can print on almost any type of paper:

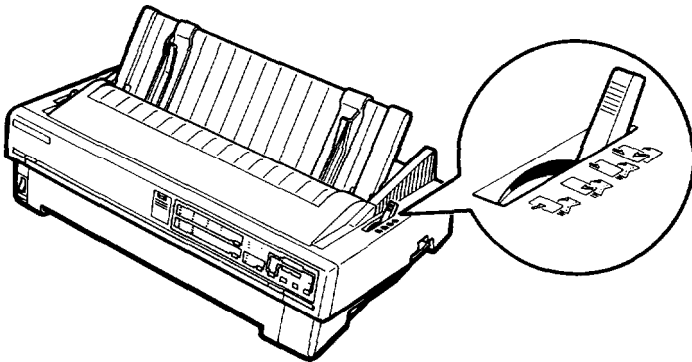
- Choose the top or front paper guide to print on single sheets
- Choose the tractor unit to load continuous paper from the front, rear, or bottom.

You can mount the tractor unit in three different positions to suit your particular needs: use it as a front push-tractor, rear push-tractor, or top pull-tractor.

Once you select a feeding method, you simply set the paper-release lever, load your paper, and print. You can even print on single sheets without removing your continuous paper supply.

Setting the paper-release lever

You set the paper-release lever to determine the active paper path in your printer. The printer automatically loads paper from the position you choose. The figure below shows which setting to use for single sheets and the various tractor positions.





- **Single-sheet position**

For all single sheets, whether loaded from front, top, or either of the optional cut-sheet feeders.



- **Front push-tractor position**

For continuous paper with the tractor unit installed in the front.



- **Rear push-tractor position**

For continuous paper with the tractor unit installed in the rear.



- **Pull-tractor position**

For continuous paper with the tractor unit installed on the top. In this case, you can load paper from either the front, rear, or bottom.

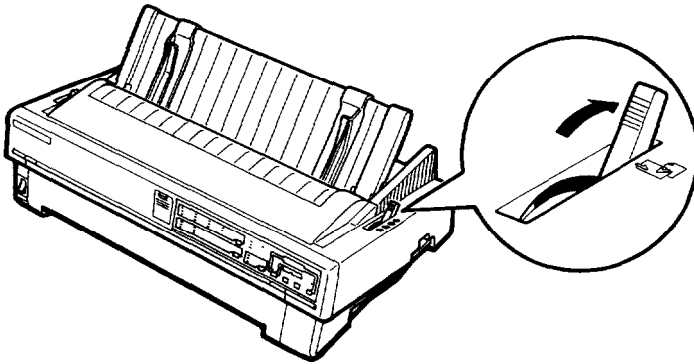
Using Single Sheets

Your printer accommodates single sheets up to a maximum width of 257 mm (10.1 inches) on the LQ-870 and 420 mm (16.5 inches) on the LQ-1170. You can load single sheets from either the top or front of the printer.

If the paper-tension unit is removed, you need to replace it before you print on single sheets. See page 1-8 in Chapter 1.

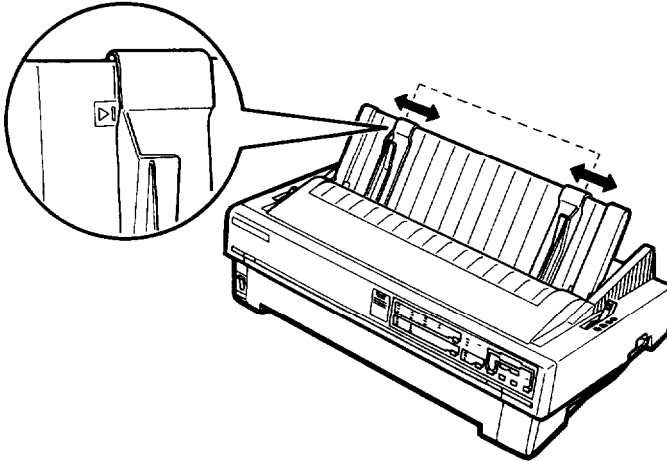
Loading single sheets from the top

1. Place the paper-release lever in the single-sheet position. Make sure the paper guide is in the upright position.

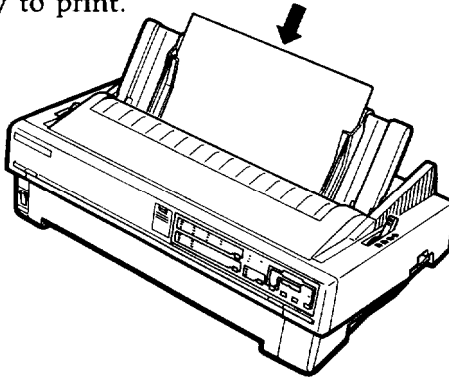


2. Turn on the printer. The POWER light on the control panel comes on.

3. Move the left edge guide until it locks in place next to the arrow the paper guide. Next adjust the right edge guide to match the width of your paper.



4. Slide a sheet of paper down between the edge guides until it meets resistance. The printer loads the paper automatically and you are ready to print.



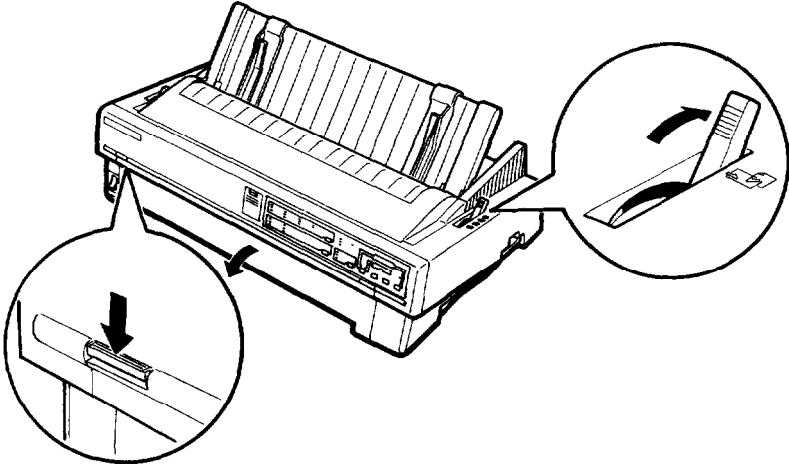
CAUTION: Use the knob on the left side of the printer only to clear paper jams when the printer is off. Otherwise you may damage the printer or lose the top-of-form position.

If the platen turns but the printer doesn't load the paper, completely remove the paper and reinsert it more firmly.

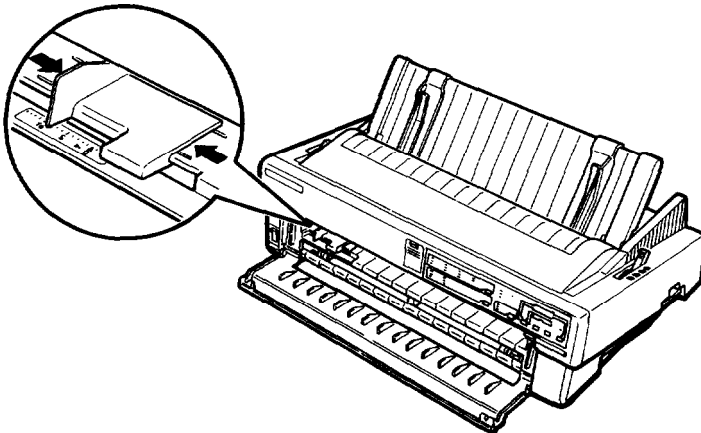
To eject the paper, press the LOAD/EJECT button.

Loading single sheets from the front

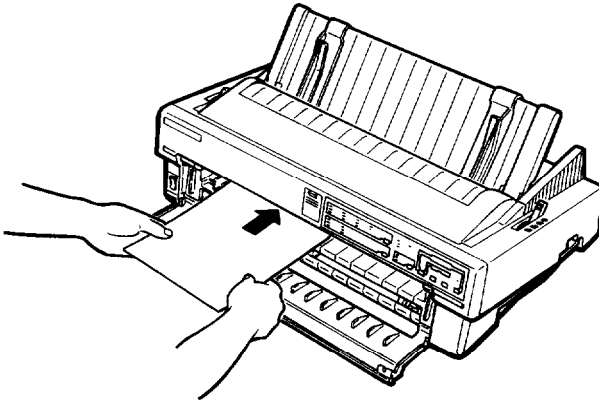
1. Place the paper-release lever in the single-sheet position and open the front cover.



2. Turn on the printer. The POWER light on the control panel comes on.
3. Move the edge guide until you feel it click into place above the arrow mark on the paper guide. You can slide the edge guide to the left in 1/10-inch increments to increase the size of the left margin on your printout.



4. Align the left edge of the paper with the edge guide and insert the page firmly until it meets resistance. The printer loads the paper automatically. You are now ready to print.



CAUTION: Use the knob on the left side of the printer only to clear paper jams when the printer is off. Otherwise you may damage the printer or lose the top-of-form position.

If the platen turns but the printer doesn't load the paper, completely remove the page and reinsert it more firmly.

To eject the paper, press the LOAD/EJECT button.

Note: The printer's paper guide serves as a built-in stacker and can hold up to 50 sheets of ejected paper.

Using Continuous Paper


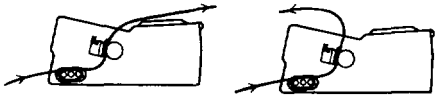

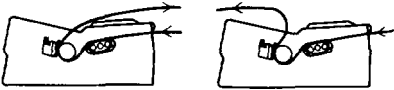

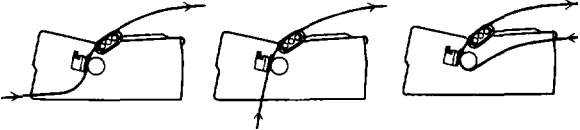
You can load continuous paper through either the front, rear, or bottom paper slot, depending upon the position of the tractor unit and the placement of your paper supply.

Your printer can handle continuous paper up to 254 mm (10.0 inches) wide on the LQ-870 and up to 406 mm (16.0 inches) wide on the LQ-1170.

To print on continuous paper, you can install the tractor unit in one of the following positions—front, rear, or pull. Be sure you set the paper-release lever correctly before you print. See Setting the paper-release lever at the beginning of this chapter for a description of each position.

Tractor position and available paper paths

Below are the possible ways of feeding continuous paper. Always set the paper-release lever to the position indicated for the paper-feed method you want to use.

Tractor position	Position of paper-release level	Paper paths
Front push-tractor		
Rear push-tractor		
Pull-tractor		

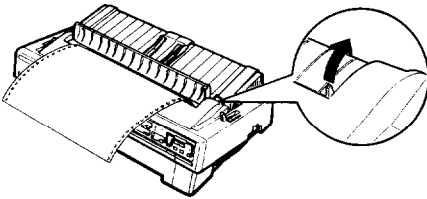
Note: Make sure you align your paper supply with the paper loaded in the tractor so that the paper can feed smoothly into the printer.

If you want to feed paper through the bottom paper slot, use a printer stand that has a large enough opening for paper to feed from the bottom without obstruction.

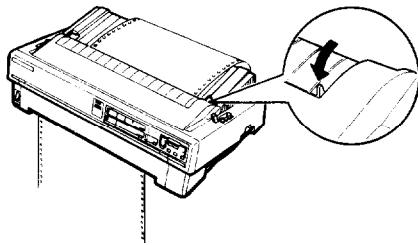
Using the paper-path guide

You can lift the paper-path guide on the printer cover to change the direction that continuous paper is ejected, as shown below.

Forward ejection



Rear ejection



Changing tractor positions

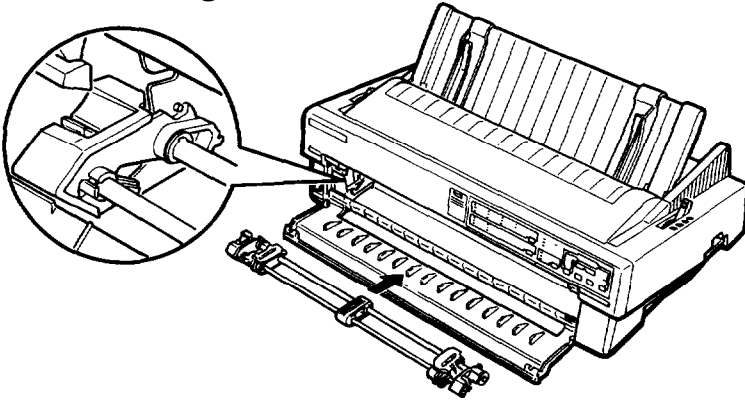
Before installing the tractor in a different position, remove it from its current position by pressing the lock tabs while you lift it out.

Installing in the front push-tractor position

- 1. Make sure the printer is turned off. Open the front cover and remove the paper guide by grasping the fins on both sides and pulling it straight out of the printer.**

Using Continuous Paper

2. Press in the tractor's lock tabs as you push the tractor into the printer's mounting slot.

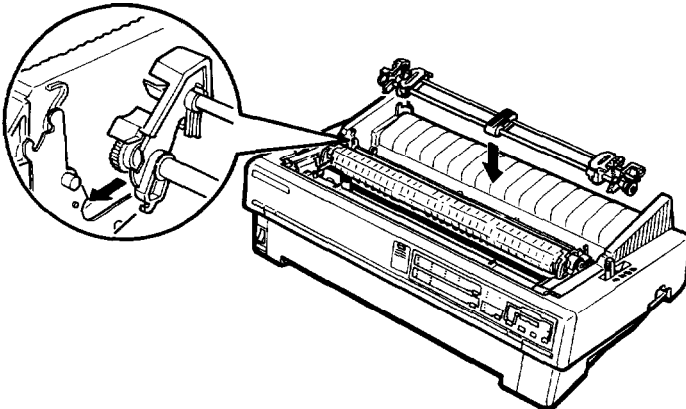


To remove the tractor unit, press the tractor's lock tabs, tilt the unit forward, and lift it out of the printer.

See page 2-12 for instructions on loading continuous paper with the front push tractor.

Installing the push-tractor in the rear position

1. Make sure the printer is turned off. Lift the paper guide up and off the printer.
2. While pressing in the tractor's lock tabs, lower the tractor straight down into the printer's mounting slots.



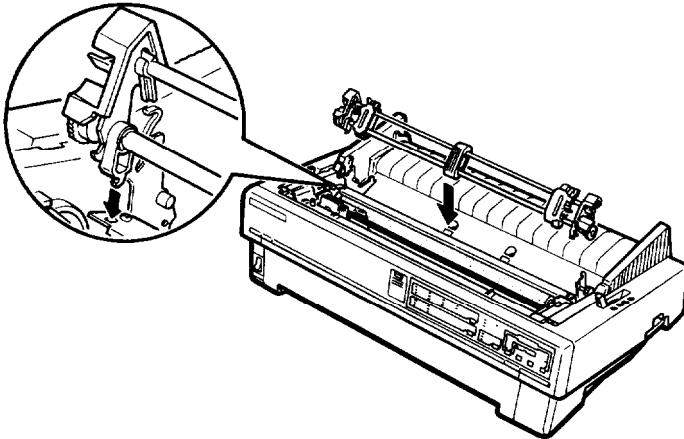
See page 2-15 for instructions on loading paper with the rear-push tractor.

To remove the tractor unit, press the tractor's lock tabs, tilt the unit back, and lift it off the printer.

Installing the pull-tractor

You can also use the tractor unit as a pull-tractor. To do this, you remove the paper-tension unit and install the tractor unit in its place. Follow the steps below to install the pull-tractor:

1. **Make sure the power is turned off. Lift the printer cover and paper guide up and off the printer.**
2. **Grasp both ends of the paper-tension unit and lift it up and off the printer. Store the paper-tension unit in safe place.**
3. **An arrow on each side of the mounting slots shows you where to install the tractor. While pressing in the tractor's lock tabs, tilt the tractor unit forward and lower it straight down into the slots.**

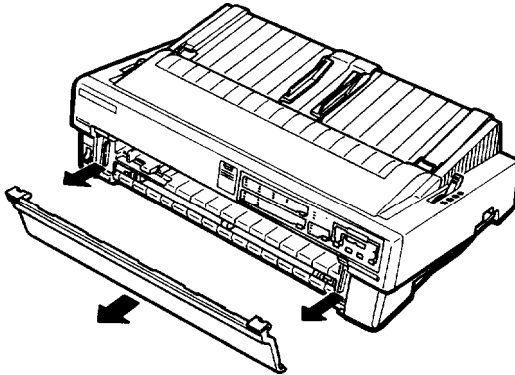


See page 2-18 for instructions on loading paper with the pull-tractor.

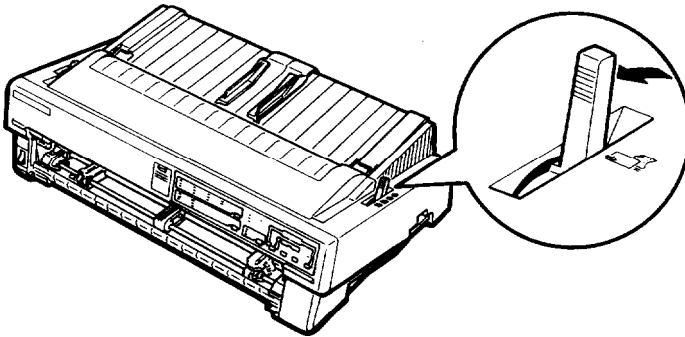
To remove the tractor unit, press the tractor's lock tabs, tilt the unit back, and lift it off the printer. Then replace the paper tension unit.

Loading continuous paper with the front push-tractor

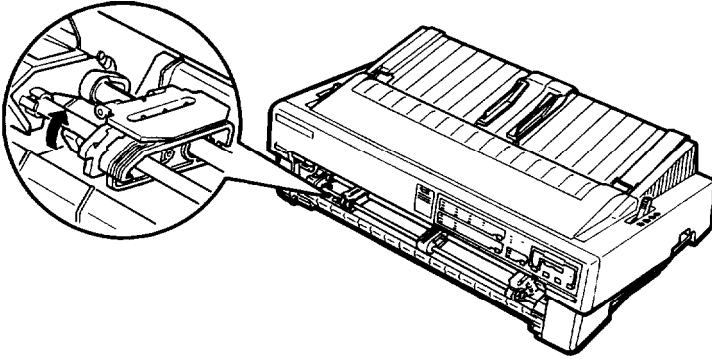
- 1. Make sure the printer is turned off and remove the front cover and the front paper guide.**



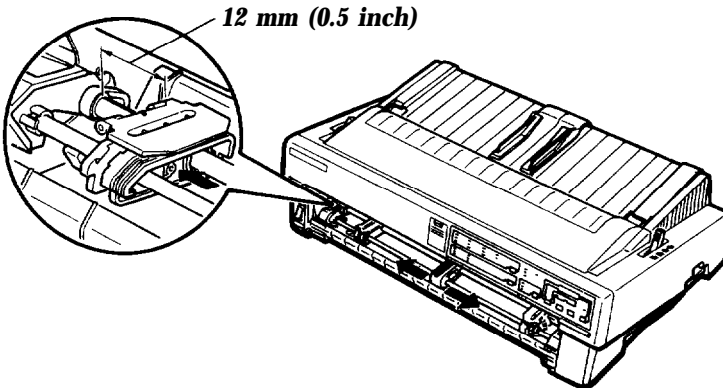
- 2. Make sure the tractor is in the front push-tractor position and the paper-release lever is in the front push-tractor position.**



- 3. Release the sprocket units by pushing the sprocket locks backward.**

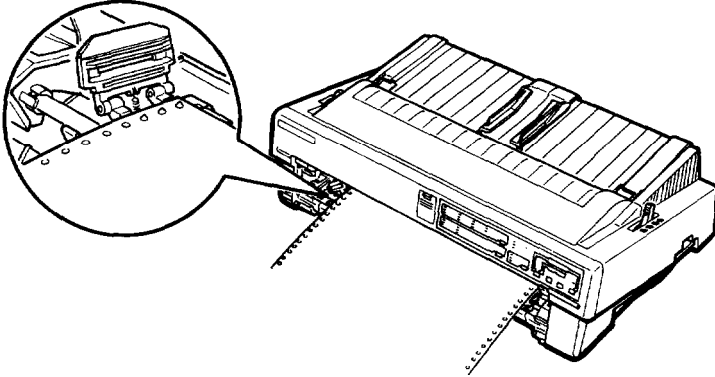


- 4. Slide the left sprocket unit to approximately 12 mm (0.5 inch) from the far left position and pull the lever forward to lock it in place. Now slide the right sprocket unit to approximately match the width of your paper, but do not lock it. Move the paper support so it is midway between the sprocket units.**



Using Continuous Paper

5. **Make sure your paper has a clean, straight edge. Open both sprocket covers and fit the first four holes of the paper over the sprocket pins.**



6. **Close the sprocket covers.**
7. **Adjust the right sprocket to remove any slack in the paper. Lock the sprocket unit in place by pulling the sprocket lock forward.**
8. **Attach the front paper guide and the front cover.**
9. **Turn on the printer. When the printer receives data, it automatically loads the paper before printing.**

Removing continuous paper from the front push-tractor

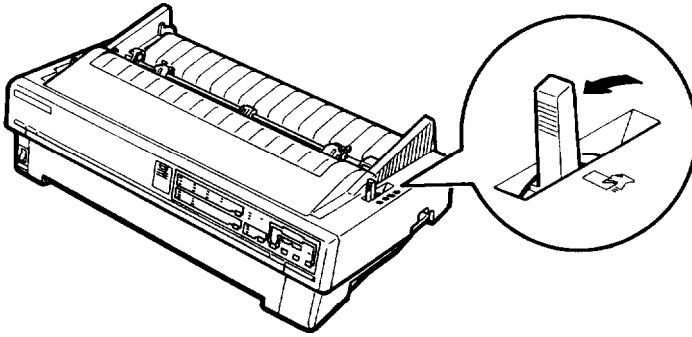
1. **To remove continuous paper, press the TEAR OFF button to feed the paper's perforation to the tear-off edge of the printer cover.**

Note: If the page perforation does not meet the tear-off edge, you can adjust the tear-off position using the micro-feed feature. See Chapter 3.

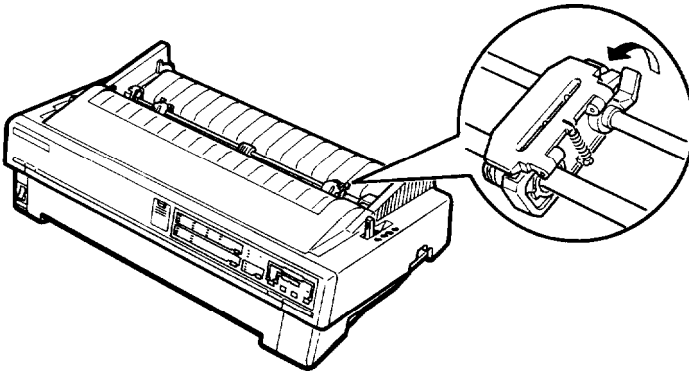
2. **Tear off the paper.**
3. **Press the LOAD/EJECT button to feed the continuous paper backward out of the printer and into the standby position.**

Loading continuous paper with the rear push-tractor

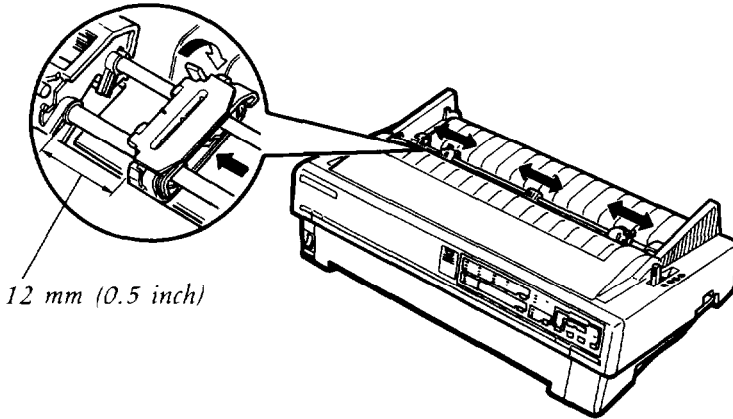
- 1. Make sure the printer is turned off and the paper guide is removed.**
- 2. Make sure the tractor is in the rear push-tractor position and the paper-release lever is in the rear push-tractor position.**



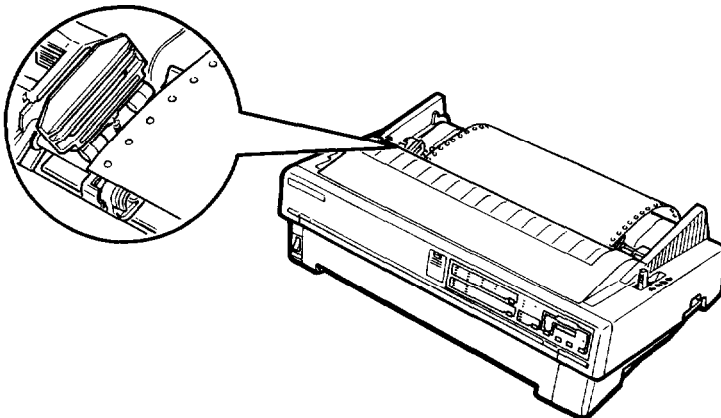
- 3. Release the sprocket units by pulling the sprocket locks forward.**



- 4. Slide the left sprocket to approximately 12 mm (0.5 inch) from the far left position (use the alignment marks on the printer case). Push the lever back to lock it in place. Then slide the right sprocket unit to match the width of your paper, but do not lock it. Move the paper support so it is midway between the sprocket units.**



- 5. Make sure your paper has a clean, straight loading edge. Open the sprocket covers and fit the holes of the paper over the sprocket pins.**



6. Close the sprocket covers.
7. Adjust the right sprocket to remove any slack in the paper; then lock it in place.
8. Attach the paper guide in its flat position over the printer. Slide the edge guides to the center.
9. Turn on the printer. When the printer receives data, it loads the paper automatically before printing.

Note: You can also advance the paper to the loading position by pressing the LOAD/EJECT button.



CAUTION: Use the knob on the left side of the printer only to clear paper jams when the printer is off. Otherwise you may damage the printer or lose the top-of-form position.

Removing continuous paper from the rear push-tractor

1. To remove continuous paper, press the TEAR OFF button to feed the paper's perforation to the tear-off edge of the printer cover.

Note: If the page perforation does not meet the tear-off edge, you can adjust the tear-off position using the micro-feed feature. See Chapter 3.

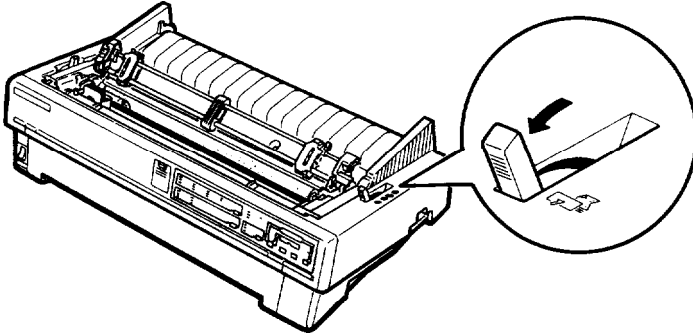
2. Tear off the paper.
3. Press the LOAD/EJECT button to feed the continuous paper backward out of the printer and into the standby position.



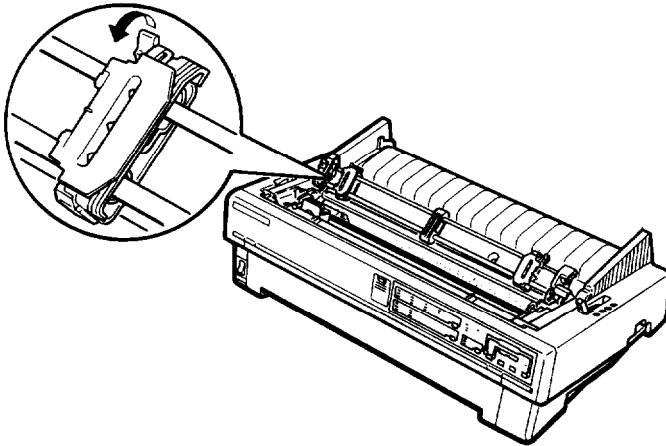
CAUTION: Make sure you tear off your printed document before pressing the LOAD/EJECT button. Reverse-feeding several pages at a time may cause a paper jam.

Loading continuous paper with the pull tractor

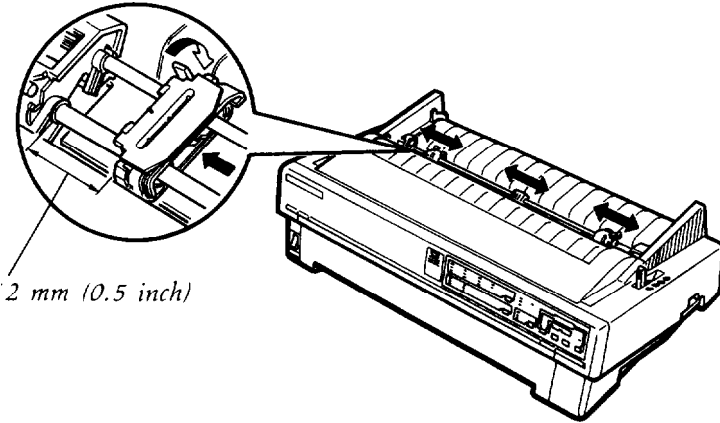
- 1. Make sure the printer is turned off and the printer cover and paper guide are removed.**
- 2. Make sure the tractor is installed in the pull-tractor position and the paper-release lever is set to the pull-tractor position.**



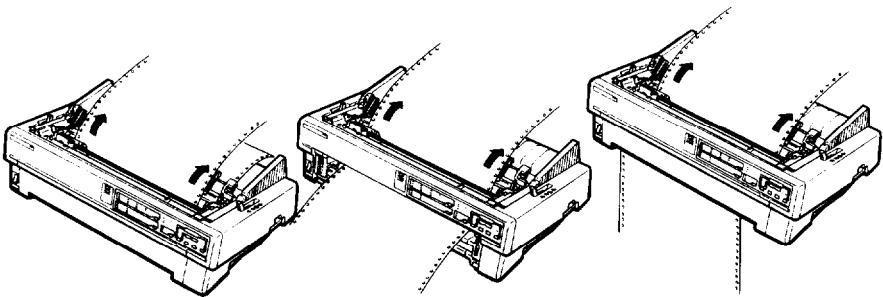
- 3. Release the sprocket units by pulling the sprocket locks forward.**



- Slide the left sprocket unit to approximately 12 mm (0.5 inch) from the far left position (use the alignment marks on the printer case). Push the sprocket lock back to lock it in place. Then slide the right sprocket unit to match the width of your paper, but do not lock it. Move the paper support so it is midway between the sprocket units.

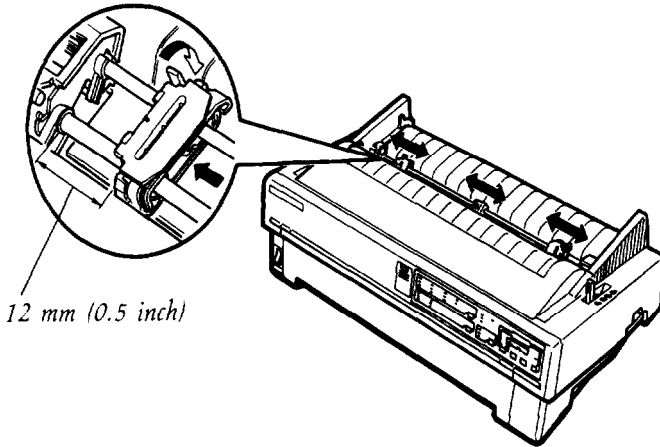


- Make sure your paper has a clean, straight edge. Insert the paper into the desired paper slot (front, bottom, or rear) until it emerges between the platen and the ribbon guide. Pull the paper up until the perforation between the first and second pages is even with the top of the printer's ribbon.



Using Continuous Paper

6. **Open the sprocket covers and fit the holes of the paper over the sprocket pins.**



7. **Close the sprocket covers.**
8. **Adjust the right sprocket unit to remove any slack in the paper; then lock it in place.**
9. **Attach the paper guide in the flat position. Then slide the edge guides to the center of the paper's width.**
10. **Turn on the printer.**
11. **Make any adjustments to the loading position with the micro-feed feature, as described in chapter 3.**
12. **Install the printer cover.**



CAUTION: Use the knob on the left side of the printer only to clear paper jams when the printer is off. Otherwise you may damage the printer or lose the top-of-form position.

Adjusting the top-of-form position

The top-of-form position is the position the printer feeds the paper to when it loads the paper or performs a form feed. This position is important because it determines where the printing begins on the page.

You may need to adjust the top of form to a certain position for printing on ready-made forms. To do this, see **Adjusting the loading position** on page 3-14.

Removing continuous paper from the pull tractor

1. **Tear off the printed document or excess paper at the tear-off edge.**
2. **Hold the LF/FF button to feed the continuous paper forward to be ejected.**

<p>Note: When you are printing with the pull tractor, do not use the TEAR OFF and LOAD/EJECT buttons.</p>
--

Switching Between Continuous and Single Sheets

Even with continuous paper loaded in the printer, you can easily switch to single-sheet printing without removing the continuous paper from the tractor. This feature can be used whenever the tractor unit is installed on the front or the rear or when using both the front and rear (with the optional tractor).

Switching to single sheets

To switch from continuous paper to single sheets, follow the steps below.

1. If you have a printed document still in the printer, press the **TEAR OFF** button to feed the paper forward to the tear-off position. Tear off the document and press the **TEAR OFF** button again to feed the continuous paper backward to the loading position.



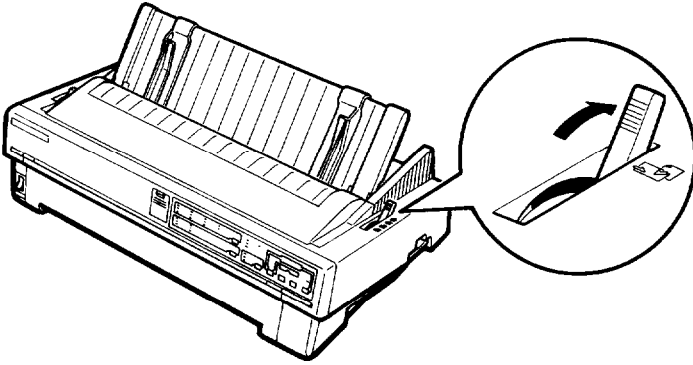
CAUTION: Make sure you tear off your printed document before pressing the **LOAD/EJECT** button. Reverse-feeding several pages at a time may cause a paper jam.

2. Now press the **LOAD/EJECT** button to feed the continuous paper out of the printer and into the standby position. The paper is still attached to the tractor but no longer in the paper path.



CAUTION: Never feed labels backward through the printer. Labels can easily come off the backing sheet and jam the printer.

- 3. Push the paper-release lever back to the single-sheet position.**

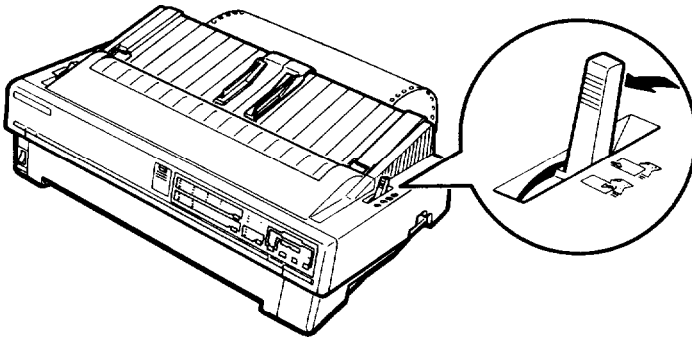


- 4. You can now load single sheets from either the front or top as described in Using Single Sheets, earlier in this chapter.**

Switching to continuous paper

You can also easily switch back to printing on continuous paper.

- 1. If you have a single sheet still in the printer, press the LOAD/EJECT button to eject it.**
- 2. Lift up slightly on the paper guide and then lower it until it lies flat on top of the printer. Slide the left and right edge guides together so that they meet at the middle.**
- 3. Set the paper-release lever to either the front or rear push-tractor position, depending on which tractor position you are using.**



Your printer loads the continuous paper automatically.

Printing on Special Paper

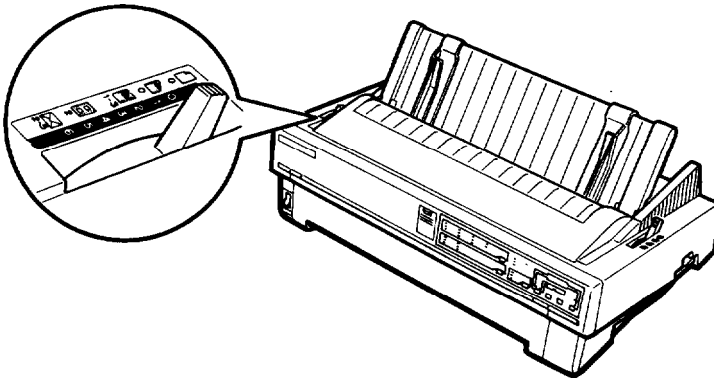
In addition to printing on single sheets and continuous paper, your printer can also print on a wide variety of paper types, such as envelopes, labels, and multi-part forms. Before printing on special types of paper, you may need to change the paper-thickness setting.



CAUTION: When printing on labels or multi-part forms, make sure that your printing stays within the printable area of the page to prevent damage to the print head. For more information on the printable area, see Chapter 7. Always return the paper-thickness lever to position 0 when you return to printing on ordinary paper.

Setting the paper-thickness lever

To accommodate various thicknesses of paper, the printer is equipped with a paper-thickness lever that can be set to six positions. These positions are identified by the scale on the printer next to the lever.



Use the following table to set the paper-thickness lever to match the thickness of your paper according to the table below:

Paper type*	Lever position
Ordinary (single sheets or continuous)	0
Ordinary (with film ribbon)	- 1
Thin paper	- 1 or 0
Carbonless multi-part forms 2 sheets (original + 1 copy)	1
3 sheets (original + 2 copies)	2
4 sheets (original + 3 copies)	3
Labels	2
Envelopes	2 to 5

*See Chapter 7 for complete paper specifications

Note: If the paper-thickness lever is set to the second position above, the MULTI-PART light comes on and print speed is reduced.

Multi-part forms

You can use carbonless multi-part forms of up to four parts (including the original). Make sure you set the paper-thickness lever to the proper position described in the table above.

Except for the paper-thickness setting, you load multi-part paper the same way as ordinary paper. For details, see the sections on loading continuous paper and loading single sheets earlier in this chapter. Pay special attention to setting the top-of-form position.



CAUTION: Do not load individual multi-part forms from the top. Use the front loading slot instead. Be sure that the multi-part forms do not exceed 0.32 mm (0.0128 inches) in thickness.

Labels

When printing labels, always choose the type mounted on a continuous backing sheet with sprocket holes for use with a tractor. Do not try to print labels as single sheets because labels on a shiny backing sheet do not feed properly.

You can load labels from the front (push tractor or pull tractor), or bottom (pull tractor) paper slot; however, for best results you should use the tractor in the pull-tractor position. You load labels the same way that you load continuous paper, except you must also set the paper-thickness lever to 2 before printing labels.

See Loading continuous paper with the pull tractor earlier in this chapter for details.



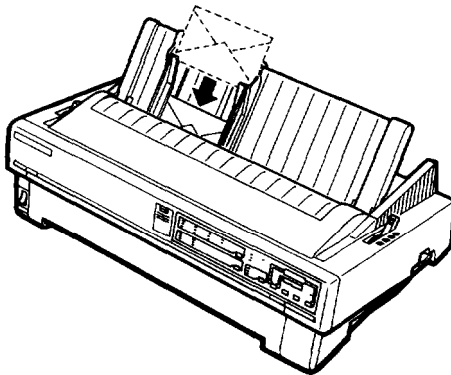
CAUTION:

- **Never feed labels backward with the LOAD/EJECT or TEAR OFF buttons. Labels can easily peel off the backing and jam the printer.**
- **Because labels are especially sensitive to extreme temperature and humidity, always use them under normal operating conditions.**
- **Do not leave labels loaded in the printer between jobs; they curl around the platen and may jam when you resume printing.**
- **To remove labels from the paper path after you finish printing, first tear off the labels at a point before the paper slot. Then use the LF/FF button to advance the remaining labels out of the printer.**

Envelopes

You can load envelopes individually using the single sheet loading feature from the top paper guide only. If you want to load several envelopes at the same time, you can install the optional single-bin cut-sheet feeder. See Chapter 4 for a description of loading envelopes with the cut-sheet feeder.

Before loading an envelope, set the position of the paper-thickness lever to position 2, 3, or 4, depending on the thickness of the envelope. To load an envelope, follow the steps described in loading single sheets from the top, earlier in this chapter.



Note:

- The print head must not print past the left or right edge of the envelope or other thick paper. Make sure that your application program keeps printing entirely within the printable area of the envelope you are using.
- Always keep the longer side of the envelope horizontal.
- If you use No. 6 envelopes, make sure the left edge guide is aligned with the arrow on the paper guide.

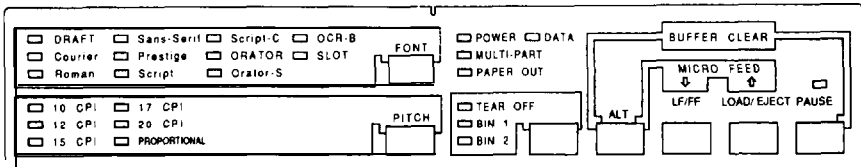
Chapter 3

Using the Printer

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Control Panel

The indicator lights give you the current status of the printer. The buttons let you control many of the printer settings.



Lights

POWER (green)

On when the power switch is on and power is supplied.

DATA (orange)

On when data is present in the printer's memory buffer.

MULTI-PART (green)

On when the paper-thickness lever is set to position 2 or higher. When this light is blinking, you can use the micro-feed feature.

PAPER OUT (red)

On when the printer runs out of paper.

PAUSE (orange)

On when you press the PAUSE button. This light stays off unless you press the PAUSE button to prevent printing.

TEAR OFF (orange)

On when you press the TEAR OFF button to feed continuous paper to the tear-off position.

BIN 1 (green)

On when bin 1 of the optional cut-sheet feeder is selected for paper feeding.

BIN 2 (green)

On when bin 2 of the optional cut-sheet feeder is selected for paper feeding.

Font (green)

Shows which font is selected.

Pitch (green)

Shows which pitch is selected.

Buttons

PAUSE

Press this button to temporarily stop printing. Press this button again to resume printing.

LOAD/EJECT

Press this button to load paper, if it is not loaded, or to eject it if paper is loaded. If the paper-release lever is set to the single-sheet position, paper is ejected. If the paper-release lever is set to the front-tractor or rear-tractor position, paper moves back to the standby position.

LF/FF (Line feed/Form feed)

Press this button briefly to feed the paper forward one line. Hold this button down to eject a single sheet of paper or advance continuous paper to the top of the next page.

Control Panel

ALT

Holding down this button while pressing certain other buttons results in the following alternate functions:

BUFFER CLEAR (ALT + PAUSE)

Clears the printer's buffer and initializes the printer settings, including top-of-form setting

MICRO FEED:

(ALT + LOAD/EJECT)

Feeds paper forward in 1/180-inch increments

(ALT + LF/FF)

**Feeds paper backward in 1/180-inch increments
see Micro Feed later in this chapter for details**

TEAR OFF (Bin Select)

Use this button to select the paper bin when both optional cut-sheet feeders are installed and you are printing on single sheets. When printing on continuous paper, press this button once to feed paper from the loading position to the tear-off position. Press this button again to feed the paper backward to the loading position.

FONT

Press this button to select one of the 10 built-in fonts. If an optional font module has been installed, select it by choosing SLOT.

PITCH

Press this button to select one of the six character pitches (characters per inch).

Note: The font names on the control panel are meant as guides only; your actual printed results may differ slightly in appearance.

Other control-panel features

The control panel also gives you access to two special functions.

Self test: Hold down the LF/FF (for LQ mode) or LOAD/EJECT (for Draft mode) button while you turn on the printer to perform the self test. The self test lets you check that your printer is operating properly and gives you a printout of the current DIP-switch settings. See the section on testing the printer in Chapter 1 for more information.

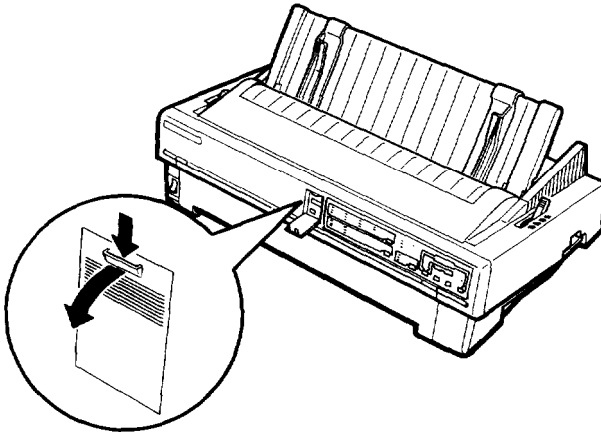
Data dump: Hold down both the LF/FF button and LOAD/EJECT button while you turn on the printer to enter data dump mode. The data dump mode allows advanced users to find the cause of communication problems between the printer and the computer. The data dump mode is explained at the end of this chapter.

DIP Switches

By changing the settings of the two sets of DIP switches, which are inside the compartment on the control panel, you can control various printer features, such as the character set and the page length. These new settings become effective when the printer is turned on, reset, or initialized.

Changing a DIP-switch setting

1. Make sure the printer is turned off.
2. Open the DIP-switch cover.



3. Use a pointed instrument, such as the tip of a pen, to turn a switch on or off. The tables on the following pages give the DIP-switch functions for each setting.
4. Close the DIP-switch cover.

The new DIP-switch settings take effect when the printer is turned on.

DIP-switch tables

The tables below show the settings for each DIP switch function. The current settings appear on your self-test printout.

Table 1 DIP Switch 1 setting

SW	Description	ON	OFF	Page
1-1	International character sets/ character tables	See tables 3 and 4		3-8
1-2				
1-3				
1-4				
1-5	Print direction for graphics	Unidi.	Bidi.*	3-10
1-6	High-speed draft	OFF	ON*	3-11
1-7	Input buffer capacity	0KB	8KB*	3-11
1-8	Skip-over-perforation	ON	OFF*	3-11

Table 2 DIP Switch 2 setting

SW	Description	ON	OFF	Page
2-1 2-2	Page length (for continuous paper)	See Table 5		3-8
2-3	Tear off	ON	OFF*	3-12
2-4	Auto linefeed	ON	OFF*	3-12

*** Asterisks indicate the default settings.**

DIP Switches

Table 3 International character sets

Country	SW1-1	SW1-2	SW1-3	SW1-4
USA	ON*	ON*	ON*	OFF*
France	ON	ON	OFF	OFF
Germany	ON	OFF	ON	OFF
United Kingdom	ON	OFF	OFF	OFF
Denmark 1	OFF	ON	ON	OFF
Sweden	OFF	ON	OFF	OFF
Italy	OFF	OFF	ON	OFF
Spain 1	OFF	OFF	OFF	OFF

Table 4 Character tables

Character table	SW 1-1	SW 1-2	SW 1-3	SW 1-4
Italic	Set international character sets according to Table 3			OFF
PC 437 (United States)	ON	ON	ON	ON
PC 850 (Multilingual)	ON	ON	OFF	ON
PC 860 (Portugal)	ON	OFF	ON	ON
PC 863 (Canada-French)	ON	OFF	OFF	ON
PC 865 (Norway)	OFF	ON	ON	ON

Settings not shown above select PC 437 (United States).

Table 5 Page length for continuous paper

Page length	SW2-1	SW2-2
8.5 inches (216 mm)	OFF	ON
11 inches (279 mm)	OFF*	OFF*
11.7 inches (296 mm)	ON	ON
12 inches (305 mm)	ON	OFF

DIP-switch functions

This section describes the different features you can control with the printer's DIP switches.

International character sets

You can choose from eight international character sets by setting DIP switches 1-1, 1-2, 1-3, and 1-4, according to DIP-switch Table 3. See the Appendix for character samples.

The character sets you can select with DIP switches are USA, France, Germany, United Kingdom, Denmark I, Sweden, Italy, and Spain I. However, you can also select the following sets only with the ESC R software command: Japan (English), Norway, Denmark II, Spain II, Latin America, Korea, and Legal.

Character tables

Your printer has five graphics character tables in addition to the italic character table. You can select these character tables by setting DIP switches 1-1, 1-2, 1-3, and 1-4, as listed in Table 4.

To select a graphics character table, you must first turn DIP switch 1-4 on.

Tables of these characters are included in the Appendix.

Print direction for graphics

The printer ordinarily prints text bidirectionally for speed and prints graphics characters unidirectionally for precise vertical alignment. You can, however, change text printing to unidirectional with the software command ESC U 1.

If you want to increase printing speed, you can change graphics character printing to bidirectional by turning DIP switch 1-5 on. If DIP switch 1-5 is off, graphics character printing is unidirectional whether or not you use ESC U o.

High-speed draft

By setting DIP switch 1-6 on, you can print at up to 330 cps (characters per second) if you select the 12 cpi draft font. The printer reduces the number of dots in each draft character to increase the printing speed.

If you select emphasized printing or condensed printing during high-speed draft mode, printing speed temporarily switches to normal draft speed until the enhancement is turned off. Also, if a line contains superscript, subscript, dot-graphics, or downloaded characters, printing speed switches to normal draft speed for that line only.

Input buffer capacity

The input buffer stores data sent from your computer. If you want to free your computer for other tasks while the printer prints, turn DIP switch 1-7 off to select the 8 KB input buffer.

Skip-over-perforation

Turning DIP switch 1-8 on when you are using continuous paper enables the skip-over-perforation function. Use this function to leave a one-inch (25.4 mm) space between the last printable line on one page and the first printable line on the next page so that the printer skips over the perforation.

Most application programs take care of the top and bottom margins. Do not turn on skip-over-perforation unless your program does not provide these margins.

You can adjust your top-of-form position with the MICRO FEED buttons if you want half of the space at the bottom of one page and half at the top of the next page.

Continuous paper page length

When you are printing on continuous paper, DIP switches 2-1 and 2-2 let you select one of the four page lengths described in DIP-switch Table 5.

Tear off

You can turn DIP switch 2-3 on to select tear-off mode. See page 3-16 for a complete description of using the tear-off mode.

Tear-off mode is available only with continuous paper loaded with the rear or front push-tractor.

Auto line-feed

When auto line feed is on (DIP switch 2-4 on), the printer follows each carriage-return code (CR) received with a line feed code (LF).

If your printer is double spacing, turn DIP switch 2-3 off. If each line overprints the next, turn DIP switch 2-4 on.

Micro Feed

The micro-feed feature allows you to move the paper forward or backward in 1/180-inch increments. You can use this feature to adjust the loading and tear-off positions.

When you make adjustments to the loading or tear-off positions for continuous paper, the printer remembers the new position even if you turn off the printer. The printer automatically advances paper to the new position when the power is turned on again.

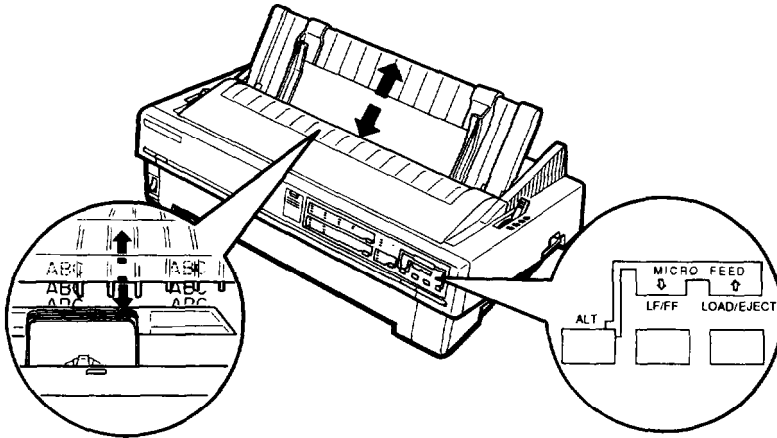
When you adjust the loading position for single-sheet paper, the printer remembers the new position only until you turn off the power. The loading position returns to the factory setting when the power is turned on again.

Using micro feed

To use the micro-feed feature, you press the ALT button in combination with the LOAD/EJECT or LF/FF button, as indicated on the printer's control panel. Follow the steps below to see how the MICRO FEED button operates:

- 1. Make sure that printing has stopped before you adjust the position of the paper.**

2. While holding down the ALT button, press the LOAD/EJECT button to feed the paper forward or press the LF/FF button to feed the paper backward, as indicated by the arrows above the buttons.



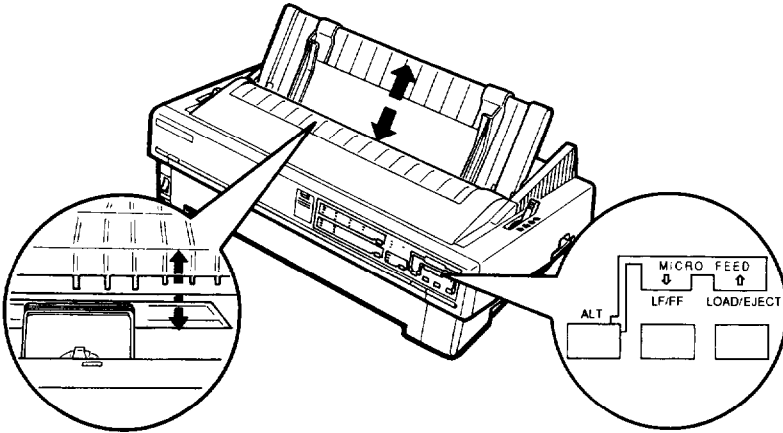
Adjusting the loading position

The loading position is the position of the paper after it is automatically loaded by the printer. If your printing is too high or low on the page, you can change the loading position with the micro-feed feature as follows:

1. Make sure the printer is turned on.
2. Load either continuous or single-sheet paper (load continuous paper by pressing the LOAD/EJECT button). The MULTI-PART light begins to blink.

Note: You can adjust the loading position only while the MULTI-PART light is blinking.

3. While holding down the ALT button, press the LOAD/EJECT button to move the loading position down on the page, or press the LF/FF button to move the loading position up on the page.



The printer remembers the new loading position and advances all subsequent pages to the new position.

Note:

- The printer has a minimum and maximum loading position. If you try to advance the loading position beyond these limits, the printer beeps and the paper stops moving.
- When the paper reaches the factory-set loading position, the printer beeps and paper feeding pauses briefly. Use the factory setting as a reference point when adjusting the loading position.

Tear Off

After you finish printing, the tear-off feature advances continuous paper to the tear-off edge of the printer. You can then easily tear off printed sheets. When you resume printing, the printer automatically feeds paper back to the loading position.

This feature lets you save the paper normally lost between documents.

You can use the tear-off feature in either of two ways:

- Turn DIP switch 2-3 on to select tear-off mode.
- Press the TEAR OFF button on the control panel.



CAUTION:

- The tear-off feature can be used only with the front or rear push-tractor feeding systems.
- Never use the tear-off feature with labels. When fed backward, labels may come off the backing and jam the printer.

Using the tear-off mode

When you select tear-off mode with DIP switch 2-3, the printer automatically advances continuous paper to the tear-off position when you finish printing.

The printer advances paper to the tear-off position whenever the printer receives a full page of data or a form feed, and then receives no more data for three seconds.

Enter tear-off mode by performing the following steps:

1. Make sure the printer is turned off. Turn DIP switch 2-3 on. Also, make sure the page length for continuous paper is selected correctly (DIP switches 2-1 and 2-2).
2. Turn the printer on.

3. **Print on continuous paper loaded on the front or rear tractor (as described in Chapter 2). When you finish printing, the printer advances the final printed page to the tear-off position.**
4. **Tear off all printed pages.**

Note: If the perforation does not meet the tear-off edge, you can adjust the tear-off position using the micro-feed feature as described later in this chapter.

5. **When you resume printing, the printer automatically feeds the paper back to the loading position and begins printing.**

You can leave tear-off mode turned on (DIP switch 2-3 on) even when you are using single sheets or the pull tractor because tear-off mode is disabled when you set the paper-release lever to the single-sheet or pull-tractor position.

Using the TEAR OFF button

Whether or not the printer is in tear-off mode, you can use the TEAR OFF button to advance continuous paper to the tear-off position following the steps below:

1. **Make sure printing has finished. Press the TEAR OFF button. The printer advances the paper to the tear-off edge and the TEAR OFF light comes on.**
2. **Tear off all printed pages.**

Note: If the perforation does not meet the tear-off edge, you can adjust the tear-off position using the micro-feed feature as described in the next section of this chapter.

3. **When you resume printing, the printer automatically feeds the paper back to the loading position and begins printing. (You can also manually feed the paper back to the loading position by pressing the TEAR OFF button again.)**

Adjusting the tear-off position

If the paper's perforation does not meet the tear-off edge, follow the steps below to adjust the tear-off position:

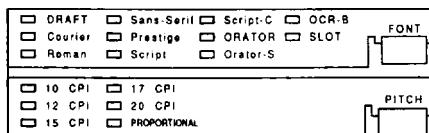
- 1. Make sure the paper is in the tear-off position and the TEAR OFF light is on.**
- 2. While holding down the ALT button, press the LOAD/EJECT button to move the tear-off position down on the page, or press the LF/FF button to move the tear-off position up on the page. The printer remembers the new tear-off position even after the printer is turned off.**
- 3. Tear off any printed pages.**
- 4. When you begin printing, the printer automatically feeds the paper back to the loading position and begins printing.**

Note:

- The printer has a minimum and a maximum tear-off position. If you try to advance the tear-off position beyond the limits, the printer beeps and the paper stops moving.**
- When the paper reaches the factory-set tear-off position, the printer beeps and paper feeding pauses briefly. Use the factory setting as a reference point when you adjust the tear-off position.**

Typestyles

You can produce a wide range of typestyles by selecting different character fonts, widths, and other enhancements from the control panel.



The font names on the control panel are meant as guides only; your actual printed results may differ slightly in appearance.

Note: The settings you select from the control panel remain valid even after you turn off the printer.

Some application programs control all typestyle functions. Because program commands often override panel settings, you should use your application program's print options instead of the control panel to select typestyles. If your panel setting does not work, check your software user's manual for instructions on selecting typestyles.

Character fonts

The printer has ten built-in fonts: draft, Courier, Roman, Sans Serif, Prestige, Script, Script-C, Orator, Orator-S, and OCR-B. To select a font, press the FONT button until the green indicator light of your desired font comes on. Note that font selection skips over SLOT unless an optional font module is installed in that slot.

The Roman and Sans Serif fonts are scalable. The minimum size of each font is 8 points and the maximum size is 32 points. You can use your application program (if it supports the LQ-870/1170) to increase the size of the font in two-point increments, as shown in the following sample:

Typestyles

Roman

A A A A A A A

Sans serif

A A A A A A A

There are two printing speeds for the draft font; high-speed draft and normal draft, controlled by the DIP switch 1-6 setting.

The following shows sample characters for each font.

Normal Draft (DIP switch 1-6 OFF)

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
wxyz{|}~ΔÇüéâääâçêëèïîïÀĀĒæÆöøòûÿŸŮŮç£¥℞fáí

High-Speed Draft (DIP switch 1-6 ON)

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
wxyz{|}~ΔÇüéâääâçêëèïîïÀĀĒæÆöøòûÿŸŮŮç£¥℞fáí

Epson Courier

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
wxyz{|}~ΔÇüéâääâçêëèïîïÀĀĒæÆöøòûÿŸŮŮç£¥℞fáí

Epson Roman

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
wxyz{|}~ΔÇüéâääâçêëèïîïÀĀĒæÆöøòûÿŸŮŮç£¥℞fáí

Epson Roman proportional

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
wxyz{|}~ΔÇüéâääâçêëèïîïÀĀĒæÆöøòûÿŸŮŮç£¥℞fáí

Epson Sans Serif

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
 wxyz{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

Epson Sans Serif proportional

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
 wxyz{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

Epson Prestige

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
 wxyz{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

Epson Script

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
 wxyz{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

Epson Script-C

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
 wxyz{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

Epson Orator

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`ABCDEFGHIJKLMNOPQRSTUVWXYZ
 WXYZ{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

Epson Orator-S

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
 wxyz{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

OCR-B

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
 wxyz{|}~ΔÇüéâãäåçèéëìíîËĀĒæÆōöôûÿÖÜø£¥Ptfaí

Character pitch

You can select a character pitch from the control panel. To select a pitch, press the PITCH button until the indicator light next to the desired pitch comes on.

The table below shows the character pitches available for each font.

Font	10 cpi	12 cpi	15 cpi	17 cpi	20 cpi	Proportional
Draft	○	○	○	○	○	
Courier	○	○	○	○	○	
Roman	○	○	○	○	○	○
Sans Serif	○	○	○	○	○	○
Prestige	○	○		○	○	
Script	○	○		○	○	
Script-C	0	0		0	0	0
Orator	0	0		0	0	
Orator-S	0	0		0	0	
OCR-B	0	0		0	0	

In the 10-, 12-, 15-, 17-, or 20-cpi modes, each character gets an equal amount of space. In proportional mode, the spacing varies from character to character. A narrow letter like the lowercase *i* receives less space than an uppercase *W*.

The printout below compares the different pitches:

This is 10 cpi printing.

This is 12 cpi printing.

This is 15 cpi printing.

This is 17 cpi printing.

This is 20 cpi printing.

This is proportional printing.

Data Dump Mode

Data dump mode is a special feature that allows experienced users to find the cause of communication problems between the printer and application programs.

In data dump mode, the printer produces an exact printout of the codes it receives. To use data dump mode, follow these steps:

1. Make sure the printer is off.
2. Hold down the LOAD/EJECT and LF/FF buttons while you turn on the printer. The printer beeps three times.
3. Load the paper.
4. Next, run either an application program or a program you have written in any programming language. Your printer prints all the codes it receives in hexadecimal format, as shown below.

Data Dump Mode

```
1B 40 1B 52 00 1B 74 01 1B 36 12 1B 50 20 20 20   .@.R..t..6..P
54 68 69 73 20 69 73 20 61 6E 20 65 78 61 6D 70   This is an examp
6C 65 20 6F 66 20 61 20 64 61 74 61 20 64 75 6D   le of a data dum
70 20 70 72 69 6E 74 6F 75 74 2E 20 54 68 69 73   p printout. This
20 69 73 20 66 65 61 74 75 72 65 20 6D 61 6B 65   is feature make
73 20 65 61 73 79 20 66 6F 72 0D 0A               s easy for..
```

5. To turn off data dump mode, press the PAUSE button to stop printing and eject the paper; then turn off the printer.

By reading the characters printed in the text field on the right side of the data dump printout (shown in step 4) or the printout of hex codes, you can check which codes are being sent to the printer.

In the text field, characters appear as their true ASCII characters, if they are printable. Nonprintable codes, such as control codes, are represented by dots.

Chapter 4

Using the Printer Options

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Cut-Sheet Feeders

Two cut-sheet feeders are available for use with your printer:

Printer	Single-bin	High-capacity
LQ-870	C806371	C806381
LQ-1170	C806391	C806401

The single-bin cut-sheet feeder holds up to 50 single sheets of paper. When this cut-sheet feeder is installed alone, you can still manually insert single sheets using the paper guide.

The high-capacity cut-sheet feeder holds up to 150 sheets of paper. You can also load up to 25 envelopes automatically with this cut-sheet feeder.

You can also connect both cut-sheet feeders and operate them as a double-bin cut-sheet feeder (see *Assembling the double-bin cut-sheet feeder*). This allows you to load two different types of paper automatically.

Follow the directions included with your cut-sheet feeder to assemble it; then install the cut-sheet feeder as described in this chapter.

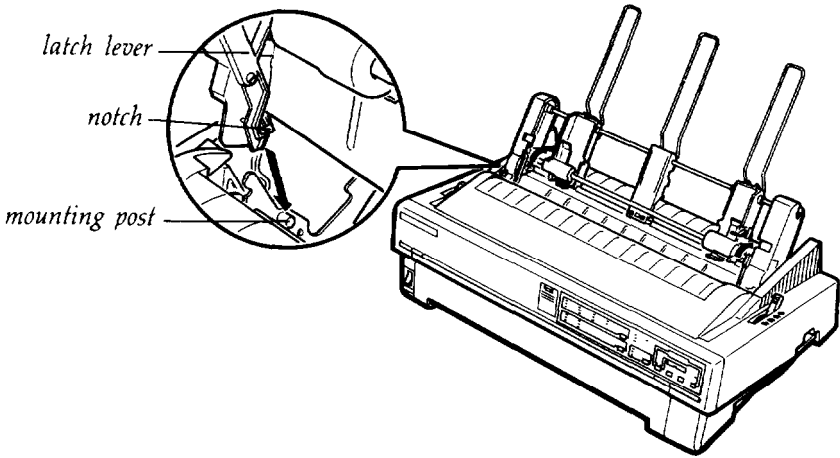
Installing a cut-sheet feeder

Installation of each cut-sheet feeder—single-bin, high-capacity, or double-bin—is basically the same. Install your cut-sheet feeder by following the steps below.

1. Make sure the printer is turned off. Remove the paper guide and printer cover.
2. If the tractor unit is installed in the top-tractor position, remove it and re-install it in the front- or rear-tractor position and install the paper-tension unit.

<p>Note: Keep the paper guide handy; if you install the single-bin unit, you need to re-install the paper guide after you load paper. Also, you will need it if you ever remove the cut-sheet feeder.</p>
--

3. **Make sure the paper-release lever is in the single-sheet position.**
4. **Hold the cut-sheet feeder in both hands. Press down on the latch levers and fit the notches in the cut-sheet feeder over the mounting posts on the printer. Release the latch levers to lock the cut-sheet feeder in place.**



5. **Replace the printer cover by first inserting the front tabs into the slots on the printer, then lowering it into place.**

You are now ready to load paper with your cut-sheet feeder.

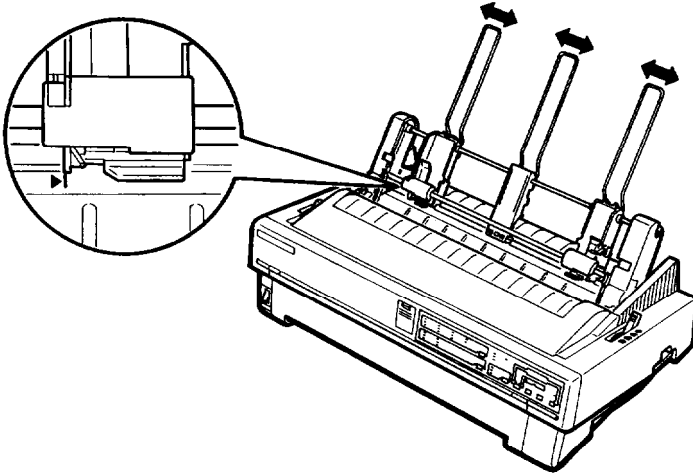
To remove a cut-sheet feeder, reverse the steps above.

Loading paper with the single-bin cut-sheet feeder

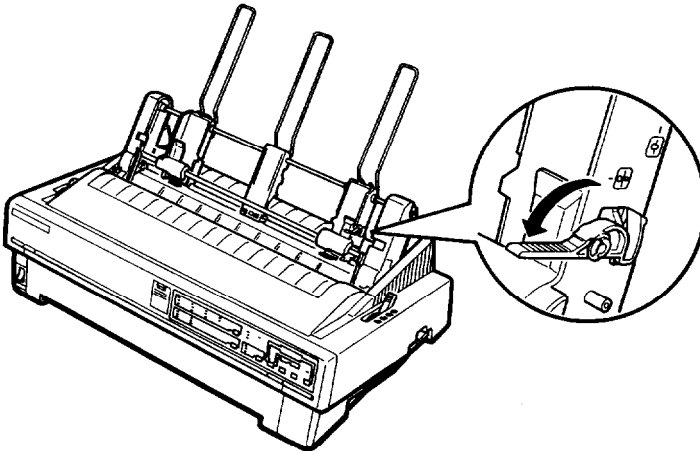
Load paper using the single-bin cut-sheet feeder as follows:

1. **Make sure the paper guide is removed.**

2. Slide the left paper guide so it is aligned with the triangle mark. Next, slide the right paper guide to roughly match the width of your paper. Slide the paper support midway between the paper guides.



3. Pull the paper-set levers all the way forward until the paper guides retract and lock open.

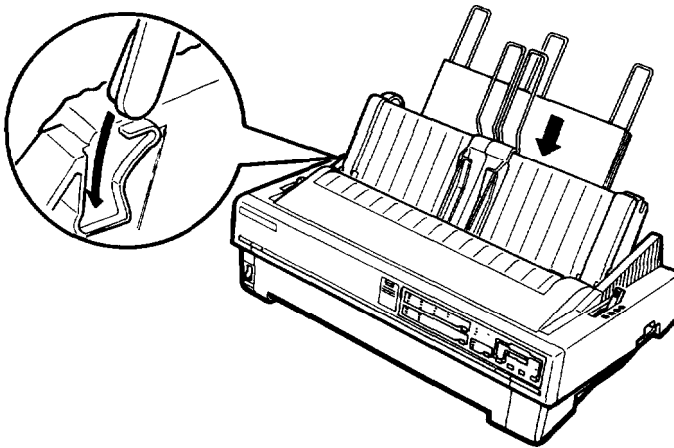


4. Take a stack of paper and fan it. Next, tap the side and bottom of the paper on a flat surface to even up the stack.



CAUTION: Do not use envelopes multi-part forms, carbon paper, or labels in the single-bin cut-sheet feeder.

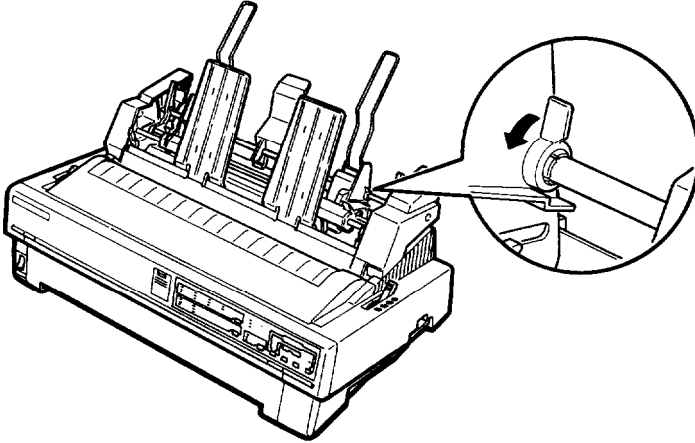
5. **Insert up to 50 sheets of paper along the left paper guide.**
6. **Adjust the position of the right paper guide so that it matches your paper's width. Make sure the position of the guide allows the paper to move up and down freely.**
7. **Push the paper-set levers back to clamp the paper against the guide rollers.**
8. **Attach the stacker-support wires to the edge guides of the paper guide. Then place the notches on the paper guide straight down over the mounting posts on the printer to reinstall it. Slide the edge guides to the middle of your paper.**



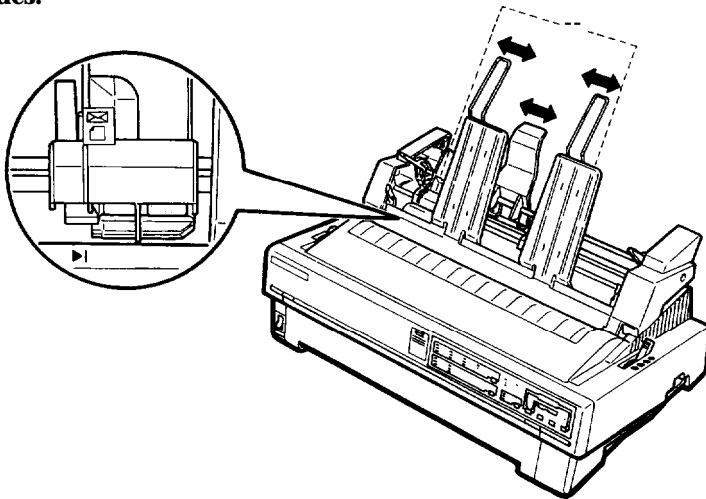
You can still insert single sheets using the rear paper guide or the front paper slot. The cut-sheet feeder automatically loads paper when you send print data to the printer (as long as the PAUSE light is not lit). You can also load paper from the cut-sheet feeder by pressing the LOAD/EJECT button.

Loading paper or envelopes with the high-capacity cut-sheet feeder

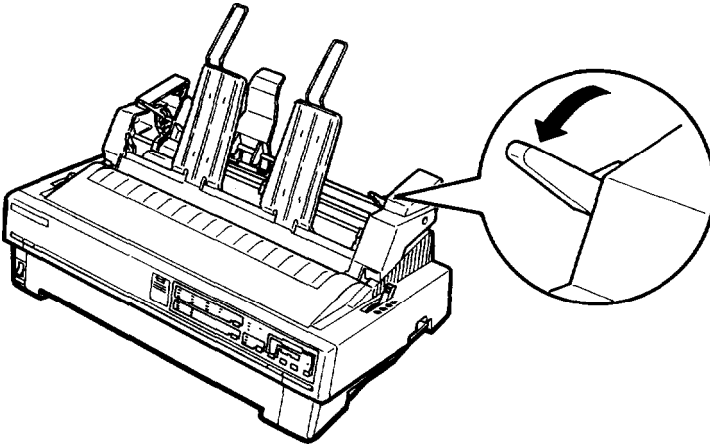
- 1. Pull the lock levers forward on the left and right paper guides to release them.**



- 2. Slide the left paper guide until it is aligned with the triangle mark; then lock it in place by pushing back on its lock lever. Next, slide the right paper guide to roughly match the width of your paper. Slide the paper support midway between the paper guides.**



- 3. Pull the paper-set levers all the way forward until the paper guides retract and lock open.**



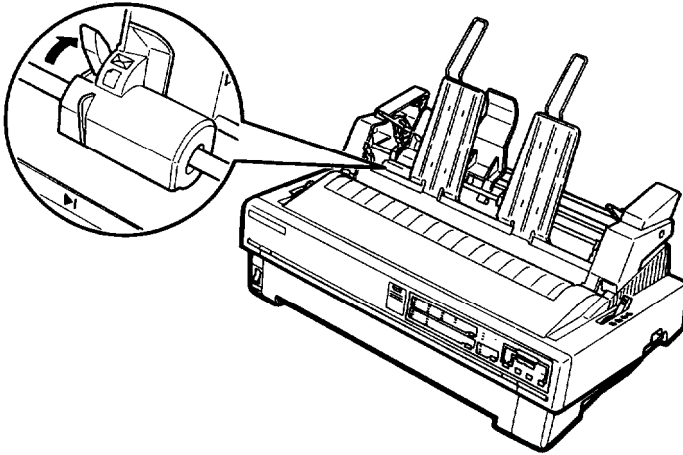
- 4. Take a stack of paper and fan it. Next, tap the side and bottom of the paper on a flat surface to even up the stack.**



CAUTION: Do not use multi-part forms, carbon paper, or labels in the cut-sheet feeder.

- 5. Insert up to 150 sheets of paper, 25 plain bond or 30 air mail envelopes along the left paper guide.**
- 6. Adjust the position of the right paper guide so that it matches your paper's width and lock it in place. Make sure that the position of the guide allows the paper to move up and down freely.**

- 7. If you are loading envelopes, push the envelope levers back.**



- 8. Push the paper-set levers back to clamp the paper or envelopes against the guide rollers.**

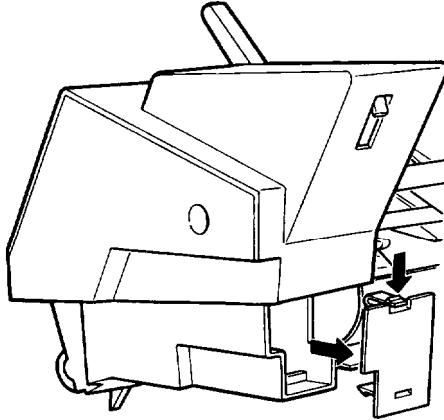
Note: You can also insert single sheets using the front paper slot or the slot between the paper guide and stacker.

The cut-sheet feeder automatically loads paper when you send print data to the printer (as long as the PAUSE light is not lit). You can also load paper from the cut-sheet feeder by pressing the LOAD/EJECT button.

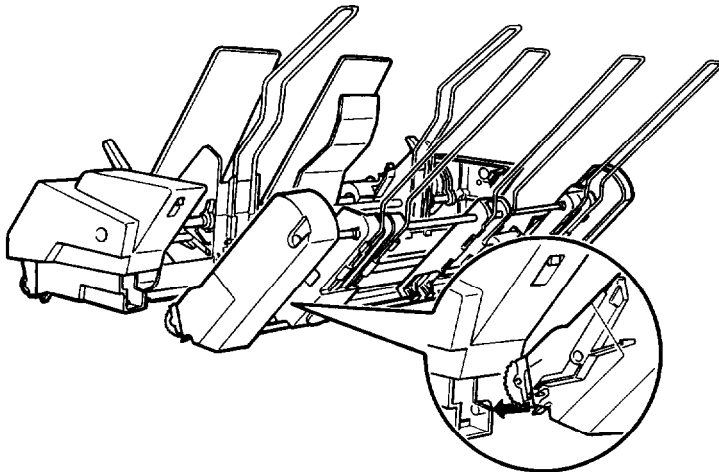
Assembling the double-bin cut-sheet feeder

You can attach the single-bin cut-sheet feeder and high-capacity cut-sheet feeder to create a double-bin cut-sheet feeder. Follow these steps:

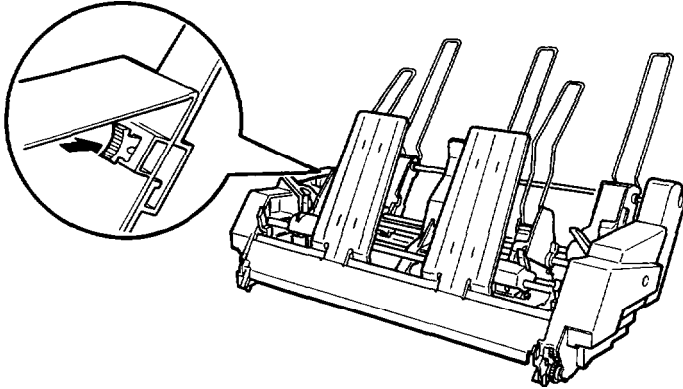
1. **Remove the gear cover from the back of the high-capacity cut-sheet feeder and store it in a safe place.**



2. **Hold the single-bin cut-sheet feeder in both hands. Fit the notches in the single-bin cut-sheet feeder over the mounting posts on the rear of the high-capacity cut-sheet feeder.**



3. Press the two cut-sheet feeders together while pushing firmly on the tab locks. Make sure the two cut-sheet feeders are securely locked together.



4. Install the assembled double-bin cut-sheet feeder on the printer. See *Installing a cut-sheet feeder* in this chapter.
5. Load paper into each bin. See the sections on loading paper in this chapter.

You can now use either cut-sheet feeder to load paper.

Note: You can also insert single sheets using the front paper slot.

The high-capacity cut-sheet feeder becomes BIN 1 and the single-bin cut-sheet feeder becomes BIN 2. Select the bin number by pressing the BIN SELECT button. The indicator light of the selected bin comes on.

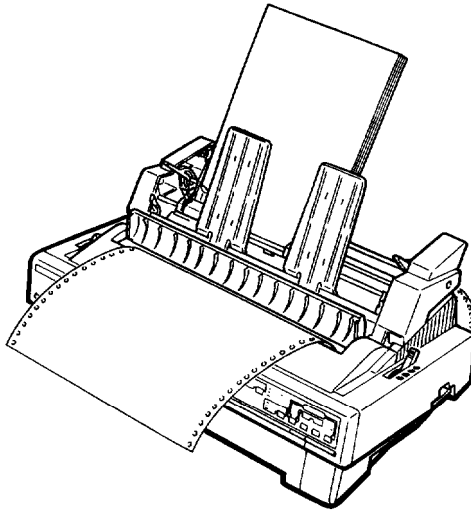
You can also specify the bin number by using software commands as described in Chapter 8, or by using your application software as described in your software user's manual.

Switching between continuous paper and the cut-sheet feeder

This printer allows you to switch easily between the cut-sheet feeder and the tractor-feeding system without removing either the feeder or the continuous-paper supply.

Switching to continuous paper

- 1. If a single sheet is in the paper path, press the LOAD/EJECT button to eject it.**
- 2. Place the paper release lever in the front or rear push-tractor position.**
- 3. Open the paper-path guide to eject the continuous paper forward.**



Switching to the cut-sheet feeder

1. If any printed sheets remain in the printer, press the **TEAR OFF** button to advance the continuous paper to the tear-off position.
2. Tear off the printed pages.
3. Press the **LOAD/EJECT** button. The printer feeds the continuous paper backward to the standby position. The paper is still attached to the push tractor but is no longer in the paper path.



CAUTION: Never feed labels backward. Labels can easily come off their backing and jam the printer. See the instructions below.

4. Place the paper-release lever in the single-sheet position.

If you are printing labels, follow these instructions to remove to the label supply and switch to the cut-sheet feeder:

1. Press the **LF/FF** button until the last printed label is at the point where you can tear it off easily.
2. Always remove labels by tearing off the fresh supply at a perforation below the push-tractor.
3. Press the **LF/FF** button to eject the remaining labels. The labels are no longer attached to the push-tractor.
4. Place the paper-release lever in the single-sheet position.


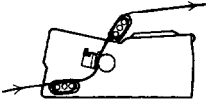

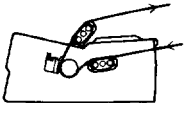


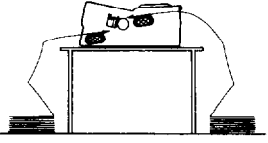
Additional Tractor Unit

You can improve the performance of continuous paper handling by using two tractor units at the same time. An additional tractor unit is available as an option. This is especially useful for continuous pre-printed forms, multi-part forms, and labels. Use of two tractor units at once is also recommended to print the highest quality graphics.

Also, if you install the tractor units in the front and rear push-tractor positions, you can load two types of continuous paper at the same time and switch between them by moving the paper-release lever.

The tractor positions and paper paths

Below are the various ways of feeding continuous paper with two tractor units.

Tractor positions	Position of the paper-release lever	Paper path
Pull + front push	Front push-tractor 	
Pull + rear push	Rear push-tractor 	
Front + rear push	Front push-tractor  or Rear push-tractor 	

Using two tractor units in combination

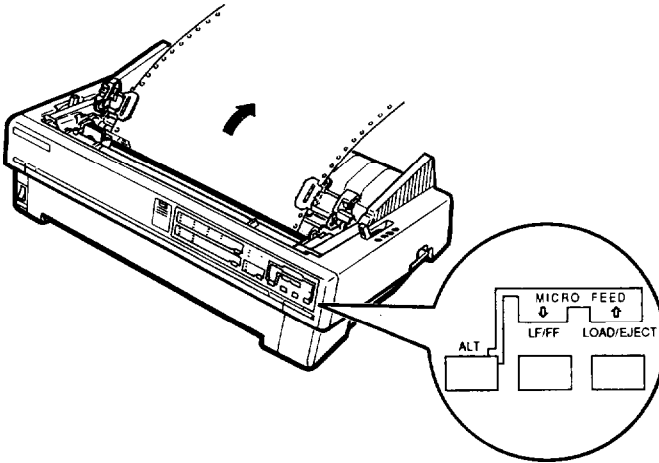
- 1. Install one tractor unit in the pull-tractor position as described in Chapter 2. Install another one in the front or rear position.**
- 2. Place the continuous paper on the sprocket units of the front or rear push-tractor unit (see Using Continuous Paper in Chapter 2).**
- 3. Turn on the printer. Press the LOAD/EJECT button to load paper; then hold down the LF/FF button to feed one page of paper.**



CAUTION: Use the knob on the left side of the printer only to clear paper jams when the printer is off. Otherwise you may damage the printer or lose the top-of-form position.

- 4. Release the sprocket lock levers of the pull tractor and adjust the sprocket units to match the width of the paper. Be sure that the sprocket units on both the tractors are aligned so that the paper is not crooked.**
- 5. Fit the holes of the paper over the tractor pins of the sprocket units and adjust the sprocket units as necessary (see Using Continuous Paper in Chapter 2).**
- 6. Close the sprocket covers.**

- 7. If there is slack in the paper between the push and pull tractors, place the paper-release lever in the pull-tractor position and use the micro-feed feature to advance the paper until slack is removed. Then place the paper-release lever back in its original position.**



- 8. See that the paper is not crooked or wrinkled and lock the sprocket units in place.**
- 9. Reinstall the printer cover and the paper guide.**

Interface Card

You can use optional interface cards to supplement your printer's built-in parallel interface.

The Epson interfaces below are compatible with your printer.

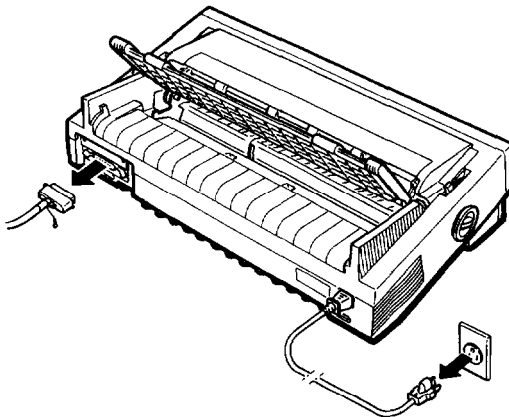
Model number	Name
C823051	Serial interface card
C823071	32KB serial interface card
C823101	32KB parallel interface card

If you are unsure whether you need an optional interface or would like to know more about interfaces, contact your dealer.

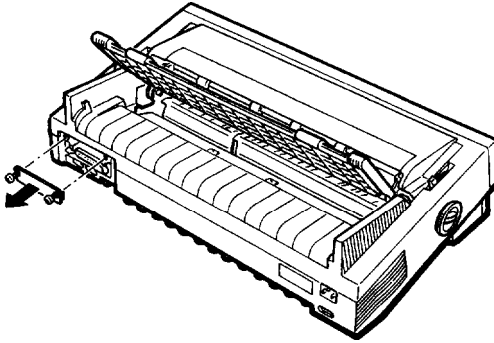
Note: These interfaces are not available in some countries.

Installing an interface card

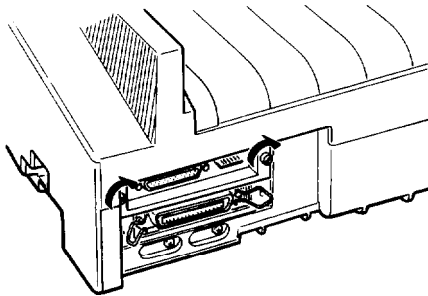
- 1. Make sure the printer is turned off. Unplug the printer's power cable and disconnect the interface cable.**



2. Remove the screws from the interface cover and remove it.



3. Insert the interface card into the slots on both sides of the interface compartment. Slide the card in firmly until the connector at the rear of the interface card fits into the printer's internal socket.
4. Replace the cover and secure the screws to complete installation,



Note: If the original screws do not fit, use the screws provided in the interface package.

To remove the interface card, first unplug the power cord; then perform the reverse of the steps above.

The C823051 serial interface card

If you are using an optional interface, it may be necessary for you to alter the communication protocol of the printer or computer so they can communicate properly. In most cases, you should use the information in your optional interface manual or your computer's manual to match the computer with the interface.

If you are using the C823051 optional interface card with your printer, make sure that you read through the section below on baud-rate selection. You may also want to refer to the section on handshake timing and error handling for interface information specific to your printer.

For all other data transfer conventions, such as word structure or communications protocol, see the manual supplied with your C823051 optional interface.

Baud rate selection

You can select from the following baud rates: 150, 300, 600, 1200, 2400, 4800, 9600, and 19,200 bps (bits per second). When you set the baud rate, see the baud rate selection table in the C823051 interface manual.

Handshake timing

When the vacant area for data in the input buffer drops to 256 bytes, the printer outputs an X-OFF code or sets the DTR flag to "1" (MARK) indicating that it cannot receive data.

Once the vacant area for data in the buffer increases to 528 bytes, the printer outputs an X-ON code or sets the DTR flag to "0" (SPACE) indicating that it is again ready to receive data.

Error handling

When a parity error is detected, your printer prints an asterisk (*). All other errors, including framing and overrun errors, are ignored.

Chapter 5

Maintenance and Transportation

Cleaning the Printer 5-2

Replacing the Ribbon Cartridge.. 5-3

Transporting the Printer 5-4

Cleaning the Printer

To keep your printer operating at its best, you should clean it thoroughly several times a year.

1. Make sure the printer is turned off. Then remove the paper guide, printer cover, tractor unit, and any installed options.
2. Use a soft brush to carefully clear away all dust and dirt.
3. If the outer case or paper guide is dirty or dusty, clean it with a soft, clean cloth dampened with a mild detergent. Keep the printer cover in place to prevent water from getting inside the printer.



WARNING: Be careful not to get water on the printer mechanism or electronic components.



CAUTION:

- Never use alcohols or thinners to clean the printer; these chemicals can damage the components as well as the case.
- Do not use a hard or abrasive brush.
- Do not spray the inside of the printer with lubricants; unsuitable oils can damage the mechanism. Contact your dealer or a qualified service person if you think lubrication is needed.

Replacing the Ribbon Cartridge

When your printing becomes too faint, you need to replace the ribbon cartridge. The following Epson replacement ribbon cartridges are recommended:

Printer	Standard fabric	Film
LQ-870	# 7753	# 7768
LQ-1170	# 7754	# 7770

To replace the ribbon cartridge, follow the steps described in **Installing the ribbon cartridge in Chapter 1.**

Note:

- Use the optional film ribbon when you need especially high-quality printing. For everyday operations, use the standard ribbon.
- Do not use ribbons designed for nine-pin printers.

Transporting the Printer

If you need to transport your printer some distance, carefully repack it using the original box and packing materials, as described below.

- 1. Turn off the printer.**
- 2. Remove the paper guide and any installed options.**
- 3. Unplug the power cord from the electrical outlet; then disconnect the interface cable from the printer.**
- 4. Remove the ribbon cartridge.**
- 5. If you have removed the tractor unit, replace it now according to the instructions in Chapter 2.**
- 6. If your printer had a protective screw, replace it now to protect the printer during shipment. See Chapter 1 for instructions.**
- 7. Repack the printer, ribbon cartridge, paper guide, and power cord in the original packing materials and insert them in the original box.**

Chapter 6
Troubleshooting

Problems and Solutions..... 6-2

Power Supply 6-3

Printing..... 6-4

Paper Handling 6-8

Options 6-10

Problems and Solutions

This chapter presents solutions to possible printer problems. If you have difficulty achieving the desired printing result, first locate the problem in the list below and then see the appropriate page for the solution.

Power supply

- **Power is not being supplied.** **See 6 - 3**

Printing

- **The printer does not print.** **See 6 - 4**
- **The print is faint or uneven.** **See 6-5**
- **Dots are missing in the printed characters or graphics.** **See 6-5**
- **Printed characters are not what you expected.** **See 6-5**
- **The print position is not what you expected.** **See 6-6**

Paper handling

- **Single sheets do not feed properly.** **See 6-8**
- **Continuous paper does not feed properly.** **See 6-9**

Options

- **When you use the cut-sheet feeder, the paper does not feed properly.** **See 6-10**
- **When you use two tractor units in combination, continuous paper does not feed properly.** **See 6-11**
- **When you use an optional interface, the printer does not operate properly.** **See 6-11**

Power Supply

Power is not being supplied.

- *The POWER light does not go on.*

Check that the power cable is plugged into the electrical outlet properly.

If the electrical outlet is controlled by an outside switch or automatic timer, use a different outlet.

Plug another electrical device into the outlet to determine whether the outlet is operating properly.

Printing

The printer does not print.

- ***The PAUSE light is on.***

Press the PAUSE button.

- ***The PAUSE light is off but nothing is printed.***

Check that the software is installed properly for your printer. Check the software's printer settings.

Check both ends of the interface cable between the printer and the computer. Make sure the cable meets both the printer and computer specifications. For the parallel interface, be sure your cable is a shielded twisted-pair parallel cable.

- ***The PAPER OUT light is on.***

Load paper in the printer.

- ***The printer sounds like it is printing, but nothing is printed.***

The ribbon cartridge may not be installed properly. See the section on ribbon installation in Chapter 1.

The ribbon may be worn out. Replace the ribbon cartridge. The paper thickness setting may be incorrect. See page 2-25.

- ***The printer makes a strange noise, the beeper sounds several times, and the printer stops abruptly.***

Turn off the printer and check for a paper jam, ribbon jam, or other problems; then try to print again. If the printer still does not print correctly, contact your dealer or a qualified service person.

- ***The PAUSE light is flickering and printer does not print or it stops printing abruptly.***

The print head is overheated. Wait a few minutes; the printer resumes printing automatically when the print head cools.

The print is faint or uneven.

- ***Printed characters have parts missing at the bottom.***

The ribbon cartridge may not be installed properly. See the section on ribbon installation in Chapter 1.

- ***The printout is faint.***

The ribbon may be worn out. Replace the ribbon cartridge.

Check that the paper-thickness lever is set correctly for the paper you are using.

Dots are missing in the printed characters or graphics.

- ***A line of dots is missing in the printout.***

The print head is damaged. Stop printing and have your dealer or a qualified service person to replace the print head.

- ***Dots are missing in random positions.***

There is either slack in the ribbon or the ribbon has come loose. Reinstall the ribbon cartridge.

Printed characters are not what you expected.

- ***The typestyle or characters that are set by your software cannot be printed.***

Check that the software is correctly installed for your printer.

- *The font selected by the control panel does not print.*

Your software may be overriding your panel setting. Check the font setting in your application program.

- *The wrong characters are printed.*

The wrong character table or the wrong international character set may be selected. Check the DIP-switch settings. See page 3-8.

The print position is not what you expected.

- *Printing starts too high or too low on the page.*

Adjust the top margin set by your application software. Use Micro-feed to adjust the print position.

- *All the text is printed on the same line.*

Set DIP switch 2-4 on so that the printer automatically adds a line-feed code to each carriage return.

- *The text is printed with an extra blank line in between.*

Two line-feed signals are being sent. Set DIP switch 2-4 off.

- *The page length does not match the length of your continuous paper.*

Change the page-length setting with DIP switches 2-1 and 2-2. See page 3-8.

Check the page length set by your application software and adjust it if necessary.

- ***Regular gaps occur in the printout.***

One-inch skip-over-perforation may be set. Set DIP switch 1-8 off.

- ***Skip-over-perforation is set, but the perforation does not fall in the center of the skip.***

Adjust the top-of-form position as described in Chapter 2.

Make sure the DIP-switch settings match your required paper length. See page 3-8.

If your application program is setting the top and bottom margins, set DIP switch 1-8 off.

- ***Printing starts too low on the page, or the bottom part of one page is printed at the top of the next page.***

Be sure to choose the correct printer when you choose a printer from your application program's menu. See Chapter 1.

Use your application software to reduce or eliminate the top margin and to reduce the page length.

If possible, specify single-sheet paper with your application software.

If the printer still does not print correctly, try the self test described in Chapter 1. If the self test works properly, the printer is all right and the problem probably lies in the computer, the software, or the cable. If the self test does not work, contact your dealer or a qualified service person.

Paper Handling

The following section guides you through problems in handling single sheets and continuous paper. If you are having problems using the optional cut-sheet feeder, see the section on options starting on page 6-10.

Single sheets do not feed properly.

- *When you insert single-sheet paper, the platen does not rotate and paper does not feed.*

Check that the paper-release lever is pushed back to the single-sheet position.

The paper may be too far to the right. Align the left edge guide with the arrow mark on the paper guide.

- *When you insert the paper, the platen rotates but paper does not feed.*

Reinsert the paper more firmly.

- *Printing starts too low on the page, or the bottom part of one page is printed at the top of the next page.*

Be sure to choose the correct printer when you choose a printer from your application program's menu. See Chapter 1.

If possible, specify single-sheet paper with your application software.

Use your application software to reduce or eliminate the top margin and reduce the page length.

Reduce the lines-per-page setting in your software.

- ***The paper feed is crooked or the paper jams.***

Turn off the printer and put the paper-release lever in the pull-tractor position. Pull out the paper and check the following two items:

- **Make sure the paper size is within the specified range. See page 7-4.**
- **Make sure the paper is aligned with the edge guides.**

- ***The paper does not fully eject.***

Use the LOAD/EJECT button to eject paper. Do not use the LF/FF button.

The paper may be too long. Only use paper that is within the specified range.

Continuous paper does not feed properly.

- ***When you send data, the platen does not turn and the push tractor does not feed the paper.***

The PAUSE light is on. Press the PAUSE button.

- ***The paper does not feed, although the platen rotates.***

Check that the paper-release lever is set to the correct position.

- ***The paper feed is crooked or the paper jams.***

Make sure the paper supply is not obstructed by a cable or some other object.

Make sure that your paper supply is positioned within 1 meter (3 feet) of the printer.

The position of your paper supply may be preventing it from feeding straight.

See that the holes on the sides of the paper are aligned with each other. Also, make sure the sprocket units are locked and their covers are closed.

Check that the paper-thickness lever is set correctly for the paper you are using. See page 2-25.

Check that the paper thickness is within the specified range. See page 7-6.

- ***The paper does not eject properly.***

The page is too long. Tear off the paper and remove it from the printer. Only use paper that is within the specified range.

Options

When you use the cut-sheet feeder, the paper does not feed properly.

- ***When a print command is sent from the computer, the platen rotates but paper does not feed.***

The cut-sheet feeder may be incorrectly installed on the printer.

See that the paper-release lever is pushed back to the single-sheet position.

Paper may be jammed near the print head.

You may have loaded too many sheets in the cut-sheet feeder's bin.

There may be only one sheet left in the bin. Add more paper.

- ***Two or more sheets feed at the same time.***

You may have loaded too many sheets in the cut-sheet feeder's bin.

You may have forgotten to fan the stack of paper before loading it into the bin. Remove the paper and fan it.

- ***The paper feed is crooked.***

The paper may be old or creased. Use only new, clean sheets of paper.

There may be too much paper in the stacker.

Make sure that your paper is the proper size and quality.

Options

When you use two tractor units in combination, continuous paper does not feed properly.

- ***The paper feed is crooked or paper jams.***

Make sure that the sprocket units on both tractors are aligned.

When you use an optional interface, the printer does not operate properly.

- ***The printer does not print or the printout is not what you expected.***

You may be trying to use an interface or interface cable with the wrong specifications. Check the specifications to make sure you can use the interface with this printer.

The computer and printer interface settings may not match. Make sure the settings on the computer and printer match.

Chapter 7

Technical Specifications

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Printer Specifications

Printing

Printing method: 24-pin impact dot matrix

Printing speed:

Quality	Characters per inch	Characters/second/line
High-speed draft	10	300
Draft	10	275
	12	330
	15	413
Letter quality	10	92
	12	110
	15	138

Printing direction: Bidirectional logic-seeking for text.
Unidirectional for graphics.
(Bidirectional for graphics can be selected with DIP switch 1-5 or the proper software command.)

Line spacing: 1/6-inch, 1/8-inch or programmable in increments of 1/360-inch

Paper-feed speed: Friction: 59.0 ms/line at 1/6-inch line spacing
Tractor: 64.1 ms/line at 1/6-inch line spacing
Continuous feed: 3.6 inches per second

Buffer: 8KB or 0KB (DIP-switch selectable)

Printable columns:

Character size	Maximum printed characters	
	LQ-870	LQ-1170
10 cpi	80	136
12 cpi	96	164
15 cpi	120	204
17 cpi (10 cpi condensed)	137	233
20 cpi (12 cpi condensed)	160	272

Character fonts:

Font	Point	7pt				10.5pt			
	Pitch	15cpi	10cpi	12cpi	Proportional	15cpi	10cpi	12cpi	Proportional
Epson Draft		0	0	0					
Epson Courier		0	0	0					
Epson Roman		0	0	0	0				
Epson Sans Serif		0	0	0	0				
Epson Prestige			I	0	I	o	I		
Epson Script			0	0					
Epson Script C								0	
Epson Orator			0						
Epson Orator-S			I	o	I				
OCR-B			I	0					

You can also select other font/pitch combinations using ESC/P 2 commands. See the command summary in chapter 8 for details.

Scalable fonts:

Font	min pt	max pt	increments
Epson Roman	8	32	2pt
Epson Sans Serif	8	32	2pt

Character tables:

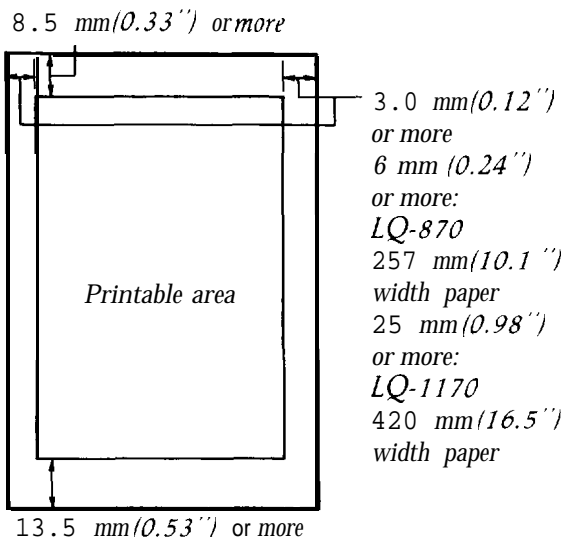
- 96 **standard ASCII characters**
- 14 **international character sets**
- 1 **legal character set**
- 5 **graphics character sets**

Paper

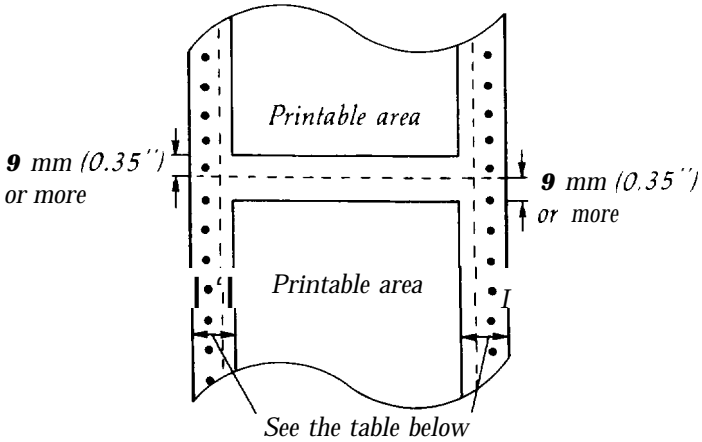
Paper size:

Paper	LQ-870	LQ-1170
Single sheet		
Width Top insertion	148 to 257 mm (5.8 to 10.1 inches)	148 to 420 mm (5.8 to 16.5 inches)
Front insertion	182 to 257 mm (7.2 to 10.1 inches)	182 to 364 mm (7.2 to 14.3 inches)
Length	max. 364 mm (14.3 inch)	
Multi-part form length	max. 297 mm (11.7 inches)	max. 364 mm (14.3 inches)
Continuous paper		
Width	101 to 254 mm (4 to 10 inch)	101 to 406 mm (4 to 16 inch)
Envelope		
Width × length	166 × 92 mm (6.5 × 3.265 inch) No. 6 240 × 104 mm (9.5 × 4.125 inch) No. 10	
Labels		
Width × length	min. 63.5 × 23.8 mm (2 1/2 × 16 inches)	

Printable area: **Single sheets**



Continuous paper



LQ-870	LQ-1170	Minimum left and right margin
Paper width	Paper width	
101 to 241 mm (4 to 9.5 inches)	101 to 377.8 mm (4 to 14.575 inches)	13 mm (0.51 inch)
—	381 to 406 mm (15 to 16 inches)	15 mm (0.59 inch)
254 mm (10 inches)	—	26 mm (1.02 inches)

Printer Specifications

Paper thickness:	Single sheets	
	top or front insertion	0.065 to 0.14 mm (0.0025 to 0.0055 inch)
	multi-part (front insertion):	0.12 to 0.32 mm (0.0047 to 0.012 inch)
	Continuous	0.065 to 0.14 mm (0.0025 to 0.0055 inch)
	multi-part	0.12 to 0.32 mm (0.0047 to 0.012 inch)
	Envelopes	0.16 to 0.52 mm (0.0063 to 0.0197 inch)
	Labels (including backing sheet)	0.16 to 0.19 mm (0.0063 to 0.0075 inch)
Paper weight:	Single sheets	
	top insertion	14 to 24 lb (52.3 to 90 g/m ²)
	front insertion	17 to 24 lb (64 to 90 g/m ²)
	Continuous paper	14 to 22 lb (52.3 to 82 g/m ²)
	Multi-part forms	12 to 15 lb × 4 (40 to 58 g/m ² × 4)
	Envelopes	12 to 24 lb (45 to 91 g/m ²)
Paper quality:	Single sheets and continuous paper:	
	plain paper, carbonless multi-part forms	
	Envelopes:	
	bond paper, plain paper, air mail	
Number of copies:	Carbonless, multi-part forms; Single sheet, front insertion or continuous paper:	
	1 original plus up to 3 copies	

Notes: You can use recycled paper with this printer; however, you may notice an increase in ribbon consumption and paper jamming. If this occurs, use a higher grade of paper.

Mechanical

Paper-feed methods: Friction (without or with optional cut-sheet feeder)
 Push-tractor (front- or rear-tractor)
 Pull-tractor
 Push-pull-tractor (optional)

Ribbon: Fabric ribbon cartridge
 LQ-870: #7753, LQ-1170: #7754
 Life expectancy
 In LQ, at 48 dots/character):
 2 million characters

Film ribbon cartridge
 LQ-870: #7768, LQ-1170: #7770
 Life expectancy
 In LQ, at 48 dots/character):
 0.2 million characters (# 7768)
 0.3 million characters (# 7770)

MCBF: For all components (excluding print head):
 5 million lines

MTBF: LQ-870: 4000 power-on hours (25% duty)
 LQ-1170: 6000 power-on hours (25% duty)

Print head life: 200 million strokes/wire (for fabric ribbon)
 100 million strokes/wire (for film ribbon)

Dimensions and weight:

	LQ-870	LQ-1170
Height	171 mm (6.8 in.)	171 mm (6.8 in.)
Width	449 mm (18 in.)	624 mm (25 in.)
Depth	365 mm (14.6 in.)	365 mm (14.6 in.)
Weight	approx. 8.9 kg (19.6 lb)	approx. 12.3 kg (27.1 lb)

Printer Specifications

Electrical

<i>Rated voltage:</i>	AC 120 V
<i>Input voltage range:</i>	AC 103.5 to 132 V
<i>Rated current:</i>	2.0 A
<i>Power consumption:</i>	(during self-test printing in draft mode, at 10 cpi) LQ-870: approx. 58 W LQ-1170: approx. 58 W
<i>Rated frequency range:</i>	50 to 60 Hz
<i>Input frequency range:</i>	49.5 to 60.5 Hz
<i>Insulation resistance:</i>	10 Mohms minimum (at DC 500 V between AC power line and chassis)
<i>Dielectric strength (between AC line and chassis):</i>	AC 1.2 kV (rms), 1 second

Environmental

Temperature:

Operation: 5° to 35°C (41° to 95°F)

Storage: -30° to 60°C (-22" to 140°F)

Humidity:

Operation: 10% to 80% RH without condensation

Storage: 5% to 85% RH without condensation

Interface Specifications

Your printer is equipped with a parallel interface

Specifications and pin assignments

The built-in parallel interface has the following characteristics:

Data format: B-bit parallel

Synchronization: STROBE pulse

Handshake timing: BUSY and ACKNLG signals

Signal level: TTL compatible level

Connector: 36-pin 57-30360 Amphenol connector or equivalent

Connector pin assignments and a description of their respective interface signals are shown in the following table.

Signal Pin	Return Pin	Signal	Direction	Description
1	19	STROBE	in	<u>STROBE</u> pulse to read data. Pulse width must be more than 0.5 microseconds at the receiving terminal.
2	20	DATA 1	IN	These signals present information of the 1st to 8th bits of parallel data, respectively. Each signal is at HIGH level when data is logical 1 and LOW when it is logical 0.
3	21	DATA 2	IN	
4	22	DATA 3	IN	
5	23	DATA 4	IN	
6	24	DATA 5	IN	
7	25	DATA 6	IN	
8	26	DATA 7	IN	
9	27	DATA 8	IN	
10	28	ACKNLG	OUT	About an 1 I-microsecond pulse. LOW indicates that data has been received and that the printer is ready to accept more data.

Interface Specifications

Signal Pin	Return Pin	Signal	Direction	Description
11	29	BUSY	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH in the following cases: 1) During data entry (ea. char. time) 2) During printing 3) When PAUSE button is pressed 4) During printer-error state.
12	30	PE	OUT	A HIGH signal indicates that the printer is out of paper.
13	—	SLCT	OUT	Pulled up to 5 volts through 3.3 Kohm resistance.
14	—	AUTO FEED \overline{XT}	IN	When this signal is LOW, the paper is automatically fed 1 line after printing. (The signal level can be fixed to this by setting DIP switch 2-4 to ON.)
15	—	NC		Not used.
16	—	GND	—	Logic ground level.
17	—	CHASSIS GND	—	Printer's chassis ground, which is isolated from the logic ground.
18	—	NC		Not used.
19-30	—	GND	—	Twisted-pair return signal ground level.
31	16	INIT	IN	When this level becomes LOW, the printer controller is reset to its power-up state and the print buffer is cleared. This level is normally HIGH; its pulse width must be more than 50 microseconds at the receiving terminal.
32		$\overline{\text{ERROR}}$	OUT	This level becomes LOW when the printer is: 1) in paper out state 2) PAUSE 3) in error state.

interface Specifications

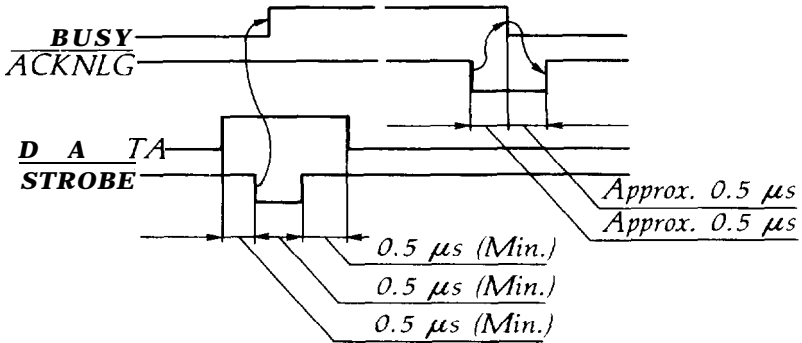
Signal Pin	Return Pin	Signal	Direction	Description
33	—	GND	—	Same as for Pins 19-30.
34	—	NC	—	Not used.
35	—	—	OUT	Pulled up to 5V through 3.3 Kohm resistance.
36	—	SLCT IN	IN	The DC1/DC3 code is valid only when this signal is HIGH. This signal is always LOW.

Note:

- **The column heading “Direction” refers to the direction of signal flow as viewed from the printer.**
- **“Return” denotes the twisted-pair return, to be connected at signal ground level. For the interface wiring, be sure to use a twisted-pair cable for each signal and to complete the connection on the return side.**
- **All interface conditions are based on TTL level. Both the rise and fall times of each signal must be less than 0.2 microseconds.**
- **Data transfer must be carried out by observing the ACKNLG or BUSY signal. Data transfer to this printer can be carried out only after receipt of the ACKNLG signal or when the level of the BUSY signal is LOW.**

Interface timing

The figure below shows the timing for the parallel interface.



Option Specifications

Cut-sheet feeders

Dimensions and weight

	Option No.	Height	Width	Depth	Weight
LQ-870	C806371 Single-bin	390 mm (15.4 in.)	449 mm (17.7 in.)	446 mm (17.6 in.)	0.55 kg (1.22 lb)
	C806381 High capacity	380 mm (15.0 in.)	449 mm (17.7 in.)	435 mm (17.1 in.)	1.55 kg (3.42 lb)
LQ-1170	C806391 Single-bin	390 mm (15.4 in.)	624 mm (24.6 in.)	446 mm (17.6 in.)	0.75 kg (1.65 lb)
	C806401 High capacity	380 mm (15.0 in.)	624 mm (24.6 in.)	435 mm (17.1 in.)	2.15 kg (4.74 lb)

Dimensions include the printer

Bin capacity:

Single sheets:

C806371 and C806391

Up to 50 sheets of 22-lb (82-g/m²) paper

C806381 and C806401

**Up to 150 sheets of 22-lb (82-g/m²)
paper**

Envelopes:

C806381 and C806401

Up to 25 (plain and bond type)

Up to 30 (air mail)

MCBF:

100,000 cycles

Paper:

	Single sheets	Envelopes
Width C806371	182 to 216 mm (7.17 to 8.50 in.)	N/A
C806391	182 to 420 mm (7.17 to 16.54 in.)	N/A
C806381	182 to 216 mm (7.17 to 8.50 in.)	165 to 241 mm (6.54 to 9.49 in.)
C806401	182 to 420 mm (7.17 to 16.54 in.)	165 to 241 mm (6.54 to 9.49 in.)
Paper length	210 to 364 mm (8.27 to 14.33 in.)	92 to 104 mm (3.62 to 4.09 in.)
Thickness	0.07 to 0.12 mm (0.0028 to 0.0047 in.)	0.25 to 0.50 mm (0.0098 to 0.0197 in.)
Weight	18 to 24 lb (64 to 91 g/m ²)	12 to 24 lb (45 to 91 g/m ²)

Paper storage conditions:

Temperature: 18" to 22°C (64" to 72°F)
Humidity: 40% to 60% RH

Environmental

Temperature: **Operation:** 5° to 35°C (41" to 95°F)
Storage: -30" to 60°C (-22" to 140°F)

Humidity (without condensation): **Operation:** 15% to 80% RH
Storage: 5% to 85% RH

Note:

- **24-lb paper printing is available only at normal operating conditions.**
- **Envelope printing is available only with the C806381 or C806401 cut-sheet feeder at normal operating conditions.**

Initialization

There are three ways that the printer can be initialized (returned to a fixed set of conditions):

- Hardware initialization** **When the power is turned on or when the printer receives an INIT signal from the parallel interface (pin 31 goes LOW).**
- Software initialization** **When software sends the ESC @ (initialize the printer) command.**
- Panel initialization** **When the PAUSE button is pushed with the ALT button held down.**

These three kinds of initialization have slightly different effects. Software and panel initialization do not initialize the printer mechanism or clear the user-defined character set. Also, software initialization does not clear the data buffer of all text.

Default settings

The table below shows the default conditions that take effect when the printer is initialized.

Item	Default condition
Top-of-form position	Current paper position
Left and right margins	Cancelled
Line spacing	1/6-inch line spacing
Vertical tab positions	Cleared
Horizontal tab positions	Every eight characters
VFU channel	Channel 0
Font selection	Reset to the current panel setting
User-defined Characters	Hardware: cleared Software: deselected only
Character pitch	Reset to the current panel setting

Chapter 8

Command Summary

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Using the Command Summary

This printer uses the Epson ESC/P 2 printer control language. You can use these commands to produce high quality laser-like printouts. ESC/P 2 commands provide scalable fonts (Epson Roman and Epson Sans Serif) and enhanced graphics.

The following section lists and describes all the commands by topic. If a command has parameters, they are explained. Parameters are indicated by lowercase italicized letters, usually *n*. The examples below show how the parameters are indicated.

ESC @ is a command with no parameters.

ESC U 1/0 is a command that uses 1 to turn the feature on and 0 to turn it off.

ESC \$ *n*1 *n*2 is a command with two parameters.

ESC D *nn* is a command with a variable number of parameters.

For comprehensive information on all these commands, call (800) 922-8911 to purchase the *Epson ESC/P Reference Manual*.

Commands Arranged by Topic

General operation

ASCII		Dec.	Hex.	Description
ESC @		64	40	Initialize Printer
ESC U	1/0	85	55	Turn Unidirectional Mode On/Off
ESC EM	<i>n</i>	25	19	Control Paper Loading/Ejecting <i>n</i> = "1" Select bin1 of CSF <i>n</i> = "2" Select bin2 of CSF <i>n</i> = "R" Eject a sheet

* For the ESC EM command the variables are the characters "1" (49 decimal or 31 hex) and "2" (50 decimal or 32 hex). Do not use 1 decimal, 01 hex, 2 decimal, or 02 hex.

Paper feeding

ASCII		Dec.	Hex.	Description
CR		13	0D	Carriage Return
FF		12	0C	Form Feed
LF		10	0A	Line Feed
ESC 0		48	30	Select 1/8-inch Line Spacing
ESC 2		50	32	Select 1/6-inch Line Spacing
ESC 3	<i>n</i>	51	33	Set <i>n</i>/180-inch Line Spacing
ESC +	<i>n</i>	43	2B	Set <i>n</i>/360-inch Line Spacing

Page format

ASCII	Dec.	Hex.	Description
ESC (c n n	40 99	28 63	Set Page Format ESC (c 4 0 m1 m2 n1 n2 $m = m1 + m2 \times 256$ m: Top margin in defined units $n = n1 + n2 \times 256$ n: Bottom margin in defined units
ESC (C n n	40 67	28 43	Set Page Length in Defined Units ESC (C 2 0 n1 n2 $n = n1 + n2 \times 256$ n: Number of defined units
ESC C n	67	43	Set Page Length in Lines $n = \text{number of lines (1-127)}$
ESC C 0 n	67	43	Set Page Length in Inches $n = \text{number of inches (1-22)}$
ESC N n	78	4E	Set Bottom Margin for Continuous Paper $n = \text{number of lines (1-127)}$
ESC 0	79	4F	Cancel Top/Bottom Margin for Continuous Paper
ESC 1 n	108	6C	Set Left Margin $n = \text{left margin column}$
ESC Q n	81	51	Set Right Margin $n = \text{right margin column}$

Print position motion

ASCII	Dec.	Hex.	Description
ESC \$ $n_1 n_2$	36	24	Set Absolute Horizontal Print Position $n = n_1 + n_2 \times 256$ n : Specifies print position from left margin in defined units * Before you define unit, default is 1/60-inch for this command
ESC \ $n_1 n_2$	92	5C	Set Relative Horizontal Print Position $n = n_1 + n_2 \times 256$ n : Moves current print position in defined units * Before you define unit, default is 1/120-inch in draft and 1/180-inch in LQ for this command
ESC (V nn	40 86 28 56		Set Absolute Vertical Print Position ESC (V 2 0 $n_1 n_2$ $n = n_1 + n_2 \times 256$ n : Specifies print position from top margin in defined units
ESC (v nn	40 118 28 76		Set Relative Vertical Print Position ESC (v 2 0 $n_1 n_2$ $n = n_1 + n_2 \times 256$ n : Moves current print position in defined units
ESC D nn	68	44	Set Horizontal Tabs Up to 32 tabs (1-255) entered in ascending order Terminated by 0
HT	9	09	Tab Horizontally
ESC B nn	66	42	Set Vertical Tabs Up to 16 tabs (1-255); last n should be 0
VT	11	0B	Tab Vertically
ESC J n	74	4A	Perform n /180-inch Line Feed

Font selection

ASCII	Dec.	Hex.	Description
ESC k <i>n</i>	107	6B	Select Typeface <i>n</i> = 0: Roman 5: OCR-B 1: Sans Serif 7: Orator 2: Courier 8: Orator-S 3: Prestige 9: Script C 4: Script
ESC X <i>nn</i>	88	58	Select Font by Pitch and Point ESC X <i>m n1 n2</i> <i>m</i> : Set pitch to 360/ <i>m</i> cpi <i>m</i> = 0 : No change in pitch <i>m</i> = 1 : Select proportional <i>m</i> = 0, 1, 18, 21, 24, 30, 36, 42, 48, 60, or 72 <i>n</i> = $n1 + n2 \times 256$ <i>n</i> : Set point size in 0.5 points Total points = $(n1 + n2 \times 256) \times 0.5$ <i>n</i> = 0 : No change in point <i>n</i> = 0, 16, 20, 21, 24, 28, 32, 36, 40, 42, 44, 48, 52, 56, 60, or 64 (for Roman and Sans serif) <i>n</i> = 0, 21, 42 (for other typeface)
* Cancel ESC X with ESC I, M, g, p, !, or @			
ESC I	80	50	Select 10.5 point, 10 cpi
ESC M	77	4D	Select 10.5 point, 12 cpi
ESC g	103	67	Select 10.5 Point, 15 cpi
ESC p 1/0	112	70	Turn Proportional Mode On/Off
ESC x <i>n</i>	120	78	Select Letter Quality or Draft <i>n</i> = 0: Draft 1: Letter Quality

ASCII	Dec.	Hex.	Description
ESC 4	52	34	Select Italic Font
ESC 5	53	35	Cancel Italic Font
ESC E	69	45	Select Bold Font
ESC F	70	46	Cancel Bold Font
ESC ! <i>n</i>	33	21	<p>Master Select</p> <p>To find the value of <i>n</i> add together the numbers of the typestyles you want to combine from the list below:</p> <p><i>n</i> = 0: 10 cpi 1: 12 cpi 2: proportional 4: condensed 8: bold 16: double-strike 32: double-width 64: italic 128: underline</p>

Font enhancement

ASCII	Dec.	Hex.	Description
SI	15	0F	Select Condensed Printing
DC2	18	12	Cancel Condensed Printing
SO	14	0E	Select Double-Width Printing (one line)
ESC W	1/0 87	57	Turn Double-Width Printing On/Off
DC4	20	14	Cancel Double-Width Printing (one line)

Commands Arranged by Topic

ASCII	Dec.	Hex.	Description
ESC w 1/0	119	77	Turn Double-Height Printing On/Off
ESC G	71	47	Select Double-Strike Printing
ESC H	72	48	Cancel Double-Strike Printing
ESC S 0	83	53	Select Superscript Printing
ESC S 1	83	53	Select Subscript Printing
ESC T	84	54	Cancel Superscript/Subscript Printing
ESC (- nn	40 45	28 2D	Select Line/Score ESC (- 3 0 1 n1 n2 n1 = 1: Underline n1 = 2: Strikethrough n1 = 3: Overscore n2 = 0: Cancel score line selected by n1 n2 = 1: Single continuous line n2 = 2: Double continuous line n2 = 5: Single broken line n2 = 6: Double broken line
ESC - 1/0	45	2D	Turn Underline On/Off
ESC q n	113	71	Select Character Style n = 0: Normal style 1: Outline 2: Shadow 3: Outline with shadow

Spacing

ASCII	Dec.	Hex.	Description
ESC SP <i>n</i>	32	20	Set Intercharacter Space <i>n</i> = number of units of space added to the space between characters (1-127) Units are 1/120 inch (draft) and 1/180 inch (LQ and proportional)
ESC (U <i>nn</i>	40 85	28 55	Define Unit ESC (U 1 0 <i>n</i> Define positioning unit as <i>n</i> /3600 inch <i>n</i> = 10, 20, 30, 40, 50, 60 <i>n</i> = 10; default
ESC c <i>n1 n2</i>	99	63	Set Horizontal Motion Index (HMI) Change Pitch in <i>n</i>/360-inch units Total units = <i>n1</i> + <i>n2</i> × 256

Character handling

ASCII	Dec.	Hex.	Description																					
ESC (t <i>nn</i>	40 116	28 74	Assign Character Table ESC (t 3 0 <i>d1 d2 d3</i> Assign Character Table set by <i>d2</i> and <i>d3</i> to <i>d1</i> <i>d1</i> = 0, 1, 2, 3, "0", "1", "2", or "3" <table border="0"> <tr> <td><i>d2</i></td> <td><i>d3</i></td> <td>Character Table</td> </tr> <tr> <td>0</td> <td>0</td> <td>Italic</td> </tr> <tr> <td>1</td> <td>0</td> <td>PC 437 (USA)</td> </tr> <tr> <td>3</td> <td>0</td> <td>PC 850 (Multilingual)</td> </tr> <tr> <td>7</td> <td>0</td> <td>PC 860 (Portugal)</td> </tr> <tr> <td>8</td> <td>0</td> <td>PC 863 (Canada-French)</td> </tr> <tr> <td>9</td> <td>0</td> <td>PC 865 (Norway)</td> </tr> </table>	<i>d2</i>	<i>d3</i>	Character Table	0	0	Italic	1	0	PC 437 (USA)	3	0	PC 850 (Multilingual)	7	0	PC 860 (Portugal)	8	0	PC 863 (Canada-French)	9	0	PC 865 (Norway)
<i>d2</i>	<i>d3</i>	Character Table																						
0	0	Italic																						
1	0	PC 437 (USA)																						
3	0	PC 850 (Multilingual)																						
7	0	PC 860 (Portugal)																						
8	0	PC 863 (Canada-French)																						
9	0	PC 865 (Norway)																						

Commands Arranged by Topic

ASCII	Dec.	Hex.	Description
ESC t <i>n</i>	116	74	Select Character Table Select character table <i>n</i> assigned by ESC (t <i>n</i> = 0, 1, 2, 3, "0", "1", "2", or "3" <i>n</i> = 2: Remaps download characters from 0-127 to 128-255
ESC R <i>n</i>	82	52	Select an International Character Set <i>n</i> = 0: USA 8: Japan 1: France 9: Norway 2: Germany 10: Denmark II 3: UK 11: Spain II 4: Denmark 12: Latin America 5: Sweden 13: Korea 6: Italy 64: Legal 7: Spain
ESC & <i>nn</i>	38	26	Define User-Defined Character ESC & 0 <i>n1 n2 d0 d1 d2 data</i> <i>n1</i> = first character number <i>n2</i> = last character number <i>d0</i> = left space of character <i>d1</i> = Body width of character <i>d2</i> = right space of character <i>data</i> : 3 bytes for each column; super/subscripts require only 2 bytes per column
ESC : 0 <i>n</i> 0	58	3A	Copy ROM to RAM <i>n</i> = 0, 1, 2, 3, 4, 5, or 9 <i>n</i> : Typeface
ESC % <i>n</i>	37	25	Select User-Defined Set <i>n</i> = 0: Normal set 1: User-defined set
ESC 6	54	36	Enable Printing of Upper Control Codes With Extended Graphics this command enables the printing of codes 128-159

ASCII	Dec.	Hex.	Description
ESC 7	55	37	Enable Upper Control Codes Cancels ESC 6
ESC (^ <i>nn</i>	4094	28 5E	Print Data as Characters ESC (^ <i>n1 n2 data</i> $n = n1 \cdot k n2 \times 256$ <i>n</i> : amount of data data : <i>n</i> byte data for printing as character

Bit image

ASCII	Dec.	Hex.	Description
ESC * <i>nn</i>	42	2A	Select Bit Image ESC * <i>m n1 n2 data</i> $n = n1 + n2 \times 256$ <i>n</i> : Total columns Total data = $(n1 + n2 \times 256) \times t$

<i>m</i>	Horizontal density (dpi)	Vertical density (dpi)	Pins	Adjacent dots printing	<i>t</i>
0	60	60	8	enable	1
1	120	60	8	enable	1
2	120	60	8	disable	1
3	240	60	8	disable	1
4	80	60	8	enable	1
6	90	60	8	enable	1
32	60	180	24	enable	3
33	120	180	24	enable	3
38	90	180	24	enable	3
39	180	180	24	enable	3
40	360	180	24	disable	3

Graphics

ASCII	Dec.	Hex.	Description
ESC (G <i>nn</i>	40 71	28 47	Select Graphics Mode ESC (G 1 0 <i>n</i> <i>n</i> = 1, or 49 * Cancel Graphics mode with ESC @
ESC . <i>nn</i>	46	2E	Print Raster Graphics ESC . <i>c v h m n1 n2 data</i> <i>c</i> = 0: Full graphics mode 1: Compressed mode <i>v</i> = 10, 20: Dot density for vertical in 3600/ <i>v</i> DPI <i>h</i> = 10, 20: Dot density for horizontal in 3600/<i>h</i> DPI <i>m</i> : Number of vertical dots 1 < <i>m</i> < 24 <i>n</i> : Number of horizontal dots Total dots = <i>n1</i> + <i>n2</i> × 256 * The following combination is not allowed: <i>v</i> = 10 and <i>h</i> = 20

Appendix

Character Tables A-2
 Italic character table. A-2
 Graphics character tables A-3

International Character Sets..... A-6



Character Tables

These character tables are selected by setting DIP switches 1-1, 1-2, 1-3, and 1-4, or using the ESC t software command. For the graphics character tables, the ESC 6 and ESC 7 software commands let you select whether hex codes 80 to 9F are characters (ESC 6) or control codes (ESC 7).

Italic character table

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	NUL		SP	0	@	P	`	p
1			!	1	A	Q	a	q			!	1	A	Q	a	q
2		DC2	"	2	B	R	b	r		DC2	"	2	B	R	b	r
3			#	3	C	S	c	s			#	3	C	S	c	s
4		DC4	\$	4	D	T	d	t		DC4	\$	4	D	T	d	t
5			%	5	E	U	e	u			%	5	E	U	e	u
6			&	6	F	V	f	v			&	6	F	V	f	v
7			'	7	G	W	g	w			'	7	G	W	g	w
8			(	8	H	X	h	x			(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y	HT	EM	)	9	I	Y	i	y
A	LF		*	:	J	Z	j	z	LF		*	:	J	Z	j	z
B	VT	ESC	+	,	K	[	k	{	VT	ESC	+	;	K	[	k	{
C	FF		,	<	L	\	l	!	FF		,	<	L	\	l	!
D	CR		-	=	M	]	m	~	CR		-	=	M	]	m	~
E	SO		.	>	N	^	n		SO		.	>	N	^	n	
F	SI		/	?	O	_	o		SI		/	?	O	_	o	

Graphics character tables

PC 437 (United States)

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	.	p	Ç	É	á	í	█	⌂	α	≡
1			!	1	A	Q	a	q	ü	æ	í	█	⌂	⌂	β	±
2		DC2	"	2	B	R	b	r	é	Æ	ó	█	⌂	Γ	≥	≡
3			#	3	C	S	c	s	â	ô	ú	█	⌂	⌂	π	≤
4		DC4	\$	4	D	T	d	t	ä	ö	ñ	█	⌂	⌂	Σ	⌂
5		S	%	5	E	U	e	u	à	ò	Ñ	█	⌂	⌂	σ	⌂
6			&	6	F	V	f	v	ã	û	a	█	⌂	⌂	μ	⌂
7			'	7	G	W	g	w	ç	ù	o	█	⌂	⌂	τ	⌂
8			(	8	H	X	h	x	ê	ÿ	ö	█	⌂	⌂	ϕ	⌂
9	HT	EM	)	9	I	Y	i	y	è	Û	Ü	█	⌂	⌂	θ	⌂
A	LF		*	:	J	Z	j	z	è	Ü	Û	█	⌂	⌂	Ω	⌂
B	VT	ESC	+	;	K	[	k	{	ï	½	¼	█	⌂	█	δ	⌂
C	FF		,	<	L	\	l	~	ï	½	¼	█	⌂	█	ε	⌂
D	CR		-	=	M	]	m	~	ï	½	¼	█	⌂	█	ϑ	⌂
E	SO		.	>	N	^	n	~	ï	½	¼	█	⌂	█	ϕ	⌂
F	SI		/	?	O	_	o	~	ï	½	¼	█	⌂	█	ϑ	⌂

PC 850 (Multilingual)

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	.	p	Ç	É	á	í	█	⌂	ð	ó
1			!	1	A	Q	a	q	ü	æ	í	█	⌂	ð	ð	±
2		DC2	"	2	B	R	b	r	é	Æ	ó	█	⌂	ð	ò	⌂
3			#	3	C	S	c	s	â	ô	ú	█	⌂	ð	ò	⌂
4		DC4	\$	4	D	T	d	t	ä	ö	ñ	█	⌂	ð	ö	⌂
5		S	%	5	E	U	e	u	à	ò	Ñ	█	⌂	ð	ö	⌂
6			&	6	F	V	f	v	ã	û	a	█	⌂	ð	ö	⌂
7			'	7	G	W	g	w	ç	ù	o	█	⌂	ð	ö	⌂
8			(	8	H	X	h	x	ê	ÿ	ö	█	⌂	ð	ö	⌂
9	HT	EM	)	9	I	Y	i	y	è	Û	Ü	█	⌂	ð	ö	⌂
A	LF		*	:	J	Z	j	z	è	Ü	Û	█	⌂	ð	ö	⌂
B	VT	ESC	+	;	K	[	k	{	ï	½	¼	█	⌂	ð	ö	⌂
C	FF		,	<	L	\	l	~	ï	½	¼	█	⌂	ð	ö	⌂
D	CR		-	=	M	]	m	~	ï	½	¼	█	⌂	ð	ö	⌂
E	S		.	>	N	^	n	~	ï	½	¼	█	⌂	ð	ö	⌂
F	SI		/	?	O	_	o	~	ï	½	¼	█	⌂	ð	ö	⌂

Character Tables

PC 860 (Portugal)

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	Ç	É	á	█	L	ll	a	≡
1			!	1	A	Q	a	q	ü	À	í	█	l	ll	β	±
2		DC2	"	2	B	R	b	r	é	Ê	ó	█	l	ll	Γ	≥
3			#	3	C	S	c	s	â	ô	ú	█	l	ll	π	≤
4		DC4	\$	4	D	T	d	t	ã	õ	ñ	█	l	ll	Σ	∫
5		S	%	5	E	U	e	u	à	ò	Ñ	█	l	ll	σ	∫
6			&	6	F	V	f	v	Á	Ú	ã	█	l	ll	μ	÷
7			'	7	G	W	g	w	Ç	Ù	o	█	l	ll	τ	≈
8			(	8	H	X	h	x	ê	ï	õ	█	l	ll	Φ	°
9	HT	EM	)	9	I	Y	i	y	Ê	Ï	Ö	█	l	ll	θ	·
A	LF		*	:	J	Z	j	z	è	Û	ı	█	l	ll	Ω	·
B	VT	ESC	+	;	K	[	k	{	í	½	¼	█	l	ll	δ	√
C	FF		,	<	L	\	l	~	ï	¼	¼	█	l	ll	ø	n ²
D	CR		-	=	M	]	m	}	î	¼	¼	█	l	ll	ø	n ²
E	SO		.	>	N	^	n	~	ã	ı	ı	█	l	ll	ε	█
F	SI		/	?	O	_	o	~	Â	Ô	Ó	█	l	ll	η	█

PC 863 (Canada-French)

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	Ç	É	ı	█	L	ll	a	≡
1			!	1	A	Q	a	q	ü	È	ı	█	l	ll	α	±
2		DC2	"	2	B	R	b	r	é	Ê	ó	█	l	ll	Γ	≥
3			#	3	C	S	c	s	â	ô	ú	█	l	ll	π	≤
4		DC4	\$	4	D	T	d	t	ã	õ	ñ	█	l	ll	Σ	∫
5		S	%	5	E	U	e	u	à	ò	Ñ	█	l	ll	σ	∫
6			&	6	F	V	f	v	Á	Ú	ã	█	l	ll	μ	÷
7			'	7	G	W	g	w	Ç	Ù	o	█	l	ll	τ	≈
8			(	8	H	X	h	x	ê	ï	õ	█	l	ll	Φ	°
9	HT	EM	)	9	I	Y	i	y	Ê	Ï	Ö	█	l	ll	θ	·
.	LF		*	:	J	Z	j	z	è	Û	ı	█	l	ll	Ω	·
B	VT	ESC	+	;	K	[	k	{	í	½	¼	█	l	ll	δ	√
C	FF		,	<	L	\	l	~	ï	¼	¼	█	l	ll	ø	n ²
D	CR		-	=	M	]	m	}	î	¼	¼	█	l	ll	ø	n ²
E S			0	.	.	.	.	.	.	.	.	█	l	ll	ε	█
F	SI		/	?	O	_	o	~	Â	Ô	Ó	█	l	ll	η	█

PC 865 (Norway)

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	Ç	É	á	█	L	⊥	α	≡
1			!	1	A	Q	a	q	ü	æ	í	█	⊥	⊥	β	±
2		DC2	"	2	B	R	b	r	é	Æ	ó	█	⊥	⊥	Γ	≡
3			#	3	C	S	c	s	â	ô	ú	█	⊥	⊥	π	≡
4		DC4	\$	4	D	T	d	t	â	ö	ñ	█	⊥	⊥	Σ	⌋
5		S	%	5	E	U	e	u	à	ò	Ñ	█	⊥	⊥	Ο	⌋
6			&	6	F	V	f	v	â	û	a	█	⊥	⊥	μ	÷
7			'	7	G	W	g	w	ç	ù	o	█	⊥	⊥	τ	≈
8			(	8	H	X	h	x	ê	ÿ	ö	█	⊥	⊥	ϕ	°
9	HT	EM	)	9	I	Y	i	y	è	Û	ü	█	⊥	⊥	θ	·
A	LF	*	:	J	Z	j	z	{	è	Ü	ü	█	⊥	⊥	Ω	·
B	VT	ESC	+	; K	[	k	{	{	ï	ø	½	█	⊥	█	δ	√
C	FF	,	<	L	\	l	{	{	î	£	¼	█	⊥	█	ε	n
D	CR	-	=	M	]	m	}	}	ï	ø	¼	█	⊥	█	ε	2
E	SO	.	>	N	^	n	~	~	Ä	ϕ	←	█	⊥	█	ε	■
F	SI	/	?	O	_	o			Å	f	↵	█	⊥	█	η	■

Characters available with ESC (^

CODE	.0	.1	.7	.1
0			▶	
1	☺	◀		
2	☹	↕		
3	♥	!!		
4	♦	¶		
5	♣			
6	♠	—		
7	·	↕		
8	■	↑		
9	○	↓		
A	■	→		
B	♀	←		
C	♀	└		
D	♪	↔		
E	♫	▲		
F	*	▼	△	

To print the characters in the table on the left you must first send the ESC (^ command. This command is valid only on printers featuring Epson ESC/P2.

International Character Sets

Country	ASCII code hex												DIP SW		
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E	1-1	1-2	1-3
0 USA	#	\$	@	[	\	\]	^	'	{	|	}	~	ON	ON	ON
1 France	#	\$	à	°	ç	§	^	'	é	ù	è	¨	ON	ON	OFF
2 Germany	#	\$	§	Ä	Ö	Ü	^	'	ä	ö	ü	ß	ON	OFF	ON
3 U.K.	£	\$	@	[	\	\]	^	'	{	|	}	~	ON	OFF	OFF
4 Denmark	#	\$	@	Æ	Ø	Å	^	'	æ	ø	å	~	OFF	ON	ON
5 Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	OFF	ON	OFF
6 Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì	OFF	OFF	ON
7 Spain	Pt	\$	@	;	Ñ	¿	^	'	¨	ñ	}	~	OFF	OFF	OFF

* **DIP switch 1-4 must be off for you to select the above international character sets by DIP switch.**

The following eight additional sets are available only when you use ESC R software command.

Country	ASCII code hex											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
8 Japan	#	\$	@	[	¥	]	^	'	{	|	}	~
9 Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10 Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11 Spain II	#	\$	á	;	Ñ	¿	é	'	í	ñ	ó	ú
12 Latin America	#	\$	á	;	Ñ	¿	é	ü	í	ñ	ó	ú
13 Korea	#	\$	@	[	₩	]	^	'	{	|	}	~
64 Legal	#	\$	§	°	'	"	¶	'	©	®	†	™

Glossary

The following definitions apply specifically to printers.

application program

A software program that helps you carry out a particular task, such as word processing or financial planning.

ASCII

American Standard Code for Information Interchange. A standardized coding system for assigning numerical codes to letters and symbols.

auto line feed

When this feature is selected using a DIP switch, each carriage-return code (CR) is automatically followed by a line-feed (LF) code.

bidirectional printing

Printing in which the print head prints from left to right only on every other line. On the other lines, it prints from right to left. This increases the speed of printing because the head prints in both directions.

bit

A binary digit (0 or 1), which is the smallest unit of information used by a printer or computer.

byte

A unit of information consisting of eight bits.

character set

A collection of letters, numbers, and symbols.

character table

A portion of the printer's standard ASCII character set that you use for graphic symbols or italic characters.

characters per inch (cpi)

A measure of the size of text characters. Ten cpi is the printer's default setting.

condensed printing

Printing in which each character is approximately 60% of the width of standard characters. Useful for fitting wide tables or spreadsheets onto a page.

continuous paper

Paper that has sprocket-feed holes on each side, is perforated between pages, and is supplied in a folded stack. Also called fanfold paper.

control code

Special codes used to control printer functions such as performing a carriage return or line feed.

cpi

See characters per inch.

cut-sheet feeder (CSF)

An optional, detachable device that automatically feeds single sheets of paper into the printer.

data dump

A troubleshooting feature that helps advanced users find the cause of communication problems between the printer and the computer. When the printer is in data dump mode, it prints each code it receives in hexadecimal notation and ASCII code. Also called hex dump.

default

A value or setting that takes effect when the equipment is turned on, reset, or initialized.

DIP switches

Small switches in a printer that control various printer functions and set the default status of the printer when it is turned on or initialized. DIP stands for dual in-line package.

dot matrix

A method of printing in which each letter or symbol is formed by a pattern (matrix) of individual dots.

double-height printing

Printing in which each character is twice as tall as normal.

double-strike printing

A way of producing bolder characters. Each character is printed twice.

double-width printing

Printing in which each character is twice as wide as normal.

draft

One of three print qualities available on your printer.

Draft uses a minimum number of dots per character for high-speed printing. See also *high-speed draft* and *Letter Quality*.

emphasized printing

A way of producing darker characters. Each character is printed twice, with the second slightly to the right of the first.

ESC/P

Abbreviation for Epson Standard Code for Printers. This system of commands gives you software control of your printer from your computer. It is standard for all Epson printers and supported by most application software for personal computers.

ESC/P 2

The enhanced version of the ESC/P printer command language. Commands in this language give laser-like features: scalable fonts and enhanced graphics printing.

font

A font is a style of type designated by a family name.

form feed

A control code and a panel button that advance the paper to the next top of form position.

high-speed draft

One of the three print qualities available on your printer. High-speed draft uses a minimum number of dots per character to produce extremely high-speed printing. See also *draft* and *Letter Quality*.

initialize

To establish the initial default status of the printer by turning on the printer or sending an INIT signal.

interface

The connection between the computer and the printer. A parallel interface transmits data one character or code at a time, and a serial interface transmits data one bit at a time.

italics

A typestyle in which the characters slant. *This sentence is italicized.* Also, a character table that contains italicized characters and symbols.

Letter Quality (LQ)

One of three print qualities available on your printer. Letter Quality provides better readability and appearance at a reduced print speed. See also *draft* and *high-speed draft*.

line feed

A control code and a panel button that advance the paper one line space.

loading position

The position to which the paper is automatically loaded. It can be adjusted with the micro-feed feature.

micro feed

A feature that adjusts the paper loading and tear-off positions.

parallel interface

See interface.

platen

The black roller that provides a backing for the paper during printing.

proportional printing

Printing in which the width of the character varies from character to character. For example, a capital W receives much more space than a lower case i. The result looks more like a typeset book than a typewritten draft.

RAM

Random Access Memory. The portion of the printer's memory used as a buffer and for storing user-defined characters. All data stored in RAM is lost when the printer is turned off.

reset

To return a printer to its defaults by sending a command or an INIT signal or by turning the printer off and then back on.

self test

A method for checking the operation of the printer. When the self test is run, the printer prints out its current DIP switch settings and the characters that are stored in its ROM.

subscript

Printing in which each character is printed at about two-thirds the normal height in the lower part of the character space.

superscript

Printing in which each character is printed at about two-thirds the normal height in the upper part of the character space.

tear off

A feature that automatically feeds the perforation of continuous paper to the tear-off position and then feeds the paper back to the loading position.

tear-off position

The position the printer feeds the paper to when you press the TEAR OFF button or when the auto tear-off mode is on. This position can be adjusted using micro-feed so that the paper's perforation meets the printer's tear-off edge.

top of form

The position on the paper that the printer recognizes as the first printable line. The printer feeds the paper to this position when it loads the paper.

unidirectional printing

Printing in one direction only. Unidirectional printing is useful for printing graphics because it allows more precise vertical alignment than bidirectional printing.

user-defined characters

Characters that are defined and stored in the printer by the user. Also known as download characters.

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Command descriptions are not indexed here. For information on a specific command, see Chapter 8.

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