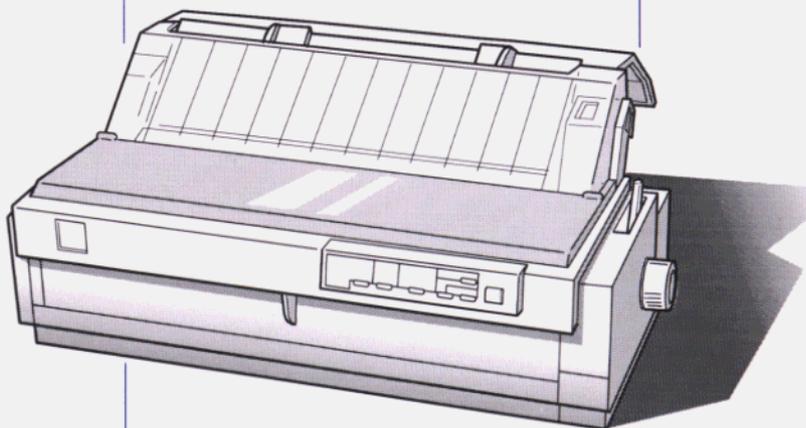


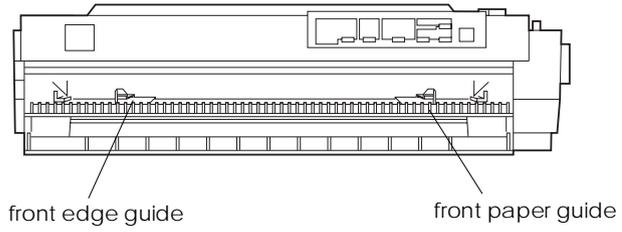
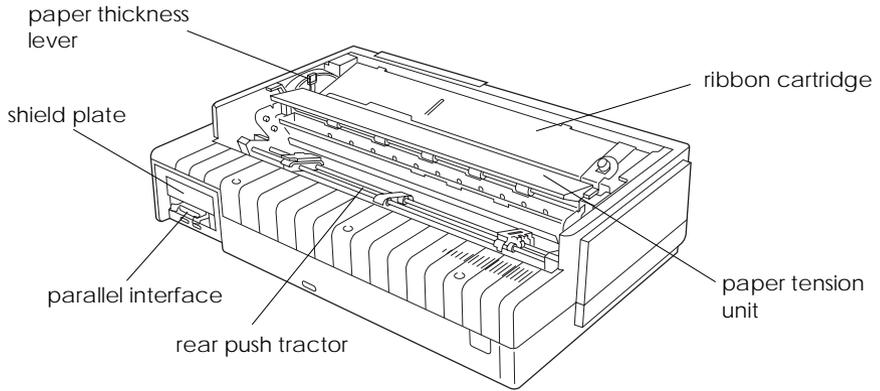
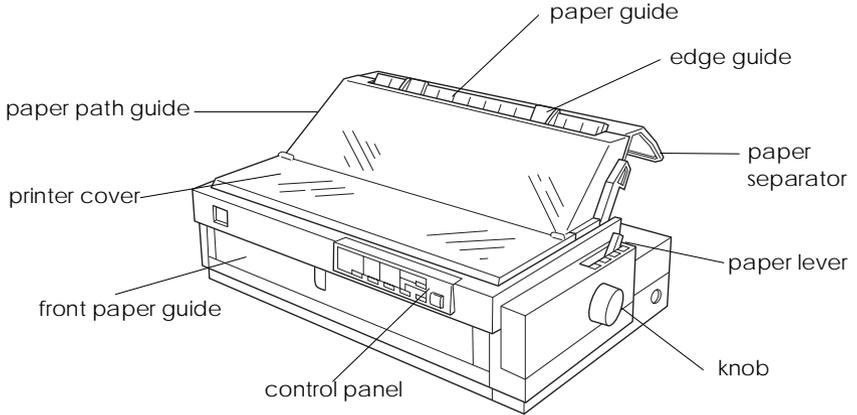
# User's Guide

## **LQ-2070**



**EPSON®**

# Printer Parts



# EPSON®

24-Pin Dot Matrix Printer

## LQ-2070

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## User's Guide

## FCC Compliance Statement 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 Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

# Declaration of Conformity

According to ISO/IEC Guide 22 and EN 45014

Manufacturer: SEIKO EPSON CORPORATION  
Address: 3-5, Owa 3-chome, Suwa-shi,  
Nagano-ken 392 Japan

Representative: EPSON EUROPE B.V.  
Address: Prof. J. H. Bavincklaan 5 1183 AT Amstelveen  
The Netherlands

Declares that the Product:

Product Name: Dot Matrix Printer  
Type Name: LQ-2070  
Model: P911A

Conforms to the following Directive(s) and Norm(s):

Directive 89/336/EEC:

EN 55022 Class B  
EN 50082-1  
IEC 801-2  
IEC 801-3  
IEC 801-4

Directive 73/23/EEC:

EN 60950

Directive 90/384/EEC:

EN 45501

April 1996

M. Hamamoto  
President of EPSON EUROPE B.V.

## Energy Star Compliance



As an Energy Star Partner, EPSON has determined that this product meets the Energy Star guidelines for energy efficiency.

The EPA estimates that if all desktop computers, printers, and other peripheral devices met Energy Star standards, energy cost savings would exceed \$1 billion annually and carbon dioxide emissions would be reduced by 20 million tons.

All of EPSON's ink jet printers conform to Energy Star standards.

**Note:**

*The Energy Star emblem does not represent EPA endorsement of any product or service.*

## Energy-saving Tips

Here are a few tips you can use to be even more energy-wise:

- If your monitor isn't Energy Star compliant, turn it off when you're not using it.
- Turn off your computer, printer, and monitor each day when you are done using them.
- Use the print preview option in your software to catch errors before you print a document.
- If you have an electronic mail system available to you, send E-mail rather than memos. Not only is this faster, but you'll save paper and storage space too.

# Where to Get Help

If you purchased your printer in the United States or Canada, EPSON provides customer support and service through a network of Authorized EPSON Customer Care Centers. EPSON also provides the following services when you dial (800) 922-8911:

- Technical assistance with the installation, configuration, and operation of EPSON products
- Assistance in locating your nearest Authorized EPSON Reseller or Customer Care Center
- Customer relations
- EPSON technical information library fax service
- Product literature on current and new products

You can purchase ribbons, supplies, parts, printed manuals, and accessories for your EPSON products from EPSON Accessories at (800) 873-7766 (U.S. sales only). In Canada, call (800) BUY-EPSON for sales locations.

If you purchased your printer outside the United States or Canada, contact your EPSON dealer or the marketing location nearest you for customer support and service.

If you need help with any software program you are using, see that program's documentation for technical support information.

## *Electronic Support Services*

If you have a modem, the fastest way to access helpful tips, specifications, drivers, application notes, and bulletins for EPSON products is through the online services below.

## *World Wide Web*

If you are connected to the Internet and have a Web Browser, you can access EPSON's World Wide Web site at <http://www.epson.com>. EPSON's home page links users to What's New, EPSON Products, EPSON Connection<sup>SM</sup>, Corporate Info, and EPSON Contacts. Link to the EPSON Connection for the latest drivers and FAQs (Frequently Asked Questions) and the EPSON Chat area. To get in touch with EPSON around the world, EPSON Contacts includes Contact Information for local EPSON subsidiaries.

## *EPSON Bulletin Board Service*

You can call the EPSON Bulletin Board Service (BBS) at (310) 782-4531. No membership is required. Make sure your communications software is set to 8 data bits with 1 stop bit, no parity bit, and a modem speed up to 28.8 Kbps. See the documentation that came with your communications software for more information.

## *CompuServe<sup>®</sup> online support*

CompuServe members can call the EPSON America Forum on CompuServe. If you are already a CompuServe member, simply type GO EPSON at the menu prompt to reach the forum.

If you are not currently a member of CompuServe, you are eligible for a free introductory membership as an owner of an EPSON product. This membership entitles you to:

- An introductory credit on CompuServe
- Your own user ID and password
- A complimentary subscription to *CompuServe Magazine*, CompuServe's monthly publication.

To take advantage of this offer, call (800) 848-8199 in the United States and Canada and ask for representative #529. In other countries, call (614) 529-1611 or your local CompuServe access number.

# For United Kingdom Users

## Use of options

EPSON (UK) Limited shall not be liable against any damages or problems arising from the use of any options or consumable products other than those designated as Original EPSON Products or EPSON Approved Products by EPSON (UK) Limited.

## Safety information

### **Warning:**

*This appliance must be earthed. Refer to rating plate for voltage and check that the appliance voltage corresponds to the supply voltage.*

### **Important:**

*The wires in the mains lead fitted to this appliance are coloured in accordance with the following code:*

*Green and yellow - Earth*

*Blue - Neutral*

*Brown - Live*

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The green and yellow wire must be connected to the terminal in the plug which is marked with the letter E or with the earth symbol (⏏) or coloured green or green and yellow.
- The blue wire must be connected to the terminal in the plug marked with the letter N or coloured black.
- The brown wire must be connected to the terminal in the plug marked with the letter L or coloured red.

If damage occurs to the plug, replace the cord set or consult a qualified electrician.

Replace fuses only with a fuse of the correct size and rating.

# Important Safety Instructions

Before using your printer, read the following safety instructions to use the printer safely:

- Turn off and unplug the printer before cleaning. Clean with a damp cloth only. Do not spill liquid on the printer.
- Do not place the printer on an unstable surface or near a radiator or heat register.
- Do not block or cover the openings in the printer's cabinet. Do not insert objects through the slots.
- Use only the type of power source indicated on the printer's label.
- Connect all equipment to properly grounded power outlets. Avoid using outlets on the same circuit as photocopiers or air control systems that regularly switch on and off.
- Do not let the power cord become damaged or frayed.
- If you use an extension cord with the printer, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure the total of all devices plugged into the wall outlet does not exceed 15 amperes.
- Except as specifically explained in this guide, do not attempt to service the printer yourself.
- Unplug the printer and refer servicing to qualified service personnel under the following conditions:
  - If the power cord or plug is damaged; if liquid has entered the printer; if the printer has been dropped or the cabinet damaged; or if the printer does not operate normally or exhibits a distinct change in performance.
- Adjust only those controls that are covered by the operating instructions.

# Contents

## *Introduction*

---

Options . . . . .	2
How to Use This Manual . . . . .	3
Warnings, Cautions, and Notes . . . . .	4

## *Chapter 1 Setting Up the Printer*

---

Choosing a Place for the Printer . . . . .	1-2
Unpacking the Printer . . . . .	1-4
Installing the Ribbon Cartridge . . . . .	1-5
Plugging in the Printer . . . . .	1-10
Running the Self Test . . . . .	1-11
Connecting the Printer to Your Computer . . . . .	1-14
Installing the Printer Driver . . . . .	1-15
For Microsoft Windows Users . . . . .	1-15
For DOS program users . . . . .	1-21
DOS printer utilities . . . . .	1-21

## Chapter 2 *Paper Handling*

---

Setting the paper release lever . . . . .	2-2
Using Single Sheets . . . . .	2-4
Loading single sheets with the paper guide . . . . .	2-4
Loading single sheets from the front . . . . .	2-7
Using Continuous Paper . . . . .	2-9
Loading paper with the rear push tractor . . . . .	2-9
Loading paper with the optional tractor unit . . . . .	2-13
Loading paper with the push/pull tractor combination . . . . .	2-27
Removing paper from the tractor . . . . .	2-30
Switching Between Continuous Paper and Single Sheets . . . . .	2-30
Switching to single sheets . . . . .	2-31
Switching to continuous paper . . . . .	2-32
Printing on Special Paper . . . . .	2-32
Adjusting the paper thickness lever . . . . .	2-33
Multipart forms . . . . .	2-34
Labels . . . . .	2-35
Envelopes . . . . .	2-36
Postcards . . . . .	2-36
Roll paper . . . . .	2-36

## Chapter 3 *Using the Printer*

---

Control Panel . . . . .	3-2
Lights . . . . .	3-2
Buttons . . . . .	3-4
Other control panel features . . . . .	3-6
Using the Default Setting Mode . . . . .	3-7
Selecting an instruction sheet language . . . . .	3-7
Changing the default settings . . . . .	3-7
Printer functions . . . . .	3-9
Using Quiet Mode . . . . .	3-13
Using Micro Adjust . . . . .	3-13
Using the Tear-Off Function . . . . .	3-15
Using auto tear-off mode . . . . .	3-16
Using the Tear Off/Bin button . . . . .	3-17
Using Bi-d Adjustment . . . . .	3-18
Printing Barcodes . . . . .	3-18

## *Chapter 4 Using Printer Options*

---

Cut-Sheet Feeders . . . . .	4-2
Installing the high capacity cut-sheet feeder . . . . .	4-2
Loading paper with the high capacity cut-sheet feeder . . . . .	4-4
Installing the double bin cut-sheet feeder . . . . .	4-6
Switching between continuous paper and the cut-sheet feeder . . . . .	4-7
Selecting single-sheets, postcards, or envelopes . . . . .	4-8
Pull Tractor . . . . .	4-9
Roll Paper Holder . . . . .	4-9
Interface Cards . . . . .	4-12
Installing an interface card . . . . .	4-12
The C82305* and C82306* serial interface cards . . . . .	4-14

## *Chapter 5 Maintenance and Transportation*

---

Cleaning the Printer . . . . .	5-2
Replacing the Ribbon . . . . .	5-3
Transporting the Printer . . . . .	5-4

## *Chapter 6 Troubleshooting*

---

Power Supply . . . . .	6-2
Power is not being supplied . . . . .	6-2
Printing . . . . .	6-3
The printer does not print . . . . .	6-3
The print is faint or uneven . . . . .	6-5
Dots are missing in printed characters or graphics . . . . .	6-5
Printed characters are not what you expect . . . . .	6-6
The print position is not what you expect . . . . .	6-6
Paper Handling . . . . .	6-7
Single sheets do not feed properly . . . . .	6-7
Continuous paper does not feed properly . . . . .	6-8
Options . . . . .	6-9
The paper does not feed properly with the cut-sheet feeder . . . . .	6-9
Continuous paper does not feed properly when using the tractors in a push/pull position . . . . .	6-11

*Appendix Specifications, Command Summary, and  
Character Tables*

---

Printer Specifications . . . . .	A-2
Printing . . . . .	A-2
Paper . . . . .	A-4
Paper alignment . . . . .	A-7
Printable area . . . . .	A-8
Mechanical . . . . .	A-9
Electrical . . . . .	A-10
Environmental . . . . .	A-11
Safety approvals . . . . .	A-11
CE marking . . . . .	A-12
Interface specifications . . . . .	A-12
Using Commands . . . . .	A-17
Sending printer commands . . . . .	A-17
Using the command summary . . . . .	A-17
Commands Arranged by Topic . . . . .	A-18
General operation . . . . .	A-18
Paper feeding . . . . .	A-18
Page format . . . . .	A-19
Print position motion . . . . .	A-20
Font selection . . . . .	A-21
Font enhancement . . . . .	A-23
Character handling . . . . .	A-24
Spacing . . . . .	A-27
Graphics . . . . .	A-27
Bit image . . . . .	A-28
Barcode . . . . .	A-29
Character Tables . . . . .	A-32
International Character Sets . . . . .	A-32
Graphics Character Tables . . . . .	A-32

*Glossary*

---

*Index*

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# Introduction

Your new EPSON® 24-pin dot matrix printer offers high performance with a wide range of features in a compact design. You will find the same high-quality printing and ease of operation you have come to expect from EPSON printers, including:

- ❑ High speed draft mode printing of up to 300 characters per second (cps) at 10 characters per inch (cpi)
- ❑ Easy paper handling for both single sheets and continuous paper
- ❑ Eight barcode fonts and four scalable fonts, as well as one draft and nine letter quality bit-map fonts
- ❑ Multipart forms printing of one original plus up to three copies
- ❑ A convenient control panel that allows direct selection of fonts
- ❑ Support of advanced EPSON ESC/P 2™ commands and IBM® 2390/2391 Plus emulation
- ❑ Large printable area; 68 lines with A4 size paper and 63 lines with letter size paper
- ❑ Software utilities, including a printer driver and a remote control panel utility that let you change printer settings quickly and easily.

---

## *Options*

The following options are available for your printer:

- ❑ Cut-sheet feeder (High capacity, C80673\*; Second bin, C80674\*), automatically feeds up to 150 sheets of paper or 25 envelopes (high capacity) without reloading. You can create a double bin cut-sheet feeder by combining the high capacity and second bin feeders. In this way you can preload up to 200 A4 or letter size sheets of paper, and you can use two different sizes.
- ❑ Pull tractor unit (C80032\*), provides easy paper handling, which is useful for printing on multipart forms. You can also use this tractor as a front push tractor.
- ❑ Roll paper holder (#8310), allows you to use your printer with 8.5-inch roll paper like that used with telex machines.
- ❑ Interface cards, available to supplement the printer's built-in parallel interface.

---

## *How to Use This Manual*

This manual provides 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.

Chapter 2 explains how to load and use single sheets, continuous paper, and special paper in the printer.

Chapter 3 describes the basic operation of your printer.

Chapter 4 explains how to use optional accessories with your printer.

Chapter 5 provides maintenance information, including transportation guidelines.

Chapter 6 contains troubleshooting tips. If the printer does not operate properly or the printed results are not what you expect, see this chapter for a list of problems and solutions.

The appendix lists the printer's specifications, commands, and character tables.

At the end of the manual you'll find a glossary and an index.

---

## *Warnings, Cautions, and Notes*

This guide uses the following conventions:



***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.

Choosing a Place for the Printer . . . . .	1-2
Unpacking the Printer . . . . .	1-4
Installing the Ribbon Cartridge . . . . .	1-5
Plugging in the Printer . . . . .	1-10
Running the Self Test . . . . .	1-11
Connecting the Printer to Your Computer . . . . .	1-14
Installing the Printer Driver . . . . .	1-15
For Microsoft Windows Users . . . . .	1-15
For DOS program users . . . . .	1-21
DOS printer utilities . . . . .	1-21

This chapter explains how to set up the printer and install the printer driver software.

---

## *Choosing a Place for the Printer*

When selecting a place to set up your printer, be sure to follow these guidelines:

- ❑ Place the printer on a flat, stable surface, close enough to the computer for the interface cable to reach it.
- ❑ Leave adequate room around the printer for easy operation and maintenance.
- ❑ Avoid locations that are subject to direct sunlight, excessive heat, moisture, or dust.
- ❑ Use a properly grounded electrical outlet; do not use an adapter plug.
- ❑ Place the printer where you can easily unplug the power cord.
- ❑ Avoid electrical outlets controlled by wall switches or automatic timers. An interruption of power can erase information in the memory of your printer or computer.
- ❑ Avoid outlets on the same circuit as large motors or other appliances that can cause voltage fluctuations.
- ❑ Keep the entire computer system away from potential sources of electromagnetic interference, such as loudspeakers or the base units of cordless telephones.

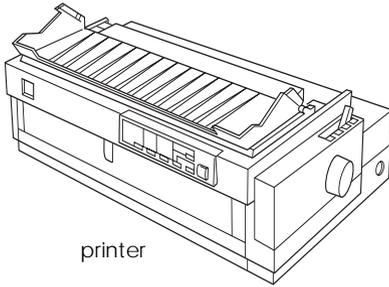
If you plan to use a printer stand, follow these guidelines:

- ❑ Use a stand that supports at least 26 kg (57.8 lbs).
- ❑ 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, the stand must keep your printer level.
- ❑ If you plan to load continuous paper through the bottom of the printer, choose a stand that provides an unobstructed paper path.
- ❑ Position your printer's power cord and interface cable so they do not interfere with paper feeding. If possible, secure the cables to a leg of the printer stand.
- ❑ Align the paper stack so that the paper feeds straight into the tractor's sprocket units.

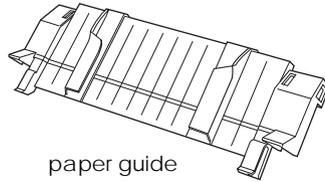
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## Unpacking the Printer

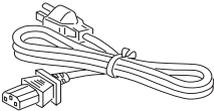
In addition to this guide, your printer box should include an EPSON printer driver disk, Notice Sheet, and the following items:



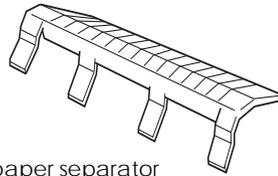
printer



paper guide



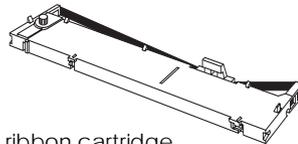
power cord  
(230 V version only)



paper separator



driver



ribbon cartridge

### **Note:**

*Depending on your printer model, the power cord may be permanently attached to the printer.*

You must remove all protective materials packed around and inside your printer before you set it up and turn on the power. Follow the directions on the Notice Sheet (packed with the printer) to remove these materials. A screwdriver has been included for removing the transportation screw.

Save all packing and protective materials, including the protective locking clips on the paper tension unit and the transportation screw, in case you need to ship the printer in the future. It should always be transported in its original packaging.



**Caution:**

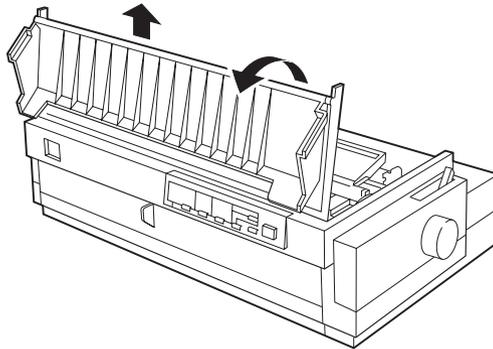
*There are several versions of the printer designed for different voltages, and it is not possible to adjust the printer for use at another voltage. If the label on the back of the printer does not show the correct voltage for your country, contact your dealer.*

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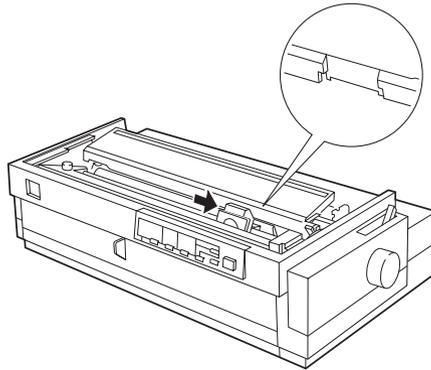
## ***Installing the Ribbon Cartridge***

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

1. Lift the printer cover up and off.



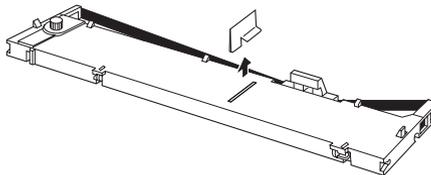
2. Make sure the print head is at the ribbon installation position as shown below. If the print head is not at this position, slide the print head to the correct position (the indented portion of the paper tension unit).



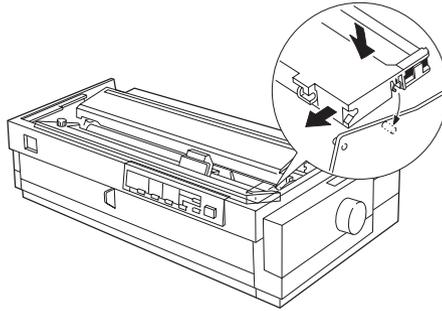
**Warning**

*Never move the printhead while the printer is turned on; this can damage the printer. Also, the print head may become hot during use. Always let it cool before you touch it.*

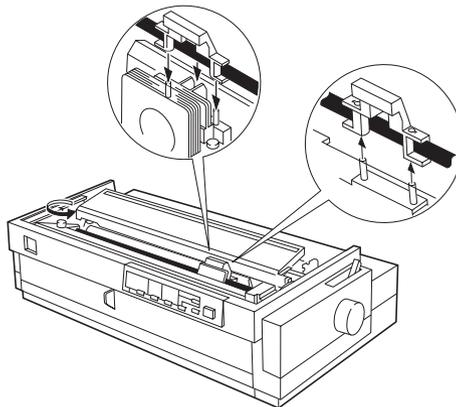
3. Remove the ribbon cartridge from its packaging. Then remove the plastic separator from the middle of the ribbon cartridge and discard the separator.



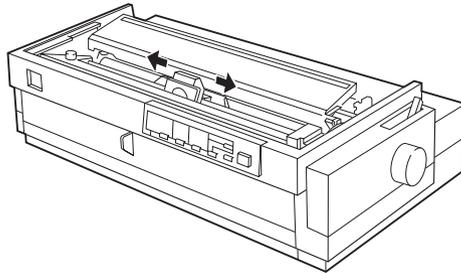
4. Hold the cartridge so that the ribbon-tightening knob is facing up and is on the left. Place the bottom edge of the cartridge into the printer so that the notch on each end of the cartridge fits over the small peg on each side of the printer.



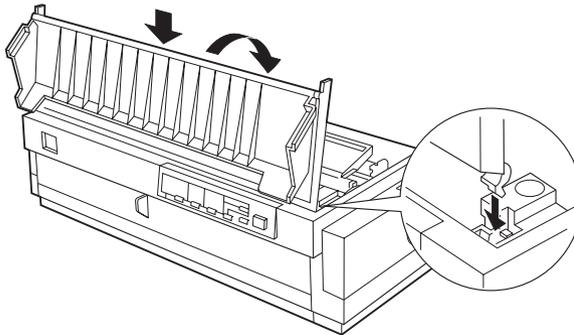
5. Lay the cartridge flat and press gently until it clicks into place on both ends.
6. Lift the ribbon guide and insert it firmly over the metal pins behind the print head. Press down on the guide until it clicks into place. Make sure the ribbon is not twisted or creased and that it is in place behind the print head. Turn the ribbon-tightening knob to remove any slack in the ribbon.



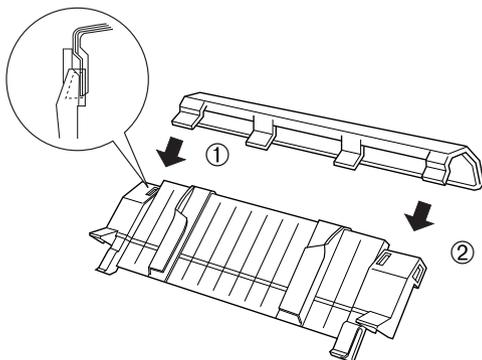
7. Slide the print head from side to side to make sure it moves smoothly.



8. Replace the printer cover by first inserting the front tabs into the slots near the front of the printer; then lower it until it locks into place.



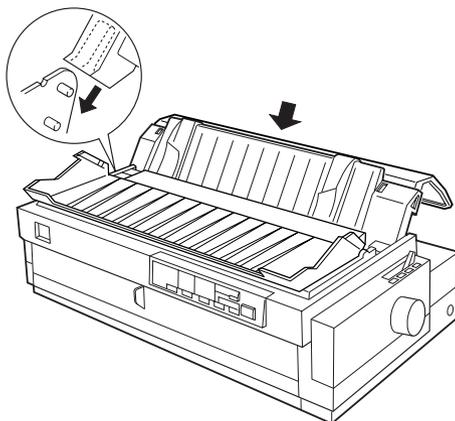
9. Insert the paper separator into the paper guide as shown below.



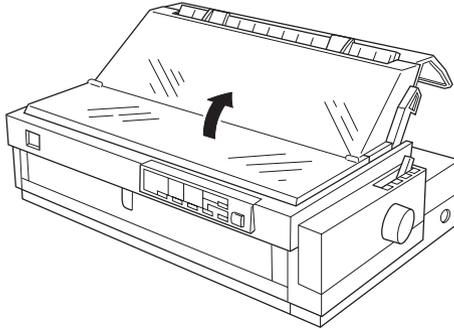
**Note:**

*You may find it easy to insert the paper separator one side at a time. You need not separate the paper guide and the paper separator, in case you need to ship the printer.*

10. Attach the paper guide by sliding the slots on the bottom of the paper guide over the pegs behind the paper tension unit.



11. Lift the paper path guide, and rest it against the paper guide.



**Note:**

*Always close the printer cover before printing. The printer stops printing when the cover is open.*

---

## ***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 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 the appropriate end to the AC inlet on the printer's rear panel.
4. Plug the power cord into a properly grounded electrical outlet.

Before continuing, test the printer to make sure it is functioning properly as described in the next section.

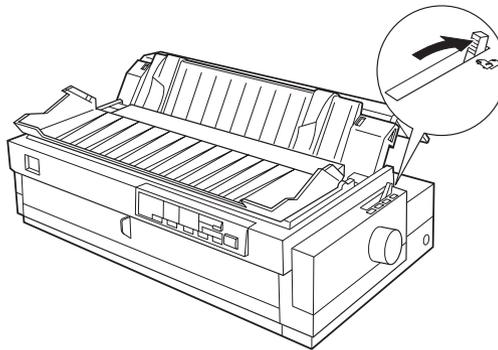
---

## *Running the Self Test*

You can run a self test on the printer in letter quality or draft mode, with either continuous paper or single sheets. You can load the paper 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 more information on paper handling.

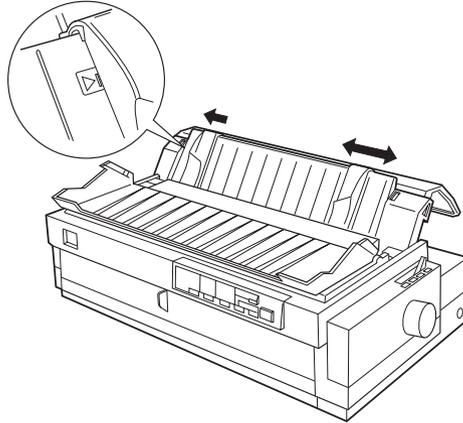
The printer prints the self test in the currently selected font.

1. Make sure the printer is turned off and the paper path guide is open.
2. Move the paper release lever to the single-sheet position.



3. For a letter quality test, hold down the Load/Eject button while you turn on the printer. For a draft printing test, hold down the LF/FF button while you turn on the printer.

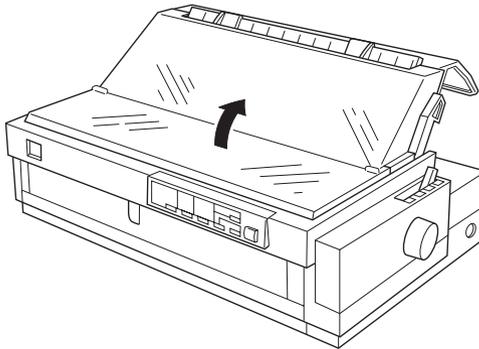
4. Move the left edge guide until it locks in place next to the arrow guide mark. Then adjust the right edge guide to match the width of your paper.



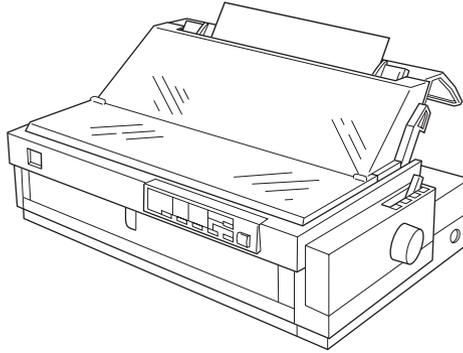
**Caution:**

*Run the self test using paper at least 360 mm (14 inches) wide; otherwise, the print head prints directly on the platen.*

5. Lift the paper path guide, and rest it against the paper guide.



6. Insert a sheet of paper between the edge guides until it meets resistance. Make sure you adjust the edge guides to match the width of your paper. After a few seconds, the printer feeds the paper to the loading position and begins printing the self test.



**Note:**

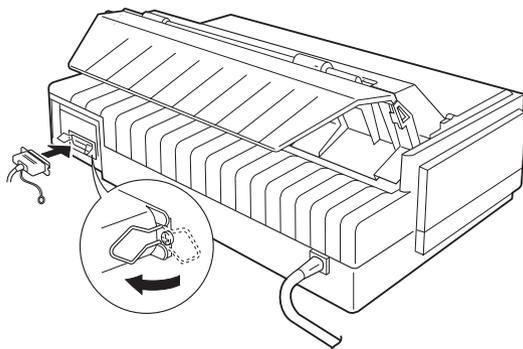
- Always close the printer cover before printing. The printer stops printing when the cover is open.*
  - If you want to temporarily stop printing the self test, press the Pause button. To resume printing, press Pause again.*
7. To end the self test, first press the Pause button. If paper remains in the printer, press the Load/Eject button to eject the page; then turn off the printer. Here is part of a typical self test:

---

## Connecting the Printer to Your Computer

Use an interface cable with a 36-pin connector on the printer end, and a connector that will work with your computer on the other end. See your computer's reference guide for the required connector type. Follow these steps to connect the printer to your computer:

1. Make sure both the printer and computer are turned off.
2. Plug the cable connector securely into the printer's parallel interface connector. Squeeze the wire clips together until they lock in place on both sides of the connector.



**Note:**

*If your cable has a ground wire, connect it to the ground connector beneath the interface connector.*

3. 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.)

---

## ***Installing the Printer Driver***

The EPSON printer driver is software that helps you take full advantage of your printer's capabilities.

The EPSON printer driver disk that came with your printer includes the driver software as well as two utilities to help you control the printer through DOS.

### ***For Microsoft Windows Users***

Before you install the driver, make a backup copy of your driver disk. If you are running Windows 3.1, follow the steps in the next section to install the printer driver. If you are running Windows 95, see page 1-16 for instructions.

#### ***Installing the driver for Windows 3.1 users***

Follow these steps to install the printer driver for Windows 3.1:

1. Make sure Windows is running.
2. Insert the EPSON driver disk into drive A (or B, depending on your computer).
3. From the File menu, choose Run.
4. Type A: SETUP (or B: SETUP); then click OK.
5. Select LQ-2070 ESC/P 2 as the Printer Model and click Continue. The printer driver is installed automatically.
6. Click OK.

The LQ-2070 printer driver is now installed on your computer. Windows will now use the LQ-2070 as the default printer.

If you need to change the default printer or port assignment, use the Printers utility in the Control Panel group.

## *Installing the driver for Windows 95 users*

Follow these steps to install the printer driver using the Windows 95 plug-and play capabilities:

**Note:**

*To install the driver using the Windows 95 plug-and play capabilities, your computer's parallel port must be an IEEE-1284 (ECP or EPP compatible) bidirectional parallel port. See your computer documentation for more information.*

1. Make sure plain paper is loaded in the printer and the printer is connected to the computer's parallel port. (The paper is used to perform a test print in step 11.)
2. Turn off your printer and computer, if necessary.
3. Turn on the printer first; then turn on the computer. Your computer begins loading Windows 95.
4. If you defined a password, enter it at the prompt. You see the New Hardware Found screen.

**Note:**

*If you do not see the New Hardware Found screen, please follow the procedure under "Installing the driver while running Windows 95" on page 1-18 instead.*

5. Make sure your printer model name is displayed on the screen. Then click the Driver from disk provided by hardware manufacturer button. Do not select any of the other buttons.

**Note:**

*The next time you turn on your computer after installing the driver, Windows 95 may display the New Hardware Found screen again. In this case, click the Do not install a driver radio button; then click OK. This screen does not appear again.*

6. Click OK. You see the Install From Disk screen.
7. Insert the Windows printer driver disk in a disk drive.
8. If you inserted the disk in drive A, click OK. Otherwise, change the drive letter in the Copy manufacturer's files from box and click OK.
9. At the next screen you can type a unique name for the printer in the Printer name box. We recommend that you keep the model name as shown. The program will copy the files to your hard disk and add an icon to the Printers folder using the printer name you assign.

To use the printer as the default printer for Windows 95 applications, select Yes. (No is the default setting.)

10. Click the Next button.
11. In the next screen, select YES to print a test page.
12. Click the Finish button.
13. Choose Yes in the test page confirmation dialog if the page printed correctly. If it did not print correctly, choose No and follow the directions on the screen.

To access the driver, see "Checking the printer driver settings," page 1-19.

## *Installing the driver while running Windows 95*

Follow these steps to install the printer driver for Windows 95.

1. In the Desktop window, double-click the My Computer icon.
2. Double-click the Printers folder.
3. Double-click the Add Printer icon.
4. Click the Next button.
5. Select the Local printer or Network printer radio button.
6. Click the Next button.
7. Click the Have Disk button.
8. Insert the floppy disk containing the driver into your computer's floppy disk drive.
9. Type A: WIN95 (or B: WIN95); then click OK.
10. Select the port you want to use with this printer.
11. Click the Next button.
12. Select the Yes or No radio button to make the default printer setting.
13. Click the Next button.
14. Click the Yes radio button to print a test page.
15. Click Finish.
16. In the dialog box that appears, choose Yes if the test page printed satisfactorily. If it didn't print satisfactorily, choose No and follow the directions that appear on your screen.

## *Checking the printer driver settings*

Before you start printing, you should make sure that the driver settings match your document requirements. While many Windows applications override the printer settings made with the driver, some do not.

Be sure to check the following:

- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> Resolution   | The printing resolution in dots per inch (dpi).                |
| <input type="checkbox"/> Paper size   | The size of the paper loaded in the printer.                   |
| <input type="checkbox"/> Orientation  | The direction of printing on the page (portrait or landscape). |
| <input type="checkbox"/> Paper source | Tractor, manual feed, or sheet feeder.                         |

### *For Windows 3.1 users*

Follow these steps to select the appropriate settings:

1. In the Main window, double-click the Control Panel icon.
2. Double-click the Printers icon.
3. Make sure your printer is highlighted, and click the Setup button in the Print Setup menu.
4. Select the paper size you have loaded in the printer from the Paper Size list. If you don't see your paper size in the list, use the arrows on the right to scroll through the list. The diagram on the screen changes according to the paper size you select.
5. Select Portrait or Landscape orientation. The diagram on the screen changes according to the orientation you select.
6. Select the resolution you desire.

7. Select the paper source.
8. Click Options to open the option menu.

You can control intensity by clicking the arrow to darker or lighter. You can control dithering by choosing None, Coarse, Fine, or Line Art.

*For Windows 95 users*

Follow these steps to select the appropriate settings:

1. In the Desktop window, click the Start button.
2. Select Settings; then click Printers.
3. Right-click on your printer icon.
4. Open the Printer menu, and choose Properties.
5. Click on the Paper tab, and select the paper size you have loaded in the printer from the Paper size list. If you don't see your paper size, scroll through the list, and select the correct size. The diagram on the screen changes according to the paper size you select.
6. Select Portrait or Landscape orientation. The diagram on the screen changes according to the orientation you select.
7. Select the paper source.
8. Select the resolution you desire on the Graphics menu.
9. Make any other settings you wish, and click OK when you are finished.

## *For DOS program users*

Most DOS software programs include drivers for EPSON ESC/P 2 printers. Also, DOS programs require you to select from a list of printers to install the printer driver. If the LQ-2070 is not included in the list, contact your software manufacturer to see if there is an updated driver available or select the first printer available from the list below.

LQ-2170  
LQ-1070/1070+  
LQ-870/1170  
LQ-850+/1050+  
LQ-850/1050  
LQ-510/550/1010  
LQ-200  
LQ-500  
LQ-860+/1060+  
LQ-2550  
LQ-2500  
LQ-800/1000  
LQ-1500

See your DOS program's documentation for instructions on selecting the printer driver.

## *DOS printer utilities*

Your printer comes with the EPSON Remote! and EPSON Calibration utilities. You can use EPSON Remote! to make setting changes from your computer instead of using the printer's control panel. Also, you can use EPSON Calibration to properly align your printout.

## Chapter 2

# Paper Handling

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Setting the paper release lever . . . . .	2-2
Using Single Sheets . . . . .	2-4
Loading single sheets with the paper guide . . . . .	2-4
Loading single sheets from the front . . . . .	2-7
Using Continuous Paper . . . . .	2-9
Loading paper with the rear push tractor . . . . .	2-9
Loading paper with the optional tractor unit . . . . .	2-13
Loading paper with the push/pull tractor combination . . . . .	2-27
Removing paper from the tractor . . . . .	2-30
Switching Between Continuous Paper and Single Sheets . . . . .	2-30
Switching to single sheets . . . . .	2-31
Switching to continuous paper . . . . .	2-32
Printing on Special Paper . . . . .	2-32
Adjusting the paper thickness lever . . . . .	2-33
Multipart forms . . . . .	2-34
Labels . . . . .	2-35
Envelopes . . . . .	2-36
Postcards . . . . .	2-36
Roll paper . . . . .	2-36



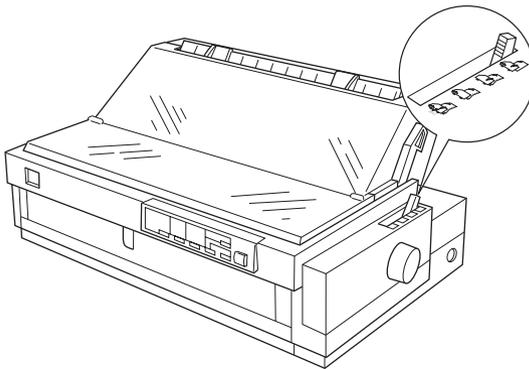
This chapter describes how to:

- ❑ Set the paper release lever
- ❑ Load single sheets
- ❑ Load continuous paper with the rear tractor or the optional tractor(s)
- ❑ Switch between paper-feed methods
- ❑ Print on special paper.

---

## *Setting the paper release lever*

Before you load paper, you must to set the paper release lever for the type of paper and feed method you want to use. The paper release lever has four positions, with icons indicating the type of paper and paper path for each position.



Paper release lever position	Tractor position and purpose
	Single-sheet position—for loading all single sheets (including envelopes and postcards), whether from the front, rear, optional cut-sheet feeders, or roll paper holder.
	Rear push and rear push/pull tractor combination—for loading continuous paper from the rear.
	Front push and front push/pull tractor combination—for loading continuous paper from the front.
	Pull tractor position—for loading continuous paper from the front, rear, or bottom.

**Note:**

- ❑ *Although some arrows show paper loading from the top, the paper actually enters the printer from the rear, even when using the paper guide.*
- ❑ *The push/pull tractor combination is recommended for enhanced paper handling when using continuous paper. See page 2-13 for more details.*

For detailed information about printing on single sheets, see the next section. For detailed information about printing on continuous paper and using an optional tractor, see “Using Continuous Paper,” page 2-9.

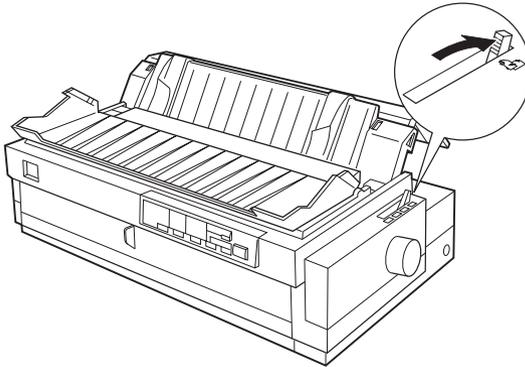
---

## *Using Single Sheets*

You can print on single sheets of paper from 101 to 420 mm (4.0 to 16.5 inches) wide. You can load single sheets from either the top or front of the printer.

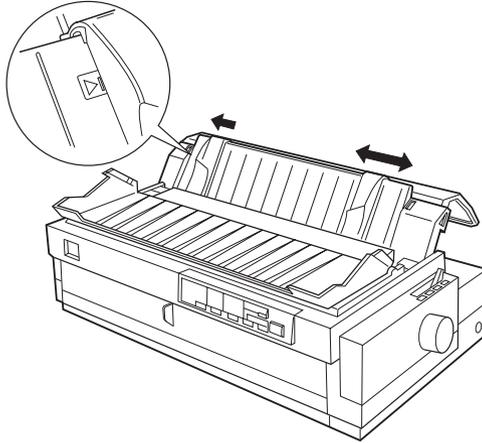
### *Loading single sheets with the paper guide*

1. Move the paper release lever to the single-sheet position. Make sure the paper guide is installed and the paper path guide is open.

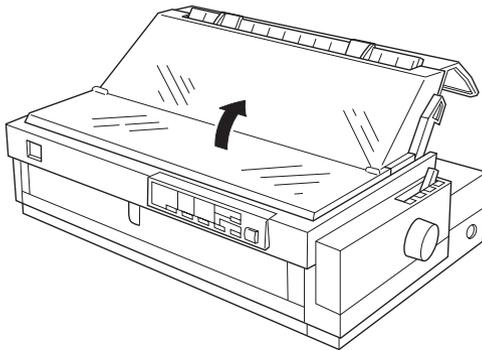


2. Turn on the printer.

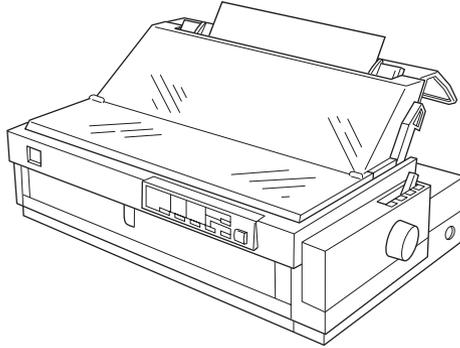
3. Slide the left edge guide until it stops next to the arrow on the paper guide. Then adjust the right edge guide to match the width of your paper.



4. Lift the paper path guide and rest it against the paper guide.



5. Insert the paper firmly between the edge guides until it meets resistance. After a few seconds, the printer advances the paper to the loading position. You are now ready to print.



**Caution:**

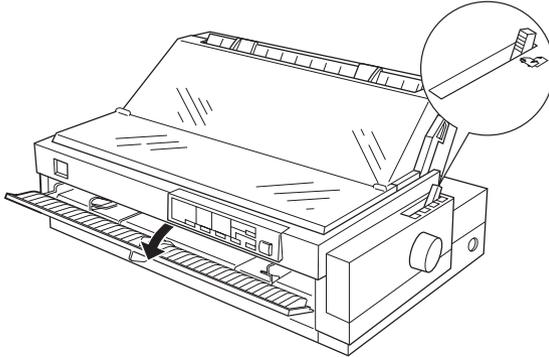
*Do not use the knob on the right side of the printer except to clear paper jams when the printer is turned off. Otherwise, you may damage the printer or cause it to lose the top-of-form position.*

If the platen turns but the printer doesn't load the paper, completely remove the paper and re-insert it.

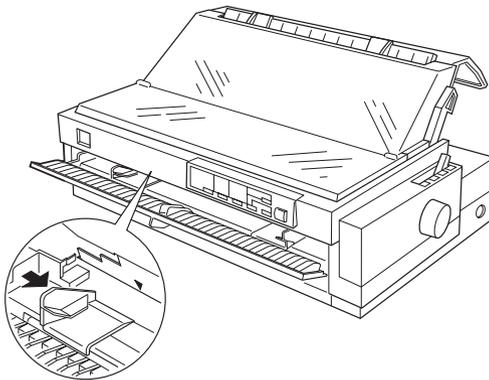
To eject the paper, press the Load/Eject button.

## *Loading single sheets from the front*

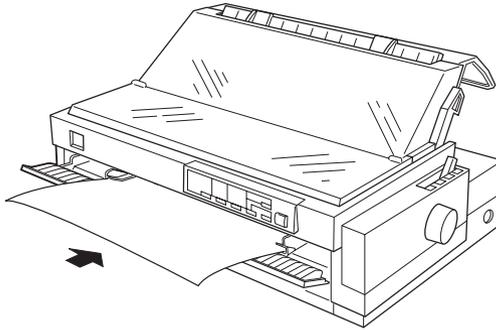
1. Move the paper release lever to the single-sheet position. Make sure the paper path guide rests against the paper guide.



2. Open the front paper guide.
3. Turn on the printer.
4. Position the left edge guide as shown below. (Printing starts at the arrow mark.) See the Appendix for more information on the left margin position. Adjust the right edge guide to match the width of your paper.



5. Insert the paper until it meets resistance. After a few seconds, the printer loads the paper to the loading position. You are now ready to print.



**Caution:**

*Do not use the knob on the right side of the printer except to clear paper jams when the printer is turned off. Otherwise, you may damage the printer or cause it to lose the top-of-form position.*

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

To eject the paper, press the Load/Eject button.

---

## *Using Continuous Paper*

The printer's built-in paper-handling system allows you to load continuous paper using the standard rear push tractor.

In addition to this, you can load continuous paper through the front or bottom using one or more optional tractor units. For more information on using the optional tractor unit, see "Loading paper with the optional tractor unit" on page 2-13.

You can print on continuous paper that is 101 to 406 mm (4 to 16 inches) wide.

**Note:**

*The standard rear push tractor cannot be removed.*



**Caution:**

*Do not load labels through the rear tractor unit. Labels can come off the paper and cause damage. Load labels only through the front or bottom.*

### *Loading paper with the rear push tractor*

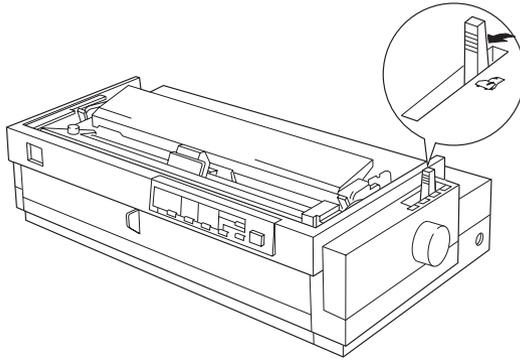
You can use the rear push tractor to load ordinary continuous paper and multi-part forms but not labels. To load labels, see "Loading paper with the optional tractor unit" on page 2-13.

Make sure you align your paper supply with the paper path so the paper feeds smoothly into the printer. Also, make sure the ejected paper does not interfere with the paper about to load.

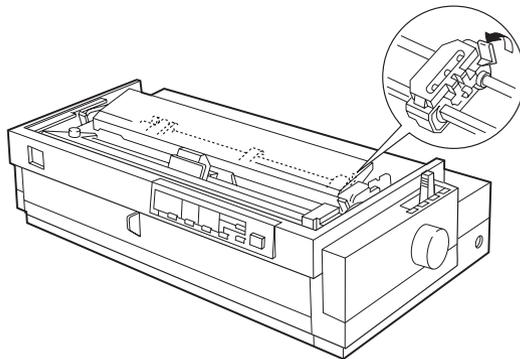
Using the optional pull tractor with the rear push tractor may help prevent paper jams. For more information about using the optional tractor unit, refer to "Loading paper with the optional tractor unit" on page 2-13.

Follow the steps below to load paper with the rear push tractor:

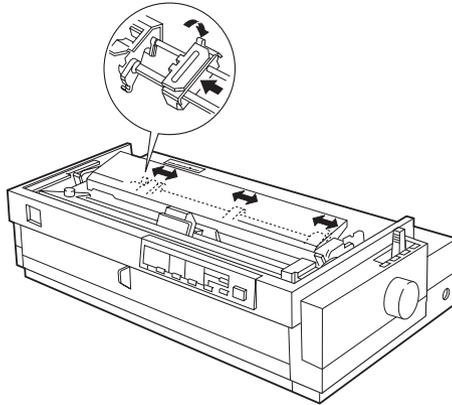
1. Make sure the printer is turned off.
2. Remove the printer cover and paper guide.
3. Make sure the paper release lever is set to the rear push tractor position.



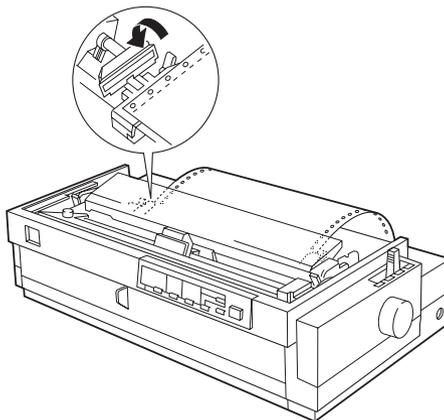
4. Release the sprockets by pushing the sprocket locks forward.



- Slide the left sprocket to the left margin of the paper using the scale on the printer as shown below. (Printing starts at the “0” mark. See the Appendix for more information on the left margin position.) Then slide the right sprocket to match the width of your paper, but do not lock it. Also, move the paper support midway between the sprocket units.



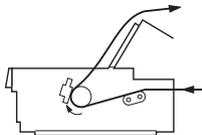
- Make sure your paper has a clean, straight edge. Then open the sprocket covers and fit the holes of the paper over the tractor pins.



7. Close the sprocket covers.
8. Slide the right sprocket to remove any slack in the paper; then lock it in place.
9. Attach the printer cover and paper guide.
10. Slide the left and right edge guides to the center of the paper exit path for smoother paper feeding.
11. Turn on the printer. When the printer receives data, it automatically loads the paper before printing.

**Note:**

- ❑ *Always close the printer cover before printing. The printer stops printing when the cover is open.*
- ❑ *You can also advance the paper to the loading position by pressing the Load/Eject button.*
- ❑ *As you print, make sure the paper advances behind the printer guide as shown below. Make sure the paper path guide rests against the paper guide.*



**Caution:**

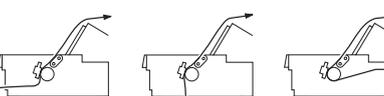
*Do not use the knob on the right side of the printer except to clear paper jams when the printer is turned off. Otherwise, you may damage the printer or cause it to lose the top-of-form position.*

## Loading paper with the optional tractor unit

The printer's paper handling system allows you to load continuous paper through the front or bottom in addition to the rear, if you purchase the optional pull tractor unit.

### Selecting the tractor position and paper path

The table below lists the different ways to feed continuous paper. Always set the paper release lever to the position indicated for the paper feed method you are using.

Tractor position	Paper release lever position	Paper paths
Rear push tractor or rear push/pull		
Front push tractor or front push/pull		
Pull tractor		

#### Note:

- The push/pull tractor combination is recommended for enhanced paper handling.*
- The rear push tractor cannot be removed, but it is deactivated in some paper release lever positions*

Make sure you align your paper supply with the paper loaded in the tractor so the paper feeds smoothly into the printer.

If you 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.

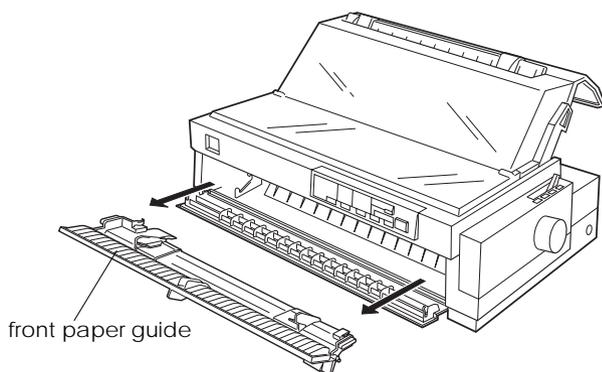
### ***Changing tractor positions***

You can use the optional pull tractor unit as either a front push tractor or a pull tractor; you just change the tractor position according to your paper feeding method.

### ***Installing the tractor in the front push position***

Before you can load continuous paper from the front tractor position, you must first purchase the optional pull tractor unit. You can use the optional pull tractor unit as a front push tractor. Follow the instructions below to install it.

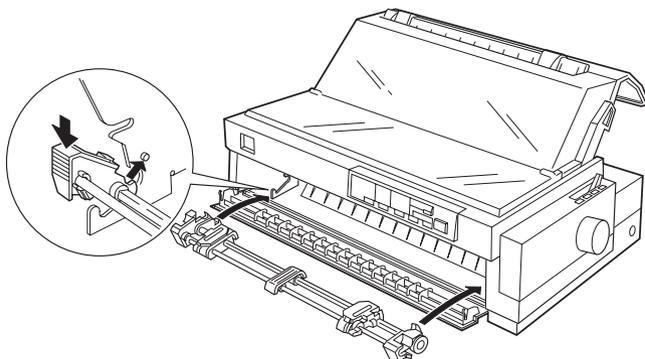
1. Make sure the printer is turned off.
2. Open the front paper guide and remove it by grasping the fins on both sides and pulling it straight out of the printer.



**Note:**

*When loading multipart forms that are bound on only one side by line gluing, always use the rear push tractor. This type of form cannot be fed from the front push tractor.*

3. Push the tractor into the printer's mounting slots as shown below.



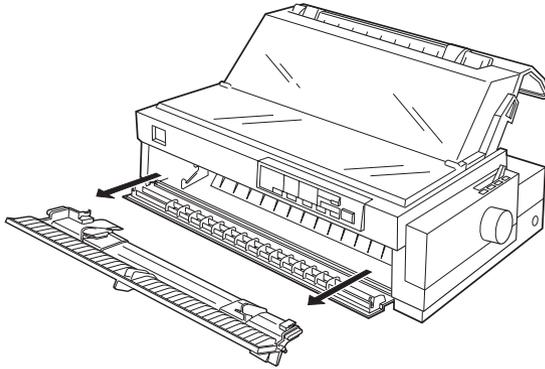
You are now ready to load continuous paper with the front push tractor. See “Loading paper with the front push tractor” on page 2-21 or “Loading paper with the push/pull tractor combination” on page 2-27 for instructions.

### ***Removing the tractor from the front push position***

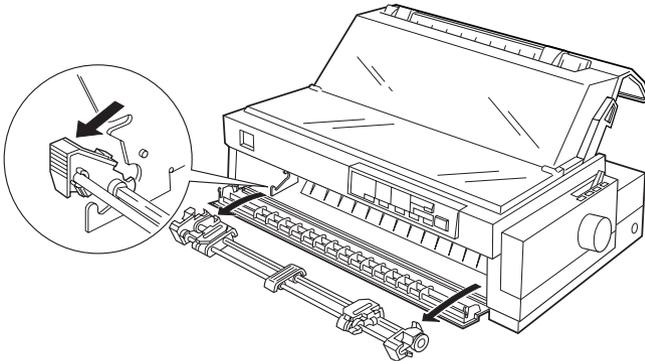
If you want to use the tractor in another position, follow the directions below to remove it. Then see the appropriate section for installation instructions.

1. Make sure the printer is turned off.
2. Remove any paper that is in the feed path.

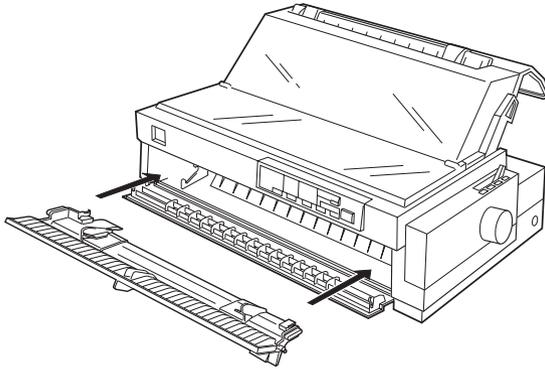
3. Open the front paper guide and remove it by grasping both sides and pulling it straight out of the printer.



4. Press the tractor's lock tabs, tilt it up, and lift it out of the printer.



5. Replace the front paper guide by sliding it along the track until it locks in place.



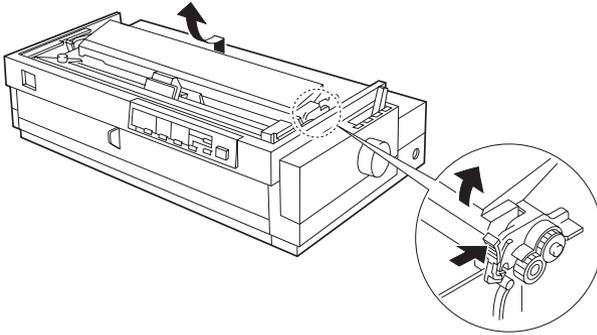
6. Close the front paper guide.

### ***Installing the tractor in the pull position***

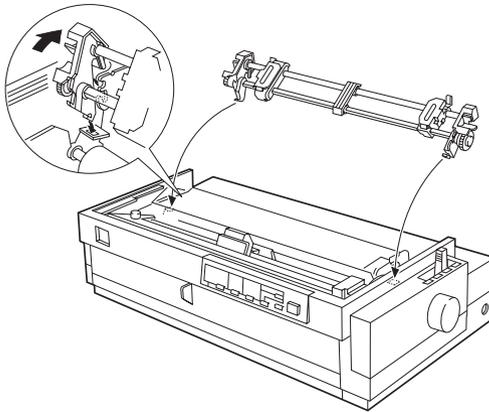
Before you load continuous paper using the pull tractor position, you must first purchase the optional pull tractor.

1. Make sure the printer is turned off.
2. Lift the printer cover and paper guide up and off the printer.

3. Press the tabs on both ends of the clear plastic paper-tension unit, raise the front of the unit, and lift it off the printer.



4. Place the tractor's tabs into the printer's mounting slots, then press the tractor back until it locks into place.



**Note:**

*Check the paper thickness lever position to ensure that it wasn't moved during pull tractor installation. See "Adjusting the paper thickness lever" on page 2-33 for the correct lever position.*

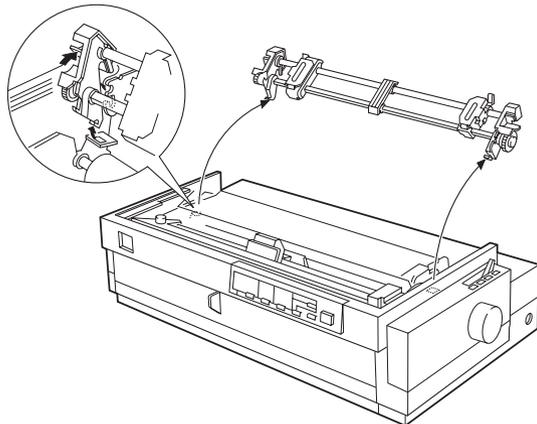
5. Replace the paper guide.

You are now ready to load continuous paper with the pull tractor. See “Loading paper with the pull tractor” on page 2-24 or “Loading paper with the push/pull tractor combination” on page 2-27 for more details.

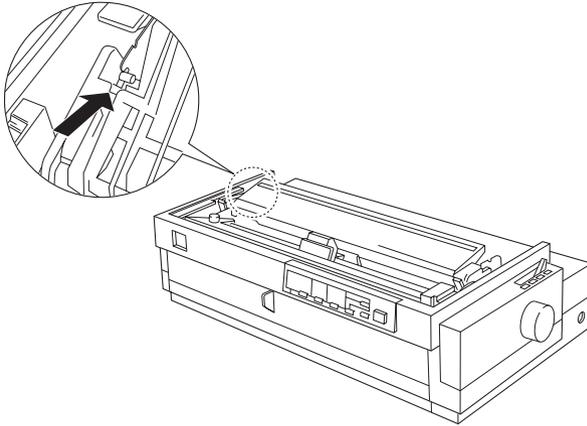
### ***Removing the tractor from the pull position***

If you want to use the tractor in another position, follow the directions below to remove it. Then see the appropriate section for installation instructions.

1. Make sure the printer is turned off.
2. Remove any paper that is in the feed path.
3. Remove the printer cover and paper guide.
4. Hold down the tractor's lock tabs, tilt it forward, and lift it off the printer.



5. Replace the clear plastic paper-tension unit by placing the small pegs into the notches on each side of the printer. Press down until it locks into place.



6. Slide the print head back and forth to make sure it can move freely. If it cannot, the paper-tension unit was incorrectly installed. Remove it and install it again.



**Warning:**

*Never move the print head while the printer is turned on; this can damage the printer. Also, the print head may become hot during use. Always let it cool before you touch it.*

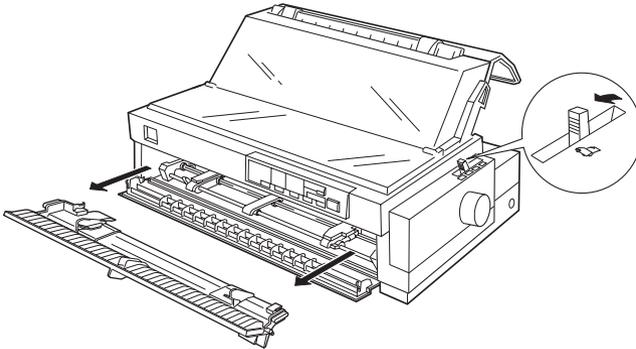
7. Replace the printer cover and paper guide.

## ***Loading paper with the front push tractor***

When you use this paper feed path, you must first purchase the optional tractor unit. Use the optional pull tractor unit as a front push tractor.

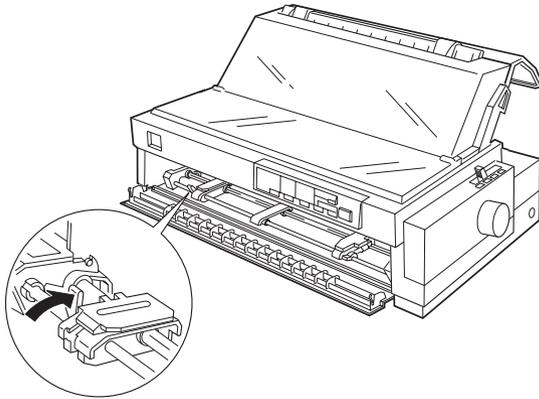
### ***Note:***

- The standard rear push tractor cannot be removed.*
  - When loading multipart forms that are bound or one side only by line glueing, use the rear push tractor. This type of form cannot be fed through the front push tractor.*
1. Make sure the printer is turned off.
  2. Remove the front paper guide.

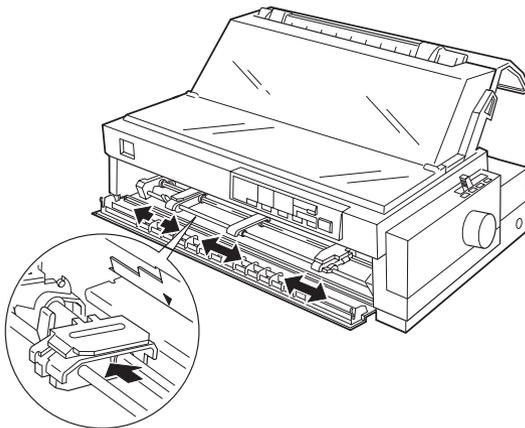


3. Make sure the tractor is in the front mounting slot and the paper release lever is set to the front push tractor position as shown above.

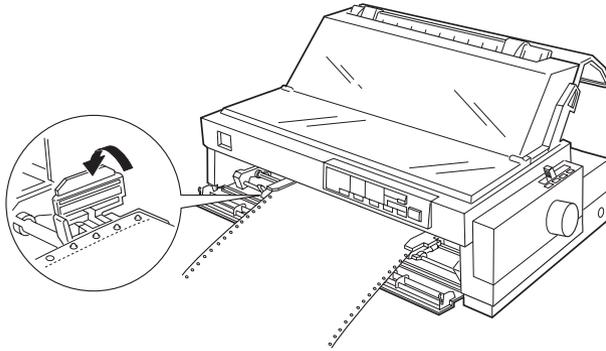
4. Release the sprockets by pushing the sprocket locks up and away from you.



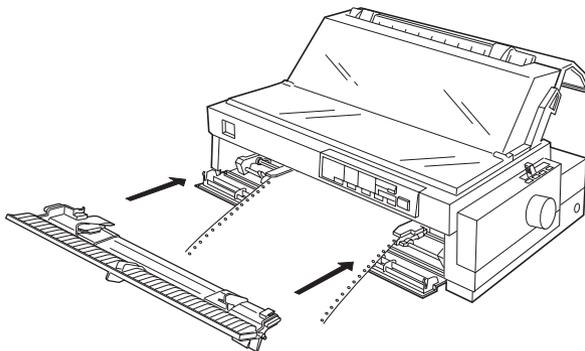
5. Position the left sprocket as shown below. (Printing starts at the arrow mark.) See the Appendix for more information on the left margin position.



6. Lock the sprocket in place. Then slide the right sprocket to match the width of your paper, but do not lock it. Move the paper support midway between the two sprocket units.
7. Make sure your paper has a clean, straight edge. Then open the sprocket covers and fit the holes of the paper, printable side up, over the tractor pins.



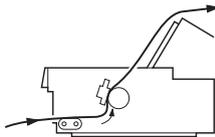
8. Close the sprocket covers.
9. Slide the right sprocket to remove any slack in the paper; then lock it in place.
10. Attach the front paper guide over the paper as shown below.



11. Slide the left and right edge guides to the center of the paper exit path. This helps prevent paper jams.
12. Turn on the printer. When the printer receives data, it automatically loads the paper before printing.

**Note:**

- ❑ *Always close the printer cover before printing. The printer stops printing when the cover is open.*
- ❑ *You can also advance the paper to the loading position by pressing the Load/Eject button.*
- ❑ *As you print, make sure the paper advances behind the printer guide as shown below. Also, make sure the paper path guide rests against the paper guide.*



**Caution:**

*Do not use the knob on the right side of the printer except to clear paper jams when the printer is turned off. Otherwise, you may damage the printer or cause it to lose the top-of-form position.*

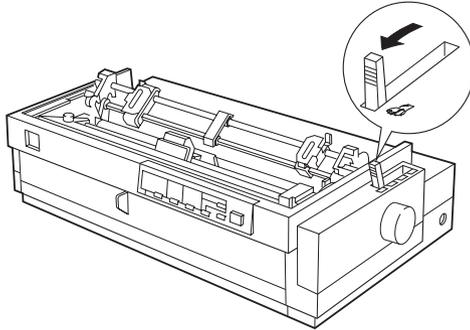
### **Loading paper with the pull tractor**

**Note:**

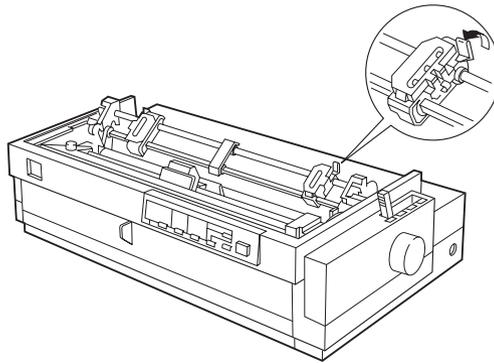
- ❑ *When you use this paper feed path, you must first purchase the optional tractor unit.*
- ❑ *The standard rear push tractor cannot be removed.*

To load continuous paper with the pull tractor, see the following.

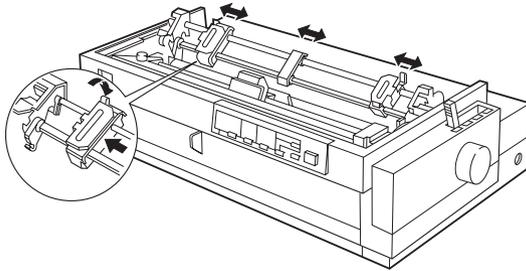
1. Make sure the printer is turned off.
2. Remove the printer cover and paper guide.
3. Make sure the tractor is in the pull tractor position and the paper release lever is set to the pull tractor position.



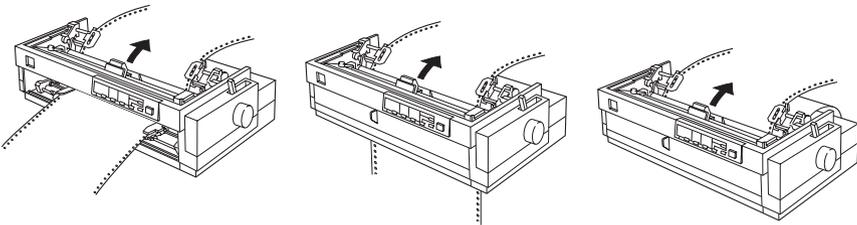
4. Release the sprockets by pulling the sprocket locks toward you.



- Slide the left sprocket to the left margin of the paper using the scale at the rear of the tractor as a guide. (Printing starts at the "0" mark. See the Appendix for more information on the left margin position.) Then slide the right sprocket to match the width of your paper, but do not lock it. Move the paper support midway between the two sprocket units.



- Make sure your paper has a clean, straight edge. Open the sprocket covers and insert paper from either the front, bottom, or rear paper slot. Then fit the holes of the paper over the tractor pins.

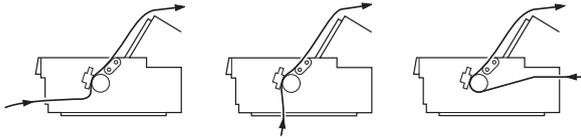


- Close the sprocket covers.
- Slide the right sprocket to remove any slack in the paper; then lock it in place.
- Attach the printer cover and paper guide.

10. Slide the left and right edge guides to the center of the paper exit path. This helps prevent paper jams.
11. Turn on the printer. When the printer receives data, it automatically loads the paper before printing.

**Note:**

- Always close the printer cover before printing. The printer stops printing when the cover is open.*
- You can also advance the paper to the loading position by pressing the Load/Eject button.*
- As you print, make sure the paper advances behind the printer guide as shown below. Also, make sure the paper path guide rests against the paper guide.*



**Caution:**

*Do not use the knob on the right side of the printer except to clear paper jams when the printer is turned off. Otherwise, you may damage the printer or cause it to lose the top-of-form position.*

### ***Loading paper with the push/pull tractor combination***

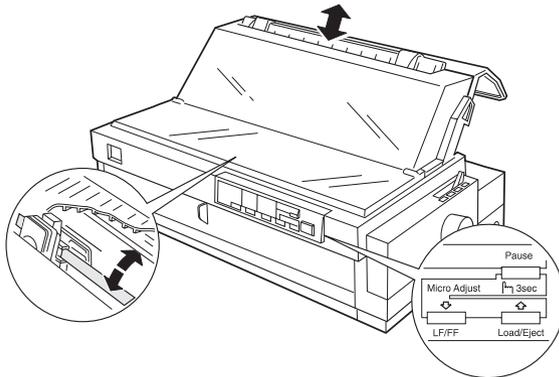
You can load paper in the front or rear push/pull position. When you use the front push and pull tractors in combination, you must first purchase two optional tractor units. Use one pull tractor as a push tractor in the front push tractor position. Use the other in the rear (top) pull tractor position.

**Note:**

*The standard rear push tractor cannot be removed.*

To load paper in the tractors, follow these steps:

1. Make sure the tractors are in the front or rear push/pull tractor position. Also, make sure the paper release lever is set to either the front push or rear push tractor position.
2. Load paper in the front or rear push tractor as described in the appropriate section earlier in this chapter.
3. Push the LF/FF button to advance the paper to the next page.
4. Load paper in the pull tractor as described in the previous section.
5. Move the paper release lever to the pull tractor position, and use Micro Adjust (described in the next chapter) to remove any slack in the paper.



6. Move the paper release lever back to the appropriate push tractor position.
7. Attach the paper guide and printer cover.
8. Slide the left and right edge guides to the center of the paper exit path for a smoother exit.
9. Raise the paper path guide and rest it against the paper guide.

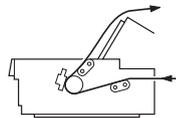
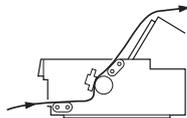


**Caution:**

*Do not use the knob on the right side of the printer except to clear paper jams when the printer is turned off. Otherwise, you may damage the printer or cause it to lose the top-of-form position.*

**Note:**

- Always close the printer cover before printing. The printer stops printing when the cover is open.*
- As you print, make sure the paper advances behind the printer guide as shown below. Also, make sure the paper path guide rests against the paper guide.*



## *Removing paper from the tractor*

1. To remove continuous paper, press the Tear Off/Bin button to feed the paper's perforation to the tear-off edge of the printer cover.

**Note:**

*If the page perforation is not properly aligned with the tear-off edge, you can adjust the tear-off position using Micro Adjust. 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.*

---

## *Switching Between Continuous Paper and Single Sheets*

When using the push tractor in the front or rear position, you can easily switch between continuous and single-sheet printing without removing the paper.

## Switching to single sheets

To switch from continuous paper to single sheets, follow these steps:

1. If any printed sheets remain in the printer, press the Tear Off/Bin button to advance the paper to the tear-off position.
2. Tear off the printed pages.



**Caution:**

- Always tear off paper before back-feeding paper through the printer; back-feeding too many sheets can cause a paper jam.*
  - Never back-feed labels. Labels can easily come off their backing and jam the printer.*
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.
  4. Move the paper release lever to the single-sheet position.
  5. Adjust the edge guides to match the width of your paper.

You can now load single sheets as described in “Using Single Sheets” on page 2-4.

## *Switching to continuous paper*

To switch from single sheets back to continuous paper, follow these steps:

1. If a single sheet is in the paper path, press the Load/Eject button to eject it.
2. Move the paper release lever to the push or pull tractor position.

The printer advances the continuous paper to the loading position when it receives data.

---

## *Printing on Special Paper*

In addition to single sheets and continuous paper, your printer can print on a wide variety of other paper types, such as envelopes, labels, postcards, roll paper, and multipart forms. Before printing on special types of paper, you need to change the paper thickness setting.

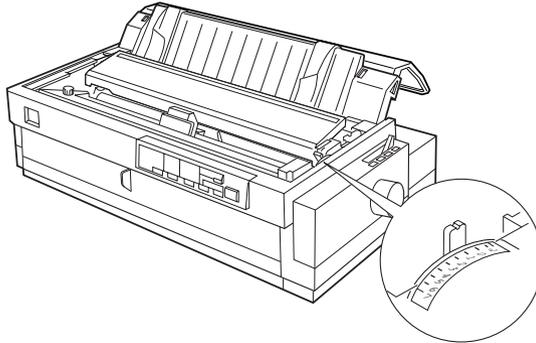


### ***Caution:***

- When printing on labels or multipart forms, make sure that your software settings keep the printing entirely within the printable area.*
- Always return the paper thickness lever to position 0 when you return to printing on ordinary paper.*

## Adjusting the paper thickness lever

Set the paper thickness lever to match the thickness of your paper according to the table below.



Paper type	Paper thickness lever position
Thin paper	0 or 1
Ordinary paper (single sheets or continuous)	0
Multipart forms (carbonless) 2 sheets (original + 1 copy)	1
3 sheets (original + 2 copies)	2
4 sheets (original + 3 copies)	3
Labels, postcards	2
Envelopes*	1 to 6

\* For thin envelopes, such as airmail, select position 1 or 2; for thick envelopes, select position 5 or 6; for regular envelopes, select 3 to 5.

## Multipart forms

Your printer can print on both single-sheet and continuous multipart forms. You can load single-sheet multipart forms in both the front and top paper slots. You can load continuous multipart forms from the front, rear, and bottom.

**Note:**

*Use only carbonless multipart forms.*

You can use multipart forms of up to four parts, including the original. Make sure you set the paper thickness lever to the proper position.

You load multipart forms the same way as single sheets or continuous paper. For best results with continuous multipart forms, you should use the tractors in a push/pull combination. The paper may be loaded from the front or rear. When loading multipart forms from the rear, an optional pull tractor is required. When loading multipart forms from the front, two optional tractors are required (the rear push tractor cannot be removed).

For details, see “Using Single Sheets” or “Using Continuous Paper,” earlier in this chapter. Also be sure to set the loading position as described in “Using Micro Adjust” in Chapter 3.



**Caution:**

- ❑ *When printing multipart forms, make sure the printing stays entirely within the printable area of the forms. (For more information on the printable area, see the Appendix.)*
- ❑ *Use multipart forms only under normal operating conditions.*
- ❑ *When loading single-sheet multipart forms that are bound at the top by line glueing, use the top or front paper path. (If you plan to print on forms that are joined at the side by line glueing, use the front paper path.)*
- ❑ *Load multipart forms that are free of wrinkles.*

## Labels

When selecting labels for printing, 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 the shiny backing sheet will not feed properly.

Load labels from either the front or bottom (not rear) paper slots with the tractor in the pull tractor position. You load them the same way that you load continuous paper, except you set the paper thickness lever to position 2. See “Using Continuous Paper” on page 2-9 for details.



### **Caution:**

- ❑ *Never feed labels backward with the Load/Eject or Tear Off/Bin buttons. Labels can easily peel off the backing and jam the printer.*
- ❑ *Since labels are especially sensitive to temperature and humidity, use them only 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 only from the top paper slot, following the guidelines below:

- ❑ Always set the paper thickness lever to match the thickness of the envelope.
- ❑ Always feed an envelope by pushing the wide edge into the printer until it meets resistance.



### **Caution:**

- ❑ *Use envelopes only under normal operating conditions.*
- ❑ *Printing on the edge of an envelope can damage the print head. Make sure the printing stays entirely within the printable area of the envelopes. See the Appendix for details.*

## Postcards

You can load postcards from the front and top paper slots. Load cards only under normal operating conditions. Set the printer to Card mode using the Tear Off/Bin button. See the Tear Off/Bin light and button descriptions in Chapter 3 for more information.

### **Note:**

- ❑ *When the length of the card is less than 14.8 cm (5.8 inches), use the top paper slot. See the Appendix for details.*
- ❑ *Use postcards only under normal operating conditions.*

## Roll paper

Load roll paper from the top paper slot. See “Roll Paper Holder” on page 4-9 for more information.

## Chapter 3

# Using the Printer

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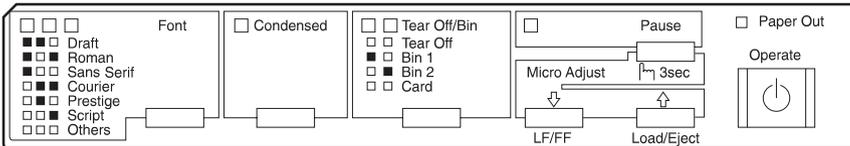
Control Panel . . . . .	3-2
Lights . . . . .	3-2
Buttons . . . . .	3-4
Other control panel features . . . . .	3-6
Using the Default Setting Mode . . . . .	3-7
Selecting an instruction sheet language . . . . .	3-7
Changing the default settings . . . . .	3-7
Printer functions . . . . .	3-9
Using Quiet Mode . . . . .	3-13
Using Micro Adjust . . . . .	3-13
Using the Tear-Off Function . . . . .	3-15
Using auto tear-off mode . . . . .	3-16
Using the Tear Off/Bin button . . . . .	3-17
Using Bi-d Adjustment . . . . .	3-18
Printing Barcodes . . . . .	3-18

This chapter covers basic operation of your printer, including the control panel lights and buttons, the printer's default settings, and other functions.

---

## Control Panel

The indicator lights on the control panel let you monitor the current status of the printer, and the buttons let you control many printer settings.



## Lights

Paper Out (red)

On when the printer runs out of paper or paper is jammed.

Pause (orange)

On when the printer is not ready to print data, paper is out or jammed, the cover is open, or you press the Pause button to pause printing. The Pause light flashes when the Micro Adjust function is enabled or the print head is too hot.

## Tear Off/Bin (two lights, green)

The Tear Off/Bin selection status is displayed by two lights:

<input type="checkbox"/>	<input type="checkbox"/>	Tear off position
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bin 1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Bin 2
<input type="checkbox"/>	<input type="checkbox"/>	Card

= Flashing,  = On,  = Off

### **Note:**

- Both lights are off when continuous paper is not in the tear-off position.*
- You can print postcards in Card mode.*

## Font (three lights, green)

The font selection status is displayed by three font lights on the control panel:

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Draft
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Roman
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sans Serif
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Courier
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Prestige
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Script
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Others*

= On,  = Off

\* Others means the font selected in the Default Setting mode.

## Condensed (green)

On when you select condensed printing from the control panel.

## **Buttons**

### Operate

Press this button to turn the printer on or off.

### Pause

Press this button to temporarily stop printing and to resume printing. To enable the Micro Adjust function, hold down this button for at least 3 seconds when the printer is in standby mode. Press it again to disable this function. See “Using Micro Adjust” later in this chapter for details.

### Load/Eject

Press this button to load single-sheet or continuous paper to the loading position. However, the printer normally loads paper automatically. If single-sheet paper is already in the loading position, use this button to eject the sheet. If continuous paper is in the loading or tear-off position, press this button to feed it backward to the standby position.

### LF/FF (line feed/form feed)

Press this button briefly to feed the paper forward one line. Hold the button down to eject a single sheet of paper or advance continuous paper to the top of the next page. You can also use this button to load a single sheet of paper from the cut-sheet feeder or to feed continuous paper from the standby position to the loading position.

## Tear Off/Bin

Press this button to move continuous paper to the tear-off position. Press it again to move the next page to the top-of-form position. When cut sheets are used, press this button to select the cut-sheet feed bin number. When you print on postcards, press this button to select Card mode.

## Font

Press this button to select one of the following fonts: Draft, Roman, Sans Serif, Courier, Prestige, Script, or Other. Other means the font selected in the Default Setting mode.

## Condensed

Press this button to print condensed characters. Press it again to return to normal character printing.

### **Note:**

*The typestyle samples on the control panel are meant as guides only; actual printed results may differ slightly.*

## *Other control panel features*

The control panel also gives you access to several other functions. To activate the functions listed below, turn on the printer while pressing one of buttons, as follows:

Load/Eject	Performs a letter quality self test. See Chapter 1 for details.
LF/FF	Performs a draft self test. See Chapter 1 for details.
Condensed	Activates the Default Setting mode. See “Using the Default Settings Mode” in this chapter.
Load/Eject and LF/FF	Prints a data dump. All the input data are printed as hexadecimal numbers and corresponding characters. See the note at the beginning of Chapter 6.
Pause	Starts the Bi-d adjustment. See “Using Bi-d Adjustment” in this chapter.
Font and Condensed	Activates the Quiet mode. See “Using Quiet Mode” in this chapter.

---

## ***Using the Default Setting Mode***

The default settings control many basic functions of the printer. While you can control many of these functions through your software or printer driver, you may sometimes need to change a default setting from the printer's control panel through the Default Setting mode.

To enter the Default Setting mode and change settings, hold down the Condensed button while turning on the printer. The printer prints an instruction sheet. Follow the instructions on this sheet and in this section. The current setting for the printer are indicated by an arrow on the instruction sheet.

### ***Selecting an instruction sheet language***

Follow these steps to select the language in which you want to print the rest of the Default Setting mode instructions:

1. Press the Font button until the Font lights indicate the language you want to select.
2. Press the Tear Off/Bin button to save your selection.
3. Press the Condensed button to print the instruction sheet.

### ***Changing the default settings***

Follow the steps below to select printer functions and change settings. The available functions and settings are listed on the instruction sheet and in the table on the next page.

1. Press the Font button until the Font lights indicate the item you want to change.
2. Press the Tear Off/Bin button until the setting you want to use for that function is indicated by the Tear Off/Bin and Pause lights.

3. Repeat steps 1 and 2 for any additional functions you want to change. Each time you press the Tear Off/Bin button, the printer saves the settings you selected.
4. When you finish changing the settings, turn off the printer.

The following table lists the functions you can change and their available settings. Each function is described after the table.

Function	Settings
Character table	Standard model: Italic, PC 437, PC 850, PC 860, PC 863, PC 865, PC 861, BRASCII, Abicom, ISO Latin 1, Roman 8 All other models: Italic, PC 437, PC 437 Greek, PC 850, PC 852, PC 853, PC 855, PC 857, PC 864, PC 866, PC 869, ISO Latin 1T, ISO 8859-7, MAZOWIA, Code MJK, Bulgaria, Estonia, PC774, ISO Latin 2, PC 866 LAT.
International character set for Italic table	Italic U.S.A, Italic France, Italic Germany, Italic U.K., Italic Denmark, Italic Sweden, Italic Italy, Italic Spain
Font *	OCR-B, Orator, Orator-S, Script C, Roman T, Sans Serif H
Page length for front tractor	3, 3.5, 4, 5.5, 6, 7, 8, 8.5, 11, 70/6, 12, 14, 17 inches
Page length for rear tractor	3, 3.5, 4, 5.5, 6, 7, 8, 8.5, 11, 70/6, 12, 14, 17 inches
High speed draft	On, Off
Print direction	Auto, Bi-d., Uni-d.
Software	ESC/P2, IBM 2391 plus
Interface mode	Auto, Parallel I/F, Option I/F
Auto interface wait time	10 sec., 30 sec.
Input buffer	On, Off
Skip-over-perforation	On, Off

Function	Settings
Auto tear off	On, Off
Auto line feed	On, Off
Auto CR **	On, Off
AGM **	On, Off
0 slash	On, Off
Buzzer	On, Off
Roll paper	On, Off

\* The font selected in the Default Setting mode corresponds to Other on the control panel. The following fonts are not selectable in the Default Setting mode: Draft, Roman, Sans Serif, Courier, Prestige, and Script.

\*\* These settings are effective when IBM2391 plus emulation is selected.

## ***Printer functions***

This section describes each of the printer functions.

### ***Character table***

Your printer has 11 standard character tables as well as tables for 20 other countries. See the Appendix for character samples.

### ***International character set for Italic table***

You can change 8 characters in the Italic character table to suit your printing needs. Since these characters are often used in other languages, they are named after countries and are referred to as international character sets. See the Appendix for character samples.

### ***Font***

You can select 6 fonts in Default Setting mode. The following fonts are indicated on the control panel and can't be selected by default settings: Draft, Roman, Sans Serif, Courier, Prestige, and Script.

### *Page length for front and rear tractor*

For paper fed through the front or rear tractor, you can set the page length to one of the following: 3, 3.5, 4, 5.5, 6, 7, 8, 8.5, 11, 70/6, 12, 14, or 17 inches.

### *High speed draft*

When you select high speed draft, the printer can print up to 300 cps (characters per second) at 10 cpi in draft mode. If you select normal speed draft, it prints up to 275 cps at 10 cpi in draft mode.

### *Print direction*

You can select auto print direction, unidirectional printing, or bidirectional printing. Printing is normally bidirectional; however, unidirectional printing allows for precise vertical printing alignment.

### *Software*

When you select ESC/P 2, the printer operates in the EPSON ESC/P 2 mode. When you select IBM, the printer emulates an IBM printer.

### *Interface mode*

The printer has two interfaces: parallel and Type-B (optional). You can choose parallel, optional, or automatic for the interface mode.

### *Auto interface wait time*

The printer determines which interface is receiving data and switches to that interface until the end of the print job (when no data is received from the selected interface for the amount of time specified). You can specify either 10 seconds or 30 seconds.

### *Input buffer*

The input buffer stores data sent from your computer. The input buffer can store up to 64KB of data, so you can free your computer for other tasks while the printer prints. When the buffer is off, the buffer cannot store data, so the computer must wait for the printer to print each character before sending the next.

### *Skip over perforation*

This feature is available only when continuous paper is selected. When you turn on this feature, the printer provides a one-inch (25.4 mm) margin between the last line printed on one page and the first line printed on the next page. Because most application programs set their own top and bottom margins, you should use this feature only if your program does not provide them.

### *Auto tear-off*

When you use continuous paper with the front or rear push tractor, this feature advances the paper perforation to the tear-off position, where you can then easily tear off the printed page. When the printer again receives data, it automatically reverses the paper to the top-of-form position and starts printing, so you can use all of the next sheet. When auto tear-off is disabled (off), you must perform the tear-off function manually by pressing the Tear Off/Bin button. See “Using the Tear Off Function” later in this chapter for more information.

### ***Auto line feed***

When auto line feed is on, the printer accompanies each carriage return (CR) code received with a line feed (LF) code.

### ***Auto carriage return***

When the auto carriage return feature is on, each line feed (LF) code or ESC J (*n*/180-inch line feed) code is accompanied by a carriage return (CR) code and the printer moves the next print position to the left margin. When this feature is off, you must send the CR code after the line feed code to move the print position to the left margin. This feature is available in IBM emulation mode only.

### ***Alternate Graphic Mode (AGM)***

When AGM is on, the printer can use some advanced graphics commands like those available in ESC/P2 mode. When you select IBM 2390/2391 mode, this setting is available. The default setting is off.

### ***0 slash***

The zero character has a slash (0) when this setting is on; it has no slash (0) when the setting is off. This allows you to easily distinguish between an uppercase “O” character and a zero.

### ***Buzzer (Beep)***

The printer beeps when some errors occur. See “Troubleshooting” in Chapter 6 for more information. If you do not want the printer to beep, turn this setting off.

### ***Roll paper***

When you turn on this mode, roll paper is not recognized as single-sheet paper even if the paper release lever is set to the single-sheet position. This means that the paper is not ejected and advanced forward to the next page with the LF/FF button.

---

## *Using Quiet Mode*

The Quiet mode allows you to print with less noise, however printing speed is reduced.

To enter Quiet mode, hold down the Font and Condensed buttons while turning on the printer.

You can only set this mode when you turn on the printer. You cannot set this in the Default Setting mode. When you turn off the printer, Quiet mode is canceled. Each time you want to use this mode, you must turn the printer on as described in this section.

---

## *Using Micro Adjust*

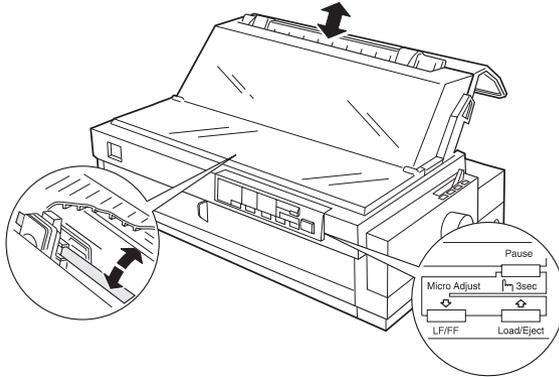
The Micro Adjust feature allows you to move paper forward or backward in 1/360-inch increments. You can use this feature to adjust the loading and tear-off positions.

This section explains how to use Micro Adjust. See the next section for information on adjusting the tear-off position.

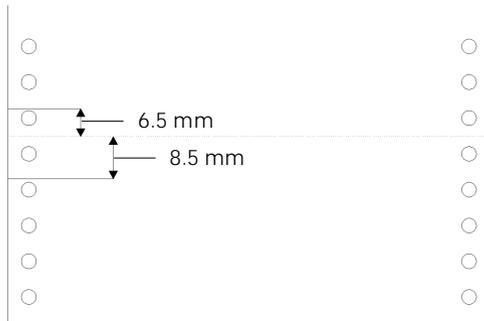
The loading position is the position of the paper after it has been automatically loaded by the printer. If your printing appears too high or low on the page, you can change the loading position with the Micro Adjust feature as follows:

1. Make sure the printer is turned on. If necessary, lift up the printer cover so you can see the paper position.
2. Load either continuous or single-sheet paper. (Load continuous paper by pressing the Load/Eject button.)
3. Hold down the Pause button for three seconds. The Pause light starts flashing.

4. Press the Load/Eject [ $\uparrow$ ] button to move the loading position down on the page, or press the LF/FF [ $\downarrow$ ] button to move the loading position up on the page.



5. For continuous paper, mark a point 6.5 mm above the perforation and position the mark on the paper so it aligns with the top of the plastic ribbon guide. This gives you an 8.5 mm top margin.



**Note:**

- ❑ *The printer has a minimum and a 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.*
6. Press the **Pause** button or send data to the printer to leave the **Micro Adjust** mode.

**Note:**

*For both cut sheet and continuous paper, the printer remembers this new position even after it has been turned off and back on.*

---

## ***Using the Tear-Off Function***

After you have finished printing, you can use the tear-off feature to advance continuous paper on the push tractor 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 so you can save paper that would normally be lost between documents.

You can use the tear-off feature in two ways: by setting the default setting to select auto tear-off mode, or by pressing the **Tear Off/Bin** button on the control panel.

If the perforation between pages is not aligned with the tear-off edge, you can adjust the tear-off position using the Micro Adjust feature as described in the previous section.



**Caution:**

- ❑ *Never use the tear-off feature to reverse-feed labels; they may come off their backing and jam the printer.*
- ❑ *The tear-off feature can be used only when paper is mounted on the front or rear push tractor.*
- ❑ *Never reverse-feed continuous paper when using the pull (top) tractor; the paper could come off the pull (top) tractor and jam the printer.*

## *Using auto tear-off mode*

When you select the auto tear-off mode default setting, the printer advances continuous paper to the tear-off position when you finish printing.

The printer advances paper to the tear-off position only when the printer receives a full page of data or a form-feed command and no more data is received for three seconds.

Select tear-off using the Default Setting mode as described earlier in this chapter. Also make sure the page length for continuous paper is selected correctly in the Default Setting mode. Be sure you turn off the printer to exit from the Default Setting mode, and then turn it on again.

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

3. When you resume printing, the printer automatically feeds the paper back to the loading position and begins printing. If the perforation does not meet the tear-off edge, you can adjust the tear-off position using the Micro Adjust feature as described in the previous section.

You can leave auto tear-off mode on even when you are using single sheets because the mode is disabled when you move the paper release lever to the single-sheet position.

**Note:**

*Set auto tear-off mode to off in the Default Setting mode, or avoid touching the Tear Off/Bin button when using the pull (top) tractor.*

### ***Using the Tear Off/Bin button***

Except when using the pull (top) tractor, you can use the Tear Off/Bin button to advance continuous paper to the tear-off position by following the steps below:

1. Make sure printing has finished. Then press the Tear Off/Bin button until the two lights on the control panel start flashing. The printer advances the paper to the tear-off edge.
2. Tear off all printed pages. If the perforation is not aligned with the tear-off edge, adjust the tear-off position using the Micro Adjust feature. See “Using Micro Adjust,” earlier in this chapter.
3. When you resume printing, the printer 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/Bin button.)

---

## *Using Bi-d Adjustment*

When using bidirectional printing, you may notice that the lines in your printout are not properly aligned. To correct this problem, use the printer's Bi-d Adjustment mode as follows:

1. Make sure continuous paper is loaded in the printer.
2. Hold down the **Pause** button while you turn on the printer. The instructions for adjusting Bi-d alignment are printed, along with the first set of alignment patterns.
3. Follow the instructions on the printout.
4. After completing Bi-d adjustment, turn off the printer.

---

## *Printing Barcodes*

Your printer has powerful barcode printing capabilities and includes the following resident barcode fonts: EAN-13, EAN-8, Interleaved 2 of 5, UPC-A, UPC-E, Code 39, Code 128, and POSTNET. See the Appendix for more information about the Barcode Print command.

## Chapter 4

---

# Using Printer Options

Cut-Sheet Feeders . . . . .	4-2
Installing the high capacity cut-sheet feeder . . . . .	4-2
Loading paper with the high capacity cut-sheet feeder . . . . .	4-4
Installing the double bin cut-sheet feeder . . . . .	4-6
Switching between continuous paper and the cut-sheet feeder . . . . .	4-7
Selecting single-sheets, postcards, or envelopes . . . . .	4-8
Pull Tractor . . . . .	4-9
Roll Paper Holder . . . . .	4-9
Interface Cards . . . . .	4-12
Installing an interface card . . . . .	4-12
The C82305* and C82306* serial interface cards . . . . .	4-14

This chapter describes how to use optional equipment with your printer, including cut-sheet feeders, a pull tractor, a roll paper holder, and interface cards.

---

## ***Cut-Sheet Feeders***

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

Printer model	High capacity (Bin 1)	Second bin (Bin 2)
LQ-2070	C80673*	C80674*

The asterisk (\*) is a substitute for the last digit, which varies by country. Contact your local EPSON dealer for the part number in your country.

By connecting both cut-sheet feeders, you can operate them as a double bin cut-sheet feeder. This allows you to load two different types of paper. See “Installing the double bin cut-sheet feeder” on page 4-6.

Before you install your cut-sheet feeder, assemble it by following the instructions in the manual that comes with it.

**Note:**

*The second bin cut-sheet feeder can only be used in combination with the high capacity cut-sheet feeder.*

### ***Installing the high capacity cut-sheet feeder***

1. Make sure the printer is turned off.
2. Remove the paper guide and the printer cover.

3. If the optional tractor is installed in the pull tractor position, remove it. Make sure the paper tension unit is not installed.

**Note:**

*Store the paper guide, optional pull tractor, and paper tension unit in a safe place; you will need to reinstall them if you remove the cut-sheet feeder.*

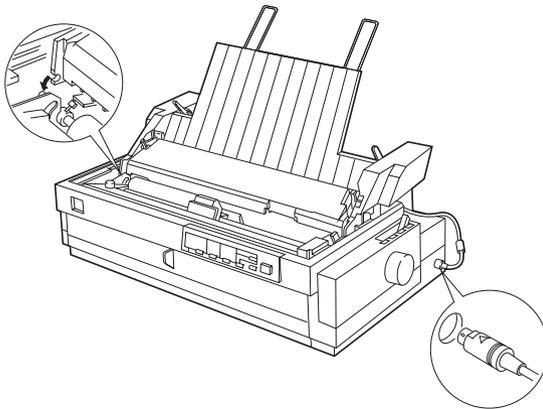
4. Gently move the print head to the ribbon installation position.



**Warning:**

*Never move the printhead while the printer is turned on; this can damage the printer. Also, the print head may become hot during use. Always let it cool before you touch it.*

5. Hold the cut-sheet feeder in both hands and on both sides of the feeder. Fit the notches over the mounting posts on the printer. Lower the cut-sheet feeder until it rests on the printer.



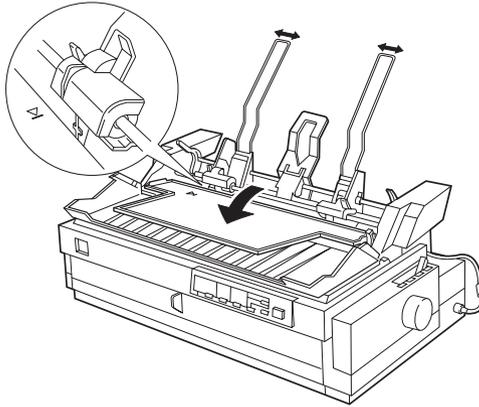
6. Insert the cable into the connector as shown above.
7. Replace the printer cover.

You are now ready to load paper with your cut-sheet feeder. To remove the cut-sheet feeder, reverse the steps above.

## ***Loading paper with the high capacity cut-sheet feeder***

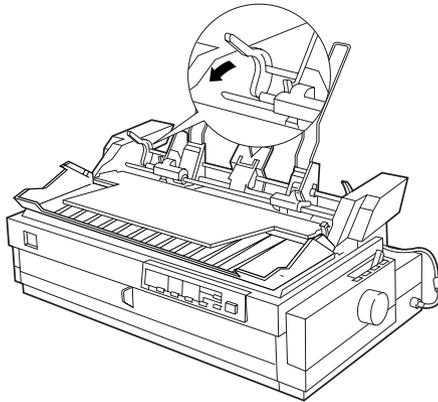
Load paper using the high capacity cut-sheet feeder as follows:

1. Turn off the printer.
2. Push down the center support. Slide the left paper guide so it is aligned with the arrow mark on the back of the center support.



3. Next, slide the right paper guide to match the width of your paper. Slide the paper stacker midway between the paper guides.

4. Pull the paper-set levers all the way forward until the paper guides retract and lock open to allow for paper loading.



5. Fan a stack of paper (up to 150 sheets); then tap the side and bottom of the stack on a flat surface to even it up.

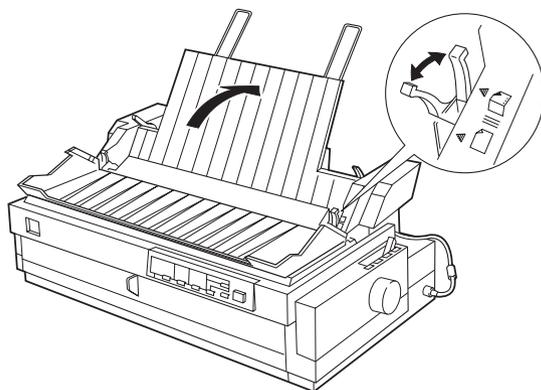


**Caution:**

*Do not use labels in the cut-sheet feeder.*

6. Insert the paper along the left paper guide. The printable side of the paper should face the back of the printer.
7. 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. Lock the guide into place.
8. Push back the paper-set levers to clamp the paper against the guide rollers.

9. Lift up the center support and select single sheet or continuous paper by moving the paper selection lever as shown below.



**Note:**

*When the cut-sheet feeder is installed, you can still load single sheets using the top paper guide or the front paper slot.*

The cut-sheet feeder loads paper when you send data to the printer (as long as the Pause light is not on). You can also load paper by pressing the Load/Eject button.

### ***Installing the double bin cut-sheet feeder***

You can connect the high capacity cut-sheet feeder to the second bin cut-sheet feeder to create a double bin cut-sheet feeder. See the cut-sheet feeder manuals for more information.

You cannot use the second bin cut-sheet feeder without the high capacity cut-sheet feeder.

1. Install the assembled double bin cut-sheet feeder on the printer. See “Installing the high capacity cut-sheet feeder” earlier in this chapter.

2. Select the bin number by pressing the Tear Off/Bin button. The light of the currently selected bin comes on.

**Note:**

*You may be able to specify the bin number using your application programs. See your software manuals for details.*

## ***Switching between continuous paper and the cut-sheet feeder***

You can easily switch between continuous paper and cut-sheet feeder operation without removing the continuous paper.

### ***Switching to continuous paper***

1. If any single sheets are in the paper path, press the Load/Eject button to eject them.
2. Move the paper release lever to the push tractor position.
3. Move the paper selection lever to the continuous paper position.

**Note:**

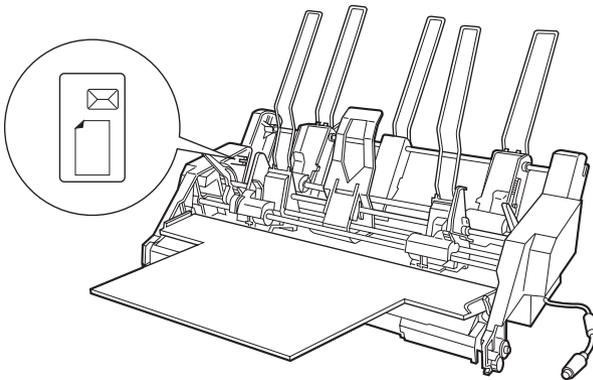
*When you print several pages of continuous paper, guide the paper over the center support and out the back of the printer as it prints.*

## *Switching to the cut-sheet feeder*

1. If any printed continuous paper remains in the printer, press the Tear Off/Bin button to advance the paper to the tear-off position.
2. Tear off the printed pages.
3. Press the Load/Eject button. The printer feeds the paper backward to the standby position. The paper is still attached to the push tractor but is no longer in the paper path.
4. Move the printer's paper release lever to the single-sheet position.
5. Move the cut-sheet feeder's paper selection lever to the single-sheet position.

## *Selecting single-sheets, postcards, or envelopes*

You can select either single-sheet paper, postcards, or envelopes using the lever on the first bin. You'll see the icons next to the lever. Move the lever to the proper position before loading your paper.



---

## ***Pull Tractor***

The optional pull tractor (C80032\*) provides easy continuous paper handling. (The asterisk(\*) is a substitute for the last digit of the product number, which varies by country.) You can use the optional pull tractor unit as a front push tractor.

The pull tractor is especially useful with continuous multipart forms. It may be used in combination with the rear push tractor. Also, two pull tractors may be used in a front push/pull combination. See Chapter 2 for instructions.

**Note:**

*You cannot remove the rear push tractor.*

---

## ***Roll Paper Holder***

The optional roll paper holder (#8310) allows you to use your printer with 8.5-inch roll paper like that used with telex machines. Before you use roll paper, set the default setting of roll paper to on. See “Using the Default Setting Mode” in Chapter 3 for details.

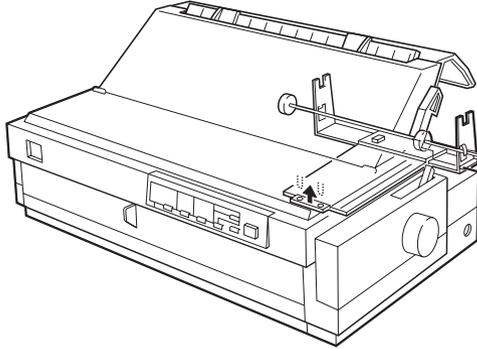
To use the roll paper holder, follow the steps below.

**Note:**

*This option is not available in all countries.*

1. Turn off the printer and make sure the paper release lever is at the single-sheet position.

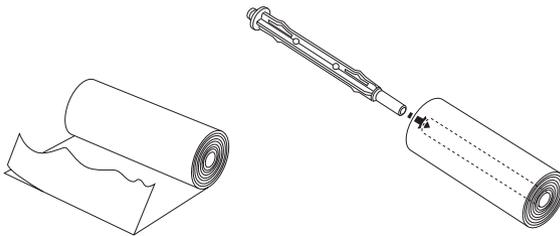
2. Position the roll paper holder beneath the printer as shown below. Fit the two holes in the base onto the two positioning pegs on the bottom of the printer.



**Caution:**

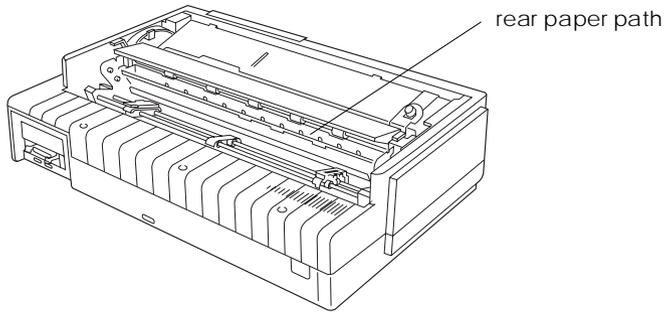
*Be careful to avoid dropping the roll paper holder when lifting the printer. Only the printer's weight holds it in place.*

3. Cut the leading edge of the roll paper straight across. Slide the roll paper holder shaft through the center of the paper roll.

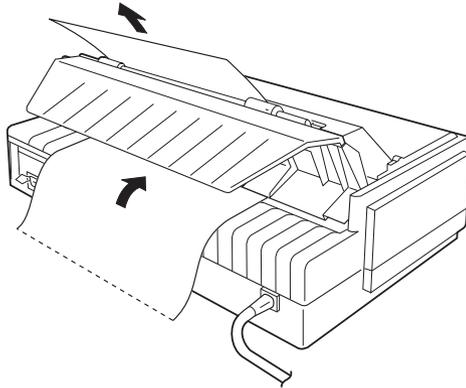


4. Set the shaft and paper roll onto the roll paper holder so that paper feeds from the bottom of the roll.

5. Bring the leading edge of the paper up over the rear push tractor and insert it into the paper path until you feel resistance.



6. Install the paper guide and the printer cover.
7. Turn on the printer. The roll paper loads automatically.



---

## ***Interface Cards***

You can use optional interface cards to supplement your printer's built-in parallel interface. The EPSON interface cards below are compatible with your printer. (Not all interfaces are available worldwide.)

Model number	Card type
C82305* / C82306*	Serial interface
C82307* / C82308*	32KB intelligent serial interface
C82310* / C82311*	32KB intelligent parallel interface
C82312*	LocalTalk interface
C82313*	32KB IEEE-488 interface
C82314*	Coax interface
C82315*	Twinax interface
C82331*	Ethernet interface

The asterisk (\*) is a substitute for the last digit, which varies by country.

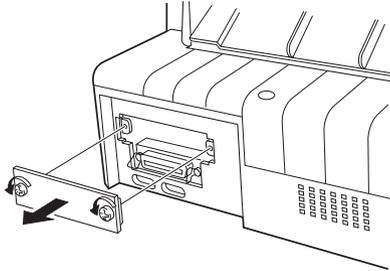
If you are unsure whether you need an optional interface or would like to know more about interfaces, contact your dealer.

### ***Installing an interface card***

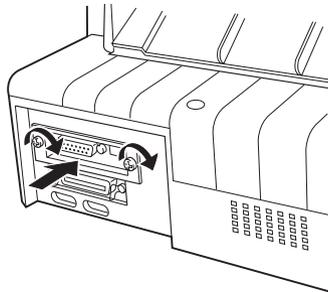
Follow the steps below to install an optional interface card.

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

2. Remove the screws securing the shield plate to the back of the printer and remove the plate.



3. Slide the interface card along the slots on both sides of the interface compartment. Push it in firmly to make sure you fully insert the connector at the back of the interface card into the printer's internal socket. Then re-insert the screws and tighten them.



To remove the interface card, reverse the steps above.

## *The C82305\* and C82306\* serial interface cards*

To use the C82305\* or C82306\* serial interface card, see the sections below for information on the correct baud rate, handshake timing, and error handling. For all other data transfer conventions, such as word structure and communications protocol, see your interface card manual.

### *Selecting a baud rate*

You can select from the following baud rates: 300, 600, 1200, 2400, 4800, 9600, and 19200 bps (bits per second). To set the baud rate, see the bit-rate selection table in your interface card manual.

### *Handshake timing*

When the unused 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) to indicate that it cannot receive data. When the unused area increases to 512 bytes, the printer outputs an X-ON code or sets the DTR flag to 0 (SPACE) to indicate that it is ready to receive data.

### *Error handling*

When the printer detects a parity error, it prints an asterik (\*). The printer ignores all other errors, including framing and overrun errors.

*Chapter 5*

---

***Maintenance and Transportation***



Cleaning the Printer . . . . . 5-2

Replacing the Ribbon . . . . . 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. Follow these steps:

1. Make sure the printer is turned off. Then remove any paper as well as the paper guide. Also remove the optional tractor and cut-sheet feeders, if installed.
2. Use a soft brush to carefully brush away all dust and dirt from the outer case.
3. If the outer case or paper guide is still dirty, clean it with a soft, clean cloth dampened with mild detergent dissolved in water. Keep the printer cover in place and close the paper-guide cover 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 and 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 if lubrication is needed.*

---

## Replacing the Ribbon

When printing becomes faint, you need to replace the ribbon cartridge. Use the EPSON ribbon cartridge or pack listed below for best results. A ribbon pack, containing ribbons only, is also available. The ribbons are used to replace the worn ribbons in the cartridge.

Genuine EPSON ribbons are designed to work properly with your EPSON printer; their high quality ensures proper operation and a long life for the print head and other printer parts. Using any other ribbon may damage your printer.

Printer model	Ribbon cartridge	Ribbon pack
LQ-2070	S015086	S010033

To replace the ribbon cartridge, follow the steps in “Installing the Ribbon Cartridge” in Chapter 1.



**Warning:**

*If the printer has been used recently, the print head may be hot. Let it cool before attempting to replace the ribbon.*

**Note:**

- The ribbon pack can be replaced only four times, after which you must replace the ribbon cartridge itself.*
- The availability of the ribbon pack varies by country.*
- Do not use a ribbon cartridge designed for 9 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. Unplug the power cord from the electrical outlet; then disconnect the interface cable from the printer.
3. Remove the paper guide.
4. Remove the optional tractor, cut-sheet feeder, or roll-paper holder if installed.
5. Remove the ribbon cartridge.
6. Remove the paper-tension unit. Attach the protective locking clips to the paper-tension unit, and then replace the paper-tension unit.
7. Replace the transportation screw.
8. Repack the printer, ribbon cartridge, paper guide, and power cord in the original packing materials and place them in the printer's original box.

## Chapter 6

# Troubleshooting

---

Power Supply . . . . .	6-2
Power is not being supplied . . . . .	6-2
Printing . . . . .	6-3
The printer does not print . . . . .	6-3
The print is faint or uneven . . . . .	6-5
Dots are missing in printed characters or graphics . . . . .	6-5
Printed characters are not what you expect . . . . .	6-6
The print position is not what you expect . . . . .	6-6
Paper Handling . . . . .	6-7
Single sheets do not feed properly . . . . .	6-7
Continuous paper does not feed properly . . . . .	6-8
Options . . . . .	6-9
The paper does not feed properly with the cut-sheet feeder . . . . .	6-9
Continuous paper does not feed properly when using the tractors in a push/pull position . . . . .	6-11



Most printer problems have simple solutions.

First, you should check the operation of your printer using the self test, as described in Chapter 1. If the self test works properly, the problem probably lies in the computer, software, or interface cable. If the self test does not work, contact your dealer or qualified service person for assistance.

**Note:**

*If you are an experienced user or a programmer, you can print a hexadecimal dump to isolate communication problems between the printer and computer. To print a hex dump, turn off the printer. Next, hold down the LF/FF and Load/Eject buttons while you turn on the printer. Then send data from your computer. The printer prints all the codes it receives in hexadecimal format.*

---

## **Power Supply**

This section explains solutions for problems related to the power supply.

### ***Power is not being supplied***

---

#### **The lights on the control panel do not light up.**

---

If your power cord is not permanently attached to the printer, check that the power cord is properly plugged into the printer.

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

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

Plug another electrical device, such as a lamp, into the outlet to determine whether the outlet is operating properly.

---

**The lights come on briefly and then go off. The lights stay off even when the power is turned on again.**

---

Check that the printer's voltage rating matches the voltage of your electrical outlet. If the voltages do not match, unplug the printer and contact your dealer immediately. Do not reconnect the power cord to an electrical outlet.

---

## ***Printing***

See this section if you have problems printing.

### ***The printer does not print***

---

**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. Make sure the cable meets both the printer and computer specifications.

---

**The Pause and Paper Out lights are flashing and the printer beeps three times.**

---

The printer may be out of paper. Load paper in the printer.

---

**The Pause light is on and nothing is printed.**

---

Press the Pause button to turn off the Pause light and resume printing.

Check that the printer cover is closed.

---

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

---

The ribbon cartridge may not be installed properly. Follow the steps in Chapter 1 to make sure it is installed correctly.

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

The paper thickness lever may be set incorrectly. Make sure it is set for the type of paper you are printing on.

---

**The printer makes a strange noise, beeps five times, abruptly stops printing, and all the control panel lights flash.**

---

Turn off the printer and let the print head cool. Then, check for a paper jam, a ribbon jam, or other problems. Try to print again. If the printer still does not print correctly, contact your dealer.

---

**The printer beeps several times.**

---

An error has occurred. Turn off the printer and turn it on again.

If the printer beeps three times, check to see if the paper has run out or the printer cover is open.

If the printer beeps five times, check for a paper jam and make sure the paper release lever is in the correct position.

If the printer beeps once, you may have tried an invalid control panel operation. Review the control panel functions in Chapter 3.

If the printer still does not work correctly, turn it off and contact your dealer or qualified service person.

## *The print is faint or uneven*

---

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

---

The ribbon cartridge may not be installed properly. See Chapter 1 for installation instructions.

### **The printout is faint.**

---

The ribbon may be worn out. Replace the ribbon cartridge as described in Chapter 1.

The paper thickness lever may not be set properly. See “Adjusting the paper thickness lever” in Chapter 2.

## *Dots are missing in printed characters or graphics*

---

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

---

Print the self test as described on page 1-11. If the self test prints correctly, check the ribbon cartridge.

The print head may be damaged. Stop printing and contact your dealer to have the print head replaced.

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

---

Either there is too much slack in the ribbon or the ribbon has come loose. Reinstall the ribbon cartridge as described in Chapter 1.

## *Printed characters are not what you expect*

---

### **The typesyles or characters you sent with your software did not print.**

---

Check that the software is correctly configured for your printer. For instructions, see “Setting Up Your Printer Driver” in Chapter 1.

### **The font selected on the control panel does not print.**

---

Your software may be overriding your control panel setting. Select the font in your software program.

## *The print position is not what you expect*

---

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

---

You can adjust the loading position using the LF/FF button in the micro-adjust mode. See “Using Micro Adjust” in Chapter 3.

### **Page length does not match the length of the paper.**

---

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

If you are using continuous paper, change the page length using the Default Setting mode. See “Changing the default settings” in Chapter 3.

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

---

Skip-over-perforation may be on. Set skip-over-perforation to off in the default setting mode. See “Changing the default settings” in Chapter 3.

---

## *Paper Handling*

See this section if a paper problem occurs.

### *Single sheets do not feed properly*

---

#### **Paper does not feed.**

---

Continuous paper may be left in the printer. Remove the continuous paper. Set the paper release lever to the single-sheet position and insert a new sheet.

---

#### **Paper feeding is crooked or the paper jams.**

---

Turn off the printer and pull out the paper. Make sure the edge guides are set correctly. Insert a new sheet straight into the paper guide. Be sure you're using the right type of paper. See the paper specifications in the Appendix.

Make sure that the printer cover is closed.

Make sure the paper release lever and paper thickness lever are set correctly.

---

#### **Paper does not eject completely.**

---

Use the LF/FF button to eject the page.

Make sure the printer cover is closed.

The paper may be too long. Use paper that is within the specified range. See the paper specifications in the Appendix.

## *Continuous paper does not feed properly*

---

### **The tractor does not feed the paper.**

---

Check that the paper release lever is pulled forward to the continuous paper position. If not, move the lever to the correct position.

The paper may have come off the tractor. Re-attach the paper to the tractor.

### **Paper feeding is crooked or the paper jams.**

---

Make sure the paper guide is in the upright position, and the paper release and paper thickness levers are set correctly.

The position of your paper supply may be preventing it from feeding straight. Make sure the paper supply is not obstructed.

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

Make sure the printer cover is closed.

Make sure the tractor is installed correctly.

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

Check that the paper size and thickness are within the specified ranges. See the paper specifications in the Appendix.

The pull tractor and push tractor sprockets are not aligned correctly. When using both tractors, be sure that the sprockets on both are positioned evenly.

The paper may have too much slack. Adjust the position of the sprockets to take up any slack along the width of the paper. Remove slack lengthwise by rotating the knob of the pull tractor.

---

**The paper does not eject properly.**

---

Tear off the paper entering the printer, then press the LF/FF or Load/Eject button to feed the paper forward. See “Using the Tear-Off Function” in Chapter 3.

---

**When you switch between single sheets and continuous paper, the printer beeps several times and the Pause light comes on.**

---

You may have tried to change the paper release lever position while paper was still in the printer. Return the paper release lever to the original position and eject the paper. Then change the lever position.

---

**Options**

See this section if you have problems with optional equipment.

***The paper does not feed properly with the cut-sheet feeder***

---

**The paper does not feed.**

---

The cut-sheet feeder may be incorrectly installed. Reinstall it as described in Chapter 4.

You may have loaded too many sheets in the cut-sheet feeder’s bin. Make sure the bin contains no more than 150 sheets.

Paper may be jammed near the print head. Look for a paper jam and remove it.

Make sure the edge guide positions on the paper guide of the cut sheet feeder are correct. Position the edge guides at the diamond-shaped guide marks.

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

---

**Two or more sheets feed at one time.**

---

You may have loaded too many sheets in the cut-sheet feeder's bin. Make sure the bin contains no more than 150 sheets.

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

The paper may not have been stored properly. Too much humidity can cause paper to stick together.

---

**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 the paper thickness lever is set correctly.

Make sure the paper guides are set correctly and your paper is the proper size and quality. See the Appendix for paper specifications.

---

**One page of your document has printed on two pages.**

---

Check that the page-length setting and lines-per-page setting in your software are correct. Also see “Changing the default settings” in Chapter 3.

---

**The desired paper type does not load when switching between the cut-sheet feeder and a push tractor.**

---

The paper release lever may not be in the proper position. Pull the lever forward to load continuous paper or push the lever back to load single sheets.

*Continuous paper does not feed properly when using the tractors in a push/pull position*

---

**Paper feed is crooked or jams.**

---

The pull tractor and push tractor sprockets may not be aligned correctly.

The paper may have too much slack, Adjust the position of the sprockets to remove any slack along the width of the paper. Remove any slack lengthwise by rotating the knob of the pull tractor.



*Appendix*

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***Specifications, Command Summary,  
and Character Tables***

Printer Specifications . . . . . A-2

    Printing . . . . . A-2

    Paper . . . . . A-4

    Paper alignment . . . . . A-7

    Printable area . . . . . A-8

    Mechanical . . . . . A-9

    Electrical . . . . . A-10

    Environmental . . . . . A-11

    Safety approvals . . . . . A-11

    CE marking . . . . . A-12

    Interface specifications . . . . . A-12

Using Commands . . . . . A-17

    Sending printer commands . . . . . A-17

    Using the command summary . . . . . A-17

Commands Arranged by Topic . . . . . A-18

    General operation . . . . . A-18

    Paper feeding . . . . . A-18

    Page format . . . . . A-19

    Print position motion . . . . . A-20

    Font selection . . . . . A-21

    Font enhancement . . . . . A-23

    Character handling . . . . . A-24

    Spacing . . . . . A-27

    Graphics . . . . . A-27

    Bit image . . . . . A-28

    Barcode . . . . . A-29

Character Tables . . . . . A-32

    International Character Sets . . . . . A-32

    Graphics Character Tables . . . . . A-32



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# *Printer Specifications*

## *Printing*

**Printing method:** 24-pin impact dot matrix

**Printing speed:**

Quality	Characters per inch	Characters/second
High speed draft	10	300
Draft	10	275
	12	330
	15	413
Draft condensed	17	236
	20	275
Letter quality	10	92
	12	110
	15	138
Letter quality condensed	17	157
	20	183

\* The paper thickness lever position or an overheated print head may affect the printing speed.

**Printable columns:**

Character sizes	Maximum printed characters per column
10 cpi	136
12 cpi	163
15 cpi	204
17 cpi condensed	233
20 cpi condensed	272

<b>Printing direction:</b>	Bidirectional logic-seeking for text and graphics
<b>Line spacing:</b>	1/6 inch or programmable in increments of 1/360 inch
<b>Paper feed speed:</b>	45 msec in 1/6-inch feed 0.127 m/sec. in continuous feed (5.0 inches/sec. in continuous feed)
<b>Buffer:</b>	0K byte or 64K byte* * Depends on default settings
<b>Character tables:</b>	11 standard, 20 other character tables
<b>Character sets:</b>	14 international character sets and one legal character set
<b>Bit map fonts:</b>	10 bit map fonts
<b>Scalable fonts:</b>	4 scalable fonts
<b>Barcode fonts</b>	8 fonts

# Paper

<b>Single sheets (CSF):</b>	<b>both front and rear entry</b>
Width:	101 to 420 mm (4.0 to 16.5 inches)
Length:	Front: 147 to 420 mm (5.8 to 16.5 inches) Rear: 101 to 420 mm (4.0 to 16.5 inches)
Thickness:	0.065 to 0.14 mm (0.0025 to 0.0055 inch)
Weight:	52.3 to 90 g/m <sup>2</sup> (14 to 24 lb)
<b>Single sheets (multipart)*:</b>	<b>both front and rear entry</b>
Width:	101 to 420 mm (4.0 to 16.5 inches)
Length:	Front: 147 to 420 mm (5.8 to 16.5 inches) Rear: 101 to 420 mm (4.0 to 16.5 inches)
Copies:	1 original + 3 copies
Thickness:	0.12 to 0.32 mm (0.0047 to 0.013 inch)
Weight:	40 to 58 g/m <sup>2</sup> (12 to 15 lb)
Jointing:	Line glue at the top of form (single side line glue is available only with front entry)

\*Use under normal operating conditions.

<b>Envelopes*:</b>	<b>rear entry only</b>
Size:	No. 6: 166 × 92 mm (6.5 × 3.6 inches) No. 10: 240 × 104 mm (9.5 × 4.1 inches)
Thickness:	0.16 to 0.52 mm (0.0063 to 0.020 inch)
Weight:	45 to 91 g/m <sup>2</sup> (12 to 24 lb)

\*Use under normal operating conditions.

<b>Postcards*:</b>	<b>both front and rear entry</b>
Width:	105 to 148 mm (4.13 to 5.83 inches)
Length:	Front: 148 mm (5.83 inches) Rear: 105 to 148 mm (4.13 to 5.83 inches)
Thickness:	0.22 mm (0.0087 inches)
Weight:	192 g/m <sup>2</sup> (51 lb)

\*Use under normal operating conditions.

**Continuous paper  
(single sheet and multipart): front, rear, and bottom entry**

Width:	101 to 406 mm (4 to 16 inches)
Length:	101 to 559 mm (4 to 22 inches)
Copies:	1 original + 3 copies
Thickness:	0.065 to 0.32 mm (0.0025 to 0.013 inch)
Weight (not multipart):	52.3 to 82 g/m <sup>2</sup> (14 to 22 lb)
Weight (one sheet of multipart):	40 to 58 g/m <sup>2</sup> (12 to 15 lb)
Jointing:	Point glue or paper staple (both sides)

**Continuous paper  
with labels:**

**front and bottom entry**

Label size:	23.8 × 63.5 mm (15/16 × 2.5 inches) minimum
Base sheet width:	101 to 406 mm (4 to 16 inches)
Base sheet length (one page):	101 to 559 mm (4 to 22 inches)
Base sheet thickness:	0.07 to 0.09 mm (0.0028 to 0.0035 inch)
Total thickness:	0.16 to 0.19 mm (0.0063 to 0.0075 inch)
Label weight:	68 g/m <sup>2</sup> (17 lb)

**Roll paper:**

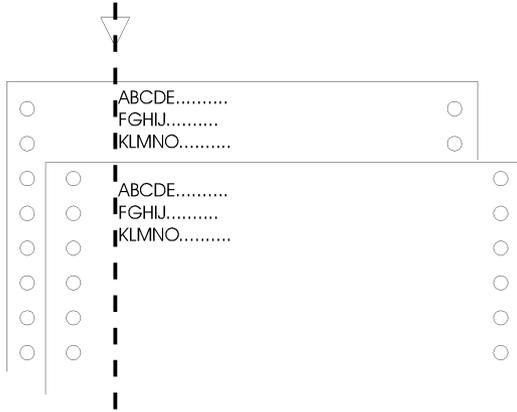
**rear entry only**

Width:	216 mm (8.5 inches)
Thickness:	0.07 to 0.09 mm (0.0028 to 0.0035 inch)
Weight:	52.3 to 82 g/m <sup>2</sup> (14 to 22 lb)

## Paper alignment

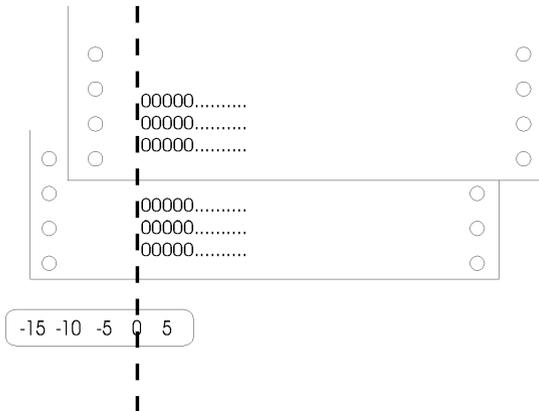
### Front paper alignment

Printing starts at the arrow mark. The unprintable area is to the left of the arrow mark.



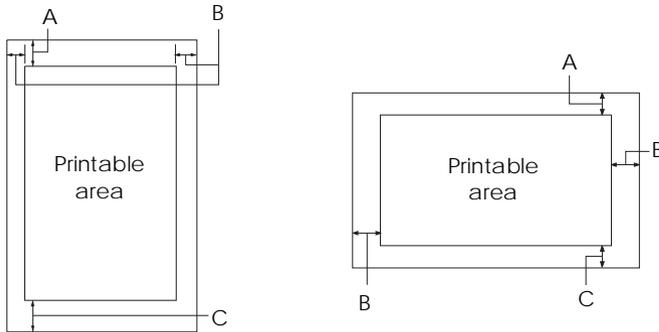
### Rear paper alignment

Printing starts at "0" on the scale. The unprintable area is to the left of the "0".



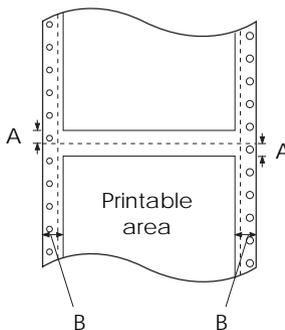
## Printable area

Single sheets, envelopes, and postcards:



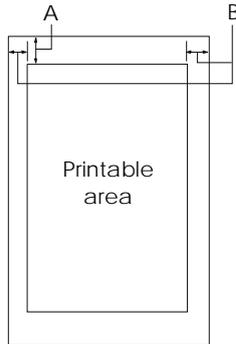
- A The minimum top margin is 4.2 mm (0.17 inch).
- B The minimum left margin is 3.0 mm (0.12 inch).  
The minimum right margin is 3.0 mm (0.12 inch).  
For single sheets, the maximum width is 420 mm (16.5 inches);  
however, the maximum printable width is 345.4 mm (13.6 inches).  
For single sheets wider than 351.4 mm (13.84 inches), the side margins  
increase to match the width of the paper.
- C The minimum bottom margin is 4.2 mm (0.17 inch).

Continuous paper:



- A The minimum top and bottom margins above and below the  
perforation are 4.2 mm (0.17 inch).
- B The minimum left and right margins are 13 mm (0.51 inch).  
The maximum printable width is 345.2 mm (13.5 inches).

Roll paper:



A The minimum top margin is 4.2 mm (0.17 inch).

B The minimum left margin is 3.0 mm (0.12 inch).

The minimum right margin is 3.0 mm (0.12 inch).

The maximum printable width is 203.2 mm (8 inches).

## *Mechanical*

Paper-feed methods:

Friction feed (front and rear)

Push tractor feed (rear:standard, front:with optional pull tractor C80032\*)

Push/Pull tractor feed (rear:standard push with optional pull tractors C80032\*, front:with two optional pull tractors C80032\*)

Pull tractor feed (front, rear, and bottom with optional pull tractor C80032\*)

Cut-sheet feeder (option C80673\*, C80674\*)

Ribbon life:

8 million characters (LQ 10 cpi, at 48 dots/character)

Total print amount:

6 million lines (except print head)

Print head life:

200 million strokes/wire

Dimensions:	639 mm (W) × 402 mm (D) × 257 mm (H) 25.2 inches (W) × 15.8 inches (D) × 10.1 inches (H)
Weight:	Approx. 13 kg (28.7 lb)

## *Electrical*

### **120V model:**

Rated voltage:	AC 120 V
Input voltage range:	AC 103.5 to 132 V
Rated frequency range:	50 to 60 Hz
Input frequency range:	49.5 to 60.5 Hz
Rated current:	1.0 A*
Power consumption:	Approx. 34 W (ISO 10561 Letter pattern)
Insulation resistance:	10MΩ min (between AC line and chassis, DC 500 V)
Dielectric strength:	AC 1000 Vrms. 1 min, or AC 1200 Vrms. 1 sec. (between AC line and chassis)

\*Maximum 2.0 A depending on the character type.

### **230V model:**

Rated voltage:	AC 220 to 240 V
Input voltage range:	AC 198 to 264 V
Rated frequency range:	50 to 60 Hz
Input frequency range:	49.5 to 60.5 Hz
Rated current:	0.5 A*

Power consumption:	Approx. 34 W (ISO 10561 Letter pattern)
Insulation resistance:	10 MΩ min. (between AC line and chassis, DC 500 V)
Dielectric strength:	AC 1500 Vrms. 1 min. (between AC line and chassis)

\*Maximum 1.2 A depending on the character type.

## *Environmental*

Temperature:	5 to 35°C (operating, *1) 15 to 25°C (operating, *1, *2) -30 to 60°C (storage)
Humidity:	10 to 80% RH (operating, *1) 30 to 60% RH (operating, *1, *2) 0 to 85% RH (storage, *1)
Resistance to shock:	1 G, within 1 ms (operating) 2 G, within 2 ms (storage)
Resistance to vibration:	0.25 G, 55 Hz max. (operating) 0.50 G, 55 Hz max. (storage)

\*1: without condensation

\*2: when printing multipart papers,  
envelopes, postcards, or labels

## *Safety approvals*

### **120 V model:**

Safety standards:	UL1950 with D3 CSA C22.2 No. 950 with D3
EMI:	FCC part 15 subpart B class B CSA C108.8

**230 V model:**

Safety standards: EN 60950 (TÜV, SEMKO, DEMKO,  
NEMKO, FIMKO)

EMI: EN 55022 (CISPR pub.22) class B

**Acoustic noise:**

Level: Approx. 50 dB (A) (ISO 7779 pattern)

***CE marking*****230 V model:**

Low Voltage Directive 73/23/EEC: EN60950

EMC Directive 89/336/EEC: EN55022 class B  
EN50082-1  
IEC801-2  
IEC801-3  
IEC801-4

Non-Automatic Weighting  
Instruments Directive 90/384/EEC: EN45501

***Interface specifications***

The printer provides a bidirectional, 8-bit, parallel interface and Type-B optional interface slot as standard.

## Parallel interface (forward channel)

Transmission mode: 8-bit parallel, IEEE-P1284 compatibility mode

Adaptable connector: 57-30360 (Amphenol) or equivalent

Synchronization:  $\overline{\text{STROBE}}$  pulse

Handshaking: BUSY and  $\overline{\text{ACKNLG}}$  signals

Signal level: TTL compatible (IEEE-P1284 level 1 device)

The following table lists the parallel connector pin assignments and describes their respective interface signals.

Pin no.	Signal name	GND	In/Out*	Description
1	$\overline{\text{STROBE}}$	19	In	Strobe pulse. Input data is latched at falling edge of the signal.
2	DATA1	20	In	Parallel input data to the printer. bit 0:LSB
3	DATA2	21	In	bit 1
4	DATA3	22	In	bit 2
5	DATA4	23	In	bit 3
6	DATA5	24	In	bit 4
7	DATA6	25	In	bit 5
8	DATA7	26	In	bit 6
9	DATA8	27	In	bit 7:MSB
10	$\overline{\text{ACKNLG}}$	28	Out	This signal (negative pulse) indicates that the printer has received data and is ready to accept more.
11	BUSY	29	Out	This signal's high level means that the printer is not ready to accept data.
12	PE	28	Out	This signal's high level means that the printer is out of paper.
13	SLCT	28	Out	Always at high level when the printer is powered on.

Pin no.	Signal name	GND	In/Out*	Description
14	$\overline{\text{AFXT}}$	30	In	Not used.
31	$\overline{\text{INIT}}$	30	In	This signal's negative pulse initializes the printer.
32	$\overline{\text{ERROR}}$	29	Out	This signal's low level means an error has occurred.
36	$\overline{\text{SLIN}}$	30	In	Not used.
18	Logic H	-	Out	This line is pulled up to +5 V through 3.9 k $\Omega$ resistor.
35	+5 V	-	Out	This line is pulled up to +5 V through 3.3 k $\Omega$ resistor.
17	Chassis	-	-	Chassis GND.
16, 33 19-30	GND	-	-	Signal GND.
15, 34	NC	-	-	Not connected.

\* In/Out shows the direction of signal flow from the printer's point of view.

### ***Parallel interface (reverse channel)***

Transmission mode:	IEEE-1284 nibble mode
Adaptable connector:	57-30360 (Amphenol) or equivalent
Synchronization:	Refer to the IEEE-1284 specification
Handshaking:	Refer to the IEEE-1284 specification
Signal level:	IEEE-1284 level 1 device
Data transmission timing:	Refer to the IEEE-1284 specification

Extensibility request:      The printer responds to the extensibility request in the affirmative when the request is 00H or 04H, which means:

   00H:      Request nibble mode of reverse channel transfer

   04H:      Request device ID in nibble mode of reverse channel transfer

The following table lists the parallel connector pin assignments and describes their respective interface signals.

Pin no.	Signal name	GND	In/Out*	Description
1	HostClk	19	In	Host clock signal
2	DATA1	20	In	Parallel input data to the printer. bit 0:LSB
3	DATA2	21	In	bit 1
4	DATA3	22	In	bit 2
5	DATA4	23	In	bit 3
6	DATA5	24	In	bit 4
7	DATA6	25	In	bit 5
8	DATA7	26	In	bit 6
9	DATA8	27	In	bit 7:MSB
10	PtrClk	28	Out	Printer clock signal.
11	PtrBusy/ DataBit-3,7	29	Out	Printer busy signal and reverse channel transfer data bit 3 or 7.
12	AckDataReq/ DataBit-2,6	28	Out	Acknowledge data request signal and reverse channel transfer data bit 2 or 6.
13	Xflag/ DataBit-1,5	28	Out	X-flag signal and reverse channel transfer data bit 1 or 5.
14	HostBusy	30	In	Host busy signal.
31	$\overline{\text{INIT}}$	30	In	Not used.
32	$\overline{\text{DataAvail/}}$ DataBit-0,4	29	Out	Data available signal and reverse channel transfer data bit 0 or 4.
36	1284-Active	30	In	1284 active signal.

Pin no.	Signal name	GND	In/Out*	Description
18	Logic-H	-	Out	A high signal indicates that all other signals sourced by the peripheral are in a valid state.
35	+5 V	-	Out	This line is pulled up to +5 V through 3.3 k $\Omega$ resistor.
17	Chassis	-	-	Chassis GND.
16, 33 19-30	GND	-	-	Signal GND.
15, 34	NC	-	-	Not connected.

\* In/Out shows the direction of signal flow from the printer's point of view.

---

## *Using Commands*

### *Sending printer commands*

Most actions your printer performs are controlled by your software. Software commands instruct the printer to print in a particular typeface, feed the paper a certain amount after printing each line, start printing on a particular place on the page, and so on. The commands your printer recognizes are listed in this command summary.

Some software programs let you send these commands yourself. How you format commands depends on the software you are using. Some software programs accept only the decimal format, while others let you type in ASCII characters. (Some programs don't let you insert printer commands at all.) In addition, your software probably specifies certain punctuation you must use to enter the command. The software manual should explain the required format and punctuation.

### *Using the command summary*

The following section lists and describes all the commands by topic. If a command has no parameters, it is merely listed. If it has parameters, they are explained. The 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 K *n1 n2* is a command with two parameters.

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

For further information about using printer commands, see the comprehensive *ESC/P Reference Manual* published by EPSON.

---

## Commands Arranged by Topic

### General operation

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
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 bin 1 of CSF <i>n</i> = "2" Select bin 2 of CSF <i>n</i> = "R" Eject a sheet

### Paper feeding

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
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

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

## Print position motion

ASCII	Dec.	Hex.	Description
ESC \$ $n1\ n2$	36	24	Set Absolute Horizontal Print Position $n = n1 + n2 \times 256$ $n$ : Specifies print position from left margin in defined units  <input type="checkbox"/> Before you define the unit, the default is 1/60-inch for this command.
ESC \ $n1\ n2$	92	5C	Set Relative Horizontal Print Position $n = n1 + n2 \times 256$ $n$ : Moves current print position in defined units  <input type="checkbox"/> Before you define the unit, the 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 ( $V\ 2\ 0\ n1\ n2$ $n = n1 + n2 \times 256$ $n$ : Specifies print position from top margin in defined units
ESC ( $v\ nn$	40 118	28 76	Set Relative Vertical Print Position ESC ( $v\ 2\ 0\ n1\ n2$ $n = n1 + n2 \times 256$ $n$ : Moves current print position in defined units
ESC D $nn$	68	44	Set Horizontal Tabs Up to 32 tabs entered in ascending order; terminated by 0
HT	9	09	Tab Horizontally

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
ESC B <i>nn</i>	66	42	Set Vertical Tabs Up to 16 tabs; last <i>n</i> should be 0
VT	11	0B	Tab Vertically
ESC J <i>n</i>	74	4A	Perform <i>n</i> /180-inch Line Feed

## Font selection

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
ESC k <i>n</i>	107	6B	Select Typeface <i>n</i> = 0: Roman            7: Orator 1: Sans Serif        8: Orator-S 2: Courier            9: Script C 3: Prestige        10: Roman T 4: Script            11: Sans Serif H 5: OCR-B
ESC X <i>m 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> : Set point size in 0.5 points Total points = ( <i>n1</i> + <i>n2</i> × 256) × 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, Sans Serif, Roman T, and Sans Serif H) <i>n</i> = 0, 21, 42 (for other typefaces)

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
ESC P	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
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	Master Select To find the value of <i>n</i> add together the numbers of the typestyles you want to combine from the list below: <i>n</i> = 0: 10 cpi    16: double-strike 1: 12 cpi    32: double-width 2: prop.    64: italic 4: cond.    128: underline 8: bold

## Font enhancement

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
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)
ESC - 1/0	45	2D	Turn Underline On/Off
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 q <i>n</i>	113	71	Select Character Style <i>n</i> = 0: Normal style 1: Outline 2: Shadow 3: Outline with shadow
ESC ( - <i>mn</i>	40 45	28 2D	Select Line/Score ESC ( - 3 0 1 <i>n1 n2</i> <i>n1</i> = 1: Underline <i>n1</i> = 2: Strikethrough <i>n1</i> = 3: Overscore <i>n2</i> = 0: Cancel score line selected by <i>n1</i> <i>n2</i> = 1: Single continuous line <i>n2</i> = 2: Double continuous line <i>n2</i> = 5: Single broken line <i>n2</i> = 6: Double broken line

## Character handling

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
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 R <i>n</i>	82	52	Select an International Char. Set <i>n</i> = 0: USA                   8: Japan 1: France               9: Norway 2: Germany           10: Den. II 3: UK                   11: Spain II 4: Denmark          12: L. Amer. 5: Sweden           13: Korea 6: Italy                64: Legal 7: Spain
ESC & <i>nm</i>	38	26	Define User-Defined Character ESC & 0 <i>n1 n2 d0 d1 d2</i> data <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 data: 3 bytes required for each column; super/subscripts require only 2 bytes per column
ESC % <i>n</i>	37	25	Select User-Defined Set <i>n</i> = 0: Normal set 1: User-defined set
ESC (^ <i>nm</i>	40 94	28 5E	Print Data as Characters ESC (^ <i>n1 n2</i> data <i>n</i> = <i>n1</i> + <i>n2</i> × 256 <i>n</i> : amount of data data: print <i>n</i> bytes of data as characters

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
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, "1", "2", or "3" <i>n</i> = 2: Remaps downloaded characters from 0-127 to 128-255
ESC 6	54	36	Enable Printing of Upper Control Codes With graphics character tables this command enables the printing of codes 128-159
ESC 7	55	37	Enable Upper Control Codes Cancels ESC 6

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
ESC ( t mn	40 116	28 74	Assign Character Table ESC ( t 3 0 d1 d2 d3 Assign Character Table set by d2 and d3 to d1 d1 = 0, 1, 2, 3, "0", "1", "2", or "3"
			d2 d3 Character Table
			0 0 Italic
			1 0 PC 437
			1 10 PC 437 Greek*
			24 0 PC 774*
			3 0 PC 850
			A 10 PC 852*
			5 0 PC 853*
			6 0 PC 855*
			B 0 PC 857*
			7 0 PC 860
			18 0 PC 861
			8 0 PC 863
			D 0 PC 864*
			9 0 PC 865
			E 0 PC 866*
			E 20 PC 866 LAT*
			F 0 PC 869*
			19 0 BRASCII
			1A 0 Abicomp
			7F 1 ISO Latin 1
			1F 0 ISO Latin 1T*
			7F 2 ISO Latin 2*
			1D 7 ISO 8859-7*
			1B 0 MAZOWIA*
			1C 0 Code MJK*
			20 0 Bulgaria*
			25 0 Estonia*
			23 0 Roman 8

\*Available in certain areas.

## Spacing

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
ESC c <i>n1 n2</i>	99	63	Set Horizontal Motion Index (HMI) Change Pitch in <i>n</i> /360-inch units Total units = $n1 + n2 \times 256$
ESC SP <i>n</i>	32	20	Set Intercharacter Space <i>n</i> = number of units of space added to the space between characters Units are 1/120 inch (draft) and 1/180 inch (LQ and proportional)
ESC ( U <i>nm</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, or 60 <i>n</i> = 10; default

## Graphics

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
ESC . <i>nm</i>	46	2E	Print Raster Graphics ESC . <i>c v h m n1 n2</i> data <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 Total dots = $n1 + n2 \times 256$
ESC ( G <i>nm</i>	40 71	28 47	Select Graphics Mode ESC ( G 1 0 <i>n</i> <i>n</i> = 1, or 49

## Bit image

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

<i>m</i>	Horizontal density (dpi)	Vertical density (dpi)	Pins	Adjacent dot 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

## Barcode

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
ESC ( B <i>mn</i>	40 66	28 42	<p>Select Barcode Printing</p> <p>ESC ( B <i>n1 n2 k m s v1 v2 c data</i></p> <p><math>n = (n1 + (256 \times n2))</math></p> <p><i>k</i>: Select Barcode</p> <p><i>k</i> = 0: EAN - 13</p> <p>1: EAN - 8</p> <p>2: Interleaved 2 of 5</p> <p>3: UPC - A</p> <p>4: UPC - E</p> <p>5: Code 39</p> <p>6: Code 128</p> <p>7: POSTNET</p> <p><i>m</i>: Module width (180 dpi)</p> <p><i>m</i> = 2: 2 dots</p> <p>3: 3 dots</p> <p>4: 4 dots</p> <p>5: 5 dots</p> <p><i>s</i>: Space adjustment value</p> <p><math>-3 \leq s \leq 3</math> (1/360 inch units)</p> <p><i>v1, v2</i>: Bar length</p> <p><math>v1 + v2 \times 256</math> (1/180-inch units)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The <i>v1</i> and <i>v2</i> values are ignored when POSTNET is selected.</li> <li><input type="checkbox"/> The long bar length of POSTNET is always 0.125 inch; the short bar length is always 0.050 inch.</li> </ul>

<i>ASCII</i>	<i>Dec.</i>	<i>Hex.</i>	<i>Description</i>
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**c: Control flag**

**Bit 0 = Check digit**

**0:** A check digit is not added by the printer

**1:** A check digit is added by the printer

**Bit 1 = Human readable character (HRC)**

**0:** The HRC is added by the printer

**1:** The HRC is not added by the printer

**Bit 2 = Position of flag character (for EAN-13 and UPC-A only)**

**0:** Center

**1:** Under

**Bits 3–7 = Not used**

**Barcode data**

Barcode data corresponds to the barcode symbology. The data number of each barcode type is constant. The barcode is not printed if the following valid characters are not set.

Barcode Type	Number of valid characters 1 (HEX)	Number of valid characters 2 (HEX)
EAN-13	0D	0C
EAN-8	8	7
Interleaved 2 of 5	2 to FF	2 to FF
UPC-A	0C	0B
UPC-E	0C or 8	0B or 7
Code 39	1 to FF	1 to FF
Code 128	2 to FF	2 to FF
POSTNET	6 or 0A or 0C	5 or 9 or 0B

Number of valid characters 1: Control flag c b0=0

Number of valid characters 2: Control flag c b0=1

The valid data of each barcode type is described below. If invalid data is included in the barcode data string, the barcode is not printed.

Barcode Type	Barcode Data
EAN13	0-9 (Hex 30-39)
EAN-8	0-9 (Hex 30-39)
UPC-A	0-9 (Hex 30-39)
UPC-E	0-9 (Hex 30-39)
Interleaved 2 of 5	0-9 (Hex 30-39)
POSTNET	0-9 (Hex 30-39)
Code 39	0-9 (Hex 30-39), (Hex 41-5A), (Hex 20, 24, 25, 2B, 2D, 2E, 2F)
Code 128	Set A, Set B, Set C

The following conditions are required for barcode printing.

- Barcode printing is always performed unidirectionally. However, when it is mixed with raster bit image data, neither barcode nor raster bit image is printed.
- A barcode is not printed when part of the barcode extends beyond the right margin.
- When barcode data and text data are mixed in a data sequence, barcode and text are printed in the same place.
- The initial data of Code 128 (Set A, B, or C) is identified as the firstdata of Code 128, and must be hexadecimal (41, 42, and 43 respectively).
- When Code 128 Set C and Interleaved 2 of 5 are selected, barcode data requires an even number data string. However, if an odd number string is sent, a 0 is automatically added, making it an even number data string.
- The barcode print start position is always 40/360 inch above the baseline.

---

## *Character Tables*

### *International Character Sets*

### *Graphics Character Tables*

#### *PC 437 (United States)*

*PC 850*

*PC 860*

*PC 863*

*PC 865*

*PC 861*

*BRASCII*

*Abicomp*

*ISO Latin 1*

*Roman 8*

*PC 437 Greek*

*PC 852*

*PC 853*

*PC 855*

*PC 857*

*PC 864*

*PC 866*

*PC 869*

*ISO Latin 1T*

*ISO 8859-7*

*MAZOWIA*

*Code MJK*

*Bulgaria*

*Estonia*

*PC 774*

*ISO Latin 2*

*PC 866 LAT*

*Italic Character*



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# Glossary

**ASCII**

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

**auto line feed**

When this feature is selected in the default-setting mode, each carriage-return code (CR) is automatically followed by a line-feed (LF) code.

**bidirectional printing**

Printing in which the print head prints in both directions. This increases the speed of printing.

**buffer**

The portion of the printer's memory used to store data before printing it.

**character table**

A collection of letters, numbers, and symbols that provides you with the characters used in a particular language.

**characters per inch (cpi)**

A measurement of the size of text characters.

**condensed**

Printing in which each character is approximately 60% of the width of standard characters. For example, condensed 10 cpi printing actually has 17 characters per inch. Useful for fitting wide table or spreadsheets onto the paper.

**continuous paper**

Paper that has sprocket-feed holes on both long edges, 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 a carriage return or line feed) instead of printing characters.

**cpi**

See *characters per inch*.

**data dump**

See *hex dump*.

**default**

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

**dithering**

A way of arranging dots on a page to simulate a shade or tone.

**dot matrix**

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

**draft**

One of two print modes available on your printer. Draft uses a minimum number of dots per character for high-speed printing. See also *letter quality*.

**driver**

See *printer driver*.

**ESC/P**

Abbreviation for Epson Standard Code for Printers. This is the system of commands your computer uses to control your printer. It is standard for all Epson printers and supported by most software for personal computers.

**ESC/P 2**

The enhanced version of the ESC/P printer command language. Commands in this language produce laser-like results, such as scalable fonts and enhanced graphics.

**font**

A style of type designated by a name such as Palatino or Helvetica.

**form feed**

A control code and control panel button that advances the paper to the next top-margin position.

**hex dump**

A troubleshooting feature that helps identify the cause of communication problems between the printer and the computer. When the printer is in hex dump mode, each code that it receives is printed in hexadecimal notation as well as in the ASCII codes that stand for the characters. Also called data dump.

**initialization**

Returns the printer to its defaults (fixed sets of conditions).

**interface**

The connection (via a cable) between the computer and the printer.

**letter quality**

One of two print modes available on your printer. Letter quality provides better readability and appearance at a reduced print speed. See also *draft*.

**line feed (LF)**

A control code and control 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 Adjust feature.

**platen**

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

**printable area**

The area of a page on which the printer can print. It is smaller than the physical size of the page due to margins.

**printer driver**

A software program that sends commands for using the functions of a particular printer.

**pull tractor unit**

An optional device that feeds continuous paper through the printer.

**RAM**

Random Access Memory. The portion of the printer's memory used as a buffer and as a place for storing user-defined characters.

**reset**

To return a printer to its defaults.

**self test**

A method for checking the operation of the printer. When you run the self test, the printer prints the characters stored in its ROM (Read Only Memory).

**software program**

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

**tear off**

A paper feed operation 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 to which the printer feeds the paper at the end of a print job. You can change the position by using the Micro Adjust feature.

**top-of-form**

The position on the paper that the printer recognizes as the first printable line. This is the default top-margin position.

**unidirectional printing**

Printing in which the print head prints in one direction only. Unidirectional printing is useful for printing graphics because it allows precise vertical alignment.

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# Index

## A

- Adjusting the loading position, 3-13–14
- AGM(Alternate Graphic Mode), 3-12
- Auto carriage return, 3-12
- Auto line feed, 3-12
- Auto tear-off, 3-11, 3-16

## B

- Barcode
  - command, A-29–30
  - fonts, 3-18, A-30
  - printing, 3-18, A-30–31
- Baud rate, 4-14
- Bi-d adjustment, 3-18
- Bidirectional printing, 3-10
- Bins, 3-3, 4-2, 4-6
- Buttons, 3-4–6
- Buzzer (Beep), 3-12

## C

- Cable, connecting, 1-14
- Cards. *See* Interface cards or Postcards
- Character
  - fonts, 3-3
  - tables, 3-8, A-32–39
- Cleaning the printer, 5-2
- Commands
  - barcode, A-29–30
  - ESC/P 2, 1, A-18–30
- Condensed
  - button, 3-5
  - light, 3-3
- Connecting the printer, 1-10

- Continuous paper, 2-9–30
  - advancing to tear-off position, 3-17
  - loading, 2-9–29
  - problems, 6-11
  - switching to or from cut-sheet feeder, 4-7–8
  - switching to or from single sheets, 2-30–32
  - unloading, 2-30
- Control panel, 3-2–6
- Cut-sheet feeders, 4-2–8
  - double bin, 4-6–7
  - high capacity, 4-2–6
  - problems, 6-7–11
  - second bin, 4-2–8
  - switching to continuous paper, 4-7

## D

- Data dump, 3-6
- Default setting mode, 3-7–12
  - instruction sheet language, 3-7
- DOS. *See* Software
- Double bin cut-sheet feeder, 4-6–7
- Draft, 3-5
- Drivers. *See* Printer drivers

## E

- Edge guides, 1-12–13, 2-5
  - front, 2-7
- Eject. *See* Load/Eject button
- Envelopes, 2-36, 4-8
- EPSON Calibration, 1-22
- EPSON Remote!, 1-22
- ESC/P 2, 1, A-18–30

## **F**

Feeders. *See* Cut-sheet feeders,  
Tractor positions  
Feeding problems, 6-7-11  
FF button. *See* LF/FF button  
Font  
    button, 3-5  
    lights, 3-3  
Front edge guide, 2-7  
Front paper guide, 2-7, 2-14, 2-16,  
    2-18  
Functions (table), 3-8-9

## **G**

Graphics character tables, A-32-39

## **H**

Handshake timing, 4-14  
High capacity cut-sheet feeder, 4-2-6  
High speed draft, 3-10

## **I**

IBM emulation, 1, 3-10  
Interface cards, 4-12-14  
International character sets, A-32  
Italic character table, A-39

## **L**

Labels, 2-35  
Lever  
    paper release, 2-2  
    paper thickness, 2-33  
LF/FF button, 3-4  
Lights, 3-2-3  
Load/Eject button, 3-4

## **Loading paper**

    continuous paper, 2-9-29  
    cut-sheet feeder, 4-4  
    envelopes, 2-36  
    labels, 2-35  
    multipart form, 2-34  
    postcards, 2-36  
    single sheets, 2-4-8  
Location for printer, 1-2-3

## **M**

Microsoft Windows. *See* Windows  
Micro Adjust button, 3-4  
Micro Adjust feature, 3-13-15  
Moving the printer, 5-2  
Multipart forms, 2-34

## **O**

Operate button, 3-4-5  
Options, 2, 4-2-14

## **P**

Paper,  
    continuous. *See* Continuous paper  
    envelopes, 2-36  
    feeding methods, 2-2-32  
    labels, 2-35  
    multipart forms, 2-34  
    postcards, 2-36  
    removing from tractor, 2-30  
    reverse feeding caution, 2-30  
    roll, 2-36, 4-9-11  
    single-sheets. *See* single-sheet  
    paper  
    special, 2-32-36  
    switching between continuous  
        and single sheets, 2-30-32

- Paper guide, 1-9
- Paper Out light, 3-2
- Paper release lever, 2-2
- Paper tension unit, 2-18
- Paper thickness lever, 2-33
- Pause
  - button, 3-4, 3-6
  - light, 3-2
- Placement of printer, 1-2-3
- Plugging in the printer, 1-10
- Postcards, 2-36
- Power cord, 1-4
  - plugging in, 1-10
- Power supply problems, 6-2-3,
- Print head warning, 1-6
- Print quality problems, 6-3-6
- Printer drivers
  - DOS programs, 1-21
  - installing, 1-15-18
  - settings, 1-19-20
- Printer functions table, 3-8-9
- Printer stand, 1-3
- Printer utilities, 1-21-22
- Problem solving, 6-1-11
- Protective materials, saving, 1-4-5
- Pull tractor, 2-13-29
- Push tractor, 2-9-12
- Push/pull tractor, 2-27-29

## R

- Release lever. *See* Paper release lever
- Ribbon cartridge
  - installing, 1-5-10
  - replacing, 5-3
- Ribbon pack, 5-3
- Roll paper, 2-36, 4-9-11
  - holder, 4-9-11

## S

- Safety instructions, viii
- Second bin cut-sheet feeder, 4-2-8
- Self test, 1-11-13
- Shield plate, 4-13
- Single-sheet paper, 2-4-8, 4-7
  - loading from front, 2-7-8
  - loading from top, 2-4-6
- Skip-over-perforation, 3-11
- Software
  - DOS, 1-21
  - setting up, 1-15-22
  - Windows, 1-15-20
- Special paper, 2-32-36
- Specifications, A-1-39

## T

- Tear Off/Bin
  - button, 3-5
  - light, 3-3
- Tear off feature, 3-15-17
  - auto tear off, 3-16-17
- Testing the printer, 1-10-13
- Tractor positions
  - changing, 2-14-20
  - front push, 2-14-17, 2-21-23
  - pull, 2-13-29
  - push/pull, 2-27-29
  - rear push, 2-9-12
  - selecting, 2-8-9
- Transporting the printer, 5-4
- Troubleshooting, 6-2-11

## *U*

Unidirectional printing, 3-10

Unpacking the printer, 1-4

### Utilities

EPSON Calibration, 1-22

EPSON Remote!, 1-22

## *V*

Voltage, caution, 1-5, 1-10

## *W*

Weight, A-10

Windows, 1-15–20

installing printer driver, 1-15–18

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