# EPSON® ActionPrinter™ 2000

U S E R ' S    G U I D E

# EPSON® ActionPrinter™ 2000

## User's Guide

## For United States Users

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

## WARNING

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

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

## For Canadian Users

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

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

# Tips for printing on single sheets

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

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

1.  When you install an application program, it normally asks you what printer you are using. Make sure you choose the correct printer. See Chapter 1 for the right printer to choose.

2.  Many programs include an option to set the maximum lines per page. If your program has a lines-per-page setting and you are using standard 8½, X 11-inch paper, set the lines per page to 61.

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Note: To find the right lines-per-page setting for paper that is not 8½, X 11, create a test document using your application program. Set your top and bottom margins to 0 and then create a file of numbered lines from 1 to 66. When you print your file, notice the last number printed on the first page. This is your maximum lines-per-page setting.

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3.  If your program doesn't have a lines-per-page setting, try decreasing the top margin or increasing the bottom margin, or both, until you get the results you want.

4.  You can also try adjusting the form length setting. For a standard 8½, X ll-inch page, try setting the form length at 10 inches.

5.  Some programs also let you indicate whether you are using single sheets or continuous paper. Make sure you choose single sheets.

# Where to Get Help for United States Users

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

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

❏ Assistance in locating your nearest Authorized Epson Reseller or Service Center

❏ Technical assistance with the installation, configuration, and operation of Epson products

❏ Epson technical information library fax service

❏ Product literature with technical specifications on our current and new products

❏ Sales of ribbons, supplies, parts, documentation, and accessories for your Epson product

❏ Customer Relations.

# IMPORTANT SAFETY INSTRUCTIONS

1.  Read all of these instructions and save them for later reference.

2.  Follow all warnings and instructions marked on the product.

3.  Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

4.  Do not use this product near water.

5.  Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

6.  Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

7.  This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

8.  This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

9.  Do not locate this product where the cord will be walked on.

10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

11. Never push objects of any kind into this product through cabinet slots, as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

12. Except as specifically explained in the User's Manual, do not attempt to service this product yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.

13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    A. When the power cord or plug is damaged or frayed.

    B. If liquid has been spilled into the product.

    C. If the product has been exposed to rain or water.

    D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls **that** are covered by the operating instructions, since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

    E. If **the** product has been dropped or the cabinet has been damaged.

    F. If **the** product exhibits a distinct change in performance, indicating a need for service.

# Introduction

Your new Epson 9-pin dot matrix printer combines a compact design and high performance with a wide range of features.

## Features

In addition to the high-quality printing and ease of operation you have come to expect from Epson printers, your printer offers the following:

- Easy paper handling, featuring automatic single-sheet loading.

- Fast draft printing of up to 240 characters per second at 12 cpi.

- Two built-in Near Letter Quality fonts (Roman and Sans Serif) for producing high-quality documents.

- A convenient control panel design that allows direct selection of fonts, as well as a choice of normal or condensed printing.

- The SmartPark$^{TM}$ paper handling system that lets you use single sheets of paper without removing continuous paper, eliminates paper waste with short tear-off, and allows easy and accurate paper alignment.

- Compatibility with the Epson ESC/P® commands used by the LX-800.

- A micro-adjustment feature that allows you to feed the paper forward or backward to finely adjust the paper loading and short tear-off positions.

- Thirteen international character sets, an italic character table, and the five PC character tables.

## Options

You may choose a cut-sheet feeder, a pull tractor unit, or a roll paper holder to enhance use of your printer. For detailed information on these options, see Chapter 4.

- **Single-Bin Cut-Sheet Feeder (C806121)**

  The cut-sheet feeder gives you easier and more efficient handling of single-sheet paper. It automatically feeds up to 150 sheets of standard bond paper into the printer.

- **Pull Tractor Unit (C800061)**

  The pull tractor unit improves continuous paper handling. It is especially useful with continuous multi-part forms.

- **Roll Paper Holder (#8310)**

  The optional roll paper holder allows you to use the many different types of 21.6 cm or 8½,-inch roll paper sold for telexes and similar machines.

- **Interface Boards**

  Optional interface boards are available to supplement the printer's built-in parallel interface. Guidelines for choosing the right interface are given in Chapter 4.

### Finding Your Way Around

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.

- Chapters 2 and 3 include important information on paper handling and the day-to-day operation of your printer.

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

ı Other chapters contain information on general maintenance, specifications, and printer commands. There is also a glossary of printer terms and an index.

## Warnings, Cautions, and Notes

**WARNINGS** must be followed carefully 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.

## Names of the Parts

*paper guide*

*edge guide*

*paper release lever*

*printer cover*

*platen knob*

*control panel*

*paper tension unit cover*

*ribbon cartridge*

*print head*

*parallel interface*

*push tractor*

*power switch*

*AC inlet*

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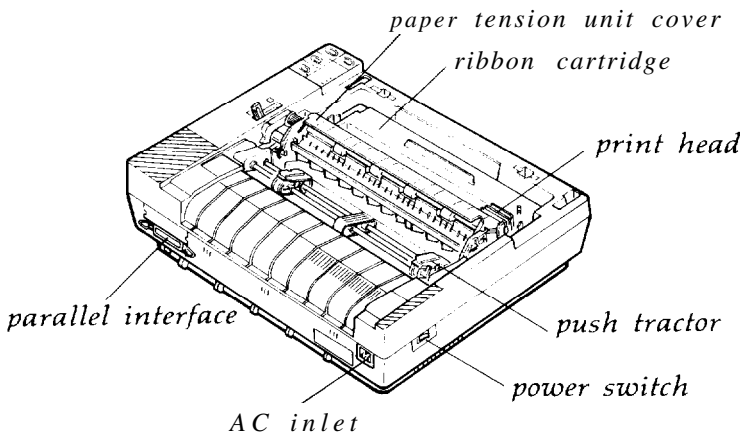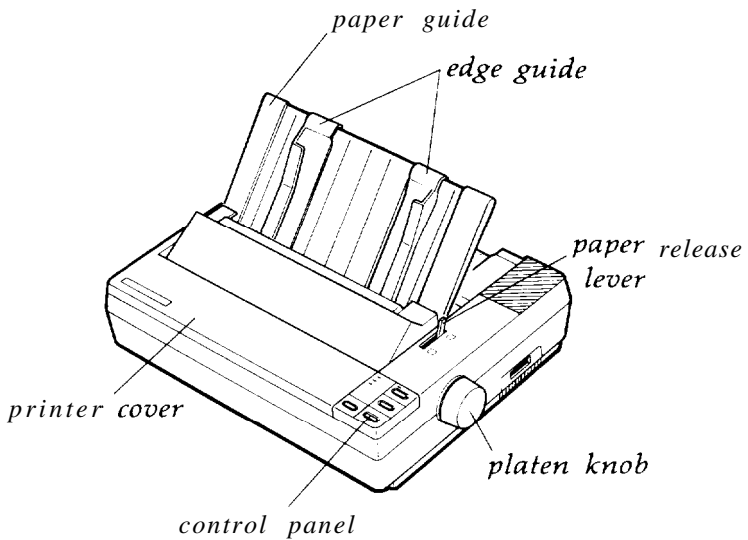
**Note:** In some locations, the power cord is attached to the printer.

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Chapter 1
# Setting Up the Printer

# Unpacking the Printer

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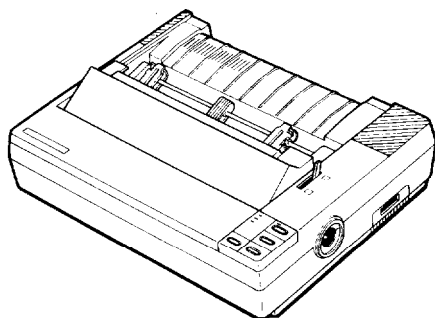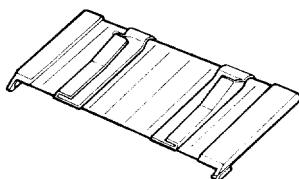


*printer*                                           *paper guide*
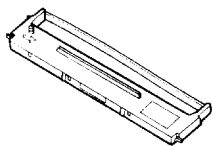
*ribbon cartridge*          *platen knob*          *power cable*
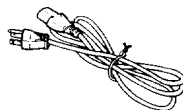
> **Note:** In some locations, the power cord is attached to the printer.

After removing the parts, save the packaging materials in case you ever need to transport your printer.

> **CAUTION:** There are several different versions of the printer designed for different electrical standards. It is not possible to adjust the printer for use at another voltage. The power supply type is shown on the label on the back of the printer. If it does not show the correct voltage for your country, contact your dealer.

# Choosing a Place for the Printer

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

• Place the printer on a flat, stable surface.

• Place the printer close enough to the computer for the printer cable to reach.

• Leave adequate room around the printer to allow for easy operation and maintenance.

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

• Use a grounded outlet; do not use an adapter plug.

• Avoid electrical outlets controlled by wall switches or automatic timers. Accidental interruption of power can wipe out information in the memory of your computer or your printer.

• Avoid outlets on the same circuit with large motors or other appliances that might cause fluctuations in line voltage.

• Keep the entire computer system away from potential sources of electromagnetic interference such as loudspeakers or the base units of cordless telephones.

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

- Use a stand that supports at least 11.6 kg (25½, lbs), which is twice the weight of the printer.

- Never use a stand that tilts the printer at an angle of more than 15 degrees from horizontal. If you install a cut-sheet feeder, keep your printer absolutely level.

- If you position the paper supply below the printer stand, make sure that you allow enough clearance (25 mm or 1 inch) to keep the paper from catching on **the** underside of the stand. Also see that the distance between the stand's supports is at least 280 **mm** (11 inches), to accommodate any paper size you may use.

- Position your printer's power cord and interface cable so that they do not interfere with paper feeding. If possible, secure **the** cables to the printer stand.

# Assembling the Printer

After choosing a good place for your printer, the next step is to install the platen knob.

## Installing the platen knob

You use the platen knob to manually feed paper in the printer when the printer is turned off. You will find the platen knob packed in an indentation in the white foam packaging material.

1. Insert the knob into the hole on the printer's side and rotate it slowly until it slips onto the shaft.
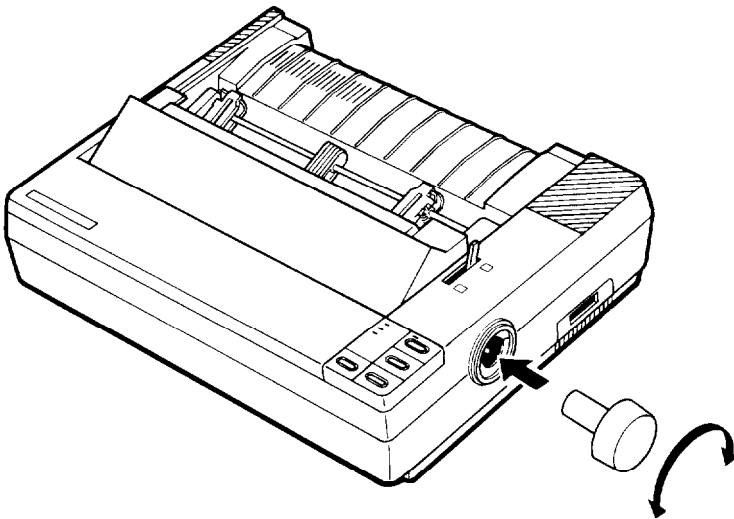


2. Push firmly on the platen knob until it fits against the printer case.

## Installing the ribbon cartridge

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

1. Raise the printer cover to the upright position. Then lift the cover up and off.
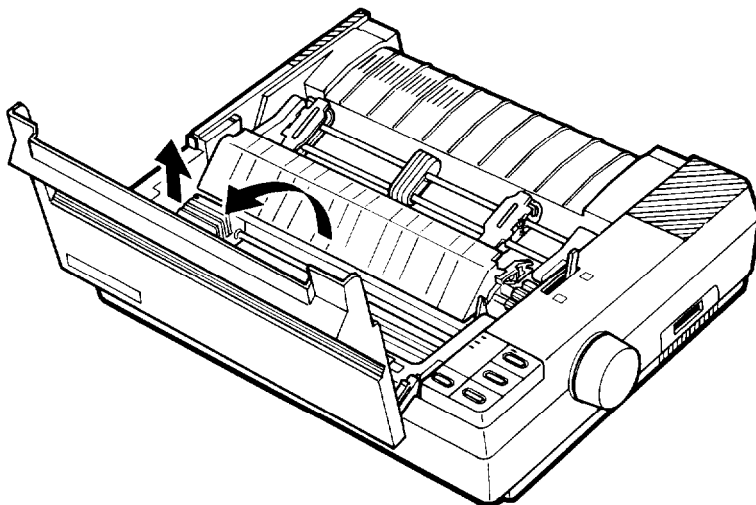
2. Slide the print head to the middle of the printer. Then open the paper tension unit cover.
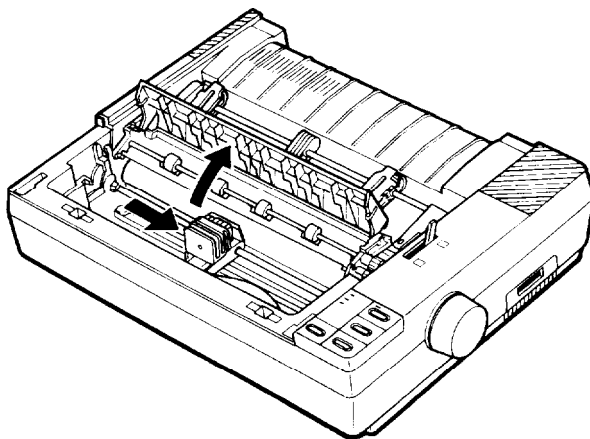
3. Turn the ribbon-tightening knob in the direction of the arrow. This removes slack from the ribbon, making it easier to install.
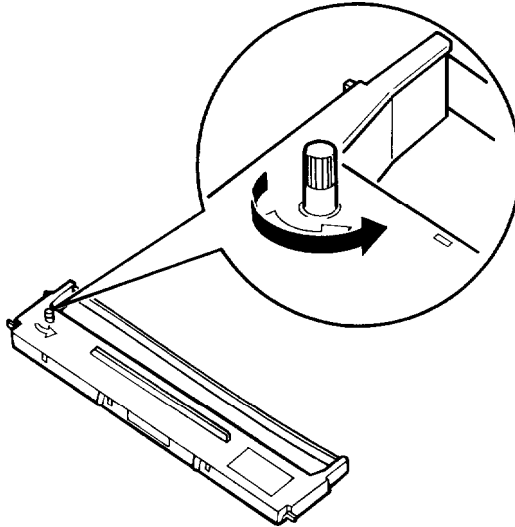


4. Hold the ribbon cartridge by its handle and push it firmly down into position, making sure the plastic hooks fit into the slots.
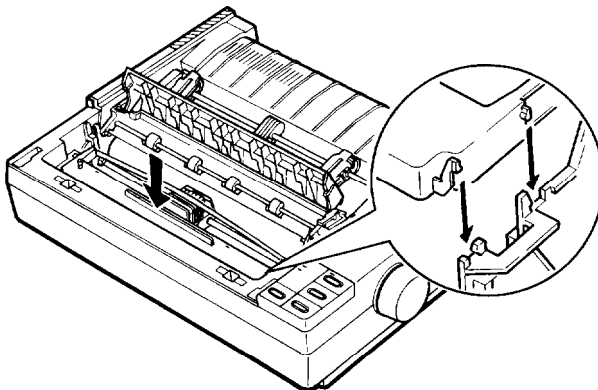


**Note:** Press lightly on both ends of the cartridge to make sure the plastic hooks are properly seated.

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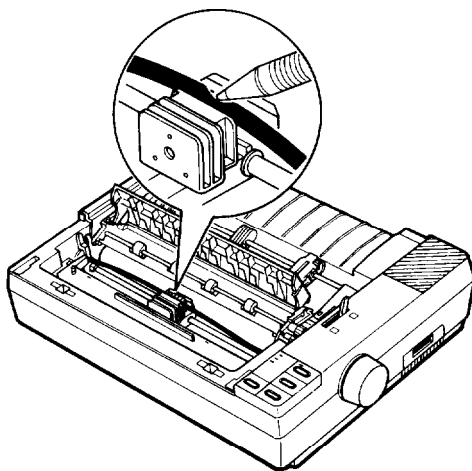


6. Slide the print head from side to side to make sure that it moves smoothly. Also check that the ribbon is not twisted or creased.

7. Close the paper tension unit cover.
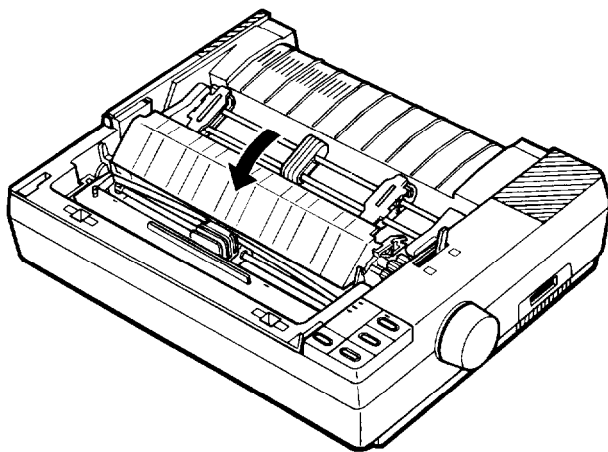
## Attaching the paper guide

1. Place the paper guide on the printer. Then raise it up until it locks into place.
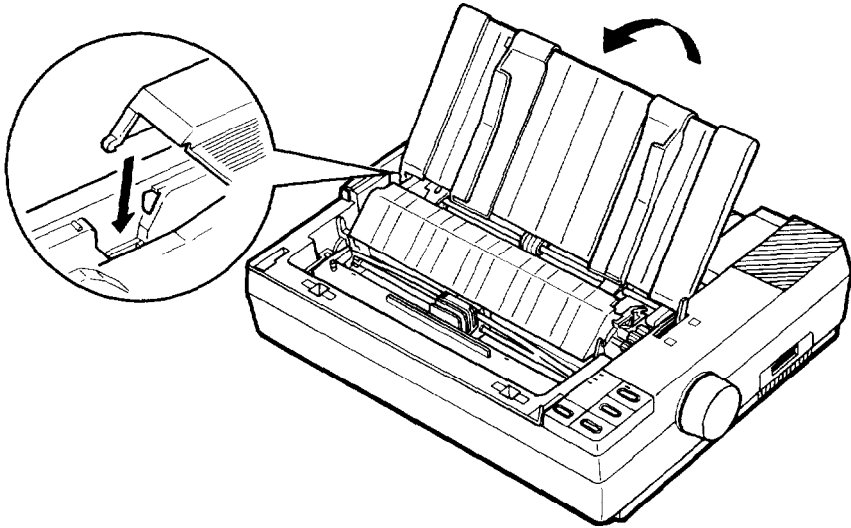
2. Attach the printer cover.
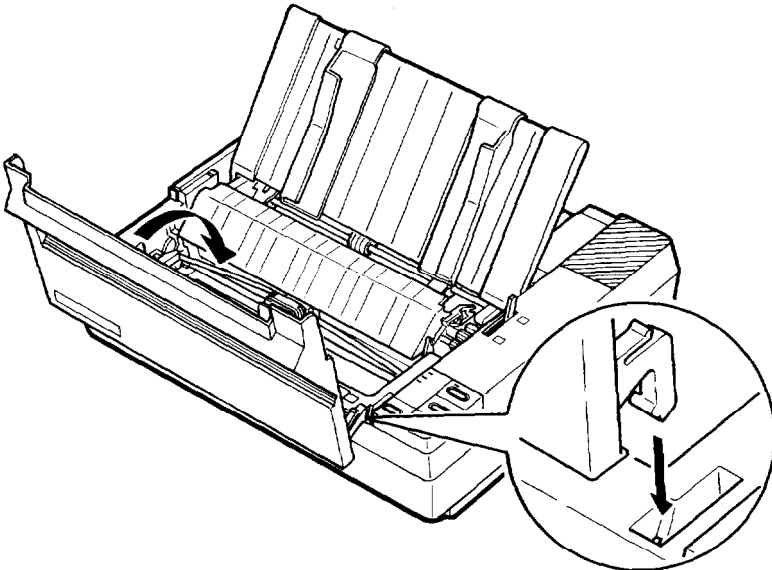
# Testing the Printer

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

Before running the self test, you need to connect your printer to an electrical outlet.

## Plugging in the printer

1. Make sure that the printer is turned off.

2. Check the label on the back of the printer to make sure the power rating required by the printer matches that of your electrical outlet.

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

3. If necessary, connect the power cord to the AC inlet on the printer's back panel.

4. Plug the power cord into a properly grounded electrical outlet.

## Running the self test

The self test runs in draft or Near Letter Quality (NLQ) mode, depending on which button you hold down as you turn on the printer.

1. Make sure that the printer is turned off and then push the paper release lever back to the single-sheet position.

2. While holding down the **LINE FEED** button (draft mode) or **FORM FEED** button (NLQ mode), turn on the printer. The **POWER** and **PAPER OUT** lights come on.

3. Slide the left edge guide until it locks in place at the guide mark. Next, adjust the right edge guide to match the width of your paper.
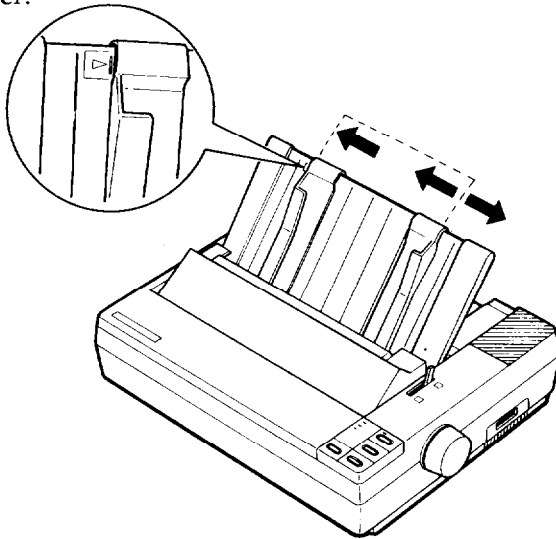


4. Slide a sheet of paper down firmly between the edge guides until it meets resistance.
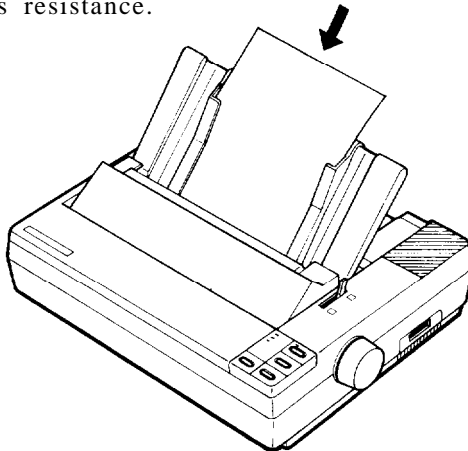


> **CAUTION:** Run the self test using paper wider than **A4** **(210 mm** or **8½,** inches) or letter size **(216 mm or 8$^1$/$_2$** inches), to prevent the print head from printing directly on the platen.

5. Press the **LOAD/EJECT** button to load paper.

6. Press **the ON LINE** button to start the self test. The test prints list of DIP switch settings first, followed by a series of characters.

7. The self test continues until the paper runs out or you press **the ON LINE** button. When you wish to stop the test, press the **ON LINE** button.

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**Note:** To resume the test, press the **ON LINE** button again.

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8. To end the self test, be sure the printer is not printing. Press the **LOAD/EJECT** or **LINE FEED** button to eject **the** paper. Then turn off the printer.

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**CAUTION:** After turning the power off, always wait at least five seconds before turning it back on. Turning the power on and off rapidly **can** damage the printer.

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Here is part of a typical self test printed in Near Letter Quality mode.

```
 '"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
 r'&&.()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
 "#$%&*()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
 #$%&-()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN¹
 $%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO'
 x&o*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP¹
 h-o*+,--./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
 '()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQR
 ()*+,-./0123456789 :;<=>?@ABCDEFGHIJKLMNOPQRS'
 )*+,-./0123456789 :;<=>?@ABCDEFGHIJKLMNOPQRST
 *+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTU
```

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**Note:** If the test did not print satisfactorily, see Chapter 6.

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# Connecting the Printer to Your Computer

If the self test printed correctly, you are ready to connect your printer to the computer. Most computers have a parallel interface. To connect such an interface, use a suitable shielded cable as described in the next section.

## The parallel interface

Connect the parallel interface cable as described below:

1.  Make sure **that** both your printer and computer are turned off. Plug the cable connector securely into the printer. Then squeeze the wire clips together until they lock in place on either side of the connector.
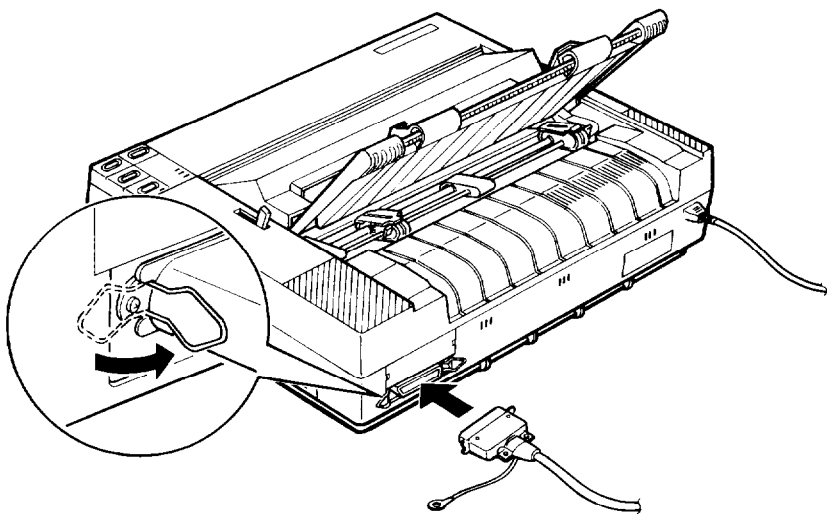


Note: If your cable has a ground wire, connect it to the ground connector beneath the interface connector.

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

# Setting Up Your Application Software

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

## Choosing from a menu

Because the family of Epson printers shares a great many commands, you can use an application program even if it does not list your printer on its printer selection menu. If your printer is not listed, choose from the following list. (The printers are listed in the order of preference.)

**LX-810/850**
**LX-800**
**LX-86**
**LX-80**
**FX-850**
**FX-86e**
**EX-800**
**FX-85**
**FX-80+**
**FX-80**

If none of these printers is listed, select the first one available on the following list: LX, FX, EX, RX, MX, Epson printer, Standard printer, Draft printer.

To use all of the features of the printer, however, it is best to choose a program with one of the LX printers on its menu. If your program does not list one of these printers, contact the software manufacturer to see if an update is available.

Chapter 2

# Paper Handling

**2**

# Using Single Sheets

Your printer can accommodate single sheets with a width of 182 mm (7.2 inches) to 257 mm (10.1 inches).

## Loading the paper

1. Turn off the printer; then place the paper guide in the upright position. Set the paper release lever to the single-sheet position.
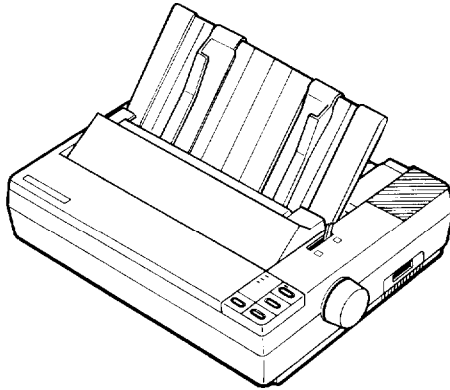


2. Turn on the printer. The **POWER** and **PAPER OUT** lights come on.

3. Slide the left edge guide until it locks in place at the guide mark. Next, adjust the right edge guide to match the paper width.
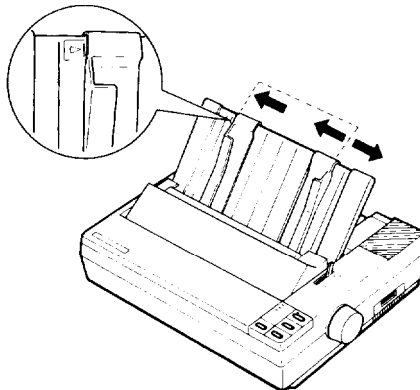
4. Slide the paper down between the edge guides until it meets resistance.

5. Press the **LOAD/EJECT** button once to load the paper.

> **Note:** If the platen turns without loading the paper, remove the paper and re-insert it more firmly. Then press the **LOAD/EJECT** button again.

> **CAUTION:** Never advance the paper using the platen knob while the printer is turned on.

6. Press the **ON LINE** button to set the printer on line.

To eject the paper, set the printer off line (by pressing the **ON LINE** button) and then press the **FORM FEED** button.

## Printing multiple-page documents

When you print a document of more than one page using single-sheet paper, you must reload paper at the end of each page. To reload, first see that the printer is off line. (If the **ON LINE** light is on, press the **ON LINE** button once to take the printer off line.) Then load a new sheet by following steps 4, 5, and 6 above.

If your software has not been set up properly, the printer may print too low on the second page of a document or print the last few lines of one page on the next. If this happens, see Tips for printing on single sheets at the beginning of this manual for instructions on how to correct the problem.

# Using Continuous Paper

The push tractor built into your printer can handle paper widths
from 101 mm (4.0 inches) to 254 mm (10.0 inches).

## Positioning your continuous paper supply

Here are three ways to position your printer and supply of
continuous paper.
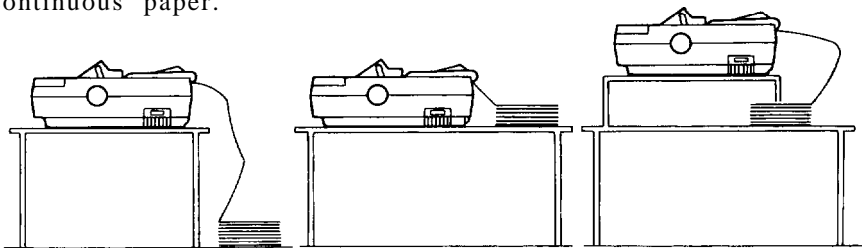


Make sure you align your paper supply with the paper loaded in
the tractor so that the paper feeds smoothly into the printer.

## Loading continuous paper

1. Make sure the printer is turned off. Then remove the paper
   guide and pull the paper-release lever forward to the
   continuous paper position.

2. Release the sprocket units by pulling the sprocket locks
   forward.
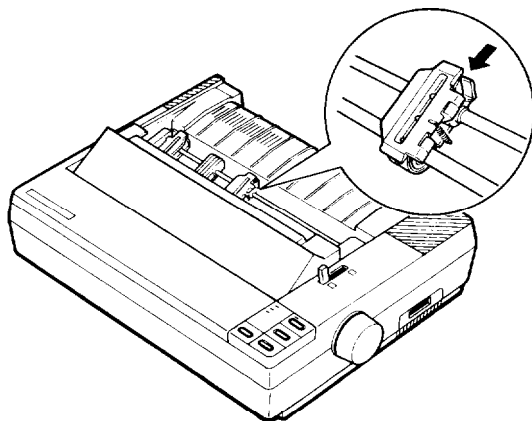
3. Slide the left sprocket unit to approximately 12 mm (l/2 inch) from the far left position and push the lever back to lock it in place. Then slide the right sprocket unit to match the width of your paper, but do not lock it.

4. Move the paper support midway between the two sprocket units.
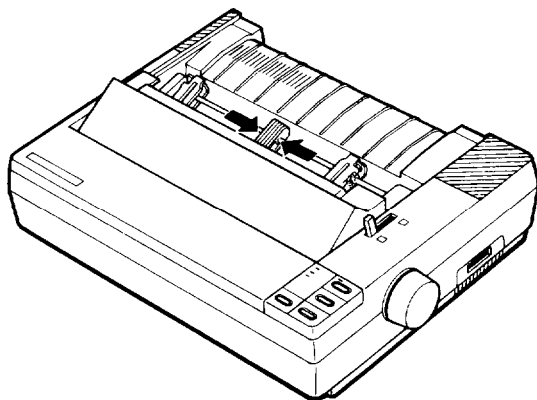


5. Open both sprocket covers. Fit the first three holes in the paper over the pins of both sprockets.
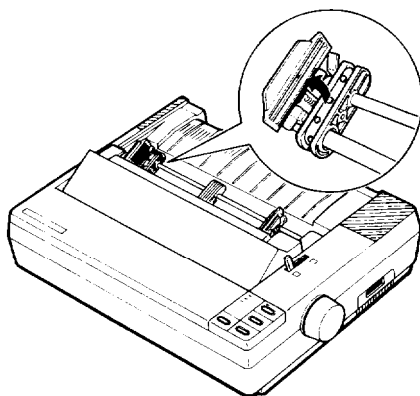


**CAUTION:** Make sure that your paper has a clean, straight edge before inserting it into the printer.

6. Close the sprocket covers.

7. Slide the right sprocket unit to a position where the paper is straight and not wrinkled; then lock it in place.

8. To separate the incoming paper from the outgoing printed paper, attach the paper guide in its flat position over the printer and incoming paper. Then slide the edge guides to the center of the paper's width.

9. Turn on the printer. The **POWER** and **PAPER OUT** lights come on.

10. Press the **LOAD/EJECT** button to feed paper to the loading position.

11. Press the **ON LINE** button to set the printer on line.

The printer remembers the loading position and advances each page to the same position. If you need to adjust the loading position, use the micro-adjustment feature. See the section on adjusting the loading position in Chapter 3.

> **CAUTION:** Use the platen knob only when the printer is off and there is a paper-feeding problem, such as a paper jam. Otherwise you may damage the printer or cause it to lose track of the loading position.

> **Note:** Before you begin printing, be sure to check the page length and skip-over-perforation settings, and readjust the settings if necessary. See the sections on page length and skip-over-perforation in Chapter 3.

# Adjusting the Loading Position

The loading position is the point where the paper stops when you load paper using the **LOAD/EJECT** button. This position is important because it determines where the printing begins on the page. If the printing is too high or too low on the page, change the loading position using the micro-adjustment feature as described below.

> CAUTION: Never use the platen knob to feed paper after turning on the printer. (If you need to use the platen knob, first turn off the power.) When you need to adjust the loading position, always use the following procedure.

1.  Make sure that the printer is turned on and that paper (single sheet or continuous) is ready for loading.

2.  Press the **LOAD/EJECT** button to feed paper to the loading position. Then press and hold down the **ON LINE** button until the beeper sounds once and the **ON LINE** light begins to blink.

3.  Press **the FORM FEED** button to feed the paper forward or the **LINE FEED** button to feed the paper backward. When you **have** set the desired loading position, you **can** begin printing; the **ON LINE** light automatically stops blinking.

**Note: You can** use the **FORM FEED** and **LINE FEED** buttons to adjust the loading position only while the **ON LINE** light is blinking.

# Switching between Continuous and Single Sheets

While using continuous paper, you can easily switch to single-sheet printing without removing the continuous paper from the tractor.

## Switching to single sheets

1.  If the printer is on line, press the **ON LINE** button to set the printer off line.

2.  Tear off all outgoing sheets of continuous paper.

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

> • If you are using narrow paper (less than 152.4 mm or 6 inches wide), you should only press the **LOAD/EJECT** button once. Also, do not use this button to eject labels.
>
> • Never feed labels backward through the printer. Labels can easily come off the backing sheet and jam the printer.

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

5.  Stand the paper guide upright and move the left edge guide so that it locks in place next to the guide mark.

6.  Adjust the right edge guide to match the width of the paper. Then, slide **the** paper down between the edge guides until it meets resistance.

7.  Press the **LOAD/EJECT** button to automatically feed the single-sheet paper to the loading position. Then, press the **ON LINE** button to set the printer on line.

## Switching back to continuous paper

1.  Make sure that the single sheet is ejected and the printer is off line.

2.  Slide the edge guides together so that they meet at the center of the paper's width.

3.  Lower the paper guide onto the back of the printer.

4.  Pull the paper release lever forward to the continuous paper position.

5.  Press the **LOAD/EJECT** button to feed the continuous paper to the loading position.

6.  Press **the ON LINE** button to set the printer on line so it can accept data.

# Printing on Special Paper

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

> **CAUTION:**
> * When printing on labels or multi-part forms, make sure that your application program settings keep the printing entirely within the printable area.
>
> * Always return the paper-thickness lever to position 2 when you go back to printing on ordinary paper.

## The paper-thickness lever

For normal use, set the paper thickness lever to position 2.
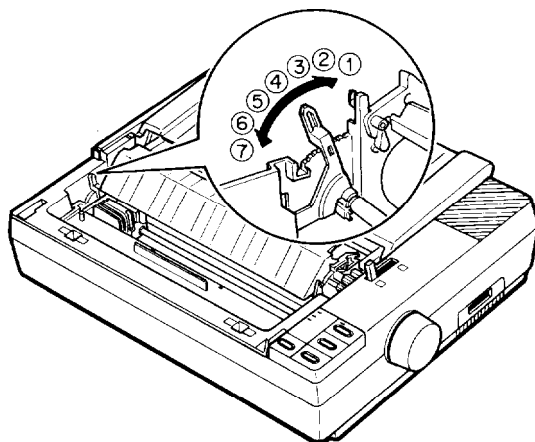
When printing on other types of paper, set the paper thickness lever according to the table below.

| Paper type | Lever position |
|---|---|
| Ordinary paper (single sheet or continuous) | 2 |
| Thin paper | 2 |
| 24 lb paper (single sheet) | 3 |
| Multi-part forms 2-sheet<br>3-sheet | 2<br>3 |
| Labels | 4 |
| Envelopes     Air mail<br>Plain<br>Bond (20 lb)<br>Bond (24 lb) | 4 or 5<br>6<br>6<br>7 |

## Multi-part forms

With the pull-tractor installed, your printer can print on continuous multi-part forms of up to three parts (including the original). Make sure you set the paper thickness lever to the proper position using the table above.

## Labels

When printing labels, always choose the type mounted on a continuous backing sheet with sprocket holes for use with a tractor.

**CAUTION:**

l   Never feed labels backward through the printer. Labels can easily peel off the backing and jam the printer.

l   Since labels are especially sensitive to temperature and humidity, use them only under normal operating conditions.

l   Do not leave labels loaded in the printer between jobs; they curl around the platen and may jam when you're resume printing.

## Envelope

You can load envelopes just like single-sheet paper. However, you should pay attention to the special considerations below:



LOAD/EJECT
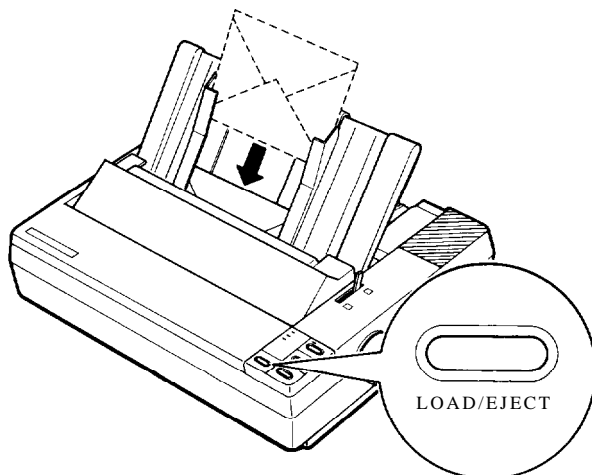
> **CAUTION:** Only use envelopes under normal operating condition.

**Note:**
- Always set the paper-thickness lever to the position indicated for envelopes in the paper-thickness lever section in this chapter.

- Always feed envelopes by inserting the wide edge into the printer.

- Make sure your application software keeps the printing within the printable area of the envelopes you are using.

Chapter 3

# Using the Printer

3

# Operating the Control Panel

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

## Lights
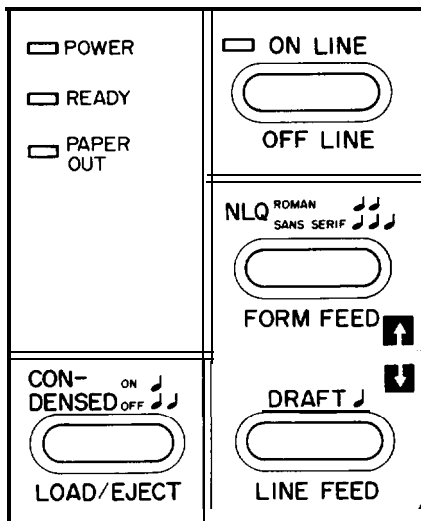


**POWER** (green)
On when the power switch is on and power is supplied.

**READY** (green)
On when the printer is ready to accept input data. This light flickers during printing.

**PAPER OUT** (red)
On when the printer is out of paper or when continuous paper is in the standby position. The printer also beeps when it is out of paper.

**ON LINE** (green)
On when the printer can receive and print data from the computer. When this light is blinking, you can use the micro-adjustment feature.

## Buttons

**ON LINE**
This button controls the printer's on line/off line status. When the printer is on line, the ON LINE light is on and the printer can receive and print data from **the** computer.

### FORM FEED

When **the** printer is off line, press this button to eject a single sheet of paper or to advance continuous paper to the top of the next page.

### LINE FEED

When the printer is off line and paper is loaded, press this button to feed the paper one line, or hold it down to feed paper continuously.

### LOAD/EJECT

Use this button to feed the paper to the loading position or to eject paper that is already loaded. The printer ejects paper forward if the paper release lever is set to the single-sheet position; it ejects paper backward (removes it from **the** paper path) if the release lever is set to the continuous-paper position.

## SelecType

When the printer is on line, you use **the FORM FEED, LINE FEED,** and **LOAD/EJECT** buttons to select the printer's built-in character fonts.

### NLQ

Press this button to select the NLQ Roman and NLQ Sans Serif fonts. When you select Roman, the printer beeps twice. When you select Sans Serif, the printer beeps three times.

### DRAFT

Press this button to select draft printing. When you select draft printing, **the** printer beeps once.

### CONDENSED

Press this button to select or deselect the condensed mode. The printer beeps once when you select the condensed mode and beeps twice when you deselect it. In the condensed mode all characters are approximately 60% of their normal width.

Note: You cannot select the condensed mode while using the Roman or Sans Serif NLQ fonts.

## Other control panel features

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

Self test: The self test lets you check that your printer is operating properly and prints out the current DIP switch settings. See the section on testing the printer in Chapter 1 for more information.

Micro-adjustment: The micro-adjustment function allows you to make fine adjustments to the loading and short tear-off positions. See the section on adjusting the loading position in Chapter 2 and the section on using short tear-off later in this chapter.

Data dump: The data dump mode allows advanced users to find the cause of communication problems between the printer and application programs. To use data dump mode, make sure that paper is loaded and the printer is off. Then hold down the **FORM FEED** and **LINE FEED** buttons and turn on the printer. Your printer then prints all codes it receives in hexadecimal format, as shown below.

To turn off data dump mode, press the **ON LINE** button to take the printer off line; then turn off the printer.

# Setting the DIP Switches

By changing the settings of the two sets of DIP switches on the right side of the printer, you can control various printer features, such as the character set and page length. These new settings become effective whenever the printer is turned on, reset, or initialized.

## Changing a DIP switch setting

1. Turn off the printer.

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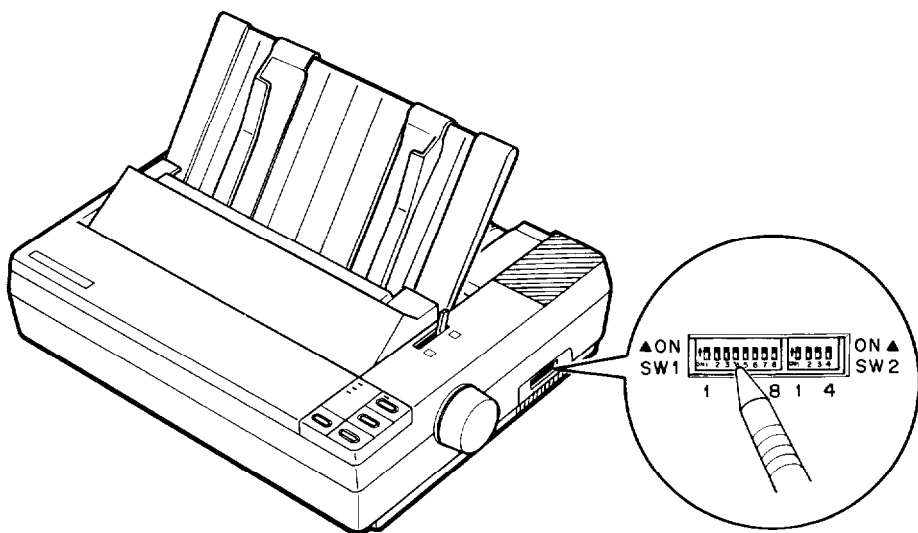


The new DIP switch settings take effect when the printer is turned on.

# DIP switch settings

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

*DIP Switch 1*

| SW | Description | ON | OFF |
|----|-------------|-----|-----|
| 1-1 | Character spacing | 12 cpi | 10 cpi |
| 1-2 | Shape of zero | Slashed | Not slashed |
| 1-3 | Page length | See Table 1 | |
| 1-4 | | | |
| 1-5 | Character table | Graphics | Italics |
| 1-6 | International | See Table 2 | |
| 1-7 | characters and | | |
| 1-8 | PC selection | | |

*DIP Switch 2*

| SW | Description | ON | OFF |
|----|-------------|-----|-----|
| 2-1 | Short tear-off | Invalid | Valid |
| 2-2 | Cut-sheet feeder mode | ON | OFF |
| 2-3 | Skip-over-perforation | ON | OFF |
| 2-4 | Auto line feed | ON | OFF |

*Table 1 Page length*

| Page length | SW1-3 | SW1-4 |
|-------------|-------|-------|
| 11 inches | OFF | OFF |
| 12 inches | ON | OFF |
| 8.5 inches | OFF | ON |
| 11.7 inches | ON | ON |

*Table 2 International character set and PC selection*

| Country | PC | SW1-6 | SW1-7 | SW1-8 |
|---------|-----|-------|-------|-------|
| United States | PC 437 | ON | ON | ON |
| France | PC 850 | ON | ON | OFF |
| Germany | PC 860 | ON | OFF | ON |
| United Kingdom | PC 863 | ON | OFF | OFF |
| Denmark | PC 865 | OFF | ON | ON |
| Sweden | PC 437 | OFF | ON | OFF |
| Italy | PC 437 | OFF | OFF | ON |
| Spain | PC 437 | OFF | OFF | OFF |

## DIP switch functions

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

### Character spacing

DIP switch 1-1 controls the character spacing. If this switch is off, the printer prints with character spacing of 10 cpi (characters per inch); if it is on, the printer prints with character spacing of 12 cpi.

> **This is 10 cpi** printing.
> **ABCDEFGHIJKLabcdefghijkl**
> This is 12 cpi printing.
> **ABCDEFGHIJKL&cdefghijkl**

### Shape of zero

When DIP switch 1-2 is on, the printer prints slashed zeros (0); when off, the printer prints open zeros *(0)*.

### Page length

DIP switches 1-3 and 1-4 control the page length. You can select a page length of 216 mm (8.5 inches), 279 mm (11 inches), 296 mm (11.7 inches), or 305 mm (12 inches).

## Short tear-off

When you are finished printing (when the printer receives a full page of data or a form feed and then no more data for three seconds), this feature automatically feeds the perforation of continuous paper to the tear-off edge of the printer cover so that you can tear off the last sheet. When you resume printing, the paper feeds backward to the loading position. To use this feature, set DIP switch 2-1 to off and load continuous paper. Moving the paper release lever to the single-sheet position disables the short tear-off function.

## Adjusting the short tear-off position

1.  Make sure that the short tear-off feature is turned on and that the paper is in the short tear-off position.

2.  Press and hold the ON LINE button until the printer beeps once and the ON LINE light begins blinking.

3.  Press the FORM FEED button to feed the paper forward or the LINE FEED button to feed it backward.

When you resume printing, the ON LINE light stops blinking and the printer remembers the new tear-off position even after you turn off the power.

## Skip-over-perforation

If DIP switch **2-3** is on when you are using continuous paper, the printer leaves a 25.4-mm (one-inch) space between the last line on one page and the first line on the next page so that the printer can skip over the perforation. Because most application programs take care of the top and bottom margins do not turn on skip-over-perforation unless your program does not provide these margins.

# Selecting  Typestyles

You can produce a wide range of typestyles by combining different character fonts, widths, and other enhancements. You can select typestyles using the SelecType feature on your control panel, **the** DIP switches, or software commands.

## Character  fonts

The printer has three fonts: draft, NLQ Roman, and NLQ Sans Serif. The draft font uses fewer dots per character to allow high-speed printing, which makes it ideal for rough drafts and editing work.

NLQ Roman and NLQ Sans Serif are Near Letter Quality fonts. Near Letter Quality produces nicely formed characters suitable for most documentation needs.

To select the draft font, press the **DRAFT (LINE FEED)** button when the printer is on line. When you select the draft font, the beeper sounds once.

To select the NLQ font, press the **NLQ (FORM FEED)** button when the printer is on line. When you select the NLQ Roman font, the printer beeps two times. When you select the NLQ Sans Serif font, the printer beeps three times.

The following samples show the characters for each font.

**Draft**

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

**Epson Roman**

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

**Epson Sans Serif**

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

## Condensed mode

You can use the condensed mode to change the character size. In the condensed mode, characters are approximately 60% of the width of normal characters. You can condense both 10 and 12 cpi in draft mode but not NLQ.

To select or cancel condensed mode, press the **CONDENSED (LOAD/EJECT)** button when the printer is on line. When you select the condensed mode, the printer beeps once. When you cancel the condensed mode, the printer beeps twice.

# Selecting an International Character Set

International character sets provide you with some characters and symbols used in other languages. The table below shows the eight international character sets you can select with DIP switches 1-6, 1-7, and 1-8 when DIP switch 1-5 is turned off. The table also shows the characters that differ in each set.

| Country | ASCII code hex | | | | | | | | | | | | DIP SW | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 23 | 24 | 40 | 5B | 5C | 5D | 5E | 60 | 7B | 7C | 7D | 7E | 1-6 | 1-7 | 1-8 |
| 0 U.S.A. | # | $ | @ | [ | \ | ] | ^ | ` | { | ¦ | } | ~ | ON | ON | ON |
| 1 France | # | $ | à | ° | ç | § | ^ | ` | é | ù | è | ¨ | ON | ON | OFF |
| 2 Germany | # | $ | § | Ä | Ö | Ü | ^ | ` | ä | ö | ü | ß | ON | OFF | ON |
| 3 U.K. | £ | $ | @ | [ | \ | ] | ^ | ` | { | ¦ | } | ~ | ON | OFF | OFF |
| 4 Denmark 1 | # | $ | @ | Æ | Ø | Å | ^ | ` | æ | ø | å | ~ | OFF | ON | ON |
| 5 Sweden | # | ¤ | É | Ä | Ö | Å | Ü | é | ä | ö | å | ü | OFF | ON | OFF |
| 6 Italy | # | $ | @ | ° | \ | é | ^ | ù | à | ò | è | ì | OFF | OFF | ON |
| 7 Spain 1 | Pt | $ | @ | ¡ | Ñ | ¿ | ^ | ` | ¨ | ñ | } | ~ | OFF | OFF | OFF |

> **Note:** If you wish to select an international character set when DIP switch 1-5 is turned on, use the ESC R command.

Besides the eight sets above, the five international character sets shown below are also available through the ESC R command.

| Country | ASCII code hex | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 23 | 24 | 40 | 5B | 5C | 5D | 5E | 60 | 7B | 7C | 7D | 7E |
| 8 Japan | # | $ | @ | [ | ¥ | ] | ^ | ` | { | ¦ | } | ~ |
| 9 Norway | # | ¤ | É | Æ | Ø | Å | Ü | é | æ | ø | å | ü |
| 10 Denmark II | # | $ | É | Æ | Ø | Å | Ü | é | æ | ø | å | ü |
| 11 Spain II | # | $ | á | ¡ | Ñ | ¿ | é | ` | í | ñ | ó | ú |
| 12 Latin America | # | $ | á | ¡ | Ñ | ¿ | é | ü | í | ñ | ó | ú |

# Choosing a Character Table

Set DIP switch 1-5 on to select the graphics character tables. Set it off to select the italic character table. The graphics character table depends on the settings of DIP switches 1-6, 1-7, and 1-8.

If you have an IBM@ or IBM-compatible computer, select a graphics character set when you wish to print character graphics as they are displayed on the screen. Even if you select a graphics character set, you can still print ordinary text and italics. For italics, see your software manual or the description of the ESC 4 command in the Command Summary, Chapter 8.

You can also select the italics character set or a graphics character set using the ESC t command. See the Command Summary in Chapter 8.

*Graphics character sets*

| Graphics character set | SW1-6 | SW1-7 | SW1-8 | SW1-5 |
|---|---|---|---|---|
| PC 437 (United States) | ON | ON | ON | ON |
| PC 850 (Multilingual) | ON | ON | OFF | ON |
| PC 860 (Portugal) | ON | OFF | ON | ON |
| PC 863 (Canada-French) | ON | OFF | OFF | ON |
| PC 865 (Norway) | OFF | ON | ON | ON |

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

The characters in each character set are shown in the Appendix.

> **Note:**
> * **To** change the setting of a DIP switch, first turn off the printer. Then change the DIP switch and turn the printer back on.
> * Use of the ESC 6 or ESC 7 commands lets you select whether to print hex codes 90 to 9E and FF as characters (ESC 6) or control codes (ESC 7).

Chapter 4

# **Using the Printer Options**

**4**

# Cut-Sheet Feeder

The optional cut-sheet feeder (C806121) makes it possible to handle single-sheet paper more easily and more efficiently. It feeds up to 150 sheets of standard bond paper into the printer automatically.

## Installing the cut-sheet feeder

1. Make sure that the printer is turned off. Remove the paper guide and printer cover. If the pull tractor is installed, remove it.

2. Separate the two halves of the printer cover by pressing on the tabs and pulling off the clear plastic half of the printer cover.
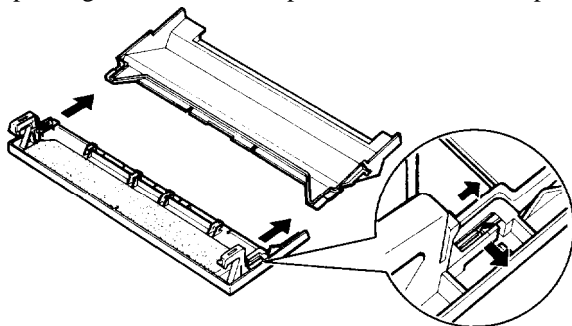


3. Attach the cut-sheet feeder cover to the front half of the printer cover.
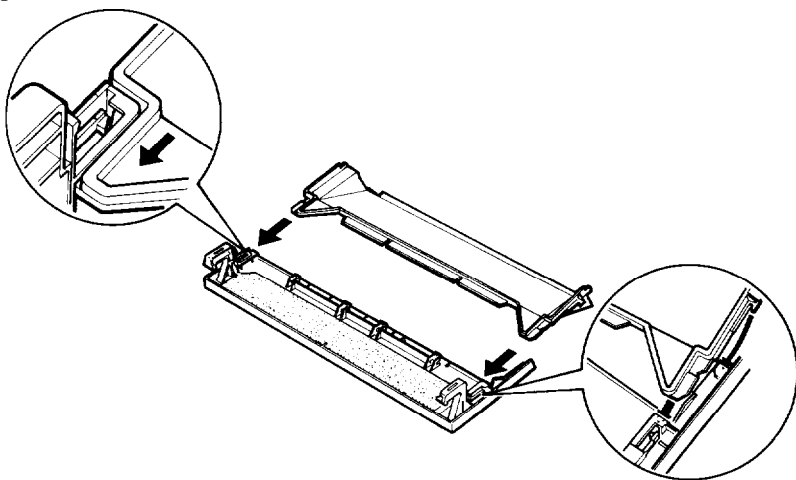
4. Push the paper release lever to the single-sheet position.

5. Hold the assembled cut-sheet feeder in both hands and fit its notches over the pins of the printer.
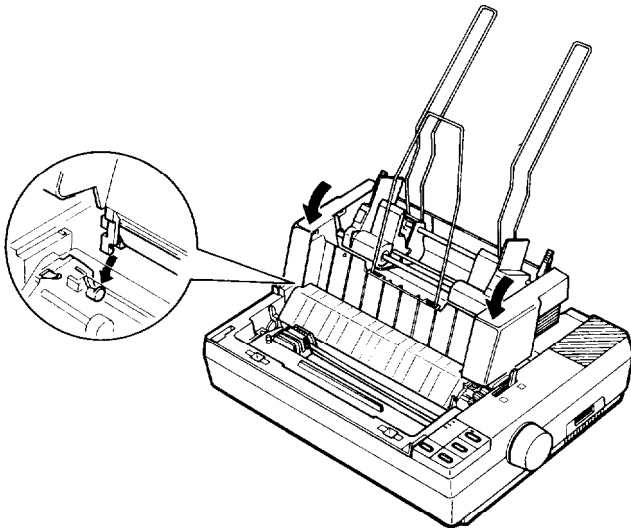


6. Attach the cut-sheet feeder cover to the printer.

7. Turn on the cut sheet feeder mode by setting DIP switch 2-2 to on.

8. Turn on the printer.

## Paper handling

1. Pull the left and right rear tabs on the cut-sheet feeder forward until the paper guides retract and lock open to allow for paper loading.
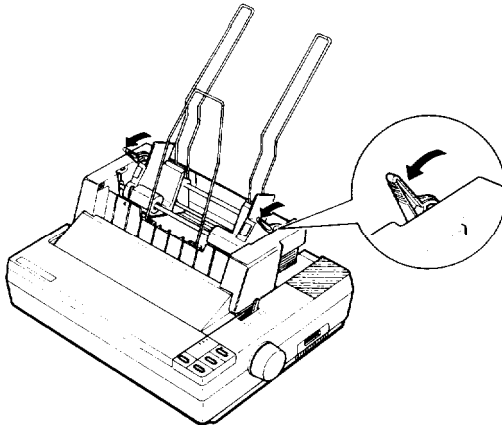
2. Slide the left paper guide to where the fin on the edge guide aligns with the arrow on the front panel. Next, slide the right paper guide to roughly match the width of your paper.
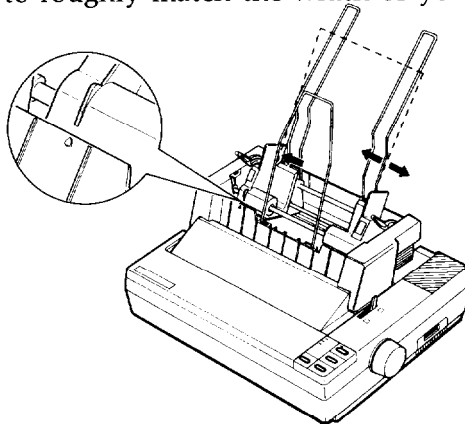
3. Take a stack of paper and fan it. Tap the side and bottom of the paper on a flat surface to even up the stack.

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

4.  Insert the paper along the left paper guide. Then adjust the right paper guide to match the paper width. Make sure that the paper can move freely up and down.

5.  Push the rear tabs on both paper guides backward to clamp the paper against the guide rollers.
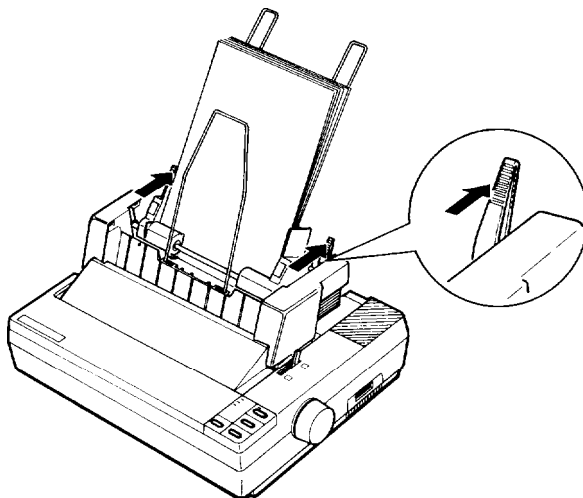


A new sheet of paper loads automatically whenever a printable character or line feed command is sent to the printer while the **ON LINE** light is on.

---

**Note:** Run the self test in the cut-sheet feeder mode. The printer counts the number of lines on the page in l/6-inch line spacing and prints out this number at the bottom of the first test page. Use this number to set the lines-per-page with your software.

---

## Switching between the cut-sheet feeder and push tractor

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** printer, press the **ON LINE** button to set the printer off line, then press the **LOAD/EJECT** button to eject.

2. Place the paper-release lever in the continuous paper position.

> **CAUTION:** To prevent paper feeding problem, when printing multiple pages, fold the first printed page forward after the perforation passes the printer cover edge.

### Switching to the cut-sheet feeder

1. If any printed sheets remain in the printer, press the **ON LINE** button to set the printer off line, then press the **FORM FEED** button to advance any printed continuous paper.

2. Tear off the printed pages.

3. Press the LOAD/EJECT button. The printer feeds the continuous paper backward to the standby position. The paper is still attached to the push tractor but is **no** longer in the paper path.

> **CAUTION:** Never feed labels backward. Labels **can** easily come off their backing and jam the printer.

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

## Single sheet insertion

Your cut-sheet feeder also has a single sheet loading feature. This feature is especially useful because it allows you to switch to a different type or size of paper (for one sheet only) without replacing the stack of paper in your cut-sheet feeder.

1. Press the **ON LINE** button to set the printer off line.

2. Align the single sheet to be fed with the mark on the left paper guide, then slide the sheet into the printer path until you feel resistance.
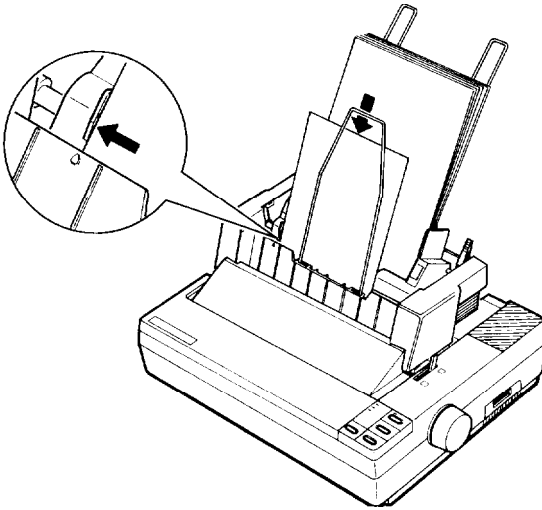


3. Press the **LOAD/EJECT** button to load the sheet.

## Removing the cut-sheet feeder

1.  Turn off the printer. If any paper remains in the bin, remove it.

2.  Remove the cut-sheet feeder cover.

3.  Tilt the front part of the cut-sheet feeder backward to release its notches from the pins in the printer and remove the cut-sheet feeder.
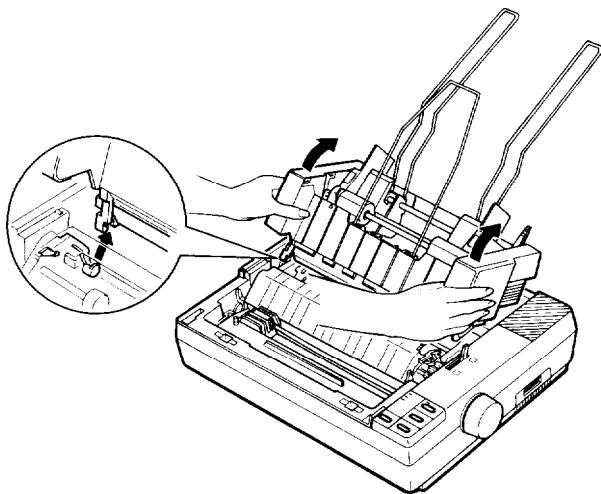


4.  Separate the cut-sheet feeder cover from the printer cover and replace the back half of the printer cover.

5.  Install the paper guide and printer cover.

6.  Turn off the cut-sheet feeder mode by setting DIP switch 2-2 to off.

Be sure to store the removed cut sheet feeder in its original box and packing materials.

# Pull Tractor

The optional pull tractor (C800061) provides optimum continuous paper handling and is especially useful with continuous multi-part forms and labels. For best results, use the pull tractor along with the built-in push tractor as described in this section. Do not use short tear-off with the pull tractor.

### Installing the pull tractor

1. Turn off the printer. Then remove the printer cover and paper guide.

2. Remove the paper tension unit cover.

3. Fit the tractor unit's rear notches over the rear mounting pins of the printer. Then tilt the tractor unit forward until its front latches lock onto the printer's front mounting pins.
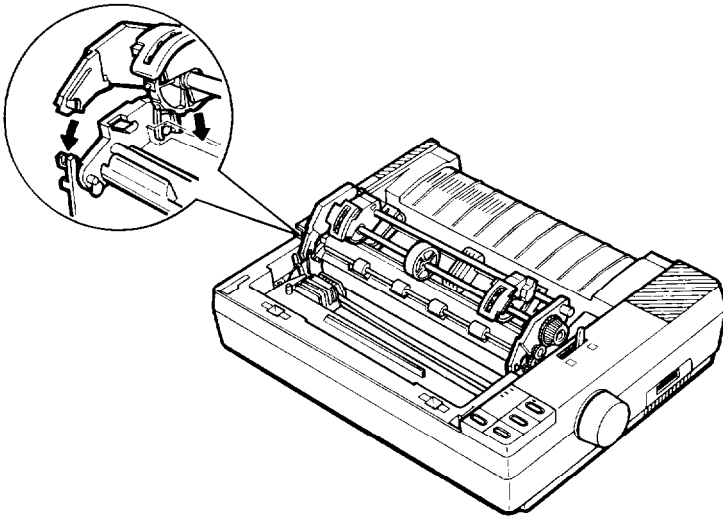
## Paper handling

1. Pull the paper release lever to the continuous paper position; then turn on the printer.

2. Position the push tractor's left sprocket unit about 6 mm (l/4 inch) from the far left position and lock it into place. Then load continuous paper onto the push tractor as described in Chapter 2.

3. Press the **LOAD/EJECT** button to load the continuous paper. Then press the **FORM FEED** button to advance the paper one page for fitting onto the pull tractor.

> **CAUTION:** If you use the platen knob to feed the paper, the printer loses track of the top-of-form position. Be sure-to press the **LINE FEED** or **FORM FEED** button to feed paper.

4. Open the pull tractor sprocket covers and release the sprocket units by pulling the sprocket locks forward.

5. Adjust the sprocket units to match the width of the paper; then position the paper support midway between the two sprocket units.

6. Fit the holes of the paper over the tractor pins of the sprocket units, and then close the sprocket covers.

7. If the paper does not fit exactly onto the tractor pins, press on the pull tractor knob and turn it in the desired direction until the paper fits properly.
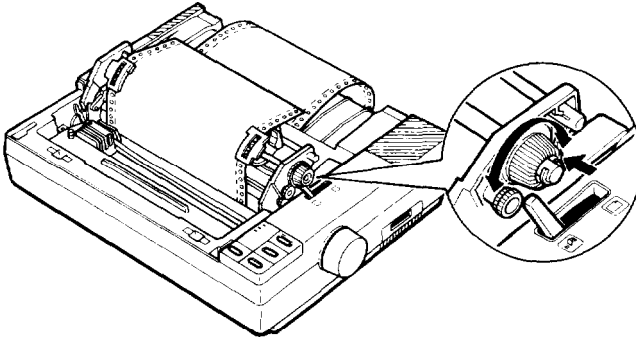


8. Make sure that the paper-release lever is set forward to the continuous paper position.

**CAUTION:** Make sure that the pull tractor's sprocket units are aligned with those of the built-in push tractor.

9. Separate the two halves of the printer cover by pressing on the tabs and pulling off the clear plastic half.
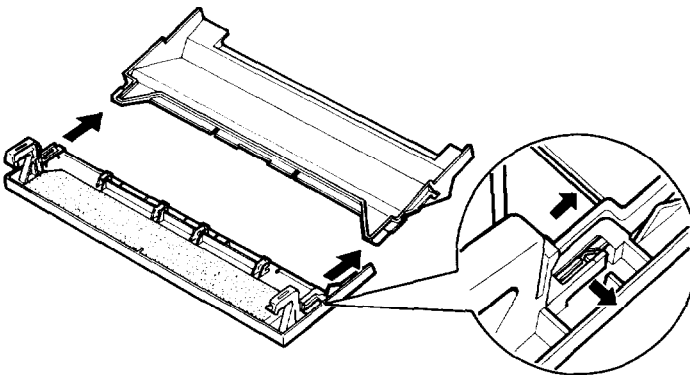
10. Attach the tractor cover to the front half of the printer cover.
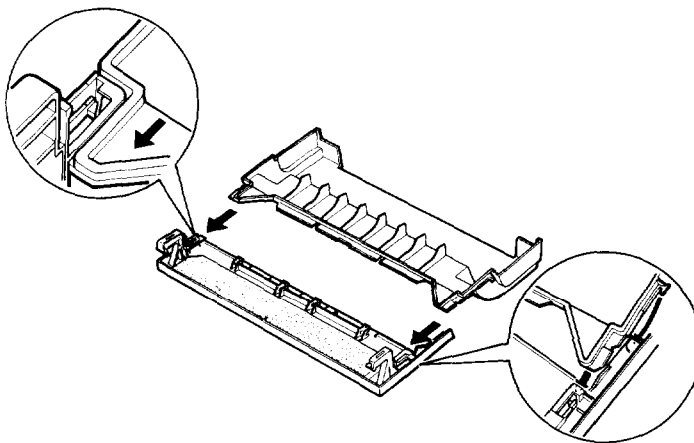


11. Install the paper guide; then slide the edge guides together so that they meet at about the center of the paper's width.

12. Install the pull tractor cover and press the **ON LINE** button to set the printer on line.

While the pull tractor can be used in combination with the built-in push tractor as described above, the pull tractor can also be used by itself. Instead of setting the paper on the pins of the push tractor, simply insert it through the same paper path as you would use with single-sheet paper.

## Removing the pull tractor

1. If you have a printed document in the printer, set the printer off line and press the **FORM FEED** button to feed the paper forward. Then tear off the document at the perforation.

2. Press the **ON LINE** button to set the printer off line. Then press the **LOAD/EJECT** button until the continuous paper feeds backward out of the printer to the standby position. (The **PAPER OUT** light comes on.)

> **CAUTION:** Never feed labels backward through the printer.

3. Remove the continuous paper from the push tractor unit.

4. Hold both ends of the tractor unit and slowly tilt the unit back until the front notches of the unit are free.
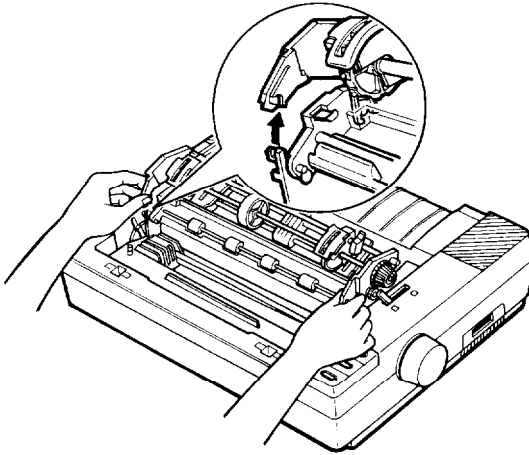


5. Lift the tractor unit up and off.

6. Reinstall the paper tension unit cover.
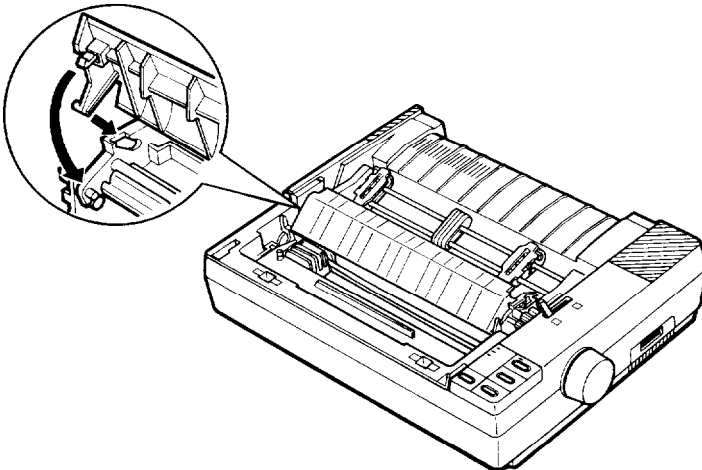


7. Separate the tractor cover from the printer cover and replace the clear plastic half of the printer cover.

8. Install the paper guide and printer cover. Push the paper release lever to the single-sheet position.

# 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. This provides an inexpensive alternative to continuous paper.

## Installing the roll paper holder

1. Turn off the printer and remove the paper guide.

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.
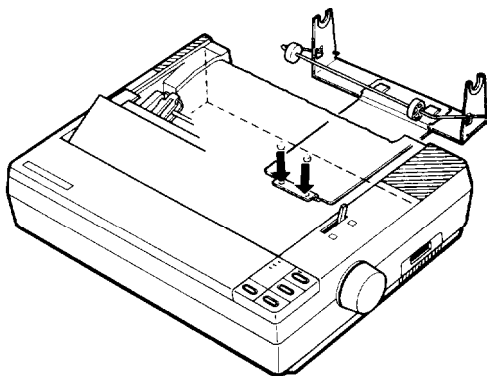


3. Push the paper-release lever to the single-sheet position

**CAUTION:** Only the weight of the printer holds the roll paper holder in place. The positioning pegs only prevent the holder from slipping out of position. If you pick up **the** printer, be careful to avoid dropping the roll paper holder.

## Paper handling

1.  Turn off the printer. Then push the paper-release lever to the single-sheet position.

2.  Cut the leading edge of the roll paper straight across.
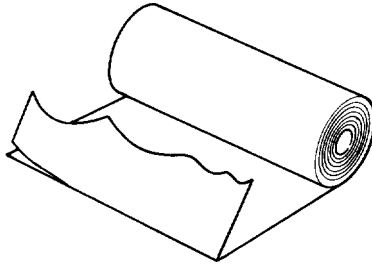


3.  Slide the roll paper holder shaft through the center of the paper roll.
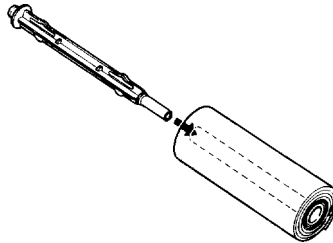


4.  Set the shaft and paper roll onto the roll paper holder. Orient the roll so that paper feeds from the bottom of the roll. Then turn on the printer.

5.  Bring the leading edge of the paper up over the paper path guide and insert it into the printer path until you feel resistance.

6. Press the **LOAD/EJECT** button to load the paper.

7.  Install the paper guide; then slide the edge guides together so that they meet at about the center of the paper's width. Press the ON LINE button to set the printer on line.
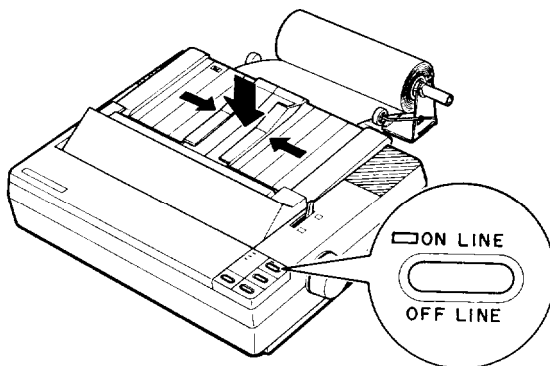


**Note:** To tear off paper after printing, set the printer off line, press the **LINE FEED** button to advance the paper, then tear off the paper against the tear-off edge of the printer cover.

## Removing the roll paper holder

1.  Cut across the paper behind the point where it feeds into the printer. Then use the **LOAD/EJECT** button to eject any paper remaining in the printer.

2.  Turn off the printer.

3.  Remove the paper roll and shaft from the roll-paper holder.

4.  Lift up the printer and separate the roll-paper holder from the printer.

Be sure to store the roll-paper holder in its original box and packing materials.

# Interface Boards

A number of optional interfaces are available. Serial interfaces are available if your computer is not equipped with a parallel interface or if you need an interface that conforms to the Current Loop standard. An IEEE-488 interface offers standardized connection, trouble-free operation, and the ability to connect computers, printers, and other devices on the same line so that they may share data freely.

Here is a list of Epson interfaces that are compatible with your printer. Note that some of these interfaces may not be available in your country or region.

| Interface number | Name |
|---|---|
| #8143 | New Serial interface |
| # 8148 | Intelligent serial interface |
| # 8165 | Intelligent IEEE-488 interface |

To learn more about interfaces, contact your Epson dealer.

## Installing an interface board

The following sections describe how to install an interface board.

### Removing the upper case

**CAUTION:** Use caution when removing or attaching the upper case to avoid damaging the printer.

1. Turn off the printer and remove the printer cover and paper guide.
2. Unplug the power cable from the electrical outlet.

**WARNING:** High voltages are present inside the printer when the power is on. Do not remove the upper case unless the printer is turned off and the power cord is unplugged. To prevent possible damage by discharge of static electricity, avoid touching contacts on the circuit board.

3. Remove the paper tension unit cover, ribbon cartridge, and platen knob.

4. Remove the push tractor by pressing the tabs on both sides using a pointed object.
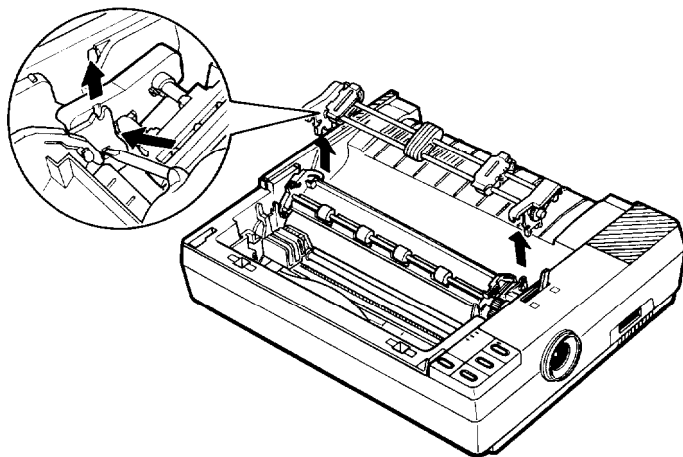


5. To remove the upper case, first position the printer so that its front extends slightly over the edge of a table, allowing access to the openings on the front of the underside of the printer.

> **CAUTION:** Make sure that the printer is not so far forward that it is in danger of falling off the table.

6.  Insert a screwdriver into the openings on the underside of the printer. Gently push the screwdriver up, and press the handle of the screwdriver toward the back of the printer to release the clips on the case.
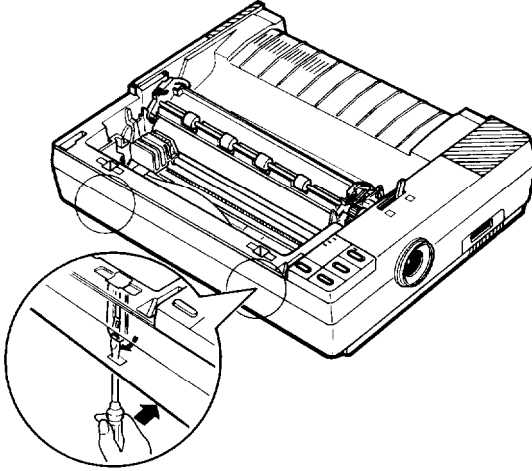


7.  Partially raise the upper case, taking care not to strain the flat cable attached to the control panel.

8. Carefully disconnect the flat control panel cable from the connector labelled CN3 on the main board.
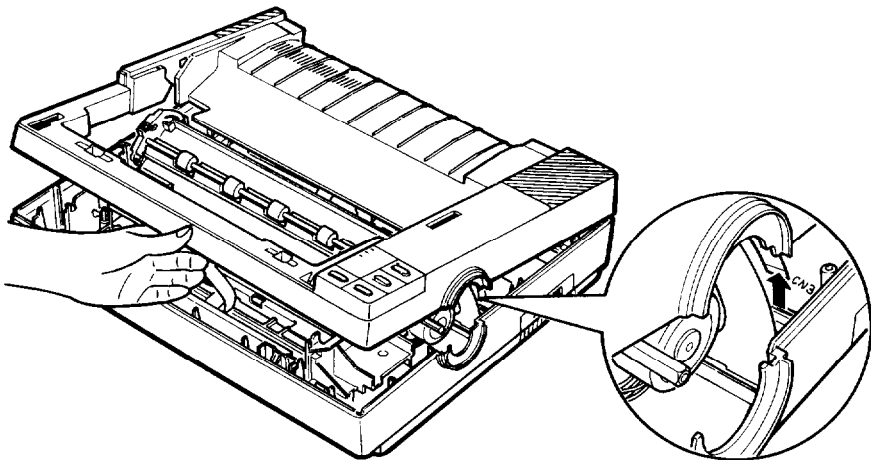
9.  Tilt the upper case backward; then remove it from the printer.

10. Remove the shield plate by pressing in on the plastic clips located at the back of the plate.
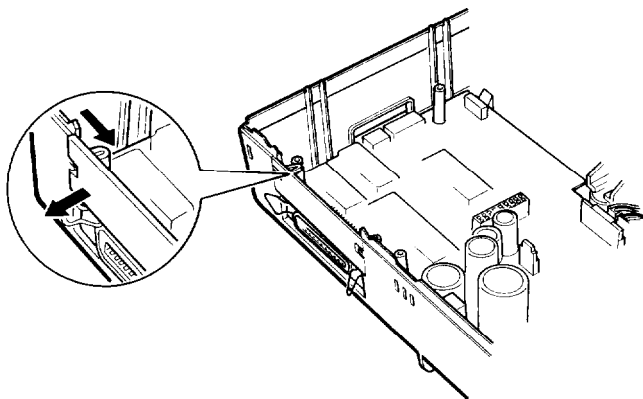


11. Using a cross-head screwdriver, remove the screw labelled CG from the main board.
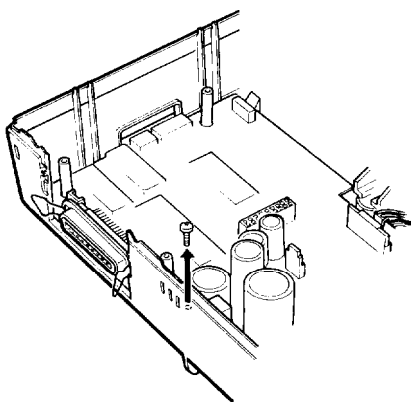
## Installing the board

There are two basic interface board designs, which differ with respect to how the frame ground (FG) wire is attached. This slight difference changes the way the boards are installed in the printer, but does not affect the operation of the interface in any way. Check below to see which type of interface board you have.
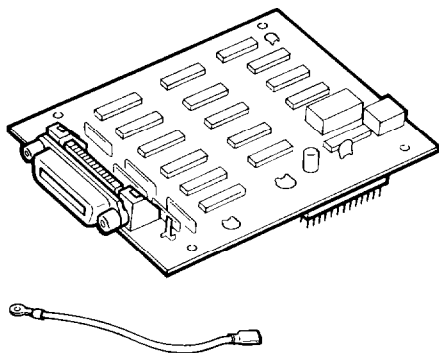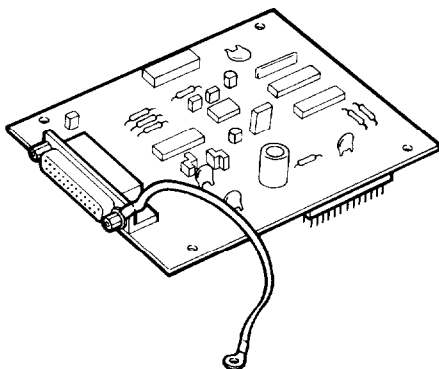


FG wire not attached                    FG wire attached

1.  Use the CG screw to attach the round end of the FG (frame ground) wire to the main board.
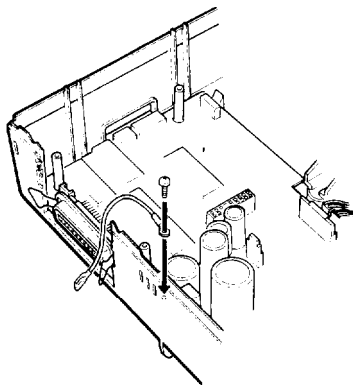
2. Carefully insert the pins on the optional interface board into the mating connector on the main board; then secure the board with the three screws provided.
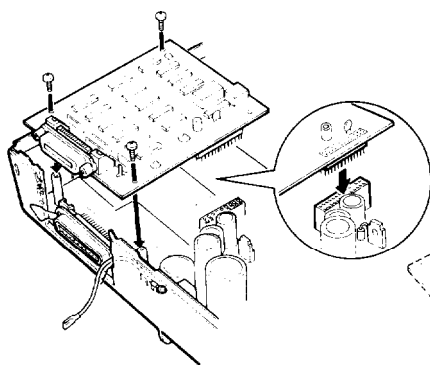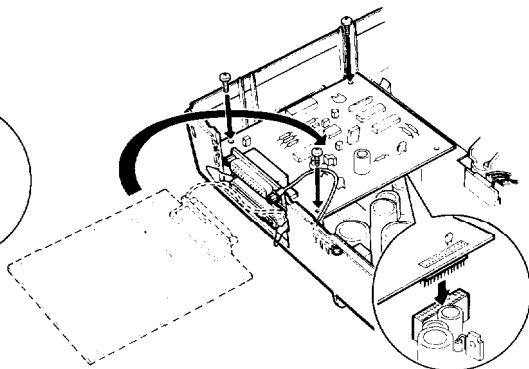


FG wire not attached          FG wire attached

3. If the FG wire is not attached to the interface board, attach the plug end of the FG wire onto the FG pin located on top of the interface board.
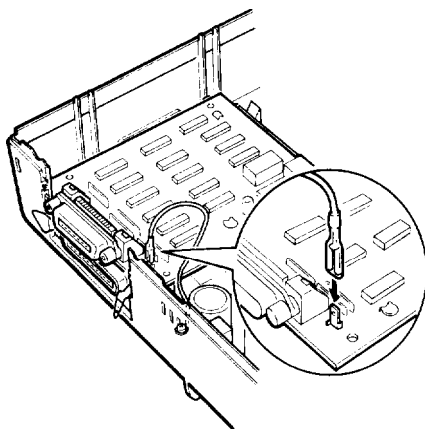
4. If you have the #8148 or #8165 interface boards, set the interface DIP switches according to the accompanying manual.

---

**Note:** If you have the #8143 interface board, you can select baud rates from 75 to 9600 BPS (Bits Per Second). (Make sure you use the bit rate selection table for printers with buffers in the #8143 interface manual.)

---

5. Reattach the upper case as described next.

## Attaching the upper case

1. Fit the hinges of the upper case into the openings in the lower case; then partially lower the upper case.



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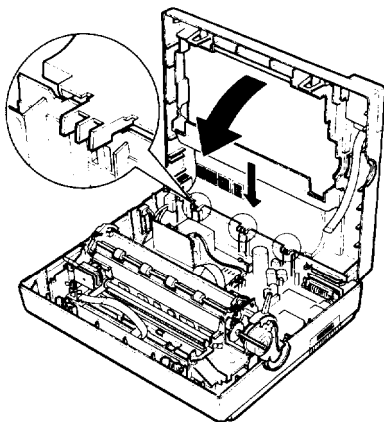
(!) **CAUTION:** Take care not to pinch the FG wire between the upper and lower cases.

---

2. Carefully insert the control panel cable into the connector labelled CN3 on the main board.
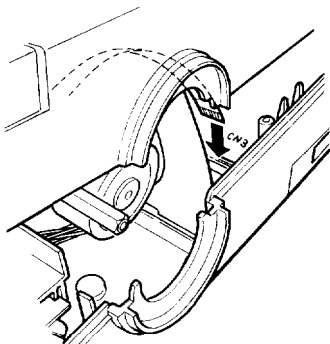


3. Close the upper case. Press down on the front of the case until it locks into place.

4. Reattach the push feed tractor.

5. Reattach the ribbon cartridge, paper tension unit cover, and platen knob.

**CAUTION:** When you install an optional interface board, be sure to disconnect the printer cable from the printer's built-in parallel interface. You must not connect two interface cables to the printer at the same time.

Chapter 5
# Maintenance

5

# Cleaning the Printer

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

1. Make sure that the printer is turned off. Then remove the paper guide or, if it is installed, the cut-sheet feeder.

2. Use a soft brush to carefully clear away all dust and dirt.

3. If the outer case or paper guide is dirty or dusty, clean it with a soft, clean cloth dampened with a mild detergent solution. Keep the printer cover in place to prevent water from getting inside the printer.

**CAUTION:**
- Never use alcohols or thinners to clean the printer, since these chemicals can damage the components as well as the case.

- Be careful not to get the printer mechanism or electronic components wet.

- Do not use a hard or abrasive brush.

- Do not spray the inside of the printer with lubricants; unsuitable oils can damage the mechanism. Contact your dealer or a qualified service person if you think lubrication is needed.

# Replacing the Ribbon

When your printing becomes too faint, you need to replace the ribbon. Use only the Epson #8750 standard ribbon cartridge with your printer. See Installing the ribbon cartridge in Chapter 1.

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

# Transporting the Printer

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

1.  Turn off the printer.

2.  Remove the paper guide, printer cover, and any installed options.

3.  Unplug the power cord from the electrical outlet; then disconnect the interface cable from the printer.

4.  Remove the ribbon cartridge and platen knob.

5.  Reattach the printer cover.

6.  Replace the packing materials and put the printer in its box.

Chapter 6
# Troubleshooting

# Problems and Solutions

This chapter presents solutions to possible printer problems. If you have difficulty achieving the desired printing result, first locate the problem in the listing below and then see the appropriate page for the solution. If these solutions do not solve your problem, see your dealer or a qualified service person.

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

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

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

**Options**
- When you use the cut-sheet feeder, the paper does not feed properly. See 6-10
- Switching between the cut sheet feeder and the push tractor does not work properly. See 6-11
- Using the pull tractor with the push tractor, continuous paper does not feed properly. See 6-11
- With the roll paper holder, paper does not feed properly. See 6-13
- With an optional interface, the printer does not operate properly. See 6-15

# Power Supply

This section supplies solutions for possible power supply problems.

## Power is not being supplied.

- *The POWER light does not go on.*

    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 into the outlet to determine whether the outlet is operating properly.

- *The POWER light comes on briefly and then goes off. The light stays 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 cable to an electrical outlet.

# Printing

This section supplies solutions for possible printing problems.

**The printer does not print.**

• *The ON LINE light is off.*

> Press the **ON LINE** button to put the printer on line.
>
> If the **ON LINE** light comes on when you remove the printer cable, either the cable or **the** interface is bad.

• *The ONLINE light is on but nothing is printed.*

> Check that the software is installed properly for your printer.
>
> Check the software's printer settings.
>
> Check both ends of the interface cable between the printer and the computer. Make sure your interface cable meets both the printer and computer specifications.

• *The PAPER OUT light is on.*

> Load paper into the printer.
>
> If paper is already loaded, the paper may be set too far to the right for detection by the paper sensor. Move the paper a little to the left.

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

> The ribbon cartridge may not be installed properly. See the section on ribbon installation in Chapter 1.
>
> The ribbon may be worn out. Replace the ribbon cartridge.
>
> Check the paper-thickness setting.

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

    Turn off the printer and check for paper jams, a jammed ribbon, or other problems and try to print again. If the printer still does not print correctly, contact your dealer or a 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 the section on ribbon installation in Chapter 1.

- *The printout is faint.*

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

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

## Dots are missing in the printed characters or graphics.

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

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

ı *Dots are missing in random positions.*

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

**Printed characters are not what you expected.**

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

  Check that the software is correctly installed for your printer.

• *The font selected by SelecType does not print.*

  Your software may be overriding your SelecType setting. Check the printing style set in your software.

• *The wrong characters are printed.*

  The wrong character table or the wrong international character set may be selected. Check the DIP switch settings. See the section on DIP switches in Chapter *3.* Also, you may be using the wrong cable or your cable may not be properly connected.

**The print position is not what you expected.**

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

  Adjust the top margin set by your application software.

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

  Set DIP switch *2-4* off.

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

  Change the page-length setting with DIP switches *1-3* and 1-4. See the section on DIP switches in Chapter *3.*

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

• *Regular gaps occur in the printout.*

>    One-inch skip-over-perforation may be set. Set DIP switch *2-3* off.

>    Your line-per-page setting in your software may be incorrect.

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

>    Adjust the loading position. See the section on DIP switches in Chapter 3.

>    Make sure the DIP-switch settings match your required paper length. See the section on DIP switches in Chapter 3.

>    If your application program is setting the top and bottom margins, set DIP switch *2-3* off.

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

# Paper Handling

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

**Single sheets do not feed properly.**

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

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

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

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

• *When you press the* LOAD/EJECT *button, the platen does not rotate and paper does not feed.*

> If the **ON LINE** light is on, press the **ON LINE** button once to set the printer off line.

• *When you press the* LOAD/EJECT *button, the platen rotates but paper does not feed.*

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

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

> The cut-sheet feeder mode may be turned on. Set DIP switch 2-2 off.

> Make sure the paper size is within the specified range. See 7-3.

• *The paper does not fully eject.*

> See that the page-length setting is correct.

## Continuous paper does not feed properly.

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

> See that the paper-release lever is pulled forward to the continuous-paper position.

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

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

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

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

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

> Check that the paper size is within the specified range. See 7-3.

# Options

This section describes problems you may encounter while using an option with your printer.

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

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

    Make sure DIP switch 1-8 is set on. See the section on DIP switches in Chapter 3.

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

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

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

    Paper may be jammed near the print head.

    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.

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

• *The paper feed is crooked.*

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

> There may be too much paper in the stacker.

> Make sure that the paper guides are set correctly and that your paper is the proper size and quality.

ı *One page of printing has spread to two pages.*

> Check that the page-length setting and lines-per-page setting in your software are correct.

**Switching between the cut-sheet feeder and the push tractor does not work properly.**

• *You press the LOAD/EJECT button to load paper, but the desired paper type does not load.*

> 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.

• *When you change the paper-release lever position, the printer beeps continuously.*

> You may have changed the paper-release lever position while paper was in the paper path. Return the paper release lever to its former position and press LOAD/EJECT button. Then move the lever.

• *When you press the LOAD/EJECT button to eject continuous paper, the paper jams or does not fully eject.*

> You may have tried to reverse feed too many pages. Before ejecting the paper, always tear off the last printed page. Never press the LOAD/EJECT button more than twice.

**Using the pull tractor with the push tractor, continuous paper does not feed properly.**

• *When you press the* FORM FEED *or* LINE FEED *button, the platen does not rotate and paper does not feed.*

> The printer may be on line. Before using the control panel buttons to feed paper, always set the printer off line.

• *Paper feed is crooked or the paper jams.*

> Something may be obstructing the paper feed. Make sure that the paper can feed smoothly into the printer.

> The supply of paper may be too far from the printer. Position the paper supply so that it is no more than **1** meter (3 feet) from the printer.

> The paper may be caught on the edge guides. Make sure that the paper guide is installed over the paper and that the edge guides are positioned at the center of the paper's width.

> 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 pressing in and rotating the pull tractor feed knob on the right.

> The paper thickness lever may not be set correctly. Set the paper thickness lever to match the thickness of your paper.

> The paper may not meet the specification for your printer. Check that your paper is of the proper size, weight, and thickness, See Chapter **7.**

• *Several lines of space occur in the printout.*

> Skip-over-perforation may be set. Set DIP switch 2-3 to off.

• *Skip-over-perforation is set but does not work.*

> You may have changed the DIP switches with the power on. To make new DIP switch settings effective, turn the power off, then on again.

• *Skip-over-perforation is set, but the skip has shifted from the perforation, or the perforation does not fall in the center of the skip.*

> The page length for one page of the continuous paper may be set incorrectly. Set DIP switches 1-3 and 1-4, or use control codes ESC C or ESC C 0 to set the correct page length.

> The loading position of the paper may be too high or too low. Use the microadjustment feature to reset the loading position.

• *When printing ends, the paper feeds abruptly, and as it resumes printing, the paper feeds backward and comes off the pull tractor sprockets.*

> You may have selected the short tear-off, which you cannot use with the pull tractor. Be sure to set DIP switch 2-1 on.

• *When you press the LOAD/EJECT button to eject the paper, the paper comes off the pull tractor sprockets.*

> When the paper release lever is in the continuous paper position, the paper feeds backward to eject. When using the pull tractor, press the FORM FEED button to feed the paper forward.

**With the roll paper holder, paper does not feed properly.**

• *When you press the LOAD/EJECT button, the platen does not rotate and paper does not feed.*

> You may be trying to feed paper while the printer is on line (ON LINE light is on). Press the ON LINE button once to set the printer off line; then feed the paper. After feeding the paper, press the ON LINE button again to set the printer on line.

• *When you press the LOAD/EJECT button, the platen rotates but paper does not feed.*

> You may have pulled the paper release lever forward to the continuous paper position. Push the paper-release lever back to the single-sheet position.

> The position of the roll paper may be wrong. Position the paper roll so that the paper feeds off of the bottom of the roll.

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

> The roll paper holder may be installed incorrectly. Check that the holes in the base fit onto the two corresponding pegs at the bottom of the printer.

> The shaft with the paper roll may not be properly mounted on the roll paper holder. Make sure the shaft fits securely onto the roll paper holder.

> The position of the roll paper may be wrong. The roll should be oriented so that paper feeds from the bottom.

> The paper may be caught on the edge guides. Make sure that the paper guide is installed over the paper and that the edge guides are positioned at the center of the paper's width.

The paper guide may be in the upright position. Make sure that the paper guide is in the lowered position so that it can act as a paper separator.

The paper may be creased. Make sure the leading edge of the roll paper has a clean, straight edge.

The roll paper may not meet the specifications for your printer. Be sure to use only paper sizes or weights that are within the specified range.

## With an optional interface, the printer does not operate properly.

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

    The interface board may be loose or not properly connected. Check that the interface board is correctly inserted into the connector on the main board.

    You may not be using the correct interface. Check the specifications to make sure that you can use the interface with this printer.

    You may not be using the correct cable. Make sure that the cable matches the specifications of the interface.

    The DIP switches or jumpers on the interface board may not be set correctly.

    The computer and interface settings may not match. Match the settings for each condition.

Chapter 7
# Technical Specification

7

# Printer   Specifications

## Printing

*Print   method:*　　　9-pin impact dot matrix

*Print   speed:*　　　　Draft, 240 characters/second at 12 cpi
　　　　　　　　　　　200 characters/second at 10 cpi
　　　　　　　　　　　NLQ, 48 characters/second at 12 cpi
　　　　　　　　　　　40 characters/second at 10 cpi

*Printing   direction:* Bidirectional logic-seeking for text.
　　　　　　　　　　　Unidirectional for graphics. (Bidirectional for
　　　　　　　　　　　graphics can be selected with the proper
　　　　　　　　　　　software command.)

*Line   spacing:*　　　l/6 inch, l/8 inch, or programmable in
　　　　　　　　　　　increments of l/216 inch.

*Paper feed speed:*　　75 ms/line at l/6-inch line spacing with
　　　　　　　　　　　continuous feeding; 95 ms/line with
　　　　　　　　　　　intermittent feeding.

*Printable columns:*　 80 characters at 10 cpi
　　　　　　　　　　　96 characters at 12 cpi
　　　　　　　　　　　137 characters at 10 cpi condensed
　　　　　　　　　　　160 characters at 12 cpi condensed

*Buffer:*　　　　　　　4KB

*Character fonts:*　　 Draft
　　　　　　　　　　　Epson NLQ Roman
　　　　　　　　　　　Epson NLQ Sans Serif

*Characters tables:*　 96 standard ASCII characters, 12 international
　　　　　　　　　　　character sets, and 5 graphics character tables

## Paper

*Paper width:*    Single sheet
    182 to 257 mm (7.2 to 10.1 inches)
Continuous paper (including multi-part forms)
    101 to 254 mm (4.0 to 10.0 inches)
Labels (continuous only)
    63.5 X 23.8 mm (2 l/2 X 15/16 inches) minimum

*Paper length:*    Single sheet
    364 mm (14.3 inches) maximum

*Printable area:*

Single sheet and Roll paper

8.5 *mm* (0.33") *or more*
*50 mm* (1.97") *or more*

*3 mm (O.12")*                              *3 mm (0.12")*
*or more*                                 *or more*

*Printable area*

13.5 *mm* (0.53") *or more*
*60 mm* (2.36") *or more*
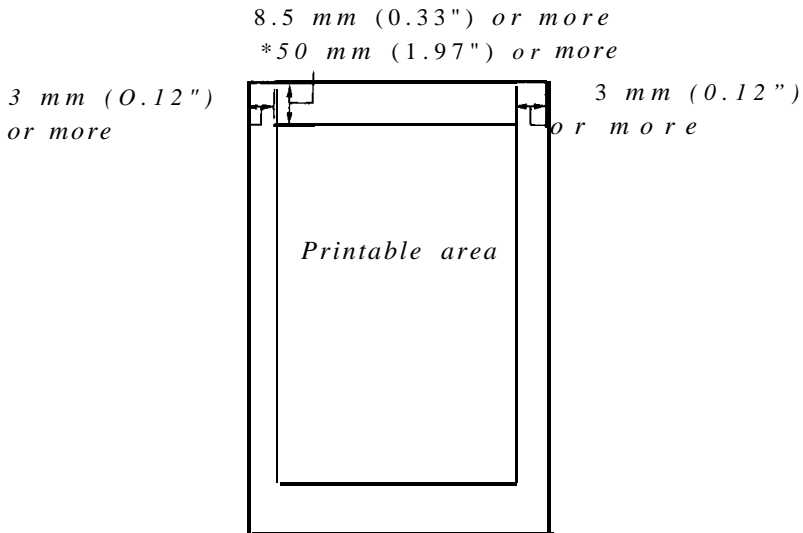
    *Roll paper

Continuous paper
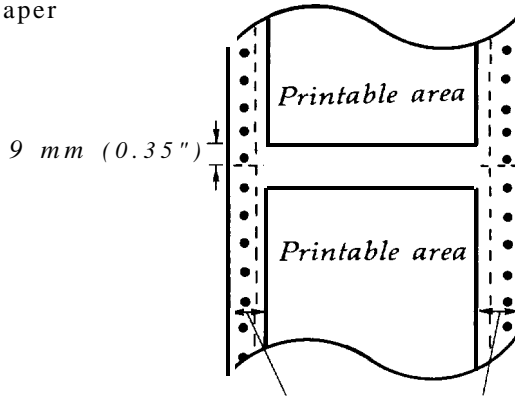


*1.3 mm (0.51 inch) or more (both sides) when the 101 mm to 242 mm (4 to 9.5 inch) width paper is used. 26 mm (1.02 inch) or more (left side) and 24 mm (0.94 inch) or more (right side) when the 254 mm (10 inch) width paper is used.*

Envelope



*8.5 mm (0.33")*

*2.2 mm (0.87") or more*

*3 mm (0.12") or more*
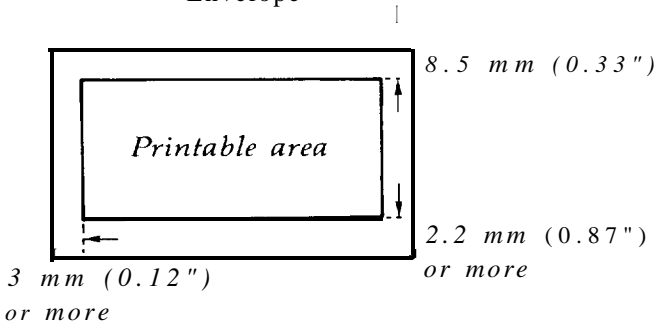
*Paper thickness:*    Single sheet
         0.065 to 0.140 mm (0.0025 to 0.0055")
       Continuous paper
         0.065 to 0.250 mm (0.0025 to 0.0098")
       Roll paper
         0.070 to 0.090 mm (0.0028 to 0.0035")
       Envelope
         0.160 to 0.520 mm (0.0063 to 0.0197")
       Label
         0.160 to 0.190 mm (0.0063 to 0.0075"
       including the base sheet)

*Paper weight:*   Single sheet
                     $52$ g/m$^2$ to $90$ g/m$^2$ (14 lb to 24 lb)
                  Continuous paper
                     $52$ g/m$^2$ to $82$ g/m$^2$ (14 lb to 22 lb)
                  Multi-part forms
                     [$45$ g/m$^2$ to $58$ g/m$^2$] X N
                     ([12 lb to 15 lb] X N)
                     N ‹ 3
                  Roll paper
                     $52$ g/m$^2$ to $64$ g/m$^2$
                     (14 lb to 17 lb)
                  Envelope
                     $45$ g/m$^2$ to $90$ g/m$^2$
                     (12 lb to 24 lb)

*Number of copies:* With continuous multi-part paper only; one
                  original plus up to two copies. Maximum
                  thickness: 0.25 mm (0.01 inch).

Note
- Print on 90 g/m$^2$ (24 lb) paper only at normal temperature.
- Printing on labels made of pressure sensitive paper jointed by
  perforations or pasting and with a total thickness of up to 0.3
  mm (0.012") is possible only when temperature is between 5°C
  to 35°C and 10% to 80% relative humidity.

## Mechanical

*Paper-feed methods:*   Friction
                        Push tractor
                        Pull tractor (optional)
                        Cut-sheet feeder (optional)
                        Roll-paper holder (optional)

*Ribbon:*          Black ribbon cartridge #8750
                   Life expectancy at 14 dots/character:
                   3 million characters

| | |
|---|---|
| *M C B F :* | For all components excluding print head: 3 million lines |
| *M T B F :* | 4000 power-on hours (25% duty) |
| *Print head life:* | 200 million strokes/wire |

| *Dimensions and weight:* | | |
|---|---|---|
| | Width: | 418 mm (16.5 inches) |
| | Depth: | 339 mm (13.3 inches) |
| | Height: | 141 mm (5.6 inches) |
| | Weight: Approx. 5.8 kg (12.8 lb) | |

## Electrical

| | |
|---|---|
| *Input voltage range:* | 120 V AC ± 10% (120 V model) |
| *Power consumption:* | Approx. 28 W (during self test printing in draft mode) |
| *Rated frequency range:* | 50.0 ± 0.5 Hz, 60.0 ± 0.5 Hz |
| *Insulation resistance:* | 10 Ma between AC power line and chassis |
| *Dielectric strength (between AC line and chassis):* | 120 V model can withstand 1.0 kV rms applied for one minute. |

## Environmental

| | |
|---|---|
| *Temperature:* | Operation: +5°C to +35°C (41°F to 95°F) |
| | Storage: -30°C to +6O°C (-22°F to 140°F) |
| *Humidity:* | Operation: 10% to 80% without condensation |
| | Storage: 5% to 85% without condensation |

# Interface Specifications

Your printer is equipped with a parallel interface.

## Specifications and pin assignments

This interface has the following characteristics:

*Data format:* 8-bit parallel

*Synchronization:* STROBE pulse

*Handshake timing:* BUSY and $\overline{\text{ACKNLG}}$ signal

*Signal level:* TTL compatible level (with rise/fall times of less than 0.2 μsec).

*Connector:* 36-pin 57-30360 (Amphenol) connector or equivalent

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

| Signal Pin | Return Pin | Signal | Direction | Description |
|---|---|---|---|---|
| 1 | 19 | $\overline{\text{STROBE}}$ | IN | $\overline{\text{STROBE}}$ pulse to read data. Pulse width must be more than 0.5 μsec at the receiving terminal. |
| 2 | 20 | DATA 1 | IN | These signals represent information of the 1st to 8th bits of parallel data, respectively. Each signal is at HIGH level when data is logical 1 and LOW when it IS logical 0. |
| 3 | 21 | DATA 2 | IN | |
| 4 | 22 | DATA 3 | IN | |
| 5 | 23 | DATA 4 | IN | |
| 6 | 24 | DATA 5 | IN | |
| 7 | 25 | DATA 6 | IN | |
| 8 | 26 | DATA 7 | IN | |
| 9 | 27 | DATA 8 | IN | |
| 10 | 28 | $\overline{\text{ACKNLG}}$ | OUT | About a 12 μsec pulse. LOW indicates that data has been received and that the printer is ready to accept more data. |
| 11 | 29 | BUSY | OUT | HIGH indicates that the printer cannot receive data in the following cases: 1) During data entry (ea. char. time) 2) When off line 3) During printer error state |

| Signal Pin | Return Pin | Signal | Direction | Description |
|---|---|---|---|---|
| 12 | 30 | PE | OUT | HIGH indicates out-of-paper. |
| 13 | -- | SLCT | OUT | Pulled up to +5 V through 3.3 KΩ. |
| 14 | -- | AUTO FEED XT | IN | When this signal is LOW, the paper is automatically fed 1 line after printing. (Can be fixed LOW by setting DIP SW 2-4 ON. |
| 15 | -- | NC | -- | Unused. |
| 16 | -- | 0V | -- | Logic ground level. |
| 17 | -- | CHASSIS GND | -- | Printer's chassis ground (isolated GND from logic ground). |
| 18 | -- | NC | -- | Unused. |
| 19-30 | -- | GND | -- | Twisted-pair return signal ground level. |
| 31 | -- | INIT | IN | When this becomes LOW, the printer is reset to its power-up state and the print buffer is cleared. This level is usually HIGH; its pulse width must be more than 50 μsec at the receiving terminal. |
| 32 | -- | ERROR | OUT | Becomes LOW when the printer is: 1) in the paper out state. 2) off line. 3) in error state. |
| 33 | -- | GND | -- | Same as for Pins 19-30. |
| 34 | -- | NC | -- | Unused. |
| 35 | -- | -- | OUT | Pulled up to +5 V through 3.3 KΩ. |
| 36 | -- | SLCT IN | IN | Can be internally fixed with jumper J1. The level of this signal is set LOW at the factory. |

- "Direction" refers to signal direction as viewed from printer.

- "Return" denotes twisted-pair return, connected at signal ground level. Be sure to use a twisted-pair for each signal, and to complete the connection on the return side. Cables should be shielded and connected to the chassis of the host computer and the printer.

### Interface timing

The figure below shows the timing for the parallel interface.

BUSY

ACKNLG

DATA

STROBE

Approx. 5 μs

Approx. 7 μs

0.5 μs (Min.)

0.5 μs (Min.)

0.5 μs (Min.)
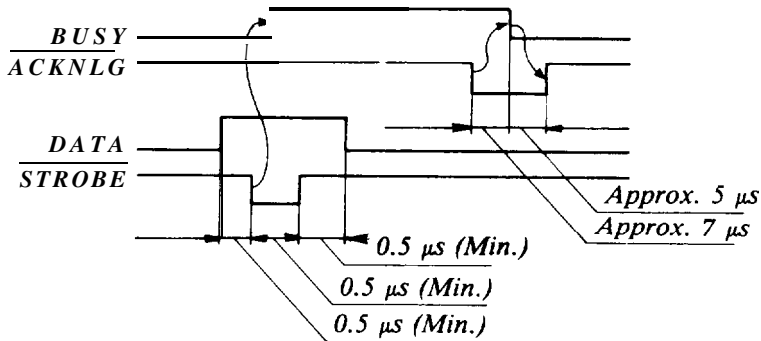
# Initialization

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

| Hardware initialization | • The power is turned on.<br>• The printer receives an INIT signal from the parallel interface (pin 31 goes LOW). |
|---|---|
| Software initialization | • Software sends the ESC @ (Initialize the printer) command. |

## Default settings

The table below shows the default conditions that become effective when the printer is initialized.

| Item | Default condition |
|---|---|
| Too of form position | Current paper position |
| Page length | The current DIP-switch setting |
| Left and right margins | Canceled |
| Line spacing | 1/6 inch |
| Vertical tab position | Cleared |
| Horizontal tab positions | Every eight characters |
| Font selection | The current SelecType setting |
| Special printing effects | Canceled |
| User-defined character set | Hardware: cleared<br>Software: deselected only |

In addition, hardware initialization clears the data buffer of all text.

Chapter 8
# Command Summary

8

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

ESC $ *n1 n2* is a command with two parameters.

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

# Commands Arranged by Topic

## Printer operation

| ASCII | Dec. | Hex. | Description |
|-------|------|------|-------------|
| ESC @ | **64** | **40** | Initialize Printer |
| DC1 | **17** | **11** | Select Printer |
| DC3 | **19** | **13** | Deselect Printer |
| ESC s 1/0 | **115** | **73** | Turn Half-Speed Mode On/Off |
| ESC < | **60** | **3C** | Select Unidirectional Mode (one line) |
| ESC U 1/O | **85** | **55** | Turn Unidirectional Mode On/Off |
| ESC 8 | **56** | **38** | Disable Paper Out Detection |
| ESC 9 | **57** | **39** | Enable Paper Out Detection |
| ESC EM *n* | **25** | **19** | Turn Cut-Sheet Feeder Mode On/Off<br>4: Turns mode on<br>0: Turns mode off |

> **Note:** For the ESC EM command, the variables are the characters "0" (48 decimal or 30 hex) and "4" (52 decimal or 34 hex). Do not use 0 decimal, 00 hex, 4 decimal, or 04 hex.

| | | | |
|-------|------|------|-------------|
| BEL | 7 | 07 | Beeper |

## Data control

| ASCII | Dec. | Hex. | Description |
|-------|------|------|-------------|
| CR | 13 | OD | Carriage Return |

| ASCII | Dec. | Hex. | Description |
|-------|------|------|-------------|
| CAN | 24 | 18 | Cancel Line |
| DEL | 127 | 7F | Delete Character |

## Vertical motion

| ASCII | Dec. | Hex. | Description |
|-------|------|------|-------------|
| FF | 12 | 0C | Form Feed |
| ESC C *n* | 67 | 43 | Set Page Length in Lines<br>*n* = no. of lines (1-127) |
| ESC C o *n* | 67 | 43 | Set Page Length in Inches<br>*n* = no. of inches (1-22) |
| ESC N *n* | 78 | 4E | Set Skip-Over-Perforation<br>*n* = no. of lines (1-127) |
| ESC O | 79 | 4F | Cancel Skip-Over-Perforation |
| LF | 10 | 0A | Line Feed |
| ESC o | 48 | 30 | Select 1/8-inch Line Spacing |
| ESC 1 | 49 | 31 | Select 7/72-inch Line Spacing |
| ESC 2 | 50 | 32 | Select 1/6-inch Line Spacing |
| ESC 3 *n* | 51 | 33 | Select *n/216-inch* Line Spacing |
| ESC A *n* | 65 | 41 | Select *n/72-inch* Line Spacing |
| ESC J *n* | 74 | 4A | Perform *n/216-inch* Line Feed |
| VT | 11 | 0B | Tab Vertically |

| ASCII | | | Dec. | Hex. | Description |
|-------|---|---|------|------|-------------|
| **ESC** | B | *nn* | 66 | 42 | Set Vertical Tabs<br>Up to **16** tabs; last n should be **0 (l-255)** |
| ESC | b | c *nn* | **98** | 62 | Set Vertical Tabs in Channels<br>Same as ESC B, except **that c** selects a channel for the vertical tabs, which must be between **0-7.** |
| ESC | / *c* | | 47 | 2F | Select Vertical Tab Channel |

## Horizontal motion

| ASCII | **Dec.** | Hex. | Description |
|-------|------|------|-------------|
| ESC 1 *n* | 108 | 6 C | Set Left Margin<br>*n* = left margin column |
| ESC Q *n* | 81 | 51 | Set Right Margin<br>*n* = right margin column |
| BS | 8 | 08 | Backspace |
| ESC e 0 *n* | 101 | 65 | Set Horizontal Tab Increments<br>*n* = horizontal tab interval in spaces *(n* ‹ 21 at 10 cpi, 25 at 12 cpi, or 36 in condensed modes) |
| ESC e 1 *n* | 101 | 65 | Set Vertical Tab Increments<br>*n* = vertical tab interval in lines |
| ESC f 0 *n* | 102 | 66 | Horizontal Skip<br>*n* = number of spaces to skip **(1-127)** |
| ESC f 1 *n* | 102 | 66 | Vertical Skip<br>*n* = number of lines to skip |

| ASCII | Dec. | Hex. | Description |
|---|---|---|---|
| HT | 9 | 09 | Tab Horizontally |
| ESC D *nn* | 68 | 44 | Set Horizontal Tabs<br>Up to 32 tabs (1-137) entered in<br>ascending order<br>Terminated by 0 |

## Overall printing style

| ASCII | Dec. | Hex. | Description |
|---|---|---|---|
| ESC x *n* | 120 | 78 | Select NLQ or Draft<br>1:NLQ<br>0:Draft |
| ESC k *n* | 107 | 6B | Select NLQ Font<br>0:Roman<br>l:Sans Serif |
| ESC ! *n* | 33 | 21 | Master Select<br>To find the value of *n,* add together<br>the numbers of the typestyles you<br>**want** to combine from the list below:<br>10 cpi: 0 decimal, 00 hex<br>12 cpi: 1, 01<br>condensed: 4, 04<br>emphasized: 8, 08<br>double-strike: 16, 10<br>double-width: 32, 20<br>italics: 64, 40<br>underline: 128, 80 |

## Print size and character width

| ASCII | Dec. | Hex. | Description |
|---|---|---|---|
| ESC P | 80 | 50 | Select 10 cpi |

| ASCII | Dec. | Hex. | Description |
|---|---|---|---|
| ESC M | 77 | 4D | Select 12 cpi |
| SI | 15 | 0F | Select Condensed Mode |
| ESC SI | 15 | 0F | Select Condensed Mode |
| DC2 | 18 | 12 | Cancel Condensed Mode |
| *s o* | 14 | 0E | Select Double-Width Mode (one line) |
| ESC So | 14 | 0E | Select Double-Width Mode (one line) |
| DC4 | 20 | 14 | Cancel Double-Width Mode (one line) |
| ESC W *1/O* | 87 | 57 | Turn Double-Width Mode On/Off |

## Print enhancement

| ASCII | Dec. | Hex. | Description |
|---|---|---|---|
| ESC E | 69 | 45 | Select Emphasized Mode |
| ESC F | 70 | 46 | Cancel Emphasized Mode |
| ESC **G** | 71 | 47 | Select Double-Strike Mode |
| ESC H | 72 | 48 | Cancel Double-Strike Mode |
| ESC So | *83* | 53 | Select Superscript Mode |
| ESC S1 | 83 | 53 | Select Subscript Mode |
| ESC T | 84 | 54 | Cancel Superscript/Subscript Mode |
| ESC 4 | 52 | 34 | Select Italic Mode |
| ESC 5 | 53 | 35 | Cancel Italic Mode |
| ESC-l/o | 45 | 2D | Turn Underline Mode On/Off |

## Word processing

| ASCII | Dec. | Hex. | Description |
|---|---|---|---|
| ESC a *n* | 97 | 61 | NLQ Justification<br>0:Left justification<br>1:Centering<br>2:Right justification<br>3:Full justification |

## Character tables

| ASCII | Dec. | Hex. | Description |
|---|---|---|---|
| ESC t *n* | 116 | 74 | Select Character Tables<br>Selects character table for codes 128-255.<br>0:Italic<br>1:Graphics |
| ESC R *n* | 82 | 52 | Select an International Character Set<br>0: USA 1: France 2: Germany 3: UK 4: Denmark I 5: Sweden 6: Italy 7: Spain I 8: Japan 9: Norway 10:Denmark II 11: Spain II 12: Latin America |
| ESC 6 | 54 | 36 | Printable Code Area Expansion |
| ESC 7 | 55 | 37 | Enable Upper Control Codes |

## User-defined characters

| ASCII | | | Dec. | Hex. | Description |
|---|---|---|---|---|---|
| ESC | & | *nn* | 38 | 26 | Define User-Defined Characters<br>ESC & 0 *nl n2 al* **dd**<br>*nl* = code for first character (58-63)<br>*n2* = code for last character (58-63)<br>*al* = use top (128) or bottom (0) 8 pins of print head<br>dd = In draft mode, 1 byte required for each of the 11 columns of each character being defined. In NLQ mode, 3 bytes required for each of 11 columns of each character being defined. |
| ESC: | *On* | 0 | 58 | 3A | Copy ROM into RAM<br>0:Roman<br>l:Sans Serif |
| ESC | % | O/l | 37 | 25 | Select User-Defined Set<br>0:Normal set<br>l:User-defined set |

## Graphics

| ASCII | | | Dec. | Hex. | Description |
|---|---|---|---|---|---|
| *E S C K n 1* | *n 2 7 5* | | | 4 B | Select Single-Density Graphics Mode<br>Total columns = *nl* + *(n2 X 256)* |
| *E S C L n 1* | *n 2 7 6* | | | 4 C | Select Double-Density Graphics Mode<br>Total columns = *n1* + *(n2 X 256)* |
| ESCY *n1 n289* | | | | 59 | Select High-Speed Double-Density Graphics Mode<br>Total columns = *n1* + *(n2 X 256)* |

| ASCII | | Dec. | Hex. | Description |
|---|---|---|---|---|
| *ESCZn1* | *n2* | 90 | 5A | Select Quadruple-Density Graphics Mode<br>Total columns = $n1 + (n2 \times 256)$ |
| *E S C \* m n 1 n 2* | | 4 2 | 2 A | Select Graphics Mode<br>Total columns = $n1 + (n2 \times 256)$ |

| Option | Alternate Code | | *m* | | Horiz. density (dots/in.) |
|---|---|---|---|---|---|
| Single-density | ESC K | | 0 | | 60 |
| Double-density | ESC L | | 1 | | 120 |
| High-speed double-density* | ESC Y | | 2 | | 120 |
| Quadruple-density* | ESC Z | | 3 | | 240 |
| CRT I | none | | 4 | | 80 |
| Plotter (1: 1) | none | | 5 | | 72 |
| CRT II | none | | 6 | | 90 |

\* Adjacent dots cannot be printed in this mode.

| | | | | |
|---|---|---|---|---|
| ESC ? *s n2* | 63 | 3F | | Reassign Graphics Mode<br>*s* is character (K, L, or Z) to be reassigned to mode *n* (O-6) |
| ESC **A** *m n1 n2* | 94 | 5E | | Select 9-Pin Graphics Mode<br>*m:* Print density *(0* for single, 1 for double)<br>Total columns = $n1 + (n2 \times 256)$ |

# Appendix

**A**

# Character Tables

These character tables are selected by setting DIP switches 1-5, 1-6, l-7, and l-8, or using the ESC t software command. For the graphics character tables, the ESC 6 and ESC 7 software commands let you select whether hex codes 80 to 9F are characters (ESC 6) or control codes (ESC 7).

## Italic character table

| CODE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | 0 | @ | P | ` | p | à | § | | 0 | @ | P | ` | p |
| 1 | | | ! | 1 | A | Q | a | q | è | ß | ! | 1 | A | Q | a | q |
| 2 | | | " | 2 | B | R | b | r | ù | Æ | " | 2 | B | R | b | r |
| 3 | | | # | 3 | C | S | c | s | ò | æ | # | 3 | C | S | c | s |
| 4 | | | $ | 4 | D | T | d | t | ì | Ø | $ | 4 | D | T | d | t |
| 5 | | | % | 5 | E | U | e | u | ° | ø | % | 5 | E | U | e | u |
| 6 | | | & | 6 | F | V | f | v | £ | ¨ | & | 6 | F | V | f | v |
| 7 | | | ´ | 7 | G | W | g | w | ¡ | Ä | ´ | 7 | G | W | g | w |
| 8 | | | ( | 8 | H | X | h | x | ¿ | Ö | ( | 8 | H | X | h | x |
| 9 | | | ) | 9 | I | Y | i | y | Ñ | Ü | ) | 9 | I | Y | i | y |
| A | | | * | : | J | Z | j | z | ñ | ä | * | : | J | Z | j | z |
| B | | | + | ; | K | [ | k | { | ¤ | ö | + | ; | K | [ | k | { |
| C | | | , | < | L | \ | l | ¦ | ₧ | ü | , | < | L | \ | l | ¦ |
| D | | | – | = | M | ] | m | } | Á | ß | – | = | M | ] | m | } |
| E | | | . | > | N | ^ | n | ~ | ä | é | . | > | N | ^ | n | ~ |
| F | | | / | ? | O | _ | o | | ç | ¥ | / | ? | O | _ | o | ß |

# Graphics character tables

## PC 437 (United States)

| CODE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | 0 | @ | P | ` | p | Ç | É | á | ▓ | └ | ╨ | α | ≡ |
| 1 | | | ! | 1 | A | Q | a | q | ü | æ | í | ▓ | ┴ | ╤ | β | ± |
| 2 | | | " | 2 | B | R | b | r | é | Æ | ó | ▓ | ┬ | ╥ | Γ | ≥ |
| 3 | | | # | 3 | C | S | c | s | â | ô | ú | │ | ├ | ╙ | π | ≤ |
| 4 | | | $ | 4 | D | T | d | t | ä | ö | ñ | ┤ | ─ | ╘ | Σ | ⌠ |
| 5 | | § | % | 5 | E | U | e | u | à | ò | Ñ | ╡ | ┼ | ╒ | σ | ⌡ |
| 6 | | | & | 6 | F | V | f | v | å | û | ª | ╢ | ╞ | ╓ | μ | ÷ |
| 7 | | | ´ | 7 | G | W | g | w | ç | ù | º | ╖ | ╟ | ╫ | τ | ≈ |
| 8 | | | ( | 8 | H | X | h | x | ê | ÿ | ¿ | ╕ | ╚ | ╪ | Φ | ° |
| 9 | | | ) | 9 | I | Y | i | y | ë | Ö | ⌐ | ╣ | ╔ | ┘ | Θ | ∙ |
| A | | | * | : | J | Z | j | z | è | Ü | ¬ | ║ | ╩ | ┌ | Ω | · |
| B | | | + | ; | K | [ | k | { | ï | ¢ | ½ | ╗ | ╦ | █ | δ | √ |
| C | | | , | < | L | \ | l | ¦ | î | £ | ¼ | ╝ | ╠ | █ | ∞ | ⁿ |
| D | | | - | = | M | ] | m | } | ì | ¥ | ¡ | ╜ | ═ | █ | ø | ² |
| E | | | . | > | N | ^ | n | ~ | Ä | ₧ | « | ╛ | ╬ | █ | ∈ | ■ |
| F | | | / | ? | O | _ | o | | Å | ƒ | » | ┐ | ╧ | █ | ∩ | |

## PC 850 (Multilingual)

| CODE | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | 0 | @ | P | ` | p | Ç | É | á | ▓ | └ | ð | Ó | - |
| 1 | | | ! | 1 | A | Q | a | q | ü | æ | í | ▓ | ┴ | Ð | ß | ± |
| 2 | | | " | 2 | B | R | b | r | é | Æ | ó | ▓ | ┬ | Ê | Ô | _ |
| 3 | | | # | 3 | C | S | c | s | â | ô | ú | │ | ├ | Ë | Ò | ¾ |
| 4 | | | $ | 4 | D | T | d | t | ä | ö | ñ | ┤ | ─ | È | õ | ¶ |
| 5 | | § | % | 5 | E | U | e | u | à | ò | Ñ | Á | ┼ | ı | Õ | § |
| 6 | | | & | 6 | F | V | f | v | å | û | ª | Â | ã | Í | μ | ÷ |
| 7 | | | ´ | 7 | G | W | g | w | ç | ù | º | À | Ã | Î | þ | ¸ |
| 8 | | | ( | 8 | H | X | h | x | ê | ÿ | ¿ | © | ╚ | Ï | Þ | ° |
| 9 | | | ) | 9 | I | Y | i | y | ë | Ö | ® | ╣ | ╔ | ┘ | Ú | ¨ |
| A | | | * | : | J | Z | j | z | è | Ü | ¬ | ║ | ╩ | ┌ | Û | · |
| B | | | + | ; | K | [ | k | { | ï | ø | ½ | ╗ | ╦ | █ | Ù | ¹ |
| C | | | , | < | L | \ | l | ¦ | î | £ | ¼ | ╝ | ╠ | █ | ÿ | ³ |
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## PC 863 (Canada-French)

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## PC 865 (Norway)

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# Glossary

The following definitions apply specifically to printers.

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

**auto line feed**
When this feature is enabled using a DIP switch the printer automatically follows each carriage return code (CR) with a line feed (LF) code.

**baud rate**
A measure of the speed of data transmission. Usually expressed in bits per second or bps.

**bidirectional printing**
Printing in which the print head alternates printing a line from left to right with printing from right to left. This increases the overall printing speed because the head prints in both directions.

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

**character table**
A portion of the printer's standard ASCII character set that can be used for either graphic symbols or italic characters.

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

**cut sheet feeder (CSF)**

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

**data dump**

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

**default**

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

**DIP switches**

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

**dot matrix**

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

**double-height printing**

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

**double-strike printing**

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

**double-width printing**

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

**draft**

One of two print qualities available on your printer. Draft uses less dots per character for faster printing.

**emphasized printing**

A way of producing darker characters. Each character of a line is printed in two passes of the print head; the second time, the dots are printed slightly to the right of the original dots.

**ESC/P**

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

**font**

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

**form feed**

Refers to both a control code and a panel button that advances the paper to the top of the next page.

**initialize**

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

**interface**

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

**line feed**

Both a control code and a panel button that advances the paper one line space.

**near letter quality (NLQ)**

One of two qualities available on your printer. Near letter quality reduces the print speed and increases the number of dots per character to produce high-resolution characters.

**on line**

When the printer is on line, it is able to communicate with the computer connected to it. The ON LINE button controls the printer's on line/off line status.

**reset**

To return a printer to its defaults, either by a command, an INIT signal, or by turning the printer off and on.

**top of form**

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

**unidirectional printing**

Printing in one direction only. Allows more precise vertical alignment than bidirectional printing. Often used for printing graphics.

**user-defined characters**

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

# Index

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

## KEY FEATURES

❏ Fast 240 CPS Draft Print Speed Capability
❏ Exclusive SelecType Control Panel
❏ Three Resident Fonts With Multiple Style Variations
❏ Graphics Capability
❏ Short Form Tear-Off
❏ Built-In 4K Buffer
❏ Epson Advanced Paper Handling
❏ Micro-Adjustment Paper Feed
❏ Epson Two-Year Limited Warranty

**EPSON AMERICA, INC.**

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