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Pinwriter  
**P2000/P2X**  
**User's Guide**

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**NEC**

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# Manufacturer's Instructions and User's Responsibility to Prevent Radio Frequency Interference

## *Manufacturer's Instructions*

The user must observe the following precautions in installing and operating this device:

1. Operate the equipment in strict accordance with the manufacturer's instructions for the model.
2. Plug the unit into a properly-grounded wall outlet and use the power cord supplied with the unit, unmodified.
3. Always operate the unit with the factory-installed cover on the unit.
4. Make no modification to the equipment which would cause radio frequency interference.
5. Maintain the equipment in a satisfactory state of repair.
6. Use a shielded and properly-grounded I/O cable to prevent radio frequency interference.

## *User's Responsibility*

The user is ultimately responsible for correcting problems that arise from harmful radio-frequency emissions from equipment under the user's control. If this equipment does cause interference to radio or television reception (which can be determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one of the following measures. All of these responsibilities and any others not mentioned are exclusively at the expense of the user.

1. Change in orientation of the receiving device antenna.
2. Change in orientation of the equipment.
3. Change in location of equipment.
4. Change in equipment power source.

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If these attempts are unsuccessful, install one or all of the following devices:

1. Line isolation transformers
2. Line filters
3. **Electro-magnetic** shielding

If necessary, the user should consult the dealer, NEC, or an experienced radio/television technician for additional suggestions.

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**NOTE:** The operator of a computing device may be required to stop operating the device upon finding that the device is causing harmful interference and it is in the public interest to stop operation until the interference problem has been corrected.

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# INTRODUCTION

Your new **Pinwriter® P2000/P2X** is an advanced, state-of-the-art matrix **printer** featuring high-speed printing and high-resolution **graphics**. A highly reliable and versatile **printer**, **the** Pinwriter prints up to 200 characters per second (**high-speed draft** mode) and **produces** hundreds of print **style** variations-

Pinwriter **P2000** is the **model** for Asia and Oceania.  
Pinwriter **P2X** is the model for Europe.

## Features

- ❑ **Plug and Play for Windows®** — Supporting the bidirectional parallel **interface** is **applicable** for using the “**Plug and Play**” of **Microsoft®** Windows95.
- ❑ **High-Speed printouts** — Up to 83 characters per second for printing the letter quality text, and 200 characters for the draft **text**.
- ❑ **High-resolution graphics** — 360 dpi graphics mode printing **can** smooth your **illustrations**.
- ❑ **Varioustypestyles** — Seven resident type styles will make your **document** look **great** .
- ❑ **Simple printer settings** — Two buttons on the control **panel** allow you to **change** the various **printer** settings easily.
- ❑ **Useful printouts** — The **P2000/P2X** has three **types** of test printouts for users. The self-test printout helps you to check the **printer** Operation and print results. The memory **switch** settings printout is useful to obtain the **printer** internal memory **settings**. **The** hex dump printout **can** be used for **program debugging**.
- ❑ **Removable tractor** — Allows you to print the continuous **paper** with your **desired paper handling**.
- ❑ **Software compatibility** — Compatible with the NEC Pinwriter series.
- ❑ **Sheet feeder (optional)** — Quickly and easily loads **cut** sheets. Also the sheet **feeder can** be used for Pinwriter P1200 and **P2Q**.

## Getting Service and Support

The dealer from whom you purchased your printer is backed by complete support resources and **programs** within **NEC**. Your dealer can provide you with details on all

- model number
- serial number
- where and when the printer was purchased
- description of the problem

## About this manual

- . Sections 1 through 5 of this manual provide basic instructions for getting your printer up and running. If you plan to use a software package with your computer and printer, you need not read past Section 6. However, if **you** have an interest in doing some of your own programming, Section 6 and Appendixes of the manual provide valuable programming information as well as hardware and paper specifications.

Notes, cautions, and warnings described in this manual are used as follows.

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**NOTE:** contains helpful hints and other important that helps you for using your P2000/P2X printer better.

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**CAUTION:** provides information about procedures which, if not observed, could result in damage to the P2000/P2X or other equipment.

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**WARNING:** means failure to follow specific procedures and practices may result in personal injury.

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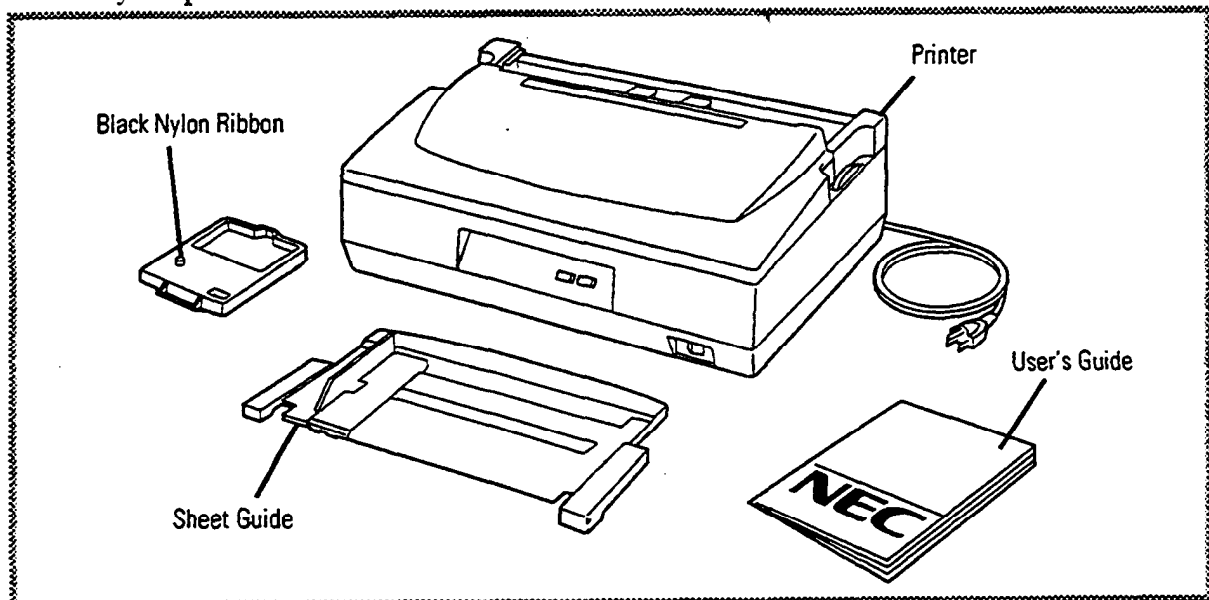


# 1 Start Here

*This section provides instructions for unpacking and setting up the Pinwriter models P2000 and P2X.*

## UNPACKING

The shipping carton contains the parts shown below. If any are damaged or missing, contact your printer dealer.



NOTE: Save the packing material in case you ever need to repack and move the printer to another location.

## OPERATING REQUIREMENTS

Before you set up your printer, be sure that you have an efficient work space. You should have a good Printer stand or similar type of table. In addition, you need the right kind of environment to keep your equipment running well.

Set up your printer in a location that is

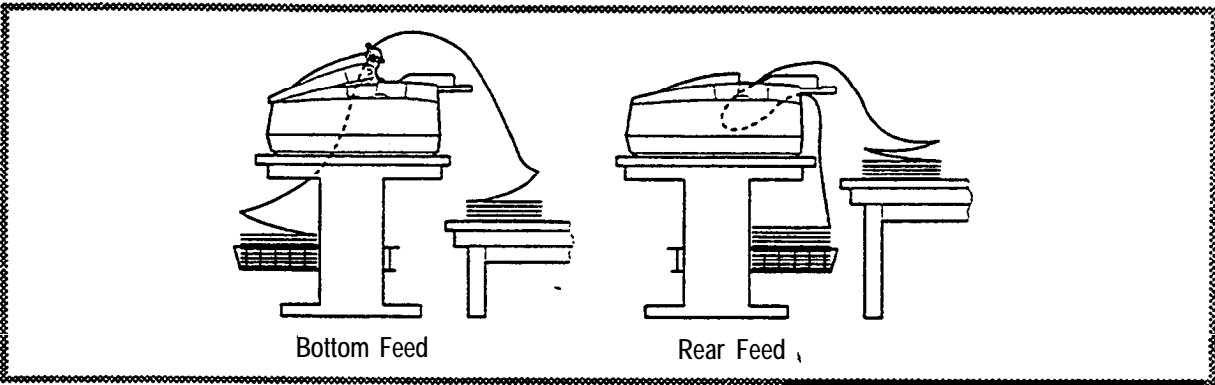
**well-ventilated**

Temperature 5° to 38°C (41° to 100°F)

Relative humidity 30% to 85% (45% to 70% with the optional sheet feeder installed)

Cl not exposed to direct sunlight

- away **from** equipment that generates strong magnetic fields or electrical interference, such as heaters, humidifiers, or equipment with large electric motors
- at least 10 cm (4 inches) from the wall, on a stable level floor, and **near** a power outlet
- spacious enough for easy access and paper flow.

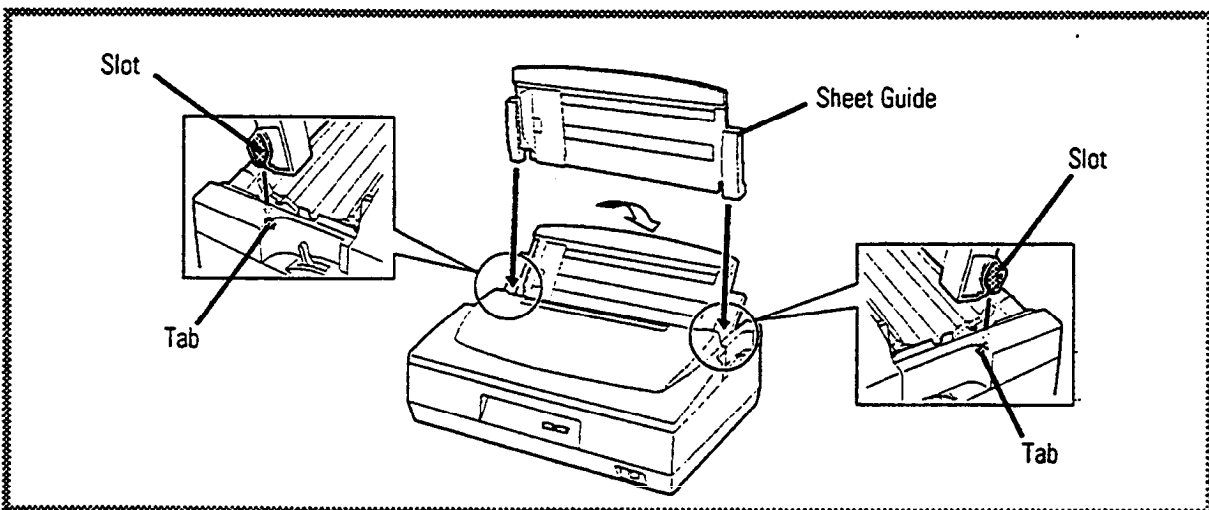


## INSTALLING THE SHEET GUIDE

The sheet guide that comes with your printer makes it easy for you to load cut sheets.

- ❶ Holding the sheet guide upright, fit the right and left slots of the sheet guide to the printer middle cover tabs.
- ❷ Tilt the sheet guide toward the rear.

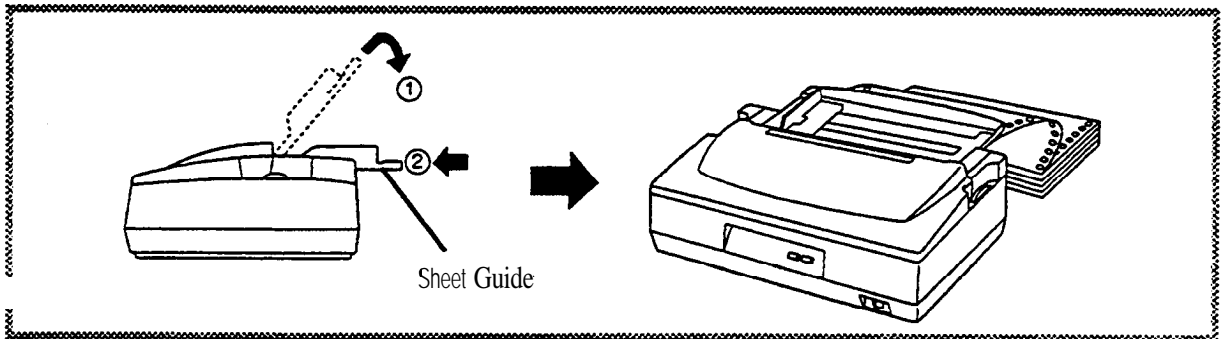
When you use the cut sheet, use the sheet guide in this position.



- ❸ Pull the sheet guide upward and then turn it toward the rear.

- ④ Slide the sheet guide toward the front.

When you use continuous papers, use the sheet guide in this position.

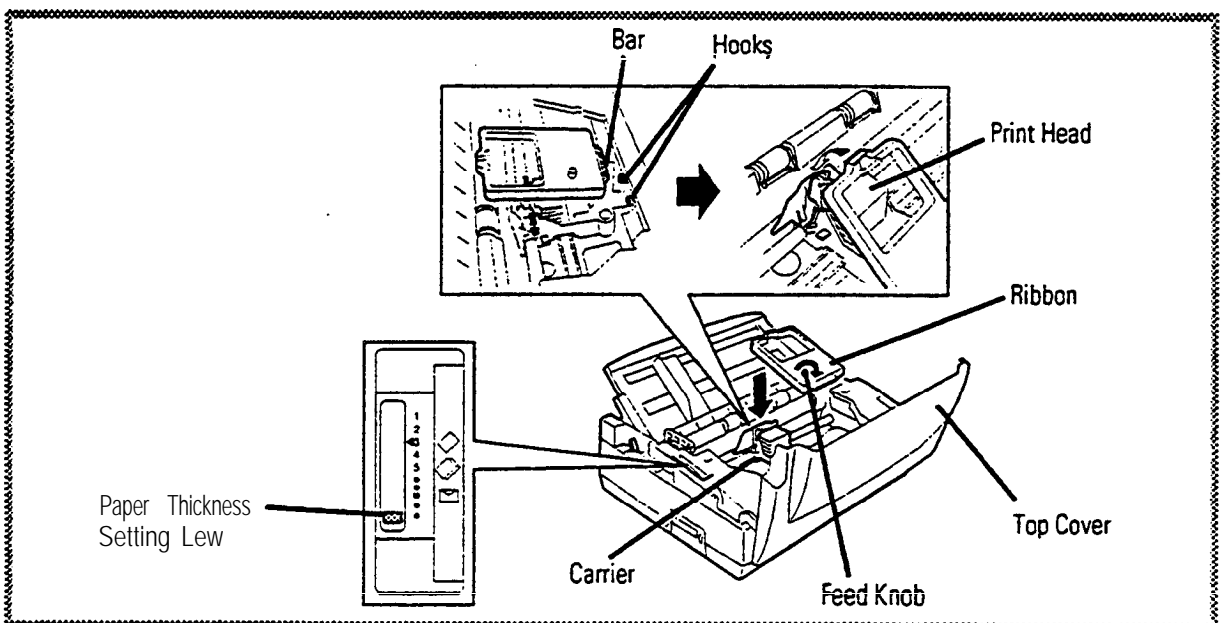


## INSTALLING THE RIBBON

A **black** nylon ribbon cartridge is shipped with your **Pinwriter**. Replace the ribbon when print quality **becomes** faint.

**WARNING:** Don't touch the **print head** just **after** the **printer** Operation.

- ① Open the top **cover**. Be sure **the carrier** is positioned at **the center** of the **printer**.
- ② Set the **paper thickness setting** lever to the forward position.
- ③ Turn the feed knob in the **direction** of the **arrow** to tighten the ribbon.
- ④ Slide **the bar** on the bottom of the ribbon cartridge underneath the two hooks on **the print head** carrier.
- ⑤ **Gently** press down on **the top** of the ribbon cartridge to **lock** it in **place** around **the print head**. You may need to turn the ribbon feed knob **slightly** to align the ribbon feed **slots** and pins.



- ⑥ Set the paper thickness setting lever according to the thickness of paper or the number of sheets in a multi-ply **form** (see Table 2-1).
- ⑦ Close the top cover.

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NOTE: To remove the ribbon, pull up the top of the cartridge and slide the bar on the bottom of the cartridge away from the hooks.

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## CONNECTING THE POWER CORD

- ① Switch off power to the printer.

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WARNING: Check that the power switch is off.

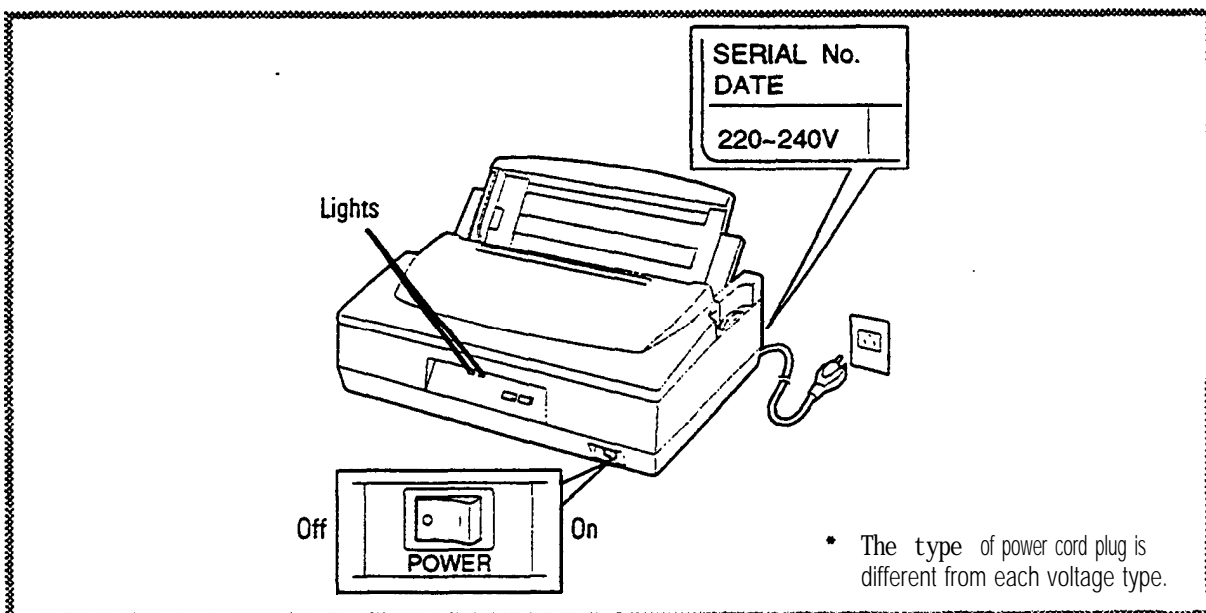
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- ② Plug the power cord into a properly grounded outlet.
- ③ Turn on the power. You can see the lights on the control panel alternatingly blinking (lights go off after two seconds).

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### CAUTION:

- Before plugging the power cord, check the printer applicable voltage. Connecting the power cord to the abnormal voltage outlet may cause the printer damage. Applicable voltage is indicated on the printer label located at the back of the printer. For more information, see **Appendix A**
  - The socket outlet should be near of the printer for easy access of the cable connection and disconnection.
- 



## RUNNING THE SELF-TEST

You **can** use the built-in Pinwriter self-test to practice **loading cut** sheets and printing. The self-test lets you check the printer's **performance** and print quality before you connect it to your Computer.

Use **A4-size paper** or **8 1/2-inch wide paper** to practice **loading** and printing. In this practice Session, you will print **only** a portion of the test. The **printer**, however, will continue to print **the self-test as long as you insert paper**.

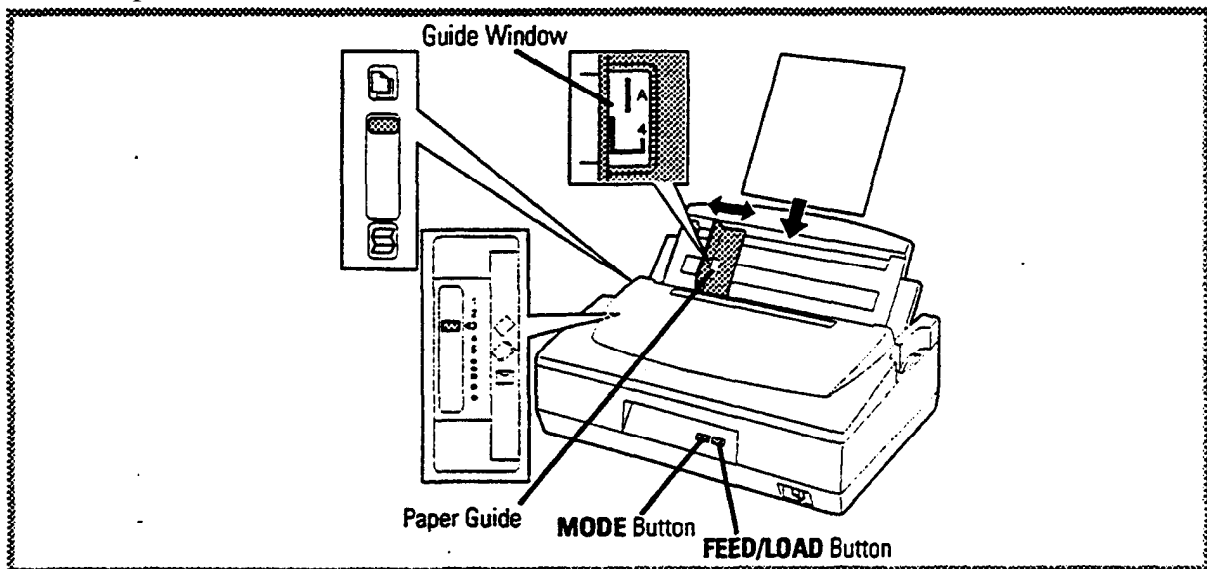
To stop the self-test at any time, press **MODE** to stop printing and turn off the power.

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**NOTE:** When using continuous **papers**, see Section 4, "Loading Continuous Papers" to load **paper** and then continue the following **steps** from **7**.

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- ① Set the **paper selection** lever to the **rear position**.
- ② Open the **top cover** and set the **paper thickness** setting lever to **position 3 or 4**.
- ③ Turn on the **printer** power.  
Make sure the carriage moves to the **center** of the **printer** and the **lights** are **off**.
- ④ Close the top cover.
- ⑤ Slide the **paper** guide so the **guide window** is over the **"A4" mark** on the sheet guide ruler.



- ⑥ Insert a sheet of **paper** into the insertion slot of the sheet guide. The **printer** feeds **the paper** to the **first print position** automatically.

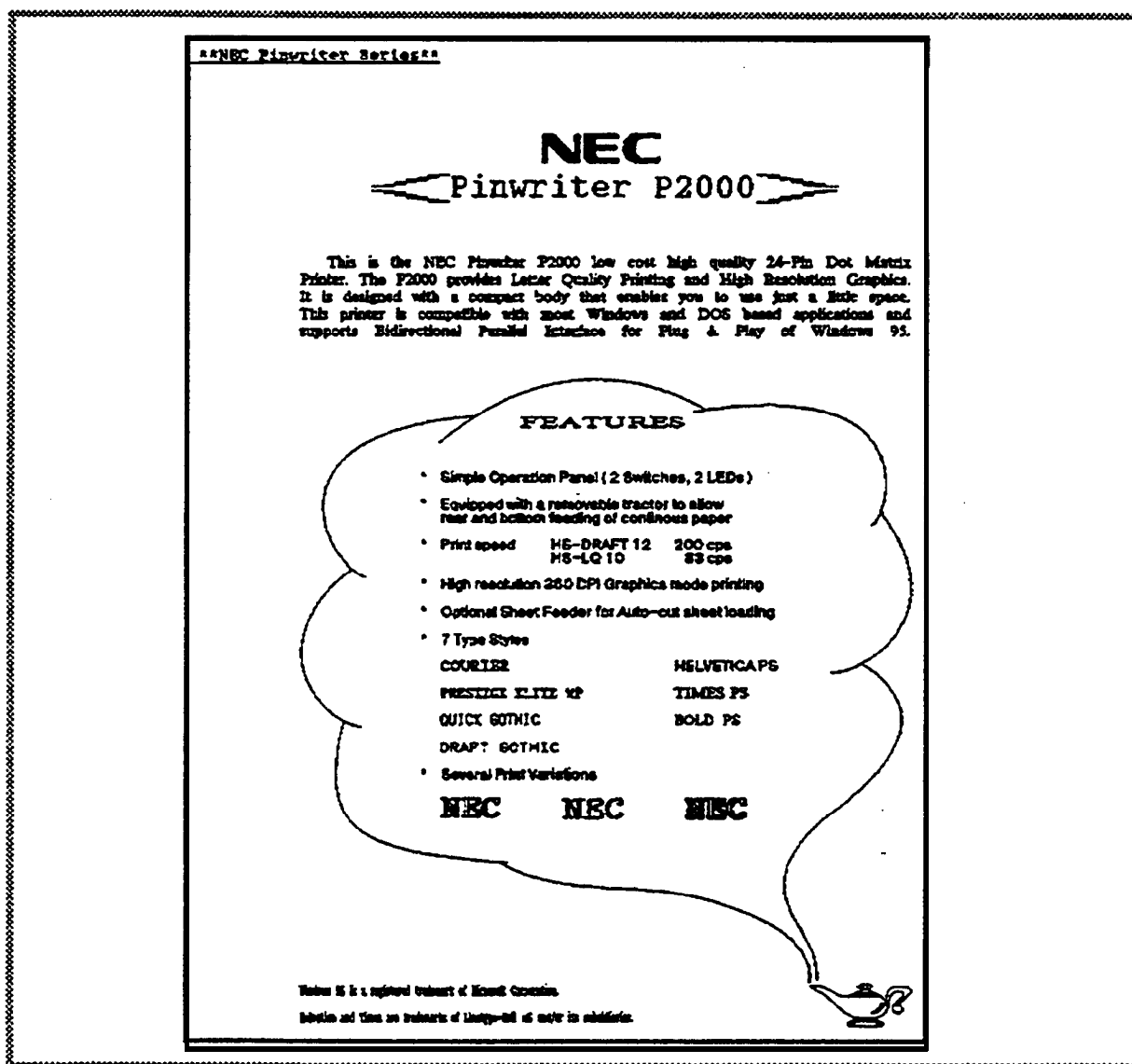
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**CAUTION:** Fit the left edge of the **paper** to the **paper** guide so that the **printer** does not print directly on the **platen** during self-test Operation. **Printing** directly on the platen **can** damage the print head.

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- 7 Turn off the power.
- 8 Hold down FEED/LOAD while turning on the printer power. The self-test begins after a pause of several seconds.
- 9 When the printer is out of paper and the SELECT light is blinking, insert a sheet of paper. The printer feeds the paper to the first print position automatically.
- 10 Press MODE. The printer resumes the self-test printing.

Your self-test will look like the following example (the following figure shows the P2000) of the



## CONNECTING THE INTERFACE CABLE

A parallel interface cable connects the **printer** to your Computer. This cable must be **purchased** separately (a **6-foot** cable is recommended). To make **sure** you get the **right** cable, contact your **printer dealer** or Computer **dealer**.

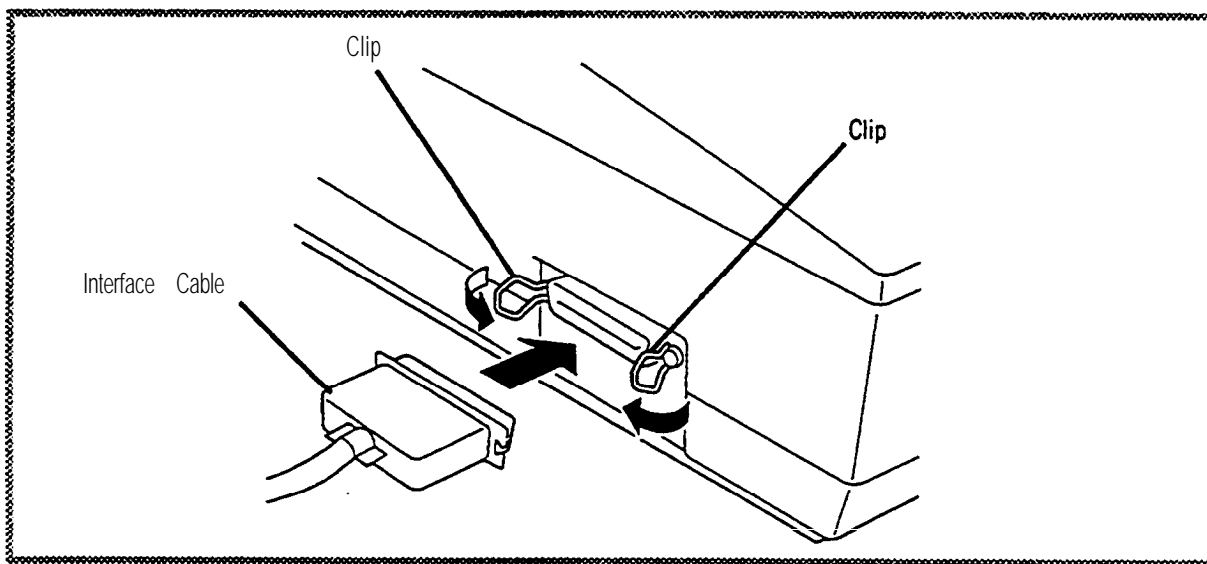
- 1 **Switch** off the **printer** and the Computer.

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**WARNING:** Before connecting the interface cable, turn off both your **printer** and Computer.

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- 2 **Locate** the parallel interface connector at the left of the **printer**.
- 3 Connect one end of the cable to the **printer**.
- 4 Secure the connector with the **clips**.
- 5 Connect the other end of the cable to the interface port at the rear of your Computer.

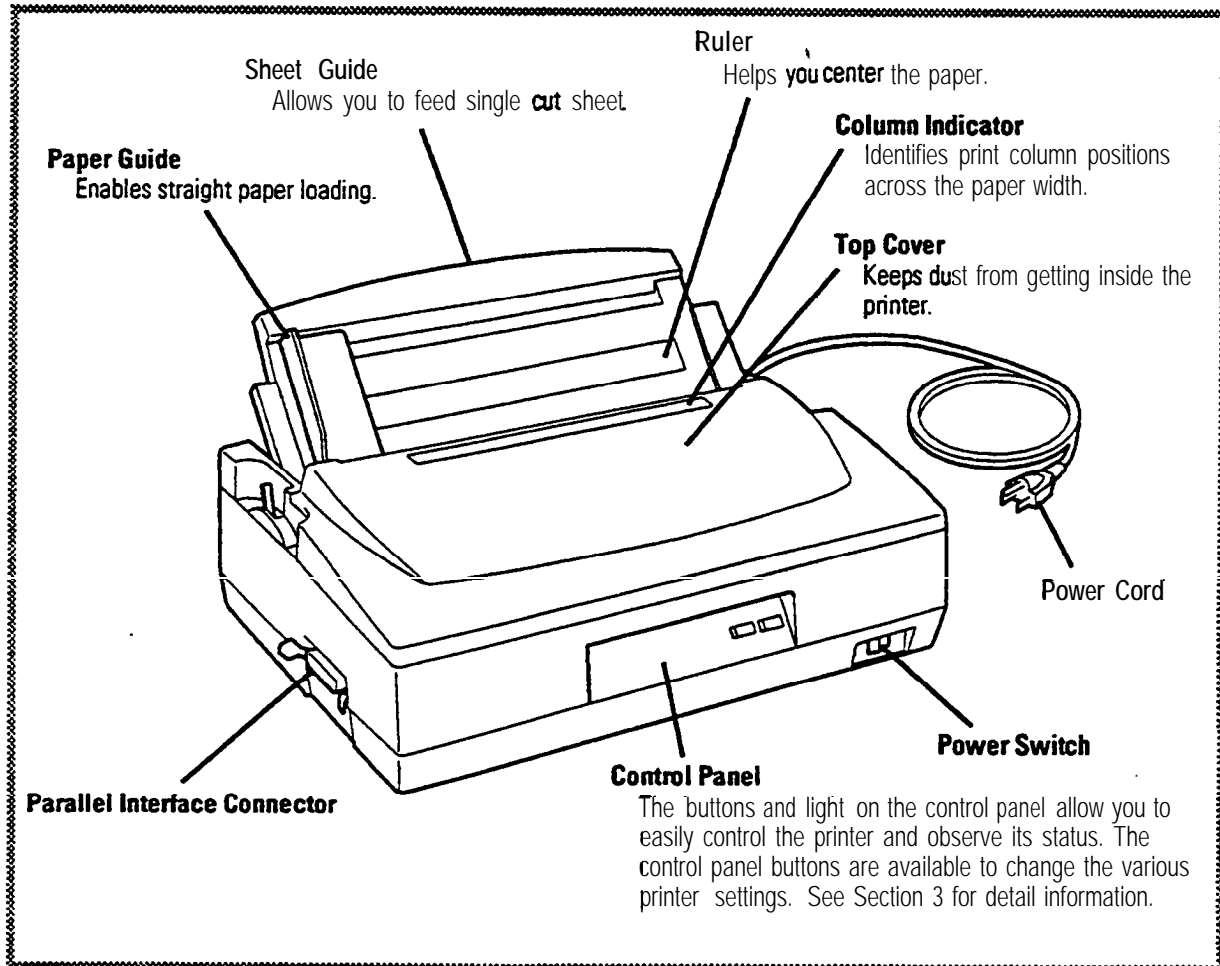


# 2 Features and Controls

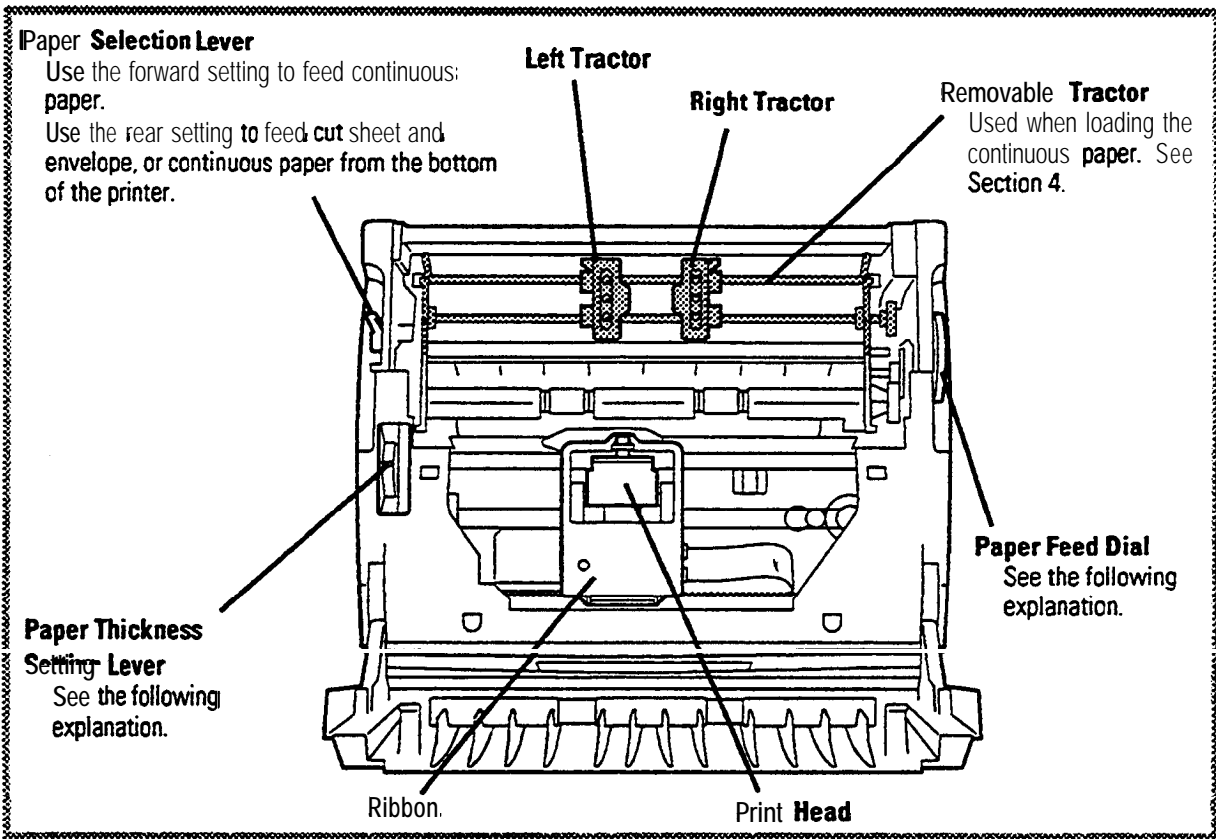
*This section explains how to use the major features and controls of your printer.*

## PRINTER FEATURES

The following illustrations will help you become familiar with the important parts of the printer and the terms used to describe them.



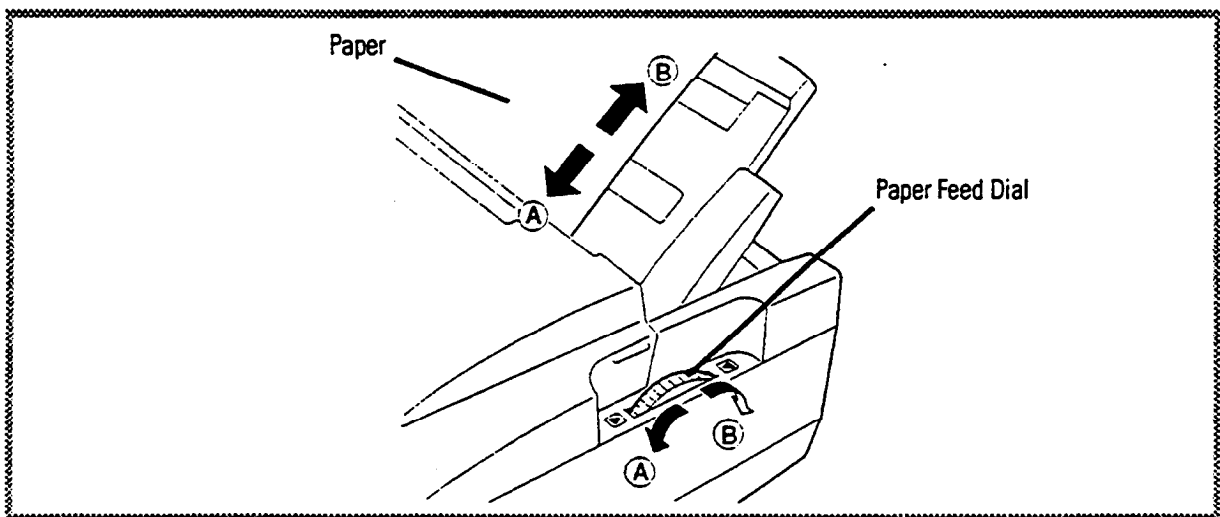




## Paper Feed Dial

The paper feed dial allows you to feed paper manually.

If you advance paper, turn the dial counterclockwise. If you feed paper in the reverse direction, turn the dial clockwise.



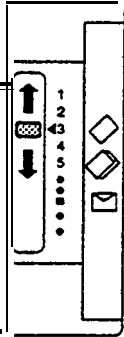
## Paper Thickness Setting Lever

The paper thickness setting lever is set at one of 10 positions, depending on the thickness of the paper or the number of sheets in a multi-ply **form**.

Table 2-1 shows the guideline of the lever setting.

**Table 2-1** Recommended Lever Setting

Paper Media	Number of Sheets	Lever Position
Copier paper, 63.7 gsm (17 lb)	1	3
Copier paper, 80.0 gsm (21 lb)	1	3
Bond paper, 80.7 gsm (21 lb)	1	4
Multiply form, carbonless	3	5
Envelope, 77.3 gsm (20 lb)	1	Envelope



If the print appears faded or when using thinner paper, move the lever backward (toward lower-numbered position).

If the print smudges or when using thicker paper, move the lever forward (toward higher-numbered position).

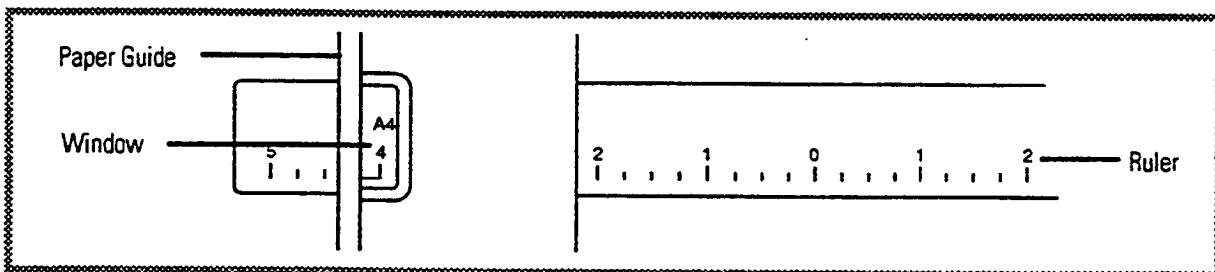
### Copy Mode

When you set the paper thickness setting lever at any of position 5 or more forward positions, the printer enters the copy mode to maintain print quality.

- In this mode, the printer prints at a lower speed.

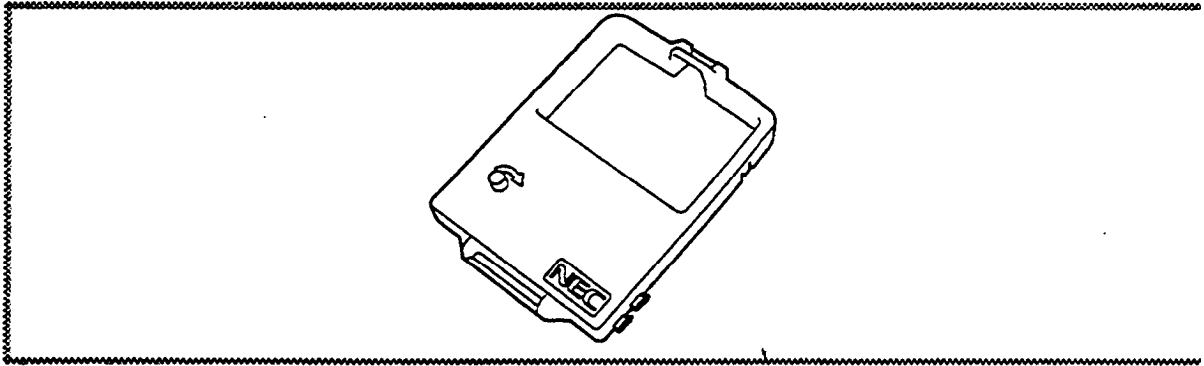
## Sheet Guide and Sheet Guide Ruler

The sheet guide allows you to feed single cut sheets to the printer. The paper guide enables straight paper **loading**. The ruler printed into the sheet guide helps you **center** the paper. For example, when using **A4-size** paper (8 1/2-inch wide), set the paper guide so that you can see the “**A4**” mark in the paper guide window.



## Ribbon

When print **quality becomes** faint, **purchase** the ribbon (order number: 808-861823-001-A or **808-861823-601-A**) and replace it. See Section 1, "Installing the Ribbon" to **reinstall** the ribbon.

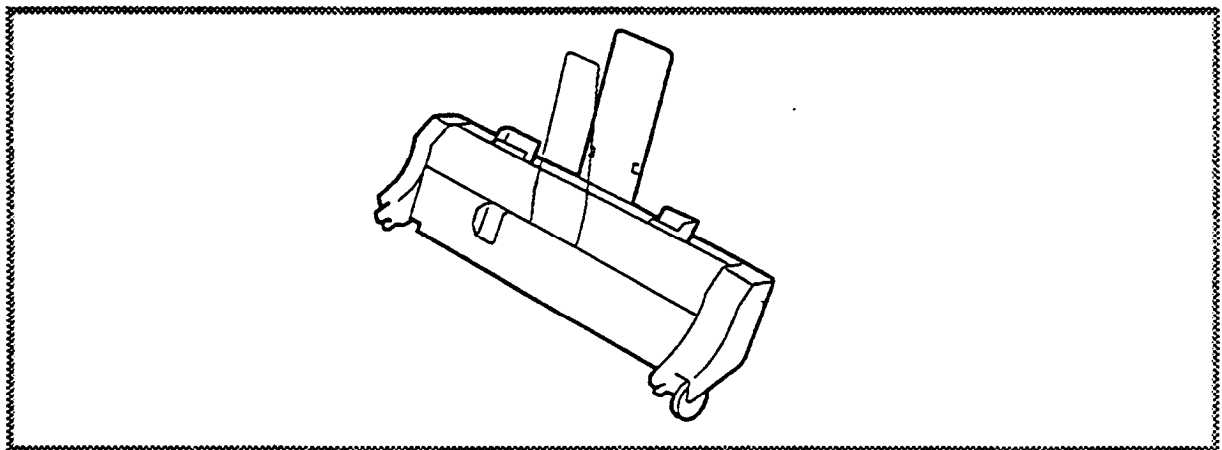


## OPTION

You **can** increase the usefulness of your **printer** by **adding** optional features. Your **printer dealer** has more information.

### Sheet Feeder

You **can** use a sheet **feeder** to load and **print cut** sheets (**hopper capacity**: maximum of 50 sheets). The **P2000/P2X** uses a one-bin sheet **feeder** (order number: 136-265194-001-A). Refer to *Sheet Feeder 4813 User's Guide* for instructions of **installing** and **paper loading**.

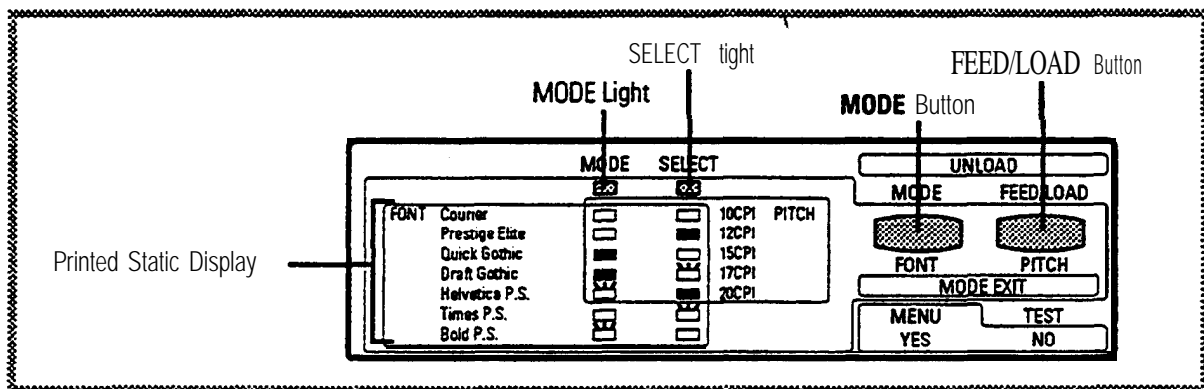


# 3 Control Panel

*This section explains how to use the numerous features accessed through the P2000/P2X control panel. You will learn the function of each button and how to access printer operations.*

## BUTTONS AND INDICATORS

The buttons and lights on the control panel allow you to easily control the printer and observe its status.



### MODE Light

Together with the SELECT light, lights or blinks to display the currently selected font or pitch during font/pitch selection mode.

### SELECT Light

- Displays the printer state.
- Lights when the printer is in the online state and paper is loaded in the printer
- Goes off when the printer is in the offline state or the printer is out of paper.
- Blinks once a second when the printer is out of paper and print data remains in the printer buffer.
- Blinks twice a second or blinks alternately with MODE light when a printer problem occurs (see Section 5).

### MODE Button

- Press to enter the font/pitch selection mode (see *Selecting the Font and Pitch*).
- Press to resume printing after loading paper when the SELECT light blinks once a second (paper empty).
- Press and hold this button while turning on the printer to enter the menu mode.
- Press to stop the self-test printing (press once to resume printing).

**FEEDROAD Button**

- Press to **load cut** sheets or continuous **papers** to the **first** print Position.
- Press and release to **advance paper** one line.
- With **cut** sheet loaded, press and hold **this** button for one second or more to eject **a** sheet.
- With continuous **papers** loaded, press and hold this button for one second or more to **perform** the form feed and then feed **paper** to the tear off position.
- After **feeding paper** to the tear off Position, press and release this button to back **paper** to the **first** print position.
- Press this button simultaneously with **MODE** to back continuous **papers** off the platen to “park” them while using **cut** sheets.
- Press and hold this button while **turning** on the **printer** to start the self-test
- With the sheet **feeder** installed, press this button simultaneously **with** **MODE** to eject **a** sheet in the **printer**.

**Printed Static Display**

In the **font/pitch** selection mode, the printed **markings** show the **corresponding** light Operation to the **MODE** and **SELECT** lights to indicate the selected font or pitch. See *Selecting the Font and Pitch*.

- means **that the light** is on.
- means **that the light** is **off**.
- means that **the light** is **blinking**.

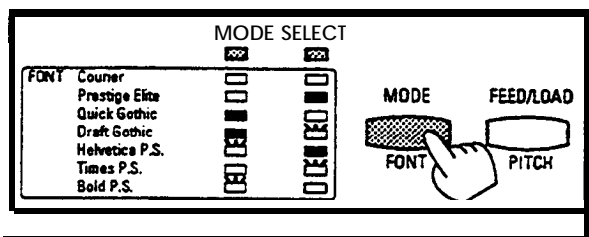
## SELECTING THE FONT AND PITCH

You **can** select the font and pitch by using the control **panel** buttons or Software control **code** (see Section 6). This **section** provides how to select the font and pitch with the control **panel** buttons.

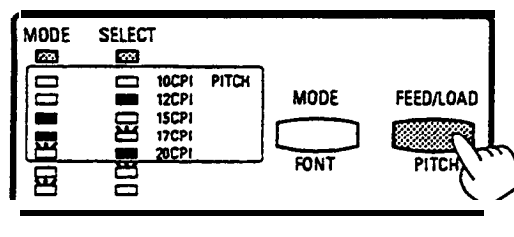
- ① Check that the **printer** is turned on and no print data is in the **printer**.
- ② Press **MODE**. The **printer** enters **the font/pitch** selection mode (**MODE** light **blinks** once a second and **SELECT** light goes **off**).
- ③ Press **MODE** to **change** the font. To **change** the pitch, press **FEEDROAD**. After **pressing** the button, the **printer** indicates the currently selected font or pitch by the combination of the **MODE** and **SELECT** lights.
- ④ Press **MODE** or **FEEDROAD** until the desired font or pitch is displayed (see Table 3-1).
- ⑤ Press **MODE** and **FEED/LOAD** simultaneously. The **printer** stores the new setting and quits the **font/pitch** selection mode.

Table 3-1 Font/Pitch Indication

Font Indication



Pitch Indication



Indication		Font
MODE	SELECT	
On	On	Courier
On	Off	Prestige Elite
Off	On	Quick Gothic
<b>Off</b>	Blink	Draft Gothic
Blink	Off	Helvetica
On	Blink	Times P.S.
Blink	On	<b>Bold P.S.</b>

Indication		Pitch
MODE	SELECT	
On	On	10 cpi
On	<b>Off</b>	12 cpi
Off	On	15 cpi
Off	Blink	17 cpi
Blink	Off'	20 cpi
On	Blink	Proportional space'

- Displayed when Times P.S. or Bold P.S. is selected.

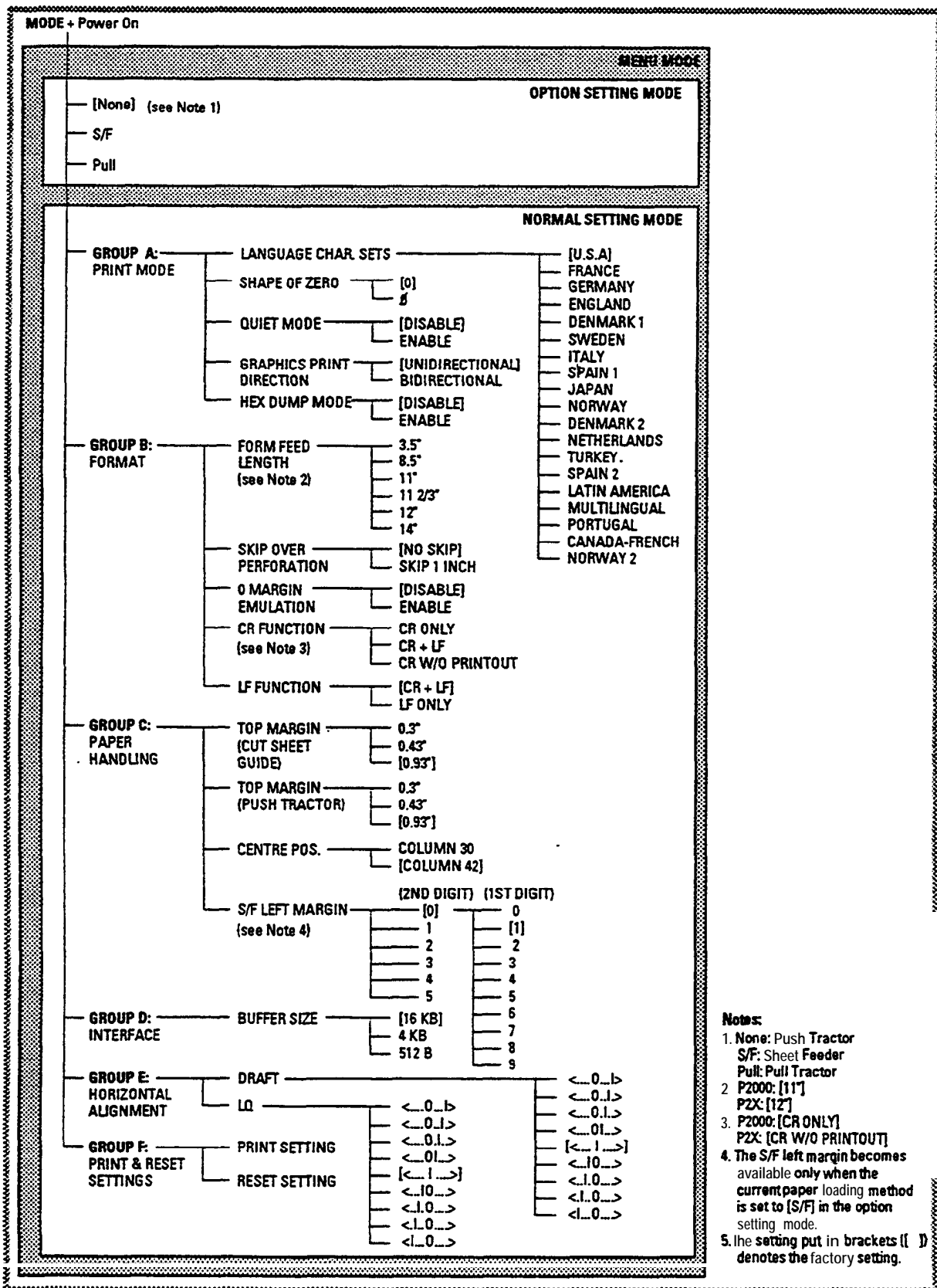
- NOTES:
1. When pressing MODE under the tear off function, the printer feeds paper to the first print position and then enters the font/pitch selection mode.
  2. When the printer error (see Table 5-1) occurs during the font/pitch selection mode, the printer displays errors after completion of the font/pitch selection mode.
  3. When the printer receives the print data during the **font/pitch** selection mode, the printer prints data after completion of the font/pitch selection mode.
  4. Turning off the printer during the font/pitch selection mode cancels any modified settings.

## MEMORY SWITCH MENU MODE

The memory switches control your printer's menu mode settings. Before using the printer, check that the memory switches are set for your particular needs.

This section provides you with instructions for entering the memory switch menu mode and the function of each mode, a listing of factory settings, and a description of each setting. The memory switch menu mode is divided into two **major** modes; option setting mode and normal setting mode. In the option setting mode, you should instruct the printer that the removable tractor is installed as push tractor or pull tractor, or the optional sheet feeder is installed in the printer. In the normal setting mode, you can change the various internal printer settings.

The following menu tree gives a complete breakdown of the printer settings available with your printer.



## Entering the Memory Switch Menu Mode

To enter the memory switch menu mode, follow these steps.

- ① Press **FEED/LOAD** to load the continuous paper into the printer and turn off the printer.
- ② Press **MODE** while turning on the printer.
- ③ The printer will enter the option setting mode and print out the menu shown in the figure below.



## Using the Control Panel

Use the following two control panel buttons to respond to the questions that appear at the end of the print out.

- MODE (YES)** – Press to indicate an affirmative (YES) response.
- FEED/LOAD (NO)** – Press to indicate a negative (NO) response.

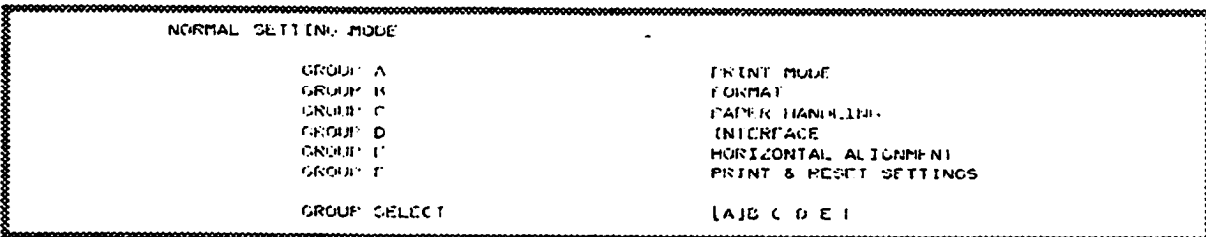
## Option Setting Mode

The option setting mode selects a paper loading method.

- ① Load paper and enter the memory switch menu mode. The printer will print the option setting mode menu.

The currently selected method is between brackets ([ ]). “None” indicates that the paper loading with the cut sheet guide or push tractor is selected. “S/F” indicates that the paper loading with the sheet feeder is selected. “Pull” indicates that the paper loading with the pull tractor is selected.

- ② Press **MODE** for yes and **FEED/LOAD** for no to select the desired method.
- ③ The printer will enter the normal setting mode after selecting the desired paper loading method in the option setting mode, and print out the main menu of the normal setting mode.



- ④ Turn off the power to quit the menu mode when you not need to change the printer settings in the normal setting mode.



## Normal Setting Mode - Printing Out the Memory Switch Setting

To print out the current 'memory switch settings, follow these steps.

- ① Load the continuous paper into the printer and enter the memory switch menu mode.
- ② Select the paper loading method in the option setting mode.
- ③ The printer will enter the normal setting mode after selecting the desired paper loading method in the option setting mode, and print out the menu of the normal setting mode.
- ④ Press FEED/LOAD to surround "F" (Group F "PRINT & RESET SETTINGS") with the brackets ([ ]).
- ⑤ Press MODE twice. The printer will print out the current memory switch settings.
- ⑥ After printing "Mode Ex&? Yes/No" question at the end of the current memory switch settings, press MODE. The printer prints the main menu of the normal setting mode.
- ⑦ Turn the Printer off to quit the menu mode.

The following figure shows the memory switch settings for the P2000 at the factory.

OPTION	SETTING MODE	CURRENT OPTION	None
NORMAL SETTING MODE			
A. PRINT MODE			
	LANGUAGE CHAR. SETS		U. S. A
	SHAPE OF ZERO		0
	QUIET MODE		DISABLE
	GRAPHICS PRINT DIRECTION		UNIDIRECTIONAL
	HEXDUMP MODE * 1		DISABLE
B. FORMAT			
	FORM FEED LENGTH		11" * 2
	SKIP OVER PERFORATION		NO SKIP
	0 MARGIN EMULATION		DISABLE
	CR FUNCTION		CU ONLY * 3
	LF FUNCTION		CR • LF
C. PAPER HANDLING			
	TOP MARGIN(CUT SHEET GUIDE)*4		0.93"
	TOP MARGIN(PUSH TRACTOR)*4		0.93"
	CENTRE PCS.		COLUMN 42
	S/F LEFT MARGIN *5		
D. INTERFACE			
	BUFFER SIZE		16 KB
E. HORIZONTAL ALIGNMENT			
	DRAFT		<...I...>
	LO		<...I...>
	Mode Exit?		Yes/No

\*1 The hex dump mode automatically becomes available only once when setting to [Enable] and turning off the Printer, then turning it on again.

\*2 The factory default setting of the P2X is "12".

\*3 The factory default setting of the P2X is "CR/WO PRINTOUT."

\*4 Distance from the top edge of the paper to the middle of the first print line.

\*5 The S/F left margin becomes available only when the current paper loading method is set to [S/F] in the option setting mode.

## Normal Setting Mode - Description of Memory Switch Settings

The normal setting mode has six groups of memory switch settings:

- |  |  |
|--|--|
| <input type="checkbox"/> Group A: Print mode     | <input type="checkbox"/> Group D: Interface              |
| <input type="checkbox"/> Group B: Format         | <input type="checkbox"/> Group E: Horizontal alignment   |
| <input type="checkbox"/> Group C: Paper handling | <input type="checkbox"/> Group F: Print & reset settings |

Table 3-2 describes the switch **functions** in each group. Values put in the brackets “[ ]” denote the factory default setting. See the menu **three** on page 15 for selectable entries in each mode.

Table 3-2 Switch Functions

Item	Function
<b>Group A: Print Mode</b>	
1. Language char. sets	Selects <b>the language</b> character set default. [U.S.A.]
2. Shape of zero	Selects the shape of zero. [0]
3. Quiet mode	Selects the quiet mode, in <b>which</b> the printer <b>prints</b> at a reduced speed and noise level. [disable]
4. Graphics print direction	Selects <b>the graphics</b> print direction <b>default</b> . [unidirectional]
5. Hex dump mode	Selects or cancels the hex dump mode. [disable]
<b>Group B: Format</b>	
1. Form feed length	Selects the form feed <b>length default</b> for continuous paper in inches. <b>P2000</b> : [11 in.] <b>P2X</b> : [12 in.]
2. Skip over perforation	Selects or cancels 1 inch skip-over perforation at power-up. [no skip]
3. 0 margin emulation	<b>Selects</b> or cancels 0 margin emulation. [disable]
4. CR function	Selects CR code ( <b>0Dh</b> ) function. <b>P2000</b> : [CR only] <b>P2X</b> : [CR W/O PRINTOUT]
5. LF function	Selects LF <b>code (0Ah)</b> function. [CR t LF]
<b>Group C: Paper Handling</b>	
1. Top margin (cut sheet guide)	Selects the top margin of the cut sheet guide in inches. [ <b>0.93</b> in.] <b>Distance from</b> the top edge of the paper to the middle of the first print line.
2. Top margin (push tractor)	Selects the <b>top</b> margin of the push tractor in inches. [ <b>0.93</b> in.] Distance from the top edge of the paper to the middle of the first print line.
3. centre pos.	Selects the <b>centering</b> position of the cut sheet. [column <b>42</b> ]
4. S/F left margin	Selects the left margin in a unit of column when the sheet feeder is installed. [ <b>1</b> ]

Table 3-2 Switch Functions (cont'd)

Item	Function
Group D: Interface	
Buffer size	Selects buffer capacity for receiving data. [16KB] The userdefined Character function is not available when selecting "16KB."
Group E: Horizontal Alignment	
1. Draft	Aligns the horizontal print position of draft bidirectional printing.
2. LQ	Aligns the horizontal print position of letterquality bidirectional printing. <...0...l>: 4/360 in. to the right      <...l0...>: 1/360 in. to the left <...0..l>: 3/360 in. to the right      <..l0...>: 2/360 in. to the left <...0.l>: 2/360 in. to the right      <.l..0...>: 3/360 in. to the left <...0l...>: 1/360 in. to the right      <...0...>: 4/360 in. to the left [<...l...>: 0 (Basic position, default setting)]
Group F: Print & Reset Settings	
1. Print setting	Prints out the current menu mode settings.
2. Reset setting	Resets the menu mode settings all to factory settings.

## Normal Setting Mode - Changing the Memory Switch Settings

To **change** any of the settings, you will interact with **the printer** and **respond** to the questions that are printed out. The control **panel** buttons are used to **respond** to the questions.

For example, to **change** the CR function in Group B **from** "CR ONLY" to "[CR + LF]", follow these **steps**.

- ① Load the continuous **paper** into the **printer** and enter the **memory switch** menu mode.
- ② Select **the paper** loading method in the **option** setting mode.
- ③ The printer will enter the normal setting mode, and print out the main menu of the normal setting **mode**.
- ④ Press **FEED/LOAD** until "GROUP SELECT A [B ] C D E F" is printed.

- 5 Press MODE.
- 6 The printer prints the menu of Group B.

```

B. (FORMAT)          1. FORM FEED LENGTH
                     2. SKIP OVER PERFORATION
                     3. D MARGIN EMULATION
                     4. CR FUNCTION
                     5. LF FUNCTION

GROUP B              [ 1 ] 3 4 5
    
```

- 7 Press FEED/LOAD repeatedly until “GROUP B 1 2 3 [4]5” is printed, then press MODE.
- 8 The printer prints the entries in the CR function.

---

NOTE: The skipped settings of the menu numbers 1 to 3 are left with no change.

---

```

CR FUNCTION          [CR ONLY]
                    CR + LF
                    CR W/O PRINT OUT
    
```

- 9 Press FEED/LOAD to surround “CR + LF” with the brackets ([ ]), then press MODE to select it.
- 10 At the “MSW WRITE OK? Yes/No” question, press MODE to reset the CR function setting to new setting. To modify the new setting, press **FEED/LOAD** and return to step 8.
- 11 At the “Mode Exit? Yes/No” question, press MODE, then the printer prints the main menu of the normal setting mode. To modify the other settings in Group B, press FEED/LOAD and perform steps 6 to 10 in the same manner.
- 12 Turn off the printer to quit the menu mode.

---

NOTE: Do not turn off the printer in the memory switch menu mode until the main menu of the normal setting mode is printed.

---

# 4 Paper Loading

*This section provides guidelines for selecting a paper loading method, as well as instructions of loading the various types of paper you'll typically use.*

## PAPER LOADING FEATURES

The P2000/P2X offers several **paper** loading features.

- Loads **cut** sheets automatically.
- Loads continuous **papers** quickly and precisely.
- The perforation of continuous **papers** feeds automatically to the **edge** of the top **cover** so that you **can** tear off the last sheet.
- The removable **tractor** allows you to load continuous **papers** from the rear and bottom of the Printer.
- Continuous **papers can** be **backed** away from the platen, and “parked,” **enabling** you to load and use **cut** sheets without removing continuous **papers**.

Refer to Appendix B for information on **paper** specifications and print area dimensions-

## ZERO MARGIN EMULATION FEATURE

The Pinwriter is shipped with the top margin preset so that the **first** print line will be printed 0.93 **inch** down **from** the top edge of a **page**. Many word processing applications, however, assume **that** the **printer** is preset so that the **first** print line will be printed at the top of the **page**. When **using** the Pinwriter with these applications, zero margin emulation is **useful** for you to directly **correlate** the word processing **document margins** with printed **document margins**.

For example, the first print line of the Printer is at 0.3 **inch from** the top of the **page**. If the top margin is set to 0.3 **inch** or more (2 or more lines) in the word processing **application**, the first line will be **printed** on the **same** line as shown in the word processing **document** in the zero margin emulation **mode**.

Setting the top margin to less **than** 0.3 **inch** is not recommended. If the top margin is set to less **than** 0.3 **inch** in the word processing **application**, **document** will start to print 0.3 **inch from** the top of **the paper**. In this **case**, the **margins** and position of the text on the **printed page** would not **duplicate** the word processing **document**.

To enter the zero margin emulation mode, set **the zero** margin emulation setting in **the** menu mode to “[ENABLE]” (see **Section 3** for **details**).

## LOADING CUT SHEETS

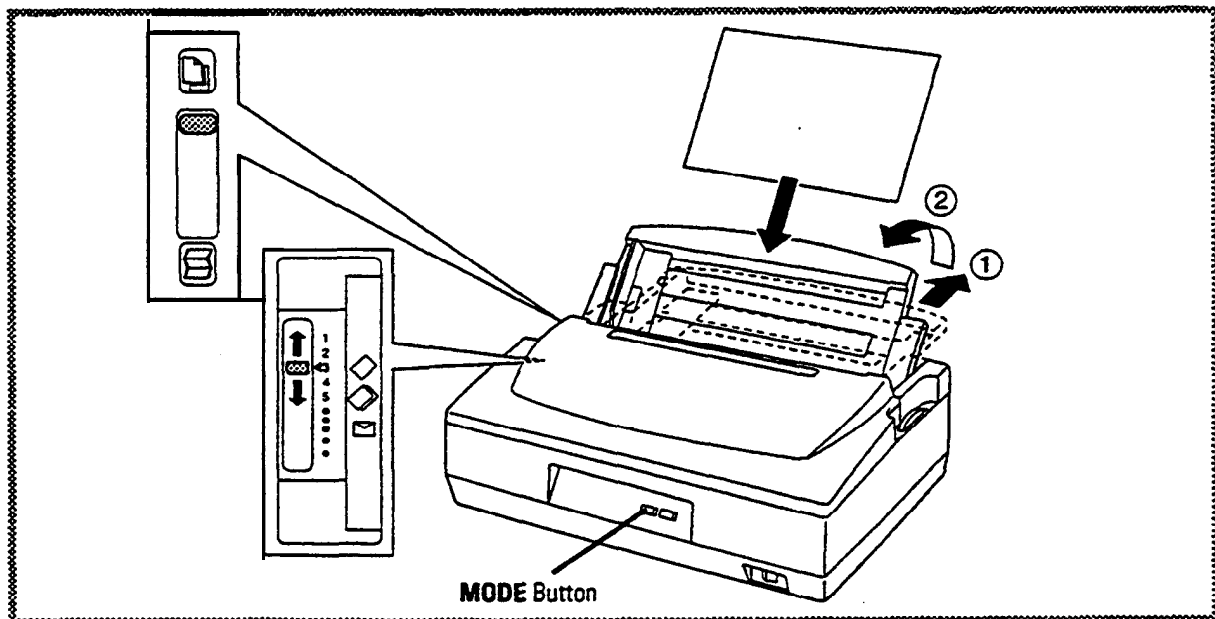
Follow these steps to load cut sheets.

- 
- NOTES:**
1. Before loading cut sheets, "[None]" must be selected in the option setting menu of the menu mode. See Section 3 for more information.
  2. When setting a single cut sheet, position it at the center of the printer.
- 

- 1 Set the paper selection lever to the rear position.
- 2 Open the top cover.
- 3 Set the paper thickness setting lever depending on the weight of the paper you are using (see Section 2).
- 4 Slide the sheet guide backward.
- 5 Pull the sheet guide forward until it locks.
- 6 Turn on the printer power. (Make sure the carriage moves to the center of the printer and the SELECT light is off.)
- 7 Close the **top** cover.
- 8 Insert a sheet of paper into the insertion slot of the sheet guide, using the ruler and paper guides to center it.

The paper is fed to the first print position and the printer will assume online state automatically (the SELECT light will light).

The printer is now ready to receive &ta from your computer.



NOTE: When the **printer** is out of **paper during** printing and the SELECT light is blinking, insert a sheet of **paper**. The printer loads the **paper** to the first print **position automatically**. Then press MODE to resume **printing**.

## Automatic Paper Loading Feature

The P2000/P2X provides an **automatic paper** loading feature.

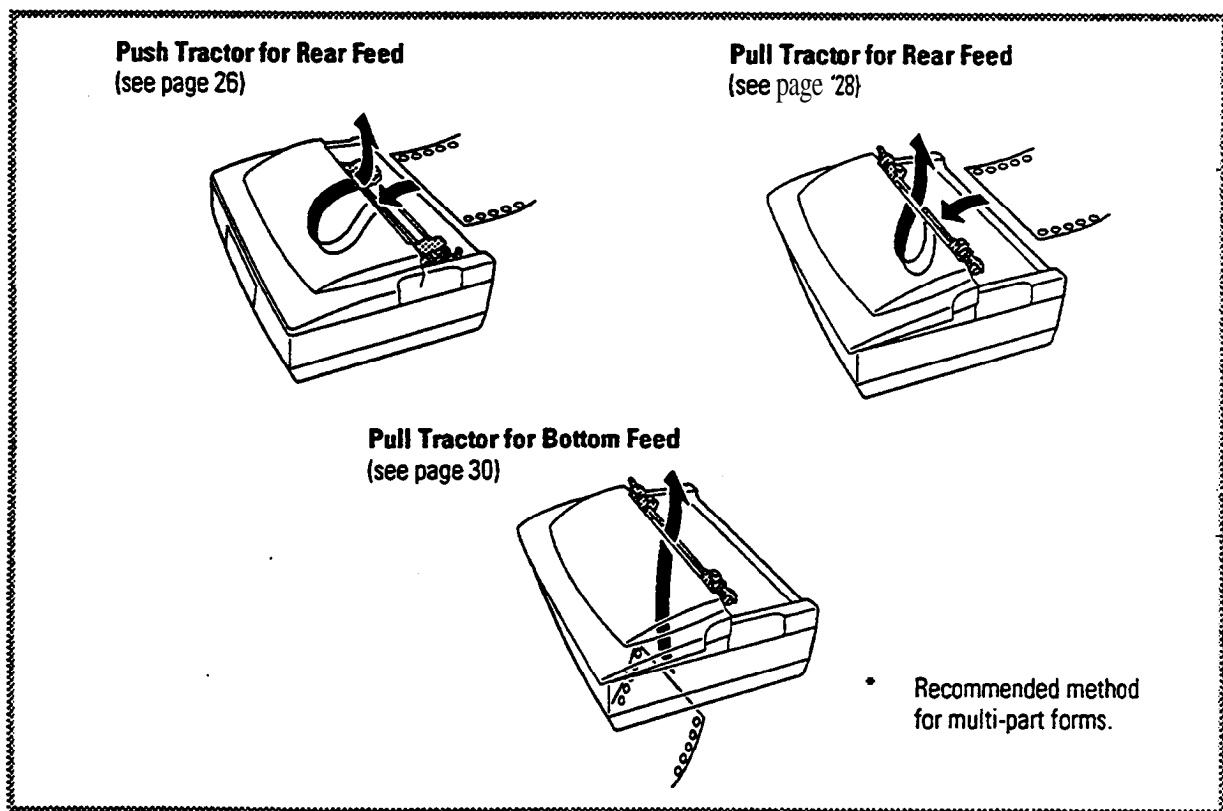
When the **paper selection** lever is set to the rear **position** and **paper** is inserted, the **printer** loads the **paper** to the first print **position automatically** without pressing **FEED/LOAD** after one **second**.

## LOADING CONTINUOUS PAPERS

The following subsections describe how to set up and load the **printer** with continuous **papers**.

### Removable Tractor

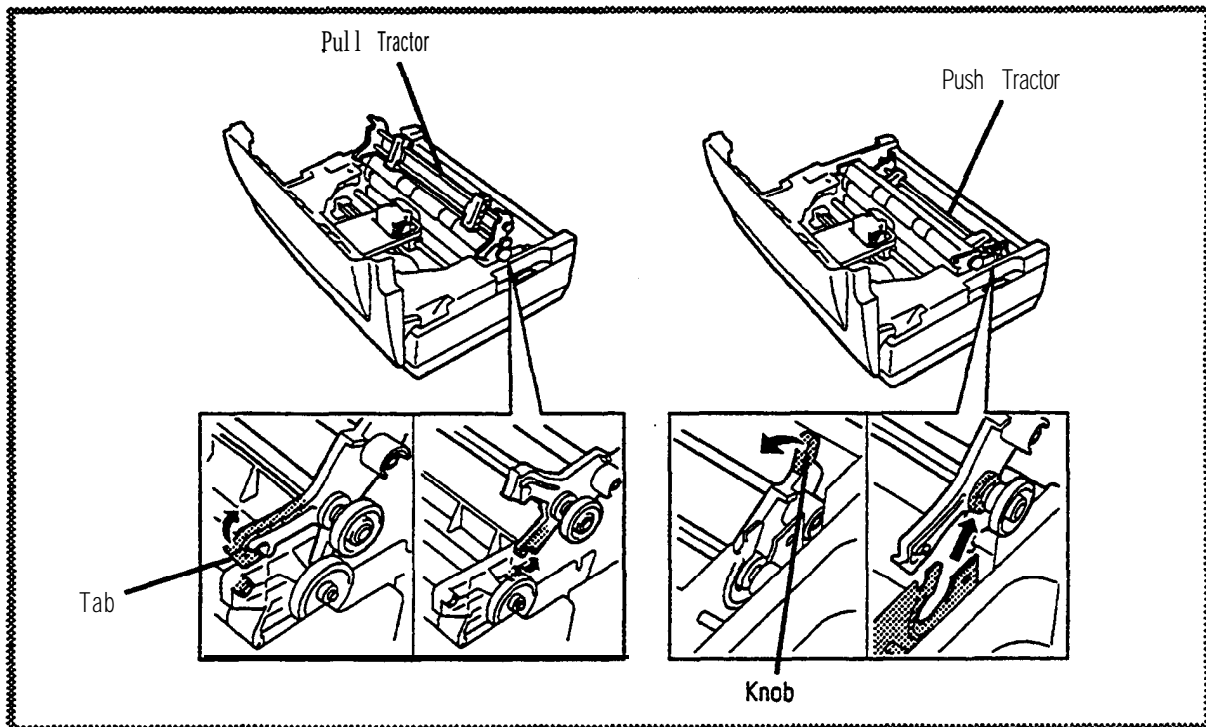
A built-in removable **tractor** feeds continuous **papers**. Although the push **tractor** is used **generally**, you **can** use the **tractor** as a **pull tractor** when you want to use **thick paper**.



Follow these steps to remove or reinstall the tractor.

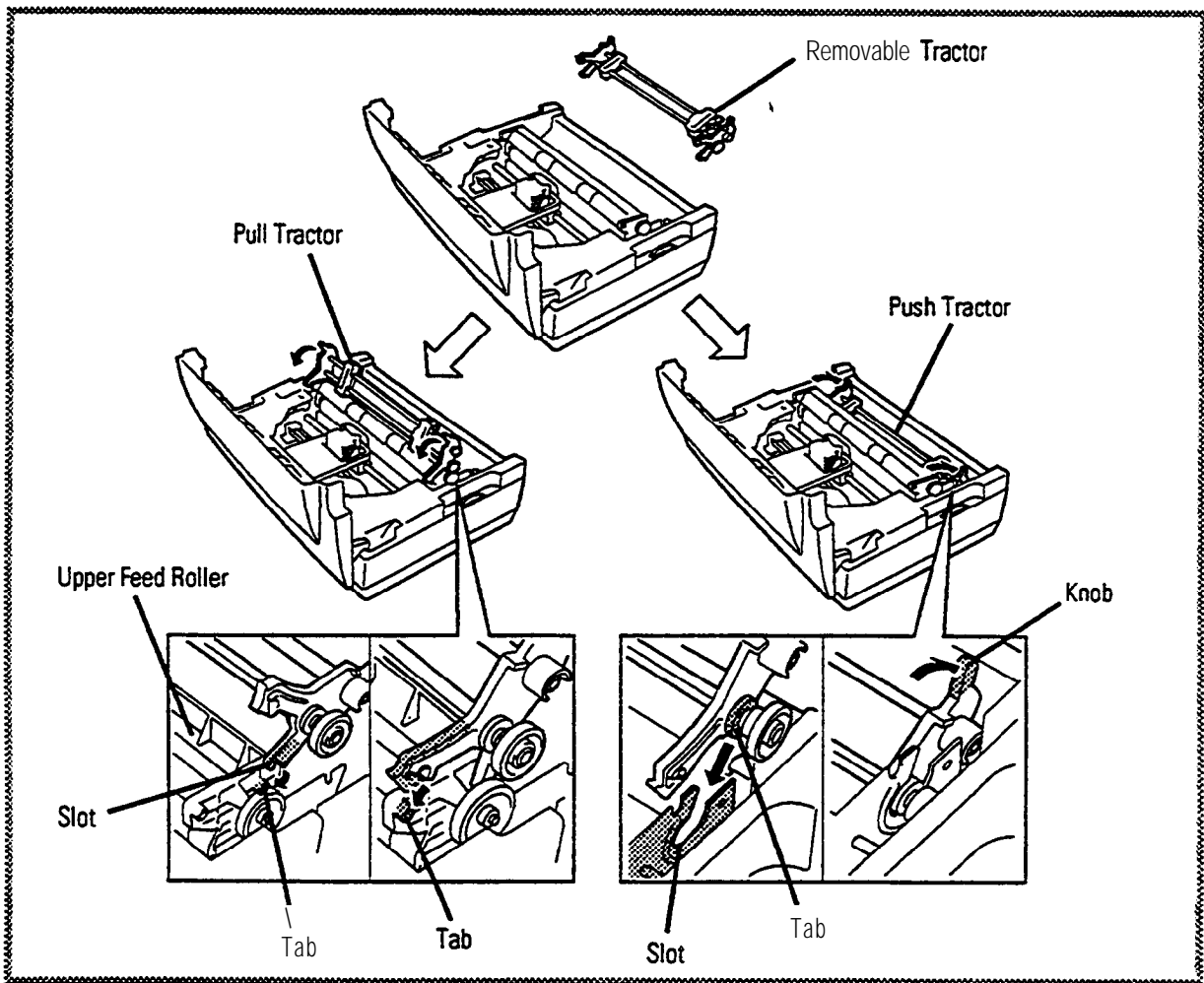
NOTE: Before **performing** the following steps, select the desired tractor configuration in the option setting mode (see Section 3 for detail).

- ① Remove paper from the printer.
- ② Set the paper selection lever to the front position.
- ③ Remove the sheet guide.
- ④ Open the top cover.
- ⑤ Remove the tractor.
  - To remove the push tractor  
Pulling up the back knobs on both sides of the tractor, remove the tractor from the printer.
  - To remove the pull tractor  
Press the tabs on both tractor side frames and turn the tractor toward the back of the printer to remove from the printer.





- ⑥ **Install the tractor.**
- ❑ To **install** the tractor as a **push tractor**
    - a. Fit the tabs on the both tractor side frames to the slots of the **printer**.
    - b. Push **the** knobs on both sides of the tractor toward the rear until it locks.
  - ❑ To **install** the tractor as a **pull tractor**
    - a. Put the slots of the tractor frames to the tabs of the sides of the upper feed **roller**.
    - b. Turn the tractor toward the front until it locks.



- ⑦ **Close the top cover.**

### Loading for Rear Feed with **Push Tractor**

Use the following steps to load the printer with continuous papers for rear feed.

- ❶ Set the paper selection lever to the front position.
- ❷ Open the top cover and set the paper thickness setting lever depending on the weight and thickness of the paper.
- ❸ Remove the sheet guide.
- ❹ Unlock the left and right tractors by flipping their lock levers up.
- ❺ Open the left and right tractor covers.
- ❻ Place the paper on the left tractor so that the feed pins protrude through the holes on the left side of the paper.
- ❼ Close the left tractor cover.
- ❽ Slide the left tractor to align the left edge of the paper with either of the markings on the rear of the printer cover which represent the left-edge position of the paper. This will allow the paper to be set at the recommended position, the center of the printer.
- ❾ Lock the left tractor into position by flipping the lock lever down.
- ❿ Set the right tractor so that its feed pins align with the holes on the right side of the paper.
- ⓫ Close and lock the right tractor.

---

NOTE: Fit the paper snugly between the tractors but do not stretch the paper feed holes.

---

- ❿ Reinstall the sheet guide.
- ⓬ Turn on the printer power. (Make sure the carriage moves to the center of the printer and the SELECT light is off.)
- ⓭ Close the top cover.
- ⓮ Press FEED/LOAD.

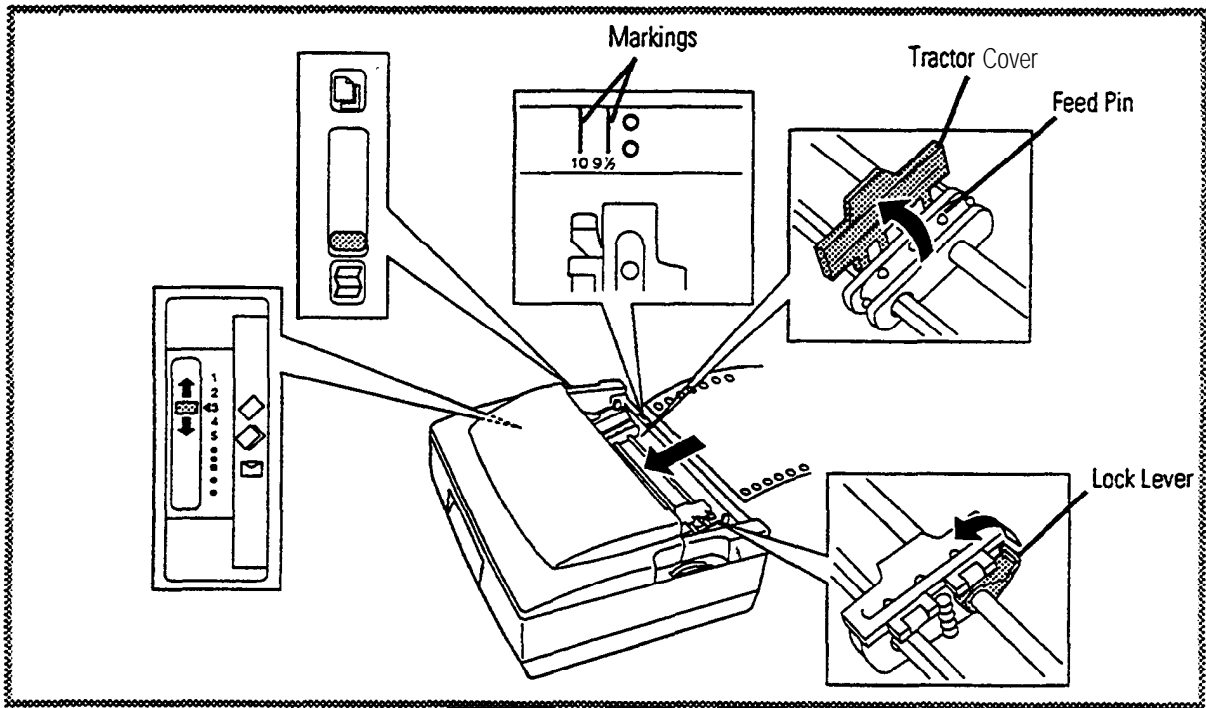
The paper is fed to the first print position and the SELECT light will go on.

The primer is now ready to receive print commands from your computer.

---

NOTE: When the printer is out of paper during printing and the SELECT light is blinking, insert continuous papers and press FEED/LOAD to feed the paper to the first print position. Then press MODE to resume printing.

---



### *L*oading Cut Sheets with Continuous Paper Parked

You **can** load and print **cut** sheets without removing continuous **paper** from the tractor by using a feature termed “**paper parking**.” You back-feed the continuous **paper** off the platen, “**parking**” it on the tractor while you load **cut** sheets. Then, refeed the continuous **paper** when you **need again**.

Follow these **steps** to use **paper parking** when you have continuous **paper** loaded in the **printer** and you want to print **cut** sheets.

---

**NOTE:** The **paper parking** feature **can** only be used with the tractor installed as a push tractor.

---

- ① Press **FEEDROAD** and **MODE** simultaneously. The **printer** will perform reverse line **feeding**, moving the continuous **papers** away **from** the platen.

---

**NOTE:** If the continuous **papers** are not away **from the** platen, press **FEEDROAD** and **MODE** simultaneously again.

---

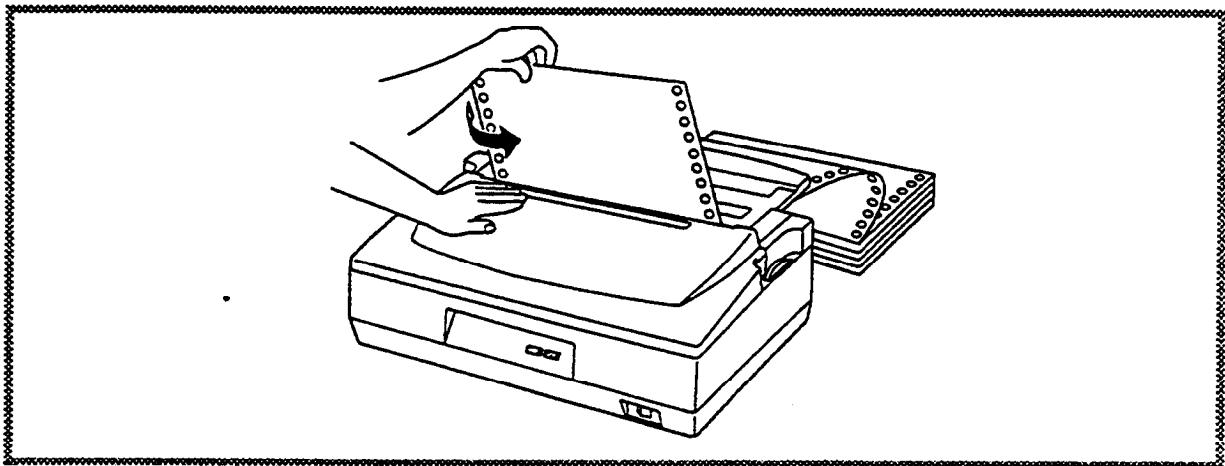
- ② Set the **paper** selection lever **to** the rear Position.
- ③ Load a **cut** sheet into the **printer** (see **page 22**).
- ④ After printing on a **cut** sheet, press **FEEDROAD** one **second** or more **to** eject a **cut** sheet.
- ⑤ After a **cut** sheet is ejected, set the **paper** selection lever **to** the front Position.
- ⑥ Press **FEED/LOAD**. The continuous **papers** return **to** the first print line.

### *Tearing Off Continuous Papers*

This function can be used only when the tractor is installed as a push tractor.

Use the edge of the top cover to tear continuous papers. It is recommended that forms be torn at the perforation.

- ❶ Make sure the paper selection lever is set to the front position, and the paper is loaded on the platen.
- ❷ Press FEED/LOAD for one second or more. Printer will perform the form feed and align the perforation with the top cover.
- ❸ Tear the paper at the perforation by pulling it toward you.
- ❹ Press FEED/LOAD to return the paper to the first print position. The paper also returns automatically to the first print position when print data is received **from** the computer.



### *Automatic Tear Off Feature*

With the tractor installed as a push tractor, you can tear off the continuous papers without pressing FEED/LOAD. The printer will advance the paper and align the perforation with the edge of top cover two seconds after printing of the last line.

### **Loading for Rear Feed with Pull Tractor**

Use the following steps to load the printer with continuous papers for rear feed

- ❶ Set the sheet guide sheet guide upright.
- ❷ Set the paper selection lever to the rear position.
- ❸ Open the top cover and set the paper thickness setting lever depending on the weight and thickness of **the** paper.

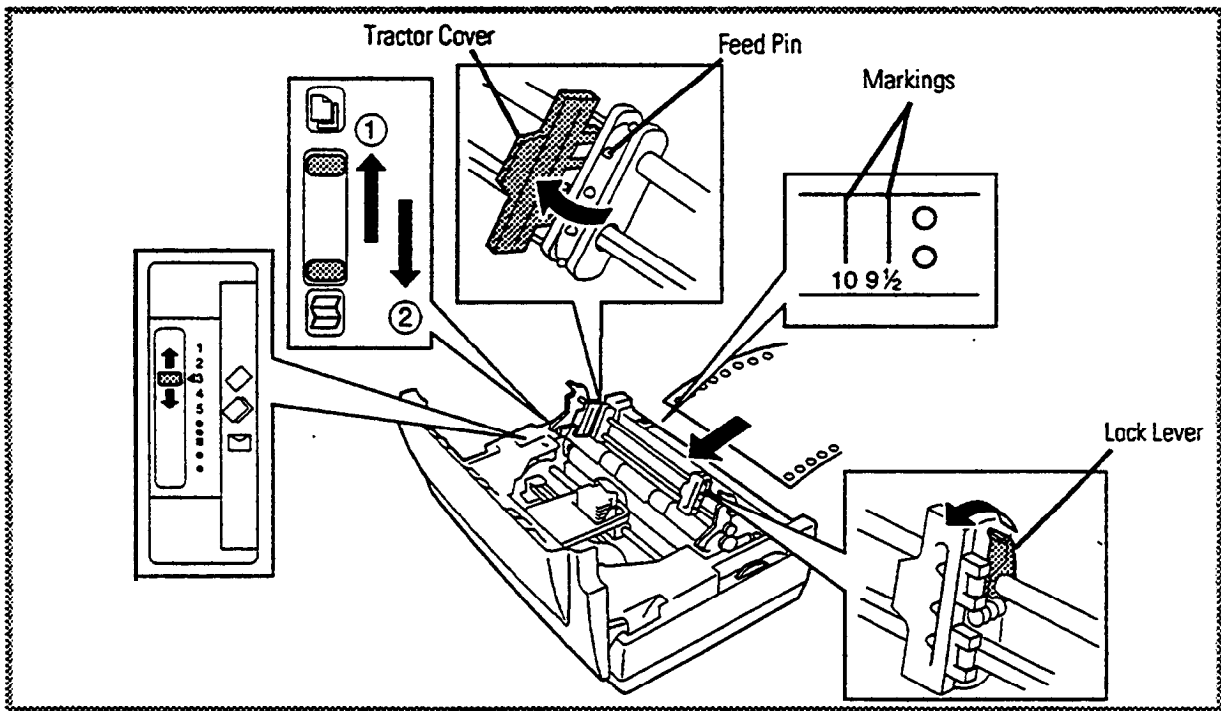
- 4 From the rear of the printer, insert continuous **papers** by using the markings embossed on the rear of the **printer** cover.
- 5 Turn the **paper feed dial** to **pull up** the **paper** to the height of the tractors.
- 6 Set the **paper selection** lever to the front position.
- 7 **Pull** the sheet guide upward and then turn it toward the rear.
- 8 **Unlock** the left and right **tractors** by flipping their **lock** levers up.
- 9 Open the left and right tractor **covers**.
- 10 Set the left tractor so that its feed pins **align** with the holes on the left side of the **paper**. Close and **lock** the left tractor into **position** by flipping the **lock** lever down.
- 11 Set the right tractor so that its feed pins **align** with the holes on the right side of the **paper**. Close and **lock** the right tractor.

---

NOTE: Fit **the paper snugly** between the tractors but do not **stretch** the **paper** feed holes.

---

- 12 Close the top cover, **leaning** it over the tractor.



- 13 Turn on the **printer** power.

The **printer** is now ready to receive print commands from your Computer.

---

NOTE: When the **printer** is out of **paper during** printing and the SELECT light is blinking, insert continuous **papers** and press MODE to resume printing.

---

## Loading for Bottom Feed

You can use the printer's bottom feed feature to print continuous papers. You need a printer table with a bottom feed slot.

- ① Make sure the paper selection lever is set to the rear position.
- ② Open the top cover.
- ③ From the bottom of the printer, insert the continuous papers. Set the continuous papers with the print side facing you.
- ④ Push the continuous papers upward from the bottom, then pull them up from the above.
- ⑤ Unlock the left and right tractors by flipping their lock levers up.
- ⑥ Open the left and right tractor covers.
- ⑦ Set the left and right tractors so that their feed pins align with the holes on the left and right sides of the paper. Close and lock the both tractors into position by flipping the lock levers down.

---

NOTE: Fit the paper snugly between the tractors but do not stretch the paper feed holes.

---

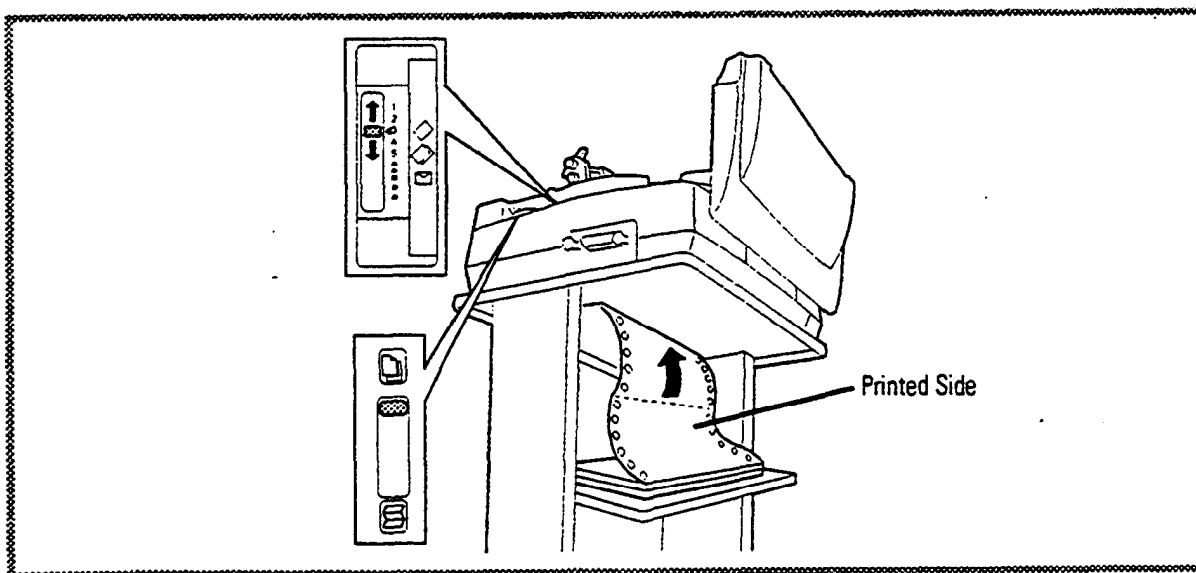
- ⑧ Gently pull the continuous papers to remove the slack.
- ⑨ Close the top cover.
- ⑩ Turn on the printer power.

The printer is now ready to receive print commands from your computer.

---

NOTE: When the printer is out of paper during printing and the SELECT light is blinking, insert continuous papers and press MODE to resume printing.

---



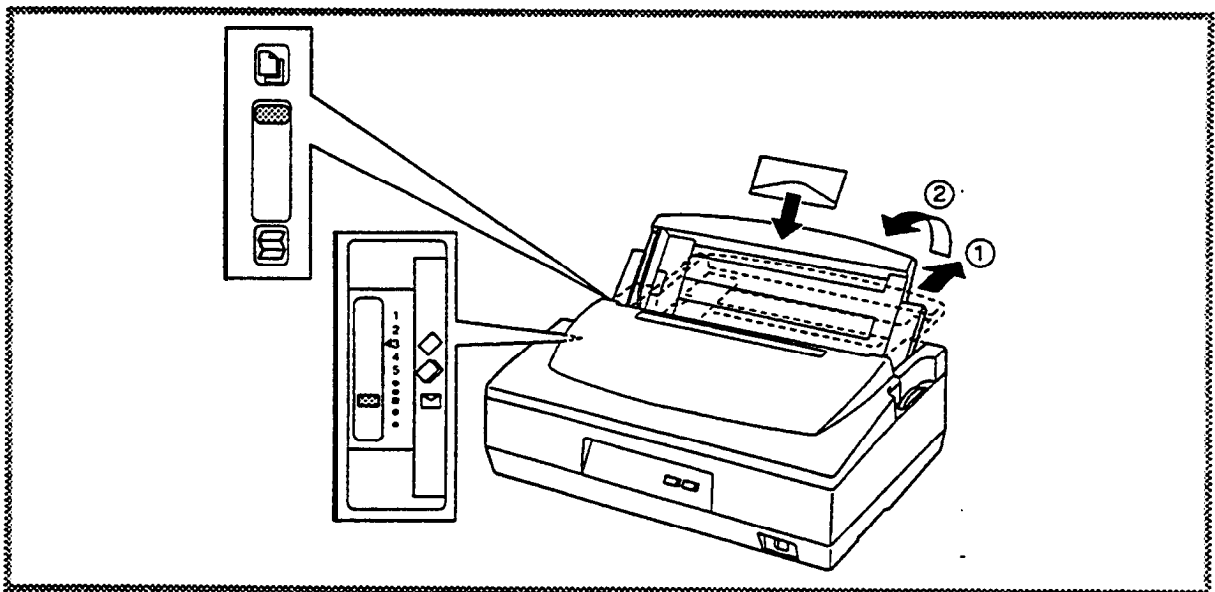
## LOADING ENVELOPES

- NOTES:**
1. Before loading envelopes, "[None]" must be selected in the **option** setting menu of **the** menu mode. See **Section 3** for more information.
  2. Print the envelope at **the** normal temperature.

- 1 Set **the paper selection** lever to the rear position.
- 2 Open the top cover.
- 3 Set the **paper thickness** setting lever to the position "■ (✉)".
- 4 Stand the sheet guide.
- 5 Turn on the **printer power**. (**Make sure** the **carriage** moves to the **center** of the printer and the **SELECT** light is off.)
- 6 Close the top cover.
- 7 Insert an envelope (top down, with the back, or flap side, towards you) into the insertion slot of the sheet guide, **using** the **ruler** and **paper guides** to **center** it.

The envelope is fed to the first print position and the **printer** will go online automatically (the **SELECT** light will light).

The **printer** is now ready to receive data **from** your Computer.



# 5 Problem Solving and Preventive Maintenance

*This section divides problem solving into two categories. The first involves quick solutions to simple problems such as print smudging or incorrect paperfeeding. The second category discusses what actions to take when the printer will not **perform** certain print functions **or fails** to print at all. In **addition**, this section provides **useful** information for performing preventive maintenance.*

## SOLVING PROBLEMS

Although your Pinwriter is highly reliable, simple problems can occur. Three lights on your printer's control panel blink to help diagnose and correct these simple problems\_

### Simple Printer Problems

Simple printer problems appear on the printer's control panel as patterns of lights that are lit, not lit or blinking. Refer to Table 5-1 for a listing of indicators and corresponding corrective actions.

Table 5-1 **Simple Problem Soivina**

MODE	indication SELECT	Meaning	Corrective Action
On	Off	Paper empty.	Load paper to the printer.
On	Slow blinking	Paper empty (with print data in memory).	Load paper in the printer and press MODE to resume printing.
On	Rapid <b>blinking</b>	Paper jam with the sheet feeder installed.	Remove the jammed paper and press MODE to resume printing.
Off	Rapid blinking	Incorrect setting of the paper selection lever.	Reset the lever or remove paper.
Rapid blinking	Rapid blinking	Print head temperature is too high.	No problem. When print head temperature goes down, the printer resumes normal operation <b>automatically</b> .

### Minor Printer Problems

Alternate blinking of the MODE and SELECT lights on the control panel indicates that minor printer problems have occurred.



When minor **problems** occur, you **can identify** the **cause** of the **problem** by pressing and holding **MODE**. Table 5-2 **lists each indication** and **corresponding** corrective **action**.

Table 5-2 Minor Problem Solving I

Indication		Meaning	Corrective Action
MODE	SELECT		
On	On	Internal <b>printer program</b> error.	Call your Service representative.
On	Off	Internal <b>printer program</b> error.	Call your <b>service</b> representative.
Off	On	<b>Electronic</b> circuit error.	Call your <b>service</b> representative.
Blink	Off	Input <b>voltage</b> error. Power supply circuit error.	Call your <b>service</b> representative.
Off	Blink	Mechanism error.	Call your <b>service</b> representative.
Blink	On	<b>A/D converter</b> error.	Call your <b>service</b> representative.
On	Blink	<b>Downloading</b> error: the <b>printer</b> is unable to <b>accept</b> downloaded data.	Change buffer <b>capacity</b> to 512 B" or '4 KB" by <b>changing memory switch</b> setting (see Section 3).

Sometimes minor printing Problems **which** are not **signalled** by lights **can** occur. Table 5-3 assists you in solving these Problems.

Table 5-3 Minor Problem Solving II

Problem	Possible Cause	Corrective Action
Does not print. All <b>lights</b> are off.	Power is <b>off</b> .	Plug the power <b>cord</b> into the electrical <b>outlet</b> properly and turn on the power.
The power is on but the <b>printer</b> does not <b>print</b> .	The <b>interface cable</b> is not connected properly.	Turn off the power and connect the <b>interface cable</b> again.
The <b>printer</b> prints one line in two unidirectional strokes.	Print <b>head</b> temperature is too high.	<b>No problem</b> . When the <b>print head temperature</b> goes down, the <b>printer</b> automatically returns to normal Operation.
<b>Printing</b> does not <b>start</b> at the top of the <b>page</b> .	<b>First print</b> position is not set <b>correctly</b> .	Move <b>paper</b> to the top of <b>page</b> .
<b>Print</b> is faded.	Ribbon is not <b>installed correctly</b> . Ribbon needs replacing. Paper thickness setting lever is set incorrectly.	Reinstall ribbon cartridge (see page 3). Replace <b>ribbon cartridge</b> (see page 3). <b>Adjust paper</b> thickness setting lever.
<b>Print</b> is smudged.	Paper thickness setting <b>lever</b> is set incorrectly.	<b>Adjust paper</b> thickness setting lever.
<b>Although vertically</b> enlarged or <b>enhanced characters</b> are not selected, the <b>printer</b> prints one line in several <b>passes</b> (multi-pass <b>print</b> ).	Printers feature.	<b>No problem</b> . When printing <b>high-density</b> dot data such as bit image <b>data</b> , the <b>printer</b> prints one line in several <b>passes</b> .

Table 5-3 Minor Problem Solving II (cont'd)

Problem	Possible Cause	Corrective Action
The built-in tractor is installed as a push tractor but the printer does not operate smoothly.	Option setting mode in the menu mode is set <b>incorrectly</b> .	Select "[None]" in the option setting mode (see Section 3).
The built-in tractor is installed as a pull tractor but the printer does not load paper.	Paper selection lever is set <b>incorrectly</b> .	When loading paper with the rear feed, set the paper selection lever to the front position. When loading paper with the bottom feed, set the paper selection lever to the rear position.
	Option setting mode in the menu mode is set <b>incorrectly</b> .	Select "[Pull]" in the option setting mode (see Section 3).
The sheet feeder is installed but paper is not loaded.	Paper selection lever is set <b>incorrectly</b> .	Set the paper selection lever to the rear position.
	Option setting mode in the menu mode is set <b>incorrectly</b> .	Select "[S/F]" in the option setting mode (see Section 3).

## TROUBLESHOOTING

If you have tried the corrective actions listed in Tables 5-1, 5-2, and 5-3, and your printer still will not print correctly, try the following troubleshooting techniques.

### Self-Test

If your Pinwriter will not print, run a self-test to determine whether the problem is with the printer itself.

- 1 Load paper into the printer and turn off the power.

---

NOTE: For best results, use continuous papers to run the entire self-test.

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- 2 Press FEED/LOAD while turning on the printer.

To stop the self-test, simply turn off the printer power.

Your self-test printout (see **page 6**) provides the first print position, print head test pattern, and the printer internal fonts. The print head test shows any pins that may be broken. The solid horizontal lines printed at the both sides of the printer model name ("Pinwriter **P2000**" for **P2000**, "Pinwriter **P2X**" for **P2X**) should have no missing or discontinuous bars.

If the self-test runs but the **printer** will not print data **from** your Computer, you may have an interface **problem**. Check that both ends of **the** interface **cable** are connected securely. If the self-test does not run at all, **call** your **printer service** representative for assistance.

## Print Screen

If the self-test runs with no Problems, you should now **perform** a print **screen** to determine if **the** interface is **working** correctly. With most Computer Systems, a print **screen** is performed by pressing the shift key and print **screen** key at the **same** time. If the **screen** does not print out, your Computer is probably not communicating **with** your **printer**. Check your interface connections and try a print **screen** again. **If** the **screen** still does not print out, **call** your **printer** Service representative for assistance.

If the **screen** does print out, the **printer** is probably fine and the **problem** lies with your Software. See your Software **dealer** for assistance. ↵

## Hex Dump

If you are having **problems with** a **particular printer** function such as underlining or condensed printing, **perform** a hex dump to determine whether the **problem** is with the **printer** or the Software.

- ① Create several lines of text using the function which is **giving** you Problems. In this example, we will use the underlining function.
- ② Exit the Software **package** and turn off the **printer**.
- ③ Press MODE while **turning** on the **printer** to enter the menu **mode**.
- ④ **Using FEED/LOAD** and MODE, **change** the menu mode setting of hex dump mode in Group A "**Print Mode**" to "**[ENABLE]**" (see Section 3).
- ⑤ Turn off and on the power to **start** the hex dump print.
- ⑥ The Computer now sends your lines of text to the **printer**, which in turn prints out the data in **hexadecimal form**. You will want to check the hex **codes** to see if the underlining **code** appears.

Look up the underlining **command** description in Section 6. Note that the **hexadecimal code** is **1B2D**. **Try** to find this **code** among the hex **codes** in the hex dump printout.

- ⑦ If the underlining hex **code** appears, the Software is doing its job and the **problem** lies with the Printer. **Call** your **printer service** representative.

If the **underlining** hex **code** does not appear, you have a Software **problem** and should see your **software dealer**.

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NOTE: To exit the hex dump, turn off the power.

---



# 6 Programming

*This section supplies you with the programming explanations and code descriptions necessary to program your Pinwriter. Intended for users who write their own programs, this section assumes some knowledge of BASIC programming. Users who do not write programs but depend on preprogrammed applications packages can skip this section completely, or read it for insight into how the Pinwriter works.*

## ASCII CODING

Table 6-1 lists the ASCII codes that can be used to control the Pinwriter. The 0 to F numbers on the top and left side are the hexadecimal (hex) numbers for the alphanumeric, special, and graphics characters inside the boxes.

Table 6-1 ASCII Table for Character Set 1

SECOND HEX DIGIT	FIRST HEX DIGIT															
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0		P		p	NUL		SP	0		P		p
1		DC1	!	1	A	Q	a	q		DC1	!	1	A	Q	a	q
2		DC2	"	2	B	R	b	r		DC2	"	2	B	R	b	r
3	ETX	DC3		3	C	S	c	s	ETX	DC3		3	C	S	c	s
4		DC4		4	D	T	d	t		DC4		4	D	T	d	t
5			&	5	E	U	e	u			&	5	E	U	e	u
6	ACK		&	6	F	V	f	v	ACK		&	6	F	V	f	v
7	BEL		'	7	G	W	g	w	BEL		'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y	HT	EM	)	9	I	Y	i	y
A	LF		*	:	J	Z	j	z	LF		*	:	J	Z	j	z
B	VT	ESC	+	:	K		k		VT	ESC	+	:	K		k	
C	FF	FS	.	:	L		l		FF	FS	.	:	L		l	
D	CR		-	=	M		m		CR		-	=	M		m	
E	SO		.	:	N		n		SO		.	:	N		n	
F	SI		/	?	O	_	o	DEL	SI		/	?	O	_	o	SP



: Modified accordiig to language character sets

## Control Codes

Table 6-2 is the control codes and sequences, their hex and decimal equivalents, and their functions. The codes and sequences are listed in numerical order.

Table 62 Control Codes and Sequences

Control Code or Sequence	Hex	Control Character Equivalents Decimal	Function
<b>Print Style Commands:</b>			
SO	0E	14	Selects one-line elongated printing.
SI	0F	15	Selects condensed printing.
DC2	12	18	Cancel condensed printing.
DC4	14	20	Cancel one-line elongated printing.
ESC SO	1B 0E	27 14	Selects one-line elongated printing. Same as SO.
ESC SI	1B 0F	27 15	Selects condensed printing. Same as SI.
ESC !(n)	1B 21 (n)	27 33 (n)	Selects any print styles (0 ≤ n ≤ 255).
ESC (- (n1)(n2)(m) (d1)(d2)	1B 28 2D (n1)(n2)(m) (d1)(d2)	27 40 45 (n1)(n2)(m) (d1)(d2)	Selects or cancels score. (n1=3, n2=0, m=1, d1=1-3, d2=0-7).
ESC -(n)	1B 2D (n)	27 45 (n)	Selects or cancels continuous underlining. n=0: Cancel, n=1 : Select
ESC 4	18 34	27 52	Selects italic printing.
ESC 5	1B 35	27 53	Cancel italic printing.
ESC E	1B 45	27 69	Selects enhanced printing.
ESC F	1B 46	27 70	Cancel enhanced printing.
ESC G	1B 47	27 71	Selects double-strike printing.
ESC H	1B 48	27 72	Cancel double-strike printing.
ESC M	1B 4D	27 77	Selects 12-cpi printing.

Table 6-2 Control Codes and Sequences (cont'd)

Control Code or Sequence	Control Character Equivalents		Function
	Hex	Decimal	
ESC P	1B 50	27 80	Selects 10-cpi printing.
ESC S (n)	1B 53 (n)	27 83 (n)	Selects <b>superscripts</b> or <b>subscripts</b> . n=0: <b>Superscript</b> , n=1: <b>Subscript</b>
ESC T	1B 54	27 84	Cancel superscripts and subscripts.
ESC W (n)	B 57 (n)	27 87 (n)	Selects or cancels elongated printing. n=0: <b>Cancel</b> , n=1: <b>Select</b>
ESC g	1B 67	27 103	Selects 15-cpi printing.
ESC k (n)	1B 6B (n)	27 107 (n)	Selects <b>LQ type style</b> . n=0 selects Courier 10. n=16 selects Helvetica 10 PT PS. n=18 selects Times 10 PT PS. n=19 selects Prestige Elite WP 12. n=34 selects <b>Bold PS</b> . n=52 selects Quick Gothic 10. n=53 selects Quick Gothic 12. n: <b>decimal code</b> .
ESC p (n)	1B 70 (n)	27 112 (n)	Selects or cancels proportional spacing. n=0: <b>Cancel</b> , n=1: <b>Select</b>
ESC q (n)	1B 71 (n)	27 113 (n)	Selects or <b>cancels outline</b> and shadow printing. n=0 cancels outline and shadow printing. n=1 selects outline printing. n=2 selects shadow printing. n=3 selects <b>outline</b> and shadow printing.
ESC w (n)	B 77 (n)	27 119 (n)	Selects or cancels double-height printing. n=0: <b>Cancel</b> , n=1: <b>Select</b>
ESC x (n)	1B 78 (n)	27 120 (n)	Selects <b>draft</b> or <b>letterquality mode</b> . n=0 selects draft mode. n=1 selects letterquality mode.
FS E (n)	1C 45 (n)	28 69 (n)	Selects or cancels horizontal enlargement. n=0 cancels horizontal enlargement. n=1 selects double horizontal enlargement. n=2 selects <b>triple</b> horizontal enlargement.
FS S (n)	1C 53 (n)	28 63 (n)	Selects <b>draft 12-cpi</b> printing speed. n=0 selects draft 12. n=1 selects high-speed <b>draft 12</b> .
FS V (n)	1C 56 (n)	28 86 (n)	Selects or cancels <b>vertical</b> enlargement. n=0 cancels <b>vertical</b> enlargement. n=1 selects double <b>vertical</b> enlargement.

Table 6-2 Control Codes and Sequences (cont'd)

Control Code or Sequence	Control Hex	Character Equivalents Decimal	Function																
<b>Horizontal Spacing Commands:</b>																			
BS	08	8	Moves <b>print</b> position one space to the left.																
HT	09	9	Advances print position to the next preset horizontal tab.																
SP	20	32	Moves <b>print</b> position one space to the tight.																
ESC SP (n)	<b>1B 20 (n)</b>	27 32 (n)	Sets space between characters ( $0 \leq n \leq 127$ ).																
ESC \$ (n1) (n2)	<b>1B 24 (n1) (n2)</b>	27 36 (n1) (n2)	Moves print position to an absolute horizontal position. $n1 + (n2 \times 256) = \text{number of dots}$ ( $0 \leq n1 \leq 255, 0 \leq n2 \leq 1$ )																
ESC D (n1) (n2) (nk) NUL	<b>1B 44 (n1) (n2) (nk) 00</b>	27 68 (n1) (n2) (nk) 0	Sets horizontal tabs ( $1 \leq k \leq 32$ ). <table border="1"> <thead> <tr> <th><u>Pitch</u></th> <th><u>n Value</u></th> <th><u>Pitch</u></th> <th><u>n Value</u></th> </tr> </thead> <tbody> <tr> <td>10 cpi</td> <td>'1 to 79</td> <td>17 cpi</td> <td>1 to 136</td> </tr> <tr> <td>12 cpi</td> <td>1 to 89</td> <td>20 cpi</td> <td>1 to 159</td> </tr> <tr> <td>15 cpi</td> <td>1 to 119</td> <td></td> <td></td> </tr> </tbody> </table>	<u>Pitch</u>	<u>n Value</u>	<u>Pitch</u>	<u>n Value</u>	10 cpi	'1 to 79	17 cpi	1 to 136	12 cpi	1 to 89	20 cpi	1 to 159	15 cpi	1 to 119		
<u>Pitch</u>	<u>n Value</u>	<u>Pitch</u>	<u>n Value</u>																
10 cpi	'1 to 79	17 cpi	1 to 136																
12 cpi	1 to 89	20 cpi	1 to 159																
15 cpi	1 to 119																		
ESC Q (n)	<b>1B 51 (n)</b>	27 81 (n)	Sets right margin. <table border="1"> <thead> <tr> <th>Character <u>Width</u></th> <th><u>Value</u></th> <th>Character <u>Width</u></th> <th><u>Value</u></th> </tr> </thead> <tbody> <tr> <td>10 cpi</td> <td>1 to 80</td> <td>17 cpi</td> <td>1 to 137</td> </tr> <tr> <td>12 cpi</td> <td>1 to 96</td> <td>20 cpi</td> <td>1 to 160</td> </tr> <tr> <td>15 cpi</td> <td>1 to 120</td> <td></td> <td></td> </tr> </tbody> </table>	Character <u>Width</u>	<u>Value</u>	Character <u>Width</u>	<u>Value</u>	10 cpi	1 to 80	17 cpi	1 to 137	12 cpi	1 to 96	20 cpi	1 to 160	15 cpi	1 to 120		
Character <u>Width</u>	<u>Value</u>	Character <u>Width</u>	<u>Value</u>																
10 cpi	1 to 80	17 cpi	1 to 137																
12 cpi	1 to 96	20 cpi	1 to 160																
15 cpi	1 to 120																		
ESC \ (n1) (n2)	<b>1B 5C (n1) (n2)</b>	27 92 (n1) (n2)	Moves print position a specified distance. $n1 + (n2 \times 256) = \text{number of dots}$ .																
ESC a (n)	<b>1B 61 (n)</b>	27 97 (n)	Selects justification. <b>n=0</b> selects left justification. <b>n=1</b> selects center justification. <b>n=2</b> selects right justification. <b>n=3</b> selects full justification.																
ESC l (n)	<b>1B 6C (n)</b>	27 108 (n)	Sets left margin. <table border="1"> <thead> <tr> <th>Character <u>Width</u></th> <th><u>n Value</u></th> <th>Character <u>Width</u></th> <th><u>n Value</u></th> </tr> </thead> <tbody> <tr> <td>10 cpi</td> <td>0 to 79</td> <td>17 cpi</td> <td>0 to 136</td> </tr> <tr> <td>12 cpi</td> <td>0 to 95</td> <td>20 cpi</td> <td>0 to 159</td> </tr> <tr> <td>15 cpi</td> <td>0 to 119</td> <td></td> <td></td> </tr> </tbody> </table>	Character <u>Width</u>	<u>n Value</u>	Character <u>Width</u>	<u>n Value</u>	10 cpi	0 to 79	17 cpi	0 to 136	12 cpi	0 to 95	20 cpi	0 to 159	15 cpi	0 to 119		
Character <u>Width</u>	<u>n Value</u>	Character <u>Width</u>	<u>n Value</u>																
10 cpi	0 to 79	17 cpi	0 to 136																
12 cpi	0 to 95	20 cpi	0 to 159																
15 cpi	0 to 119																		
FS \$ (n1) (n2)	<b>1 C 24 (n1) (n2)</b>	28 36 (n1) (n2)	Moves print position a specified distance. $n1 + (n2 \times 256) = \text{number of dots}$ .																



Table 6-2 Control Codes and Sequences (cont'd)

Control Code or Sequence	Control Character Equivalents		Function																																
	Hex	Decimal																																	
<b>Vertical Spacing Commands:</b>																																			
LF	0A	10	Advances <b>paper</b> one line.																																
VT	0B	11	Advances <b>paper to</b> the next preset vertical tab.																																
FF	0C	12	Advances <b>paper</b> to the top of next <b>page</b> .																																
ESC + (n)	<b>1B 2B (n)</b>	27 43 (n)	Sets line spacing at <b>n/360 inch</b> ( $0 \leq n \leq 255$ ).																																
ESC / (n)	<b>1B 2F (n)</b>	27 47 (n)	Selects a vertical tab channel ( $0 \leq n \leq 7$ ).																																
ESC 0	<b>1B 30</b>	27 48	Sets line spacing at 8 lines per <b>inch</b> .																																
ESC 2	<b>1B 32</b>	27 50	Sets line spacing at 6 lines per <b>inch</b> .																																
ESC 3 (n)	<b>1B 33 (n)</b>	27 51 (n)	Sets line spacing at <b>n/180 inch</b> ( $0 \leq n \leq 255$ ).																																
ESC A (n)	<b>1B 41 (n)</b>	27 65 (n)	Sets line spacing at <b>n/60 inch</b> ( $0 \leq n \leq 127$ ).																																
ESC B (nl) (n2) (nk) NUL	<b>1B 42 (nl)</b> <b>(n2) (nk) 00</b>	27 66 (nl) <b>(n2) (nk) 0</b>	Sets vertical tabs ( $1 \leq n \leq 255$ , $1 \leq k \leq 16$ ).																																
ESC C (n)	<b>1B 43 (n)</b>	27 67 (n)	Sets page length at n <b>lines</b> per page ( $1 \leq n \leq 127$ ).																																
ESC C NUL (n)	<b>1B 43 00 (n)</b>	27 67 0 (n)	Sets page length at n inches per page ( $1 \leq n \leq 22$ ).																																
ESC J (n)	<b>1B 4A (n)</b>	27 74 (n)	Advances <b>paper n/180 inch</b> ( $1 \leq n \leq 255$ ).																																
ESC N (n)	<b>1B 4E (n)</b>	27 78 (n)	Sets skip-over perforation function ( $1 \leq n \leq 127$ ).																																
ESC 0	<b>1B 4F</b>	27 79	Cancel skip-over perforation function.																																
ESC b (c) (nl) (n2) (nk) NUL	<b>1B 62 (c) (nl)</b> <b>(n2) (nk) 00</b>	27 98 (c) (nl) <b>(n2) (n...) 0</b>	Sets <b>vertical</b> tabs in <b>tab</b> channels ( $0 \leq c \leq 7$ , $1 \leq n \leq 255$ , $1 \leq k \leq 16$ ).																																
FS 3 (n)	<b>1C 33 (n)</b>	28 51 (n)	Sets <b>line</b> spacing at <b>n/360 inch</b> ( $0 \leq n \leq 255$ ).																																
FS F	<b>1C 46</b>	28 70	Selects forward <b>line</b> feed.																																
FS R	<b>1C 52</b>	28 82	Selects reverse <b>line</b> feed.																																
<b>Graphics Commands:</b>																																			
ESC ● (m) (n1) (n2)	<b>1B 2A (m)</b> <b>(n1) (n2)</b>	27 42 (m) <b>(n1) (n2)</b>	Prints <b>selected-density</b> dot graphics.																																
			<table border="1"> <thead> <tr> <th><u>8-pin</u></th> <th><u>Dots/Inch</u></th> <th><u>24-pin</u></th> <th><u>Dots/Inch</u></th> </tr> </thead> <tbody> <tr> <td>m=0</td> <td>60</td> <td>m=33</td> <td>60</td> </tr> <tr> <td>m=1</td> <td>120</td> <td>m=38</td> <td>120</td> </tr> <tr> <td>m=2</td> <td>120</td> <td></td> <td>90</td> </tr> <tr> <td>m=3</td> <td>240</td> <td>m=39</td> <td>180</td> </tr> <tr> <td>m=4</td> <td>80</td> <td>m=40</td> <td>360</td> </tr> <tr> <td>m=6</td> <td>90</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><math>(0 \leq n1 \leq 256, 0 \leq n2 \leq 19)</math></td> </tr> </tbody> </table>	<u>8-pin</u>	<u>Dots/Inch</u>	<u>24-pin</u>	<u>Dots/Inch</u>	m=0	60	m=33	60	m=1	120	m=38	120	m=2	120		90	m=3	240	m=39	180	m=4	80	m=40	360	m=6	90			$(0 \leq n1 \leq 256, 0 \leq n2 \leq 19)$			
<u>8-pin</u>	<u>Dots/Inch</u>	<u>24-pin</u>	<u>Dots/Inch</u>																																
m=0	60	m=33	60																																
m=1	120	m=38	120																																
m=2	120		90																																
m=3	240	m=39	180																																
m=4	80	m=40	360																																
m=6	90																																		
$(0 \leq n1 \leq 256, 0 \leq n2 \leq 19)$																																			

Table 6-2 Control Codes and Sequences (cont'd)

Control Code or Sequence	Control Character Equivalents		Function
	Hex	Decimal	
ESC ? (s) (m)	1B 3F(s) (m)	27 63 (s) (m)	Assigns any graphics mode to any one of the four other graphics commands. s="K" (ESC K nl n2) s="L" (ESC L nl n2) s="Y" (ESC Y nl n2) s="Z" (ESC Z nl n2) "m" is the same variable as "Sets bi image mode selection."
ESC K (nl) (n2)	1B 4B (nl) (n2)	27 75 (nl) (n2)	Sets 8-bit single-density dot mode (60 dpi). n1+(n2×256)=number of columns.
ESC L (nl) (n2)	1B 4C (nl) (n2)	27 76 (nl) (n2)	Sets 8-bit double-density dot mode (120 dpi). n1+(n2×256)=number of dots.
ESC Y (nl) (n2)	1B 59 (nl) (n2)	27 89 (nl) (n2)	Selects high-speed, double-density dot mode (120 dpi). n 1 +(n2×256)=number of dots.
ESC Z (nl) (n2)	1B 5A (nl) (n2)	27 90 (nl) (n2)	Selects quadruple-density dot mode (240 dpi). nl +(n2×256)=number of dots.
FS Z (nl) (n2)	1C 5A (n1) (n2)	28 90 (nl) (n2)	Selects high-density dot mode (360 dpi). n1+(n2×256)=number of dots.
<b>Character Set Commands:</b>			
ESC % (n)	1B 25 (n)	27 37 (n)	Selects either internal or user-defined character set. n=0: internal, n=1: user-defined.
ESC & (NUL) (n1) (n2)	1B 26 (00) (n1) (n2)	27 38 (0) (n1)(n2)	Loads user-defined characters into user-defined character set (0≤n1≤n2≤1276).
ESC : (NUL) (NUL) (NUL)	1B 3A (00) (00) (00)	27 58 (0) (0)(0)	Copies currently active character set to user-defined character set.
ESC R (n)	1B 52 (n)	27 82 (n)	Selects language character set. n=0: United States                    n=10: Denmark 2 n=1: France                            n=11: Netherlands n=2: Germany                        n=12: Turkey n=3: England                         n=13: Spain 2 n=4: Denmark 1                       n=14: Latin America n=5: Sweden                           n=16: Multilingual n=6: Italy                                n=17: Portugal n=7: Spain 1                           n=18: Canada-French n=8: Japan                             n=19: Norway 2 n=9: Norway
ESC t (n)	1B 74 (n)	27 116 (n)	Selects italic or IBM character set. n=0 selects italic character set. n=1 selects IBM character set.

Table 6-2 Control Codes and Sequences (cont'd)

Control Code or Sequence	Control Character Equivalents		Function
	Hex	Decimal	
FS I (n)	1C 49 (n)	28 73 (n)	Selects italic or IBM character set. n=0 selects italic character set. n=1 selects IBM character set.
FS \ (n1) (n2) (d1) (d2) (d...)	1C SC (n1) (n2) (d1) (d2) (d...)	28 92 (n1) (n2)(d1)(d2) (d...)	Prints characters continuously from all characters chart. n1+(n2×256)=total number of characters.
FS ^ (d)	1C 5E (d)	28 94 (d)	Prints one character from all characters chart.
<b>Miscellaneous Commands:</b>			
CR	0D	13	Moves print position to the left margin.
CAN	18	24	Cancels current line of data.
DEL	7F	127	Deletes preceding character.
ESC EM (n)	1B 19 (n)	27 25 (n)	Controls sheet feeder. n=1 : Selects hopper n=3: Selects manual slot n=4: Selects hopper n=R: Ejects sheet from the sheet feeder.
ESC #	1823	2735	Cancels control of eighth data bit.
ESC 6	1B 36	2754	Sets locations 128 to 159 (decimal) as characters.
ESC 7	1B 37	27 55	Sets locations 128 to 159 (decimal) as control codes.
ESC <	1B 3C	27 60	Returns print head to the left side of printer.
ESC =	1B 3D	27 61	Sets eighth data bit to 0.
ESC >	1B 3E	27 62	Sets eighth data bit to 1.
ESC @	1B 40	2764	Initializes printer to the default values.
ESC U (n)	1B 55 (n)	27 85 (n)	Selects unidirectional or bidirectional printing. n=0: Bidirectional, n=1: Unidirectional
FS @	1C 40	2864	Initializes printer to the default values.

# A Technical Specifications

## *Print Speed*

- |  |  |
|--|--|
| <input type="checkbox"/> Draft 10: 167 cps         | <input type="checkbox"/> Letter-quality 15: 83 cps     |
| <input type="checkbox"/> Draft 12: 133 cps         | a Letter-quality 17: 95 cps                            |
| <input type="checkbox"/> Draft 15: 125 cps         | a Letter-quality 20: 111 cps                           |
| <input type="checkbox"/> Draft 17: 143 cps         | <input type="checkbox"/> HS letter-quality* 10: 83 cps |
| <input type="checkbox"/> Draft 20: 167 cps         | <input type="checkbox"/> HS letter-quality 12: 100 cps |
| <input type="checkbox"/> HS draft 12: 200 cps      | <input type="checkbox"/> HS letter-quality 15: 125 cps |
| <input type="checkbox"/> Letter-quality 10: 56 cps | <input type="checkbox"/> HS letter-quality 17: 143 cps |
| <input type="checkbox"/> Letter-quality 12: 67 cps | <input type="checkbox"/> HS letter-quality 20: 167 cps |

\* Quick Gothic is used for HS letter-quality font.

## *Print Method*

Impact, **24-pin** dot matrix, 2 x 12 **staggered** pin **arrangement**

## *Font Type*

- |                              |  |
|------------------------------|--|
| a <b>Draft Gothic</b> 10     | a Courier 17                               |
| a Draft Gothic 12            | a Courier 20                               |
| a High-speed Draft Gothic 12 | a Prestige Elite WP 10                     |
| a Draft Gothic 15            | a Prestige Elite WP 12                     |
| a <b>Draft Gothic</b> 17     | a Prestige Elite WP 15                     |
| a Draft Gothic 20            | a Prestige Elite WP 17                     |
| a Quick Gothic 10            | a Prestige Elite WP 20                     |
| a Quick Gothic 12            | <input type="checkbox"/> Bold PS           |
| a Quick Gothic 15            | <input type="checkbox"/> Condensed Bold PS |
| a Quick Gothic 17            | a <b>Helvetica™</b> 10 PT PS               |
| a Quick Gothic 20            | a Condensed <b>Helvetica™</b> 10 PT PS     |
| a Courier 10                 | a Times* 10 PT PS                          |
| a Courier 12                 | a Condensed <b>Times™</b> 10 PT PS         |
| a Courier 15                 |  |

## *Line Length*

- At 10 cpi: 80 characters
- At 12 cpi: 96 characters
- At 15 cpi: 120 characters
- Cl At 17 cpi: 137 characters
- At 20 cpi: 160 characters

**Dot Size**

0.2 mm (0.0079 inch)

**Dot Spacing**

- Cl Vertical — 180 or 360 dots per inch  
 Horizontal — 60, 80, 90, 120, 180, 240, or 360 dots per inch

**Vertical Line Spacing**

- 3, 4, 6 or 8 lines per inch (lpi)  
 n/60-, n/180-, or n/360-inch line spacing  
 1/6-inch line feed speed — 100 ms  
 Slew rate — 2.5 inches per second

**Language Character Sets**

- |  |                                  |  |                                       |
|--|----------------------------------|--|---------------------------------------|
| <input type="checkbox"/> United States | <input type="checkbox"/> Sweden  | <input type="checkbox"/> Denmark 2     | <input type="checkbox"/> Multilingual |
| Cl France                              | <input type="checkbox"/> Italy   | <input type="checkbox"/> Netherlands   | <input type="checkbox"/> Portugal     |
| <input type="checkbox"/> Germany       | <input type="checkbox"/> Spain 1 | <input type="checkbox"/> Turkey        | Cl Canada-French                      |
| <input type="checkbox"/> England       | <input type="checkbox"/> Japan   | <input type="checkbox"/> Spain2        | <input type="checkbox"/> Norway 2     |
| <input type="checkbox"/> Denmark 1     | <input type="checkbox"/> Norway  | <input type="checkbox"/> Latin America |                                       |

**Paper Handling**

- Manual feed slot (sheet guide) — standard  
 Cl Bottom feed slot (for continuous paper) — standard  
 Push/pull convertible tractor — standard  
 Sheet feeder (capacity: 50 sheets) — optional

**Ribbon (order number: 808-861623-001-A, 808-867623-607-A)**

Endless loop, black nylon ribbon — 3 million character life (DR 12)

**Copy Printing Capacity**

Original and three copies (see Appendix B for details)

**Paper width\***

- Cl Sheet guide: 89 to 279 mm (3.5 to 11 in.)  
 Built-in tractor: 89 to 254 mm (3.5 to 10 in.)

\* See Appendix B for details.

### *Dimensions*

width 395 mm (15.6 in.), depth 300 mm (11.8 in.), height 150 mm (5.9 in.)

### *Weight*

6 kg (13 lb 3 oz)

### *Interface*

Centronics® parallel interface

### *Emulation*

NEC Pinwriter

### *Power Requirements*

- P2000:** 110 V model — 110 Vac  $\pm 10\%$ , 50/60  $\pm 1$  Hz  
220 V model — 220 Vac  $\pm 10\%$ , 50/60  $\pm 1$  Hz  
240 V model — 240 Vac  $\pm 10\%$ , 50/60  $\pm 1$  Hz  
200 - 220 model — 200 - 220 Vac  $\pm 10\%$ , 50/60  $\pm 1$  Hz
- P2X:** 240 V model — 240 Vac  $\pm 10\%$ , 50/60  $\pm 1$  Hz  
200 - 220 model — 200 - 220 Vac  $\pm 10\%$ , 50/60  $\pm 1$  Hz

---

CAUTION: The printer would not be able to guarantee its operation if the input voltage is beyond the specified range.

---

### *Environmental Conditions*

- Operating temperature — 5° to 38°C (41° to 100°F)
- Operating humidity — 30% to 85% RH, noncondensing  
(45% to 70% RH with sheet feeder)
- Storage temperature — -25° to 60°C (-13° to 140°F)
- Storage humidity — 10% to 90% RH, noncondensing

### *Reliability*

- MTBF — 4000 hours (25% duty and 35% density)
- MTTR — 15 minutes

### *Administrative Compliance*

- UL 1950 Class I  
FCC Class B  
CSA C22.2 No.950 D3 Class I
- EN60 950 Class I (TÜV)  
VDE 0871 Class B  
SET1  
NEMKO

---

NOTE: Some models described above are not applicable to the standard for safety See the printer label located at the back of the printer for detail.

---

### *Special Features*

- Triple width characters
- Double width characters
- Double height characters
- Hex data dump
- Automatic paper **loading/parking/tearing-off**
- Operator panel with font and pitch selection

### Receive **Buffer**

16K bytes or 4K bytes (with 128 download characters) or **0.5K** bytes (with 128 download characters)

### **Option**

**S**heet feeder (order number: 136-265 194-00 1 -A)

# B Paper Specifications

*The following tables and figures provide paper specifications and print area dimensions for cut sheets and continuous forms.*

*Refer to Tables B-1 and B-Z before selecting paper.*

Table B-1 Paper Specifications for Sheet Guide

Paper Measurements	Specifications
Width	89 to 279 mm (3.5 to 11 in.)
Length	109 to 363 mm (4.3 to 14.3 in.)
Weight	45.1 to 90.2 gsm (12 to 24 lb)
Paper thickness	0.058 to 0.124 mm (0.0023 to 0.0049 in.)

Table B-2 Paper Specifications for Tractor

Paper Measurements	Specifications
<b>Width</b>	89 to 254 mm (3.5 to 10 in.)
Weight Original	44.9 to 89.8 gsm (12 to 24 lb)
Paper thickness	0.058 to 0.124 mm (0.0023 to 0.0049 in.)
1 plus original	
Carbonless:	Original 74.9 gsm max. (20 lb max.)
	Copy 1 48.7 gsm max. (13 lb max.)
Carbon-interleaved:	Original 56.2 gsm max. (15 lb max.)
	Copy 1 56.2 gsm max. (15 lb max.)
	Carbon 33.7 gsm (9 lb)
2 plus original	
Carbonless:	Original 74.9 gsm max. (20 lb max.)
	COPY 1 56.2 gsm max. (15 lb max.)
	Copy 2 48.7 gsm max. (13 lb max.)
Carbon-interleaved:	Original 56.2 gsm max. (15 lb max.)
	Copy 1 56.2 gsm max. (15 lb max.)
	Copy 2 56.2 gsm max. (15 lb max.)
	Carbon 33.7 gsm (9 lb)
3 plus original	
Carbonless:	Original 74.9 gsm max. (20 lb max.)
	Copy 1 56.2 gsm max. (15 lb max.)
	Copy 2 56.2 gsm max. (15 lb max.)
	COPY 3 48.7 gsm max. (13 lb max.)



NOTE: **With** 2-ply forms (1 plus original), punched tucks (crimped perforations that hold the paper layers together) are permissible along both sides of the form. All **3-ply** and **4-ply** forms (2 or 3 plus original) must be spot-glued on **both sides, or one side** spot-glued with the other punched tucks. Staples cannot be used to bind multi-ply forms.

Tables B-3, B-4 and B-5 and the corresponding figures describe the dimensions of the print area of a cut sheet, continuous forms and envelopes.

Table B-3 Print Area Dimensions for Sheet Guide

Dimensions	Description	Measurements
<b>A and B</b>	Margins ( <b>Normally</b> non-printing area)	12.7 mm min. (0.5 in. min.)
C	Distance from the top edge to the middle of the first print line	23.6 mm (0.93 in.)
C	Distance from the top edge to the bottom of the first print line	<b>25.4 mm (1 in.)</b>
D	Distance from the bottom edge to the middle of the last print line	27.1 mm min. (1.07 in. min.)
D	<b>Distance</b> from the bottom edge to the bottom of the <b>last</b> print line	25.4 mm min. (1 in. min.)

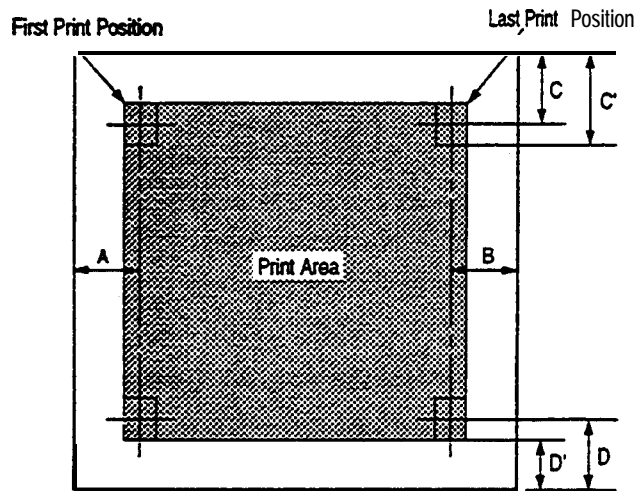


Table B-4 Print Area Dimensions for Tractor

Dimensions	Description	Measurements
A	<b>Distance</b> from the left edge to the first print position (when the left tractor is in the extreme left position).	30 mm (1.18 in.)
B	<b>Distance</b> from the right edge to the last print position (when the right tractor is in the extreme right position).	30 mm (1.18 in.)
C	Distance to the middle of the first print line. Usually a non-printing area because of nearness of perforation. Adjustable by changing memory switch setting (see Section 3).	23.6 mm (0.93 in.)
C'	<b>Distance</b> to the bottom of the first print line.	25.4 mm (1 in.)
D	Usually a non-printing area because of nearness of perforation. Next print fine after the paper is torn at the perforation is factory-set to 0.93 inch. Adjustable by changing memory switch setting (see Section 3).	23.6 mm (0.93 in.)

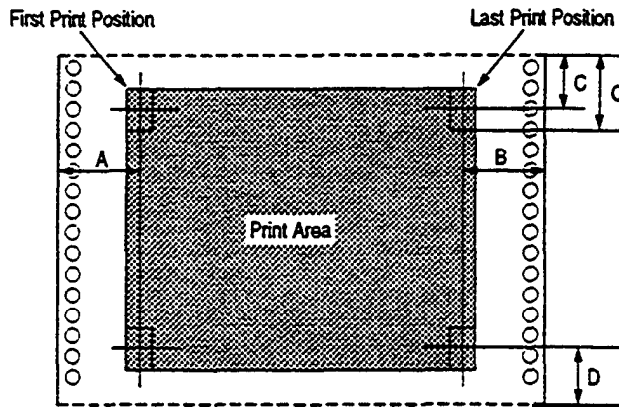
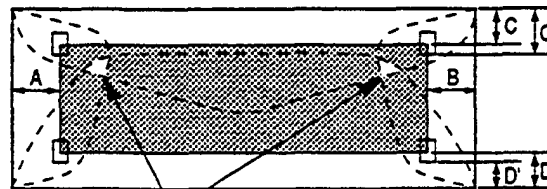


Table B-5 Print Area Dimensions for Envelopes

Dimensions	Description	Measurements
A and B	Margins (Normally non-printing area)	12.7 mm (0.5 in.)
C	Distance from the top edge to the <b>middle</b> of the first print line	23.6 mm (0.93 in.)
C'	Distance from the top edge <b>to</b> the bottom of the first print line	25.4 mm (1 in.)
D	Distance from the bottom edge to the middle of the fast print line	27.1 mm (1.07 in.)
D'	Distance from the bottom edge to the bottom of the fast print fine	25.4 mm (1 in.)



Not recommended as a print area (4-ply area)

## GLOSSARY

**ASCII** — American Standard Code for Information **Interchange**. This standard defines character set codes that are used for data interchange between data terminal equipment. This code defines 96 displayed characters (64 without lowercase) and 32 nondisplayed control codes in terms of 7 bits plus an eighth bit for parity check.

**B** -Byte.

**BASIC** — Beginner's All-purpose Symbolic Instruction Code. A popular programming language that is available on most personal computers.

**bidirectional printing** — The printer prints a line from left to right, performs a line feed, prints a line from right to left, and continues in this manner.

**bit** — A contraction for binary digit. Either a 1 or a 0 digit is used to code information for computer systems.

**buffer** — An electronic memory where text is stored for processing by the printer.

**byte** — Eight bits equal one byte.

**condensed printing** — 17- or 20-pitch printing.

**control code** — A nonprintable ASCII code that is used to control a printer function.

**cpi** — Characters per inch. Also known as pitch.

**deselected** — A mode in which the printer cannot receive data from the host computer. Also called offline mode.

**dot mode** — A mode in which each dot pin on the print head is individually addressed by software.

**double-strike printing** — A way of printing boldface characters. Each line is struck twice by the print head.

**DR** — Draft.

**elongated printing** — Double-width printing of characters.

**enhanced printing** — A way of printing boldface characters. The Pinwriter prints each character a second time, the second character being spaced **1/180** inch to the right of the first character.

**font** — A group of letters, numbers, punctuation marks, and symbols of a given size and design, all with the same print weight.

**hex dump** — A feature which prints out, in hexadecimal form, data sent to the printer, thus enabling you to troubleshoot and debug software problems.

**horizontal enlargement** — Double- or triple-width printing of characters.

**Hz** — Hertz. A unit of frequency equal to one cycle per second.

**KB** — Kilobyte.

**kg** — Kilogram.

**lpi** — Lines per inch.

**LQ** — Letter-quality.

**memory switch menu mode** — The mode in which the operator sets the print mode, format, paper handling, interface, horizontal alignment parameters, and menu mode settings via the control panel.

**MSW** — Memory switch.

**MTBF** — Mean Time Between Failures.

**MTTR** — Mean Time To Repair.

**pitch** -The number of characters per inch in a line.

**PS** — Proportional spacing. A printing method in which the distance between characters varies according to the width of the characters.

**PT** -Point.

**quiet mode** — The mode in which the printer prints at a reduced noise level and at a **half-speed**.

**ROM** — Read only memory.

**selected** — A mode in which the printer can receive data **from** the host computer. Also called online mode.

**TOF** — Top of forms.

**unidirectional printing** — The printer prints a line **from** left to right and performs

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