

XB24-200

XB24-250

MULTI-FONT

USERS MANUAL

NOT INTENDED FOR SALE

Self Declaration

Radio interference regarding this equipment has been eliminated according to Vfg 1046/1984 announced by the DBP.

DBP has been informed of the introduction of this special equipment and has been granted the right to examine the whole series.

It is the user's responsibility to see that his own assembled system is in accordance with the technical regulations under Vfg 1046/1984.

To conform to FTZ-regulations it is necessary to make all connections to the printer with shielded cable.

The equipment may only be opened by qualified service representatives.

The above statement applies only to printers marketed in Germany.

Trademark Acknowledgements

XB24-200/250, XB24-10/15, LC24-200, FZ24, LZ24, X24CL, RC-32Z, DC-32Z, IS-8XL, IP-128XL, SF-10DMII/15DMII, SF-10RMII/15RMII, PT-10XM/15XM: Star Micronics Co., Ltd.
IBM-PC, PS/2, PC-AT, Proprinter X24E/XL24E, Proprinter X24/XL24, PC-DOS: International Business Machines Corp.

MS-DOS, Microsoft BASIC: Microsoft Corporation

LQ-860/1060, LQ-850/1050: Seiko Epson Corp.

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- The above notwithstanding, STAR can assume no responsibility for any errors in this manual.

HOW TO USE THIS MANUAL

This manual is organized into eleven chapters. To learn how to make the best use of your printer you are urged to read through chapters 2 through 6. The remaining chapters may be treated as a reference guide for programming operations, etc. It assumes a degree of acknowledge of the operation of computers (for instance, it assumes you know about hexadecimal numbers). The chapters are as follows:

Chapter 1 — Introduction

This chapter indicates the some features of the printer, the names and those functions of the printer components, and the actual example of font style.

Chapter 2 — Setting up the printer

This chapter explains how to get the printer unpacked and set up. Read this chapter before you do anything else.

Chapter 3 — Optional accessories

This chapter explains the optional accessories with your printer, and how to install them.

Chapter 4 — Paper installation and use

This chapter describes instructions for printing such as selecting paper types, adjusting the printing gap, and installing paper.

Chapter 5 — Control panel operations

There are a number of controls on the front panel which perform various functions related to paper handling, print modes and font selection.

After getting set up, read this chapter and try out the procedures in it to find out how the printer works.

Chapter 6 — Default settings

This chapter explains how to set the Electronic DIP Switch (EDS) mode to make system settings on the printer.

Chapter 7 — Printer control commands

This chapter explains the different emulations provided by your printer, and the software commands used to drive it. This section is of use if you are writing or modifying programs to take advantage of the printer's features.

Chapter 8 — Download characters

This chapter explains the procedures to create your own characters.

Chapter 9 — MS-DOS and your printer

Since the PS/2 or PC-AT family of computers running under MS-DOS is currently the most popular configuration of microcomputer, we have included a few hints and tips to help you use your printer with such systems.

Since virtually all PCs are sold with a Microsoft BASIC interpreter, we have also included some hints, and a sample program in this language to demonstrate the capabilities of the printer.

Chapter 10 — Troubleshooting and maintenance

This section gives a checklist of points to check if your printer is not working in the expected way. It also includes details of some routine maintenance operations you can carry out yourself. It is not, however, a complete service manual. Call a qualified service engineer if you are unsure of your ability to carry out any maintenance or servicing operations.

Chapter 11 — Reference

This section gives some reference of your printer, such as specifications of your printer, the pinout of interface connector, the character tables.

The character table charts give the different character sets available.

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Chapter 1

INTRODUCTION

This printer has a full complement of features, making it an excellent partner for a personal computer. It supports the Epson/IBM printer commands and character sets, enabling it to print just about anything your computer can generate, both text and graphics.

FEATURES OF THE PRINTER

Some of main features are the following:

- **Versatile paper handling**
Single sheets, fanfold forms, and multi-part forms (up to 5-ply) are all accepted, and you can use either push/pull tractor or friction feed. (You can load fanfold forms from the rear with internal push tractor, or fanfold forms and multi-part forms from the bottom with optional pull tractor.) A special feature enables you to keep fanfold forms parked in readiness while printing on other paper.
- **Six bright colors**
Magenta, cyan, violet, yellow, orange and green add a color dimension to your printed output by the optional color ribbon.
- **Large variety of fonts**
The printer has the following resident fonts:
 - Draft
 - Sanserif
 - Script
 - SLQ Roman
 - High-Speed Draft
 - Courier
 - Orator
 - SLQ TW-Light
 - Roman
 - Prestige
 - H-Gothic

In addition, following fonts can be used by installing the optional font cartridge:

[FC-1Z Cartridge]

- Orator 2
- Letter Gothic
- Blippo
- Cinema

[FC-2Z Cartridge]

- OCR-B
- OCR-A
- CODE 39
- UPC/EAN

[FC-3Z Cartridge]

- TW-Light
- Orane

[FC-4Z Cartridge]

- Russian

[FC-5Z Cartridge]

- Old Style
- Firenze

[FC-10Z Cartridge]

- SLQ Script

- Extensive software support

Since it is compatible with the Epson and IBM printers, it works with any software that supports those printers. That includes most word-processing and graphics programs, spread-sheets, and integrated software packages.

- Easy operation



Indicator displays and beep tones provide immediate, easy to understand feedback when you press the buttons on the control panel. The five buttons can operate in combinations to perform a surprising variety of functions, including micro-alignment.

- Easy care and maintenance

The ribbon cartridge can be replaced in seconds the print head in a few minutes.

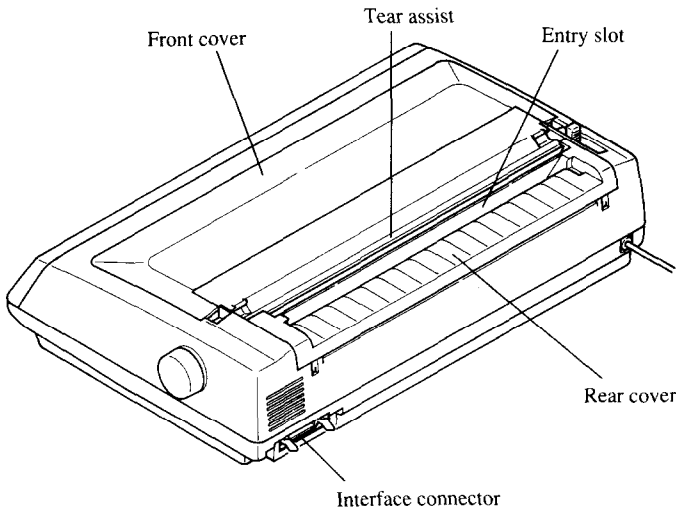
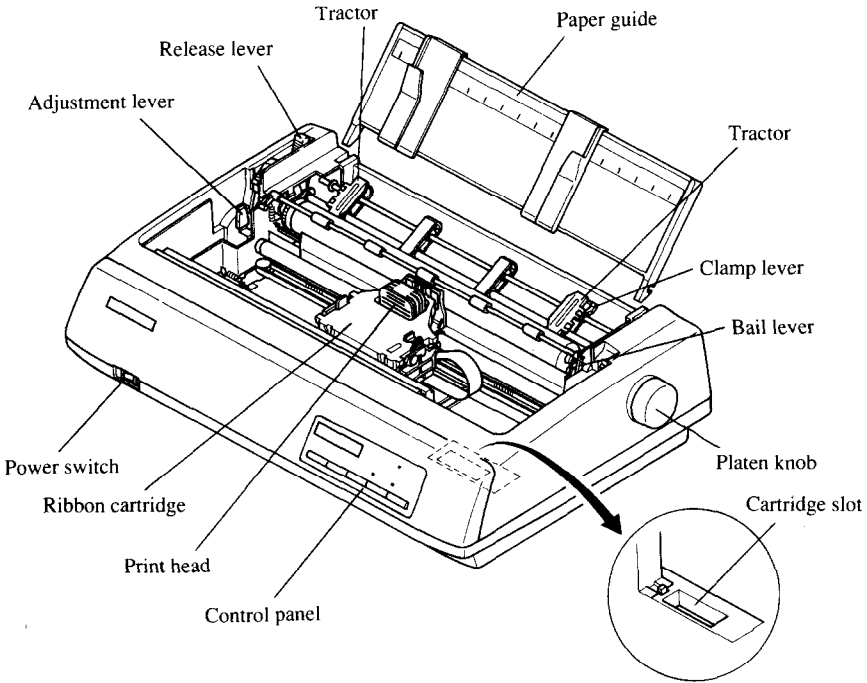
FONT STYLE EXAMPLE

The following example shows the many font styles your printer can print.

Draft	123456789	ABCDEFGHIJK	abcdefghijkl
HS-Draft	123456789	ABCDEFGHIJK	abcdefghijkl
Roman	123456789	ABCDEFGHIJK	abcdefghijkl
Sanserif	123456789	ABCDEFGHIJK	abcdefghijkl
Courier	123456789	ABCDEFGHIJK	abcdefghijkl
Prestige	123456789	ABCDEFGHIJK	abcdefghijkl
Script	<i>123456789</i>	<i>ABCDEFGHIJK</i>	<i>abcdefghijkl</i>
OCR-B	123456789	ABCDEFGHIJK	abcdefghijkl
OCR-A	123456789	ABCDEFGHIJK	abcdefghijkl
Orator	123456789	ABCDEFGHIJK	ABCDEFGHIJK
Orator-2	123456789	ABCDEFGHIJK	abcdefghijkl
TW-Light	123456789	ABCDEFGHIJK	abcdefghijkl
Letter Gothic	123456789	ABCDEFGHIJK	abcdefghijkl
Blippo	123456789	ABCDEFGHIJK	abcdefghijkl
H-Gothic	123456789	ABCDEFGHIJK	abcdefghijkl
Orane	123456789	ABCDEFGHIJK	abcdefghijkl
Cinema	123456789	ABCDEFGHIJK	abcdefghijkl
CODE 39			
UPC/EAN	123456789	123456789	
Old Style	123456789	<i>ABCDEFGHIJK</i>	<i>abcdefghijkl</i>
Firenze	123456789	ABCDEFGHIJK	abcdefghijkl
SLQ Roman	123456789	ABCDEFGHIJK	abcdefghijkl
SLQ TW-Light	123456789	ABCDEFGHIJK	abcdefghijkl
SLQ Script	<i>123456789</i>	<i>ABCDEFGHIJK</i>	<i>abcdefghijkl</i>

PRINTER COMPONENTS

To get acquainted with the printer's components and capabilities, refer to the information on the following pages.



Paper guide	Aligns single sheets (cut forms) to help the printer detect when paper is inserted.
Release lever	Releases pressure on the paper. This lever must be back for fanfold forms, and forward for single sheets.
Front cover	Protects the print head and other internal components of your printer.
Rear cover	Protects the tractor feed unit and separates incoming and outgoing fanfold forms.
Entry slot	For inserting single sheets of paper.
Tear assist	Assists when tearing fanfold forms at the perforation. CAUTION: Since the tear assist edge is made sharp to cut off paper, you must swing down the transparent part when you open the front cover. Otherwise, you may injure your fingers.
Control panel	Indicates printer status and makes various control of printer functions simple and convenient.
Power switch	Switches power on or off.
Platen knob	Advances the paper manually.
Interface connector	Connects the computer to the printer.
Cartridge slot	Holds the optional Font cartridge or RAM cartridge.
Print head	Has a dot matrix (24-wire) composition.
Ribbon cartridge	Contains the printer ribbon.
Adjustment lever	Controls print darkness by adjusting for the thickness of forms being printed.
Tractors	Control the movement of fanfold forms.
Clamp lever	Clamps the tractor in place.
Bail lever	Opens and closes the paper bail which holds the paper against the platen.

MEMO

Chapter 2

SETTING UP THE PRINTER

This chapter describes the following procedures to set up your new printer.

If you have optional accessories, refer to chapter 3 after setting up the printer.

- Locating the printer
- Unpacking the carton box
- Mounting the platen knob
- Installing the ribbon cartridge
- Connecting the printer to your computer

LOCATING THE PRINTER

Before you start unpacking and setting up your printer, make sure that you have a suitable place on which to locate it. By “a suitable place”, we mean:

- A firm, level surface which is fairly vibration-free
- Away from excessive heat (such as direct sunlight, heaters, etc)
- Away from excessive humidity
- Away from excessive dust
- Supply it with “clean” electricity. Do not connect it to the same circuit as a large, noise-producing appliance such as a refrigerator.
- Make sure the line voltage is the voltage specified on the printer’s identification plate.
- To disconnect the printer, the plug has to be disconnected from the wall socket, which has to be located close to the printer, and easy to access.
- Install the printer where there is sufficient room for the paper and any paper being fed in or printed out.
- If you are connecting your printer with a parallel interface, make sure that the cable is within 2m (6ft) of the printer. An RS-232 connection using the optional IS-8XL interface cartridge can be made over longer distances.

UNPACKING AND INSPECTION

Now unpack the contents of the shipping carton, and check each item in the box against Figure 2-1 to make sure that you have everything (there should be five items).

If any of these items are missing, contact your supplier.

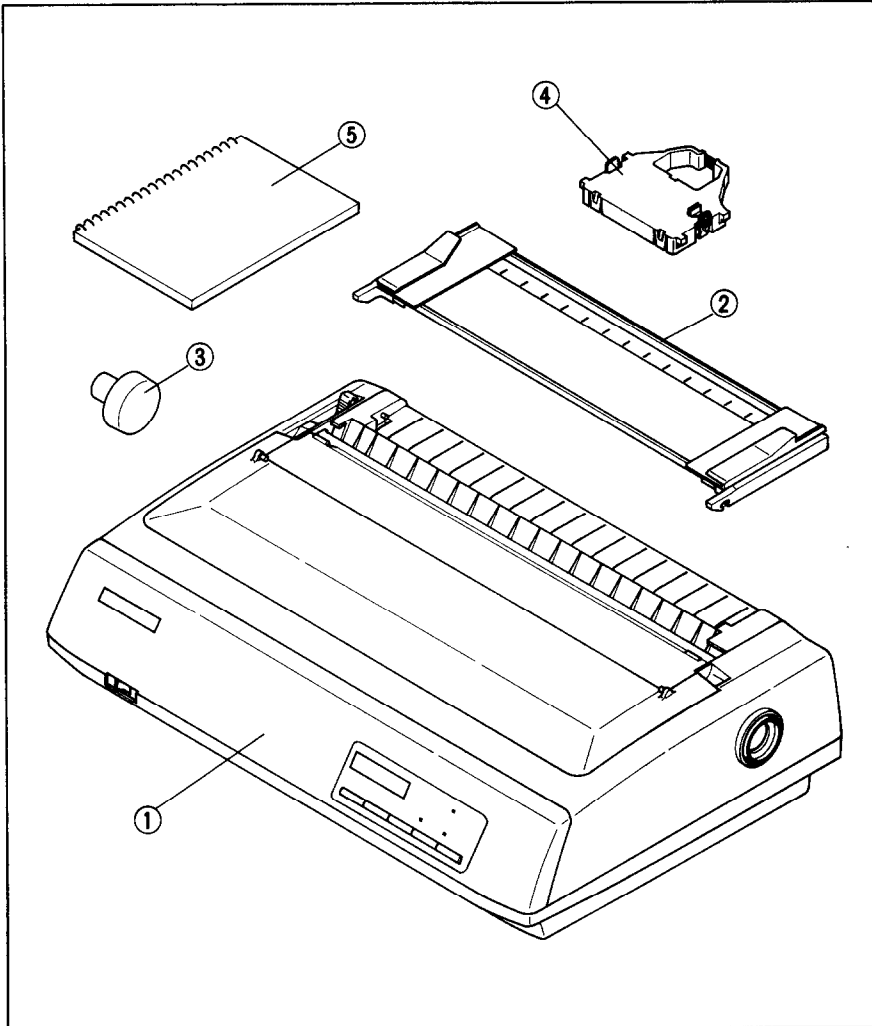


Figure 2-1. Check to make sure you have all five items: 1) Printer, 2) Paper guide, 3) Platen knob, 4) Ribbon cartridge, and 5) User's manual.

NOTE: The platen knob is mounted on the printer for the Normal carriage printer.

The optional accessories which you may have ordered with your printer are:

- Film ribbon cartridge (FZ24)
- Color ribbon cartridge (X24CL)
- Font cartridges (FC series)
- RAM cartridge (RC-32Z, DC-32Z)
- Serial interface cartridge (IS-8XL)
- Buffered parallel interface cartridge (IP-128XL)
- Automatic sheet feeder (SF-10DMII/15DMII, SF-10RMII/15RMII)
- Pull tractor unit (PT-10XM/15XM)

For details of the optional accessories, refer to Chapter 3.

SETTING UP

Place the printer in the desired location, and remove all packing material from inside the printer cover. This packing material is intended to prevent damage to the printer while in transit. You will want to keep all the packing material, along with the printer carton, in case you have to move the printer to a new location.

Mounting the platen knob

The platen knob is packed into an accessory box with other accessories for the Wide carriage printer.

NOTE: For the Normal carriage printer, the platen knob is mounted on the printer at factory.

Mount the knob on the platen shaft, which is located on the right-hand side of the printer. Rotate the knob on the shaft before pushing the knob fully into position.

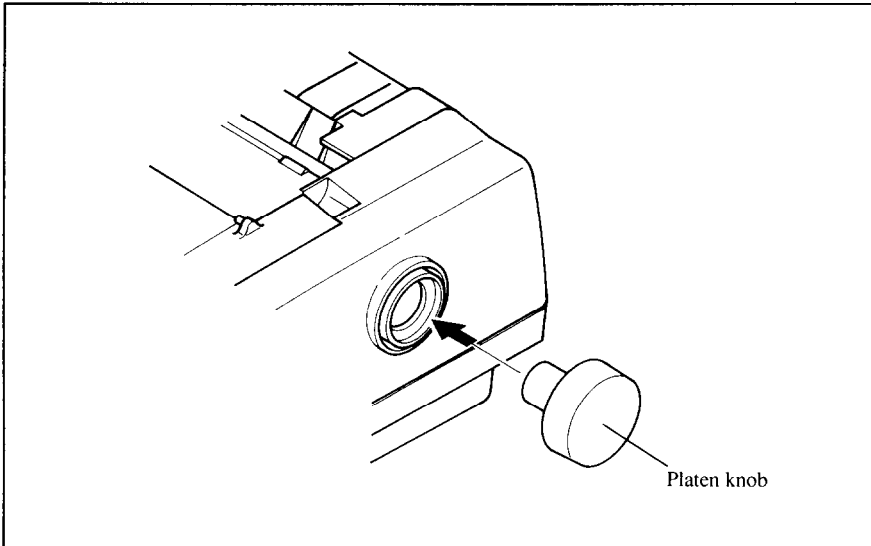


Figure 2-2. Mount the platen knob.

Install the ribbon cartridge

Open the front cover by lifting up the back using the two grips on either side, then swing down the transparent part (see Figure 2-3).

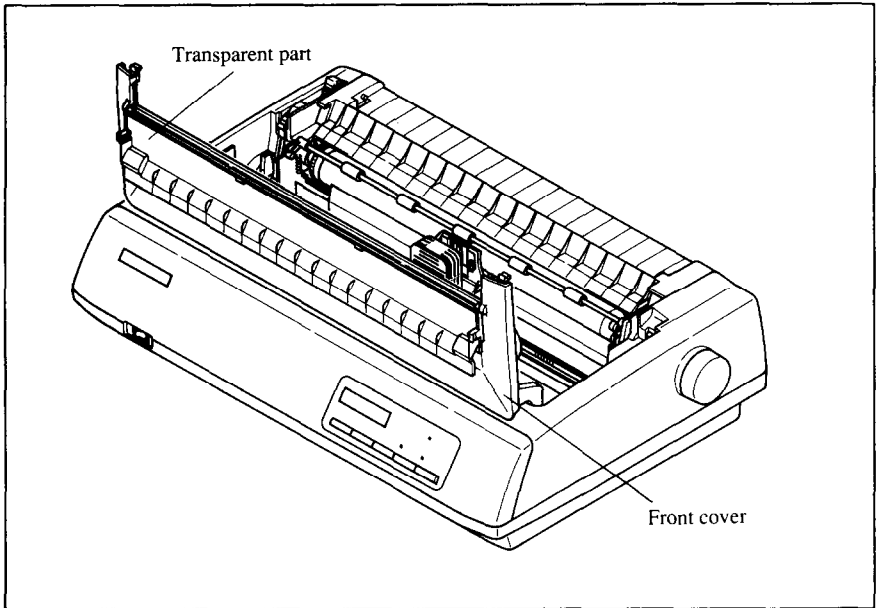


Figure 2-3. Open the front cover, and swing down the transparent part.

Now install the ribbon with the following procedure. (If you want to print with color, install the optional color ribbon cartridge, X24CL.)

1. Turn the tension knob clockwise on the ribbon cartridge to tighten the ribbon if it is slack.
2. Guide the ribbon between the print head and the silver print head shield, making certain that the spindles on the cartridge holder fit into the sockets on the cartridge itself.

The ribbon should pass between the print head and the print head shield as shown in Figure 2-4.

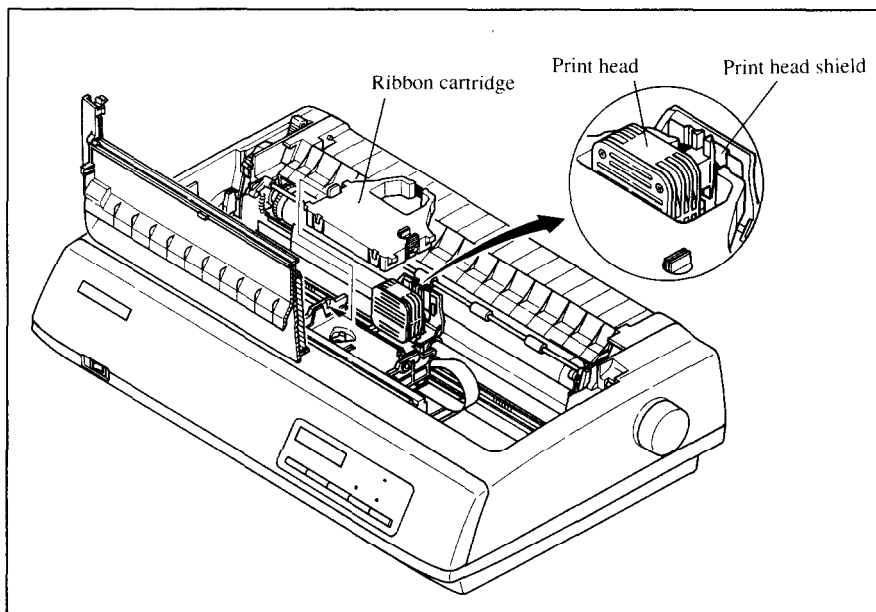


Figure 2-4. Installing the ribbon cartridge.

After you have installed the ribbon cartridge, close the front cover.

Leave the front cover closed during normal operation. The cover keeps out dust and dirt and reduces the printer's operating sounds. Open the cover only to change the ribbon or make an adjustment.

Connecting the interface cable

Connect the printer to your computer using a standard Centronics parallel interface cable. On a PS/2 or PC/AT-type computer, this means that you use the 25-pin D-type connector at the computer end, and the Amphenol-type 36-pin connector at the printer end. The configuration of the printer's connector is given in Chapter 11 should you need a cable for connecting to another computer.

If you need to connect to a serial port, use the optional Serial RS-232 interface cartridge, IS-8XL.

Follow the procedures below to connect the interface cable:

1. Turn off the power switch both the printer and the computer.
2. Connect the interface cable to the printer as shown in Figure 2-5.
Make sure that you press the plug fully into the interface connector.

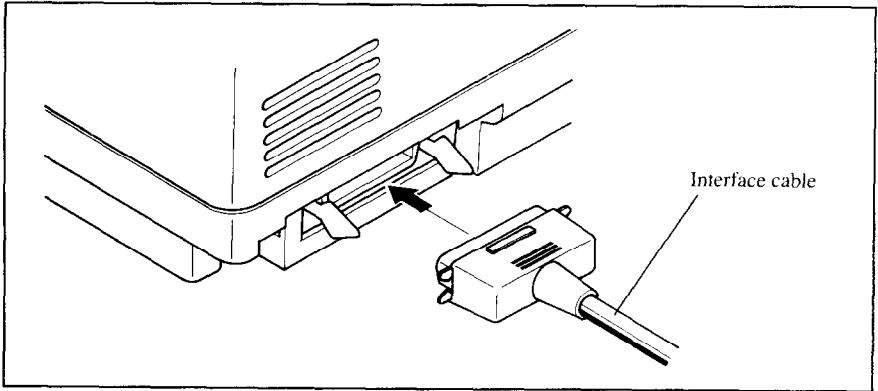


Figure 2-5. Connecting the interface cable.

3. Move both clips inside the extended prongs on the sides of the plug until you hear a click.

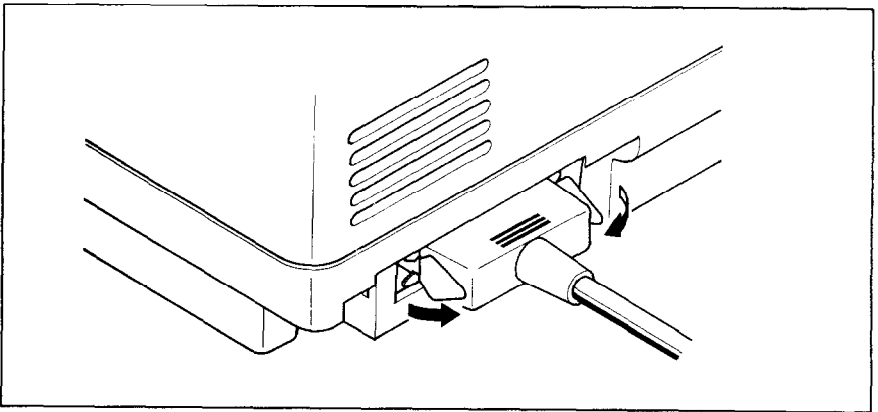


Figure 2-6. Move the clips until you hear a click.

4. Connect the other end of the interface cable to your computer. Use your computer instructions to attach the interface cable.

NOTE : Because you need your computer when you start printing, ensure that it is completely installed.

Plug the printer into a suitable outlet. However, **DO NOT** turn on the power switch at the front of the printer yet.

NOTE : To disconnect the printer the plug has to be disconnected from the wall socket, which has to be located close to the printer, and easy to access.

MEMO

Chapter 3

OPTIONAL ACCESSORIES

You can select the following accessories as option.

- Automatic sheet feeder (SF-10DMII/15DMII, SF-10RMII/15RMII)
- Pull tractor unit (PT-10XM/15XM)
- Font cartridges (FC series)
- RAM cartridge (RC-32Z, DC-32Z)
- Serial interface cartridge (IS-8XL)
- Buffered parallel interface cartridge (IP-128XL)

This chapter describes how to install these optional accessories.

NOTE: When you install or remove the optional accessories, turn off the power switch.

AUTOMATIC SHEET FEEDER

You can use the Automatic Sheet Feeder to print on single sheets.

This printer can be used either a Single-bin type or Dual-bin type Automatic Sheet Feeder.

Single-Bin Automatic Sheet Feeder ***(SF-10DMII/15DMII)***

The procedure to mount the Single-Bin ASF is:

1. Open the front cover by lifting up the back using the two grips on either side, then swing down the transparent part (see Figure 3-1).
2. Open the rear cover by lifting up the front using the two grips on either side, then remove it upward.
If the paper guide is installed, remove it before taking off the rear cover.
3. Move the bail lever on top of the printer forward to open the paper bail.

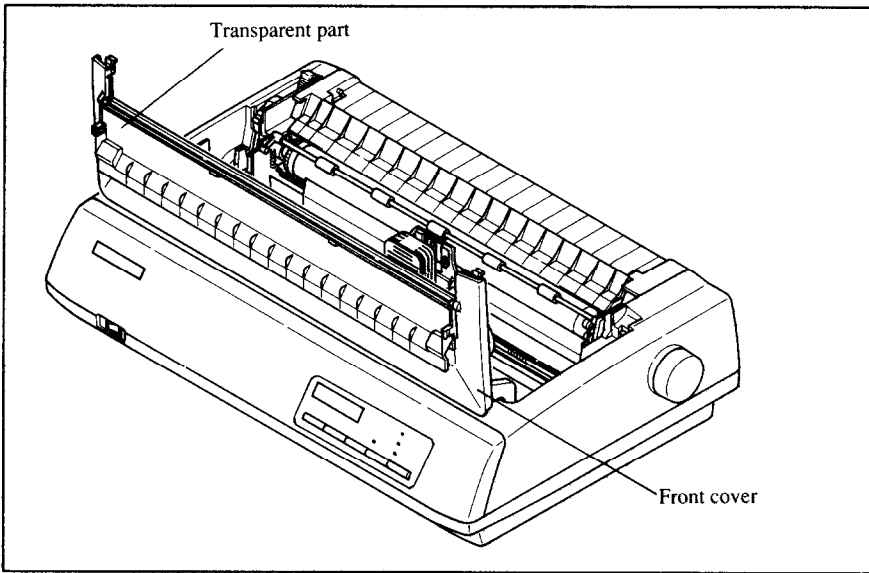


Figure 3-1. Open the front cover, and swing down the transparent part.

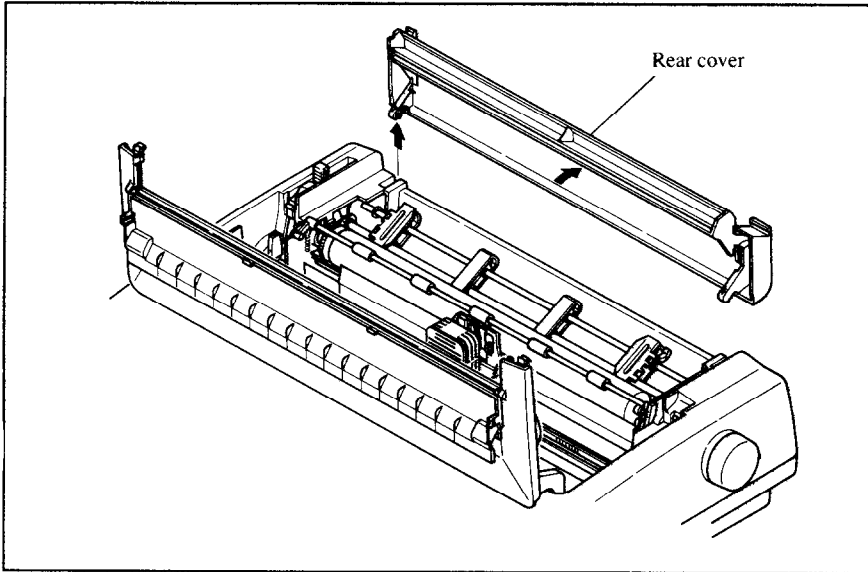


Figure 3-2. Open the rear cover, and remove it.

4. A stacker is included with the Automatic Sheet Feeder. Attach the hook at the top of the stacker to the Automatic Sheet Feeder. Then push the lower section of the stacker down into position, and engage the lower hook as shown in Figure 3-3.

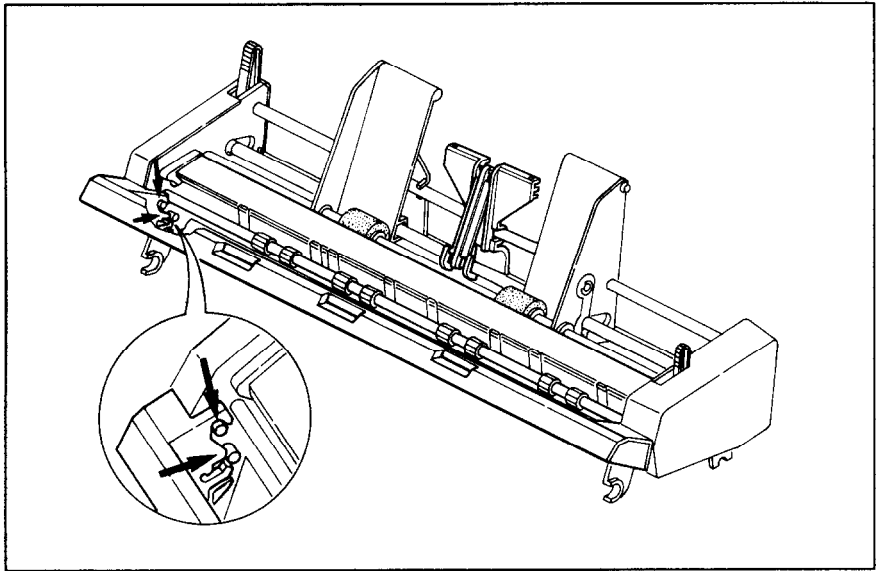


Figure 3-3. Attach the stacker to the Automatic Sheet Feeder.

5. Tip the Automatic Sheet Feeder forward slightly and put the feeder into place behind the printer platen roller.
6. Lower the rear side of the Automatic Sheet Feeder and attach it to the platen shaft.

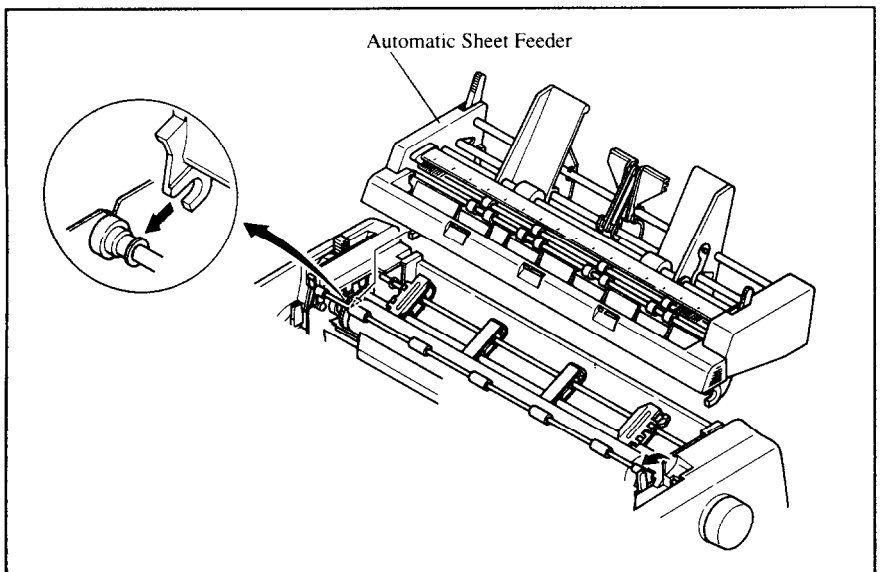


Figure 3-4. Mount the Automatic Sheet Feeder to the printer.

7. Close the front cover with the transparent part in the open position.

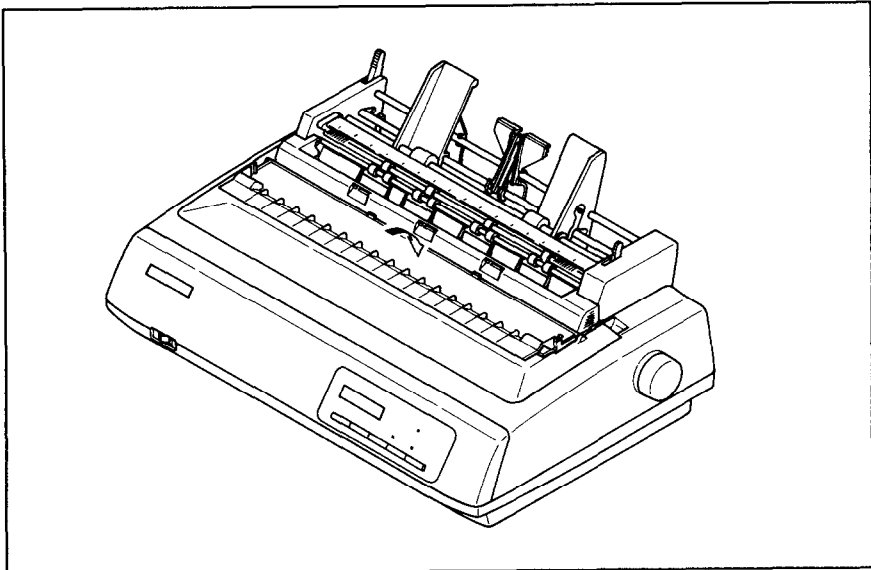


Figure 3-5. Close the front cover.

8. Insert the hopper attachment by hand into the holders on top of the hopper support section as shown in Figure 3-6.

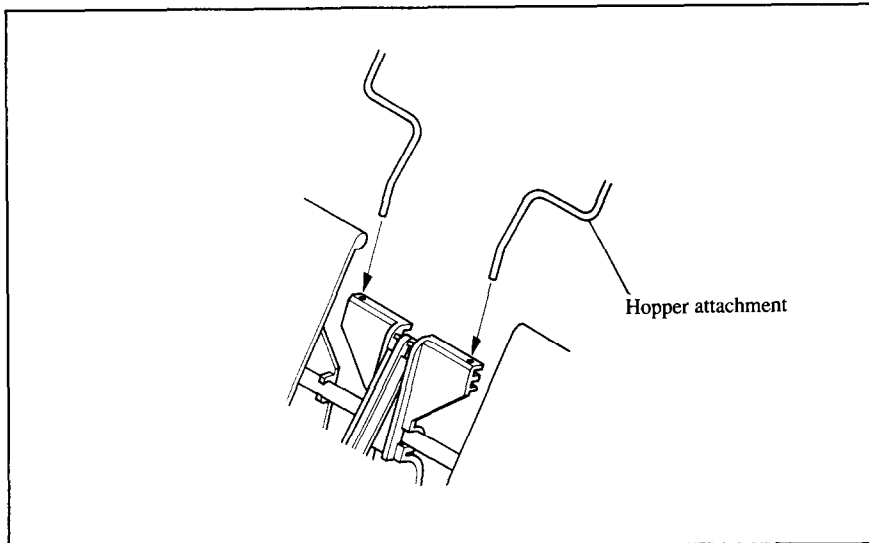


Figure 3-6. Insert the hopper attachment.

9. Squeeze the sides of the stacker attachments lightly, and insert into the holders on the front part of the sheet feeder.

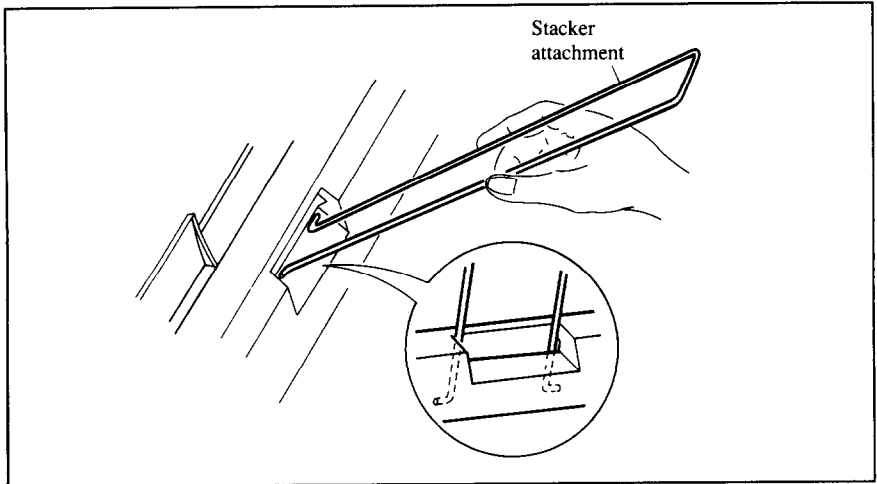


Figure 3-7. Insert the stacker attachment.

Now, you can use the ASF by installing the paper stack into the hopper. (Refer to Chapter 4.)

In addition, you can feed a sheet of paper manually by inserting into the slot at the front of ASF roller as shown in Figure 3-8.

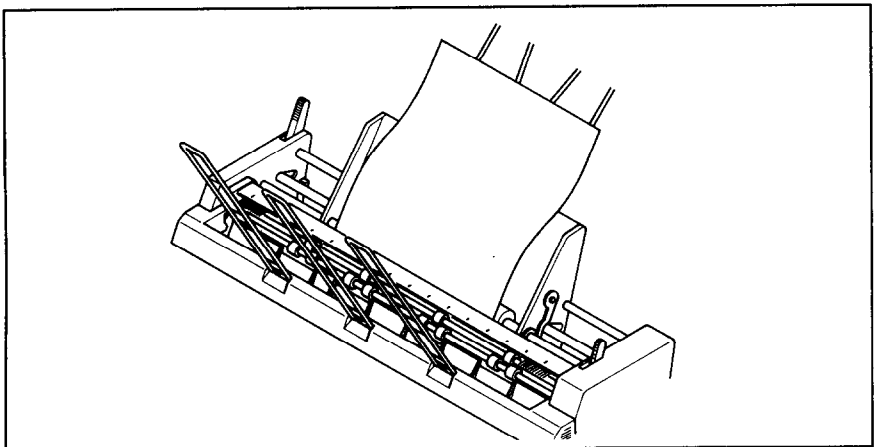


Figure 3-8. Insert a sheet of paper to feed manually.

NOTE: Set the paper guide and rear cover aside carefully after they have been removed from the printer. Reverse the procedure described above when removing the Automatic Sheet Feeder.

Dual-Bin Automatic Sheet Feeder

(SF-10RMII/15RMII)

The procedure to mount the Dual-Bin ASF is:

1. Open the front cover by lifting up the back using the two grips on either side, then swing down the transparent part (see Figure 3-1).
2. Open the rear cover by lifting up the front using the two grips on either side, then remove it upward.

If the paper guide is installed, remove it before taking off the rear cover.

3. Move the bail lever on top of the printer forward to open the paper bail.
4. A stacker is included with the Automatic Sheet Feeder. Attach the hook at the top of the stacker to the Automatic Sheet Feeder. Then push the lower section of the stacker down into position, and engage the lower hook as shown in Figure 3-9.

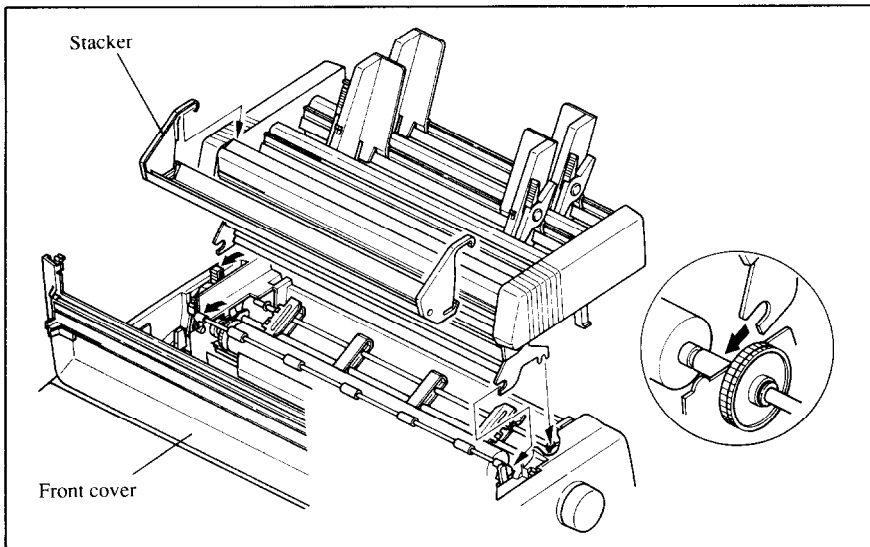


Figure 3-9. Attach the stacker to the Automatic Sheet Feeder.

5. Tip the Automatic Sheet Feeder forward slightly and put the feeder into place behind the printer platen roller.
6. Lower the rear side of the Automatic Sheet Feeder and attach it to the platen shaft.
7. Close the front cover with the transparent part in the open position.
8. Attach the clear plastic paper supports between the left and right paper guides of the hopper bins and the stacker.

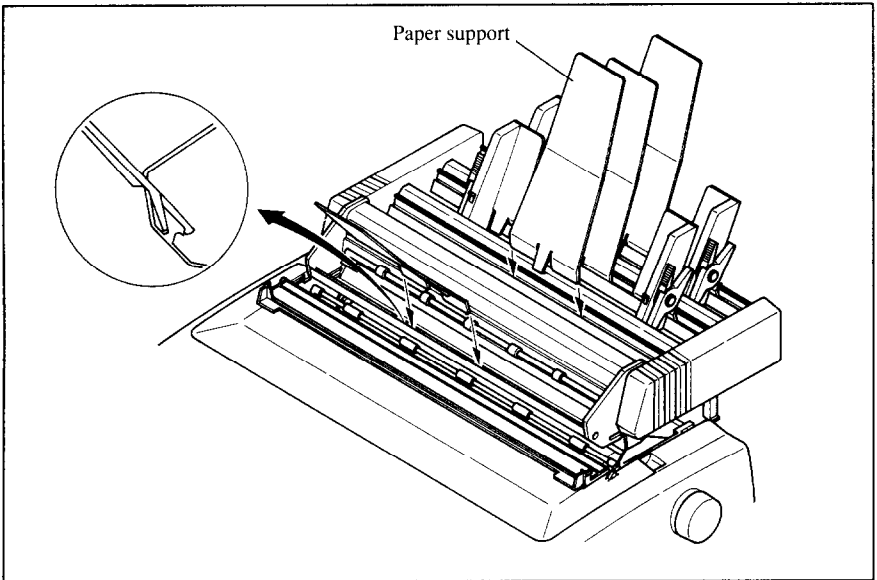


Figure 3-10. Attach the clear plastic paper supports to the Automatic Sheet Feeder.

Now, you can use the ASF by installing the paper stack into the bin. (Refer to Chapter 4.)

In addition, you can feed a sheet of paper manually by inserting into the slot at the front of ASF bin #1 as shown in Figure 3-11.

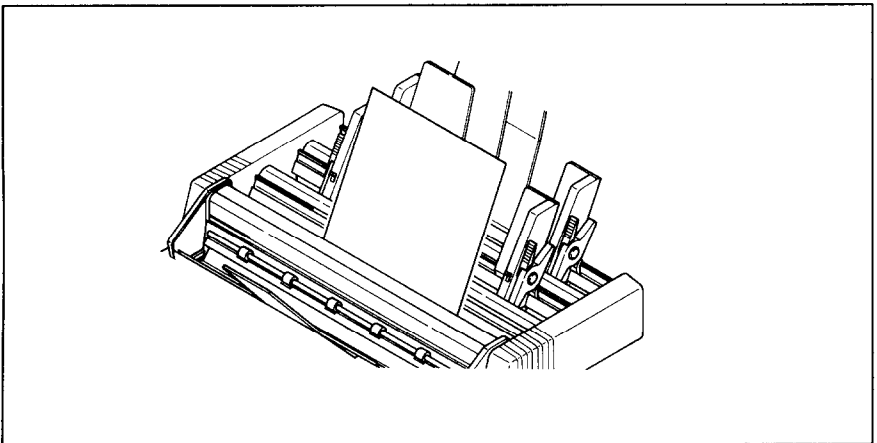


Figure 3-11. You can insert a sheet of paper to the front slot.

NOTE: Set the paper guide and rear cover aside carefully after they have been removed from the printer. Reverse the procedure described above when removing the Automatic Sheet Feeder.

PULL TRACTOR UNIT (PT-10XM/15XM)

You can use the Pull Tractor Unit to print on fanfold forms or multi-part forms.

The procedure to mount the Pull Tractor Unit is:

1. Open the front cover by lifting up the back using the two grips on either side, then swing down the transparent part (see Figure 3-1).
2. Open the rear cover by lifting up the front using the two grips on either side, then remove it upward.

If the paper guide is installed, remove it before taking off the rear cover.

3. Move the bail lever on top of the printer forward to open the paper bail.
4. Squeeze the sides of the paper supports lightly, and insert into the holes on both side of the Pull Tractor Unit as shown in Figure 3-12.

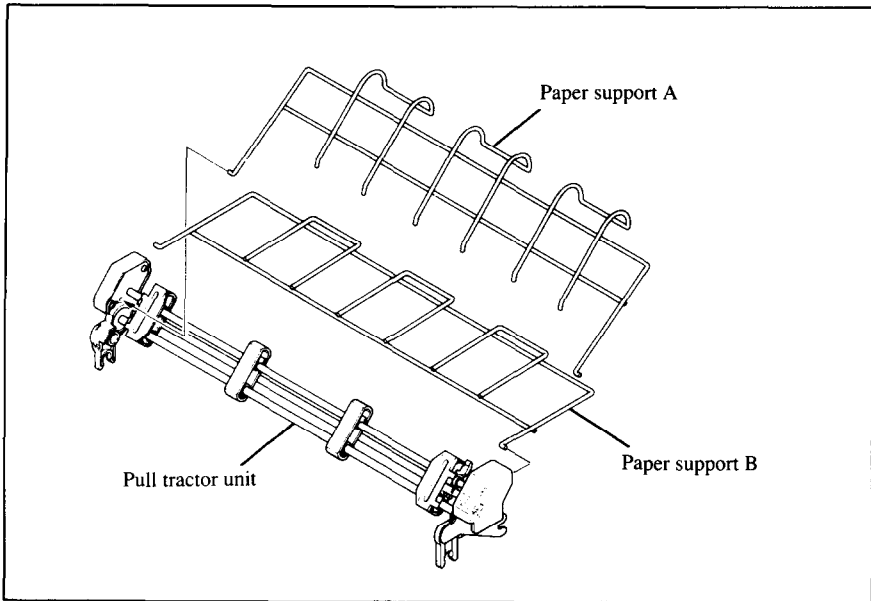


Figure 3-12. Mount the paper support A and B onto the Pull Tractor Unit.

5. Fit the mounting brackets of the Pull Tractor Unit onto the shaft of the printer mechanism, tilting the Pull Tractor Unit slightly backward.
6. Secure the Pull Tractor Unit firmly by lowering it into position, as shown in Figure 3-13.
7. Close the front cover with the transparent part in the open position.

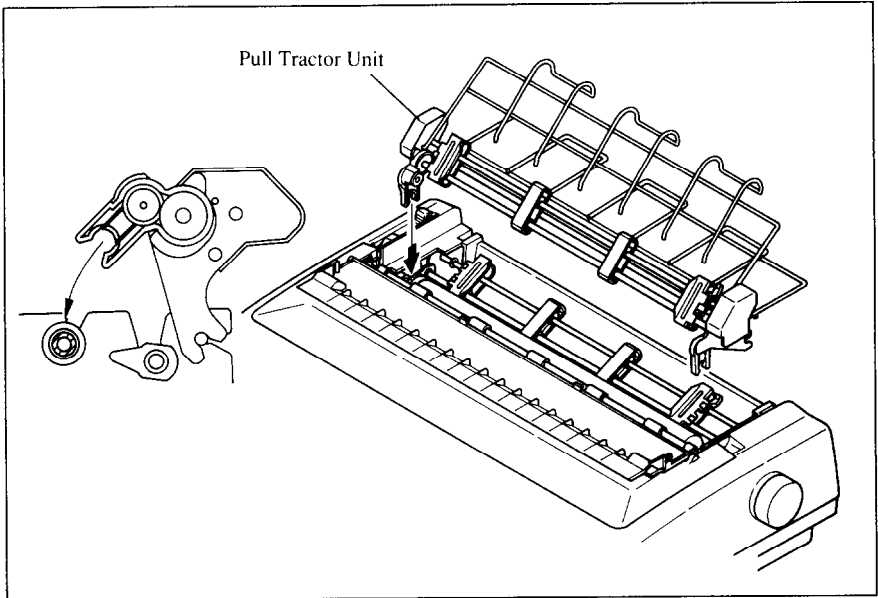


Figure 3-13. Mount the Pull Tractor Unit onto the printer.

NOTE: Set the paper guide and rear cover aside carefully after they have been removed from the printer. Reverse the procedure described above when removing the Pull Tractor Unit.

FONT CARTRIDGES AND RAM CARTRIDGES

This printer has seven built-in LQ fonts, and a 29 K-byte (76 K-byte for wide carriage type printer) printing buffer.

You can add the following optional fonts or expand the printing buffer by installing optional cartridges (Font Cartridge or RAM Cartridge).

[FC-1Z Cartridge]

- Orator 2
- Letter Gothic
- Blippo
- Cinema

[FC-2Z Cartridge]

- OCR-B
- OCR-A
- CODE 39
- UPC/EAN

[FC-3Z Cartridge]

- TW-Light
- Orane

[FC-4Z Cartridge]

- Russian

[FC-5Z Cartridge]

- Old Style
- Firenze

[FC-10Z Cartridge]

- SLQ Script

To install or change a cartridge, follow the procedure below.

1. Turn off the power switch at the front of the printer, and open the front cover.
Swing down the transparent part (see Figure 3-1).
2. Remove the connector cover at the right side of the printer.
3. Push out the cap from the connector cover.

NOTE: Keep this cap in a safe place.

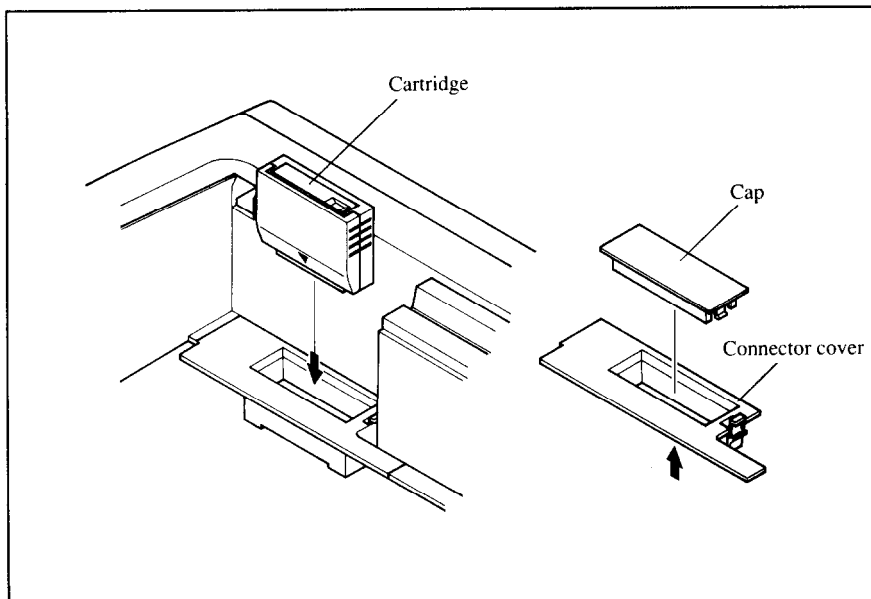


Figure 3-14. Slide the cartridge into the slot with the power switch off.

4. Install the connector cover into the printer.
5. Insert the cartridge into the slot of the connector cover, and slide it all the way in.

NOTE: Remount the cap on the connector cover if you do not use the optional cartridge.

INTERFACE CARTRIDGES

You can use the Serial RS-232 Interface with the optional Serial Interface Cartridge (IS-8XL), or extend the print buffer by installing the optional Buffered Parallel Interface Cartridge (IP-128XL), instead of the Standard Interface Cartridge.

If you want to use the Serial Interface Cartridge, set the DIP switches on the board before install it to the printer.

1. Turn off the power switch and disconnect the power cord from the power source.
2. Disconnect the interface cable if attached.
3. Compress the projected parts on the right and left, and pull the Standard Interface Cartridge to remove it from the printer.

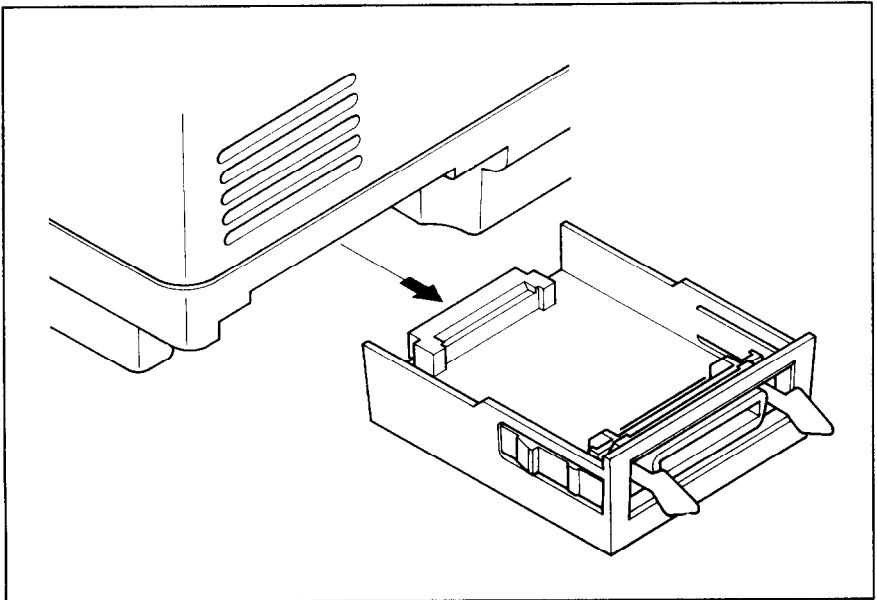


Figure 3-15. Remove the Standard Interface Cartridge from the printer.

4. Insert the optional Interface Cartridge securely into place.
If it is not fully inserted, the printer will not properly print.
5. Connect the interface cable to the connector.

NOTE: Store the removed Interface Cartridge in a safe place.

DIP Switch Functions on The Serial Interface Cartridge

It is necessary to make compatible the data transfer conditions between the computer and the serial interface board with the DIP switch settings on the serial interface board.

Following table shows the functions of the DIP switches on the Serial Interface Cartridge.

Switch	Function	ON	OFF
1	Data length	8-bit	7-bit
2	Parity condition	(Refer below)	
3	Data Protocol	(Refer below)	
4			
5	Parity condition	(Refer below)	
6	Transfer speed	(Refer below)	
7			
8			

[Parity condition]		
Switch 2	Switch 5	Condition
ON	ON	No parity
ON	OFF	
OFF	ON	Odd parity
OFF	OFF	Even parity

[Data protocol]		
Switch 3	Switch 4	Protocol
ON	ON	DTR
ON	OFF	XON/XOFF
OFF	ON	ETX/ACK

[Transfer speed]

Switch 6	Switch 7	Switch 8	Transfer speed
OFF	OFF	OFF	150 BPS
OFF	OFF	ON	300 BPS
OFF	ON	OFF	600 BPS
OFF	ON	ON	1200 BPS
ON	OFF	OFF	2400 BPS
ON	OFF	ON	4800 BPS
ON	ON	OFF	9600 BPS
ON	ON	ON	19200 BPS

Chapter 4

PAPER INSTALLATION AND USE

This chapter describes instructions for printing such as selecting paper types, adjusting the printing gap, and installing paper.

SELECTION OF PAPER

Your printer accepts any of the following papers:

- **Single sheets (cut forms) and stationary**
Use the friction feed or the optional Automatic Sheet Feeder.
- **Fanfold forms**
Fanfold forms have holes along the sides and perforations between the sheets. They are also called sprocket forms, punched forms, or just plain "computer paper".
Printing on or near the perforations of continuous fanfold forms may reduce printing quality, misalign the fanfold forms, or cause a paper jam. It is recommended not to print within an area of one inch before and after the perforations.
- **Multi-part forms**
You can use multi-part forms that have up to five parts including the original when the Multi-part mode is selected with the EDS setting. (For details, please refer to Chapter 6.)
Use pressure sensitive multi-part forms with both side edges glued and a difference in thickness of 0.05mm or less between the side edges.
It is recommended to use the bottom feed with the optional Pull Tractor Unit to get fine alignment.
NOTE: Care should be taken in color printing with continuous multi-part forms. Side edges of paper might be damaged.
- **Preprinted forms**

Figure 4-1 shows the recommended print area for each type of papers.

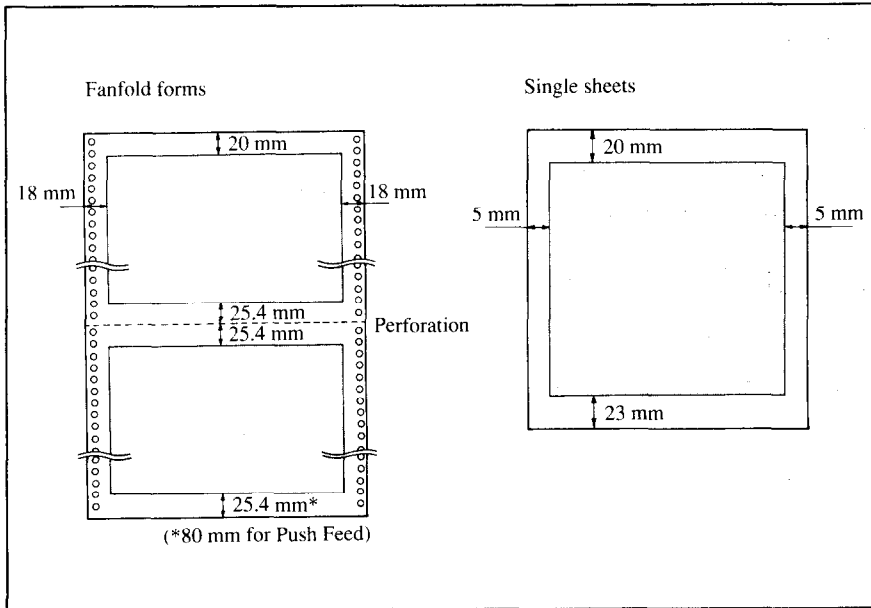


Figure 4-1. Recommended print area for acceptable papers.

ADJUSTING THE PRINTING GAP

The distance between the print head and the platen can be adjusted to accommodate different paper thicknesses. To make this adjustment, open the front cover. The adjustment lever is located at the left side of the printer mechanism. Pushing the adjustment lever backwards narrows the gap; pulling it forwards widens the gap.

There are seven positions, and you can feel the lever clicking into each position. The second position from the rear (marked with “•”) is the one most commonly used for single sheets of paper.

Try different positions until you get the best printing results.

NOTE: Printing with an inappropriate gap may drastically shorten the life of the print head.

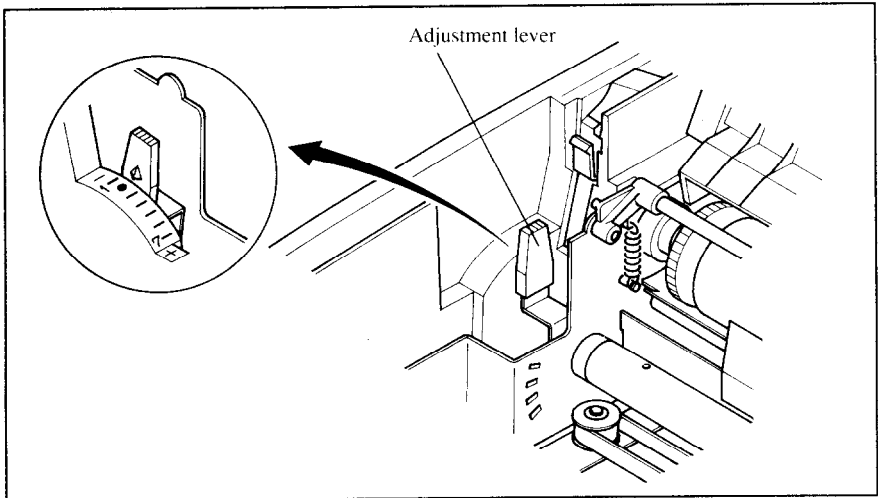


Figure 4-2. Location of the adjustment lever.

The following table provides the recommended lever positions for each paper types as a reference.

Paper Type	Weight (g/m ²) (Each paper)	Thickness (mm) (Total)	Recommended Lever position
Single	52 ~ 90	0.07 ~ 0.12	2nd or 3rd
2-ply	40 ~ 58	0.12 ~ 0.16	2nd or 3rd
3-ply	40 ~ 58	0.18 ~ 0.25	3rd or 4th
4-ply	40 ~ 58	0.24 ~ 0.30	4th or 5th
5-ply	40 ~ 58	0.30 ~ 0.35	5th or 6th

LOADING FANFOLD FORMS

This printer accepts fanfold forms up to 10" wide for the normal carriage printer, and up to 16" wide for the wide carriage printer.

You can load fanfold paper with the following three ways:

- Push feed with internal tractor unit
- Bottom feed with optional Pull Tractor Unit
- Push/Pull feed with internal tractor unit and the optional Pull Tractor Unit.

This section will take you through the procedures for loading, parking and unparking fanfold forms.

Loading the paper from the rear of the printer (Push feed)

You can load the fanfold paper with the internal push tractor unit.

1. Place a stack of fanfold paper behind and at least one page-length below the printer.
2. Turn the printer's power OFF.
3. Push the release lever backward. This has the effect of releasing the paper from the platen roller, and engaging the tractor feed.
4. Remove the paper guide and put it aside for the moment.
5. Open the transparent part of the front cover, and the rear cover using the two grips on either side, as in Figure 4-3.

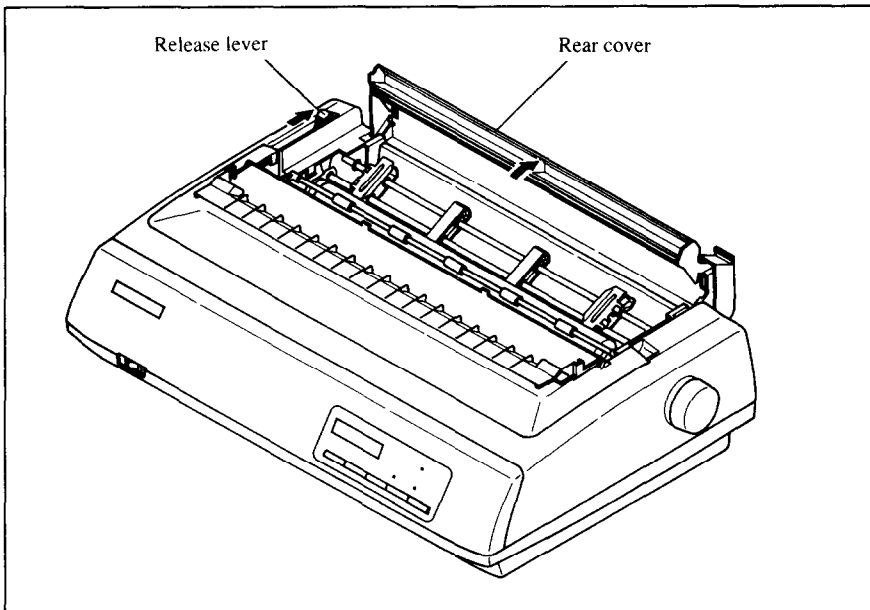


Figure 4-3. Opening the rear cover.

6. Pass the paper between the printer case and the rear cover.
7. With the tractor covers open, mount the paper by aligning holes with the pins on the tractor unit.
8. Adjust the spacing of the tractor units by sliding them along the bar, using the clamp lever at the back of each unit to release and lock them in position. When the clamp lever is up, the unit is released, and when it is down, the unit is locked.

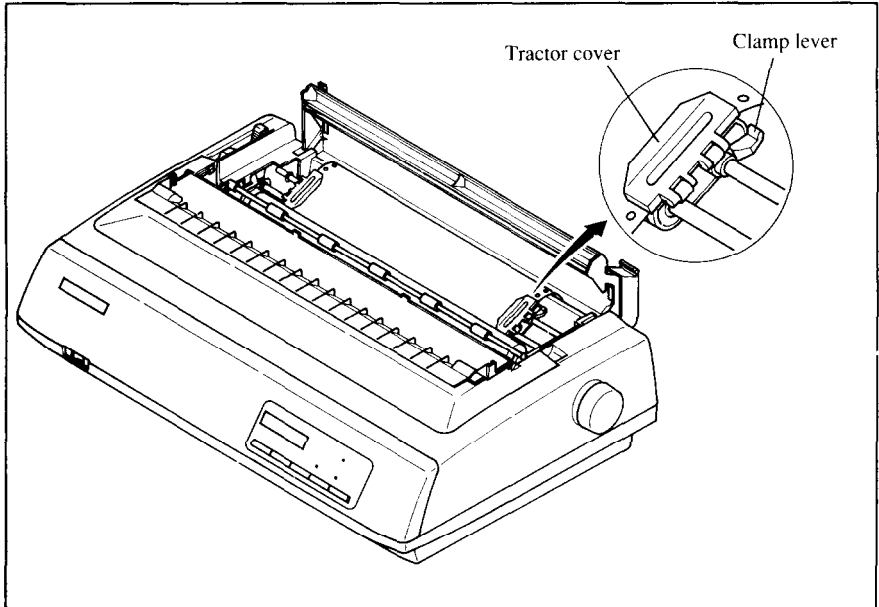


Figure 4-4. Mount the fanfold paper over the tractor units.

9. Now close the tractor covers, again making sure that the paper holes are aligned with the pins on the tractor units. If they are not aligned properly, you will have problems with paper feeding, possibly resulting in tearing and jamming of the paper.
10. Turn on the power using the switch located at the front of the printer. The printer will beep, indicating that the paper is not yet fully loaded. The "PAPER OUT" message will also flash to confirm this.
11. Now press the **SET/EJECT PAPER** button. The paper will be fed and adjusted past the print head to a position ready for printing.
12. If you want to set the paper to a different position, set the printer off-line by pressing the **ON LINE** button, then set the paper by using the micro-feed function. (For details, refer to Chapter 5.)
13. Close the rear cover and the transparent part of the front cover, then mount the paper guide in the horizontal position shown in Figure 4-5, so that it will separate the printed from the unprinted paper.

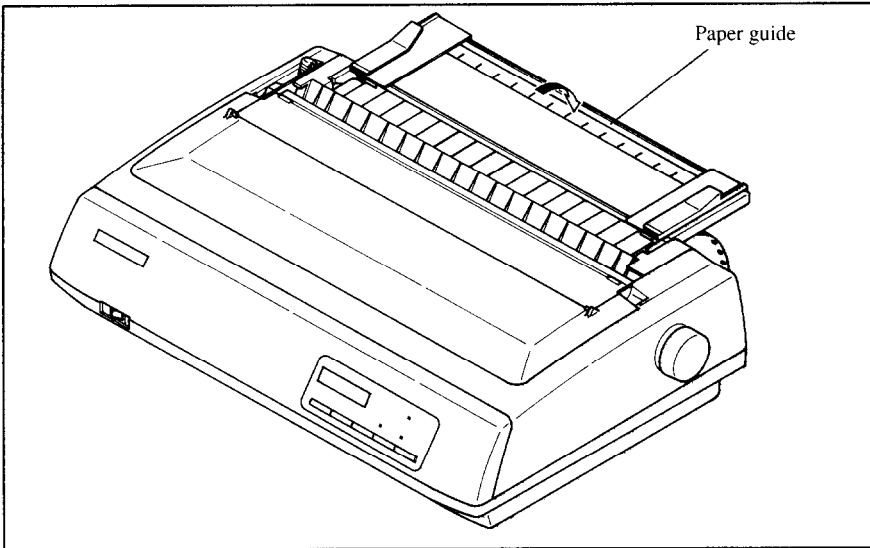


Figure 4-5. Mounting the paper guide for fanfold forms.

Loading the paper from the bottom of the printer

You can load the fanfold paper from the bottom of the printer with the optional Pull Tractor Unit.

1. Install the optional Pull Tractor Unit as described in Chapter 3.

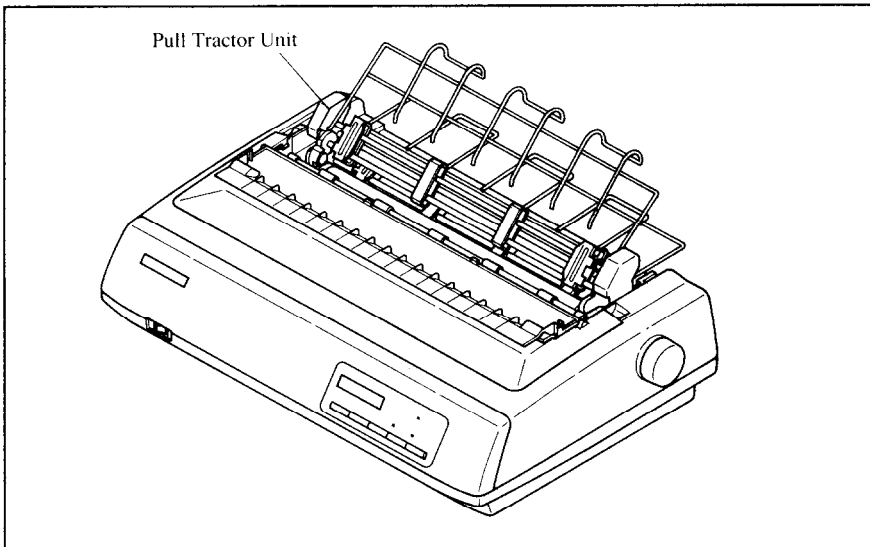


Figure 4-6. Install the optional Pull Tractor Unit.

2. With the tractor covers open, mount the paper from the bottom of the printer, by aligning holes with the pins on the tractor unit.

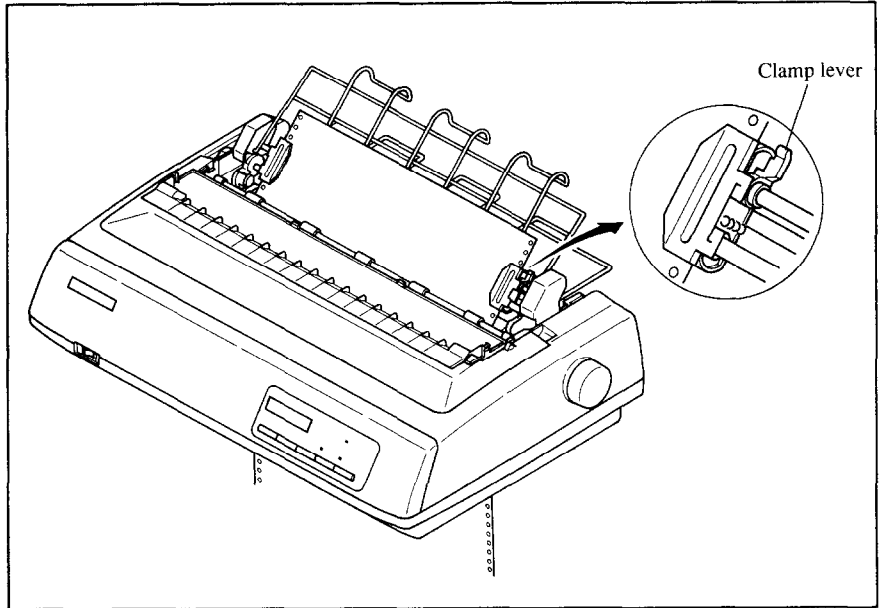


Figure 4-7. Mount the fanfold paper from the bottom of the printer.

3. Adjust the spacing of the tractor units by sliding them along the bar, using the clamp lever at the back of each unit to release and lock them in position. When the lever is up, the unit is released, and when it is down, the unit is locked.
4. Now close the tractor covers, again making sure that the paper holes are aligned with the pins on the tractor units. If they are not aligned properly, you will have problems with paper feeding, possibly resulting in tearing and jamming of the paper.

Loading the paper with Push/Pull feed

You can load the fanfold paper with Push/Pull feed by using both the internal push tractor unit and the optional Pull Tractor Unit.

1. Place a stack of fanfold paper behind and at least one page-length below the printer.
2. Turn the printer's power OFF.
3. Push the release lever backward. This has the effect of releasing the paper from the platen roller, and engaging the tractor feed.

4. Open the transparent part of the front cover, and remove the paper guide and the rear cover.
5. With the tractor covers open, mount the paper by aligning holes with the pins on the tractor unit.
6. Adjust the spacing of the tractor units by sliding them along the bar, using the clamp lever at the back of each unit to release and lock them in position. When the clamp lever is up, the unit is released, and when it is down, the unit is locked.
7. Now close the tractor covers, again making sure that the paper holes are aligned with the pins on the tractor units. If they are not aligned properly, you will have problems with paper feeding, possibly resulting in tearing and jamming of the paper.

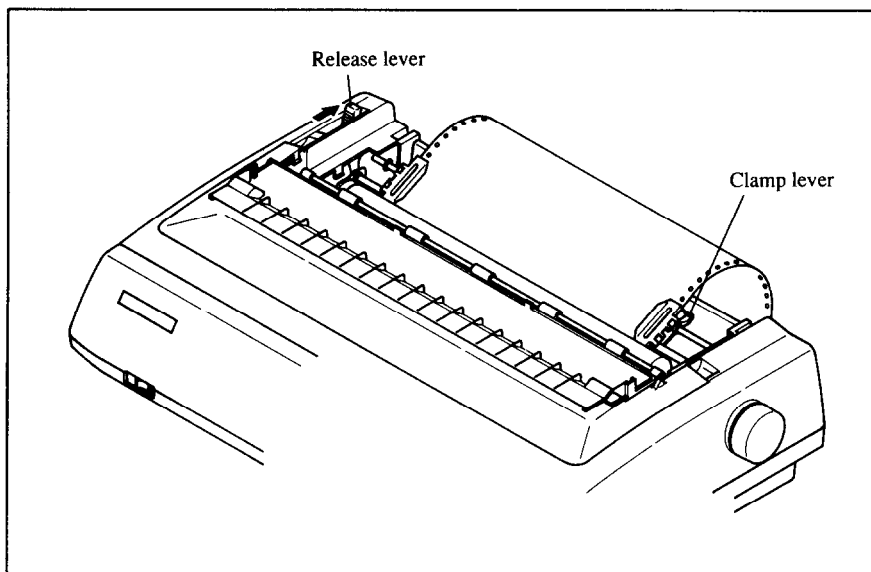


Figure 4-8. Mount the fanfold paper over the internal tractor units.

8. Turn on the power using the switch located at the front of the printer. The printer will beep, indicating that the paper is not yet fully loaded. The "PAPER OUT" message will also flash to confirm this.
9. Now press the **SET/EJECT/PARK** button. The paper will be fed past the print head.
10. Turn off the power, and install the optional Pull Tractor Unit as described in Chapter 3.
11. With the optional tractor covers open, turn the platen knob clockwise to mount the paper by aligning holes with the pins on the optional tractor unit.

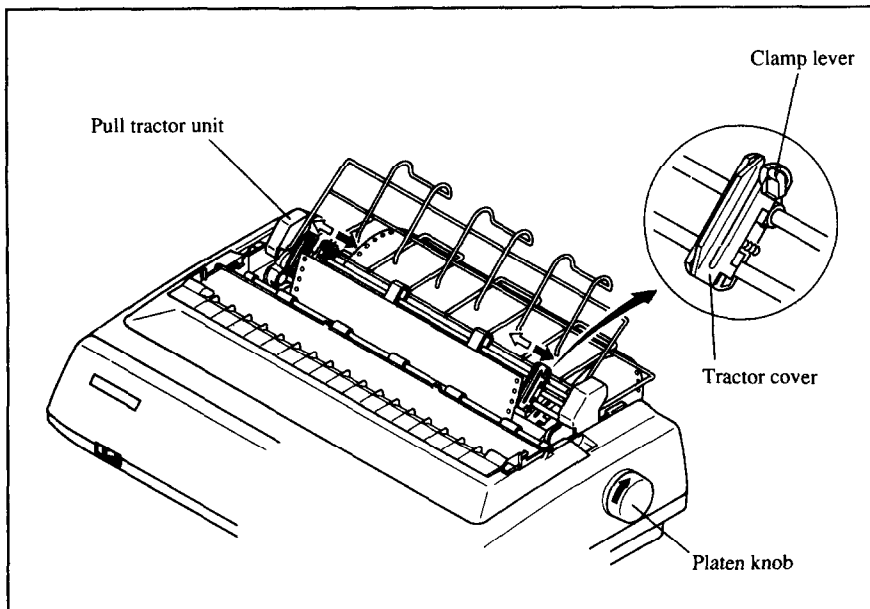


Figure 4-8. Mount the fanfold paper to the Pull Tractor Unit by turning the platen knob.

12. Adjust the spacing of the optional tractor units by sliding them along the bar, using the clamp lever at the back of each unit to release and lock them in position. When the lever is up, the unit is released, and when it is down, the unit is locked.
13. Now close the tractor covers, again making sure that the paper holes are aligned with the pins on the optional tractor units. If they are not aligned properly, you will have problems with paper feeding, possibly resulting in tearing and jamming of the paper.
14. Remove the lever stopper from the slot of the release lever as shown in Figure 4-10.
15. Set the release lever to the “•” position, and turn the platen knob clockwise to tighten the paper if it is slack.

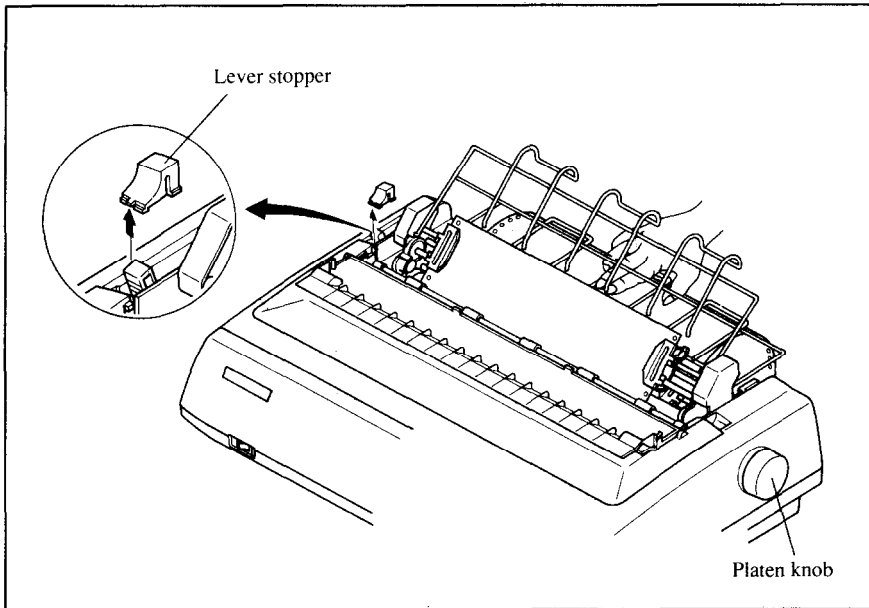


Figure 4-10. Remove the lever stopper, and tighten the paper.

16. Push the release lever backward, and remount the lever stopper to the original position.

Paper parking

After loading fanfold paper with Push feed mode, you do not have to unload it when you want to print on a single sheet. The printer will “park” it for you if you follow the procedure below.

1. To begin paper parking, start with power ON, fanfold paper loaded in printing position, and the release lever backward.
2. Press the button on the control panel to set the printer off-line. ON LINE indicator will turn off.
3. Tear off the printed form at the last perforation, leaving not more than about half a page showing above the front cover. If necessary, press the button to feed paper forward until a perforation is located just above the front cover, and tear there.
4. Press the button on the control panel.
The printer will automatically feed the fanfold form backward until the paper is completely free of the platen.
5. Move the release lever to the front.

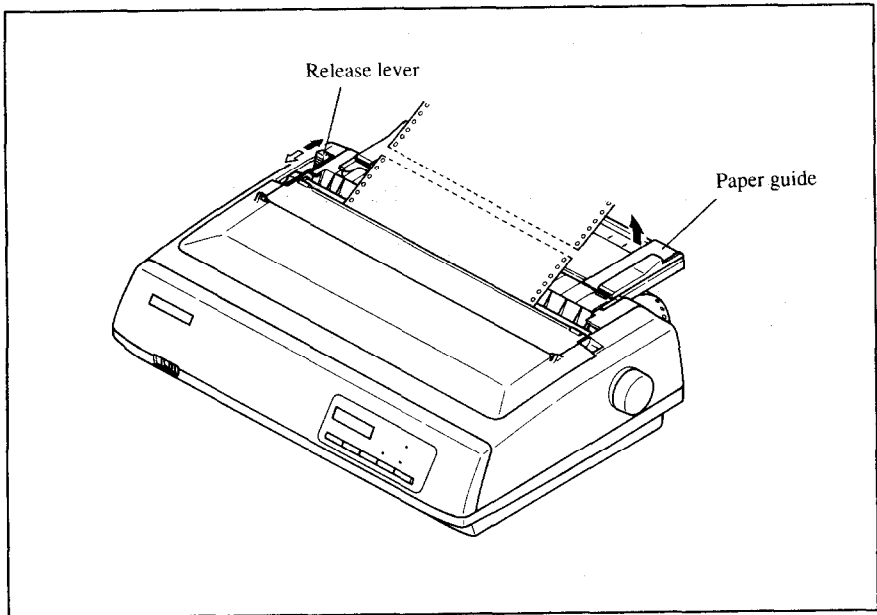


Figure 4-11. Tear off the printed fanfold paper.

6. Mount the paper guide in the upright position.

Now you can load single sheets. The fanfold paper remains parked at the back of the printer.

NOTE: You cannot park the fanfold paper if you have loaded it using the optional Pull Tractor Unit.

Paper unparking

When you want to resume using fanfold paper, the procedure is as follows.

1. Remove all single sheets from the printer.
2. Mount the paper guide in the horizontal position.
3. Move the release lever to the backward.
4. Press the **SET/EJECT PARK** button. The printer will automatically feed the parked fanfold paper back into position for printing.

NOTE: The printer beeps intermittently if you move the release lever while the paper is loaded.

LOADING SINGLE SHEETS

This section will take you through the procedures for loading single sheets of paper.

Loading the paper without optional accessories

If you are using the optional Automatic Sheet Feeder, refer to next section.

1. Place the paper guide in position by inserting the tabs, located on the bottom of the assembly, into the slots on the rear cover of the printer.

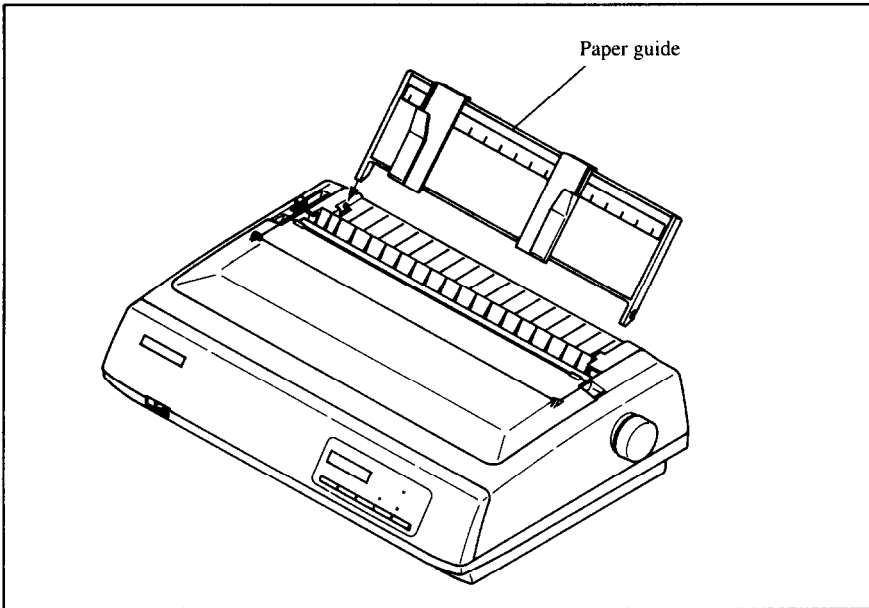


Figure 4-12. Mounting the paper guide for single sheets.

2. Adjust the paper guides to match the size of the paper you will be using. Remember that printing will start some distance from the left-hand edge of the carriage.
3. Turn on the power using the switch located at the front of the printer. The printer will beep, indicating that there is no paper in position for printing. The "PAPER OUT" message will also flash to confirm this.
4. Make sure that the release lever is at front position. If fanfold paper is already mounted in the printer, press the **REJECT PARK** button to park the paper in the off-line state, then move the release lever forward.

5. Place a single sheet between the guides, placing the side on which you want to print towards the back of the printer. Gently push the paper down in the guides until you feel it stop.
6. Now press the **SET/EJECT
PARK** button. The paper will be fed into the printer and adjusted past the print head to a position ready for printing.
7. If you want to set the paper to a different position, set the printer off-line by pressing the **ON LINE** button, then set the paper position by using the micro-feed function. (For details, refer to Chapter 5.)

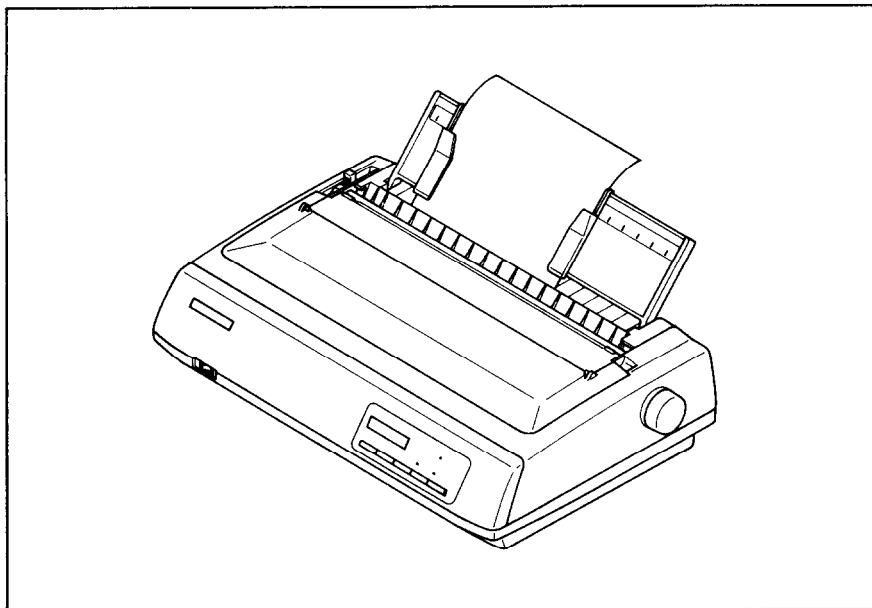


Figure 4-13. Loading a single sheet.

Loading the paper with optional Automatic Sheet Feeder

If you are not using the optional Automatic Sheet Feeder, refer to the previous section.

1. Install the optional Automatic Sheet Feeder as described in Chapter 3.

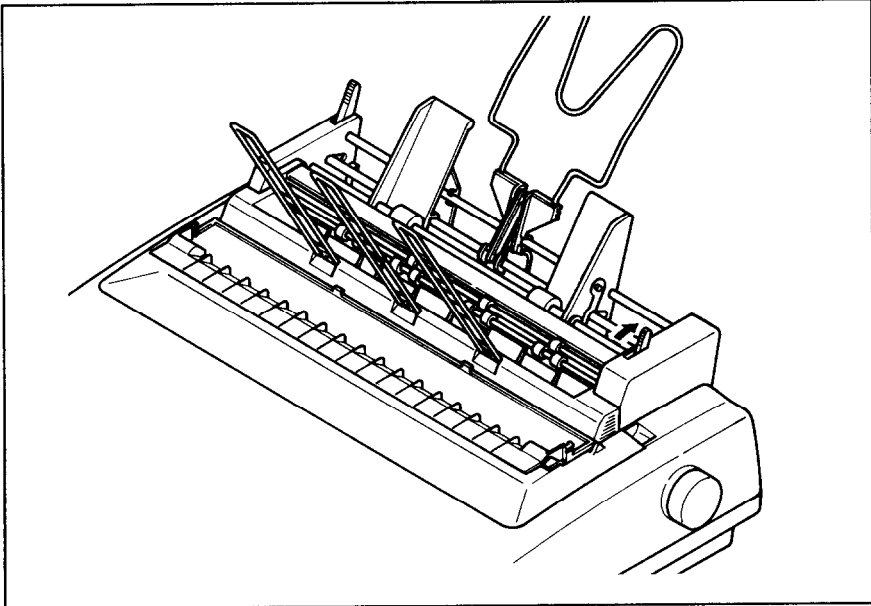


Figure 4-14. Install the optional Automatic Sheet Feeder.

2. Use the printer's EDS mode to select ASF. (For details, please refer to Chapter 6.)
3. If fanfold paper has already been loaded in the printer, park the paper through the rear slot.
4. Pull the printer release lever forward to load single sheets.
5. When you are using Single-Bin ASF, pull the paper loading lever forward to pull the hopper out until it is in position.
In case of the Dual-Bin ASF, pull both pressure bar levers forward to open the pressure bar.

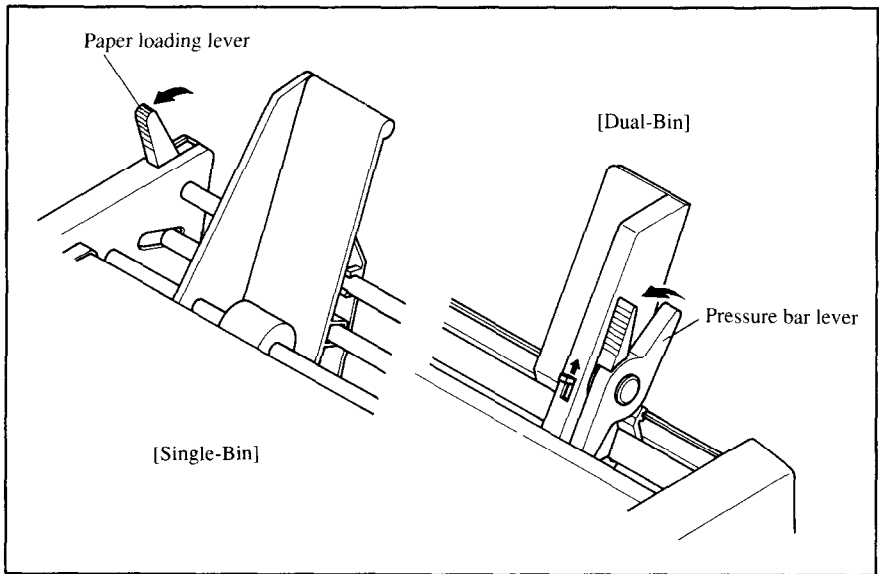


Figure 4-15. Make ready to load paper.

6. Adjust the left paper guide to the desired left position by moving it horizontally in either direction. (Unlock the paper guides by pressing down on the locking levers in case of Dual-Bin ASF.)
7. Lock the left paper guides in position by moving the locking lever up for the Dual-Bin ASF.

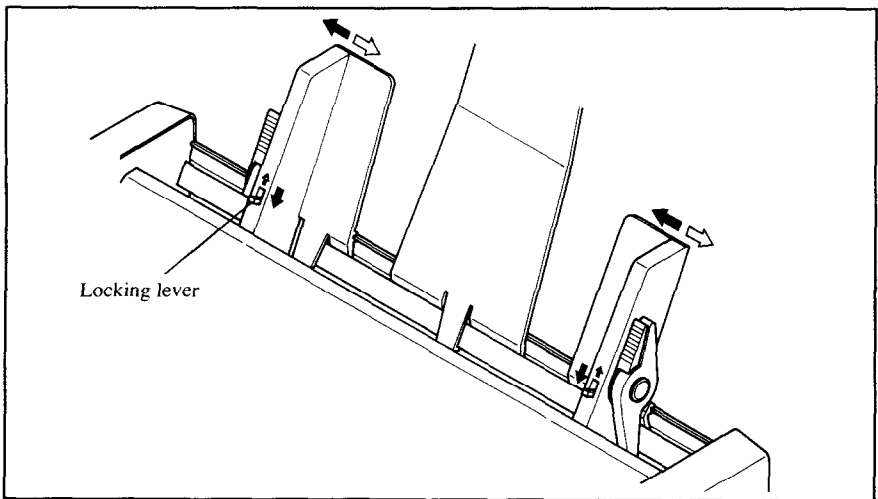


Figure 4-16. Adjust the paper guides to accommodate the width of the paper.

8. Adjust the right paper guide to accommodate the width of the paper. The guides should be adjusted to restrict the amount of horizontal play while allowing the paper to slide up and down freely between the two paper guides. The ideal distance between paper ream and paper guides is 0.25 mm (0.01") on both sides at the narrowest part of the paper guides.
9. Fan the paper stack and square it off properly before inserting it into the Automatic Sheet Feeder.

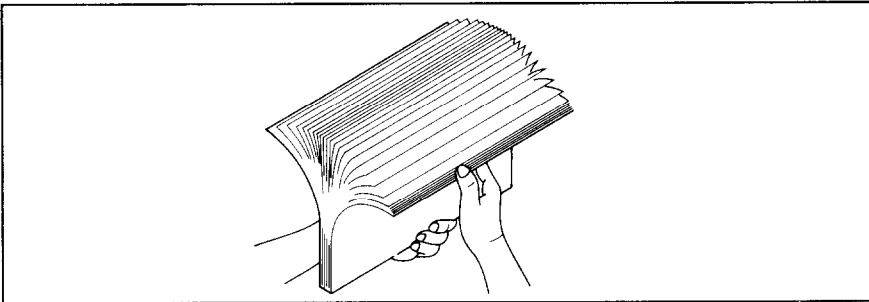


Figure 4-17. Fan the paper before inserting into the ASF.

10. Insert the paper stack into the Automatic Sheet Feeder. The stack should not be more than 15 mm (5/8") equivalent to 150 sheets of 20 lb paper. If necessary, remove some sheets. The ASF may not perform satisfactorily if it is overloaded.
11. When you are using Single-Bin ASF, push the paper loading lever toward the back. In case of the Dual-Bin ASF, push both pressure bar levers toward the back to "FEED".

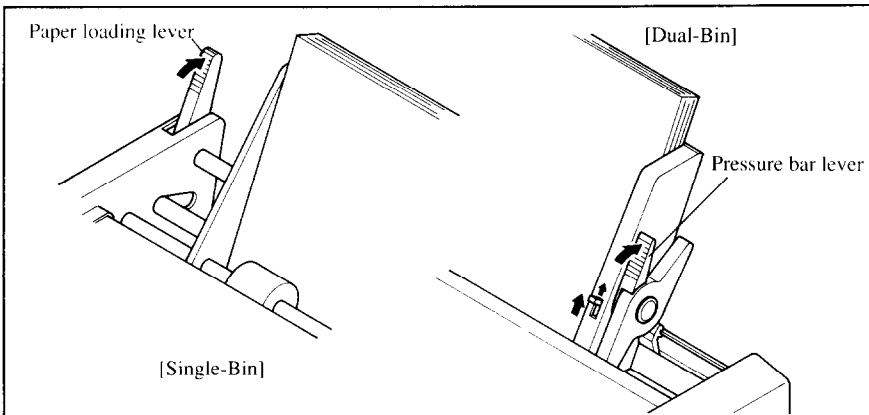


Figure 4-18. Push the paper loading lever or pressure bar levers to hold the paper stack.

Chapter 5

CONTROL PANEL OPERATIONS

The control panel buttons can be pressed individually to perform the operations indicated by their names. Other functions can be achieved by holding these buttons down when you turn the printer's power on, or by pressing the control panel buttons in combination.

This chapter explains all the button and indicator functions.

- Pause printing
- Feed paper (fast and slow, forward and reverse)
- Park fanfold forms
- Set the top-of-form position
- Select the print pitch
- Select a font
- Print test patterns
- Prevent software from changing the panel pitch and font selections
- Print a hexadecimal dump
- Clear the printer's buffer
- Change the print color
- Store macro definition

BUTTONS AND INDICATORS

The printer is equipped with five buttons on the control panel. From left to right they are , , , and .

The following is a brief guide to the buttons and indicators on the control panel.

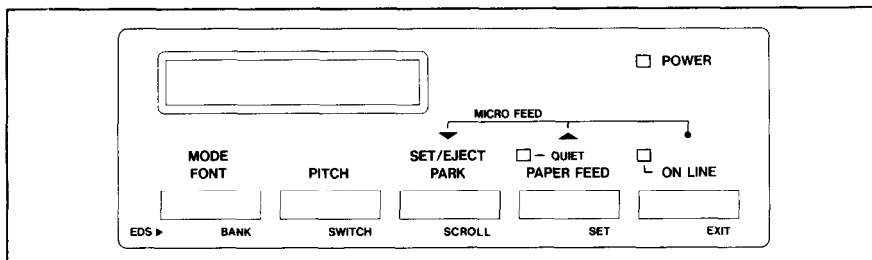


Figure 5-1. Control panel.

ON LINE button

The ON LINE button sets the printer on-line and off-line. The status changes each time you press the button.

When the printer is on-line, it can receive and print data from the computer. When the printer is off-line, it stops printing and sends the computer a signal indicating that it cannot accept data.

The printer powers up in the on-line status if paper is loaded. If paper is not loaded, the printer powers up off-line with the "PAPER OUT" message blinking. When you load paper, the printer goes on-line.

You will want to press the ON LINE button:

- Before and after any other panel operation
The other panel buttons operate only in the off-line state. Press the ON LINE button to go off-line. After performing the panel operation(s), press the ON LINE button again to go back on-line.
- To pause during printing
If you press the ON LINE button during printing, the printer stops printing and goes off-line, allowing you to check the printout or change a control panel setting. Printing resumes when you press the ON LINE button again to go back on-line.
- To cut fanfold forms at the end of printing
When you hold the ON LINE button down for one second with the push tractor mode, the printer goes off-line and displays the "SHORT TEAR-OFF" message, then the printer also feeds the paper forward approximately two inches forward. This allows you to cut it off just below the last line printed.
When you press the ON LINE button again to go back on-line, the paper feeds backward stopping where you left off.

NOTE: This function is valid only when the buffer is empty.

PAPER FEED button

If you press this button while off-line, the paper will feed forward. If you hold the button down, the printer will perform consecutive line feeds.

If you also press the ON LINE button while you are line-feeding, the paper will feed automatically to the top of the next page. This is explained later.

If you press this button while on-line, this will alternately flash the QUIET indicator. When in Quiet mode with the QUIET indicator lit, the printer will print slightly slower, but at a reduced noise level.

SET/EJECT/PARK button

NOTE: This button has no effect if the bottom feed mode is selected.

Pressing this button causes the printer to begin paper loading if the paper has not loaded while in the off-line state.

If the paper has been loaded, this button results in different functions depending on the position of the release lever.

If the release lever is back for the fanfold forms, pressing this button parks the forms.

If the release lever is forward for the single sheets, pressing this button ejects the paper.

PITCH button

This button allows you to select the printing pitch. Remember that the printer must be off-line for you to do this. Successive presses of this button will display (and select) the following options in order (Note that semi-condensed pitch and condensed proportional pitch are not available in the IBM mode):

Pitch	Message
Pica (10CPI)	10
Elite (12CPI)	12
Semi-condensed (15CPI)	15
Condensed pica (17CPI)	17
Condensed elite(20CPI)	20
Proportional	PRO
Condensed proportional	P.C

FONT button

This button selects the font to be printed. Roman font is selected at power-up unless the default settings are changed. To change the font, set the printer off-line, then press the button repeatedly until the message on the display illuminates. The selections cycle in the following order:

Font	Message	Font	Message
Roman	ROMAN	H-Gothic	H-GOTHIC
Sanserif	SANSERIF	Orane	ORANE
Courier	COURIER	Cinema	CINEMA
Prestige	PRESTIGE	Bar code 39	CODE 39
Script	SCRIPT	UPC/EAN	UPC/EAN
OCR-B	OCR-B	Old Style	O STYLE
OCR-A	OCR-A	Firenze	FIRENZE
Orator with small caps	ORATOR	SLQ Roman	ROMAN SQ
Orator with lower case	ORATOR-2	SLQ TW-light	TW-LIGHT SQ
TW-light	TW-LIGHT	SLQ Script	SCRIPT SQ
Letter Gothic	L GOTHIC	Draft	DRAFT
Blippo	BLIPPO	High-Speed Draft	HS-DRAFT

If a Font cartridge is not installed, the selection of related Font is skipped.

If you want to change the character quality quickly, press this button in on-line. The printer stops printing and enters the Quick mode, with "QUICK MODE" message on the display.

If you continue to press the button, the display changes to "HS-DRAFT", "DRAFT" and LQ/SLQ (currently-selected SLQ or LQ font) repeatedly.

Printing will be performed according to the print mode message on the display which selected when the button is released.

POWER-UP FUNCTIONS

In addition to their normal functions, all the control panel buttons have special functions that operate if you hold them down while switching power on.

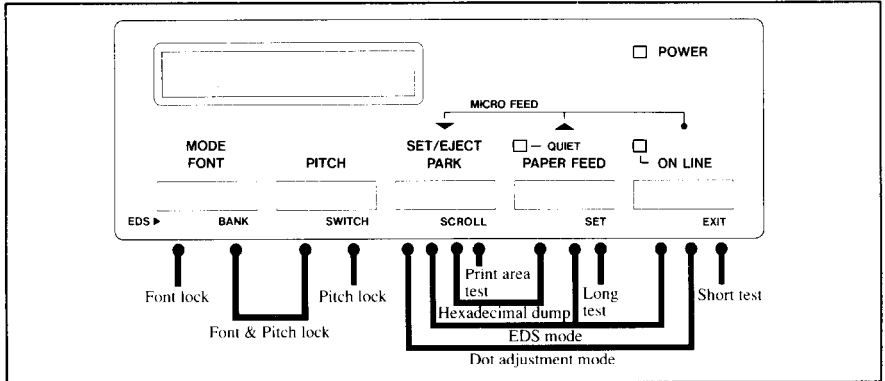


Figure 5-2. Power-up functions of control panel.

Short test mode

If the printer is turned on while the **ON LINE** button is pressed, the printer will enter the short self-test mode, with the "SELF TEST SHORT" message on the display. The printer will print the version number of the printer's ROM, followed by seven lines of the character set.

Each line will be offset by one character from the one before it. The final result will be something like Figure 5-3. (If the color ribbon is used, each line prints in a different color.)

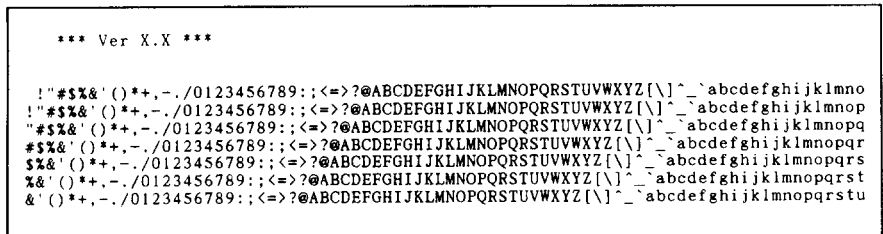


Figure 5-3. Short self-test.

Since the self-test occupies the full width of the carriage, it is recommended that the printer is loaded with the widest paper possible to avoid damage to the print head and/or platen.

Since the self-test occupies the full width of the carriage, it is recommended that the printer is loaded with the widest paper possible to avoid damage to the print head and/or platen. In addition, the total number of lines printed is considerable, more than can be accommodated on a single sheet, so fanfold paper is recommended for this test.

Print area test mode

By holding the button down during power-up, the printer will enter the print area test mode. This way, you can find how many lines on your paper are available for printing. The printer will show the "SELF TEST TOP&B." on the display and print the first line message, then print the last line message after feeding to the bottom of the page.

If you have loaded the fanfold paper, only the first line message is printed.

Pitch lock mode

By holding the button down during power-up, the print pitch can only be selected from the control panel. This prevents software interference. You will hear an acknowledging beep, and the printer will show the "PITCH LOCK" message on the display as power comes on.

After the beep tone, you can set the printer off-line, select a print pitch, then return to on-line and start printing. The pitch you selected will show with "*" on the display and not be reset or otherwise changed by any commands your software may issue.

Font lock mode

By holding the button during power-up, fonts can only be selected from the control panel. This prevents software interference. There will be an acknowledging beep and "FONT LOCK" message on the display. After which you can set the printer off-line, select a font, then return to the on-line state and begin printing. The selected font, shown with "*" on the display, will not be changed by any commands your software may issue.

Font and Pitch lock mode

If you want to protect both the pitch and font settings from software changes, press both the and buttons during power-up. There will be two acknowledging beep tones and "FONT&PITCH LOCK" message on the display.

Pressing these buttons during power-up does not prevent you from making any number of changes later from the control panel.

Hexadecimal dump

This feature is useful for programmers who are debugging printing programs and want to see the actual codes the printer is receiving. (Some computers change the codes the programmer intended.)

In this mode, all data received will be printed in a hexadecimal dump format, rather than the control codes being acted on as command codes.

This mode is accessed with the following procedure:

1. While holding both the **PAPER FEED** and **SET/EJECT PARK** buttons down, turn power ON. A beep tone will be heard and the "HEX DUMP MODE" message on the display.
2. Begin printing. In place of the usual printout you will get a formatted dump showing exactly what data the printer receives. Each line presents sixteen characters, their hexadecimal codes to the left and printable characters printed on the right.
3. At the end of the hexadecimal dump, set the printer off-line with the **ON LINE** button. This is necessary to print the last line.

The following BASIC program is a simple test you can run in hexadecimal mode:

```

10 WIDTH "LPT1:",255
20 FOR I=0 TO 255
30 LPRINT CHR$(I);
40 NEXT I
50 LPRINT
60 END
  
```

00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	.....
10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	.....
20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	!"#\$%&'()*+,-./
30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F	0123456789:;<=>?
40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	@ABCDEFGHIJKLMNO
50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	PQRSTUVWXYZ[\]^_
60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	`abcdefghijklmnopqrstuvwxyz{|}~.
70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F	.....
80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	.....
90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	.....
A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF	.....
B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF	.....
C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	.....
D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	.....
E0	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF	.....
F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF	.....
00	0A															..

Figure 5-5. Sample hexadecimal dump.

If your system passes the codes directly to the printer without changing them, you will get a printout like Figure 5-5.

Most BASICs, however, are not quite that straightforward. For example, the IBM-PC will give you a printout similar to Figure 5-6.

```

00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F .....
0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F .....
20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F .....
30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F 0123456789:;<=>?
40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F @ABCDEFGHIJKLMNO
50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F PQRSTUVWXYZ[\]_
60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F `abcdefg hijklmno
70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F pqrstuvwxyz{|}~.
80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F .....
90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F .....
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF .....
B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF .....
C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF .....
D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF .....
E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF .....
F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF .....
OD 0A ..

```

Figure 5-6. Sample hexadecimal dump with IBM-PC.

When the IBM-PC BASIC interpreter sends hex code 0D (carriage return) it adds an extra hex 0A (line feed). Hex code 1A (end-of-file) also gets special treatment: the interpreter does not send it at all. This can cause problems with graphics or download character data. However, you can solve this problem by changing line 30 in the preceding program and adding the coding shown below.

Coding for IBM-PC with monochrome display:

```

30 GOSUB 100
100 X=INP(&H3BD) :IF X<128 THEN 100
110 OUT &H3BC,I :OUT &H3BE,5 :OUT &H3BE,4
120 RETURN

```

Coding for IBM-PC with color adapter:

```

30 GOSUB 100
100 X=INP(&H379) :IF X<128 THEN 100
110 OUT &H378,I :OUT &H37A,5 :OUT &H37A,4
120 RETURN

```

SWITCH COMBINATION FUNCTIONS

Several additional functions can be achieved by pressing the control panel buttons in combinations.

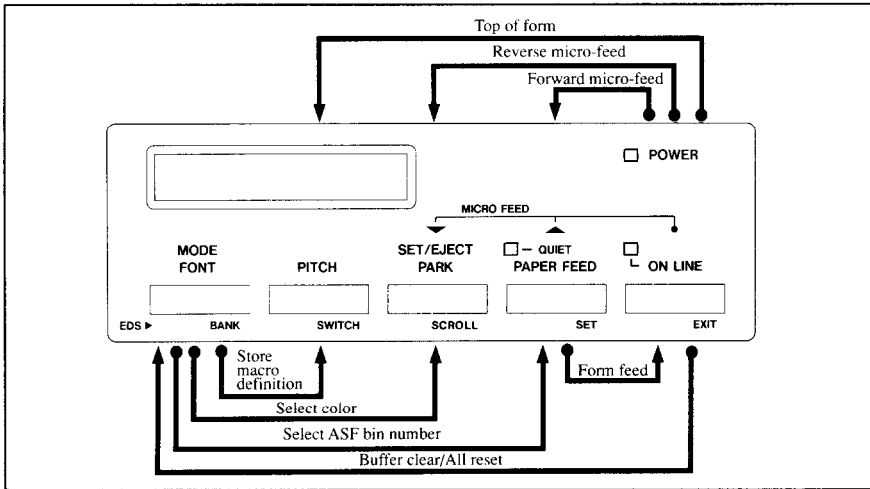


Figure 5-7. Switch combination functions of control panel.

Form feed

If you are using single sheets, this operation ejects the current page. If you are using fanfold forms, it feeds to the top of the next page.

1. Press the button to set the printer off-line.
2. Press the button and hold it down. The printer will start performing successive line feeds.
3. While holding the button down, press the button, then release both buttons at the same time. The printer will smoothly eject the current page.

Top of form

When you power on the printer, the top-of-form position is automatically set to the current position. If this is not where you want the top of the page to be, you can change the top-of-form position as follows:

1. Press the button to set the printer off-line.
2. Move the paper to the desired top-of-form position by pressing the button, or by performing a forward or reverse micro-feed.

3. Press and hold the button.
4. While holding the button down, press and the button, then release both buttons at the same time. The "SET TOF POSITION" message will show on the display to indicate that the top-of-form position has been set.

Forward micro-feed

For fine alignment, you can feed the paper forward in very small increments as follows:

1. Press the button to set the printer off-line.
2. Press the button again and hold it down.
3. While holding the button down, press the button. The paper will start advancing in a series of small steps. When you want to stop, release both buttons.

Reverse micro-feed

You can also feed the paper in small increments in reverse, to return to a higher position on the same page.

NOTE: With fanfold forms, do not try to return to a previous page. The perforation may catch inside the printer.

1. Press the button to set the printer off-line.
2. Press the button again and hold it down.
3. While holding the button down, press the button. The paper will start moving backwards in a series of small steps. When you want to stop, release both buttons.

Changing the auto loading value

Normally, the printer automatically loads the paper one line from the top edge.

If you want to change this value, follow this procedure:

1. Load the paper using the button.
2. Change the print position using the micro feed function.
3. After you get the desired position, press the button to save the value.

The "TOP MARGIN SET" message will show on the display.

This value will remain unless you power off the printer. If you want to retain this value even after you turn off the power, store it using the Macro Definition function, which is described later.

Note that you can only change this value immediately after loading paper. If you feed paper, you cannot change the auto loading value.

Clearing the buffer/All reset

The printer stores received data in a large memory buffer. This creates a problem when you want to abandon a printing job and restart: the printer may be holding more data in its buffer than it has actually printed, and this unprinted data must be cleared out before restarting. Turning power off is one way to clear the buffer, but there is another way:

1. Halt the printing program on the computer. If printing stops immediately, the buffer is clear and the rest of this procedure is unnecessary. If printing does not stop, continue as follows:
2. Press the button to set the printer off-line. Printing will now stop, but there may be data remaining in the buffer.
3. Press and hold the button.
4. While pressing the button down, press and hold the button. Continue holding these two buttons down. In one second you will hear a beep tone and the "BUFFER CLEAR" message on display signaling that the buffer has been cleared.
If you hold these buttons more three seconds, you will hear three beep tones and the "PRINTER RESET" message on the display signaling that the printer has been initialized to the power-on default settings.
5. Release these buttons, make any necessary control panel settings, then set the printer back on-line.

It is essential to halt the printing program on the computer before you go off-line. Otherwise, when you go back on-line the computer will start sending data again and the printer will continue printing, with missing data where the buffer was cleared.

Selecting the print color

Normally, the printer prints with black even if the color ribbon is installed. Without the aid of software, you can change the printing color as follows:

1. Press the button to set the printer off-line.
2. Press the button and hold it down.

3. While holding the **MODE FONT** button, press the **SET/EJECT PARK** button. The "CURRENT BLACK" message will show on the display to indicate the current color setting. (In this case, the current color is set black.)
4. If you want to change the color, press the **SET/EJECT PARK** button while holding the **MODE FONT** button.

The message on the display will be changed in the following order.

Color	Message	Color	Message
Black	CHANGE BLACK	Yellow	CHANGE YELLOW
Magenta	CHANGE MAGENTA	Orange	CHANGE ORANGE
Cyan	CHANGE CYAN	Green	CHANGE GREEN
Violet	CHANGE VIOLET		

5. Release both buttons after you set the desired printing color.
If you want to save the selected color for later use, store it using the Macro Definition.

NOTE: This function is valid only when the color ribbon is installed into the printer.

Selecting the ASF bin number

You can use the dual-bin type Automatic Sheet Feeder (SF-10RMII/15RMII) with this printer.

You can select this ASF bin number by the control panel operation as shown below:

1. Press the **ON LINE** button to set the printer off-line.
2. Press the **MODE FONT** button and hold it down.
3. While holding down the **MODE FONT** button, press the **PAPER FEED** button.

The "CURRENT ASF BIN1" message (when ASF bin #1 is selected) will show on the display.

4. Each time you press the **PAPER FEED** button while holding down the **MODE FONT** button, the "CHANGE ASF BIN1" and the "CHANGE ASF BIN2" message will be shown on the display.
5. Release both buttons after you set the desired ASF bin number.

NOTE: This function is valid only when the Dual-bin ASF is selected by the EDS setting.

Store Macro Definition

You can store the current settings to the printer for later use with the following procedure:

1. Press the button to set the printer off-line.
2. Press the button and hold it down.
3. While holding the button down, press the button and hold them down until the "SET MACRO" message shows on the display.
4. Release both buttons at the same time after this message to store the current setting.

If you release these buttons after the "CLEAR MACRO" message is shown on the display, the macro is cleared.

NOTE: You can store the following settings with this procedure.

- Current Font and Pitch
- Current auto-loading amount for cut sheet
- Current auto-loading amount for continuous paper
- Current auto-loading amount in ASF mode
- Current print color

Data to be stored are controlled in Standard mode and IBM mode separately. For example, the data stored in the Standard mode are not effective in the IBM mode, and vice versa.

Chapter 6

DEFAULT SETTINGS

From the control panel you can change the parameters that define how your printer works. Parameter just means “variable”. If you are familiar with earlier kinds of printers, you’ll understand that this printer parameters control pretty much the same things DIP switches do. This function is called as Electronic DIP Switch (EDS) mode.

HOW TO SET THE EDS MODE

The EDS mode has 29 kinds of functions you can set as the power-on default.

Turn the printer on while simultaneously holding the **SET/EJECT PARK**, **PAPER FEED** and **ON LINE** buttons.

The “ELECTRIC DIP SW” message will show on the display, and enter the EDS mode.

In EDS mode, the buttons on the control panel are used as shown below in Figure 6-1.

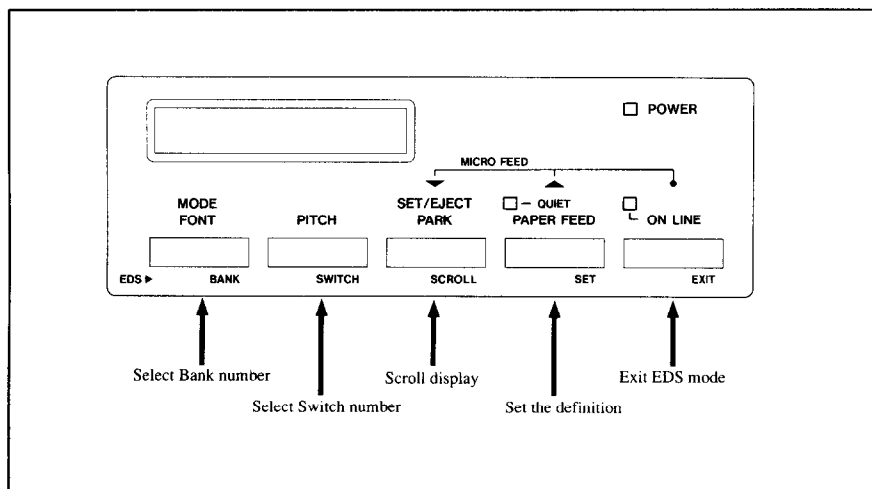


Figure 6-1. Button functions in the EDS mode.

- Use the button to select the Bank Number.
- Use the button to select the Switch Number.
- The display on the control panel shows the current setting.
If you want to scroll it, press the button.
- Press the button to set the current settings.
- Press the button to exit the EDS mode.

If you want to confirm the current EDS settings, try to run the long self-test. (For details, refer to Chapter 5.)

FUNCTIONS OF THE EDS SETTINGS

The printer stores the parameters as easy-to-use program menu items that you can select from the control panel while in the EDS mode. These parameters specify:

- Command (which commands the printer accept)
- Font (which font to print)
- Character (which character set to print)
- Style (which style to print)
- Layout (how pages will be formatted)
- Forms (what paper the printer will use)
- Others

A default is the setting the printer will use if none is specifically selected by a program. When you first turn on or later reset your printer these default settings will take effect.

Following table shows the default settings at the factory.

Display Message	Meaning
A1 EMULATION STD	Standard emulation mode is selected.
A2 RAM BUFFER	RAM is used as the print buffer.
A3 QUIET OFF	Quiet mode is cancelled.
A4 GRAPH DIR BI	Bi-directional printing is selected for graphics.
A5 AUTO-ONLINE Y	Auto on-line mode is selected.
B1 MODE LQ/SLQ	LQ/SLQ mode is selected.
B2 LQ ROMAN	Roman font is selected for LQ/SLQ mode.
C1 STD GRAPH	Graphic set is selected for Standard character set.
C2 IBM IBM#2	Set #2 is selected for IBM character set.
C3 ZERO NORMAL	Normal zero character is selected.
C4 CODEPAGE #437	Code Page #437 (U.S.A.) is selected.
C5 COUNTRY USA	U.S.A. character set is selected.
D1 ITALIC OFF	Italic print mode is cancelled.
D2 PITCH 10	Pica pitch (10 CPI) is selected.
E1 MULTIPART OFF	Multi-part mode is cancelled.
E2 PAPER-OUT ON	Paper-out detector is enabled.
E3 ASF OFF	Optional ASF is not installed.
E4 T.MGN-CUT 1/6	Top margin for cut forms is set to 1/6 inch.
E5 T.MGN-ASF 1/6	Top margin for ASF is set to 1/6 inch.
E6 T.MGN-TRA 1/6	Top margin for fanfold forms is set to 1/6 inch.
E7 BOTTM MGN 1/6	Bottom margin is set to 1/6 inch.
E8 L.P.I. 6	6 lines can be printed on one inch.
F1 AUTO-LF OFF	LF must be from host.
F2 AUTO-CR ON	Auto CR with LF.
F3 TEAR-OFF OFF	Tear-off function is disabled.
F4 SKIP-PERF OFF	Skip-over-perforation is disabled.
F5 PAGE-LGTH 11	Page length is set to 11 inches.
G1 STROBE NORMAL	Set the normal interface timing.
G2 EDS CURRENT	Set the current EDS settings.

Command parameters

The Command parameters are assigned to Bank "A", including these functions:

- **Emulation**
Select the mode compatible with your computer and software. In Standard mode the printer operates like the Epson LQ-860/LQ-1060. In IBM mode it operates like the IBM Proprinter X24E/XL24E.
- **RAM usage**
In order to download characters this switch must be set "DOWNLOAD". The printer then uses its RAM memory for storing character patterns and provides only a one-line print buffer.
If you leave this switch, the printer uses its RAM memory as an input buffer, allowing the computer to send data faster than the printer prints.
- **Quiet mode**
You can select the Quiet mode as the power-on default by setting this switch.
When in Quiet mode, the printer will print slightly slower, but at a reduced noise level.
- **Graphics direction**
When printing in dot graphics mode, the printer may either print bi-directionally (in alternate directions) for speed or in one direction only (uni-directional for increased accuracy).
For practically all purposes, however, bi-directional printing is sufficiently accurate.
- **Auto On-Line**
Set the status just after loaded the paper into the printer.
When the Auto-Online is set ON, the printer automatically goes on-line.
When it is set OFF, you must press the ON LINE button to set on-line after load the paper.

Following table shows the display messages and those meanings for the Bank "A".

Display Message	Meaning
A1 EMULATION STD	Standard emulation mode is selected.
A1 EMULATION IBM	IBM emulation mode is selected.
A2 RAM BUFFER	RAM is used as the print buffer.
A2 RAM DOWNLOAD	Download commands are enabled.
A2 RAM 1 LINE	RAM is used as only one-line buffer.
A3 QUIET OFF	Quiet mode is cancelled.
A3 QUIET ON	Quiet mode is selected.
A4 GRAPH DIR BI	Bi-directional printing is selected for graphics.
A4 GRAPH DIR UNI	Uni-directional printing is selected for graphics.
A5 AUTO-ONLINE Y	Auto on-line mode is selected.
A5 AUTO-ONLINE N	Need to press the <input type="checkbox"/> ON LINE button to set on-line.

Font parameters

The Font parameters are assigned to Bank "B", including these functions:

- Mode
 - Select the mode of font quality.
 - HS Draft prints with the highest speed, but the dot matrix is reduced to print faster.
 - Draft has a reduced dot matrix compared to Letter Quality, but the print quality is better than the HS Draft.
 - Letter Quality is referred as LQ, and there are many font styles as shown below.
 - The SLQ (Super Letter Quality) is the highest quality of this printer, and there are three types of font styles.
- LQ/SLQ Font styles
 - There are many font styles for LQ and SLQ print mode. You can select one of them as the power-on default by setting this switch.
 - Optional fonts can be selected only when the corresponding font cartridge is installed in the printer.
 - If the corresponding font cartridge is not installed after you selected it with this EDS mode, the Roman is selected.

Following table shows the display messages and those meanings for the Bank "B".

Display Message	Meaning
B1 MODE LQ/SLQ	LQ/SLQ mode is selected.
B1 MODE DRAFT	Draft mode is selected.
B1 MODE HS-DRAFT	HS Draft mode is selected.
B2 LQ ROMAN	Roman font is selected for LQ/SLQ mode.
B2 LQ SANSERIF	Sanserif font is selected for LQ/SLQ mode.
B2 LQ COURIER	Courier font is selected for LQ/SLQ mode.
B2 LQ PRESTIGE	Prestige font is selected for LQ/SLQ mode.
B2 LQ SCRIPT	Script font is selected for LQ/SLQ mode.
B2 LQ OCR-B	OCR-B font is selected for LQ/SLQ mode.
B2 LQ OCR-A	OCR-A font is selected for LQ/SLQ mode.
B2 LQ ORATOR	Orator font is selected for LQ/SLQ mode.
B2 LQ ORATOR-2	Orator font with lower case is selected for LQ/SLQ mode.
B2 LQ TW-LIGHT	TW-Light font is selected for LQ/SLQ mode.
B2 LQ L GOTHIC	Letter Gothic font is selected for LQ/SLQ mode.
B2 LQ BLIPPO	Blippo font is selected for LQ/SLQ mode.
B2 LQ H GOTHIC	H-Gothic font is selected for LQ/SLQ mode.
B2 LQ ORANE	Orane font is selected for LQ/SLQ mode.
B2 LQ CINEMA	Cinema font is selected for LQ/SLQ mode.
B2 LQ CODE 39	Code 39 font is selected for LQ/SLQ mode.
B2 LQ UPC/EAN	UPC/EAN font is selected for LQ/SLQ mode.
B2 LQ O STYLE	Old Style font is selected for LQ/SLQ mode.
B2 LQ FIRENZE	Firenze font is selected for LQ/SLQ mode.
B2 SLQ ROMAN	SLQ Roman font is selected for LQ/SLQ mode.
B2 SLQ TW-LIGHT	SLQ TW-Light font is selected for LQ/SLQ mode.
B2 SLQ SCRIPT	SLQ Script font is selected for LQ/SLQ mode.

Character parameters

The Character parameters are assigned to Bank "C", including these functions:

- **Standard Character Set**

If you selected Standard mode, you can set either italic or graphic characters.

When you select the "italic" characters, the character table is the same as the Epson printers.

When you select the "Graphic" characters, in place of italics you will get the graphic characters, international characters, and mathematical symbols of IBM character set #2.

- **IBM Character Set**

If you selected IBM mode, you can select either character set #1 or #2.

Character set #2 is for computers with an 8-bit interface (the most common kind), and set #1 is for computers with a 7-bit interface.

- **Zero style**

This switch tells the printer how to print zero's.

When the "NORMAL" is selected, the printer prints the normal zero; when it is "SLASHED", the slash zero (which is often used in draft mode to prevent any possible confusion with the letter "O").

- **IBM Code Page**

Except in the Standard Italic character set, this switch selects the default character code page.

- **International Character Set**

International character sets differ in their assignment of 14 character codes in the Standard Italic character set.

Following table shows the display messages and those meanings for the Bank "C".

Display Message	Meaning
C1 STD GRAPH	Graphic set is selected for Standard character set.
C1 STD ITALIC	Italic set is selected for Standard character set.
C2 IBM IBM#2	Set #2 is selected for IBM character set.
C2 IBM IBM#1	Set #1 is selected for IBM character set.
C3 ZERO NORMAL	Normal zero character is selected.
C3 ZERO SLASHED	Slashed zero character is selected.
C4 CODEPAGE #437	Code Page #437 (U.S.A.) is selected.
C4 CODEPAGE #850	Code Page #850 (Multi-lingual) is selected.
C4 CODEPAGE #860	Code Page #860 (Portuguese) is selected.
C4 CODEPAGE #861	Code Page #861 (Icelandic) is selected.
C4 CODEPAGE #863	Code Page #863 (Canadian French) is selected.
C4 CODEPAGE #865	Code Page #865 (Nordic) is selected.
C5 COUNTRY USA	U.S.A. character set is selected.
C5 COUNTRY FRA	France character set is selected.
C5 COUNTRY GER	Germany character set is selected.
C5 COUNTRY UK	England character set is selected.
C5 COUNTRY DEN1	Denmark character set 1 is selected.
C5 COUNTRY SWEDN	Sweden character set is selected.
C5 COUNTRY ITALY	Italy character set is selected.
C5 COUNTRY SPA1	Spain character set 1 is selected.
C5 COUNTRY JAPAN	Japan character set is selected.
C5 COUNTRY NORWY	Norway character set is selected.
C5 COUNTRY DEN2	Denmark character set 2 is selected.
C5 COUNTRY SPA2	Spain character set 2 is selected.
C5 COUNTRY LTN.A	Latin America character set is selected.
C5 COUNTRY KOREA	Korea character set is selected.
C5 COUNTRY IRE	Irish character set is selected.
C5 COUNTRY LEGAL	Legal character set is selected.
C5 COUNTRY OPT 1	Optional character set 1 is selected.
C5 COUNTRY OPT 2	Optional character set 2 is selected.
C5 COUNTRY OPT 3	Optional character set 3 is selected.

Style parameters

The Style parameters are assigned to Bank "D", including these functions:

- **Italic print**
Selects to print all characters with Italic style, or not.
This is different from the italic characters in the Standard Italic character table.
- **Print pitch**
Selects the default print pitch.
Note that semi-condensed pitch and condensed proportional pitch are not available in the IBM mode.

Following table shows the display messages and those meanings for the Bank "D".

Display Message	Meaning
D1 ITALIC OFF	Italic print mode is cancelled.
D1 ITALIC ON	Italic print mode is selected.
D2 PITCH 10	Pica pitch (10 CPI) is selected.
D2 PITCH 12	Elite pitch (12 CPI) is selected.
D2 PITCH 15	Semi-condensed pitch (15 CPI) is selected.
D2 PITCH 17	Condensed pica pitch (17 CPI) is selected.
D2 PITCH 20	Condensed elite pitch (20 CPI) is selected.
D2 PITCH PS	Proportional pitch is selected.
D2 PITCH PS+CND	Condensed proportional pitch is selected.

Layout parameters

The Layout parameters are assigned to Bank "E", including these functions:

- **Multi-part mode**
You can use up to 3-ply paper with normal mode. If you want to print on 4-ply or 5-ply paper, set the Multi-part mode ON.
- **Paper-out detector**
When this switch is OFF the printer ignores the paper-out detector and prints down to (and beyond) the bottom edge. Otherwise leave it ON.
- **Automatic Sheet Feeder**
In order to use the optional Automatic Sheet Feeder, set this switch to the related position.
- **Top margin setting for each paper type**
Sets the first line position on the each paper type.
- **Bottom margin**
Sets the last line position on the paper.
- **Lines per Inch**
Sets how many lines to be printed in one inch.

Following table shows the display messages and those meanings for the Bank "E".

Display Message	Meaning
E1 MULTIPART OFF	Multi-part mode is cancelled.
E1 MULTIPART ON	Multi-part mode is selected.
E2 PAPER-OUT OFF	Paper-out detector is disabled.
E2 PAPER-OUT ON	Paper-out detector is enabled.
E3 ASF OFF	Optional ASF is not installed.
E3 ASF-SINGL ON	Single-Bin ASF is installed.
E3 ASF-DUAL ON	Dual-Bin ASF is installed.
E4 T.MGN-CUT 1/6	Top margin for cut forms is set to 1/6 inch.
E4 T.MGN-CUT 2/6	Top margin for cut forms is set to 2/6 inch.
E4 T.MGN-CUT 3/6	Top margin for cut forms is set to 3/6 inch.
E4 T.MGN-CUT 4/6	Top margin for cut forms is set to 4/6 inch.
E4 T.MGN-CUT 5/6	Top margin for cut forms is set to 5/6 inch.
E4 T.MGN-CUT 6/6	Top margin for cut forms is set to 6/6 inch.

Display Message	Meaning
E5 T.MGN-ASF 1/6	Top margin for ASF is set to 1/6 inch.
E5 T.MGN-ASF 2/6	Top margin for ASF is set to 2/6 inch.
E5 T.MGN-ASF 3/6	Top margin for ASF is set to 3/6 inch.
E5 T.MGN-ASF 4/6	Top margin for ASF is set to 4/6 inch.
E5 T.MGN-ASF 5/6	Top margin for ASF is set to 5/6 inch.
E5 T.MGN-ASF 6/6	Top margin for ASF is set to 6/6 inch.
E6 T.MGN-TRA 1/6.	Top margin for fanfold forms is set to 1/6 inch.
E6 T.MGN-TRA 2/6	Top margin for fanfold forms is set to 2/6 inch.
E6 T.MGN-TRA 3/6	Top margin for fanfold forms is set to 3/6 inch.
E6 T.MGN-TRA 4/6	Top margin for fanfold forms is set to 4/6 inch.
E6 T.MGN-TRA 5/6	Top margin for fanfold forms is set to 5/6 inch.
E6 T.MGN-TRA 6/6	Top margin for fanfold forms is set to 6/6 inch.
E7 BOTTM MGN 1/6	Bottom margin is set to 1/6 inch.
E7 BOTTM MGN 2/6	Bottom margin is set to 2/6 inch.
E7 BOTTM MGN 3/6	Bottom margin is set to 3/6 inch.
E7 BOTTM MGN 4/6	Bottom margin is set to 4/6 inch.
E7 BOTTM MGN 5/6	Bottom margin is set to 5/6 inch.
E7 BOTTM MGN 6/6	Bottom margin is set to 6/6 inch.
E8 L.P.I. 1	1 line can be printed on one inch.
E8 L.P.I. 2	2 lines can be printed on one inch.
E8 L.P.I. 3	3 lines can be printed on one inch.
E8 L.P.I. 4	4 lines can be printed on one inch.
E8 L.P.I. 6	6 lines can be printed on one inch.
E8 L.P.I. 8	8 lines can be printed on one inch.

Forms parameters

The Forms parameters are assigned to Bank "F", including these functions:

- **Auto Line Feed**

If you set this switch OFF, a separate line-feed code is required from your computer to obtain a line feed.

If you set this switch ON, the printer performs both a carriage return and line feed each time it receives a carriage-return code.

Most computer systems send a line feed code, or both a carriage return and line feed, at the end of each line, so this switch should be left OFF.

If you get double line spacing when you expect single spacing, or if lines overprint each other, try changing the setting of this switch.

- **Auto Carriage Return**

If you set this switch OFF, a separate carriage-return code is required from your computer to return to the left margin.

If you set this switch ON, the printer performs both a carriage return and line feed each time it receives a line-feed code.

- **Tear-Off function**

You can select the Tear Off function with this switch ON.

When using fanfold paper, the Tear Off function allows you to tear off one sheet of paper without fully advancing the following sheet.

- **Skip-over-perforation**

You can select the Skip-over-perforation with this switch ON.

It is recommended to skip close to the perforation of fanfold forms to get good print quality.

If you cannot set this function with your software, set this switch ON. The printer automatically skips the perforations.

- **Page length**

You can set a different page length to accommodate your paper with this switch.

Following table shows the display messages and those meanings for the Bank "F".

Display Message	Meaning
F1 AUTO-LF OFF	LF must be from host.
F1 AUTO-LF ON	Auto LF with CR.
F2 AUTO-CR OFF	CR must be from host.
F2 AUTO-CR ON	Auto CR with LF.
F3 TEAR-OFF OFF	Tear-off function is disabled.
F3 TEAR-OFF ON	Tear-off function is selected.
F4 SKIP-PERF OFF	Skip-over-perforation is disabled.
F4 SKIP-PERF ON	Skip-over-perforation is selected.
F5 PAGE-LGTH 14	Page length is set to 14 inches.
F5 PAGE-LGTH 12	Page length is set to 12 inches.
F5 PAGE-LGTH A4	Page length is set to compatible for A4 size.
F5 PAGE-LGTH 11	Page length is set to 11 inches.
F5 PAGE-LGTH 10	page length is set to 10 inches.
F5 PAGE-LGTH 9	Page length is set to 9 inches.
F5 PAGE-LGTH 8.5	Page length is set to 8.5 inches.
F5 PAGE-LGTH 8	Page length is set to 8 inches.
F5 PAGE-LGTH 7	Page length is set to 7 inches.
F5 PAGE-LGTH 6	Page length is set to 6 inches.
F5 PAGE-LGTH 5.5	Page length is set to 5.5 inches.
F5 PAGE-LGTH 5	Page length is set to 5 inches.
F5 PAGE-LGTH 4.5	Page length is set to 4.5 inches.
F5 PAGE-LGTH 4	Page length is set to 4 inches.
F5 PAGE-LGTH 3.5	Page length is set to 3.5 inches.
F5 PAGE-LGTH 3	Page length is set to 3 inches.

Other parameters

The Other parameters are assigned to Bank "G", including these functions:

- **STROBE timing**
This switch controls the timing of the interface.
Most computers can communicate with the Normal timing, as the factory-setting.
If you were not possible to communicate with your computer to the printer, set this switch to "INVERSE".
- **EDS setting**
If you want to cancel your EDS settings and return to the factory-settings, set this switch "RESET".

Following table shows the display messages and those meanings for the Bank "G".

Display Message	Meaning
G1 STROBE NORMAL	Set the normal interface timing.
G1 STROBE INVRSE	Set the inversed interface timing.
G2 EDS CURRENT	Set the current EDS settings.
G2 EDS RESET	Resets the EDS setting to the factory-set.

DOT ADJUSTMENT MODE

This mode is used to adjust the alignment of the print head on successive bi-directional passes.

After a period of some months, your printer may work itself out of alignment on left and right printing passes, showing itself most obviously in graphics printing. This mode will probably be used very rarely.

1. Turn the printer off and then turn it on again while holding down the **SET/EJECT PARK** and **ON LINE** buttons. The display on the control panel shows "DOT-ADJUSTMENT" message, and prints something like the following:

```

*** DOT ADJUSTMENT SETTING ***
LQ          0 : |-----|

```

2. The printer will feed the paper forwards and backwards during this operation, allowing you to view the paper for optimum alignment.
3. To adjust the printing, use the **SET/EJECT PARK** and **PAPER FEED** buttons. The **SET/EJECT PARK** button will move the second pass to the left. The **PAPER FEED** button will move the second pass to the right.

```

*** DOT ADJUSTMENT SETTING ***
LQ          0 : |-----|
SET/EJECT PARK → LQ      -1 : |-----|
PAPER FEED   → LQ          0 : |-----|

```

4. When the two passes are aligned with each other to form one continuous line, the bi-directional alignment test is completed.
5. To change the mode for which the bi-directional adjustment is performed, press the **ON LINE** button. This will cycle between "LQ", "DRAFT" and "DR.COND."

Repeat the process for all print modes.

```

*** DOT ADJUSTMENT SETTING ***
LQ          0 : |-----|
LQ          -1 : |-----|
LQ          0 : |-----|
ON LINE     → DRAFT      0 : |-----|
PAPER FEED → DRAFT      +1 : |-----|
SET/EJECT PARK → DRAFT    0 : |-----|

```

6. To exit from this mode, press the button.

```
*** DOT ADJUSTMENT SETTING ***
LQ          0 : ||||||||||||||||||||||||||||||||||||||||
LQ          -1 : ||||||||||||||||||||||||||||||||||||||||
LQ          0 : ||||||||||||||||||||||||||||||||||||||||
DRAFT       0 : ||||||||||||||||||||||||||||||||||||||||
DRAFT       +1 : ||||||||||||||||||||||||||||||||||||||||
DRAFT       0 : ||||||||||||||||||||||||||||||||||||||||
 → DRAFT COND 0 : ||||||||||||||||||||||||||||||||||||||||
 → *** END ***
```