star

USERS MANUAL

NX-2430 MULTI-FONT
DOT MATRIX PRINTER

NX-2430

MULTI-FONT

USERS MANUAL

Federal Communications Commission
Radio Frequency Interference Statement

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

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

Unauthorized modifications of this product by the user will void his authority to operate the equipment unless expressly approved by the party responsible for compliance.

For compliance with the Federal Noise Interference Standard, this equipment requires a shielded cable.

The above statement applies only to printers marketed in the U.S.A.

Statement of
The Canadian Department of Communications
Radio Interference Regulations

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émen pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélecrrique édicté par le minisère des Communications du Canada.

The above statement applies only to printers marketed in Canada.

Trademark Acknowledgements

NX-2430, NX-2420, NX-2410, SF-10DS, PT-10ZS, RC-32Z, DC-32Z, SPC-8K: Star Micronics Co., Ltd.
IBM-PC, PS/2, PC-AT, Proprinter X24E, Proprinter 24P, PS/1 printer: International Business Machines Corp.
LQ-860, LQ-850: Seiko Epson Corp.

NOTICE
- All rights reserved. Reproduction of any part of this manual in any form whatsoever without STAR's express permission is forbidden.
- The contents of this manual are subject to change without notice.
- All efforts have been made to ensure the accuracy of the contents of this manual at the time of press. However, should any errors be detected, STAR would greatly appreciate being informed of them.
- The above notwithstanding, STAR can assume no responsibility for any errors in this manual.

HOW TO USE THIS MANUAL

This manual is organized into nine chapters. To learn how to make the best use of your printer you are urged to read through chapters 1 through 6. Chapters 7 through 9 may be treated as a reference guide for programming operations, etc. It assumes a degree of knowledge of the operation of computers. The chapters are as follows:

Chapter 1 — Introduction

This chapter indicates the primary features of your printer, the names and functions of the printer components, and an actual example of the many font styles that your printer can produce.

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 — Paper Installation and Use

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

Chapter 4 — 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 performing the set up of the printer, read this chapter and try out the procedures to find out how the printer works.

Chapter 5 — Default Settings-EDS mode

This chapter explains how to set the Electronic DIP Switch (EDS) mode to make your printer match your system and software needs.

Chapter 6 — Troubleshooting

This section shows a list of check points to follow if your printer is not working properly. It also includes details of some routine maintenance operations you can perform yourself. It is not, however, a complete service manual. Call your authorized service center if you are unsure of your ability to carry out any maintenance or servicing operations on the printer.

Chapter 7 — Optional Accessories

This chapter explains the optional accessories that are available for your printer, and how to install and use them.

Chapter 8 — Printer Control Commands

This chapter explains the different emulations provided by your printer, and the software commands that are 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 9 — Reference

This section provides references for your printer, such as specifications, the pinout of interface connector, and the character tables.

The character table charts give the different character sets available.

TABLE OF CONTENTS

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.

The selection of paper you can use is as varied as the types of documents you can produce. This printer accepts any of the following papers:

- Single sheets (cut forms) and stationery
- Fanfold forms (continuous forms)
- Multi-part forms
- Preprinted forms
- Labels.

This Multi-font printer has 11 resident (internal) fonts which you can print. These include 2 Draft fonts:

- High-Speed Draft
- Draft

And 9 Letter Quality fonts:

- Roman
- Roman Proportional
- Sanserif
- Sanserif Proportional
- Courier
- Courier Proportional
- Prestige
- Prestige Proportional
- Script

In addition, you can print wide variation of fonts by using optional Font Cartridges.

The control panel has five buttons and one LCD display. The LCD 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 saving a macro.

The Paper Parking function enables you to keep fanfold forms parked in readiness while printing on single sheet paper.

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

PRINTER COMPONENTS

Entry slot

Mute cover

Front cover

Paper guide

Release lever

Cartridge slot

Tractor

Adjustment lever

Rear cover

Clamp lever

Power switch

Platen knob

Ribbon cartridge

Print head

Bail lever

Control panel

Interface connector

Component	Description
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 cut-sheet forms (�*image*), and forward for fanfold forms (▗*image*).
Front cover	Protects the print head and other internal components of your printer.
Mute cover	Reduces the printing noise.
Rear cover	Protects the tractor feed unit and separates incoming and outgoing fanfold forms.
Entry slot	For inserting single sheets of paper.
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 high resolution dot matrix (24-wire) composition for outstanding print quality.
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.
	This lever is also used to load paper and to perform the short tear off function.

SUMMARY OF PRINTER FEATURES

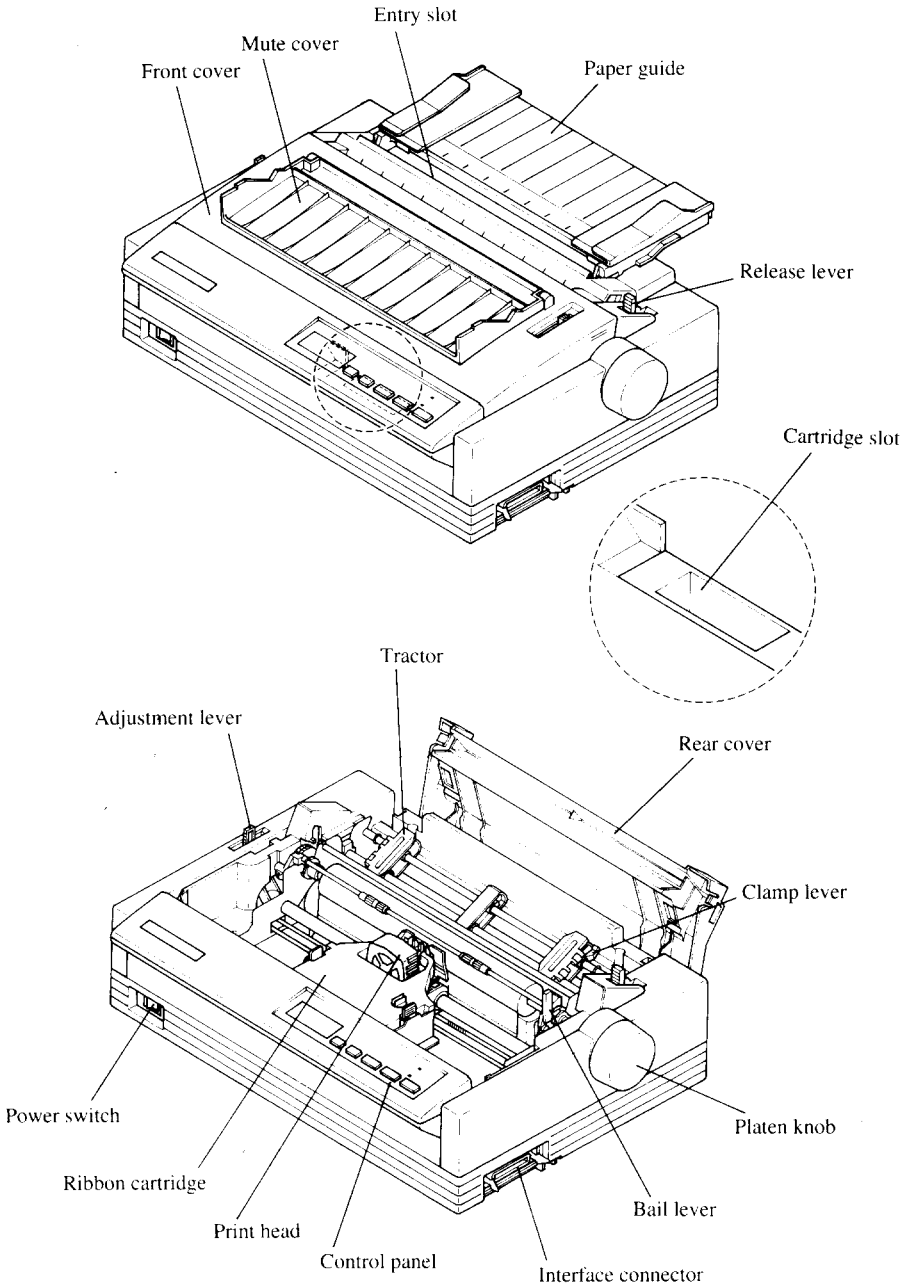| Feature	Function
Dot matrix (24-wire) impact printing	High-Speed Draft, Draft and Letter-Quality printing.
Extensive software support	It is compatible with the Epson and IBM standard, and works with any software that supports those printers.
AEC mode	Auto Emulation Change (AEC) mode is provided to select the proper emulation automatically sent from your program.
Multi-font support	This printer includes HS-Draft, Draft, and Roman, Roman Proportional, Sanserif, Sanserif Proportional, Courier, Courier Proportional, Prestige, Prestige Proportional and Script fonts. In addition, you can print wide variation of fonts by using optional Font Cartridges.
Carriage size	A standard carriage that prints on fanfold forms up to 254 mm (10 inches) wide and cut forms up to 279.4 mm (11 inches) wide.
Multi-speed printing	In High-Speed Draft mode, prints at speed up to: • 210 CPS (Characters per second) in 10 pitch (CPI). In Draft mode, prints at speeds up to: • 240 CPS in 15 pitch • 192 CPS in 12 pitch • 160 CPS in 10 pitch In Letter-Quality mode, prints at speeds up to: • 80 CPS in 15 pitch • 64 CPS in 12 pitch • 53 CPS in 10 pitch.

Feature	Function
Character spacing	Prints in 10, 12, 15, 17, 20, and 24 CPI, as well as proportional spacing.
LCD Control panel	Button control for fonts, pitches, paper movement, and paper park functions. LCD messages indicate current status.
Font/Pitch Lock	Ignores font and pitch selections sent from your computer, and stays on the selected font and pitch with the control panel.
Quiet mode	Reduces printing noise by approximately 50%. However, printing speed is also reduced.
Graphics printing	Standard graphics printing with resolution of up to 360×360 dots per square inch.
Paper parking	Parks fanfold paper. You can print on cut sheet paper without unloading the fanfold forms.
Print styles	Highlighting capability with the following emphasis styles: • Double-high • Double-strike • Double-wide • Emphasized • Italics • Outline • Overlining • Quadruple-high • Quadruple-wide • Shadow • Subscript • Superscript • Underlining.
Tear off function	Fanfold forms can be torn off without advancing blank forms.
Multi-part forms	Prints up to three-part forms.
Ribbon cartridge	Contains the printer ribbon.
EDS mode	Electronic DIP Switch (EDS) mode allows you to easily change the default settings of your printer to match your system and software needs.

FONT STYLE EXAMPLE

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

RESIDENT:	HS-Draft	123456789 ABCDE abcde
	Draft	123456789 ABCDE abcde
	Roman	123456789 ABCDE abcde
	Sanserif	123456789 ABCDE abcde
	Courier	123456789 ABCDE abcde
	Prestige	123456789 ABCDE abcde
	Script	*123456789 ABCDE abcde*
FC-1Z:	Orator	123456789 ABCDE ABCDE
	Orator-2	123456789 ABCDE abcde
	Letter Gothic	123456789 ABCDE abcde
	Blippo	123456789 ABCDE abcde
	Cinema	**123456789 ABCDE abcde**
FC-2Z:	OCR-B	123456789 ABCDE abcde
	OCR-A	123456789 ABCDE abcde
	CODE 39	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
	UPC/EAN	123456789 12345 ‖‖‖‖ ‖‖‖
FC-3Z:	TW-Light	123456789 ABCDE abcde
	H-Gothic	123456789 ABCDE abcde
	Orane	123456789 ABCDE abcde
FC-5Z:	Old Style	123456789 ABCDE abcde
	Firenze	123456789 ABCDE abcde
FC-10Z:	SLQ Script	*123456789 ABCDE abcde*
FC-11Z:	SLQ Roman	123456789 ABCDE abcde
FC-12Z:	SLQ TW-Light	123456789 ABCDE abcde

Resident LQ fonts are:
Roman characters,   Sanserif characters,
Courier characters,   Prestige characters,
Script characters.

Print pitches are:
Pica pitch (10 CPI),   Elite pitch (12 CPI),
Semi-condensed pitch (15 CPI), Condensed pica pitch (17 CPI),
Condensed elite pitch (20 CPI),
Normal proportional,   Condensed proportional.

Double-height,
Double width,
Triple width,
Double-sized,
Quad-sized.

Various line and character spacings:

THE SPACINGS ARE CHANGED
THE SPACINGS ARE CHANGED
THE SPACINGS ARE CHANGED
THE SPACINGS ARE CHANGED
THE SPACINGS ARE CHANGED
THE SPACINGS ARE CHANGED
THE SPACINGS ARE CHANGED
THE SPACINGS ARE CHANGED
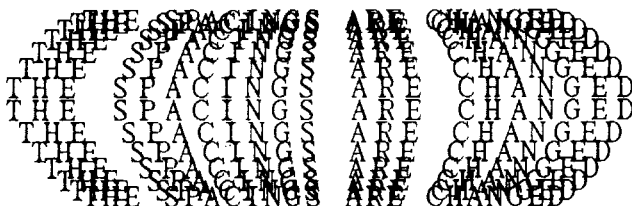
Other features:
OUTLINED, SHADOWED, OUTLINED WITH SHADOWED,
Emphasized, Double-strike, *Italics,*
<u>Underlining</u>, ~~Strike-through~~, O̅v̅e̅r̅l̅i̅n̅i̅n̅g,
SUPERSCRIPT and SUBSCRIPT,
Download characters: ‡‡‡‡‡☎☎☎☎☎☎☎☎☎
Dot graphics:

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 7 after setting up the printer.

• Printer placement

• Unpacking the carton box

• Mounting the platen knob

• Installing the ribbon cartridge

• Configure your software for the printer

PRINTER PLACEMENT

Before you start 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

• A steady power supply that is not subject to power surges should be connected to the printer. For example, do not connect it to the same circuit as a large, noise-producing appliance such as a refrigerator or an air conditioner.

• Make sure the line voltage is the voltage specified on the printer's identification plate.

• Install the printer where there is sufficient room for the fanfold paper stack 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 SPC-8K interface converter can be made over longer distances.

UNPACKING AND INSPECTION

Now check each item in the box against Figure 2-1 to make sure that you have everything (there should be six items).
If any of these items are missing, contact your supplier.
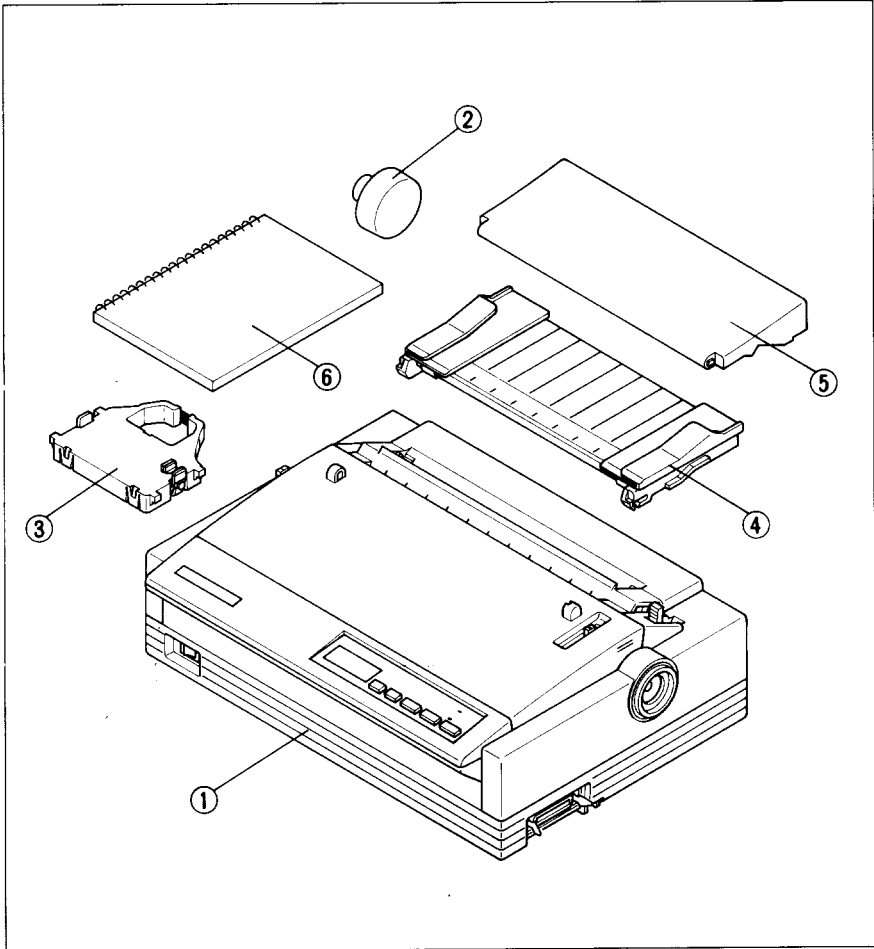
Figure 2-1. Check to make sure you have all six items: 1) Printer, 2) Platen knob, 3) Ribbon cartridge, 4) Paper guide, 5) Mute cover, and 6) User's manual.

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

- Film ribbon cartridge (FZ24)
- Font cartridges (FC series)
- RAM cartridge (RC-32Z, DC-32Z)
- Serial-Parallel converter (SPC-8K)
- Automatic sheet feeder (SF-10DS)
- Pull tractor unit (PT-10ZS)

For details of the optional accessories, refer to Chapter 7.

SETTING UP

Place the printer in the desired location, and remove all packing material from the printer as shown in Figure 2-2. 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.
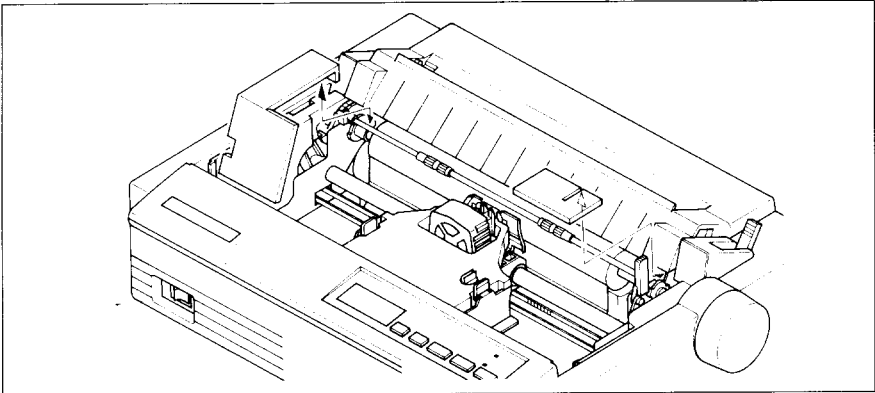
Figure 2-2. Remove the packing material from the printer.

Installing the platen knob

The platen knob is packed into an accessory box with other accessories.

Align 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.
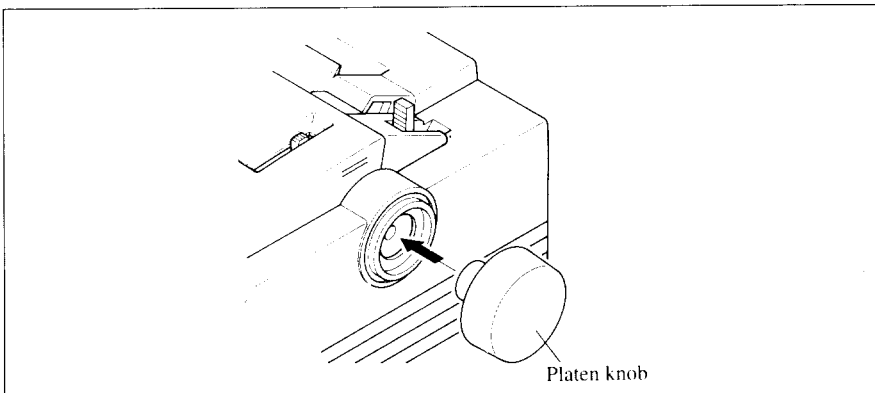
Platen knob

Figure 2-3. Installing the platen knob.

Removing the front cover

Open the front cover by lifting up the back cover using the two grips on either side, then remove the cover by pulling up (see Figure 2-4).
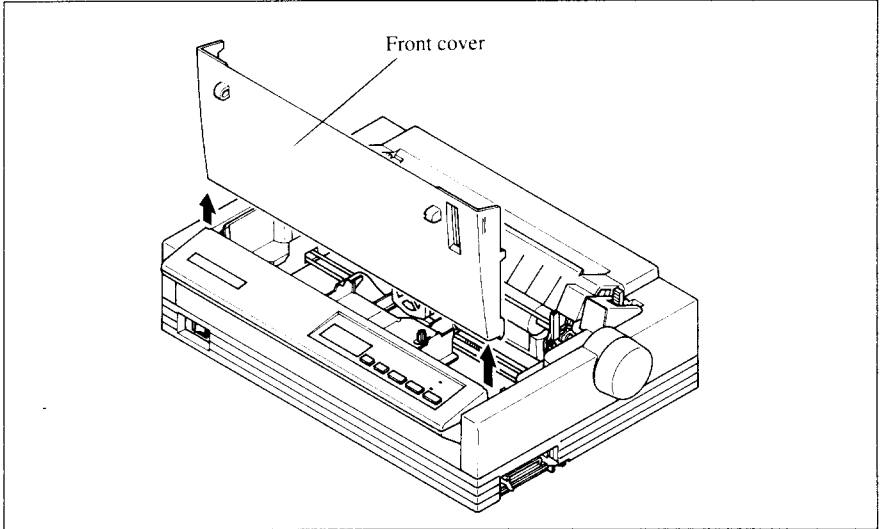
Figure 2-4. Open the front cover, and remove it by pulling up.

NOTE: You can keep the front cover installed on the printer, as shown in Figure 2-5. But, in this case you must take care not to injure your fingers with the tear assist edge.
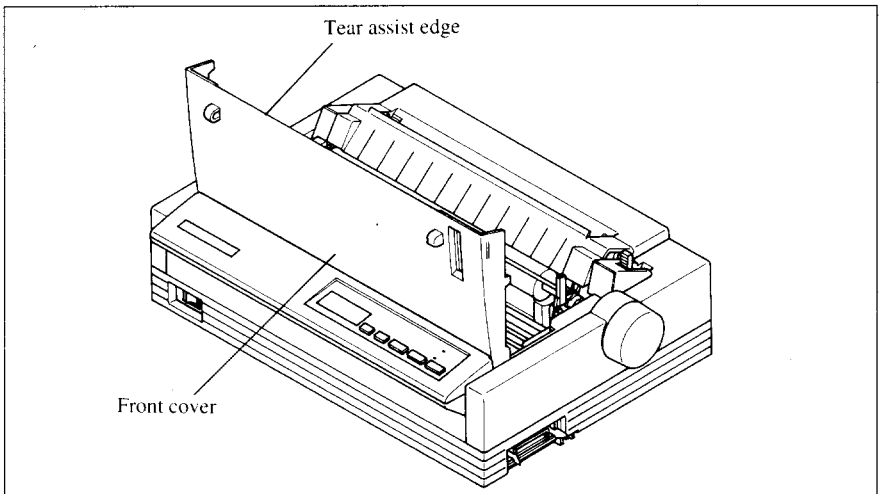
Figure 2-5. The front cover can stay on the printer.

Installing the ribbon cartridge

Now install the ribbon with the following procedure.

1. Take the slack out of the ribbon by turning the tension knob on the ribbon cartridge clockwise as shown by the arrow.
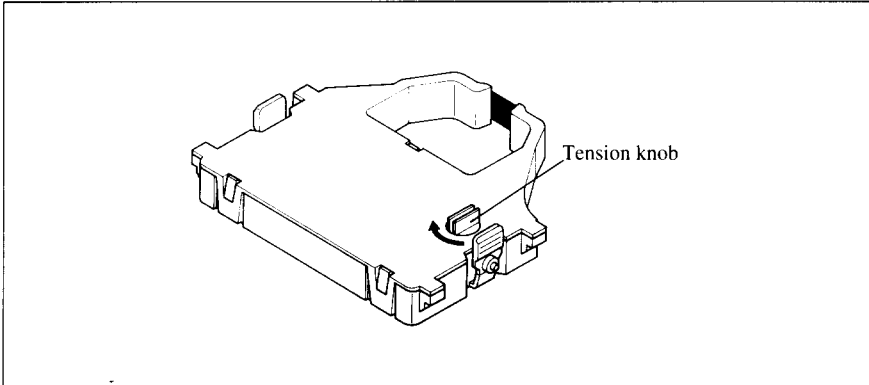
Figure 2-6. Take out the slack of the ribbon by turning the tension knob on the ribbon cartridge.

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.
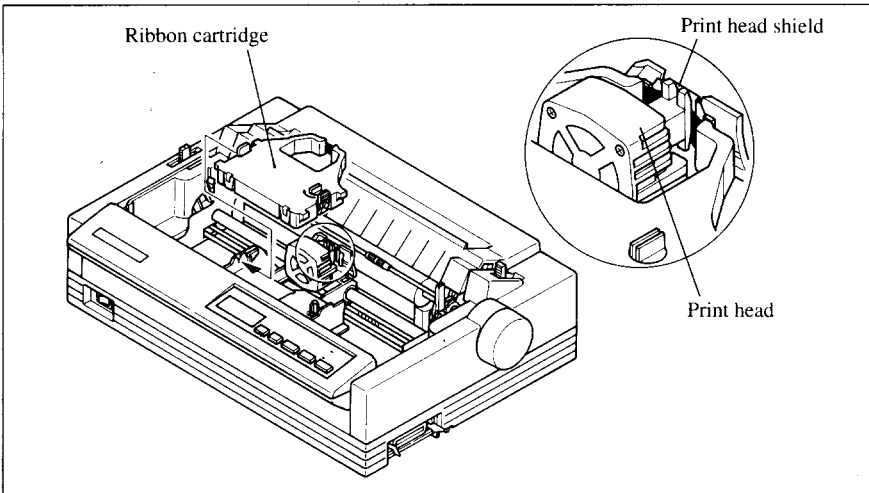
Figure 2-7. Installing the ribbon cartridge.

14

3. Make sure that the ribbon is positioned between the print head and the print head shield as shown in Figure 2-8.
4. Take the slack out of the ribbon again by turning the tension knob.
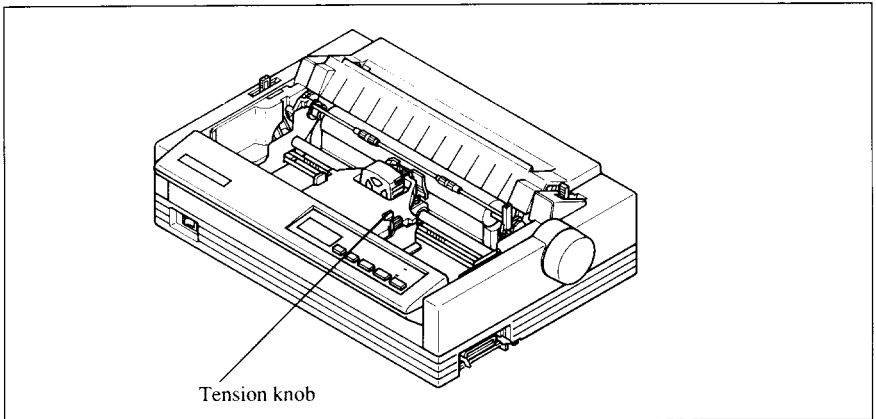
Figure 2-8. Make sure that the ribbon is positioned correctly.

Installing the front cover

After you have installed the ribbon cartridge, re-install the front cover.

1. Insert the tabs into the slots on the printer case.
2. Swing down the rear of the front cover to close it.
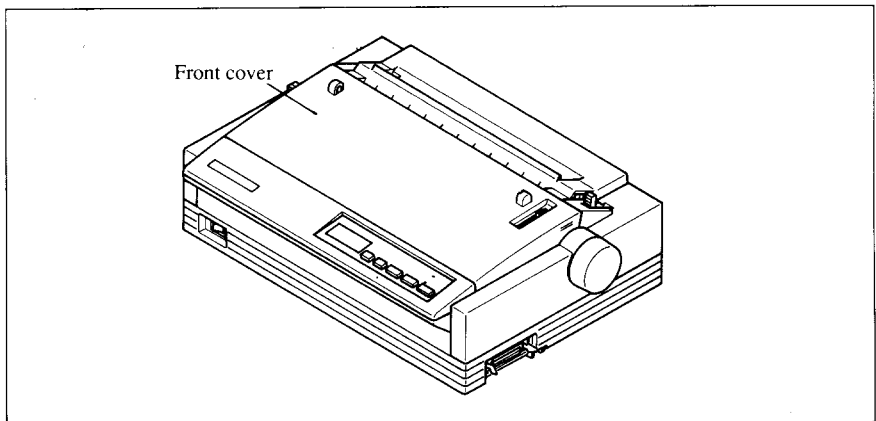
Figure 2-9. Installing the front cover.

Installing the paper guide

Follow the procedure below to install the paper guide:

1. Insert the two slots on either side of the paper guide into the two tabs on the rear cover.
2. Place the paper guide horizontally, as shown in Figure 2-10.
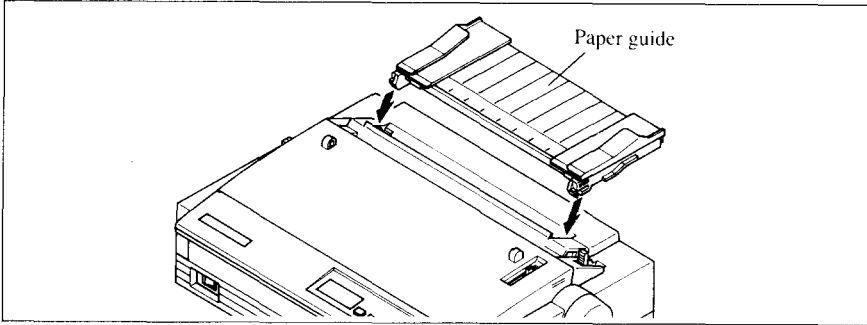
Figure 2-10. Installing the paper guide horizontally.

Installing the mute cover

Follow the procedure below to install the mute cover:

1. Insert the tab on the left side of the mute cover into the hole on the front cover.
2. Insert the other tab into the slot on the front cover.
3. Swing down backward to close the mute cover.
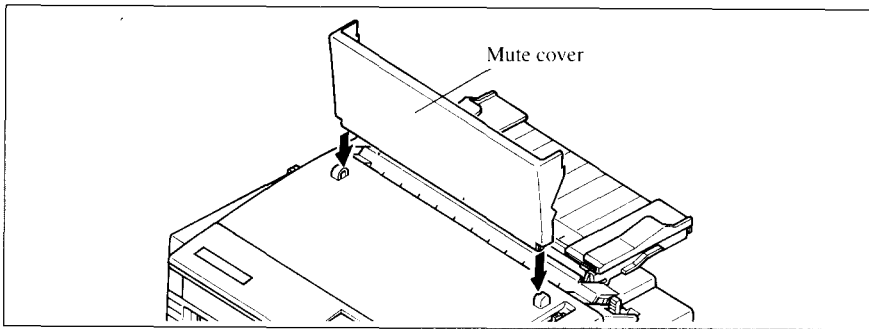
Figure 2-11. Install the tabs on the mute cover, then swing down to close it.

Leave the front and mute covers 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 9 should you need a cable for connecting to another computer.

If you need to connect to a serial port, use the optional Serial-Parallel Converter, SPC-8K.

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 2-12. Make sure that you press the plug into the interface connector.
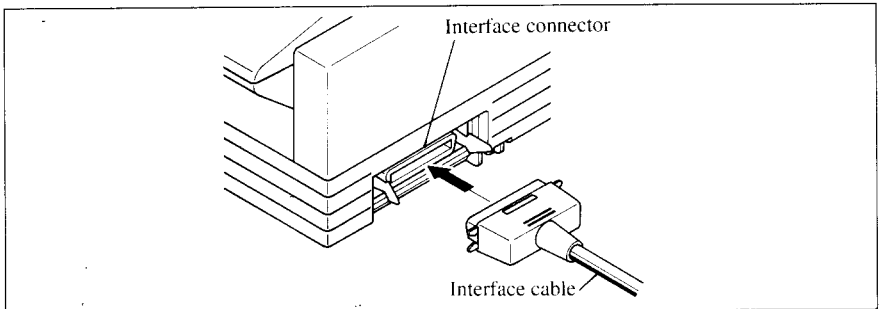
Figure 2-12. Connecting the interface cable.

3. Move both clips inside the extended prongs on the sides of the plug until you hear a click.
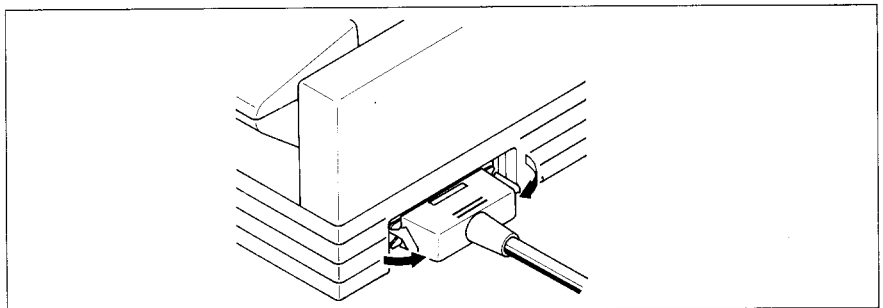
Figure 2-13. Move the clips until you hear a click.

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

17

Configuring your software for the printer

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

This printer is set up to emulate the Epson printer commands at the factory. If you want to emulate the IBM printer commands, you can select it with the Electronic DIP Switch (EDS) mode.

Choose one of the following (in order of preference) according to your selected Emulation mode.

#	Standard (Epson) mode	IBM mode
1	Star NX-2430	IBM PS/1 printer
2	Star NX-2420	Proprinter X24E
3	Epson LQ-860	Proprinter 24P
4	Epson LQ-850	
5	Star NX-2410	

If your software package does not mention printers by name, but asks instead what features your printer is capable of, the most common questions are: "Can your printer perform a backspace?" and "Can it do a hardware form feed?". You should answer "Yes" to both these questions.

Make sure that the Electronic DIP Switch (EDS) is set for the correct printer emulation, and that you have also selected the appropriate character set. (Refer to Chapter 5 for detailed information on the EDS mode.)

If you are in doubt about the configuration of your application software, seek expert advice. Your software supplier will probably be your most qualified reference.

Chapter 3

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 types of paper:

* 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, continuous 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.

* Multi-part forms
    You can use multi-part forms that have up to three parts including the original. It is recommended that you load multi-part forms using the bottom feed slot with the optional Pull Tractor Unit.
    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.

* Labels
    When printing labels, always select the type mounted on a continuous backing sheet with sprocket holes for use with a tractor.
    Do not try to print labels as cut forms because labels on a shiny backing sheet almost always slip a little.
    It is recommended that you load labels from the bottom feed slot with the optional Pull Tractor Unit.

NOTES:

1. Never feed labels backward. Labels can easily peel off the backing and get stuck in the printer.

    To remove labels from the paper path after you finish printing, first tear off the labels at a point before the paper slot.

2. Use labels only under normal operating conditions.

    The labels are especially sensitive to temperature and humidity.

3. Do not leave labels loaded in the printer between jobs. They curl around the platen and may jam when you resume printing.

Figure 3-1 shows the recommended print area for each type of papers.

Fanfold forms — 17mm, 18mm, 25.4mm, 25.4mm, Perforation, 75mm (8mm for Bottom Feed), Bottom of Forms

Single sheets — 17mm, 18mm, 5mm, 5mm, 19mm
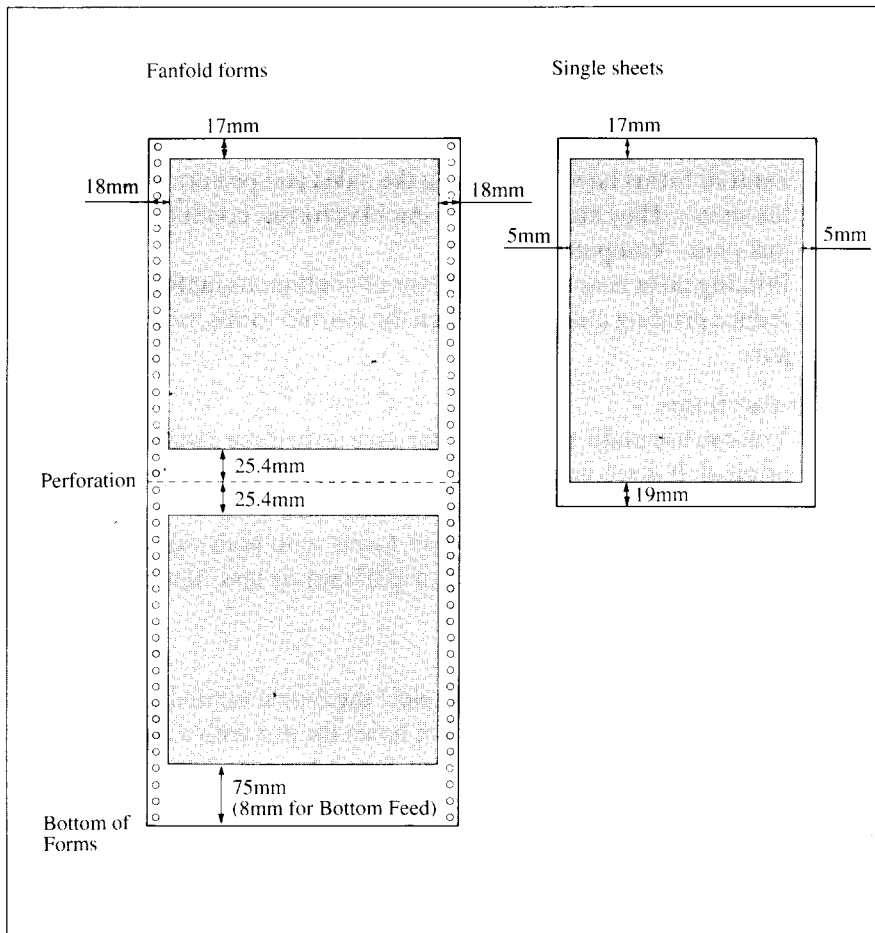
Figure 3-1. Recommended print area for acceptable papers.

ADJUSTING THE PRINTING GAP

The distance between the print head and the platen can be adjusted to accommodate different paper thicknesses. The adjustment lever is located at the left side of the printer. Pushing the adjustment lever towards the rear of the printer narrows the gap; pulling it towards the front of the printer widens the gap.

There are five 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.
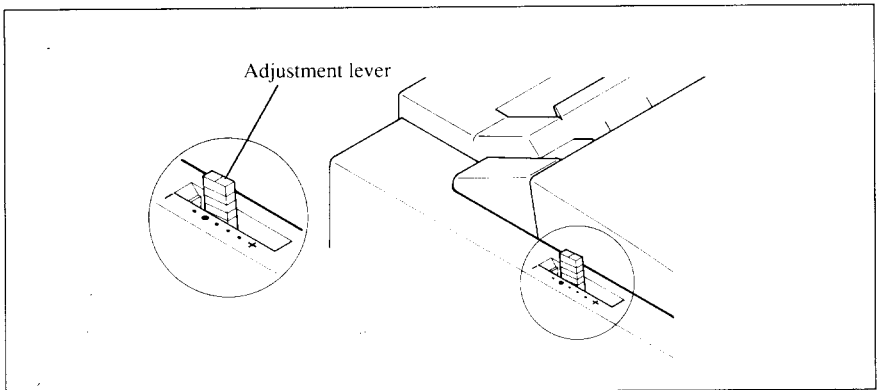
Adjustment lever

Figure 3-2. Location of the adjustment lever.

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

Paper Type	Weight (Each paper)	Thickness (mm) (Total)	Recommended Lever position
Single	52 ~ 90 g/m² (14 ~ 24 lbs)	0.07 ~ 0.12	2nd or 3rd
2-ply	40 ~ 56 g/m² (11 ~ 15 lbs)	0.11 ~ 0.15	2nd or 3rd
3-ply	40 ~ 56 g/m² (11 ~ 15 lbs)	0.18 ~ 0.23	3rd or 4th

LOADING FANFOLD FORMS

This printer accepts fanfold forms up to 10" wide.

This printer can feed fanfold forms either from the rear or from the bottom of the printer, as shown in Figure 3-3.
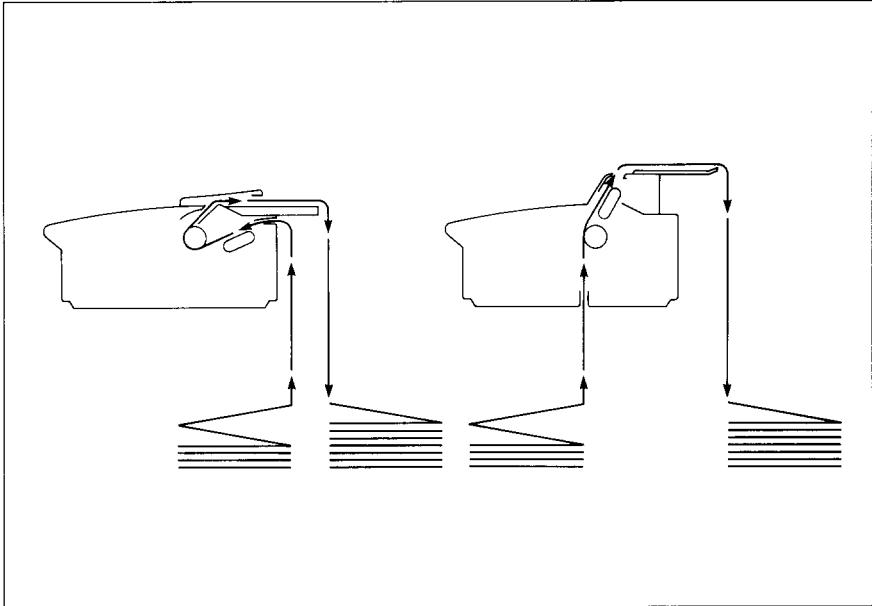
Figure 3-3. Paper path for fanfold forms.

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

If you want to feed paper from the bottom, you must use the optional Pull Tractor Unit. (Refer to Chapter 7.)

Loading the paper

1. Place a stack of fanfold paper behind and below the printer.
2. Turn the printer's power OFF.
3. Pull the release lever toward the front of the printer (■). This has the effect of releasing the paper from the platen roller, and engaging the tractor feed.
4. Open the mute cover on the front cover, as shown in Figure 3-4.

Release lever
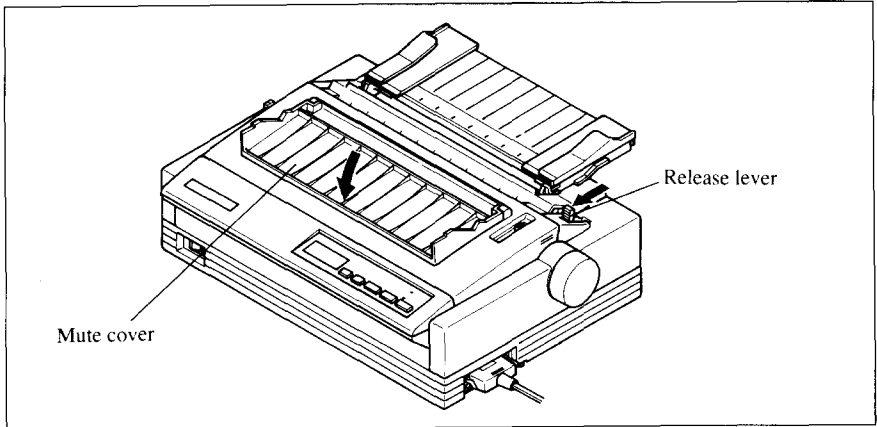
Mute cover

Figure 3-4. Opening the mute cover and correct lever position.

5. Open the rear cover using the two grips on either side, as in Figure 3-5.
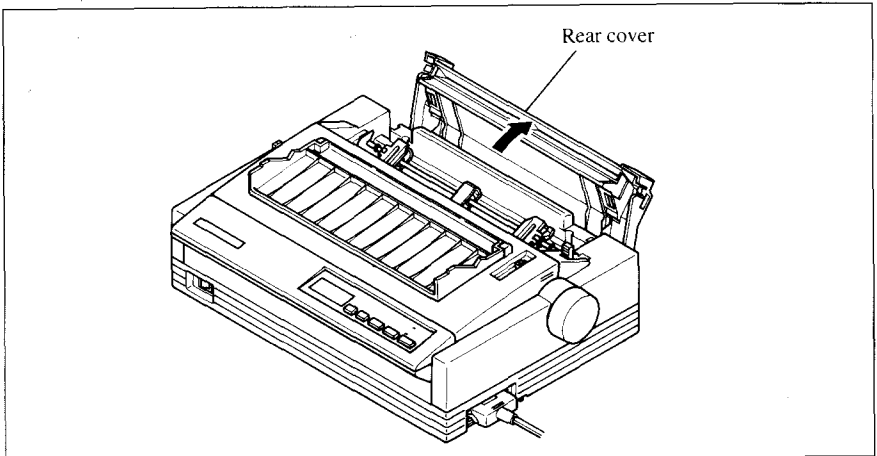
Rear cover

Figure 3-5. Opening the rear cover.

6. Pass the paper between the printer case and the rear cover.

7. Open both tractor covers and mount the paper by aligning holes with the pins on the tractor unit.
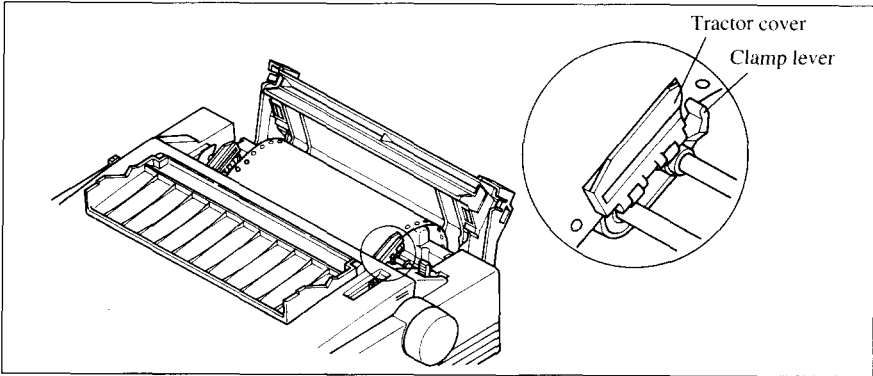
Figure 3-6. Mount the fanfold paper over the tractor units.

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.

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.
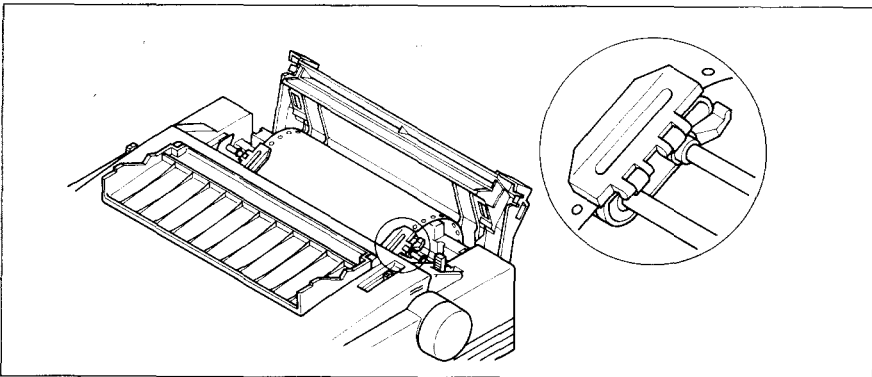
Figure 3-7. Adjust the tractor positions to accommodate the width of fanfold forms.

10. Close the rear cover and the mute cover, then set the paper guide in the horizontal position, as shown in Figure 3-8. This will separate the printed from the unprinted paper.

11. 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. A "PE" message will also flash on the LCD display to confirm this.
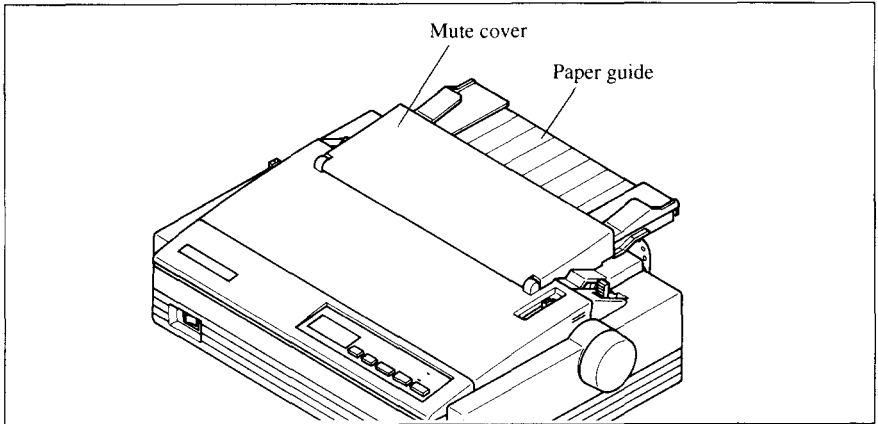
Figure 3-8. Close the rear cover and the mute cover, then set the paper guide horizontally.

12. Now pull the bail lever toward the front of the printer. The paper will be fed and adjusted past the print head to a position ready for printing.
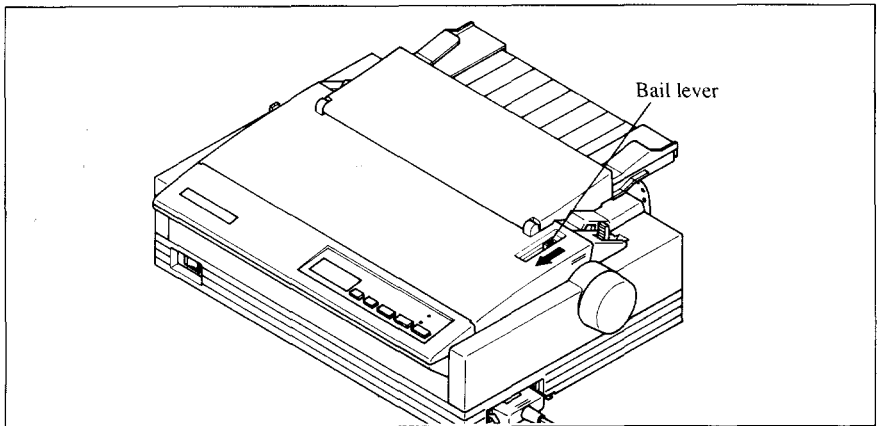
Figure 3-9. Pull the bail lever toward the front of the printer to load paper.

NOTE: Do not return the bail lever backward. The bail lever automatically returns to its original position after the paper goes through under the bail lever location.

13. 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 4.)

Paper parking

After loading fanfold paper with internal tractor unit, you do not have to unload it when you want to print on a cut sheet. The printer will "park" it for you if you follow the procedure below.

1. To begin paper parking, start with the power ON, fanfold paper loaded in printing position, and the release lever toward the front of the printer (▙).

2. Press the [ON LINE] button on the control panel to set the printer off-line. The ON LINE indicator light 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 [PAPER FEED] button to feed paper forward until a perforation is located just above the front cover, and tear there.
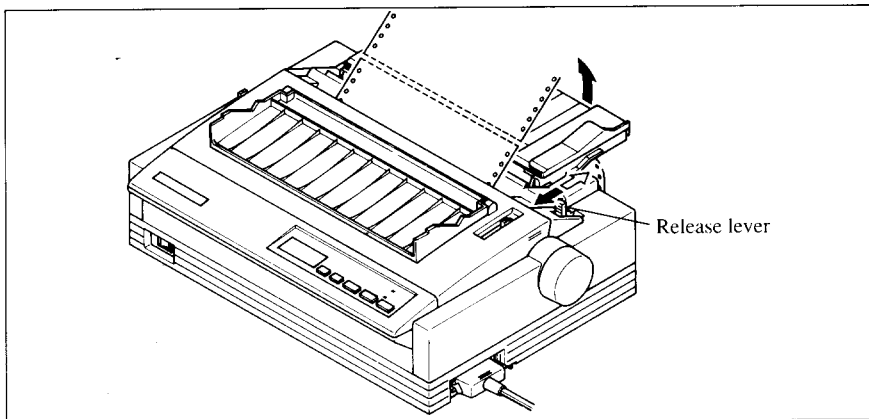
Figure 3-10. Tear off the printed fanfold paper.

4. Press the [EJECT/PARK] button on the control panel. The printer will automatically feed the fanfold form backward until the paper is completely free of the platen.

5. A "PE" message will now appear on the LCD display and a beep will sound.

6. Move the release lever toward the rear of the printer (▛).

7. 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.

26

Paper unparking

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

1. Remove all cut forms from the printer.
2. Mount the paper guide in the horizontal position.
3. Move the release lever toward the front of the printer (▉).
4. Move the bail lever forward. 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.

Tear off function

At the end of printing, use this tear off function to cut off the printed form without advancing blank forms.

1. Open the mute cover on the front cover.
2. Pull the bail lever forward.
   The paper will be fed to the tear off position and the bail lever will automatically close.
3. Tear off the printed form with the tear assist edge of the front cover.
4. Pull the bail lever forward.
   The paper automatically returns to the printing position.

NOTE: Do not return bail the lever after return to the on-line state.

LOADING SINGLE SHEETS

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

The paper path for cut forms is shown in Figure 3-11.
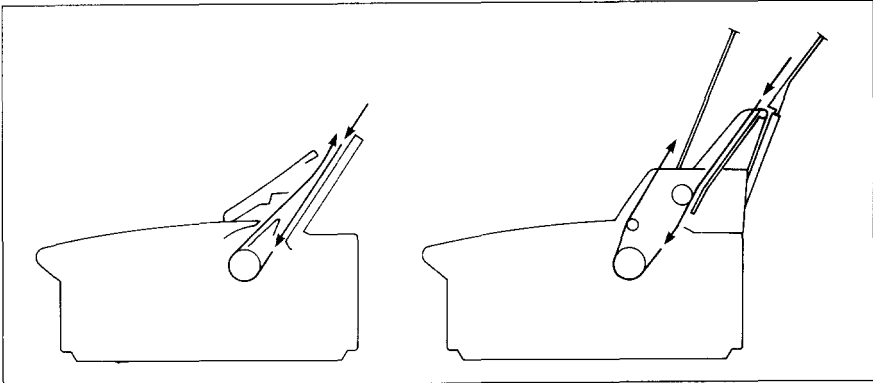
Figure 3-11. Paper path for cut forms.

If you are using the optional Automatic Sheet Feeder, refer to Chapter 7.

1. Raise the paper guide in position on the rear cover of the printer.
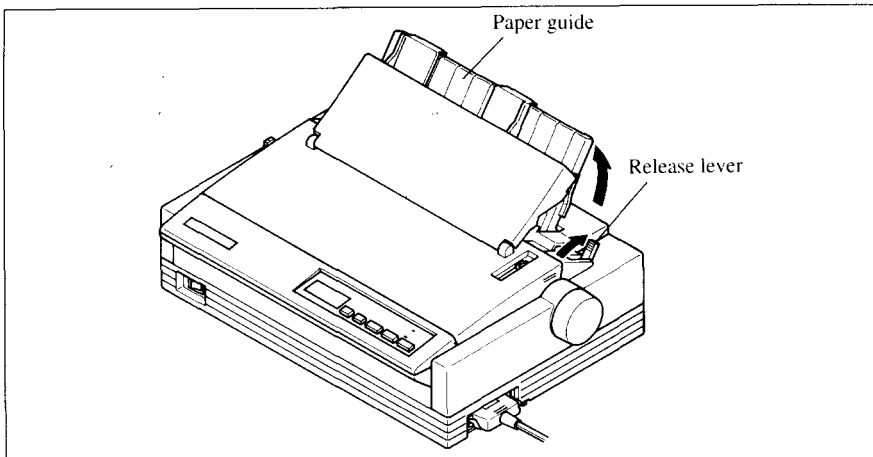
Figure 3-12. Raise the paper guide for single sheets.

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 "PE" message will also flash on the LCD display to confirm this.

4. Make sure that the release lever is at rear position (▶).
    If fanfold paper is already mounted in the printer, press the ⌷EJECT/PARK⌷ button to park the paper in the off-line state, then move the release lever toward the rear of the printer.

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.
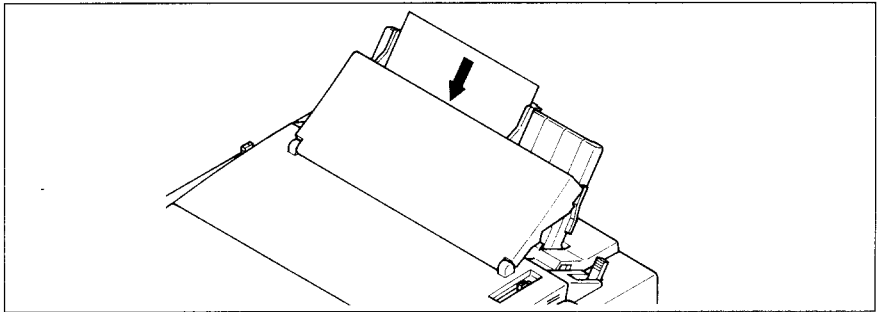
Figure 3-13. Place a single sheet between the guides.

6. Now pull the bail lever toward the front of the printer. The paper will be fed into the printer and adjusted past the print head to a position ready for printing.

NOTE: Do not place the bail lever in the backward position. The bail lever automatically returns to its original position after the paper goes through under the bail lever location.
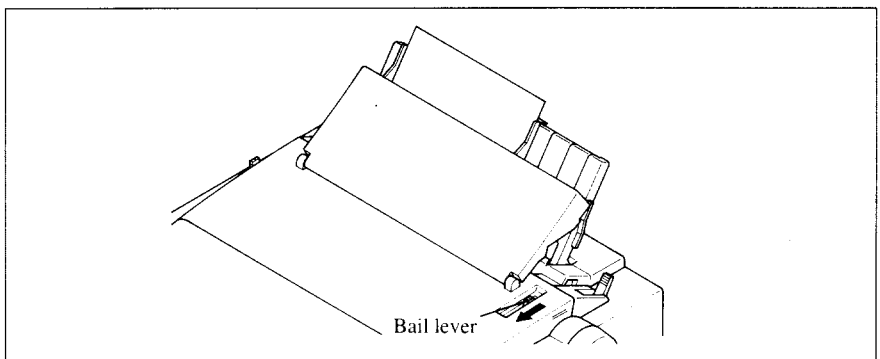
Figure 3-14. Pull the bail lever forward to load paper.

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 4.)

Chapter 4

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
- Adjusting the print alignment for bi-directional printing
- Print a hexadecimal dump
- Clear the printer's buffer
- Save macro definition

BUTTON AND INDICATOR FUNCTIONS

The printer is equipped with five buttons on the control panel. From left to right they are [FONT], [PITCH], [EJECT/PARK], [PAPER FEED] and [ON LINE].

The following is a brief guide to the buttons and indicators on the control panel.
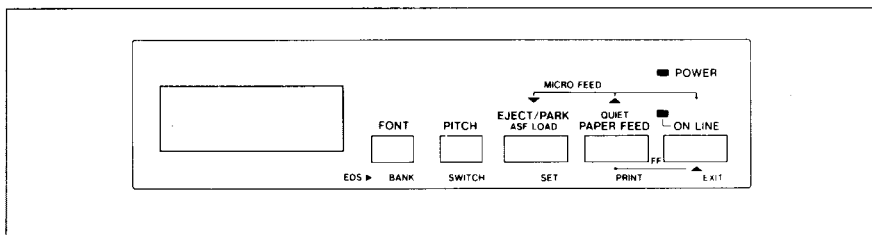
Figure 4-1. Control panel.

31

ON LINE

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 and will be indicated by the ON LINE indicator being lit. 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 when paper is loaded. If paper is not loaded, the printer powers up off-line with the "PE" message and the Power indicator light will blink. 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.

PAPER FEED

If you press and release this button while off-line, the paper will feed forward one line. 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 the [PAPER FEED] button while on-line, this will alternately flash the "QUIET" message on the display. When in Quiet mode with the "QUIET" message, the printer will print slightly slower, but at a reduced noise level.

EJECT/PARK

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

This button results in different functions depending on the position of the release lever.

If the release lever is facing toward the rear of the printer for the cut forms (▶), pressing this button ejects the paper.

If the release lever is facing toward the front of the printer for the fanfold forms (▶), pressing this button parks the forms.

PITCH

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 the super-condensed pitch is not available with Standard/Epson mode, and condensed proportional pitch is not available with IBM mode):

Pitch	LCD Message
Pica (10 CPI)	*IO*
Elite (12 CPI)	*I2*
Semi-condensed (15 CPI)	*I5*
Condensed pica (17 CPI)	*I7*
Condensed elite (20 CPI)	*20*
Super-condensed (24 CPI)	*24*
Proportional	*PS*
Condensed proportional	*Pc*

FONT

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

Font	LCD Message
Roman	¡ROMAN ¡
Sanserif	¡SANSERIF ¡
Courier	¡COURIER ¡
Prestige	¡PRESTIGE ¡
Script	¡SCRIPT ¡
High-Speed Draft	¡HS-DRAFT¡
Draft	¡DRAFT ¡
Optional font	¡OPTION ¡

NOTE: If the optional Font Cartridge is not installed, the "OPTION" message will not illuminate.

POWER-UP FUNCTIONS

In addition to their normal functions, all of the control panel buttons perform "special" functions if you hold them down while switching the power button on.
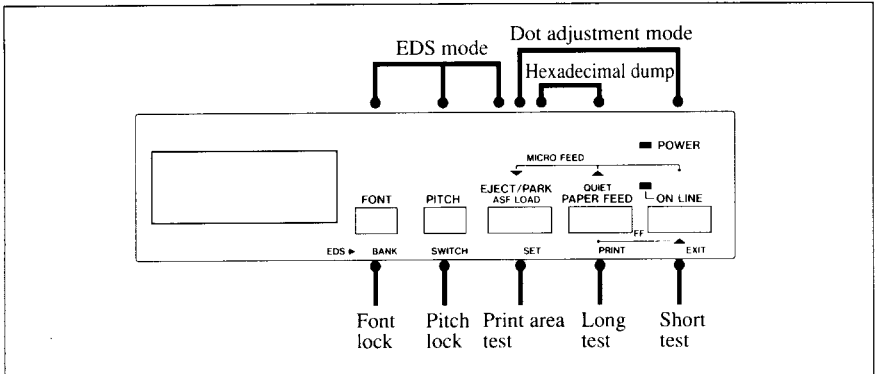
Figure 4-2. Power-up functions of control panel.

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 "P1" message on the LCD 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 4-3.

```
*** Ver 1.0 ***

 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnop
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopq
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
```

Figure 4-3. Short self-test.

Since the self-test prints across 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.

Long test mode

If the printer is turned on while the [PAPER FEED] button is pressed, the printer will enter the long self-test mode, with the "P2" message on the LCD display. The printer will print the version number of the printer's ROM, the current Electronic DIP Switch (EDS) settings and the current Dot Adjustment setting, followed by the entire character set printed in each font and pitch available.

The test repeats endlessly, so you must turn the power off to stop it.
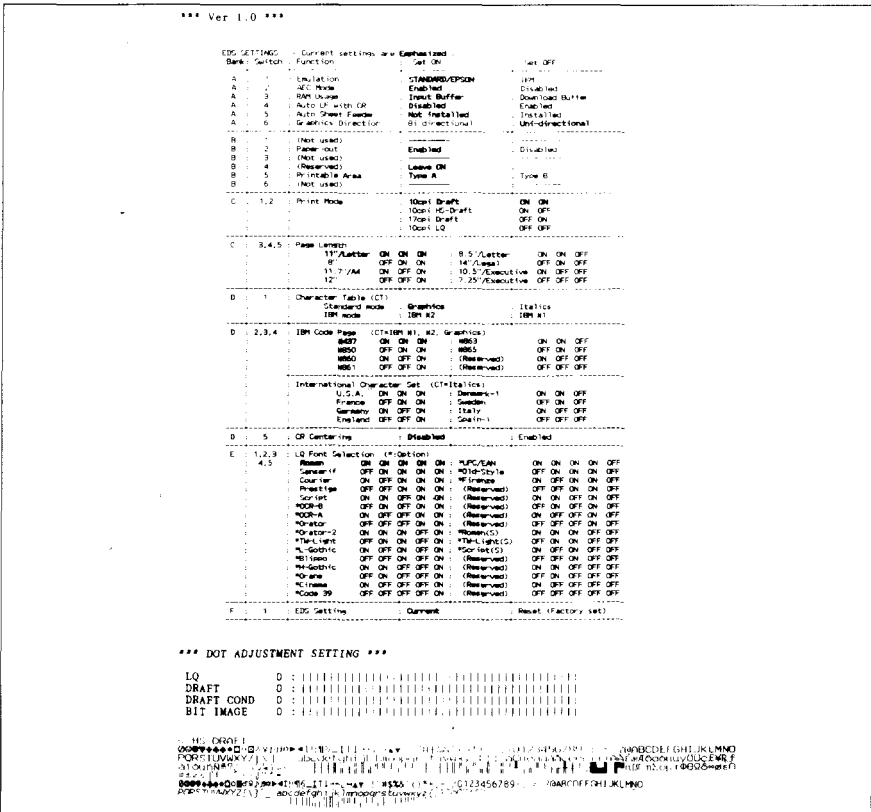
Figure 4-4. Long self-test.

Since the self-test prints across 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 ⌐EJECT/PARK⌐ button down during power-up, the printer will enter the print area test mode. You can find how many lines on your paper are available for printing with 1/6-inch line feeding. The printer will show the "P3" message on the LCD display and print the first line message on the paper, 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 ⌐PITCH⌐ 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 "P-LOCK" message on the LCD 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 on the LCD display and will not be reset or otherwise changed by any commands your software may issue.

Font lock mode

By holding the ⌐FONT⌐ button during power-up, fonts can only be selected from the control panel. This prevents software interference. There will be an acknowledging beep and "F-LOCK" message on the LCD 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 will not be changed by any commands your software may issue.

Font and Pitch lock mode

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

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

Dot adjustment mode

This mode is used to adjust the vertical alignment of text and graphics on successive bi-directional passes.

After a period of time, your printer may work itself out of alignment on left and right printing passes, appearing most visibly during 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 [EJECT/PARK] and [ON LINE] buttons. The "dA" message will show on the display, and the printer will then print something like the following:

```
*** DOT ADJUSTMENT SETTING ***
LQ            0 : ||||i||||||||||||||||||:|||||||||i|||||i:|||i
```

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 [EJECT/PARK] and [PAPER FEED] buttons. The [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 : ||||||||||||||||||:|||||||||||:||||||||:||||||||
[EJECT/PARK] →
            LQ     -1 : ////////////////////////////////////////
[PAPER FEED] →
            LQ      0 : |||||||||||||||||||||||i|||||||||||||||||i
```

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", "DRAFT COND" and "BIT IMAGE".
   Repeat the process for all print modes.

```
*** DOT ADJUSTMENT SETTING ***

         LQ        0 : |||||||||||||||||||||||||||.||||||||||||||||||

         LQ       -1 : ////////////////////////////////////////////

         LQ        0 : |||||||||||||||||||||||||||||||||||||||||||||
ON LINE  →
         DRAFT     0 : ||||||||||||||||||||||||||||||||||||||||||||||
PAPER FEED →
         DRAFT    +1 : \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
EJECT:PARK →
         DRAFT     0 : ||||||||||||||||||||||||||||||||||||||||||||||
```

6. To exit from this mode, press the [PITCH] button.

```
*** DOT ADJUSTMENT SETTING ***

          LQ         0 : |||||||||||||||||||||||||||||||||| ||||||||

          LQ        -1 : ////////////////////////////////////////////

          LQ         0 : ||||||||||||||||||||||||||||||||||||||||||||

          DRAFT      0 : ||||||||||||||||||||||||||||||||||||||||||||

          DRAFT     +1 : \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

          DRAFT      0 : ||||||||||||||||||||||||||||||||||||||||||||
ON LINE   →
          DRAFT COND 0 : ||||||||||||||||||||||||||||||||||||||||||||
ON LINE   →
          BIT IMAGE  0 : ||||||||||||||||||||||||||||||||||||||||||||
PITCH     →
          *** END ***
```

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 ‾EJECT/PARK‾ buttons down, turn power ON. A beep tone will be heard and the "Hd" 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.

SWITCH COMBINATION FUNCTIONS

Several additional functions can be achieved by pressing the control panel buttons in combinations.
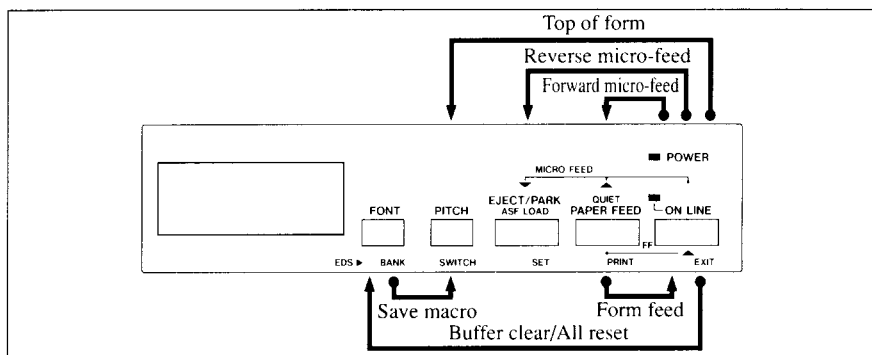
Figure 4-5. Switch combination functions of control panel.

Form feed

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

1. Press the [ON LINE] button to set the printer off-line.
2. Press the [PAPER FEED] button and hold it down. The printer will start performing successive line feeds.
3. While holding the [PAPER FEED] button down, press the [ON LINE] 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 [ON LINE] button to set the printer off-line.
2. Move the paper to the desired top-of-form position by pressing the [PAPER FEED] button, or by performing a forward or reverse micro-feed.
3. Press and hold the [ON LINE] button.
4. While holding the [ON LINE] button down, press the [PITCH] button, then release both buttons at the same time. The "– –" message will show on the LCD display, 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 [ON LINE] button to set the printer off-line.
2. Press the [ON LINE] button again and hold it down.
3. While holding the [ON LINE] button down, press the [PAPER FEED] 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.

1. Press the [ON LINE] button to set the printer off-line.
2. Press the [ON LINE] button again and hold it down.
3. While holding the [ON LINE] button down, press the [EJECT/PARK] button. The paper will start moving backwards in a series of small steps. When you want to stop, release both buttons.
   NOTE: Open the bail lever when the printer beeps intermittently and the "Er" message shows on the LCD display near the edge of the paper.

Changing the auto loading position

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 by moving bail lever toward the front of the printer.
2. Change the print position using the micro feed function.
   The value on the LCD display shows the micro-feed value from the default position.
3. After you get the desired position, press the [ON LINE] button to save the value.

This position will remain unless you power off the printer. If you want to retain this position 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 [ON LINE] 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 [ON LINE] button.
4. While pressing the [ON LINE] button down, press and hold the [FONT] button. Continue holding these two buttons down, you will hear a beep tone and the "bC" message appears on the LCD display. If you hold these buttons down longer, you will hear three beep tones and 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 stop 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 from when the buffer was cleared.

Save Macro Definition

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

1. Press the [ON LINE] button to set the printer off-line.
2. Press the [FONT] button and hold it down.
3. While holding the [FONT] button down, press the [PITCH] button and hold them down until the "MACRO" message appears on the LCD display.
4. Release both buttons at the same time after this message appears on the LCD display to save the current setting.
   If you release these buttons after the "MACRO" message has gone out on the display, the macro has been cleared.

43

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

- Current Font
- Current Pitch
- Current auto-loading amount for cut forms
- Current auto-loading amount for fanfold forms
- Current auto-loading amount in ASF mode

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.

CONDITIONS INDICATED BY MESSAGES AND TONES

This section helps you identify the messages and the meanings of the tones.

Summary of display messages

Following table shows the summary of the messages on the LCD display.

LCD Message	Meanings and action
ROMAN	ROMAN LQ font is selected.
SANSERIF	SANSERIF LQ font is selected.
COURIER	COURIER LQ font is selected.
PRESTIGE	PRESTIGE LQ font is selected.
SCRIPT	SCRIPT LQ font is selected.
HS-DRAFT	High-Speed Draft font is selected. You cannot select print pitch except 10 CPI.
DRAFT	Draft font is selected. You cannot select proportional pitch with the Standard/ Epson mode.
OPTION	Optional LQ font is selected.
PITCH	Indicates the message below shows the current pitch.
EDS	EDS mode is currently selected and the message on the right indicates the current Bank and Switch number. Press the ⌐ ON LINE ⌐ button to exit the EDS mode.
F-LOCK	Font lock mode is selected. The printer ignores the font selection commands and prints with the font displayed on the panel. Turn off the power switch to cancel the font lock mode.
P-LOCK	Pitch lock mode is selected. The printer ignores the pitch selection commands and prints with the pitch displayed on the panel. Turn off the power switch to cancel the pitch lock mode.

LCD Message	Meanings and action
ON OFF	Displays in the EDS mode. Indicates the current status of the displayed EDS bank and switch number. Press the [EJECT/PARK] button to change the status.
QUIET	Quiet mode is selected. Press the [PAPER FEED] button while in the on line mode to return to the Normal mode.
MACRO	Front panel setting are saved in the printer's memory as a "MACRO".
P 1	Short print test mode is selected.
P2	Long print test mode is selected.
	Turn off the power switch to cancel the long print test mode.
P3	Print area test mode is selected.
Hd	Hexadecimal dump mode is selected. Turn off the power switch to cancel the hexadecimal dump mode.
- -	Top of form is set manually with the control panel.
bC	Buffer is cleared manually with the control panel.
PE	Paper is not loaded to the printer.
dA	Dot Adjustment mode is selected.
Er	Bail lever is closed before the paper goes through the location of the bail lever. Open the bail lever. Release lever is moved while the paper is in printing position.
CE	The memory of EDS settings is accessed.
E 1	Print head error. Turn off the printer and turn it on again.
E2	Carriage home position error. Turn off the printer and turn it on again.
E3	Paper handling error. Turn off the printer and turn it on again.
E4	S.W.I. error. Turn off the printer and turn it on again.
E5	RAM check error. Turn off the printer and turn it on again.
E7	Watch dog error. Turn off the printer and turn it on again.

Summary of beep tones

Following table shows the summary of beep tones.

Beep tones	Meanings
Two seconds tone	Printer detects an error condition. Turn off the power switch and turn it on again.
Long tone, once	Printer detects an error condition. Turn off the power switch and turn it on again.
Four short tone sequence, two times	Printer is out of paper.
Short tone, once	• Buffer is cleared. • Top of form is set. • Quiet mode is selected. • Tear off function is selected. • EDS mode is selected.
Short tone, twice	• Macro definition is selected. • Quiet mode is cancelled.
Short tone, triple	• Macro definition is cancelled. • Printer is reset.
One-quarter tone	• Hexadecimal mode is selected. • Pitch lock mode is selected. • Font lock mode is selected.
One-quarter tone, twice	Pitch and Font lock mode is selected at a time.
Intermittent tone One-quarter tone, twice	• Release lever is moved while the paper is in printing position. • Bail lever is closed before the paper goes through the location of the bail lever.

MEMO

Chapter 5

DEFAULT SETTINGS-EDS MODE

From the control panel you can change the parameters that define how your printer works. These parameters become your power-on settings.This function is called the Electronic DIP Switch (EDS) mode.

HOW TO SET THE EDS MODE

The EDS mode in this printer has 16 functions that you can set as the power-on default.

Turn the printer on while simultaneously holding the ⌈FONT⌉, ⌈PITCH⌉, and ⌈EJECT/PARK⌉ buttons.

The "EDS" message will show on the LCD display. This indicates that you have entered the EDS mode.

In EDS mode, the buttons on the control panel are used as shown below in Figure 5-1.
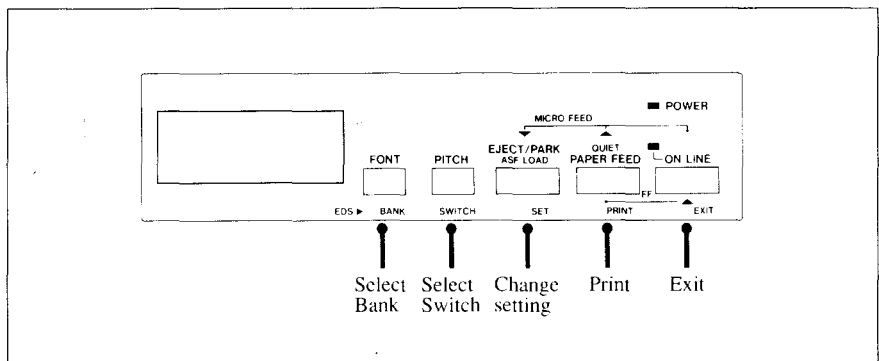
Figure 5-1. Button functions in the EDS mode.

- Use the ⌈FONT⌉ button to select the Bank Letter.
- Use the ⌈PITCH⌉ button to select the Switch Number.
- The LCD display on the control panel shows the current setting, ON or OFF.
  Use the ⌈EJECT/PARK⌉ button to change the settings.
- Press the ⌈PAPER FEED⌉ button to print the current settings.
- Press the ⌈ON LINE⌉ button to save and exit the EDS mode.

49

FUNCTIONS OF THE EDS SETTINGS

The printer stores the parameters that you can select from the control panel while in the EDS mode.

A default is the setting that 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. By changing the settings, you can alter various printer functions to match your specific requirements. The following will help you choose the proper settings.

Bank-Switch	Function	ON	OFF
A-1	Emulation	STANDARD/EPSON	IBM
A-2	AEC Mode	Enabled	Disabled
A-3	RAM Usage	Input Buffer	Download Buffer
A-4	Auto LF with CR	Disabled	Enabled
A-5	Auto Sheet Feeder	Not installed	Installed
A-6	Graphics Direction	Bi-directional	Uni-directional
B-1	(Not used)		
B-2	Paper-out	Enabled	Disabled
B-3	(Not used)		
B-4	(Reserved)	Leave ON	
B-5	Printable Area	Type A	Type B
B-6	(Not used)		
C-1	Print Mode	(See below)	
C-2			
C-3			
C-4	Page Length	(See below)	
C-5			
D-1	Character Table		
	(Standard mode)	Graphics	Italics
	(IBM mode)	Set #2	Set #1
D-2	IBM Code page or		
D-3	International	(See below)	
D-4	Character Set		
D-5	CR Centering	Disabled	Enabled
E-1			
E-2			
E-3	LQ Font Selection	(See below)	
E-4			
E-5			
F-1	EDS Setting	Current	Reset

NOTE: The factory default is the "ON" position for all functions except A-6 which is set to the "OFF" position.

Switch A-1: Emulation

Select the mode compatible with your computer and software. In the Standard/Epson mode, the printer operates like the Epson LQ-860/850. In the IBM mode, it operates like the IBM Proprinter X24E/24P, PS/1.

The ON position selects Standard/Epson mode. The OFF position selects IBM mode.

Switch A-2: Auto Emulation Change (AEC) Mode

This switch selects the Auto Emulation Change (AEC) mode. When the AEC mode is enabled, the printer automatically judges the Emulation which your application program uses.

Switch A-3: RAM Usage

In order to download characters this switch must be in the OFF position. The printer then uses its RAM memory for storing character patterns and provides only a one-line print buffer. If you leave this switch ON, the printer uses its RAM memory as an input buffer, allowing the computer to send data faster than the printer prints.

Switch A-4: Auto LF with CR

If you leave this switch at the ON position, a separate line-feed code is required from your computer to obtain a line feed. If you move this switch to the OFF position, 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 ON. If you get double line spacing when you expect single spacing, or if lines overprint each other, try changing the setting of this switch.

Switch A-5: Auto Sheet Feeder

In order to use the optional automatic sheet feeder (SF-10DS), move this switch to the OFF position.
Otherwise leave it ON.

Switch A-6: Graphics Direction

When printing in 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.

Switch B-2: Paper-out

When this switch is OFF the printer ignores the paper-out detector and prints down to (and beyond) the bottom edge.

Switch B-4: This switch is used for technical purpose only. Leave this switch ON.

Switch B-5: Printable area

This printer can use two types of printing area format for single sheets (cut forms).

By putting the switch ON ("Type A"), the top of the first line of printing will start 1/6 inch from the top of the paper, and the printed area will end 1/6 inch from the bottom of the paper.

By putting the switch OFF ("Type B"), the first line of printing will start at one inch from the top of the paper, and the printed area will end to print 6 mm from the bottom of the printer.

Switches C-1 and C-2: Print Mode

These switches select the default print pitch and the fonts as shown below.

Print Mode	C-1	C-2
10CPI DRAFT	ON	ON
10CPI HS DRAFT	ON	OFF
17CPI DRAFT	OFF	ON
10CPI LQ	OFF	OFF

NOTE: If you change these switches after you have saved a macro, these new settings will override the macro setting.

Switches C-3 to C-5: Page Length

Leave these switches ON if you will be using 11-inch forms. You will need to change the switches if you will be using a different page length as shown below:

Page Length	C-3	C-4	C-5
11 inches/Letter	ON	ON	ON
8 inches	OFF	ON	ON
11.7 inches/A4	ON	OFF	ON
12 inches	OFF	OFF	ON
8.5 inches/Letter	ON	ON	OFF
14 inches/Legal	OFF	ON	OFF
10.5 inches/Executive	ON	OFF	OFF
7.25 inches/Executive	OFF	OFF	OFF

Switch D-1: Character Table

The action of this switch depends on the mode chosen with switch A-1.

Move this switch OFF to select Italic character table with the Standard/Epson emulation mode. If you leave this switch to the ON position, in place of italics you will get the graphic characters, international characters, and mathematical symbols of IBM character set #2.

In the IBM emulation mode, ON selects character set #2, which has international characters and fewer control words.

OFF selects character set #1, for computers with a 7-bit interface.

Switches D-2 to D-4: IBM Code Page or International Character Set

Except in the Standard Italic character set, these switches select the default character code page as shown below:

IBM Code Page	D-2	D-3	D-4	IBM Code Page	D-2	D-3	D-4
#437 U.S.A.	ON	ON	ON	#863 Canadian French	ON	ON	OFF
#850 Multi-lingual	OFF	ON	ON	#865 Nordic	OFF	ON	OFF
#860 Portuguese	ON	OFF	ON	(Reserved)	ON	OFF	OFF
#861 Icelandic	OFF	OFF	ON	(Reserved)	OFF	OFF	OFF

International character sets differ in their assignment of 12 character codes in the Standard Italic character set. See the character tables in Chapter 11. With these switches you can select one of eight character sets as follows:

Country	D-2	D-3	D-4	Country	D-2	D-3	D-4
U.S.A.	ON	ON	ON	Denmark I	ON	ON	OFF
France	OFF	ON	ON	Sweden	OFF	ON	OFF
Germany	ON	OFF	ON	Italy	ON	OFF	OFF
England	OFF	OFF	ON	Spain I	OFF	OFF	OFF

Switch D-5: CR Centering

If you set this switch OFF, the carriage moves to the center each time to feed paper near the perforation. This way, you can get better quality of printing around the preforations. It is recommended to match the page length setting to your fanfold paper, otherwise, this function does not work properly at the perforations.

If you leave this switch ON, the carriage does not move when feeding paper.

Switches E-1 to E-5: LQ Font Selection

These switches allows you to choose the default font selected when LQ mode is selected, as shown below.

Font Name	E-1	E-2	E-3	E-4	E-5	Font Name	E-1	E-2	E-3	E-4	E-5
Roman	ON	ON	ON	ON	ON	UPC/EAN*	ON	ON	ON	ON	OFF
Sanserif	OFF	ON	ON	ON	ON	Old-Style*	OFF	ON	ON	ON	OFF
Courier	ON	OFF	ON	ON	ON	Firenze*	ON	OFF	ON	ON	OFF
Prestige	OFF	OFF	ON	ON	ON	(Reserved)	OFF	OFF	ON	ON	OFF
Script	ON	ON	OFF	ON	ON	(Reserved)	ON	ON	OFF	ON	OFF
OCR-B*	OFF	ON	OFF	ON	ON	(Reserved)	OFF	ON	OFF	ON	OFF
OCR-A*	ON	OFF	OFF	ON	ON	(Reserved)	ON	OFF	OFF	ON	OFF
Orator*	OFF	OFF	OFF	ON	ON	(Reserved)	OFF	OFF	OFF	ON	OFF
Orator 2*	ON	ON	ON	OFF	ON	SLQ Roman*	ON	ON	ON	OFF	OFF
TW-Light*	OFF	ON	ON	OFF	ON	SLQ TW-Light*	OFF	ON	ON	OFF	OFF
Letter-Gothic*	ON	OFF	ON	OFF	ON	SLQ Script*	ON	OFF	ON	OFF	OFF
Blippo*	OFF	OFF	ON	OFF	ON	(Reserved)	OFF	OFF	ON	OFF	OFF
H-Gothic*	ON	ON	OFF	OFF	ON	(Reserved)	ON	ON	OFF	OFF	OFF
Orane*	OFF	ON	OFF	OFF	ON	(Reserved)	OFF	ON	OFF	OFF	OFF
Cinema*	ON	OFF	OFF	OFF	ON	(Reserved)	ON	OFF	OFF	OFF	OFF
Code 39*	OFF	OFF	OFF	OFF	ON	(Reserved)	OFF	OFF	OFF	OFF	OFF

Optional fonts (marked with*) can be selected only when the corresponding font cartridge is installed in the printer.

If the corresponding font cartridge is not installed, the Roman is selected.

Switch F-1: EDS Setting

If you set this switch OFF, the current EDS settings are all cleared, and restores the Factory Settings.

MEMO

Chapter 6

TROUBLESHOOTING

This chapter helps you identify printer conditions and problems that you can often correct yourself.

Remember that your printer is a highly sophisticated electronic device, which also contains high voltage inside. For that reason, only carry out those operations described in this chapter.

CAUTION: Any attempt to carry out operations other than those described here may result in electric shock and/or damage to the printer. When carrying out any repairs or maintenance, always follow the instructions carefully.

TROUBLESHOOTING

Your printer is a reliable piece of precision machinery, which should not cause you any trouble, provided it is used and treated sensibly. However, the few elementary tips below should help you avoid having to make unnecessary service calls.

• Power switch is on, but power indicator is off

Probable Cause	Action
Printer is not getting power.	Make sure that the power cord is correctly connected. Verify that the power source works.

• Printer sounds as if it is printing but does not; Printing is weak

Probable Cause	Action
Ribbon is jamming, twisted, or not between the print head and the print head shield.	Make sure that the ribbon cartridge is correctly installed. Make sure that the ribbon is between the shield on the print head and the end of the print head. Replace the ribbon.
Adjustment lever is set incorrectly.	Check the setting of the adjustment lever. Move the lever to a darker setting.

• Printer test works, but printer does not print when attached to computer

Probable Cause	Action
Printer cable has a problem.	Make sure that the printer cable is correctly connected at both ends, printer and computer.
Problem with the application program.	Refer to your application program manual.
Incorrect emulation is selected.	Select the other emulation with the EDS setting. See Chapter 5.

• Printer sounds the audible alarm

Probable Cause	Action
This might indicate an error or normal operation.	Check the message on the display and the status of the control panel indicators and see "Conditions indicated by messages and tones" in Chapter 4.

• Pitch or font selected is being changed

Probable Cause	Action
Your software is overriding your control panel selection.	Set your printer in Font/Pitch lock. See "Pitch lock mode" and "Font lock mode" in Chapter 4.

• Printer does not feed paper

Probable Cause	Action
Paper is jamming.	Remove all forms and pieces of paper.
Bail lever is closed before paper goes through the bail lever location.	Open the bail lever. Bail lever automatically closed when the paper goes through the bail lever location.
Adjustment lever is set incorrectly.	Check the setting of the adjustment lever. See "Adjusting the printing gap" in Chapter 3.
Fanfold form is parked.	Move bail lever forward to unpark the fanfold paper.

• Line spacing is incorrect or overprinting occurs

Probable Cause	Action
The tractor positions are incorrectly adjusted.	Adjust the tractor positions. See "Loading fanfold forms" in Chapter 3.
Incorrect emulation is selected.	Select the other emulation with the EDS setting. See Chapter 5.
Problem with the application program.	Refer to your application program manual.
Platen knob was manually turned while the Power indicator was on.	Set the top of form. See "Top of form" in Chapter 4. Do not manually turn the platen knob when the power is on. Use the ⎡PAPER FEED⎤ button.
Forms are jamming between printing surface and the print head.	Reset adjustment lever. See "Adjusting the printing gap" in Chapter 3.

• Incorrect number of lines on a page

Probable Cause	Action
Paper is adjusted incorrectly.	Set the top of form. See "Top of form" in Chapter 4.
Paper has shifted backwards after several forms printed correctly.	Readjust forms.
Incorrect emulation is selected.	Select the other emulation with the EDS setting. See Chapter 5.
Problem with the application program.	Refer to your application program manual.
Distance printer must pull paper is too far.	Move paper closer to the printer.
Paper is getting stuck on cables.	Move the paper away from any wires or cables.

• Line length is wrong; Graphics do not print; Lines are not starting at left margin

Probable Cause	Action
Incorrect emulation is selected.	Select the other emulation with the EDS setting. See Chapter 5.
Problem with the application program.	Refer to your application program manual.

• Characters are wrong or missing; formatting control codes do not work

Probable Cause	Action
Problem with the application program.	Refer to your application program manual.
Some wires are missing from the print head.	Printer needs repair.
Wrong default setting with EDS switches.	Check the current EDS setting. Modify the EDS setting.

• Dots are missing or print quality is poor

Probable Cause	Action
Adjustment lever is set incorrectly.	Check the position of the adjustment lever. See Chapter 3.
Print head is not working.	Printer needs repair.

• Forms are smudged or printing is too dark

Probable Cause	Action
Adjustment lever is set incorrectly.	Check the position of the adjustment lever. Move the lever to a lighter setting (front). See Chapter 3.
Ribbon is twisted or is not between the print head and the print head shield.	Install the ribbon correctly. See "Installing the ribbon cartridge" in Chapter 2.
Print head shield (or print head) is damaged or missing.	See "Installing the ribbon cartridge" in Chapter 2 to locate the print head shield and print head. Contact your dealer.

- Printer is unstable; Wrong characters are printed; Left margin changes; printing stops

Probable Cause	Action
Static electricity is resulting from low humidity or interference from nearby electrical devices.	Increase the humidity. Move devices with electric motors away from the printer.

- Left margin moves to the right during printing

Probable Cause	Action
The print head is not moving correctly.	Check that the ribbon and paper are correctly installed. See "Installing ribbon cartridge" in Chapter 2 and "Loading paper" in Chapter 3.
Problem with the application program.	Refer to your application program manual.
The adjustment lever is in the wrong position.	Reset the adjustment lever. See "Adjusting the printing gap" in Chapter 3.

- Printer is printing beyond side edge of forms

Probable Cause	Action
Paper is adjusted incorrectly.	Adjust both forms tractors and the paper.
Problem with the application program.	Refer to your application program manual.
A print head jam caused by the ribbon or a paper jam.	Make sure that the ribbon cartridge is correctly installed. See "Installing the ribbon cartridge" in Chapter 2. Clear the paper jam.

• Printer case is hot to the touch

Probable Cause	Action
Printer's vents are blocked.	Move object away from the air vents, including the bottom of the printer.

• Printer is noisy

Probable Cause	Action
The printer vibrates.	Move any objects that touch the printer. Ensure that the printer is on a level, study surface.
Printer covers are open.	Close covers.

MAINTENANCE

Essentially, your printer is a robust piece of equipment, but should be treated with a modicum of care in order to avoid malfunctions. For example:

- Keep your printer in a "comfortable" environment. Roughly speaking, if you are comfortable, then the environment is suitable for your printer (see Chapter 2).

- Do not subject the printer to physical shocks or excessive vibration.

- Avoid over-dusty environments. Dust is the enemy of all precision mechanical devices.

- To clean the exterior of the printer, use a cloth barely dampened with either water with a little detergent or a little alcohol, but do not allow any liquid to fall inside the printer.

- The interior of the printer may be cleaned with a small vacuum cleaner or a compressed-air aerosol (sold for this purpose). When performing this operation, be sure not to bend or damage any cable connections or electronic components.

Chapter 7

OPTIONAL ACCESSORIES

You can select the following accessories as option.

• Automatic sheet feeder (SF-10DS)
• Pull tractor unit (PT-10ZS)
• Font cartridges (FC series)
• RAM cartridge (RC-32Z, DC-32Z)
• Serial-Parallel Converter (SPC-8K)

This chapter describes how to install and use these optional accessories.

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

AUTOMATIC SHEET FEEDER (SF-10DS)

You can use the Automatic Sheet Feeder (ASF) to print on cut-sheet forms.

Before installing the ASF, check each item in the box against Figure 7-1 to make sure that you have everything.
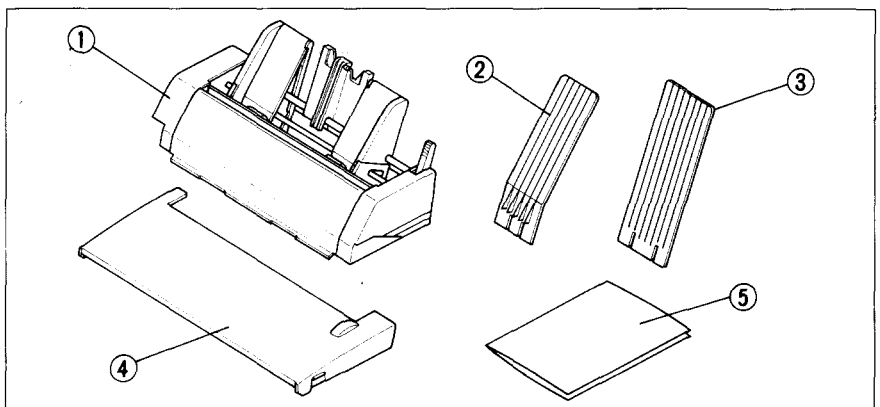
Figure 7-1. Check to make sure you have all five items: 1) Sheet Feeder, 2) Hopper attachment, 3) Stacker attachment, 4) Printer cover, and 5) ASF Users manual.

NOTE: The Automatic Sheet Feeder is protected by packing and tape during shipping. Be sure to remove all of the protective material and tape before use.

Setting up

The procedure to install the ASF is:

1. Use the printer's EDS mode to select ASF as "installed". (For details, please refer to Chapter 5.)
2. Open the front cover by lifting up the back using the two grips on either side, then remove the cover by pulling up.
3. Open the rear cover by lifting up the front using the two grips on either side.
4. Move the printer bail lever toward the front of the printer to open the paper bail.
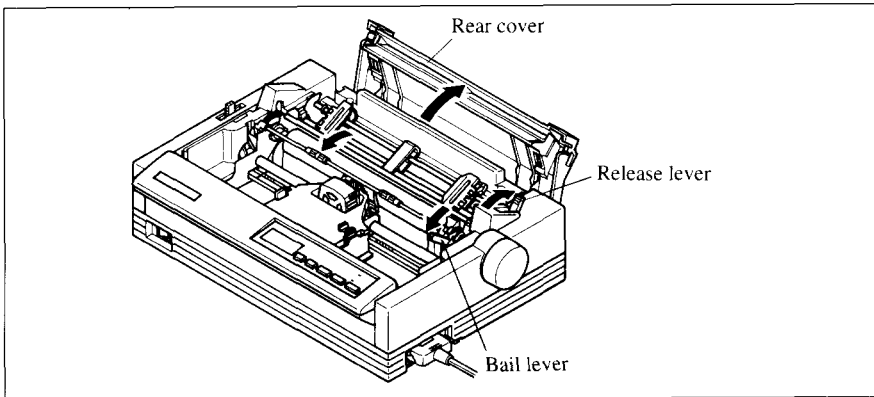
Figure 7-2. Remove the front cover, and open the rear cover.

5. Tip the Automatic Sheet Feeder forward slightly by aligning the notches on the ASF cover with the bail rollers, then put the feeder into place behind the printer platen roller.
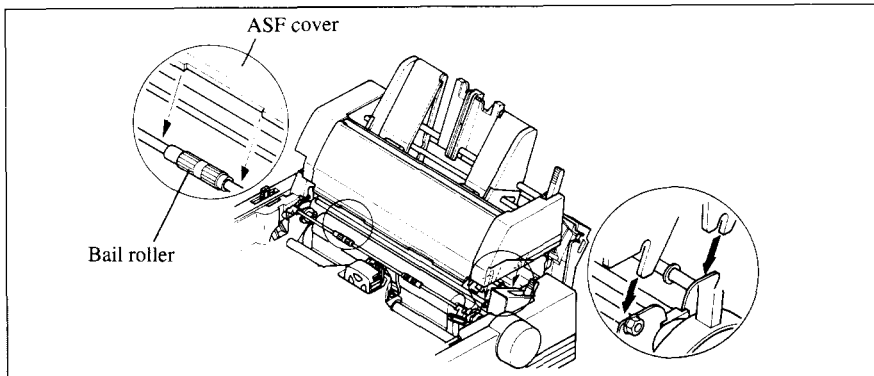
Figure 7-3. Align the notches and the bail rollers, then tip the ASF forward slightly.

6. Lower the rear side of the Automatic Sheet Feeder and attach it to the holder shaft.

7. Install the printer cover provided with the Automatic Sheet Feeder.
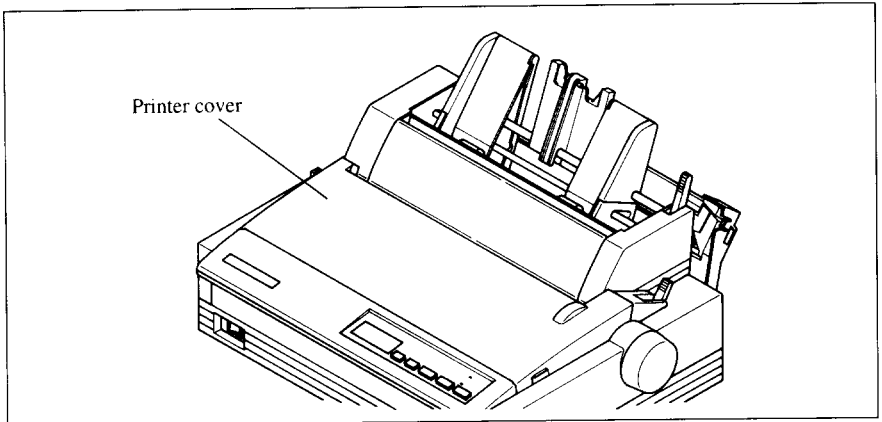
Figure 7-4. Install the printer cover.

8. Insert the hopper attachment on top of the hopper support section as shown in Figure 7-5.
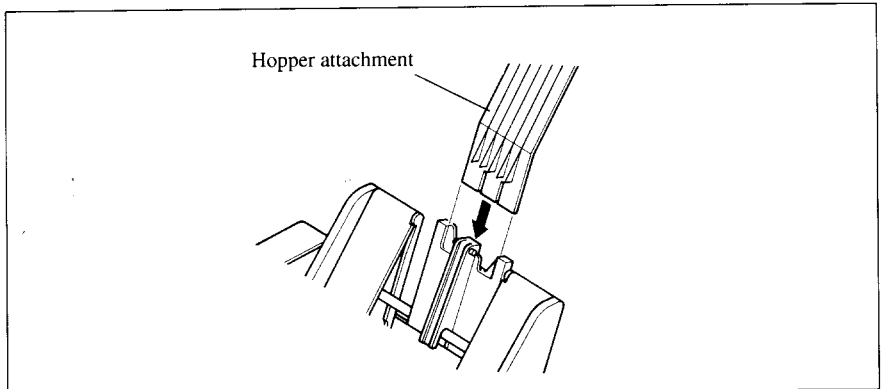
Figure 7-5. Insert the hopper attachment. ·

9. Insert the stacker attachment into the holder on the front part of the sheet feeder.

NOTE: The flat side of the attachment should be located to the rear, as shown in Figure 7-6.

Now, you can use the ASF by installing the paper stack into the hopper.

NOTE: Set the front cover aside carefully after they have been removed from the printer. Reverse the procedure described above when removing the Automatic Sheet Feeder.
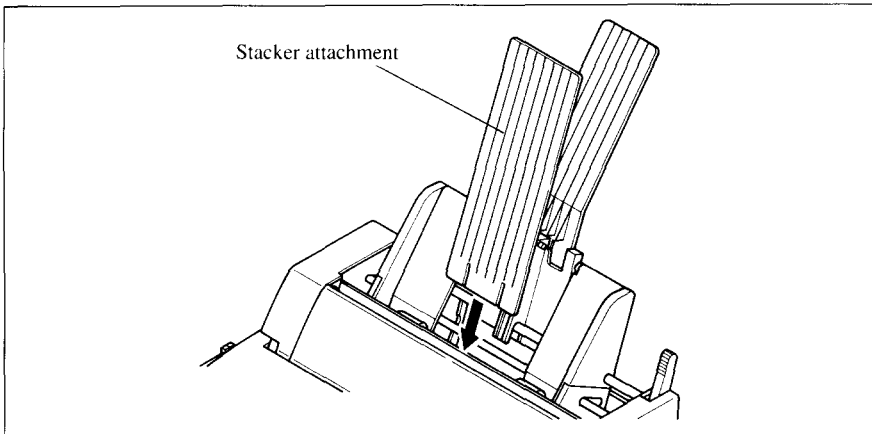
Figure 7-6. Insert the stacker attachment.

Loading paper

1. If fanfold paper has already been loaded in the printer, park the paper through the rear slot.
2. Push the printer release lever toward the rear of the printer (■) to load single sheets.
3. Pull the paper loading lever toward the front of the printer to pull the hopper out until it is in position.
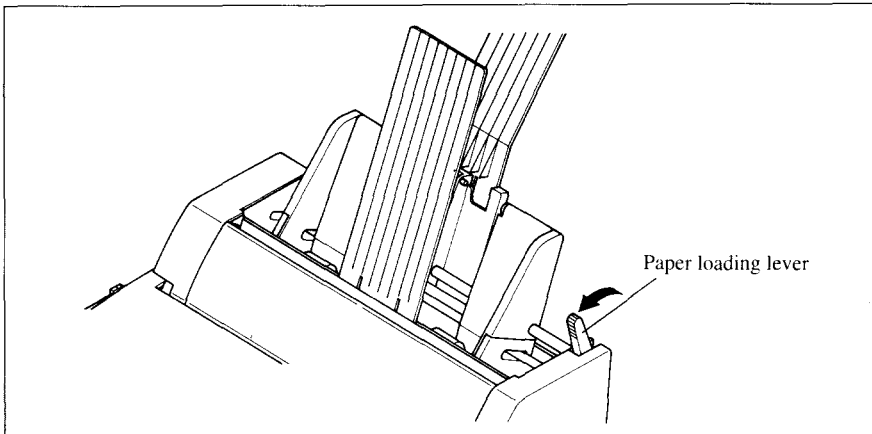
Figure 7-7. Pull the paper loading lever forward.

4. Adjust the left paper guide to the desired left position by moving it horizontally in either direction.
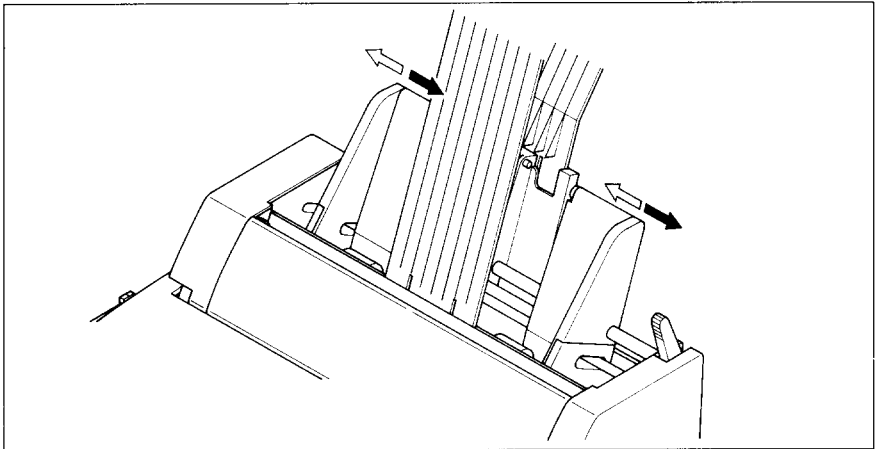
Figure 7-8. Adjust the paper guides to accommodate the width of the paper.

5. 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.

6. Fan the paper stack and square it off properly before inserting it into the Automatic Sheet Feeder.
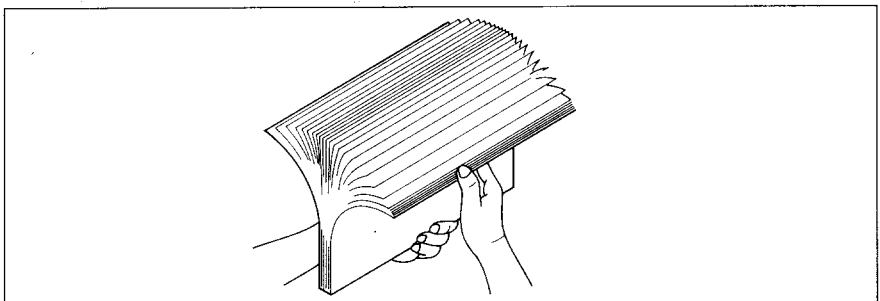
Figure 7-9. Fan the paper before inserting into the ASF.

7. Insert the paper stack into the Automatic Sheet Feeder.
   The stack should not be more than 50 sheets of 20 lb paper.
   If necessary, remove some sheets. The ASF may not perform satisfactorily if it is overloaded.

8. Push the paper loading lever toward the rear of the printer.
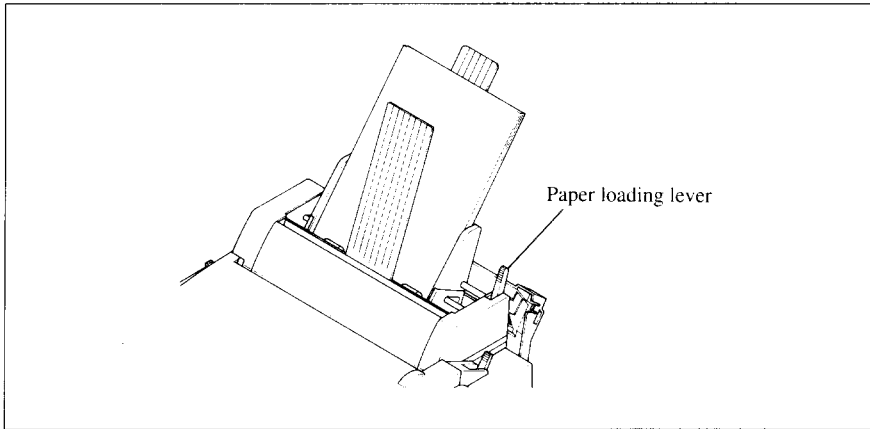
Figure 7-10. Push the paper loading lever to hold the paper stack.

Now, you are ready to start printing with the Automatic Sheet Feeder.

Feeding a single sheet

A single sheet of paper can also be fed manually with the Automatic Sheet Feeder.

1. Set the paper by inserting into the slot at the front of the stacker attachment, as shown in Figure 7-11.
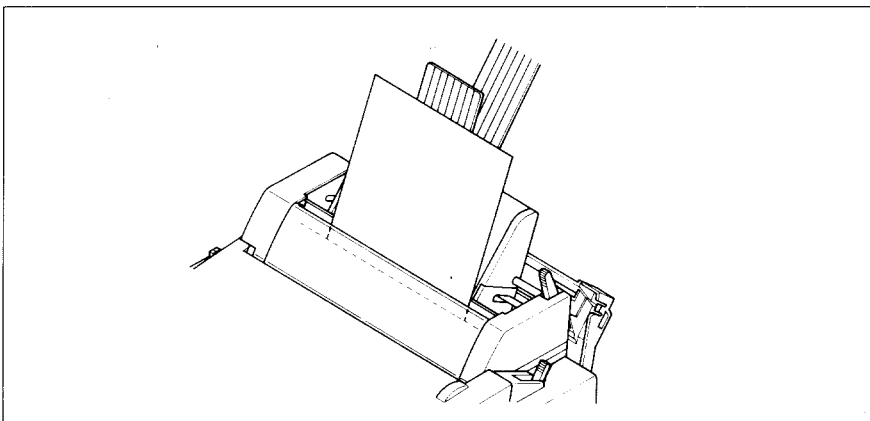
Figure 7-11. Insert a single sheet into the slot at the front of the stacker attachment.

2. With the power on, press the [ON LINE] button to put the printer off-line. Then press the [EJECT/PARK] button. The paper will feed into the printer.

PULL TRACTOR UNIT (PT-10ZS)

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

Setting up

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 remove it.
2. Open the rear cover by lifting up the front using the two grips on either side.
3. Move the printer bail lever toward the front of the printer to open the paper bail.
4. Fit the mounting brackets of the Pull Tractor Unit onto the shaft of the printer mechanism, tilting the Pull Tractor Unit slightly backward.
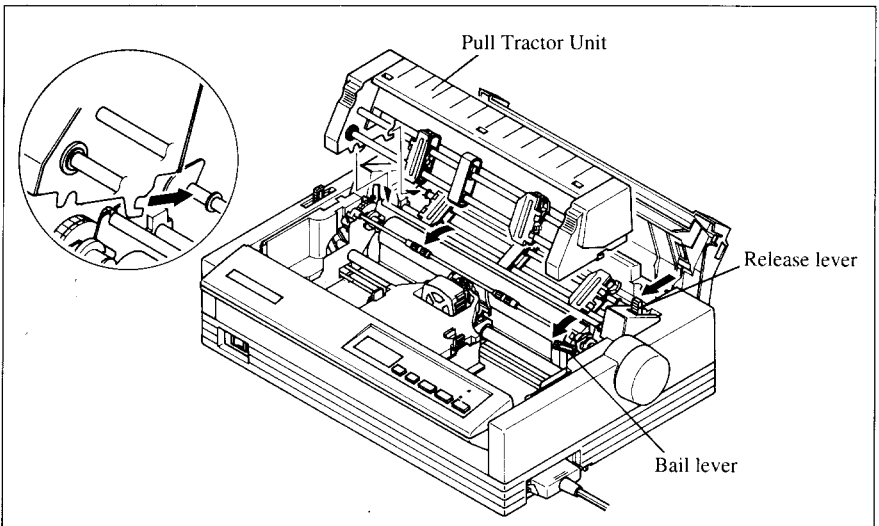
Figure 7-12. Fit the mounting brackets of the Pull Tractor Unit onto the shaft of the printer.

5. Secure the Pull Tractor Unit firmly by pushing the lock levers on either side, as shown in Figure 7-13.
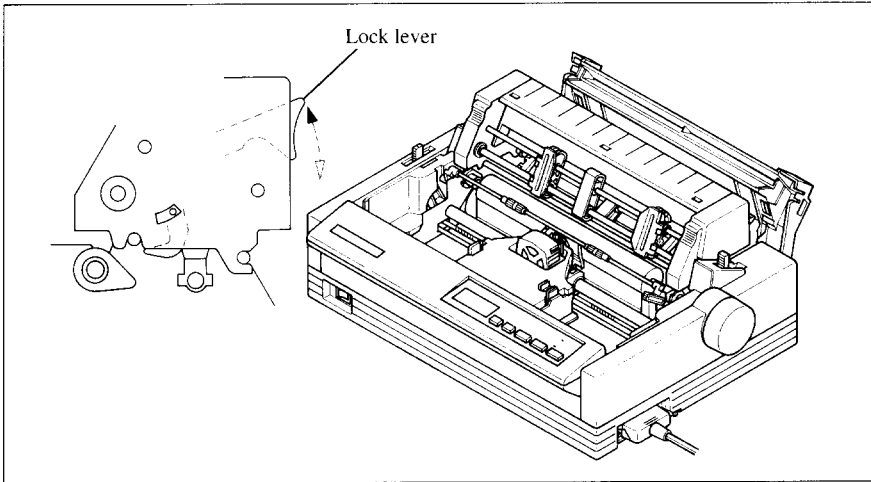
Figure 7-13. Install the Pull Tractor Unit onto the printer by pushing the lock levers.

6. Install the paper guide provided with the Pull Tractor Unit, as shown in Figure 7-14.

7. Install the printer cover provided with the Pull Tractor Unit.
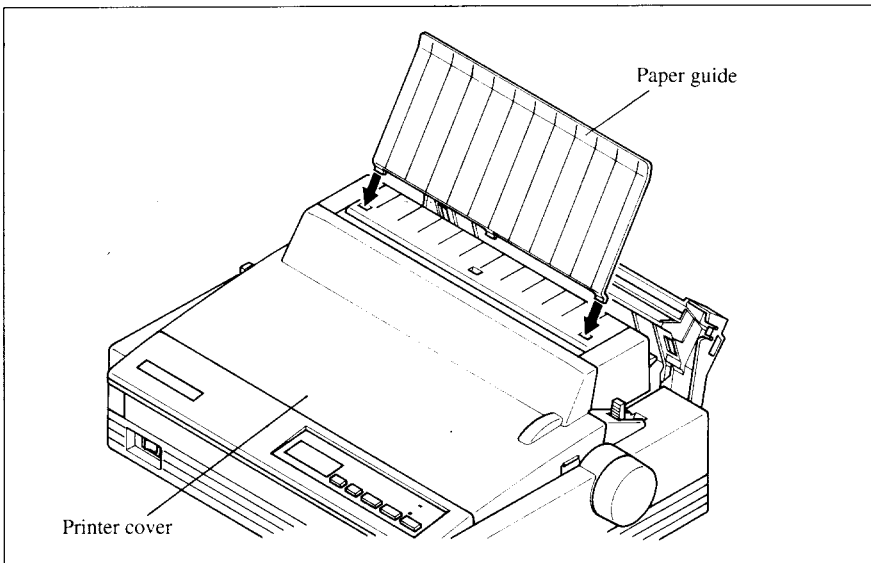
Figure 7-14. Mount the paper guide and the printer cover onto the printer.

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

Loading paper

1. Open the printer cover.
2. With the tractor covers open, guide the paper from the bottom of the printer, by aligning holes with the pins on the tractor unit.
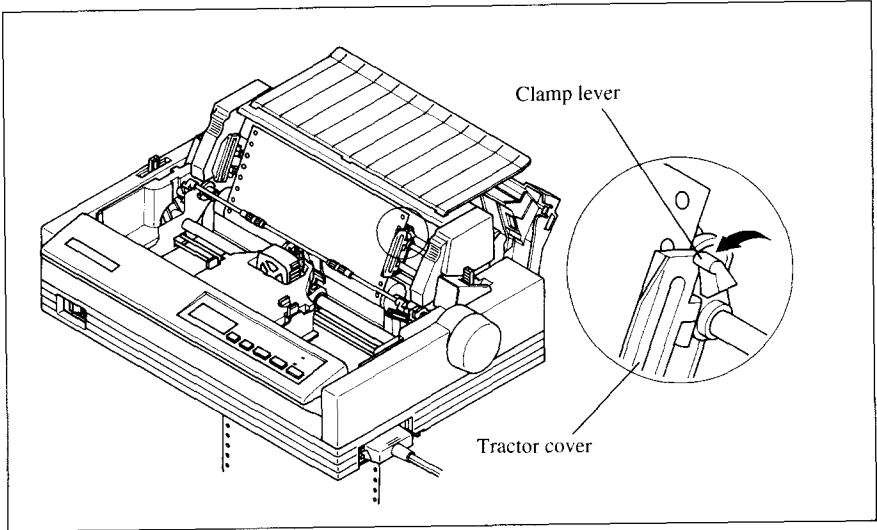
Figure 7-15. Mount the fanfold paper from the bottom of the printer.

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.

Clamp lever
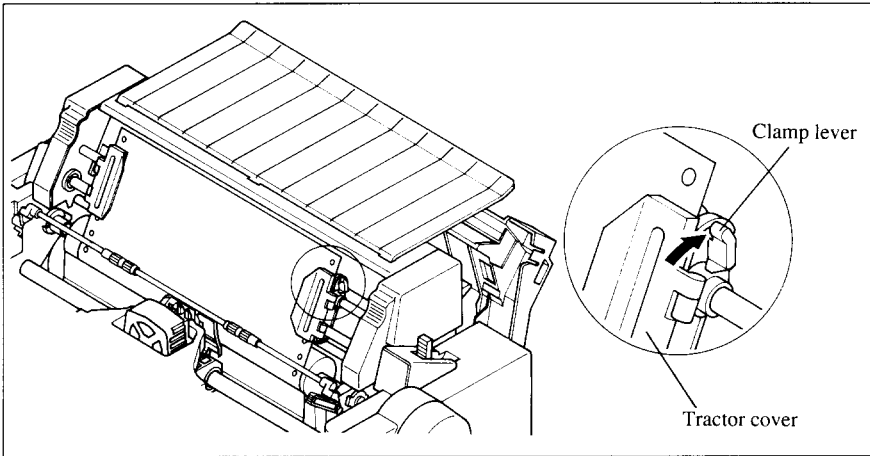
Tractor cover

Figure 7-16. Close the tractor covers after adjust the spacing of the tractor units by sliding them along the bar.

5. After setting up the paper from the bottom of the printer, install the printer cover.
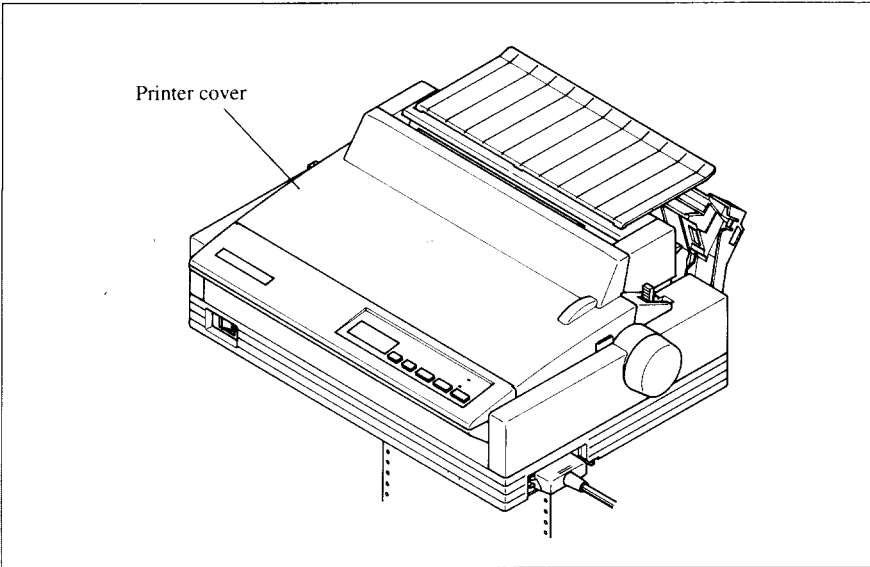
Printer cover

Figure 7-17. Mount the printer cover.

Now, you are ready to start printing with the Pull Tracter Unit.

FONT CARTRIDGES AND RAM CARTRIDGES

This printer has five built-in LQ fonts, and a 16 K-byte printing buffer.

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

[Optional Font Cartidges]

	Font Name	Character sample
• FC-1Z	Orator	123456789 ABCDE ABCDE
	Orator 2	123456789 ABCDE abcde
	Letter Gothic	123456789 ABCDE abcde
	Blippo	123456789 ABCDE abcde
	Cinema	123456789 ABCDE abcde
• FC-2Z	OCR-B	123456789 ABCDE abcde
	OCR-A	123456789 ABCDE abcde
	CODE 39	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	UPC/EAN	123456789 12345 IIIII IIII
• FC-3Z	TW-Light	123456789 ABCDE abcde
	H-Gothic	123456789 ABCDE abcde
	Orane	123456789 ABCDE abcde
• FC-4Z	Russian Roman	123456789 АБВГД ≡±≥≤ ʃ
	GOST	123456789 гәёіï ПЯРСТ
	Cyrillic	123456789 АБВГД ЁёЄёЇ
• FC-5Z	Old Style	123456789 ABCDE abcde
	Firenze	123456789 ABCDE abcde
• FC-10Z	SLQ Script	123456789 ABCDE abcde
• FC-11Z	SLQ Roman	123456789 ABCDE abcde
• FC-12Z	SLQ TW-Light	123456789 ABCDE abcde

[Optional RAM Cartridge]

• RC-32Z — 32 K-byte printing buffer with memory backup for downloading of data
• DC-32Z — 32 K-byte printing buffer

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.
2. Remove the connector cover at the right side of the printer.
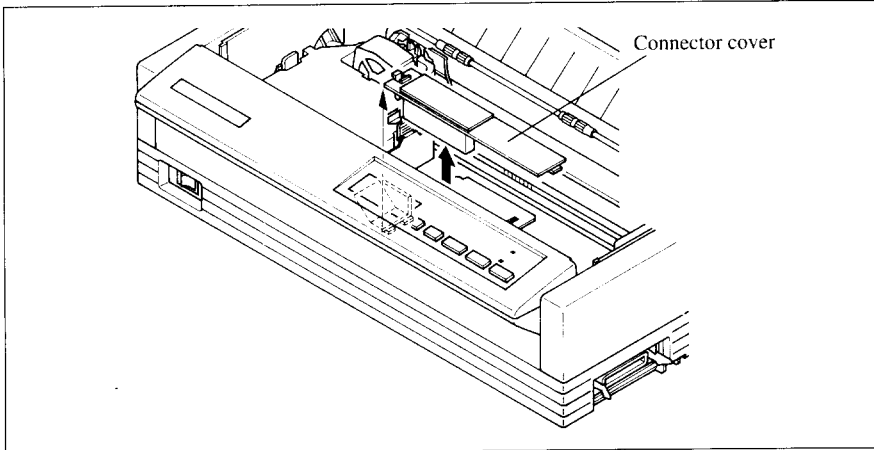
Figure 7-18. Remove the connector cover at the right side of the printer.

3. Push out the cap from the connector cover, as shown in Figure 7-19. NOTE: Keep this cap in a safe place.
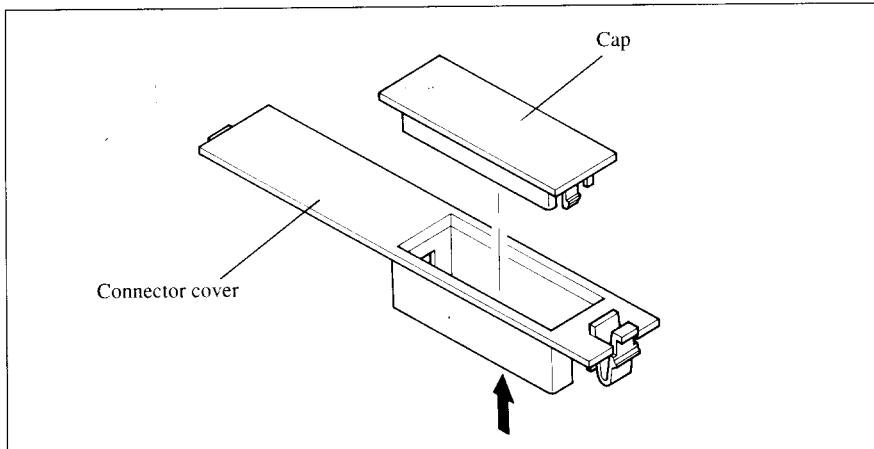
Figure 7-19. Push out the cap from the connector cover.

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.
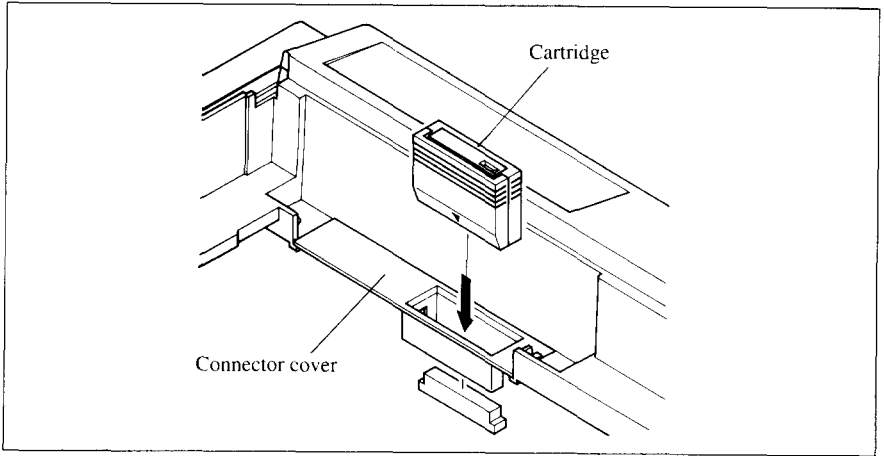
Figure 7-20. Insert the cartridge into the slot of the connector cover.

6. Close the front cover.

NOTE: Remount the cap on the connector cover if you are not using an optional cartridge.

INTERFACE CONVERTER (SPC-8K)

To run the printer in serial mode, you should use the optional Serial/Parallel Converter (SPC-8K).

The procedure to install the Converter is:

1. Set the DIP switches on the SPC-8K before attaching it to the printer. (See next page for detailed information.)
2. Turn off the power switch and disconnect the power cord from the power source.
3. Disconnect the interface cable if attached.
4. Connect the Parallel connector to the printer.
5. Move both clips inside the extended prongs on the sides of the plug until you hear a click.
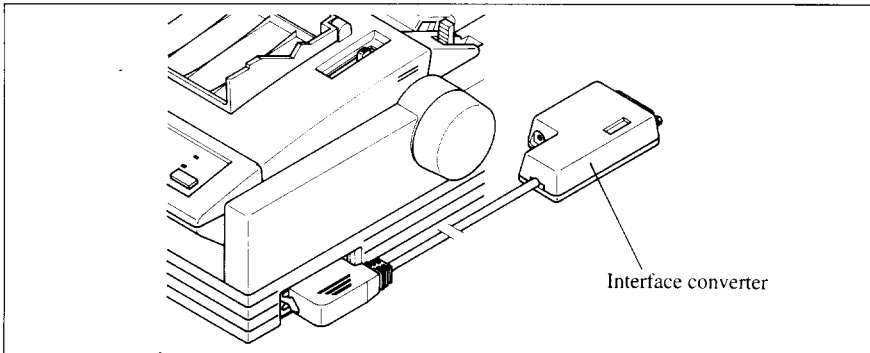
Figure 7-21. Connect the Parallel connector to the printer.

6. Connect the Serial connector to your computer.

NOTE: Place the Converter on a table in order not to damage the cable.
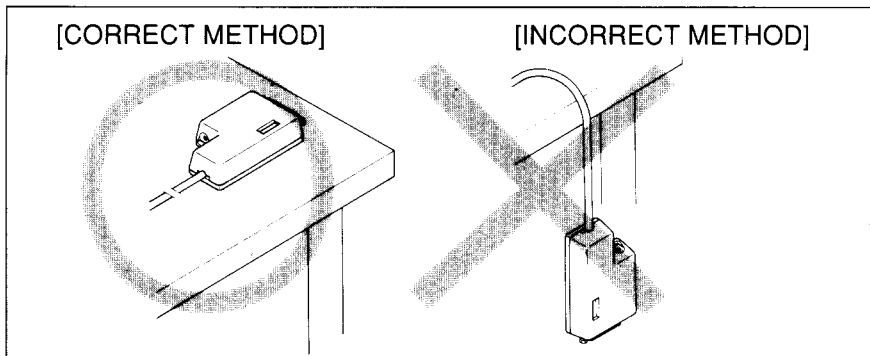
Figure 7-22. Place the converter on a table.

DIP Switch Functions on The Converter

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 converter.

Following table shows the functions of the DIP switches on the Serial-Parallel Converter.

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			
7	Transfer speed	(Refer below)	
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

MEMO

Chapter 8
PRINTER CONTROL COMMANDS

The printer has two emulation modes: Standard/Epson mode and IBM mode. In Standard/Epson mode, the printer emulates the functions of the Epson LQ-860/850. In IBM mode, the printer emulates the IBM Proprinter X24E/24P and PS/1 printer. Additional command codes are included as a superset of these emulations.

The emulation is changed by means of EDS switch A-1. When it is ON, the printer will be in Standard/Epson mode, and when OFF, the printer will be in IBM mode (see Chapter 5).

In addition, when the EDS switch A-2 is ON, the printer automatically changes the emulation by means of software control.

This chapter describes the printer's control commands. Some commands are common to both the standard and IBM modes. In the descriptions of the commands, all commands will given by functions.

Mode	ASCII	Decimal	Hexadecimal	Description
Std.	<ESC> "x" <1>	27 120 1	1B 78 01	Select LQ characters

Mode: Indicates the mode in which the command is recognized.

              Std.   Standard/Epson mode (EDS switch A-1 is ON.)

              IBM   IBM mode (EDS switch A-1 is OFF.)

              Both   Both Standard/Epson and IBM modes

ASCII: Indicates the ASCII coding of the command. Control characters are enclosed in pointed brackets: For example, <1> means character code 1.

Decimal: Gives the command in decimal character codes.

Hexadecimal: Gives the command in hexadecimal character codes.

Parameters for which values must be supplied are indicated by italic letters such as *n, m* or *d*.

FONT CONTROL COMMANDS

Mode	ASCII			Decimal			Hexadecimal			Description
Std.	<ESC>	"x"	n	27	120	n	1B	78	n	Changes the print quality according to the value of n, as shown below: 0 Draft 1 Letter Quality
IBM	<ESC> <1>	"[" <0>	<d> n	27 1	91 0	100 n	1B 01	5B 00	64 n	Changes the print quality according to the value of n, as shown below: 0 Unchanged 1 - 127 Draft 128 - 254 Letter quality 255 Return to EDS setting
Both	<ESC>	"k"	n	27	107	n	1B	6B	n	Selects an LQ font according to the value of n. 0 Roman 1 Sanserif 2 Courier 3 Prestige 4 Script 5 OCR-B (FC-2Z) 6 OCR-A (FC-2Z) 7 Orator (FC-1Z) 8 Orator 2 (FC-1Z) 9 TW-Light (FC-3Z) 10 Letter Gothic (FC-1Z) 11 Blippo (FC-1Z) 12 H-Gothic (FC-3Z) 13 Orane (FC-3Z) 14 Cinema (FC-1Z) 15 CODE 39 (FC-2Z) 16 UPC/EAN (FC-2Z) 17 Old Style (FC-5Z) 18 Firenze (FC-5Z) 32 SLQ Roman (FC-11Z) 33 SLQ TW-Light (FC-12Z) 34 SLQ Script (FC-10Z)
Std.	<ESC>	"4"		27	52		1B	34		Causes subsequent characters to be printed in italics.
Std.	<ESC>	"5"		27	53		1B	35		Stops italic printing and causes subsequent characters to be printed upright.
Both	<ESC>	"E"		27	69		1B	45		Causes subsequent characters to be emphasized.
Both	<ESC>	"F"		27	70		1B	46		Cancels emphasized printing.
Both	<ESC>	"G"		27	71		1B	47		Causes subsequent characters to be printed in double-strike mode.
Both	<ESC>	"H"		27	72		1B	48		Cancels double-strike printing.
Both	<ESC>	"–"	n	27	45	n	1B	2D	n	When n is 1, causes subsequent characters to be underlined. When n is 0, stops underlining.
IBM	<ESC>	"_"	n	27	95	n	1B	5F	n	When n is 1, causes subsequent characters to be overlined. When n is 0, stops overlining.

82

Mode	ASCII			Decimal			Hexadecimal			Description
Std.	<ESC>	"("	"–"	27	40	45	1B	28	2D	Start score according to the values of $n1$ and $n2$, as
	<3>	<0>	<1>	3	0	1	03	00	01	shown below.
		$n1$	$n2$		$n1$	$n2$		$n1$	$n2$	$n1$: 1 Underlining
										2 Strike-through
										3 Overlining
										$n2$: 0 Cancel score
										1 Single continuous line
										2 Double continuous line
										5 Single broken line
										6 Double broken line
Std.	<ESC>	"q"	n	27	113	n	1B	71	n	Selects an ornament character according to the
										value of n, as shown below.
										0 Normal
										1 Outline
										2 Shadow
										3 Shadow and outline
Both	<ESC>	"S"	<0>	27	83	0	1B	53	00	Causes subsequent characters to be printed as superscripts.
Both	<ESC>	"S"	<1>	27	83	1	1B	53	01	Causes subsequent characters to be printed as subscripts.
Both	<ESC>	"T"		27	84		1B	54		Stops printing superscripts or subscripts and returns to normal printing.

CHARACTER SET COMMANDS

Mode	ASCII			Decimal			Hexadecimal			Description
Both	\<ESC\>	"t"	\<0\>	27	116	0	1B	74	00	Selects the standard character set.
Both	\<ESC\>	"t"	\<1\>	27	116	1	1B	74	01	Selects an IBM character set.
Both	\<ESC\>	"7"		27	55		1B	37		Selects character set #1.
Both	\<ESC\>	"6"		27	54		1B	36		Selects character set #2.
Std.	\<ESC\>	"R"	n	27	82	n	1B	52	n	Selects an international character set in the Standard character set according to the value of n.
										0 U.S.A 8 Japan
										1 France 9 Norway
										2 Germany 10 Denmark II
										3 England 11 Spain II
										4 Denmark I 12 Latin America
										5 Sweden 13 Korea
										6 Italy 14 Irish
										7 Spain I 64 Legal
Both	\<ESC\>	"["	"T"	27	91	84	1B	5B	54	Changes the code page of the current IBM charac-
	\<4\>	\<0\>	\<0\>	4	0	0	04	00	00	ter set according to the values of n1 and n2.
	\<0\>	n1	n2	0	n1	n2	00	n1	n2	n1 n2 Code Page
										1 181 #437 U.S.A.
										3 82 #850 Multi-lingual
										3 92 #860 Portuguese
										3 93 #861 Icelandic
										3 95 #863 Canadian French
										3 97 #865 Nordic
IBM	\<ESC\>	"\\"		27	92		1B	5C		Enables printing of all characters in the IBM char-
		n1	n2		n1	n2		n1	n2	acter set, for the next n1 + n2 × 256 characters.
IBM	\<ESC\>	"^"	n	27	94	n	1B	5E	n	Enables printing of all characters in the IBM character set, for the value of n.
Std.	\<ESC\>	"~"	n	27	126	n	1B	7E	n	Selects subsequent zero character style.
										0 Normal 1 Slashed

84

CHARACTER SIZE AND PITCH COMMANDS

Mode	ASCII		Decimal		Hexadecimal		Description
Std.	<ESC> "P"		27 80		1B 50		Changes from either elite or semi-condensed to pica pitch (10 cpi) or from condensed elite to condensed pica (17 cpi).
IBM	<DC2>		18		12		Changes from either elite or condensed to pica (10 cpi).
Std.	<ESC> "M"		27 77		1B 4D		Changes from either pica or semi-condensed to elite pitch (12 cpi) or from condensed pica to condensed elite (20 cpi).
IBM	<ESC> ":"		27 58		1B 3A		Changes from either pica or semi-condensed to elite pitch (12 cpi) or from condensed pica to condensed elite (20 cpi).
Std.	<ESC> "g"		27 103		1B 67		Changes from either pica or elite to semi-condensed pitch (15 cpi).
Both	<SI>		15		0F		Changes from pica to condensed pica (17 cpi) or from elite to condensed elite (20 cpi).
Both	<ESC> <SI>		27 15		1B 0F		Changes from pica to condensed pica (17 cpi) or from elite to condensed elite (20 cpi).
Std.	<DC2>		18		12		Changes from condensed pica to normal pica or from condensed elite to normal elite.
Std.	<ESC> "p" n		27 112 n		1B 70 n		Selects or cancels proportional spacing. 0 Cancel 1 Select
IBM	<ESC> "P" n		27 80 n		1B 50 n		Selects or cancels proportional spacing. 0 Cancel 1 Select
IBM	<ESC> "I" n		27 73 n		1B 49 n		Changes the print font and pitch according to the value of n, as shown below: 0 10 CPI Draft 2 10 CPI Letter Quality 3 Proportional Letter Quality 4 10 CPI Draft Download 6 10 CPI LQ Download 7 Proportional LQ Download 8 12 CPI Draft 10 12 CPI Letter Quality 12 12 CPI Draft Download 14 12 CPI LQ Download 16 17 CPI Draft 18 17 CPI Letter Quality 20 17 CPI Draft Download 22 17 CPI LQ Download

Mode	ASCII			Decimal			Hexadecimal			Description
IBM	<ESC>	"I"	"I"	27	91	73	1B	5B	49	Changes the print font and pitch according to the
	<2>	<0>		2	0		02	00		values of $n1$ and $n2$, as shown below.
	$n1$	$n2$		$n1$	$n2$		$n1$	$n2$		$n1$ $n2$ Font and pitch
										0 11 10 CPI Courier
										1 235 12 CPI Courier
										1 236 15 CPI Courier
										1 237 17 CPI Courier
										1 238 20 CPI Courier
										1 30 24 CPI Courier
										0 171 Proportional Courier
										0 12 10 CPI Prestige
										1 239 12 CPI Prestige
										1 240 15 CPI Prestige
										1 201 17 CPI Prestige
										1 202 20 CPI Prestige
										1 31 24 CPI Prestige
										0 164 Proportional Prestige
										0 36 10 CPI Letter Gothic
										1 143 12 CPI Letter Gothic
										1 142 15 CPI Letter Gothic
										1 141 17 CPI Letter Gothic
										1 140 20 CPI Letter Gothic
										1 32 24 CPI Letter Gothic
										0 174 Proportional Letter Gothic
Both	<ESC>	"W"	n	27	87	n	1B	57	n	Selects or cancels expanded printing. 0 Cancel 1 Select
Both	<SO>			14			0E			Causes subsequent characters in the current line to be expanded to double width.
Both	<ESC>	<SO>		27	14		1B	0E		Causes subsequent characters in the current line to be expanded to double width.
Both	<DC4>			20			14			Stops one-line expanded printing set with <SO> or <ESC> <SO>.
Std.	<ESC>	"!"	n	27	33	n	1B	21	n	Selects a combined print mode according to the value of n. The value of n is the sum of the values given below for the desired characteristics. Function n value Underline 128 Italic 64 Expanded 32 Double strike 16 Emphasized 8 Condensed 4 Proportional 2 Elite 1
Std.	<ESC>	<SP>	n	27	32	n	1B	20	n	Increases the space between characters by n dots.
Std.	<ESC>	"h"	n	27	104	n	1B	68	n	Selects the size of subsequent characters as shown below. 0 Normal size 1 Double-high, double-wide 2 Quadruple-high, quadruple-wide
Std.	<ESC>	"w"	n	27	119	n	1B	77	n	Selects or cancels double height printing. 0 Cancel 1 Select

Mode	ASCII			Decimal			Hexadecimal			Description
IBM	\<ESC\>	"["	"@"	27	91	64	1B	5B	40	Selects a combination of character height, width,
	\<4\>	\<0\>	\<0\>	4	0	0	04	00	00	and line spacing according to the value of n and m,
	\<0\>	n	m	0	n	m	00	n	m	as below.

n	Line spacing	Character height
0	Unchanged	Unchanged
1	Unchanged	Single height
2	Unchanged	Double height
16	Single	Unchanged
17	Single	Single height
18	Single	Double height
32	Double	Unchanged
33	Double	Single height
34	Double	Double height

m	Character width
1	Single width (same as \<ESC\> "W" 0)
2	Double width (same as \<ESC\> "W" 1)

VERTICAL POSITION COMMANDS

Mode	ASCII			Decimal			Hexadecimal			Description
Both	<ESC>	"0"		27	48		1B	30		Set line spacing to 1/8 inch.
Both	<ESC>	"1"		27	49		1B	31		Set line spacing to 7/60 or 7/72 inch.
Std.	<ESC>	"2"		27	50		1B	32		Set line spacing to 1/6 inch.
Std.	<ESC>	"+"	n	27	43	n	1B	2B	n	Set line spacing to n/360 inch.
IBM	<ESC>	"["	"\"	27	91	92	1B	5B	5C	Set base unit for line spacing, according to the
	<4>	<0>	<0>	4	0	0	04	00	00	values of n1 and n2.
	<0>	n1	n2	0	n1	n2	00	n1	n2	n1 n2 Base unit
										0 180 1/180-inch
										0 216 1/216-inch
										1 104 1/360-inch
Both	<ESC>	"3"	n	27	51	n	1B	33	n	Set line spacing to n/180 inch, n/216 inch, or n/360 inch, according to the defined base unit.
Both	<ESC>	"A"	n	27	65	n	1B	41	n	Set line spacing to n/60 inch (Standard mode) or n/72 inch (IBM mode).
IBM	<ESC>	"2"		27	50		1B	32		Sets the line spacing to the value defined by the last preceding <ESC> "A" command.
Both	<LF>			10			0A			Prints the current line and feeds the paper to the next line.
Std.	<ESC>	<LF>		27	10		1B	0A		Prints the current line and feeds the paper in the reverse direction to the preceding line.
IBM	<ESC>	"]"		27	93		1B	5D		Prints the current line and feeds the paper in the reverse direction to the preceding line.
Both	<ESC>	"J"	n	27	74	n	1B	4A	n	Feeds the paper once by n/180 inches, n/216 inches, or n/360 inches, according to the defined base unit.
Std.	<ESC>	"j"	n	27	106	n	1B	6A	n	Feeds the paper once by n/180 inches in the reverse direction.
Std.	<ESC>	"f"		27	102		1B	66		Feeds the paper n lines from the current line.
	<1>	n		1	n		01	n		
IBM	<ESC>	"4"		27	52		1B	34		Sets the current position as the top-of-page position.
Both	<ESC>	"C"	n	27	67	n	1B	43	n	Sets the page length to n lines in the current line spacing.
Both	<ESC>	"C"		27	67		1B	43		Sets the page length to n inches.
	<0>	n		0	n		00	n		
Both	<ESC>	"N"	n	27	78	n	1B	4E	n	Sets the bottom margin to n lines.
Both	<ESC>	"O"		27	79		1B	4F		Cancels the bottom margin.
Both	<FF>			12			0C			Feeds the paper to the top of the next page according to the current page length.
Std.	<ESC>	<FF>		27	12		1B	0C		Feeds the paper backward to the top of the current page.
Both	<ESC>	"8"		27	56		1B	38		Causes the printer to disregard the signal sent by the paper-out detector.
Both	<ESC>	"9"		27	57		1B	39		Causes the printer to stop printing before the end of the paper.
Both	<ESC>	"B"	n1	27	66	n1	1B	42	n1	Cancels all current vertical tab stops and sets new
	n2	....	<0>	n2	....	0	n2	...	00	vertical tab stops at lines n1, n2, etc.
Std.	<ESC>	"e"		27	101		1B	65		Cancels all current vertical tab stops and sets new
	<1>	n		1	n		01	n		tab stops every n lines.

Mode	ASCII			Decimal			Hexadecimal			Description
Std.	<ESC>	"b"	n0	27	98	n0	1B	62	n0	Cancels all current vertical tab stops in channel n0,
	n1	n2	<0>	n1	n2	0	n1	n2	00	(where n0 is between 0 and 7) and sets new vertical
										tab stops in this channel.
Std.	<ESC>	"/"	n0	27	47	n0	1B	2F	n0	Selects a set of vertical tab stops designated by a
										channel number (n0) from 0 to 7.
Both	<VT>			11			0B			Feeds the paper to the next vertical tab stop and
										moves the print position to the left margin.

HORIZONTAL POSITION COMMANDS

Mode	ASCII			Decimal			Hexadecimal			Description
Std.	\<ESC\>	"l"	n	27	108	n	1B	6C	n	Sets the left margin at column n in the current character pitch.
Std.	\<ESC\>	"Q"	n	27	81	n	1B	51	n	Sets the right margin at column n in the current character pitch.
IBM	\<ESC\>	"X"		27	88		1B	58		Sets the left margin at column n1 and the right
		n1	n2		n1	n2		n1	n2	margin at column n2.
Both	\<CR\>			13			0D			Prints the current line and returns the next print position to the left margin.
IBM	\<ESC\>	"5"	\<1\>	27	53	1	1B	35	01	Causes the printer to perform both a carriage return and line feed each time it receives a \<CR\> code.
IBM	\<ESC\>	"5"	\<0\>	27	53	0	1B	35	00	Causes the printer to perform only a carriage return when it receives a \<CR\> code.
Both	\<BS\>			8			08			Moves the print position one column to the left.
Std.	\<ESC\>	"a"	\<0\>	27	97	0	1B	61	00	Aligns subsequent text with the left margin, leaving the right margin ragged.
Std.	\<ESC\>	"a"	\<1\>	27	97	1	1B	61	01	Centers subsequent text between the left and right margins.
Std.	\<ESC\>	"a"	\<2\>	27	97	2	1B	61	02	Aligns subsequent text with the right margin, leaving the left margin ragged.
Std.	\<ESC\>	"a"	\<3\>	27	97	3	1B	61	03	Aligns subsequent text between the left and right margins.
Both	\<ESC\>	"D"	n1	27	68	n1	1B	44	n1	Cancels all current horizontal tab stops and sets
		n2	\<0\>	n2	....	0	n2	...	00	new tab stops at columns n1, n2, etc. in the current character pitch.
Std.	\<ESC\>	"e"		27	101		1B	65		Cancels all current horizontal tab stops and sets
		\<0\>	n		0	n		00	n	new tab stops every n columns.
IBM	\<ESC\>	"R"		27	82		1B	52		Resets the horizontal tab stops to their power-up values in which a tab stop is set every 8 column starting at column 9. Also clears all vertical tab stops.
Both	\<HT\>			9			09			Moves the print position to the next horizontal tab stop.
Std.	\<ESC\>	"\\"		27	92		1B	5C		Moves the print position right or left a specified
		n1	n2		n1	n2		n1	n2	distance.
IBM	\<ESC\>	"d"		27	100		1B	64		Sets the next print position to (n1 + n2 × 256)/120
		n1	n2		n1	n2		n1	n2	inches from the current position.
Std.	\<ESC\>	"S"		27	36		1B	24		Sets the next print position to (n1 + n2 × 256)/60
		n1	n2		n1	n2		n1	n2	inches from the left margin on the current line.
Std.	\<ESC\>	"f"		27	102		1B	66		Moves the next print position to column n from the
		\<0\>	n		0	n		00	n	left margin.

GRAPHICS COMMANDS

Mode	ASCII			Decimal			Hexadecimal			Description
Both	<ESC> "K"			27	75		1B	4B		Prints bit-image graphics at 60 dots per inch
	n1	*n2*			*n1*	*n2*		*n1*	*n2*	horizontally. The graphic image is 8 dots high and
	m1	*m2*	...	*m1*	*m2*	...	*m1*	*m2*	...	*n1* + *n2* × 256 dots wide.
Both	<ESC> "L"			27	76		1B	4C		Prints bit-image graphics at 120 dots per inch
	n1	*n2*			*n1*	*n2*		*n1*	*n2*	horizontally.
	m1	*m2*	...	*m1*	*m2*	...	*m1*	*m2*	...	
Both	<ESC> "Y"			27	89		1B	59		Prints bit-image graphics at 120 dots per inch
	n1	*n2*			*n1*	*n2*		*n1*	*n2*	horizontally, skipping every second dot in the
	m1	*m2*	...	*m1*	*m2*	...	*m1*	*m2*	...	horizontal direction.
Both	<ESC> "Z"			27	90		1B	5A		Prints bit-image graphics at 240 dots per inch
	n1	*n2*			*n1*	*n2*		*n1*	*n2*	horizontally, skipping every second dot in the
	m1	*m2*	...	*m1*	*m2*	...	*m1*	*m2*	...	horizontal direction.
Std.	<FS> "Z"	*n1*		28	90	*n1*	1C	5A	*n1*	Prints 24-bit dot graphics at 360 dots per inch
	n2	*m1*			*n2*	*m1*		*n2*	*m1*	horizontally. The graphics image is 24 dots high
	m2	*m3*	...	*m2*	*m3*	...	*m2*	*m3*	...	and *n1* + *n2* × 256 dots wide.
Std.	<ESC> "*"		*n0*	27	42	*n0*	1B	2A	*n0*	Selects one of eleven graphics modes depending
	n1	*n2*			*n1*	*n2*		*n1*	*n2*	on the value of *n0* and prints bit-image graphics in
	m1	*m2*	...	*m1*	*m2*	...	*m1*	*m2*	...	this mode.
										0 8-bit Normal-density (60 dpi)
										1 8-bit Double-density (120 dpi)
										2 8-bit Double-density, double-speed
										(120 dpi)
										3 8-bit Quadruple-density (240 dpi)
										4 8-bit CRT graphics, mode 1 (80 dpi)
										6 8-bit CRT graphics, mode II (90 dpi)
										32 24-bit Normal-density (60 dpi)
										33 24-bit Double-density (120 dpi)
										38 24-bit CRT graphics (90 dpi)
										39 24-bit Triple-density (180 dpi)
										40 24-bit Hex-density (360 dpi)
IBM	<ESC> "["	"g"		28	91	103	1B	5B	67	Selects one of eight graphics modes depending on
	n1	*n2*	*m0*	*n1*	*n2*	*m0*	*n1*	*n2*	*m0*	the value of *m0* and prints dot graphics in this
	m1	*m2*	...	*m1*	*m2*	...	*m1*	*m2*	...	mode.
										0 8-bit Normal-density (60 dpi)
										1 8-bit Double-density (120 dpi)
										2 8-bit Double-density, double-speed
										(120 dpi)
										3 8-bit Quadruple-density (240 dpi)
										8 24-bit Normal-density (60 dpi)
										9 24-bit Double-density (120 dpi)
										11 24-bit Triple-density (180 dpi)
										12 24-bit Hex-density (360 dpi)
Std.	<ESC> "?"			27	63		1B	3F		Converts graphics defined by subsequent <ESC>
	n	*m*			*n*	*m*		*n*	*m*	"K", <ESC> "L", <ESC> "Y" or <ESC> "Z"
										commands to a density mode defined by <ESC>
										"*".

DOWNLOAD CHARACTER COMMANDS

Mode	ASCII			Decimal			Hexadecimal			Description
Std.	<ESC>	"&"	<0>	27	38	0	1B	26	00	Defines one or more new characters and stores
	$n1$	$n2$	$m0$	$n1$	$n2$	$m0$	$n1$	$n2$	$m0$	them in RAM for later use. $n1$ is the character code
	$m1$	$m2$	$d1$	$m1$	$m2$	$d1$	$m1$	$m2$	$d1$	of the first character defined and $n2$ is the character
	$d2$	...	dx	$d2$	...	dx	$d2$	...	dx	code of the last character defined. $n1$ must be equal
										to or less than $n2$.
										The data for each character start with three bytes
										specifying proportional spacing attributes: the first
										byte, $m0$, specifies the left of the character; the
										second byte, $m1$, specifies the character width; the
										third byte, $m2$, specifies the right of the character.
IBM	<ESC>	"="	$n1$	27	61	$n1$	1B	3D	$n1$	Defines new characters and stores them in RAM
	$n2$	"#"	$n3$	$n2$	35	$n3$	$n2$	23	$n3$	for later use.
	$n4$	<0>	$n5$	$n4$	0	$n5$	$n4$	00	$n5$	
	$m1$	$m2$	...	$m1$	$m2$	..	$m1$	$m2$	...	
	$m9$	$d1$	$d2$	$m9$	$d1$	$d2$	$m9$	$d1$	$d2$	
		...	dx		...	dx		...	dx	
Std.	<ESC>	":"	<0>	27	58	0	1B	3A	00	Copies the selected character set with n, as shown
		n	<0>		n	0		n	00	below, to the corresponding download character
										RAM area, overwriting any download data already
										present.

 0 Roman
 1 Sanserif
 2 Courier
 3 Prestige
 4 Script
 5 OCR-B   (FC-2Z)
 6 OCR-A   (FC-2Z)
 7 Orator   (FC-1Z)
 8 Orator 2   (FC-1Z)
 9 TW-Light   (FC-3Z)
10 Letter Gothic (FC-1Z)
11 Blippo   (FC-1Z)
12 H-Gothic   (FC-3Z)
13 Orane   (FC-3Z)
14 Cinema   (FC-1Z)
15 CODE 39   (FC-2Z)
16 UPC/EAN   (FC-2Z)
17 Old Style   (FC-5Z)
18 Firenze   (FC-5Z)
32 SLQ Roman   (FC-11Z)
33 SLQ TW-Light (FC-12Z)
34 SLQ Script   (FC-10Z)

Mode	ASCII			Decimal			Hexadecimal			Description
Std.	<ESC>	"%"	<1>	27	37	1	1B	25	01	Selects the download character set.
Std.	<ESC>	"t"	<2>	27	116	2	1B	74	02	Shifts the download character area defined between 0 to 127 to the area between 128 to 255.
Std.	<ESC>	"%"	<0>	27	58	0	1B	25	00	Stops using the download character set and returns to the built-in ROM character set.

OTHER PRINTER COMMANDS

Mode	ASCII			Decimal			Hexadecimal			Description
Std.	\<ESC>	">"		27	62		1B	3E		Sets the most significant bit of each subsequent byte received to 1.
Std.	\<ESC>	"="		27	61		1B	3D		Sets the most significant bit of each subsequent byte received to 0.
Std.	\<ESC>	"#"		27	35		1B	23		Cancels the preceding commands and accepts the most significant bit as it is sent to the printer.
Std.	\<DEL>			127			7F			Deletes the last character received.
Both	\<CAN>			24			18			Deletes the last line currently present in the print buffer.
Std.	\<DC3>			19			13			Sets the printer off-line.
IBM	\<ESC>	"Q"	*n*	27	81	*n*	1B	51	*n*	Sets the printer off-line. The value of *n* should be 36, 81, or 180.
Both	\<DC1>			17			11			Returns the printer on-line state.
IBM	\<ESC>	"j"		27	106		1B	6A		Prints the entire contents of the input buffer, then sets the printer off-line.
Both	\<BEL>			7			07			Sounds a brief beep tone from the printer.
Both	\<ESC>	"U"	\<0>	27	85	0	1B	55	00	Causes subsequent printing to be done in the normal bi-directional mode.
Both	\<ESC>	"U"	\<1>	27	85	1	1B	55	01	Causes subsequent printing to be done uni-directionally.
Std.	\<ESC>	"<"		27	60		1B	3C		Immediately returns the print head to the left margin, then prints the remainder of the line from left to right.
Both	\<ESC> \<EM>	\<0>		27	25	0	1B	19	00	Selects manual sheet feeding even when the optional automatic sheet feeder is mounted.
Both	\<ESC> \<EM>	\<4>		27	25	4	1B	19	04	Selects the automatic sheet feeder.
Both	\<ESC> \<EM>	"R"		27	25	82	1B	19	52	Ejects the current page.
Both	\<ESC> \<EM> "T"	*n*		27 25	84	*n*	1B 19	54	*n*	Skips *n*/6 inches at the top of the page.
Both	\<ESC>	"@"		27	64		1B	40		Reinitializes the printer.
IBM	\<ESC> "[" "K" \<3> \<0> \<0> *n1* *n2*			27 91 75 3 0 0 *n1* *n2*			1B 5B 4B 03 00 00 *n1* *n2*			Reinitializes the printer to the initial conditions determined by the value of *n2*. The value of *n1* should be 3, 22, 35, 36, or 177.

MEMO

Chapter 9

REFERENCE

SPECIFICATIONS

Printing system ....Serial Impact Dot-matrix

Printing speed	Pica	Elite	Semi-condensed
High-Speed Draft	210 cps	—	—
Draft	160 cps	192 cps	240 cps
Letter Quality	53 cps	64 cps	80 cps

Print direction ....Bi-directional, logic-seeking
Uni-directional, logic-seeking
(selectable)

Print head ....24 pins
Life: 200 million dots

Line spacing ....1/6, 1/8, $n/60$, $n/72$, $n/180$, $n/216$, $n/360$
inches

Font styles
    Standard (2 Draft and 9 LQ)....High-Speed Draft, Draft, Roman, Roman Proportional, Sanserif, Sanserif Proportional, Courier, Courier Proportional, Prestige, Prestige Proportional, Script
    Option [FC-1Z Cartridge] ....Orator, Orator 2, Letter Gothic, Blippo, Cinema
        [FC-2Z Cartridge] ....OCR-B, OCR-A, CODE 39, UPC/EAN
        [FC-3Z Cartridge] ....TW-Light, H-Gothic, Orane
        [FC-4Z Cartridge] ....Russian Roman, GOST, Cyrillic
        [FC-5Z Cartridge] ....Old Style, Firenze
        [FC-10Z Cartridge] .....SLQ Script
        [FC-11Z Cartridge] .....SLQ Roman
        [FC-12Z Cartridge] .....SLQ TW-Light

Characters	ASCII	96
	International	16 sets (*)
	IBM special	111
	IBM block graphic	50
	IBM code page	6 sets (**)
	Download	255

* USA, France, Germany, England, Denmark I, Sweden, Italy, Spain I, Japan, Norway, Denmark II, Spain II, Latin America, Korea, Irish, Legal

** #437 (USA), #850 (Multi-Lingual), #860 (Portuguese), #861 (Icelandic), #863 (Canadian French), #865 (Nordic)

Number of columns	CPI	
Pica	10	80
Elite	12	96
Semi-condensed	15	120
Condensed pica	17.1	137
Condensed elite	20	160
Super-condensed	24	192
Proportional		Variable

Character matrix .... Draft		LQ	SLQ
Pica	24×9	24×31	48×31
Elite	24×9	24×27	48×27
Semi-condensed			
(Standard/Epson mode)	16×7	16×21	32×21
(IBM mode)	24×9	24×16	48×16
Condensed pica	24×9	24×16	48×16
Condensed elite	24×9	24×16	48×16
Super-condensed	24×9	24×14	48×14
Proportional	—	$24 \times n$	$48 \times n$

Bit image dot-matrix .... DPI		
8-pin normal	60	8×480
8-pin double	120	8×960
8-pin high-speed double *	120	8×960
8-pin quadruple *	240	8×1920
8-pin CRT I	80	8×640
8-pin CRT II	90	8×720

24-pin normal	60	24 × 480
24-pin double	120	24 × 960
24-pin CRT III	90	24 × 720
24-pin Triple	180	24 × 1440
24-pin Hex *	360	24 × 2880

* It is impossible to print adjacent dots in the mode marked with an asterisk (*).

Paper feed .... Friction or push tractor feed (standard)
Bottom feed with pull tractor (option)

Paper feed speed .... 3.4 inches/second max

Paper specifications
  Cut sheet
    Width .... 7.2" ~ 11.0" (182.0 ~ 279.4 mm)
    Length .... 5.5" ~ 14.3" (139.7 ~ 364.0 mm)
    Thickness .... 0.07 ~ 0.12 mm
    Weight .... 52 ~ 90 g/m²
      45 ~ 77 kg
      14 ~ 24 lb
  Fanfold (continuous)
    Width .... 4.0" ~ 10.0" (101.6 ~ 254.0 mm)
    Length .... Minimum 5.5" (139.7 mm)
    Thickness .... Single-ply paper 0.07 ~ 0.12 mm
      Total for multi-part forms 0.25 mm
    Weight .... 52 ~ 82 g/m²
      45 ~ 70 kg
      14 ~ 22 lb

Copies .... Original + 2 copies

Maximum buffer size .... Without Download   15.6 kB
With Download   256 Bytes

Emulations .... Standard mode: Epson LQ-860/850
IBM mode: IBM Proprinter X24E,
      Proprinter 24P, PS/1 printer

Interface .... Centronics parallel (standard)
                                             RS-232C serial (option)

Ribbon type .... On-carriage, dedicated
                                             Film ribbon (Black only)-FZ24
                                             Fabric ribbon (Black only)-Z24HD
                                             Long life fabric ribbon (Black only)-
                                             LZ24HD

Ribbon life
    Film ribbon (FZ24) .... 0.2 million characters (LQ pica)
    Fabric ribbon (Z24HD) .... 3 million characters (draft pica)
    Long life fabric ribbon .... 4 million characters (draft pica)
    (LZ24HD)

Dimensions and Weight
    Width .... 440 mm (17.32")
    Depth .... 330 mm (12.99")
    Width .... 150 mm (5.91")
    Weight .... 6.4Kg (14.1 lb)

Power supply .... 120VAC, 220VAC, 240VAC, 50/60 Hz
                                             (varies according to the country of pur-
                                             chase)

Options .... Film ribbon cartridge (FZ24)
                                             Long life fabric ribbon cartridge (LZ24HD)
                                             Single-bin Automatic Sheet Feeder
                                             (SF-10DS)
                                             Pull Tractor Unit (PT-10ZS)
                                             Font cartridge (FC-1Z, FC-2Z, FC-3Z, FC-
                                             4Z, FC-5Z, FC-10Z, FC-11Z, FC-12Z)
                                             RAM cartridge (RC-32Z, DC-32Z)
                                             Serial-Parallel Converter (SPC-8K)

PINOUT OF INTERFACE CONNECTOR

The following describes the pinout of the interface connector (signals which are low when active are overlined).

Parallel interface

Pin	Name	Function
1	$\overline{\text{STROBE}}$	Goes from high to low (for ≥ 0.5 µs) when active
2	DATA0	High when active
3	DATA1	High when active
4	DATA2	High when active
5	DATA3	High when active
6	DATA4	High when active
7	DATA5	High when active
8	DATA6	High when active
9	DATA7	High when active
10	$\overline{\text{ACK}}$	5 µs low pulse acknowledges receipt of data
11	BUSY	Low when printer ready to receive data
12	PAPER	High when paper out. Can be disabled with EDS setting
13	SELECT	High when printer is on-line
14, 15	N/C	
16	SIGNAL GND	Signal ground
17	CHASSIS	Chassis ground (isolated from signal ground)
18	+5V	+5V DC output from printer
19 ~ 30	GND	Twisted pair ground return
31	$\overline{\text{RESET}}$	When this input signal is low, printer is reset
32	$\overline{\text{ERROR}}$	Outputs low when printer cannot continue, due to an error
33	EXT GND	External ground
34, 35	N/C	
36	$\overline{\text{SELECT IN}}$	Always high

Serial Interface

Pin	Name	Function
1	GND	Printer's chassis ground.
2	TXD	This pin carries data from the printer.
3	RXD	This pin carries data to the printer.
4	RTS	This pin is always set space.
5	CTS	This pin is Space when the computer is ready to send data. This printer does not check this pin.
6	N/C	
7	GND	Signal ground.
8 ~ 10	N/C	
11	RCH	This printer turn this pin Space when it is ready to receive data. This line carries the same signal as pin 20.
12	N/C	
13	GND	Signal ground.
14 ~ 19	N/C	
20	DTR	This printer turns this pin Space when it is ready to receive data.
21 ~ 25	N/C	

CHARACTER SETS

The following tables show the standard and IBM character sets.

The decimal character code of each character is shown in an inset to the lower right of the character.

The hexadecimal code can be found by reading the entires at the top and left edges of the table. For example, the character "A" is in column 4 and row 1, so its hexadecimal character code is 41. This is equivalent $(4 \times 16 + 1 = 65)$ to decimal 65, the number in the inset.

Control codes recognized by this printer are indicated by abbreviations inside pointed brackets < >.

	0	1	2	3	4	5	6	7
0	\<NUL\> `0`	`16`	`32`	0 `48`	@ `64`	P `80`	` `96`	p `112`
1	`1`	\<DC1\> `17`	! `33`	1 `49`	A `65`	Q `81`	a `97`	q `113`
2	`2`	\<DC2\> `18`	'' `34`	2 `50`	B `66`	R `82`	b `98`	r `114`
3	`3`	\<DC3\> `19`	# `35`	3 `51`	C `67`	S `83`	c `99`	s `115`
4		\<DC4\>	$ `36`	4 `52`	D			t `116`

Character

Hexadecimal value (high order)

Control code

Decimal value

Hexadecimal value (low order)

Standard character set #2

	0	1	2	3	4	5	6	7
0	⟨NUL⟩ 0	16	32	0 48	@ 64	P 80	` 96	p 112
1	1	⟨DC1⟩ 17	! 33	1 49	A 65	Q 81	a 97	q 113
2	2	⟨DC2⟩ 18	'' 34	2 50	B 66	R 82	b 98	r 114
3	3	⟨DC3⟩ 19	# 35	3 51	C 67	S 83	c 99	s 115
4	4	⟨DC4⟩ 20	$ 36	4 52	D 68	T 84	d 100	t 116
5	5	21	% 37	5 53	E 69	U 85	e 101	u 117
6	⁻ 6	⟨SYN⟩ 22	& 38	6 54	F 70	V 86	f 102	v 118
7	⟨BEL⟩ 7	23	' 39	7 55	G 71	W 87	g 103	w 119
8	⟨BS⟩ 8	⟨CAN⟩ 24	(40	8 56	H 72	X 88	h 104	x 120
9	⟨HT⟩ 9	⟨EM⟩ 25	) 41	9 57	I 73	Y 89	i 105	y 121
A	⟨LF⟩ 10	26	* 42	: 58	J 74	Z 90	j 106	z 122
B	⟨VT⟩ 11	⟨ESC⟩ 27	+ 43	; 59	K 75	[91	k 107	{ 123
C	⟨FF⟩ 12	⟨FS⟩ 28	, 44	< 60	L 76	\ 92	l 108	¦ 124
D	⟨CR⟩ 13	29	─ 45	= 61	M 77	] 93	m 109	} 125
E	⟨SO⟩ 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126
F	⟨SI⟩ 15	31	/ 47	? 63	O 79	_ 95	o 111	⟨DEL⟩ 127

	8	9	A	B	C	D	E	F
0	à 128	§ 144	160	0 176	@ 192	P 208	` 224	p 240
1	è 129	ß 145	! 161	1 177	A 193	Q 209	a 225	q 241
2	ù 130	Æ 146	" 162	2 178	B 194	R 210	b 226	r 242
3	ò 131	æ 147	# 163	3 179	C 195	S 211	c 227	s 243
4	ì 132	Ø 148	$ 164	4 180	D 196	T 212	d 228	t 244
5	° 133	ø 149	% 165	5 181	E 197	U 213	e 229	u 245
6	£ 134	¨ 150	& 166	6 182	F 198	V 214	f 230	v 246
7	¡ 135	Ä 151	' 167	7 183	G 199	W 215	g 231	w 247
8	¿ 136	Ö 152	(168	8 184	H 200	X 216	h 232	x 248
9	Ñ 137	Ü 153	) 169	9 185	I 201	Y 217	i 233	y 249
A	ñ 138	ä 154	* 170	: 186	J 202	Z 218	j 234	z 250
B	¤ 139	ö 155	+ 171	; 187	K 203	[219	k 235	{ 251
C	Pt 140	ü 156	, 172	< 188	L 204	\ 220	l 236	¦ 252
D	Á 141	É 157	- 173	= 189	M 205	] 221	m 237	} 253
E	å 142	é 158	. 174	> 190	N 206	^ 222	n 238	~ 254
F	ç 143	¥ 159	/ 175	? 191	O 207	_ 223	o 239	255

International character sets

When an international character set is selected by a command from software, the following changes are made in the Standard Italic character set:

Country	35	36	64	88	90	91	92	93	94	96	123	124	125	126
U.S.A.	#	$	@	X	Z	[	\	]	^	`	{	¦	}	~
FRANCE	#	$	à	X	Z	°	ç	§	^	`	é	ù	è	¨
GERMANY	#	$	§	X	Z	Ä	Ö	Ü	^	`	ä	ö	ü	ß
ENGLAND	£	$	@	X	Z	[	\	]	^	`	{	¦	}	~
DENMARK 1	#	$	@	X	Z	Æ	Ø	Å	^	`	æ	ø	å	~
SWEDEN	#	¤	É	X	Z	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ITALY	#	$	@	X	Z	°	\	é	^	ù	à	ò	è	ì
SPAIN 1	₧	$	@	X	Z	¡	Ñ	¿	^	´	¨	ñ	}	~
JAPAN	#	$	@	X	Z	[	¥	]	^	`	{	¦	}	~
NORWAY	#	¤	É	X	Z'	Æ	Ø	Å	Ü	é	æ	ø	å	ü
DENMARK 2	#	$	É	X	Z	Æ	Ø	Å	Ü	é	æ	ø	å	ü
SPAIN 2	#	$	á	X	Z	¡	Ñ	¿	é	´	í	ñ	ó	ú
LATIN AMERICA	#	$	á	X	Z	¡	Ñ	¿	é	ü	í	ñ	ó	ú
KOREA	#	$	@	X	Z	[	₩	]	^	`	{	¦	}	~
IRISH	#	$	@	Ú	´	[	\	]	^	`	Á	É	Ó	~
LEGAL	#	$	§	X	Z	°	'	"	¶	`	©	®	†	™

The command for selecting the international character set is:

<ESC> "R" n

Where n means character code n, i.e. CHR$ (n) in BASIC. The values of n are:

0	U.S.A.	6	Italy	12	Latin America
1	France	7	Spain I	13	Korea
2	Germany	8	Japan	14	Irish
3	England	9	Norway	64	Legal
4	Denmark I	10	Denmark II		
5	Sweden	11	Spain II		

IBM character set #2

Code Page #437 (U.S.A.)

	0	1	2	3	4	5	6	7
0	(NUL) 0	16	32	0 48	@ 64	P 80	` 96	p 112
1	1	(DC1) 17	! 33	1 49	A 65	Q 81	a 97	q 113
2	2	(DC2) 18	" 34	2 50	B 66	R 82	b 98	r 114
3	♥ 3	(DC3) 19	# 35	3 51	C 67	S 83	c 99	s 115
4	♦ 4	(DC4) 20	$ 36	4 52	D 68	T 84	d 100	t 116
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117
6	♠ 6	(SYN) 22	& 38	6 54	F 70	V 86	f 102	v 118
7	(BEL) 7	23	' 39	7 55	G 71	W 87	g 103	w 119
8	(BS) 8	(CAN) 24	(40	8 56	H 72	X 88	h 104	x 120
9	(HT) 9	(EM) 25	) 41	9 57	I 73	Y 89	i 105	y 121
A	(LF) 10	26	* 42	: 58	J 74	Z 90	j 106	z 122
B	(VT) 11	(ESC) 27	+ 43	; 59	K 75	[91	k 107	{ 123
C	(FF) 12	(FS) 28	, 44	< 60	L 76	\ 92	l 108	¦ 124
D	(CR) 13	29	- 45	= 61	M 77	] 93	m 109	} 125
E	(SO) 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126
F	(SI) 15	31	/ 47	? 63	O 79	_ 95	o 111	(DEL) 127

	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	L 192	⨇ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▓ 177	⊥ 193	╤ 209	β 225	± 241
2	é 130	Æ 146	ó 162	▒ 178	T 194	π 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	⨆ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	— 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	F 213	σ 229	⌡ 245
6	å 134	û 150	ª 166	╢ 182	╞ 198	π 214	μ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	• 250
B	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	ì 141	¥ 157	¡ 173	╜ 189	= 205	▌ 221	ø 237	2 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	⊥ 207	▀ 223	∩ 239	255

Code Page #850 (Multi-lingual)

Other characters are identical to Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	░ 176	└ 192	ð 208	Ó 224	– 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242
3	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245
6	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	ì 141	Ø 157	¡ 173	¢ 189	= 205	¦ 221	Ý 237	² 253
E	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	255

Code Page #860 (Portuguese)

Other characters are identical to Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	À 145	í 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	é 130	È 146	ó 162	� 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ã 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	Á 134	Ú 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	Ì 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	Ê 137	Õ 153	Ò 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	Í 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	Ô 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	ì 141	Ù 157	¡ 173	╜ 189	= 205	▌ 221	ø 237	² 253
E	Ã 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	Â 143	Ó 159	» 175	┐ 191	± 207	▀ 223	∩ 239	255

Code Page #861 (Icelandic)

Other characters are identical to Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	é 130	Æ 146	ó 162	░ 178	┬ 194	π 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	Á 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	þ 149	Í 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	Ó 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	Ý 151	Ú 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ý 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	Ð 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	ð 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	Þ 141	Ø 157	¡ 173	╜ 189	= 205	▌ 221	φ 237	2 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	255

Code Page #863 (Canadian French)

Other characters are identical to Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç [128]	É [144]	¦ [160]	▓ [176]	└ [192]	╨ [208]	α [224]	≡ [240]
1	ü [129]	È [145]	´ [161]	▒ [177]	┴ [193]	╤ [209]	β [225]	± [241]
2	é [130]	Ê [146]	ó [162]	▓ [178]	┬ [194]	╥ [210]	Γ [226]	≥ [242]
3	â [131]	ô [147]	ú [163]	│ [179]	├ [195]	╙ [211]	π [227]	≤ [243]
4	Â [132]	Ë [148]	¨ [164]	┤ [180]	─ [196]	╘ [212]	Σ [228]	⌠ [244]
5	à [133]	Ï [149]	¸ [165]	╡ [181]	┼ [197]	╒ [213]	σ [229]	⌡ [245]
6	¶ [134]	û [150]	³ [166]	╢ [182]	╞ [198]	╓ [214]	µ [230]	÷ [246]
7	ç [135]	ù [151]	― [167]	╖ [183]	╟ [199]	╫ [215]	τ [231]	≈ [247]
8	ê [136]	¤ [152]	Î [168]	╕ [184]	╚ [200]	╪ [216]	Φ [232]	° [248]
9	ë [137]	Ô [153]	┌ [169]	╣ [185]	╔ [201]	┘ [217]	θ [233]	• [249]
A	è [138]	Ü [154]	¬ [170]	║ [186]	╩ [202]	┌ [218]	Ω [234]	· [250]
B	ï [139]	¢ [155]	½ [171]	╗ [187]	╦ [203]	█ [219]	δ [235]	√ [251]
C	î [140]	£ [156]	¼ [172]	╝ [188]	╠ [204]	▄ [220]	∞ [236]	ⁿ [252]
D	‗ [141]	Ù [157]	¾ [173]	╜ [189]	═ [205]	▌ [221]	ø [237]	² [253]
E	À [142]	Û [158]	« [174]	╛ [190]	╬ [206]	▐ [222]	∈ [238]	■ [254]
F	§ [143]	ƒ [159]	» [175]	┐ [191]	╧ [207]	▀ [223]	∩ [239]	[255]

110

Code Page #865 (Nordic)

Other characters are identical to Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	░ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	μ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	ì 141	Ø 157	¡ 173	╜ 189	= 205	▌ 221	ø 237	² 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	Å 143	ƒ 159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	255

111

Character set #1

Other characters are identical to character set #2.

The duplication of control codes enables systems with a 7-bit interface to obtain control functions when the most significant bit is set to 1 by the <ESC> ">" command in the standard mode.

	0	1
0	<NUL> 0	16
1	1	<DC1> 17
2	2	<DC2> 18
3	3	<DC3> 19
4	4	<DC4> 20
5	5	21
6	6	<SYN> 22
7	<BEL> 7	23
8	<BS> 8	<CAN> 24
9	<HT> 9	<EM> 25
A	<LF> 10	26
B	<VT> 11	<ESC> 27
C	<FF> 12	<FS> 28
D	<CR> 13	29
E	<SO> 14	30
F	<SI> 15	31

	8	9
0	<NUL> 128	144
1	129	<DC1> 145
2	130	<DC2> 146
3	131	<DC3> 147
4	132	<DC4> 148
5	133	149
6	134	<SYN> 150
7	<BEL> 135	151
8	<BS> 136	<CAN> 152
9	<HT> 137	<EM> 153
A	<LF> 138	154
B	<VT> 139	<ESC> 155
C	<FF> 140	<FS> 156
D	<CR> 141	157
E	<SO> 142	158
F	<SI> 143	159

IBM special character set

Additional characters can be printed by special commands.

	0	1
0	Ø 0	► 16
1	☺ 1	◄ 17
2	☻ 2	↕ 18
3	♥ 3	‼ 19
4	♦ 4	¶ 20
5	♣ 5	§ 21
6	♠ 6	▬ 22
7	• 7	↨ 23
8	◘ 8	↑ 24
9	○ 9	↓ 25
A	◙ 10	→ 26
B	♂ 11	← 27
C	♀ 12	∟ 28
D	♪ 13	↔ 29
E	♫ 14	▲ 30
F	☼ 15	▼ 31

PROPORTIONAL SPACING TABLE

This table lists the widths of your printer's proportional characters, for Standard mode and IBM mode.

The values given are in 360ths of an inch. For example, a value of 36 is 36/360ths of an inch. You may need to enter these widths into a special table for your processing program so it can calculate the number of proportional characters that will fit on a line.

The following width table shows each character, its ASCII code (decimal) for each character set, and its width for Standard normal mode, Standard super/subscript mode, and IBM mode.

Character code						Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
–	0	0	0	0	0	0	Ø	30	20	30
–	1	1	1	1	1	1	☺	30	20	30
–	2	2	2	2	2	2	☻	30	20	30
–	3	3	3	3	3	3	♥	30	20	30
–	4	4	4	4	4	4	♦	30	20	30
–	5	5	5	5	5	5	♣	30	20	30
–	6	6	6	6	6	6	♠	30	20	30
–	7	7	7	7	7	7	•	30	20	30
–	8	8	8	8	8	8	◘	30	20	30
–	9	9	9	9	9	9	○	30	20	30
–	10	10	10	10	10	10	◙	30	20	30
–	11	11	11	11	11	11	♂	30	20	30
–	12	12	12	12	12	12	♀	30	20	30
–	13	13	13	13	13	13	♪	30	20	30
–	14	14	14	14	14	14	♫	30	20	30
–	15	15	15	15	15	15	☼	30	20	30
–	16	16	16	16	16	16	►	30	20	30
–	17	17	17	17	17	17	◄	30	20	30
–	18	18	18	18	18	18	↕	30	20	30
–	19	19	19	19	19	19	‼	30	20	30

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
INT	20	20	20	20	20	20	¶	30	20	30
INT	21	21	21	21	21	21	§	30	20	30
-	22	22	22	22	22	22	▬	30	20	30
-	23	23	23	23	23	23	↨	30	20	30
-	24	24	24	24	24	24	↑	30	20	30
-	25	25	25	25	25	25	↓	30	20	30
-	26	26	26	26	26	26	→	30	20	30
-	27	27	27	27	27	27	←	30	20	30
-	28	28	28	28	28	28	∟	30	20	30
-	29	29	29	29	29	29	↔	30	20	30
-	30	30	30	30	30	30	▲	30	20	30
-	31	31	31	31	31	31	▼	30	20	30
32	32	32	32	32	32	32		30	20	30
33	33	33	33	33	33	33	!	18	12	30
34	34	34	34	34	34	34	''	30	20	30
35	35	35	35	35	35	35	#	30	20	30
36	36	36	36	36	36	36	$	30	20	30
37	37	37	37	37	37	37	%	36	24	30
38	38	38	38	38	38	38	&	36	24	36
39	39	39	39	39	39	39	'	18	12	18
40	40	40	40	40	40	40	(	24	16	30
41	41	41	41	41	41	41	)	24	16	30
42	42	42	42	42	42	42	*	30	20	30
43	43	43	43	43	43	43	+	30	20	30
44	44	44	44	44	44	44	,	18	12	30
45	45	45	45	45	45	45	-	30	20	30
46	46	46	46	46	46	46	.	18	12	30
47	47	47	47	47	47	47	/	30	20	30
48	48	48	48	48	48	48	0	30	20	30
49	49	49	49	49	49	49	1	30	20	30

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
50	50	50	50	50	50	50	2	30	20	30
51	51	51	51	51	51	51	3	30	20	30
52	52	52	52	52	52	52	4	30	20	30
53	53	53	53	53	53	53	5	30	20	30
54	54	54	54	54	54	54	6	30	20	30
55	55	55	55	55	55	55	7	30	20	30
56	56	56	56	56	56	56	8	30	20	30
57	57	57	57	57	57	57	9	30	20	30
58	58	58	58	58	58	58	:	18	12	30
59	59	59	59	59	59	59	;	18	12	30
60	60	60	60	60	60	60	<	30	20	30
61	61	61	61	61	61	61	=	30	20	30
62	62	62	62	62	62	62	>	30	20	30
63	63	63	63	63	63	63	?	30	20	30
64	64	64	64	64	64	64	@	36	24	30
65	65	65	65	65	65	65	A	36	24	42
66	66	66	66	66	66	66	B	36	24	42
67	67	67	67	67	67	67	C	36	24	42
68	68	68	68	68	68	68	D	36	24	42
69	69	69	69	69	69	69	E	36	24	36
70	70	70	70	70	70	70	F	36	24	36
71	71	71	71	71	71	71	G	36	24	42
72	72	72	72	72	72	72	H	36	24	42
73	73	73	73	73	73	73	I	24	16	24
74	74	74	74	74	74	74	J	30	20	30
75	75	75	75	75	75	75	K	36	24	42
76	76	76	76	76	76	76	L	36	24	36
77	77	77	77	77	77	77	M	42	28	42
78	78	78	78	78	78	78	N	36	24	42
79	79	79	79	79	79	79	O	36	24	42

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
80	80	80	80	80	80	80	P	36	24	36
81	81	81	81	81	81	81	Q	36	24	42
82	82	82	82	82	82	82	R	36	24	42
83	83	83	83	83	83	83	S	36	24	36
84	84	84	84	84	84	84	T	36	24	42
85	85	85	85	85	85	85	U	42	28	42
86	86	86	86	86	86	86	V	36	24	42
87	87	87	87	87	87	87	W	42	28	42
88	88	88	88	88	88	88	X	36	24	42
89	89	89	89	89	89	89	Y	36	24	42
90	90	90	90	90	90	90	Z	30	20	36
91	91	91	91	91	91	91	[	24	16	30
92	92	92	92	92	92	92	\	30	20	30
93	93	93	93	93	93	93	]	24	16	30
94	94	94	94	94	94	94	^	30	20	30
95	95	95	95	95	95	95	_	30	20	30
96	96	96	96	96	96	96	`	18	12	30
97	97	97	97	97	97	97	a	30	20	30
98	98	98	98	98	98	98	b	36	24	36
99	99	99	99	99	99	99	c	30	20	30
100	100	100	100	100	100	100	d	36	24	36
101	101	101	101	101	101	101	e	30	20	30
102	102	102	102	102	102	102	f	24	16	24
103	103	103	103	103	103	103	g	36	24	36
104	104	104	104	104	104	104	h	36	24	36
105	105	105	105	105	105	105	i	18	12	18
106	106	106	106	106	106	106	j	24	16	18
107	107	107	107	107	107	107	k	36	24	36
108	108	108	108	108	108	108	l	18	12	18
109	109	109	109	109	109	109	m	42	28	42

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
110	110	110	110	110	110	110	n	36	24	36
111	111	111	111	111	111	111	o	30	20	30
112	112	112	112	112	112	112	p	36	24	36
113	113	113	113	113	113	113	q	36	24	36
114	114	114	114	114	114	114	r	30	20	30
115	115	115	115	115	115	115	s	30	20	30
116	116	116	116	116	116	116	t	24	16	24
117	117	117	117	117	117	117	u	36	24	36
118	118	118	118	118	118	118	v	36	24	36
119	119	119	119	119	119	119	w	42	28	42
120	120	120	120	120	120	120	x	30	20	36
121	121	121	121	121	121	121	y	36	24	36
122	122	122	122	122	122	122	z	30	20	30
123	123	123	123	123	123	123	{	24	16	30
124	124	124	124	124	124	124	¦	18	12	30
125	125	125	125	125	125	125	}	24	16	30
126	126	126	126	126	126	126	~	30	20	30
–	127	127	127	127	127	127	⌂	30	20	30
128	128	128	128	128	128	128	Ç	36	24	42
129	129	129	129	129	129	129	ü	36	24	36
130	130	130	130	130	130	130	é	30	20	30
131	131	131	131	131	131	131	â	30	20	30
132	132	132	–	132	–	132	ä	30	20	30
133	133	133	133	133	133	133	à	30	20	30
134	134	134	–	134	–	134	å	30	20	30
135	135	135	135	135	135	135	ç	30	20	30
136	136	136	136	136	136	136	ê	30	20	30
137	137	137	–	137	137	137	ë	30	20	30
138	138	138	138	138	138	138	è	30	20	30
139	139	139	–	–	139	139	ï	18	12	18

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
140	140	140	–	–	140	140	î	18	12	18
141	141	141	141	–	–	141	ì	18	12	18
142	142	142	–	142	–	142	Ä	36	24	42
143	143	143	–	143	–	143	Å	36	24	42
144	144	144	144	144	144	144	É	36	24	36
145	145	145	–	145	–	145	æ	42	28	42
146	146	146	–	146	–	146	Æ	42	28	42
147	147	147	147	147	147	147	ô	30	20	30
148	148	148	–	148	–	148	ö	30	20	30
149	149	149	149	–	–	149	ò	30	20	30
150	150	150	–	150	150	150	û	36	24	36
151	151	151	151	–	151	151	ù	36	24	36
152	152	152	–	–	–	152	ÿ	36	24	36
153	153	153	–	153	–	153	Ö	36	24	42
154	154	154	154	154	154	154	Ü	42	28	42
155	155	189	155	–	155	–	¢	30	20	30
156	156	156	156	156	156	156	£	30	20	30
157	157	190	–	–	–	–	¥	36	24	30
158	158	–	158	158	–	158	Pt	42	28	42
159	159	159	–	159	159	159	ƒ	30	20	30
160	160	160	160	160	–	160	á	30	20	30
161	161	161	161	161	–	161	í	18	12	18
162	162	162	162	162	162	162	ó	30	20	30
163	163	163	163	163	163	163	ú	36	24	36
164	164	164	164	–	–	164	ñ	36	24	36
165	165	165	165	–	–	165	Ñ	36	24	42
166	166	166	166	–	–	166	ª	30	20	30
167	167	167	167	–	–	167	º	30	20	30
168	168	168	168	168	–	168	¿	30	20	30
169	169	–	–	169	169	169	⌐	30	20	30

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
170	170	170	170	170	170	170	¬	30	20	30
171	171	171	171	171	171	171	½	30	20	30
172	172	172	172	172	172	172	¼	30	20	30
173	173	173	173	173	–	173	¡	30	20	30
174	174	174	174	174	174	174	«	30	20	42
175	175	175	175	175	175	–	»	30	20	42
176	176	176	176	176	176	176	░	30	30	30
177	177	177	177	177	177	177	▒	30	30	30
178	178	178	178	178	178	178	▓	30	30	30
179	179	179	179	179	179	179	│	30	30	30
180	180	180	180	180	180	180	┤	30	30	30
181	181	–	181	181	181	181	╡	30	30	30
182	182	–	182	182	182	182	╢	30	30	30
183	183	–	183	183	183	183	╖	30	30	30
184	184	–	184	184	184	184	╕	30	30	30
185	185	185	185	185	185	185	╣	30	30	30
186	186	186	186	186	186	186	║	30	30	30
187	187	187	187	187	187	187	╗	30	30	30
188	188	188	188	188	188	188	╝	30	30	30
189	189	–	189	189	189	189	╜	30	30	30
190	190	–	190	190	190	190	╛	30	30	30
191	191	191	191	191	191	191	┐	30	30	30
192	192	192	192	192	192	192	└	30	30	30
193	193	193	193	193	193	193	┴	30	30	30
194	194	194	194	194	194	194	┬	30	30	30
195	195	195	195	195	195	195	├	30	30	30
196	196	196	196	196	196	196	─	30	30	30
197	197	197	197	197	197	197	┼	30	30	30
198	198	–	198	198	198	198	╞	30	30	30
199	199	–	199	199	199	199	╟	30	30	30

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
200	200	200	200	200	200	200	⌐	30	30	30
201	201	201	201	201	201	201	⌐	30	30	30
202	202	202	202	202	202	202	⊥	30	30	30
203	203	203	203	203	203	203	⊤	30	30	30
204	204	204	204	204	204	204	⊢	30	30	30
205	205	205	205	205	205	205	=	30	30	30
206	206	206	206	206	206	206	╬	30	30	30
207	207	–	207	207	207	207	⊥	30	30	30
208	208	–	208	208	208	208	⊥	30	30	30
209	209	–	209	209	209	209	⊤	30	30	30
210	210	–	210	210	210	210	⊤	30	30	30
211	211	–	211	211	211	211	⌐	30	30	30
212	212	–	212	212	212	212	⊢	30	30	30
213	213	–	213	213	213	213	⊢	30	30	30
214	214	–	214	214	214	214	⌐	30	30	30
215	215	–	215	215	215	215	╫	30	30	30
216	216	–	216	216	216	216	╪	30	30	30
217	217	217	217	217	217	217	⌐	30	30	30
218	218	218	218	218	218	218	⌐	30	30	30
219	219	219	219	219	219	219	█	30	30	30
220	220	220	220	220	220	220	▄	30	30	30
221	221	–	221	221	221	221	▌	30	30	30
222	222	–	222	222	222	222	▐	30	30	30
223	223	223	223	223	223	223	▀	30	30	30
224	224	–	224	224	224	224	α	30	30	30
225	225	225	225	225	225	225	β	30	30	36
226	226	–	226	226	226	226	Γ	30	30	36
227	227	–	227	227	227	227	π	30	30	36
228	228	–	228	228	228	228	Σ	30	30	42
229	229	–	229	229	229	229	σ	30	30	36

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
230	230	230	230	230	230	230	μ	30	30	36
231	231	–	231	231	231	231	τ	30	30	30
232	232	–	232	232	232	232	Φ	30	30	42
233	233	–	233	233	233	233	θ	30	30	42
234	234	–	234	234	234	234	Ω	30	30	42
235	235	–	235	235	235	235	δ	30	30	30
236	236	–	236	236	236	236	∞	30	30	30
237	237	–	237	237	237	237	ø	30	30	42
238	238	–	238	238	238	238	∈	30	30	30
239	239	–	239	239	239	239	∩	30	30	30
240	240	–	240	240	240	240	≡	30	30	30
241	241	241	241	241	241	241	±	30	30	30
242	242	–	242	242	242	242	≥	30	30	30
243	243	–	243	243	243	243	≤	30	30	30
244	244	–	244	244	244	244	⌠	30	30	30
245	245	–	245	245	245	245	⌡	30	30	30
246	246	246	246	246	246	246	÷	30	30	30
247	247	–	247	247	247	247	≈	30	30	30
248	248	248	248	248	248	248	°	30	30	30
249	249	–	249	249	249	249	•	30	30	30
250	250	250	250	250	250	250	·	30	30	30
251	251	–	251	251	251	251	√	30	30	30
252	252	–	252	252	252	252	n	30	30	30
253	253	253	253	253	253	253	2	30	30	30
254	254	254	254	254	254	254	■	30	30	30
255	255	255	255	255	255	255		30	20	30
INT	–	155	–	155	–	155	ø	30	30	42
INT	–	157	–	157	–	157	Ø	36	28	42
–	–	158	–	–	–	–	×	42	20	30
INT	–	169	–	–	–	–	®	36	21	30

Character code							Chr.	Proportional width		
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
INT	–	181	134	164	–	–	Á	36	28	42
–	–	182	143	–	132	–	Â	42	20	42
–	–	183	145	–	142	–	À	42	28	42
INT	–	184	–	–	–	–	©	36	21	30
–	–	198	132	–	–	–	ã	30	20	30
–	–	199	142	–	–	–	Ã	42	28	42
INT	–	207	–	–	152	175	¤	30	20	30
–	–	208	–	140	–	–	ð	36	24	36
–	–	209	–	139	–	–	Đ	42	28	42
–	–	210	137	–	146	–	Ê	36	24	36
–	–	211	–	–	148	–	Ë	36	24	36
–	–	212	146	–	145	–	È	36	24	36
–	–	213	–	–	–	–	ı	18	12	18
–	–	214	139	165	–	–	Í	24	16	24
–	–	215	–	–	168	–	Î	24	16	24
–	–	216	–	–	149	–	Ï	24	16	24
–	–	221	–	–	160	–	¦	18	12	30
–	–	222	152	–	–	–	Ì	24	16	24
INT	–	224	159	166	–	–	Ó	30	28	42
–	–	226	140	–	153	–	Ô	30	28	42
–	–	227	169	–	–	–	Ò	30	28	42
–	–	228	148	–	–	–	õ	30	20	30
–	–	229	153	–	–	–	Õ	30	28	42
–	–	231	–	149	–	–	þ	30	24	36
–	–	232	–	141	–	–	Þ	30	28	42
INT	–	233	150	167	–	–	Ú	30	28	42
–	–	234	–	–	158	–	Û	30	28	42
–	–	235	157	–	157	–	Ù	30	28	42
–	–	236	–	152	–	–	ý	30	24	36
–	–	237	–	151	–	–	Ÿ	30	28	42

| Character code | | | | | | | Chr. | Proportional width | | |
Std.	#437	#850	#860	#861	#863	#865		Normal	Super/Sub	IBM
–	–	238	–	–	167	–	¯	30	20	30
INT	–	239	–	–	161	–	´	18	20	30
–	–	240	–	–	–	–	–	30	20	30
–	–	242	–	–	–	–	=	30	20	30
–	–	243	–	–	173	–	¾	30	21	30
–	–	244	–	–	134	–	¶	30	20	30
–	–	245	–	–	143	–	§	30	20	30
–	–	247	–	–	165	–	¸	30	20	30
INT	–	249	–	–	164	–	¨	30	20	30
–	–	251	–	–	–	–	¹	30	20	30
–	–	252	–	–	166	–	³	30	20	30
–	–	–	–	–	141	–	=	30	20	30
INT	–	–	–	–	–	–	⁄	30	20	30
INT	–	–	–	–	–	–	°	24	16	24
INT	–	–	–	–	–	–	₩	42	28	42
INT	–	–	–	–	–	–	†	30	20	30
INT	–	–	–	–	–	–	ß	36	24	36
INT	–	–	–	–	–	–	™	36	24	36

INDEX

A

Absolute horizontal tab, 90
Adjustment lever, 3, 21
AEC mode, 4, 51
All reset, 43
Application software, 18
ASF control commands, 93
Auto emulation change mode, 4, 51
Auto Line Feed, 51, 90
Auto loading position, 42
Automatic Sheet Feeder, 11, 51, 65

B

Backspace, 90
Bail lever, 3, 25, 27, 29
Base unit for line spacing, 88
Beep tones, 47
Bell command, 93
Bi-directional printing, 51, 93
Bit image dot-matrix, 96
Bottom feed, 19, 22, 97
Bottom margin, 88
Buffer size, 97
Button and indicator functions, 31-34

C

Cancel command, 93
Carriage centering, 54
Carriage return, 90
Carton contents, 10
Cartridge slot, 3
Center text, 90
Character height, 87
Character matrix, 96
Character pitch commands, 85-87
Character set #1, 84, 112

Character set #2, 84
Character set commands, 84
Character set table, 101-113
Character size commands, 85-87
Character spacing, 5, 86
Character table, 53
Character width, 86, 87
Clamp lever, 3, 24
Clear the buffer, 43
Code page, 53, 84, 96, 105-111
  #437, 105-106
  #850, 107
  #860, 108
  #861, 109
  #863, 110
  #865, 111
Command summary, 129-133
Component, 2-3
Condensed printing, 85
Contents of the carton, 10
Control commands, 81-93
Control panel 3, 5, 31-44
Copy characters, 92

D

Default settings, 49-55
Define download characters, 92
Delete command, 93
Dimensions, 98
Display massages, 45-46
Dot Adjustment mode, 38
Double-density graphics, 91
Double-height characters, 86
Double-size characters, 86
Double-strike printing, 82

Reverse micro-feed, 42
Ribbon cartridge, 3, 5, 14, 98
Right justify, 90
Right margin, 90

S

Score, 83
Selection of paper, 19-20
Self-test, 35, 36
Semi-condensed, 85
Serial-Parallel Converter, 11, 78
Setting up, 12-18
Shift download character area, 92
Short test mode, 35
Single sheets, 1, 19, 28-30, 97
Special character set, 113
Specifications, 95-98
Standard character set, 84, 102-103
Strike-through, 83
Subscript, 83
Superscript, 83
Switch combination functions, 41-44

T

Tear assist, 13
Tear-off function, 5, 27
Top of form, 41, 88
Tractor, 3
Troubleshooting, 57-63

U

Underlining, 82, 83
Uni-directional printing, 51, 93
Unpacking and inspection, 10

V

Vertical position commands, 88-89
Vertical tab, 89
Vertical tab channel, 89
Vertical tab stops, 88

W

Weight, 98

Z

Zero style, 84

COMMAND SUMMARY

Standard Mode

The following commands take effect with the Standard mode.

CONTROL CODE	FUNCTION	PAGE
<BEL>	Bell	93
<BS>	Backspace	90
<HT>	Horizontal tab	90
<LF>	Line feed	88
<VT>	Vertical tab	89
<FF>	Form feed	88
<CR>	Carriage return	90
<SO>	Expanded printing for one line	86
<SI>	Condensed printing	85
<DC1>	Set printer on-line	93
<DC2>	Cancel condensed printing	85
<DC3>	Set printer off-line	93
<DC4>	Cancel one-line expanded printing	86
<CAN>	Cancel last line	93
<ESC> <LF>	Reverse line feed	88
<ESC> <FF>	Return to top of current page	88
<ESC> <SO>	Expanded printing for one line	86
<ESC> <SI>	Condensed printing	85
<ESC> <EM> <0>	Manual feed	93
<ESC> <EM> <4>	Auto feed	93
<ESC> <EM> "R"	Eject paper from ASF	93
<ESC> <EM> "T" n	Set print start position on ASF	93
<ESC> <SP> n	Increase character spacing	86
<ESC> "!" n	Select master print mode	86
<ESC> "#"	Accept MSB as is	93
<ESC> "$" $n1$ $n2$	Absolute horizontal tab in inches	90
<ESC> "%" 0	Select ROM character set	92
<ESC> "%" 1	Select download character set	92
<ESC> "&" <0> $n1$ $n2$ $m0$ $m1$ $m2$ $d1$ $d2$ ... dx	Define download characters	92
<ESC> "(" "−" <3> <0> <1> $n1$ $n2$	Select score	83
<ESC> "*" $n0$ $n1$ $n2$ $m1$ $m2$ ...	Select graphics mode	91
<ESC> "+" n	Set line spacing to $n/360$ inch	88
<ESC> "−" n	Underlining	82
<ESC> "/" $n0$	Select vertical tab channel	89
<ESC> "0"	Set line spacing to 1/8 inch	88
<ESC> "1"	Set line spacing to 7/60 inch	88
<ESC> "2"	Set line spacing to 1/6 inch	88
<ESC> "3" n	Set line spacing to $n/180$ inch	88
<ESC> "4"	Select italic characters	82
<ESC> "5"	Select upright characters	82
<ESC> "6"	Select character set #2	84
<ESC> "7"	Select character set #1	84
<ESC> "8"	Disable paper-out detector	88
<ESC> "9"	Enable paper-out detector	88
<ESC> ":" <0> n <0>	Copy character set from ROM into RAM	92

CONTROL CODE	FUNCTION	• PAGE
<ESC> "<"	One-line uni-directional printing	93
<ESC> "="	Set MSB to 0	93
<ESC> ">"	Set MSB to 1	93
<ESC> "?" n m	Convert graphics density	91
<ESC> "@"	Reset printer	93
<ESC> "A" n	Set line spacing to $n/60$ inch	88
<ESC> "B" $n1$ $n2$ .... <0>	Set vertical tab stops	88
<ESC> "C" <0> n	Set page length to n inches	88
<ESC> "C" n	Set page length to n lines	88
<ESC> "D" $n1$ $n2$ .... <0>	Set horizontal tab stops	90
<ESC> "E"	Emphasized printing	82
<ESC> "F"	Cancel emphasized printing	82
<ESC> "G"	Double-strike printing	82
<ESC> "H"	Cancel double-strike printing	82
<ESC> "J" n	Perform one $n/180$-inch line feed	88
<ESC> "K" $n1$ $n2$ $m1$ $m2$ ...	Print normal-density 8-bit graphics	91
<ESC> "L" $n1$ $n2$ $m1$ $m2$ ...	Print double-density 8-bit graphics	91
<ESC> "M"	Elite pitch	85
<ESC> "N" n	Set bottom margin	88
<ESC> "O"	Cancel bottom margin	88
<ESC> "P"	Pica pitch	85
<ESC> "Q" n	Set right margin	90
<ESC> "R" n	Select international character set	84
<ESC> "S" 0	Superscript	83
<ESC> "S" 1	Subscript	83
<ESC> "T"	Cancel superscript or subscript	83
<ESC> "U" 0	Bi-directional printing	93
<ESC> "U" 1	Uni-directional printing	93
<ESC> "W" n	Expanded printing	86
<ESC> "Y" $n1$ $n2$ $m1$ $m2$ ...	Print double-density, double-speed 8-bit graphics	91
<ESC> "Z" $n1$ $n2$ $m1$ $m2$ ...	Print quadruple-density 8-bit graphics	91
<ESC> "[" "T" <4> <0> <0> <0> $n1$ $n2$	Select IBM code page	84
<ESC> "\" $n1$ $n2$	Relative horizontal tab	90
<ESC> "a" 0	Left justify	90
<ESC> "a" 1	Center text	90
<ESC> "a" 2	Right justify	90
<ESC> "a" 3	Full justify	90
<ESC> "b" $n0$ $n1$ $n2$ .... <0>	Set vertical tab stops in channel	89
<ESC> "e" 0 n	Set horizontal tab stop every n columns	90
<ESC> "e" 1 n	Set vertical tab stops every n lines	88
<ESC> "f" 0 n	Absolute horizontal tab in columns	90
<ESC> "f" 1 n	Feed paper n lines	88
<ESC> "g"	Semi-condensed pitch	85
<ESC> "h" n	Select double or quadruple size	86
<ESC> "j" n	Perform one $n/180$-inch reverse line feed	88
<ESC> "k" n	Select LQ font	82
<ESC> "l" n	Set left margin	90
<ESC> "p" n	Proportional spacing	85
<ESC> "q" n	Select ornament character	83
<ESC> "t" 0	Select standard character set	84
<ESC> "t" 1	Select IBM character set	84
<ESC> "t" 2	Shift download character area	92
<ESC> "w" n	Double-height characters	86
<ESC> "x" n	Select print quality	82
<ESC> "~" n	Select zero style	84
<FS> "z" $n1$ $n2$ $m1$ $m2$ $m3$ ...	Print hex-density 24-bit graphics	91
<DEL>	Delete last character sent	93

IBM Mode

The following commands take effect with the IBM mode.

CONTROL CODE	FUNCTION	PAGE
<BEL>	Bell	93
<BS>	Backspace	90
<HT>	Horizontal tab	90
<LF>	Line feed	88
<VT>	Vertical tab	89
<FF>	Form feed	88
<CR>	Carriage return	90
<SO>	Expanded printing for one line	86
<SI>	Condensed printing	85
<DC1>	Set printer on-line	93
<DC2>	Pica pitch	85
<DC4>	Cancel one-line expanded printing	86
<CAN>	Cancel last line	93
<ESC> <SO>	Expanded printing for one line	86
<ESC> <SI>	Condensed printing	85
<ESC> <EM> <0>	Manual feed	93
<ESC> <EM> <4>	Auto feed	93
<ESC> <EM> "R"	Eject paper from ASF	93
<ESC> <EM> "T" *n*	Set print start position on ASF	93
<ESC> "−" *n*	Underlining	82
<ESC> "0"	Set line spacing to 1/8 inch	88
<ESC> "1"	Set line spacing to 7/72 inch	88
<ESC> "2"	Execute <ESC> "A"	88
<ESC> "3" *n*	Set line spacing to *n*/180 inch, *n*/216 inch, or *n*/360 inch	88
<ESC> "4"	Set top of page at current position	88
<ESC> "5" <0>	Cancel automatic line feed	90
<ESC> "5" <1>	Set automatic line feed	90
<ESC> "6"	Select character set #2	84
<ESC> "7"	Select character set #1	84
<ESC> "8"	Disable paper-out detector	88
<ESC> "9"	Enable paper-out detector	88
<ESC> ":"	Elite pitch	85
<ESC> "=" *n1 n2* "#" *n3 n4* <0> *n5 m1 m2 ... m9 d1 d2 ... dx*	Define download characters	92
<ESC> "@"	Reset printer	93
<ESC> "A" *n*	Set line spacing to *n*/72 inch	88
<ESC> "B" *n1 n2* .... <0>	Set vertical tab stops	88
<ESC> "C" <0> *n*	Set page length to *n* inches	88
<ESC> "C" *n*	Set page length to *n* lines	88
<ESC> "D" *n1 n2* .... <0>	Set horizontal tab stops	90
<ESC> "E"	Emphasized printing	82
<ESC> "F"	Cancel emphasized printing	82
<ESC> "G"	Double-strike printing	82
<ESC> "H"	Cancel double-strike printing	82
<ESC> "I" *n*	Select font and pitch	85
<ESC> "J" *n*	Perform one *n*/180-inch, *n*/216-inch, or *n*/360-inch line feed	88
<ESC> "K" *n1 n2 m1 m2* ...	Print normal-density 8-bit graphics	91
<ESC> "L" *n1 n2 m1 m2* ...	Print double-density 8-bit graphics	91
<ESC> "N" *n*	Set bottom margin	88
<ESC> "O"	Cancel bottom margin	88
<ESC> "P" *n*	Proportional spacing	85
<ESC> "Q" *n*	Set printer off-line	93
<ESC> "R"	Reset all tab stops	90
<ESC> "S" 0	Superscript	83

132

USERS' GUIDE ★star

CONTROL PANEL OPERATIONS

The control panel buttons can be pressed individually to perform the operations indicated by their names.

LCD DISPLAY — shows the information of the printer status.

FONT BUTTON — selects the font to be printed. To change the font, set the printer off-line, then press the FONT button repeatedly until the message on the display illuminates.

PITCH BUTTON — allows you to select the printing pitch. Remember that the printer must be off-line for you to do this.

EJECT/PARK BUTTON — Pressing this button parks the fanfold forms or ejects the cut sheet paper.

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 press this button while on-line, this will alternately flash the "**QUIET**" message on the display. When in Quiet mode with the "**QUIET**" message, the printer will print slightly slower, but at a reduced noise level.

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

■ POWER-UP FUNCTIONS ■

The control panel buttons have special functions that operate if you hold them down while switching power on.

■ SELF-TEST

If the printer is turned on while the **ON LINE** button is pressed, the printer will enter the short self-test mode, with the "**P1**" message on the display.

If the printer is turned on while the **PAPER FEED** button is pressed, the printer will enter the long self-test mode, with the "**P2**" message on the display.

■ PRINT AREA TEST

By holding the **EJECT/PARK** button down during power-up, the printer will enter the print area test mode, with the "**P3**" message on the display. This way, you can find how many lines on your paper are available for printing.

■ PITCH LOCK
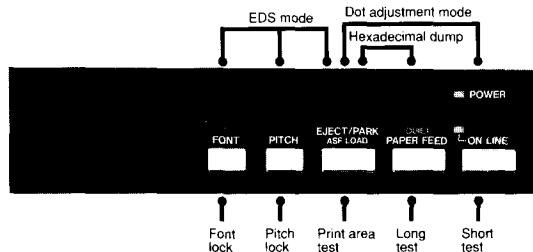
By holding the **PITCH** button down during power-up, the print pitch can only be selected from the control panel. This prevents software interference. You will hear an acknowl-

edging beep, and the printer will show the "**P-LOCK**" message on the display as power comes on.

■ FONT LOCK

By holding the **FONT** button during power-up, fonts can only be selected from the control panel. This prevents software interference.

There will be an acknowledging beep and "**F-LOCK**" message on the display.

■ HEXADECIMAL DUMP

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.

■ SWITCH COMBINATION FUNCTIONS ■

Several additional functions can be obtained by pressing the control panel buttons with the off-line state.

■ FORM FEED

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

■ MICRO-FEED

For fine alignment, you can feed the paper either forward or reverse in very small increments.

■ BUFFER CLEAR/ALL RESET

Turning power off is one way to clear the buffer, but there is another way.

Press and hold the **ON LINE** and **FONT** button in off-line. The "**bC**" message shows on display signaling that the buffer has been
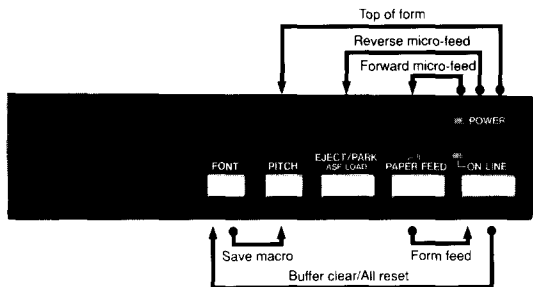
cleared. If you hold these buttons more three seconds, you will hear three beep tones and the printer will be initialized to the power-on default settings.

■ SAVE MACRO

You can store the current settings to the printer for later use with the **FONT** button and the **PITCH** button combinations.

BAIL LEVER FUNCTIONS

The bail lever is used to control paper.

If the paper is not mounted on the printer, use the bail lever to load the paper.
When you open the bail lever with the fanfold paper in on-line, the printer goes off-line and the bail lever automatically closed, then the printer also feeds the paper forward. This allows you to cut it off just below the last line printed.

When you open the bail lever again, the paper feeds backward stopping where you left off, and the printer returns to on-line.
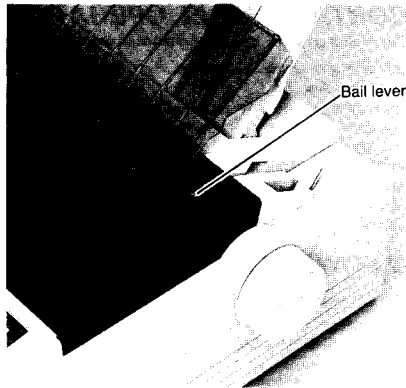
Bail lever

EDS MODE

From the control panel you can change the parameters that define how your printer works. This function is called the Electronic DIP Switch (EDS) mode.

The EDS mode has 16 functions you can set as the power-on default.

Turn the printer on while simultaneously holding the **FONT**, **PITCH** and **EJECT/PARK** buttons.
The "**EDS**" 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:

- Use the **FONT** button to select the Bank Letter.
- Use the **PITCH** button to select the Switch Number.
- The LCD display on the control panel shows the current setting.
  Use the **EJECT/PARK** button to change the settings.
- Press the **PAPER FEED** button to print the current settings.
- Press the **ON LINE** button to exit the EDS mode.

Number	Function	ON	OFF
A-1	Emulation	STANDARD/EPSON	IBM
A-2	AEC Mode	Enabled	Disabled
A-3	RAM Usage	Input Buffer	Download Buffer
A-4	Auto LF with CR	Disabled	Enabled
A-5	Auto Sheet Feeder	Not installed	Installed
A-6	Graphics Direction	Bi-directional	Uni-directional
B-1	(Not used)		
B-2	Paper-out	Enabled	Disabled
B-3	(Not used)		
B-4	(Reserved)	Leave ON	
B-5	Printable Area	Type A	Type B
B-6	(Not used)		
C-1	Print Mode	(See table 1)	
C-2			
C-3	Page Length	(See table 2)	
C-4			
C-5			
D-1	Character Table (Standard mode) (IBM mode)	Graphics Set #2	Italics Set #1
D-2	IBM Code page or		
D-3	International	(See table 3 and 4)	
D-4	Character Set		
D-5	CR Centering	Disabled	Enabled
E-1			
E-2			
E-3	LQ Font Selection	(See table 5)	
E-4			
E-5			
F-1	EDS Setting	Current	Reset

NOTE The factory default is the "ON" position for all functions except A-6 which is set to the "OFF" position.

Table 1

Print Mode	C-1	C-2
10CPI DRAFT	ON	ON
10CPI HS DRAFT	ON	OFF
17CPI DRAFT	OFF	ON
10CPI LQ	OFF	OFF

Table 2

Page Length	C-3	C-4	C-5
11 inches/Letter	ON	ON	ON
8 inches	OFF	ON	ON
11.7 inches/A4	ON	OFF	ON
12 inches	OFF	OFF	ON
8.5 inches/Letter	ON	ON	OFF
14 inches/Legal	OFF	ON	OFF
10.5 inches/Executive	ON	OFF	OFF
7.25 inches/Executive	OFF	OFF	OFF

Table 3

IBM Code Page	D-2	D-3	D-4	IBM Code Page	D-2	D-3	D-4
#437 U.S.A.	ON	ON	ON	#863 Canadian French	ON	ON	OFF
#850 Multi-lingual	OFF	ON	ON	#865 Nordic	OFF	ON	OFF
#860 Portuguese	ON	OFF	ON	(Reserved)	ON	OFF	OFF
#861 Icelandic	OFF	OFF	ON	(Reserved)	OFF	OFF	OFF

Table 4

Country	D-2	D-3	D-4	Country	D-2	D-3	D-4
U.S.A.	ON	ON	ON	Denmark I	ON	ON	OFF
France	OFF	ON	ON	Sweden	OFF	ON	OFF
Germany	ON	OFF	ON	Italy	ON	OFF	OFF
England	OFF	OFF	ON	Spain I	OFF	OFF	OFF

Table 5

Font Name	E-1	E-2	E-3	E-4	E-5	Font Name	E-1	E-2	E-3	E-4	E-5
Roman	ON	ON	ON	ON	ON	UPC/EAN	ON	ON	ON	ON	OFF
Sanserif	OFF	ON	ON	ON	ON	Old-Style	OFF	ON	ON	ON	OFF
Courier	ON	OFF	ON	ON	ON	Firenze	ON	OFF	ON	ON	OFF
Prestige	OFF	OFF	ON	ON	ON	(Reserved)	OFF	OFF	ON	ON	OFF
Script	ON	ON	OFF	ON	ON	(Reserved)	ON	ON	OFF	ON	OFF
OCR-B	OFF	ON	OFF	ON	ON	(Reserved)	OFF	ON	OFF	ON	OFF
OCR-A	ON	OFF	OFF	ON	ON	(Reserved)	ON	OFF	OFF	ON	OFF
Orator	OFF	OFF	OFF	ON	ON	(Reserved)	OFF	OFF	OFF	ON	OFF
Orator 2	ON	ON	ON	OFF	ON	SLQ Roman	ON	ON	ON	OFF	OFF
TW-Light	OFF	ON	ON	OFF	ON	SLQ TW-Light	OFF	ON	ON	OFF	OFF
Letter-Gothic	ON	OFF	ON	OFF	ON	SLQ Script	ON	OFF	ON	OFF	OFF
Blippo	OFF	OFF	ON	OFF	ON	(Reserved)	OFF	OFF	ON	OFF	OFF
H-Gothic	ON	ON	OFF	OFF	ON	(Reserved)	ON	ON	OFF	OFF	OFF
Orane	OFF	ON	OFF	OFF	ON	(Reserved)	OFF	ON	OFF	OFF	OFF
Cinema	ON	OFF	OFF	OFF	ON	(Reserved)	ON	OFF	OFF	OFF	OFF
Code 39	OFF	OFF	OFF	OFF	ON	(Reserved)	OFF	OFF	OFF	OFF	OFF

Consumer Response

Star Micronics Co., Ltd. invites your suggestions and comments on your printer and this manual. Please address your correspondence to:

Worldwide Headquarters:
STAR MICRONICS CO., LTD.
20-10 Nakayoshida
Shizuoka, JAPAN 422-91
Attn: Product Manager

American Market:
STAR MICRONICS AMERICA, INC.
420 Lexington Avenue, Suite 2702-25
New York, NY 10170
Attn: Product Manager

European Market:
STAR MICRONICS DEUTSCHLAND GMBH
Westerbachstraße 59
P.O. Box 940330
D-6000 Frankfurt/Main 90
F.R. of Germany
Attn: Product Manager

U.K. Market:
STAR MICRONICS U.K., LTD.
Star House
Peregrine Business Park
Gomm Road, High Wycombe
Bucks. HP13 7DL, U.K.
Attn: Product Manager

French Market:
STAR MICRONICS FRANCE S.A.R.L.
25, rue Michaël Faraday
78180 Montigny-le-Bretonneux
Attn: Product Manager

Asian Market:
STAR MICRONICS ASIA LTD.
Room 2408-10 Sincere Building;
173 Des Voeux Road, Central, HONG KONG
Attn: Product Manager