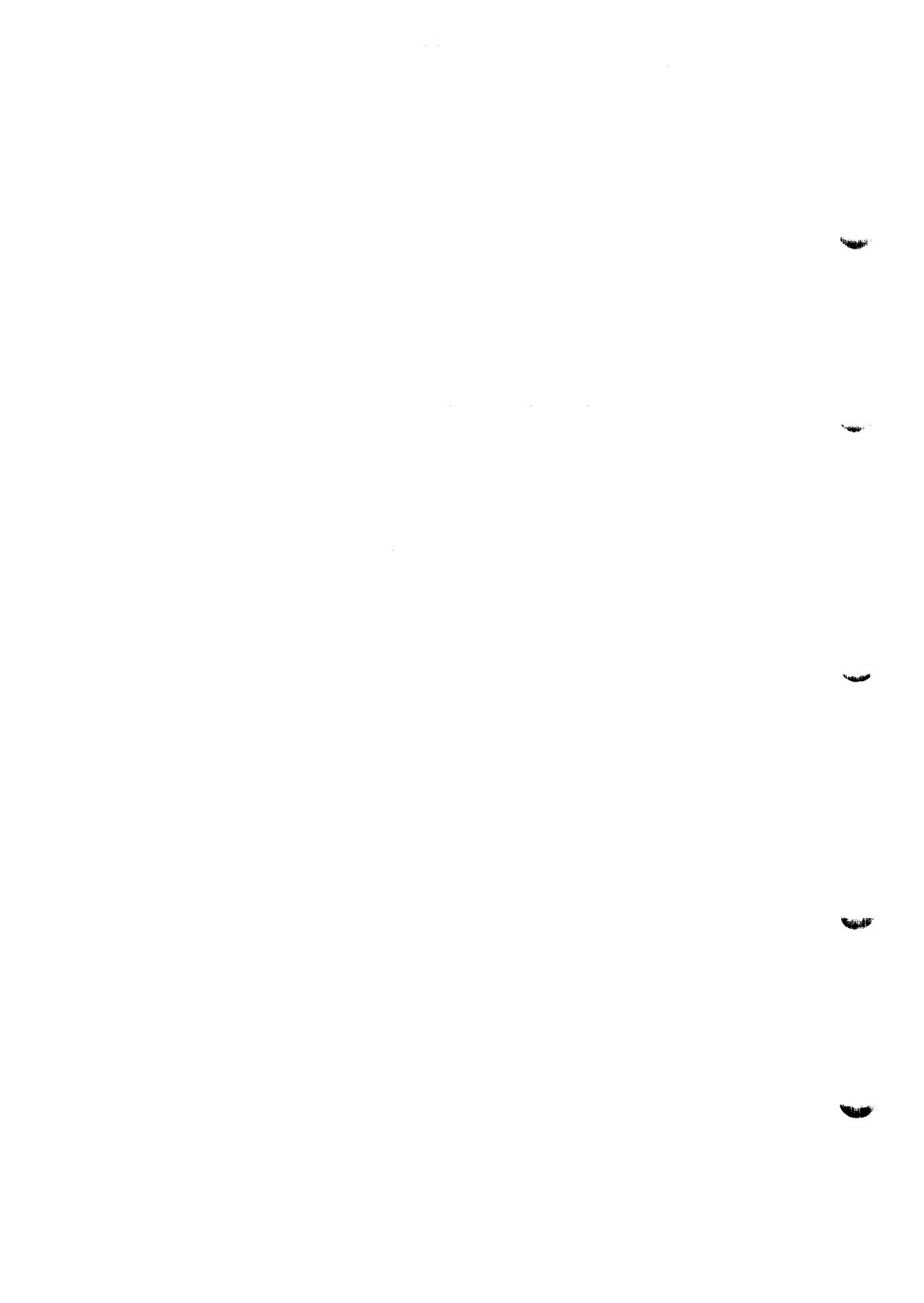


DL2600
DOT MATRIX PRINTER
USER'S MANUAL



DL2600
B-69255. I/D, Rev. C



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B-69255 Rev. C November 1986

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**** PREFACE ****

This manual represents the FUJITSU DL2600 Dot Matrix Printer as manufactured at the time of publication. Every effort has been made to ensure that the information included here is complete and accurate. Fujitsu has reviewed this material but cannot be held responsible for errors and omissions.

Fujitsu has other publications for this printer, as listed on the following page. Please request additional publications from your dealer or authorized Fujitsu representative.

We reserve the right to make changes and improvements to this product without obligation to incorporate these changes and improvements into units previously shipped.

DL2600 USER'S MANUAL ADDENDUM

Transparency Printing, used with an overhead projectors, is scheduled for delivery in 1986.

Ribbon cassette: Color for transparency film (D30L-9001-0503)
Transparency film: Letter size (D87L-3001-0499)

Qume Sprint 11 Emulation is being developed.

Optional tear bar with the acoustic cover is scheduled for delivery in 1986.

**** SUPPLIES, OPTIONS AND PUBLICATIONS ****

The following items are available for your printer. Contact your Dealer or Fujitsu representative for additional information.

SUPPLIES:

Ribbon Cassette

Color (D30L-9001-0273)

Black (D30L-9001-0269)

Ribbon subcassette (not available for U.S. users)

Color (D30L-9001-0296)

Black (D30L-9001-0259)

OPTIONS:

Font Cartridges

Letter Gothic 12 (D05B-2610-C500)

Scientific 12 (D05B-2610-C501)

Orator (D05B-2610-C502)

Light Italic (D05B-2610-C503)

Boldface PS (D05B-2610-C504)

Cut Sheet Feeders

Single Bin (SF220C or ASF521-FUJITSU)

Double Bin (ASF522-FUJITSU)

Double Bin & Envelope Bin (ASF523-FUJITSU)

Interface Circuit Card

For DPL24C & DPL24D Emulation:

Parallel Interface (D05B-2810-C115)

Parallel & RS-232-C Interface (B05B-2810-C105)

PUBLICATIONS:

Interface module manual for DPL24C & DPL24D Emulation (B-69240)

Programmer's manual for DPL24C Emulation (B-69238)

Programmer's manual for DPL24D Emulation (B-69237)

**** STANDARD FEATURES ****

Thank you for purchasing this high quality Fujitsu printer. You have made a wise selection. Your printer will provide years of high speed, reliable, and versatile printing.

Your printer is a multi-purpose, 24-wire dot matrix impact printer. It has been designed to satisfy most word processing, data processing and graphic printing requirements. Standard features include:

Seven-Color Printing:

When the four-color ribbon is used, you get high quality character and graphic printing in seven colors.

Multi-emulation:

Many kinds of emulation are available in your printer. Great capability is built into your printer. Your printer is truly an excellent multi-purpose printer.

Compatibility:

The command set of your printer includes most of the IBM Graphics Printer and Epson FX-80 codes, additional word processing, graphics and cut sheet feeder codes, in addition to Epson JX-80 color codes (accessible only with the color option). The command set of your printer also includes most of Diablo 630 API codes.

Wide Variety of Control Panel Functions:

Print Quality, Character Style, Character Spacing, Line Spacing, Language, Interface Type and Protocol are selected from the Control Panel. A 16-Character Display gives helpful messages and status information for easy operation of the printer.

High Quality Printing:

Your printer has a 24-wire print head, that prints a maximum of 360 X 180 dots per square inch.

Quiet Operation:

Your printer uses a special low noise print mechanism as well as an acoustic cover and padding to reduce printing noise.

Parallel and Serial Interfaces:

A Centronics Type Parallel or RS-232-C Serial Interface ensures that your printer will be compatible with most host systems. There are two types of standard interface modules: one for the parallel interface only and the other for both parallel and serial interfaces (dual interface module).

Wide Selection of Type Fonts:

Courier 10, Prestige Elite 12, Boldface PS, Draft and Compressed are the printer's standard fonts. Optional Cartridge fonts are Letter Gothic 12, Scientific 12, Orator, Boldface PS and Light Italic. Additional font cartridges are available from other vendors. Check with your Dealer for additional information on cartridges from Fujitsu.

Automatic Paper Handling:

Automatic loading of paper simplifies printer operation. Switching between continuous form and cut sheet paper is easily achieved. Optional cut sheet feeders are also available in single bin, double bin, or double bin plus envelope bin models.

High Reliability:

The simplified print mechanism design and proven electrical components result in high reliability and ease of maintenance if an error should occur.

High Speed Printing:

Prints up to 288 characters per second — at 12 CPI — with automatic bidirectional logic seeking printing.

**** PURPOSE AND ORGANIZATION OF GUIDE ****

This guide is designed to help you install, set up, and use your printer. It is written for both the novice and the experienced user and organized to present information in the order that it is most likely to be required.

This guide is organized as follows:

Quick Start — lists the steps you should take to set up and operate the printer.

Section 1 Setting Up Your Printer — describes the unpacking procedure, identifies the printer's main components, and describes how to connect your printer to a computer.

Section 2 Getting Acquainted — defines user functions, such as installing the ribbon cassette, paper handling procedures and the paper thickness adjustment.

Section 3 Using the Control Panel — provides a detailed explanation on how the control panel is used to select the printer's features. Also describes how the control panel is used to set up and operate the printer. Includes error messages and recovery methods.

Appended to the Interface Module Manual.

Section 4 Printer Care — gives suggestions for keeping your printer in good operating condition and provides troubleshooting procedures. This section also includes a repacking procedure.

NOTE:

Command set, that lists the control codes that command the printer's functions or change the printer's operational mode through a software program, is not in this manual, but in "Interface module manual".

You have also the interface module manual including command sets, interface hardware configuration, and others.

Appendices — provide information on optional features (such as cut sheet feeders and font cartridges), printer specifications and interfaces. Reference tables are also included.

**** APPLICATION SOFTWARE SETUP ****

When you want to use an application software together with this printer, set up both the software and the printer and check that your printer is listed as a printer option in the installation instructions of the application software. Even if your printer is not listed, it can be emulated by one of the printers below. For details on the emulation of printers, refer to Section 3.

For word processing software:

Select the printer to be emulated from the table below. Your selection will enable you to use the command set of the emulated printer for word processing.

Printer	Emulation setting
FUJITSU DPL24C color printer	DPL24C (*)
FUJITSU Dotmax24C color printer	DPL24C (*)
FUJITSU DPL24 Type I printer	DPL24I
FUJITSU Dotmax24I printer	DPL24I

(*) There is no DPL24C setting for the monochrome model.

If an interface module for the DPL24D emulation type has been installed, select the printer to be emulated from the table below.

Printer	Emulation setting
FUJITSU DPL24 Type D printer	DPL24D
FUJITSU Dotmax24D printer	DPL24D
DIABLO 630 API printer (*)	DIABLO
DIABLO 1640 printer (*)	DIABLO

(*) These printers may not have the command sets necessary for your software. Check the command sets of the other printers in this table first.

If an interface module for the S-11 emulation type has been installed, select the printer to be emulated from the table below.

Printer	Emulation setting
QUME SPRINT 11 PLUS printer	QUME 11
QUME SPRINT 5 printer	QUME 11

The printers listed below can also be emulated.

Printer	Emulation setting
IBM Graphics printer	IBM GPH
EPSON FX-80/100 printer (*)	FX-80
EPSON JX-80 color printer (*)	JX-80 (**)

(*) The command sets of EPSON printers are not fully compatible with your printer.

(**) There is no JX-80 setting for the monochrome model.

If your printer is not listed as a printer option for your software, select the appropriate printer to be emulated from these tables.

For business graphics and other software:

Select the printer to be emulated from the table below. Your selection will enable you to use the command set of the emulated printer for graphics and other software.

Printer	Emulation setting
FUJITSU DPL24C color printer	DPL24C (*)
FUJITSU Dotmax24C color printer	DPL24C (*)
FUJITSU DPL24 Type I printer	DPL24I
FUJITSU Dotmax24I printer	DPL24I

(*) There is no DPL24C setting for the monochrome model.

The printers listed below can also be emulated.

Printer	Emulation setting
IBM Graphics printer	IBM GPH
EPSON FX-80/100 printer (*)	FX-80
EPSON JX-80 color printer (*)	JX-80 (**)

- (*) The command sets of EPSON printers are not fully compatible with your printer.
- (**) There is no JX-80 setting for the monochrome model.

If your printer is not listed as a printer option for your software, select the appropriate printer to be emulated from these tables.

NOTE:

If the size of printed graphics images is inappropriate, select the IBM Graphics printer or any of the FUJITSU 24 series printers (DPL24C, DPL24I, Dotmax24C, and Dotmax24I) that print the desired size of graphics images.



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Quick Start

**Quick
Start**

**Section 1
Setting up Your Printer**

Setting Up

**Section 2
Getting Acquainted**

**Getting
Acquainted**

**Section 3
Using the Control Panel**

**Control
Panel**

**Section 4
Printer Care**

**Printer
Care**

Appendixes

Appendixes

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QUICK START

This Quick Start section is intended for users who want to operate their printer shortly after taking it out of the shipping carton. Refer to this Quick Start Chart and the following paragraphs.

QUICK START CHART

What You Do:	What You Check:	Refer To:
Unpack printer	All received items	Page 1–1
Open front cover & remove shipping restraints	Print head carriage for smooth side to side movement	Page 1–3
Prepare printer for operation	Review Installation Precautions	Page 1–5
Install ribbon cassette	Ribbon path between print head and platen	Carton or Page 2–1
Install paper guide (if necessary)		Page 1–4
Attach AC cord	Ensure voltage is OK	Page 1–8
Insert paper	Paper width/position	Page 2–5
Run Self-Test	Printer performance	Page 1–9
Connect interface cable	Type of interface & cable connection	Page 1–11

Use the printer with your host computer and check the printer's performance.

Refer to your computer documentation and Section 3 for printer set up information. Refer to Section 4 for Troubleshooting hints.

UNPACK PRINTER & REMOVE SHIPPING RESTRAINTS

Refer to the instructions on the shipping carton.

CHECK PRINTER

Print head carriage — should move smoothly from side to side.

Ribbon feed shaft — rotates when the print head carriage is moved.

Paper bail lever — lifts rollers off the platen.

Paper release lever — sets continuous form or cut sheet paper mode.

Forms tractors — rotate freely when the paper release lever is set to the front of the printer.

Paper thickness lever — sets gap between the platen and print head.

INSTALL RIBBON CASSETTE

Refer to instructions on the ribbon carton, or page 2-1.

TURN POWER SWITCH ON

Check that the control panel display briefly shows "INTERNAL TEST" and "INTERNAL TEST OK". The Display will then show "ON-LINE READY".

A "PAPER OUT ERROR" message is shown if the paper release lever is towards the front of the printer.

INSERT AND LOAD PAPER

Ensure that the paper release lever is set towards the front of the printer for continuous form and towards the rear of the printer for cut-sheet paper.

Load paper by pulling the paper bail lever towards the front of the printer, and then hold the ALT/(RESET) button, on the control panel, down while pressing the LOAD/(FF) button.

Return the paper bail lever to its original position after the paper is loaded.

Set the paper thickness lever to the proper position. (Page 2–11)

RUN SELF-TEST

Self-test prints the currently selected options, the revision level of the printer's firmware and then a test pattern to check the printer's performance.

See Section 4 for basic troubleshooting hints if a fault should appear.

Starting Self-Test

Start self-test by turning power on while holding the FUNCTION/(FF) button down.

Self-test may also be started as follows:

1. Hold the ALT/(RESET) button down while pressing the SETUP/(ONLINE) button. The control panel display flashes "SETUP MODE", then it shows "FUNCTN :STYLE".
2. Press the FUNCTION/(FF) button four times to advance the display to "FUNCTN :SELF TST".

Each press of this button advances the display through one of its seven functions: STYLE, INTRFCE, SAVE, LIST, SELF TST, HEX DUMP, and DEFAULT.

3. Start printing the self-test print pattern by pressing the SELECT/(RESET) button.

The display changes to "SELF TEST PRINT".

Stopping Self-Test

Halt self-test by pressing the ITEM/(LF) or SELECT/(RESET) button. The display changes to "PAUSE".

Restart self-test, by pressing the SELECT/(RESET) button again.

Stop the self-test by turning power off, or by pressing the EXIT/(ONLINE) button; printing stops and the display changes to "ON-LINE:READY".

CONNECT THE INTERFACE CABLE

Be sure that you are using the correct interface cable.

Parallel Interface Cable — connector is a 36-pin shield type plug, AMP DDK 57FE-30360 or equivalent (see Interface Module Manual).

RS-232-C Serial Interface Cable — connector is a 25-pin plug, Canon DB-25 or equivalent (see Interface Module Manual).

Consult with your dealer for any modifications that may be required to your cable pin assignments — depending upon your computer's make and model number.

PREPARE PRINTER FOR HOST OPERATION

If you are using the parallel interface, you may only have to choose an equivalent printer type from the list of printer options given in the software package installation instructions. With some exceptions, this printer emulates a Fujitsu DPL24I (DotMax 24I) or IBM graphics printer; with the color option it emulates an Epson JX-80 or Fujitsu DPL24C (DotMax 24C). It also emulates the Diablo 63C API or Qume Sprint 11 printer when the optional interface circuit card is installed.

To satisfy the requirements of your host computer or software application, you may need to change some of the printer's STYLE and INTERFACE selections. The default selections, set by the manufacturer, are listed below. A procedure for changing these selections is given on page Q-6 (refer to Section 3 for a complete explanation of the control panel).

NOTE:

Your printer has a variety of interface modules. Some of the following items may vary with the interface module.

The following shows selections for the DPL24C and DPL24D emulation.

STYLE:	EMULATE	DPL24C*
	QUALITY	LETTER*
	FONT	COURIER 10*
	CHR SET	SET 2* (IBM GPH character set 2)
	ATTRIB	NONE* (No attribute)
	COLOR	AUTOSEL* (Program dependent)
	LANGUGE	USA* (Language)
	CHAR SP	10 CPI* (Character spacing)
	LINE SP	6 LPI* (Line spacing)
	GRPH LF	IBM GPH* (IBM graphics printer)
	PAGE LG	11.0 IN*
	PRF SKP	NO* (Skip over paper perforation)
	LFT MRG	COLUMN 1* (Left margin)
	TOP MRG	LINE 1* (Top margin)
	OFFSET	0* (Top-of-form offset)
	PPR OUT	DETECT* (Paper out)
	DC3-CDE	ENABLE*
	CR-CODE	CR ONLY* (CR code definition)
	LF-CODE	LF & CR* (LF code definition)
	AUTO CR	YES* (Automatic carriage return)
	PRT DIR	BI-DIR* (Bidirectional printing)
	BUZZER	ON* (Buzzer activation enabled)

INTRFCE:	TYPE	PARALEL* (Parallel type interface)
	WORD LG	8* BIT

The following selections appear only when the RS-232-C serial interface selected (dual interface module only).

FORMAT	8 NONE 1*
	(8 data, no parity, 1 stop bit)
BAUD RT	9600* (Baud rate)
PROTOCL	XON/XOF* (Control codes DC1 and DC3 used to indicate buffer status)
DUPLEX	FULL* (Full duplex)
CONTROL	3 WIRES*

Functions performed by the control panel, in addition to setting style/
interface selections and controlling the self-test, are:

- | | |
|----------|--|
| SAVE | Causes current selections to be stored in memory and retained even when power is turned off. |
| LIST | Allows the operator to use the display to view the current selections. |
| HEX DUMP | Places printer online and causes received data to be printed in hexadecimal. |
| DEFAULT | Replaces current selections with the manufacture's selections. |

PROCEDURE FOR CHANGING A STYLE OR INTERFACE SELECTION

Refer to Section 3 for additional details.

1. Hold the ALT/(RESET) button down while pressing the SETUP/(ONLINE) button. The control panel display flashes "SETUP MODE", then shows "FUNCTN:STYLE".
2. Press the FUNCTION/(FF) button. Each time you press this button the display is advanced to its next function. There are seven functions: STYLE, INTRFCE, SAVE, LIST, SELF TST, HEX DUMP, and DEFAULT.
3. Press the ITEM/(LF) button to enter the Function, when it is displayed.
4. Continue to press the ITEM/(LF) button the number of times necessary to display each item. If you hold this button down, each item will be displayed with a brief interval between each Display.
5. Change a currently set selection, by pressing the SELECT/(RESET) button until the option you wish to select is displayed, then press the ITEM/(LF) button to return to the item level (the last option viewed is automatically selected).
6. Repeat steps 2, 3 and 4 as required to set the necessary options. Go to step 7 after setting the required selections.
7. To save your selections in memory, press the FUNCTION/(FF) button, to advance the display to show "FUNCTN:SAVE", and then press the SELECT/(RESET) button. The display flashes "SAVING NOW!!" then shows "FUNCTN:SAVE".

If you do not perform this operation, your selections will be lost when power is turned off.

8. Press the EXIT/(ONLINE) button to place the printer online.

The display will show "ON LINE:READY".



SECTION 1

SETTING UP YOUR PRINTER

1.1 UNPACK THE PRINTER

Printer unpacking instructions are given on the shipping carton and summarized below. Refer to the drawing on the shipping carton.

Inspect the shipping carton and packing material as you unpack your printer.

Unlatch and remove the plastic handles on the side of the shipping carton.

Open the flaps (of the carton) and slide the accessory tray out of the carton.

Remove the ribbon cassette, platen knobs, cut sheet paper guide, AC power cord, and User's Guide from the accessory tray.

Slide the printer out of the carton.

Place the printer on a sturdy desk or table, near its operating location.

Remove the printer and accessories from their protective shipping bags.

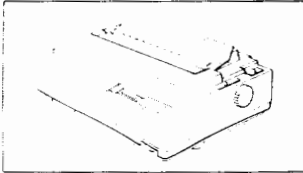
Remove the tape from the printer's top cover and raise the cover.

Identify major printer elements (see Page 1-5).

Notify your dealer/distributor and shipping agent if any shipping damage is discovered.

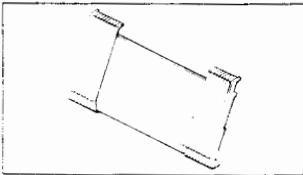
1.2 CHECK ITEMS RECEIVED

Ensure that you have the items shown below:

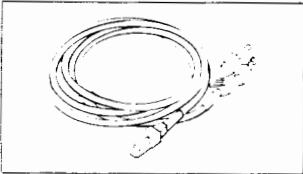


Printer

Platen knobs are shipped in the accessory tray

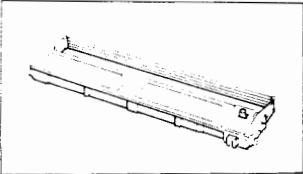


Cut sheet paper guide



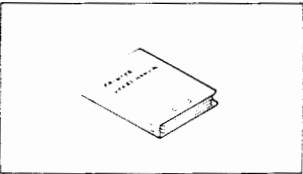
Power cord

115-120 VAC — 3 prongs (USA)
220-240 VAC — 2 prongs
(Europe)

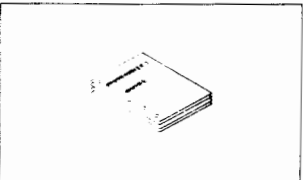


Ribbon cassette

Black if monochrome model
Four-color if color model



User's Manual



Interface module manual
(supplied with the interface module)

Figure 1-1 Items received

1.3 SHIPPING RESTRAINTS

Remove the tape from the top of the printer and open the front cover.

Remove the tape and foam shipping restraints from the top and bottom of the ribbon platform.

Pull out the yellow Print Head shipping restraint and remove the two-ties from each side of the paper bail.

Store all shipping materials for reshipment of the printer.

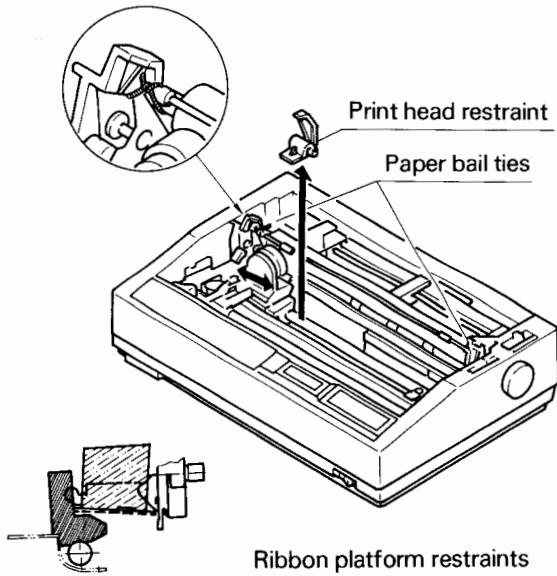


Figure 1-2 Shipping restraints

1.4 INSTALLING THE CUT-SHEET PAPER GUIDE

The cut sheet paper guide enables smooth feeding of cut-sheet paper. You had better mount the cut sheet paper guide on your printer before operating the printer.

Mount the guide on the rear of the printer case, using its mounting arms (Figure 1.3).

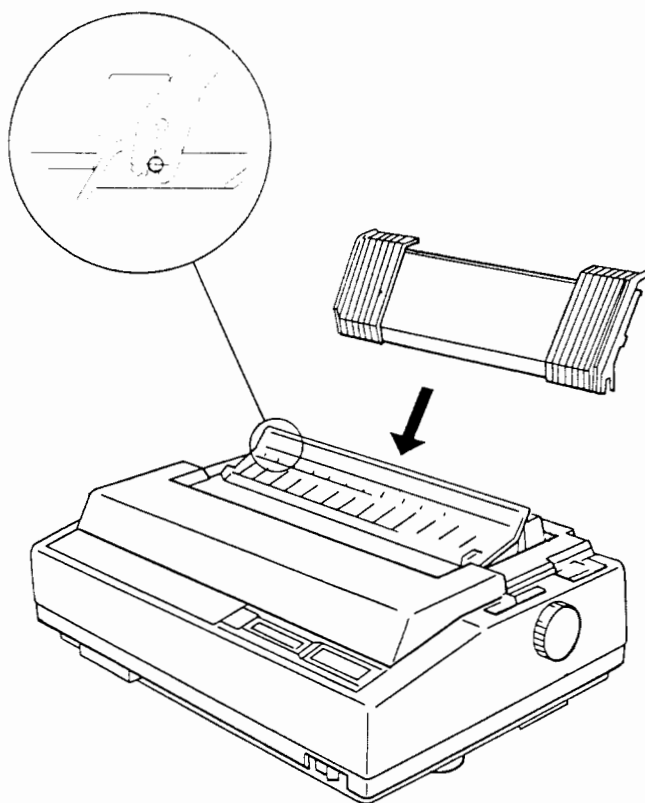


Figure 1-3 Installing the paper guide

1.5 INSTALLATION PRECAUTIONS

- * Install your printer on a level surface to prevent excessive vibration.
- * Do not install your printer in direct sunlight or near a heater where it may become overheated.
- * Do not block ventilation around your printer, which could also cause overheating.
- * Do not operate your printer in a humid or dusty environment, which may allow contaminants to enter the printer.
- * Do not place obstacles near the platen knobs which could prevent the platen from turning and cause a paper misfeed.
- * Use only proper AC voltage and a power outlet that is not shared with heavy industrial equipment that may generate electrical noise.
- * Select a location within the length of your interface cable (generally less than 10 feet) and convenient to an AC power outlet.

The location should allow easy access to:

Operator's control panel — To allow set up and operation of the printer.

Printer's front cover — For access into the printer for ribbon changing.

Rear of printer — For access to the printer's interface cable, power cable, and continuous form tractor mechanisms.

1.6 PRINTER ELEMENTS

The location of major printer elements are shown below and described in the following paragraphs:

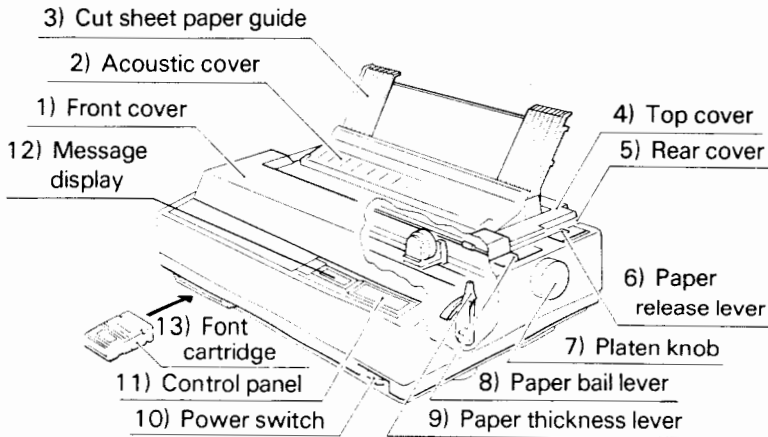


Figure 1-4 Printer elements

- 1) Front cover — Open for access into printer for ribbon installation, paper thickness adjustments, and other user oriented activities in the carriage area.
- 2) Acoustic cover — Reduces noise when printing.
- 3) Cut-sheet paper guide — Use to guide single cut sheet paper and continuous form into and out of the printer.
- 4) Top cover — Remove for installation of the optional cut sheet feeder.
- 5) Rear cover — Open for access to the continuous form tractor mechanisms.
- 6) Paper release lever — Set to the back of the printer for friction feed (cut sheet paper); set to the front of the printer for tractor feed (continuous form).
- 7) Platen knob — Turn to manually feed paper.
- 8) Paper bail lever — Controls paper bail shaft, with rollers that hold the paper against the platen.

- 9) Paper thickness lever — Varies the gap between the print head and platen to accommodate different paper thickness or multiple forms.
- 10) Power switch — Initializes the printer and illuminates the power lamp when turned on. Removes power from the printer when turned off.
- 11) Control panel — see Section 3 — Used to control paper, select printer options, and control printing.
- 12) Message display — 16-character liquid crystal display that provides operational and error messages.
- 13) Font cartridge — Optional font cartridges may be installed into the printer.

The location of printer elements on the rear of the printer is shown in the following drawing:

1.7 REAR VIEW OF PRINTER

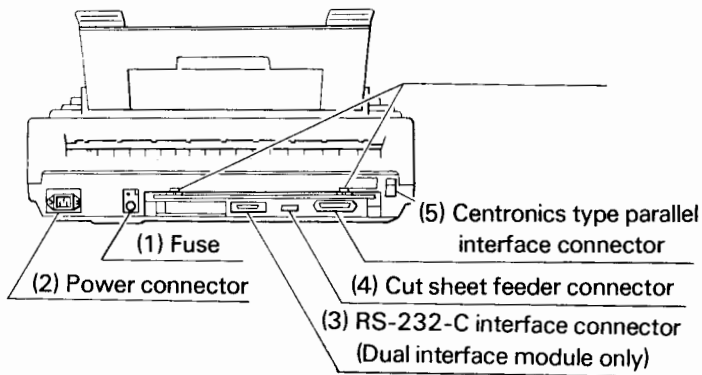


Figure 1-5 Rear view of printer

- 1) Fuse — Protects electrical components from excessive current. May be checked or replaced by an operator.
- 2) Power connector — The AC power cord connects to the printer with this connector.

- 3) RS-232-C interface connector (dual interface module only) — The host computer's serial port connects to the printer with this connector.
- 4) Cut sheet feeder connector — Provides power and control signals to the optional sheet feeder.
- 5) Centronics type parallel interface connector — The host computer's parallel port connects to the printer with this connector.

1.8 ATTACH THE AC POWER CORD

Ensure that the power outlet matches the power cord plug with the ground lug properly grounded.

Connect the power cord to the printer and to the power outlet, as shown below.

When you prepare the power cord, its length must be 3 m or less.

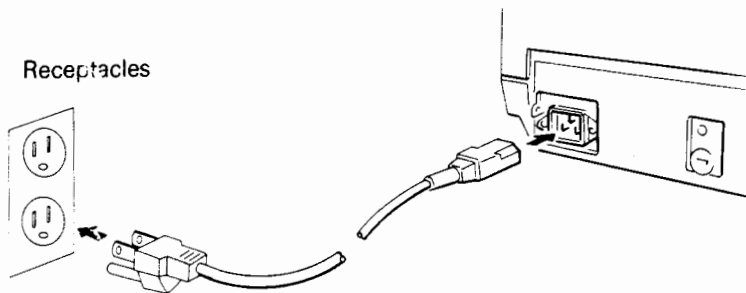


Figure 1-6 AC power cord

Turn the power switch to the on position. When power is turned on, your printer will:

Light the green POWER lamp (on the control panel)

Move the print head to its home position (left side)

With the paper release lever set to the rear of the printer, the display briefly shows "INTERNAL TEST", "INTERNAL TEST OK", then "ON-LINE:READY".

1.9 RUN SELF-TEST

Install a ribbon (refer to paragraph 2.1) and load paper (refer to paragraph 2.2 or 2.3) before starting the self-test.

If you plan to run self-test, we recommend that you use continuous forms more than 10 inches wide. Self-test prints the maximum characters per print line and if printing occurs without the paper, the print head and platen may be damaged.

Start the self-test by holding the FUNCTION/(FF) button down while turning power on. Refer to Section 3 and page Q-3 for additional information.

SELF TEST

1 SETUP Condition

```

EMULATE:DPL24C
CHR SET:SET 2
CHAR SP:10 CPI
PAGE LG:11.0 IN
TOP MRG: 1 LINE
DC3-CDE:ENABLE
AUTO CR:YES
TYPE :PARALEL

QUALITY:LETTER
ATTRIB :NONE
LINE SP:6 LPI
PRF SKP:NO
OFFSET : 0
CR-CODE:CR ONLY
PRT DIR: BI-DIR
WORD LG:8 BIT

FONT :COUR 10
LANGUAGE:USA
GRPH LF:IBM GPH
LFT END: 1 COLM
PPR OUT:DETECT
LF-CODE:LF & CR
BUZZER :ON

```

2 Software Revision: D103,D113 4EA 4FA 4GA (24ID)

3 Repeat Printing

```

!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S
T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ¡ ¢ £ ¤ ¥ ¦ § ¨
© ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ ¿ À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ñ Ò Ó
Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã ä å æ ç è é ê ë ì í î ï ð ñ ò ó ô õ ö ø ù ú û ü ý þ ÿ

```

Figure 1-7 Self-test print pattern

1.10 CONNECTING AN INTERFACE CABLE

The printer communicates with the host computer through a Centronics type parallel interface or RS-232-C serial interface (dual interface module only). Refer to your computer documentation for interface information on your computer.

Refer to Figure 1-8 for the location of the interface connectors.

See interface module manual for interface hardware configuration.

The interface cable is not supplied with the printer.

Make sure the printer and computer are turned off before connecting the interface cable.

Connect one end of the cable to your printer and the other end to your computer.

Lock a parallel interface connector to your printer by snapping the cable latches inward.

Lock a serial interface connector to the printer by tightening the cable connector screws.

Clamp the cable to the printer as shown in Figure 1-9.

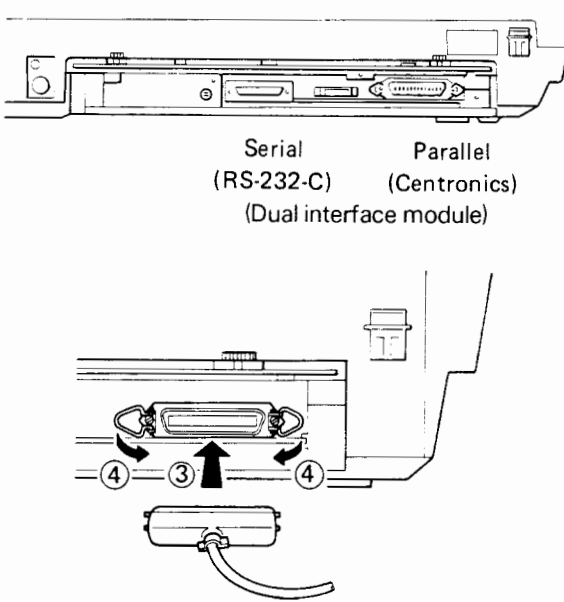


Figure 1-8 Interface connectors

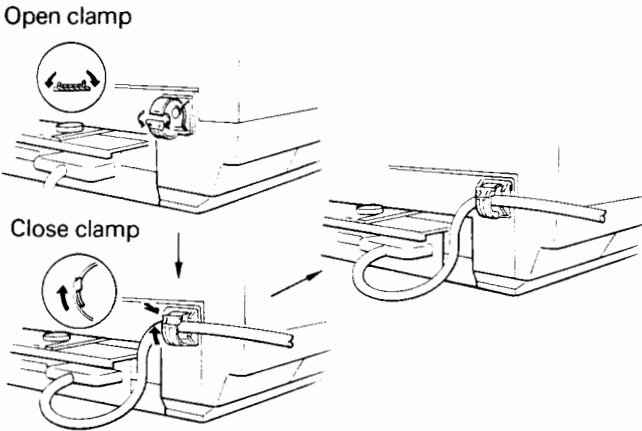


Figure 1-9 Clamping the interface cable

SECTION 2

GETTING ACQUAINTED

2.1 INSTALLING A RIBBON CASSETTE

This procedure is used for installing a four-color or single-color ribbon cassette. You will also find ribbon installation/removal instructions on each ribbon cassette carton.

NOTE:

To prevent loss of data stored in the printer's buffer when changing the ribbon, place the printer in offline mode, and **DO NOT TURN THE POWER OFF.**

Your printer is shipped with a ribbon cassette for the print mechanism. There are two types of print mechanism: a color print unit and monochromatic print unit. A black ribbon cassette can be used on the color print unit, but a color ribbon cannot be used on the monochromatic print unit.

1. Open the front cover.
2. If power is off, move the print head to the center of the print line.

- Pull the transportation tab out of the ribbon cassette (Figure 2-1).

Handle the ribbon cassette carefully, to prevent the ribbon from twisting, after removing the transportation tab.

- Grasp the ribbon release, between your thumb and forefinger, and push in the direction of the arrows to close the ribbon drive rollers (Figure 2-1).

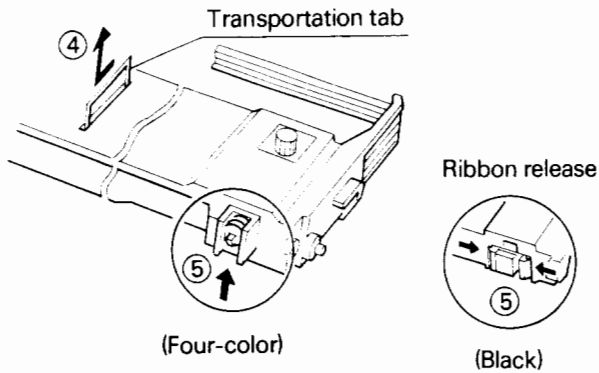


Figure 2-1 Ribbon cassette (1 of 2)

- Rotate the ribbon feed knob in a clockwise direction to tighten the ribbon (Figure 2-2).

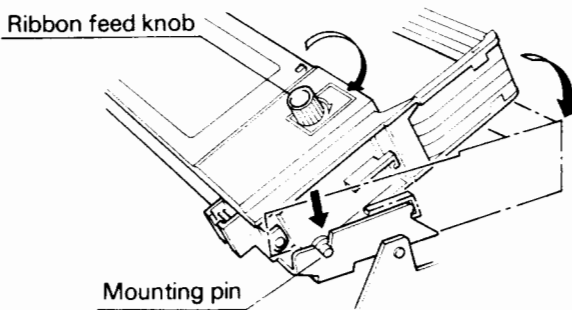


Figure 2-2 Ribbon cassette (2 of 2)

6. Pull the paper thickness lever towards you, to position D (Figure 2-3).
7. Push down on the front (your side) of the ribbon cassette support frame to be sure it is in its up position (Figure 2-3) for the color version.

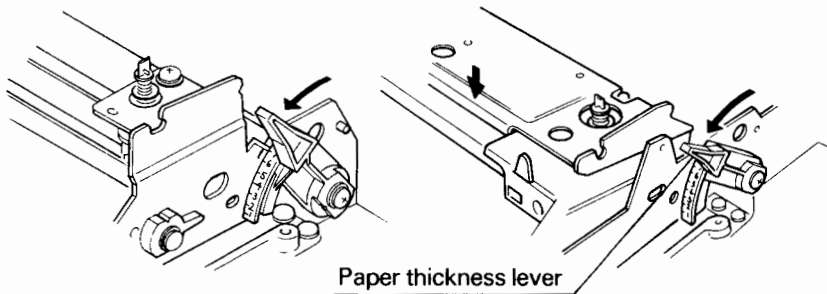


Figure 2-3 Ribbon cassette installation

8. Insert the ribbon cassette's left and right mounting pins into the guide notches of the side frame. Push the cassette forward, while pivoting it on the mounting pins, then snap it into place (Figure 2-2).

9. Guide the ribbon through the ribbon guide shafts on the print head (Figure 2-4).

If power is off, move the print head from side to side, to ensure that the ribbon is correctly seated.

NOTE:

Do not allow the ribbon to touch the print head guide shaft which may cause it to be stained with grease.

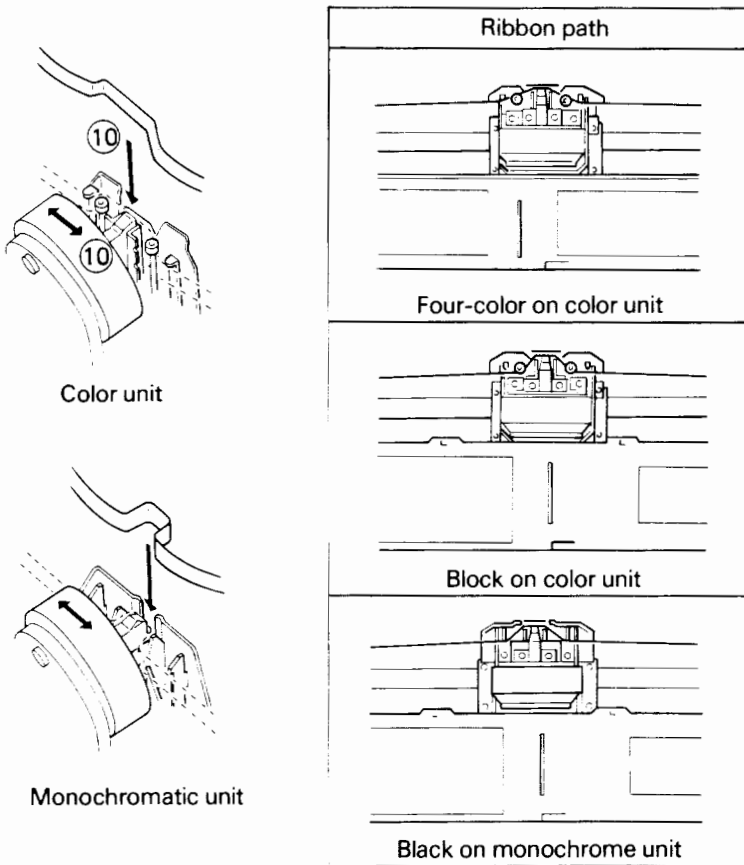


Figure 2-4 Ribbon path

10. Set the paper thickness lever to the correct position; tighten the ribbon again (see step 6); and close the front cover.

Replacing the ribbon cassette

Remove the ribbon cassette as follows and install a new ribbon cassette as shown in the above.

1. Confirm that the printer power is off.
2. Open the front cover.
3. Move the print head to the center.
4. Set the paper thickness lever to position D.
5. Lift the ribbon cassette toward you to release the lock and take the ribbon cassette out.

2.2 LOADING PAPER

NOTE:

When loading paper for the self-test, use paper that is at least 10 inches wide to prevent printing on the platen.

See Appendix A when loading paper with an optional cut sheet feeder installed.

2.2.1 Loading Continuous Forms

Continuous forms have holes on the left and right margins. This section describes how to fit these holes into the forms tractors and load the forms into the printer.

1. Remove any paper that is loaded in the printer.
2. Set the paper release lever towards the front of the printer.
3. Open the front and rear covers, to expose the forms tractors.
4. Set the paper thickness lever to position D.

Covers opened

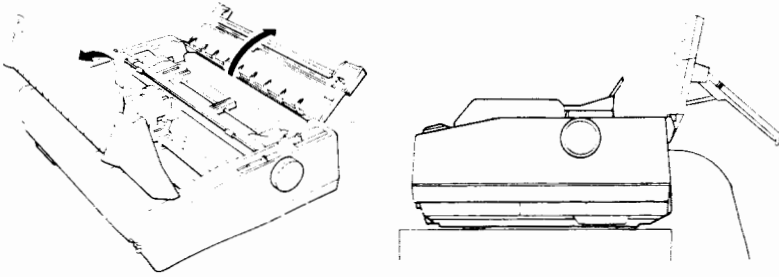


Figure 2-5 Loading continuous forms (1 of 3)

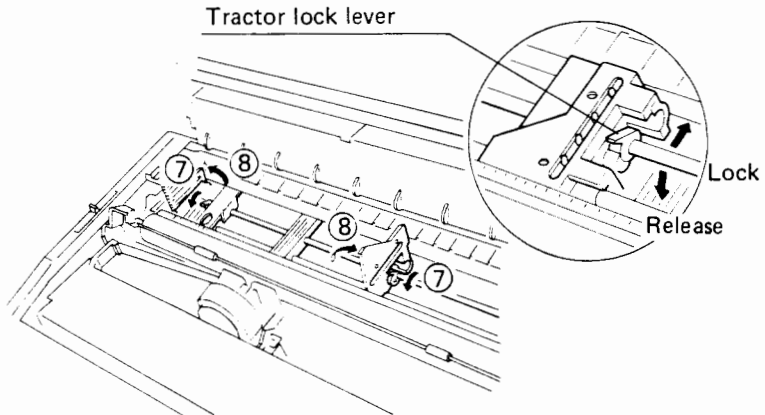


Figure 2-6 Loading continuous forms (2 of 3)

5. To adjust the tractors to the width of the form, push the tractor lock levers downward.
6. Open the left and right forms tractor door plates.
7. Guide the form under the top cover (from the rear of the printer) into the forms tractors.
8. Fit the form's feed holes onto the right and left forms tractors pins.
9. Close the forms tractor door plates and adjust the position of the form.

10. Move the forms tractors until the form is stretched taut between the tractors. Pull the tractor lock levers upward to lock the tractors.
11. For one-part lighter-weight (thin) continuous forms, position bail rollers at the left and right sides of the paper so that each roller rests half on the paper and half on the platen. This evens paper tension and helps prevent less durable forms from the tearing during printing.
12. Adjust the paper thickness lever.
13. Close the rear and front covers and push down the cut sheet paper guide.
14. Pull the paper bail lever towards the front of the printer and ensure power is turned on.
15. While holding the ALT/(RESET) button down, press the LOAD/(FF) button on the control panel and the form will advance to the first print position.
16. Return the paper bail lever to its closed position.
17. Arrange the paper as shown in Figure 2-7 to ensure smooth feeding and folding of paper.

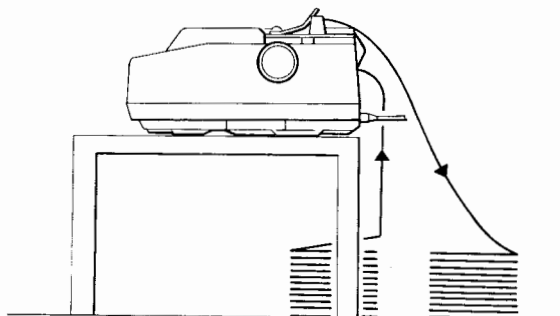


Figure 2-7 Loading continuous forms (3 of 3)

18. To align the paper, use micro LF mode. See paragraph 3.3 for micro LF mode.

NOTE:

If you adjust the print position by using reverse micro feed, the printing may be placed out of position due to mechanical play. Adjust the print position using forward micro feed at least 2 or 3 mm.

2.2.2 Loading Cut Sheet Paper

If continuous forms are loaded, pull the paper bail lever towards the front of the printer. Tear the forms at the perforation nearest the platen on the print head side.

Retract the forms from the printer by holding down the ALT/(RESET) button and then pressing the LOAD/(FF) button on the control panel.

Continue holding the ALT/(RESET) button down and pressing the LOAD/(FF) switch until the forms are fully retracted and the display shows "PAPER OUT ERROR".

There is no need to remove the paper from the tractors, it will not affect cut sheet feeding.

Refer to Appendix A if using an optional cut sheet feeder.

1. Ensure power is on.
2. Set the paper release lever towards the rear of the printer.

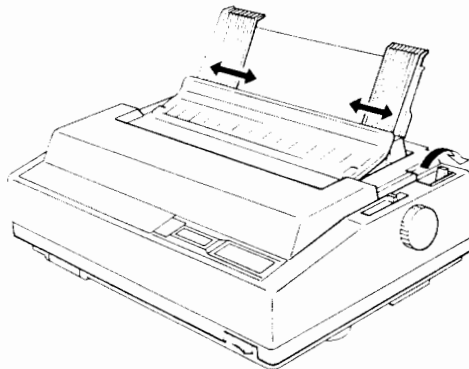


Figure 2-8 Loading cut-sheet paper (1 of 3)

3. Insert the paper between the cut sheet paper guide and the platen (the paper will rest against the pinch rollers).

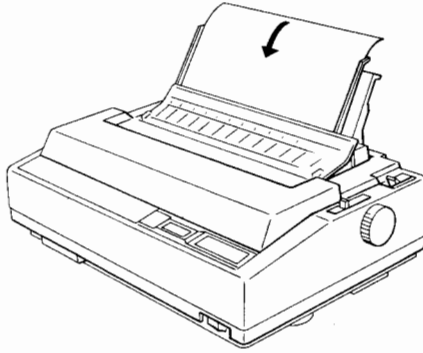


Figure 2-9 Loading cut-sheet paper (2 of 3)

4. Pull the paper bail lever towards the front of the printer.
5. While holding the ALT/(RESET) button down press the LOAD/(FF) button. The paper will advance to the first print line (about one-inch below the top of the paper).
6. Return the paper bail lever to its closed position.

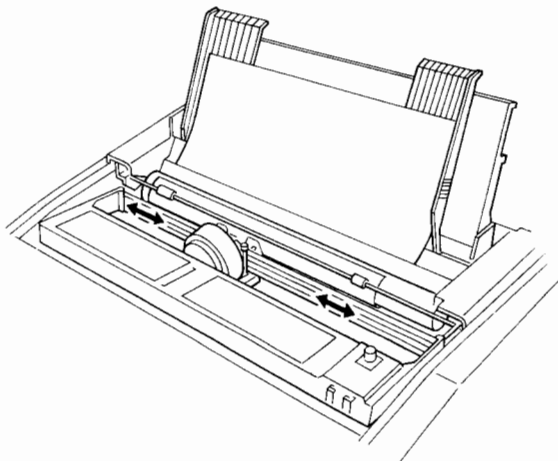


Figure 2-10 Loading cut-sheet paper (3 of 3)

To align the paper, use micro LF mode. See paragraph 3.3 for micro LF mode. Pull the paper release lever towards the front of the printer, and move the paper as required (as you would in a typewriter).

NOTE:

If you adjust the print position by using reverse micro feed, the printing may be placed out of position due to mechanical play. Adjust the print position using forward micro feed at least 2 or 3 mm.

2.2.3 Changing Continuous Forms to Cut Sheet Paper

When continuous forms are in your printer, you change the forms to cut-sheet paper as follows:

Ensure the paper release lever is in the forward position.

Pull the paper bail and press the LOAD/(FF) button with the ALT/(RESET) button pressed (the forms are unloaded).

Push the paper release lever to the rear position.

Insert cut-sheet paper behind the platen.

Press the LOAD/(FF) button with the ALT/(RESET) button pressed (the cut-sheet paper is loaded).

Restore the paper bail.

NOTE:

The continuous forms remains in the forms tractors but does not move as long as the paper release lever is in the rear position.

When you have finished printing your cut-sheet paper, change it to continuous forms by merely placing the paper release lever to its forward position and pressing the LOAD/(FF) button with the ALT/(RESET) button pressed. The continuous forms will be loaded.

2.3 ADJUSTING PAPER THICKNESS

When the paper thickness lever is moved one notch, the print head moves about 0.05mm, therefore each notch of movement corresponds to about one sheet of 10-pound paper.

Adjust the gap, between the print head and platen, for paper thickness variations as described below:

1. Open the front cover and locate the paper thickness lever (at the right side of the printer).
2. Select an appropriate notch from Table 2-1.

Table 2-1 Paper thickness lever adjustment

Paper thickness	Notch position
Single part	1 or 2
Two parts	2
Three parts	3
Four parts	4
Five parts (monochrome)	5
Envelope*	Near D
Ribbon Exchange	D

* Avoid envelopes thicker than 0.5mm.

Too narrow a gap may cause:

Paper damage at left or right margin.

Inaccurate line feeding.

Ribbon to become loose, or come off its guides, during printing.

Too wide a gap may cause:

Light printing or characters to be missed.

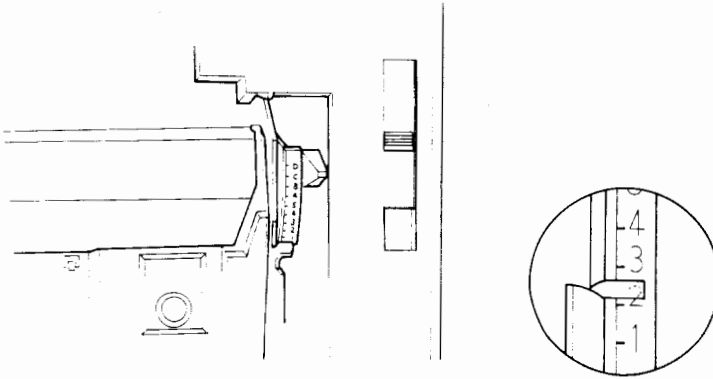


Figure 2-11 Paper thickness lever

2.4 PAPER REQUIREMENTS

You can use letter paper, typewriter paper, copy paper, business forms, and other types of stock forms which will be common at your home or office. However, if you want to use unusual paper, such as envelopes, of different size or thickness, you had better check whether it satisfies the requirements shown below. For other specific problems, ask your dealer whether the paper can be used with this printer.

Table 2-2 Paper requirements

Item	Requirements
Width	The width of the paper used by this printer must be 4 to 16.5 inches (102 to 419 mm).
Thickness	You can use letter paper, typewriter paper, copy paper, and other types of paper which are common at your home or office. However, if you want to use unusual paper, such as envelopes, of different size or thickness, check whether it meets the requirements listed in Table 2-2. For other problems, ask your dealer whether the paper can be used with this printer. The thicknesses of the paper are indicated in grams per square meter and in pounds per bond in terms of weight, and represent the maximum weights of the paper. For single-part paper, the weight must be between 46 g/m ² (12 lbs/bond) and 100 g/m ² (26 lbs/bond) (For paper whose width is less than 255 mm (10 inches) the weight must be 35 g/m ² (9 lbs/bond)). For multi-part paper, the weight must be between 39 g/m ² (11 lbs/bond) and the weight corresponding to the number of copies and parts listed in the table below. All multi-part paper must be tested before orders are placed.

Table 2-2 - continued

Item	Requirements					
Number of copies	– Carbonless/carbon-backed Up to four copies:					
		Copies 1	2	3	4	5
Part 2	64 (17)	81 (22)				
3	49 (13)	49 (13)	81 (22)			
4	39 (11)	39 (11)	39 (11)	81 (22)		
5	39 (11)	39 (11)	39 (11)	39 (11)	64 (7)	

NOTES:

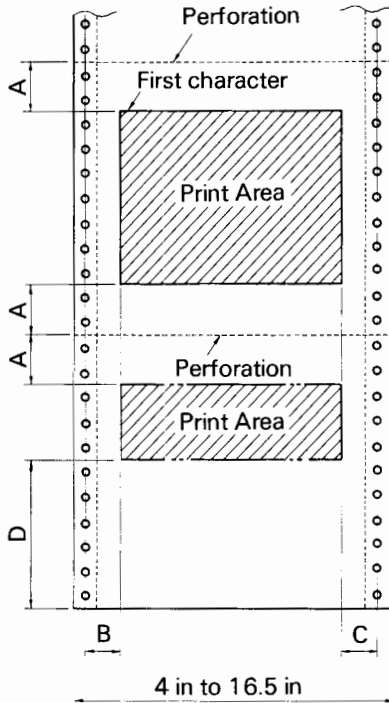
1. If a four-color ribbon is used, 4-part paper must not be used.
2. The desired width for multi-part cut-sheet paper is less than 10 inches.

– Carbon-interleaved

	Copies 1	2	3	4
Part 2	50 (13)	81 (22)		
3	46 (12)	46 (12)	81 (22)	

NOTES:

1. Because the carbon inserted between sheets of paper counts as one part, the number of copies must be less than 3.
2. If a four-color ribbon is used, carbon-interleaved 3-part paper must not be used.
3. Do not use carbon-interleaved paper as multi-part cut-sheet paper.



A	1 inch (25.4 mm)	
B	0.95 to 1.2 inches (24 to 30 mm)	Note 1
C	More than 0.95 inches (24 mm)	Note 2
D	About 2.9 inches (74 mm)	Note 3

Note 1: For single-part paper, if a black ribbon is used, B must be more than 1/5 inch (5 mm). If a four-color ribbon is used, B must be more than 6/5 inch (30 mm).

2: For single-part paper, if a black or four-color ribbon is used, C must be more than 1/5 inch (5 mm).

3: Paper end is detected and printing stops when this amount of paper is left in the print area.

Figure 2-12 Print area on continuous forms

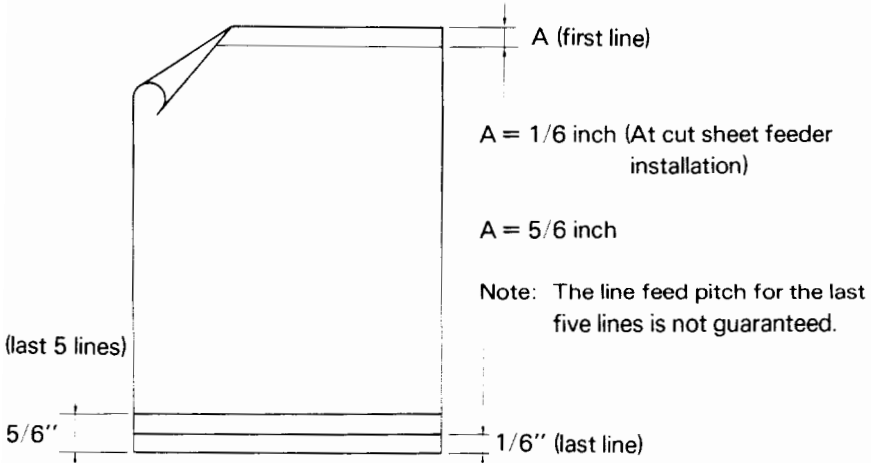
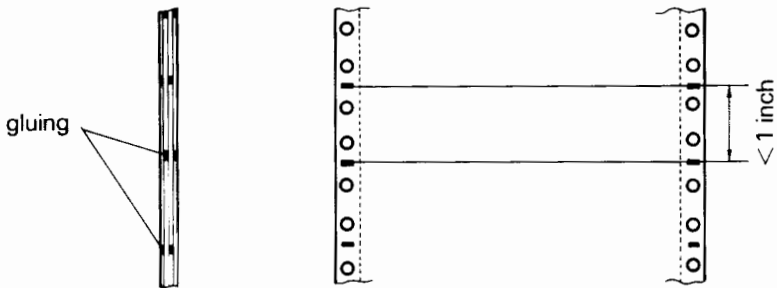


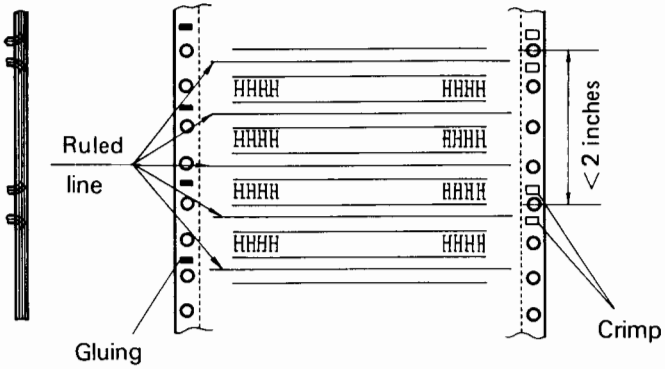
Figure 2-13 Print area on cut-sheet paper

When using multi-part paper, note the following:

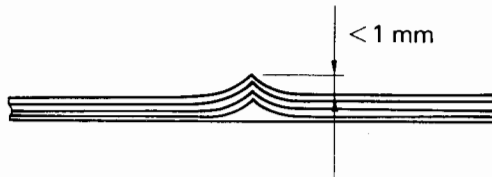
- Continuous forms
- (1) When binding continuous forms, glue the opposing margins of the paper together at spots other than pin holes and perforations, as shown below.



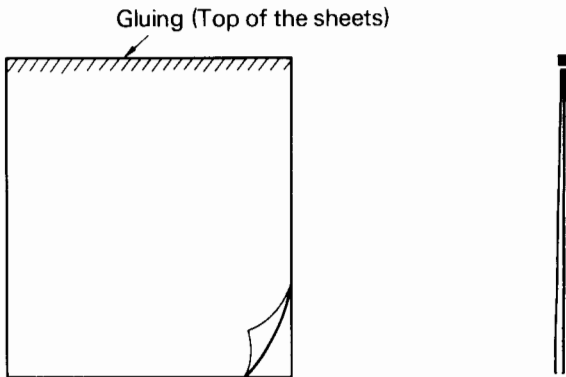
- (2) When affixing paper by gluing, crimping, or stitching, use three or fewer copies and make sure that the paper is not misaligned. If the paper is misaligned, printing must be done on every other line.



- (3) The raised part at the perforation (fold) must be 1 mm or less, with the bottom layer kept flat by force, as shown below.



Glue must be applied evenly to the paper and must not cause wrinkles, creases, or discoloration.



Getting Acquainted

– Cut-sheet paper

- (1) When using carbonless/carbon-backed cut-sheet paper, make it into pads that are glued at the top.

Carbon can be interleaved with multi-part paper in two ways: (1) by gluing the carbon to the paper at their margins and not covering the pin holes or (2) by gluing the carbon to the paper at their margins, covering the pin holes, and making pin holes that align with those of the paper.

Multi-part paper with parts whose thickness or count vary must be tested before orders are placed.

Multi-part paper must be affixed at the margins only, and paper staples must not be used.

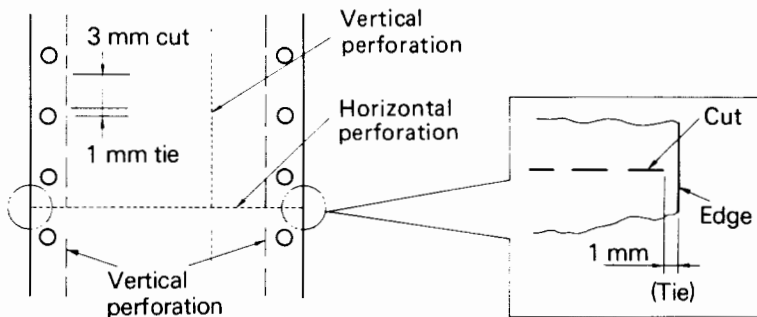
The maximum thickness of paper (including parts) must not exceed 0.013 inches (0.33 mm). The thickness of parts must be uniform.

The maximum thickness of envelopes must not exceed 0.2 inches (0.5 mm).

If paper is not affixed properly, print quality may be reduced and paper folding may become difficult.

Perforations

Weak horizontal and vertical perforations cause paper jams. Therefore, the tie to cut ratio for both types of perforations must be 1 to 3.



SECTION 3

USING THE CONTROL PANEL

3.1 CONTROL PANEL LAYOUT

The control panel has upper and lower labels, a power indicator and four white buttons, as shown below:

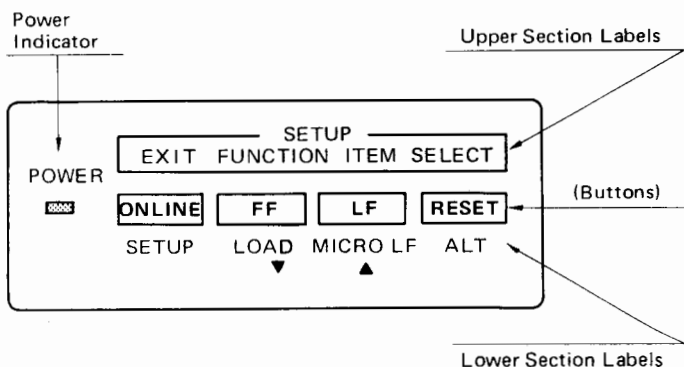


Figure 3-1 Control panel layout

When the purpose for pressing a button is on the button, the button's name is given. When the purpose for pressing a button is on an upper or lower section label, the label's name is given followed by the button's name in brackets (). For example:

There are three ways used to refer to a button.

1. **RESET** — Refers to the rightmost button — When you press this button with the printer, offline or pause mode to reset the printer.
2. **SELECT/(RESET)** — Refers to the same rightmost button and the upper section label — When you press this button with the printer in setup mode to select an option.
3. **ALT/(RESET)** — Refers to the same rightmost button and the lower section label — When you hold this button down to perform an alternate function.

The control panel has three sections:

- Center section — Contains buttons — ONLINE, FF (form feed), LF (line feed), and RESET — The name on each button identifies the function performed by pressing the button when the printer is online, offline or in pause mode, see paragraph 3.2.
- Lower section — Contains labels — SETUP, LOAD (paper load), MICRO LF (micro line feed), and ALT (alternate) — Each label identifies the alternate function performed, by holding the ALT (RESET) button down and then pressing the corresponding button, see paragraph 3.3.
- Upper section — Contains labels — EXIT, FUNCTION, ITEM and SELECT — Each label identifies the setup function performed (in the setup mode), when the corresponding button is pressed, see paragraph 3.4.

3.2 CENTER SECTION (ONLINE, OFFLINE, or PAUSE)

This section contains the four buttons — ONLINE, FF, LF and RESET. These buttons are labeled with the function they perform when the printer is online, offline, or pause mode.

ONLINE button

Press this button to change the printer between online and offline. The display changes from "ON-LINE:READY" to "===OFF-LINE===". If this button is pressed when the display shows "ON-LINE:BUSY"; the display changes to "===PAUSE===" and printing stops (data, that has been received but not printed, is stored in the print buffer). Press this button again to resume printing.

FF (Form Feed) button

Press this button to execute a form feed (to the next top of form). The top of form is the print line where the print head is positioned when power is turned on. The top of form is changed when the paper is moved, by micro line feeds or by manual rotation of the platen.

LF (Line Feed) button

Press this button to execute a line feed. Holding this button down advances the paper to the first line of the next page (Top of form position).

RESET button

Press this button to reset the printer (or clear a communication error when using an RS-232-C serial interface).

To reset the printer, press this button when the display shows "OFF-LINE" or "PAUSE". The display will change to "Reset Printer?". If the RESET button is pressed again, all data in the print buffer is cleared. When the printer is reset, the display will show "ON-LINE:READY".

If you do not wish to clear the data in the print buffer, press the ONLINE button (rather than RESET).

Clear an RS-232-C interface communication error display, listed below, by pressing the RESET button once.

"PARITY ERROR"
"FRAMING ERROR"
"OVER-FLOW ERROR"
"MODEM ERROR"

3.3 LOWER SECTION (ALTERNATE MODE)

ALT/(RESET) button

Access an alternate mode function (setup, load or micro LF), by holding down the ALT/(RESET) button and then pressing the desired button in the center section of the control panel.

SETUP/(ONLINE) button

When the SETUP/(ONLINE) button is pressed with the ALT/(RESET) button held down, the printer enters setup mode, and the button functions are labeled by the upper section of the control panel (paragraph 3.4).

LOAD/(FF) button

Load paper into the printer, when you open the paper bail, and then press the LOAD/(FF) button with the ALT/(RESET) button held down. Either cut sheet or continuous form may be automatically loaded to the first print position on the page (top of form).

If you press this button without opening the paper bail, the display will show "OPEN PAPER BAIL!". What you need for recovering from this error state and loading paper is only to open the paper bail.

If continuous forms have already been loaded, press this button with the ALT/(RESET) button held down to unload the forms from the printer.

MICRO LF/(LF) button

Enter micro line feed mode by holding the ALT/(RESET) button down and then pressing the MICRO LF/(LF) button. The display shows "MICRO LF MODE". Use the FF (▼) and LF (▲) buttons to move paper down or up in 1/180 inch increments. Holding down either button causes continuous paper movement. Press the ALT/(RESET) button to leave this mode and get back to previous mode.

3.4 UPPER SECTION (SETUP MODE)

Setup mode allows you to select options that change the printer's printing style, page format, interface type, interface characteristic, etc.

Additional functions performed in setup mode are SAVE, LIST, SELF TEST, HEX DUMP, and DEFAULT.

In setup mode the four buttons are defined as follows:

EXIT/(ONLINE) button

When this button is pressed the printer leaves setup mode and returns to "ON-LINE:READY".

FUNCTION/(FF) button

When this button is pressed the printer steps from function to function.

ITEM/(LF) button

This button steps the printer from item to item (within a Function) or starts and stops an operation.

SELECT/(RESET) button

This button steps the printer from option to option (within an item) or starts and stops an operation.

NOTE:

Holding the button (FUNCTION/(FF), ITEM/(LF), or SELECT/(RESET)) down automatically selects the functions, items, or options sequentially.

3.4.1 Setup Mode Structure

Setup mode is designed using a tree structure of the following type:

Top level:	Function
Middle level:	Item
Lower level:	Selectable option

At the function level, the first seven positions of the display shows "FUNCTN" and the remaining positions show the name of the Function.

Example: When the display shows "FUNCTN :STYLE":
Function is "STYLE"

and

When the display shows "FUNCTN :INTRFCE":
Function is "INTRFCE"

At the item level, the display shows both the item and selectable option.

Example: When the display shows "QUALITY:LETTER":
Function is "STYLE".
Item is "QUALITY".
Selectable option is "LETTER".

and

When the Display shows "LANGUGE: USA":
Function is "STYLE".
Item is "LANGUGE".
Selectable pption is "USA".

The last location of the display shows an asterisk (*) if the selectable option being viewed has been saved to nonvolatile memory, using the SAVE function, see paragraph 3.9.

Refer to the following flowchart for a visual presentation of how the setup mode is organized:

3.5 FUNCTION LEVEL

Enter setup mode by holding down the ALT/(RESET) button and then pressing the SETUP/(ONLINE) button. The display will briefly show "SETUP MODE" then "FUNCTN :STYLE".

When the printer is in the FUNCTN (function) level of setup mode, the display will show "FUNCTN:" and then one of the following Functions: STYLE, INTRFCE, SAVE, LIST, SELF TST, HEX DUMP or DEFAULT.

An explanation of each function is shown below:

Table 3-1 Function chart

FUNCTN :STYLE	Allows you to select character, and page format options.
FUNCTN :INTRFCE	Allows you to select the printer's interface type and characteristics.
FUNCTN :SAVE	Allows you to store selected options in non-volatile memory (not affected by power on/off).
FUNCTN :LIST	Allows you to display selected options on the 16-position liquid crystal message display.
FUNCTN :SELF TST	Allows you to perform the self-test printing.
FUNCTN :HEX DUMP	Allows you to print the data, received from the host, in hexadecimal.
FUNCTN :DEFAULT	Returns the printer's selectable options to the factory default settings.

In setup mode, you move from function to function each time you press the FUNCTION/(FF) button. When the Display shows the function you wish to enter, press the ITEM/(LF) button.

3.6 ITEM LEVEL

The item level is the middle level of the tree structure. Enter the item level by pressing the ITEM/ (LF) button when the display shows "FUNCTN :"
followed with the name of a function (such as "STYLE" or "INTRFCE").

When the printer is in the item level of setup mode, the display will show the name of an item (such as "QUALITY:" or "LANGUGE:") followed with the name of a selectable option (such as "LETTER" or "DRAFT").

As shown in the previous flowchart and explained in the following paragraphs, there are multiple items you may select in the STYLE and INTRFCE functions. In the remaining five functions you select an action (SAVE, LIST, SELF TST, HEX DUMP, and DEFAULT).

3.7 STYLE FUNCTION SELECTIONS

When the display shows "FUNCTN :STYLE" and the ITEM button is pressed, the printer enters the Function "STYLE".

To move from item to item in this function, press the ITEM (LF) button. The Display will show the next item and its current selection.

Example When "QUALITY:LETTER" shows in the display, it means that under the item "QUALITY", the current selection is "LETTER".

To change the current selection, press the SELECT (RESET) button until the selectable option you want to select is displayed, then press the ITEM (LF) button, your selection is set until power to the printer is turned off (unless the selection has been saved, see paragraph 3.9). The next item is shown on the display.

If a switch other than the SELECT (RESET) button is used, parameters cannot be changed. Don't forget to return the parameters to the original values when you operate the SELECT (RESET) button by mistake or for other than the purpose of changing parameters, that is, for checking what kinds of parameters are contained in an item.

The following chart provides an explanation of the items and selectable options in the STYLE function:

Table 3-2 Style function selectable options

No.	Item	Selectable option (style function)
1	EMULATE:	<p>Command emulation: The following shows printers for the command emulation mode to be displayed and selected.</p> <p>DPL24C* and DPL24I — Fujitsu DPL24C and DPL24I printers</p> <p>IBM GPH — IBM graphics printer</p> <p>FX-80 and JX-80 — EPSON FX-80/100 and JX-80 printers</p> <p>QUME 11 — Qume Sprint 11 printer</p>
2	QUALITY:	<p>Print quality: LETTER* — Letter quality is valid for Courier 10, Prestige Elite 12, Boldface PS, and optional cartridge fonts marked with (LQ) on the cartridge label.</p> <p>REPORT — Report quality has less quality than letter but has higher printing speed.</p> <p>DRAFT — Draft quality is a resident font in the printer.</p>

* Indicates factory setting.

Table 3-2 – continued

No.	Item	Selectable option (style function)
3	FONT:	Print font: COUR 10* – Courier 10 PRSTG12 – Prestige Elite 12 COMPRSD – Compressed patterns corresponding to 18 cpi BOLDfce – Boldface PS CRTRDG # (#: 0 to 7) – Font # in the font cartridge. Displayed only when an optional font cartridge is installed. (For details of the font cartridge, see Appendix B) DWNLOD0 or DWNLOD1 – Font 0 or font 1 in the download RAM
4	CHR SET:	Character set: SET2* – Uses IBM graphics printer character set 2 SET 1 – Uses IBM graphics printer character set 1. If a font in the font cartridge or download RAM is selected and SET 2 is selected, the character set in the cartridge or download RAM is used. (User- designed character set) For the character sets, see Appendix F.
5	ATTRIB:	Character attribute: NONE* – Standard character ITALICS ENLARGD – Enlarged CONDNSD – Condensed SHADOW BOLD
6	COLOR:	Printed color: AUTOSEL* (computer mode), BLACK, YELLOW, MAGENTA (red), or CYAN (blue)
7	LANGUGE:	Language: USA*, UK, GERMAN, FRENCH, ITALIAN, SPANISH, SWEDISH, FINISH, DANISH, or NORWEGN (Norwegian) – The character set for the swedish and Finnish languages as well as for the Danish and Norwegian languages are the same.

* Indicates factory setting.

Table 3-2 — continued

No.	Item	Selectable option (style function)
8	CHAR SP:	<p>Characters per inch: 10 CPI*, 12 CPI, 15 CPI, 17 CPI, 18 CPI, 20 CPI, or PROP SP (proportional spaced)</p> <p>Some characters may overlap other characters if the specified spacing is narrow.</p> <p>Proportional spacing is valid for any selection of type style and print quality.</p>
9	LINE SP:	Lines per inch: 6 LPI*, 8 LPI, 3 LPI, or 4 LPI
10	GRPH LF:	<p>Graphic line feeding: IBM GPH* — IBM graphics printer or equivalent FX-80 — EPSON FX-80/JX-80 printer or equivalent</p> <p>Graphic line feeding: Your printer in DPL24C or DPL24I emulation mode is compatible with the two types of printer given above, but command set includes different definitions of some line spacing commands of the same codes.</p> <p>This setting is meaningful only for DPL24C and DPL24I emulations and when one of the other emulations is selected this is not displayed.</p>
11	PAGE LG:	Page length in inch units: 11.0 IN* (letter size), 11.6 IN, 12.0 IN, 14.0 IN, 18.0 IN, 3.0 IN, 3.5 IN, 4.0 IN, 5.0 IN, 5.5 IN, 6.0 IN, 7.0 IN, 8.0 IN, 8.5 IN
12	PRF SKP:	Skip 1" over the perforation at the end of each continuous form sheet, or print through it*.
13	LFT END:	<p>Left end position offset: You can set the left margin at column 1 through 41. The selected number plug software left margin spacing determines the position of the left margin. The column is determined based on the character spacing currently selected, but 12 cpi (Elite pitch) is assumed for proportional spacing.</p> <p>1 COLM*, 2 COLM, ..., 41 COLM</p>
14	TOP MRG:	Set top margin at line 1* through 10.

* Indicates factory default setting.

Table 3-2 – continued

No.	Item	Selectable option (style function)
15	OFFSET:	-n (n: 1 to 7) – Backward shift of n 60 inch 0* – Standard +m (m: 1 to 8) – Forward shift of m 60 inch Set top of form alignment variable from -7 to +8 (0 is set at the factory). Used with an optional cut sheet feeder to provide a consistent top-of-form.
16	PPR OUT:	Stop printing when out-of-paper* is detected, or ignore out-of-paper detection and keep on printing.
17	DC3-CDE:	Enable* or Disable DC3 DC1 codes. Print data received between a DC3 and DC1 code is ignored when enabled.
18	CR-CODE:	Select Carriage Return without a Line Feed* or a Line Feed with each Carriage Return.
19	LF-CODE:	Select Line Feed (not only LF code (0A hexadecimal) but also the all of the other paper feed commands) without a Carriage Return or Carriage Return with each Line Feed*.
20	AUTO CR:	Select causing a Carriage Return when the print head reaches the physical right end* or not.
21	PRT DIR:	Select Bi-directional* or Uni-directional printing.
22	BUZZER:	Enable* or disable the buzzer when an error occurs.

* Indicates factory default setting.

3.8 INTERFACE FUNCTION SELECTIONS

When the Display shows "FUNCTN :INTRFCE" and the ITEM button is pressed, the printer enters the function "INTRFCE" and the display shows the current selection.

To move from item to item in this function, press the ITEM/(LF) button. The display will show the next Item and the current selection.

Example: When "TYPE :SERIAL" shows in the display, it means that under the item "TYPE", the current selection (interface type) is "SERIAL".

To change the current selection, press the SELECT/(RESET) button until the selectable option you want to select is displayed, then press the ITEM/(LF) button, your selection is set until power to the printer is turned off (unless the selection has been saved, see paragraph 3.9). The next item is shown on the display.

The following chart provides an explanation of the items and selectable options in the INTRFCE Function:

Table 3-3 Interface function selectable options

No.	Item	Selectable option
1	TYPE:	Interface type: Select PARALLEL* or SERIAL interface.
2	WORD LG:	Word length: Select 8-BIT* or 7-BIT word length. Bit image graphics always uses 8-bit data.

* Indicates factory setting.

Table 3-3 – continued

No.	Item	Selectable option																																																							
NOTE: The following items and selectable options are shown only when the serial interface type is selected.																																																									
3	FORMAT:	Data format selection: See the "Interface Module Manual" for details of the data format.																																																							
<table border="1"> <thead> <tr> <th></th> <th data-bbox="572 424 647 467">No. of data bits</th> <th data-bbox="652 424 728 467">Parity bit</th> <th data-bbox="733 424 808 467">Stop bit</th> <th data-bbox="814 424 889 467">Total (*)</th> </tr> </thead> <tbody> <tr> <td data-bbox="434 480 546 501">8 NONE 1 *</td> <td data-bbox="602 480 617 501">8</td> <td data-bbox="669 480 706 501">None</td> <td data-bbox="770 480 785 501">1</td> <td data-bbox="848 480 874 501">10</td> </tr> <tr> <td data-bbox="434 504 546 525">8 NONE 2</td> <td data-bbox="602 504 617 525">8</td> <td data-bbox="669 504 706 525">None</td> <td data-bbox="770 504 785 525">2</td> <td data-bbox="848 504 874 525">11</td> </tr> <tr> <td data-bbox="434 528 546 549">8 ODD 1</td> <td data-bbox="602 528 617 549">8</td> <td data-bbox="669 528 706 549">Odd</td> <td data-bbox="770 528 785 549">1</td> <td data-bbox="848 528 874 549">11</td> </tr> <tr> <td data-bbox="434 552 546 572">8 EVEN 1</td> <td data-bbox="602 552 617 572">8</td> <td data-bbox="669 552 706 572">Even</td> <td data-bbox="770 552 785 572">1</td> <td data-bbox="848 552 874 572">11</td> </tr> <tr> <td data-bbox="434 576 546 596">7 MARK 1</td> <td data-bbox="602 576 617 596">7</td> <td data-bbox="669 576 706 596">Mark</td> <td data-bbox="770 576 785 596">1</td> <td data-bbox="848 576 874 596">10</td> </tr> <tr> <td data-bbox="434 600 546 620">7 SPCE 1</td> <td data-bbox="602 600 617 620">7</td> <td data-bbox="669 600 706 620">Space</td> <td data-bbox="770 600 785 620">1</td> <td data-bbox="848 600 874 620">10</td> </tr> <tr> <td data-bbox="434 624 546 644">7 ODD 1</td> <td data-bbox="602 624 617 644">7</td> <td data-bbox="669 624 706 644">Odd</td> <td data-bbox="770 624 785 644">1</td> <td data-bbox="848 624 874 644">10</td> </tr> <tr> <td data-bbox="434 647 546 668">7 EVEN 1</td> <td data-bbox="602 647 617 668">7</td> <td data-bbox="669 647 706 668">Even</td> <td data-bbox="770 647 785 668">1</td> <td data-bbox="848 647 874 668">10</td> </tr> <tr> <td data-bbox="434 671 546 692">7 ODD 2</td> <td data-bbox="602 671 617 692">7</td> <td data-bbox="669 671 706 692">Odd</td> <td data-bbox="770 671 785 692">2</td> <td data-bbox="848 671 874 692">11</td> </tr> <tr> <td data-bbox="434 695 546 716">7 EVEN 2</td> <td data-bbox="602 695 617 716">7</td> <td data-bbox="669 695 706 716">Even</td> <td data-bbox="770 695 785 716">2</td> <td data-bbox="848 695 874 716">11</td> </tr> </tbody> </table>				No. of data bits	Parity bit	Stop bit	Total (*)	8 NONE 1 *	8	None	1	10	8 NONE 2	8	None	2	11	8 ODD 1	8	Odd	1	11	8 EVEN 1	8	Even	1	11	7 MARK 1	7	Mark	1	10	7 SPCE 1	7	Space	1	10	7 ODD 1	7	Odd	1	10	7 EVEN 1	7	Even	1	10	7 ODD 2	7	Odd	2	11	7 EVEN 2	7	Even	2	11
	No. of data bits	Parity bit	Stop bit	Total (*)																																																					
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* Total number of bits includes a start bit.																																																									
None: No parity bit is assigned.																																																									
Mark: Parity bit is always logical 1.																																																									
Space: Parity bit is always logical 0.																																																									
4	BAUD RT:	Baud (1 bit per second) rate: 9600*, 19200, 600, 1200, 2400, or 4800																																																							
Selecting a speed lower than that of your computer (or modem) causes an overflow error in your printer.																																																									
5	PROTOCOL:	Communication protocol: Set XON/XOFF*, DC1, DC3, DTR (Data Terminal Ready), REV CHL (Reverse Channel) or ETX/ACK protocol.																																																							
6	DUPLEX:	Duplex mode: Full duplex* or Half duplex. See the <u>Interface Module Manual</u> .																																																							
7	CONTROL:	<p>Number of control wires: 3 WIRE* – Enables the Transmitted Data, Received Data and Data Terminal Ready (Reverse Channel in REV CHL protocol) signals.</p> <p>ALLWIRE – Enables all signals except the Carrier Detect signal.</p> <p>Wires refer to control signals received from the host system. Your printer has either three wires or is full of wires.</p>																																																							

* Indicates factory setting.

3.9 SAVE FUNCTION

When the Display shows "FUNCTN :SAVE" and either the ITEM/(LF) or SELECT/(RESET) button is pressed, the display will briefly show "SAVING NOW!!" and the currently selected options will be saved in non-volatile memory. If you do not perform this operation, your selections will be lost when power is turned off. Saved selections show an asterisk (*) in the last position of the display.

3.10 LIST FUNCTION

When the display shows "FUNCTN :LIST" and either the ITEM/(LF) or SELECT/(RESET) button is pressed, the display will briefly show all selected options.

This function is provided for checking the parameters currently stored in the RAM by the STYLE and INTRFCE setting functions. It does not display the contents of non-volatile memory. Therefore, to check whether the parameters are correctly stored in non-volatile memory, execute this function after turning power off and on or after performing the reset operation to instruct the printer to reread the contents of non-volatile memory.

If, during the LIST process, either the ITEM/(LF) or SELECT/(RESET) button is pressed, the listing will stop and the display will show the last item and option shown before the button was pressed.

If either the ITEM/(LF) or SELECT/(RESET) button is pressed again, the selected options continue to be listed.

Press the FUNCTION/(FF) button to return to the FUNCTN level.

3.11 SELF TEST FUNCTION

When the display shows "FUNCTN :SELF TST" and either the ITEM/(LF) or SELECT/(RESET) button is pressed, the display changes to "SELF TEST PRINT" and the printer will print a SELF-TEST that shows:

- All currently selected options
- Firmware revision level
- Self-test printing pattern

If, during the SELF TST printing operation, either the ITEM/(LF) or SELECT/(RESET) button is pressed, the Display shows "===PAUSE===" and the printer will stop printing.

If either the ITEM/(LF) or SELECT/(RESET) button is pressed when "===PAUSE===" is displayed, the SELF TST printing will continue.

Press the FUNCTION/(FF) button to return to the FUNCTN level.

NOTE:

You can also start the self-test by turning the POWER switch on while holding down the FUNCTION/(FF) button.

3.12 HEX DUMP FUNCTION

When the display shows "FUNCTN :HEX DUMP" and either the ITEM/(LF) or SELECT/(RESET) button is pressed, the printer will enter its HEX DUMP mode and the display will show "HEX DUMP:READY". All subsequent data, sent to the printer, will be printed in hexadecimal and the display changes to "HEX DUMP:BUSY". One print line contains values for 16 characters.

If, during the HEX DUMP printing operation, either the ITEM/(LF) or SELECT/(RESET) button is pressed, the display shows "===PAUSE===" and the printer will stop printing.

If either the ITEM/(LF) or SELECT/(RESET) button is pressed when "===PAUSE===" is displayed, the Hex dump printing will continue.

Press the FUNCTION/(FF) button to return to FUNCTN level.

3.13 DEFAULT FUNCTION

When the display shows "FUNCTN :DEFAULT" and either the ITEM/(LF) or SELECT/(RESET) button is pressed, the display will briefly show "Setting Default!", and then show "FUNCTN :DEFAULT". During this operation the printer sets all currently selected options to the factory default settings.

Press the FUNCTION/(FF) button to return to the FUNCTN level.

NOTE:

Following parameters are not changed and remain by this function.

- Emulation
- Left end position offset
- TOF offset
- Interface settings

3.14 PRINT HEAD ALIGNMENT

This function is typically used by maintenance personnel to adjust vertical alignment of bidirectionally printed characters. You may also use this procedure as follows:

1. Hold the FF and LF buttons down while turning power on.

The display will show "VER.ALIGNMENT:n" and the printer, in bidirectional mode, will print a series of vertical bars.

The vertical bars will line up, when printing in this mode.

"n" is set at the factory between -8 and +7 for best alignment of these bars.

2. If the alignment is correct, press the RESET button.

If the alignment is not correct:

Press the FF button to decrease the value of "n" and move the vertical bars towards the right side.

Press the LF button to increase the value of "n" and move the vertical bars towards the left side.

3. Press the RESET button when the best alignment is obtained. The display shows "SAVING NOW!!!", and then "ON-LINE:READY".

3.15 ERROR MESSAGES

The printer's error messages and the action needed to correct the error is shown in the following charts:

Table 3-4 Operational error messages

Error message	Cause	Recovery
COVER OPEN ERROR	The front cover is not closed.	*Close the front cover.
PAPER OUT ERROR	Printer has detected paper out state.	*Load new paper.
FEEDER ERROR	The hopper of the cut sheet feeder runs out of paper, or paper jam occurs.	*Put new sheets in the hopper, and load the paper. *Remove paper jam, and load new paper.

Table 3-5 Paper handling error messages

Error message	Cause	Recovery
SET FRICTN MODE!	Paper release lever is set to continuous form position when cut sheet feeder is used.	*Set the paper release lever to rear for cut sheet paper.
OPEN PAPER BAIL!	Auto-load switch is pressed while paper bail is closed.	*Open the paper bail.

Clear the following error messages by pressing the RESET button.

Table 3-6 Serial interface error messages

Error message	Cause	Recovery
PARITY ERROR	Printer has received data with incorrect parity.	<ul style="list-style-type: none"> *Check parameters of "FORMAT" or "BAUD RT". *Check interface cable.
FRAMING ERROR	Printer has received data with incorrect format.	<ul style="list-style-type: none"> *Check parameters of "FORMAT" or "BAUD RT". *Check interface cable.
OVER-FLOW ERROR	Input buffer has overflowed.	<ul style="list-style-type: none"> *Check parameters of "PROTOCL", "FORMAT" or "CONTROL". *Check interface cable.
MODEM ERROR	Printer has received data with incorrect modem control signal.	<ul style="list-style-type: none"> *Check parameter of "CONTROL". *Check interface cable.

Table 3-7 Memory error messages

Error message	Cause	Recovery
ROM SUM ERROR! or RAM R/W ERROR!	An error was detected during testing of the ROM or RAM memory.	<ul style="list-style-type: none"> *Consult Maintenance personnel if either message is displayed repeatedly.

Table 3-8 Downloading error message

Error message	Cause	Recovery
DOWN-LOAD ERROR	The format of the down load data is incorrect.	*Check down load data.

Table 3-9 Mechanical error messages

Error message	Cause	Recovery
DRIVE ALARM! POWER ALARM! or LEFT END ALARM!	These are warning messages that indicate a possible mechanical problem.	*Consult maintenance personnel if any of these messages is displayed repeatedly.

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SECTION 4

PRINTER CARE

This section describes the printer's initialization cycle, gives basic troubleshooting hints, explains the cleaning and lubricating procedures, and describes how to repack the printer for storage or transport.

4.1 PRINTER INITIALIZATION

A printer initialization cycle occurs when:

1. The power switch is turned on.
2. An Input Prime signal is received from the host system with parallel interface.
3. An escape code sequence for initializing your printer is received from the host system.

A normal initialization cycle causes the printer to:

Light the POWER lamp.

Perform a basic internal check on its circuits.

Display "INTERNAL TEST" briefly and then show "INTERNAL TEST OK" (power-on initialization only).

If the internal test detects an error, the display will show the error.

The platen slightly rotates backward and forward to clear gear backlash when paper release lever is set to the front of the printer.

The print head moves to the left side frame.

The printer enters the online mode (if paper is inserted).

The display will show "PAPER OUT ERROR" if the paper release lever is towards the front of the printer and no paper is in the forms tractors.

When the initialization cycle is complete, the display shows "ON-LINE: READY".

4.2 REMOVING A PAPER JAM

1. Turn power off and open the front cover. Otherwise, you may have your fingers caught by the print head carriage because the carriage will move if the bail lever is operated during jam removal.
2. Pull the paper release lever towards the front of the printer.
3. Place the paper thickness lever into position D.
4. Place the print head at either end of the print line.
5. Carefully pull the jammed paper from the paper path. Try to avoid tearing the paper.
6. Rotate the platen knob and try to remove all scraps of paper from beneath the platen.
7. Move the print head to the center of the print line.
8. Insert fresh paper into printer and rotate the platen knob, to advance the paper through the printer and push out any scraps of paper.
9. Put the paper release lever and paper thickness lever into their operating positions and close the front cover.
10. Turn power on, load paper and print.

4.3 REPLACING FUSE

If your printer goes off during operation or does not come on at the start, the AC line fuse of your printer may have blown out. First, you should check

that the power source at the outlet is not interrupted and the power cord is not disconnected.

A blown fuse indicates that an overcurrent flowed through your printer for some reason. If the cause is unknown, be careful when turning power on again after replacing the fuse. If the fuse blows again, contact your dealer.

The replacement procedure is as follows:

1. Unplug the power cord. (Turning off the power switch is not sufficient.)
2. Turn the fuse holder counterclockwise with your finger or a screwdriver, and remove the holder together with the blown fuse.
3. Put a new fuse into the fuse holder.
4. Put the fuse holder back into the socket by reversing step 3.

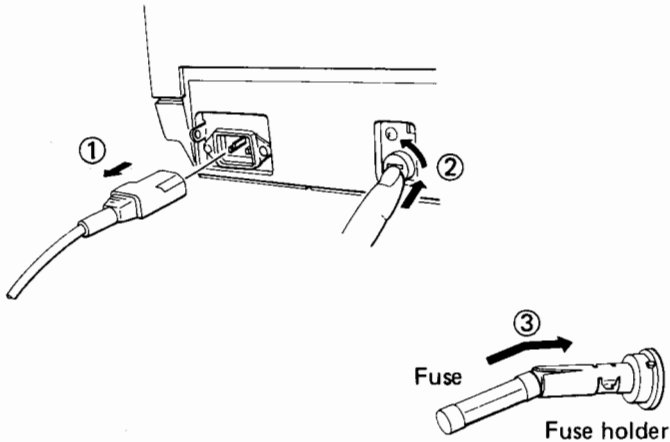


Figure 4-1 Replacing the fuse

(For German users)

Austausch der Sicherung

Wenn der Drucker beim Betrieb plötzlich aussetzt oder beim Einschalten nicht arbeiten will kann es sein, daß die Netzstromsicherung des Druckers durchgebrannt ist. Natürlich müssen Sie auch nachprüfen, ob Strom im Netz ist und ob der Netzstecker ein gesteckt ist. Eine durchgebrannte Sicherung deutet darauf hin, daß aus irgendeinem Grund ein zu starker Strom durch den Drucker geflossen ist. Wenn die Ursache dafür nicht festgestellt werden kann, seien Sie beim erneuten Einschalten des Druckers nach Austausch der Sicherung vorsichtig. Wenn die Sicherung erneut durchbrennt, wenden Sie sich an Ihren Fachhändler. Die Sicherung wird wie folgt ausgetauscht;

1. Das Netzkabel aus der Steckdose ziehen (einfaches Ausschalten des Gerätes reicht nicht aus).
2. Den Sicherungshalter mit einem Finger oder einem Schraubenzieher gegen den Uhrzeigersinn drehen und den Halter zusammen mit der durchgebrannten Sicherung entnehmen.
3. Eine neue Sicherung mit gleichem Nennwert einlegen.
4. Die Sicherung in die Halterung einstecken.

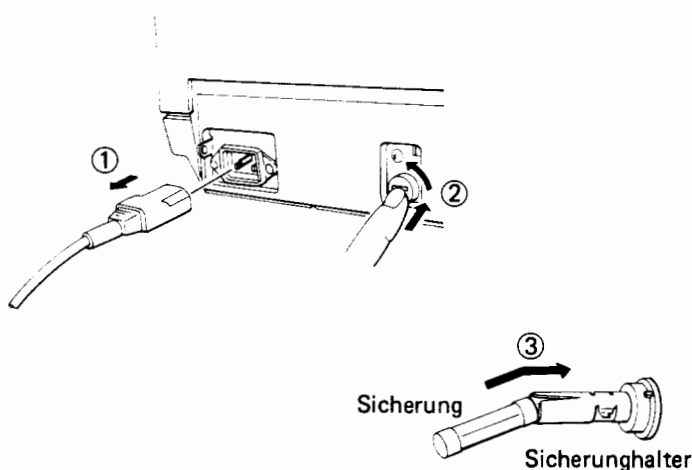


Abb. 4-1 Austausch der sicherung

4.4 CLEANING AND LUBRICATING

CLEANING AND LUBRICATING NOTES:

Printer lubrication is generally not required and is best performed by a service technician.

Do not use alcohol to clean rubber parts (platen, rollers, etc.). Alcohol may cause the rubber to harden.

Operator maintenance is limited to cleaning the printer, ensuring there is lubrication on the print head guide shaft, and cleaning the platen as follows:

Ensure power is off and the AC power cord is disconnected before cleaning or lubricating the printer.

1. Clean the outer surfaces of the printer with a soft cloth dampened with a mild detergent.
2. Use a small vacuum cleaner to remove accumulations of paper dust and particles from inside the printer.
3. Use a platen cleaner to remove ink from the platen and paper rollers.
4. Apply a small amount of platen cleaner to a cloth, place the cloth against the platen (or paper rollers) and rotate the platen knob.
5. Dry the platen by applying a dry cloth to the platen.
6. Avoid getting platen cleaner inside the printer.

CAUTION:

Be careful not to plug up the sensor holes with removed dust.

4.5 BASIC TROUBLESHOOTING

Your printer is designed to provide reliable operation. If it happens to malfunction use Table 4-1 to help identify and resolve the difficulty.

Check your computer and application software manual for additional suggestions. If self-test performs correctly, you should check the interface connection and other elements in the system.

Table 4-1 Troubleshooting hints

Symptom	Check
POWER lamp fails to light.	Power cord and connection. Fuse, replace if bad.
Printer will not initialize.	Carriage for easy side to side movement.
Display fails to show "ON-LINE:READY".	Printer and circuit cards are correctly installed.
Interface cable fails to connect.	Interface cable and circuit card connectors.
Paper feed problem.	Paper path for obstruction. Forms tractor for correct side to side settings.
Printing is light.	Ribbon, replace if worn. Paper thickness lever setting.
Printed characters have voids or vary in darkness.	Paper, ribbon and platen. Paper thickness lever setting.
Poor print quality.	Paper thickness lever setting and ribbon cassette.
Will not print.	If a "PAPER OUT ERROR" is displayed, check the paper path and sensor. Ensure the ribbon is correctly installed between the print head and platen. Also check the interface card and cable.
Incorrect character printed.	Host system control or data code may not agree with the printer's STYLE or INTRFCE selections, see Section 3.
Ribbon breaks, or jams.	Installation of ribbon and paper thickness lever setting.
Extra line feed, or no line feed.	Line feed and carriage return code setup, see Section 3.
Paper jam.	Turn the power switch off, push the paper release lever towards rear of printer, and carefully pull the paper out of the paper path.

4.6 REPACKING YOUR PRINTER

Use the carton and packing material supplied with the printer if you have to store or transport your printer.

Turn computer and printer power off.

Disconnect the interface cable.

Remove the power cord, paper guide, platen knobs and ribbon cassette. Place these items into their protective plastic bags and position them inside the tray of the shipping carton.

Clean the printer, if required.

Refer to paragraph 1-3. Position the bail rollers at the rightmost position, and set the paper release lever towards the front position of the printer. Position the print head at the left end of the print line. Install the shipping restraints to prevent the print head, paper bail, and ribbon platform from moving during transport.

Close and tape the printer's covers.

Put the printer into its protective plastic bag.

Install the polystyrol pads on each side of the printer and slide it into the shipping carton.

Slide the accessory tray into the shipping carton.

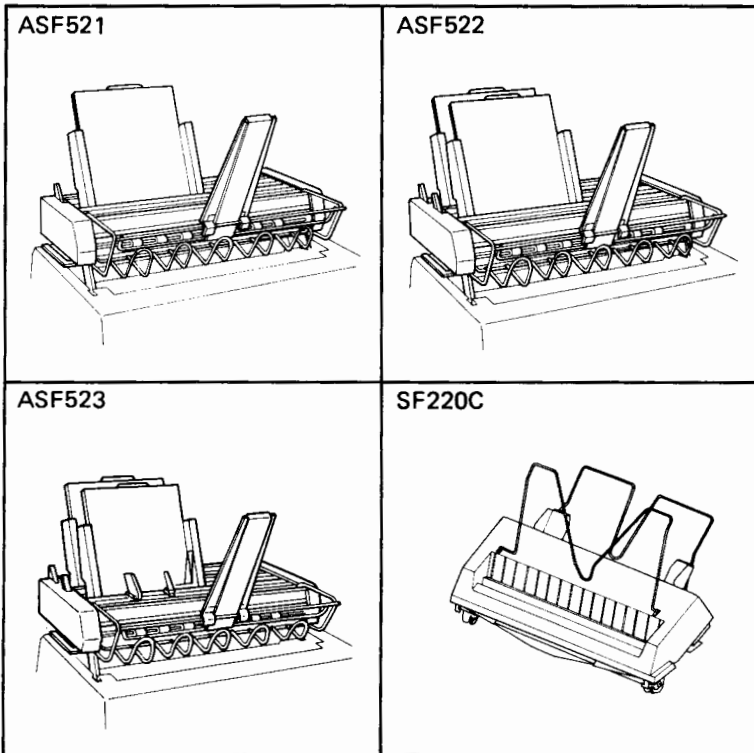
Close the flaps on the shipping carton.

Secure the shipping carton with the two plastic handles to complete the packing procedure.

APPENDIX A CUT SHEET FEEDERS

SUPPORTED MODELS

The printer can be equipped with the following cut sheet feeder model numbers.



Büro und Datentechnik (BDT) produces the ASF521, ASF522, and ASF523.

Fujitsu produces the SF220C.

The standard BDT sheet feeder is changed slightly to be completely compatible with the printer.

Consult the manual shipped with the cut sheet feeder and your authorized dealer for specifications and additional performance data on these cut sheet feeders.

CUT SHEET FEEDER INSTALLATION

Prepare the printer for the cut sheet feeder as follows:

Refer to the Figure A-1.

Confirm printer power is off.

Open the front cover.

Remove the top cover by unlocking the two hooks at its front.

Move the paper release lever towards the rear of the printer.

Pull the paper bail lever forward (away from the platen).

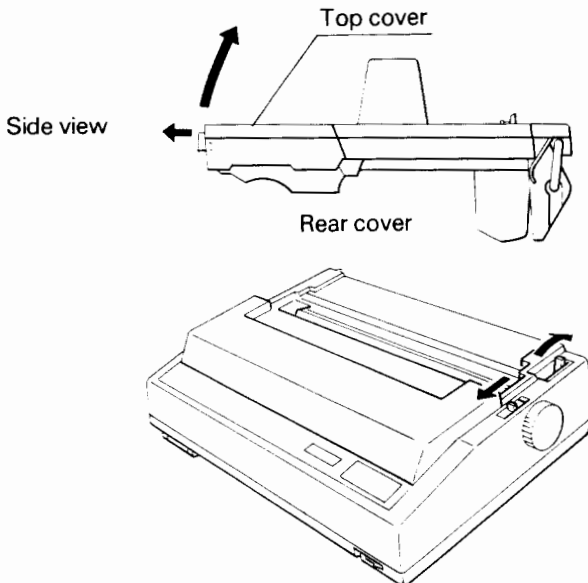


Figure A-1 Preparing the printer

Place the cut sheet feeder on the printer as shown in Figure A-2.

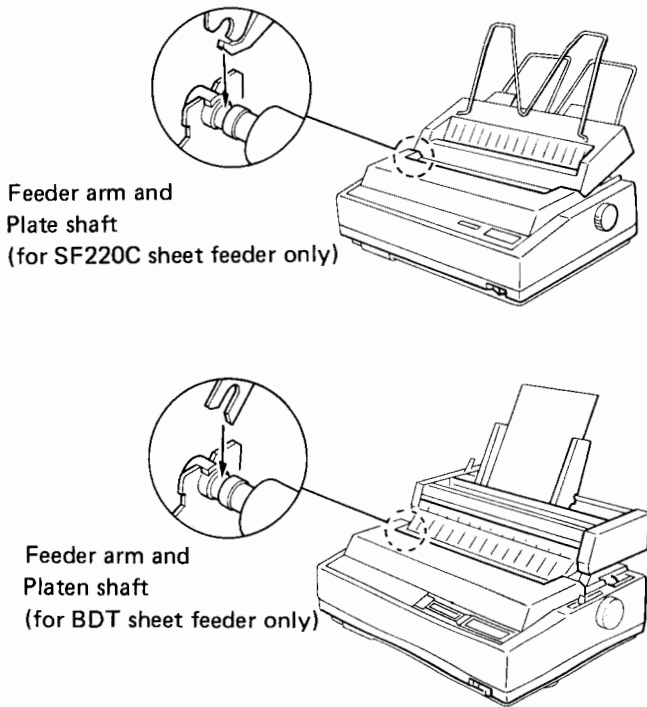


Figure A-2 Mounting the cut sheet feeder

For a functional check of the cut sheet feeder, turn the printer's platen knob manually, in the forward direction. The Cut Sheet Feeder's eject rollers should rotate.

Connect the cable from the cut sheet feeder into the printer's cut sheet feeder connector as follows.

Confirm power is off.

Ensure the pins in the cable's connector match the holes in the printer's cut sheet feeder connector.

Insert the cable connectors as shown in Figure A-3.

Confirm that the cable connectors match up with the connector receptacles on the printer and cut sheet feeder.

Insert the connectors and confirm their orientation mark (projection). Also connect the grounding plugs.

Clamp the cut sheet feeder cable in place using the interface cable clamps.

CAUTION:

Disconnect the cut sheet feeder cable at the printer side if you are not going to use the cut sheet feeder no longer. If not, the printer does not operate correctly.

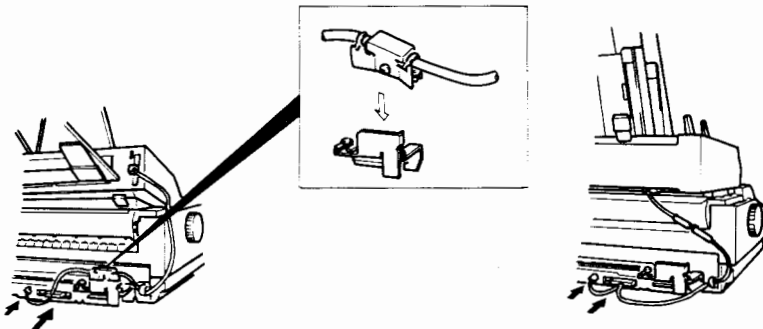


Figure A-3 Connecting the cut sheet feeder cable

SET FORM (PAGE) LENGTH

Use the control panel to select the correct page length when the printer is in setup mode (PAGE LG is defined in Section 3).

Use a system control command to set form length when the printer is online (as defined in your software manual or the Programmer's Manual of the printer).

Form length must correspond to the length of paper used in the cut sheet feeder.

LOAD PAPER

Manually insert paper into the sheet feeder's bin(s).

Paper must be manually fanned before placing it into a sheet feeder's paper bin.

Paper will be loaded into the printer when:

1. The printer receives a printable character code.
2. A feed control command is received from the system.
3. With the RESET switch held down, paper will be loaded to the top of form when the LOAD/(FF) button on the control panel is pressed.
4. You press the LF (line feed) switch on this printer. (Only for SF220C)

NOTES:

1. For the SF220C, after loading the paper by pushing the FF switch while holding down the RESET switch, you can adjust the printing position by turning the platen knob manually or by pushing the LF or FF switch in the micro feed mode.
2. For the SF220C, ASF521, or ASF522, you can load a sheet that is a trial sheet or that has a different size from sheets in use with the sheet feeder installed. To do so, put a sheet in the forms inlet and press the FF switch while holding down the RESET switch. A feed command is not necessary.

PAPER EJECT

When the printer is online, a paper feed command from the system will cause the paper to eject.

When the printer is offline, paper will be ejected from the printer when the FF button on the control panel is pressed, until the paper is advanced out of the printer.

PAPER OUT CONDITION

When a paper bin runs out of paper, a "FEEDER ERROR" message appears on the message display.

To resume printing:

Insert paper into the empty bin

Press the FF button on the control panel while holding down the RESET switch.

Paper will load and the "FEEDER ERROR" message will disappear.

Press the ONLINE button to continue printing.

EXCHANGING RIBBON CASSETTE

The ribbon cassette cannot be exchanged with the cut sheet feeder installed. Therefore, you must demount the feeder and follow the ribbon exchanging procedure described in Section 2.1.

1. Turn off the printer power.
2. Disconnect the cable from the cut sheet feeder or the cable connected to the extension connector for the BDT model.
3. Demount the cut sheet feeder from the printer and place it on a level surface.
4. Exchange the ribbon cassette as explained in Section 2.
5. Reverse steps 1 to 3 to mount the cut sheet feeder.

APPENDIX B

RESIDENT AND CARTRIDGE FONTS

In addition to the variety of fonts resident in your printer, you can use other fonts by using optional font cartridges.

Font cartridges allow you to use additional character fonts. All font cartridges are supplied in electrostatic proof cases. Handle your font cartridges with appropriate care.

RESIDENT FONTS

There are five types of fonts resident in the printer.

- Courier 10
- Prestige Elite
- Draft
- Compression
- Boldface PS

(1) Courier 10

L\H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	SP	
	NUL	DLE	SP	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
	SOH	DC1	"	#	DC3	DC4	§	SYN	BEL	BS	HT	EM	LF	VT	FF	CR	SO	SI
	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?		
	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_		
	~	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o		
	p	q	r	s	t	u	v	w	x	y	z	{	}	~	DEL			
	Ç	ü	é	â	ä	à	á	ç	ê	è	è	ï	í	ì	À	Á		
	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	Ç	£	¥	℞	ƒ		
	Á	á	í	ó	ú	ñ	Ñ	ã	õ	¿	¬	½	¼	¡	«	»		
	B	⋮	⋮	⋮	|	†	‡	§	¶	⌋	⌌	⌍	⌎	⌏	⌐	⌑		
	C	⌒	⌓	⌔	⌕	⌖	⌗	⌘	⌙	⌚	⌛	⌜	⌝	⌞	⌟	⌠		
	D	⌡	⌢	⌣	⌤	⌥	⌦	⌧	⌨	〈	〉	⌫	⌬	⌭	⌮	⌯		
	E	α	β	Γ	π	Σ	ο	μ	τ	ϕ	θ	Ω	δ	∞	∅	€	∩	
	F	≡	±	≥	≤	∫	∫	+	≈	•	•	•	√	∞	²	■	SP	

(4) Compression

L \ H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	SP
0	NUL	DLE	SP	0	ø	P	˘	ˆ	€	ç	é	ê	ë	ì	í	î	ï
1	SOH	DC1	!	1	A	Q	a	á	â	ã	ä	å	æ	ç	è	é	ê
2	STX	DC2	"	2	B	R	b	â	ä	å	æ	ç	è	é	ê	ë	ì
3		DC3	#	3	C	S	c	ç	è	é	ê	ë	ì	í	î	ï	ñ
4		DC4	\$	4	D	T	d	ä	å	æ	ç	è	é	ê	ë	ì	í
5		§	§	5	E	U	e	å	æ	ç	è	é	ê	ë	ì	í	ñ
6		SYN	&	6	F	V	f	æ	ç	è	é	ê	ë	ì	í	ñ	ø
7	BEL	ETB	'	7	G	W	g	ç	è	é	ê	ë	ì	í	î	ï	ñ
8	BS	CAN	(	8	H	X	h	è	é	ê	ë	ì	í	î	ï	ñ	ø
9	HT	EM	)	9	I	Y	i	é	ê	ë	ì	í	î	ï	ñ	ø	ø
A	LF	SUB	*	:	J	Z	j	ê	ë	ì	í	î	ï	ñ	ø	ø	ø
B	VT	ESC	+	;	K	[	k	ë	ì	í	î	ï	ñ	ø	ø	ø	ø
C	FF	FS	,	<	L	\	l	ì	í	î	ï	ñ	ø	ø	ø	ø	ø
D	CR	GS	-	=	M	]	m	í	î	ï	ñ	ø	ø	ø	ø	ø	ø
E	SO	RS	.	>	N	^	n	î	ï	ñ	ø	ø	ø	ø	ø	ø	ø
F	SI	US	/	?	O	_	o	ï	ñ	ø	ø	ø	ø	ø	ø	ø	ø

TYPES OF FONT CARTRIDGES

Cartridges from Fujitsu include Orator, Letter Gothic 12, Scientific 12, Boldface PS and Light Italic. Additional font cartridges are available from other vendors. Check with your Dealer/Distributor for additional information on font cartridges.

INSTALLING A FONT CARTRIDGE

Open the electrostatic case and remove the cartridge.

TURN OFF PRINTER POWER. Always ensure power is off before installing or removing a font cartridge.

See Figure B-1. Insert your font cartridge with the embossed letters "FONT CARTRIDGE" facing upward.

Turn Power ON.

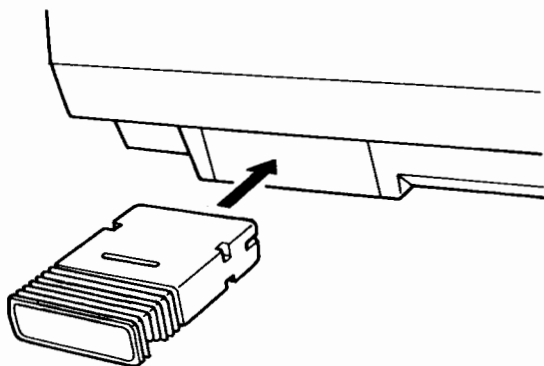


Figure B-1 Inserting the font cartridge

USING YOUR FONT CARTRIDGE

Change to the cartridge font in setup mode, as explained in Section 3. In online mode, send a cartridge font command to your printer (as explained in your software manual or the Programmer's Manual of the printer).

There are two optional font cartridges.

OLD: (D05B-2610-C100 to D05B-2610-C103)

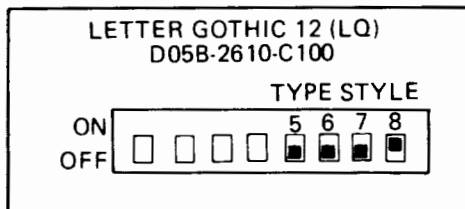
NEW: (D05B-2610-C500 to D05B-2610-C504)

For the NEW version, the font is selected by font name, for example, "BOLDFCE". The font name is indicated on the cartridge label.

For the OLD version, the font is selected by font number, for example, "CRTRDGO".

For the OLD version, the number to be specified can be obtained from the label information as shown below.

Label



Note: = ON

Bit	Significance
5	1
6	2
7	4

Add the significance values of the bits that are on, and use the sum as the cartridge number.

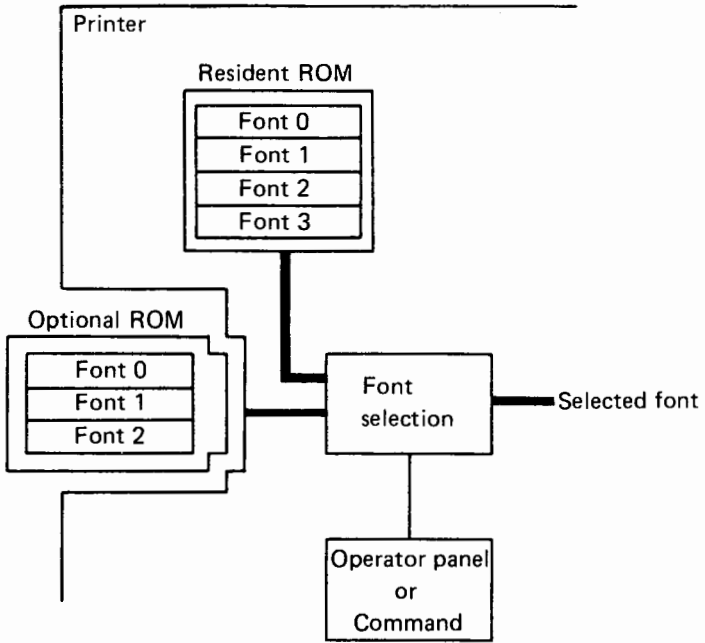


Figure B-2 Font selection

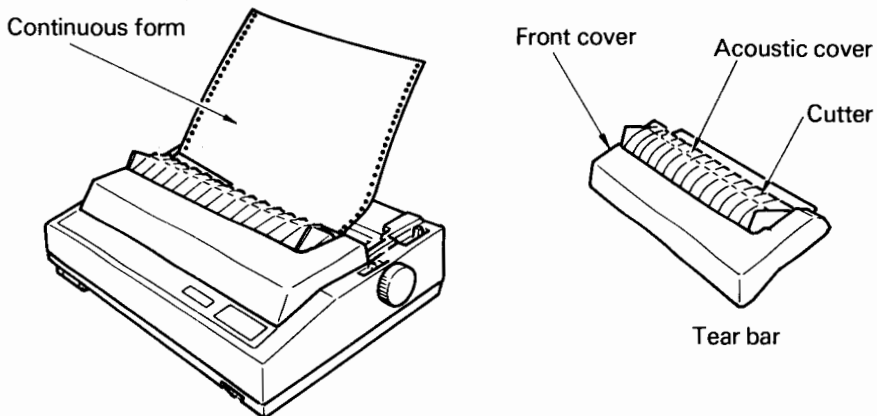


APPENDIX C

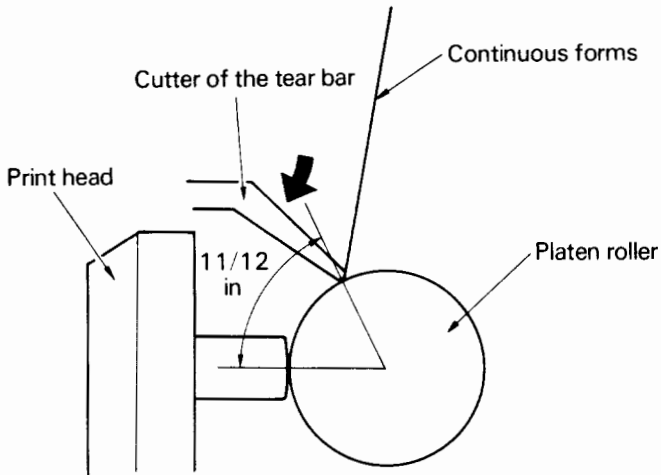
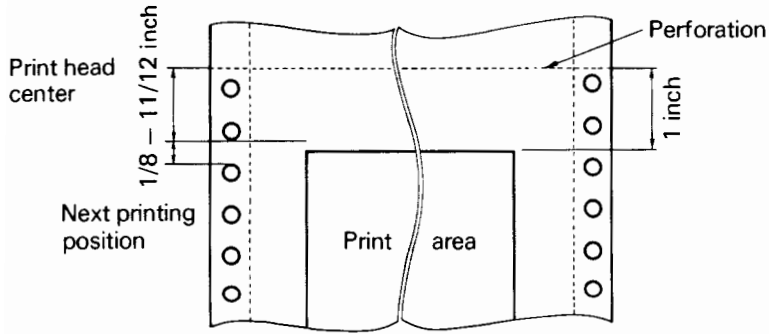
TEAR BAR FOR CONTINUOUS FORMS

If the optional tear bar is installed, the printed forms can quickly be torn off at the perforation.

1. Open the acoustic cover.
2. While pushing down the cutter, tear off the form at the perforation.

**NOTE:**

After tearing off the form, perform 1/6-inch line feed to compensate the gear backlash of the paper feed mechanism.



(For use outside the United States)

APPENDIX D

EXCHANGING RIBBON SUBCASSETTES

The ribbon subcassette is a paper case housing only a ribbon. You can use a four-color ribbon subcassette in a four-color ribbon cassette or a black ribbon subcassette in a black ribbon cassette.

The black type can be replaced five times for one ribbon cassette and the four-color type can be four times. The ribbon cassette has an instruction label for recording the number of subcassette replacements. Circle a number each time you replace ribbon subcassette. When number 6 or 5 has been circled, you have to replace the ribbon cassette with a new one.

The procedures for exchanging subcassettes are almost the same for four-color and black-color ribbons except that the black ribbon is twisted half a turn, like the Mobius strip, to form a dual track ribbon and lengthen the life of the ribbon.

Four-color ribbon

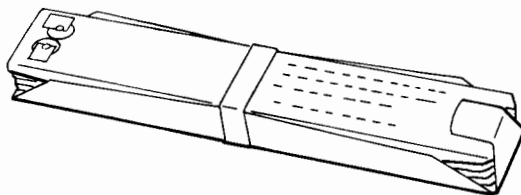
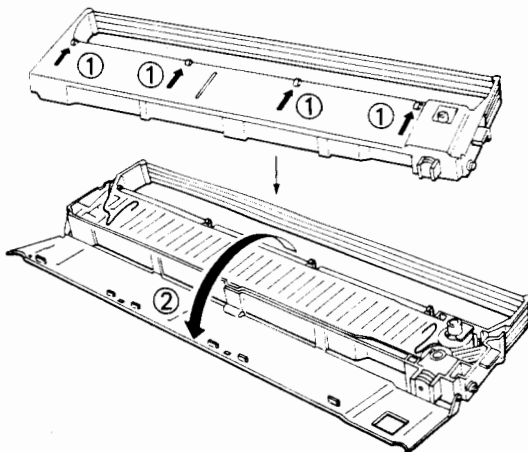


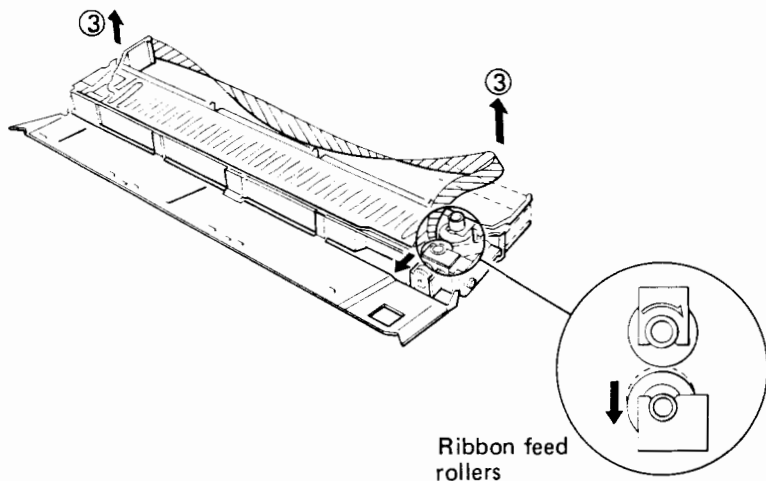
Figure D-1 Four-color ribbon subcassette

1. Unlock the four catches, one by one, in the direction of arrow.
2. Open the cassette cover.



**Figure D-2 Replacing the four-color ribbon subcassette
(1 of 6)**

3. Pull the rubber roller in the direction of the arrow until it clicks, and lift and remove the used ribbon out of the cassette.



**Figure D-3 Replacing the four-color ribbon subcassette
(2 of 6)**

4. Set a new subcassette in the ribbon cassette (be careful), and tear and remove the subcassette wrapping paper tape.
5. While gently holding the case in place, take out the tab inserted in the case by pulling it out.

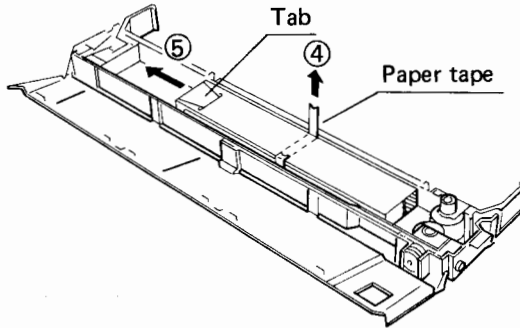


Figure D-4 Replacing the four-color ribbon subcassette (3 of 6)

6. Carefully arrange the ribbon along ribbon paths as shown in the figure.

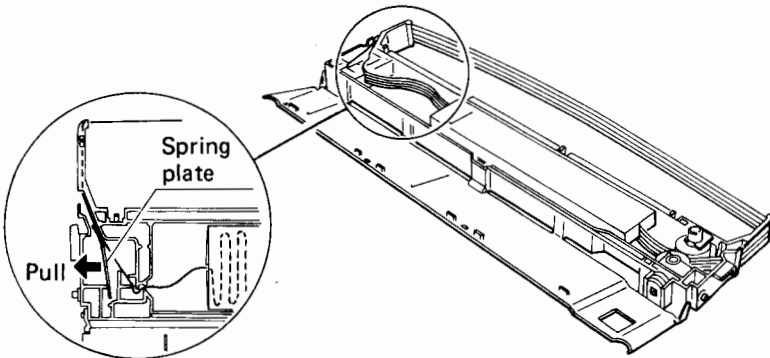
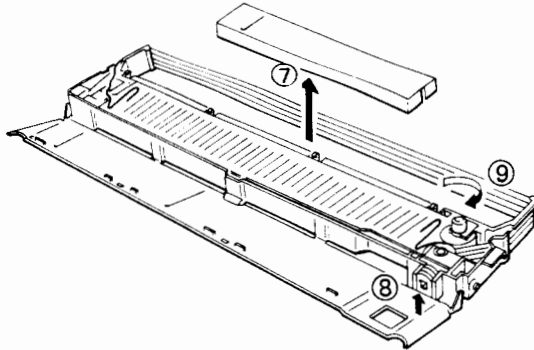


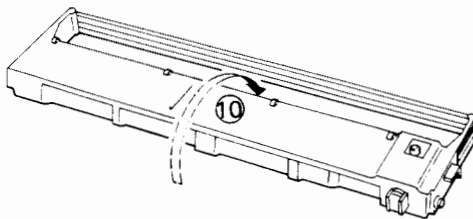
Figure D-5 Replacing the four-color ribbon subcassette (4 of 6)

7. Slowly lift the subcassette case out of the cassette.
8. Unlock the ribbon release knob in the direction of the arrow.
9. Turn the ribbon feed knob clockwise two or three times to check the ribbon feed operation.



**Figure D-6 Replacing the four-color ribbon subcassette
(5 of 6)**

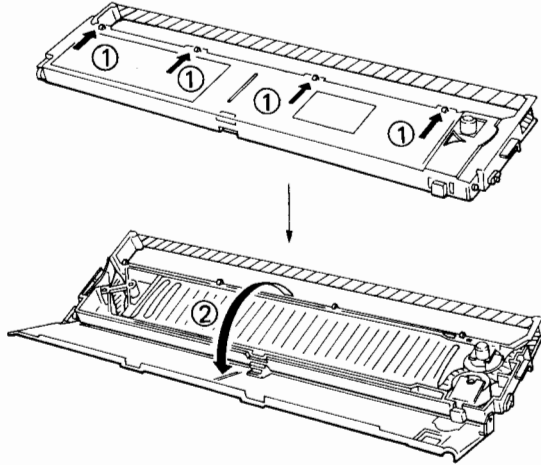
10. Close the cassette cover and circle the number of subcassette replacements on the label.



**Figure D-7 Replacing the four-color ribbon subcassette
(6 of 6)**

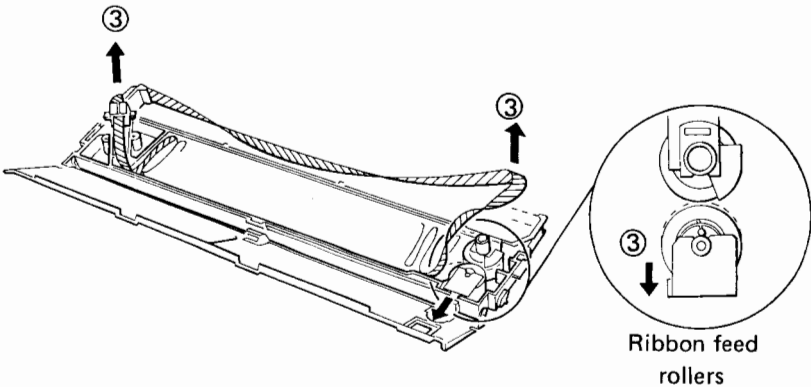
Black ribbon

1. Unlock the four catches, one by one, in the direction of arrow.
2. Open the cassette cover.



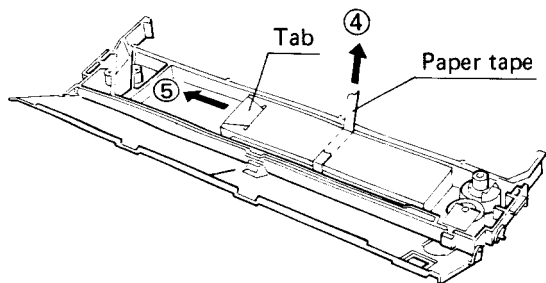
**Figure D-8 Replacing the black ribbon subcassette
(1 of 6)**

3. Pull the rubber roller in the direction of the arrow until it clicks, and lift and remove the used ribbon with the ribbon guide out of the cassette.



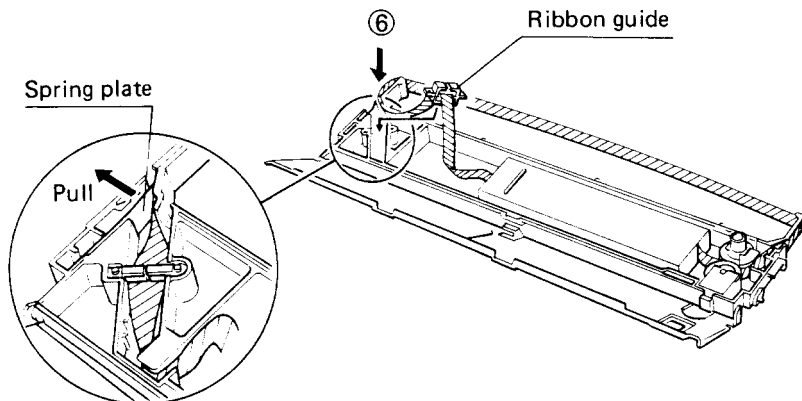
**Figure D-9 Replacing the black ribbon subcassette
(2 of 6)**

4. Set a new subcassette in the ribbon cassette (be careful), and tear and remove the subcassette wrapping paper tape.
5. While gently holding the case in place, take out the tab inserted in the case by pulling it out.



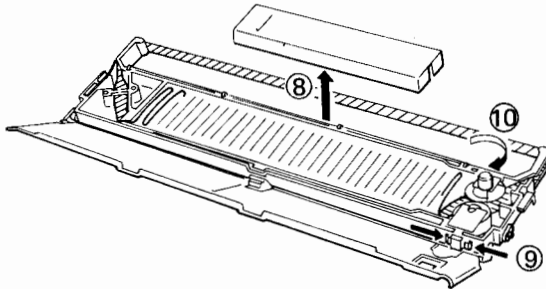
**Figure D-10 Replacing the black ribbon subcassette
(3 of 6)**

6. Pass the ribbon through the ribbon guide and put the guide into the slot so that the ribbon can be twisted half a turn counterclockwise, as viewed from the ribbon outlet (a quarter of a turn at the guide).
7. Carefully arrange the ribbon along ribbon paths as shown in the figure.



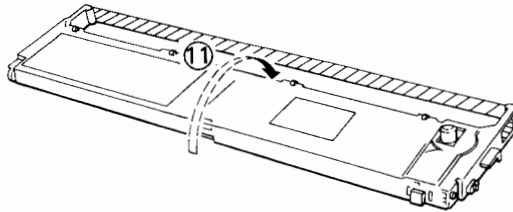
**Figure D-11 Replacing the black ribbon subcassette
(4 of 6)**

8. Slowly lift the subcassette case out of the cassette.
9. Unlock the ribbon release knob in the direction of the arrow.
10. Turn the ribbon feed knob clockwise two or three times to check the ribbon feed operation.



**Figure D-12 Replacing the black ribbon subcassette
(5 of 6)**

11. Close the cassette cover and circle the number of subcassette replacements on the label.



**Figure D-13 Replacing the black ribbon subcassette
(6 of 6)**



APPENDIX E

PRINTER SPECIFICATIONS

Command set: Refer to the Interface Module Manual for each emulation mode. Compatible with Fujitsu DPL24 I (DotMax 24I). Includes most of the commands for the IBM graphics printer and Epson FX-80 printer. It has additional word processing, graphics, and cut sheet feeder commands. Color commands are compatible with the Fujitsu DPL24 C (DotMax 24C) and Epson JX-80 Color printers. The command set also includes most of Diablo 630 API codes.

Dimensions: Height: 6.4 inches (195mm)
 Width: 22.4 inches (570mm)
 Depth: 15.3 inches (390mm)
 Weight: 40 pounds (20 kg)

Operating environment: 41°F to 100°F (5°C to 38°C)
 20% to 85% RH (no condensation)

Storage environment: -4°F to 140°F (-20°C to 60°)
 10% to 90% RH (no condensation)

AC power: 115 to 120 VAC ± 10%, 50/60 Hz
 220 to 240 VAC ± 10%, 50/60 Hz

Ribbon: Four-color fabric or Black fabric ribbon in an easily installed cassette.
 4-color ribbon for transparency film
 Up to 3.6 million characters per color band with the color in draft ribbon, up to 15 million characters with the black ribbon, and up to 2.5 million characters with the color ribbon for transparency film.

Character sets & Character fonts: Character sets have 96 ASCII characters with Europeansymbols and characters.
 Character fonts are Courier 10, Prestige Elite 12, Boldface PS, Compressed, or an optional font cartridge.

Optional font cartridges:	Letter Gothic 12, Scientific 12, Orator, Boldface PS and Light Italic. Check with your dealer/distributor for the latest information on fonts.
Character matrix: (Horizontal X vertical)	Draft quality has 12 X 24 dots. Letter quality has 36 X 24 dots.
Print method:	Impact dot matrix with a 24-wire print head.
Printing speed:	Draft Quality prints 288 characters per second at 12 CPI. Letter Quality prints 96 characters per second at 12 CPI. Graphics prints 8 inches per second at 180 dpi.
Character spacing:	1/10", 1/12", 1/15", 1/17", 1/18", 1/20", or proportional spacing set with the control panel. Programmed with the host in increments of 1/120" or 1/180".
Line spacing:	1/3", 1/4", 1/6" or 1/8" set with the control panel. Programmed with the host for increments of 1/180" or 1/60" for image graphics.
Number of copies:	Up to 5, including the original.
Continuous form:	4" to 16.5" wide, up to 0.013 inch (0.33 mm) thick.
Paper handling:	Friction feed platen and rear feed forms tractors are standard. Optional cut sheet feeders, as described in Appendix A.
Interface:	Centronics type parallel or Centronics type parallel plus RS-232-C serial.

APPENDIX F

CHARACTER SET TABLES

IBM graphic printer character set 1

L\H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	SP
0	NUL	DLE	SP	0	@	P	~	p	NUL	DLE	á	▒	␣	▒	▒	▒	▒
1	SOH	DC1	!	1	A	q	a	q	SOH	DC1	í	▒	␣	▒	▒	▒	▒
2	STX	DC2	"	2	B	r	b	r	STX	DC2	ó	▒	␣	▒	▒	▒	▒
3	ETX	DC3	#	3	C	s	c	s	ETX	DC3	ú	▒	␣	▒	▒	▒	▒
4	EOT	DC4	\$	4	D	t	d	t	EOT	DC4	ñ	▒	␣	▒	▒	▒	▒
5	ENQ	NAK	%	5	E	u	e	u	ENQ	NAK	Ñ	▒	␣	▒	▒	▒	▒
6	ACK	SYN	&	6	F	v	f	v	ACK	SYN	á	▒	␣	▒	▒	▒	▒
7	BEL	ETB	'	7	G	w	g	w	BEL	ETB	ó	▒	␣	▒	▒	▒	▒
8	BS	CAN	(	8	H	x	h	x	BS	CAN	õ	▒	␣	▒	▒	▒	▒
9	HT	EM	)	9	I	y	i	y	HT	EM	ç	▒	␣	▒	▒	▒	▒
A	LF	SUB	*	:	J	z	j	z	LF	SUB	¸	▒	␣	▒	▒	▒	▒
B	VT	ESC	+	;	K	{	k	{	VT	ESC	¸	▒	␣	▒	▒	▒	▒
C	FF	FS	,	<	L	|	l	|	FF	FS	¸	▒	␣	▒	▒	▒	▒
D	CR	GS	-	=	M	~	m	~	CR	GS	¸	▒	␣	▒	▒	▒	▒
E	SO	RS	.	>	N	¸	n	¸	SO	RS	¸	▒	␣	▒	▒	▒	▒
F	SI	US	/	?	O	_	o	_	SI	US	¸	▒	␣	▒	▒	▒	▒

International character sets

Hex	23H	24H	40H	5BH	5CH	5DH	5EH	60H	7BH	7CH	7DH	7EH
Dec	35	36	64	91	92	93	94	96	123	124	125	126
USA	#	\$	@	|	\	|	^	~	{	|	}	~
FRENCH	£	\$	à	•	ç	§	^	~	é	ù	è	..
GERMAN	#	\$	§	Ä	ö	Ü	^	~	ä	ö	ü	ß
UK	£	\$	@	|	\	|	^	~	{	|	}	~
DANISH/ NORWEGN	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
SWEDISH/ FINNISH	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ITALIAN	£	\$	§	•	ç	é	^	ù	à	ò	è	ì
SPANISH	£	\$	§	¡	Ñ	¿	^	~	•	ñ	ç	~



APPENDIX G

CODE CONVERSION TABLES

Set1	Set2	Dec	Hex	Binary	Set1	Set2	Dec	Hex	Binary
NUL	NUL	0	00	00000000	SP	SP	32	20	00100000
SOH	SOH	1	01	00000001	!	!	33	21	00100001
STX	STX	2	02	00000010	"	"	34	22	00100010
ETX	♥	3	03	00000011	#	#	35	23	00100011
EOT	♦	4	04	00000100	\$	\$	36	24	00100100
ENQ	♠	5	05	00000101	%	%	37	25	00100101
ACK	♣	6	06	00000110	&	&	38	26	00100110
BEL	BEL	7	07	00000111	'	'	39	27	00100111
BS	BS	8	08	00001000	(	(	40	28	00101000
HT	HT	9	09	00001001	)	)	41	29	00101001
LF	LF	10	0A	00001010	*	*	42	2A	00101010
VT	VT	11	0B	00001011	+	+	43	2B	00101011
FF	FF	12	0C	00001100	,	,	44	2C	00101100
CR	CR	13	0D	00001101	-	-	45	2D	00101101
SO	SO	14	0E	00001110	.	.	46	2E	00101110
SI	SI	15	0F	00001111	/	/	47	2F	00101111
DLE	DLE	16	10	00010000	0	0	48	30	00110000
DC1	DC1	17	11	00010001	1	1	49	31	00110001
DC2	DC2	18	12	00010010	2	2	50	32	00110010
DC3	DC3	19	13	00010011	3	3	51	33	00110011
DC4	DC4	20	14	00010100	4	4	52	34	00110100
NAK	§	21	15	00010101	5	5	53	35	00110101
SYN	SYN	22	16	00010110	6	6	54	36	00110110
ETB	ETB	23	17	00010111	7	7	55	37	00110111
CAN	CAN	24	18	00011000	8	8	56	38	00111000
EM	EM	25	19	00011001	9	9	57	39	00111001
SUB	SUB	26	1A	00011010	:	:	58	3A	00111010
ESC	ESC	27	1B	00011011	;	;	59	3B	00111011
FS	FS	28	1C	00011100	<	<	60	3C	00111100
GS	GS	29	1D	00011101	=	=	61	3D	00111101
RS	RS	30	1E	00011110	>	>	62	3E	00111110
US	US	31	1F	00011111	?	?	63	3F	00111111

Set1	Set2	Dec	Hex	Binary	Set1	Set2	Dec	Hex	Binary
@	@	64	40	01000000	`	`	96	60	01100000
A	A	65	41	01000001	a	a	97	61	01100001
B	B	66	42	01000010	b	b	98	62	01100010
C	C	67	43	01000011	c	c	99	63	01100011
D	D	68	44	01000100	d	d	100	64	01100100
E	E	69	45	01000101	e	e	101	65	01100101
F	F	70	46	01000110	f	f	102	66	01100110
G	G	71	47	01000111	g	g	103	67	01100111
H	H	72	48	01001000	h	h	104	68	01101000
I	I	73	49	01001001	i	i	105	69	01101001
J	J	74	4A	01001010	j	j	106	6A	01101010
K	K	75	4B	01001011	k	k	107	6B	01101011
L	L	76	4C	01001100	l	l	108	6C	01101100
M	M	77	4D	01001101	m	m	109	6D	01101101
N	N	78	4E	01001110	n	n	110	6E	01101110
O	O	79	4F	01001111	o	o	111	6F	01101111
P	P	80	50	01010000	p	p	112	70	01110000
Q	Q	81	51	01010001	q	q	113	71	01110001
R	R	82	52	01010010	r	r	114	72	01110010
S	S	83	53	01010011	s	s	115	73	01110011
T	T	84	54	01010100	t	t	116	74	01110100
U	U	85	55	01010101	u	u	117	75	01110101
V	V	86	56	01010110	v	v	118	76	01110110
W	W	87	57	01010111	w	w	119	77	01110111
X	X	88	58	01011000	x	x	120	78	01111000
Y	Y	89	59	01011001	y	y	121	79	01111001
Z	Z	90	5A	01011010	z	z	122	7A	01111010
[	[	91	5B	01011011	{	{	123	7B	01111011
\	\	92	5C	01011100	|	|	124	7C	01111100
]	]	93	5D	01011101	}	}	125	7D	01111101
^	^	94	5E	01011110	~	~	126	7E	01111110
_	_	95	5F	01011111	DEL	DEL	127	7F	01111111

Set1	Set2	Dec	Hex	Binary	Set1	Set2	Dec	Hex	Binary
␣	␣	192	C0	11000000	α	α	224	E0	11100000
␣	␣	193	C1	11000001	β	β	225	E1	11100001
␣	␣	194	C2	11000010	Γ	Γ	226	E2	11100010
␣	␣	195	C3	11000011	π	π	227	E3	11100011
␣	␣	196	C4	11000100	Σ	Σ	228	E4	11100100
␣	␣	197	C5	11000101	ο	ο	229	E5	11100101
␣	␣	198	C6	11000110	μ	μ	230	E6	11100110
␣	␣	199	C7	11000111	τ	τ	231	E7	11100111
␣	␣	200	C8	11001000	ϕ	ϕ	232	E8	11101000
␣	␣	201	C9	11001001	θ	θ	233	E9	11101001
␣	␣	202	CA	11001010	Ω	Ω	234	EA	11101010
␣	␣	203	CB	11001011	δ	δ	235	EB	11101011
␣	␣	204	CC	11001100	∞	∞	236	EC	11101100
␣	␣	205	CD	11001101	∅	∅	237	ED	11101101
␣	␣	206	CE	11001110	€	€	238	EE	11101110
␣	␣	207	CF	11001111	∩	∩	239	EF	11101111
␣	␣	208	D0	11010000	≡	≡	240	F0	11110000
␣	␣	209	D1	11010001	±	±	241	F1	11110001
␣	␣	210	D2	11010010	≥	≥	242	F2	11110010
␣	␣	211	D3	11010011	≤	≤	243	F3	11110011
␣	␣	212	D4	11010100	∫	∫	244	F4	11110100
␣	␣	213	D5	11010101	∫	∫	245	F5	11110101
␣	␣	214	D6	11010110	÷	÷	246	F6	11110110
␣	␣	215	D7	11010111	≈	≈	247	F7	11110111
␣	␣	216	D8	11011000	•	•	248	F8	11111000
␣	␣	217	D9	11011001	•	•	249	F9	11111001
␣	␣	218	DA	11011010	•	•	250	FA	11111010
␣	␣	219	DB	11011011	√	√	251	FB	11111011
␣	␣	220	DC	11011100	°	°	252	FC	11111100
␣	␣	221	DD	11011101	°	°	253	FD	11111101
␣	␣	222	DE	11011110	■	■	254	FE	11111110
␣	␣	223	DF	11011111	SP	SP	255	FF	11111111

Set1	Set2	Dec	Hex	Binary	Set1	Set2	Dec	Hex	Binary
NUL	Ç	128	80	10000000	Á	Á	160	A0	10100000
SOH	ú	129	81	10000001	í	í	161	A1	10100001
STX	é	130	82	10000010	ó	ó	162	A2	10100010
ETX	ã	131	83	10000011	ú	ú	163	A3	10100011
EOT	ä	132	84	10000100	ñ	ñ	164	A4	10100100
ENQ	à	133	85	10000101	Ñ	Ñ	165	A5	10100101
ACK	á	134	86	10000110	ª	ª	166	A6	10100110
BEL	ç	135	87	10000111	º	º	167	A7	10100111
BS	ê	136	88	10001000	¿	¿	168	A8	10101000
HT	ë	137	89	10001001	¸	¸	169	A9	10101001
LF	è	138	8A	10001010	¸	¸	170	AA	10101010
VT	ì	139	8B	10001011	½	½	171	AB	10101011
FF	í	140	8C	10001100	¼	¼	172	AC	10101100
CR	î	141	8D	10001101	ı	ı	173	AD	10101101
SO	ÿ	142	8E	10001110	«	«	174	AE	10101110
SI	À	143	8F	10001111	»	»	175	AF	10101111
DLE	ê	144	90	10010000			176	B0	10110000
DC1	æ	145	91	10010001			177	B1	10110001
DC2	æ	146	92	10010010			178	B2	10110010
DC3	ô	147	93	10010011	|	|	179	B3	10110011
DC4	ö	148	94	10010100	¸	¸	180	B4	10110100
NAK	ò	149	95	10010101	¸	¸	181	B5	10110101
SYN	û	150	96	10010110	¸	¸	182	B6	10110110
ETB	ù	151	97	10010111	¸	¸	183	B7	10110111
CAN	ÿ	152	98	10011000	¸	¸	184	B8	10111000
EM	ö	153	99	10011001	¸	¸	185	B9	10111001
SUB	ü	154	9A	10011010	||	||	186	BA	10111010
ESC	ç	155	9B	10011011	¸	¸	187	BB	10111011
FS	£	156	9C	10011100	¸	¸	188	BC	10111100
GS	¥	157	9D	10011101	¸	¸	189	BD	10111101
RS	Ŕ	158	9E	10011110	¸	¸	190	BE	10111110
US	f	159	9F	10011111	¸	¸	191	BF	10111111

GRAPHIC CHARACTERS (character => decimal)

Character	Decimal	Character	Decimal
⋮	176	■	220
⋯	177	▮	221
⋰	178	▮	222
■	219	■	223

218	196	194	210	196	191
┌	—	┐	└	—	┘
|	179	|	||	186	|
└	195 —	┘	└	215 —	┘
|	179	|	||	186	|
└	198 =	┘	└	206 =	┘
	205			205	
└	192 —	┘	└	208 —	┘

201	205	203	209	187
┌	=	┐	=	┘
	186		186	
└	199 —	┘	215 —	┘
	186		186	
└	204 =	┘	206 =	┘
└	200 =	┘	202 =	┘

┌	213 =	┘	184	┌	214 —	┘	183
			179				186
└	212 =	┘	190	└	211 —	┘	189

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Federal Communications Commission Radio Frequency Interference Statement for United States Users

This equipment generates and uses radio frequency energy. If it is not installed and used properly, that is, in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specification in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate this equipment with respect to the receiver.
- Move this equipment away from the receiver.
- Plug this equipment into a different outlet so that this equipment and the receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-000345-4.

(This equipment has been tested as the M3345A of the model number.)

NOTE:

The length of power cord must be 3 m or less.

NOTE:

An unshielded plug or cable may cause radiation interference. The printer is designed for use with a properly shielded interface cable. A non-shielded interface cable must not be used. The shield must be connected directly to the chassis of the printer. The cable length must be 3 m or less.

Notice for German Users

Dieses Gerät entspricht als Einzelgerät den Funkentstörungsanforderungen der Postverfügung Nr. 1046/1984 bzw. der Grenzfläche B nach VDE 0871/6.78.

Das Kabel muß abgeschirmt und unter 3 Meter lang sein.