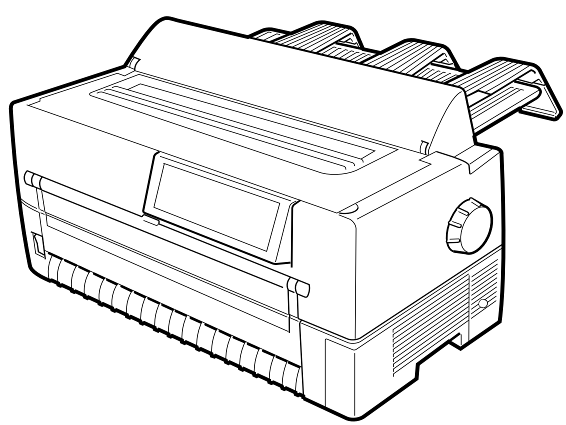
FUJITSU

DL6400 Pro/6600 Pro

24-wire dot matrix printers

FUJITSU

USER'S MANUAL



Federal Communications Commission Radio Frequency Interference Statement for United States Users

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

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

FCC WARNING: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

(This equipment has been tested as M3390A/M3391A of the model number.)

Notes:

1. The use of a nonshielded interface cable with the referenced device is prohibited. The length of the parallel interface cable must be 3 meters (10 feet) or less. The length of the serial interface cable must be 15 meters (50 feet) or less.
2. The length of the power cord must be 3 meters (10 feet) or less.

Notice to Canadian Users

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Notice to German Users

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

- M3390B/M3391B

in Übereinsstimmung mit den Bestimmungen der

- EN 45014 (CE)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Maschinenlärminformationsverordnung 3. GSGV, 18.01.1991: Der höchste Schalldruckpegel beträgt 70 dB (A) oder weniger gemäß EN 27779-1991.

CE
Manufacturer's Declaration of Conformity

According to Electromagnetic Compatibility Directive 89/336/EEC and Low Voltage Directive 73/23/EEC, Annex IIIB.

FUJITSU ISOTEC LIMITED, 135 Higashinozaki Hobara-machi Date-gun, Fukushima, 960-0695, Japan

Declares, in sole responsibility, that the following products

Product Type : DOT MATRIX PRINTER
Model Number : M3390B and M3391B

Approval ID Number : S1 2050720 for M3390B
S1 2050721 for M3391B

Referred to in this declaration, conforms with the following directives and standards;

Electromagnetic Compatibility Directive 89/336/EEC, 92/31/EEC, 93/68/EEC Low Voltage Directive 73/23/EEC, 93/68/EEC

EN55022 : 1998, Class B
EN55024 : 1998 (IEC61000-4-2 : 1995, IEC61000-4-3 : 1995, IEC61000-4-5 : 1995, IEC61000-4-6 : 1996, IEC61000-4-11 : 1994)
EN61000-3-2 : 1995
EN61000-3-3 : 1995
EN60950

The contents of this manual may be revised without prior notice to incorporate changes and improvements for units already shipped.

Every effort has been made to ensure that the information included here is complete and accurate at the time of publication. However, Fujitsu cannot be held responsible for errors or omissions.

Printer model specifications differ with the power supply input voltage (100 to 120 or 220 to 240 VAC).

C147-E041-05EN May 2001

Trademark Acknowledgment

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Other product names mentioned in this manual may also be trademarks and are used here for identification only.

Preface

You have made a wise choice by purchasing the DL6400 Pro/DL6600 Pro printer.

To ensure that you get the maximum performance from your printer, read this manual before attempting to use the printer.

The printer has an LED or LCD control panel. This manual describes the operation of the printer with the LED control panel. For the operation of the printer with the LCD control panel, see Appendix E.

As an ENERGY STAR® Partner, FUJITSU LIMITED has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

The International ENERGY STAR® Office Equipment Program is an international program that promotes energy saving through the use of computers and other office equipments. The program backs the development and dissemination of products with functions that effectively reduce energy consumption. It is an open system in which business proprietors can participate voluntarily. The targeted products are office equipment such as computers, displays, printers, facsimiles, and copiers. Their standards and logos are uniform among participating nations.

Contents

CHAPTER 1

Introduction

Overview

The DL6400 Pro/DL6600 Pro is a 24-dot impact printer used for image and graphics reproduction.

Figure 1-1 shows the printer.

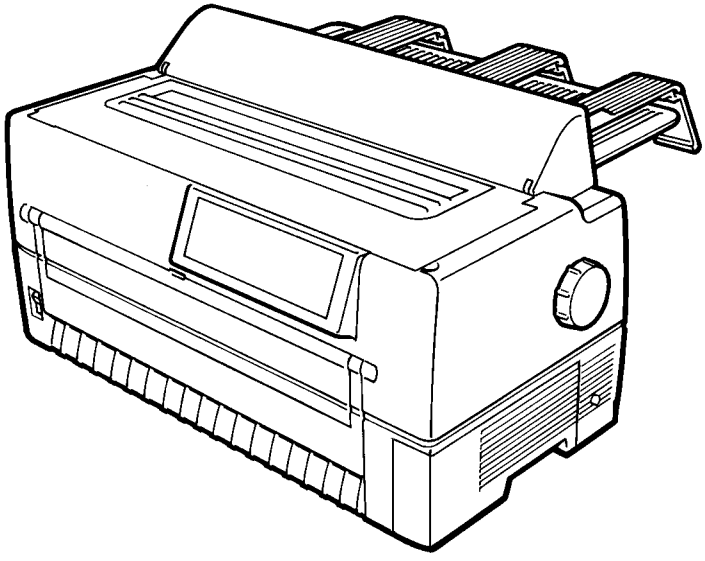


Figure 1–1 DL6400 Pro/DL6600 Pro printer

Package Contents

Check that the printer package contains the items shown in Figure 1-2. For missing items, contact the Fujitsu sales department.

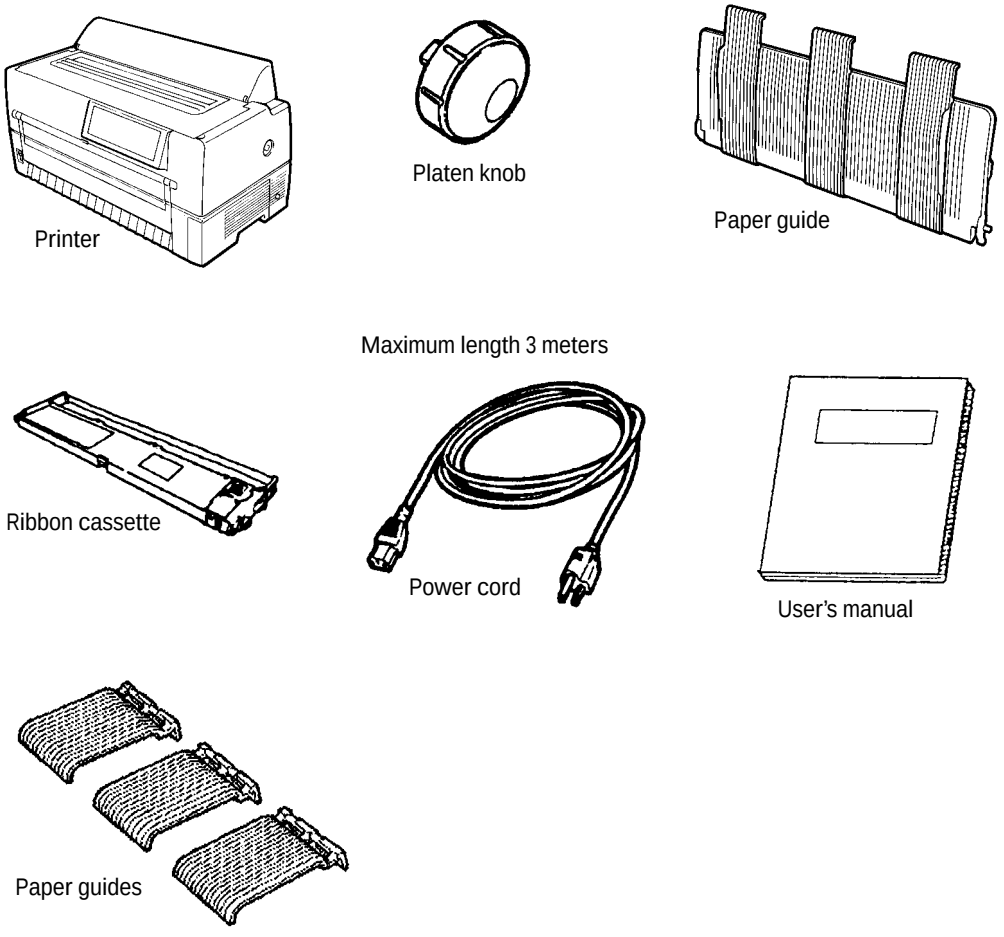


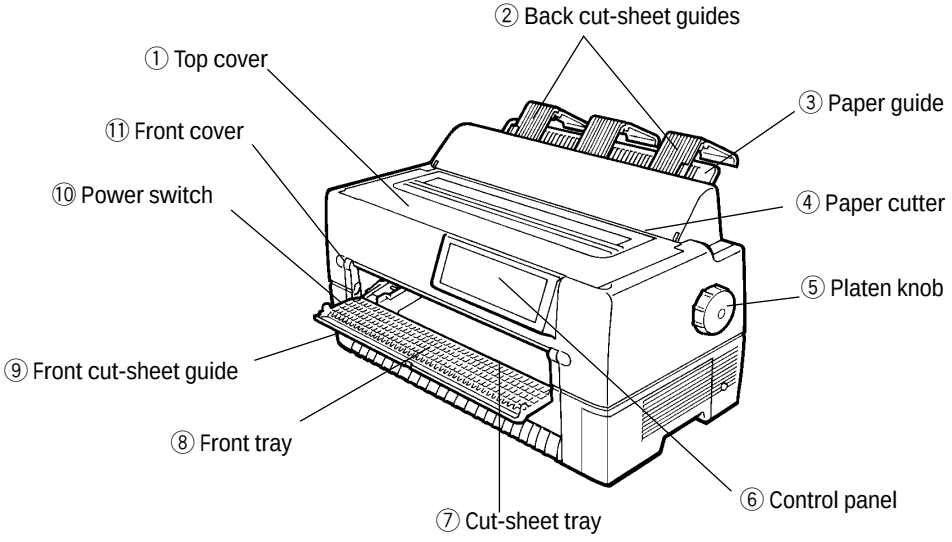
Figure 1–2 Components

Parts and Functions

Figures 1-3 and 1-4 show the printer parts.

The numbers in the figures correspond to the parts listed in Table 1-1.

FRONT



BACK

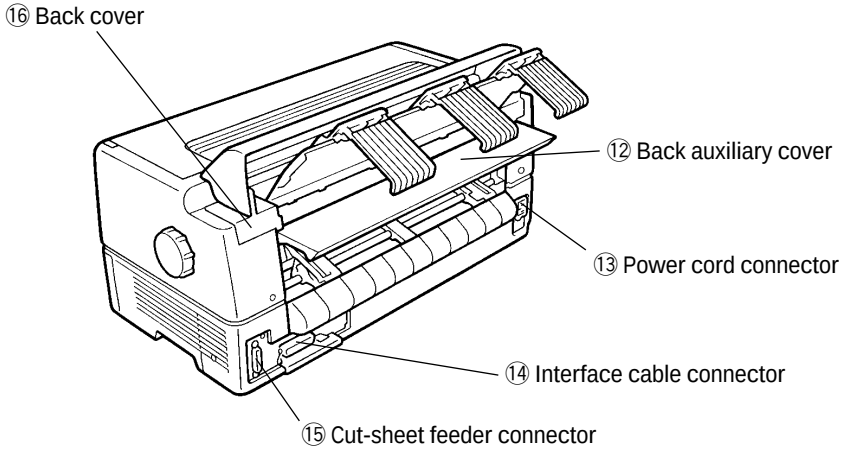
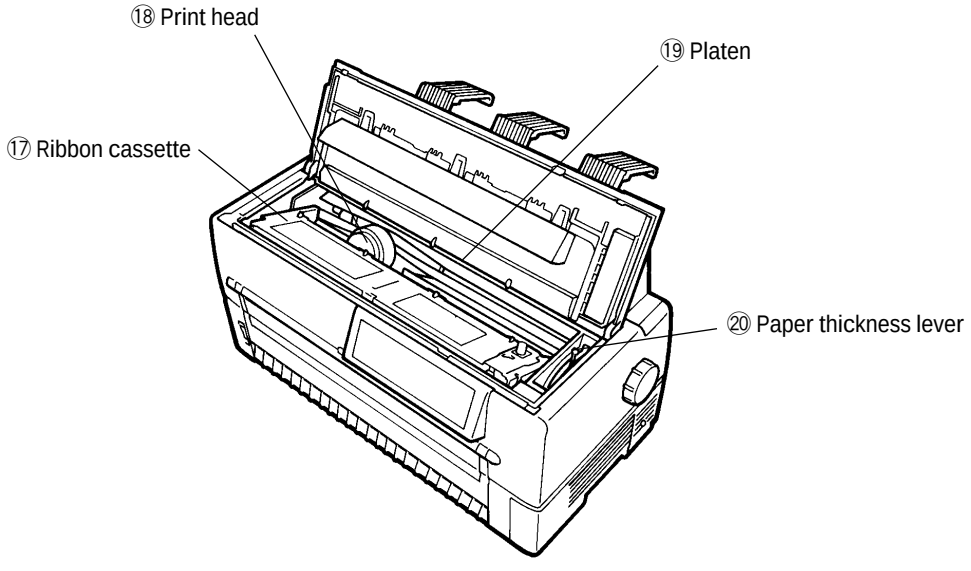


Figure 1–3 Parts (1)

INSIDE



SIDES (left side shown)

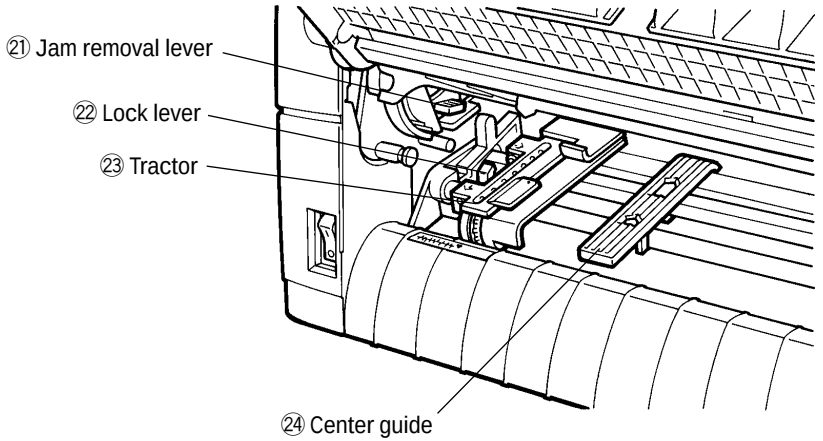


Figure 1–4 Parts (2)

Table 1-1 lists the printer parts and functions.

Table 1–1 Printer parts and functions

Number	Part	Function
①	Top cover	Protects the print head and other internal printer components.
②	Back cut-sheet guides	Guides paper into the printer. Set based on the cut-sheet or continuous forms width.
③	Paper guide	Set down for continuous forms and up for cut sheets.
④	Paper cutter	Cuts continuous forms.
⑤	Platen knob	Turned to feed paper manually.
⑥	Control panel	Contains the switches and status lamps used to operate the printer.
⑦	Cut-sheet tray	Supports cut sheets during feeding.
⑧	Front tray	Holds cut sheets for insertion into the printer. Open for cut sheets and closed for continuous forms.
⑨	Front cut-sheet guide	Set based on the cut-sheet width to guide paper into the printer.
⑩	Power switch	Set to "|" to turn power on and to "❍" to turn power off. When power is on, the power lamp is on.
⑪	Front cover	Protects components inside the printer. Opened to replace continuous forms.
⑫	Back auxiliary cover	Protects components inside the printer. Opened to replace continuous forms.
⑬	Power cord connector	Power cord connection.
⑭	Interface cable connector	Cable connection between the printer and processor.
⑮	Cut-sheet feeder connector	Cable connection between the printer and the optional cut-sheet feeder.
⑯	Back cover	Removed when the optional cut-sheet feeder is installed.

Table 1–1 Printer parts and functions (Continued)

Number	Part	Function
⑰	Ribbon cassette	Contains the printing ribbon. If characters do not print clearly, replace the ribbon or cassette. A Fujitsu ribbon is recommended.
⑱	Print head	Performs actual printing.
⑲	Platen	Controls and feeds paper.
⑳	Paper thickness lever	Used to manually adjust paper thickness.
㉑	Jam removal lever	Turned down to allow jammed paper to be removed more easily.
㉒	Lock lever	Locks the tractor.
㉓	Tractor	Feeds continuous forms.
㉔	Center guide	Controls continuous forms feeding.

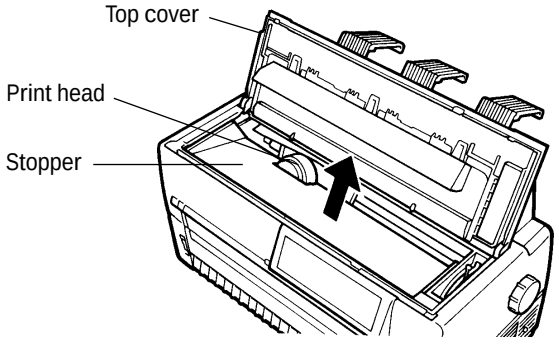
CHAPTER
2

Setting Up the Printer

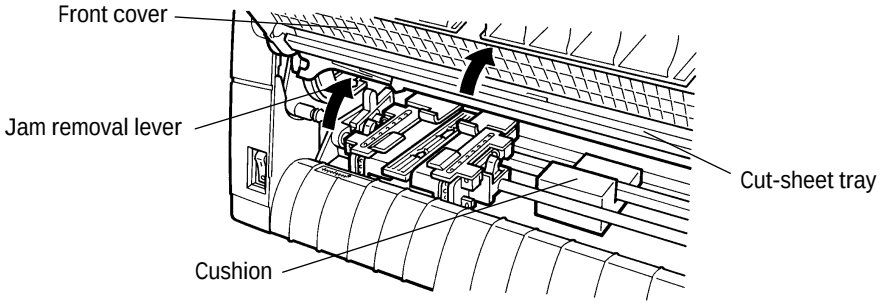
Removing the Stopper and Cushion

The printer is shipped with a stopper and cushion inside that prevent vibration and other movement that could cause damage during shipment.

1. Open the top cover and lift out the stopper as shown by the arrow in the figure.



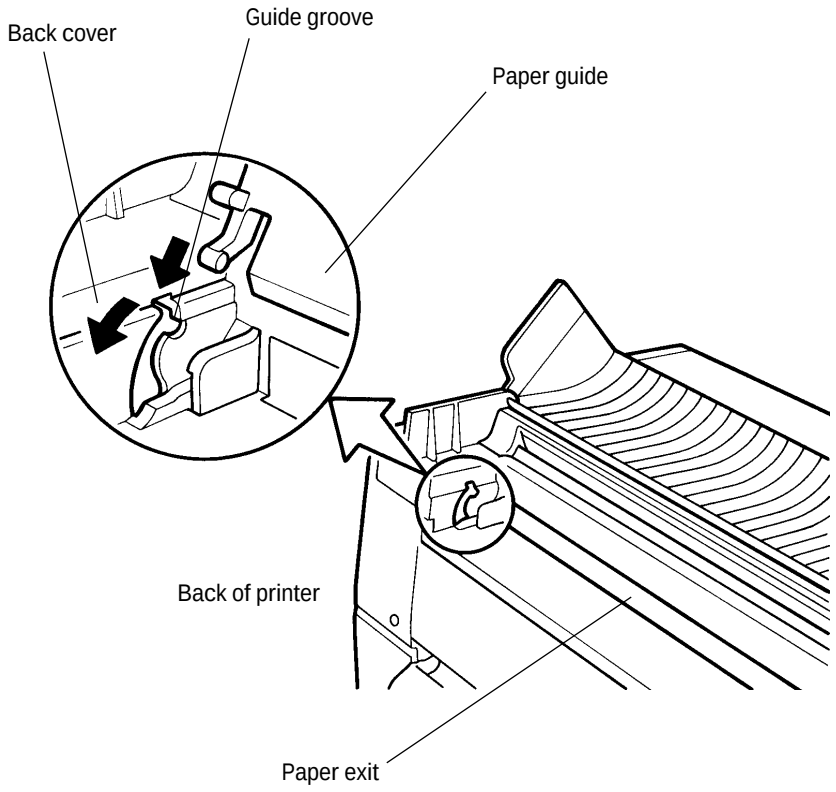
2. Open the front cover and cut-sheet tray and remove the cushion from between the tractor shafts.



3. Check that the jam removal lever is locked.

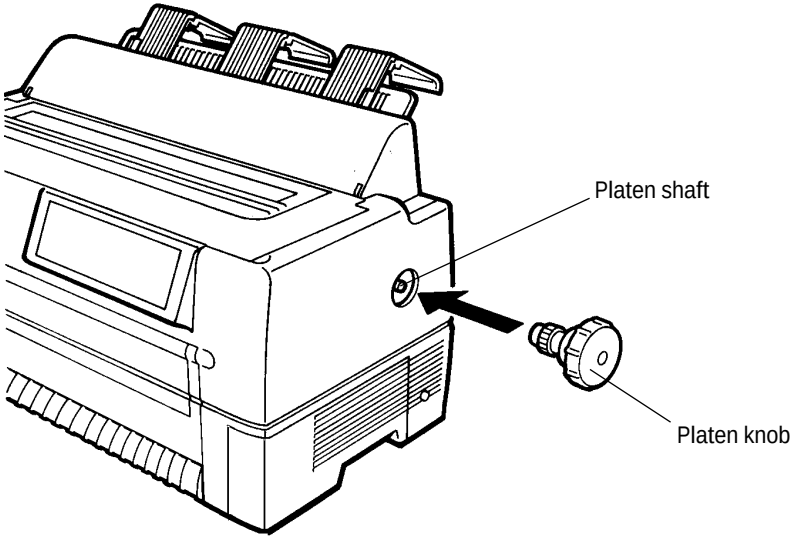
Installing the Paper Guide

Insert the paper guide, at an angle, into the left and right guide grooves on the back cover and slide it back into place.



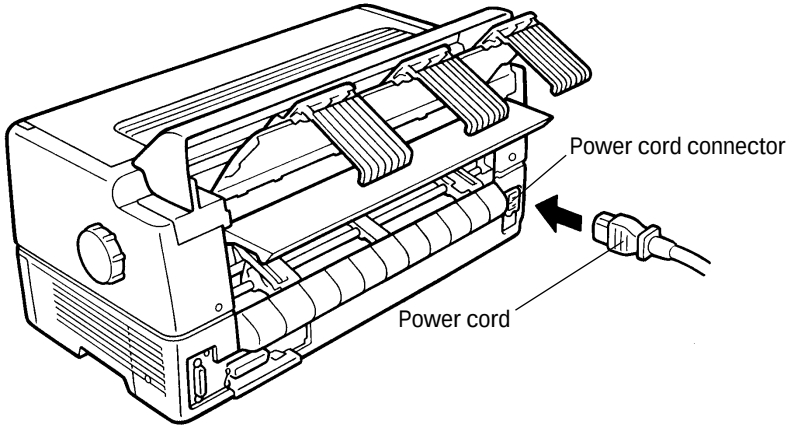
Installing the Platen Knob

Insert the platen knob and align it with the gear teeth.



Connecting the Power Cord

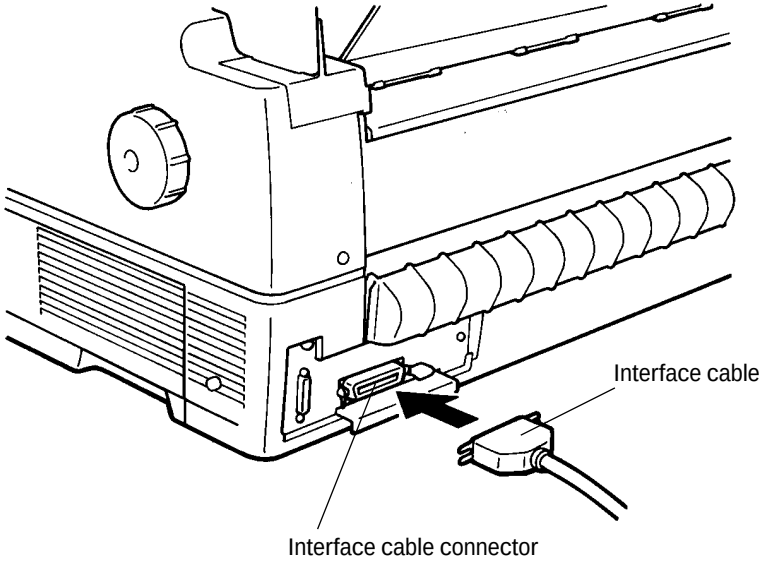
1. Turn off printer power (❍).
2. Connect the power cord to the connector on the back of the printer, at the right side.



3. Plug the power cord into an outlet.

Connecting the Interface Cable

1. Turn off printer and processor power.
2. Connect the interface cable to the connector at the back of the printer, on the left side. Make sure the orientation is correct. Press the left and right lock pins down to secure the cable.



3. Connect the cable to the computer. For more information, refer to the computer user's manual.

CHAPTER 3

Installing the Ribbon Cassette

The ribbon cassette contains a folded ribbon. Handle the ribbon cassette carefully to ensure that the ribbon is not disordered or damaged.

Notice:
A Fujitsu ribbon cassette is recommended. Other cassettes may cause operating problems or damage the print head. Fujitsu takes no responsibility for print head faults caused by such cassettes.

Choosing a Cassette

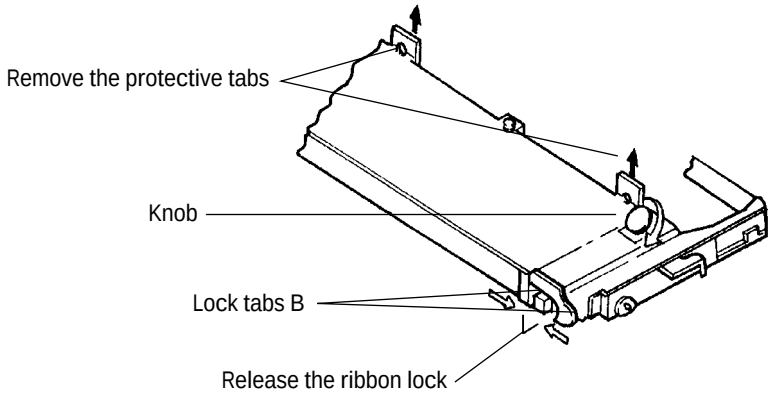
Use a cassette or subcassette (ribbon only) listed in Table 3-1.

Table 3–1 Ribbon cassette and subcassette

Product	Product number	Product description
Ribbon cassette	CA02460-D115	Ribbon in cassette
Subcassette	CA02460-D215	Ribbon only

Preparing the Ribbon Cassette

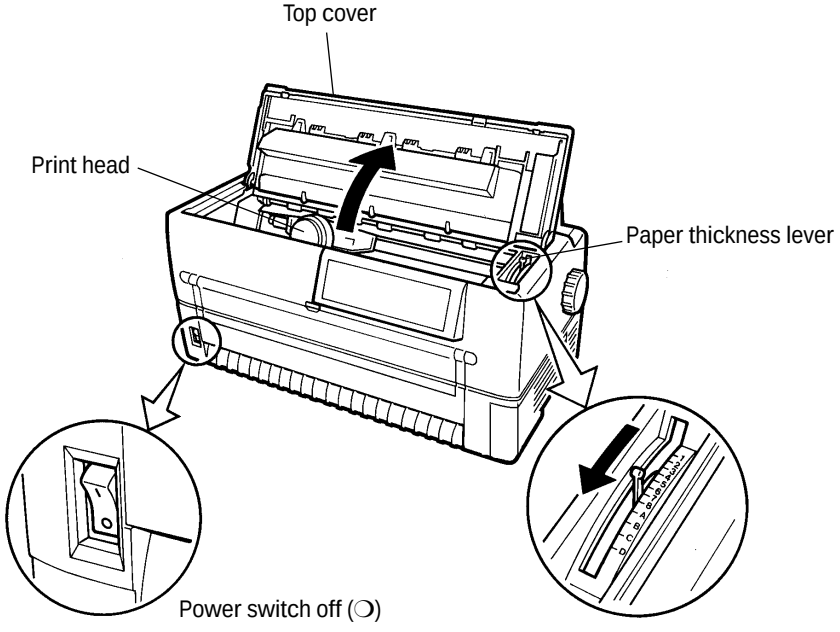
1. Remove the two protective tabs used in shipment.
2. Release the ribbon lock.
3. Turn the knob clockwise to check that the ribbon moves smoothly.



Notice:
Adjust the paper thickness lever on the printer appropriately for the forms used. Otherwise, the ribbon may come loose or paper may be smeared by ink from the ribbon.

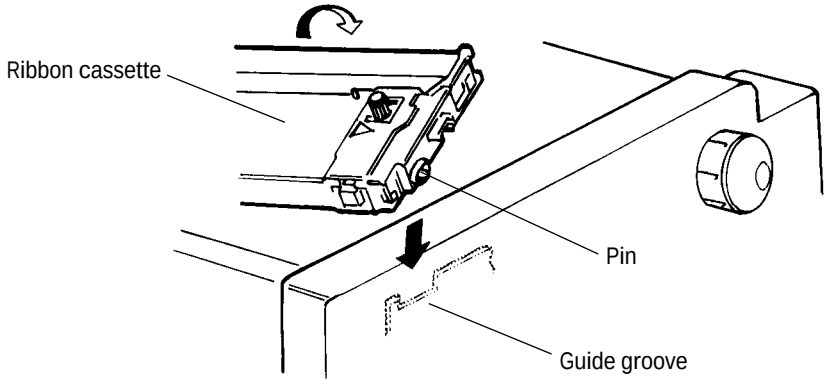
Installing the Ribbon Cassette

1. Turn off printer power (❍).
2. Open the top cover of the printer and move the paper thickness lever to D.

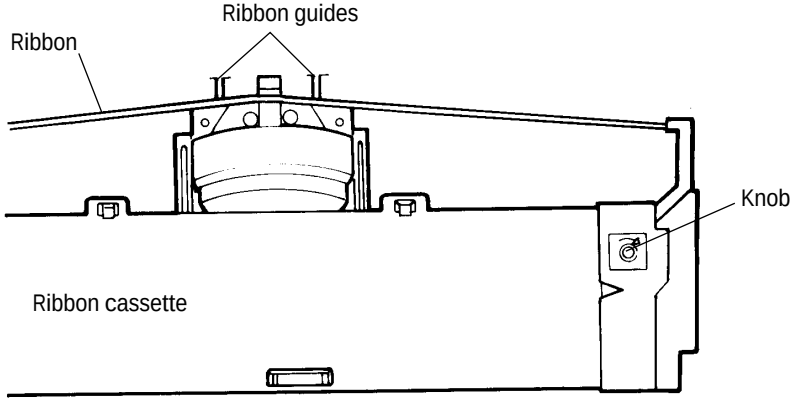


3. Manually move the print head to the left side so that it is one third of the printer width from the left side.

4. Align the pins on both ends of the ribbon cassette with the guide grooves inside the printer. Then press the ribbon cassette down to install it.



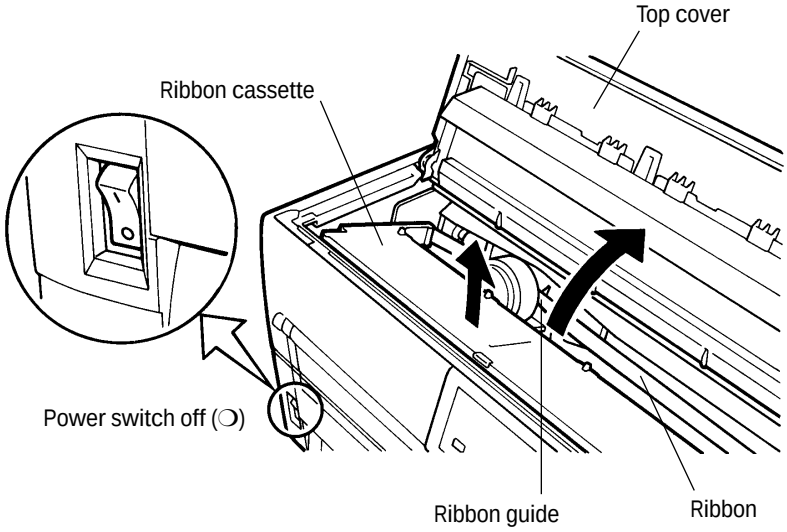
5. Hook the ribbon over the ribbon guide.
6. Turn the ribbon cassette knob clockwise to remove any slack.



7. Close the top cover of the printer.

Removing the Ribbon Cassette

1. Turn off printer power (❍).
2. Open the top cover of the printer.
3. Remove the ribbon from the ribbon guide.
4. Pull the ribbon cassette towards you to unlock it and remove the cassette from the printer.



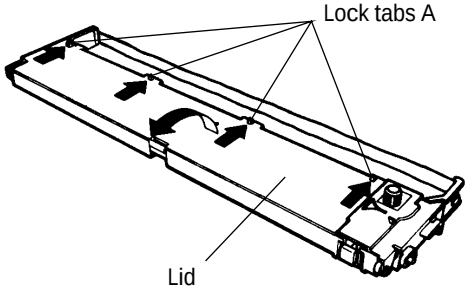
Replacing the Subcassette

The ribbon can be replaced up to five times before the entire ribbon cassette itself must be replaced.

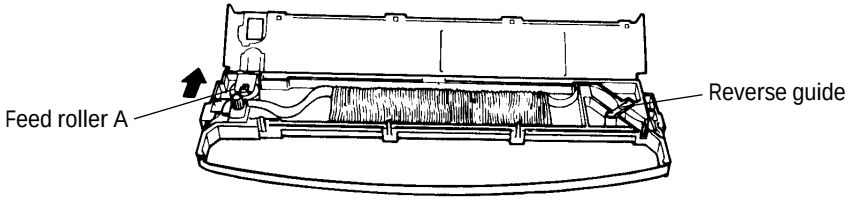
Notice:
A Fujitsu ribbon cassette is recommended. Other cassettes may cause operating problems or damage the print head. Fujitsu takes no responsibility for print head faults caused by such cassettes. Replace the cassette carefully to avoid getting ink on your hands.

Replace the ribbon as follows:

1. Turn off printer power (❍).
2. Remove the ribbon cassette from the printer as explained in "Removing the Ribbon Cassette" on page 3-5.
3. Sequentially press each of the four lock tabs A in the directions of the arrows, starting from either end. Then open the cassette lid.

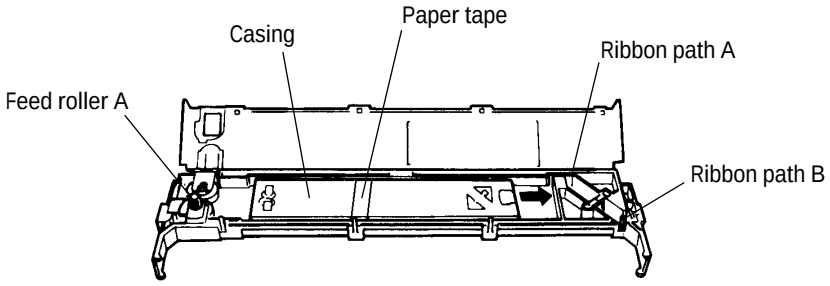


4. Press feed roller A in the direction of the arrow until it clicks into place. This procedure loosens the ribbon holder.

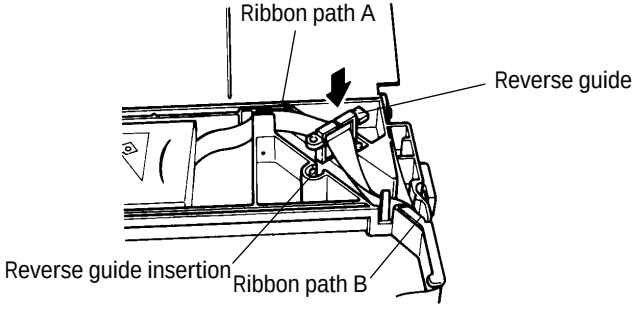


5. Lift the reverse guide and remove the old ribbon.

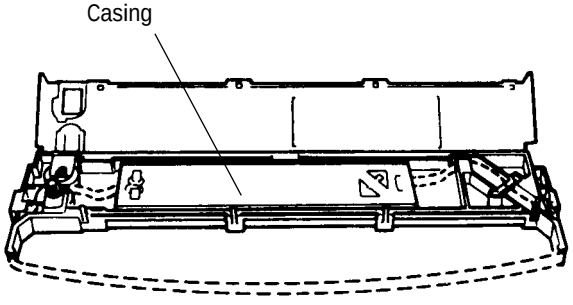
6. When loading the new subcassette into the ribbon cassette, check that the orientation of the new subcassette is correct. After loading remove the paper tape.
7. Holding the subcassette casing, slide the bottom of the casing to the right to remove it.



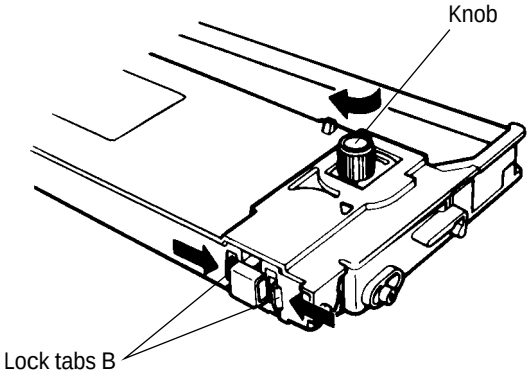
8. Route the ribbon through paths A and B and insert the reverse guide.



9. Thread the ribbon through the cassette as shown by the dotted line in the figure. Then raise the casing to remove it.



10. Press lock tabs B in the direction of the arrows to return feed roller A to its original position. Then close the cassette lid. Turn the knob clockwise to check that the ribbon moves smoothly.



11. Check off the subcassette replacement column on the cassette label.
12. Install the ribbon cassette (see “Installing the Ribbon Cassette” on page 3-3).

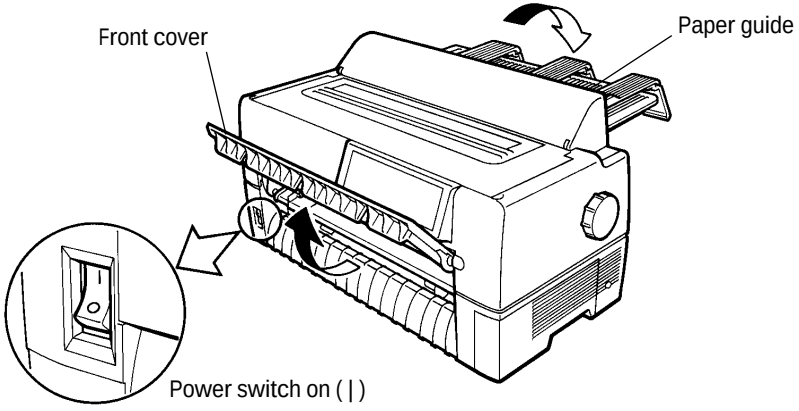
CHAPTER

4

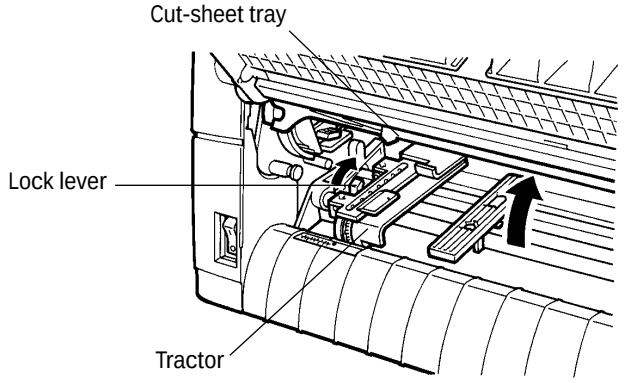
Loading Paper

Loading Continuous Forms (Front)

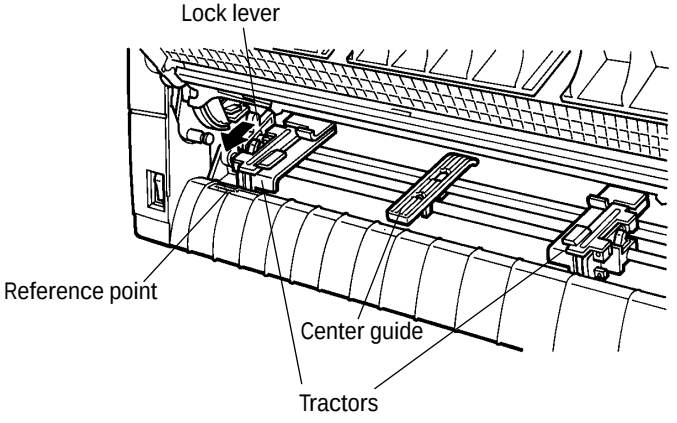
1. Turn on the printer power switch (|).
2. Press the PAPER PATH button on the control panel to select FRONT TRACTOR. The FRONT TRACTOR lamp lights.
3. Move the paper guide back as indicated by the arrow in the figure. (See “Installing the Paper Guide” on page 2-2.)
4. Open the front cover of the printer.



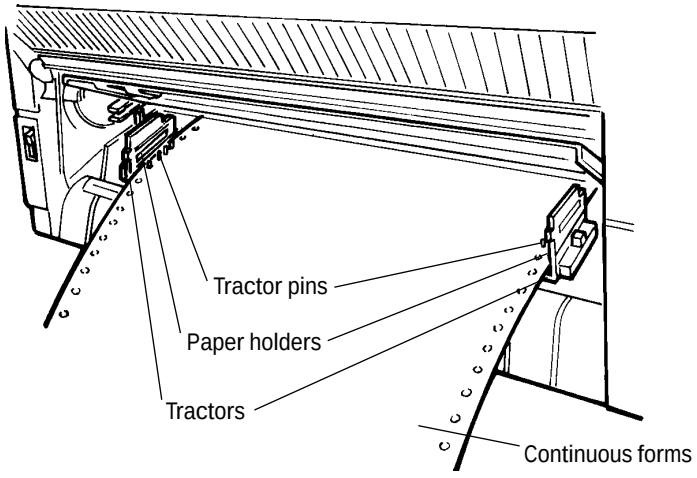
5. Raise the cut-sheet tray.
6. Turn the lock levers of the left and right tractors in the direction indicated by the arrow to unlock them.



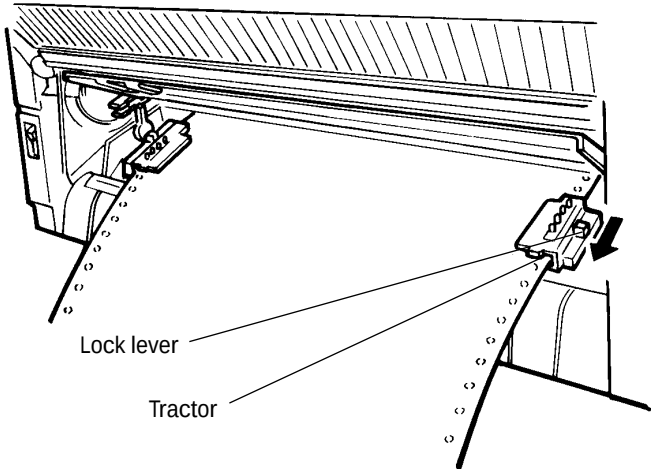
7. Move the left tractor to the reference point on the lower cover. Then press the lock lever in the direction of the arrow in the figure below to lock it.
8. Move the right tractor in alignment with the paper width.
9. Adjust the center guide to the paper width to remove slack in the paper.



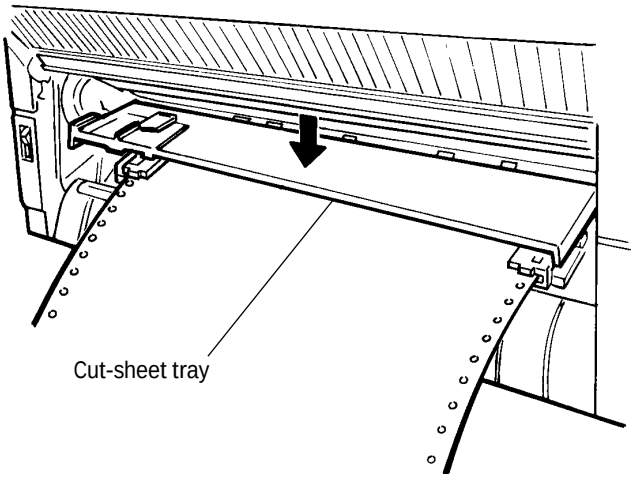
10. Open the paper holders of the left and right tractors. Align the forms feed holes with the tractor pins and close the paper holders.



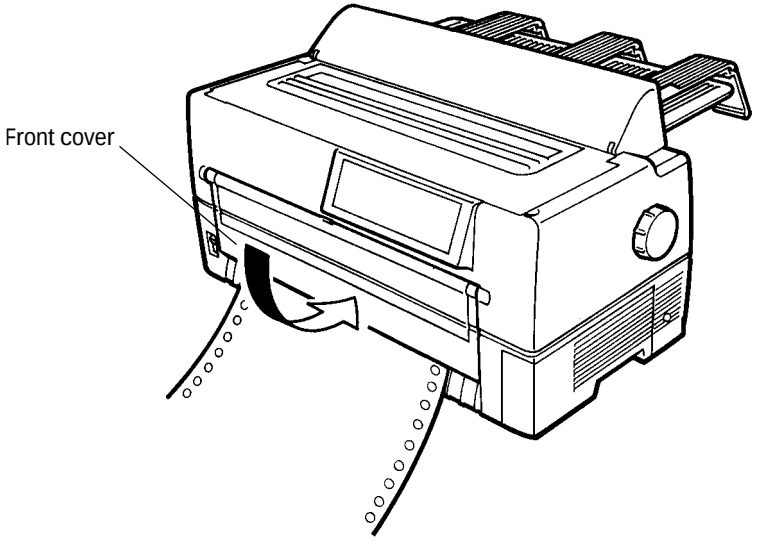
11. Move the right tractor to add slight tension to the paper. Then press the lock lever in the direction of the arrow to lock it.



12. Lower the cut-sheet tray.



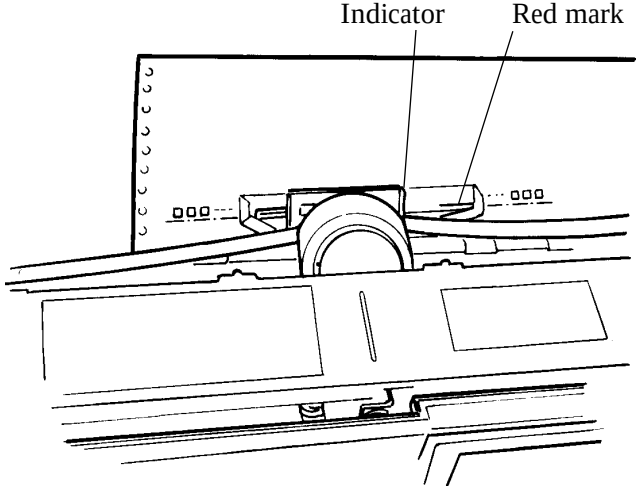
13. Close the front cover of the printer.



14. Press the ONLINE button on the control panel to place the printer offline. The ONLINE lamp should not be lit.
15. Press the LOAD button (or LOAD/UNLOAD button) on the control panel to load a continuous form automatically.
16. Adjust the position of the print line

    To adjust the print line to the position that you require, open the top cover of the printer and align the red mark of the indicator with the position you require the bottoms of characters to be.

    - Fine forward feed: Holding the ONLINE button down, press the LF/FF button to feed paper forward in small increments.
    - For the operation of the printer with the LCD control panel, see Appendix E.
    - Fine reverse feed: Holding the ONLINE button down, press the TEAR OFF button to feed paper in reverse in small increments.



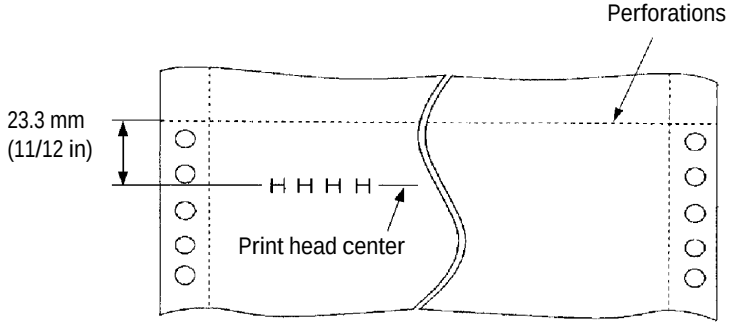
17. Press the ONLINE button on the control panel to place the printer online. The ONLINE lamp lights.

Loading Continuous Forms (Rear)

Refer to the *Rear-Feed Tractor User's Manual* for information on the rear-feed tractor option.

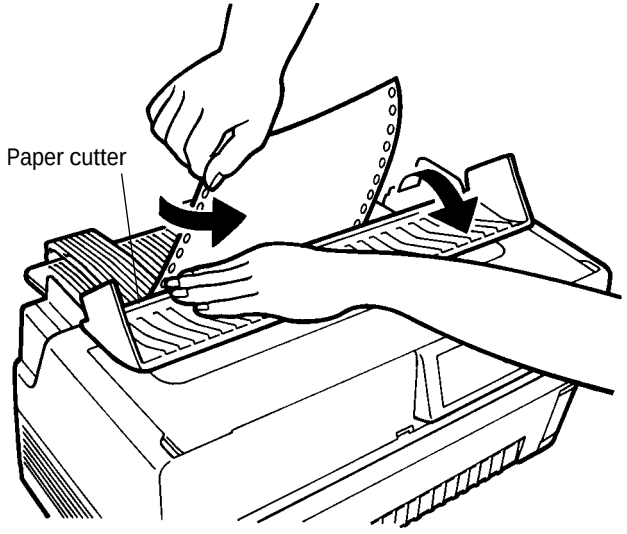
Cutting Continuous Forms

Forms are cut at perforations 23.3 mm (11/12 inch) above the print head center when the print head center is on the sixth line. A single line feed is 4.2 mm (1/6 inch)..



1. Press the TEAR OFF button on the control panel. The continuous forms are then automatically loaded to where they are to be cut. For the operation of the printer with the LCD control panel, see Appendix E.
2. Open the noise-proof cover.
3. Check that the perforations are at the paper cutter.
4. Cut the continuous forms as shown in the figure below.

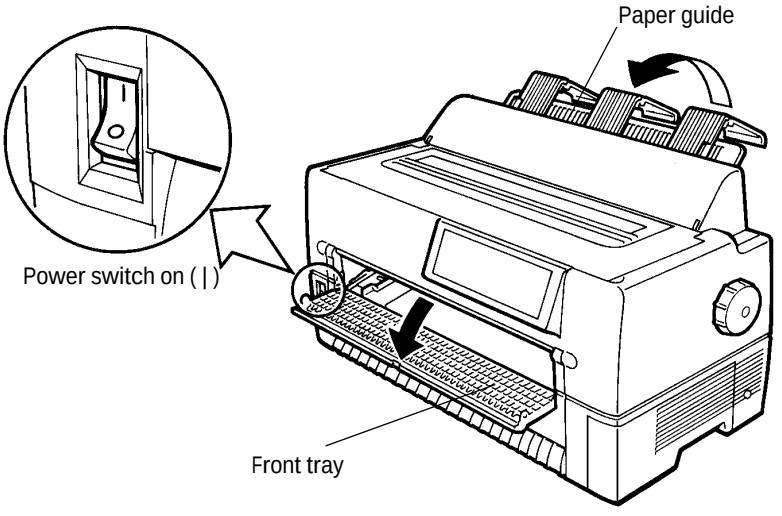
Important:
Continuous forms cannot be cut where there are no perforations.



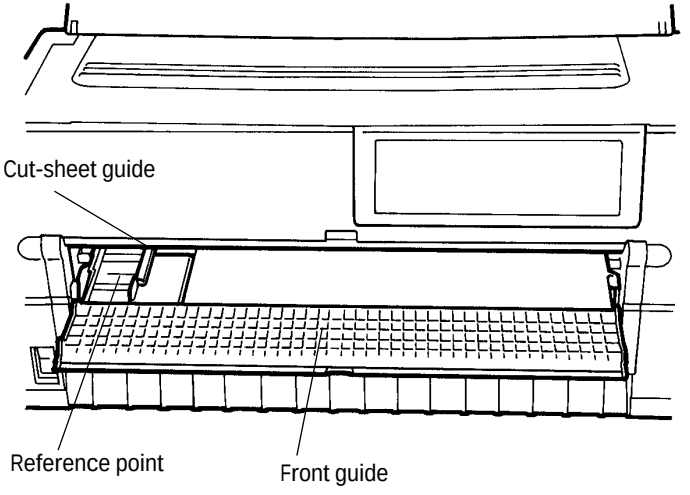
Loading Cut Sheets

1. Turn on printer power (|).
2. Press the PAPER PATH button on the control panel to select FRICTION (friction feed). The FRICTION lamp lights.
3. Raise the paper guide. (See “Installing the Paper Guide” on page 2-2.)

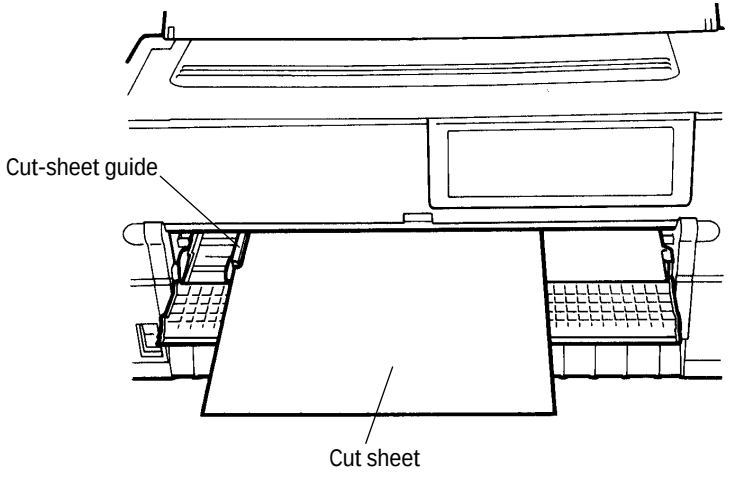
4. Open the front tray.



5. Align the cut-sheet guide with the reference point.



6. Insert paper while aligning its left edge with the cut-sheet guide.



7. Press the LOAD button (or LOAD/UNLOAD button). The paper is then loaded to the print start position.

Notice:
If paper is not loaded correctly, a paper feed error or skewed loading may occur. Once a cut sheet has been inserted, it is loaded automatically.

8. Adjust vertical printing as described in step 16 in "Loading Continuous Forms (Front)" on page 4-1.

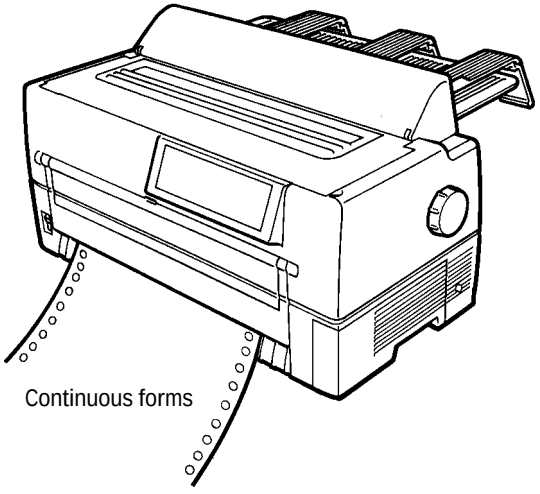
Printing on Cut Sheets

You can print on cut sheets without removing continuous forms from the tractor section.

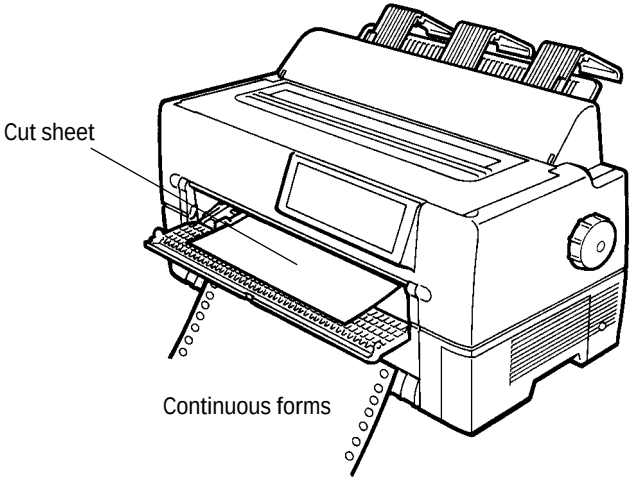
1. Press the PAPER PATH button on the control panel to select FRICTION (friction feed). The FRICTION lamp lights.

Important:

1. Retract continuous forms, if any, from the paper path to the tractor section. The FRICTION lamp lights.
2. If the lamp does not light to indicate FRICTION, continuous forms remain in the paper path. Cut the continuous forms and select FRICTION again.



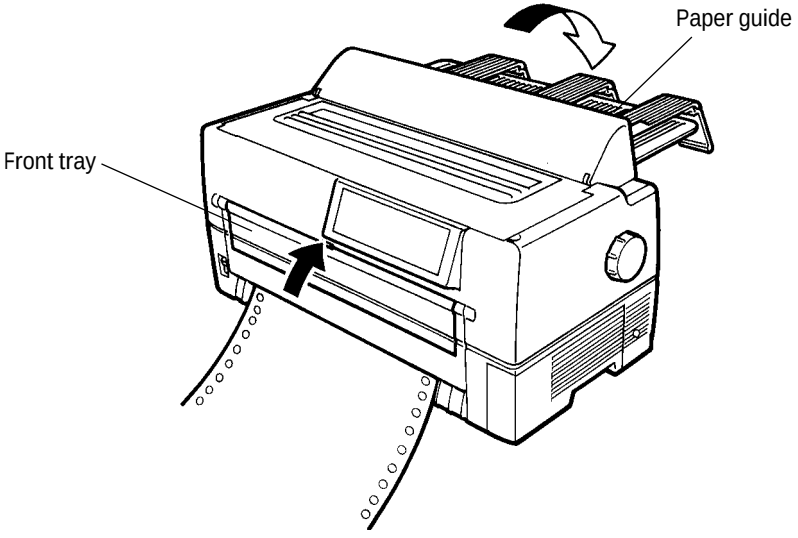
2. Load cut sheets as explained in “Loading Cut Sheets” on page 4-7 without removing the continuous forms.



Returning to Continuous Forms

After printing on cut sheets with continuous forms loaded, you can easily return to printing continuous forms.

1. Remove cut sheets, if any.
2. Tip back the paper guide.



3. Close the front tray.
4. Press the PAPER PATH button on the control panel to select FRONT TRACTOR or REAR TRACTOR, whichever you want to use. The FRONT TRACTOR or REAR TRACTOR lamp lights. Continuous forms are then loaded automatically.

   The REAR TRACTOR lamp is for the optional rear-feed tractor.
5. Check the vertical printing position. See “Loading Continuous Forms (Front)” on page 4-1.

CHAPTER 5

Operating the Printer

Using the Control Panel

LED type control panel

1. Layout

   Figure 5-1 shows the LED type control panel layout.

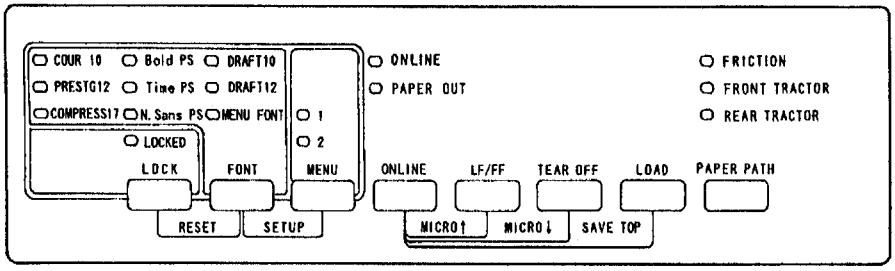


Figure 5–1 Control panel layout (LED type)

2. Lamps

   Control panel lamps indicate the printer status.

   Table 5-1 lists the lamp functions.

Table 5–1 Lamp functions (LED type)

Lamp*1	Function
ONLINE	Lights when the printer is online.
PAPER OUT (amber)	Changes to red when a paper outage is detected.
1	Lights when MENU 1 is selected. Switched by pressing the MENU button.
2	Lights when MENU 2 is selected. Switched by pressing the MENU button.

Table 5–1 Lamp functions (LED type) (Continued)

Lamp*1	Function
FRICTION	Lights when cut sheets can be used. Switched by pressing the PAPER PATH button.
FRONT TRACTOR	Lights when the FRONT tractor can be used for continuous forms. Switched by pressing the PAPER PATH button.
REAR TRACTOR	Lights when the REAR tractor can be used for continuous forms. Switched by pressing the PAPER PATH button.
LOCKED	Lights when lock mode is on. Switched by pressing the LOCK button.
	Fonts are selected by pressing the FONT button.
COUR10	Courier (10 cpi)
PRESTG12	Prestige Elite (12 cpi)
COMPRESS17	Compression (17 cpi)
Bold PS	Boldface (proportional spacing)
Time PS	Timeless (proportional spacing)
N. Sans PS	Nimbus Sans (proportional spacing)
DRAFT10	Draft (10 cpi)
DRAFT12	Draft (12 cpi)
MENU FONT	The font selected in menu mode becomes valid in this state.

*1 Lamps glow green unless otherwise indicated.

3. Buttons (when printer is online)

   ONLINE: Places the system offline after it prints the current line.

   LF/FF: Line feed/forms feed button. Feeds forms forward. Pressing this button continuously for 3 seconds or more feeds lines forward to the feed point for the next page (forms feed).
   When the cut-sheet feeder is used, pressing this button continuously for 3 seconds or more unloads forms. If forms are not at the platen, forms are not loaded, but a line feed occurs.

   TEAR OFF: Places the system in tear off mode and feeds lines to the forms cutting point. Tear off mode is valid for continuous forms only.
   When this button is pressed, the printer performs centering, and the ONLINE lamp blinks.
   If any button is pressed after forms are cut, the buzzer sounds, the ONLINE lamp stops blinking, and forms are fed back to their previous location.

   LOAD: Loads or unloads forms as follows, depending on the situation:

   - Continuous forms at the platen
     Forms are fed backward on the tractor until a paper outage is detected. If a paper outage has not been detected when forms have been fed 22 inches, forms feeding stops.
   - Cut sheets at the platen
     Cut sheets are unloaded if printing has not started, and the TOP MARGIN value is made the current vertical location.
   - Cut-sheet feeder set and cut sheets at the platen
     Cut sheets are unloaded if printing has not started, and the next cut sheet is loaded from the cut-sheet feeder. The TOP MARGIN value is made the current vertical location.
   - Continuous forms or cut sheets being used, cut-sheet feeder set, and no forms at the platen

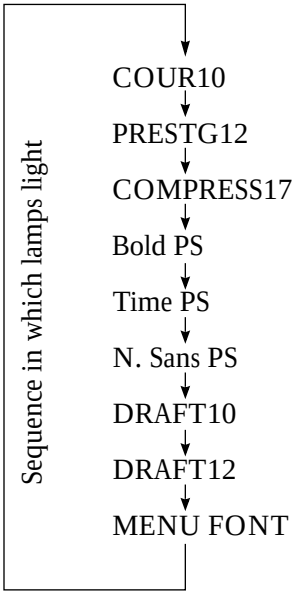
Forms are loaded, and the TOP MARGIN value is made the current vertical location.

4. Buttons (when printer is offline)

LOCK: Switches lock mode on or off. The lock mode takes effect when the offline status changes to online. When the LOCKED lamp is on, lock mode is on.
When lock mode is on, the font selected on the control panel is in effect, even if a host command sends an instruction to change it.

FONT: Selects a font. The font lamps light sequentially each time the FONT button is pressed. The font lamp that is on indicates which font is selected.
The font setting takes effect when the offline status changes to online.
If a command changes the font when lock mode is off, the font lamp indication does not change.
The font, pitch, and quality for each font selection are shown here.

Table 5–2 Font button values



Font	Quality	Characters per inch
Courier	Letter	10
Prestige	Letter	12
Compression	CQ	17
Boldface	Letter	Proportional spacing
Timeless	Letter	Proportional spacing
Nimbus Sans	Letter	Proportional spacing
Draft	Draft	10
Draft	Draft	12
The font, quality, and pitch for the font selected in menu mode are used.		

ONLINE:	Places the system online.
MENU:	Selects Menu 1 or 2. This button is a toggle.
LF/FF:	Feeds lines or forms (same as in online mode).
TEAR OFF:	Places the system in tearoff mode (same as in online mode).
LOAD:	Loads or unloads forms (same as in online mode).
PAPER PATH:	Selects FRICTION, FRONT TRACTOR, or REAR TRACTOR.
ONLINE + LF/FF:	Feeds lines forward by 1/180 inch.
ONLINE + TEAR OFF:	Feeds lines backward by 1/180 inch.
ONLINE + LOAD:	Permanently stores the load position adjusted by fine line feeding.
LOCK + FONT:	Initializes the printer.
MENU + FONT:	Places the system in Setup mode. See Chapter 8, “Setup Modes,” for more information.

LCD type control panel

1. Layout

   Figure 5-2 shows the LCD type control panel layout.

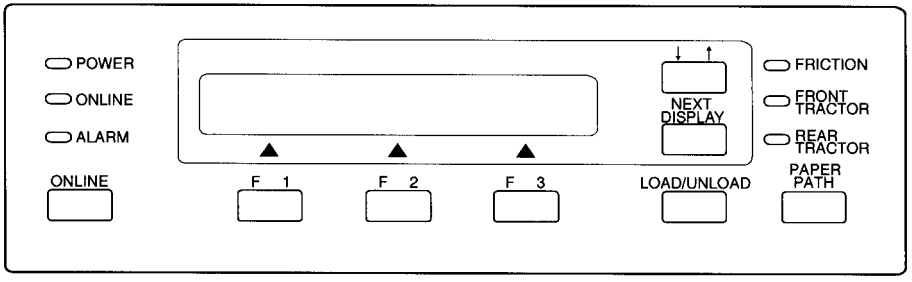


Figure 5–2 Control panel layout (LCD type)

2. Lamps

   Control panel lamps indicate the printer status.

   Table 5-3 lists the lamp functions.

Table 5–3 Lamp functions (LCD type)

Lamps*1	Function
POWER	Lights when power is on.
ONLINE*2	Lights when the printer is online.
ALARM (amber)	Changes to red to indicate an alarm.
FRICTION*2	Lights when cut sheets can be used. Switched by pressing the PAPER PATH button.
FRONT TRACTOR*2	Lights when the FRONT tractor can be used for continuous forms. Switched by pressing the PAPER PATH button.
REAR TRACTOR*2	Lights when the REAR tractor can be used for continuous forms. Switched by pressing the PAPER PATH button.

*1 Lamps glow green unless otherwise indicated.
*2 Same as the LED control panel.

3. LCD

   The LCD control panel displays printer status, messages, and control items on the screen using alphanumeric characters. The LCD control panel is 24 columns × 2 lines.

4. Buttons

ONLINE[*1]:	When the system is online, pressing ONLINE puts the printer offline after the current lines are printed. When the printer is offline, pressing ONLINE puts the printer online.
F1, F2, and F3:	Programmable function buttons numbered 1 to 3. The functions depend on the LCD screen contents.[*2]
↑ ↓:	Switches the direction of an arrow displayed on the LCD screen.[*2]
NEXT DISPLAY:	Displays the next LCD screen.[*2]
LOAD/UNLOAD:	Loads or unloads forms. The operation depends on the situation. This button performs the same function as the LOAD button on the LED control panel. For details, see 3 and 4 under "LED Type Control Panel" on pages 5-3 and 5-4.
PAPER PATH[*1]:	Selects FRICTION, FRONT TRACTOR, or REAR TRACTOR.

*1 Same as the LED control panel.

*2 For basic operation information, see Appendix E, "Using the LCD Type Control Panel."

Turning Printer Power On and Off

Turn power on or off as follows:

1. On

   Press the power switch at the left on the front of the printer to turn the printer on (|). Depending on the switch settings, lamps will light.

Notice:
Do not touch any other control panel button when turning power on or off. Otherwise, you may activate a maintenance mode for other than test printing.

2. Off

   Press the power switch to turn the printer off (❍). Lamps go out.

Notice:
Wait at least 3 seconds before turning on power again after turning it off. Otherwise, a printer fault may occur.

Test Printing

The printer's built-in self-test program prints the firmware version number, the names of resident emulations, and all available characters. The test prints 80 characters per line.

For the operation of the printer with the LCD control panel, see Appendix E.

Make sure paper is loaded. Check that the paper thickness lever is set to the appropriate position (see “Installing the Ribbon Cassette” on page 3-3. Then follow these steps to print a self-test page.

1. Turn off the printer.
2. Holding down the LF/FF button, turn the printer back on.

   Hold LF/FF down until the printer beeps. Test printing will start then.

3. To stop printing, press the FONT or MENU button. To remove the test page, turn the platen knob clockwise.

Notice:
Do not attempt to use the LF/FF (line feed/forms feed) button to eject paper in test mode.

4. Check that the printed page resembles the sample in Figure 5-3.

   Check that printing is uniform and free of light, dark, or smudged areas. When printing quality is satisfactory, go to step 5. Otherwise, correct problems as follows:

   a. Check that the ribbon is installed correctly.

   b. Check that the paper thickness lever is set to the appropriate position.

   c. Put a new sheet in the cut-sheet tray. Then manually turn the platen knob to advance the top edge of the paper past the top roller.

   d. Press FONT or MENU to restart printing. If printing quality does not improve, turn off the printer and contact your dealer.

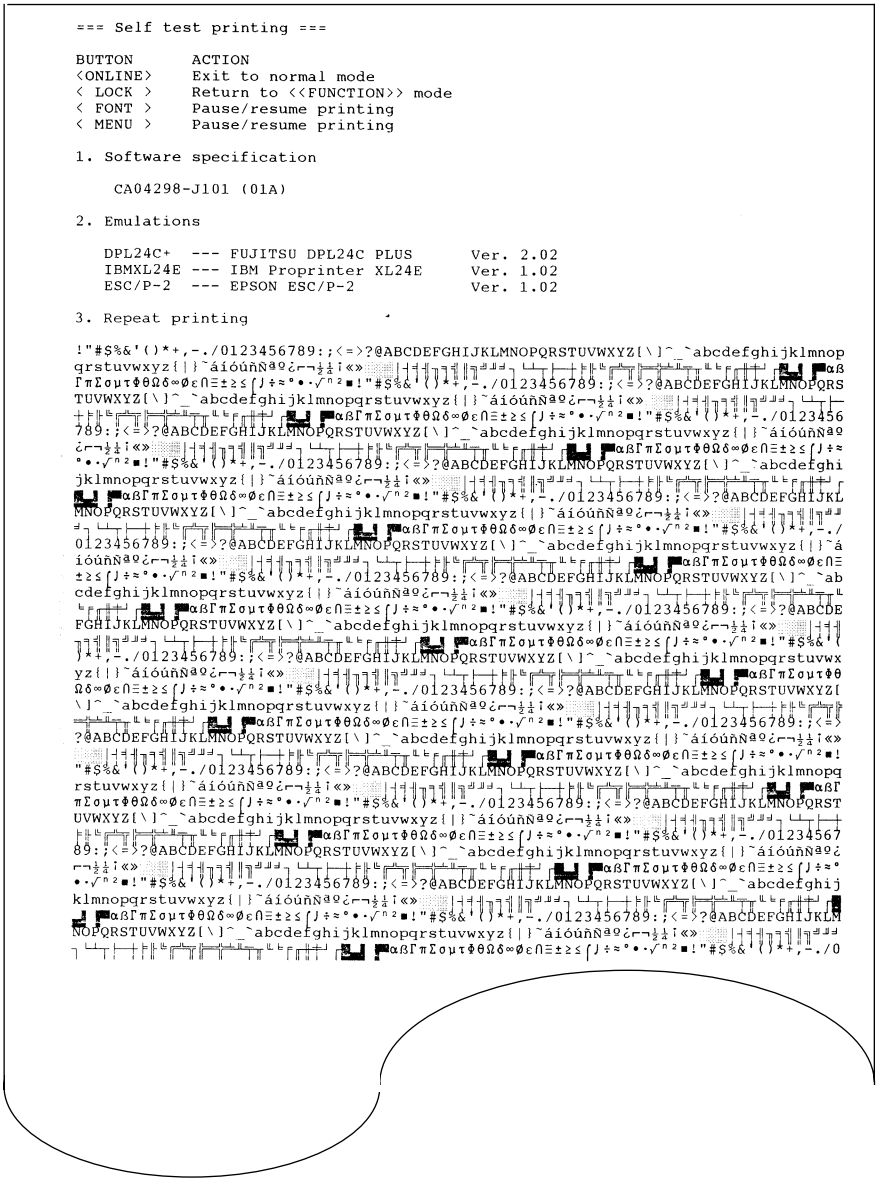


Figure 5–3 Test printing sample

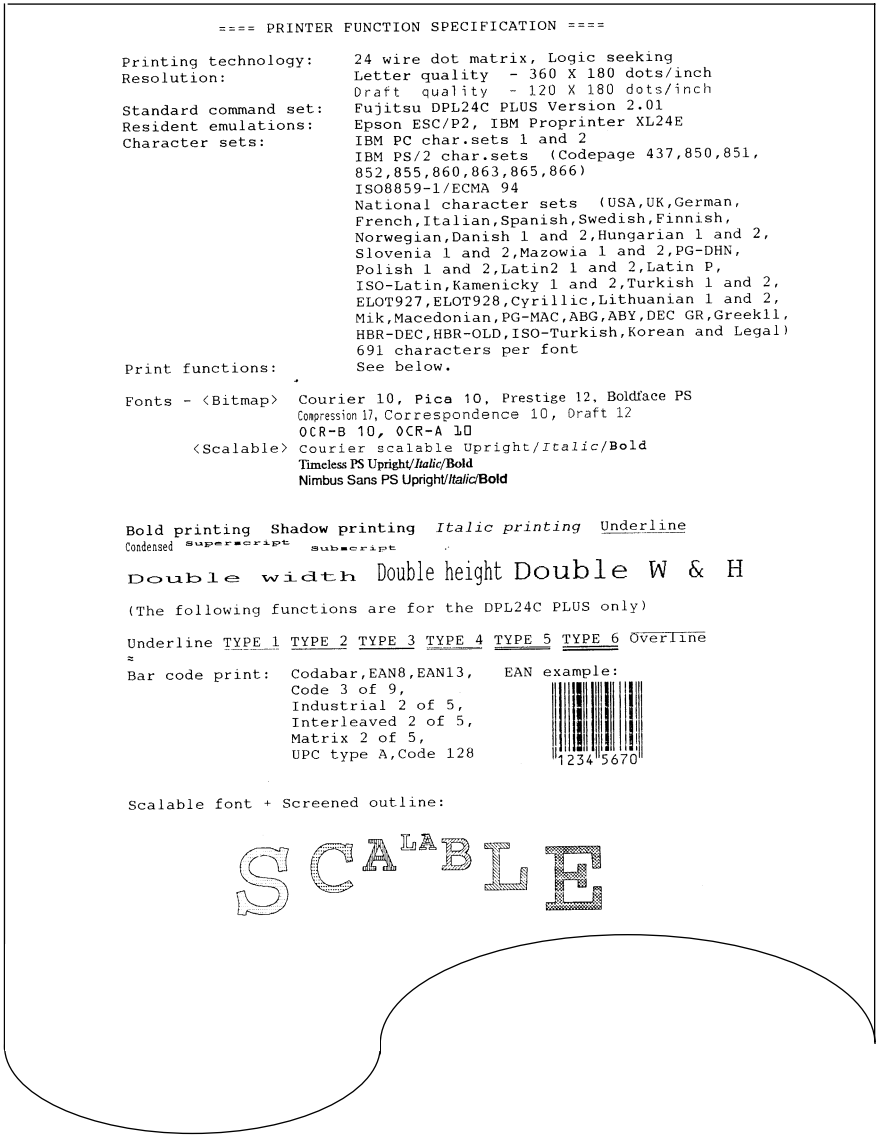
5. To exit test printing mode, press ONLINE. The printer goes online.

Demonstration Pattern Printing

The printer prints a demonstration pattern showing some printing features, as shown in Figure 5-4. To print a demonstration pattern, follow the steps below.

For the operation of the printer with the LCD control panel, see Appendix E.

1. Load a sheet of letter- or A4-size paper.
2. Turn off the printer.
3. Holding down the FONT button, turn the printer back on. The printer will start printing the demonstration pattern.
4. For cut sheets, the demonstration stops after printing a page. If a cut-sheet feeder or continuous forms are used, the demonstration pattern is repeated. To stop or restart the demonstration during printing, press ONLINE.
5. To exit demonstration mode, turn off the printer.



==== PRINTER FUNCTION SPECIFICATION ====

Printing technology:	24 wire dot matrix, Logic seeking
Resolution:	Letter quality - 360 X 180 dots/inch Draft quality - 120 X 180 dots/inch
Standard command set:	Fujitsu DPL24C PLUS Version 2.01
Resident emulations:	Epson ESC/P2, IBM Proprinter XL24E
Character sets:	IBM PC char.sets 1 and 2 IBM PS/2 char.sets (Codepage 437,850,851, 852,855,860,863,865,866) ISO8859-1/ECMA 94 National character sets (USA,UK,German, French,Italian,Spanish,Swedish,Finnish, Norwegian,Danish 1 and 2,Hungarian 1 and 2, Slovenia 1 and 2,Mazowia 1 and 2,PG-DHN, Polish 1 and 2,Latin2 1 and 2,Latin P, ISO-Latin,Kamenicky 1 and 2,Turkish 1 and 2, ELOT927,ELOT928,Cyrillic,Lithuanian 1 and 2, Mik,Macedonian,PG-MAC,ABG,ABY,DEC GR,Greek11, HBR-DEC,HBR-OLD,ISO-Turkish,Korean and Legal) 691 characters per font
Print functions:	See below.

Fonts - <Bitmap> Courier 10, Pica 10, Prestige 12, Boldface PS
Compression 17, Correspondence 10, Draft 12
OCR-B 10, OCR-A 10
<Scalable> Courier scalable Upright/*Italic*/**Bold**
Timeless PS Upright/*Italic*/Bold
Nimbus Sans PS Upright/*Italic*/Bold

Bold printing **Shadow printing** *Italic printing* Underline
Condensed Superscript Subscript

Double width Double height Double W & H

(The following functions are for the DPL24C PLUS only)

Underline TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6 Overline

Bar code print: Codabar,EAN8,EAN13,
Code 3 of 9,
Industrial 2 of 5,
Interleaved 2 of 5,
Matrix 2 of 5,
UPC type A,Code 128

EAN example:

Scalable font + Screened outline:

SCALABLE

Figure 5–4 Demonstration pattern

Sensor Detection

The printer has sensors to detect the following conditions:

- Top cover open

  The printer goes offline if the top cover is open.

- Paper out

  The printer stops printing when it detects a paper outage, cut-sheet search, or cut-sheet loading.

- Paper jam

  The printer stops printing when it detects a paper jam while paper is being ejected.

- Print head overheating

  The printer prints each line in three passes to protect the print head when overheating is detected.

- Skewed feeding

  When the printer detects skewed feed during loading from the front table, the printer ejects a cut sheet by reverse line feeding.

- Internal lock switch (not available in some countries)

  If the top cover is opened during printing, the printer will automatically stop, and the remainder of the print data from the line being printed will be lost. Therefore, do not open the top cover during printing.

- Jam lever open

CHAPTER

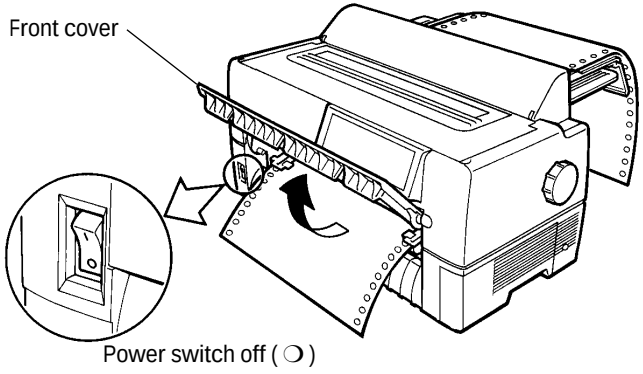
6

Clearing Paper Jams

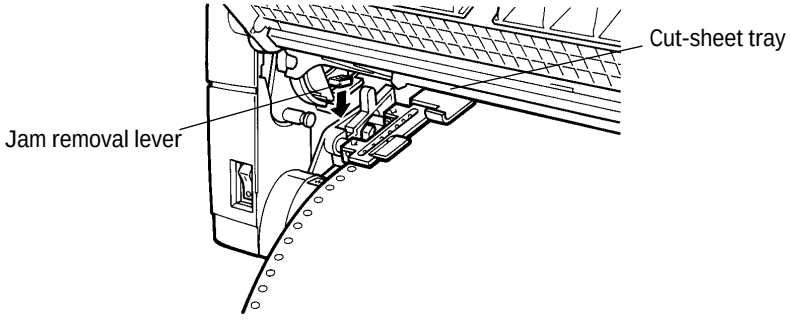
Continuous Forms (Front)

When using front-fed continuous forms, remove jammed paper as follows:

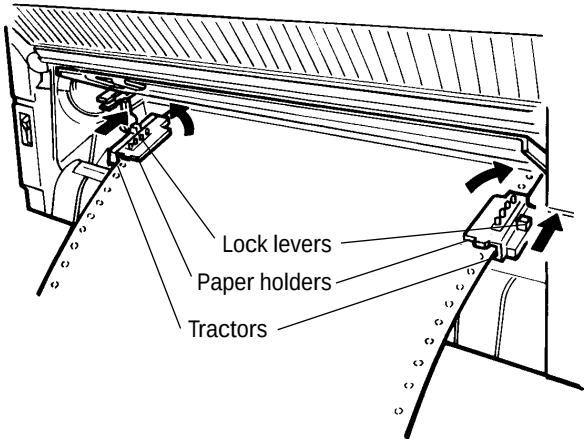
1. Turn off printer power (❍).
2. Open the front cover.



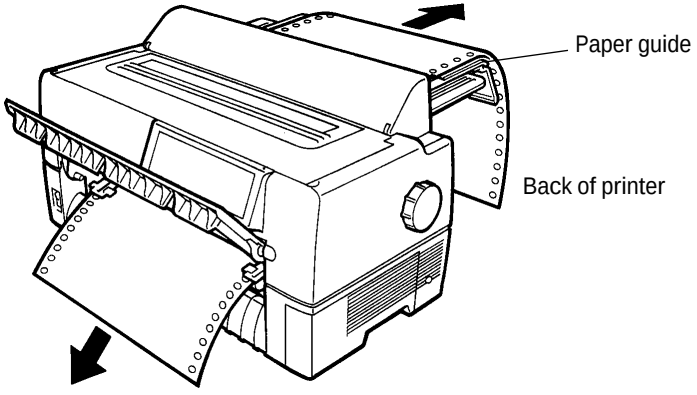
3. Raise the cut-sheet tray.
4. Lower the green left and right jam removal levers.



5. Turn the tractor lock levers in the direction indicated by the arrows in the figure to unlock them. Then open the paper holders.

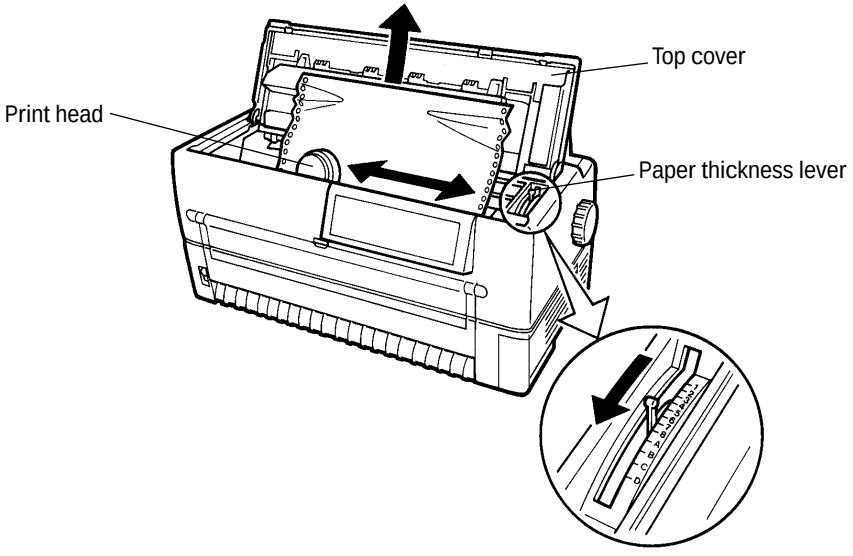


6. Cut the forms just in front of the tractors.
7. Remove jammed continuous forms from the tractors as follows:
   a. Remove paper from the paper guide, at the back of the printer.
   b. Remove other paper from the front of the printer.



c. Remove jammed paper in the printing section as follows:

1. Open the top cover.
2. Slide the paper thickness lever down to D.
3. Move the print head away from the paper.
4. Remove the paper.



8. Lift the green left and right jam removal levers and return them to their original locations.
9. Lower the cut-sheet tray.
10. Reload forms.

Important:
To prevent paper jams when using continuous forms, align the left and right holes with the tractor feed holes and ensure that the forms have no slack.

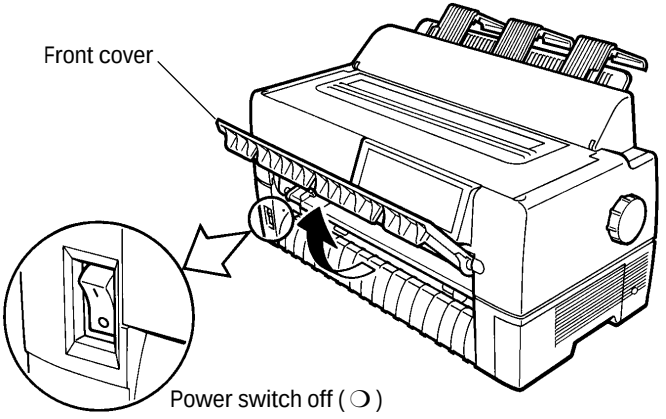
Continuous Forms (Rear)

Refer to the *Rear-Feed Tractor User's Manual* for information on the rear-feed tractor option.

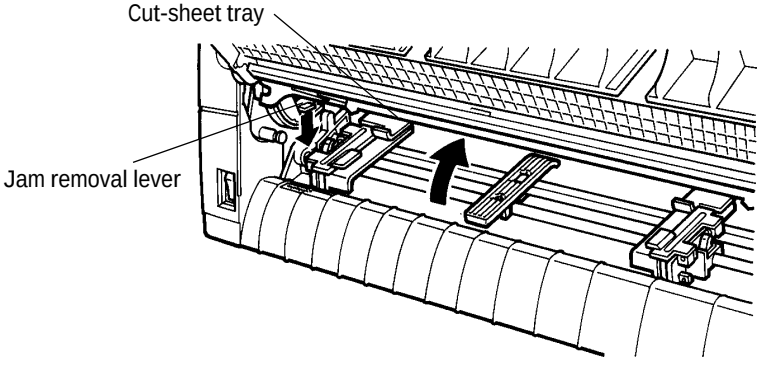
Cut Sheets

Remove jammed cut sheets as follows:

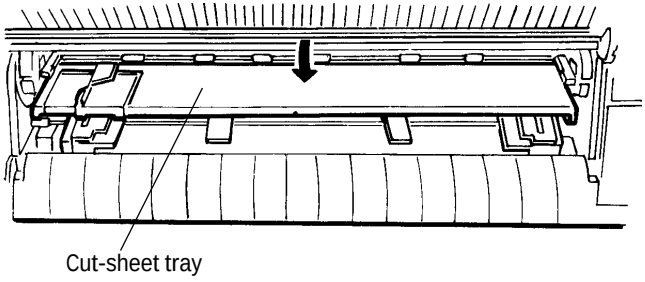
1. Turn off printer power (❍).
2. Open the front cover.



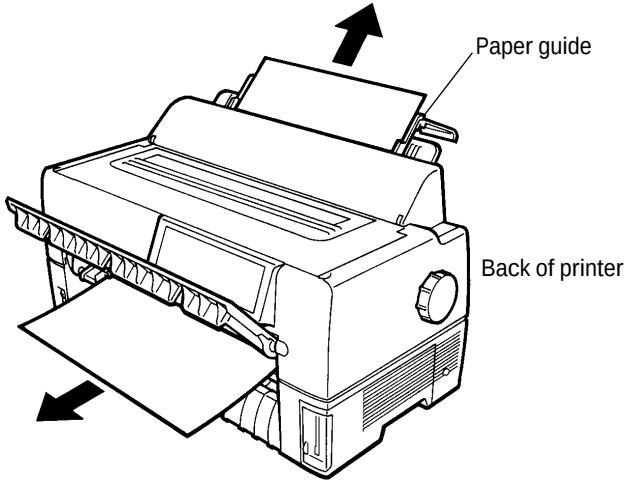
3. Raise the cut-sheet tray.
4. Lower the green left and right jam removal levers.



5. Lower the cut-sheet tray.



6. Remove the jammed cut sheet as follows:
   a. Remove paper in the paper guide from the back of the printer.
   b. Remove paper other than paper in the paper guide from the front of the printer.



   c. Remove paper in the printing section as explained in step 7 of "Continuous Forms (Front)" on page 6-3.

Important:
When loading forms after clearing a jam, be sure to insert cut sheets with the left edge aligned with the paper guide.

CHAPTER 7

Paper Specifications

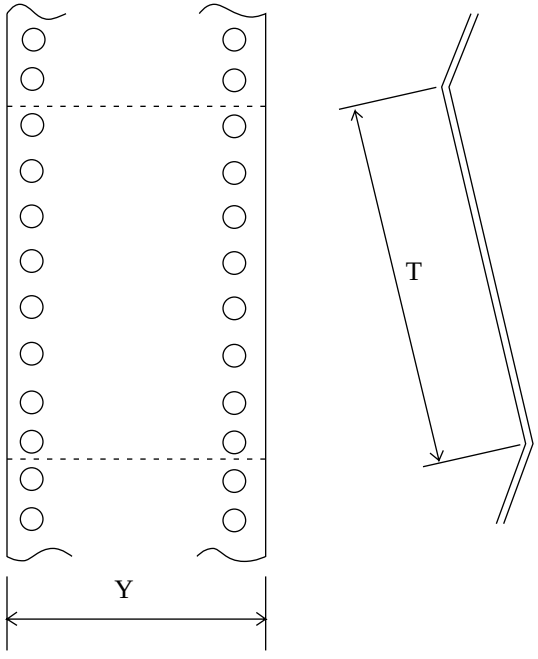
This chapter describes paper that the printer can use.

Any other paper should be tested carefully before use.

Continuous Forms

1. Size

   Figure 7-1 shows the size range for continuous forms.



Measurement	Dimensions in mm (in)
Paper width Y	101.6 to 419 (4 to 16.5)
Length between folds T	101.6 (4) or more

Figure 7–1 Size range for continuous forms

2. Number of parts

   The printer can handle multipart paper. Table 7-1 lists allowable combinations for the total number of parts, including the original, and the ream weight.

Table 7–1 Number of parts and ream weight for continuous forms

Type	Number of parts	Ream weight in g/m^2
Single part	1	46, 52, 64, 81
Pressure sensitive*1	2 3 4 5 [6] [7] [8]	39, 50, 64, (81) 39, 50, (64, 81) 39, (50, 64, 81) 39, (50, 64) 39, (50, 64) 39, (50, 64) 39, (50, 64)
Carbon-backed multipart*1	2 3 4 5 [6] [7] [8]	39, 52, 64, (81) 39, 52, (64, 81) 39, (52, 64, 81) 39, (52, 64) 39, (52, 64) 39, (52, 64) 39, (52, 64)
Multipart with carbons*2	2 3 [4]	34, 46, 52, (64, 81) 34, 46, (52, 64) 34, 46, (52, 64)

*1 Ream weights for pressure-sensitive and carbon-backed multipart forms may differ slightly according to the manufacturer. Select forms of the weight closest to those in Table. 7-1.

*2 The maximum number of parts for multipart forms with carbons counts each carbon as one part; that is, the maximum is four.

Important:

1. For specifications for continuous forms loaded from the back of the printer, refer to the *Rear-Feed Tractor User's Manual*.
2. The printer can use only the bottom copy layer of paper with its weight in parentheses ( ).

3. Characteristics of paper with the number of parts in brackets [ ] may differ slightly with the manufacturer and should be tested carefully before use.
4. Paper used for continuous forms differs depending on whether it is loaded from the front or from the back of the printer. The paper specifications in Table 7-1 are for forms loaded from the front.
5. The total thickness of multipart paper must not exceed 0.65 mm (0.025 in).

3. Binding

Select a binding type from Table 7-2.

Table 7–2 Binding for continuous forms with two to six parts

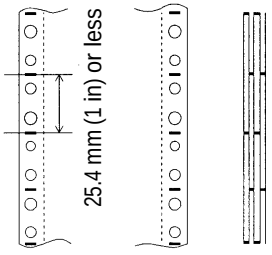
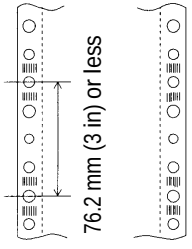
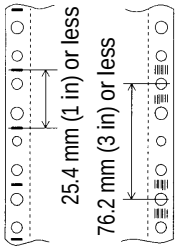
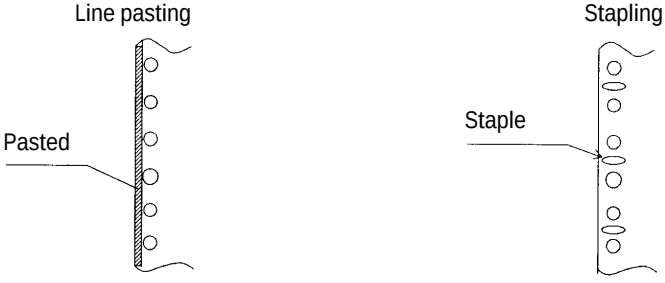
Binding	Remarks
Double-sided glued multipart forms (zigzag spot gluing) 	Recommended because: • Forms remain flexible. • Parts do not separate or become misaligned easily.
Double-sided paper staples 	The more parts, the easier the parts separate or become misaligned.

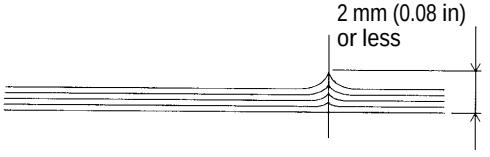
Table 7–2 Binding for continuous forms with two to six parts (Continued)

Binding	Remarks
Single-sided zigzag spot gluing and paper staples from back 	Combination of the other two types of binding

Important:
To avoid paper feed problems, do not bind as shown in the figure.



Check that the height of unfolded pasted forms at perforations is 2 mm (0.08 in) or less.

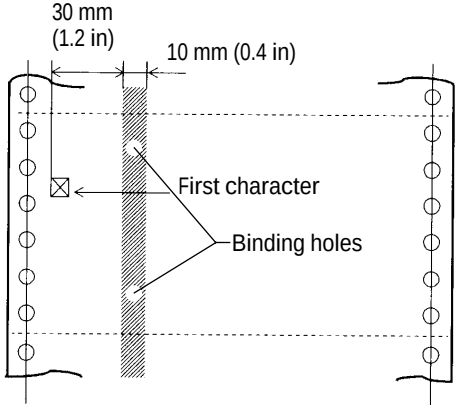


4. Binding holes in the scanning area of the sensor

   The shaded area shown in the figure indicates the scanning area of the sensor in which binding holes may lie. Their size is subject to the following restrictions as described and illustrated.

   Any binding hole completely in the shaded area must be 7 mm (0.28 in) or less in diameter.

Caution:
Always avoid printing on the binding holes. This could damage the print head.

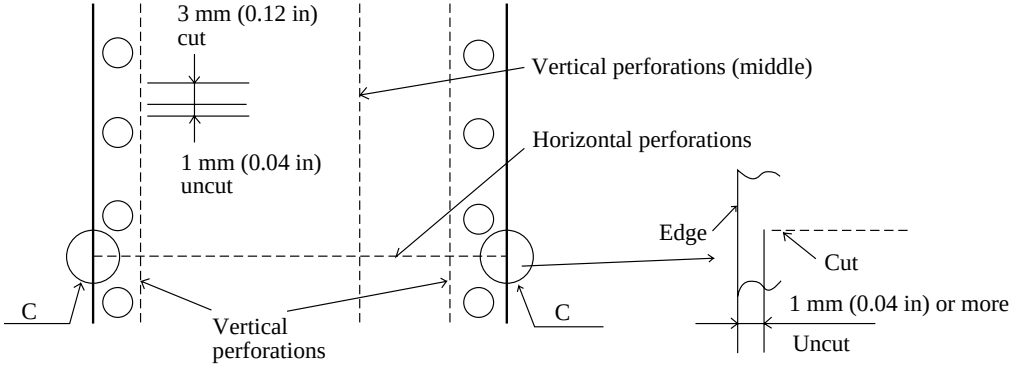


5. Perforations

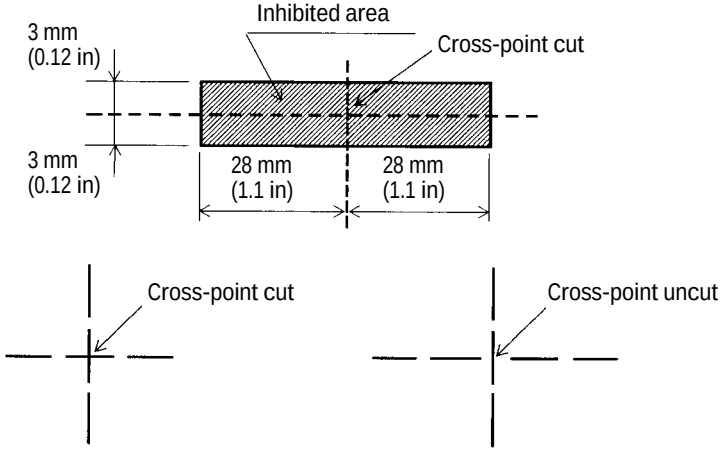
   The perforations in continuous forms must meet the following conditions:

   The ratio of cut to uncut areas for single-part continuous forms must be 3:1.

The uncut dimension at C on each end of horizontal perforations shown below must be 1 mm or more.



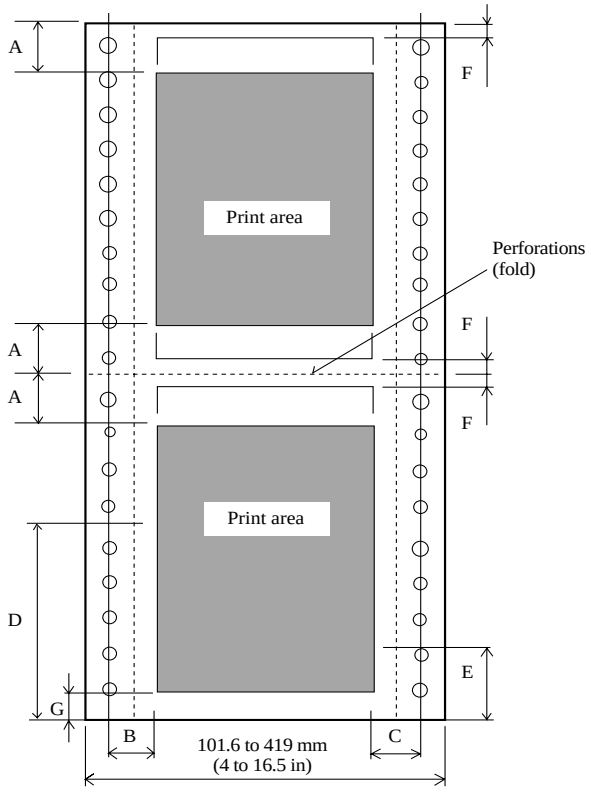
When a cross-point cut occurs at the juncture of vertical and horizontal perforations, printing is inhibited in the shaded area shown in the figure below. Printing is not allowed in this area to prevent damage to forms and also to prevent printer faults.



Notice:
This restriction also applies when the print head moves without printing.

6. Print area

The figure below shows the print area on continuous forms.



Area	Size in mm (in)	Remarks
A	4.2 (0.17)	Characters printed in this area may not be neat. A line spacing of 4.2 mm (1/6 in) or more prevents characters on adjacent lines from overlapping.
B	5.08 to 30 (0.2 to 1.18)	Depending on the paper width, this size varies as follows: 101.6 to 119.4 mm (4 to 4.7 in) wide: 5.08 to 9 mm (0.2 to 0.35 in) 388.6 to 419 mm (15.3 to 16.5 in) wide: 15 to 30 mm (0.6 to 1.18 in)
C	5.08 (0.2) or more	This size varies with the paper width and number of print columns, but must be at least 5.08 mm (1/5 inch).
D	152 (6.0)	This area feeds off the tractors and prevents reverse line feed.
E	Appropriately 29 (1.1)	This value indicates the paper-end detection point.
F	3.5 (0.14)	Do not move the printing unit horizontally in this area as paper may be smeared by the ink ribbon or the printing unit may be caught at bulges.
G	4.2 (0.17)	

Cut Sheets

For cut sheets, use high-quality paper with a light reflection factor of 60 percent or more. Ordinary high-quality white paper has a light reflection factor of approximately 70 percent. The darker or thinner the paper, the lower the reflection factor.

1. Size

   Width: 90 to 420 mm (3.5 in to A3 horizontal)
   Length: 90 to 420 mm (3.5 in to A3 horizontal)

2. Number of parts

   The printer can handle multipart paper. Table 7-3 lists allowable combinations for the total number of parts, including the original, and the ream weight.

Table 7–3 Number of parts and ream weight for cut sheets

Type	Number of parts	Ream weight in g/cm^2	Front	Rear*1
Single part	1	<35>, 46, 52, 64, 81		○
		35, 46, 52, 64, 81, 104, 127	○	
Pressure sensitive*2	2	39, 50, 64, (81)	○	○
	3	39, 50, (64, 81)	○	○
	4	39, (50, 64, 81)	○	○
	5	39, (50, 64)	○	○
	[6]	39, (50, 64)	○	○
	[7]	39, (50, 64)	○	
	[8]	39, (50, 64)	○	
Carbon-backed multipart*3	2	39, 52, 64, (81)	○	○
	3	39, 52, (64, 81)	○	○
	4	39, (52, 64, 81)	○	○
	5	39, (52, 64)	○	○
	[6]	39, (52, 64)	○	○
	[7]	39, (52, 64)	○	
	[8]	39, (52, 64)	○	

*1 For DL6600 only.
*2 Ream weights for pressure-sensitive and carbon-backed multipart forms may differ slightly according to the manufacturer. Select forms of the closest weight to those in the table.
*3 Do not use carbon paper with cut sheets.

Important:

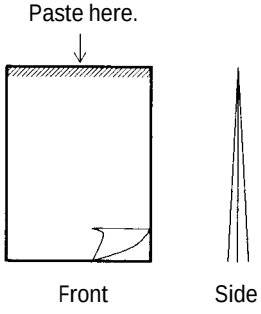
1. Paper with its weight in angle brackets < > must be at least 254 mm (10 in) wide.
2. For multipart forms the ream weight of the bottom sheet being used must be one of the values in parentheses ( ).
3. Characteristics of paper with the number of parts in brackets [ ] may differ slightly according to the manufacturer and should be tested carefully before use.
4. The total thickness of multipart paper must not exceed 0.65 mm (0.025 in).

3. Binding

   Paste sheets at the top.

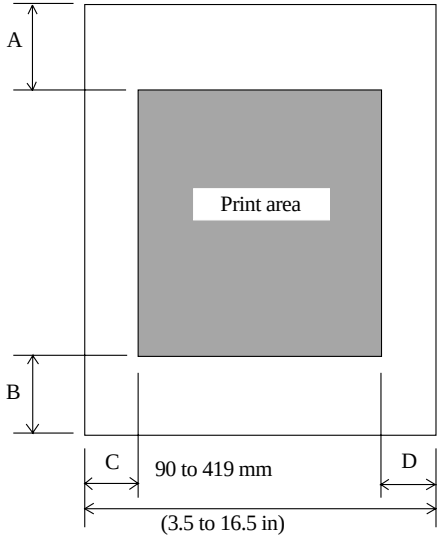
Important:

Pasted portions must be flexible and free of curl.



4. Print area

   The figure below shows the print area on cut sheets.



Area Size in mm (in)

	Front	Rear (DL6600 Pro only)
A	4.2 (0.17)	8.5 (0.33)
B	4.2 (0.17)	8.5 (0.33)
C*1	5.1 (0.2) to 38 (1.5) or more	
D	5.1 (0.2) or more	

*1 For wide paper, this specification is as follows:
406.4 mm (16 in) wide: 22.5 to 38.5 mm (0.9 to 1.5 in)
419 mm (16.5 in) wide: 36 to 38.5 mm (1.4 to 1.5 in)

Labels

Only labels on the front of continuous forms backing sheets can be printed.

1. Size

   Paper size specifications are the same as for general continuous forms.

2. Paper thickness

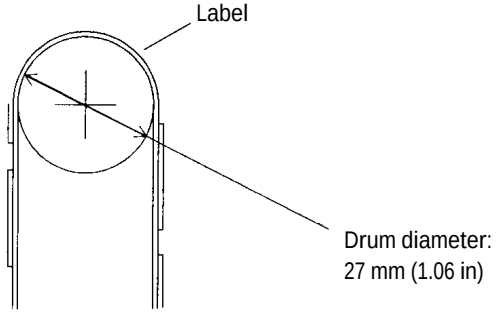
   The label and backing sheet together must be 0.2 mm (1/27 in) or less.

Important:

1. The thickness of the backing sheet must be 0.1 mm (1/254 in) or less.
2. The thickness of the label must be 0.1 mm (1/254 in) or less.

3. Label adhesion

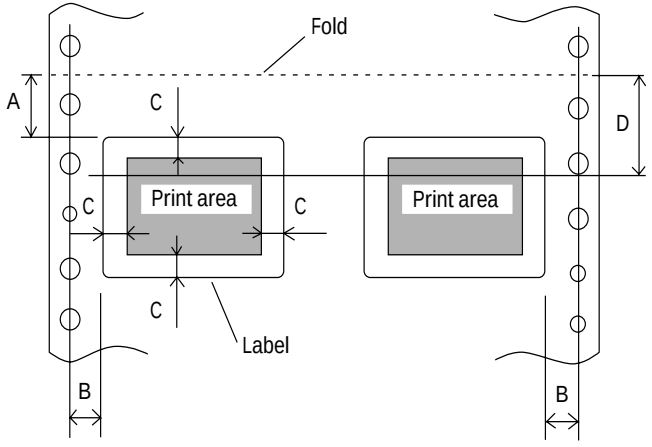
   Labels must satisfy the conditions below and not peel off easily.



Winding drum diameter	27 mm (1.06 in)
Winding angle	180°
Winding time	24 hours
Ambient temperature	40°C
Ambient humidity	30% RH

4. Print area

   The figure below shows the print areas on labels.



Area	Size in mm (in)
A	2.54 (0.1) or more
B	6.35 (0.25) or more
C	2.54 (0.1) or more
D	25.4 (1) *1

*1 Lines may not be fed neatly in the print area of D. A line spacing of 1/6 inch or more prevents characters on adjacent lines from overlapping.

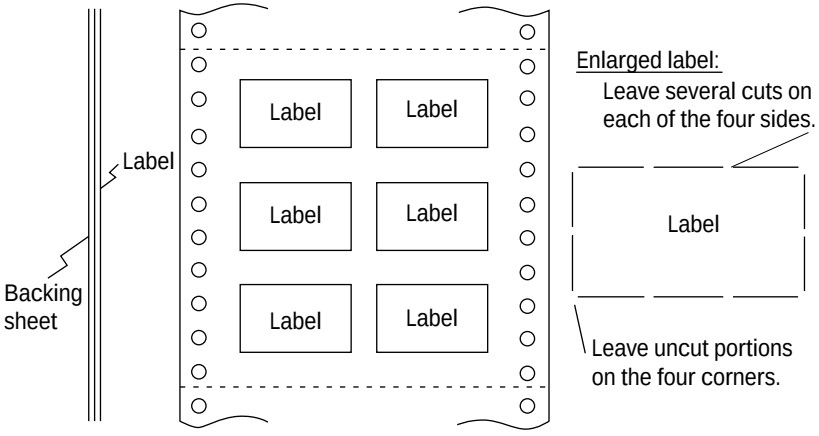
5. Formats

   Use the formats shown below to prevent peeled labels from causing feed failures, print head damage, and other serious problems.

   Example 1:

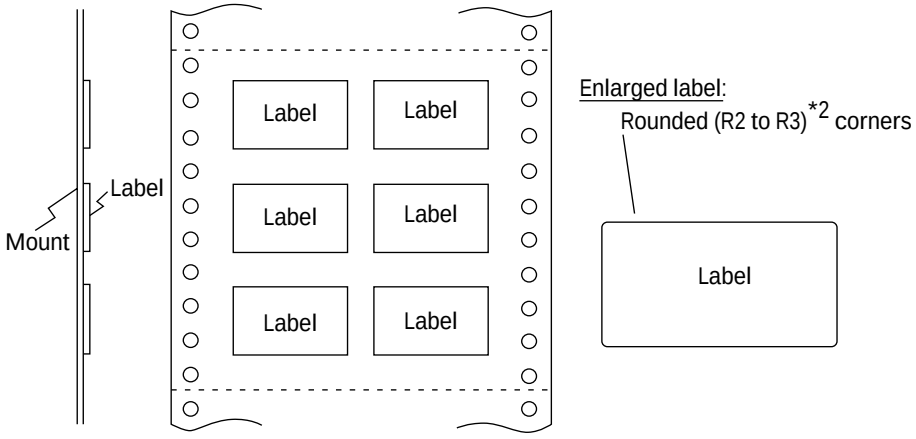
   Leave the four corners and sides uncut between cut portions and do not remove nonlabel areas[*1].

   This procedure completely prevents label peeling.



Example 2:

If nonlabel areas*1 must be removed, round label corners.

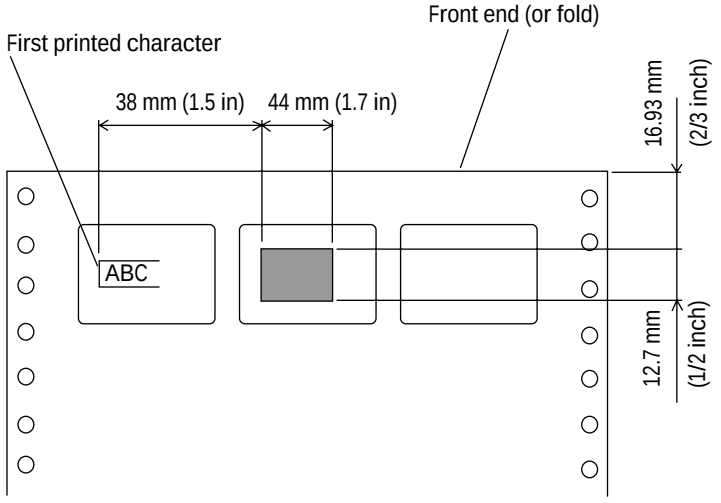


*1 Areas in which no labels adhere to the backing sheet.
*2 R stands for radius. R2 and R3 should be between 2 mm and 3 mm.

Figure 7–2 Recommended label formats

6. Restriction on APTC option

   The printer performs automatic paper thickness detection on the printing side. For forms with backing sheets removed, the thickness differs between the label and backing sheet. Measure the thickness at a label as shown in Figure 7-13.



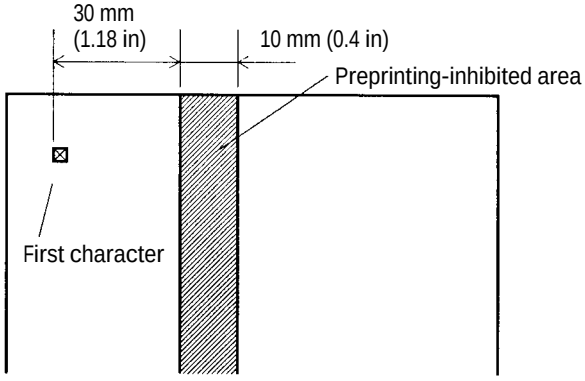
Important:
Ensure that characters are printed in the shaded area.

Figure 7–3 Label arrangement

Precautions

1. Preprinting

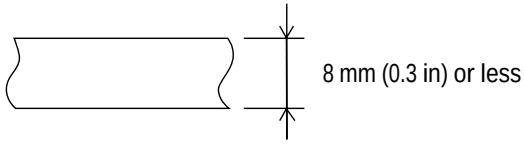
   When printing using a color with a reflection factor of 60 percent or less, such as black, do not print in the shaded area shown in the figure below.



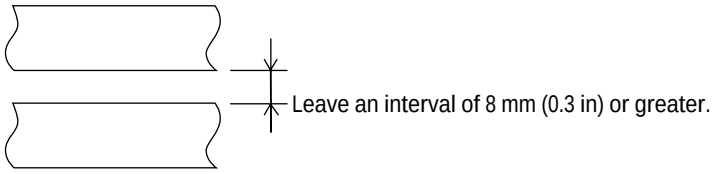
Important:
The printer uses an autosensor to detect loaded paper in the shaded area. If the area is preprinted in black, the sensor may fail to detect the paper because of decreased light reflection.

Perform preprinting as follows:

a. Do not print horizontal lines thicker than 8 mm (0.3 in)

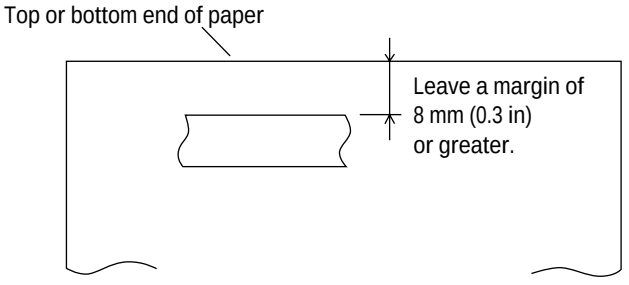


b. When consecutively printing lines that satisfy the specification in (a), leave an interval of 8 mm (0.3 in) or greater between lines.



Important:
If the line thickness is 0.5 mm (0.02 in) or less, the interval can be 4 mm (0.16 in) or more.

c. When printing near a paper edge, leave a margin of 8 mm (0.3 in) or greater.



Important:
If the line thickness is 0.5 mm (0.02 in) or less, the interval can be 4 mm (0.16 in) or more.

d. When printing vertical lines in the shaded area in Figure 7-##, make lines 0.5 mm (0.02 in) thick or less and do not print more than one line.

Before printing characters in the shaded area in Figure 7-14, use a sample to check that the characters can be printed.

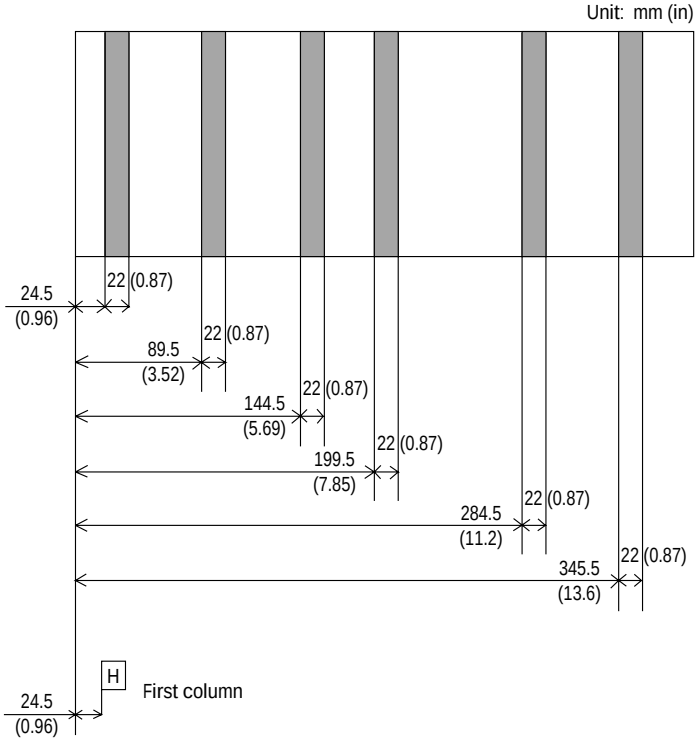
2. Binding hole

   The shaded area on page 7-15 also places restrictions on binding holes punched in that area. If punching is necessary, make the holes 7 mm (0.28 in) or less in diameter.

3. Smearing caused by paper feed roller

   If the percentage of printing in the shaded areas in the figure below is high, the paper feed roller may smear paper at loading or ejection. Design the format to make areas as far away from the printed area as possible or print a color or pattern on the paper to make smearing unnoticeable.

   Smeared areas in the figure below assume that the left margin is 25.4 mm (1 in). If the left margin is changed, smear areas move proportionally.



4. Miscellaneous

   When using special paper that does not conform to specifications, prepare samples for full trials before using the paper.

   Store and handle paper with care to prevent deformation or damage. Do not store paper where humidity is high.

CHAPTER 8

Setup Mode

Overview

The printer provides two modes: normal mode, for everyday printer operations, and setup mode, for selecting printer options and helping diagnose printer problems.

Setup is performed offline using the printer control panel, an approach called offline setup, or remotely using a processor or software, an approach called setup program online setup. This chapter focuses on offline setup. The section “Performing Online Setup” on page 8-48 applies to all emulations.

Optional printer settings include emulation, font, spacing, page length and width, serial interface, and top-of-form. Saving settings in the printer's permanent memory makes them the default settings. Default settings are activated whenever the printer is turned on. If DPL24C PLUS is saved as the default emulation, for example, DPL24C PLUS is activated when the printer is next turned on.

Printer diagnostic functions include SELF-TST, HEX-DUMP, and V-ALMNT, used in troubleshooting. HEX-DUMP is mainly used by programmers.

For printers that use the LED control panel, perform offline setup as follows. Firstly, print setup function, item, and option. Press the FONT, MENU, or LOCK button to move the yellow arrow on the print head beneath the desired selection.

For printers that use the LCD control panel, perform offline setup as follows. Firstly, display the setup function, item, and option on the LCD screen. Press F1, F2, or F3 to select the desired function. On the LCD display, options can be easily set, and functions un be easily executline setup function using the LCD control panel, see Appendix E, “Using the LCD Type Control Panel.”

Chapter Organization

If you are using setup mode for the first time, read "Activating Setup Mode" on page 8-2 and "Using Setup Mode" on page 8-4 to learn how setup mode works. Once you understand the basics, read the following sections to learn how to select printer options compatible with your processor hardware and software.

To restore printer default values set at shipment, see "Resetting Default Values" on page 8-36.

For information on using SELF-TST, HEX-DUMP, and V-ALMNT, see "Using Diagnostic Functions" on page 8-37.

Experienced users can turn to the flowchart at the end of this chapter, which lists the printer setup functions and options for quick reference.

Activating Setup Mode

Before entering setup mode, load continuous forms paper. For information, see "Loading Continuous Forms (Front)" on page 4-1. You will need approximately eight sheets of paper to print all setup selections.

Enter setup mode as follows:

1. Check that forms are loaded.
2. Press ONLINE to place the printer offline.
3. Press FONT and MENU together until the printer beeps.

   If a beep does not sound, you are not in setup mode. Place the printer offline and try again.

   Upon entering offline setup mode, the printer prints the information shown in Figure 8-1.

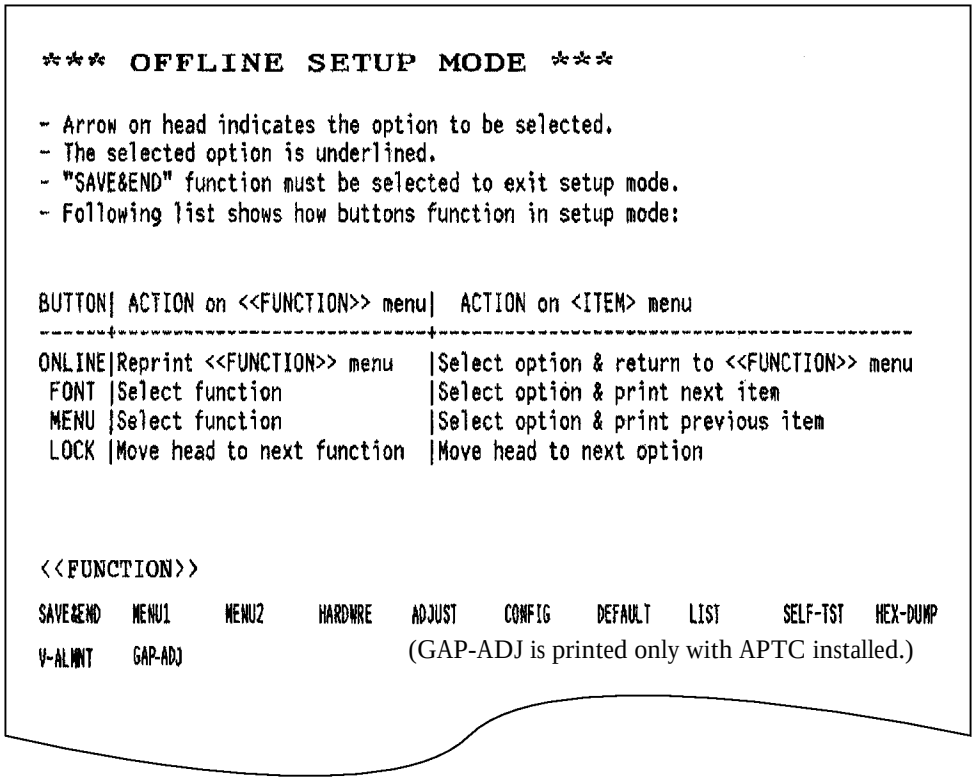


Figure 8–1 Initial setup mode printout

The initial printout contains a header, help menu, and <<FUNCTION>> menu. The header shows that the printer is offline and in setup mode. The help menu summarizes setup mode operations. The <<FUNCTION>> menu lists all functions available in setup mode. Note that the yellow arrow on the print head is initially below the SAVE&END function.

Another way to enter setup mode is to turn off the printer and then turn it on again while pressing the FONT and MENU buttons. Continue pressing the buttons until the printer beeps.

Using Setup Mode

Entering setup mode prints the <<FUNCTION>> menu.

```
<<FUNCTION>>
  SAVE&END   MENU1   MENU2   HARDWRE   ADJUST   CONFIG   DEFAULT   LIST   SELF-TST   HEX-DUMP
  V-ALMNT    GAP-ADJ
```

(GAP-ADJ is printed only with APTC installed.)

Table 8-1 summarizes the setup mode functions.

Table 8–1 Setup mode functions

Function	Purpose
SAVE&END	Exits setup mode and saves changes made in setup mode.
MENU1 and MENU2	Assigns print features to MENU1 and MENU2 on the control panel.
HARDWRE	Changes hardware options.
ADJUST	Changes print adjustment options.
CONFIG	Changes configuration options.
GAP-ADJ	Sets the head gap, and is displayed when the printer is equipped with the APTC function.
DEFAULT	Resets MENU1 and MENU2 default values set at shipment.
LIST	Prints all currently selected options.
SELF-TST	Run the self-test.
HEX-DUMP	Prints hexadecimal data dumps.
V-ALMNT	Checks and corrects vertical printing alignment.

To select a function from the <<FUNCTION>> menu, do the following:

1. Repeatedly press LOCK to position the yellow arrow on the print head beneath the required function.
2. Press FONT or MENU to select a function. If the function has items and options, the printer prints the first item and its options.

MENU1, MENU2, HARDWRE, ADJUST, CONFIG, and GAP-ADJ contain items with selectable options.

The first three MENU1 items shown in angle brackets < > and options, for example, are as follows:

```
<EMULATE>   DPL24C+  XL24E    ESC/P2
<FONT>
  COUR 10  PRSTG12  COMPRSD  BOLDFCE  PICA10   CORRESP  OCR-B    OCR-A    COUR-N  COUR-B
  COUR-I   N.SAN-N  N.SAN-B  N.SAN-I  TIMLS-N  TIMLS-B  TIMLS-I  DOWNLD0  DOWNLD1
<QUALITY>  LETTER   REPORT   DRAFT
```

To select an option from an item menu, do the following:

1. Repeatedly press LOCK to position the yellow arrow on the print head beneath the required option.
2. Press FONT to select the option. The printer prints the next function and its options.
3. After selecting options, press ONLINE to reprint the <<FUNCTION>> menu.

   Underlined options are current default settings—that is, the settings saved in the printer's permanent memory. In the preceding example, the default options are Fujitsu DPL24C PLUS emulation, Courier 10 font, and letter-quality printing.

Figure 8-2 summarizes option selection and button use for functions that do not have options.

The following example illustrates the use of setup mode. The example shows how to change the font and spacing in MENU2 to Prestige Elite 12 and 12 cpi.

1. Load continuous forms.
2. Enter setup mode.

   Press FONT and MENU together until the printer beeps.
3. Select the MENU2 function.

   Wait for the printer to stop printing and press LOCK twice to position the yellow arrow on the print head beneath MENU2. Press FONT or MENU to select MENU2 and print <EMULATE> and its options.

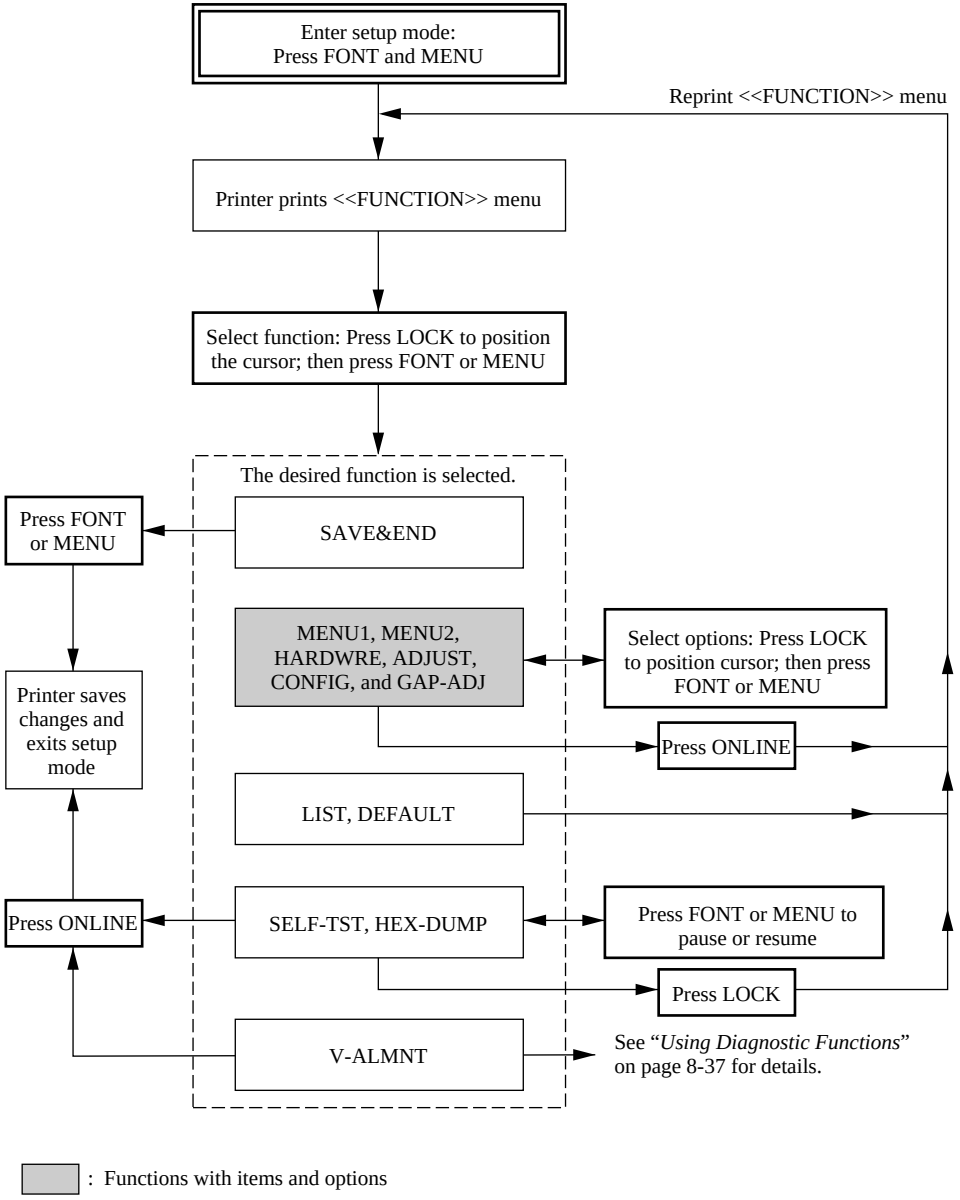


Figure 8–2 Setup mode summary

4. Select the current emulation.

   To leave the emulation unchanged, press FONT to select the current emulation and print <FONT> and its options.

5. Change the font to Prestige Elite 12.

   Press LOCK once to position the yellow arrow on the print head beneath PRSTG12. Press FONT to select PRSTG12 and print <QUALITY> and its options.

6. Select the current print quality.

   To leave print quality unchanged, press FONT to select the current print quality and print <PITCH>.

7. Change spacing to 12 cpi and exit MENU2.

   Press LOCK once to position the yellow arrow beneath 12 CPI. To leave MENU1 unchanged, press ONLINE to select 12 CPI and exit MENU2. The <<FUNCTION>> menu is then reprinted.

8. Exit setup mode, saving the new font and spacing.

   The cursor is beneath SAVE&END, so press FONT or MENU to select SAVE&END. The printer save Prestige Elite 12 and 12 cpi as the new default settings in MENU2. It then exits setup mode and goes back online. These settings remain in effect until changed.

Important:

1. Load continuous forms before entering setup mode. LF/FF and LOAD cannot be used to feed or load paper in setup mode.
2. When setup mode is entered, short help menus are printed at the top of the page. Help menus are also printed when SELF-TST, HEX-DUMP, or V-ALMNT is selected. Use help menus for quick reference in setup mode.
3. Functions and options can be printed only one at a time. To move forward (print the next function) in the item list, press FONT. To move backward (print the previous function), press MENU.
4. While in the <<FUNCTION>> menu or selecting a function that contains items and selectable options, press ONLINE to reprint the <<FUNCTION>> menu.

5. Underlining beneath the first two letters of an option indicates the current default setting. For example, <u>12</u> CPI indicates that 12 characters per inch is the default value. To change the default settings, select and save a new setting.
6. While in setup mode, use LIST to print a list of currently selected options. For details, see "Printing a List of Options" below.
7. To exit setup mode and permanently save changes, select either SAVE & END or SELF-TST. For details, see "Exiting and Saving" on page 8-35. To exit setup mode without saving changes, turn the printer off. Previous default settings are activated when the printer is turned on again.

Printing a List of Options

LIST prints a list of all currently selected options. This list is useful for checking settings when entering or exiting setup mode. To print options, load continuous forms. Then do the following:

1. Enter setup mode

   To center setup mode printer must be offline.

   Press FONT and MENU simultaneously. Wait for the printer to stop printing and check that the <<FUNCTION>> menu is printed.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select LIST.

   Repeatedly press LOCK to position the yellow arrow on the print head beneath LIST. Next, press FONT or MENU to select LIST. The printer starts to print a list of current options. Figure 8-3 shows the default values set at shipment.

Important:
To remove the printout, turn the platen knob until paper can be torn off at the perforation. The TEAR OFF button cannot be used in setup mode.

3. Either select another function or exit setup mode, saving any changes you made.

   When exiting setup mode and saving changes, check that the yellow arrow on the print head is positioned beneath SAVE &END. Then press FONT or MENU.

*** Setup Parameters ***

<< Menu 1 settings >>

Func.	Item	Option
MENU1	EMULATE	DPL24C+
MENU1	FONT	COUR 10
MENU1	QUALITY	LETTER
MENU1	PITCH	10 CPI
MENU1	LINE SP	6 LPI
MENU1	CHAR-W	NORMAL
MENU1	CHAR-H	NORMAL
MENU1	ATTRIB	NONE
MENU1	PAGE LG	11.0 IN
MENU1	LFT-END	1 COLM
MENU1	TOP-MRG	1 LINE
MENU1	LANGUGE	PAGE437
MENU1	CHR-SET	SET2
MENU1	PRF-SKP	NO-SKIP
MENU1	WIDTH	13.6 IN
MENU1	ZEROFNT	NO-SLSH
MENU1	DC3-CDE	ENABLE
MENU1	CR-CODE	CR ONLY
MENU1	LF-CODE	LF & CR
MENU1	RGHTEND	WRAP
MENU1	==END==	

<< Menu 2 settings >>

Func.	Item	Option
MENU2	EMULATE	DPL24C+
MENU2	FONT	COUR 10
MENU2	QUALITY	LETTER
MENU2	PITCH	10 CPI
MENU2	LINE SP	6 LPI
MENU2	CHAR-W	NORMAL
MENU2	CHAR-H	NORMAL
MENU2	ATTRIB	NONE
MENU2	PAGE LG	11.0 IN
MENU2	LFT-END	1 COLM
MENU2	TOP-MRG	1 LINE
MENU2	LANGUGE	PAGE437
MENU2	CHR-SET	SET2
MENU2	PRF-SKP	NO-SKIP
MENU2	WIDTH	13.6 IN
MENU2	ZEROFNT	NO-SLSH
MENU2	DC3-CDE	ENABLE
MENU2	CR-CODE	CR ONLY
MENU2	LF-CODE	LF & CR
MENU2	RGHTEND	WRAP
MENU2	==END==	

<< Hardware settings >>

Func.	Item	Option
HARDWRE	PPR-OUT	CNTONLY
HARDWRE	PRT-DIR	BI-DIR
HARDWRE	BUZZER	ON
HARDWRE	WORD-LG	8 BIT
HARDWRE	BUFFER	8KBYTE
HARDWRE	INTRFCE	AUTO-2S
HARDWRE	FORMAT	8NONE 1
HARDWRE	BAUD-RT	9600
HARDWRE	PROTOCL	XON/XOF
HARDWRE	DSR	IGNORE
HARDWRE	DUPLEX	FULL
HARDWRE	CTS	DETECT
HARDWRE	CD	DETECT
HARDWRE	==END==	

<< Adjust settings >>

Func.	Item	Option
ADJUST	CNT-ORG	6 /6 IN
ADJUST	CNTFINE	0 /180
ADJUST	CUT-ORG	6 /6 IN
ADJUST	CUTFINE	0 /180
ADJUST	CNT-LFT	0 /90
ADJUST	CUT-LFT	0 /90
ADJUST	FCNTADJ	0 /360
ADJUST	RCNTADJ	0 /360
ADJUST	CUT-ADJ	0 /360
ADJUST	==END==	

<< Gap adjust settings >> *

Func.	Item	Option
GAP-ADJ	AMOUNT	AUTO
GAP-ADJ	==END==	

<< Config settings >>

Func.	Item	Option
CONFIG	TEAROFF	MANUAL
CONFIG	TEARPOS	VISIBLE
CONFIG	CUTLOAD	BUTTON
CONFIG	DECODE	DIRECT
CONFIG	ON-LOAD	ONLINE
CONFIG	LOCK	NONE
CONFIG	//S//	DISABLE
CONFIG	CONT-PE	EDGE
CONFIG	==END==	

* GAP settings are printed only with APTC installed.

Figure 8–3 Default settings at shipment

Setting Required Options

The sections “Changing MENU1 and MENU2 Options” on page 8-11 to “Changing Configuration Options“ on page 8-32 list the default settings for options by function and tell how to change the settings.

Menu 1 settings (MENU1)

Menu 2 settings (MENU2)

Hardware settings (HARDWRE)

Print adjustment settings (ADJUST)

Configuration settings (CONFIG)

Head gap adjustment (GAP-ADJ)

Most selectable options simply change print features such as the type face and page format. Some options, however, must be selected correctly for the printer to work properly with hardware and software. Table 8-2 lists these options.

Table 8–2 Required options

Function	Item	Options
MENU1	EMULATE	The emulation selected for the printer and software must match. The emulation selected at printer setup (see Chapter 2, “Setting Up the Printer”) need not be changed unless you want to switch to a different emulation. The emulation assigned to MENU1 is the default setting when the printer is turned on. See “Changing MENU1 and MENU2 Options” on page 8-11.
MENU2	None	If MENU2 is used, the selected emulation must match that of the software. See “Changing MENU1 and MENU2 Options” on page 8-11.

Table 8–2 Required options (Continued)

Function	Item	Options
HARD-WRE	FORMAT BAUD-RT PROTOCL DSR DUPLEX	For a serial interface model, serial interface options selected for the printer must match those of the software or operating system. Otherwise, the printer will not print or will print incorrectly. See “Changing Hardware Options” on page 8-24.
ADJUST	None	If your software does not specify the top margin of the page, use the printer's default top-of-form setting: 25.4 mm (1 in) from the top of the paper. If the software does specify the top margin, change the default setting to 4.2 mm (1/6 in). See “Changing Print Adjustment Options” on page 8-28.

Changing MENU1 and MENU2 Options

MENU1 and MENU2 set print options for MENU1 and MENU2 on the control panel. In normal (nonsetup) mode, these menus are easily switched.

Table 8-3 lists MENU1 and MENU2 items and options in the order they are printed. For some emulations, some items are not defined and some options differ.

MENU1 is active when the printer is first turned on.

The printer emulation must match that of the software. Otherwise, the printer will not work correctly. If you regularly use two different emulations, assign the most frequently used to MENU1 and the other to MENU2. All settings available for MENU1 and MENU2 are optional. Some items and options differ with the emulation.

To determine which features specific software supports, refer to the software documentation.

The procedure for changing the MENU1 and MENU2 options follows Table 8-3.

Table 8–3 MENU1 and MENU2 options

MENU 1 or MENU2 item	Options	Description
<EMULATE>		Select the same emulation as that of the software.
	DPL24C+	Fujitsu DL-series printers (DPL24C PLUS command set)
	XL24E	IBM Proprinter XL24E printers
	ESC/P2	Epson printers using the ESC/P2 command set
		Note: Changing the emulation resets all MENU1 or MENU2 options to the default values set at shipment.
<FONT>		For each font below, the recommended pitch settings are given in parentheses. When you change the font, be sure to also change the pitch, if required.
	COUR 10	Courier, 10cpi
	PRSTG 12	Prestige Elite, 12cpi
	COMPRSD	Compressed font, 15,17,and 18cpi
	BOLDFCE	Boldface, Proportional
	PICA 10	Pica, 10cpi
	CORRESP	Correspondence,10cpi
	OCR-B	OCR-B, 10cpi
	OCR-A	OCR-A, 10cpi
	COUR-N	Courier Normal, 10cpi
	COUR-B	**Courier Bold, 10cpi**
	COUR-I	*Courier Italic, 10cpi*
	N.SAN-N	Nimbus Sans Normal, Prop.
	N.SAN-B	**Nimbus Sans Bold, Prop.**
	N.SAN-I	*Nimbus Sans Italic, Prop.*
	TIMLS-N	Timeless Normal, Proportional
	TIMLS-B	**Timeless Bold, Proportional**
	TIMLS-I	***Timeless Italic, Proportional***
	DOWNLD#	Font 0 or font 1 in the printer's download RAM

Table 8–3 MENU1 and MENU2 options (Continued)

MENU 1 or MENU2 item	Options	Description
<QUALITY>		Select the print quality that meets most needs.
	LETTER	Letter quality. Highest resolution, slowest print speed, invalid for compressed fonts.
	REPORT	Report quality. Lower resolution than letter quality, but prints at twice the speed. For double speed regardless of font, use the correspondence font because its quality is higher than report.
	DRAFT	Regular draft quality. Lower resolution than report quality, but prints at three times letter speed.
<PITCH>	## CPI	2.5, 3, 5, 6, 10, 12, 15, 17, 18, or 20 characters per horizontal inch (cpi)
	PROP SP	Proportional spacing (1/12 inch for a space)
<LINE SP>	## LPI	1, 2, 3, 4, 5, 6, 7, or 8 lines per vertical inch (lpi) 6 lpi: 3 lpi (double spacing): ABCD ABCD ABCD ABCD ABCD ABCD ABCD ABCD ABCD

Table 8–3 MENU1 and MENU2 options (Continued)

MENU 1 or MENU2 item	Options	Description
<CHAR-W>		If necessary, also change the spacing when 2 TIMES or 4 TIMES is selected.
	NORMAL	Standard character width: ABCD
	2 TIMES	Double character width: ABCD
	4 TIMES*1	Quadruple character width: ABCD
<CHAR-H>		If necessary, also change the line spacing when 2 TIMES or 4 TIMES is selected.
	NORMAL	Standard character height: ABCD abcd
	2 TIMES	Double character height: ABCD abcd
	4 TIMES*1	Quadruple character height: ABCD abcd

Table 8–3 MENU1 and MENU2 options (Continued)

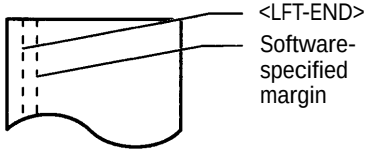
MENU 1 or MENU2 item	Options	Description
<ATTRIB>		Select an attribute to add emphasis. Only one attribute can be selected at a time.
	NONE	Standard characters (no attributes)
	ITALICS	*Italic printing*
	CONDNSD *1	Condensed printing
	SHADOW	Double printing with a slight offset
	BOLD	**Double printing at the same location**
<PAGE LG>		Specifies the page length in inches.
	## IN	DPL24C PLUS and IBM XL24E emulations: 3.0, 3.5, 4.0, 5.0, 5.5, 6.0, 7.0, 8.0, 8.5, 11.0 (letter size), 11.6 (A4 size), 12.0, 14.0, or 18.0 inches Epson ESC/P2 emulation: 4.0, 4.5, 5.0, ..., 11.0, 11.5, ..., 22.0 inches
<LFT-END>		Specifies the print start column for modifying the left margin. Printing starts at this column plus the software-specified left margin.
	## COLM	Column 1, 2, 3, ..., 41 

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Table 8–3 MENU1 and MENU2 options (Continued)

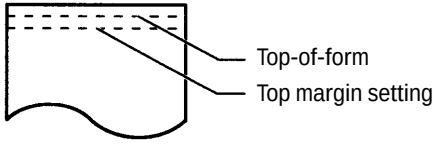
MENU 1 or MENU2 item	Options	Description
<TOP-MRG>		Specifies the number of space lines for the top margin. The resultant blank space is the <TOP-MRG> setting minus one line. The total size of the top margin is the preceding value plus these two settings: top-of-form (default = 1 inch) plus software-specified top margin. If using software to specify the top margin, use the default setting (one line) for <TOP-MRG>.
	## LINE1	1, 2, 3,4, 5, 6, 7, 8, 9, or 10 lines 

Table 8–3 MENU1 and MENU2 options (Continued)

MENU 1 or MENU2 item	Options	Description
<LANGUGE>		Selects a language. Two-pass means that diacritical marks are printed separately from letters printed without reduction. The first list of languages is common to all emulations. Subsequent lists show options specific to other emulations.
	USA	American English (same as code page 437)
	UK	British English
	GERMAN	German
	SWEDISH	Swedish
	PAGE437	Code page 437
	PAGE850	Code page 850
	PAGE860	Code page 860
	PAGE863	Code page 863
	PAGE865	Code page 865
	ECMA94	ECMA 94
	ISO8859	ISO 8859-1
	PG852	Code page 852
	PG852-T	Code page 852 two-pass
	PG855	Code page 855
	PG866	Code page 866
	HUNGARY	Hungarian
	HUNG-T	Hungarian two-pass
	SLOV	Slovenian
	SLOV-T	Slovenian two-pass
	POLISH	Polish
	POLSH-T	Polish two-pass
	MAZOWIA	Mazowian
	MAZOW-T	Mazowian two-pass
	LATIN2	Latin 2
	LATIN2-T	Latin 2 two-pass
	KAMENIC	Kamenicky
	KAMEN-T	Kamenicky two-pass
	TURKY	Turkish
	TURKY-T	Turkish two-pass
	CYRILIC	Cyrillic
	IBM437	IBM 437

Table 8–3 MENU1 and MENU2 options (Continued)

MENU 1 or MENU2 item	Options	Description
<LANGUGE> (continued)	IBM851	IBM 851
	ELOT928	ELOT 928
	PG-DHN	Code page DHN
	LATIN-P	Latin Polish
	ISO-LTN	ISO Latin
	LITHUA1	Lithuanian 1
	LITHUA2	Lithuanian 2
	MIK	
	MACEDON	Macedonian
	PG-MAC	
	ELOT927	
	ABG	
	ABY	
	DEC GR	
	GREEK 11	
	PG862	
	HBR-DEC	
	HBR-OLD	
	ISO-TUK	ISO Turkish
	*2	
	FRENCH	French
	ITALIAN	Italian
	SPANISH	Spanish
	DANISH1	Danish I
	DANISH2	Danish II
	FINNISH	Finnish
	NORWEGN	Norwegian
	*3	
	DANISH1	Danish I
	ITALIAN	Italian I
	SPANSH1	Spanish I
	SPANSH2	Spanish II
	JAPAN	Japanese
	NORWEGN	Norwegian
	LATIN A	Latin American
	FRENCH	French I
	DANISH2	Danish II
	KOREA	
	LEGAL	

Table 8–3 MENU1 and MENU2 options (Continued)

MENU 1 or MENU2 item	Options	Description
<CHR-SET>	SET 1 SET 2	IBM character set 1 IBM character set 2 If a downloaded (soft) font is used, the character set for that font overrides the <CHR-SET> setting.
	*3 ITALIC GRAPHIC	 Italic characters possible Graphics characters (ruled lines) possible
<AGM>*4	OFF ON	Specifies that alternate graphics mode (AGM) is off. The unit of line spacing is 1/72 or 1/216 of an inch. Specifies that alternate graphics mode (AGM) is on. The unit of line spacing is 1/60 or 1/180 of an inch.
<PRF-SKP>	 SKIP NO-SKIP	For continuous forms, specifies whether an inch is skipped over the perforation. If not using software to specify a bottom margin, select SKIP when using thick multipart forms. One inch is skipped over the perforation. The perforation is not skipped. Printing continues in the bottom margin of the page.
<WIDTH>	13.6 IN 11.4 IN 11.0 IN 8.0 IN	13.6-inch page width 11.4-inch page width 11-inch page width 8-inch page width
<ZEROFNT>*2	 NO-SLSH SLASH	Specifies whether the number zero is printed with a slash. The slash is useful for distinguishing the capital letter “O” from the number “0.” This setting is invalid for some software fonts. 0 Ø

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Table 8–3 MENU1 and MENU2 options (Continued)

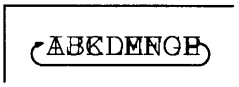
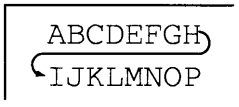
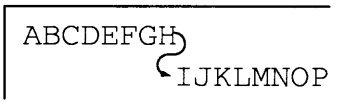
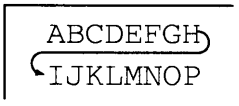
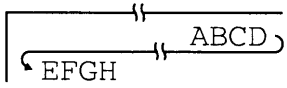
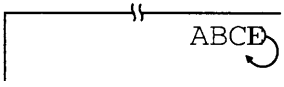
MENU 1 or MENU2 item	Options	Description
<DC3-CDE>*5		DC1 and DC3 codes are sent from the host system.
	ENABLE	Enables DC1 and DC3 codes. Any data received between DC3 and the next DC1 is ignored.
	DISABLE	Disables DC1 and DC3 codes. These codes are then ignored.
<CR-CODE>	CR ONLY	No line feed is added to a carriage return 
	CR & LF	A line feed is added to each carriage return. 
<LF-CODE>*2	LF ONLY	No carriage return is added to a line feed. This is the default when the XL24E emulation is selected. 
	LF & CR	A carriage return is added to each line feed. 

Table 8–3 MENU1 and MENU2 options (Continued)

MENU 1 or MENU2 item	Options	Description
<RGHTEND>	<u>WRAP</u>	End-of-line wrap. Causes a carriage return plus a line feed. 
	OVR-PRT	Characters are overprinted at the end of a line. 
<==END==>		Indicates the end of MENU1 items. Press FONT to print the first item, <EMULATE>. Press MENU to print the previous item, <RGHTEND>. Press ONLINE to reprint the <<FUNCTION>> menu.

*1 Unavailable for the IBM XL24E emulation
*2 Unavailable for the Epson ESC/P2 emulation
*3 Available only for the Epson ESC/P2 emulation
*4 Available only for the IBM XL24E emulation
*5 Available only for the DPL24C+ Emulation
*6 Underlined options are the factory default settings.

To change MENU1 or MENU2 options, check that continuous forms are loaded. Then do the following:

1. Enter setup mode.

   Place the printer offline and then press FONT and MENU simultaneously. Wait for the printer to stop printing. The <<FUNCTION>> menu is printed.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select MENU1 or MENU2.

   Repeatedly press LOCK to position the yellow arrow on the print head beneath either MENU1 or MENU2. Press FONT or MENU to select the function and print the <EMULATE> options.

```
<EMULATE>   DPL24C+   XL24E   ESC/P2
```

3. Select an emulation.

   Repeatedly press LOCK to position the cursor beneath the emulation required. Then do one of the following:

   - Press FONT to select the emulation and print the next MENU1 or MENU2 item. In Table 8-3, this item is <FONT>.
   - Press MENU to select the emulation and print <==END==>. Press MENU again to print the last MENU1 or MENU2 item. In Table 8-3, this item is <RGHTEND>. Using MENU is convenient when options to be changed are near the end of the list.

Important:
Whenever a new emulation is selected, all MENU1 or MENU2 options are reset to the default values for that emulation.

4. Change other MENU1 or MENU2 options as required.

   Press LOCK to move the yellow arrow on the print head to the option. Press FONT to select the option and print the next item

listed in Table 8-3. Press MENU to select the option and print the previous item.

5. Exit MENU1 or MENU2.

   Press ONLINE to exit the selected function and reprint the <<FUNCTION>> menu.

6. Either select another function or exit setup mode, saving changes.

   To exit setup mode and save changes, check that the yellow arrow on the print head is positioned beneath SAVE&END. Then press FONT or MENU.

Important:
To reset MENU1 and MENU2 to their default values, select DEFAULT. See the section called “Resetting Default Values” on page 8-37 DEFAULT does not reset options handled by HARDWARE, ADJUST, or CONFIG.

Changing Hardware Options

HARDWRE defines printer hardware conditions. If you are using the optional RS-232C serial interface, serial interface options must be set correctly for the printer to function with system hardware.

Table 8-4 lists HARDWRE items and options in the order they are printed. The procedure for changing hardware options follows Table 8-4.

Table 8–4 HARDWRE options

HARDWRE item	Options	Description
<PPR-OUT>		Specifies how the printer responds to a paper outage.
	CNTONLY	The printer detects paper outage only for continuous forms. Printing stops, and the PAPER OUT indicator (or ALARM indicator) glows amber.
	DETECT	The printer detects paper outage for both continuous forms and cut sheets. Printing stops, and the PAPER OUT indicator (or ALARM indicator) glows amber.
	IGNORE	The printer ignores paper outage for both continuous forms and cutsheets. Printing continues until no more data remains. No PAPER OUT (or ALARM) warning occurs.
		Note: For cut-sheet feeders, printing stops, and the PAPER OUT (or ALARM indicator) indicator glows amber, regardless of the <PPR-OUT> setting.
<PRT-DIR>	BI-DIR	The printer performs bidirectional printing in both directions while seeking the next print direction, this option is used for a shorter print time.
	UNI-DIR	The printer performs unidirectional printing. This feature is useful for printing vertical lines in tables even if vertical alignment is not adjusted. Printing is slower than bidirectional printing.
<BUZZER>		Enables or disables the printer status buzzer.
	ON	Buzzer is on. This setting is recommended. The printer beeps to indicate paper outages and other conditions.
	OFF	Buzzer is off.

Table 8–4 HARDWRE options (Continued)

HARDWRE item	Options	Description
<WORD-LG>		To determine the required word length, refer to processor documentation. Select 8-BIT when printing bit-image graphics.
	8 BIT	8-bit word length. Used by most processors
	7 BIT	7-bit word length (MSB = 0).
<BUFFER>		Print buffer / Download buffer
	NONE	0 bytes / 28K bytes
	256BYTE2	56 bytes / 127.75K bytes
	2KBYTE2	2K bytes / 126K bytes
	8KBYTE	8K bytes / 120K bytes
	24KBYTE	24K bytes / 104K bytes
	32KBYTE	32K bytes / 96K bytes
	96KBYTE	96K bytes / 32K bytes
	128KBYT	128K bytes / 0K bytes
		Note: With 128KB selected, the printer cannot accept any downloaded font data.
<INTRFCE>		Selects the type of the interface to the computer.
	PARALEL	Centronics parallel interface
	SERIAL	RS-232C serial interface
	AUTO-2S	Auto interface selection mode
	AUTO-4S	Both interfaces are ready for communication.
	AUTO-6S	Specify the timing regarding the selected interface as being inactive.
	AUTO-10S	
	AUTO-15S	
	AUTO-20S	

Serial interface items: The <FORMAT> to <DUPLEX> items are printed only when you select the RS-232C option for the <INTRFCE> item. Be sure that options selected on the printer match the operating system or software. Refer to related documentation.

Table 8–4 HARDWRE options (Continued)

HARDWRE item	Options	Description		
<FORMAT>		Data bits	Parity bit	Stop bits
	8 NONE 1	8	None	1
	8 NONE 2	8	None	2
	8 EVEN 1	8	Even	1
	8 ODD 1	8	Odd	1
	7 EVEN 1	7	Even	1
	7 ODD 1	7	Odd	1
	7 MARK 1	7	Mark	1
	7 SPACE1	7	Space	1
	7 EVEN 2	7	Even	2
	7 ODD 2	7	Odd	2
		The data format also includes a start bit. The mark is logical 1. The space is logical 0.		
<BAUD-RT>	150 300 600 1200 2400 4800 9600 19200	The baud rate is given in bits per second (bps). Select the same baud rate as for the processor or modem.		
<PROTOCL>		Indicates the data transmission protocol.		
	XON/XOF	DC1 and DC3 codes are used.		
	DTR	The Data Terminal Ready signal is used.		
	REV-CHL	The Reverse Channel signal is used.		
<DSR>	IGNORE	The printer ignores DSR.		
	DETECT	The printer detects DSR.		
<DUPLEX>	FULL	Simultaneous data transmission occurs in opposite directions.		
	HALF	Data transmission occurs in either direction, but not simultaneously.		
<CTS>	IGNORE	The printer ignores CTS.		
	DETECT	The printer detects CTS.		

Table 8–4 HARDWRE options (Continued)

HARDWRE item	Options	Description
<CD>	IGNORE DETECT	The printer ignores CD. The printer detects CD.
<==END==>		Indicates the end of the HARDWRE item list. Press FONT to print the first item, <PPR-OUT>. Press MENU to print the previous item, <CTS> for a serial interface or <INTRFCE> for a parallel interface. Press ONLINE to reprint the <<FUNCTION>> menu.

Note:
Underlined options are the factory default settings.

To change printer hardware options, check that continuous forms are loaded. Then do the following:

1. Enter setup mode.

   Place the printer offline and then press FONT and MENU simultaneously. Wait for the printer to stop printing and check that the <<FUNCTION>> menu is printed.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select HARDWRE.

   Repeatedly press LOCK to position the yellow arrow on the print head beneath HARDWRE. Press FONT to select HARDWRE and print the first item and its options.

```
<PPR-OUT>       CNTONLY   DETECT    IGNORE
```

3. Select an option.

   Press LOCK to move the yellow arrow to the option. Press FONT to select the option and print the next item.

Important:
To print the previous item, press MENU.

4. Repeat step (3) until all required options are changed.
5. Exit HARDWRE.

   Press ONLINE to exit the HARDWRE function and reprint the <<FUNCTION>> menu.
6. Either select another function or exit setup mode, saving changes.

   To exit setup mode and save changes, check that the yellow arrow on the print head is positioned beneath SAVE&END. Then press FONT or MENU.

Changing Print Adjustment Options

When printing using ruled paper, use ADJUST to adjust the print position so the printout fits the ruled lines. Use ADJUST to do the following:

- Set the top-of-form.
- Fine-adjust the top-of-form.
- Fine-adjust the left print start column (left margin).
- Adjust for cumulative line-spacing errors on a page.

For the first three tasks ADJUST provides separate items for cut sheets and continuous forms. The last task applies to cut sheets only.

The top edge of paper is the physical top of the page. The logical top of the page, as understood by the printer when loading paper, is called its top-of-form, where printing starts. Printing actually starts at the position obtained by adding the following:

Top-of-form; default value = 1 inch (25.4 mm)

Top margin specified by software

Printer's <TOP-MRG> (top margin) setting; default value = 1 line

Table 8-5 lists ADJUST items and options in the order they are printed. The procedure for changing the top-of-form follows Table 8-5.

Table 8–5 ADJUST options

ADJUST item	Options	Description
<CNT-ORG>		Sets the top-of-form for continuous forms in 1/6-inch (4.2-mm) increments from the top of the physical page.
	1/6 IN : 6/6 IN : 66/6 IN	The default setting is recommended if the top margin is not software specified. 1/6 inch is preferable when the top margin is software specified.
<CNTFINE>		Fine-adjusts the top-of-form for continuous forms.
	0/180, ..., 29/180	Increases the top-of-form in 1/180-inch (0.14-mm) increments.
<CUT-ORG>		Sets the top-of-form for single sheets in 1/6-inch (4.2-mm) increments from the top of the physical page.
	1/6 IN : 6/6 IN : 66/6 IN	The default setting is recommended if the top margin is not software specified; 1/6 inch is preferable when the top margin is software specified.
<CUTFINE>		Fine-adjusts the top-of-form for cut sheets.
	0/180, ..., 29/180	Increases the top-of-form in 1/180-inch (0.14-mm) increments.
<CNT-LFT>		Fine-adjusts the left print start position for continuous forms.
	-10/90, ..., 0, ..., 10/90	Moves the position left or right in 1/90-inch (0.28-mm) increments.
<CUT-LFT>		Fine-adjusts the left print start position for cut sheets.
	-10/90, ..., 0, ..., 10/90	Moves the position left or right in 1/90-inch (0.28-mm) increments.

Table 8–5 ADJUST options (Continued)

ADJUST item	Options	Description
<FCNTADJ>		Compensates for cumulative line-spacing errors resulting from front feeding continuous forms 22 inches.
	-22/360, ..., 0, ..., +22/360	Decreases or increases in 1/360-inch increments.
<RCNTADJ>		Compensates for cumulative line-spacing errors resulting from rear feeding continuous forms 22 inches.
	-22/360, ..., 0, ..., +22/360	Decreases or increases in 1/360-inch increments.
<CUT-ADJ>		Compensates for cumulative line-spacing errors resulting from feeding cut sheets 10 inches.
	-22/360, ..., 0, ..., +22/360	Decreases or increases in 1/360-inch increments.
<==END==>		Indicates the end of the ADJUST item list. Press FONT to print the first item, <CNT-ORG>. Press MENU to print the last item, <CUT-ADJ>. Press ONLINE to reprint the <<FUNCTION>> menu.

Note:
Underlined options are the factory default settings.

Before adjusting a print position, measure the amount of adjustment required for paper preprinted with ruled lines, and thus requiring precise print registration. To adjust a print position, check that continuous forms are loaded. The following procedure adjusts the top-of-form setting for cut sheets.

1. Enter setup mode.

   Place the printer offline and then press FONT and MENU simultaneously. Wait for the printer to stop printing and check that the <<FUNCTION>> menu is printed:

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select ADJUST.

   Repeatedly press LOCK to position the yellow arrow on the print head beneath ADJUST. Press FONT or MENU to select ADJUST and print the <CNT-ORG> options.

```
<CNT-ORG>       1/6IN   2/6IN   3/6IN   4/6IN   5/6IN   6/6IN   7/6IN   8/6IN   9/6IN
               10/6IN  11/6IN   ....
```

3. Select an option from 1/6 IN to 66/6 IN.

   Press LOCK to move the yellow arrow on the print head to the appropriate option. Press FONT to select the option. The <CNTFINE> item is then printed. If the top-of-form must be fine-adjusted, do so now. Otherwise, go to step 4.

4. Exit ADJUST.

   Press ONLINE to exit ADJUST and reprint the <<FUNCTION>> menu.

5. Exit setup mode, saving the top-of-form setting.

   Make sure that the yellow arrow is positioned beneath SAVE&END. Then press FONT or MENU.

6. Check the top-of-form setting.

   Load paper and print a sample page using software to check adjustment. If necessary, reenter setup mode and fine-adjust the top-of-form by changing the <CNTFINE> option.

Changing Configuration Options

CONFIG defines primary printer conditions for the following:

- Tearing off continuous forms
- Autoloading single sheets
- Directly decoding certain commands

Table 8-6 lists CONFIG items and options in the order they are printed. The procedure for changing the printer configuration options follows Table 8-6.

Table 8–6 CONFIG options

CONFIG item	Options	Description
<TEAROFF>		Specifies automatic or manual tearoff feed.
	MANUAL	Automatic tearoff feed is valid for continuous forms only. Tearoff feed can also be performed using the TEAR OFF button.
	AUTO	Automatic tearoff feed is invalid, and tearoff feed must be performed using the TEAR OFF button.
<TEARPOS>		Specifies the tearoff position.
	VISIBLE	Select this option when the software positions forms at the next top-of-form after printing the last data. The printer performs tearoff feed without adding a form feed when data transfer ends.
	ALWAYS	Select this option when the software stops after printing the last data. The printer performs tearoff feed after adding a forms feed when data transfer ends. Note: For both settings, tearoff positioning fails if the page length setting does not match the actual perforation spacing.
The <TEAR-EN> item is printed when AUTO is specified for the <TEAROFF> item.		

Table 8–6 CONFIG options (Continued)

CONFIG item	Options	Description
<TEAR-EN>	0 SEC 1 SEC 2 SEC 4 SEC 6 SEC	Specifies the offset time when tearoff is enabled. The offset time is measured from when data transfer stops to when the printer performs automatic tearoff feed. If the printer receives data again within the offset time, the printer does not perform automatic tearoff feed. In some application programs, data transfer may stop temporarily because of internal processing. This setting can prevent undesired tearoff feed by causing the printer to wait for up to 6 seconds each time data transfer stops.
<CUTLOAD>	AUTO BUTTON	Specifies how cut sheets are loaded using the front table. Cut-sheet paper is automatically loaded within a certain time after paper is loaded. Cut-sheet paper is loaded by pressing the LOAD button (or LOAD/UNLOAD button).
The <LOADTIM> item is printed when AUTO is specified for the <CUTLOAD> item.		
<LOADTIM>	0.5, 1.0, 1.5, 2.0, 2.5, 3.0 SEC	Autoload start time. Autoloading starts when this time passes after cut-sheet loading.
<DECODE>	DIRECT QUEUED	Specifies the timing of command decoding. The printer decodes certain commands right after receiving data. Example: ESC SUB I, ESC CR P (DPL24C+) ESC Q # (IBM XL24E) The printer decodes commands after storing all data (including commands) in the input buffer. This speeds data reception because the printer needs no decode time during data reception.
<ON-LOAD>	OFF LINE ONLINE	Printer status after loading paper in offline mode. Remains offline after paper loading. Goes into online after paper loading.

Table 8–6 CONFIG options (Continued)

CONFIG item	Options	Description
<LOCK>		Lock function of setup mode.
	NOTE	Enables all buttons on the control panel.
	SETUP	Disables the setup-related buttons to keep the printer from entering setup mode during the offline state.
	ALL	Disables the setup-related buttons and the LOCK, FONT, and MENU buttons.
<//S//>		Effectiveness of the Cut Sheet Feed Selection command (//S//)
	DISABLE	Makes the command ineffective.
	ENABLE	Makes the command effective. Note: The Cut Sheet Feed Selection command (//S//) changes the paper source to the paper table and waits for manual insertion of a cut sheet.
<CONT-PE>		Detects the end of continuous forms.
	TRACTOR	Paper end is detected by the sensor. Paper-end unprinted area: Front feeding continuous forms: About 31 mm Rear feeding continuous forms: About 88 mm
	EDGE	Regardless of paper end, printing continues near the edge of paper. Paper-end uprinted area: Front feeding continuous forms: About 4.2 mm Rear feeding continuous forms: About 8.5 mm
<==END==>		Indicates the end of the CONFIG item list. Press FONT to print the first item, <TEAROFF>. Press MENU to print the previous item, <CONT-PE>. Press ONLINE to reprint the <<FUNCTION>> menu.

Note:
Underlined options are the factory defaults settings.

To change printer configuration options, check that continuous forms are loaded. Then do the following:

1. Enter setup mode.

   Place the printer offline and then press FONT and MENU simultaneously. Wait for the printer to stop printing and check that the <<FUNCTION>> menu is printed.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select CONFIG.

   Repeatedly press LOCK to position the yellow arrow on the print head beneath CONFIG. Press FONT to select the CONFIG function and print the <TEAROFF> options.


```
<TEAROFF>       MANUAL   AUTO
```

3. Select an option.

   Press LOCK to move the yellow arrow to select an option. Press FONT to select the option and print the next item.

Important:
To print the previous item, press MENU.

4. Exit CONFIG.

   Press ONLINE and reprint the <<FUNCTION>> menu.

5. Either select another function or exit setup mode, saving changes.

   To exit setup mode and save changes, check that the yellow arrow on the print head is positioned beneath SAVE&END. Then press FONT or MENU.

Changing Head Gap Adjustment Options

The GAP-ADJ function adjusts the gap between the print head and the paper. This function is displayed only when the automatic paper thickness control (APTC) feature is built in.

Table 8–7 GAP-ADJ option

GAP-ADJ item	Options	Description
<AMOUNT>		Specifies the print head gap.
	AUTO	The print head gap is set automatically.
	1-PLY 2-PLY 3-PLY 4-PLY 5-PLY 6-PLY 7-PLY 8-PLY POS.A POS.B POS.C POS.D	Select one to eight-ply paper and auxiliary positions A, B, C, or D.
	MANUAL	Adjust the head gap using the paper thickness lever.
<==END==>		Indicates item termination.

Exiting and Saving

Exit setup mode and save any changes either by exiting setup mode immediately and selecting SAVE&END or by printing before exiting setup mode, selecting SELF-TST, and pressing ONLINE.

Either way, changed settings are saved as the printer's new default settings. These new default settings remain active until they are changed.

Important:
The only way to exit setup mode without saving changes is to turn off the printer. Turning the printer back on activates the previous default settings.

To exit setup mode and save changes using SELF-TST, see "Test Printing (SELF-TST)" on page 8-38. To exit setup mode and save changes using SAVE&END, do the following:

1. Print the <<FUNCTION>> menu.

   The <<FUNCTION>> menu should be the last printed line on the page. If it is not printed, press ONLINE to print it. If using SELF-TST or HEX-DUMP, press LOCK instead of ONLINE.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```


2. Select SAVE&END.

   Check that the yellow arrow on the print head is positioned beneath SAVE&END. Press FONT or MENU to select SAVE&END. The printer exits setup mode and goes back online (the ONLINE indicator glows green). Any changes made in setup mode are saved.

Resetting Default Values

When resetting the printers default values, default values set at shipment or default values for MENU1 and MENU2 set at shipment make sure to reset as described in the following sections.

1. Default values

   Default values activated when power is turned on are saved in the printer's permanent memory. The easiest way to reset them is to turn the printer off and then on. This procedure eliminates changes not to be saved.

2. Default values set at shipment

   For a list of the default values set at shipment, see "Printing a List of Options" on page 8-8. To reset the default values for all functions, do the following:

- Turn off the printer.
- While pressing LOCK, FONT, and MENU, turn the printer on. Continue pressing until the printer beeps.

3. Default values for MENU1 and MENU2 set at shipment

   Table 8-3 lists the default values for MENU1 and MENU2 set at shipment. Reset these values using the procedure described here. This procedure does not reset the printer's hardware, printing adjustment, and configuration options.

   - Enter setup mode.

     Place the printer offline and then press FONT and MENU simultaneously. Wait for the printer to stop printing and check that the <<FUNCTION>> menu is printed.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT    GAP-ADJ              (GAP-ADJ is printed only with APTC installed.)
```

   - Select DEFAULT.

     Repeatedly press LOCK to position the yellow arrow beneath DEFAULT. Press FONT or MENU to select DEFAULT. The printer reprints the <<FUNCTION>> menu. The default values in MENU1 and MENU2 are now reset.

   - Either select new options for MENU1 or MENU2 or exit setup mode, saving the default values set at shipment.

     To exit setup mode and save new default settings, check that the yellow arrow is positioned beneath SAVE&END. Then press FONT or MENU.

     For more information, see “Changing MENU1 and MENU2 Options” on page 8-11.

Using Diagnostic Functions

This section explains how to use the SELF-TST, HEX-DUMP, and V-ALMNT diagnostic functions.

Use these functions to check printing quality and diagnose printer problems. Note that HEX-DUMP is used mainly by programmers.

Test printing (SELF-TST)

SELF-TST prints test pages to check printer operation independent of the processor. It does not check the interface between the processor and printer.

SELF-TST prints the printer's firmware version number, resident emulations, and all characters available in the currently selected character set. If the DPL24C PLUS emulation is selected for MENU1, printing uses settings currently assigned to MENU1. If Prestige Elite 12 is selected, for example, the test uses Prestige Elite 12.

The following procedure assumes the printer is in setup mode. Check that continuous forms are loaded. Then do the following:

1. Print the <<FUNCTION>> menu.

   The <<FUNCTION>> menu should be the last printed line on the page. If it is not printed, press ONLINE. If using HEX-DUMP, press LOCK instead of ONLINE to print the <<FUNCTION>> menu.


```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select SELF-TST.

   Repeatedly press LOCK to position the yellow arrow on the print head beneath SELF-TST. Then press FONT or MENU. The printer selects SELF-TST and starts printing. A short help menu is printed at the top of the page, followed by the test. Note that the printer does not go online during printing.

3. Check the test page.

   To temporarily halt test printing, press FONT or MENU. To resume printing, press FONT or MENU again.

4. Exit SELF-TST.

   To exit SELF-TST and remain in setup mode, press LOCK. The <<FUNCTION>> menu is then reprinted.

To exit SELF-TST and return online, press ONLINE. The printer saves any changes you made while in setup mode and returns online.

Another way to start the test is to turn off the printer and then press LF/FF while turning the printer back on. As explained in "Test Printing" on page 8-38, this procedure is convenient when first setting up the printer.

Hex dump printing (HEX-DUMP)

HEX-DUMP prints data and commands in hexadecimal and abbreviated control code. The character set is IBM character set 2. HEX-DUMP is useful for checking whether the processor is sending the correct commands to the printer and whether the printer is executing commands correctly. It is also useful for debugging software programs.

To print hex dumps, check that continuous forms are loaded. Then do the following:

1. Enter setup mode.

   Place the printer offline and then press FONT and MENU simultaneously. Wait for the printer to stop printing and check that the <<FUNCTION>> menu is printed.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select HEX-DUMP.

   Repeatedly press LOCK to position the yellow arrow on the print head beneath HEX-DUMP. Then press FONT or MENU to select HEX-DUMP. The printer goes online and prints a header and a short help menu.

3. Print the hex dump.

   To start hex dump printing, send the file or program to the printer. The printer goes online and prints the hex dump. Figure 8-4 shows a sample hex dump.

Press FONT or MENU to temporarily halt hex dump printing. To resume hex dump printing, press the button again.

Important:
When hex dump printing stops, the printer remains online in setup mode (the ONLINE indicator glows green). To print another hex dump, send another file to the printer.

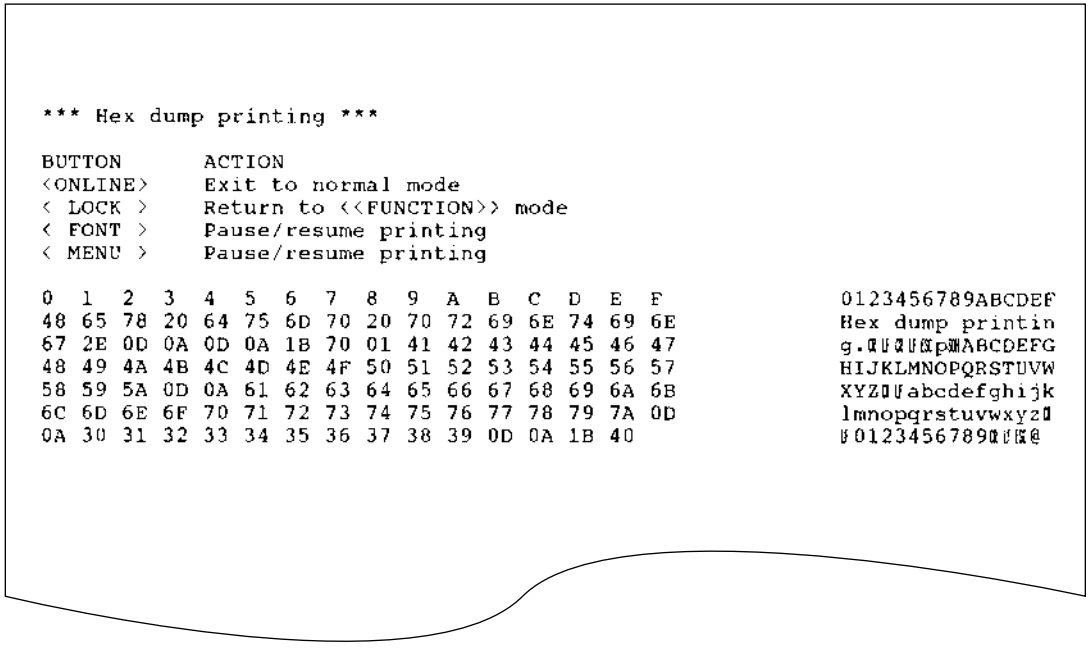


Figure 8–4 Sample hex dump

4. Exit the HEX-DUMP function.

   To remain in setup mode, press LOCK. The <<FUNCTION>> menu is then reprinted.

   To return to online normal mode, press ONLINE. If ONLINE is pressed while the hex dump is printing, printing continues, but the printer switches from hexadecimal format to standard characters.

You can also enter hex dump mode by turning off the printer and then turning it back on while pressing ONLINE and LF/FF. Continue pressing the buttons until the printer beeps.

Checking vertical print alignment (V-ALMNT)

V-ALMNT corrects vertical character displacement that may occur in bidirectional printing. Characters printed from left to right and right to left become misaligned as follows:

```
This example shows how printing looks
 when characters are vertically
misaligned. Note that the left
 margin is not straight.
```

Check that continuous forms are loaded. If possible, use forms at least 356 mm (14 inches) wide to avoid printing on the platen. For letter or A4 size, set WIDTH in MENU1 to 8 inches. See "Changing MENU1 and MENU2 Options" on page 8-11. Check and correct vertical alignment as follows:

1. Enter setup mode.

   Place the printer offline and then press FONT and MENU simultaneously. Wait for the printer to stop printing and check that the <<FUNCTION>> menu is printed.

```
<<FUNCTION>>
  SAVE&END  MENU1  MENU2  HARDWRE  ADJUST  CONFIG  DEFAULT  LIST   SELF-TST  HEX-DUMP
  V-ALMNT   GAP-ADJ                (GAP-ADJ is printed only with APTC installed.)
```

2. Select V-ALMNT.

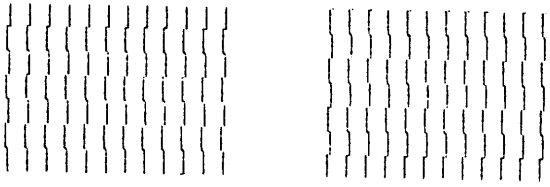
   Repeatedly press LOCK to position the yellow arrow on the print head beneath V-ALMNT. Then press FONT or MENU to select V-ALMNT. The printer starts printing rows of parallel bars at letter-quality speed.

3. Adjust vertical alignment as follows:

   Check the parallel bars. When they are aligned (not jagged), go to step (4). If they are offset to the left, repeatedly press FONT until

the bars are aligned. If the bars are offset to the right, repeatedly press MENU until they are aligned.

The first line in the following example is assumed to be printed from left to right:



Bars offset to the left Bars offset to the right

4. Adjust vertical alignment at correspondence speed.

   Press LOCK to switch from letter speed to correspondence speed.

   Check the bars and adjust as in step (3).

5. Adjust vertical alignment at draft speed.

   Press LOCK to switch from report speed to draft speed.

   Check the bars and adjust as in step (3).

6. Exit V-ALMNT.

   Press ONLINE to exit V-ALMNT and save the new vertical alignment settings. The printer exits setup mode and goes back online.

Important:
You can also exit setup mode to exit V-ALMNT.

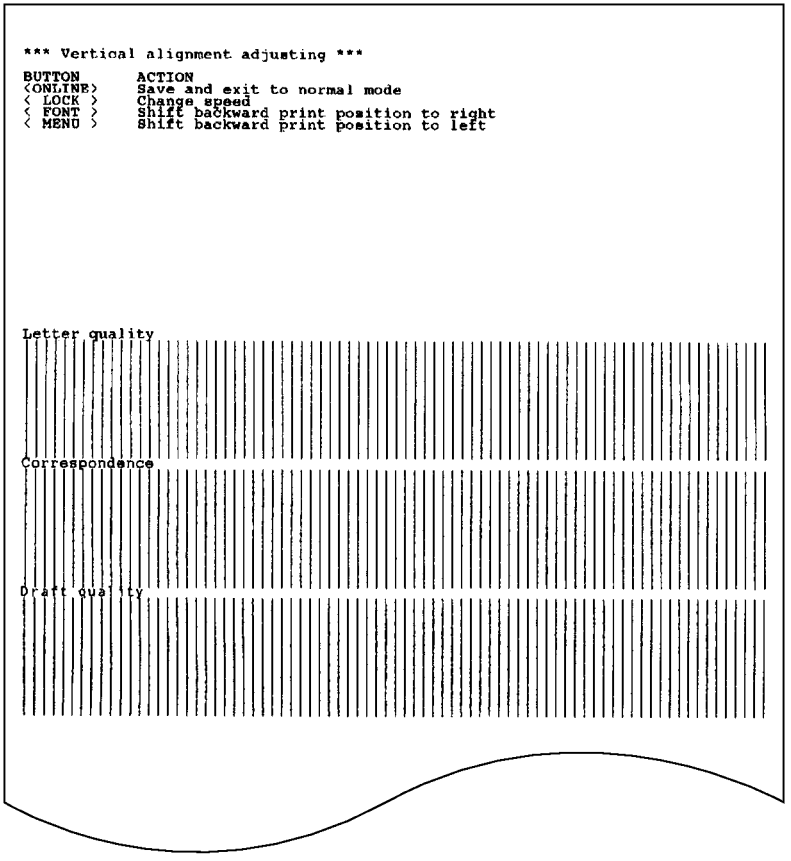


Figure 8–5 Correct vertical printing alignment

Setup Mode Reference

The flowchart in Figure 8-6 shows the setup mode for the Fujitsu DPL24C PLUS emulation. Following the flowchart, differences are listed for IBM Proprinter XL24E and Epson ESC/P2 emulations.

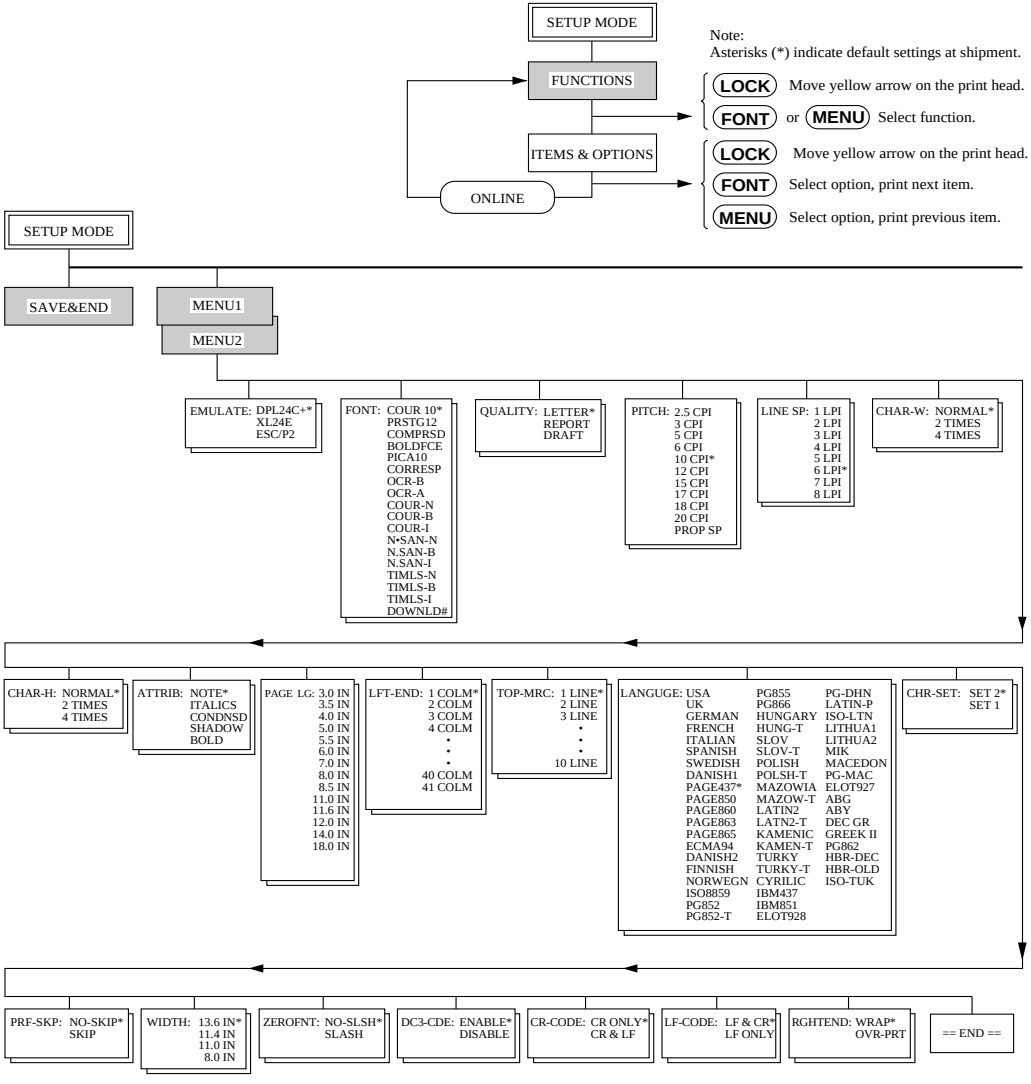


Figure 8–6 DPL24C PLUS emulation

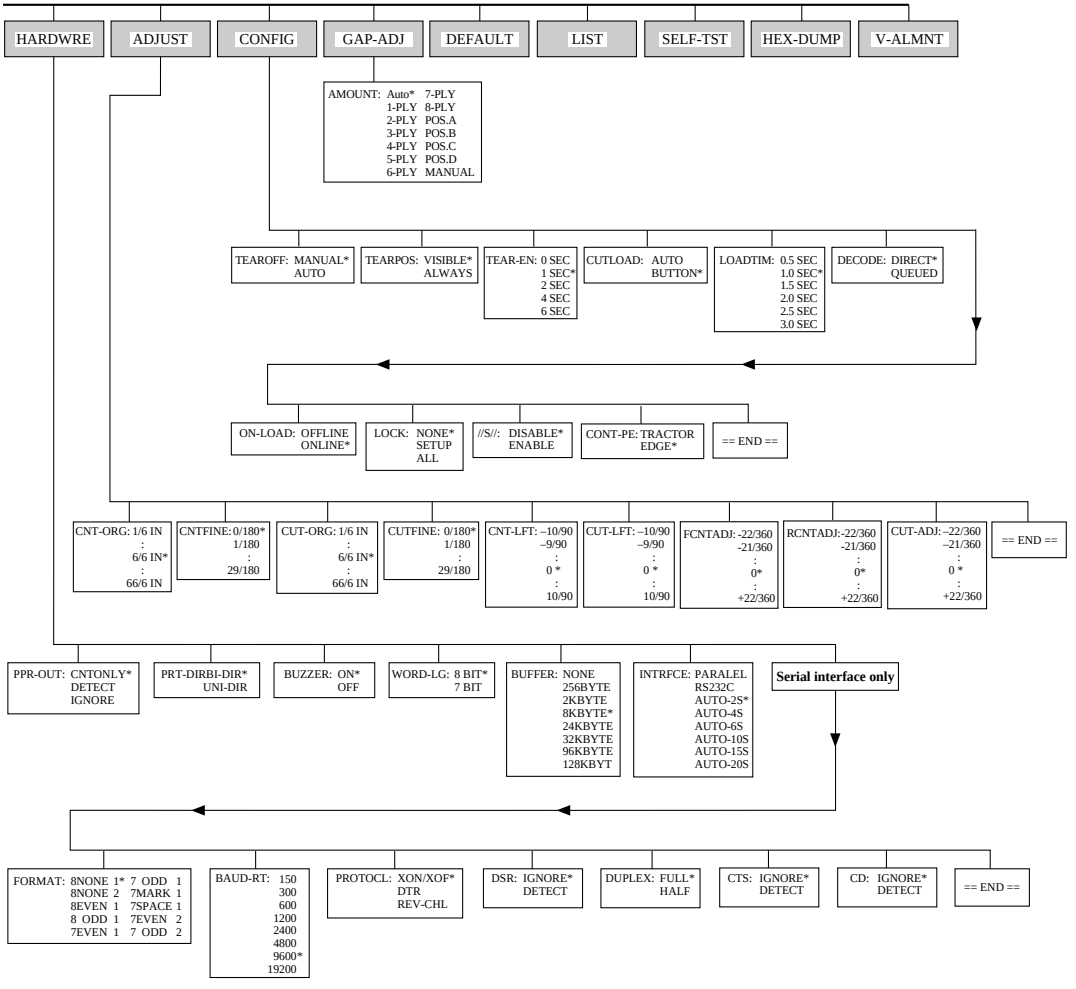
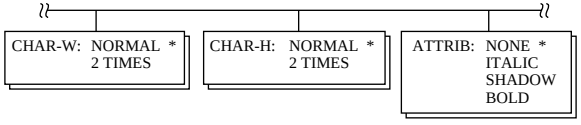


Figure 8–6 DPL24C PLUS emulation (cont.)

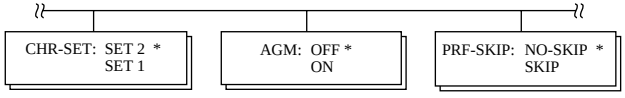
1. Differences in IBM Proprinter XL24E emulation

   In the IBM Proprinter XL24E emulation, MENU1 and MENU2 differ from the DPL24C PLUS emulation as follows:

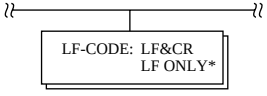
   Options:



   AGM:



   LF code:

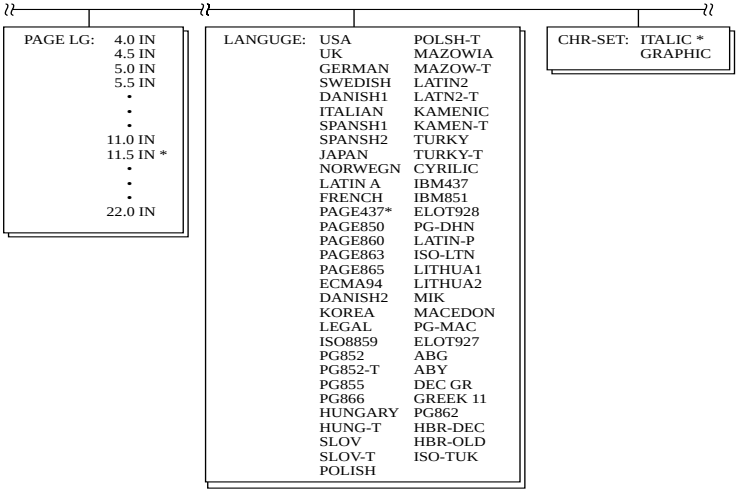


2. Differences in Epson ESC/P2 emulation

   In the Epson ESC/P2 emulation, MENU1 and MENU2 differ from the DPL24C PLUS emulation as follows:

   ZEROFNT and LF-CODE are not defined.

   Options:



Performing Online Setup

The procedures explained in the preceding sections use offline setup mode. Offline setup mode makes setting printer features one by one from the control panel easier by printing the desired options for checking.

In online setup mode, printer features are set via the processor instead of the printer control panel.

1. Place the printer in online setup mode in one of two ways:
   - Turn off the printer and then turn it back on while pressing MENU. Hold down the button until the printer beeps. (Printers with the LCD control panel can be placed in the online setup mode only in the next way.)
   - Issue printer command ESC e ONLINE. This command is valid in any emulation.
2. Send setup data from the processor in one of three ways:
   - Enter setup data directly from the processor keyboard before starting work. For MS-DOS, hold down Ctrl and type P; data entered from the keyboard is sent directly to the printer. When data entry is complete, hold down Ctrl again and type P. This procedure is useful when you are changing just a few settings.
   - Use an editor to prepare a setup data file and send the file to the printer using a command. For MS-DOS, use the COPY command. This procedure is useful when you are using settings repeatedly.
   - Write a program that enables interactive entry of setup data on the screen. This procedure is the most useful among the three. Check with your dealer regarding the latest available programs.
3. Exit online setup mode by sending EXIT as the last setup data.

CHAPTER 9

Notes on Safety

Note the following for safe use of the printer:

1. Dirt

   Keep the printer clean and free of obstacles at all times.

   Keep liquids, such as water and coffee, and metal objects, such as paper clips and pins, away from the printer.

2. Vibration and impact shock

   Protect the printer from excess vibration.

   Do not drop or strike the printer in such a way as to cause impact shock.

3. Long-term storage without use.

   Remove the power cable from the outlet.

4. Cleaning

   Clean the outer cover gently with a soft cloth moistened with water or a neutral detergent. Using a solvent such as benzene or thinner or other corrosive substances may damage or discolor the cover.

5. Print head

   Before printing, make sure that paper and a ribbon are loaded. Printing without these damages the print head and platen.

   Do not touch or force the print head when moving.

   Do not turn off power when the print head is moving.

   The print head becomes very hot during printing, and should not be touched until it becomes cool.

6. Ribbon cassette

   A Fujitsu ribbon cassette is recommended. Other cassettes may cause problems in operation or damage the print head. Fujitsu takes no responsibility for print head faults caused by such cassettes.

   Ensure that ribbons are not slack.

7. Paper

   Store and handle paper carefully.

   Avoid storing paper where humidity is high.

8. Installation conditions

   Install the printer away from direct sunlight and heat-generating equipment such as heaters.

   Install the printer away from very humid places or areas where dust contains oil or iron.

   Install the printer on the flat and stable table.

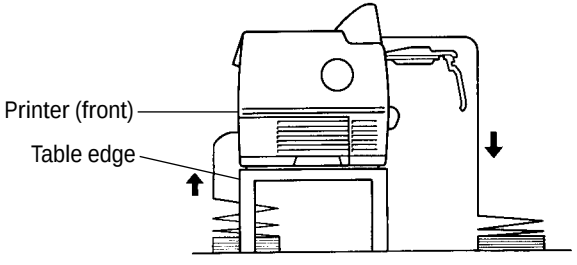
   Keep the area around the printer clean.

   Keep the printer vent clear.

   Check that the platen knob turns smoothly.

   To ensure smooth paper feeding, align the edges of the printer and table as shown in the figure below.

   After loading, check that continuous forms are straight.



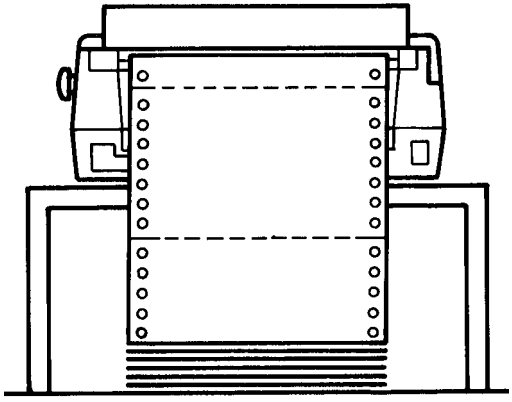


Figure 9–1 Correct continuous forms loading

9. Internal lock switch (not available in some countries.)

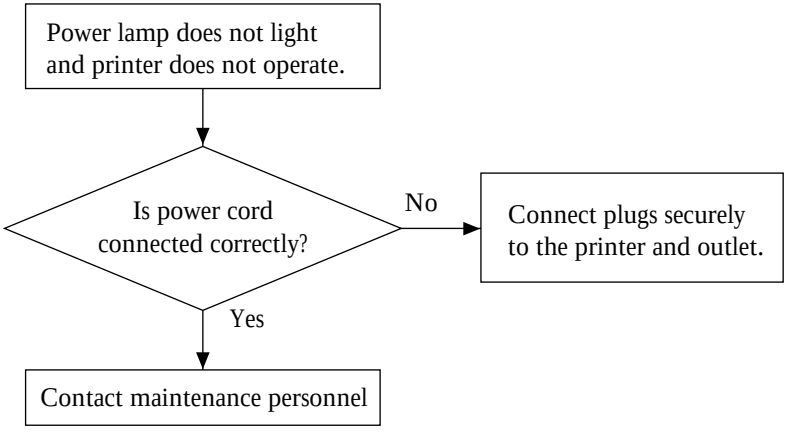
   If the top cover is opened during printing, the printer will automatically stop, and the remainder of the print data from the line being printed will be lost. Therefore, do not open the top cover during printing.

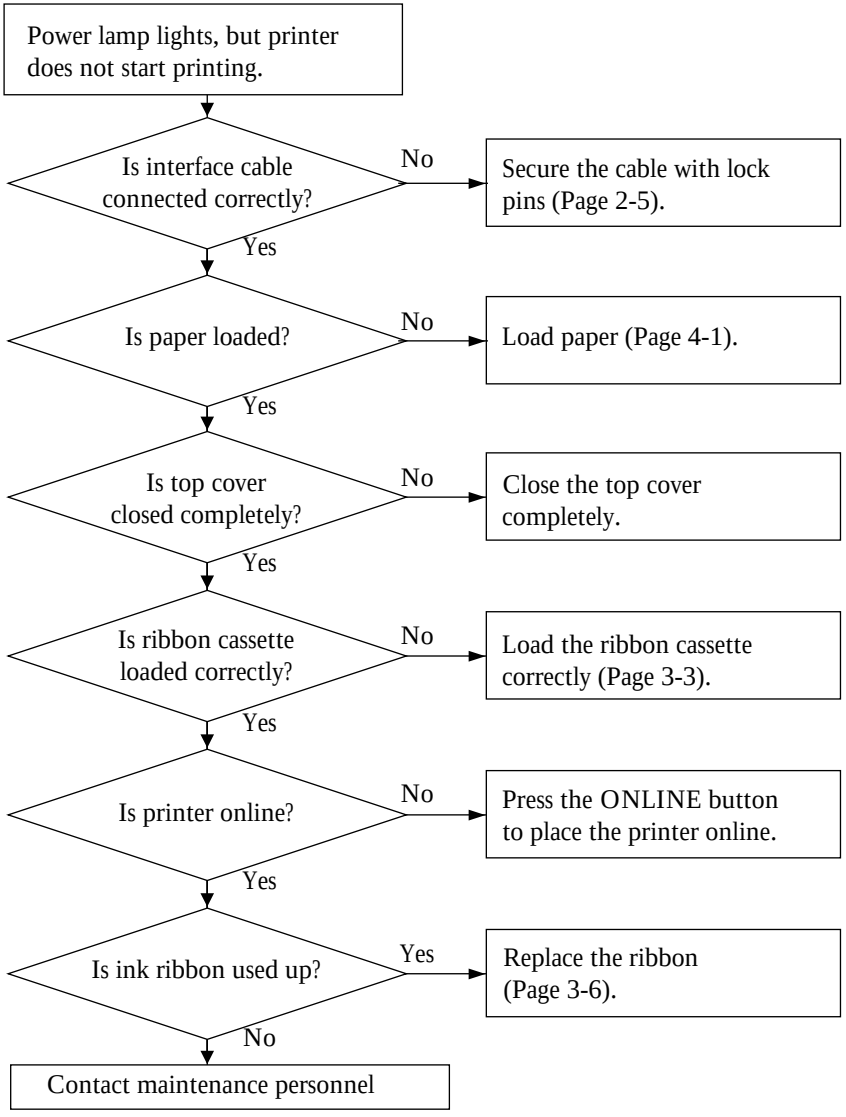
CHAPTER

10

Troubleshooting

To troubleshoot printer problems, follow the flowchart.




Power lamp lights, but printer does not start printing.
Is interface cable connected correctly?
No
Secure the cable with lock pins (Page 2-5).
Yes
Is paper loaded?
No
Load paper (Page 4-1).
Yes
Is top cover closed completely?
No
Close the top cover completely.
Yes
Is ribbon cassette loaded correctly?
No
Load the ribbon cassette correctly (Page 3-3).
Yes
Is printer online?
No
Press the ONLINE button to place the printer online.
Yes
Is ink ribbon used up?
Yes
Replace the ribbon (Page 3-6).
No
Contact maintenance personnel

CHAPTER 11

Daily Inspection and Maintenance

Inspection

To maintain stable print quality, check the following before and after printer use:

1. Prework check

   Is the area around the printer clean?

   Keep the area free of paper clips and dirt that could adversely affect printer operation.

2. Postwork check

   Is printer power off? Unplug the power cable from the outlet to be sure.

Maintenance

Note the following:

Wipe the cover with a damp, not dripping, cloth.

Use a neutral detergent if necessary.

Do not use thinner, alcohol, or other solvents to clean the printer.

CHAPTER 12

Specifications

Tables 12-1 and 12-2 list the printer specifications, Table 12-3 lists the installation conditions, and Figure 12-1 shows the outside dimensions of the printer.

Table 12–1 Printer specifications

Item		Specification	Remarks
Printing system		24-wire dot matrix	
Printing speed (DL6400 Pro)	Letter quality	140 cps	
	Correspondence quality	280 cps	
	Report quality	280 cps	
	Draft quality	420 cps	
Printing speed (DL6600 Pro)	Letter quality	180 cps	
	Correspondence quality	360 cps	
	Report quality	360 cps	
	Draft quality	540 cps	
Dot spacing		1/360 inch	Vertical and horizontal
Print character and number of columns	Pica pitch	136 characters/line	
Character dot configuration (body face)	Letter Quality	24 × 36	Vertical × horizontal
	Draft Quality	24 × 12	Vertical × horizontal

Table 12–1 Printer specifications (Continued)

Item		Specification	Remarks
Image printing	Number of print dots	4896 dots/line	
	Vertical and horizontal dot pitch	360 dpi	
	Vertical	Image printing by n/360 inch	

Table 12–2 Paper feed specifications

Item		Specification	Remarks
Paper feed	Continuous forms	Push-in tractor feed	
	Cut sheets	Friction feed	
Line spacing		1, 2, 3, 4, 5, 6, 7, or 8 lines per inch, programmable in 1/360 inch or various increments	

Table 12–3 Installation conditions

Item		Specification		Remarks
Dimensions	Width	600 mm		
	Depth	300 mm		
	Height	325 mm		
Weight		About 25 kg		
Input power	Voltage	100 to 120 VAC ± 10%, 220 to 240 VAC +6, –10%		
	Phases	Single		
	Frequency	50/60 Hz +2, –4%		
	Plug specification	Parallel two pins		
Power consumption	Voltage / Printer	100-120 VAC	220-240 VAC	
	DL6400 Pro	Ave. 330VA	Ave. 360VA	
		Max. 790VA	Max. 860VA	
	DL6600 Pro	Ave. 390VA	Ave. 420VA	
		Max. 1000VA	Max. 1060VA	
Heat		Ave. less than 160 Kcal/h		
Permissible temperature and humidity ranges	Installation status	Operating	Not operating	
	Temperature (°C)	5 to 35	0 to 50	Temperature gradient: 15°C/H or less
	Humidity (% RH)	30 to 80	10 to 80	
Accessory cable length		Power cable: 3 m		

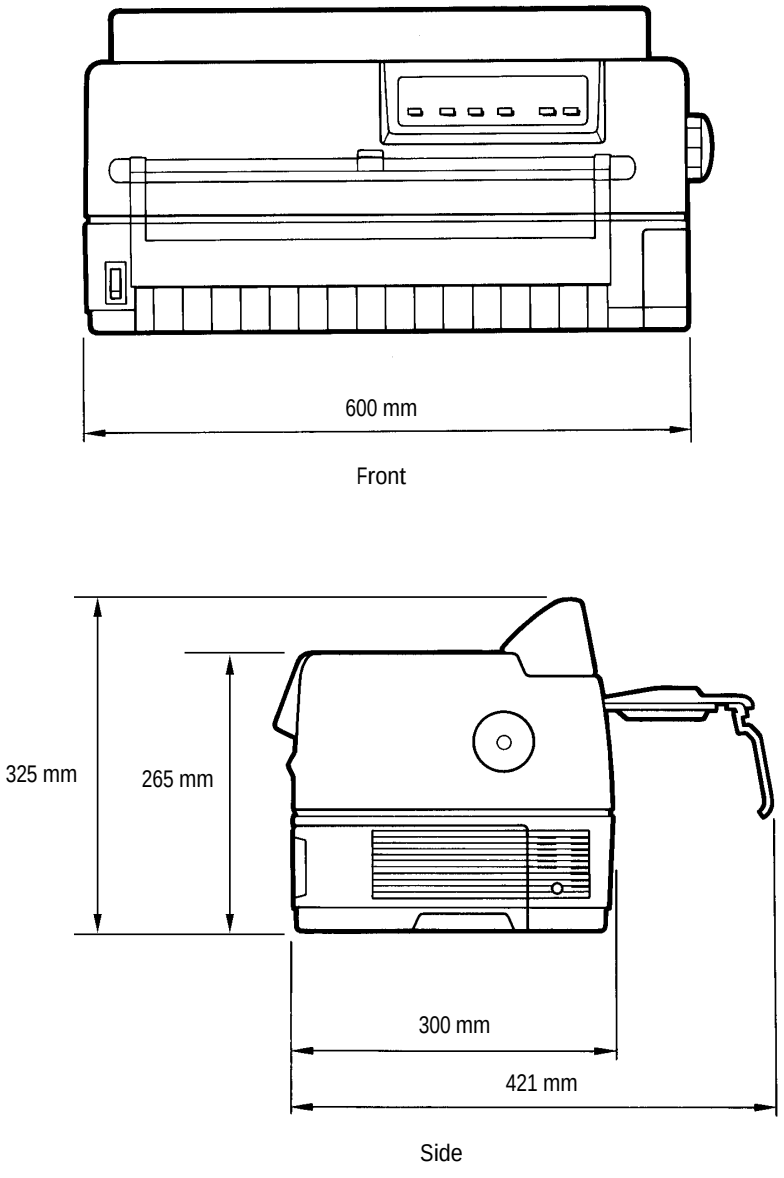


Figure 12–1 Dimensions

APPENDIX

A

Consumables and Options

This appendix lists printer consumables and options. Contact your dealer for information on ordering.

Table A–1 Consumables

Consumable	Order number
Ribbon cassette	CA02460-D115
Ribbon subcassette	CA02460-D215
Print head	D86B-1138-C363 for DL6400 Pro (Manual) D86B-1138-C369 for DL6400 Pro (APTC) D86B-1138-C353 for DL6600 Pro (Manual) D86B-1138-C359 for DL6600 Pro (APTC)

Table A–2 Options

Option	Order number
Cut-sheet feeder	CA02464-0051
Rear-sheet feeder	CA02464-0001 *1
Rear-sheet feeder secondary bin	CA02464-0031 *1
Stacker	CA02464-0081
Rear-feed tractor	CA02464-E602

*1 For DL6600 Pro only

APPENDIX

B

Command Sets

This appendix lists commands and parameters.

This printer has three resident command sets:

- Fujitsu DPL24C PLUS, native to Fujitsu DL series printers
- IBM Proprinter XL24E
- Epson ESC/P2

Select the same emulation on the printer as for the software. If the software supports more than one emulation, including DPL24C PLUS, select DPL24C PLUS for better performance.

Fujitsu DPL24C PLUS

This section lists printer commands for the DPL24C PLUS command set native to the printer.

Table B–1 Printer commands in the DPL24C PLUS command set

Function	Command
Print Mode Control	
Double-strike (bold) printing on	ESC G
Double-strike (bold) printing off	ESC H
Emphasized (shadow) printing on	ESC E
Emphasized (shadow) printing off	ESC F
Italic printing on	ESC 4
Italic printing off	ESC 5
Select character style and screening	ESC e S (n_1) (n_2)
*n*1 = 0: Normal	
1: Outline	
2: Shaded	
3: Outline and shaded	
4: Thin outline	
5: Thin shaded	
6: Thin outline and shaded	
*n*2 = 0: Transparent	
1: Light dot matrix	
2: Heavy dot matrix	
3: Vertical bars	
4: Horizontal bars	
5: Slants	
6: Back slants	
7: Lattice	
One-line double-width characters on	SO or ESC SO
One-line double-width characters off	DC 4
Double-width characters on or off (on: *n* = 1, off: *n* = 0)	ESC W (*n*)
Double-height characters on or off (on: *n* = 1, off: *n* = 0) This command does not adjust the line spacing.	ESC V (*n*)

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Multiwidth and height printing n_1 = 0: Not adjusted 1: Character spacing multiplied 2: Line spacing multiplied 3: Character spacing and line spacing multiplied h_1:Tens digit of horizontal multiple h_2:Units digit of horizontal multiple v_1:Tens digit of vertical multiple v_2:Units digit of vertical multiple ($0 \le h_1\ h_2$ or $v_1\ v_2 \le 11$)	ESC u (n) (h_1) (h_2) (v_1) (v_2)
Condensed characters on	SI or ESC SI
Condensed characters off	DC2
Subscript or superscript printing on (subscript: n = 1, superscript: n = 0)	ESC S (n)
Subscript and superscript printing off	ESC T
Select underline type n = 0: Single line 1: Bold single line 2: Extremely bold single line 3: Double line 4: Bold double line 5: Extremely bold double line	ESC e U (n)
Underline on or off (on: n = 1, off: n = 0)	ESC – (n)
Overline on or off (on: n = 1, off: n = 0)	ESC e o (n)
Select printing style This command combines printing styles. n is the sum of values of styles to be combined. n = 0: Pica 1: Elite 4: Condensed 8: Shadow 16: Bold 32: Double width 64: Proportional	ESC ! (n)

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Select image overlay type This command allows you to overlay a pattern on characters. *n* = 1: Light dot matrix 2: Heavy dot matrix 3: Vertical bars 4: Horizontal bars 5: Slants 6: Back slants 7: Lattice	ESC e I (*n*)
Image overlay printing on or off (on: *n* = 1, off: *n* = 0)	ESC e L (*n*)
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Elite (12 cpi)	ESC M
Pica (10 cpi)	ESC P
Proportionally spaced characters on or off (on: *n* = 1, off: *n* = 0)	ESC p (*n*)
Set character spacing to (*n* – 1)/120 inch ($1 \leq n \leq 127$)	ESC US (*n*)
Set character spacing to *n*/180 inch ($0 \leq n \leq 255$)	ESC h (*n*)
Set character offset to *n*/120 inch Canceled by CR or ESC x. ($0 \leq n \leq 63$) ($64 \leq n \leq 127$)	ESC DC1 (*n*)
Set character spacing to *n*/360 inch ($1 \leq n_1\ n_2\ n_3 \leq 999$) n_1, n_2, and n_3 are the hundreds, tens, and ones digits.	ESC e H (n_1) (n_2) (n_3)

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Vertical Control	
Line feed	LF
Reverse line feed	ESC LF
Form feed	FF
Advance paper *n*/180 inch ($0 \le n \le 255$)	ESC J (*n*)
Reverse paper *n*/180 inch ($0 \le n \le 255$)	ESC j (*n*)
Advance paper *n*/360 inch ($1 \le n_1\ n_2\ n_3 \le 999$) n_1, n_2 and n_3 are the hundreds, tens, and ones digits.	ESC e J (n_1) (n_2) (n_3)
Reverse paper *n*/360 inch ($1 \le n_1\ n_2\ n_3 \le 999$) n_1, n_2, and n_3 are the hundreds, tens, and ones digits.	ESC e j (n_1) (n_2) (n_3)
Set line spacing to 1/8 inch (8 lpi)	ESC 0
Set line spacing to *n*/180 inch ($0 \le n \le 255$)	ESC 3 (*n*)
Set line spacing to 7/60 inch	ESC 1
Set line spacing to *n*/60 inch ($0 \le n \le 127$)	ESC A (*n*)
Set line spacing to 1/6 inch (6 lpi) or to the value set with the ESC A command. The preset line spacing command is ESC A (*n*).	ESC 2
Set line spacing to *n*/360 inch ($1 \le n_1\ n_2\ n_3 \le 999$) n_1, n_2, and n_3 are the hundreds, tens, and ones digits.	ESC e V (n_1) (n_2) (n_3)
Set line spacing to *n*/360 inch ($1 \le n \le 255$)	FS 3 (*n*)

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs n_1 to n_k are ASCII values of print columns (at current character width) where tabs are to be set. ($1 \le n \le 255$) ($1 \le k \le 255$)	ESC D (n_1) ... (n_k) NUL
Move to print column n ($1 \le n \le 255$)	ESC HT (n)
Move dot column n/360 inch ($n = n_1 + n_2 \times 256$) The value below is for 136-column printers. ($0 \le n_1$ 255) ($0 \le n_2 \le 19$) ($0 \le n_2 \times 256 + n_1 \le 4895$)	ESC \$ (n_1) (n_2)
Horizontal relative move by n/360 inch ($-999 \le n_1\ n_2\ n_3 \le +999$) n_1, n_2, and n_3 are the hundreds, tens, and ones digits of the distance. s is a plus or minus (+ or –) sign.	ESC e R (s) (n_1) (n_2) (n_3)
Vertical tab execution	VT
Set vertical tabs n_1 to n_k ASCII are values of lines (at current line spacing) where tabs are to be set. ($1 \le n \le 255$) ($1 \le k \le 64$)	ESC B (n_1) ... (n_k) NUL
Move to line n ($1 \le n \le 255$)	ESC VT (n)
Page Formatting	
Set right margin ($0 \le n \le 255$)	ESC Q (n)
Set left margin ($0 \le n \le 255$)	ESC l (n)
Set perforation skip by n lines ($1 \le n \le 127$)	ESC N (n)
Perforation skip off	ESC O
Set page length to n lines ($1 \le n \le 127$)	ESC C (n) or ESC e c (n) or ESC FF (n)
Set page length to n inches ($1 \le n \le 22$)	ESC C NUL (n) or ESC e c NUL (n) or ESC FF NUL (n)
Set page length to n/360 inch ($n = n_1 \times 256 + n_2$) ($0 \le n_1\ n_2 \le 255$) ($1 \le n_1 \times 256 + n_2 \le 7920$)	ESC e f (n_1) (n_2)

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Character Set Control	
Select character set 1 Appendix D lists character sets.	ESC 7
Select character set 2 Appendix D lists character sets.	ESC 6
Select international character set n = 0: USA 1: France 2: Germany 3: United Kingdom 4: Denmark 1/Norway 5: Sweden/Finland 6: Italy 7: Spain 8: Denmark 2	ESC R (*n*)
Clear print buffer	CAN
Select printer	DC1
Deselect printer (ignore input)	DC3
Force most significant bit to 1	ESC >
Force most significant bit to 0	ESC =
Cancel control over most significant bit	ESC #
Select code table n = 0: Code page 437 1: Code page 850 2: Code page 860 3: Code page 863 4: Code page 865 5: ISO 8859-1/ECMA 94	ESC e C (*n*)
Select extended character by character number ($0 \le n_1\ n_2\ n_3 \le 664$) n_1, n_2, and n_3 are the hundreds, tens, and ones digits.	ESC e E (n_1) (n_2) (n_3)
Word Processing	
Reset word processing features	ESC x

COMMAND SETS

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Font Selection and Downloading Select font *m* with source and style set by *n* • *m* (bits 0 and 1: Font device selection) **Bit 1 / Bit 0 / Selection of font** 0 / 0 / Resident font 0 / 1 / Download font 1 / 0 / Resident font • *m* (bits 2 and 3: Specification of print quality) **Bit 3 / Bit 2 / Print quality** 0 / 0 / Original quality of font 0 / 1 / Letter quality (360 dpi) 1 / 0 / Correspondence quality (180 dpi) 1 / 1 / Draft quality (120 dpi) • *n* (bit 0 to 2: Specification of font number) (1) Resident fonts ***n* / *m (bit 1, 0)* = 0, 0 / *m (bit 1, 0)* = 1, 0** 0 / Courier 10 / OCR-B 1 / Prestige elite 12 / OCR-A 2 / Draft 3 / Compression 4 / Boldface PS 5 / Pica 10 6 / Correspondence 7 / High-speed draft	ESC % (*m*) (*n*)

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
(2) Download fonts *n* = 0: Download font 0 1: Download font 1	
Select print quality (font attributes) *n* = 0: Letter (360 × 180 dpi) 1: Correspondence (180 x 180 dpi) 2: Draft (120 × 180 dpi) 3: High-speed draft (90 x 180 dpi)	ESC e q (*n*)
Select spacing mode (font attributes) *n* = 0: Fixed-space font 1: Proportionally spaced font	ESC e s (*n*)
Select character spacing(*n*/360 inch, font attributes) $(0 \le n_1 \le 255)$ $(0 \le n_2 \le 255)$ $(n = n_1 \times 256 + n_2)$ Ex. *n* = 36: 10 spacing 30: 12 spacing 24: 15 spacing 21: 17 spacing	ESC e p (n_1) (n_2)
Condense or enlarge vertically (font attributes) *n* = 1: Executed 0: Not executed	ESC e A (*n*)
Select point size (*n*/1200 inch, font attributes) $(0 \le n_1 \le 255)$ $(0 \le n_2 \le 255)$ $(n = n_1 \times 256 + n_2)$ Ex. n = 166: 10 point	ESC e v (n_1) (n_2)
Select character style (font attributes) *n* = 0: Upright 1: Italic	ESC e i (*n*)
Select stroke weight (font attributes) *n* = 249: –7 (reserved) 251: –5 (reserved) 253: –3 (light) 0: 0 (medium) 3: 3 (bold) 5: 5 (black) 7: 7 (ultra black)	ESC e w (*n*)

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Select typeface (font attributes) *n* = 1: Pica 3: Courier (bitmap) 4: Nimbus Sans® 5: Timeless 6: Gothic 8: Prestige 23: Boldface 130: OCR-A 131: OCR-B 134: Courier (scalable)	ESC e t (*n*)
Select font by ID (font attributes)	ESC e F (*n*)

n	Quality	Spacing	Pitch	Point	Typeface
1	LQ	Fixed	10 cpi	12 pt	Courier (bitmap)
2	LQ	Fixed	12 cpi	10 pt	Prestige
3	LQ	PS	—	12 pt	Boldface
4	LQ	Fixed	10 cpi	12 pt	Pica
9	LQ	Fixed	10 cpi	12 pt	OCR-A
10	LQ	Fixed	10 cpi	12 pt	OCR-B
32	CQ	Fixed	10 cpi	12 pt	Courier (bitmap)
34	DQ	Fixed	12 cpi	11 pt	Gothic
128	LQ	PS	—	10 pt	Timeless
129	LQ	PS	—	10 pt	Timeless Italic
130	LQ	PS	—	10 pt	Timeless Bold
132	LQ	PS	—	10 pt	Nimbus Sans®
133	LQ	PS	—	10 pt	Nimbus Italic
134	LQ	PS	—	10 pt	Nimbus Bold
140	LQ	Fixed	10 cpi	10 pt	Courier (scalable)
141	LQ	Fixed	10 cpi	10 pt	Courier Bold (scalable)
142	LQ	Fixed	10 cpi	10 pt	Courier Italic (scalable)

LQ: Letter quality
CQ: Correspondence quality
PS: Proportional spacing
DQ: Draft quality

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

<table>
<tr><th>Function</th><th>Command</th></tr>
<tr><td>Copy resident font to download area
m = 0: Courier 10
1: Prestige Elite 12
2: Draft
3: Compression
4: Boldface PS
5: Pica 10
6: Correspondence
7: High-speed draft
n = 0: Download font 0
1: Download font 1</td><td>ESC : NUL (m) (n)</td></tr>
<tr><td>Create download font

m (bits 4 and 5: Specifies the quality of characters to be registered)
<table>
<tr><th>Bit 5</th><th>Bit 4</th><th>Font quality</th></tr>
<tr><td>0</td><td>1</td><td>Letter (360 dpi)</td></tr>
<tr><td>1</td><td>0</td><td>Correspondence (180 dpi)</td></tr>
<tr><td>1</td><td>1</td><td>Draft (120 dpi)</td></tr>
</table>
m (bit 0: External font number to be registered)
<table>
<tr><th>Bit 0</th><th>Font number selection</th><th>Font quality</th></tr>
<tr><td>0</td><td>Download font 0</td><td>At power-on, resident font 0 is automatically downloaded.</td></tr>
<tr><td>1</td><td>Download font 1</td><td>At power-on, resident font 1 is automatically downloaded.</td></tr>
</table></td><td>ESC & (m) (Cs) (Ce) (data)</td></tr>
</table>

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
m (bits 1, 2, 3, 6, 7) not used Cs (download start character of ASCII code) Ce (download end character of ASCII code) Decimal: $0 \le Cs, Ce < 255$ Hex: $00 \le Cs, Ce \le FF$ Precaution: $Ce \ge Cs$ data (data of more than one byte containing bitmap data) (Reserved)	ESC e D (*data*)
Bit-Image Graphics	
Graphics type *m* graphics	ESC * (*m*) (n_1) (n_2) (*data*)
Graphics type *m* graphics	ESC e b (*m*) (n_1) (n_2) (data) or ESC e B (*m*) (n_1) (n_2) (data)
Single-density graphics	ESC K (n_1) (n_2) (data)
Double-density graphics	ESC L (n_1) (n_2) (data)
High-speed double-density graphics	ESC Y (n_1) (n_2) (data)
Quadruple-density graphics	ESC Z (n_1) (n_2) (data)
360 dot-per-inch 24-pin graphics	FS Z (n_1) (n_2) (data)
Cut-Sheet Feeder Control	
Feed a sheet from bin 1	ESC EM 1
Feed a sheet from bin 2	ESC EM 2
Feed a sheet from bin 3	ESC EM E
Eject a page from the printer	ESC EM R
Select bin 1 for following pages	/ / 1 / /
Select bin 2 for following pages	/ / 2 / /
Select bin 3 for following pages	/ / E / /
Eject sheet at end of current page	/ / R / /
Change bins at next page	/ / C / /
Initialize Printer	
Reset printer	ESC @
Reset printer	ESC CR P
Initialize printer	ESC SUB I

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Bar Code Printing Print bar code b: Total number of parameters R: (fixed) *c:* Type of bar code	ESC DC4 (b) R (*c*) (*w*) (*h*) (*a*) (ch_1) ... (ch_n)

ASC II	Decimal	Hex	Type of bar code
1	49	31	Codabar (nw-7)
2	50	32	EAN 13
3	51	33	EAN 8
4	52	34	Code 3 to 9
5	53	35	Industrial 2 of 5
6	54	36	Interleaved 2 of 5
7	55	37	Matrix 2 of 5
A	65	41	UPC type A
B	66	42	Code 128
a	97	61	UPC type A with checkdigit printing

w: Width of narrow bar in 1/1440-inch units
h: Height of bar code
a: Defines check characters and OCR characters
ch_1 ... ch_n: Bar code characters

Print Option Control			
Friction feed selection			/ / F / /
Rear tractor feed selection			/ / T / /
Front tractor feed selection			/ / M / /
Cut sheet feed selection			/ / S / /
Host controlled paper path control	n=	"F": Friction "T": Rear Tractor "M": Front Tractor	ESC e T (*n*)
Automatic paper thickness control[*1]			ESC e P (n_1) (n_2) (n_3) (n_4)

COMMAND SETS

Table B–1 Printer commands in the DPL24C PLUS command set (Continued)

Function	Command
Miscellaneous	
Sound bell	BEL
Enable paper-out sensor	ESC 9
Ignore the paper-out sensor	ESC 8
Typewriter mode on or off (on: n = 1, off: n = 0)	ESC i (*n*)
Move print head to home position	ESC <
Unidirectional printing on or off (on: n = 1, off: n = 0)	ESC U (*n*)
Select CR code definition n = 0: CR = CR only 1: CR = CR + LF	ESC e r (*n*)
Select LF code definition n = 0: LF = LF only 1: LF = LF + CR	ESC e l (*n*)
Enter online setup mode	ESC e ONLINE (*data*)
Move print head (unit: 1/180 inch) $(0 \leq n_1 \leq 255)$ $(0 \leq n_2 \leq 255)$	ESC e h (n_1) (n_2)
Message display on LCD*2	ESC e M (n_1) (n_2) $D_1...D_n$
Message display time control*2	ESC e W (n_1) (n_2)

*1 The A.P.T.C control command is available only for a printer with the APTC feature.

*2 This command is available only for a printer with the LCD control panel.

Default settings at shipment

The following table lists printer commands that control options selectable in printer setup mode. Command parameters are omitted.

Table B–2 Default settings at shipment

Item	Options	Command
Emulation	DPL24C+, XL24E, ESC/P2	Controllable online
Font	COUR 10, PRSTG 12, COMPRSD, BOLDFCE, PICA 10, CORRESP, DOWNLD 0, DOWNLD 1	ESC e t ESC e F ESC %
Quality	LETTER, REPORT, DRAFT	ESC e q
Pitch	2.5, 3, 5, 6, 10, 12, 15, 17, 18, 20 CPI or PROP SP	ESC e p ESC e H ESC h ESC US ESC M ESC P ESC p ESC i ESC e s
Line space	1, 2, 3, 4, 5, 6, 7, 8, LPI	ESC e V ESC 0 ESC 1 ESC 2 ESC 3 ESC A
Character width	NORMAL, 2 TIMES, 4 TIMES	ESC W SO or ESC SO (DC4) ESC u ESC !
Character height	NORMAL, 2 TIMES, 4 TIMES	ESC V ESC u

Table B–2 Default settings at shipment (Continued)

Item	Options	Command
Attributes	NONE, ITALICS, CONDNSD, SHADOW, BOLD	ESC 4 (ESC 5) SI or ESC SI (DC2) ESC E (ESC F) ESC G (ESC H) ESC e i ESC !
Page length	3.0, 3.5, 4.0, 5.0, 5.5, 6.0, 7.0, 8.0, 8.5, 11.0, 11.6, 12.0, 14.0, 18.0 IN	ESC C NUL ESC FF NUL ESC C ESC FF
Left end	1, 2, 3, ... , 41 COLM	Controllable online
Top margin	1, 2, 3, ... , 10 LINE	Controllable online
Language	USA, UK, GERMAN, FRENCH, ITALIAN, SPANISH, SWEDISH, FINNISH, DANISH 1, DANISH 2, NORWEGN, PAGE437, PAGE850, PAGE860, PAGE863, PAGE865 ISO8859, ECMA94	ESC R ESC e C
	PG852, PG852-T, PG855, PG866, HUNGARY, HUNG-T, SOLV, SOLV-T, MAZOWIA, MAZOW-T, POLISH, POLSH-T, LATIN2, LATIN2-T,KAMENIC, KAMEN-T, TURKY, TURKY-T, CYRLIC, IBM437, IBM851, ELOT928, PG-DHN, LATIN-P, ISO-LTN, LITHUA1, LITHUA2, MIK, MACEDON, PG-MAC, ELOT927, ABG. ABY. DEC GR. GREEK 11. HBR-DEC, HBR-OLD, ISO-TUK	Not controllable by commands
Character set	SET 1, SET 2	ESC 7 ESC 6
Perforation skip	SKIP, NO-SKIP	ESC N (ESC O)
Paper width	8.0 IN, 11.0 IN, 11.4 IN, 13.6 IN	Controllable online

Table B–2 Default settings at shipment (Continued)

Item	Options	Command
Zero font	NO-SLSH, SLASH	Controllable online
DC1/DC3	ENABLE, DISABLE	Controllable online
CR code	CR-ONLY, CR & LF	ESC e r
LF code	LF-ONLY, LF & CR	ESC e l
Right-end wrap	WRAP, OVR-PRT	Controllable online
Paper outage	CNTONLY, DETECT	ESC 9 (ESC 8)
Print direction	BI-DIR, UNI-DIR	ESC U

Underlined option: Default setting at shipment
Command in parentheses ( ): Cancel command

IBM Proprinter XL24E Emulation

This section lists printer commands for the IBM Proprinter XL24E emulation. Asterisks in the "Function" column indicate extended commands not supported by the original printer. .

Table B–3 Printer commands for the IBM Proprinter XL24E emulation

Function	Command
Print Mode Control	
Double-strike (bold) printing on	ESC G
Double-strike (bold) printing off	ESC H
Emphasized (shadow) printing on	ESC E
Emphasized (shadow) printing off	ESC F
One-line double-width characters on	SO or ESC SO
One-line double-width characters off	DC4
Double-width characters on or off (on: $n = 1$, off: $n = 0$)	ESC W (n)
Double-height/double-width characters $n_1 = 4$, $n_2 = 0$, $m_1 = 0$, $m_2 = 0$ m_3 controls character height and line spacing:	ESC [@ (n_1) (n_2) (m_1) ... (m_4)

m_3	Height	Spacing
0	Unchanged	Unchanged
1	Normal	Unchanged
2	Double	Unchanged
16	Unchanged	Single
17	Normal	Single
18	Double	Single
32	Unchanged	Double
33	Normal	Double
34	Double	Double

m_4 controls character width:

m_3	Height
0	Unchanged
1	Normal
2	Double

Table B–3 Printer commands for the IBM Proprinter XL24E emulation (Continued)

Function	Command
Condensed characters on	SI or ESC SI
Condensed and elite characters off	DC2
Subscript or superscript printing on (subscript: n = 1, superscript: n = 0)	ESC S (n)
Subscript and superscript printing off	ESC T
Underline on or off (on: n = 1, off: n = 0)	ESC - (n)
Overline on or off (on: n = 1, off: n = 0)	ESC_(n)
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Elite characters on	ESC :
Proportionally spaced characters on or off (on: n = 1, off: n = 0)	ESC P (n)
Vertical Control	
Line feed	LF
Form feed	FF
Advance paper n/216 inch ($1 \le n \le 255$)	ESC J (n)
Advance paper n/180 inch (in AG mode) ($1 \le n \le 255$)	ESC J (n)
Set line spacing to 1/8 line	ESC 0
Set line spacing to 7/72 inch	ESC 1
Set line spacing to n/216 inch ($0 \le n \le 255$)	ESC 3 (n)
Set line spacing to n/180 inch (in AG mode) ($0 \le n \le 255$)	ESC 3 (n)
Preset line spacing to n/72 inch ($1 \le n \le 255$)	ESC A (n)
Preset line spacing to n/60 inch (in AG mode) ($1 \le n \le 255$)	ESC A (n)
Set line spacing to 1/6 inch or to the value preset by line spacing command ESC A (n)	ESC 2
Change graphics line spacing base to 1/216 or 1/180 inch (for ESC J and ESC 3) $m_1 = 4$, $m_2 = 0$ $0 \le t_1 \le 255$, $0 \le t_2 \le 255$, $t_3 = 0$, $t_4 = 180$ or 216	ESC [\ (m_1) (m_2) (t_1) ... (t_4)

Table B–3 Printer commands for the IBM Proprinter XL24E emulation (Continued)

Function	Command
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs	ESC D (n_1) ...(nk) NUL
The values of $n_1$to n_k are ASCII values of the print columns (at the current character width) where tabs are to be set.	
($1 \le n \le 255$) ($1 \le k \le 28$)	ESC D NUL
Clear all horizontal tabs	ESC d (n_1) (n_2)
Move print position right by n/120 inch	
($0 \le n_1, n_2 \le 255$) ($n = n_1 + n_2 \times 256$)	VT
Vertical tab execution	ESC B (n_1)...(n_k) NUL
Set vertical tabs	
The values of n_1 to n_k in this command are the ASCII values of the lines (at the current line spacing) where tabs are to be set.	
($1 \le n \le 255$) ($1 \le k \le 64$)	ESC B NUL
Clear all vertical tabs	ESC R
Reset tabs to default values	
Page Formatting	
Set left margin at column n and right	ESC X (n) (m)
margin at column m ($0 \le n, m \le 255$)	
Set perforation skip to n lines ($1 \le n \le 255$)	ESC N (n)
Perforation skip off	ESC O
Set page length to n lines ($1 \le n \le 255$)	ESC C (n)
Set page length to n inches ($1 \le n \le 22$)	ESC C NUL (n)
Set top of form	ESC 4

Table B–3 Printer commands for the IBM Proprinter XL24E emulation (Continued)

Function	Command
Character Set Control	
Select character set 1	ESC 7
Select character set 2	ESC 6
Print $n_1 + n_2 \times 256$ characters from all-character set (chars.: Codes of characters to print, $0 \le chars. \le 255$)	ESC \ (n_1) (n_2) (*chars.*)
Print codes of character from all-character set (char.: Character to print, $0 \le char. \le 255$)	ESC ^ (char.)
Select code page table *n* $(0 \le n_1, n_2 \le 255)$ $(n = n_1 + n_2 \times 256)$	ESC [T (n_1) (n_2) 0 0 (c_1) (c_2)
Clear input buffer	CAN
Select printer	DC1
Deselect printer (ignore input)	ESC Q #
Downloading	
Select resident or download font Ex. n = 0: Resident Draft 2: Resident Courier 4: Download Draft 6: Download Courier	ESC I (*n*)
Create download font	ESC = (n_1) (n_2) ID (m_1) (m_2) (*data*)

C_1	C_2	Code Page ID
0	0	Ignore command
1	181	Code page 437
3	82	Code page 850
3	92	Code page 860
3	95	Code page 863
3	97	Code page 865

Table B–3 Printer commands for the IBM Proprinter XL24E emulation (Continued)

Function	Command
Bit-Image Graphics	
Single-density graphics	ESC K (n_1) (n_2) (*data*)
Double-density graphics	ESC L (n_1) (n_2) (*data*)
High-speed double-density graphics	ESC Y (n_1) (n_2) (*data*)
Quadruple-density graphics	ESC Z (n_1) (n_2) (*data*)
High-resolution graphics	ESC [g (n_1) (n_2) (*m*) (*data*)
Select graphics mode (in AG mode only)	ESC * (*m*) (c_1) (c_2) (*data*)
Cut-Sheet Feeder Control*	
Feed a sheet from bin 1*	ESC EM 1
Feed a sheet from bin 2*	ESC EM 2
Feed a sheet from bin 3*	ESC EM E
Eject a page from the printer*	ESC EM R
Select bin 1 for following pages*	/ / 1 / /
Select bin 2 for following pages*	/ / 2 / /
Select bin 3 for following pages*	/ / E / /
Eject sheet at end of current page*	/ / R / /
Change bins at next page*	/ / C / /
Print Option Control	
Friction feed selection*	/ / F / /
Rear tractor feed selection*	/ / T / /
Front tractor feed selection*	/ / M / /
Cut sheet feed selection*	/ / S / /
Miscellaneous	
Sound the bell	BEL
Unidirectional printing on or off (on: *n* = 1, off: *n* = 0)	ESC U (*n*)
Add carriage return to all line feeds (on: *n* = 1, off: *n* = 0)	ESC 5 (*n*)
Printer offline	ESC j
Enter online setup mode*	ESC e ONLINE (*data*)
Select default settings	ESC [K (n_1) (n_2) (*i*) (*ID*) (p_1) (p_2)

EPSON ESC/P2 Emulation

The following table lists printer commands for the Epson ESC/P2 emulation. Asterisks in the "Function" column indicate extended commands not supported by the original printer.

Table B–4 Printer commands for the Epson ESC/P2 emulation

Function	Command
Print Mode Control	
Double-strike (bold) printing on	ESC G
Double-strike (bold) printing off	ESC H
Emphasized (shadow) printing on	ESC E
Emphasized (shadow) printing off	ESC F
Italic printing on	ESC 4
Italic printing off	ESC 5
Select character style *n* = 0: Normal 1: Outlined 2: Shaded 3: Outlined and shadowed	ESC q (*n*)
One-line double-width characters on	SO or ESC SO
One-line double-width characters off	DC4
Double width characters on or off (on: *n* = 1, off: *n* = 0)	ESC W (*n*)
Double height characters on or off (on: *n* = 1, off: *n* = 0)	ESC w (*n*)
Condensed characters on	SI or ESC SI
Condensed characters off	DC2
Subscript or superscript printing on (subscript: *n* = 1, superscript: *n* = 0)	ESC S (*n*)
Subscript and superscript printing off	ESC T
Underline on or off (on: *n* = 1, off: *n* = 0)	ESC - (*n*)

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Select line n_1 = 3, n_2 = 0, d_1 = 1 d_2 = 0: Ignore command 1: Underline 2: Strike through 3: Overscore d_3 = 0 or 4: Cancel line selection 1: Single line 2 or 3: Double line 5: Single dotted line 6 or 7: Double dotted line	ESC (- (n_1) (n_2) (d_1) (d_2) (d_3)
Select printing style This command combines printing styles. *n* is the sum of values of styles to be combined. *n* = 0: Pica 1: Elite 2: Proportional spacing 4: Condensed 8: Shadow 16: Bold 32: Double width 64: Italics 128: Underline	ESC ! (*n*)

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Set elite	ESC M
Set pica	ESC P
Set 15 cpi	ESC g
Proportionally spaced characters on or off (on: $n = 1$, off: $n = 0$)	ESC p (n)
Set intercharacter spacing to n/120 inch (for draft) or n/180 inch (for letter and proportional) ($0 \le n \le 127$)	ESC SP (n)
Set character spacing to $(n_1 + n_2 \times 256)/360$ inch ($0 \le n_1 \le 255$) ($0 \le n_2 \le 4$)	ESC c (n_1) (n_2)
Set character spacing to n/3600 inch $n_1 = 1$, $n_2 = 0$ d = 10 to 19: 10/3600 inch = 1/360 inch d = 20 to 29: 20/3600 inch = 1/180 inch d = 30 to 39: 30/3600 inch = 1/120 inch d = 40 to 49: 40/3600 inch = 1/90 inch d = 50 to 59: 50/3600 inch = 1/72 inch d = 60 to 69: 60/3600 inch = 1/60 inch	ESC (U (n_1) (n_2) (d)
Vertical Control	
Line feed	LF
Form feed	FF
Advance paper n/180 inch ($1 \le n \le 255$)	ESC J (n)
Set line spacing to 1/8 inch	ESC 0
Set line spacing to n/180 inch ($0 \le n \le 255$)	ESC 3 (n)
Set line spacing to n/60 inch ($0 \le n \le 127$)	ESC A (n)
Set line spacing to 1/6 inch	ESC 2
Set line spacing to n/360 inch ($0 \le n \le 255$)	ESC + (n)

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs The values of n1to nk in this command are the ASCII values of the print columns (at the current character width) where tabs are to be set. ($1 \le n \le 255$) ($1 \le k \le 32$)	ESC D (n_1) ... (n_k) NUL
Move print position n/120 inch (for draft)[*1] or n/180 inch (for letter)[*1] right from left margin ($n = n_1 + n_2 \times 256$)	ESC $ (n_1) (n_2)
Move print position n/120 inch (for draft)[*1] or n/180 inch (for letter) left or right from the current position ($n = n_1 + n_2 \times 256$)	ESC \ (n_1) (n_2)
Vertical tab execution	VT
Set vertical tabs The values of n1to nk are ASCII values of lines (at the current line spacing) where tabs are to be set. ($1 \le n \le 255$) ($1 \le k \le 16$)	ESC B (n_1) ...(n_k) NUL
Move to dot line ($d_1 + d_2 \times 256$)/360 inch[*1] $n_1 = 2$, $n_2 = 0$ ($0 \le d_1 \le 255$) ($0 \le d_2 \le 127$)	ESC (V (n_1) (n_2) (d_1) (d_2)
Vertical relative move by ($d_1 + d_2 \times 256$)/360 inch[*1] $n_1 = 2$, $n_2 = 0$ ($0 \le d_1 \le 255$) ($0 \le d_2 \le 127$) $-32768 \le d_1 + d_2 \times 256 \le 32768$	ESC (v (n_1) (n_2) (d_1) (d_2)

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Page Formatting	
Set right margin to column *n* $(1 \le n \le 255)$	ESC Q (*n*)
Set left margin to column *n* $(0 \le n \le 255)$	ESC l (*n*)
Set top and bottom margins $n_1 = 4, n_2 = 0$ Top margin = $(t_1 + t_2 \times 256)/360$ inch[*1] $(0 \le t_1 \le 255)$ $(0 \le t_2 \le 127)$ Bottom margin = $(b_1 + b_2 \times 256)/360$ inch[*1] $(0 \le b_1 \le 255)$ $(0 \le b_2 \le 127)$	ESC (c (n_1) (n_2) (t_1) (t_2) (b_1) (b_2)
Set perforation skip by *n* lines $(1 \le n \le 127)$	ESC N (*n*)
Perforation skip off	ESC O
Set page length to *n* lines $(1 \le n \le 127)$	ESC C (*n*)
Set page length to *n* inches $(1 \le n \le 22)$	ESC C NUL (*n*)
Set page length to $(d_1 + d_2 \times 256)/360$ inch[*1] $n_1 = 2, n_2 = 0$ $(0 \le d_1 \le 255)$ $(0 \le d_2 \le 127)$	ESC (C (n_1) (n_2) (d_1) (d_2)

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Character Set Control	
Select character set 1	ESC 7
Select character set 2	ESC 6
Select character set table	ESC t (*n*)
n = 0: Italics	
1: Graphics	
2: Download	
3: Graphics	
Select international character set	ESC R (*n*)
n = 0: USA	
1: France	
2: Germany	
3: United Kingdom	
4: Denmark 1	
5: Sweden	
6: Italy	
7: Spanish 1	
8: Japan	
9: Norway	
10: Denmark 2	
11: Spanish 2	
12: Latin America	
13: Korea	
64: Legal	
Assign character set to active character set number 0 to 3	ESC (t (n_1) (n_2)
n_1 = 3, n_2 = 0	(d_1) (d_2) (d_3)
d_1 = 0: Active character set 0	
d_1 = 1: Active character set 1	
d_1 = 2: Active character set 2	
d_1 = 3: Active character set 3	
d_2, d_3 = 0, 0: Italic	
d_2, d_3 = 1, 0: PC 437 (USA)	
d_2, d_3 = 3, 0: PC 850 (Multilingual)	
d_2, d_3 = 7, 0: PC 860 (Portugal)	
d_2, d_3 = 8, 0: PC 863 (Canada-French)	
d_2, d_3 = 9, 0: PC 865 (Norway)	
Print n1 + n2 x 256 characters from all-character set	ESC (^ (n_1) (n_2)
($0 \le n_1 \le 255$) ($0 \le n_2 \le 127$)	(*character codes*)
($0 \le n_1 + n_2 \times 256 \le 255$)	

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Clear input buffer	CAN
Delete character	DEL
Force most significant bit to 1	ESC >
Force most significant bit to 0	ESC =
Cancel control over most significant bit	ESC #
Font Selection and Downloading	
Select font	ESC % (*n*)
n = 0: Resident character set	
1: Download character set	
Select letter or draft quality	ESC x (*n*)
n = 0: Draft	
1: Letter	
Select type style	ESC k (*n*)
Bitmap font	
n = 0: Courier	
1: Courier	
2: Courier	
3: Prestige	
4: Courier	
5: OCR-B	
6: OCR-A	
7: Courier	
8: Courier	
9: Courier	
Scalable font:	
n = 0: Timeless	
1: NimbusSans®	
2: Courier	
3: Timeless	
4: Timeless	
5: Timeless	
6: Timeless	
7: Timeless	
8: Timeless	
9: Timeless	

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Set scalable font mode m sets character spacing. m = 0: = Keep previous spacing 1: = Set proportional spacing mode m ≥ 5: = Select character spacing (m/360 inch) (Reset proportional spacing mode) n_1 and n_2 set point size of font. Point size = $(n_1 + n_2 \times 256) \times 0.5$ point $(0 \le n_1 \le 255)$ $(2 \le n_2 \le 127)$	ESC X m (n_1) (n_2)
Copy resident character set to download area	ESC : 0 (*n*) (*s*)
Create download font	ESC & (*s*) (*n*) (*m*) (a_0) (a_1) (a_2) (*data*)
Bit-Image Graphics	
Graphics type *m* graphics	ESC * (*m*) (n_1) (n_2) (data)
Bit image mode definition	ESC ? (*s*) (*n*)
Single-density graphics	ESC K (n_1) (n_2) (*data*)
Double-density graphics	ESC L (n_1) (n_2) (*data*)
High-speed double-density graphics	ESC Y (n_1) (n_2) (*data*)
Quadruple-density graphics	ESC Z (n_1) (n_2) (*data*)
Select raster image graphics $n_1 = 1$, $n_2 = 0$ *d* = 1: Raster image graphics mode	ESC (G (n_1) (n_2) (*d*)
Print raster image graphics	ESC . (*c*) (*v*) (*h*) (*m*) (n_1) (n_2) (*data*)
Cut-Sheet Feeder Control	
Feed a sheet from bin 1	ESC EM 1
Feed a sheet from bin 2	ESC EM 2
Feed a sheet from bin 3*	ESC EM E
Eject a page from the printer	ESC EM R
Select bin 1 for following pages*	/ / 1 / /
Select bin 2 for following pages*	/ / 2 / /
Select bin 3 for following pages*	/ / E / /
Eject sheet at end of current page*	/ / R / /
Change bins at next page*	/ / C / /
Cut sheet feed selection*	/ / S / /

Table B–4 Printer commands for the Epson ESC/P2 emulation (Continued)

Function	Command
Print Option Control	
Friction feed selection*	/ / F / /
Rear Tractor feed selection*	/ / T / /
Front Tractor feed selection*	/ / M / /
Cut sheet feed selection*	/ / S / /
Miscellaneous	
Sound bell	BEL
Move print head to home position	ESC <
Unidirectional printing on or off (on: *n* = 1, off: *n* = 0)	ESC U (*n*)
Initialize printer	ESC @
Enter online setup mode*	ESC e ONLINE (*data*)

*1 The value depends on the pitch set by the ESC (U command.

APPENDIX

C

Interface Information

The printer communicates with a processor through either a Centronics parallel interface or a pre-installed add-on RS-232C serial interface. The printer cannot use both interfaces at the same time.

This appendix provides information on wiring interface cables or programming for processor-to-printer communications. To simply connect the printer and processor, read the instructions in Chapter 2, "Setting Up the Printer."

Parallel Interface

The Centronics parallel interface is the industry standard. It supports the bi-directional data transfer in nibble mode of the IEEE 1284 standard. It is also compatible with the conventional Centronics interface. The cable connector at the printer should be a shielded Amphenol DDK 57FE-30360 or equivalent.

The following table lists the connector pin assignments. Note the following:

- "Input" indicates a signal sent to the printer from the processor.
- "Output" indicates a signal sent from the printer.
- Return lines specified in the "Return pin number" column represent twisted pairs, with one side connected to signal ground.
- The standard signal levels are 0.0 to +0.4 V for low and +2.4 to +5.0 V for high.

Table C–1 Parallel interface signals

Pin number	Return pin number	Signal Compatible mode Nibble mode	Direction	Description
1	19	Data Strobe (DSTB)	Input	• Strobe pulse for reading data (Data 1 to Data 8). The printer reads data when this signals is low. • The pulse width must be 1 µs or more at the printer's receiving terminal.
		Host Clock		This signal is set high when the host requests the reverse data transfer phase (nibble mode).
2 3 4 5 6 7 8 9	20 21 22 23 24 25 26 27	Data 1 Data 2 Data 3 Data 4 Data 5 Data 6 Data 7 Data 8	Input Input Input Input Input Input Input Input	• Data 1 to 8 signals correspond to parallel data bits 1 to 8. • Data 8 is the most significant bit, but is not used in the 7-bit ASCII mode. • All signals must go high at least 1 µs before the falling edge of the Data Strobe signal, and must stay high for at least 1 µs after the rising edge.
10	28	Acknowledge (ACK)	Output	• Pulse signal indicating data receiption completed (or data reception enabled) status • Issued when the printer switches from offline to online
		Printer Clock		Reverse data transfer phase: This signal goes high when data being sent to the host is established. Reverse idle phase: This signal is set low then goes high to interrupt the host, indicating that data is available.

Table C–1 Parallel interface signals (Continued)

Pin number	Return pin number	Signal Compatible mode Nibble mode	Direction	Description
11	29	Busy	Output	Data cannot be received when this signal is high. e.g., if the buffer is full, or an error occurs.
		Printer Busy		Reverse data transfer phase: Data bit 3, data bit 7, then forward path (host to printer) busy status
12	30	Paper Empty (P E)	Output	This signal goes high if paper runs out.
		Ack Data Req		Reverse data transfer phase: Data bit 2, then data bit 6 Reverse idle phase: This signal is set high until the host requests data and, after that, follows the Data Available signal.
13	—	Select (SLCT)	Output	This signal goes high when the printer is selected (online), and goes low when the printer is deselected (offline).
		X Flag		Reverse data transfer phase: Data bit 1, then data bit 5

Table C–1 Parallel interface signals (Continued)

Pin number	Return pin number	Signal Compatible mode Nibble mode	Direction	Description
14	—	$\overline{\text{Auto Feed XT}}$	Input	Not used
		Host Busy		Reverse data transfer phase: This signal is set low when the host can receive data, and goes high when the host has received data. Following a reverse data transfer, the interface enters the reverse idle phase when the Host Busy signal goes low and the printer has no data. Reverse idle phase: This signal goes high when the Printer Clock signal goes low so that the interface re-enters the reverse data transfer phase. If it goes high with the 1284 Active signal low, the idle phase is aborted and the interface returns to the compatibility mode.
15	—	—	—	No connection
16	—	Signal Ground (SG)	—	Logic ground level (0 V)
17	—	Frame Ground (FG)	—	Printer chassis ground line. FG and SG are connected.
18	—	+5V	Output	+5V source (up to 300 mA)
19–30	—	Signal Ground (SG)	—	Twisted-pair return lines
31	—	$\overline{\text{Input Prime}}$ (INPRM)	Input	If this signal is low for more than 50 µs, the printer is reset to initial status and placed online.

Table C–1 Parallel interface signals (Continued)

Pin number	Return pin number	Signal Compatible mode Nibble mode	Direction	Description
32	—	$\overline{\text{Fault}}$	Output	This signal goes low under the following printer conditions: (1) Offline (2) Paper out (3) Cut-sheet feeder error (4) Other printer error
		$\overline{\text{Data Available}}$		Reverse data transfer phase: This signal is set low when the printer is ready to send data to the host. During the data transfer, it is used as data bit 0 (LSB), then data bit 4. Reverse idle phase: This signal is used to indicate that data is available.
33	—	Signal Ground (SG)	—	Logic ground level (0 V)
34	—	—	—	No connection
35	—	+5 VR	Output	Pulled up to +5 V through a 3.3 kΩ resistor
36	—	$\overline{\text{SLCT-IN}}$	Input	Not used
		1284 Active		This signal goes high to cause the printer to enter the reverse data transfer phase (nibble mode).

Notes:

1. Left-aligned signal names are in compati mode and right-aligned ones are in nibble mode.
2. The direction (input and output) refers to the printer.
3. Return line: Twisted-pair return line connected to the signal ground level.

Data Transmission Timing

The 6400 Pro/6600 Pro uses a bi-directional parallel interface complying with IEEE 1284. This interface is also compatible with the conventional Centronics interface. Data transfer from host to print is performed according to Centronics standard, called compatible mode. Data transfer from printer to host, it is performed according to the IEEE 1284 standard, called nibble mode.

In compatible mode, the printer receives data from the computer in handshaking mode based on the Busy and Acknowledge signals from the printer and the Data Strobe signal from the computer. For the Data Strobe and Acknowledge signals, the timing of the Busy signal must be as shown in Figure C-1.

To send data from the printer to the host, the interface enters the nibble mode where data is sent in units of four bits (nibble) using the four output signal lines as data paths. The data transfer sequence in nibble mode involves negotiation phase, reverse idle phase, reverse data transfer phase, and termination phase. Figure C-2 shows the reverse data transfer phase where data is sent.

Compatible mode (data transfer from host to printer):

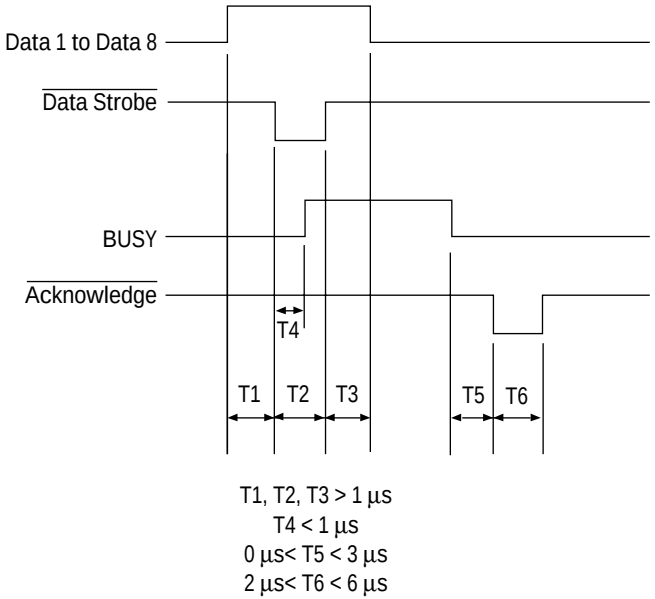
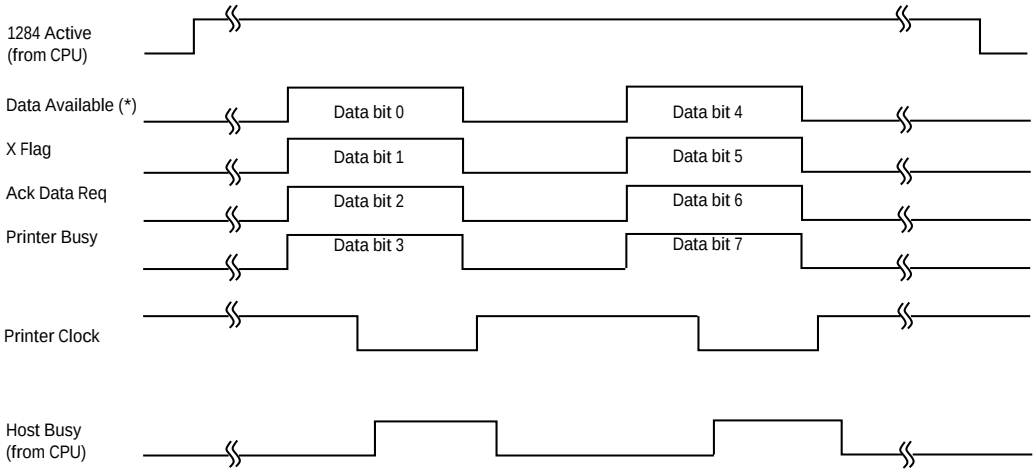


Figure C–1 Data transmission timing

Reverse data transfer phase in nibble mode (data transfer from printer to host)



* $\overline{\text{Data Available}}$ is assigned for the cable.

Figure C–2 Data transmission timing

Serial Interface

RS-232C is the standard serial interface for data terminal equipment (DTE). The cable connector at the printer should be a D-subminiature Cannon or Cinch DB-25P pronged connector or equivalent conforming to EIA standards.

The following table shows pin assignments commonly used by most processors.

Note the following:

- "Input" indicates a signal sent to the printer from the processor.
- "Output" indicates a signal sent from the printer.
- The signal level for mark (logical 1) is –3 V or lower; for space (logical 0), it is +3 V or higher.

Table C–2 Serial interface

Pin number	Signal	Direction	Description
1	FG	—	Frame Ground
2	TD	Output	Transmitted Data. This pin carries information from the printer to the processor.
3	RD	Input	Received Data. This pin carries information from the processor to the printer.
4	RTS	Output	Request To Send. Spaces are sent when the printer is ready to transmit data.
5	CTS	Input	Clear To Send. Spaces are sent when the processor is ready to receive data.
6	DSR	Input	Data Set Ready. Spaces are sent when the processor is turned on and ready.
7	SG	—	Signal Ground (common return)
8	CD	Input	Data Carrier Detect. Spaces are sent when the processor lets the printer receive data.

Table C–2 Serial interface (Continued)

Pin number	Signal	Direction	Description
11	RC	Output	Reverse Channel. This signal is used in the RC protocol only. Spaces are sent when the printer is ready to send or receive data.
20	DTR	Output	Data Terminal Ready. Spaces are sent when the printer is turned on and ready.

Serial Options

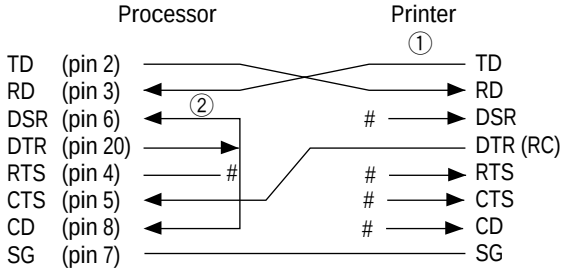
The serial options listed here must be set up the same way on both the processor and the printer. By using the printer control panel, the processor operating system, or software, you can change selectable options.

Transmission mode:	Asynchronous, full duplex, or half duplex (selectable)
Speeds:	150, 300, 600, 1200, 2400, 4800, 9600, or 19200 baud (selectable)
Data bits:	7 or 8 bits (selectable)
Parity bit:	Odd, even, mark, space, or none (selectable)
Start bit:	1 bit
Stop bit:	1 or 2 bits (selectable)
Protocol:	XON/XOFF (DC1/DC3), DTR (Data Terminal Ready), RC (Reverse Channel), or ETX/ACK (selectable)
Buffer size:	256, 2K, 8K, 24K, 32K, 96K, or 128K bytes (selectable)

Cable Wiring

The printer allows two types of serial communication control: DSR enabled and DSR disabled. The type used is determined by processor requirements and affects the way the interface cable is wired. To select between DSR-enabled and DSR-disabled control, use the printer HARDWRE function (see “Changing Hardware Options” on page 8-24 and in subsequent sections).

DSR-disabled control offers simpler cabling and communication than DSR-enabled control. It can be used for interfacing with an IBM or most other PCs. With DSR-disabled control, input control signals DSR, CTS, and CD are always considered high, regardless of their actual status. Therefore, a wire connection for these pins is not required. The following figure below shows the wiring required for connection to an IBM PC.



Open wire
Wire ① is unnecessary for the DTR (or RC) protocol.
Some computers may not require wire ②.

Figure C–1 Cable wiring (DSR disabled control)

DSR-enabled control enables communication with an RS-232C interface. The CTS and DSR input control signals are enabled; CD is ignored. DSR must be high when the printer receives data. If the printer has data to be transmitted, it transmits data immediately when both DSR and CTS are high.

For connection to a data communications equipment DCE device using DSR-enabled control, use a straight-through cable. For connection to a data terminal equipment DTE device, use a null-modem cable as shown here.

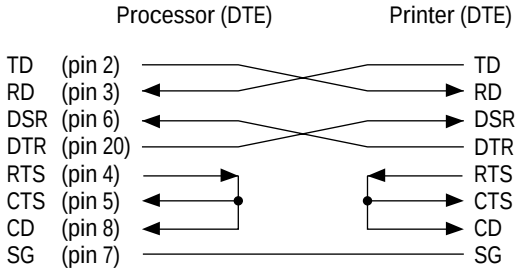


Figure C–1 Cable wiring (DSR-enabled control)

Serial Protocols

A protocol is a set of instructions that control the way data is transmitted between devices such as a processor and printer. The protocol ensures that the processor does not send information to the printer faster than the data can be processed. By telling the processor when it can receive data, the protocol prevents the printer buffer from overflowing.

This printer offers a choice of four protocols: XON/XOFF, DTR, RC, and ETX/ACK. The following table gives details. If no particular protocol is recommended, try DTR.

Table C–1 Serial protocols

Protocol	Description
ON/XOFF (DC1/DC3)	When the printer is ready to receive data, it sends the XON (DC1) code (hex 11). When fewer than 255 bytes of space remain in the buffer, or when the printer is switched offline, the printer sends the XOFF (DC3) code (hex 13). The processor must stop transmitting data within 255 (63) characters of receiving XOFF, or information may be lost.
DTR (hardware)	The DTR signal on interface cable pin 20 controls the flow of data rather than sending a character code.
RC	Same as DTR except that it uses the Reverse Channel signal (pin 11) instead of the Data Terminal Ready signal (pin 20).
ETX/ACK	This protocol is a little more complicated, but allows faster throughput under some conditions. The processor adds the End of Text ETX character (hex 03) at the end of each block of print data. The block, including the ETX character, is usually half the printer input buffer, but it can be as large as the input buffer. The processor must stop transmitting the next block of data until it receives the ACK character, or information may be lost. Data transmission continues until the printer finishes printing two blocks, providing high-throughput data communication.

APPENDIX

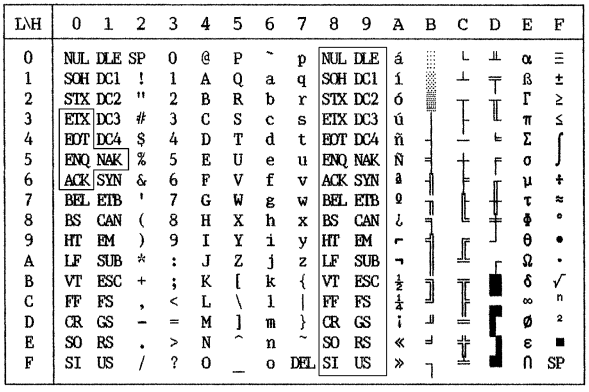
D

Character Sets

1. Basic character sets for DPL24C PLUS and IBM XL24E emulation

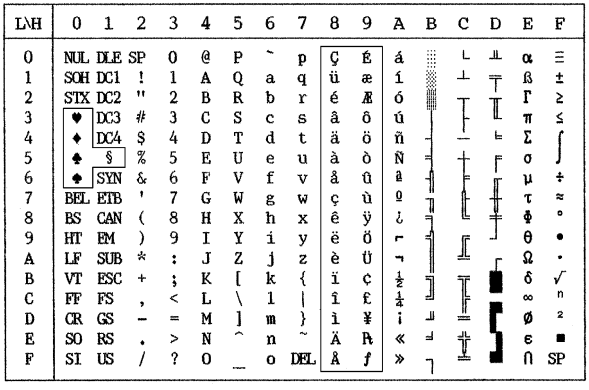
   The two basic character sets for the DPL24C PLUS command set and the IBM Proprinter XL24E emulation are shown below. These are USA character sets. Character set 2 is the same as code page 437 in IBM PS/2 character sets. Characters in boxes differ for sets 1 and 2. Those of set 2 also vary with the national character set.

IBM PC character set 1



L\H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	NUL	DLE	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	SOH	DC1	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	STX	DC2	ó	▒	┬	╥	Γ	≥
3	ETX	DC3	#	3	C	S	c	s	ETX	DC3	ú	▒	├	╙	π	≤
4	EOT	DC4	$	4	D	T	d	t	EOT	DC4	ñ	▒	─	╘	Σ	⌠
5	ENQ	NAK	%	5	E	U	e	u	ENQ	NAK	Ñ	▒	┼	╒	σ	⌡
6	ACK	SYN	&	6	F	V	f	v	ACK	SYN	ª	▒	╞	╓	µ	÷
7	BEL	ETB	'	7	G	W	g	w	BEL	ETB	º	▒	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	▒	╚	╪	Φ	°
9	HT	EM	)	9	I	Y	i	y	HT	EM	⌐	▒	╔	┘	Θ	∙
A	LF	SUB	*	:	J	Z	j	z	LF	SUB	¬	▒	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	▒	╦	█	δ	√
C	FF	FS	,	<	L	\	l	|	FF	FS	¼	▒	╠	▄	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	CR	GS	¡	▒	═	▌	Ø	²
E	SO	RS	.	>	N	^	n	~	SO	RS	«	▒	╬	▐	ε	■
F	SI	US	/	?	O	_	o	DEL	SI	US	»	▒	╧	▀	∩	SP

IBM PC character set 2



L\H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	Ç	É	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	é	Æ	ó	▒	┬	╥	Γ	≥
3	♥	DC3	#	3	C	S	c	s	â	ô	ú	▒	├	╙	π	≤
4	♦	DC4	$	4	D	T	d	t	ä	ö	ñ	▒	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	▒	┼	╒	σ	⌡
6	♠	SYN	&	6	F	V	f	v	å	û	ª	▒	╞	╓	µ	÷
7	BEL	ETB	'	7	G	W	g	w	ç	ù	º	▒	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	ê	ÿ	¿	▒	╚	╪	Φ	°
9	HT	EM	)	9	I	Y	i	y	ë	Ö	⌐	▒	╔	┘	Θ	∙
A	LF	SUB	*	:	J	Z	j	z	è	Ü	¬	▒	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	ï	ç	½	▒	╦	█	δ	√
C	FF	FS	,	<	L	\	l	|	î	£	¼	▒	╠	▄	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	ì	¥	¡	▒	═	▌	Ø	²
E	SO	RS	.	>	N	^	n	~	Ä	₧	«	▒	╬	▐	ε	■
F	SI	US	/	?	O	_	o	DEL	Å	ƒ	»	▒	╧	▀	∩	SP

2. Basic character sets for ESC/P2 emulation

The three basic character sets available for ESC/P2 emulation are shown below. The characters for decimal codes 128 to 255 (hex 80 to FF) differ for each set.

Italic Character Set

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

Graphics Character Set 1

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	NUL	DLE	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	SOH	DC1	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	STX	DC2	ó	▒	┬	╔	Γ	≥
3	ETX	DC3	#	3	C	S	c	s	ETX	DC3	ú	▒	├	╙	π	≤
4	EOT	DC4	$	4	D	T	d	t	EOT	DC4	ñ	▒	─	╘	Σ	⌠
5	ENQ	§	%	5	E	U	e	u	ENQ	NAK	Ñ	▒	┼	╒	σ	⌡
6	ACK	SYN	&	6	F	V	f	v	ACK	SYN	ª	▒	╞	╓	µ	÷
7	BEL	ETB	'	7	G	W	g	w	BEL	ETB	º	▒	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	▒	╚	╪	Φ	°
9	HT	EM	)	9	I	Y	i	y	HT	EM	⌐	▒	╔	┘	Θ	∙
A	LF	SUB	*	:	J	Z	j	z	LF	SUB	¬	▒	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	▒	╦	■	δ	√
C	FF	FS	,	<	L	\	l	|	FF	FS	¼	▒	╠	▐	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	CR	GS	¡	▒	═	▌	ø	²
E	SO	RS	.	>	N	^	n	~	SO	RS	«	▒	╬	▀	ε	■
F	SI	US	/	?	O	_	o	DEL	SI	US	»	▒	╧	▀	∩	SP

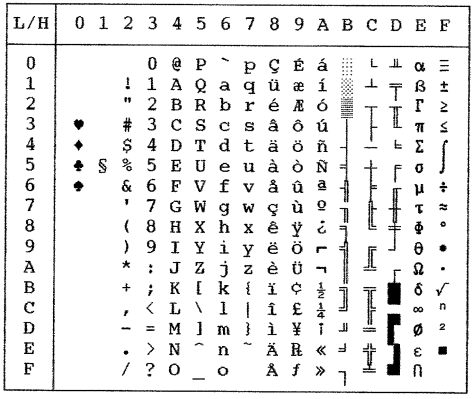
Graphics Character Set 2

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	Ç	É	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	é	Æ	ó	▒	┬	╔	Γ	≥
3	ETX	DC3	#	3	C	S	c	s	â	ô	ú	▒	├	╚	π	≤
4	EOT	DC4	$	4	D	T	d	t	ä	ö	ñ	▒	─	╘	Σ	⌠
5	ENQ	§	%	5	E	U	e	u	à	ò	Ñ	▒	┼	╒	σ	⌡
6	ACK	SYN	&	6	F	V	f	v	å	û	ª	▒	╞	╓	µ	÷
7	BEL	ETB	'	7	G	W	g	w	ç	ù	º	▒	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	ê	ÿ	¿	▒	╚	╪	Φ	°
9	HT	EM	)	9	I	Y	i	y	ë	Ö	⌐	▒	╔	┘	Θ	●
A	LF	SUB	*	:	J	Z	j	z	è	Ü	¬	▒	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	ï	¢	½	▒	╦	█	δ	√
C	FF	FS	,	<	L	\	l	|	î	£	¼	▒	╠	▐	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	ì	¥	¡	▒	═	▌	Ø	²
E	SO	RS	.	>	N	^	n	~	Ä	₧	«	▒	╬	▄	ε	■
F	SI	US	/	?	O	_	o	DEL	Å	ƒ	»	▒	╧	▀	∩	SP

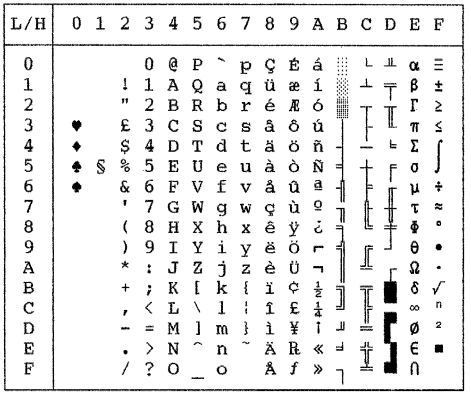
3. National character sets available for all emulations

The 50 national character sets available for all emulations are shown below. They support different characters and symbols specific to different languages. Note that these tables are for a resident Courier 10 font. Some national character sets do not have some characters and symbols and may not be usable depending on resident fonts. See item (6) for details.

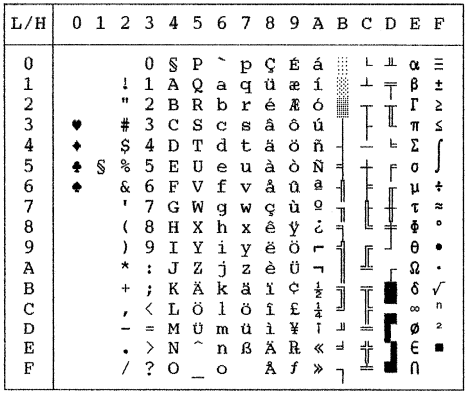
PAGE437/USA (Code Page 437/USA)



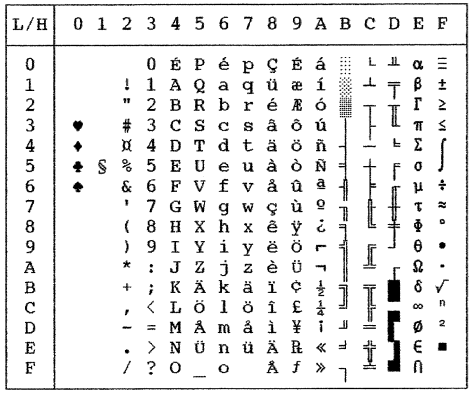
UK (British English)



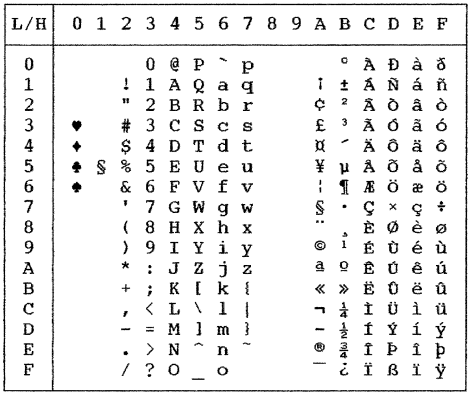
GERMAN (German)



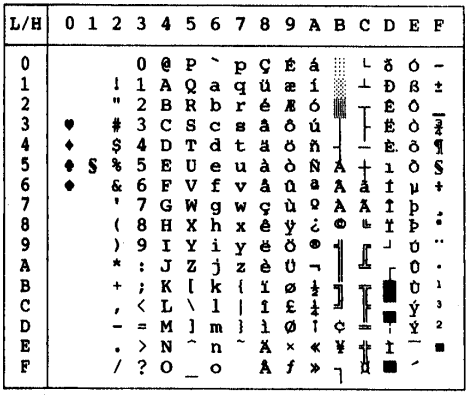
SWEDISH (Swedish)



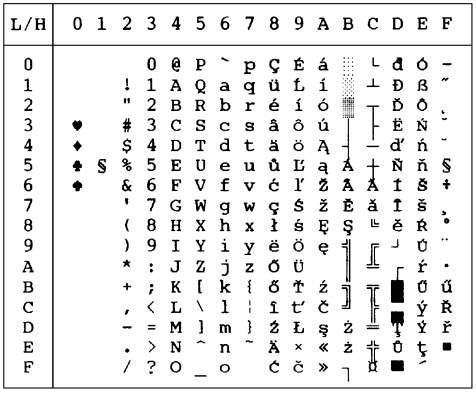
ISO8859/ECMA94 (ISO 8859-1/ECMA94)



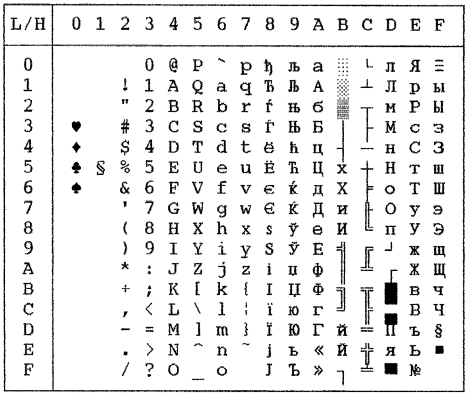
PAGE850 (Code Page 850 (Multilingual))



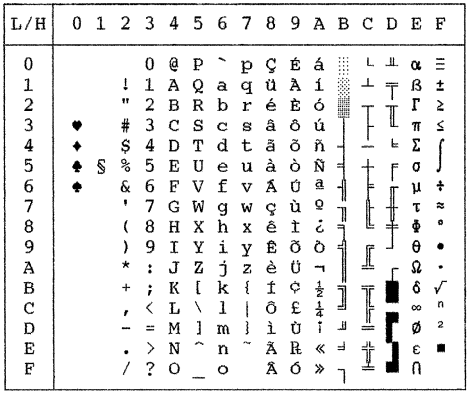
PG852/PG852-T (Code Page 852)



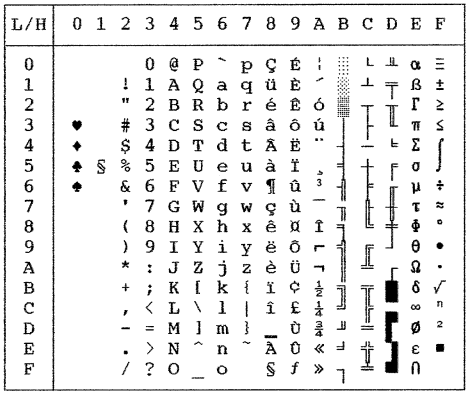
PG855 (Code Page 855)



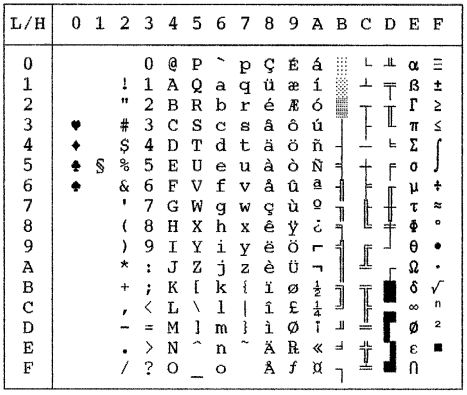
PAGE860 (Code Page 860(Portugal))



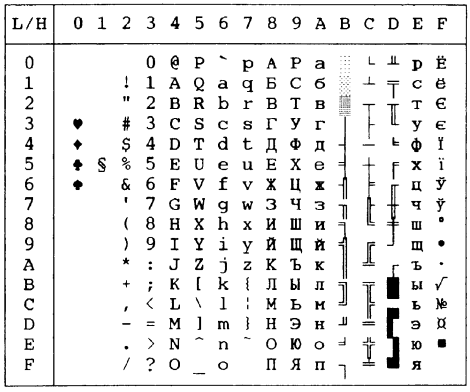
PAGE863 (Code Page 863(Canada-French))



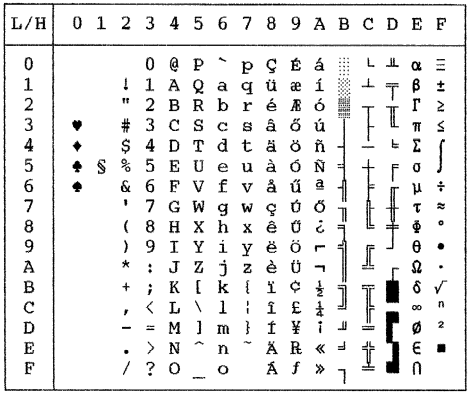
PAGE865 (Code Page 865(Nordic))



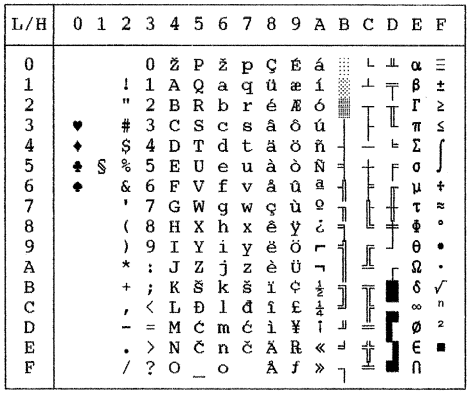
PG866 (Code Page 866(Cyrillic))



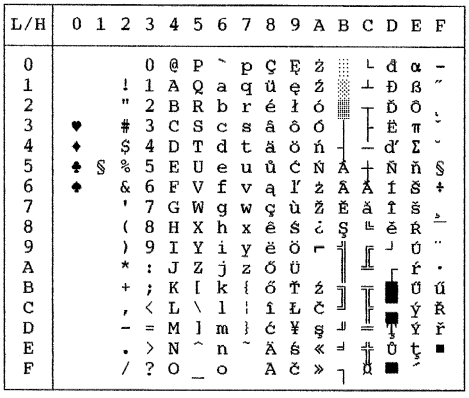
HUNGARY/HUNG-T (Hungarian)



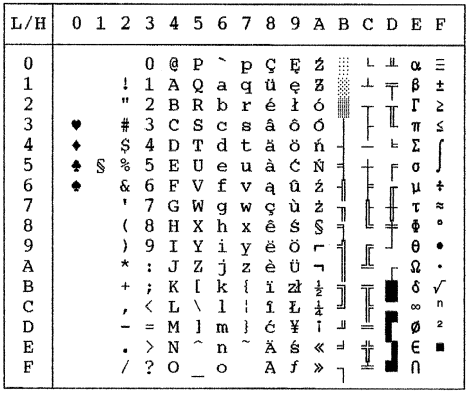
SLOV/SLOV-T (Slovenian)



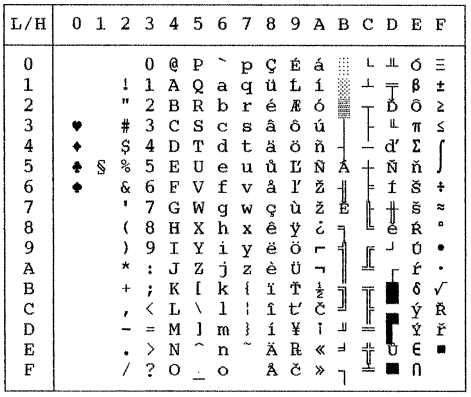
POLISH/POLSH-T (Polish)



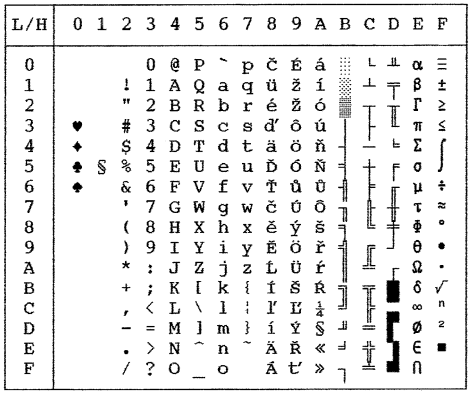
MAZOWIA/MAZOW-T (Mazowian)



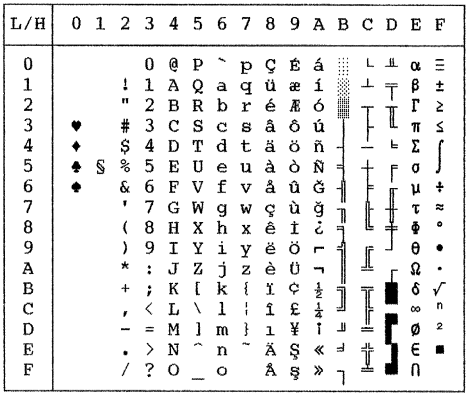
LATIN2/LATN2-T (Latin2)



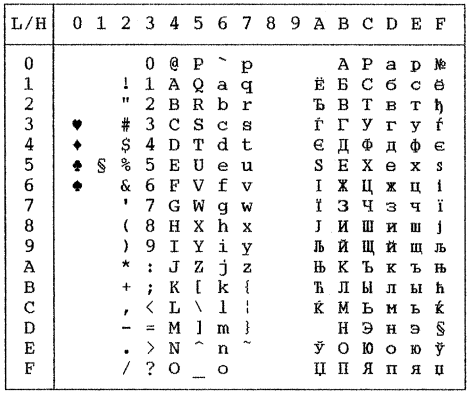
KAMENIC/KAMEN-T (Kamenicky)



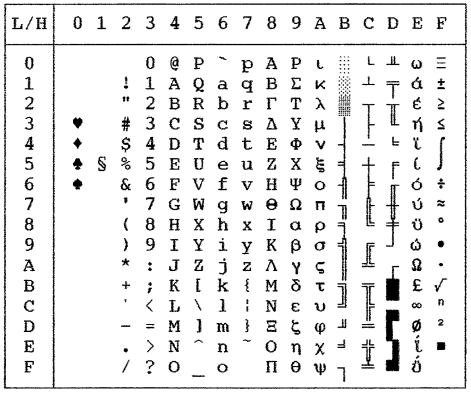
TURKY/TURKY-T (Turkish)



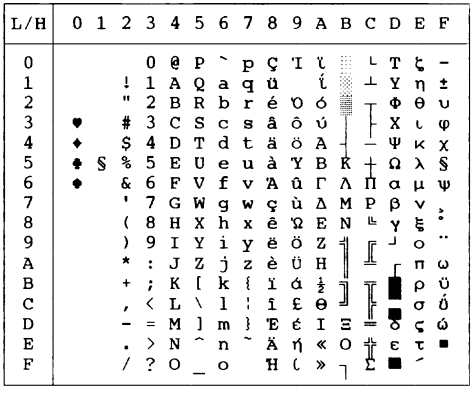
CYRILIC (Cyrillic)



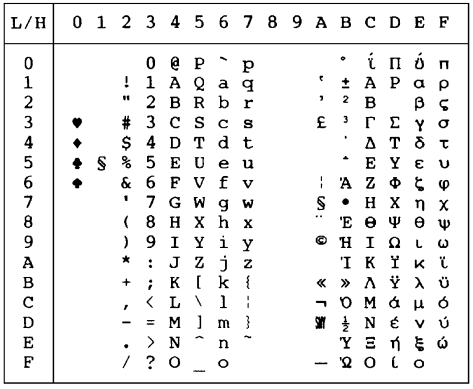
IBM437 (IBM 437)



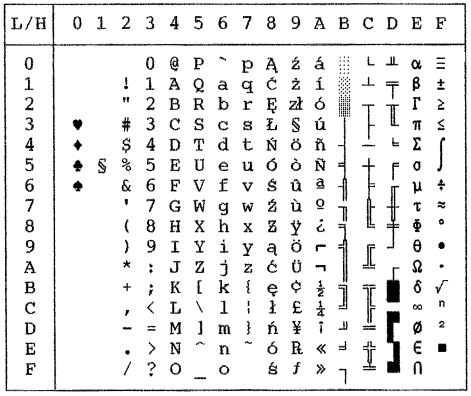
IBM851



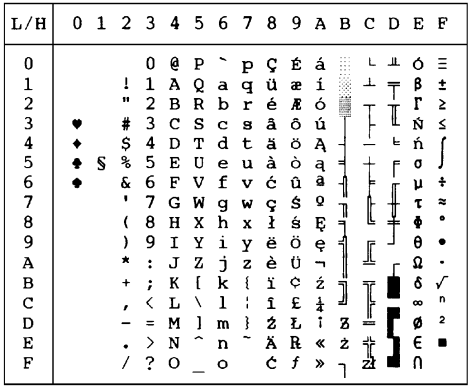
ELOT928



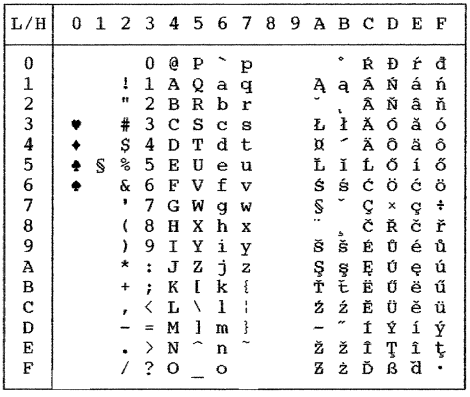
PG-DHN (Code Page DHN)



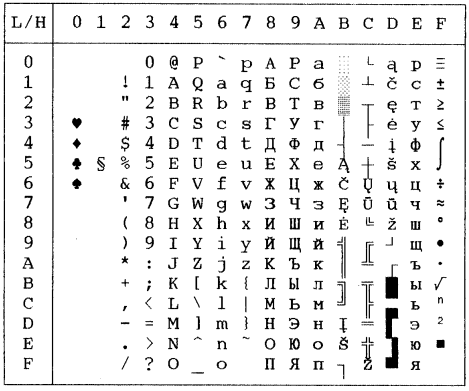
LATIN-P (Latin Polish)



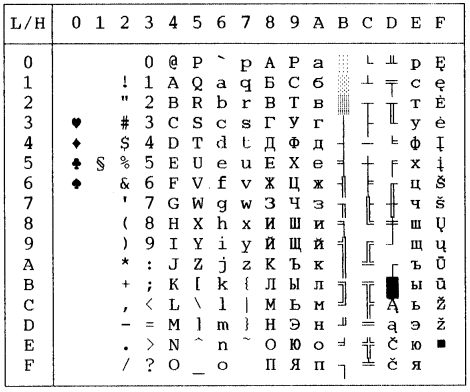
ISO-LTN (ISO Latin)



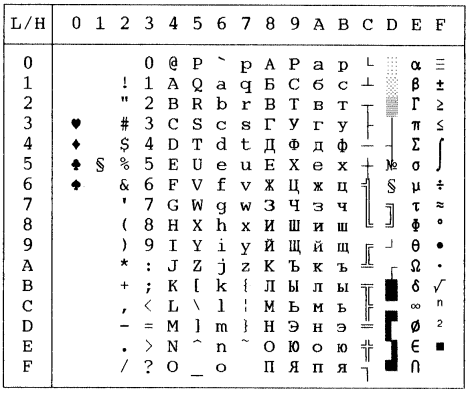
LITHUA1 (Lithuanian 1)



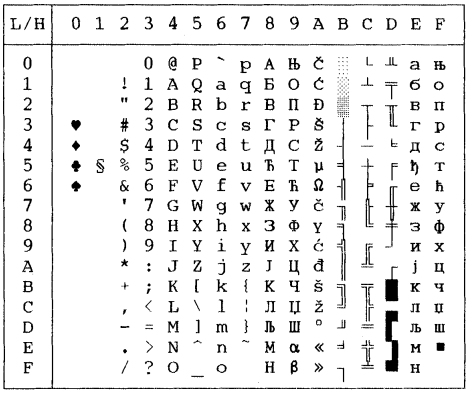
LITHUA2 (Lithuanian 2)



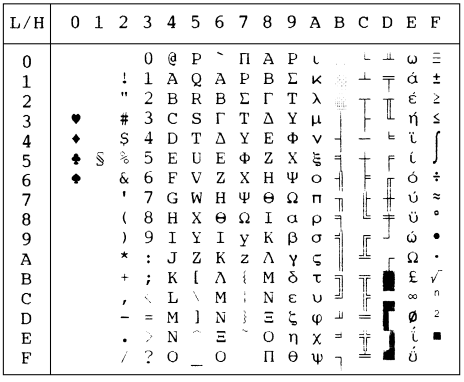
MIK



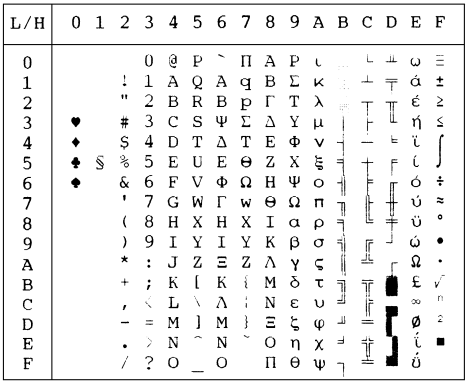
MACEDON (Macedonian)



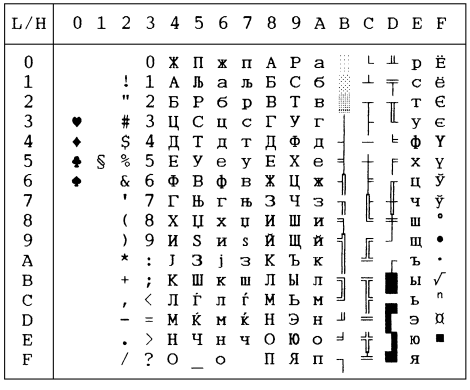
ABG



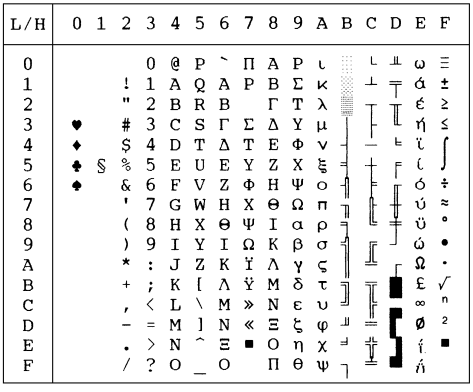
ABY



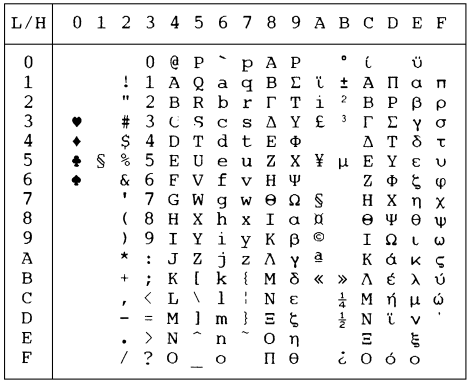
PG-MAC



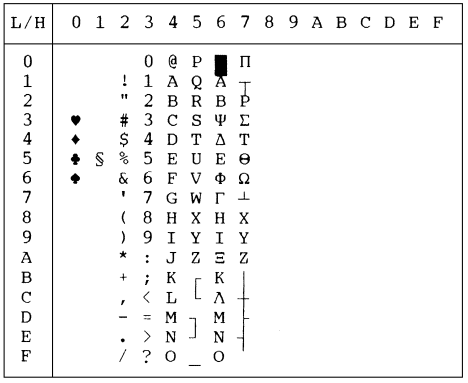
ELOT927



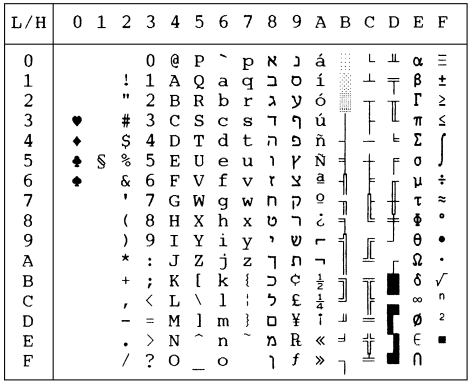
DEC GR



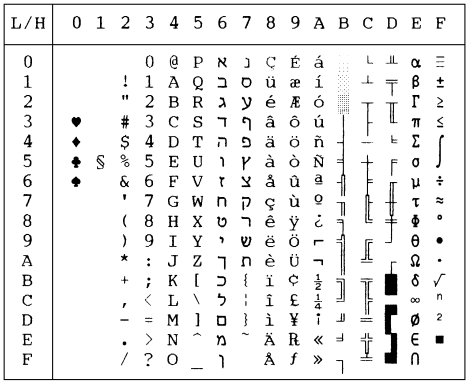
Greek 11



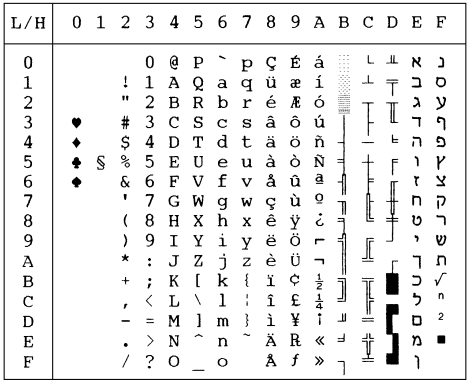
PAGE862



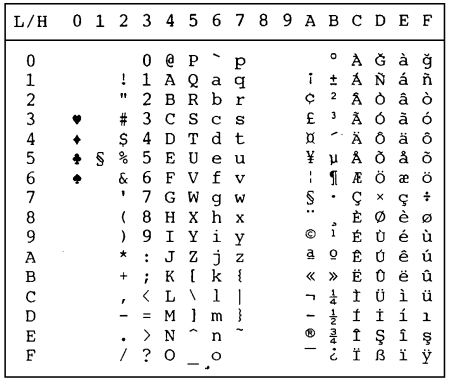
HBR OLD



HBR DEC



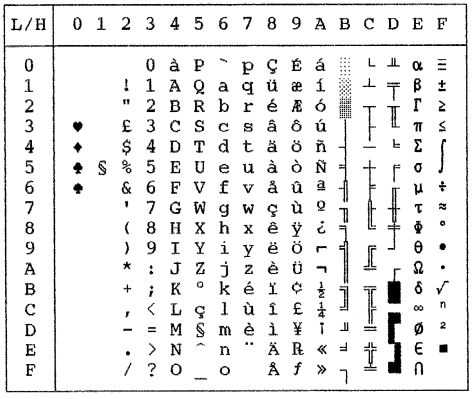
ISO-TUK



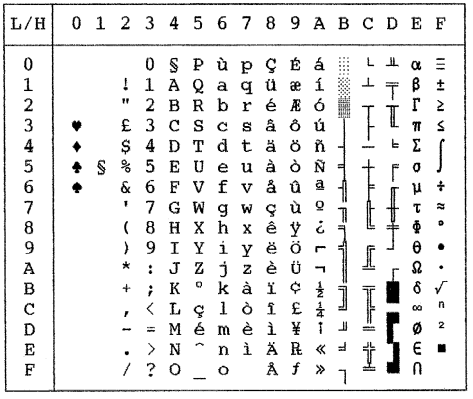
4. National character sets available for DPL24C PLUS and IBM XL24E emulation

   The character sets that are different from Code Page 437 (USA) but that are available in the DPL24C PLUS command set and the IBM Proprinter XL24E emulation are shown below.

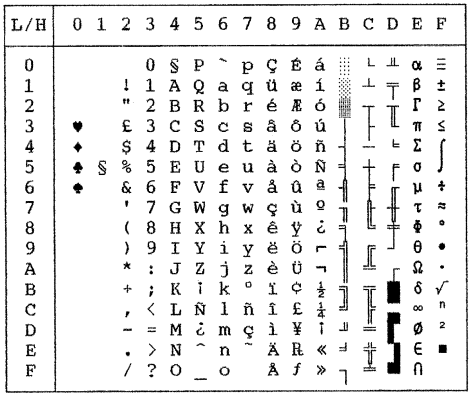
FRENCH (French)



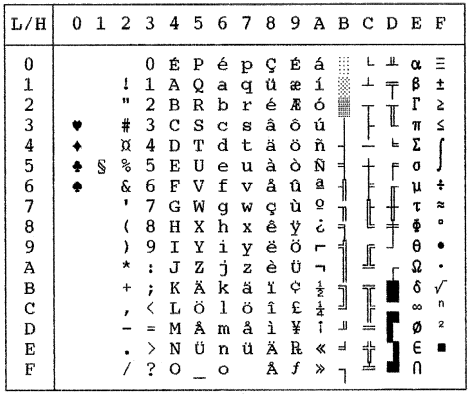
ITALIAN (Italian)



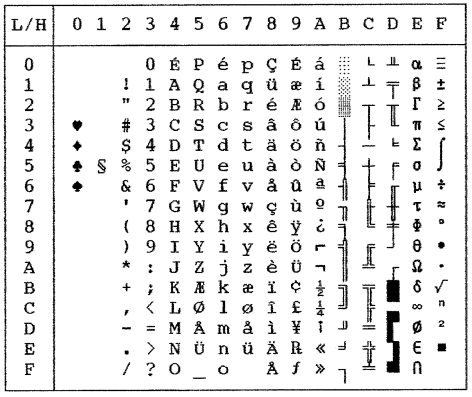
SPANISH (Spanish)



FINNISH (Finnish)

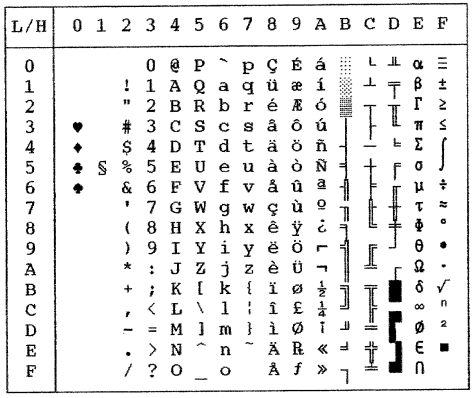


DANISH1/NORWEGN (Danish1/Norwegian)



L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	É	P	é	p	Ç	É	á	▒	└	╨	α	≡
1			!	1	A	Q	a	q	ü	æ	í	▓	┴	╤	β	±
2			"	2	B	R	b	r	é	Æ	ó	│	┬	╥	Γ	≥
3	♥		#	3	C	S	c	s	â	ô	ú	┤	├	╙	π	≤
4	♦		$	4	D	T	d	t	ä	ò	ñ	╡	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╢	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	å	û	ª	╖	╞	╓	µ	÷
7			'	7	G	W	g	w	ç	ù	º	╕	╟	╫	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿	╣	╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	║	╔	┘	Θ	•
A			*	:	J	Z	j	z	è	Ü	¬	╗	╩	┌	Ω	·
B			+	;	K	Æ	k	æ	ï	¢	½	╝	╦	█	δ	√
C			,	<	L	Ø	l	ø	î	£	¼	╜	╠	▄	∞	ⁿ
D			-	=	M	Å	m	å	ì	¥	¡	╛	═	▌	ø	²
E			.	>	N	Ü	n	ü	Ä	₧	«	╞	╬	▐	Ε	■
F			/	?	O	_	o		Å	ƒ	»	╧	╧	▀	∩	

DANISH2 (Danish2)

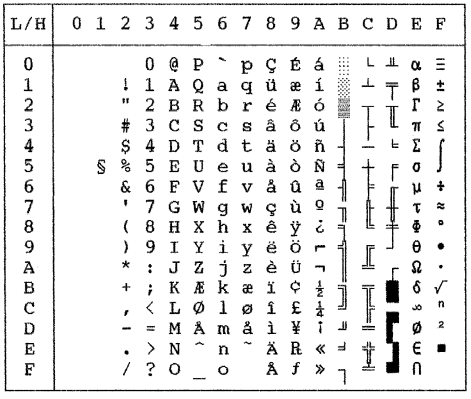


L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	▒	└	╨	α	≡
1			!	1	A	Q	a	q	ü	æ	í	▓	┴	╤	β	±
2			"	2	B	R	b	r	é	Æ	ó	│	┬	╥	Γ	≥
3	♥		#	3	C	S	c	s	â	ô	ú	┤	├	╙	π	≤
4	♦		$	4	D	T	d	t	ä	ò	ñ	╡	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╢	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	å	û	ª	╖	╞	╓	µ	÷
7			'	7	G	W	g	w	ç	ù	º	╕	╟	╫	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿	╣	╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	║	╔	┘	Θ	•
A			*	:	J	Z	j	z	è	Ü	¬	╗	╩	┌	Ω	·
B			+	;	K	[	k	{	ï	ø	½	╝	╦	█	δ	√
C			,	<	L	\	l	¦	î	£	¼	╜	╠	▄	∞	ⁿ
D			-	=	M	]	m	}	ì	Ø	¡	╛	═	▌	ø	²
E			.	>	N	^	n	~	Ä	₧	«	╞	╬	▐	Ε	■
F			/	?	O	_	o		Å	ƒ	»	╧	╧	▀	∩	

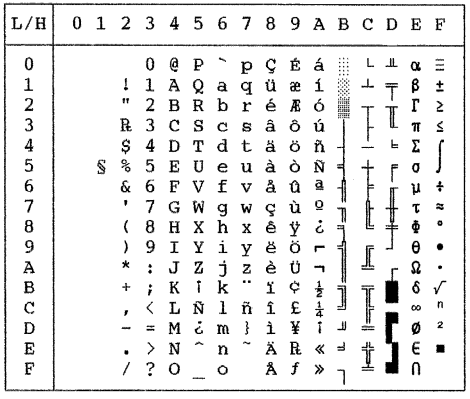
5. National character sets available for ESC/P2 emulation

   The character sets that are different from graphics character set 2 available for Epson ESC/P2 emulation are shown below.

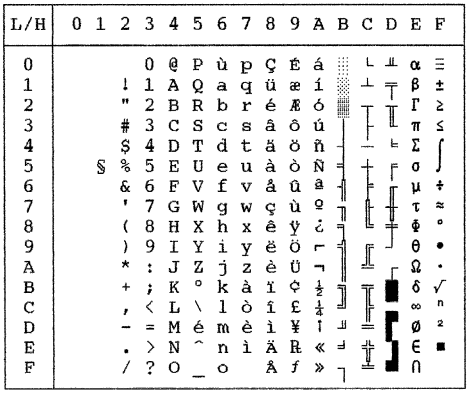
DANISH1 (Danish1)



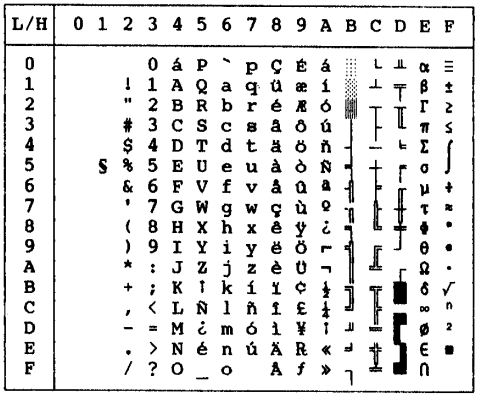
SPANSH1 (Spanish1)



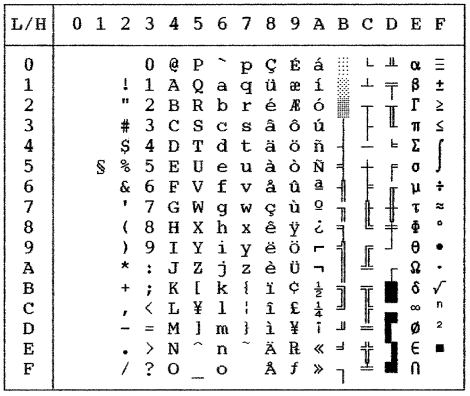
ITALIAN (Italian)



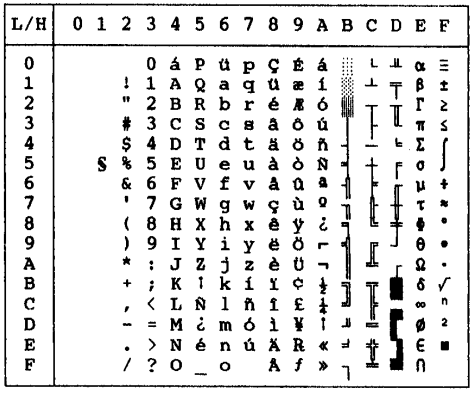
SPANSH2 (Spanish2)



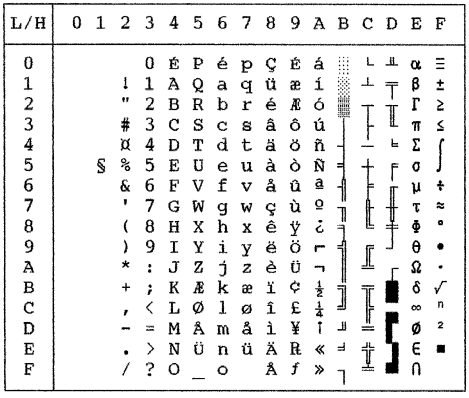
JAPAN (Japanese)



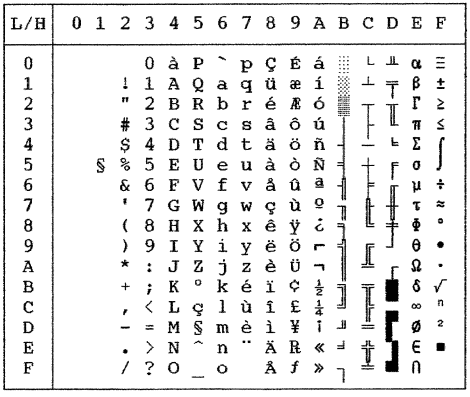
LATIN A (Latin American)



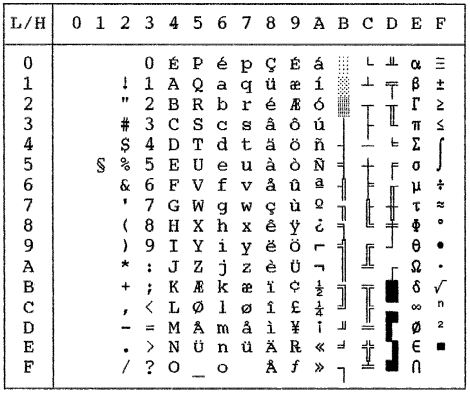
NORWEGN (Norwegian)



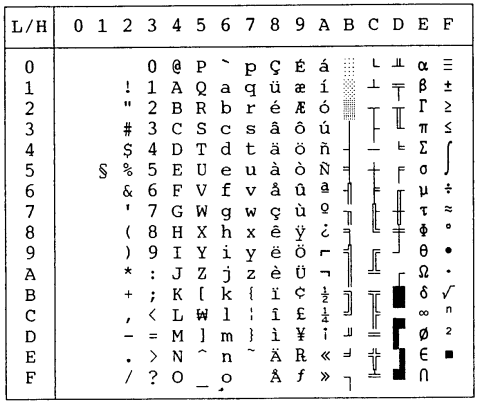
FRENCH (French)



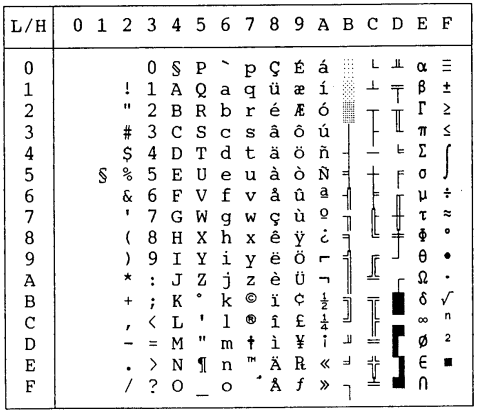
DANISH2 (Danish2)



KOREA (Korea)



LEGAL **(Legal)**



L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	§	P	`	p	Ç	É	á	▒	└	╨	α	≡
1			!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	β	±
2			"	2	B	R	b	r	é	Æ	ó	▒	┬	╥	Γ	≥
3			#	3	C	S	c	s	â	ô	ú	▒	├	╙	π	≤
4			$	4	D	T	d	t	ä	ö	ñ	▒	─	╘	Σ	⌠
5		§	%	5	E	U	e	u	à	ò	Ñ	▒	┼	╒	σ	⌡
6			&	6	F	V	f	v	å	û	ª	▒	╞	╓	µ	÷
7			'	7	G	W	g	w	ç	ù	º	▒	╟	╫	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿	▒	╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	▒	╔	┘	Θ	●
A			*	:	J	Z	j	z	è	Ü	¬	▒	╩	┌	Ω	·
B			+	;	K	[	k	{	ï	¢	½	▒	╦	█	δ	√
C			,	<	L	\	l	|	î	£	¼	▒	╠	▄	∞	n
D			-	=	M	]	m	}	ì	¥	¡	▒	═	▌	ø	2
E			.	>	N	^	n	~	Ä	Ŗ	«	▒	╬	▐	ϵ	■
F			/	?	O	_	o		Å	ƒ	»	▒	╧	▀	∩	

6. Restrictions on national character sets supported in all emulations

   In all emulations, this printer supports 50 national character sets for characters and symbols specific to different languages. Some national character sets, however, do not have specific characters and symbols and may not be usable, depending on resident fonts. The following table shows which resident fonts are supported for each national character set:

Resident font													
National character set	**Name in setup menu**	**Courier 10**	**Elite 12**	**Compress**	**Draft**	**Bold PS**	**Pica 10**	**Courier scalable*1**	**Timeless *1**	**Nimbus Sans *1**	**Correspondence**	**OCR-B**	**OCR-A**
USA*2	USA	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
United Kingdom	UK	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
German	GERMAN	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Swedish	SWEDISH	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
ISO 8859-1	ISO8859	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
ECMA 94	ECMA94	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Code Page 437*2	PAGE437	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Code Page 850	PAGE850	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Code Page 852	PG852	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
" two-pass	PG852-T	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
Code Page 855	PG855	✔	✔	✔	✔			✔	✔	✔			
Code Page 860	PAGE860	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Code Page 863	PAGE863	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Code Page 865	PAGE865	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Code Page 866	PG866	✔	✔	✔	✔			✔	✔	✔			
Hungarian	HUNGARY	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
" two-pass	HUNG-T	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
Slovenian	SLOV	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
" two-pass	SLOV-T	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
Polish	POLISH	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
" two-pass	POLSH-T	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
Mazowian	MAZOWIA	✔	✔	✔	✔	✔	✔				✔		
" two-pass	MAZOW-T	✔	✔	✔	✔	✔	✔				✔		

Resident font													
National character set	**Name in setup menu**	**Courier 10**	**Elite 12**	**Compress**	**Draft**	**Bold PS**	**Pica 10**	**Courier scalable*1**	**Timeless *1**	**Nimbus Sans *1**	**Correspondence**	**OCR-B**	**OCR-A**
Latin 2	LATIN2	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
" two-pass	LATN2-T	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
Kamenicky	KAMENIC	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
" two-pass	KAMEN-T	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
Turkish	TURKY	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
" two-pass	TURKY-T	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
Cyrillic	CYRILIC	✔	✔	✔	✔			✔	✔	✔			
IBM 437	IBM437	✔	✔	✔	✔			✔	✔	✔			
IBM 851	IBM851	✔	✔	✔	✔			✔	✔	✔			
ELOT 928	ELOT928	✔	✔	✔	✔								
Code Page DHN	PG-DHN	✔	✔	✔	✔	✔	✔				✔		
Latin Polish	LATIN-P	✔	✔	✔	✔	✔	✔				✔		
ISO Latin	ISO-LTN	✔	✔	✔	✔	✔	✔				✔		
Lithuanian 1	LITHUA1	✔	✔	✔	✔								
Lithuanian 2	LITHUA2	✔	✔	✔	✔								
MIK	MIK	✔	✔	✔	✔			✔	✔	✔			
Macedonian	MACEDON	✔	✔	✔	✔			✔	✔	✔			
ABG	ABG	✔	✔	✔	✔			✔	✔	✔			
ABY	ABY	✔	✔	✔	✔			✔	✔	✔			
Code Page MAC	PG-MAC	✔	✔	✔	✔			✔	✔	✔			
ELOT927	ELOT927	✔	✔	✔	✔			✔	✔	✔			
DEC Greek	DEC GR	✔	✔	✔	✔			✔	✔	✔			
Greek 11	GREEK 11	✔	✔	✔	✔			✔	✔	✔			
Code Page 862	PG862	✔	✔	✔	✔	✔	✔						
Hebrew Old	HBR-OLD	✔	✔	✔	✔	✔	✔						
Hebrew DEC	HBR-DEC	✔	✔	✔	✔	✔	✔						
ISO-Turkish	ISO-TUK	✔	✔	✔	✔	✔	✔						

*1 These are scalable and provided with upright, italic, and bold as resident fonts.
*2 USA is the same as Code Page 437.
✔ Supported

APPENDIX

E

Using the LCD/LED Type Control Panel

Two types of printer control panel are available: the light-emitting diode (LED) lamp type and the liquid-crystal display (LCD) type.

With the LED lamp type control panel,

- Status or error information is represented by on/off states of the LED lamps or, in some cases, by combinations of the LED lamps.
- Setup information is printed on paper.
- Button functions are determined for each button and for combinations of two or more buttons.

With the LCD type control panel,

- Status or error information is represented by a combination of up to 48 characters, consisting of numerals, letters, and symbols, displayed on the LCD screen.
- Setup information is displayed on the LCD screen.
- Button functions are displayed on the LCD, and the functions of some buttons can be programmed by firmware.

The body of this manual describes operations and functions using the LED type control panel. This appendix describes operations of the LCD type control panel, focusing on

- Basic printer operations
- Setup menu operations

You use the printer control panel to control most printer operations. If your printer is equipped with the LCD type control panel, read the entire first section to familiarize yourself with this type of control panel.

This appendix does not generally repeat the descriptions and procedures that are the same as or similar to those for printers with the LED type control panel. This appendix also does not describe individual operations, but gives basic information necessary for everyday printer operations using the LCD type control panel.

Getting Acquainted with the Control Panel

This section consists of three parts:

- Control panel components
- Overview of menus
- Using the basic menus

Control panel components

The LCD type control panel has the following components:

- Six indicator lights
- A 24-character × 2-line display
- Eight buttons

Figure E-1 shows the layout of the LCD type control panel. A description of each component follows.

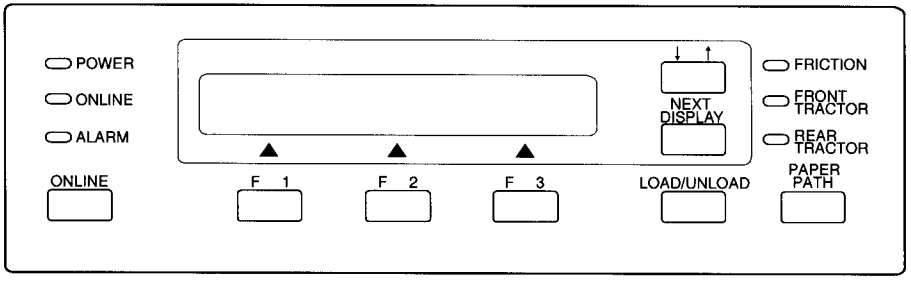


Figure E–1 LCD type control panel

Indicator lights

Indicator	Meaning
POWER	Indicates printer power is on.
ONLINE	Indicates the printer is online and printing or ready to print.
ALARM	Indicates an error has occurred. The LCD also displays an error message. The alarm may also sound.
FRICTION	Indicates cut sheets can be used.
FRONT TRACTOR	Indicates continuous forms can be used with the front tractor.
REAR TRACTOR	Indicates continuous forms can be used with the optional rear tractor.

Switch among the FRICTION, FRONT TRACTOR, and REAR TRACTOR indicators by pressing the PAPER PATH button while the printer is offline.

LCD screen

The printer menus and status or error messages appear on a two-line display. Buttons F1, F2, and F3, located beneath the display, are used to select menu options. Basic menu options are described later in this section.

Form ↑ feed	Tear off paper	Line ↑ feed

On the top line of the display, short messages appear to guide you in using the printer. A status or error message is always displayed after you take some action, such as turning on the printer or pressing F1, F2, or F3. Status messages displayed during normal printer operation and error messages are listed in the section “Messages” on page E-23.

Buttons

Button	Function
ONLINE	Switches the printer online or offline.
F1, F2, and F3	Scroll through the printer menu items to allow selection of setup functions, items, and options. Other specific functions are assigned by the setup functions selected.
↓ ↑	Reverses the direction of the up or down arrows shown in the display. For example, pressing this button changes forward line feed (↑) to reverse line feed (↓).
NEXT DISPLAY	Displays the printer's four basic menus.
LOAD/ UNLOAD	Loads paper to the top-of-form position for printing. Unloads (retracts) continuous forms to the tractor or ejects cut-sheet paper.
PAPER PATH	Selects the friction, front tractor, or optional rear tractor for feeding paper.

Overview of menus

The printer has two types of menus:

- Basic menus
- Setup menus

The basic menus allow you to select frequently used printer options. These menus allow you to feed paper, select fonts, print quality, and character pitch, and reset the printer. In addition, one of the basic menus allows you to enter setup mode.

The setup menus – available in setup mode – allow you to specify the printer's default operating parameters (also called the power-on default settings). The setup menus allow you to set the printer's hardware conditions, top-of-form position, and various print characteristics. You can also perform some other special functions, such as printing a list of current parameter settings. To use the setup menus, see the section “Using the Setup Menus” on page E-14.

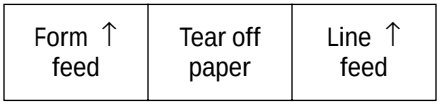
Points to remember about basic menus

- You can use basic menus while the printer is either online or offline.
- The changes you make using basic menus are temporary. The changes are not saved in the printer's permanent memory. (To permanently change the printer's default settings, use the SAVE function. See “Example of operations” on page E-16.)

Using the basic menus

The printer's four basic menus are each displayed in three panels on the LCD screen. This section shows the basic menus and summaries their functions and the effects of buttons on the menus. This section then describes common operations using the basic menus.

Menus and functions



- Executes form feed.

- Advances continuous forms paper to the tear-off edge and then retracts paper to the original position (for rear feeding only).
- Executes line feed.

Reset printer	Micro ↑ feed	Line ↑ feed

- Resets the printer.
- Executes micro line feed.
- Executes line feed.

<Font> ↑ COUR 10	<Qual> ↑ LETTER	<Pitch> ↑ 10 CPI

- Displays the currently selected font, print quality, and pitch.
- Changes the font, print quality, and pitch.

Enter setup	<Menu> MENU1	<Lock> OFF

- Activates setup mode.
- Selects setup menu 1 or 2.
- Enables or disables lock mode. With lock mode on, the printer ignores font commands from your application software and continues to use the font, print quality, and pitch selected in the previous basic menu.

Buttons perform the following operations in the basic menus:

- To display each of the four basic menus, repeatedly press the NEXT DISPLAY button.
- To select options from the basic menus, press the F1, F2, or F3 button or the ↓↑ (invert arrow) button. Items enclosed by less-than and greater-than signs (< >) have options.
- To execute functions, press the F1, F2, or F3 button. Items not enclosed by < > are functions.

Executing a form feed or line feed

To execute a form feed or line feed:

Form ↑ feed	Tear off paper	**Line ↑ feed**

1. Press NEXT DISPLAY repeatedly until the menu shown at the left appears.
2. Check the direction of the arrow displayed in the menu. If the arrow points up ↑, paper feeds forward. If the arrow points down ↓, paper feeds backward. To invert the arrow, press the ↓↑ button.

Page length = 11.0 inch		
feed	paper	feed

3. Press F1 to feed paper forward (or backward) by the page. As the paper moves forward (or backward) on the platen, the control panel briefly displays the page length, as shown at the left.

Line count = 002		
feed	paper	feed

Press F3 to feed paper forward (or backward) by the line. As the paper moves forward (or backward) on the platen, the control panel briefly displays the new line count, with 001 indicating the first print line (the top-of-form).

The example here indicates that the paper is positioned to start printing at the second print line.

Executing a micro line feed

To execute a micro line feed (1/180 inch per step):

Reset printer	**Micro ↑ feed**	Line ↑ feed

1. Press NEXT DISPLAY repeatedly until the menu shown at the right appears.
2. Check the direction of the arrow displayed in the menu. If the arrow points up ↑, paper feeds forward. If the arrow points down ↓, paper feeds backward. To invert the arrow, press the ↓↑ button.

Offset(n/180") = +008		
feed	paper	feed

3. Press F2 to feed paper forward (or backward) by small increments (or decrements) of 0.14 mm (1/180 inch). As the paper moves forward (or backward) on the platen, the control panel briefly dis-

plays the offset from a particular line in the range (–128 to +127).

The example here indicates an offset of +8/180 inch from the currently selected print line.

Tearing off continuous forms

To tear off continuous forms:

Form ↑ feed	**Tear off paper**	Line ↑ feed

Tear off paper and press any button

Form ↑ feed	Tear off paper	Line ↑ feed

1. Make sure the printer has stopped printing. Press NEXT DISPLAY repeatedly until the menu shown at the left appears.
2. Press F2 to advance the forms to the tear-off edge. The control panel displays the prompt message shown at the left.
3. Tear off the continuous forms.
4. Press any button on the control panel to retract the continuous forms back to the original position. The original basic menu reappears.

Resetting the printer

To reset the printer:

Reset printer	Micro ↑ feed	Line ↑ feed

RESET: Are you sure?	
No	Yes

Now resetting

Form ↑ feed	Tear off paper	Line ↑ feed

1. Press NEXT DISPLAY repeatedly until the menu shown at the left appears.
2. Press F1. The confirmation message shown at the left appears.
3. Respond to the confirmation message. Press F3 to reset the printer. If you do not want to reset the printer, press F1.

   After the printer is reset, the original basic menu reappears.

Important:
Resetting the printer resets the following:

- Line buffer data
- Input buffer data
- Mechanical positions
- Top-of-form position

The following remain in effect:

- Menu 1 or 2 settings; print font, quality, and pitch; and lock on or off as set by the control panel
- LOAD ADJ function settings specified in setup mode
- Downloaded data

Changing print font, quality, and pitch temporarily

You can temporarily change the print font, quality, and pitch from the power-on defaults settings. Any changes you make are active until the power is turned off. (Use setup mode to change the settings permanently.)

To change print font, quality, and pitch temporarily:

<Font>↓	<Qual>↓	<Pitch>↓
COUR 10	LETTER	10 CPI

1. Press NEXT DISPLAY repeatedly until the menu shown at the right appears.

   The bottom line displays abbreviations of the current font, quality, and pitch settings. In the menu shown here, the current settings are

   - Courier 10 font
   - Letter-quality print
   - 10 characters per inch cpi

2. Look at the arrows displayed in the top line of the display. If an arrow point up, press ↓↑ to reverse it. In the following steps, it is assumed that the arrows point down.

<Font>↓	<Qual>↓	<Pitch>↓
PICA 10	LETTER	10 CPI

3. Press F1 repeatedly to scroll through the various font options, selecting each in turn. The last selection wraps around to the first selection.
   - Courier 10
   - Prestige 12
   - Compressed printing
   - Boldface PS
   - Pica 10
   - Correspondence
   - OCR-B 10
   - OCR-A 10
   - Courier normal 10 (outline)
   - Courier bold 10 (outline)
   - Courier italic 10 (outline)
   - Nimbus Sans normal PS (outline)
   - Nimbus Sans bold PS (outline)
   - Nimbus Sans italic PS (outline)
   - Timeless normal PS (outline)
   - Timeless bold PS (outline)
   - Timeless italic PS (outline)
   - Downloaded font #1
   - Downloaded font #2

   If you want to scroll upward, press ↓↑ to reverse the arrow.

<Font>↓	<Qual>↓	<Pitch>↓
PICA 10	**REPORT**	10 CPI

4. Press F2 repeatedly to scroll through the various print quality options, selecting each in turn.
   - Letter
   - Report
   - Draft

<Font>↓	<Qual>↓	<Pitch>↓
PICA 10	REPORT	**12 CPI**

5. Press F3 repeatedly to scroll through the various character spacing options, selecting each in turn.

   - 10 CPI, 12 CPI, 15 CPI, 17 CPI, 18 CPI, 20 CPI, PROP SP (proportional spacing), 2.5 CPI, 3 CPI, 5 CPI, and 6 CPI

After the changes in this example, the printer prints characters using the pica 10 font, report quality, and 12 cpi so long as the computer commands do not change these options or you do not switch the menu (1 or 2) in the basic menus.

Important:
The actual printed font, print quality, and pitch may differ from the settings displayed in this menu because the options displayed are independent of those specified by commands from the computer.

Selecting MENU1 or MENU2

You can easily select either of the two setup menus, which you can use to change settings while in setup mode.

To select MENU1 or MENU2:

Enter setup	**<Menu>** MENU1	<Lock> OFF

1. Make sure the printer has printed all data. Press NEXT DISPLAY repeatedly until the menu shown at the left appears.

Enter setup	<Menu> **MENU2**	<Lock> OFF

2. To switch to MENU2, press F2.

Form ↑ feed	Tear off paper	Line ↑ feed

3. The printer is initialized 2 seconds later. The original basic menu reappears.

Important:
Print data buffer is cleared even if the last selected menu is the same as the original.

Enabling or disabling lock mode

Lock mode protects the font selected on the control panel from being changed by commands from your application software.

To enable lock mode:

Enter setup	<Menu> MENU1	**<Lock>** OFF

1. Press NEXT DISPLAY repeatedly until the menu shown at the right appears.

Enter setup	<Menu> MENU1	<Lock> **ON**

2. Press F3 to switch the option from OFF to ON.

   Lock mode remains in effect until the power is turned off. It is not disabled by initializing or resetting the printer or by changing the emulation.

Entering setup mode

You can specify different settings in advance by entering setup mode. There are many menus in setup mode.

To enter setup mode:

Enter setup	<Menu> MENU1	<Lock> OFF

1. Make sure the printer has printed all data. Press NEXT DISPLAY repeatedly until the menu shown at the left appears.

Offline setup mode

2. Press F1 to enter setup mode. The setup mode opening message shown at the left appears for 2 seconds.

   If unprinted data remains in the buffer, the confirmation message shown at the left appears before the opening message.

Data will be lost. OK?	
No	Yes

   Pressing F1 redisplays the original menu (step 1). Pressing F3 clears the data and switches the printer to setup mode (next step).

Func. ↓ MENU1	**Item** ↓ EMULATE	**Option** ↓ DPL24C*

3. The setup mode initial menu appears.

Exiting setup mode

You can exit setup mode in the following two ways:

- Use the EXIT FROM SETUP function in setup mode to return to the setup mode initial menu.
- Press the ONLINE or NEXT DISPLAY button to return to the first basic menu.

In either case, if any options were changed, a confirmation message asks you whether you want to save new options in nonvolatile memory.

Using the Setup Menus

Using the control panel buttons in setup mode

With the LED type control panel, setup functions, items, and options to be selected are printed on paper. To specify or execute a selection, position the yellow arrow on the print head at the selection using the ONLINE, FONT, MENU, and LOCK buttons.

With the LCD type control panel, setup functions, items, and options are displayed on a 24-character × 2-line LCD. The LCD screen is divided into three parts in which functions, items, and options are displayed respectively. These three parts also correspond to the F1, F2, and F3 buttons beneath the LCD. You can select or execute desired functions, items, and options using these three buttons according to messages that appear above the buttons.

The organization of setup functions, items, and options is the same for both types of control panels. Abbreviated names of functions, items, and options printed or displayed are also the same. See Chapter 8 for information on items that are the same.

This section describes the basic operations used in setup mode. It also describes some typical operations in detail. However, this section does not describe all setup mode operations because the LCD screen messages are self-explanatory.

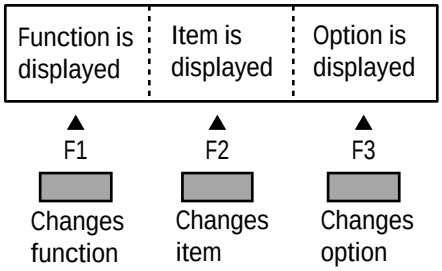
Selecting options

The MENU1, MENU2, HARDWRE, ADJUST, CONFIG, and GAP-ADJ functions have options you can select or change. For these functions, the F1, F2, and F3 buttons work as described below.

Relationship of the three screen sections and the F1, F2, F3 buttons

As described in “Setup Mode Reference” on page 8-44, setup mode provides many functions, items, and options. To make the display suit the hierarchical structure of setup mode and to make the operation of buttons easy, the screen is divided into three parts, from left to right displaying functions, items, and options. You can easily make a desired selection by selecting a function using F1, an item using F2, and an option using F3, in this sequence.

The selections are not in effect until they are saved.



ONLINE, ↓↑, and NEXT DISPLAY buttons

During selection, the functions of the ONLINE, ↓↑, and NEXT DISPLAY buttons are as follows:

- Press the ONLINE or NEXT DISPLAY button to exit setup mode and return to the original basic menu.
- Press the ↓↑ button to reverse the direction of the arrow displayed in the screen section.

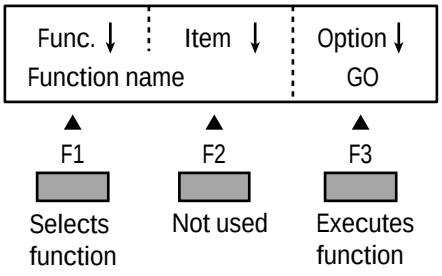
Starting functions

The SAVE, LIST, LOAD DEFAULTS, SELF-TEST, HEX DUMP, V-ALIGNMENT, and EXIT FROM SETUP functions save changed options, list current options, help diagnose printer problems, and so on. These functions do not have any items or options to be selected. For these functions, the F1, F2, and F3 buttons work as described below.

F1, F2, F3 buttons

For functions that have no items and options to be selected, select the function using F1. The function name appears on the lower line of the screen, and "GO" appears above the F3 button. The upper line of the screen continues to display the setup mode initial menu.

Press F3 to start the function. The function is executed or its specific prompt message for the next operation is displayed.



ONLINE, ↓↑, and NEXT DISPLAY buttons

After the function is started, the functions of the ONLINE, ↓↑, and NEXT DISPLAY buttons are as follows:

- Press the ONLINE or NEXT DISPLAY button to exit setup mode and return to the original basic menu. When the HEX DUMP function is executed, this button switches the printer between online and offline modes.
- The ↓↑ button is not used.

Example of operations

This section describes typical setup mode functions to help you understand the operations of all other setup mode functions. The following functions are described:

- MENU1 and MENU2
- SAVE
- EXIT FROM SETUP
- SELF-TEST
- V-ALIGNMENT

Selecting options in MENU1 and MENU2

"Setup Mode Reference" on page 8-44 describes the assignment of functions, items, and options in setup menus. The following example shows how to select (not change) the print quality from letter to draft to speed printing using MENU1. It also shows how to scroll forward and backward through the setup menus.

Func. ↓	Item ↓	Option ↓
MENU1	EMULATE	DPL24C+*

1. Enter setup mode. If MENU1 is not displayed under Func., press F1 until it appears.

Func. ↓	Item ↓	Option ↓
MENU1	**QUALITY**	LETTER*

2. Press F2 until QUALITY appears under Item.

   An asterisk (*) appears next to each default option.

Func. ↓	Item ↓	Option ↓
MENU1	QUALITY	**DRAFT**

3. Press F3 until DRAFT appears under Option.

Draft print quality is now selected. To use this option in printing, save it. If you are working through the example setup operations described here, go to the SAVE function on page E-18.

Scrolling the menu

- To scroll forward quickly through the setup functions, items, or options, press and hold down F1, F2, or F3. The last selection wraps around to the first selection.
- To scroll backward when you pass the desired function, item, or option, press the ↓↑ button to make the arrows on the display point up (↑). To scroll quickly, press and hold down F1, F2, or F3. The first selection wraps around to the last selection.

Saving changed options

You can save changed options in three ways:

- Use the SAVE function.
- Use the EXIT FROM SETUP function.
- Press the ONLINE or NEXT DISPLAY button.

With the first method, the printer remains in setup mode after saving the changes, allowing you to use different functions in setup mode. With the other methods, the printer saves the changes and then exits from setup mode and redisplays the original basic menu.

If you made changes while in setup mode, the printer prompts you to save the changes. You can save changes permanently or temporarily. Permanent changes become the printer's new default settings. Temporary changes are lost when the printer is turned off.

Using the SAVE function

The SAVE function permanently saves changed options. Use SAVE when you want to select another function after saving. To use the SAVE function, follow these steps:

Func. ↓	Item ↓	Option ↓
MENU1	QUALITY	DRAFT

Func. ↓	Item ↓	Option ↓
SAVE		GO

NOTE: Values have been permanently saved.

Func. ↓	Item ↓	Option ↓
SAVE		GO

1. Make sure the printer is in setup mode. If you just completed the previous exercise, the printer is in setup mode with the menu shown at the left.
2. Press F1 until SAVE appears under Func.
3. Press F3 to execute the SAVE function. If the options have been changed, the save execution message briefly appears, indicating the changed options are now permanently saved. Then the original SAVE menu reappears. If the options were not changed, the original SAVE menu simply reappears.
4. If you want, select another function.

If you are working through the exercises, after completing the exercise on the SAVE function go to the SELF-TEST function on page E-20.

Using the EXIT FROM SETUP function or the ONLINE or NEXT DISPLAY button

When you use the EXIT FROM SETUP function or press the ONLINE or NEXT DISPLY button, the printer prompts you to permanently or temporarily save changed options. Use these methods when you want to place the printer offline after saving. Follow these steps:

Func. ↓ XXXXX	Item ↓ XXXXX	Option ↓ XXXXX

1. Be sure the printer is in setup mode with the menu shown at the left displayed.

Func. ↓ **EXIT FROM SETUP**	Item ↓	Option ↓ GO

2. Press F1 until EXIT FROM SETUP appears under Func. Then press F3 to execute the EXIT FROM SETUP function. Alternatively, press ONLINE or NEXT DISPLAY.

   The prompt message shown at the right appears.

EXIT: Use temporarily?		
USE	SAVE	Not-exit

3. • To use the changed options temporarily press F1. The save execution message shown at the right briefly appears.

   The changed options are now temporarily saved.

   • To use the changed options permanently press F2. The save execution message shown at the right briefly appears.

   The changed options are now permanently saved.

NOTE: Values are lost if power is turned off.

NOTE: Values have been permanently saved.

Enter setup	<Menu> MENU1	<Lock> OFF

4. The original basic menu reappears, and you can place the printer online.

Printing the self-test

The printing self-test is a convenient way to check print quality after making adjustments using the GAP-ADJ or V-ALIGNMENT function. You can start the printing self-test from setup mode.

To start the self-test, load paper in the printer. Then follow these steps:

Func. ↓	Item ↓	Option ↓
SAVE		GO

1. Enter setup mode. If you just completed the previous exercise on the SAVE function, the printer is in setup mode with the menu shown at the left.

Func. ↓	Item ↓	Option ↓
SELF-TEST		GO

2. Press F1 until SELF-TEST appears under Func.

Self-test printing		
EXIT	STOP	GO

3. Press F3 to select GO. The self-test starts with the self-test execution message shown at the left.

4. Press F2 to stop self-test printing. Press F3 to resume self-test printing.

Func. ↓	Item ↓	Option ↓
SELF-TEST		GO

5. Press F1 to exit self-test mode and return to the SELF-TEST menu.

Form ↑ feed	Tear off paper	Line ↑ feed

6. Press ONLINE to exit setup mode. The basic menu reappears.

Correcting vertical character displacement

You use the V-ALIGNMENT function to correct the vertical character displacement that sometimes occurs with bidirectional printing. Printing from left to right becomes misaligned with printing from right to left, resulting in erratic-looking print lines.

To start the vertical alignment function, load paper wider than 381 mm (15 inches). Then follow these steps:

Func. ↓	Item ↓	Option ↓
MENU1	EMULATE	DPL24C+*

1. Enter setup mode.

Func. ↓	Item ↓	Option ↓
V-ALIGNMENT		GO

2. Press F1 until V-ALIGNMENT appears under Func.

Vertical alignment: xx		
SPEED	INCR	DECR

3. Press F3 to select GO. The vertical alignment execution message shown at the left appears, and the printer prints alternate rows of vertical bars.

   Bars are printed from left to right and then from right to left, initially at letter-quality speed.

4. Check the offset of the left-to-right bars against the right-to-left bars. If the offset is to the left, press F2 to increase the offset. If the offset is to the right, press F3 to decrease the offset. Recheck the offset several seconds later. Continue this step until the bars are correctly aligned.
5. Press F1 to change SPEED to Correspondence. Then repeat step 4.
6. Press F1 to change SPEED to Draft. Then repeat step 4.

Func. ↓	Item ↓	Option ↓
V-ALIGNMENT		GO

7. Press ONLINE or NEXT DISPLAY to stop printing and return to the V-ALIGNMENT menu. (You can then select another function.)

EXIT: Use temporarily?		
USE	SAVE	Not-exit

8. Press ONLINE to save the settings. The prompt message shown at the left appears.

Form ↑ feed	Tear off paper	Line ↑ feed

9. To save the settings temporarily, press F1. To save the settings permanently, press F2.

   A save execution message appears and then the original basic menu is redisplayed.

Power-on Special Functions

Table E-1 lists functions you can execute by pressing the ONLINE or F1 to F3 control panel buttons while turning on the power. Keep the buttons pressed until the buzzer sounds. Use only the combinations of buttons listed here. If you make a mistake (the printer displays a message not listed in the table), turn the power off without responding affirmatively to the message.

Table E–1 Power-on special functions

Buttons pressed during power on	Function	Initial message
ONLINE	Vertical alignment	Vertical alignment print
F1	Printing self-test	Self-test print
F2	Printing demonstration	DEMO pattern printing
F1 F2	Printing hexadecimal dump	Hex dump mode
F1 F2 F3	Option listing	Setup values listing

Messages

Status messages

Table E-2 lists messages the printer displays during normal operation. The messages are listed alphabetically.

Table E–2 Printer status messages

Message	Meaning
Data will be lost. OK? No Yes	Data remains in the print buffer. If you do not need the data, select Yes (press F3).
DEMO pattern printing STOP GO	The printer is printing or ready to print a demonstration pattern page. Press F2 to pause printing. Press F3 to start or restart printing.
ERROR! Use this button to invert arrows on LCD.	You have used the ↓↑ button incorrectly. Use ↓↑ to reverse the direction of the arrows shown in the display. You cannot use this button to change the direction of the NEXT DISPLAY button.
EXIT: Use temporarily? USE SAVE Not-exit	The SAVE or EXIT function was selected in setup mode. Press F1 to use the changed options temporarily (until the power is turned off). Press F2 to use the changed options permanently. Press F3 to return to the initial setup menu.
Factory values are set!	The LOAD DEFAULTS function was selected in setup mode, and the printer's factory default settings have been reset in MENU1 and MENU2.
HEX dump mode EXIT	The printer is in setup mode and is printing in hexadecimal format. Press F1 to exit.

Table E–2 Printer status messages *(Continued)*

Message	Meaning
Internal test	The printer is performing its internal hardware test. This message appears for 2 seconds immediately after the printer is turned on.
Line count = xxx	This message appears briefly when a line feed is executed. It indicates the new line position for printing, where line 001 is the top-of-form position.
Loading/Unloading paper	The printer is loading paper to the print position or unloading paper to the tractor.
NOTE: Values are lost if power is turned off.	This message appears when you exit setup mode by selecting USE, which temporarily save the changes you made. When you turn the printer off, the changes are lost.
NOTE: Values have been permanently saved.	This message appears when you exit setup mode by selecting SAVE, which permanently saves the changes you made, making them the printer's new power-on default settings.
Now resetting	The printer is clearing its print buffer and resetting itself for printing.
Offline setup mode	This message appears briefly when you enter setup mode using the control panel. It is the opening message of offline setup mode.
Offset (n/180”) = xxxx	This message briefly appears when a micro line feed is executed. It indicates the offset from the current print line in units of 1/180 inch, where xxxx is –128 to +127.

Table E–2 Printer status messages *(Continued)*

Message	Meaning
Online setup mode	This message appears when a computer command places the printer in setup mode. It is the opening message of online setup mode. Printer status information appears in the lower line of the display.
Page length = xx.x inch	This message appears briefly when a form feed is executed. It indicates the length of paper moved per form feed.
Paper still remains	When unloading continuous forms, paper was not retracted all the way to the tractor. Tear off the continuous forms.
Printing	The printer is online and printing.
RESET: Are you sure? No Yes	The printer is ready to reset itself. Press F3 to reset the printer. The buffer is cleared.
Save top adjust now!	This message briefly appears when the adjusted top-of-form position is permanently saved in the printer. Line 001 is set at the current position on the page.
Self-test printing EXIT STOP GO	The printer is printing or ready to print its self-test pattern, used to check print quality. Press F1 to exit the self-test. Press F2 to pause printing. Press F3 to start or restart printing.
Setup values listing	The printer is printing a page listing its currently set default values.

Table E–2 Printer status messages (Continued)

Message	Meaning
Tear off paper and press any button	This message appears when Tear off paper is selected from the control panel. After tearing off the continuous forms, press any button on the control panel to retract the paper to the top-of-form.
TOP ADJ: xx/6 IN + xx/180 MICRO↑ EXIT SAVE	This message appears for 7 seconds when the printer loads paper while offline. It indicates the top-of-form (line 001) position from the top edge of the paper by the sum of a multiple of 1/6 inch and a multiple of 1/180 inch. You can adjust the top-of-form by using ↓↑ and F1 while this message is displayed. Press F2 to save the setting temporary. Press F3 to save the setting permanently.
Vertical alignment: xx SPEED INCR DECR	The printer is printing the vertical bar pattern used to check alignment between forward and backward printing. Press F1 to change print quality (speed). Press F2 (increment) and F3 (decrement) to adjust the alignment of forward printing. To stop printing, press the ONLINE or NEXT DISPLAY button.

Error messages

Many printer messages are informational. They are intended to guide you in using the printer. Because these messages are self-explanatory and require no corrective action, they are not discussed here.

This section lists and gives possible solutions for two types of error messages:

- Messages indicating user-correctable problems
- Messages indicating fatal errors

When you see an error message, first check table E-3, E-4 and E-5 for the LED model and table E-6 for the LCD model to determine whether it indicates a problem you can correct. If the message is not listed in table E-3 to E-6, check the list of fatal error messages in table E-7 for the LED model or the list on page E-34 for the LCD model.

Messages indicating user-correctable problems

For both printer models, LED model and LCD model, the messages indicating user-correctable problems fall into two categories:

- Operational error messages
- Warning error messages

Operational error messages

LED model

An operational error message indicates a problem you can correct immediately.

1. If one of the two following errors occur, the “PAPER OUT” LED lights and the alarm buzzer sounds.

   Operate push buttons in the same way as in the offline state.

Table E–3 Operational error list

No.	Error name	Error description	Recovery method
1	Paper end (PE) error	Paper end is detected.(*1)	• Insert forms and load them.

Table E–3 Operational error list *(Continued)*

No.	Error name	Error description	Recovery method
2	Cut sheet feeder error	Cut sheet feeder paper end or paper jam is detected.(*2)	• Remove jammed paper. • Insert cut sheets and load them.

Notes: *1. DL6400 has a paper end detection sensor to detect paper end (Paper end is not detected, unless the setup item PPR-OUT: IGNORE is set.)

*2. Cut sheet feeder error is detected during paper loading.

2. If the following error occurs, the alarm buzzer sounds.

   All switches on the control panel are disabled.

Table E–4 Operational error list

No.	Error name	Error description	Recovery method
1	Cover open error	Cover is open.	• Shut the cover.

LCD model

An operational error message indicates a problem you can correct immediately. Printing stops after the current line, and the following occurs:

- The ALARM indicator turns red.
- The printer goes offline.
- The alarm sounds (unless it was deactivated in setup mode).

The printer remains offline until the error is corrected. The operational error message appears in the upper line of the display, the lower line retains the previous contents. For example, the display appears as follow when a paper outage is detected during a form feed or line feed.

```
          Out of paper
feed      paper      feed
```

Warning error messages

LED model

A warning error message indicates an interface or data format error while the printer is online. When this error occurs, the alarm buzzer sounds but printing continues.

Table E–5 Warning errors list

No.	Error name	Error description	Recovery method
1	Parity error	An incorrect parity condition is detected in received data at the RS-232C interface. • Besides parity, this error may also occur due to incorrect setting. • The printer prints question marks (?).	• Check the baud rate and data format. • Check the interface cable.
2	Framing error	An incorrect stop bit condition is detected in received data at the RS-232C interface. • The printer prints a question mark (?) for the first error byte then ignores the succeeding data.	• Check all settings for the RS-232C interface.

Table E–5 Warning errors list *(Continued)*

No.	Error name	Error description	Recovery method
3	Overflow error	The host transmits data to the printer although the input buffer is full of data (i.e., while the printer is requesting the host to stop data transmission). • The printer ignores the data (data is lost) and a question mark (?) is stored in the input buffer when the error is recovered.	• Check all settings for the RS-232C interface.
4	Download error	The download buffer overflows. • The printer ignores the data (data is lost).	• Reduce downloaded data. • Reduce the print buffer capacity, i.e., increase the download buffer capacity.
5	Overrun error	The printer cannot accept data at the rate it is transmitted. That is, while the printer is reading out the input buffer, the host transmits the next data. • The printer ignores the data (data is lost).	

Table E–5 Warning errors list *(Continued)*

No.	Error name	Error description	Recovery method
6	Transmission timeout error	While the printer attempts to transmit data to the host, ten seconds elapse with the output buffer full of data. • The printer ignores the data (data is lost).	

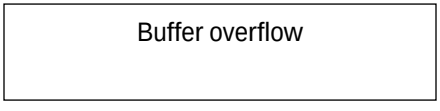
Note: Incorrect settings on the RS-232C do not always cause parity or framing errors. If the baud rates of the host computer and the printer are multiples of 4800, such as 19200, framing errors are not detectable, and meaningless data indicates a setting error. These errors do not affect the line from the host computer. An error remains if the printer is online and no other warning is displayed until push button operation or an operational error or fatal error is detected. The buzzer sounds each time a download error occurs.

LCD model

A warning error message indicates an interface or data format error while the printer is online. The printer remains online and printing does not stop, but the following happens:

- The ALARM indicator turns red.
- An alarm sounds (unless it was deactivated in setup mode).

For example, the display appears as follows when a buffer control error occurs on the serial interface.



The message remains displayed until the printer is placed offline and the error condition is corrected.

Table E-6 lists nonfatal error messages alphabetically.

Table E–6 Messages indicating user-correctable problems

Message	Meaning and solution
Buffer over-flow	The print buffer fails to accept data. The data is discarded. Check all parameters for the serial interface.
Cover is open	The top cover is open or removed. Printing stops. Close the top cover.
Download error	The download buffer has overflown. The data is discarded. Reduce the amount of download data, reduce the size of the input buffer to prepare more space for download data, or check the format of download data.
Framing error	The printer has received data in an incorrect format. The first byte is replaced by “?” and the succeeding data is all discarded. Check the FORMAT and BAUD RT settings in setup menus or check the interface cable.
Out of paper	The printer is out of paper. Install paper and press LOAD/UNLOAD. To resume printing, press ONLINE.
Out of paper or jam	The cut-sheet feeder is out of paper, or a paper jam has occurred. Remove the jam, if any. Install paper and press LOAD/UNLOAD. To resume printing, press ONLINE.
Parity doesn't match	The printer has received data with a incorrect parity. The data is replaced by “?” Check the interface cable.

Messages indicating fatal errors

LED model

Generally, a user cannot clear errors caused by defective printer hardware because usually, the printer does not restart. Therefore, when a fatal error occurs, immediately call your repair service center. For preliminary identification help of the fatal error types possible, please read the information below.

If a fatal error occurs, the printer enters one of the following states:

- If printing is in progress, it is stopped immediately.
- The ONLINE indicator goes off, and the printer goes offline.
- The PAPER OUT indicator blinks, and the alarm buzzer sounds.
- One of the FONT LEDs light up, thus indirectly indicating the alarm type (see table E-7 for the errors and their corresponding LEDs.)

Table E–7 Alarm names and the corresponding LED display

Alarm name	LEDs lit
Power alarm	COUR 10
Left end alarm	PRESTG 12
Overload alarm	COMPRESS 17
RAM alarm	Bold PS
FAN alarm	N. Sans PS
Head alarm	DRAFT 10
SP motor alarm	DRAFT 12
LF motor alarm	MENU FONT
GAP alarm*1	COUR 10, COMPRESS 17
Ribbon motor alarm	COUR 10, Bold PS
JAM lever alarm*2	COUR 10, Time PS
CSF motor alarm	COUR 10, N.Sans PS

*1, *2 You can evade each of these errors using the corresponding method indicated below:

*1 Confirm whether the specification of the form used lies within the printer's specification (for details see "Paper specification").

*2 Set the Jam removal lever (for how to do it, see page 6-4).

LCD model

Fatal errors other then “Jam lever open” cannot be corrected. Fatal errors include serious mechanical or electrical problems that prevent the printer from operating. Printing stops immediately, and the following occurs:

- The ALARM indicator blinks red.
- The ONLINE indicator turns off (the printer goes offline).
- An alarm sounds.

A fatal error message cannot be cleared. Usually, the printer does not restart. When a fatal error occurs, call your repair service. The upper line of the display shows FATAL! For example, the display appears as follows if the voltage is too low for printer operation.

```
FATAL!
Low voltage
```

The fatal error messages are listed here alphabetically.

- CSF motor driver
- Fan doesn't work
- Jam lever open (To correct, turn off power, close the jam lever, and turn power back on.)
- Left end sensor
- LF motor driver
- Low voltage
- Overload
- Paper too thick
- Print head driver
- RAM read/write
- Resident ROM sum (The ALARM indicator does not light and an alarm does not sound.)
- Ribbon motor driver
- SP motor driver

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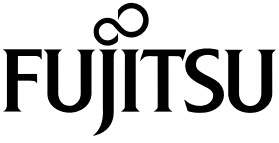

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