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# LA75 Plus Companion Printer Installation and User Guide

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## FCC NOTICE

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

- Reorient the receiving antenna.
- Relocate the computer or peripheral with respect to the receiver.
- Move the computer or peripheral away from the receiver.
- Plug the computer or peripheral into a different outlet so that they are on different branch circuits than the receiver.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the booklet *How to Identify and Resolve Radio/TV Interference Problems*, prepared by the Federal Communications Commission helpful. This booklet is available from the U.S. Government Printing Office, Washington DC, 20402, Stock No. 004-000-00345-4.

To meet FCC requirements, a shielded parallel cable is required to connect the device to a personal computer or other Class B device.



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# Preface

## About This Guide

The *LA75 Plus Companion Printer Installation and User Guide* is part of the LA75 Plus documentation package. This guide, which explains how to install and operate the printer, is written for someone with little or no computer experience. You should read the whole of the guide.

Even if you are familiar with this kind of desk-top printer, you should, at the very least, read Chapter 3, Loading the Paper, to familiarize yourself with the LA75 Plus's new features.

The guide is divided into seven chapters and four appendixes.

**Chapter 1, Installing the Printer** describes how to unpack and install the printer. It names the printer parts, shows you how to test the printer, and how to connect your printer to your computer system, personal computer or video terminal. *Read this chapter completely before you begin the installation procedure.*

**Chapter 2, Using the Operator Control Panel** describes how to use the printer's operating controls.

**Chapter 3, Loading the Paper** provides a detailed explanation of the different ways to load paper.

**Chapter 4, Using Fonts** describes how to insert and access the optional font cartridges available for the LA75 Plus.

**Chapter 5, Configuring the Printer** explains how to configure the printer so that it can communicate with your computer system.

**Chapter 6, Maintaining the Printer** shows how to keep the printer clean, how to replace the ribbon cartridge and the fuse, and how to install or replace the printhead. The chapter also suggests how you can identify simple problems, and so avoid having to contact your Digital sales representative.

**Chapter 7, Reference Information** contains general user reference material, including a summary of the printer's set-up features, and printer and paper specifications.

**Appendix A, Set-up** contains details of the set-up process, and a complete list of the available values for each of the printer's features. The factory setting of each feature is marked.

**Appendix B, Printing Control Characters** explains how to print printer control characters.

**Appendix C, DEC PPL2 Quick Reference** contains basic information on using DEC PPL2 control codes and escape sequences.

**Appendix D, IBM Proprinter X24E Quick Reference** contains basic information on using IBM Proprinter X24E control codes and escape sequences.

## Conventions Used in This Guide

### Warnings, Cautions, and Notes

The warnings, cautions, and notes in this guide have the following specific purposes:

<i>WARNING</i>	Contains information about preventing personal injury.
<i>CAUTION</i>	Contains information about preventing damage to equipment.
<i>NOTE</i>	Contains general information of which you should be aware.

## Associated Documentation

The other guides in the LA75 Plus documentation package are the *LA75 Plus Companion Programmer Reference Manual*, part number EK-LA75S-RM-001, and the *LA75 Plus Companion Printer Sheet Feeder Guide*, part number EK-LA75S-SF-001.

The optional Automatic Sheet Feeder is documented separately in the *LA75 Plus Companion Printer Sheet Feeder Guide*.

## Software Requirements

The LA75 Plus has many features. The features you can use depend on the following conditions:

- The computer system (also known as the host) to which the printer is connected
- The operating software used by your computer
- The software program you are using

Check the documentation for the software you are using to learn what printer features you can use. Your software may allow insertion of the printer attribute escape sequences. Some basic escape sequences are listed in Appendix C. Refer to your software documentation for information about how to insert escape sequences.

If you need help choosing the correct computer software for your application needs, contact your Digital sales representative.

## About the Printer

The LA75 Plus is a narrow-carriage, impact dot-matrix printer, designed to be a personal desk-top printer, and suitable for general business applications. It has flexible paper handling, and is capable of printing on continuous pinfeed paper, single sheets, multiple-part forms, and envelopes. An Automatic Sheet Feeder (LA75Y-SF) is available as an option, to hold and automatically load up to 80 sheets of cut paper. The print quality is suitable for limited word processing in a small-to-medium computer environment.

The LA75 Plus has the following features that were not present in the LA75:

- The LA75 Plus is a 24-pin printer.
- The printer is able to print in four colors once the color ribbon (PN LA75R-KC) has been installed.
- The printer also has a Document on Demand capability (automatic or manual) which prevents wasting forms or paper between printing jobs.
- The printer has an Automatic Viewing capability, which allows the user to see the last printed line after a job has finished.
- The printer can be connected at the same time to serial and parallel ports, and switches automatically between them when data is received.
- The printer is compatible with the IBM Proprinter X24E which is the default protocol at power-up when the parallel port is used.

## Replacing the Fuse

Your printer is equipped with a fuse which has the following value according to the mains voltage. If you need to change it, you must replace it with a fuse of equal value.

Mains Voltage	Fuse Value
100V and 120V models	1.6 A - 250V
220V and 240V models	1 A - 250V



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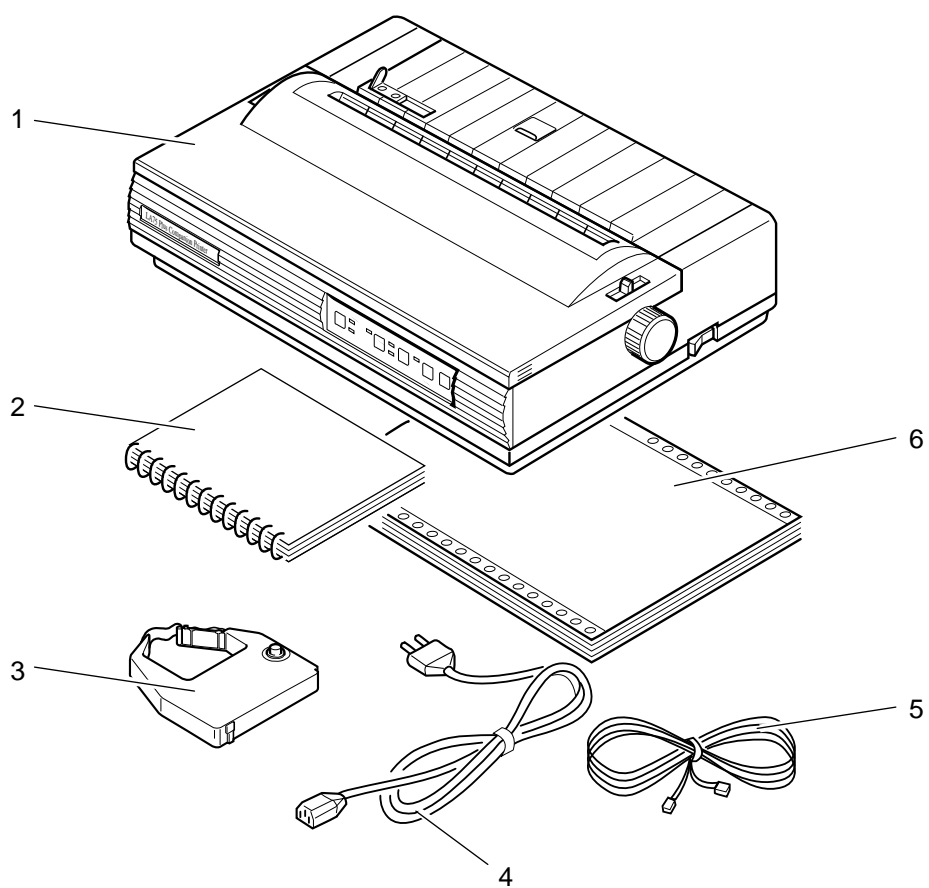
# Installing the Printer

## 1.1 Checking the Contents of the Box

Unpack the LA75 Plus and make sure you have all the items shown in the table. If any items are missing or damaged, contact your Digital sales representative.

Please complete the installation procedure in sequence. After you install the LA75 Plus, keep this guide near the printer for easy reference.

Item Number	Item Name
1.	Printer
2.	Documentation
3.	Ribbon Cartridge
4.	Power Cord
5.	Interface Cable
6.	Pinfeed Paper





## 1.2 Site Considerations

The LA75 Plus can be installed in your office, school, or home.

### **Environmental Conditions**

- Install the printer in an area away from a heater or other heat source, and away from an air conditioner or strong drafts.
- Avoid installing the printer in a dusty or humid environment.

### **Work Location**

- Place the printer on a flat, solid, level area such as a desk or printer stand.
- Allow enough space around the printer to ensure correct ventilation and easy access to all sides of the printer.

### **Power Requirements**

- No special wiring is required. A typical household or office wall outlet is sufficient.
- Do not plug other equipment such as coffee pots, office copiers, or air conditioners into the same wall outlet.

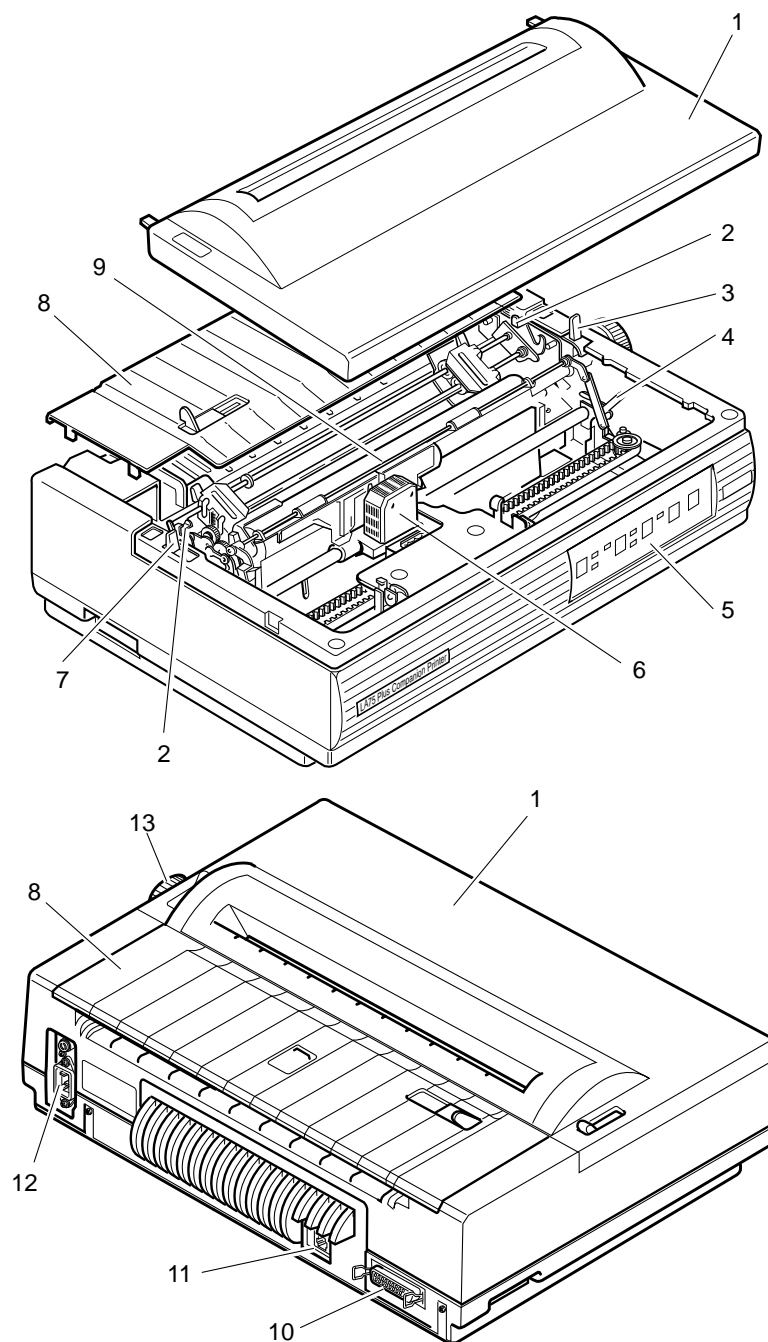
See Chapter 7 for more detailed specifications.

## 1.3 A First Look at the Printer

Before installing the LA75 Plus, spend a little time familiarizing yourself with the printer.

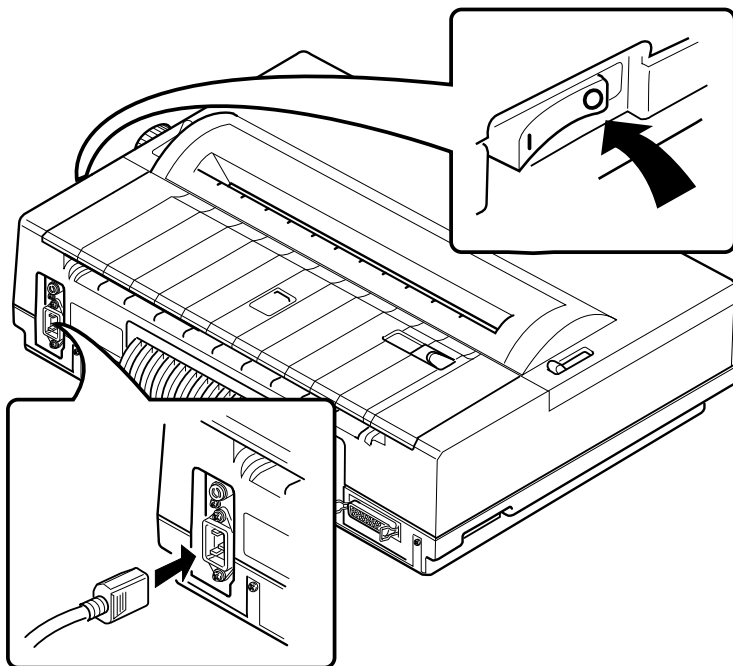
Item Number	Item Name
1.	Access Cover
2.	Tractor Release Lever
3.	Paper Release Lever
4.	Printhead Adjustment Lever
5.	Control Panel
6.	Printhead
7.	Paper Parking Lever
8.	Paper Cover
9.	Bail Bar
10.	Parallel Port
11.	Serial Port
12.	Power Cord Socket
13.	Platen Knob <sup>1</sup>

<sup>1</sup>Only turn the platen knob to manually clear a paper jam.



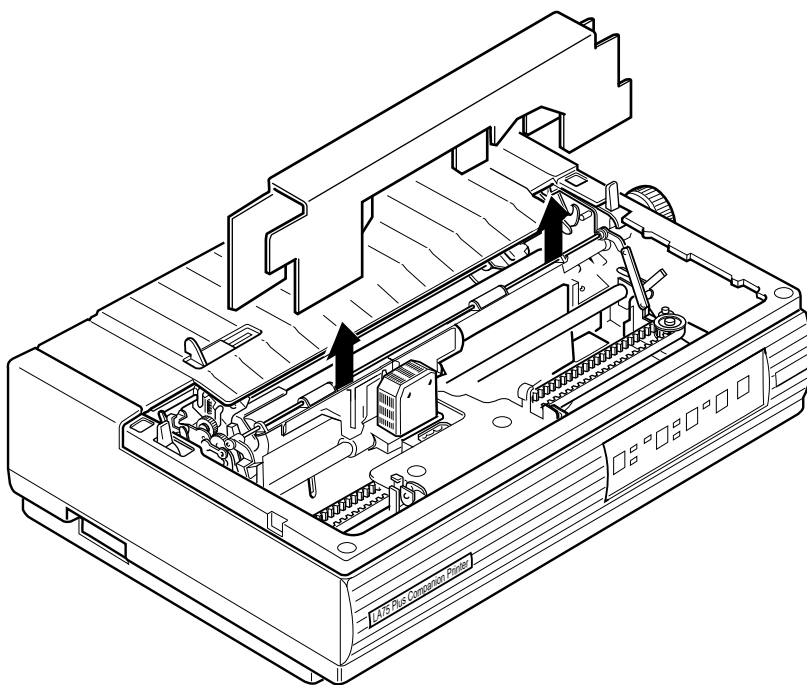
### 1.3.1 Installing the Power Cord

- 1 Make sure the power switch is set to 0 (off).
- 2 Plug the power cord into the socket at the back of the printer.
- 3 Plug the other end of the cord into your electrical outlet.



### 1.3.2 Removing the Packing Material

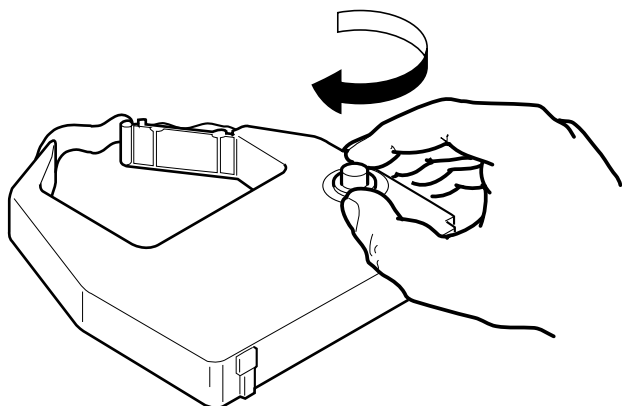
- 1 Remove the access cover.
- 2 Remove the cardboard packing.



### 1.3.3 Installing the Ribbon Cartridge

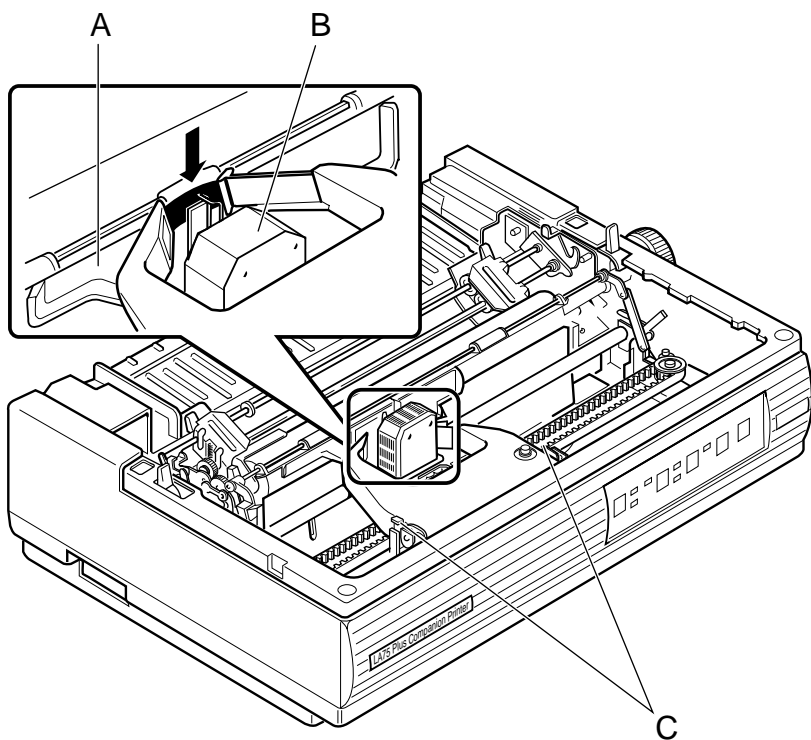
**Note:** The printer will automatically detect a color ribbon as soon as one has been installed.

- 1 Remove the ribbon cartridge from its wrapper. To tighten the ribbon, turn the ribbon adjustment knob in the direction indicated on the cartridge.

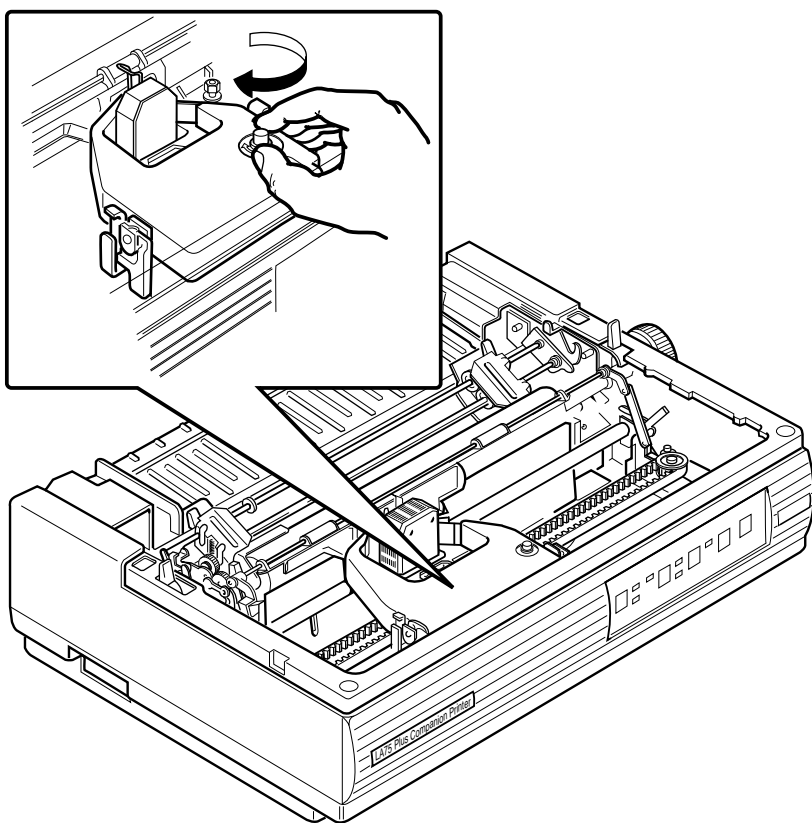


- 2 Fit the ribbon cartridge between the mounting clips (C) on the carriage. Make sure the ribbon fits between the front of the printhead (B) and the clear plastic smudge guard (A). Press down on the cartridge until you hear it click into place.

**Note:** Make sure the ribbon is secured on both the left and right sides.



- 3 Turn the ribbon adjustment knob enough to tighten the ribbon against the printhead.

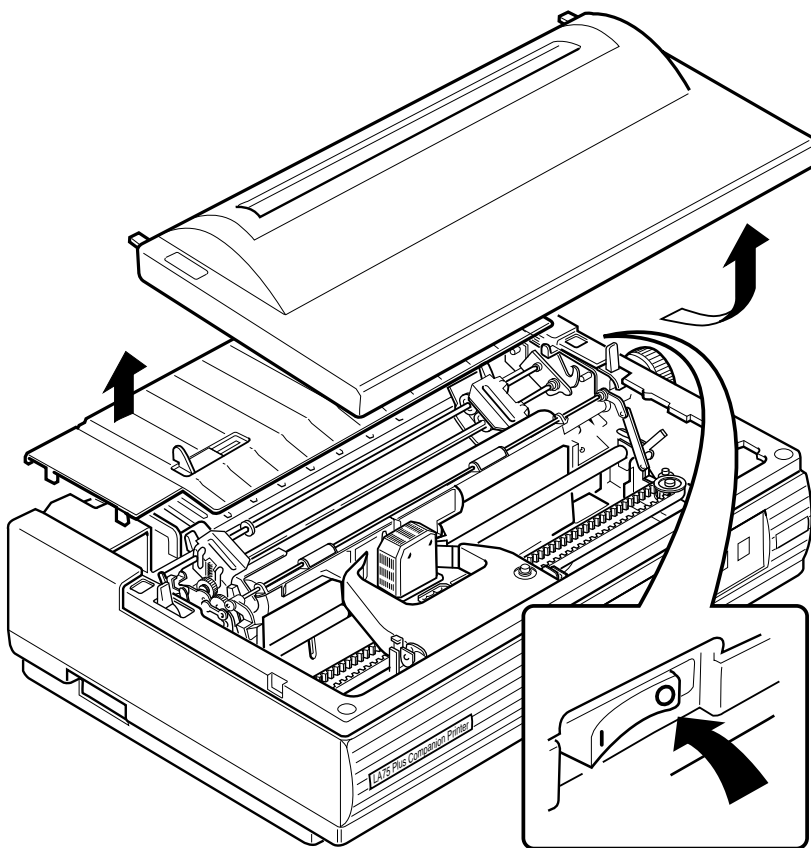




## 1.4 Testing the Printer

The printer self-test allows the printer to check its operations independently. To load paper into the printer and run the self-test, perform the following steps:

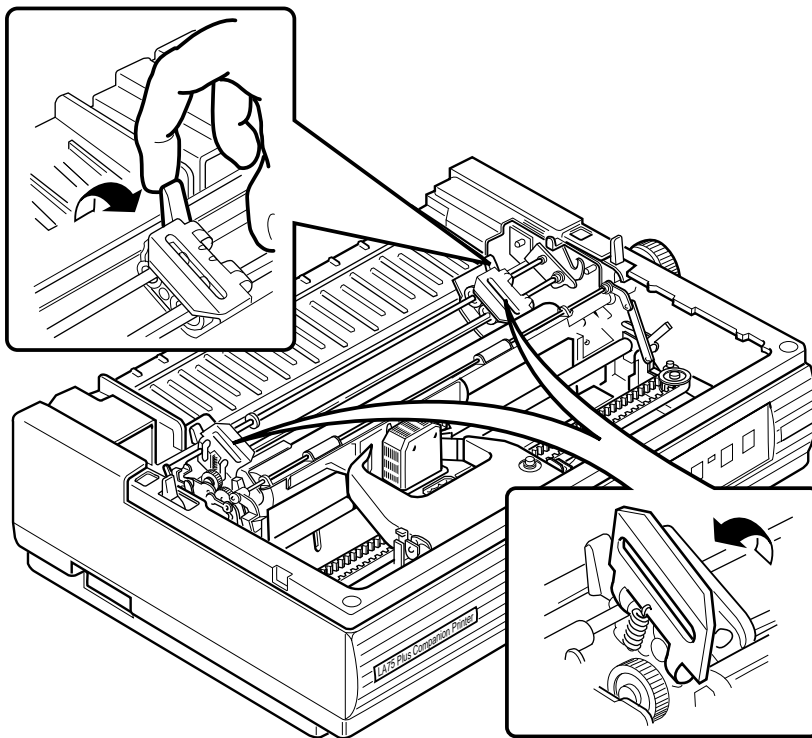
- 1 Make sure the power switch is set to 0 (off).
- 2 Remove the access cover and the paper cover.



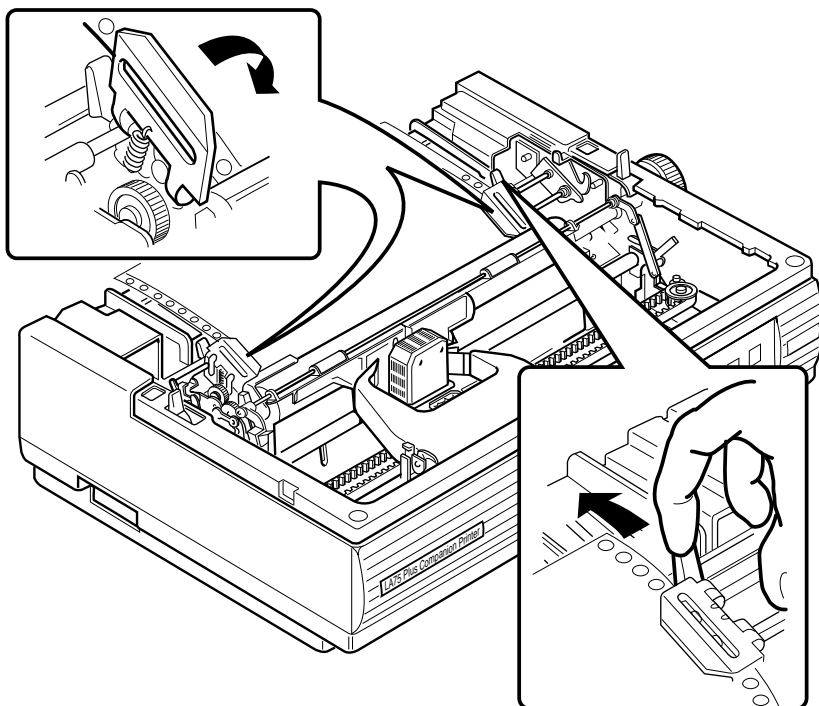
- 3 Unlock only the clamp on the right tractor by pulling the clamp towards the front of the printer.

**Note:** The left tractor has been factory set so that the left edge of the paper (column 1) lines up correctly with the printhead when it starts printing. Digital recommends that you do not unlock the left tractor clamp. Only unlock it if, for some reason, the leftmost character does not line up with the edge of the paper.

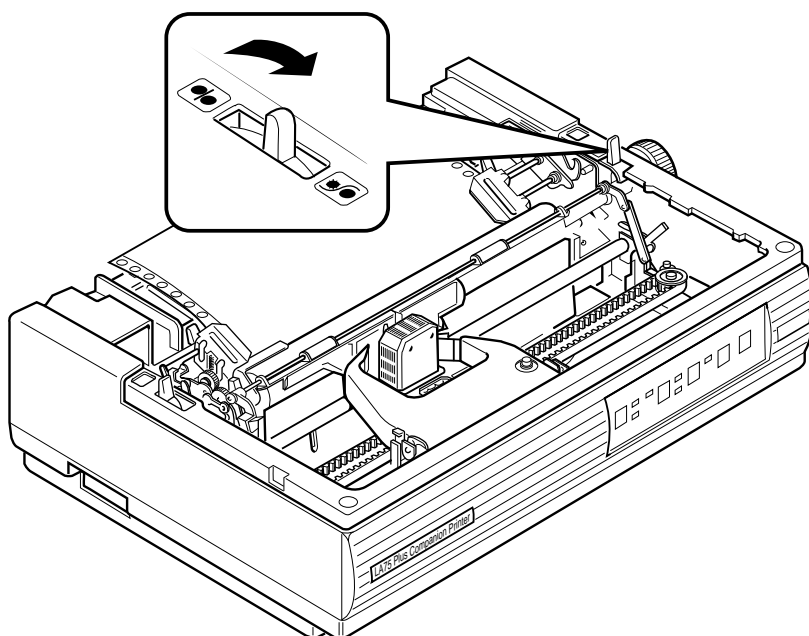
- 4 Open both tractor doors.



- 5 Align the pinfeed holes on both edges of the paper with the tractor pins. Close the tractor doors to secure the paper.  
**Note:** The red marks on the bail bar indicate the print area for a standard sheet of paper. Use these marks to help position the paper correctly.
- 6 Readjust the right tractor position by moving it to the right so that the paper extends smoothly between the two tractors. (The pinfeed holes should not be mis-shaped by too much tension on the paper.) Lock the right tractor by pushing the tractor clamp towards the back of the printer.



- 7 Pull the paper release lever towards the front of the printer to set the printer in tractor mode.



- 8 Replace the access cover and the paper cover.  
**Note:** The printer will not work if the covers are not on, or if they are replaced incorrectly.

- 9 On the control panel, press and hold down the Form Feed switch (FF), and turn the power switch to 1 (on).

- 10** Release the Form Feed switch as soon as the printer begins to print. The printer produces the following pattern.

- 11 After a few lines of printout, turn off the power to stop the self-test. (If the printer does not pass the self-test, see Section 6.2 in Chapter 6.)

## 1.5 Connecting the Printer to a Computer System

### A. Connecting to a Digital Computer, Server, or Terminal

You should connect to the serial port before following the steps described in this section.

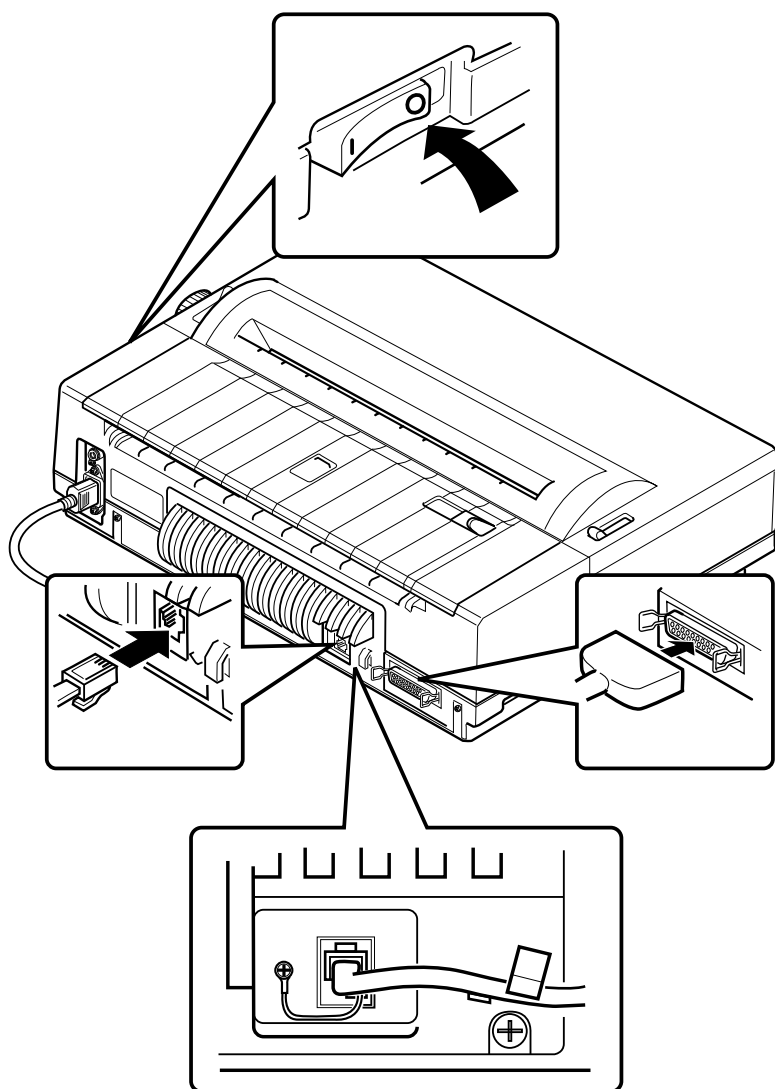
### B. Connecting to a Digital PC or PC Compatible

You should connect to the parallel port, and select the IBM Proprinter X24E driver from the PC application software before following the steps described in this section.

**Note:** If the above cabling strategy is followed, the LA75 Plus will be ready, once the power is switched on, to communicate:

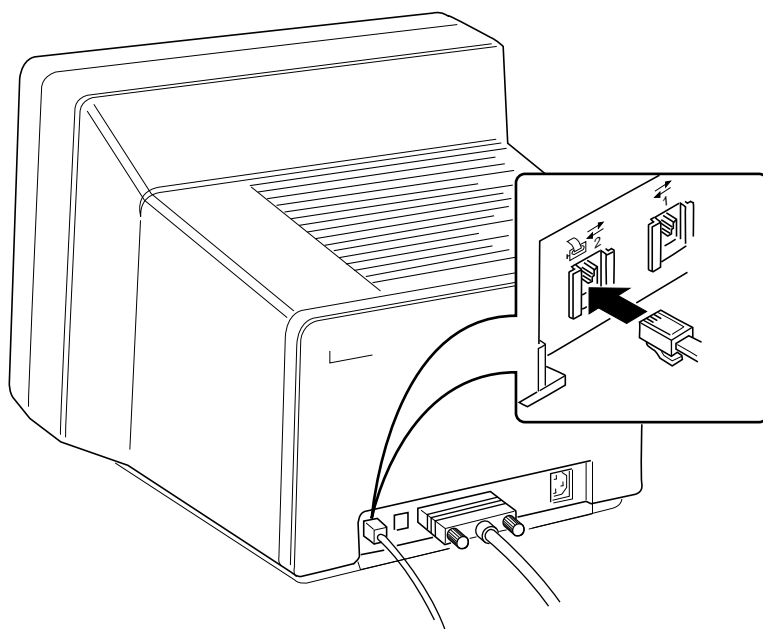
- 1 In Digital protocol through the serial port.
- 2 In IBM Proprinter X24E protocol through the parallel port.

- 1 Turn the power switch to 0 (off).
- 2 Plug the interface cable <sup>1</sup> into the back of the printer.



<sup>1</sup> To connect to a Digital PC or PC Compatible, use the parallel data cable BC-19M-10. If you use a shielded serial data cable (DD-16E-10), insert it into the cable retainer.

- 3 Plug the other end of the interface cable directly into your host computer. If you use an adapter,<sup>1</sup> first plug the interface cable into the appropriate adapter, and then to your host computer or video terminal (with printer port).



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<sup>1</sup> To connect to a Digital Computer, Server, or Terminal, use the H8571-A adapter.



### 1.5.1 Cables

For specific information on cables, see Section 7.6 in Chapter 7.

### 1.5.2 Printing a File

Refer to your computer system documentation for information about operating the printer with your computer. Your computer or terminal may require printer set-up before it can operate with the printer.

If your computer does not require printer set-up, you can print a file as follows:

- 1 Turn your computer or video terminal on.
- 2 Turn the power switch on the LA75 Plus to 1 (on). The printer is ready to print.
- 3 Make sure there is paper in the printer, and that you have advanced the paper (by pressing the FF switch) to the print position. **Do NOT turn the platen knob to manually advance the paper.** <sup>1</sup>
- 4 Follow the instructions in your computer system's documentation on printing a file.

**Note:** When the LA75 Plus is connected to two computer systems at the same time, the printer can accept data to print from either one only if it has been idle for two seconds.

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<sup>1</sup> Only turn the platen knob to manually clear a paper jam.

### **1.5.3 If You Have Difficulties Printing a File**

The LA75 Plus configuration is factory set for use with Digital's computer systems. If you have difficulties printing your files correctly, you may need to change the printer's configuration. Some suggestions follow.

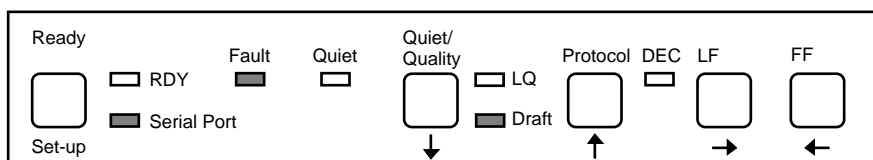
- 1** Check that the printer features match the host computer configuration, in particular, the communication protocol. If the printer is connected to the serial port, check the printer's baud rate, and data bits and parity. See Section 7.4 in Chapter 7 for information on these features. Also check your computer system's documentation.
- 2** If you have to change the printer's configuration to match that of the host computer, see Chapter 5.
- 3** If your printer still does not print your files correctly, see Section 6.2 in Chapter 6.
- 4** If you are not sure of how to correct the problem, contact your Digital sales representative.

# 2

## Using the Operator Control Panel

### 2.1 About the LA75 Plus Control Panel

This chapter describes how to use the printer's operating controls. To print files, the control panel switches perform the functions that appear above the switches.



**Note:** The functions on the control panel that appear below the switches are explained in Chapter 5.

## 2.1.1 Printer Operating Switches and Indicators

### Ready Indicator and Switch

The Ready switch puts the printer *on-line* or *off-line*. When the Ready indicator (RDY) lights up, the printer is on-line and ready to print. When the Ready indicator is blinking, the printer is off-line and will not print.

If you press the Ready switch while the printer is printing (putting it off-line), the LA75 Plus will complete the line it is printing, stop, then move the paper until the last line is visible.

### Serial Port Indicator

The Serial Port indicator lights up when the printer receives data from the serial port. When the Serial Port Indicator is not lit up, the printer receives data from the parallel port.

### Fault Indicator

The Fault indicator is amber. It lights up when the paper supply is exhausted or nearly exhausted, or if there is a mechanical problem, and flashes continuously when the printer finds an electronic problem. (See Section 6.2.3 in Chapter 6 to find the probable cause of the problem, as well as suggestions for correcting the problem.)

### Quiet Indicator

The Quiet indicator is green. It lights up when the printer is turned to Quiet mode.

### **Quiet/Quality Switch**

When the printer is in Ready mode, pressing the Quiet/Quality switch puts it into Quiet mode.

When the printer is off-line, (the Ready indicator (RDY) is blinking), the Quiet/Quality switch allows you three choices of print quality:

- 1 Letter Quality (LQ), which prints at 83 characters per second (CPS).
- 2 Draft Quality (DQ), which prints at 250 CPS.  
In both cases, an indicator lights up next to the print quality you have selected.
- 3 If no indicator lights up, the print quality is controlled through software commands.

The LA75 Plus has one other print quality, Near Letter Quality (NLQ), which prints at 125 CPS. This mode is only selectable through software commands.

**Note:** All CPS speeds listed in this guide are quoted at their maximum burst speeds (Normal Mode). For more information on CPS, see Section 7.5 in Chapter 7.

### **Protocol Indicator and Switch**

The Protocol switch lets you change the way the printer communicates with your computer system. This switch is only operative when the printer is in a paused state, and a print job has finished. (There is no data left in the print buffer.) Press this switch to toggle between DEC protocol and IBM X24E protocol.

When DEC LED is On, DEC mode is selected; when DEC LED is Off, IBM mode is selected. The protocol can also be changed by the application software.

### **Line Feed (LF) Switch**

The LF switch advances the paper in the printer one line at a time. Continued pressure on the switch advances the paper a number of lines.

### **Form Feed (FF) Switch**

The FF switch advances the paper in the printer to the top of the next form.



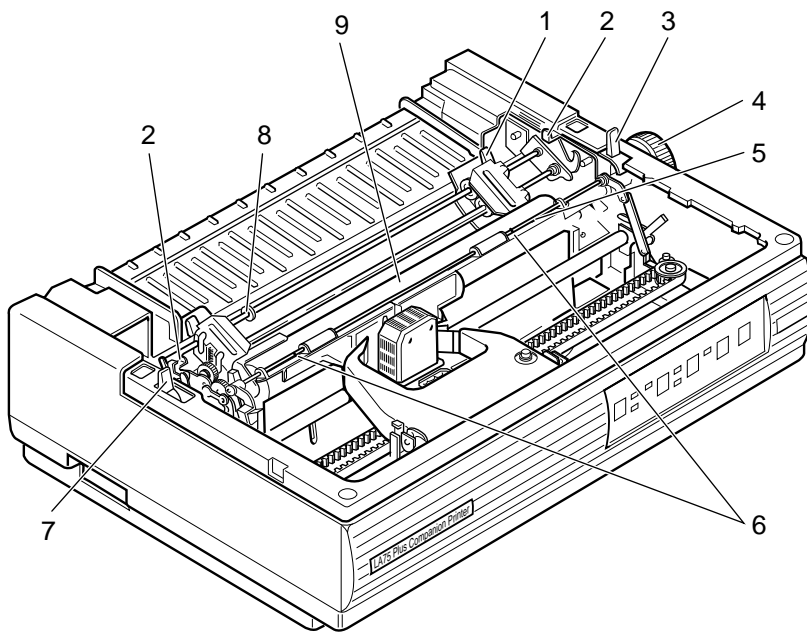
# 3

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## Loading the Paper

### 3.1 Paper Controls

The levers and controls described in this section are used for loading and positioning paper in the printer.





**Parking Lever**

The parking lever (7) controls the autopark function. This function is used to move pinfeed paper into the park position before single-sheet loading.

**Bail Bar**

The bail bar (5) holds the paper against the platen (9). The red marks (6) on the bail bar indicate the print area for a standard sheet of paper. Use these marks to position the paper correctly.

**Platen Knob**

The platen knob (4) is only used to clear paper jams. **Do not use it in any other circumstances.**

**Paper Release Lever**

The paper release lever (3) controls the paper drive system. Pull the lever towards the front of the printer for tractor feed. Push the lever towards the back of the printer for friction feed.

**Tractor Release Levers**

The tractor release levers (2) are used to position the entire tractor unit for a paper-feed operation.

**Tractor Clamps**

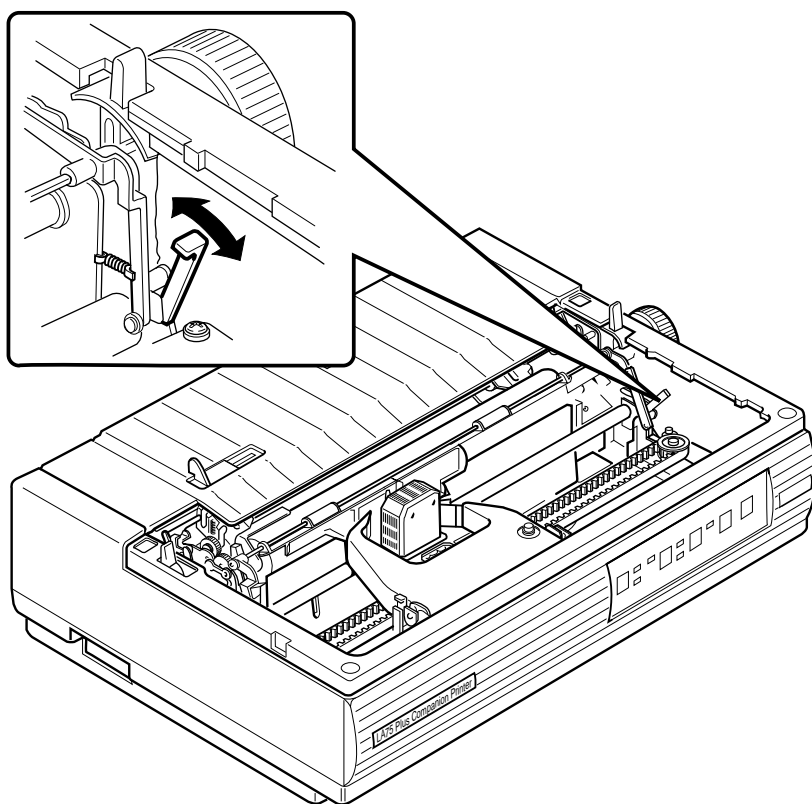
The tractor clamps (1) allow you to adjust the position or location of the tractors for different paper sizes. Pull the clamp towards the front of the printer to move the tractor to the left or right. Push the clamp towards the back of the printer to lock the tractor in place.

**Tractor Stop**

The tractor stop (8) prevents the left tractor from being moved too far to the right.

### Printhead Adjustment Lever

The printhead adjustment lever changes the printhead position to allow for different thicknesses of paper, and for forms or envelopes. The lever can be moved to four positions to vary the distance between the printhead and the platen. See Section 3.3 in this chapter for more information.



## 3.2 Loading Paper

There are three ways to load paper for the LA75 Plus which are illustrated in the cross-section diagrams later in this section.

- Load pinfeed paper from the back of the printer (Factory default).
- Hand feed single sheets <sup>1</sup> from the back of the printer.
- Load pinfeed paper through the printer's bottom slot.

**Note:** Bottom Loading is intended for printing applications using forward paper motion only. Typically, bottom loading is most appropriate for loading "difficult" paper (for example "sticky" labels). **It is the least frequently used of the three loading methods.**

**Note:** Using the printer's bottom slot requires a special printer table or stand. Contact your Digital sales representative for ordering information.

For applications requiring reverse paper motion to achieve printing functions such as bolding, underlining, and superscripting or subscripting, load the paper from the back of the printer. **The new LA75 Plus features described in Section 3.2.1.1, Viewing the Last Printed Line and Section 3.2.1.2, Document on Demand are only possible with Rear Loading.**

Table 3–1 illustrates Digital's recommendations on using the three methods.

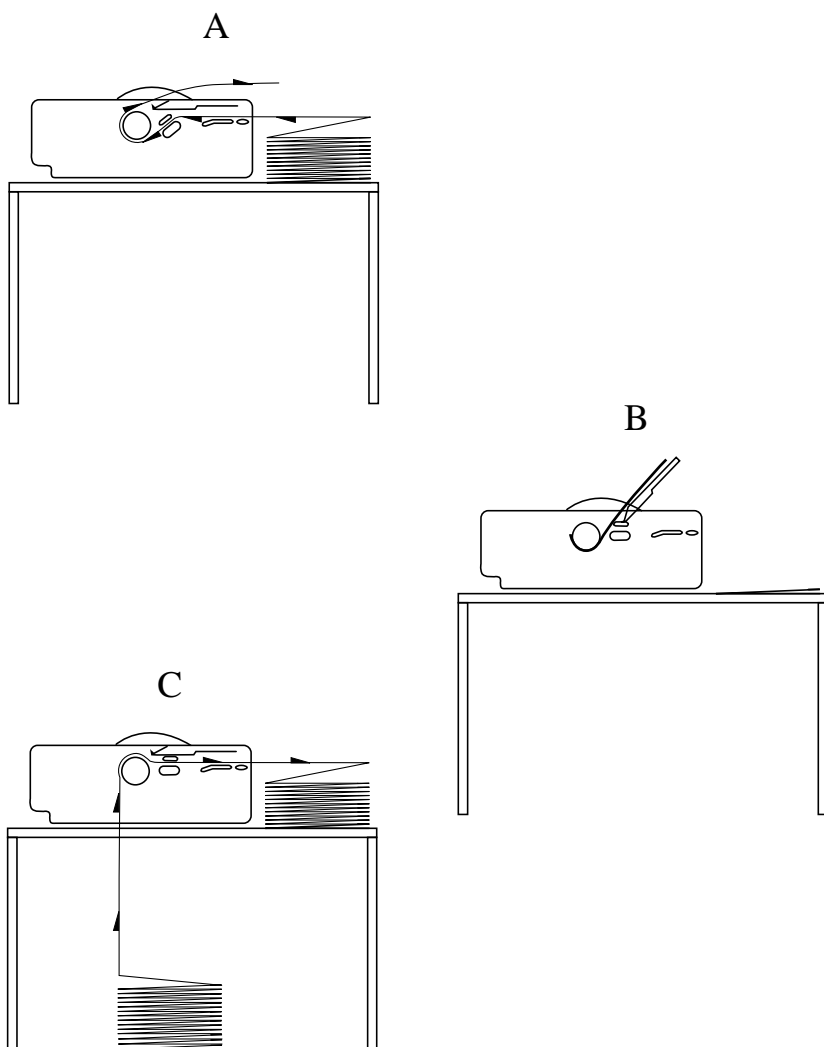
**Table 3–1      Loading Methods and Types of Paper**

Method	Type of Paper
Rear Loading (Section 3.2.1)	Pinfeed Paper
Single-sheet Loading (Section 3.2.2)	Single Sheets/Envelopes
Bottom Loading (Section 3.2.4)	Pinfeed Paper -Labels/Multipart

<sup>1</sup> See also the *LA75 Plus Companion Printer Sheet Feeder Guide*

## Loading Methods

Diagram A illustrates the Rear Pinfeed Loading method, Diagram B the Single-sheet Loading method,<sup>1</sup> and Diagram C the Bottom Pinfeed Loading method. The three methods are discussed respectively in Section 3.2.1, Section 3.2.2 and Section 3.2.4 later in this chapter.



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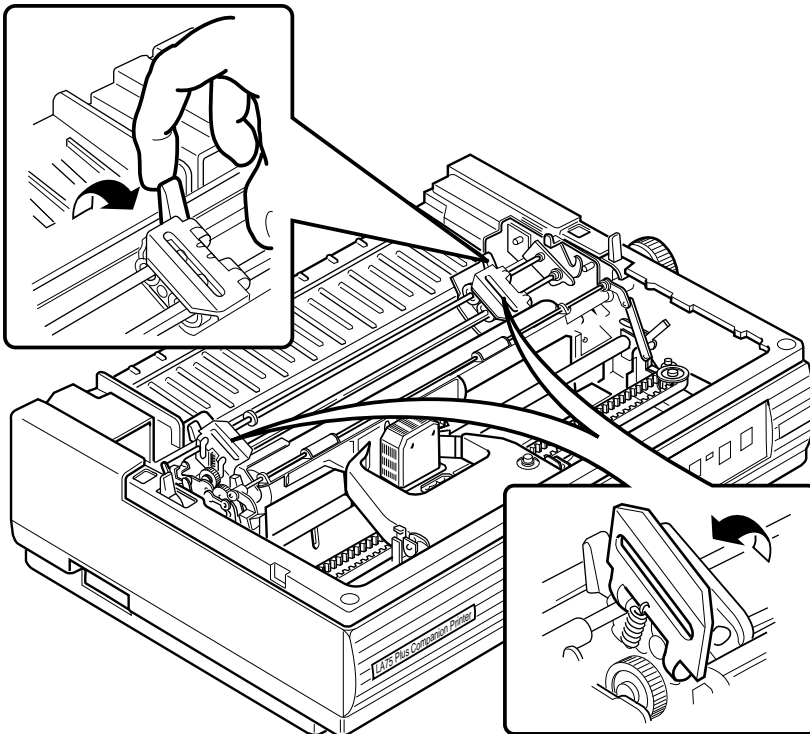
<sup>1</sup> See also the *LA75 Plus Companion Printer Sheet Feeder Guide*

### 3.2.1 Rear Loading

- 1 Unlock only the clamp on the right tractor by pulling the clamp towards the front of the printer.

**Note:** The left tractor has been factory set so that the left edge of the paper (column 1) lines up correctly with the printhead when it starts printing. Digital recommends that you do not unlock the left tractor clamp. Only unlock it if, for some reason, the leftmost character does not line up with the edge of the paper.

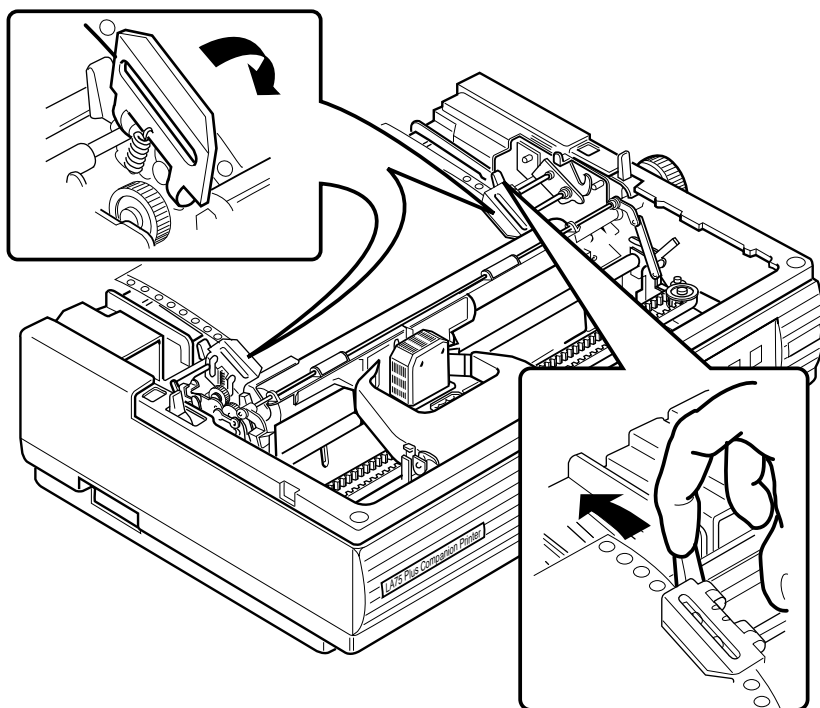
- 2 Open both tractor doors.



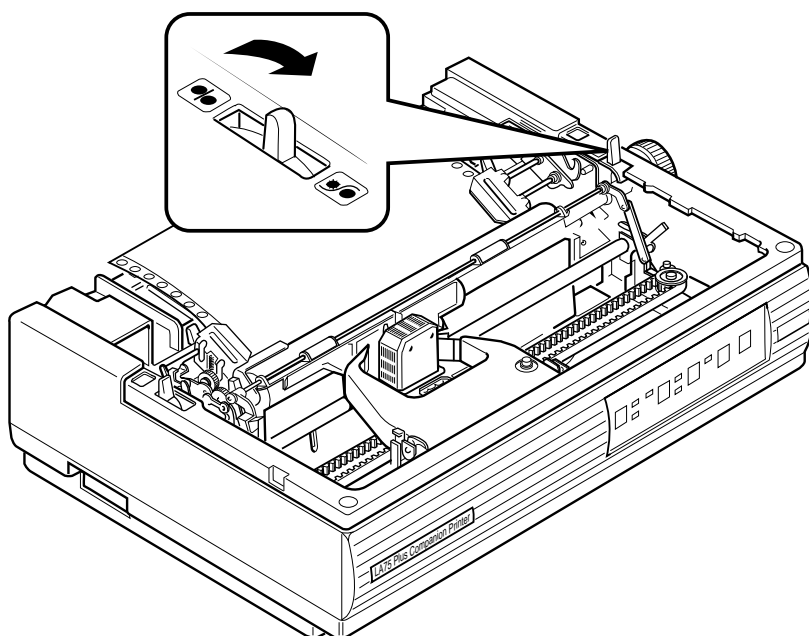
- 3 Align the pinfeed holes on both edges of the paper with the tractor pins. Close the tractor doors to secure the paper.

**Note:** The red marks on the bail bar indicate the print area for a standard sheet of paper. Use these marks to help position the paper correctly.

- 4 Readjust the right tractor position by moving it to the right so that the paper extends between the two tractors. (The pinfeed holes should not be mis-shaped by too much tension on the paper.) Lock the right tractor by pushing the tractor clamp towards the back of the printer.



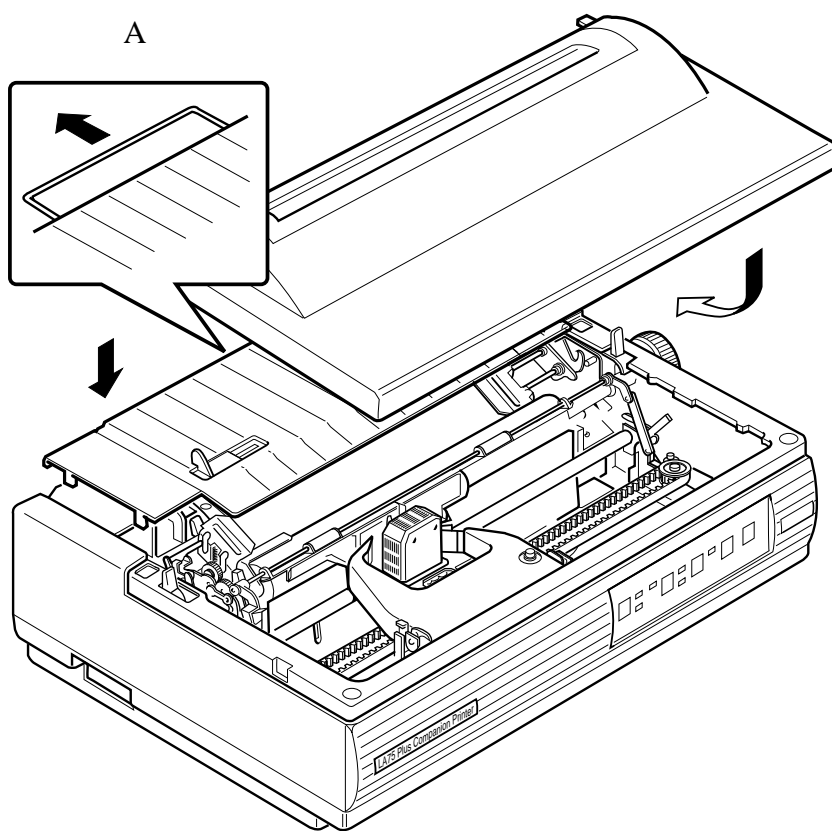
- 5 Pull the paper release lever towards the front of the printer to set the printer in tractor mode.



6 Replace the access cover and the paper cover.

7 Pull out the wire paper-separator (A).

**Note:** The printer will not work if the covers are not on, or if they are replaced incorrectly.





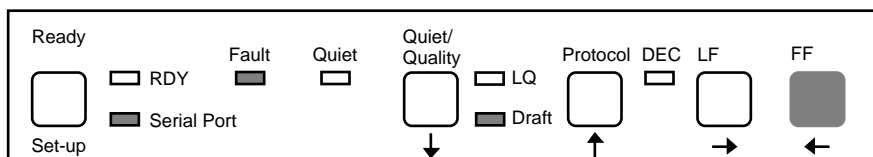
## Activating the Automatic Paper Feed

You can now advance the paper to the print position by activating the automatic paper feed as follows.

- Turn the power switch to 1 (on).

All the indicators light up on the Control Panel. The printhead moves to the center, to the print position, and the paper automatically moves under the platen, also to the print position.

- If the power was already on, press FF to load the paper.



You are now ready to print.

**3.2.1.1 Viewing the Last Printed Line** This section and Section 3.2.1.2 describe two LA75 Plus features that are available using the Rear Loading method.

There are three methods to advance the paper to see the last printed line. (This procedure applies only to pinfeed paper.) To ease readability, the paper support should be in the raised position.

**A** When printing has ended and the printer is in the Ready state:

- 1 Press the Ready switch.

The paper advances so that the last printed line can be seen above the tear-off line.

- 2 Press the Ready switch again.

The paper returns to the previous printing position.

**B** When the printer is printing:

- 1 Press the Ready switch.

The printing stops, and the paper advances so that the last printed line can be seen above the tear-off line.

- 2 Press the Ready switch again.

The printer moves back, and printing continues from the next line

**C** If you select Automatic Advance, the paper will advance for viewing if no data is received for two seconds. The paper will move back as soon as the next data is received.

**Note:** You cannot view the last printed line if the end of the paper has been detected.

**3.2.1.2 Document on Demand** If the last character received by the printer was a Form Feed, or if you pressed FF at the end of the last printed job, you can make use of the Document on Demand feature and so avoid wasting paper before the next printed job.

Document on Demand works in the same way as Viewing the Last Printed Line. Two modes can be selected in the Set-up menu: Automatic and Manual (the factory default).

- **Automatic**

When two seconds have elapsed since the printer received the last piece of data (FF), the paper perforation moves on to the tear blade. Tear off the paper. On the receipt of new data, the paper moves back to its previous position (the first printable line).

- **Manual**

Press the Ready switch to move the paper perforation on to the tear blade. Tear off the paper. Press the Ready switch again to move the paper back to its previous position (the first printable line).

**Note:** To use Document on Demand correctly, make sure that the value of the printer's form length matches the physical paper size. <sup>1</sup>.

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<sup>1</sup> For selecting form length (Generic Feature 2 in Set-up mode), see Section 7.5 in Chapter 7

### 3.2.2 Single-sheet Loading

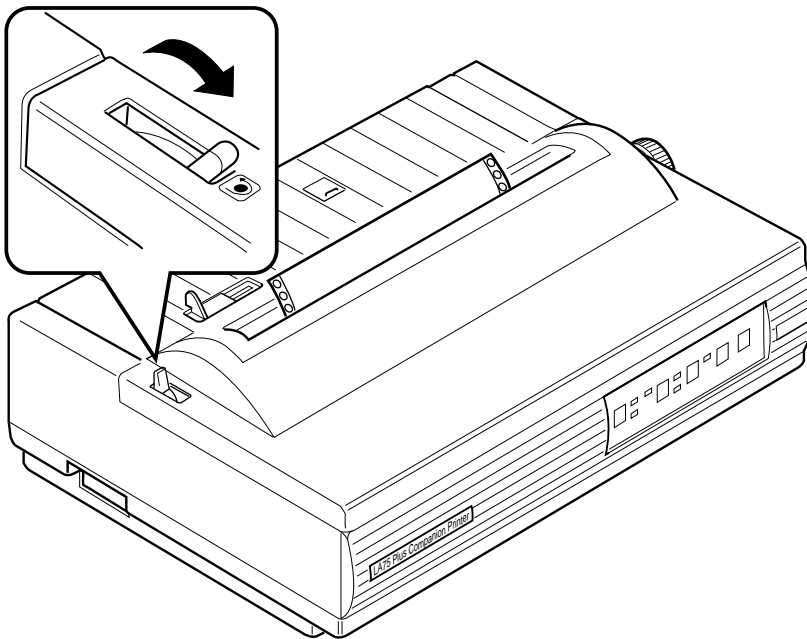
- 1 Turn the power switch to 1 (on).

All indicators light up on the Control Panel. The printhead moves to the center, to the print position.

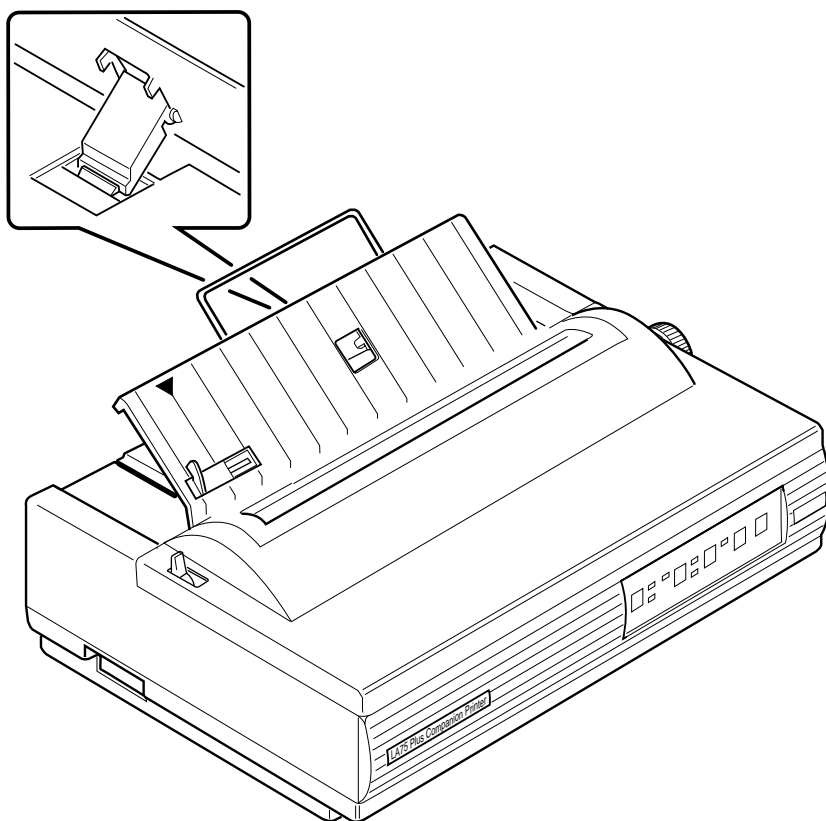
- 2 If (and only if) there is pinfeed paper in the printer, pull the parking lever all the way forward to the autopark position.

The paper moves away from the print position and remains in the tractors.

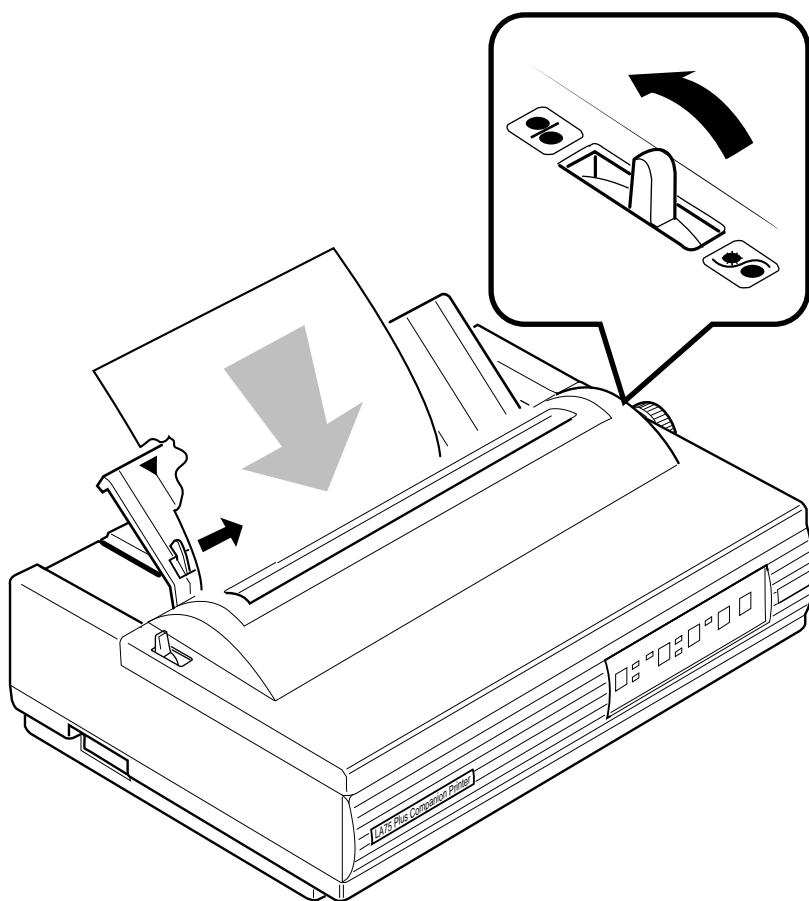
**Note:** This autopark feature allows you to reverse the paper only two page lengths (15 inches, 38.1 centimeters) at a time.



- 3 Raise the paper support and secure it in place. Pull out the paper separator.



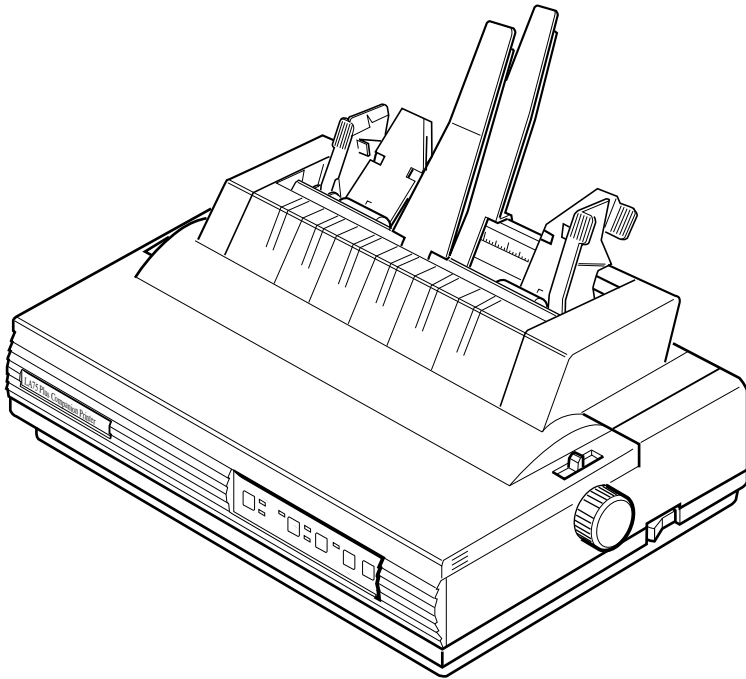
- 4 Move the paper release lever towards the back of the printer so that it is in friction mode.
- 5 Place a single sheet of paper on the paper support so that the paper is resting just under the platen.  
If the Fault indicator goes out when the paper is inserted, move the paper away from the platen until the Fault indicator lights up again.
- 6 Move the paper-edge guide to the right until it is aligned with the arrow on the paper support.



- 7 Advance the paper to the print position by activating the Automatic Paper Feed. To do this, press the FF switch on the control panel. The Fault Indicator turns off.

You are now ready to print on the single sheet.

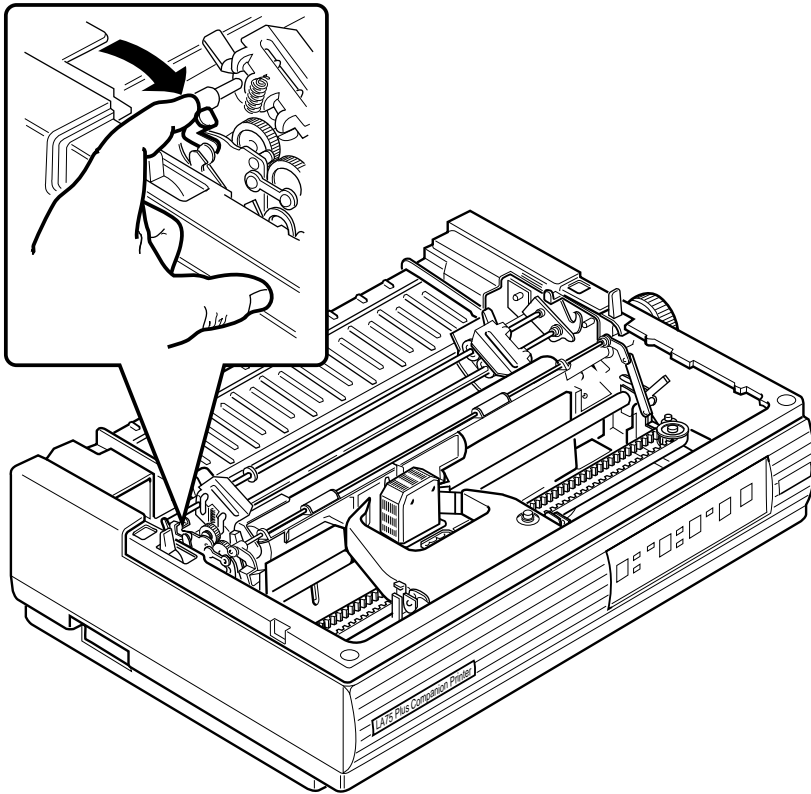
**3.2.2.1 Printing Multiple Single Sheets** To print multiple single sheets, use the Automatic Sheet Feeder option. Full details of the installation and use of the Automatic Sheet Feeder (LA75 PlusX-SF) are included in the *LA75 Plus Companion Printer Sheet Feeder Guide*.



### 3.2.3 Switching to Bottom Loading

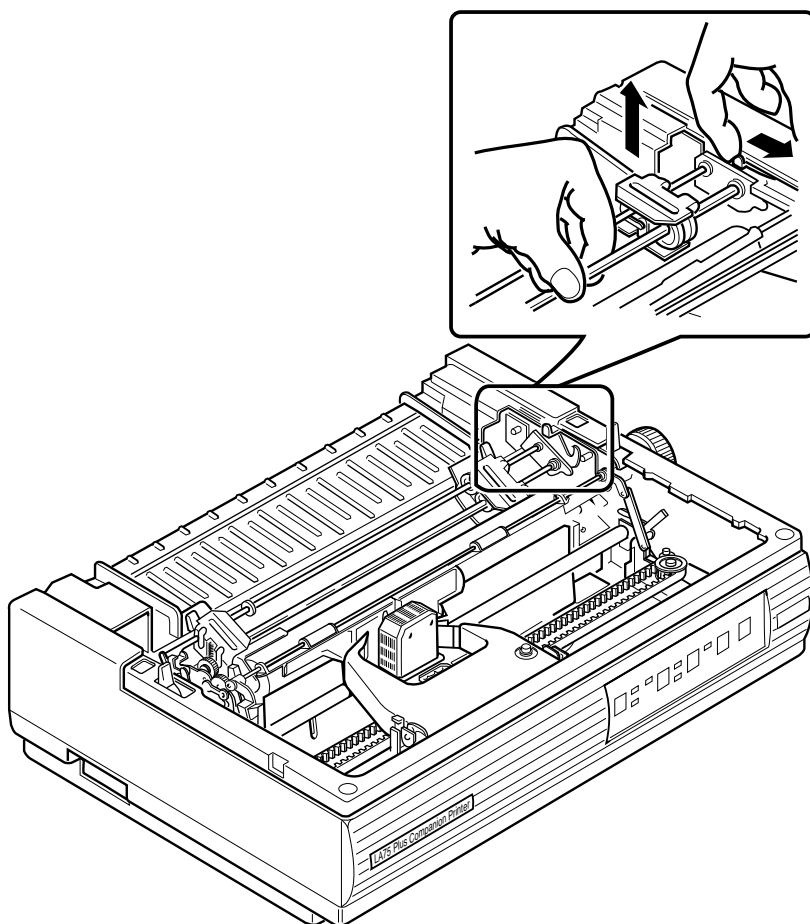
**Note:** Using the printer's bottom slot requires a special printer table or stand. Contact your Digital sales representative for ordering information.

- 1 Make sure the power switch is set to 0 (off).
- 2 Remove the access cover and the paper cover.
- 3 Move the left tractor release lever towards the front of the printer until it locks.





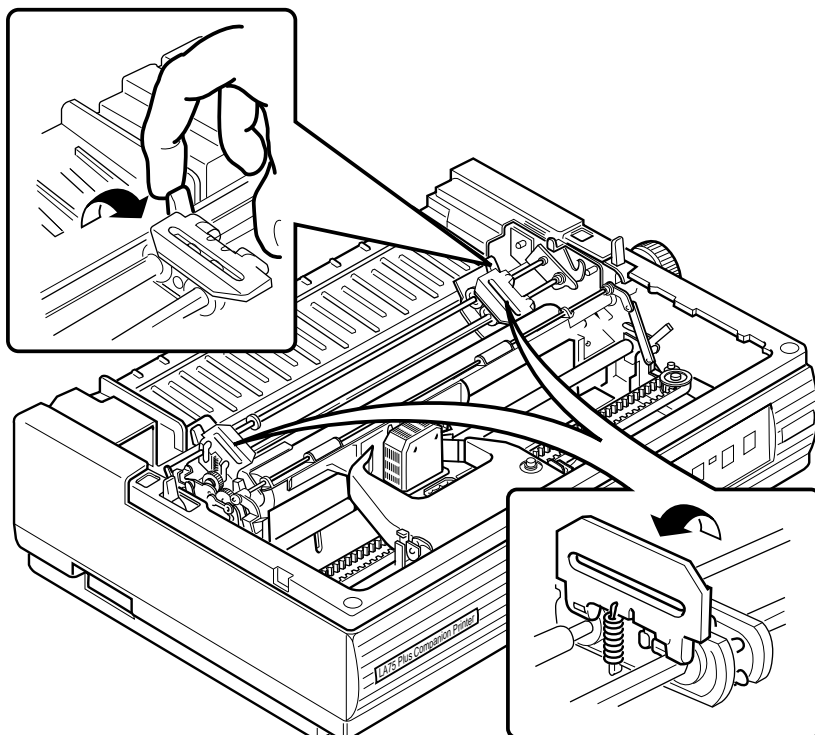
- 4 Move the right tractor release lever towards the front of the printer and pull the tractor unit up. The tractors are now in a horizontal position.



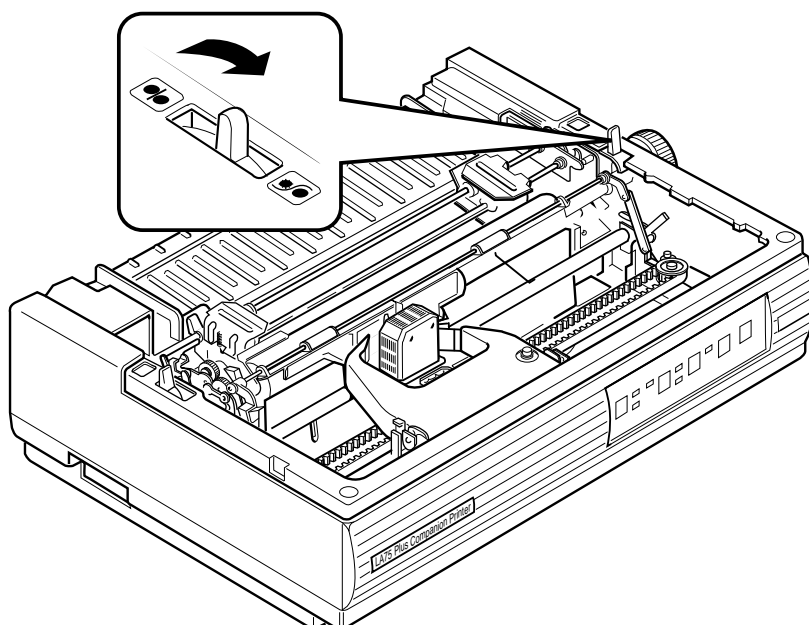
- 5 Unlock the tractor clamp on the right tractor by pulling the clamp towards the front of the printer.

**Note:** The left tractor has been factory set so that the left edge of the paper (column 1) lines up correctly with the printhead when it starts printing. Digital recommends that you do not unlock the left tractor clamp.

- 6 Open both tractor doors.



- 7 Move the paper release lever towards the front of the printer to set the printer in tractor mode.



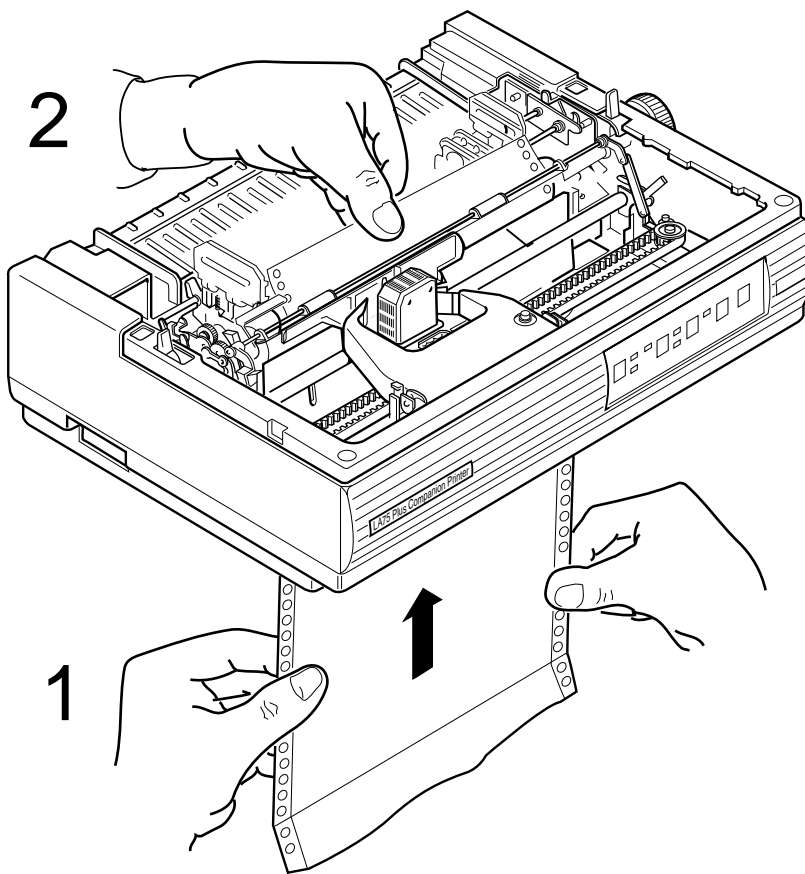
### 3.2.4 Bottom Loading

- 1 After opening the tractor doors, insert the paper through the bottom slot of the printer.

**Note:** To prevent skewing, position the paper so that it feeds straight into the bottom of the printer.

**Note:** Using the printer's bottom slot requires a special printer table or stand. Contact your Digital sales representative for ordering information.

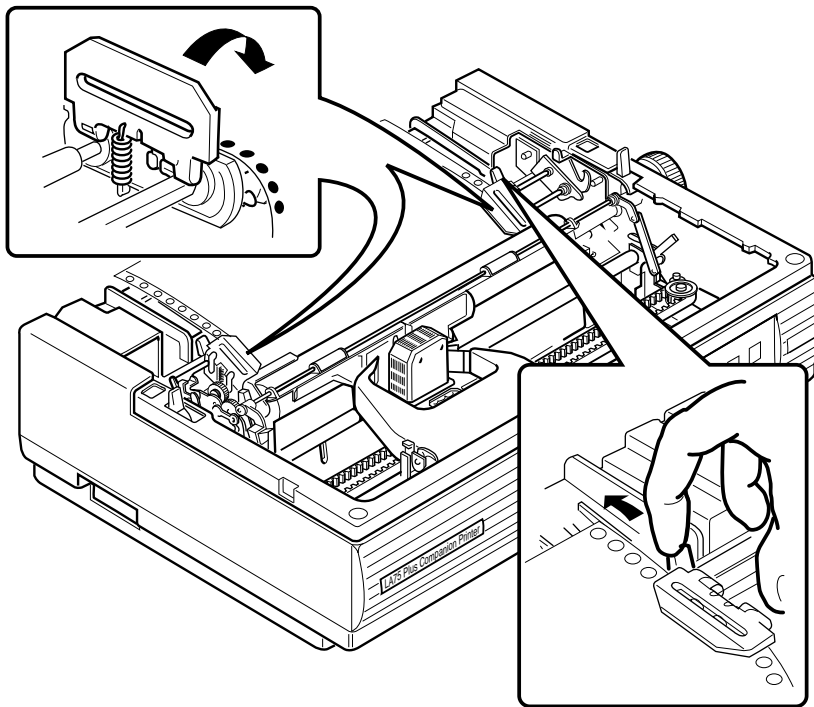
- 2 Pull the paper up between the platen and the clear plastic smudge guard, and onto the tractors.



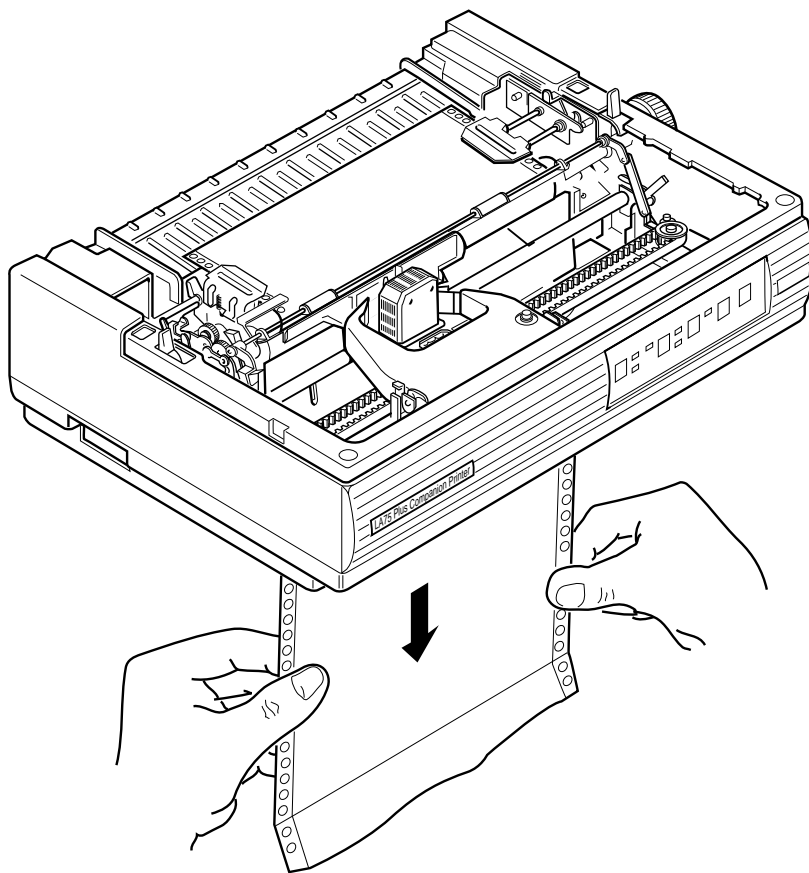
- 3 Align the pinfeed holes on both edges of the paper with the tractor pins of both tractors. Close the tractor doors to secure the paper.

**Note:** The red marks on the bail bar indicate the print area for a standard sheet of paper. Use these marks to help position the paper correctly.

- 4 Readjust the right tractor position by moving it to the right or left so that the paper extends between the two tractors. (The pinfeed holes should not be mis-shaped by too much tension on the paper.) Lock both tractors in place by pushing the clamps towards the back of the printer.



- 5 Adjust the paper by pulling it down from beneath the printer's bottom slot.



**6** Manually adjust the top of the form.

**7** Replace the access cover and the paper cover.

**Note:** The printer will not work if the covers are not on, or if they are replaced incorrectly.

You are now ready to print.

**Note:** To return to rear loading, release the tractor unit by pulling both tractor release levers towards the front of the printer. Click the tractor unit into place.

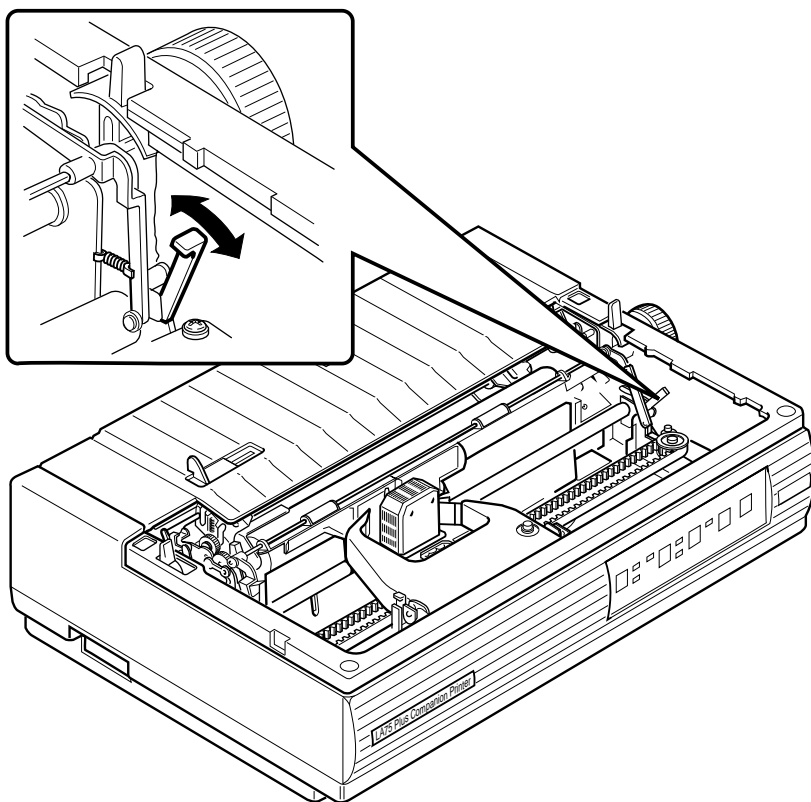
### 3.3 Adjusting the Printhead for Paper Thickness

**For single-part pinfeed paper, and single-sheet hand-fed paper:**

Push the printhead adjustment lever all the way towards the platen.

**For multipart paper or envelopes:**

Pull the lever towards the front of the printer.





# 4

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## Using Fonts

This chapter describes how to insert and access the optional font cartridges available for the LA75 Plus.

### 4.1 Using the Optional Font Cartridges

A set of font cartridges is available which cover different printing needs. Each cartridge works both in DEC and Emulation protocols. For details of these cartridges see Section 7.6 in Chapter 7.

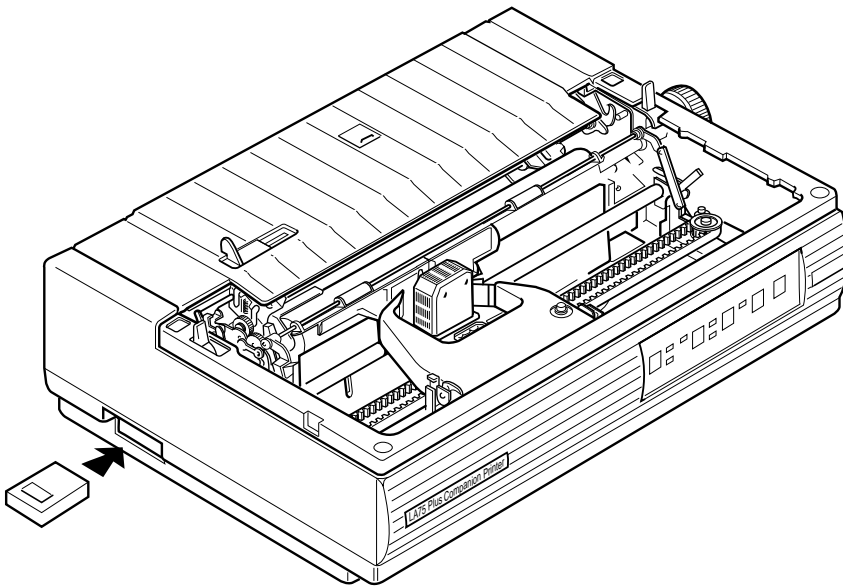
**Note:** The print density must be set to Letter quality when you are using typestyles from the font cartridge. When you select Draft quality, the printer uses the internal draft typestyles.

- 1 Make sure the power switch is set to off (0).

**Caution:** If you do not set the power switch to off before inserting the font cartridge, you could damage the cartridge.

- 2 Insert the cartridge, making sure it is firmly in place.

**Caution:** The font cartridge has a key and can be inserted only one way. Do not try to force the cartridge into place.



- 3 Power On the printer and enter the user set-up mode to select the type style or character sets provided by the cartridge. (Refer to the notice on the cartridge.)

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## Configuring the Printer

### 5.1 What is Configuration?

This chapter describes how to set up or configure the LA75 Plus, so that the printer and your computer system can communicate correctly with each other.

Communication between the two requires that both the computer operating system and the printer have the same communication settings or features. The most important of these are protocol, baud rate, and data bits and parity. You may also need to change some of the printer's other features depending on your hardware and software requirements. (See Chapter 7 for a complete list of printer features.)

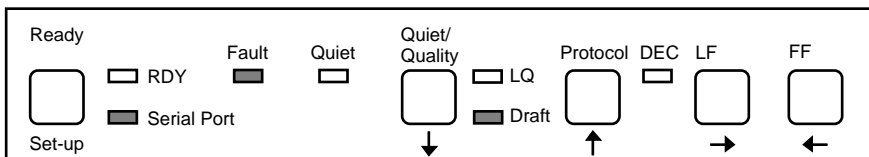
Set-up mode allows you to access the LA75 Plus's configuration memory. The memory stores a list of all the printer's features and values, as well as the values that you have chosen to run the printer. The set-up controls which are discussed in Section 5.3, allow you to access set-up mode.

### 5.1.1 Determining the Printer's Configuration

Check your computer system's documentation to determine what your system requirements are for protocol, baud rate, and data bits and parity. (These are, respectively, Generic Features 1, 7, and 8 in Set-up.)

You can see what is programmed into your LA75 Plus's set-up memory by following these instructions:

- 1 Turn the power switch to 0 (off).
- 2 Press and hold the Set-up switch while you set the power switch to 1 (on).  
The LA75 Plus prints a list of what is in its set-up memory. See the tables in Section 7.4 in Chapter 7 for examples of what information is stored in set-up memory.
- 3 Press the Set-up switch to exit Set-up mode.
- 4 Compare the printer's current configuration with the requirements of your computer or video terminal. Read Section 5.3 if you need to change the printer's set-up memory.



## 5.2 Features and Values

Each of the LA75 Plus's features stored in its set-up memory has at least two values. (See Section 7.4 in Chapter 7). A value is an option or choice within each feature.

The features are organized into three groups as follows:

- Generic
- DEC (specific to Digital protocol)
- X24 (specific to IBM Proprinter X24E)

When you are in set-up mode, you can change the value for any feature. Changing the set-up memory changes the way the printer runs and how it communicates with your host computer.

*The following example illustrates the difference between a feature and a value:*

The set-up menu gives you seven choices for the baud-rate feature. Baud rate is the speed at which the printer can receive data from your host computer. The printer's baud rate is factory-set at 4800 bits per second.

If your host computer's baud rate is set at 1200 bits per second, you will need to change the LA75 Plus's baud rate from 4800 to 1200 in order to have accurate communication between your host computer and the printer.

In this example, baud rate is the feature; 4800 and 1200 are the values.

## 5.3 Set-up Mode Switches and Indicators

In set-up mode, the control panel performs the functions that appear in letters and arrows below the switches.

### Set-up Switch

To put the printer in set-up mode, press the Set-up switch while turning the printer on. After you have changed the printer's configuration, press the Set-up switch again to save the new values and to exit set-up mode.

### Up-arrow and Down-arrow Switches

Press the Up-arrow and Down-arrow switches respectively upwards and downwards through the features when you are setting the printer's configuration.

### Right-arrow and Left-arrow Switches

Press the Right-arrow and Left-arrow switches to scan respectively forwards and backwards through the values when you are setting the printer's configuration.

### 5.3.1 Changing the Printer's Configuration (Set-up Mode)

**Note:** Before beginning the set-up procedure, make sure that the power switch is set to 0 (off) and that paper is advanced to the print position.

- 1 Press and hold down the Set-up switch while setting the power switch to 1 (on).  
The Serial Port and Draft indicators flash.  
The printer automatically does the following:
  - Prints a list of the features and values stored in its memory. (See Section 7.4 in Chapter 7.)
  - Prints the first feature in the list (Protocol: DEC Emulation, or port-dependant).
- 2 Press the Right-arrow or Left-arrow switch to select the next or previous value.
- 3 Press the Up-arrow or Down-arrow switch to access the feature you wish to change.

**Note the following:**

- If the first value Protocol is set to DEC, only the DEC and Generic group features are accessible in Step 3.
- If the first value Protocol is set to X24, only the X24 and Generic group features are accessible in Step 3.
- If the communication is port-dependant, all features are accessible.

### **5.3.2 Saving New Values and Exiting Set-up Mode**

Press the Set-up switch once to store your set-up changes in the printer's memory.

The printer automatically returns to print mode.

**Note:** If the power is turned off before the Set-up switch is pressed, no changes are stored in the printer's memory.

## **5.4 Protocol Selection**

The protocol that is active at power-up is selected through Generic Feature 1 in Set-up. When this feature is selected, the protocol is determined at power-up by the following rules:

- If the Port Selection feature is set to "Serial Port", the DEC protocol is selected.
- If the Port Selection feature is set to "Parallel Port", the IBM Proprinter protocol is selected.
- If the Port Selection feature is set to "Automatic", the first active port will determine the selected protocol:
  - If the first active port is the serial port, the DEC protocol is selected.
  - If the first active port is the parallel port, the IBM Proprinter protocol is selected.
- After a protocol is selected, a new selection can only be done through software commands, or through the Protocol switch on the control panel.





# 6

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## Maintaining the Printer

### 6.1 General Maintenance

The printer does not need preventive maintenance.

The casing of the printer and the platen will need cleaning from time to time. Digital's computer-accessories catalog, DECdirect, lists suitable cleaners for these tasks.

Always use the cleaners in accordance with the instructions on the cleaners..

#### **Paper**

Select the correct kind of paper for the job. Always make sure to position paper squarely and set it tightly around the platen. Also make sure that the printhead adjustment lever is in the correct position (See Section 3.3 in Chapter 3). See Section 7.5 in Chapter 7 for paper specifications. To remove paper from the printer, use the FF switch.

#### **Ribbon Cartridge and Printhead**

Keep samples of early printouts to help you know when to replace the ribbon cartridge and printhead. Use only Digital-approved ribbon cartridges in the printer. (Other cartridges may not give the same performance and may shorten the life of the printhead.) See Section 6.3 in this chapter for information on how to replace the ribbon cartridge, See Section 6.2 for tips on recognizing when to replace the ribbon cartridge and printhead, or when to contact your service representative.

## 6.2 Correcting Simple Problems

This section lists possible fault symptoms and suggests tests and actions to help you clear those symptoms.

### How to Use This Section

- 1 Find the category in which your problem occurs. For example, if the print appears very light on the paper, look at Section 6.2.4, Print-related Problems.
- 2 Find the symptom description that most closely matches the printer symptom. In this example you would look at the symptom "Print faint or of poor quality."
- 3 Try the first suggestion under that heading.
- 4 If the suggestion does not cure the problem, try the next suggestion.
- 5 If none of the suggestions enable you to continue printing, or if the fault is not listed, you will need to contact your Digital sales representative.

Each time the printer is switched On, the indicators flash slowly for approximately two seconds while the internal self-tests are run. Look at all the indicators to make sure that they are all working. (If an internal fault is detected, the Fault indicator will flash faster than the other indicators.)

If any indicators are faulty, or if the Fault indicator flashes, contact your Digital sales representative.

**Warning:** It is assumed that the reader is not qualified to work on, or with, high-voltage electricity. Interpret the suggestions in accordance with your qualifications in electrical technology.

### 6.2.1 Power-related Problems

- **No indicators come On when power is switched On.**
  - i Check that the power cord and plug are securely fitted to the printer.
  - ii Ask for the power connector connections (and fuse, if fitted) to be verified.
  - iii Ask for the building electrical supply to be verified.
- **Ready indicator is flashing; Fault indicator is flashing (1 second period), and does not respond when the Ready switch is pressed.**
  - i Is the access cover fitted and seated correctly?  
Closing it and pressing the Ready switch should light the Ready indicator.

- ii If you have an Automatic Sheet Feeder, ensure that its front cover is seated correctly.

Closing it and pressing the Ready switch should light up the Ready indicator.

- **When the power is On, the carriage does not move.**

- i Make sure that the access cover is seated correctly.

## 6.2.2 No Printout

- **Printing does not start.**

- i Make sure that the Ready indicator is On. If not, press the Ready switch. Printing should start when you send data from the host computer.
- ii Make sure that the printer is connected to the host computer. (Refer to Section 1.5 in Chapter 1).
- iii Make sure that the host computer can send data.
- iv Make sure that you have set the correct protocol. (Refer to Section 5.3 in Chapter 5.)
- v Make sure that you have selected the correct port (if the automatic feature has not been selected). (Section 5.3 in Chapter 5.)

- **No response to computer commands. Ready indicator is On.**

- i Examine and, if necessary, reseal the data cable connections.
- ii Check the condition of the data cable. Replace it if necessary.
- iii Examine the features setup for a communications mismatch. Do the features match those of the host computer?

- **Carriage moves, but there is no printout during Printing Self-test.**

- i Make sure that the ribbon is installed.
- ii Examine the ribbon path. Does the ribbon pass in front of the whole printhead? Adjust the ribbon if necessary. (See Section 1.3.3).

- **Pinfeed paper does not advance.**

- i Pull the paper release lever towards the front of the printer for tractor feed.

- **Single sheet paper does not advance.**

- i Push the paper release lever towards the back of the printer for friction feed.

### 6.2.3 Operation-related Problems

- **Power/Ready indicator is flashing; Fault indicator is On.**
  - i This is an "out of paper" response. Make sure that the tractor/friction feed lever is in the position needed by your application. Load paper; the Fault indicator will turn Off, and the Power/Ready indicator will either turn On or flash. If it flashes, press the Ready switch to turn On the Power/Ready indicator.
- **The LA75 Plus stops printing; Fault indicator is On.**
  - i This is an "out of paper" response. Load paper; if the Ready indicator is flashing, press the Ready switch. The LA75 Plus should resume printing.
  - ii Make sure that the paper is not torn or otherwise damaged.
- **No reverse paper feed.**
  - i Make sure that you are not at the end of the paper.
  - ii Make sure that the paper is not damaged.
- **Paper is not positioned at perforation for tear-off feature.**
  - i Make sure that the printer is in the Pause state. If the Ready indicator is On, press the Ready switch.
  - ii If the platen has been moved by hand, reload the paper. Make sure that you use a complete form for the first sheet.
  - iii Select the correct form length using the Set-up feature.
- **Printhead carriage does not move smoothly.**
  - i Examine the paper pathway. Remove any obstructions.
  - ii Examine the printhead carriage bar (the round bar on which the printhead moves). Is it dirty? If so, clean it with an oil-lubricated soft cloth. Do not use water or cleaners containing solvents.
  - iii Examine the carriage area for obstructions. Remove, where necessary.
- **Carriage does not move; Fault indicator flashes.**
  - i Examine the paper pathway. Remove any obstructions. Press the Ready switch when the paper pathway is cleared.

## 6.2.4 Print-related Problems

- **Printer cannot print in color.**

- i Check that the color ribbon (LA75R-KC) is installed.
- ii Check that the proper control sequences are sent to the printer. (See the English-language Appendix C.)

- **Font cartridge has been installed, but the printer is still using internal Courier fonts.**

- i Switch off the printer and check that the font cartridge has been correctly inserted.
- ii Check that the font cartridge has been selected in the printer Set-up (see the English-language Appendix A), or that proper control sequences are sent to the printer (Appendix C).

- **Print faint or of poor quality.**

- i Is the paper thickness control set correctly for the paper you are using? Adjust as necessary. See Section 3.3 in Chapter 3.
- ii Have you used the correct paper? See Section 7.5 in Chapter 7 which contains a full specification of the paper you can use. Replace the paper if it does not match the specification.
- iii Make sure that the ribbon is tensioned correctly.
- iv Make sure that the ribbon is of the correct type. (See Section 7.5).
- v Does the ribbon need changing? Replace it with a new ribbon if necessary.
- vi Is the ribbon cartridge properly seated? Reseat as necessary.

- **Character or characters do not print evenly or are not uniform in pitch.**

- i Examine the paper pathway for dirt or other obstruction that may cause the gap between printhead and platen to vary. Remove the obstruction.

- **Print lines overlap.**

- i Examine the paper pathway for dirt or other obstruction that may prevent the platen from rotating freely. Remove the obstruction.
- ii Make sure that the paper release lever is set fully to the front or to the rear and not in an intermediate position.
- iii Make sure that the platen can rotate freely by moving the platen knob.

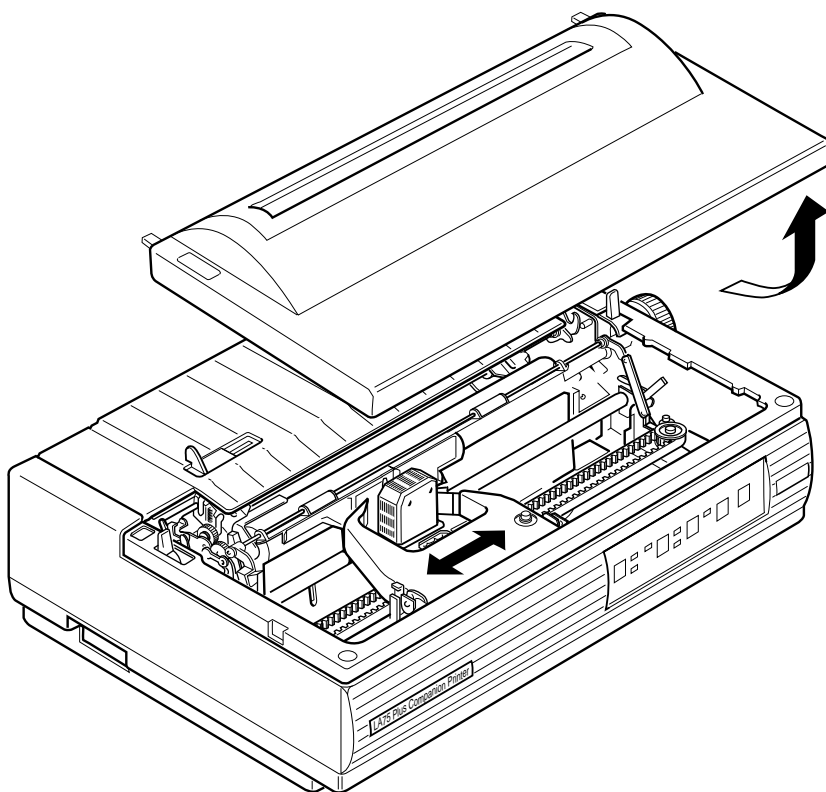
- **Characters printed at a slant; paper tears or jams.**
  - i Make sure that the paper release lever is set fully to the front or to the rear and not in an intermediate position.
  - ii Examine the paper pathway; remove any obstructions.
  - iii Is the paper too loose or too taut between the tractors?
    - If the holes in the paper are deformed at their outer edges, the paper is too taut.
    - If the paper rises between the tractors, it is too loose.
    - Readjust the tractor spacing so that the paper lies smoothly but without any tension.
    - Ensure that the paper is horizontally aligned on the pins.
- **Error reports or characters printed; Ready indicator is On.**
  - i Examine and, if necessary, reseal the data cable connections.
  - ii Examine the features setup; there may be a communications mismatch. Do the features match those of the host computer?
- **Printer does not stop when out of paper.**
  - i Printer circuits do not detect that there is no paper. Examine the paper pathway. Remove any obstructions. Press the Ready switch when the paper pathway is cleared.

## 6.2.5 Ribbon or Carriage-related Problems

- **Ribbon Problems.**
  - i Make sure that the ribbon is:
    - Tensioned correctly
    - Not worn thin or dry
    - Not torn or damaged in any other way
    - Not jammed
    - The correct type as recommended by Digital (See Section 7.5 in Chapter 7).
- **Carriage does not move smoothly.**
  - i Examine the paper pathway. Remove any obstructions.
  - ii Examine the printhead carriage bar (the round bar on which the printhead moves.) Is it dirty? If so, clean it with a soft cloth.
  - iii Examine the carriage area for obstructions. Remove where necessary.

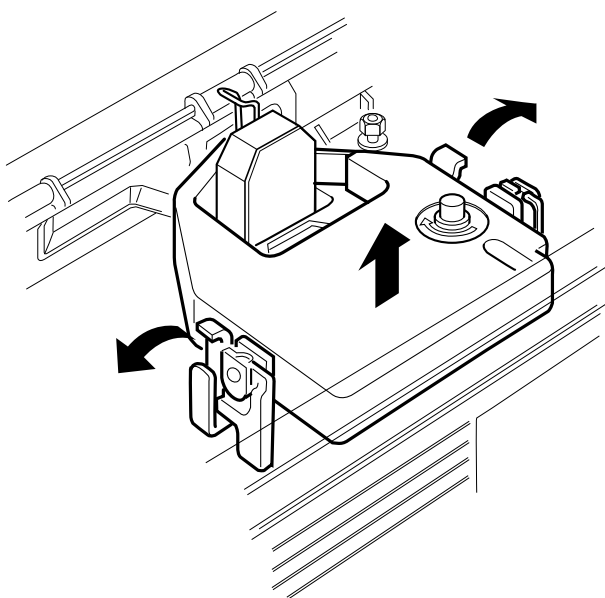
## 6.3 Removing and Replacing the Ribbon Cartridge

- 1 Remove the printer access cover.
- 2 Move the printhead carriage to the center of the platen.



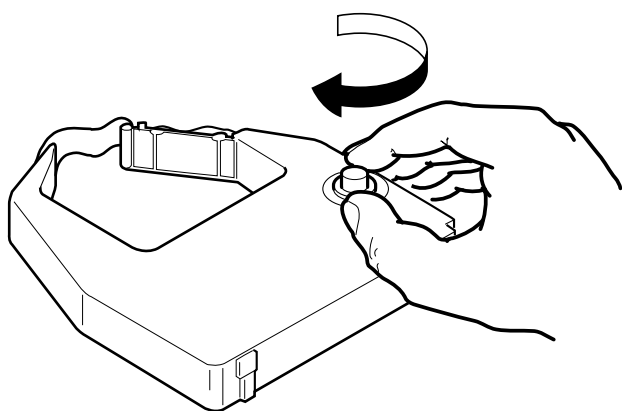
**Caution:** Only use Digital's LA75 Plus ribbons (LA75R-KA or LA75R-KC). Do **not** use LA75 ribbons (LA50R-O6) as this could reduce the life of the printhead.

- 3 Push the ribbon cartridge notches outward and remove the ribbon cartridge by pulling it upwards. Discard the old ribbon cartridge.



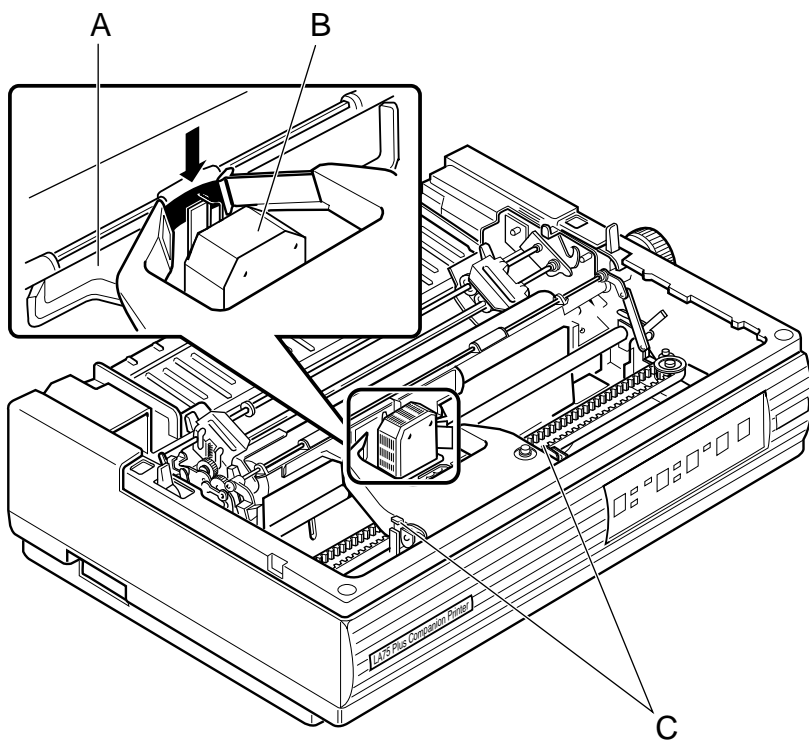


- 4 Turn the ribbon adjustment knob on the new cartridge in the direction indicated.

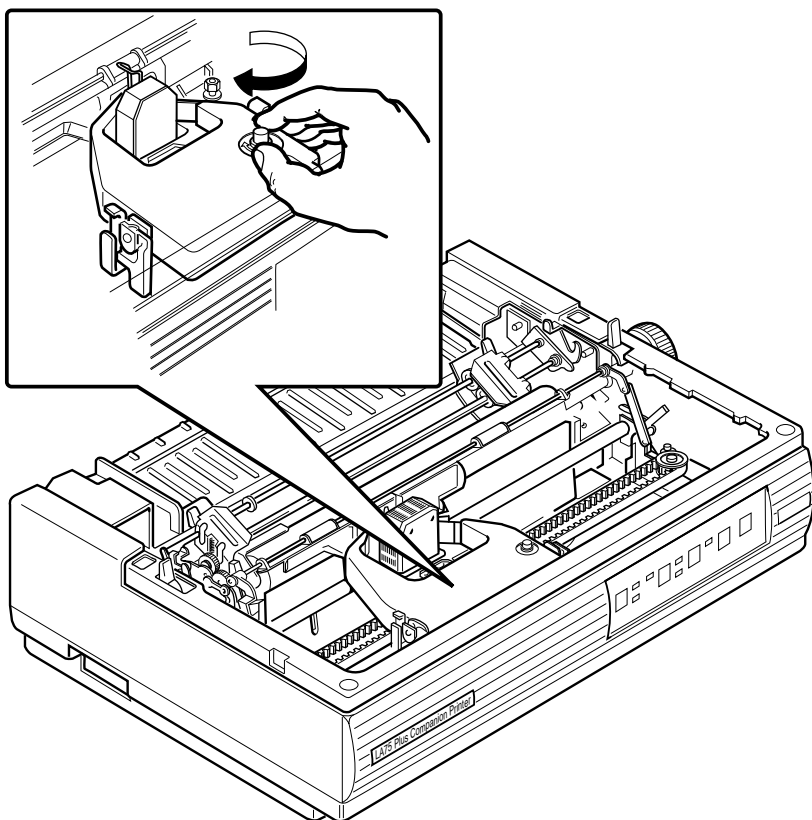


- 5 Fit the ribbon cartridge between the mounting clips (C) on the carriage. Make sure that the ribbon fits between the front of the printhead (B) and the clear plastic smudge guard (A). Press down on the cartridge until you hear it click into place.

**Note:** Make sure that the ribbon is secured on both the left and right sides.



- 6 Tighten the ribbon with the ribbon adjustment knob.

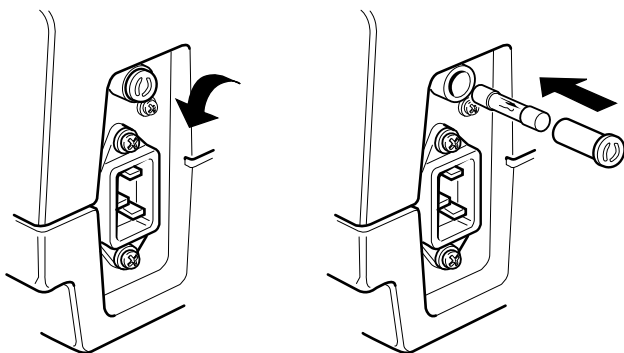


- 7 Replace the access cover.

## 6.4 Removing and Replacing the Fuse

**Note:** Turn the power switch to 0 (off). Disconnect the power cord from the wall outlet and the printer.

- 1 Push the fuse holder in while turning it to the left, and remove it.
- 2 **Caution:** Replace the old fuse with a new one of equal value.



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## Reference Information

### 7.1 Service

If you cannot correct a problem with the printer, contact your Digital sales representative.

### 7.2 Digital Equipment Corporation Services

Digital Equipment Corporation provides a wide range of maintenance programs that cover small systems, terminals, and printers. These include on-site, carry-in, and mail-in maintenance services. You can use these programs to select a plan that meets your service needs, from complete Digital support to self-maintenance.

**On-Site Service**

Choose from three fast, low-cost, high quality, on-site maintenance options: DECservice, Basic Service Agreements, or Time and Materials service.

**Carry-In Service**

More than 150 Digital service centers in major cities around the world offer convenient, fast, and dependable "return-to" maintenance.

**DECmailer**

For those capable of self-maintenance, a fast turnaround module and sub-assembly repair service.

For more information on any of Digital Equipment Corporation's Maintenance Services, call the Digital Customer Services office in your area during normal business hours.

# 7.3 Calling the Service Center

Refer to the following advice before calling the service center.

<i>Before calling for service, check the problem yourself.</i>	Check Section 6.2 in Chapter 6; you may be able to solve the problem yourself.
<i>Who should call for service?</i>	Typically, the system manager should place the call for service.
<i>What the service center needs to know.</i>	Write down the serial and model numbers of the LA75 Plus. These are located on the back of the printer.
<i>Be ready to answer questions when you call.</i>	<p>Summarize the problem. Make a note of:</p> <ul style="list-style-type: none"><li>■ What you were doing when the printer failed</li><li>■ Any indications on the control panel</li><li>■ Any strange noises</li></ul> <p>Stay by the printer/host system if possible; the service engineer may ask you to recreate the problem.</p>
<i>Where you should call.</i>	In the continental United States, call DIGITAL at 1-800-272-2001. In Alaska, Hawaii, Canada and Europe, call your local sales office for service.

# 7.4 Summary of Set-up Features

The following table summarizes the LA75 Plus set-up features and factory settings. Refer to Appendix A for a full listing of the features and their associated values.

**Note:** Set-up feature 99 stores the factory setting for each feature. If you enter the value YES for this feature, the factory settings overwrite any existing feature values when you exit from Set-up mode.

Number	Feature	Factory-set Value	
Generic 1	Protocol at Power-up	1	Port Dependant
Generic 2	Form Length	9	11 inches
Generic 3	Vertical Pitch	4	6 LPI
Generic 4	Automatic Advance	2	Not Selected
Generic 5	Print Quality Control	1	Software Control
Generic 6	Port Selection	3	Automatic
Generic 7	Baud Rate	6	4800
Generic 8	Data Bits and Parity	7	8-None
Generic 9	Buffer Control	1	XON/XOFF
Generic 10	Error Beep	1	One Beep
Generic 11	Typestyle	1	Internal
Generic 12	Input Buffer Size	1	8K
Generic 13	Disconnect on Fault	1	Not Selected
DEC 1	Horizontal Pitch	7	10 CPI (80 col)
DEC 2	GO Character Set	1	U.S ASCII
DEC 3	User Pref Character Set	1	DEC Supplemental
DEC 4	Printer ID	4	Conf. Level 2 (LA75 Plus)
DEC 5	Text Mode Right Margin	2	Wrap
DEC 6	Auto LF on CR	2	Not Selected
DEC 7	Auto CR on LF	2	Not Selected
DEC 8	Disconnect on EOT	1	Not Selected
DEC 9	Initialization Message	2	Not Selected
X24 1	Slashed Zero	2	Without Slash
X24 2	Auto LF on CR	2	Not Selected
X24 3	Auto CR on LF	2	Not Selected
X24 4	Active Character Table	1	Graphics Set A
X24 5	National character set	1	U.S.A (Code Page 437)
X24 6	Emphasized	2	Not Selected
X24 7	Character Height	2	Single
X24 8	Horizontal Pitch	1	10 CPI
X24 9	Alternate Graphic Mode	1	Not Selected

## 7.5 Specifications

### Printer Specifications

Feature	Range								
<b>Printing Method:</b>	Impact Dot Matrix, 24 pin								
<b>Print Head:</b>	24 wires @ 180 dots per inch vertical density								
<b>Sensors:</b>	Print head position Cover open Paper out Paper edge Parking lever pulled Automatic Sheet Feeder present								
<b>Protocols:</b>	Digital's Conformance Level-2 (for sixel graphics) IBM Proprinter (X24E)								
<b>Interfaces:</b>	Serial, via 6 pin DECconnect type connector Parallel, via 36 pin Centronics type connector								
<b>Selectable Baud Rates:</b>	200, 300, 600, 1200 2400, 4800, 9600								
<b>Selectable Data Bits and Parity:</b>	7-Even, 7-Odd, 7/Space, 7/Mark 8-Even, 8-Odd, 8-None								
<b>Print Modes:</b>	Normal Quiet (double passes)								
<b>Average Print Speeds:</b>	<table><tr><th>Print</th><th>Speed</th></tr><tr><td>Draft</td><td>250 CPS</td></tr><tr><td>NLQ</td><td>125 CPS</td></tr><tr><td>LQ</td><td>83CPS</td></tr></table>	Print	Speed	Draft	250 CPS	NLQ	125 CPS	LQ	83CPS
Print	Speed								
Draft	250 CPS								
NLQ	125 CPS								
LQ	83CPS								
<b>Paper Handling:</b>	Pinfeed, Single Sheet Single bin Automatic Sheet Feeder (optional) Also see <i>Paper Specifications</i> in this chapter								



Feature	Range	
<b>Selectable Form Length:</b>	<b>Inches</b>	<b>mm</b>
	3	76.2
	3.5	88.9
	4	101.6
	5.5	139.7
	6	152.4
	7	177.8
	8	203.2
	8.5	215.9
	11	279.4
	11 2/3	296.16
	12	304.8
	14	355.6
	15	381
	(1/180"):XXX	(0.176):XXX
Other values are available by software selection.		
<b>Horizontal Print Density:</b>	5 CPI	10 CPI (80 col)
	6 CPI	12 CPI
	6.6 CPI	13.2 CPI
	8.25 CPI	16.5 CPI (132 col)
	8.55 CPI	17.1 CPI
	9 CPI	18 CPI
<b>Vertical Print Density:</b>	2 LPI	
	3 LPI	
	4 LPI	1 LPCM
	6 LPI	2 LPCM
	8 LPI	4 LPCM
	12 LPI	

Feature	Range																																							
<b>Character Sets:</b>	<b>DEC</b> <table><tr><td>US ASCII</td><td>DEC Hebrew</td></tr><tr><td>Great Britain</td><td>DEC Turkish</td></tr><tr><td>DEC Finland</td><td>DEC Turkish Supplemental</td></tr><tr><td>France</td><td>DEC Greek Supplemental</td></tr><tr><td>DEC French/Canada</td><td>DEC Supplemental</td></tr><tr><td>Germany</td><td>DEC Technical</td></tr><tr><td>Italy</td><td>Katakana</td></tr><tr><td>JIS Roman</td><td>DEC Hebrew Supplemental</td></tr><tr><td>DEC Norway/Denmark</td><td>VT100</td></tr><tr><td>Spain</td><td>W.P. Legal</td></tr><tr><td>DEC Sweden</td><td>ISO Latin 1 Supplemental</td></tr><tr><td>Norway/Denmark</td><td>ISO Hebrew Supplemental</td></tr><tr><td>DEC Dutch</td><td>ISO Latin 5 Supplemental</td></tr><tr><td>DEC Swiss</td><td>ISO Greek Supplemental</td></tr><tr><td>DEC Portugal</td><td></td></tr></table> <b>IBM</b> <table><tr><td>USA (Code Page 437)</td></tr><tr><td>Multilingual (Code Page 850)</td></tr><tr><td>Portugal (Code Page 860)</td></tr><tr><td>Norway (Code Page 865)</td></tr><tr><td>Spain (Code Page 220)</td></tr><tr><td>Greece (Code Page 210)</td></tr><tr><td>Canada - French (Code Page 863)</td></tr><tr><td>German GS (Code Page 190)</td></tr><tr><td>Turkey (Code Page 857)</td></tr></table>	US ASCII	DEC Hebrew	Great Britain	DEC Turkish	DEC Finland	DEC Turkish Supplemental	France	DEC Greek Supplemental	DEC French/Canada	DEC Supplemental	Germany	DEC Technical	Italy	Katakana	JIS Roman	DEC Hebrew Supplemental	DEC Norway/Denmark	VT100	Spain	W.P. Legal	DEC Sweden	ISO Latin 1 Supplemental	Norway/Denmark	ISO Hebrew Supplemental	DEC Dutch	ISO Latin 5 Supplemental	DEC Swiss	ISO Greek Supplemental	DEC Portugal		USA (Code Page 437)	Multilingual (Code Page 850)	Portugal (Code Page 860)	Norway (Code Page 865)	Spain (Code Page 220)	Greece (Code Page 210)	Canada - French (Code Page 863)	German GS (Code Page 190)	Turkey (Code Page 857)
US ASCII	DEC Hebrew																																							
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Canada - French (Code Page 863)																																								
German GS (Code Page 190)																																								
Turkey (Code Page 857)																																								
<b>Printing Quality Modes:</b>	Draft LQ																																							
<b>Print Attributes:</b>	Underline Double underline Overline Italic Strike-through Shadow bold Double width																																							
<b>Noise Level:</b>	Draft Mode - 6.5 LwAd, 55 LpAm Quality Mode - 6.4 LwAd, 54 LpAm Quiet Mode - 6.3 LwAd 53 LpAm																																							

Feature	Range
<b>Dimensions:</b>	Width= 400 mm (15.7"), Depth = 290 mm (11.4"), Height = 120 mm (4.8"), Height with Auto Sheet Feeder = 400 mm (15.7")
<b>Weight:</b>	16 pounds (7,5 kg)
<b>Power Requirements:</b>	100 V @ 1.6 Amps, 50/60 Hz, 50 W 120 V @ 1.6 Amps, 50/60 Hz, 50 W 220 V @ 1.0 Amps, 50/60 Hz, 50 W 240 V @ 1.0 Amps, 50/60 Hz, 50 W

Exact values on noise levels for specific configurations are available from your Digital representative.

## Paper Specifications

Feature	Range
<b>Paper Types:</b>	Pinfeed (tractor media) Single sheets Up to 3 part forms Envelopes
<b>Continuous Paper (Tractor Media):</b>	<ol style="list-style-type: none"> <li>1 Single part continuous paper between 4" and 10" wide including perforations is supported. The allowable weight for these forms is 56 to 90 g/m<sup>2</sup> (15 to 24 pounds per ream).</li> <li>2 Multiple part forms: 4" to 10" wide including perforation. <ul style="list-style-type: none"> <li>■ 3 parts (1 original and 2 copies) with carbon: First Sheet - 60 to 75 g/m<sup>2</sup> (16 to 20 lb/ream) Copies - 45 to 56 g/m<sup>2</sup> (12 to 15 lb/ream) Total thickness: .012" maximum (0.3 mm)</li> <li>■ 3 parts (1 original and 2 copies) without carbon: First Sheet and Copies - 54 to 56 g/m<sup>2</sup> (14.5 to 15 lb/ream) Last Sheet - 49 to 56 g/m<sup>2</sup> (13 to 15 lb/ream) Total thickness: .012" maximum (0.3 mm)</li> <li>■ <b>NOTE</b> <b>Hole spacing should be 12.7 mm +/- 0.25 mm (0.50" +/- 0.01") non-accumulative over 50.8 mm (2.00") with a hole diameter of 3.8 mm to 4.1 mm (0.15" to 0.16").</b></li> </ul> </li> </ol>
<b>Single-sheet Paper (Hand-fed Media):</b>	Single-sheet plain bond, typewriter quality paper between 60 and 90 g/m <sup>2</sup> (16 and 24 pounds per ream). Hand-fed multiple-part forms (.012 max. thickness) and up to 8.5" in width.
<b>Single-sheet Paper (Sheet-feeder Media):</b>	Single-sheet plain bond (60 to 90 g/m <sup>2</sup> (16 to 24 lb/ream)) Bin Capacity: up to 80 sheets at 75 g/m <sup>2</sup> (20 lb/ream)

## 7.6 Printer Accessories

Description	Part Number
<b>Ribbon Cartridges</b>	
Black Ribbon Cartridges (six in a box)	LA75R-KA
Color Ribbon Cartridges (six in a box)	LA75R-KC
<b>Font Cartridges</b>	
Letter Gothic Font	LA75Y-CA
Orator Font	LA75Y-CB
Prestige Elite Font	LA75Y-CC
OCR A Font	LA75Y-CD
OCR B Font	LA75Y-CE
ISO Latin 2/ Cyrillic Character Set Cartridge	LA75Y-CF
<b>Cables</b>	
Serial Data Cable	BC16E-10
Parallel Data Cable	BC-19M-10
Shielded Serial Data Cable	DD-16E-10
<b>Accessories</b>	
Automatic Sheet Feeder	LA75Y-SF
Acoustic Cover	See current edition of DECdirect
Desk Stand	See current edition of DECdirect
Printer Table	See current edition of DECdirect
Dust Cover	See current edition of DECdirect
Paper Basket	See current edition of DECdirect
Cleaning Materials	See current edition of DECdirect
Paper	See current edition of DECdirect

## Interface/System Cable and Adapters

Connector Type	Adapter and Cable
<b>25-Pin Male</b>	
VAXstation 3200/3500	H8571-A and BC16E <sup>1</sup>
VT100 Series	H8571-A and BC16E <sup>1</sup>
DECserver 200/MC (DSRVB-AA)	H8571-A and BC16E <sup>1</sup>
CCITT V.24/CCITT V.28	H8571-A and BC16E <sup>1</sup>
<b>9-Pin Male</b>	
VT200-Series	H8571-B and BC16E <sup>1</sup>
DECmate	H8571-B and BC16E <sup>1</sup>
Pro-Series	H8571-B and BC16E <sup>1</sup>
VAXstation 2000	H8571-B and BC16E <sup>1</sup>
<b>DEC423 Serial</b>	
VAXmate	BC16E <sup>1</sup>
MicroVAX 2000	BC16E <sup>1</sup>
DECserver 200/DL (DSRVB-BA)	BC16E <sup>1</sup>
VT300-Series	BC16E <sup>1</sup>
CPU DEC423 ports	BC16E <sup>1</sup>
VT 420	BC16E <sup>1</sup>
<b>25-Pin Female</b>	
Rainbow	H8571-D and BC16E <sup>1</sup>

<sup>1</sup>The BC16E cable is included with the LA75 Plus printer. If the BC16E cable is listed on its own, no adapter is required.

# A

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## Set-up

### A.1 Set-up Mode

Set-up mode enables you to customize the printer for your specific use. This appendix contains a full list of the choices you can make for each feature of the printer.

To change any of the features, perform the following steps:

- 1 Load the fanfold paper
- 2 Enter the Set-up mode
- 3 Select the feature to be changed
- 4 Select the value needed.
- 5 When all changes have been made, exit Set-up mode to store the changes in the printer's memory.

Any changes you make are stored by the printer when you exit Set-up mode.

If power is switched Off before you exit Set-up mode, the changes you made will not be stored by the printer.

#### A.1.1 List of Set-up Features and Values

The value of each set-up feature is changed by moving through the list of features until the desired feature is reached, and then moving through the list of available values for that feature until the desired value is reached. The list of features and their possible values is shown in the following tables. The values marked with an "\*" indicate the factory setting when shipped.

**Table A-1 Set-up Features and Values - Common Features for both Dec and IBM protocols**

Number	Feature	Value
Generic 1	Protocol at Power-up	<b>1</b> DEC
		<b>2</b> IBM Proprinter
		<b>3</b> Port Dependent (Serial=DEC, Parallel=IBM) *
Generic 2	Form Length	<b>1</b> 3 inches
		<b>2</b> 3.5 inches
		<b>3</b> 4 inches
		<b>4</b> 5.5 inches
		<b>5</b> 6 inches
		<b>6</b> 7 inches
		<b>7</b> 8 inches
		<b>8</b> 8.5 inches
		<b>9</b> 11 inches (A) *
		<b>10</b> 11 2/3 inches (A4)
		<b>11</b> 12 inches
		<b>12</b> 14 inches
		<b>13</b> 15 inches
		<b>14</b> (1/180"): xxxx <sup>1</sup>

<sup>1</sup>The 14th listed form length is given in 1/180 inches, it is the active form length; that is ,the form length prior to entering Set-up mode. As a result it is the current value when entering Set-up mode.

(continued on next page)



**Table A-1 (Cont.)      Set-up Features and Values - Common Features for both Dec and IBM protocols**

<b>Number</b>	<b>Feature</b>	<b>Value</b>
Generic 3	Vertical Pitch	<b>1</b> 2 lines per inch
		<b>2</b> 3 lines per inch
		<b>3</b> 4 lines per inch
		<b>4</b> 6 lines per inch *
		<b>5</b> 8 lines per inch
		<b>6</b> 12 lines per inch
		<b>7</b> 1 line per cm
		<b>8</b> 2 lines per cm
		<b>9</b> 4 lines per cm
Generic 4	Automatic Advance	<b>1</b> Selected
		<b>2</b> Not selected *
Generic 5	Print Quality Control	<b>1</b> Software Control *
		<b>2</b> Draft Locked
		<b>3</b> LQ Locked
Generic 6	Port Selection	<b>1</b> Serial port
		<b>2</b> Parallel port
		<b>3</b> Automatic

(continued on next page)

**Table A-1 (Cont.)      Set-up Features and Values - Common Features for both Dec and IBM protocols**

Number	Feature	Value
Generic 7	Baud Rate	<b>1</b> 200
		<b>2</b> 300
		<b>3</b> 600
		<b>4</b> 1200
		<b>5</b> 2400
		<b>6</b> 4800 *
		<b>7</b> 9600
Generic 8	Data Bits and Parity	<b>1</b> 7-Even
		<b>2</b> 7-Odd
		<b>3</b> 7-Space
		<b>4</b> 7-Mark
		<b>5</b> 8-Even
		<b>6</b> 8-Odd
		<b>7</b> 8-None *
Generic 9	Buffer Control	<b>1</b> XON/XOFF *
		<b>2</b> DTR

(continued on next page)

**Table A-1 (Cont.) Set-up Features and Values - Common Features for both Dec and IBM protocols**

Number	Feature	Value
Generic 10	Error Beep <sup>2</sup>	<b>1</b> One Beep *
		<b>2</b> Three Beeps
		<b>3</b> Continuous
		<b>4</b> Off
Generic 11	Typestyle	<b>1</b> Internal *
		<b>2</b> Cartridge <sup>3</sup>
Generic 12	Input Buffer Size <sup>4</sup>	<b>1</b> 8 K *
		<b>2</b> 32 K - No DLL Capability
Generic 13	Disconnect on Fault <sup>5</sup>	<b>1</b> No action *
		<b>2</b> Drop DTR

<sup>2</sup>This feature selects the beep signal when there is a "Paper out" or "Paper jam" condition. The printer always sounds one beep when BEL control code is received.

<sup>3</sup>Value number 2 may be selected even if no cartridge is installed. If no cartridge is installed, typestyle is internal, but this value is not changed in NVM.

<sup>4</sup>Input Buffer Size:

- If standard buffer size is selected, the resident DLL capability is limited to 32 K Bytes.
- If the input buffer size is extended, there is no down loaded character (DLL) capability.

<sup>5</sup>On any condition that makes the Fault indicator On or blinking, if this feature is set to 2, the DTR serial signal is dropped until the fault is corrected.

**Table A-2     Set-up Features and Values - Dec Protocol Features**

<b>Number</b>	<b>Feature</b>	<b>Value</b>
DEC 1	Horizontal Pitch	
		<b>1</b> 5 characters per inch
		<b>2</b> 6 characters per inch
		<b>3</b> 6.6 characters per inch
		<b>4</b> 8.25 characters per inch
		<b>5</b> 8.55 characters per inch
		<b>6</b> 9 characters per inch
		<b>7</b> 10 characters per inch (80 col) *
		<b>8</b> 12 characters per inch
		<b>9</b> 13.2 characters per inch
		<b>10</b> 16.5 characters per inch (132 col)
		<b>11</b> 17.1 characters per inch
		<b>12</b> 18 characters per inch

(continued on next page)

**Table A-2 (Cont.)      Set-up Features and Values - Dec Protocol Features**

<b>Number</b>	<b>Feature</b>	<b>Value</b>
DEC 2	G0 Character Set	<ol style="list-style-type: none"> <li><b>1</b> U.S. ASCII *</li> <li><b>2</b> Great Britain</li> <li><b>3</b> DEC Finland</li> <li><b>4</b> France</li> <li><b>5</b> DEC French Canada</li> <li><b>6</b> Germany</li> <li><b>7</b> Italy</li> <li><b>8</b> JIS Roman</li> <li><b>9</b> DEC Norway/Denmark</li> <li><b>10</b> Spain</li> <li><b>11</b> DEC Sweden</li> <li><b>12</b> Norway/Denmark</li> <li><b>13</b> DEC Dutch</li> <li><b>14</b> DEC Swiss</li> <li><b>15</b> DEC Portugal</li> <li><b>16</b> DEC Hebrew</li> <li><b>17</b> DEC Turkish</li> <li><b>18</b> DEC Turkish Supplemental</li> <li><b>19</b> DEC Greek Supplemental</li> <li><b>20</b> DEC Supplemental</li> <li><b>21</b> DEC Technical</li> <li><b>22</b> Katakana</li> <li><b>23</b> DEC Hebrew Supplemental</li> </ol>

(continued on next page)

**Table A-2 (Cont.)      Set-up Features and Values - Dec Protocol Features**

Number	Feature	Value
<b>24</b>	VT100	
<b>25</b>	W.P. Legal	
<b>26</b>	User Preference character set	
<b>27</b>	SPECIAL <sup>1</sup>	
<b>28</b>	<i>Cartridge character sets labelled with (External) <sup>2</sup></i>	
<b>29</b>	.	
	.	
	.	

---

<sup>1</sup>The SPECIAL character set is reserved for future use.

<sup>2</sup>The cartridge character sets are listed if a font cartridge with additional DEC character sets is installed.

(continued on next page)

**Table A-2 (Cont.) Set-up Features and Values - Dec Protocol Features**

Number	Feature	Value
DEC 3	User Pref. Character Set	<p>1 DEC Supplemental *</p> <p>2 ISO Latin 1 supp.</p> <p>3 Katakana</p> <p>4 ISO Hebrew supp.</p> <p>5 DEC hebrew supp.</p> <p>6 DEC Hebrew</p> <p>7 DEC Technical</p> <p>8 ISO Latin 5 supp.</p> <p>9 ISO Latin-Greek supp.</p> <p>10 SPECIAL <sup>1</sup></p> <p>11 <i>Cartridge character sets labelled with (External)</i> <sup>2</sup></p> <p>12</p> <p>.</p> <p>.</p> <p>.</p>
DEC 4	Printer ID	<p>1 LA50</p> <p>2 LA120</p> <p>3 LA210</p> <p>4 Conf. Level 2 (LA75 Plus) *</p>

<sup>1</sup>The SPECIAL character set is reserved for future use.

<sup>2</sup>The cartridge character sets are listed if a font cartridge with additional DEC character sets is installed.

(continued on next page)

**Table A-2 (Cont.) Set-up Features and Values - Dec Protocol Features**

Number	Feature	Value
DEC 5	Text Mode Right Margin	1 Truncate
		2 Wrap *
DEC 6	Auto LF on CR	1 Selected
		2 Not Selected *
DEC 7	Auto CR on LF	1 Selected
		2 Not Selected *
DEC 8	Disconnect on EOT <sup>3</sup>	1 Selected
		2 Not Selected *
DEC 9	Initialization Message	1 Selected
		2 Not selected *

---

<sup>3</sup>When Disconnect on EOT is enabled, the DTR signal on the serial port will drop for 5 seconds when the EOT control code is received. This feature is active if the serial port is active.

---



**Table A-3     Set-up Features and Values - IBM Protocol Features**

Number	Feature	Value
X24 1	Slashed Zero	<b>1</b> Zero with slash
		<b>2</b> Without slash *
X24 2	Auto LF on CR	<b>1</b> Selected
		<b>2</b> Not Selected *
X24 3	Auto CR on LF	<b>1</b> Selected
		<b>2</b> Not Selected *
X24 4	Active character table	<b>1</b> Graphics set A *
		<b>2</b> Graphics set B

(continued on next page)

**Table A-3 (Cont.) Set-up Features and Values - IBM Protocol Features**

Number	Feature	Value
X24 5	National character set	<b>1</b> U.S.A (Code Page 437) *
		<b>2</b> Multilingual (Code Page 850)
		<b>3</b> Portugal (Code Page 860)
		<b>4</b> Norway (Code Page 865)
		<b>5</b> Spain (Code Page 220)
		<b>6</b> Greece (Code Page 210)
		<b>7</b> Canada-French (Code Page 863)
		<b>8</b> German GS (Code Page 190)
		<b>9</b> Turkish (Code Page 857)
		<b>10</b> <i>Cartridge character sets labelled with (External)</i> <sup>1</sup>
		<b>11</b> . . .
X24 6	Emphasized (Bold)	<b>1</b> Selected
		<b>2</b> Not Selected *
X24 7	Character Height	<b>1</b> Single *
		<b>2</b> Double

<sup>1</sup>The cartridge character sets are listed if a font cartridge with additional IBM character sets is installed.

(continued on next page)

**Table A-3 (Cont.) Set-up Features and Values - IBM Protocol Features**

Number	Feature	Value
X24 8	Horizontal Pitch	1 5 Characters per inch
		2 6 Characters per inch
		3 8.55 Characters per inch
		4 10 Characters per inch *
		5 12 Characters per inch
		6 17.1 Characters per inch
		7 Proportional
		8 Prop. Enlarged
X24 9	Alternate Graphic Mode	1 Not Selected*
		2 Selected

**Table A-4 Set-up Features and Values - Factory Setting**

Number	Feature	Value
99	Factory Setting	1 No
		2 Yes

If the value 2 Yes is selected when exiting Set-up mode, all features are set with their factory setting indicated with the \* symbol.



---

## Printing Control Characters

Use this mode to assist when debugging software.

**Exceptions:** In this mode, control characters are printed, not acted upon, with the following exceptions.

- Line Feed character produces a carriage return and line feed action, as well as printing <LF>.
- Form Feed character prints <FF>, followed by carriage return action.
- Space character produces a space.

**Format of Normal text:**

- Normal mode
- Draft
- 10 CPI
- 6 LPI

**Format of Acronyms:**

- Normal mode
- Draft
- 10 CPI
- 6 LPI
- Bold

The control character acronyms are included in this appendix.

**Procedure:**

- 1 With paper loaded, press the linefeed switch (LF), and switch power On.
- 2 To terminate this mode, switch power Off.



---

## DEC PPL2 Quick Reference

This appendix contains basic information on the DEC PPL2 commands that are supported in the LA75 Plus. It also contains the character set code tables supported by the LA75 Plus in the DEC PPL2 protocol.

The commands are listed by function in the following order:

- Positioning controls
- Sheet size and margins
- Type size and spacing, managing implicit cursor motion
- Font management and attribute selection
- Tabs
- Character set selection
- Reports
- Miscellaneous

This guide should be used in conjunction with the *Digital Ansi-compliant Printing Protocol Level 2 Programming Reference Manual* and the *Digital Ansi-compliant Printing Protocol Level 2 Programming Supplement*.

Characters used in control functions appear in monospaced type. Table D-1 explains some of the conventions used.

A pair of numbers separated by a slash (/) character indicates Column/Row notation. This notation refers to the location of a character in a standard code table, such as ASCII.

Spaces appear between characters in sequences for clarity; they are not part of the format. Space is designated as "SP" when it is part of the format of a command or sequence.

The following conventions are used in the command listings:

**Table C–1 Conventions**

ESC	Escape (1/11), introduces an escape sequence
CSI	Control Sequence Introducer (9/11), introduces a control sequence. CSI can also be represented by the equivalent escape sequence ESC [ (1/11 5/11).
DCS	Device Control String (9/0), introduces a device control string. DCS can also be represented by the equivalent escape sequence ESC P (1/11 5/0).
ST	String Terminator (9/12) indicates the end of a control string. ST can also be represented by the equivalent escape sequence ESC \ (1/11 5/12).
Pn	Numeric parameter, or number of units that specify a distance or quantity pertaining to the escape sequence, control function or control string.
Ps	Selective parameter, or one which identifies a list of options pertaining to the specific command. If ">" (3/14) or "?" (3/15) occurs at the beginning of a string of parameters, the parameters that follow are Digital private parameters. ">" or "?", if present, must occur only once at the beginning of the parameter string.
I <sub>n</sub>	Intermediate character — component of an escape sequence, control sequence or control string
F	Final character — component of an escape sequence, control sequence or control string
SP	Space (2/0)

**Note** Both numeric and selective parameters are interpreted as unsigned decimal integers, with the most significant digit sent first. For instance, the value 16 is coded as "16" (3/1 3/6). Leading zeros are allowed but are ignored. Plus and minus signs are not allowed.

**Table C–2 Positioning Controls**

DECCAHT	Clear All Horizontal Tabs	ESC 2	
DECAVT	Clear All Vertical Tabs	ESC 4	
DECSHTS	Set Horizontal Tab Stops	CSI Pn ; . . . ; Pn u	Pn = tabstop position
DECSVTS	Set Vertical Tab Stops	CSI Pn ; . . . ; Pn v	Pn = tabstop position
DECHTS	Horizontal Tab Set	ESC 1	

(continued on next page)



**Table C-2 (Cont.)      Positioning Controls**

DECVTS	Vertical Tab Set	ESC 3	
HPA	Horizontal Position Absolute	CSI Pn `	Pn = position to move to
HPR	Horizontal Position Relative	CSI Pn a	Pn = number of columns down
VPA	Vertical Position Absolute	CSI Pn d	Pn = position to move to
VPR	Vertical Position Relative	CSI Pn e	Pn = number of lines down

**Table C-3      Sheet size and margins**

DECSLPP	Set Lines per Physical Page	CSI Pn t	Pn = number of lines per page
DECSLRM	Set Left and Right Margins	CSI Pn1 ; Pn2 s	Pn1 = left margin Pn2 = right margin
DECHPWA	Set Page Width Alignment	CSI Pn1 ; Pn2 " s	Pn1 <sup>4</sup> = origin Pn2 <sup>4</sup> = paper width
DECSTBM	Set Top and Bottom Margins	CSI Pn1 ; Pn2 r	Pn1 = top margin Pn2 = bottom margin

<sup>4</sup>Units are 1/12 inch.

**Table C-4      Type size and spacing, managing implicit cursor motion**

DECAWM	Autowrap Mode	CSI ? 7 h CSI ? 7 l	Set autowrap mode Reset autowrap mode
DECCRNLM	Carriage Return /New Line Mode	CSI ? 40 h CSI ? 40 l	CR acts as New Line CR acts as Carriage Return

(continued on next page)

Table C-4 (Cont.) Type size and spacing, managing implicit cursor motion

DECSHORP	Set Horizontal Pitch	CSI Ps w	Ps = 0: Determined by current font Ps = 8: 8.25 CPI Ps = 1: 10 CPI Ps = 9: 15 CPI Ps = 11: 17.1 CPI Ps = 2: 12 CPI Ps = 12: 8.55 CPI Ps = 3: 13.2 CPI Ps = 13: 18 CPI Ps = 4: 16.5 CPI Ps = 14: 9 CPI Ps = 5: 5 CPI Ps = 15: 10 CPI Ps = 6: 6 CPI Ps = 7: 6.6 CPI
DECVERP	Set Vertical Pitch	CSI Ps z	Ps = 0: Determined by current font Ps = 1: 6 LPI Ps = 2: 8 LPI Ps = 3: 12 LPI Ps = 4: 2 LPI Ps = 5: 3 LPI Ps = 6: 4 LPI Ps = 21: 4 LPcm <sup>1</sup> Ps = 22: 2 LPcm Ps = 23: 1 LPcm Ps = 11–16 and 31–33: same as 1–6 and 21–23
LNM	Line Feed/New Line Mode	CSI 20 h CSI 20 l	LF acts as New Line LF acts as line feed

<sup>1</sup>LPcm = Lines per centimeter

**Table C-5**      **Font management and attribute selection**

SGR	Select Graphic Rendition - <i>Selecting Fonts</i>	CSI Ps m	Ps = 10–16: Built in Typestyle or Downloaded font Ps = 17–19: Cartridge Typestyle or Donloaded font (continued on next page)
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**Table C-5 (Cont.)      Font management and attribute selection**

SGR	Select Graphic Rendition - <i>Selecting Attributes</i>	CSI Ps m	Ps = 0: Turn off all attributes Ps = 1: Bold on Ps = 3: Slant on Ps = 4: Underline on Ps = 9: Strike-through on Ps = 21: Double underline on Ps = 22: Bold off Ps = 23: Slant off Ps = 24: Any underline off Ps = 29: Strike through off Ps = 53: Overline on Ps = 55: Overline off Ps = ?4: Superscript on Ps = ?5: Subscript on Ps = ?24: Script off
DECDLD	Download Font	DCS parameter_string { D . . . D ST	See the <i>Programming Reference Manual</i>

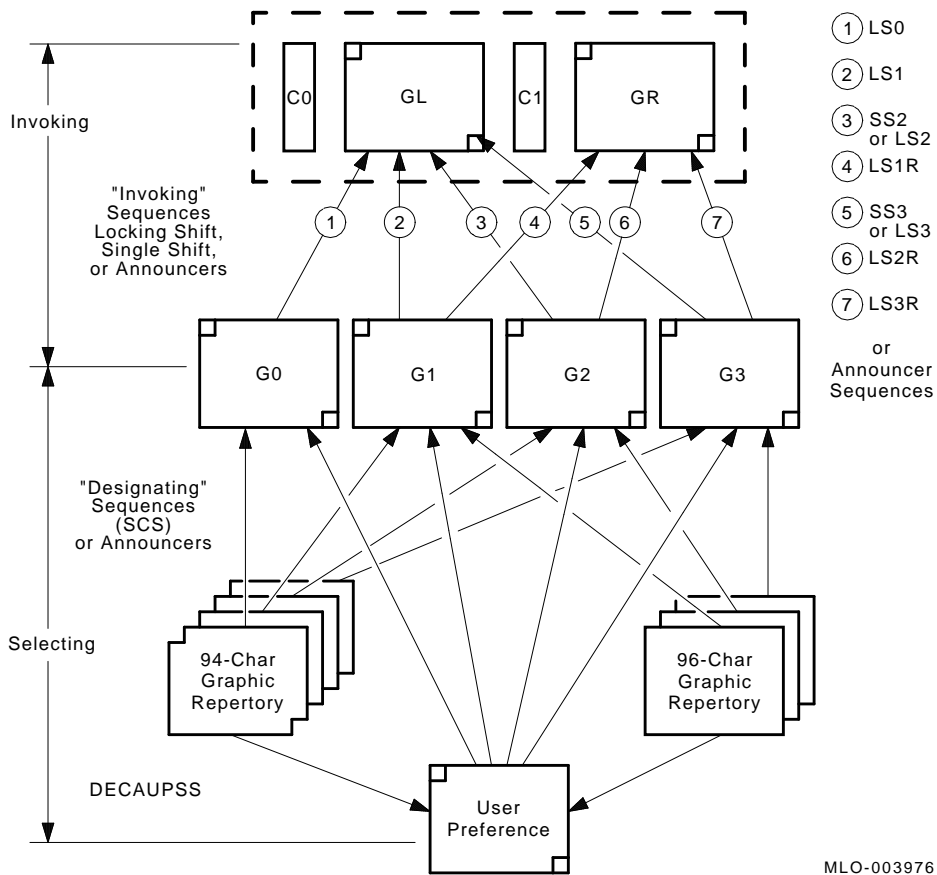
**Table C-6      Tabs**

DECCAVT	Clear All Horizontal Tabs	ESC 2	deprecated command
DECCAHT	Clear All Vertical Tabs	ESC 4	deprecated command
DECHTS	Horizontal Tab Set	ESC 1	deprecated command
DECSHTS	Set Horizontal Tab Stops	CSI Pn ; . . . ; Pn u	Pn = tab stop
DECSVTS	Set Vertical Tab Stops	CSI Pn ; . . . ; Pn v	Pn = tab stop
DECVTS	Vertical Tab Set	ESC 3	deprecated command
TBC	Tab Clear	CSI Ps ; . . . ; Ps g	Ps = 0: Clear horiz. tab at active position Ps = 1: Clear vert. tab at active position Ps = 2 or 3: Clear all horiz. tabs Ps = 4: Clear all vert. tabs

**Table C-7     Selecting character sets**

ASCEF	Announce Subset of Code Extension Facilities	ESC SP L	ASCII in G0 and GL. ISO Latin-1 in G1 and GR.
		ESC SP M	Same as ESC SP L
		ESC SP N	ASCII in G0 and GL.
DECAUPSS	Assign User Preference Supplemental Set	DCS Ps ! u D . . . D ST	Ps = 0: 94-char. set Ps = 1: 96-char. set D . . . D: SCS designating sequence.
SS2	Single Shift 2	ESC N	Take the next character from G2
SS3	Single Shift 3	ESC O	Take the next character from G3
LS0	Locking Shift 0 (or Shift In)	SI	Invoke G0 into GL
LS1	Locking Shift 1 (or Shift Out)	SO	Invoke G1 into GL
LS2	Locking Shift 2	ESC n	Invoke G2 into GL
LS3	Locking Shift 3	ESC o	Invoke G3 into GL
LS1	Locking Shift 1 Right	ESC ~	Invoke G1 into GR
LS2	Locking Shift 1 Right	ESC }	Invoke G2 into GR
LS3	Locking Shift 1 Right	ESC	Invoke G3 into GR
SCS	Select Character Set	ESC I <sub>1</sub> I <sub>2</sub> F	I <sub>1</sub> = "(": Invoke 94-char. set into G0 I <sub>1</sub> = ")": Invoke 94-char. set into G1 I <sub>1</sub> = "*": Invoke 94-char. set into G2 I <sub>1</sub> = "+": Invoke 94-char. set into G3 I <sub>1</sub> = "-": Invoke 96-char. set into G1 I <sub>1</sub> = ".": Invoke 96-char. set into G2 I <sub>1</sub> = "/": Invoke 96-char. set into G3 I <sub>2</sub> F = additional characters from Table C-11, at the end of this appendix.

**Figure C-1     Designating and Invoking Character Sets**



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**Table C-8     Character Sets Power-up Settings**

Character Set	Power-up Setting
G0	Defined by Set-up feature "DEC 2"

(continued on next page)

**Table C-8 (Cont.) Character Sets Power-up Settings**

Character Set	Power-up Setting
G1	US ASCII
G2 and G3	User Preference Character Set
GL	G0
GR	G2
User Preference Character Set	Defined by Set-up feature "DEC 3"

**Table C-9 Reports**

DA	Device Attributes	CSI c	Request Device Attributes Report
DAR	Device Attributes Report	CSI ? Ps1 ; Ps2 ; . . . ; Psn c (printer to host)	Ps1 = 72 Ps2–Psn describe extensions. See the <i>Programming Supplement</i> .
DA2	Secondary Device Attributes	CSI > Ps c	Ps must = 0
DA2R	Secondary Device Attributes Report	CSI > Ps1 ; Ps2 c (printer to host)	Ps1 = 54 Ps2 = firmware revision x 10
DECFSR	Font Status Report	DCS 3 " { D . . . D ST (printer to host)	D . . . D = type_style ( intended_pitch ; SGR_parameter ) ; CR LF . . .
DECRFS	Request Font Status	CSI Ps " {	Ps must = 3
DSR	Device Status Request	CSI Ps n	Ps = 0 or 5: Request extended DSR Ps = ?2: Enable brief unsolicited reports, send extended report Ps = ?3: Enable/send extended unsolicited reports
DSR	Device Status Report	Brief: CSI Ps n Extended: brief, followed by CSI Pn1 ; Pn2 ; . . . ; Pnn n	Ps = 0: No errors Ps = 3: Error See the <i>Programming Supplement</i> for extended report

**Table C-10     Miscellaneous**

DECSCL	Select Conformance Level	CSI Ps1 " p	Ps = 0: reset - native level Ps = 71: reset - DEC PPL1 Ps = 72: reset - DEC PPL2
DECSTR	Soft Terminal Reset	CSI ! p	Reset to initial state
RIS	Reset to Initial State	ESC c	Reset to initial state
DECIPEM	IBM Proprinter Emulation Mode	CSI ? 58 h CSI ? 58 l	Deprecated function
ROCS	Return from Other Coding System	ESC % @	Return to DEC PPL2 mode
SOCS	Select Other Coding System	ESC % =	IBM Proprinter Emulation
CRM	Control Representation Mode	CSI 3 h CSI 3 l	Print hex representation for all characters Reset
DECASFC	Automatic Sheet Feeder Control	CSI Ps ! v	Ps = 0-98: Select ASF and Conditional Sheet Feed Ps = 99: Manual feed
DECDEN	Printing Density Selection	CSI Ps " z	Ps = 0 or 1: Select draft Ps = 2: Select letter quality Ps = 3 or 4: Select near letter quality
DECUPM	Unidirectional Print Mode	CSI ? 41 h CSI ? 41 l	Set unidirectional print mode Reset unidirectional print mode

(continued on next page)

**Table C-10 (Cont.)      Miscellaneous**

SnC1R /DEC*C1	C1 Transmit /Receive	ESC SP 6 ESC SP 7 ESC SP F ESC SP G	Process 7-bit, drop 8th bit Process 7-bit and 8-bit Transmit 8-bit as 7-bit equivalents Transmit 8-bit (not supported)
DECBAR	Start or Stop Bar Coding	CSI % SP 0 CSI % @	Start Barcode Stop Barcode
DECSBCA	Select Bar Code Attributes	CSI Ps1 ; Ps2 ; ... Ps9 ' q	Ps1 = 0 or 2, sets Code 39. Ps2 = 9 or 18, sets the width of narrow bars and spaces in 1/720". Ps3 = 180, quiet zone in 1/720" : .25" . Ps4 = 27 or 54, sets the width of wide bars and wide spaces in 1/720". Ps5 = 18 or 36, sets the inter character gap in 1/720". Ps6 = 96, sets the height of bars 1/720" : .133". Ps7 and Ps8 are ignored Ps9 sets the human readable option : 0 or 1 for no human readable characters printed ; 2 for human readable characters printed.

**Table C-11      SCS Final Characters**

Character Set	I <sub>2</sub> F Designator Characters	Code
<b>94-Character Sets</b>		
British <sup>1</sup>	A	4/1
ASCII	B	4/2
DEC Dutch <sup>1</sup>	4	3/4
DEC Finnish <sup>1</sup>	5	3/5
French <sup>1</sup>	R	5/2
DEC French-Canadian <sup>1</sup>	9	3/9
German <sup>1</sup>	K	4/11
DEC Hebrew Supplemental	"4	2/2, 3/4
DEC 7-Bit Hebrew	%=	2/5, 3/13
ISO Italian <sup>1</sup>	Y	5/9

<sup>1</sup>Those character sets are National Replacement Character (NRC) sets, see Table C-12.

(continued on next page)



**Table C-11 (Cont.) SCS Final Characters**

Character Set	I <sub>2</sub> F Designator Characters	Code
Legal	%4	2/5, 3/4
JIS Katakana	I	4/9
JIS Roman <sup>1</sup>	J	4/10
DEC Norwegian/Danish <sup>1</sup>	6	3/6
ISO Spanish <sup>1</sup>	Z	5/10
DEC Swedish <sup>1</sup>	7	3/7
DEC Swiss <sup>1</sup>	=	3/13
Norwegian/Danish <sup>1</sup>	'	6/0
DEC Supplemental	%5	2/5, 3/5
DEC Technical	>	3/14
DEC Special Graphics	0	3/0
DEC Portuguese <sup>1</sup>	%6	2/5, 3/6
7-Bit Turkish	%2	2/5, 3/2
DEC 8-Bit Turkish Supplemental	%0	2/5, 3/0
DEC 8-Bit Greek Supplemental	"?	2/2, 3/15
User Preference Supplemental	<	3/12 <sup>2</sup>
<b>96-Character Sets</b>		
ISO Latin-1 Supplemental	A	4/1
ISO Latin-2 Supplemental <sup>3</sup>	B	4/2
ISO Latin-Greek Supplemental	F	4/6
ISO Latin-Hebrew Supplemental	H	4/8
ISO Latin/Cyrillic Supplemental <sup>3</sup>	L	4/12
ISO Latin-5 Supplemental	M	4/13

<sup>1</sup>Those character sets are National Replacement Character (NRC) sets, see Table C-12.

<sup>2</sup>For compatibility with older devices, set the User Preference Supplemental character set to the DEC Supplemental character set.

<sup>3</sup>Those character sets are supported by an optional cartridge.

**Figure C-2 Standard 8-bit Code Table (Left Half)**  
Standard Left

C0 Control Set				Graphics Left (GL)												
Column 0		1		2		3		4		5		6		7		
Row 0	NUL	00	DLE	20	SP 40 32 20											
1	SOH	11	DC1 (XON)	21	!	41	1	A	101	P	120	`	p	160		
2	STX	22	DC2	18	"	42	2	B	102	R	122	b	r	162		
3	ETX	33	DC3 (XOFF)	13	#	43	3	C	103	S	123	c	s	163		
4	EOT	44	DC4	24	\$	44	4	D	104	T	124	d	t	164		
5	ENQ	55	NAK	25	%	45	5	E	105	U	125	e	u	165		
6	ACK	66	SYN	26	&	46	6	F	106	V	126	f	v	166		
7	BEL	77	ETB	27	'	47	7	G	107	W	127	g	w	167		
8	BS	108	CAN	30	(	50	8	H	110	X	130	h	x	170		
9	HT	119	EM	31	)	51	9	I	111	Y	131	i	y	171		
10	LF	120	SUB	26	*	52	:	J	112	Z	132	j	z	172		
11	VT	131	ESC	33	+	53	;	K	113	[	133	k	{	173		
12	FF	142	FS	34	,	54	<	L	114	\	134	l		174		
13	CR	153	GS	35	-	55	=	M	115	]	135	m	}	175		
14	SO	164	RS	36	.	56	>	N	116	^	136	n	~	176		
15	SI	175	US	37	/	57	?	O	117	_	137	o		177		
														DEL	177 127 7F	
ASCII Graphic Character Set																

LEGEND

	GL	Column/Row
A	4/1	Octal
	101	Decimal
	65	Hex
	41	

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LEGEND

	GL	Column/Row Octal Decimal Hex
	4/1	
A	101	
	65	
	41	

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### Standard Right

## DEC Supplemental Graphic Character Set

	GR	
	12/1	Column/Row
A	301	Octal
	193	Decimal
	C1	Hex

DEC PPL2 Quick Reference C-13

The following tables provide the list the positions from the National Replacement Character (NRC) Sets which differ from the U.S. ASCII Character Set. All other positions of these NRC sets are the same as in the U.S. ASCII character set.

**Table C–12 National Replacement Character sets**

Location	National Replacement Character Sets							
	US ASCII	British	DEC Finnish	French	DEC French- Canada	German	ISO Italian	JIS Roman
2/3	#	£		£			£	
4/0	@			à	à	§	§	
5/11	[		Ä	°	â	Ä	°	
5/12	\		Ö	ç	ç	Ö	ç	¥
5/13	]		Å	§	ê	Ü	é	
5/14	^		Û		î			
6/0	‘		é		ô		ù	
7/11	{		ä	é	é	ä	à	
7/12			ö	ù	ù	ö	ò	
7/13	}		å	è	è	ü	è	
7/14	~		ü	trema	û	ß	ì	—

Location	National Replacement Character Sets							
	US ASCII	DEC Norwegian- Danish	ISO Spanish	DEC Swedish	Norwegian- Danish	DEC Dutch	DEC Swiss	DEC Portuguese
2/3	#		£			£	ù	
4/0	@	Ä	§	É		3/4	à	
5/11	[	Æ	ı	Ä	Æ	ÿ	é	Ã
5/12	\	Ø	Ñ	Ö	Ø	½	ç	Ç
5/13	]	Å	¿	Å	Å	ı	ê	Õ
5/14	^	Û		Û			î	
5/15	_						è	
6/0	‘	ä		é			ô	
7/11	{	æ	°	ä	æ	trema	ä	ã

(continued on next page)

Table C–12 (Cont.)      National Replacement Character sets

Location	National Replacement Character Sets							
	US ASCII	DEC Norwegian- Danish	ISO Spanish	DEC Swedish	Norwegian- Danish	DEC Dutch	DEC Swiss	DEC Portuguese
7/12		ø	ñ	ö	ø	f	ö	ç
7/13	}	å	ç	å	å	¼	û	õ
7/14	~	ü		ü		,	û	

### Figure C-4 DEC Special Graphics Character Set

## DEC Special Graphics Character Set

		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR	
	Column	2	10		3	11		4	12		5	13		6	14		7	15							
Row 0				0	60 260 48 176 B0	@	100 64 40	300 192 C0	P	120 320 80 208 D0	◆	140 340 96 224 E0	— SCAN 3	160 240 112 360 F0	Row 0										
1	!	41 33 21 A1	241 161 A1	1	61 261 49 177 B1	A	101 65 41	301 193 C1	Q	121 321 81 209 D1	■	141 341 97 225 E1	— SCAN 5	161 241 113 361 F1	1										
2	"	42 34 22 A2	242 162 A2	2	62 262 50 178 B2	B	102 66 42	302 194 C2	R	122 322 82 210 D2	HT	142 342 98 226 E2	— SCAN 7	162 242 114 362 F2	2										
3	#	43 35 23 A3	243 163 A3	3	63 263 51 179 B3	C	103 67 43	303 195 C3	S	123 323 83 211 D3	FF	143 343 99 227 E3	— SCAN 9	163 243 115 363 F3	3										
4	\$	44 36 24 A4	244 164 A4	4	64 264 52 180 B4	D	104 68 44	304 196 C4	T	124 324 84 212 D4	CR	144 344 100 228 E4	┌	164 244 116 364 F4	4										
5	%	45 37 25 A5	245 165 A5	5	65 265 53 181 B5	E	105 69 45	305 197 C5	U	125 325 85 213 D5	LF	145 345 101 229 E5	└	165 245 117 365 F5	5										
6	&	46 38 26 A6	246 166 A6	6	66 266 54 182 B6	F	106 70 46	306 198 C6	V	126 326 86 214 D6	o	146 346 102 230 E6	┐	166 246 118 366 F6	6										
7	'	47 39 27 A7	247 167 A7	7	67 267 55 183 B7	G	107 71 47	307 199 C7	W	127 327 87 215 D7	±	147 347 103 231 E7	└	167 247 119 367 F7	7										
8	(	50 40 28 A8	250 168 A8	8	70 270 56 184 B8	H	110 72 48	310 200 C8	X	130 330 88 216 D8	NL	150 350 104 232 E8	└	170 270 120 348 F8	8										
9	)	51 41 29 A9	251 169 A9	9	71 271 57 185 B9	I	111 73 49	311 201 C9	Y	131 331 89 217 D9	VT	151 351 105 233 E9	≡	171 271 121 349 F9	9										
10	*	52 42 30 AA	252 170 AA	:	72 272 58 186 BA	J	112 74 4A	312 202 CA	Z	132 332 90 218 DA	J	152 352 106 234 EA	≡	172 272 122 350 FA	10										
11	+	53 43 31 AB	253 171 AB	;	73 273 59 187 BB	K	113 75 4B	313 203 CB	[	133 333 91 219 DB	J	153 353 107 235 EB	π	173 273 123 351 FB	11										
12	,	54 44 32 AC	254 172 AC	<	74 274 60 188 BC	L	114 76 4C	314 204 CC	\	134 334 92 220 DC	J	154 354 108 236 EC	≠	174 274 124 352 FC	12										
13	-	55 45 33 AD	255 173 AD	=	75 275 61 189 BD	M	115 77 4D	315 205 CD	]	135 335 93 221 DD	L	155 355 109 237 ED	ℳ	175 275 125 353 FD	13										
14	.	56 46 34 AE	256 174 AE	>	76 276 62 190 BE	N	116 78 4E	316 206 CE	^	136 336 94 222 DE	+	156 356 110 238 EE	·	176 276 126 354 FE	14										
15	/	57 47 35 AF	257 175 AF	?	77 277 63 191 BF	O	117 79 4F	317 207 CF	^	137 337 95 223 DF	— SCAN 1	157 357 111 239 EF			15										

### LEGEND

	GL	GR	
	4/1	12/1	Column/Row
A	101	301	Octal
	65	193	Decimal
	41	C1	Hex

MLO-003984

Figure C-5 DEC Technical Character Set

DEC Technical Character Set															
		GL	GR			GL	GR			GL	GR			GL	GR
Column		2	10			3	11			4	12			5	13
Row 0															
				}	60 48 30	260 176 B0		∴	100 64 40	300 192 C0	Π	120 80 50	320 208 D0	¬	140 96 60
1	↯	41 33 21	241 161 A1	↶	61 49 31	261 177 B1		α	101 65 41	301 193 C1	Ψ	121 81 51	321 209 D1	α	141 97 61
2	┐	42 34 22	242 162 A2	↷	62 50 32	262 178 B2		∞	102 66 42	302 194 C2		122 82 52	322 210 D2	β	142 98 62
3	—	43 35 23	243 163 A3	↘	63 51 33	263 179 B3		÷	103 67 43	303 195 C3	Σ	123 83 53	323 211 D3	χ	143 99 63
4	┌	44 36 24	244 164 A4	↙	64 52 34	264 180 B4		Δ	104 68 44	304 196 C4		124 84 54	324 212 D4	δ	144 100 64
5	└	45 37 25	245 165 A5	↵	65 53 35	265 181 B5		▽	105 69 45	305 197 C5		125 85 55	325 213 D5	ε	145 101 65
6	┤	46 38 26	246 166 A6	┐	66 54 36	266 182 B6		Φ	106 70 46	306 198 C6	√	126 86 56	326 214 D6	φ	146 102 66
7	┌	47 39 27	247 167 A7	┐	67 55 37	267 183 B7		Γ	107 71 47	307 199 C7	Ω	127 87 57	327 215 D7	γ	147 103 67
8	└	48 40 28	248 168 A8		68 56 38	268 184 B8		~	110 72 48	310 200 C8	Ξ	130 88 58	330 216 D8	η	150 104 68
9	┐	49 41 29	249 169 A9		69 57 39	269 185 B9		≈	111 73 49	311 201 C9	⋈	131 89 59	331 217 D9	ι	151 105 69
10	└	50 42 30	250 170 A0		70 58 40	270 186 B0		Θ	112 74 50	312 202 C0	⊂	132 90 60	332 218 D0	θ	152 106 70
11	┌	51 43 31	251 171 A1		71 59 41	271 187 B1		×	113 75 51	313 203 C1	⊃	133 91 61	333 219 D1	κ	153 107 71
12	└	52 44 32	252 172 A2		72 60 42	272 188 B2		Λ	114 76 52	314 204 C2	∩	134 92 62	334 220 D2	λ	154 108 72
13	┐	53 45 33	253 173 A3		73 61 43	273 189 B3		≠	115 77 53	315 205 C3	↔	135 93 63	335 221 D3	→	155 109 73
14	└	54 46 34	254 174 A4		74 62 44	274 190 B4		⇒	116 78 54	316 206 C4	∧	136 94 64	336 222 D4	ν	156 110 74
15	┐	55 47 35	255 175 A5		75 63 45	275 191 B5		≡	117 79 55	317 207 C5	∨	137 95 65	337 223 D5	∂	157 111 75

LEGEND

	GL	GR	
	4/1	12/1	Column/Row
α	101 65 41	301 193 C1	Octal Decimal Hex

MLO-003985

### Figure C-6 ISO Latin-1 Supplemental Character Set

**ISO Latin-1 Supplemental Character Set**

		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR	
	Column	2	10		3	11		4	12		5	13		6	14		7	15	
Row 0	NBSP	240 A0	°		260 B0	` À		300 C0	Ð		320 D0	à		340 E0	ä		360 F0		Row 0
1	í	241 A1	±		261 B1	´ Á		301 C1	Ñ		321 D1	á		341 E1	ã		361 F1		1
2	¢	242 A2	²		262 B2	Â		302 C2	Ò		322 D2	â		342 E2	ò		362 F2		2
3	£	243 A3	³		263 B3	Ã		303 C3	Ó		323 D3	ã		343 E3	ó		363 F3		3
4	¤	244 A4	,		264 B4	Ä		304 C4	Ô		324 D4	ä		344 E4	ô		364 F4		4
5	¥	245 A5	µ		265 B5	Å		305 C5	Õ		325 D5	å		345 E5	ö		365 F5		5
6		246 A6	¶		266 B6	Æ		306 C6	Ö		326 D6	æ		346 E6	ö		366 F6		6
7	§	247 A7	•		267 B7	Ç		307 C7	×		327 D7	ç		347 E7	÷		367 F7		7
8	¨	250 A8	¸		270 B8	È		310 C8	Ø		330 D8	è		350 E8	ø		370 F8		8
9	©	251 A9	¹		271 B9	É		311 C9	Ù		331 D9	é		351 E9	ù		371 F9		9
10	ª	252 AA	º		272 BA	Ê		312 CA	Ú		332 DA	ê		352 EA	ú		372 FA		10
11	«	253 AB	»		273 BB	Ë		313 CB	Û		333 DB	ë		353 EB	û		373 FB		11
12	¬	254 AC	¼		274 BC	Ì		314 CC	Ü		334 DC	ì		354 EC	ü		374 FC		12
13	-	255 AD	½		275 BD	Í		315 CD	Ý		335 DD	í		355 ED	ý		375 FD		13
14	®	256 AE	¾		276 BE	Î		316 CE	Þ		336 DE	î		356 EE	þ		376 FE		14
15	-	257 AF	¿		277 BF	Ï		317 CF	ß		337 DF	ï		357 EF	ÿ		377 FF		15

## LEGEND

	<b>GR</b>	
	12/1	<b>Column/Row</b>
<b>/</b>	301	<b>Octal</b>
<b>A</b>	193	<b>Decimal</b>
	C1	<b>Hex</b>

MLO-004000



Figure C-7 Legal Character Set

		Legal																	
		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR	
Column		2	10		3	11		4	12		5	13		6	14		7	15	
Row	0			0	60 48 30	260 176 B0	@	100 64 40	300 192 C0	P	120 80 50	320 208 D0	=	140 96 60	340 224 E0	p	160 112 70	360 240 F0	Row 0
1	!	41 33 21	241 161 A1	1	61 49 31	261 177 B1	A	101 65 41	301 193 C1	Q	121 81 51	321 209 D1	a	141 97 61	341 225 E1	q	161 113 71	361 241 F1	1
2	"	42 34 22	242 162 A2	2	62 50 32	262 178 B2	B	102 66 42	302 194 C2	R	122 82 52	322 210 D2	b	142 98 62	342 226 E2	r	162 114 72	362 242 F2	2
3	#	43 35 23	243 163 A3	3	63 51 33	263 179 B3	C	103 67 43	303 195 C3	S	123 83 53	323 211 D3	c	143 99 63	343 227 E3	s	163 115 73	363 243 F3	3
4	\$	44 36 24	244 164 A4	4	64 52 34	264 180 B4	D	104 68 44	304 196 C4	T	124 84 54	324 212 D4	d	144 100 64	344 228 E4	t	164 116 74	364 244 F4	4
5	%	45 37 25	245 165 A5	5	65 53 35	265 181 B5	E	105 69 45	305 197 C5	U	125 85 55	325 213 D5	e	145 101 65	345 229 E5	u	165 117 75	365 245 F5	5
6	&	46 38 26	246 166 A6	6	66 54 36	266 182 B6	F	106 70 46	306 198 C6	V	126 86 56	326 214 D6	f	146 102 66	346 230 E6	v	166 118 76	366 246 F6	6
7	'	47 39 27	247 167 A7	7	67 55 37	267 183 B7	G	107 71 47	307 199 C7	W	127 87 57	327 215 D7	g	147 103 67	347 231 E7	w	167 119 77	367 247 F7	7
8	(	50 40 28	250 168 A8	8	70 56 38	270 184 B8	H	110 72 48	310 200 C8	X	130 88 58	330 216 D8	h	150 104 68	350 232 E8	x	170 120 78	370 248 F8	8
9	)	51 41 29	251 169 A9	9	71 57 39	271 185 B9	I	111 73 49	311 201 C9	Y	131 89 59	331 217 D9	i	151 105 69	351 233 E9	y	171 121 79	371 249 F9	9
10	*	52 42 2A	252 170 AA	:	72 58 3A	272 186 BA	J	112 74 4A	312 202 CA	Z	132 90 5A	332 218 DA	j	152 106 6A	352 234 EA	z	172 122 7A	372 250 FA	10
11	+	53 43 2B	253 171 AB	;	73 59 3B	273 187 BB	K	113 75 4B	313 203 CB	[	133 91 5B	333 219 DB	k	153 107 6B	353 235 EB	§	173 123 7B	373 251 FB	11
12	,	54 44 2C	254 172 AC	<	74 60 3C	274 188 BC	L	114 76 4C	314 204 CC	®	134 92 5C	334 220 DC	l	154 108 6C	354 236 EC	¶	174 124 7C	374 252 FC	12
13	-	55 45 2D	255 173 AD	=	75 61 3D	275 189 BD	M	115 77 4D	315 205 CD	]	135 93 5D	335 221 DD	m	155 109 6D	355 237 ED	†	175 125 7D	375 253 FD	13
14	.	56 46 2E	256 174 AE	>	76 62 3E	276 190 BE	N	116 78 4E	316 206 CE	©	136 94 5E	336 222 DE	n	156 110 6E	356 238 EE	™	176 126 7E	376 254 FE	14
15	/	57 47 2F	257 175 AF	?	77 63 3F	277 191 BF	O	117 79 4F	317 207 CF	—	137 95 5F	337 223 DF	o	157 111 6F	357 239 EF				15

LEGEND

	GL	GR	
	4/1	12/1	Column/Row
A	101 65 41	301 193 C1	Octal Decimal Hex

MLO-003982

### DEC 7-Bit Hebrew Character Set

LEGEND		GL	GR	
		4/1	12/1	Column/Row
A		101	301	Octal
		65	193	Decimal
		41	C1	Hex

C-20 DEC PPL2 Quick Reference

Figure C-9 DEC Hebrew Supplemental Character Set

DEC Hebrew Supplemental Character Set																			
		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR				
	Column	2	10		3	11		4	12		5	13		6	14		7	15	
Row 0				◊	60 48 30	260 176 B0		100 64 40	300 192 C0		120 80 50	320 208 D0	א	140 96 60	340 224 E0	ב	160 112 70	360 240 F0	Row 0
1	י	41 33 21	241 161 A1	±	61 49 31	261 177 B1		101 65 41	301 193 C1		121 81 51	321 209 D1	ב	141 97 61	341 225 E1	ג	161 113 71	361 241 F1	
2	¢	42 34 22	242 162 A2	2	62 50 32	262 178 B2		102 66 42	302 194 C2		122 82 52	322 210 D2	ג	142 98 62	342 226 E2	ד	162 114 72	362 242 F2	2
3	£	43 35 23	243 163 A3	3	63 51 33	263 179 B3		103 67 43	303 195 C3		123 83 53	323 211 D3	ד	143 99 63	343 227 E3	ה	163 115 73	363 243 F3	3
4		44 36 24	244 164 A4		64 52 34	264 180 B4		104 68 44	304 196 C4		124 84 54	324 212 D4	ה	144 100 64	344 228 E4	ו	164 116 74	364 244 F4	4
5	¥	45 37 25	245 165 A5	μ	65 53 35	265 181 B5		105 69 45	305 197 C5		125 85 55	325 213 D5	ו	145 101 65	345 229 E5	ז	165 117 75	365 245 F5	5
6		46 38 26	246 166 A6		66 54 36	266 182 B6		106 70 46	306 198 C6		126 86 56	326 214 D6	ז	146 102 66	346 230 E6	ח	166 118 76	366 246 F6	6
7	§	47 39 27	247 167 A7	•	67 55 37	267 183 B7		107 71 47	307 199 C7		127 87 57	327 215 D7	ח	147 103 67	347 231 E7	ט	167 119 77	367 247 F7	7
8	⌘	50 42 28	250 168 A8		70 56 38	270 184 B8		110 72 48	310 200 C8		130 88 58	330 216 D8	ט	150 104 68	350 232 E8	י	170 120 78	370 248 F8	8
9	©	51 41 29	251 169 A9	1	71 57 39	271 185 B9		111 73 49	311 201 C9		131 89 59	331 217 D9	י	151 105 69	351 233 E9	יא	171 121 79	371 249 F9	9
10	ª	52 42 2A	252 170 AA	º	72 58 3A	272 186 BA		112 74 4A	312 202 CA		132 90 5A	332 218 DA	יא	152 106 6A	352 234 EA	יב	172 122 7A	372 250 FA	10
11	«	53 43 2B	253 171 AB	»	73 59 3B	273 187 BB		113 75 4B	313 203 CB		133 91 5B	333 219 DB	יב	153 107 6B	353 235 EB		173 123 7B	373 251 FB	11
12		54 44 2C	254 172 AC	¼	74 60 3C	274 188 BC		114 76 4C	314 204 CC		134 92 5C	334 220 DC	יג	154 108 6C	354 236 EC		174 124 7C	374 252 FC	12
13		55 45 2D	255 173 AD	½	75 61 3D	275 189 BD		115 77 4D	315 205 CD		135 93 5D	335 221 DD	יד	155 109 6D	355 237 ED		175 125 7D	375 253 FD	13
14		56 46 2E	256 174 AE		76 62 3E	276 190 BE		116 78 4E	316 206 CE		136 94 5E	336 222 DE	יד	156 110 6E	356 238 EE		176 126 7E	376 254 FE	14
15		57 47 2F	257 175 AF	¿	77 63 3F	277 191 BF		117 79 4F	317 207 CF		137 95 5F	337 223 DF	טו	157 111 6F	357 239 EF				15

LEGEND

GL	GR
4/1	12/1
101 65 41	301 193 C1

Column/Row  
Octal  
Decimal  
Hex

MLO-004002

Figure C-10 ISO Latin-Hebrew Supplemental Character Set

ISO Latin-Hebrew Supplemental Character Set																		
		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR
	Column	2	10		3	11		4	12		5	13		6	14		7	15
Row 0	NBSP	240 160 A0	°	260 176 B0			300 192 C0			320 208 D0	ז		340 224 E0	ח		360 240 F0	Row 0	
1		241 161 A1	±	261 177 B1			301 193 C1			321 209 D1	ט		341 225 E1	ץ		361 241 F1	1	
2	¢	242 162 A2	2	262 178 B2			302 194 C2			322 210 D2	כ		342 226 E2	ל		362 242 F2	2	
3	£	243 163 A3	3	263 179 B3			303 195 C3			323 211 D3	מ		343 227 E3	נ		363 243 F3	3	
4	¤	244 164 A4	,	264 180 B4			304 196 C4			324 212 D4	ס		344 228 E4	ע		364 244 F4	4	
5	¥	245 165 A5	µ	265 181 B5			305 197 C5			325 213 D5	פ		345 229 E5	צ		365 245 F5	5	
6	¦	246 166 A6	¶	266 182 B6			306 198 C6			326 214 D6	ק		346 230 E6	כּ		366 246 F6	6	
7	§	247 167 A7	•	267 183 B7			307 199 C7			327 215 D7	ר		347 231 E7	ך		367 247 F7	7	
8	¨	250 168 A8	¸	270 184 B8			310 200 C8			330 216 D8	ש		350 232 E8	ת		370 248 F8	8	
9	©	251 169 A9	1	271 185 B9			311 201 C9			331 217 D9	י		351 233 E9	י		371 249 F9	9	
10	×	252 170 AA	÷	272 186 BA			312 202 CA			332 218 DA	ך		352 234 EA	ת		372 250 FA	10	
11	«	253 171 AB	»	273 187 BB			313 203 CB			333 219 DB	כּ		353 235 EB			373 251 FB	11	
12	¬	254 172 AC	¼	274 188 BC			314 204 CC			334 220 DC	ל		354 236 EC			374 252 FC	12	
13	-	255 173 AD	½	275 189 BD			315 205 CD			335 221 DD	ם		355 237 ED			375 253 FD	13	
14	®	256 174 AE	¾	276 190 BE			316 206 CE			336 222 DE	ן		356 238 EE			376 254 FE	14	
15	-	257 175 AF		277 191 BF			317 207 CF		=	337 223 DF	ו		357 239 EF			377 255 FF	15	

LEGEND		GR
	12/1	Column/Row
	301	Octal
	193	Decimal
	C1	Hex

MLO-004003

Figure C-11 ISO Latin-Greek Supplemental Character Set

ISO Latin-Greek Supplemental Character Set															
		GL	GR			GL	GR			GL	GR			GL	GR
Column		2	10			3	11			4	12			5	13
Row	0	NBSP	40 32 20 A0	240 160 120 80	°	60 48 30 B0	260 176 144 112	!	100 64 40 C0	300 192 160 120	Π	120 80 50 D0	320 208 176 144	!	140 96 60 E0
1		`	41 33 21 A1	241 161 120 80	±	61 49 31 B1	261 177 144 112	À	101 65 41 C1	301 193 160 120	P	121 81 51 D1	321 209 176 144	α	141 97 61 E1
2		´	42 34 22 A2	242 162 120 80	²	62 50 32 B2	262 178 144 112	B	102 66 42 C2	302 194 160 120	β	122 82 52 D2	322 210 176 144	β	142 98 62 E2
3		£	43 35 23 A3	243 163 120 80	³	63 51 33 B3	263 179 144 112	Γ	103 67 43 C3	303 195 160 120	Σ	123 83 53 D3	323 211 176 144	γ	143 99 63 E3
4		⌘	44 36 24 A4	244 164 120 80	´	64 52 34 B4	264 180 144 112	Δ	104 68 44 C4	304 196 160 120	T	124 84 54 D4	324 212 176 144	δ	144 100 64 E4
5		⌘	45 37 25 A5	245 165 120 80	ˆ	65 53 35 B5	265 181 144 112	E	105 69 45 C5	305 197 160 120	Y	125 85 55 D5	325 213 176 144	ε	145 101 65 E5
6		ı	46 38 26 A6	246 166 120 80	ˆA	66 54 36 B6	266 182 144 112	Z	106 70 46 C6	306 198 160 120	Φ	126 86 56 D6	326 214 176 144	ζ	146 102 66 E6
7		§	47 39 27 A7	247 167 120 80	•	67 55 37 B7	267 183 144 112	H	107 71 47 C7	307 199 160 120	X	127 87 57 D7	327 215 176 144	η	147 103 67 E7
8		ˆ	48 40 28 A8	248 168 120 80	ˆE	68 56 38 B8	268 184 144 112	Θ	108 72 48 C8	308 200 160 120	Ψ	128 88 58 D8	328 216 176 144	θ	148 104 68 E8
9		©	49 41 29 A9	249 169 120 80	ˆH	69 57 39 B9	269 185 144 112	I	109 73 49 C9	309 201 160 120	Ω	129 89 59 D9	329 217 176 144	ι	149 105 69 E9
10		⌘	50 42 30 AA	250 170 130 90	ˆI	70 58 40 BA	270 186 144 112	K	110 74 50 CA	310 202 160 120	İ	130 90 60 DA	330 218 176 144	κ	150 106 70 EA
11		«	51 43 31 AB	251 171 130 90	»	71 59 41 BB	271 187 144 112	Λ	111 75 51 CB	311 203 160 120	İ	131 91 61 DB	331 219 176 144	λ	151 107 71 EB
12		¬	52 44 32 AC	252 172 130 90	ˆO	72 60 42 BC	272 188 144 112	M	112 76 52 CC	312 204 160 120	ı	132 92 62 DC	332 220 176 144	μ	152 108 72 EC
13		-	53 45 33 AD	253 173 130 90	½	73 61 43 BD	273 189 144 112	N	113 77 53 CD	313 205 160 120	ı	133 93 63 DD	333 221 176 144	ν	153 109 73 ED
14		⌘	54 46 34 AE	254 174 130 90	ˆT	74 62 44 BE	274 190 144 112	Ξ	114 78 54 CE	314 206 160 120	ı	134 94 64 DE	334 222 176 144	ξ	154 110 74 EE
15		—	55 47 35 AF	255 175 130 90	ˆΩ	75 63 45 BF	275 191 144 112	O	115 79 55 CF	315 207 160 120	ı	135 95 65 DF	335 223 176 144	ο	155 111 75 EF

LEGEND

		GL	GR
		4/1	12/1
		Column/Row	
		Octal	
		Decimal	
		Hex	
A		101	301
		65	193
		41	C1

MLO-006610

**Figure C-12**    **DEC Greek Supplemental Character Set**

## DEC Greek Supplemental Character Set

		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR			
	Column	2	10		3	11		4	12		5	13		6	14		7	15			
Row 0				◦	60 48 30	260 176 B0		¨ ı	100 64 40	300 192 C0		120 80 D0	320 208 D0		¨ ü	140 96 E0	340 224 E0		160 112 70	360 240 F0	Row 0
1		ı	41 33 21	161 A1	±	61 49 31	261 177 B1	A	101 65 41	301 193 C1	Π	121 81 51	321 209 D1	α	141 97 E1	341 225 E1	π	161 113 71	361 241 F1	1	
2		¢	42 34 22	242 162 A2	2	62 50 32	262 178 B2	B	102 66 42	302 194 C2	P	122 82 52	322 210 D2	β	142 98 62	342 226 E2	ρ	162 114 72	362 242 F2	2	
3		£	43 35 23	243 163 A3	3	63 51 33	263 179 B3	Γ	103 67 43	303 195 C3	Σ	123 83 53	323 211 D3	γ	143 99 63	343 227 E3	σ	163 115 73	363 243 F3	3	
4			44 36 24	244 164 A4		64 52 34	264 180 B4	Δ	104 68 44	304 196 C4	T	124 84 54	324 212 D4	δ	144 100 64	344 228 E4	τ	164 116 74	364 244 F4	4	
5		¥	45 37 25	245 165 A5	μ	65 53 35	265 181 B5	E	105 69 45	305 197 C5	Υ	125 85 55	325 213 D5	ε	145 101 65	345 229 E5	υ	165 117 75	365 245 F5	5	
6			46 38 26	246 166 A6	¶	66 54 36	266 182 B6	Z	106 70 46	306 198 C6	Φ	126 86 56	326 214 D6	ζ	146 102 66	346 230 E6	φ	166 118 76	366 246 F6	6	
7		§	47 39 27	247 167 A7	•	67 55 37	267 183 B7	H	107 71 47	307 199 C7	Χ	127 87 57	327 215 D7	η	147 103 67	347 231 E7	χ	167 119 77	367 247 F7	7	
8		⌘	50 42 28	250 168 A8		70 56 38	270 184 B8	Θ	110 72 48	310 200 C8	Ψ	130 88 58	330 216 D8	θ	150 104 68	350 232 E8	ψ	170 120 78	370 248 F8	8	
9		©	51 43 29	251 169 A9	1	71 57 39	271 185 B9	I	111 73 49	311 201 C9	Ω	131 89 59	331 217 D9	ι	151 105 69	351 233 E9	ω	171 121 79	371 249 F9	9	
10		ª	52 44 2A	252 170 AA	º	72 58 3A	272 186 BA	K	112 74 4A	312 202 CA	ı	132 90 5A	332 218 DA	κ	152 106 6A	352 234 EA	ς	172 122 7A	372 250 FA	10	
11		«	53 45 2B	253 171 AB	»	73 59 3B	273 187 BB	Λ	113 75 4B	313 203 CB	ı	133 91 5B	333 219 DB	λ	153 107 6B	353 235 EB	ı	173 123 7B	373 251 FB	11	
12			54 46 2C	254 172 AC	¼	74 60 3C	274 188 BC	M	114 76 4C	314 204 CC	ı	134 92 5C	334 220 DC	μ	154 108 6C	354 236 EC	ı	174 124 7C	374 252 FC	12	
13			55 47 2D	255 173 AD	½	75 61 3D	275 189 BD	N	115 77 4D	315 205 CD	ı	135 93 5D	335 221 DD	ν	155 109 6D	355 237 ED	ı	175 125 7D	375 253 FD	13	
14			56 48 2E	256 174 AE		76 62 3E	276 190 BE	Ξ	116 78 4E	316 206 CE		136 94 5E	336 222 DE	ξ	156 110 6E	356 238 EE		176 126 7E	376 254 FE	14	
15			57 49 2F	257 175 AF	¿	77 63 3F	277 191 BF	O	117 79 4F	317 207 CF	ı	137 95 5F	337 223 DF	ο	157 111 6F	357 239 EF				15	

## LEGEND

	GL	GR	
	4/1	12/1	Column/Row
A	101	301	Octal
	65	193	Decimal
	41	C1	Hex

MLO-006607

Figure C-13 ISO Latin-5 Supplemental Character Set

ISO Latin-5 Supplemental Character Set															
		GL	GR			GL	GR			GL	GR			GL	GR
Column		2	10			3	11			4	12			5	13
Row	0	NBSP	40 32 20 A0	240 160 120 70	°	60 48 30 B0	260 176 140 80	À	100 64 40 C0	300 192 150 80	Á	120 80 50 D0	320 208 170 80	Â	140 96 60 E0
1		í	41 33 21 A1	241 161 120 71	±	61 49 31 B1	261 177 140 81	Ã	101 65 41 C1	301 193 150 81	Ä	121 81 51 D1	321 209 170 81	Å	141 97 61 E1
2		¢	42 34 22 A2	242 162 120 72	2	62 50 32 B2	262 178 140 82	Ä	102 66 42 C2	302 194 150 82	Ö	122 82 52 D2	322 210 170 82	â	142 98 62 E2
3		£	43 35 23 A3	243 163 120 73	3	63 51 33 B3	263 179 140 83	Ã	103 67 43 C3	303 195 150 83	Ó	123 83 53 D3	323 211 170 83	ã	143 99 63 E3
4		¤	44 36 24 A4	244 164 120 74	,	64 52 34 B4	264 180 140 84	Ä	104 68 44 C4	304 196 150 84	Ô	124 84 54 D4	324 212 170 84	ä	144 100 64 E4
5		¥	45 37 25 A5	245 165 120 75	μ	65 53 35 B5	265 181 140 85	Å	105 69 45 C5	305 197 150 85	Õ	125 85 55 D5	325 213 170 85	å	145 101 65 E5
6		¦	46 38 26 A6	246 166 120 76	¶	66 54 36 B6	266 182 140 86	Æ	106 70 46 C6	306 198 150 86	Ö	126 86 56 D6	326 214 170 86	æ	146 102 66 E6
7		§	47 39 27 A7	247 167 120 77	•	67 55 37 B7	267 183 140 87	Ç	107 71 47 C7	307 199 150 87	×	127 87 57 D7	327 215 170 87	ç	147 103 67 E7
8		¨	48 40 28 A8	248 168 120 78	¸	68 56 38 B8	268 184 140 88	È	110 72 48 C8	310 200 160 88	Ø	130 88 58 D8	330 216 170 88	è	150 104 68 E8
9		©	49 41 29 A9	249 169 120 79	¹	69 57 39 B9	269 185 140 89	É	111 73 49 C9	311 201 160 89	Ù	131 89 59 D9	331 217 170 89	é	151 105 69 E9
10		ª	50 42 30 AA	250 170 130 7A	º	70 58 40 BA	270 186 140 90	Ê	112 74 50 CA	312 202 160 90	Ú	132 90 60 DA	332 218 170 90	ê	152 106 70 EA
11		«	51 43 31 AB	251 171 130 7B	»	71 59 41 BB	271 187 140 91	Ë	113 75 51 CB	313 203 160 91	Û	133 91 61 DB	333 219 170 91	ë	153 107 70 EB
12		¬	52 44 32 AC	252 172 130 7C	¼	72 60 42 BC	272 188 140 92	Ì	114 76 52 CC	314 204 160 92	Ü	134 92 62 DC	334 220 170 92	ì	154 108 70 EC
13		-	53 45 33 AD	253 173 130 7D	½	73 61 43 BD	273 189 140 93	Í	115 77 53 CD	315 205 160 93	Ý	135 93 63 DD	335 221 170 93	í	155 109 70 ED
14		®	54 46 34 AE	254 174 130 7E	¾	74 62 44 BE	274 190 140 94	Î	116 78 54 CE	316 206 160 94	Ş	136 94 64 DE	336 222 170 94	î	156 110 70 EE
15		-	55 47 35 AF	255 175 130 7F	¿	75 63 45 BF	275 191 140 95	Ï	117 79 55 CF	317 207 160 95	ß	137 95 65 DF	337 223 170 95	ï	157 111 70 EF

LEGEND		GR
		12/1
		Column/Row
		Octal
		Decimal
		Hex
		301
		193
		C1

MLO-006611

Figure C-14 DEC Turkish 7-bit Character Set

DEC Turkish 7-bit Character Set																			
		GL	GR			GL	GR			GL	GR			GL	GR			GL	GR
Column		2	10			3	11			4	12			5	13			6	14
Row	0			0	60 48 30	260 176 B0	İ	100 64 40	300 192 C0	P	120 80 50	320 208 D0	Ğ	140 96 60	340 224 E0	p	160 112 70	360 240 F0	Row
1	I	41 33 21	241 161 A1	1	61 49 31	261 177 B1	A	101 65 41	301 193 C1	Q	121 81 51	321 209 D1	a	141 97 61	341 225 E1	q	161 113 71	361 241 F1	1
2	"	42 34 22	242 162 A2	2	62 50 32	262 178 B2	B	102 66 42	302 194 C2	R	122 82 52	322 210 D2	b	142 98 62	342 226 E2	r	162 114 72	362 242 F2	2
3	#	43 35 23	243 163 A3	3	63 51 33	263 179 B3	C	103 67 43	303 195 C3	S	123 83 53	323 211 D3	c	143 99 63	343 227 E3	s	163 115 73	363 243 F3	3
4	\$	44 36 24	244 164 A4	4	64 52 34	264 180 B4	D	104 68 44	304 196 C4	T	124 84 54	324 212 D4	d	144 100 64	344 228 E4	t	164 116 74	364 244 F4	4
5	%	45 37 25	245 165 A5	5	65 53 35	265 181 B5	E	105 69 45	305 197 C5	U	125 85 55	325 213 D5	e	145 101 65	345 229 E5	u	165 117 75	365 245 F5	5
6	ğ	46 38 26	246 166 A6	6	66 54 36	266 182 B6	F	106 70 46	306 198 C6	V	126 86 56	326 214 D6	f	146 102 66	346 230 E6	v	166 118 76	366 246 F6	6
7	,	47 39 27	247 167 A7	7	67 55 37	267 183 B7	G	107 71 47	307 199 C7	W	127 87 57	327 215 D7	g	147 103 67	347 231 E7	w	167 119 77	367 247 F7	7
8	(	50 40 28	250 168 A8	8	70 56 38	270 184 B8	H	110 72 48	310 200 C8	X	130 88 58	330 216 D8	h	150 104 68	350 232 E8	x	170 120 78	370 248 F8	8
9	)	51 41 29	251 169 A9	9	71 57 39	271 185 B9	I	111 73 49	311 201 C9	Y	131 89 59	331 217 D9	i	151 105 69	351 233 E9	y	171 121 79	371 249 F9	9
10	*	52 42 2A	252 170 AA	:	72 58 3A	272 186 BA	J	112 74 4A	312 202 CA	Z	132 90 5A	332 218 DA	j	152 106 6A	352 234 EA	z	172 122 7A	372 250 FA	10
11	+	53 43 2B	253 171 AB	;	73 59 3B	273 187 BB	K	113 75 4B	313 203 CB	Ş	133 91 5B	333 219 DB	k	153 107 6B	353 235 EB	ş	173 123 7B	373 251 FB	11
12	,	54 44 2C	254 172 AC	<	74 60 3C	274 188 BC	L	114 76 4C	314 204 CC	Ö	134 92 5C	334 220 DC	l	154 108 6C	354 236 EC	ö	174 124 7C	374 252 FC	12
13	-	55 45 2D	255 173 AD	=	75 61 3D	275 189 BD	M	115 77 4D	315 205 CD	Ç	135 93 5D	335 221 DD	m	155 109 6D	355 237 ED	ç	175 125 7D	375 253 FD	13
14	.	56 46 2E	256 174 AE	>	76 62 3E	276 190 BE	N	116 78 4E	316 206 CE	Ü	136 94 5E	336 222 DE	n	156 110 6E	356 238 EE	ü	176 126 7E	376 254 FE	14
15	/	57 47 2F	257 175 AF	?	77 63 3F	277 191 BF	O	117 79 4F	317 207 CF	—	137 95 5F	337 223 DF	o	157 111 6F	357 239 EF				15

LEGEND		GL	GR	Column/Row
		4/1	12/1	
A	101	301	Octal	
	65	193	Decimal	
	41	C1	Hex	

MLO-006605



Figure C-15 DEC Turkish 8-bit Supplemental Character Set

DEC Turkish 8-bit Supplemental Character Set															
		GL	GR			GL	GR			GL	GR			GL	GR
Column		2	10			3	11			4	12			5	13
Row	0			°	60 48 30	260 176 B0	À	100 64 40	300 192 C0	Ğ	120 80 50	320 208 D0	à	140 96 60	340 224 E0
1		İ	41 33 21	±	61 49 31	261 177 B1	Á	101 65 41	301 193 C1	Ñ	121 81 51	321 209 D1	á	141 97 61	341 225 E1
2		¢	42 34 22	2	62 50 32	262 178 B2	Â	102 66 42	302 194 C2	Ò	122 82 52	322 210 D2	â	142 98 62	342 226 E2
3		£	43 35 23	3	63 51 33	263 179 B3	Ã	103 67 43	303 195 C3	Ó	123 83 53	323 211 D3	ã	143 99 63	343 227 E3
4			44 36 24		64 52 34	264 180 B4	Ä	104 68 44	304 196 C4	Ô	124 84 54	324 212 D4	ä	144 100 64	344 228 E4
5		¥	45 37 25	µ	65 53 35	265 181 B5	Å	105 69 45	305 197 C5	Õ	125 85 55	325 213 D5	å	145 101 65	345 229 E5
6			46 38 26	¶	66 54 36	266 182 B6	Æ	106 70 46	306 198 C6	Ö	126 86 56	326 214 D6	æ	146 102 66	346 230 E6
7		§	47 39 27	•	67 55 37	267 183 B7	Ç	107 71 47	307 199 C7	Œ	127 87 57	327 215 D7	ç	147 103 67	347 231 E7
8		¤	50 42 28		70 56 38	270 184 B8	È	110 72 48	310 200 C8	Ø	130 88 58	330 216 D8	è	150 104 68	350 232 E8
9		©	51 41 29	1	71 57 39	271 185 B9	É	111 73 49	311 201 C9	Ù	131 89 59	331 217 D9	é	151 105 69	351 233 E9
10		ª	52 42 2A	º	72 58 3A	272 186 BA	Ê	112 74 4A	312 202 CA	Ú	132 90 5A	332 218 DA	ê	152 106 6A	352 234 EA
11		«	53 43 2B	»	73 59 3B	273 187 BB	Ë	113 75 4B	313 203 CB	Û	133 91 5B	333 219 DB	ë	153 107 6B	353 235 EB
12			54 44 2C	¼	74 60 3C	274 188 BC	Ì	114 76 4C	314 204 CC	Ü	134 92 5C	334 220 DC	ì	154 108 6C	354 236 EC
13			55 45 2D	½	75 61 3D	275 189 BD	Í	115 77 4D	315 205 CD	Ý	135 93 5D	335 221 DD	í	155 109 6D	355 237 ED
14		İ	56 46 2E	ı	76 62 3E	276 190 BE	Î	116 78 4E	316 206 CE	Ş	136 94 5E	336 222 DE	î	156 110 6E	356 238 EE
15			57 47 2F	¿	77 63 3F	277 191 BF	Ï	117 79 4F	317 207 CF	ß	137 95 5F	337 223 DF	ï	157 111 6F	357 239 EF

LEGEND

	GL	GR
	4/1	12/1
À	101 65 41	301 193 C1

Column/Row  
Octal  
Decimal  
Hex

MLO-006606

		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR	
	Column	2	10		3	11		4	12		5	13		6	14		7	15	
Row		0	1		2	3		4	5		6	7		8	9		10	11	Row
0	НБSP	40 32 20	240 160 A		60 48 30	260 176 B		100 64 C0	320 192 C0		120 80 D0	320 208 D0		140 96 E0	340 224 E0		160 112 F0	360 240 F0	
1	Ё	41 33 21	241 161 A1	Ђ	61 49 31	261 177 B1	С	101 65 C1	301 193 C1	ѐ	121 81 D1	321 209 D1	с	141 97 E1	341 225 E1	ё	161 113 F1	361 241 F1	1
2	Ѣ	42 34 22	242 162 A2	В	62 50 32	262 178 B2	Т	102 66 C2	302 194 C2	В	122 82 D2	322 210 D2	т	142 98 E2	342 226 E2	ѣ	162 114 F2	362 242 F2	2
3	Ѓ	43 35 23	243 163 A3	Г	63 51 33	263 179 B3	У	103 67 C3	303 195 C3	Г	123 83 D3	323 211 D3	у	143 99 E3	343 227 E3	ѓ	163 115 F3	363 243 F3	3
4	Є	44 36 24	244 164 A4	Д	64 52 34	264 180 B4	Ф	104 68 C4	304 196 C4	Д	124 84 D4	324 212 D4	ф	144 100 E4	344 228 E4	є	164 116 F4	364 244 F4	4
5	Ѕ	45 37 25	245 165 A5	Е	65 53 35	265 181 B5	Х	105 69 C5	305 197 C5	е	125 85 D5	325 213 D5	х	145 101 E5	345 229 E5	ѕ	165 117 F5	365 245 F5	5
6	І	46 38 26	246 166 A6	Ж	66 54 36	266 182 B6	Ц	106 70 C6	306 198 C6	ж	126 86 D6	326 214 D6	ц	146 102 E6	346 230 E6	і	166 118 F6	366 246 F6	6
7	Ї	47 39 27	247 167 A7	З	67 55 37	267 183 B7	Ч	107 71 C7	307 199 C7	з	127 87 D7	327 215 D7	ч	147 103 E7	347 231 E7	ї	167 119 F7	367 247 F7	7
8	Ј	50 42 28	250 168 A8	И	70 56 38	270 184 B8	Ш	110 72 C8	310 200 C8	и	130 88 D8	330 216 D8	ш	150 104 E8	350 232 E8	ј	170 120 F8	370 248 F8	8
9	Љ	51 43 29	251 169 A9	Ў	71 57 39	271 185 B9	Щ	111 73 C9	311 201 C9	ў	131 89 D9	331 217 D9	щ	151 105 E9	351 233 E9	љ	171 121 F9	371 249 F9	9
10	Њ	52 44 2A	252 170 AA	К	72 58 3A	272 186 BA	Ъ	112 74 CA	312 202 CA	к	132 90 DA	332 218 DA	њ	152 106 EA	352 234 EA	њ	172 122 FA	372 250 FA	10
11	Ѧ	53 45 2B	253 171 AB	Л	73 59 3B	273 187 BB	Ы	113 75 CB	313 203 CB	л	133 91 DB	333 219 DB	ѣ	153 107 EB	353 235 EB	ћ	173 123 FB	373 251 FB	11
12	Ў	54 46 2C	254 172 AC	М	74 60 3C	274 188 BC	Ь	114 76 CC	314 204 CC	м	134 92 DC	334 220 DC	ь	154 108 EC	354 236 EC	ѥ	174 124 FC	374 252 FC	12
13	-	55 47 2D	255 173 AD	Н	75 61 3D	275 189 BD	Э	115 77 CD	315 205 CD	н	135 93 DD	335 221 DD	э	155 109 ED	355 237 ED	Ѧ	175 125 FD	375 253 FD	13
14	Ѣ	56 48 2E	256 174 AE	О	76 62 3E	276 190 BE	Ю	116 78 CE	316 206 CE	о	136 94 DE	336 222 DE	ю	156 110 EE	356 238 EE	Ѣ	176 126 FE	376 254 FE	14
15	Ѥ	57 49 2F																	

	GL	GR	
	4/1	12/1	Column/Row
C	101	301	Octal
	65	193	Decimal
	41	C1	Hex

## C-28 DEC PPL2 Quick Reference

Figure C-17 ISO Latin-2 Supplemental Character Set

ISO Latin-2 Supplemental Character Set																			
		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR	
Column		2	10		3	11		4	12		5	13		6	14		7	15	
Row 0	NBSP	40 32 20	240 160 A0	°	60 48 30	260 176 B0	°	80 64 40	300 192 C0	°	120 80 50	320 208 D0	°	140 96 60	340 224 E0	°	160 112 70	360 240 F0	Row 0
1	À	41 33 21	241 161 A1	°	61 49 31	261 177 B1	°	81 65 41	301 193 C1	°	121 81 51	321 209 D1	°	141 97 61	341 225 E1	°	161 113 71	361 241 F1	1
2	Á	42 34 22	242 162 A2	°	62 50 32	262 178 B2	°	82 66 42	302 194 C2	°	122 82 52	322 210 D2	°	142 98 62	342 226 E2	°	162 114 72	362 242 F2	2
3	Â	43 35 23	243 163 A3	°	63 51 33	263 179 B3	°	83 67 43	303 195 C3	°	123 83 53	323 211 D3	°	143 99 63	343 227 E3	°	163 115 73	363 243 F3	3
4	Ã	44 36 24	244 164 A4	°	64 52 34	264 180 B4	°	84 68 44	304 196 C4	°	124 84 54	324 212 D4	°	144 100 64	344 228 E4	°	164 116 74	364 244 F4	4
5	Ä	45 37 25	245 165 A5	°	65 53 35	265 181 B5	°	85 69 45	305 197 C5	°	125 85 55	325 213 D5	°	145 101 65	345 229 E5	°	165 117 75	365 245 F5	5
6	Å	46 38 26	246 166 A6	°	66 54 36	266 182 B6	°	86 70 46	306 198 C6	°	126 86 56	326 214 D6	°	146 102 66	346 230 E6	°	166 118 76	366 246 F6	6
7	Æ	47 39 27	247 167 A7	°	67 55 37	267 183 B7	°	87 71 47	307 199 C7	°	127 87 57	327 215 D7	°	147 103 67	347 231 E7	°	167 119 77	367 247 F7	7
8	Ç	50 40 28	250 168 A8	°	70 56 38	270 184 B8	°	90 72 48	330 200 C8	°	130 88 58	330 216 D8	°	150 104 68	350 232 E8	°	170 120 78	370 248 F8	8
9	È	51 41 29	251 169 A9	°	71 57 39	271 185 B9	°	91 73 49	331 201 C9	°	131 89 59	331 217 D9	°	151 105 69	351 233 E9	°	171 121 79	371 249 F9	9
10	É	52 42 2A	252 170 AA	°	72 58 3A	272 186 BA	°	92 74 4A	332 202 CA	°	132 90 5A	332 218 DA	°	152 106 6A	352 234 EA	°	172 122 7A	372 250 FA	10
11	Ê	53 43 2B	253 171 AB	°	73 59 3B	273 187 BB	°	93 75 4B	333 203 CB	°	133 91 5B	333 219 DB	°	153 107 6B	353 235 EB	°	173 123 7B	373 251 FB	11
12	Ë	54 44 2C	254 172 AC	°	74 60 3C	274 188 BC	°	94 76 4C	334 204 CC	°	134 92 5C	334 220 DC	°	154 108 6C	354 236 EC	°	174 124 7C	374 252 FC	12
13	Ì	55 45 2D	255 173 AD	°	75 61 3D	275 189 BD	°	95 77 4D	335 205 CD	°	135 93 5D	335 221 DD	°	155 109 6D	355 237 ED	°	175 125 7D	375 253 FD	13
14	Í	56 46 2E	256 174 AE	°	76 62 3E	276 190 BE	°	96 78 4E	336 206 CE	°	136 94 5E	336 222 DE	°	156 110 6E	356 238 EE	°	176 126 7E	376 254 FE	14
15	Î	57 47 2F	257 175 AF	°	77 63 3F	277 191 BF	°	97 79 4F	337 207 CF	°	137 95 5F	337 223 DF	°	157 111 6F	357 239 EF	°	177 127 7F	377 255 FF	15

LEGEND

	GL GR	
	4/1	12/1
°	101	301
°	65	193
°	41	C1

Column/Row  
Octal  
Decimal  
Hex

MLO-006608

Figure C-18 JIS Katakana Character Set

JIS Katakana																								
		GL	GR			GL	GR			GL	GR			GL	GR			GL	GR			GL	GR	
Column		2	10			3	11			4	12			5	13			6	14			7	15	
Row	0				ー	60 48 30	260 176 B0		タ	100 64 40	300 192 C0		ㇿ	120 80 50	320 208 D0			140 96 60	340 224 E0			160 112 70	360 240 F0	Row 0
1		・	41 33 21	A1	ア	61 49 31	261 177 B1		チ	101 65 41	301 193 C1		ㇾ	121 81 51	321 209 D1			141 97 61	341 225 E1			161 113 71	361 241 F1	
2		ㇿ	42 34 22	A2	イ	62 50 32	262 178 B2		ツ	102 66 42	302 194 C2		メ	122 82 52	322 210 D2			142 98 62	342 226 E2			162 114 72	362 242 F2	2
3		ㇾ	43 35 23	A3	ウ	63 51 33	263 179 B3		テ	103 67 43	303 195 C3		モ	123 83 53	323 211 D3			143 99 63	343 227 E3			163 115 73	363 243 F3	3
4		ゝ	44 36 24	A4	エ	64 52 34	264 180 B4		ト	104 68 44	304 196 C4		ャ	124 84 54	324 212 D4			144 100 64	344 228 E4			164 116 74	364 244 F4	4
5		ゑ	45 37 25	A5	オ	65 53 35	265 181 B5		ナ	105 69 45	305 197 C5		ヅ	125 85 55	325 213 D5			145 101 65	345 229 E5			165 117 75	365 245 F5	5
6		ヲ	46 38 26	A6	カ	66 54 36	266 182 B6		ニ	106 70 46	306 198 C6		ヨ	126 86 56	326 214 D6			146 102 66	346 230 E6			166 118 76	366 246 F6	6
7		ㇼ	47 39 27	A7	キ	67 55 37	267 183 B7		ヌ	107 71 47	307 199 C7		ウ	127 87 57	327 215 D7			147 103 67	347 231 E7			167 119 77	367 247 F7	7
8		ィ	50 40 28	A8	ク	70 56 38	270 184 B8		ネ	110 72 48	310 200 C8		リ	130 88 58	330 216 D8			150 104 68	350 232 E8			170 120 78	370 248 F8	8
9		ゥ	51 41 29	A9	ケ	71 57 39	271 185 B9		ノ	111 73 49	311 201 C9		ル	131 89 59	331 217 D9			151 105 69	351 233 E9			171 121 79	371 249 F9	9
10		ヱ	52 42 2A	AA	コ	72 58 3A	272 186 BA		ハ	112 74 4A	312 202 CA		シ	132 90 5A	332 218 DA			152 106 6A	352 234 EA			172 122 7A	372 250 FA	10
11		ォ	53 43 2B	AB	サ	73 59 3B	273 187 BB		ヒ	113 75 4B	313 203 CB		ロ	133 91 5B	333 219 DB			153 107 6B	353 235 EB			173 123 7B	373 251 FB	11
12		ャ	54 44 2C	AC	シ	74 60 3C	274 188 BC		フ	114 76 4C	314 204 CC		ㇽ	134 92 5C	334 220 DC			154 108 6C	354 236 EC			174 124 7C	374 252 FC	12
13		ヅ	55 45 2D	AD	ス	75 61 3D	275 189 BD		ハ	115 77 4D	315 205 CD		ン	135 93 5D	335 221 DD			155 109 6D	355 237 ED			175 125 7D	375 253 FD	13
14		ヨ	56 46 2E	AE	セ	76 62 3E	276 190 BE		ホ	116 78 4E	316 206 CE		ㇼ	136 94 5E	336 222 DE			156 110 6E	356 238 EE			176 126 7E	376 254 FE	14
15		ㇾ	57 47 2F	AF	ソ	77 63 3F	277 191 BF		マ	117 79 4F	317 207 CF		ㇾ	137 95 5F	337 223 DF			157 111 6F	357 239 EF					15

LEGEND		GL	GR	Column/Row Octal Decimal Hex
		4/1	12/1	
チ		101 65 41	301 193 C1	

MLO-003983

# D

## IBM Proprinter X24E Quick Reference

This appendix contains basic information on the Proprinter X24E Emulation commands supported in the LA75 Plus. It also contains the character set code tables supported by the LA75 Plus in Proprinter X24E Emulation mode.

This guide should be used in conjunction with the *Digital Ansi-compliant Printing Protocol Level 2 Programming Reference Manual* and the *Digital Ansi-compliant Printing Protocol Level 2 Programming Supplement*.

Characters used in control functions appear in monospaced type. Table D-1 explains some of the conventions used.

A pair of numbers separated by a slash (/) character indicates Column/Row notation. This notation refers to the location of a character in a standard code table, such as ASCII.

Spaces appear between characters in sequences for clarity; they are not part of the format.

The following conventions are used in the command listings:

**Table D-1 Conventions**

ESC	Escape (1/11), introduces an escape sequence
n1 n2	A 2 byte number of data beginning with the next byte, low byte followed by high byte. This number indicates the number of parameters in the Escape Sequence.
Pn	Numeric parameter, or number of units that specify a distance or quantity pertaining to the escape sequence, control function or control string.
v1 ... vn	A series of parameters pertaining to the escape sequence, control function or control string. The number of parameters is determined by n1 n2.

**Table D-2 Control Characters**

Control Character	Location		Description
	in Character Set 1 (A)	in Character Set 2 (B)	
NUL	0/0	0/0	Null
BEL	0/7 or 8/7	0/7	Beeper
BS	0/8 or 8/8	0/8	Backspace
HT	0/9 or 8/9	0/9	Horizontal Tab
LF	0/10 or 8/10	0/10	Line Feed
VT	0/11 or 8/11	0/11	Vertical Tab
FF	0/12 or 8/12	0/12	Form Feed
CR	0/13 or 8/13	0/13	Carriage Return
SO	0/14 or 8/14	0/14	Double Width Printing By Line
SI	0/15 or 8/15	0/15	Condensed Printing
DC1	1/1 or 9/1	1/1	Select Printer
DC2	1/2 or 9/2	1/2	10 Characters-per-Inch Print
DC3	1/3 or 9/3	1/3	Deselect Printer
DC4	1/4 or 9/4	1/4	Cancel Double Width Printing By Line
CAN	1/8 or 9/8	1/8	Cancel Data
ESC	1/11 or 9/11	1/11	Initiate Escape Sequence
SP	2/0 or 15/15	2/0 or 15/15	Space

**Table D-3 Terminal Management**

Escape Sequence	Description
ESC ? 5 8 h	Enter X24E Proprinter mode
ESC ? 5 8 l	Return to DEC mode
ESC % =	Enter X24E Proprinter mode
ESC % @	Return to DEC mode
ESC @	Reset Printer to X24E Emulation mode
ESC Q \$	Deselect Printer
ESC c	Reset Printer to DEC mode

(continued on next page)

**Table D-3 (Cont.)     Terminal Management**

Escape Sequence	Description
ESC j	Stop Printing
ESC [ ! p	Reset Printer to DEC mode
ESC [ K n1 n2 init id P1 P2	Set Initial Condition
ESC [ T n1 n2 NUL NUL P1 P2	Code-Page Switching. Pn1 Pn2 for Code-Page number, most-significant byte first. Code-page 437: U.S.A. Code-page 190: German GS (Same as 437) Code-page 210: Greece Code-page 220: Spain Code-page 850: Multilingual Code-page 857: Turkish Code-page 860: Portugal Code-page 863: Canada-French Code-page 865: Norway Code-page 852: Latin-2 (In optional cartridge) Code-page 866: Cyrillic (In optional cartridge)

**Table D-4     Vertical Form Handling**

Escape Sequence	Description
ESC 0	1/8-Inch Line spacing
ESC 1	7/72-Inch Line spacing
ESC 2	Start Text Line spacing
ESC 4	Set Top of Form
ESC 5 Pn	Automatic Line Feed Pn = any odd number set automatic line feed on CR, Pn = any even number reset automatic line feed on CR
ESC A Pn	Set Text Line spacing 72/Pn lines per inch
ESC B P1 P2 ... Pn NUL	Set Vertical Tabs
ESC C Pn	Set Form Length in Lines
ESC C NUL Pn	Set Form Length in Inches

(continued on next page)

**Table D-4 (Cont.) Vertical Form Handling**

Escape Sequence	Description
ESC N Pn	Set Automatic Perforation Skip on fanfold paper Pn is the number of lines from bottom of paper to skip
ESC O	Cancel Automatic Perforation Skip
ESC [ \ n1 n2 P1 P2 P3 P4	Set Vertical Units P1 P2 for Text vertical units value, P3 P4 for Graphic vertical units value
ESC EM Pn	Sheet Feeder Selection EM = 1/9 Pn = 0/0: Eject single sheet and deselect Sheet Feeder Pn = 0/1 or 0/2: Ejects single sheet and select Shhet Feeder

**Table D-5 Horizontal Form Handling and Printing Modes**

Escape Sequence	Description
ESC :	Set Horizontal Spacing to 12 CPI
ESC - Pn	Underline Printing Pn = 0/1 (or any odd number) set Underline Printing, Pn = 0/0 (or any even number) cancel Underline Printing
ESC _ Pn	Overline Printing Pn = 0/1 (or any odd number) set Overline Printing, Pn = 0/0 (or any even number) cancel Overline Printing
ESC [ @ n1 n2 NUL NUL P1 P2	Double-Wide/Double-High Mode P1 controls line spacing and character height, P2 controls character width
ESC D P1 P2 ... Pn NUL	Set Horizontal Tabs
ESC E	Emphasized Printing
ESC F	Cancel Emphasized Printing
ESC G	Enter NLQ Printing
ESC H	Cancel NLQ Printing

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**Table D-5 (Cont.)      Horizontal Form Handling and Printing Modes**

<b>Escape Sequence</b>	<b>Description</b>
ESC I Pn	Select Print Mode Pn = 0/0: Draft, 10 cpi Pn = 0/2: LQ, 10 cpi Pn = 0/3: Proportional, 10 cpi Pn = 0/4: Downloaded Draft, 10 cpi Pn = 0/6: Downloaded LQ, 10 cpi Pn = 0/7: Proportional Downloaded LQ, 10 cpi Pn = 0/8: Draft, 12 cpi Pn = 0/10: LQ, 12 cpi Pn = 0/12: Downloaded Draft, 12 cpi Pn = 0/14: Downloaded LQ, 12 cpi Pn = 1/0: Draft, 17 cpi Pn = 1/2: LQ, 17 cpi Pn = 1/4: Downloaded Draft, 17 cpi Pn = 1/6: Downloaded LQ, 17 cpi
ESC P Pn	Proportional Printing Pn = 1 set Proportional printing, Pn = 0 disable Proportional printing
ESC R	Set All Horizontal Tabs to Default
ESC S Pn	Script Printing Pn = 0/1 (or any odd number) set Subscript Printing, Pn = 0/0 (or any even number) set Superscript Printing
ESC T	Cancel Script Printing
ESC U Pn	Bidirectional Printing, Pn = 0 (or any even number) set Bidirectional printing, Pn = 1 (or any odd number) set Unidirectional printing
ESC W Pn	Continuous Double-Wide Printing Pn = any odd number set double-wide printing, Pn = any even number reset double-wide printing
ESC X P1 P2	Set Horizontal Margins P1 is Left Margin, P2 is Right Margin
ESC b	Select Black Printing
ESC c	Select Cyan Printing
ESC d P1 P2	Horizontal Relative Motion Right P1 P2 for 1/120-inch steps, low byte first
ESC m	Select Magenta Printing

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**Table D-5 (Cont.)      Horizontal Form Handling and Printing Modes**

Escape Sequence	Description
ESC r Pn	Select Color Printing Pn = 0/0: Black Pn = 0/1: Magenta Pn = 0/2: Cyan Pn = 0/3: Blue Pn = 0/4: Yellow Pn = 0/5: Red Pn = 0/6: Green
ESC y	Select Yellow Printing

**Table D-6      Print-Mode Priority Chart**

Print-Mode Combinations	Resulting Mode <sup>1</sup>
Compressed, 12 cpi	12 cpi
Compressed, 12 cpi, LQ	12 cpi, LQ
Compressed, Emphasized	Emphasized
Super/Subscript, Block Graphics	Block Graphics with no height change
Block Graphics (176-223,244), Overline or Underline	Block Graphics, no Over/Underline
Double-High, NLQ	Double-High

<sup>1</sup>Graphics commands suspend any text printing command. ESC I Pn (Select Print Mode) cancels any existing conflicting combinations.

**Table D-7      Graphics Modes**

Escape Sequence	Description
ESC 3 Pn	Graphics Line spacing, 216/Pn lines per inch
ESC J Pn	Graphics Variable Line spacing, 216/Pn lines per inch
ESC K n1 n2 v1 ... vn	Normal-Density Bit-Image Graphics
ESC L n1 n2 v1 ... vn	Dual-Density Bit-Image Graphics, half-speed
ESC Y n1 n2 v1 ... vn	Dual-Density Bit-Image Graphics, normal-speed
ESC Z n1 n2 v1 ... vn	High-Density Bit-Image Graphics

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**Table D-7 (Cont.)      Graphics Modes**

Escape Sequence	Description
ESC [ g n1 n2 v1 ... vn	High Resolution Graphics First parameter v1 is for Mode

**Table D-8      Alternate Graphics Mode (AGM)<sup>1</sup>**

Escape Sequence	Description
ESC 3 Pn	Graphics Line spacing (AGM) <sup>1</sup> , 180/Pn lines per inch
ESC A Pn	Set Text Line spacing (AGM) <sup>1</sup> , 60/Pn lines per inch
ESC J Pn	Graphics Variable Line spacing (AGM) <sup>1</sup> 180/Pn lines per inch
ESC * Mode n1 n2 v1 ... vn	Select Graphics Mode (AGM) <sup>1</sup> 60/Pn lines per inch

<sup>1</sup>Alternate Graphics Mode is set by Set-up.

**Table D-9      Character Set Selection**

Escape Sequence	Description
ESC 6	Select Character Set 2 (or B) <sup>3</sup>
ESC 7	Select Character Set 1 (or A) <sup>2</sup>
ESC \ n1 n2 v1 ... vn	Select All Character Set <sup>1</sup>
ESC ^	Print Single Character from All Character Set <sup>1</sup>

<sup>1</sup>All Character Sets charts are given starting from Figure D-1.

<sup>2</sup>Character Set 1 (or A) is based on the All Character Set with the exception of the following:

- The characters in columns 0, 1, 8, and 9 are not printed.
- The control codes as specified in the second column of Table D-2 are applicable.

<sup>3</sup>Character Set 2 (or B) is based on the All Character Set with the exception of the following:

- The characters in columns 0, and 1 are not printed.
- The control codes as specified in the third column of Table D-2 are applicable.

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**Table D-9 (Cont.)      Character Set Selection**

Escape Sequence	Description
ESC = n1 n2 ID v1 . . . vn	Downloading Printer Characters ID = 2/3

Figure D-1 All Character Set, All Code-pages, Left Side

IBM All Character Set (1)

		GL		GL		GL		GL		GL		GL		GL		GL		
	Column	0		1		2		3		4		5		6		7		
Row	0	ø	0 0 0	▶	20 16 10	SP	40 32 20	0	60 48 30	@	100 64 40	P	120 80 50	`	140 96 60	p	160 112 70	Row
1		☺	1 1 1	◀	21 17 11	!	41 33 21	1	61 49 31	A	101 65 41	Q	121 81 51	a	141 97 61	q	161 113 71	1
2		☹	2 2 2	↕	22 18 12	"	42 34 22	2	62 50 32	B	102 66 42	R	122 82 52	b	142 98 62	r	162 114 72	2
3		♥	3 3 3	!!	23 19 13	#	43 35 23	3	63 51 33	C	103 67 43	S	123 83 53	c	143 99 63	s	163 115 73	3
4		♦	4 4 4	¶	24 20 14	\$	44 36 24	4	64 52 34	D	104 68 44	T	124 84 54	d	144 100 64	t	164 116 74	4
5		♣	5 5 5	§	25 21 15	%	45 37 25	5	65 53 35	E	105 69 45	U	125 85 55	e	145 101 65	u	165 117 75	5
6		♠	6 6 6	-	26 22 16	&	46 38 26	6	66 54 36	F	106 70 46	V	126 86 56	f	146 102 66	v	166 118 76	6
7		•	7 7 7	↕	27 23 17	'	47 39 27	7	67 55 37	G	107 71 47	W	127 87 57	g	147 103 67	w	167 119 77	7
8		◐	8 8 8	↑	28 24 18	(	48 40 28	8	68 56 38	H	110 72 48	X	130 88 58	h	150 104 68	x	170 120 78	8
9		◯	9 9 9	↓	29 25 19	)	49 41 29	9	69 57 39	I	111 73 49	Y	131 89 59	i	151 105 69	y	171 121 79	9
10		◑	10 10 A	→	30 26 1A	*	50 42 2A	:	70 58 3A	J	112 74 4A	Z	132 90 5A	j	152 106 6A	z	172 122 7A	10
11		♂	11 11 B	←	31 27 1B	+	51 43 2B	;	71 59 3B	K	113 75 4B	[	133 91 5B	k	153 107 6B	{	173 123 7B	11
12		♀	12 12 C	L	32 28 1C	,	52 44 2C	<	72 60 3C	L	114 76 4C	\	134 92 5C	l	154 108 6C		174 124 7C	12
13		♪	13 13 D	↔	33 29 1D	-	53 45 2D	=	73 61 3D	M	115 77 4D	]	135 93 5D	m	155 109 6D	}	175 125 7D	13
14		♫	14 14 E	▲	34 30 1E	.	54 46 2E	>	74 62 3E	N	116 78 4E	^	136 94 5E	n	156 110 6E	~	176 126 7E	14
15		☼	15 15 F	▼	35 31 1F	/	55 47 2F	?	75 63 3F	O	117 79 4F	—	137 95 5F	o	157 111 6F	◊	177 127 7F	15

LEGEND

	GL	
	4/1	Column/Row
A	101	Octal
	65	Decimal
	41	Hex

MLO-004008

IBM All Character Set (1B)

LEGEND		GR	
		12/1	Column/Row
		301	Octal
		193	Decimal
		C1	Hex

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**Figure D-3 All Character Set, Code-page 850 Multilingual, Right Side**

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### LEGEND

	<b>GL</b>	<b>GR</b>	
	4/1	12/1	Column/Row
<b>A</b>	101 65 41	301 193 C1	Octal Decimal Hex

