Digital LA400 MultiPrinter

User Guide

Digital Equipment Corporation
Maynard, Massachusetts

First Printing, May 1996

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Preface

About this User Guide

Thank you for buying the Digital LA400 Multiprinter. You can expect years of reliable service with very little maintenance. This guide explains how you can use your printer to full advantage. It is written for both new and experienced users.

This guide consists of two parts: *Setting Up Your Printer* and *User Guide*. The former describes how to install and set up your printer. This part is easily identifiable, as each page has a gray border. The latter part describes how to use your printer and printer options, how to keep the printer in good working condition, and what to do should something go wrong. Detailed procedures are provided for first-time users. Experienced users can skip some of the details, using the table of contents and chapter introductions to locate specific information.

This part has several appendixes and an index. Appendix A lists supplies and options available form your dealer or authorized representative of Digital Equipment Corporation.

Notes, Cautions and Warnings

The text contains three different types of annotation which should always be read.

Note: This NOTE annotation provides you additional information, or indicates where you can find it.

Caution: *This CAUTION annotation should catch your attention, advising you of a particular situatio/problem which may occur/be avoided as a result of a certain sequence of operations. It may also contain a reminder to execute a particular operation.*

Warning: This WARNING annotation indicates a specific procedure which must be strictly observed. Failure to comply with the instructions given may result in injury to the operator and/or damage to the printer.

1

What Your New Printer Offers

Thank you for choosing a Digital LA400 MultiPrinter. This chapter describes the main characteristics of your new printer.

The Digital LA400 MultiPrinter

Paper Handling Flexibility

The Digital LA400 MultiPrinter is able to feed paper through different paths, allowing you to quickly switch between different paper types or print tasks. This is made possible by the removable Push tractor unit that can be installed in Front or Rear position.

With the optional additional Push tractor unit, you can then use at the same time, either the Push-Front or the Push-Rear path, without having to reinstall paper to switch between two different kinds of print tasks.

The optional Pull tractor unit allows you to handle heavy and special paper for example, multipart. If necessary, you can combine the use of both Push and Pull tractor units (Push+Pull paper path).

Cut sheets are fed using the integrated Manual paper path. You can use this path in combination with any other paper path.

Connectivity

Thanks to its dual interface, you can integrate your Digital LA400 MultiPrinter into most of industry standard environments:

- within a Digital environment with the DEC-423 serial interface
- within a PC environment with the Bitronics parallel interface

Three protocols are available to ensure perfect compatibility with the corresponding operating systems:

- DEC PPL2 for the Digital environment
- EPSON ESC/P2 and IBM Proprinter XL24E for the PC environment. For a user-friendly printing this environment, a printer driver for Windows 3.x and Windows 95 is also delivered.

Robustness and Reliability

Your Digital LA400 MultiPrinter is virtually maintenance free. It is designed for use in industrial environments: it has been manufactured to withstand factory floor environments and heavy duty applications.

One remarkable characteristic of your printer is in its 400 million characters print head life. This is twice the life of any print head from other printers.

Printing on Several Types of Paper

The Digital LA400 MultiPrinter is able to handle a variety of paper types, from standard paper up to the heaviest multipart paper, including labels and envelopes.

Multipart printing allows you to print up to 6 parts (5 copies in addition to the original) with normal fonts, and up to 8 parts by using the High Impact Draft special font.

Numerous Printing Capabilities

The Digital LA400 MultiPrinter offers many different printing features to support the layout of printed pages for applications that range from desktop publishing to industrial applications. Several resident fonts with a great number of code pages can be combined for desktop printing applications. Many different barcodes can be used for industrial applications.

Ease of Use

Your Digital LA400 MultiPrinter offers various features supported by a series of automatic operations, for maximum ease of use.

The Tear/View mode allows the automatic and precise advance of the paper at the end of each print task, so that you can easily tear it off. The paper then returns to its previous position, ready for the next print task. You can also set the Tear/View mode so that paper automatically advances to show the last printed line, when switching the printer to Pause state.

The automatic adjustment of the Print Gap guarantees the best print head positioning whatever the paper type used, without any user intervention.

The Park feature allows you to remove paper from the printing sector only of the corresponding paper path, in order to quickly switch to a paper coming from another paper path. So, you do not need physically to remove the original paper from the printer.

The automatic Interface Type selection permits you to integrate your printer into a heterogeneous environment and to share it, using its dual interface.

You can define four customized printer configurations, corresponding to most normal applications. You switch from a configuration to another simply by pushing a button: your Digital LA400 MultiPrinter automatically performs the paper parking and feeding operations. Messages are displayed on the LCD screen to let you know eventual additional actions necessary to complete the switching procedure.

Low Cost Ownership

Your Digital LA400 MultiPrinter is EPA compliant, which means that power consumption is as low as possible either when operating or in stand-by state.

Your printer also allows you to reduce the cost of consumables, such as paper. For example the Blank Pages option avoids unnecessary page breaks if you select this feature.

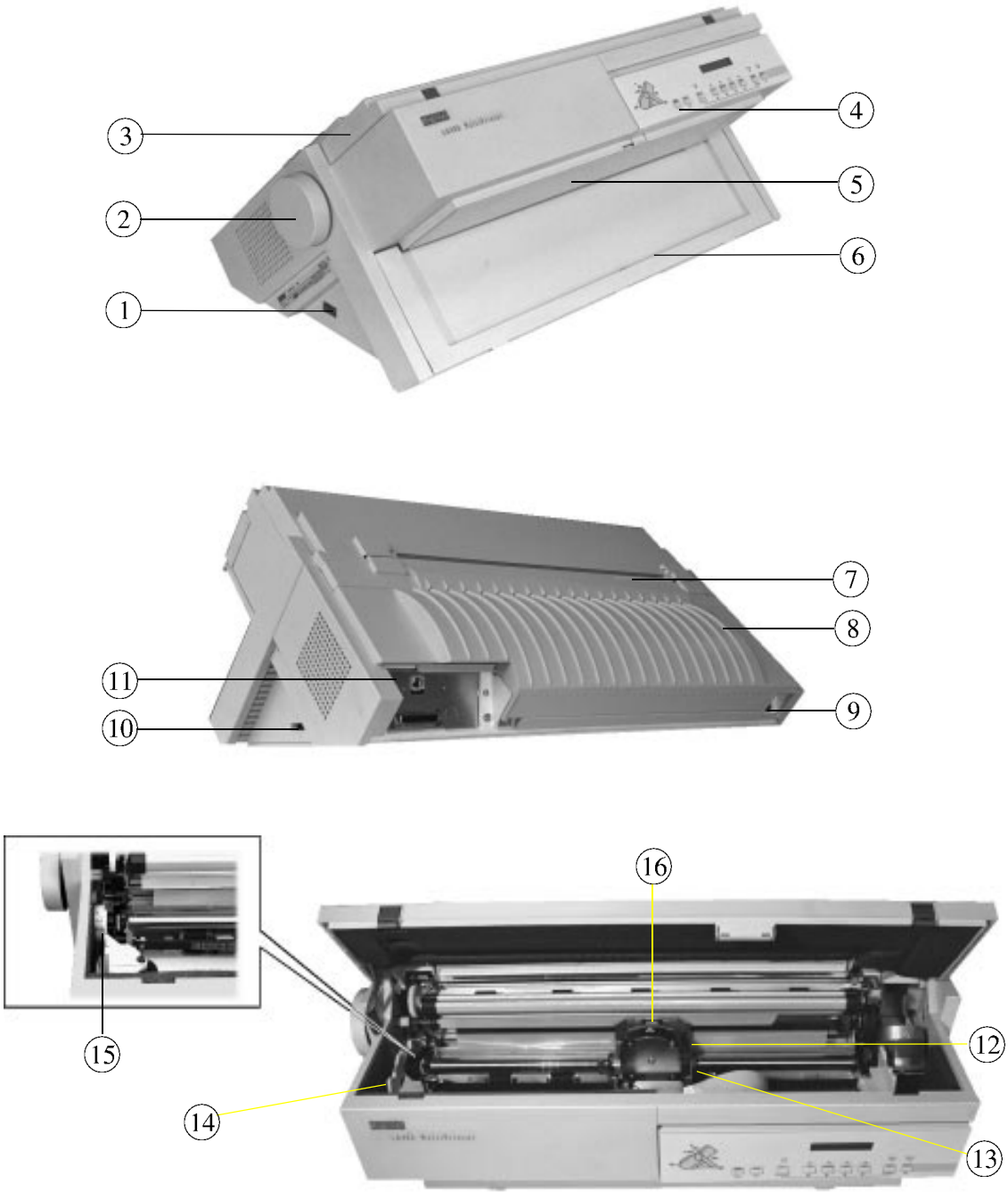
The mechanical design of the main paper path (Push-Front) allows straight paper feeding. This reduces paper jam possibilities, and paper waste.

2

Getting to Know Your Printer

This chapter describes the major parts and controls of your Digital LA400 Multiprinter.

To find out how to assemble, connect, and set up your printer, see the *Setting Up Your Printer* section at the beginning of this guide.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Parts of the Printer

The figures on the previous page show a front, rear and internal view of the printer. The following parts are indicated:

Front and Left View

① Power switch

② Platen knob *(to feed the paper manually)*

③ Top cover *(to protect print head and the printer carriage)*

④ Operator panel *(to control the printer)*

⑤ Cut sheet stand *(for the Manual paper path)*

⑥ Front slot cover *(for the Push-Front paper path)*

Rear and Right View

⑦ Rear slot cover *(for the Push-Rear paper path)*

⑧ Large rear cover *(to facilitate paper feeding device installation in Rear position)*

⑨ Power socket

⑩ Slot for optional Set-Up card or Font card

⑪ Interface connectors

Internal View

⑫ Print head

⑬ Print head carriage

⑭ Ribbon cartridge supports

⑮ Print gap adjustment knob

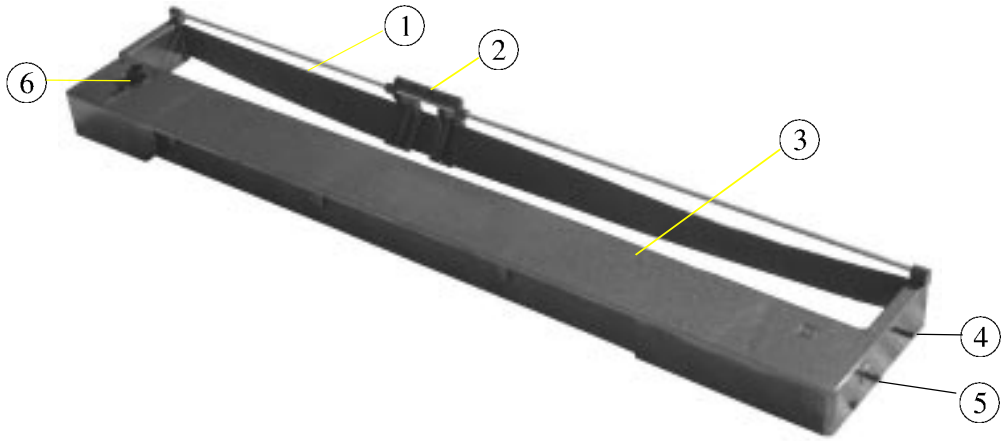
⑯ Print head mask

The Ribbon Cartridge

The Ribbon Cartridge contains the inked ribbon which is inserted between the print head and the paper. The impact of the print head needles on the ribbon applies the ink to the paper.

Your Digital LA400 MultiPrinter can use either a black ribbon or a color ribbon, if the color mechanism is installed (see section "Preparing for Color Printing" in Appendix A "Supplies and Options"). The black ribbon cartridge life is 15 million characters.

The Black Ribbon Cartridge



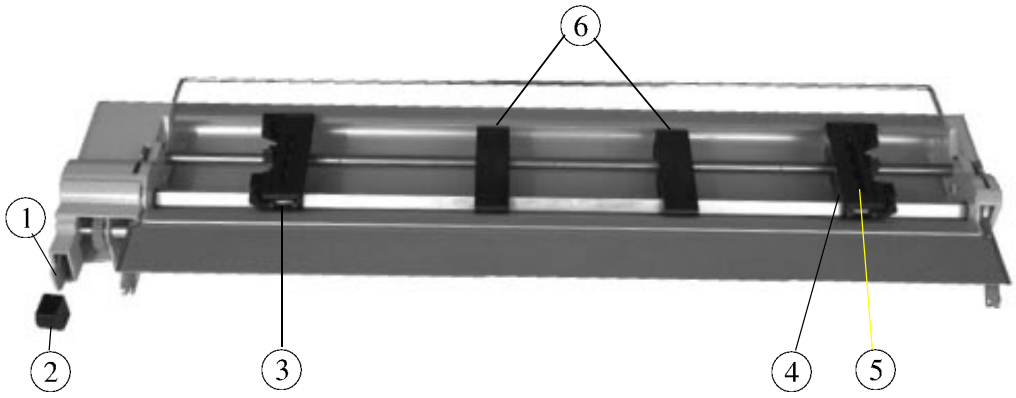
Ribbon Cartridge

1. Inked ribbon
2. Ribbon guide
3. Casing
4. Back pins
5. Front pins
6. Ribbon feed knob

The Push Tractor Unit

The following figure shows you the Push tractor unit which is a paper feeding device used to load continuous form into the printer.

According to your needs, the Push tractor unit can be mounted in Front position or in Rear position.



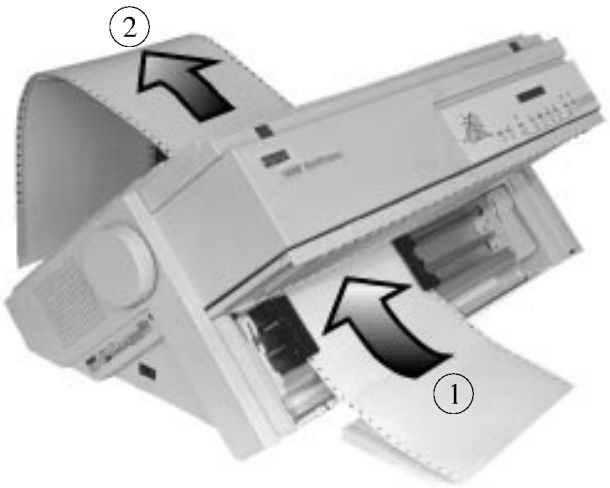
Push Tractor Unit

1. Connector
2. Connector cover
3. Tractor
4. Tractor door
5. Tractor pins
6. Paper supports

The Push Tractor Unit in Front Position

The mounting of the Push tractor unit in Front position is described at Step 6 "Loading Continuous Form" in the *Setting Up Your Printer* section you find at the beginning of this guide.

The Push tractor unit installed in the Front position feeds the paper from the front slot ① and ejects it through the rear slot ②.



Push Tractor in Front Position

The Push Tractor Unit in Rear Position

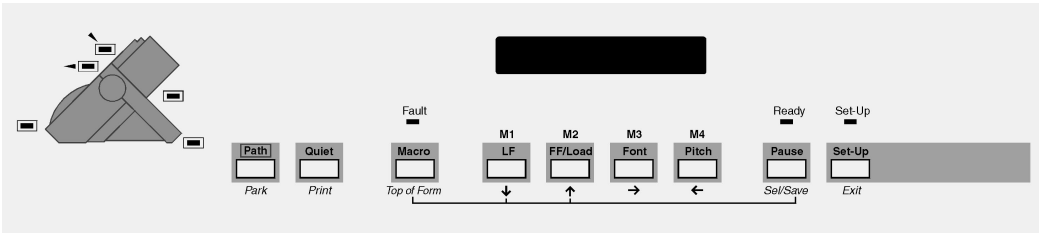
The installation procedure of the Push tractor unit in Rear position is described in Chapter 3 "Handling Different Types of Paper" of this *User Guide*.

With the Push tractor unit in this position, the paper is fed through the rear entry slot and is ejected through the rear paper slot.

Push Tractor in Rear Position

The Operator Panel

The operator panel is positioned on the front right side of the printer. It includes nine function buttons, a 16-character display, three state and five Paper Path indicators.



Operator Panel

The display shows the messages regarding the printing functions and the operating state of the printer. You use the buttons to control the printer. The indicator lights show you which function mode or Paper Path is selected or give information about the printer state.

The Indicators

The following graphic conventions are used to describe the possible indicator behaviours:

Off

Lit

Flashing

Flashing rapidly

Indicator Graphic Conventions

The State Indicators

The Digital LA400 MultiPrinter operator panel has three state indicators: Fault, Ready and Set-Up.

Indicator State	Meaning
Ready 	Ready lit. The printer is in Ready or Busy state. The printer can receive printing information from the host.
Ready 	Ready off. The printer is in Pause state. The printer cannot receive printing information from the host and the current print tasks are put on hold.
Ready 	Ready blinking. The printer is in Pause state, and there is still data in the input buffer.
Set-Up 	Set-Up off. The printer is in normal state.
Set-Up 	Set-Up blinking slowly. The printer is in Set-Up state. See the description of the paper path indicators below.
Fault 	Fault lit. The printer is out of paper.
Fault 	Fault blinking slowly. There is a fault such as cover open, paper jam, communication error, buffer overflow.
Fault 	Fault blinking rapidly. There is an internal diagnostic fault.

The Paper Path Indicators

The Paper Path indicators identify which Paper Path is selected. A Paper Path is mainly defined by:

- the paper feeding device used
- the position of the paper feeding device on the printer

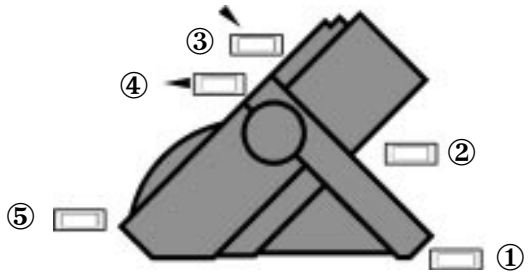
Two paper feeding devices are available:

- the Push tractor unit (standard)
- the Pull tractor unit (option)

You can mount the feeding devices in two positions:

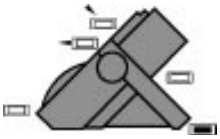
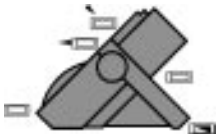
- the Front position (under the front slot cover)
- the Rear position (under the rear slot cover)

Caution: *Always remember to power-off the printer before mounting any new paper feeding device. This allows the printer to automatically detect this device at power-on.*



(1) Push-Front	(4) Pull (optional)
(2) Manual	(5) Reserved
(3) Push-Rear	(1) + (4) Push+Pull (optional)

Note: Indicators ① and ④ both lit identify the optional Push+Pull Paper Path.

Indicator Status	Meaning
	Paper Path indicator lit. The Paper Path corresponding to the lit indicator is selected. In this example the Push-Front Paper Path is selected.
	Paper Path indicator blinking. The Paper Path corresponding to the blinking indicator is selected, but it is out of paper. In this example the Push-Front Paper Path is out of paper.

The Buttons

The operator panel buttons are used to control the printer. Their function depends both on the printer state and on the operating mode you have chosen. See the following section to know the states and modes definitions.

The main function ① of each button is related to the Normal mode. This function is printed above the button, in a shaded rectangle.

The secondary functions concern the Set-Up mode, the Top of Form mode or any other specific mode. These functions are printed outside the shaded rectangle. You access these secondary functions after first pressing a button as follows:

- you access the secondary functions printed in italic style ② after pressing the Set-Up button
- you access the secondary functions printed in green ③ after pressing the Macro button.

Identification of the Button Functions

The Operating States

The following definitions explain the printer operating states. A state is a specific situation essentially characterized by the data flow interpretation and the physical configuration of the printer transmitted through the different sensors. The first part of the display indicates the current operating state (see the section "The Display" later in this chapter).

Throughout this User Guide, we refer to these definitions.

Operating State	Definition
Ready	- No data are to be printed - No fault is detected by the sensors
Busy	- Data are to be printed (being printed or not) - No fault is detected by the sensors
Pause	- Printing is put to hold - No fault is detected by the sensors
Fault	- A fault is detected by the sensors - The printer buzzer sounds according to the Set-Up setting, and the display reads a specific error message

The Operating Modes

The following definitions explain the printer operating modes. An operating mode allows the user to perform specific operations grouped according to a common function.

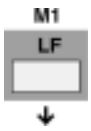
Some other feature are also called modes, especially within the Set-Up options. The following description concerns only the modes that affect how you ues the printer, mainly by using the button functions.

Throughout this User Guide, we refer to these definitions.

Operating Modes	Definition
Normal	This is the basic operating mode of your printer, allowing you to perform all the operations related to getting documents printed: printing, handling paper, selecting fonts, managing the operating states, switching between your customized configurations.
Quiet	This is the same mode as Normal, except that printing is performed with a lower noise level than in Normal mode.
Tear/View	This mode is part of the Normal mode, since it defines the way the paper moves at the end of each print task or when putting the task on hold (Pause state). For example, you can make the paper automatically advance to the tear bar at the end of the print task, or see the last printed line when you switch to Pause state.
Set-Up	This mode mainly allows you to set-up your printer according to your operating environment. You can also define 4 customized configurations depending on the different kinds of jobs you have to manage.
Top of Form	You can quickly access the Top of Form mode (abbreviated to ToF) from Normal mode in order to modify the position of the first printable line.
Hex-Dump	This is a special printing mode allowing you to check the proper functioning of your application or your printer.
Adjustment	This mode allows you to perfectly adjust your printer behaviour, in particular the bidirectional alignment, the position of the first printable line and the alignment of the paper perforation with the tear bar.

The Function of the Buttons in Normal Mode

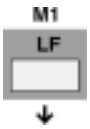
As explained previously, the function of the button mainly depends on the operating mode but is also affected by the printer state. Normal mode gives you direct access to the following button functions:

Button	Functions	Purpose			
		Ready/Pause State	Busy State	Fault State	
				Paper Out	Other Fault
	Path	To select one of the available paper paths. *See "How to Select a Paper Path" in Chapter 3.*	Inactive	Same as for Ready/Pause state.	Inactive
	Quiet	To toggle between the Quiet and the Normal modes. *See "Reducing the Print Noise Level" in Chapter 4.*	Same as for Ready/Pause state.	Same as for Ready/Pause state.	Inactive
	Macro	To select one of the Macros (access to the M1, M2, M3 and M4 button functions). *See "Using Macros" in Chapter 4.*	Inactive	Same as for Ready/Pause state.	Inactive
	LF	LF - To advance the paper one line at the current vertical pitch. *See "Moving the Paper" in Chapter 3.*	Inactive	Same as for Ready/Pause state.	Inactive
	M1	M1 - To select Macro 1. *See "Using Macros" in Chapter 4.*			
	FF/Load	FF/Load - To advance the paper. The paper moves according to the settings of the Tear/View mode. *See "Moving the Paper" in Chapter 3.*	Inactive	Same as for Ready/Pause state.	Inactive
	M2	M2 - To select Macro 2. *See "Using Macros" in Chapter 4.*			

Button	Functions	Purpose			
		Ready/Pause State	Busy State	Fault State	
				Paper Out	Other Fault
	Font	Font - To force one of the available resident fonts. *See "Selecting Print Features" in Chapter 4.*	Inactive	Same as for Ready/Pause state.	Inactive
	M3	M3 - To select Macro 3. *See "Using Macros" in Chapter 4.*			
	Pitch	Pitch - To force one of the available resident pitch values. *See "Selecting Print Features" in Chapter 4.*	Inactive	Same as for Ready/Pause state.	Inactive
	M4	M4 - To select Macro 4. *See "Using Macros" in Chapter 4.*			
	Pause	To toggle between the Pause and the Ready state. The paper moves according to the settings of the Tear/View mode. *See "Holding a Print Task" in Chapter 4.*	Same as for Ready/Pause state.	Same as for Ready/Pause state.	Clears the fault and returns to previous state. See Chapter 11 "Trouble-shooting".
	Set-Up	To access the Set-Up mode, the corresponding button functions and other specific button functions (*Park, Print, Top of Form*). *See "The Function of the Buttons in Set-Up Mode" later in this Chapter.*	Same as for Ready/Pause state.	Same as for Ready/Pause state.	Inactive

The Function of the Buttons in Set-Up Mode

As explained previously, the function of the button mainly depends on the operating mode. The printer state also affects the specific function purpose. By definition, you access the following button functions in Set-Up mode, that is after pressing the Set-Up button.

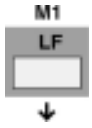
Button	Functions	Purpose
	*Park*	- With the Push-Rear or Push-Front Paper Paths, to park the paper. - With the Pull tractor, advances the paper. *Note: This function is no longer active once you enter Set-Up.* See "Handling Continuous Form" in Chapter 3.
	*Print*	Pressing this button the printer prints the firmware version of your printer and the list of set-up features of the four macros and their associated values. *Note: This function is no longer active once you enter Set-Up.* See "Printing the Printer Configuration" in Chapter 6.
	*Top of Form*	To access the Top of Form mode. *Note: This function is no longer active once you enter Set-Up.* See "Adjusting the Top of Form from the Operator Panel" in Chapter 5.
	↓	In Set-Up, to navigate downwards (through Functions, Options, Sub-options and Values). See "How to Configure Your Printer" in Chapter 6.
	↑	In Set-Up, to navigate upwards (through Functions, Options, Sub-options and Values). See "How to Configure Your Printer" in Chapter 6.
	→	In Set-Up, to navigate at the same level to the next item. See "How to Configure Your Printer" in Chapter 6.

Button	Functions	Purpose
	←	In the Set-Up structure, to navigate at the same level to the previous item. See "How to Configure Your Printer" in Chapter 6.
	*Sel/Save*	To select a Value and save the new Configuration. See "How to Configure Your Printer" in Chapter 6.
	*Exit*	To exit Set-Up mode without saving the Values. See "How to Configure Your Printer" in Chapter 6.

The Functions of the Buttons in Top of Form Mode

As explained previously, the function of the button mainly depends on the operating mode but is also affected by the printer state. You access the following button functions in the Top of Form mode, that is after pressing the *Top of Form* button.

The following table introduces only the buttons active in Top of Form mode.

Button	Function	Purpose
	*Top of Form*	To reset the Top of Form Value to zero.
	↓	To reduce the Top of Form Value (the paper moves backwards accordingly). *See "Adjusting the Top of Form from the Operator Panel" in Chapter 5.*
	↑	To increase the Top of Form Value (the paper moves forwards accordingly). *See "Adjusting the Top of Form from the Operator Panel" in Chapter 5.*
	*Sel/Save*	To save the Top of Form Value and return to Normal mode. *See "Adjusting the Top of Form from the Operator Panel" in Chapter 5.*
	*Exit*	To return to Normal mode without saving the Top of Form Value. *See "Adjusting the Top of Form from the Operator Panel" in Chapter 5.*

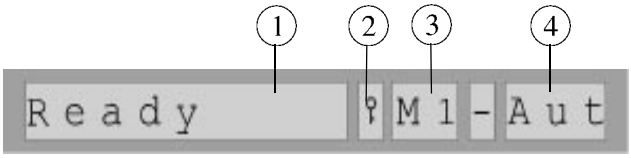
The Display

The display reads different types of messages according to the printer state and the operating mode.

The Basic Screen

The basic screen is displayed in Normal mode. It is overwritten with interactive messages which are described in a section below.

The display is divided in three parts: the printer state ①, the Lock symbol ②, selected Macro ③, and the current Protocol ④.



The Basic Screen

Printer State Message	Meaning
`Ready`	The printer is in Ready state.
`Busy`	The printer is in Busy state.
`Pause`	The printer is in Pause state.
`Quiet`	The printer is in Quiet state. Note: The `Quiet` message overwrites the other printer state messages.

Lock Symbol	Meaning
	The use of a specific font or a specific horizontal pitch is forced (see "The Font/Pitch Screen").

Macro Message	Meaning
M1	The Macro 1 is selected.
M2	The Macro 2 is selected.
M3	The Macro 3 is selected.
M4	The Macro 4 is selected.

Protocol Message	Meaning
DEC	The DEC PPL2 protocol is selected.
IPP	The IBM Proprinter XL24E protocol is selected.
AGM	The Alternate Graphic Mode of the IBM Proprinter XL24E protocol is selected.
EP2	The EPSON ESC/P2 protocol is selected.
Aut (blinking)	The interface type is set to automatic. The printer switches to the protocol you selected for each type of interface (serial or parallel) when receiving data.
Hex	The Hexadecimal Dump has been selected. Note: The Hex message overwrites the other protocol messages.

The Font/Pitch Screen

You access the Font/Pitch screen from the Basic screen after pressing the Font or the Pitch button. The display is divided in two parts: the selected font ① and the selected horizontal pitch ②.

The Font/Pitch Screen

When you first access the Font/Pitch screen, the display reads the following Factory setting for the font and the pitch:

Font Messages	Pitch Messages	Common Meaning
SoftContrl.	Soft.	Software Control
Draft	10	

Software Control means that the font and the pitch that are used by the printer are defined through the commands of your software application. These messages appear with the font and the Pitch that will be used if the printer receives no software command.

The Different Types of Interactive Messages

The interactive messages can be divided into the groups which are introduced below. See Appendix C "LCD Display Messages" for a complete list of the display messages.

The User Instruction Messages

These interactive messages are displayed when you have to perform specific operations.

Example:
```
1. Power-off
2. Push -> Front
```

This message reminds you to power-off the printer, then to mount the Push tractor unit in the Front position.

The Printer Status Messages

These interactive messages are displayed to give you specific information on the printer status.

Example: `Top cover open`

This message reminds you that the top cover is open, or at least not correctly closed.

The Operating Messages

These interactive messages are displayed to give you additional information on the printer operating state.

Example: `Loading paper ...`

This message indicates that the paper is being loaded through the selected Paper Path.

The Error Messages

These interactive messages are displayed when the printer is in Fault state. The first part identifies the error, the second part helps you correct the error.

Example:
```
Comm. failure
Check line
```

This message indicates that the communication between your printer and the host is not correct and suggests you check the communication line.

3

Handling Different Types of Paper

Paper Types

Your printer is able to handle various types of paper: simple or multipart paper for cut sheet or continuous form. In addition, you can also print on envelopes and labels.

The following specifications should be adhered to in order to assure reliable operation. Paper not conforming to these specifications may be used with the printer, however, the results are not guaranteed. A brief test of out-of-specification paper should be performed prior to regular use.

Most paper is sensitive to temperature and humidity conditions and the performance of the paper may be adversely affected due to extremes in these conditions. To prevent damage, paper, envelopes and cards should be stored in the original packaging until they are used.

Storage temperature	Storage relative humidity
64° F - 75° F (18° C - 24° C)	40% - 60%

Tips on Paper Quality

Plain bond, typewriter quality paper with a light wood pulp content should be used for optimum performance. Maximum allowable cotton or rag content is 25%. Papers which should first be tested prior to regular use are those with a textured, embossed or glossy surface, or a "hammered" type paper.

Paper must be in pristine condition with no creases or surface or edge damage. Cut sheets must be flat, not curled or curved.

Multipart Paper

Multi-parts form demands special consideration because of itscomplexity. Adherence to tolerances and environmental conditions is more critical than with simple part. The width tolerances and storage conditions specified for simple part also apply to multipart paper. There are many different types of multipart paper available; use only snap-out or top-glued forms. Form sets must be tested prior to regular use.

Side-glued forms glued on both sides are not acceptable. This type of form can trap air bubbles and are thus more susceptible to skewing. Side glued forms glued on only one side may be used, though they must be operationally tested prior to regular use.

Envelopes

Envelopes should be tested prior to use. The minimum length of the envelopes that can be inserted through the manual entry slot is 4" (102 mm).

Note: For the Paper Specifications, see Appendix B, "Technical Characteristics".

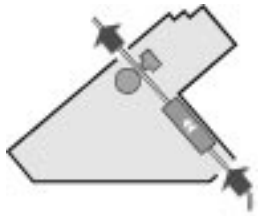
The Paper Paths

One of the main features of your new printer are the many paper paths through which you can load the paper. According to the type of paper you are using and the paper feed options you are using, you can define the following paper paths.

For continuous forms the paper path is defined by the paper feeding device used and the position of this device on the printer.

Warning: To ensure proper detection of the paper feeding devices by the printer, always power-off the printer before mounting a new device or changing the location of a device.

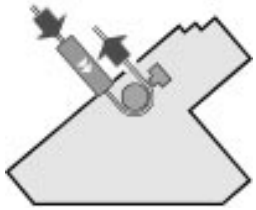
Push-Front



The Push-Front Paper Path

Continuous form loaded with the Push tractor unit installed in the front position. The paper is input into the printer through the front paper slot and is output through the rear paper slot.

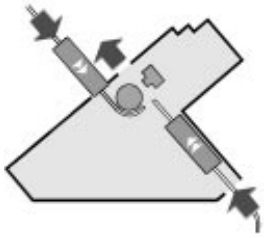
Push-Rear



The Push-Rear Paper Path

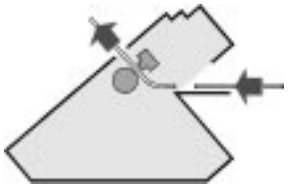
Continuous form loaded with the Push tractor unit installed in the rear position. The paper is input into the printer through the rear tractor paper slot and is output through the rear paper slot.

Note: With an additional Push tractor unit two continuous forms can be loaded for alternate use, one in the Front position and one in the Rear position.



Using Push-Front and Push-Rear Tractor Alternatively

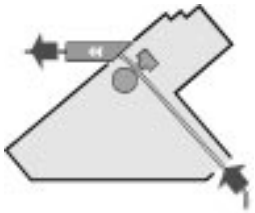
Manual



The Manual Paper Path

Cut Sheets, envelopes or particular paper formats loaded through the cut sheet stand.

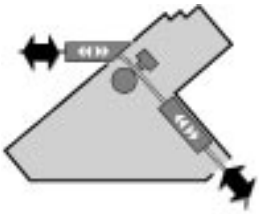
Pull



The Pull Paper Path

Continuous form loaded from the front and fed with the Pull tractor unit (option).

Push+Pull



The Push+Pull Paper Path

One fanfold paper loaded using both the Pull tractor unit (Option) and the Push tractor unit installed in Front position.

How to Select a Paper Path

The selection of the paper path can be done using the printer driver with your application software. There are also two ways of selecting the paper path operating on the printer.

- using the operator panel, to change the paper path temporarily for a specific need at a given time
- using the Set-Up mode, to switch to a specific customized Configuration (Macro) including the use of a dedicated paper path.

Using Set-Up Mode

The Set-Up mode allows you to manage the paper paths used at power-on. Using the PATH AT POWER-ON Option, you can choose one of the two possibilities:

Path at Power-on Value	Definition
From Macro	The paper path at power-on will be the paper path selected in the active Macro at power-on. The corresponding PAPER PATH Option is available in the Macro Option list only when this Value is selected.
Last sel. Path	The paper path at power-on will be paper path selected when the printer was powered off.

If you select the From Macro Value, select the paper path you intend to use in the PAPER PATH Option available in the Macro Option list. If the paper feeding device corresponding to your Macro definition is not present at power-on, the display shows a specific message.

Note: See Chapter 6 "Configuring Your Printer" for information about the PATH AT POWER-ON Option and Chapter 7 "Customizing Macros" for information about the PAPER PATH Option.

Using the Operator Panel

The Path button on the operator panel is used to select the paper path you want to use. To select a paper path using the operator panel:

1. Press the Path button.
   The indicator corresponding to the currently selected path starts blinking. The display shows the paper path name.

2. Press the Path button again.
   The Path indicators light up one afterone another in counterclockwise order. Only the indicators of the available paths light up, i.e. those for which the corresponding tractor unit is installed.
   Simultaneously, the display reads the corresponding paper path names.

3. Once the indicator corresponding to the paper path you want to select is lit, release the button.
   Automatic paper handling operations depending on your choice are performed after a time-out.
   If the new selected path is out of paper, the corresponding indicator blinks.
   The printer will load the paper corresponding to your new paper path selection only when receiving data.

Tips on Selecting the Proper Paper Path

Continuous Form

Paper Path	Paper Type	Document Type	Advantages	Disadvantages
Push Front	■ Normal thickness ■ Wide choice: - Simple part - Multiparts with chemical or carbon paper	■ Pre-printed forms (with a large number of copies) ■ Program listings ■ Adhesive labels paper with `TEAR/VIEW MODE` set to `No tear/reverse`	■ Straight paper routing ■ Paper handling with standard printer feeding device ■ Maximum print area	■ Not to be used for strong paper.
Push Rear	■ Medium thickness ■ Limited choice: - Simple part - Multiparts with chemical or carbon paper	■ Pre-printed forms (with a large number of copies) ■ Program listings	■ Combinable with the Push-Front, if you acquire the additional Push tractor unit (option)	■ Paper routing not straight ■ Limitation for paper thickness

Paper Path	Paper type	Document Type	Advantages	Disadvantages
Pull	■ High thickness ■ Great choice: - Simple part - Multiparts with chemical or carbon paper ■ Labels with the support	■ Program listings ■ Adhesive labels	■ Straight paper routing	■ Specific routing, needs the optional Pull tractor ■ Not possible to use other paper paths ■ No reverse paper movement
Push+ Pull	■ Wide thickness ■ Great choice: - Simple part - Multiparts with chemical or carbon paper	■ Pre-Printed forms (with a large number of copies) ■ Program listings ■ Adhesive labels with `TEAR/VIEW MODE` set to `No tear/reverse`	■ Allows printing on paper which cannot be fed with the Push Front path ■ Paper driving reliability	■ Specific routing, needs the optional Pull tractor ■ First part of the paper cannot be printed. This paper path may be incompatible with printing on preprinted forms. ■ Not possible to use other paper paths.

Note: Paper with a weight > 100 g/m^2 should be operationally tested prior to use. Although the printer is perfectly able to handle paper of this weight, some of these heavy papers may have special perforations, which could cause paper jams. See also "Perforation Anti-Jam" in Chapter 7.

Cut Sheets

Paper Path	Paper type	Document Type	Advantages	Disadvantages
Manual	■ Normal thickness ■ Great choice: - Simple part - Multiparts with chemical or carbon paper	■ Pre-printed forms	■ Best paper routing ■ Allows printing without any option mounted	■ Sheet by sheet feeding

Envelopes

Paper Path	Paper Type	Document Type	Advantages	Disadvantages
Manual	■ Maximum thickness: 0,3 mm	■ Normal and preprinted envelopes	■ Best paper routing ■ Allows printing on paper without any option mounted	■ Sheet by sheet feeding.

Adhesive Labels

Paper Path	Paper Type	Document Type	Advantages	Disadvantages
Pull	■ According to paper specifications	■ Adhesive labels	■ No reverse paper movement	■ Not possible to use with other paper paths

Handling Continuous Form

The Digital LA400 MultiPrinter allows a great number of continuous form handling features. In addition to the Push-Front and Push-Rear paper paths, the use of the optional Pull tractor unit gives you access to the Pull and the Push+Pull paper path.

When choosing the paper and paths the following measures apply:

Paper Characteristics		Push-Front	Push-Rear	Pull/Push+Pull
Width		3 to 17 (76 to 432 mm)	3 to 17 (76 to 432 mm)	3 to 17 (76 to 432 mm)
Length		3 to 24 (76 to 609 mm)	3 to 24 (76 to 609 mm)	3 to 24 (76 to 609 mm)
Thickness		max. 0.025 (0.5 mm)	max. 0.014 (0.3 mm)	max. 0.025 (0.5 mm)
Copies		1 + 5 *	1 + 3	1 + 5 *
Weight	*Simple part*	55 to 100 g/m^2	55 to 80 g/m^2	55 to 100 g/m^2
	Multiparts			
	- First part	< 60 g/m^2	< 60 g/m^2	< 60 g/m^2
	- Other parts	< 40 g/m^2	< 40 g/m^2	< 40 g/m^2
	Carbon paper	35 g/m^2	35g/m^2	35g/m^2

* 1+7 when selecting the High Impact Draft font.

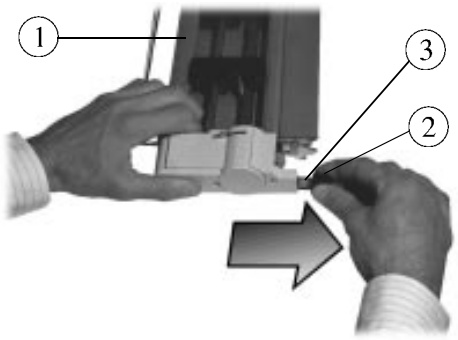
Note: Paper with a weight > 100 g/m^2 may be used with the printer. It should be operationally tested prior to use.

Handling Continuous Forms using the Push Tractorin Front Position

Mounting the Push Tractor Unit in Front Position

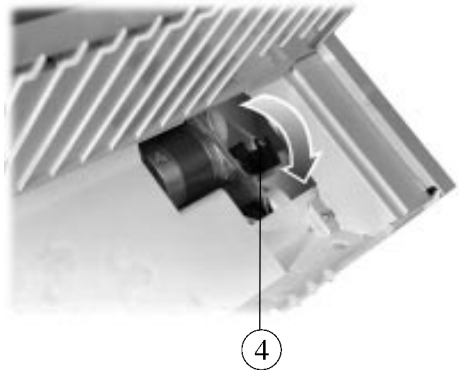
Warning: Before mounting or removing any paper feeding device, power-off the printer.

1. Remove the Push tractor unit ① from its plastic packet.
2. Remove the black plastic protection ② from the electrical connector ③.



Removing the Protection from the Electrical Connector

3. Disengage the plastic protection ④ from the feeding motor gear wheel, rotating it.



Disengaging the Gear Wheel Protection

4. Identify the place ⑤ of the Push tractor unit ① in the printer. The electrical connector ③ must be on the right.

Identifying the Tractor Unit Place

5. Mount the Push tractor unit ① in its place ⑤, inserting the electrical connector into the corresponding plug on the printer and aligning both its left and bottom sides with the printer casing.

Warning: Ensure that the paper separator ⑥ is correctly retracted in the tractor unit casing. Otherwise, paper may not be loaded.

Mounting and Aligning the Push Tractor Unit in its Place

6. Push both the left and right sides of the Push tractor unit ① upward, until it is fully engaged.

Engaging the Push Tractor Unit

Note: The Push tractor is engaged when you feel and hear the click of both left and right buttons ⑦. The Push tractor locking buttons must be in the up position as shown in the following picture.

7. Check that the paper separator ⑥ seats inside the printer and does not overhang the casing.

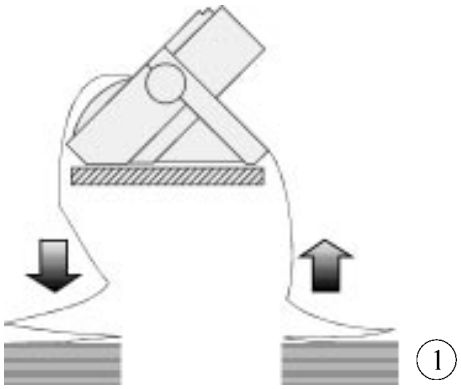
Position of the Push Tractor Locking Buttons

Right Position (up) *Wrong Position (down)*

Loading the Paper

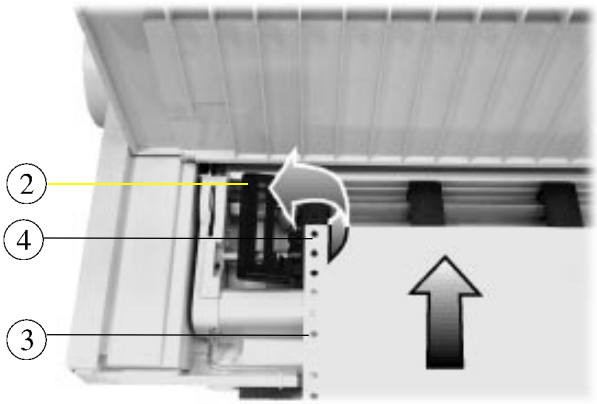
Your Digital LA400 MultiPrinter is factory set to have the left tractor already positioned for the first printable column. Some of the following steps may thus not be necessary. The following photos show the installation of 80-column paper.

1. Position the paper stack ① in front of the printer as shown in the following figure and make sure that the paper can be fed freely into the printer.



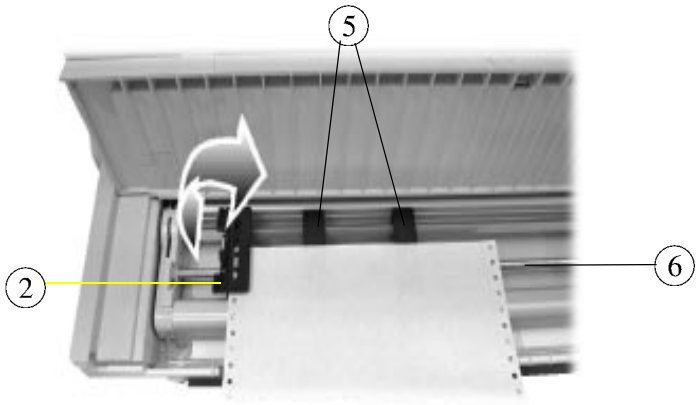
Positioning the Paper Stack

2. Open the door ② of the left tractor and place the pinfeed holes ③ of the paper on the tractor pins ④.



Installing the Paper on the Left Tractor

3. Close the door ② of the left tractor and, if necessary, adjust the position of both paper supports ⑤ along the tractor bar ⑥ to get equal intervals between them and the edges of the paper.



Positioning the Paper Supports Along the Tractor Bar

4. Open the door ⑦ of the right tractor, then, to facilitate placing paper on the tractor pins, unlock the tractor by pushing down its locking lever ⑧.

Unlocking the Right Tractor

5. If necessary, move the right tractor along the tractor bar ⑥ to position its pins in front of the pinfeed holes of the paper. Place the pinfeed holes ③ on the same tractor pins as on the left tractor, so that the top edge of the paper is parallel to the tractor bar.

Positioning the Right Tractor/Placing the Paper

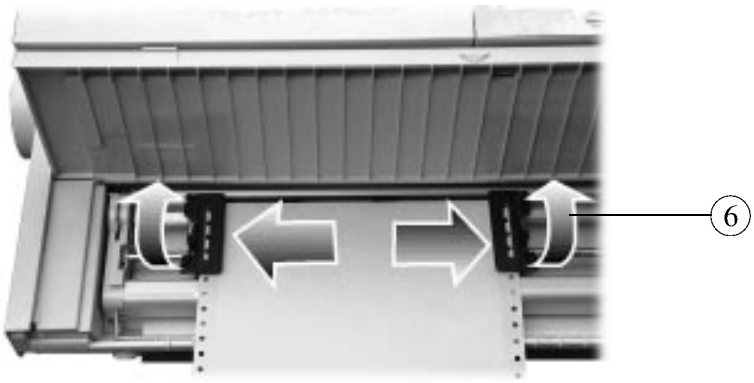
6. Close the door ⑦ of the right tractor and check that the left edge of the paper is aligned with the right edge of the green mark ⑨ on the printer casing. This position allows you to print the first column against the left side of the printable area (no left margin). If necessary, unlock the left tractor by pushing down its locking lever, and adjust paper position by moving both tractors.

   If you do not position the paper to print on the first printable column, do not forget to adjust the `LEFT MARGIN` Option in Set-Up mode.

Aligning the Paper Edge with the Green Mark

Note: When you aligning the paper edge with the green mark on the printer casing the leftmost position of the printhead corresponds to the first printable column on the page. It is not possible to print to the left of the green mark.
Ensure that the left edge of the paper is not outside of the positioning marks. These marks delimit the paper detection area.

7. Once the paper is properly positioned, lock the left tractor on the tractor bar ⑥ by pushing up its locking lever and, if necessary, adjust the right tractor position so that the paper is fairly taut and appears to lay flat on the paper supports.



Locking the Tractors

8. Lock the right tractor on the tractor bar ⑥ by pushing up its locking lever.

Caution: *Do not stretch the paper too tightly. The side perforation may tear or the pinfeed holes may enlarge and cause misfeed or paper jam.*

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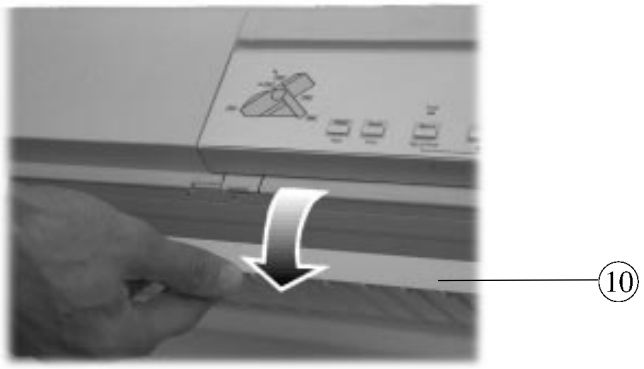
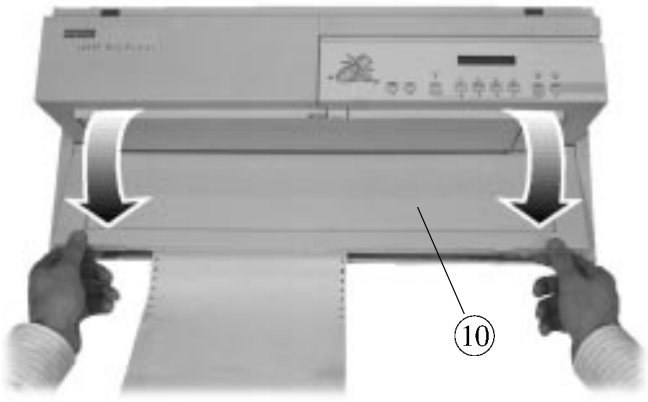
9. Unlock the front cover ⑩ by pulling it with your fingers at its center (put your thumb on the printer casing to help you).



Unlocking the Front Cover

10. Close the front cover ⑩ by pushing down on both corners. The front cover is properly closed when it clicks into place and its edges are aligned with the printer casing.



Closing the Front Cover

11. Power the printer on.

12. If necessary, select the Push-Front path at the operator panel.

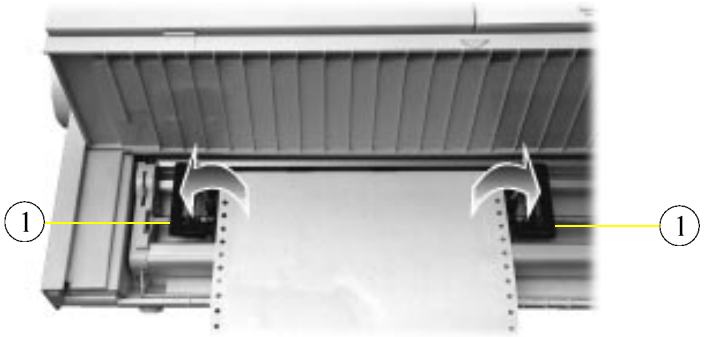
13. Press the FF/Load button.
    The message "`Loading paper...`" appears on the display and the paper is loaded into the printer. When the paper stops, the Push-Front indicator is on, the Fault indicator is off and the display shows "`Ready M1-Aut.`". You are now ready to print.

Paper Loaded in the Push-Front Paper Path

Removing the Push tractor Unit from Front Position

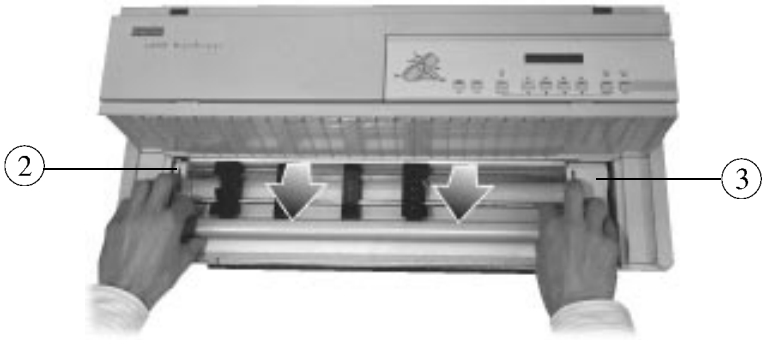
Warning: Before mounting or removing any paper feeding device, power-off the printer

1. If paper is loaded in the Push-Front paper path, park the paper on the Push tractor pressing the Set-Up button followed by the *Park* button.
2. Power-off the printer.
3. Open the left and right tractor doors ① and remove the paper.



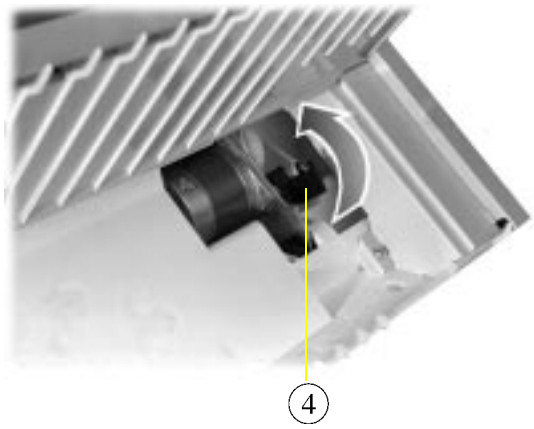
Opening the Tractor Doors

4. Press the tractor unit locking buttons ② down on both sides to unlock the tractor unit ③, pull it downwards to disengage it and remove it from the printer by rotating slightly.



Removing the Tractor Unit

4. Close the gear protection ④ rotating it upwards.



Closing the Gear Protection

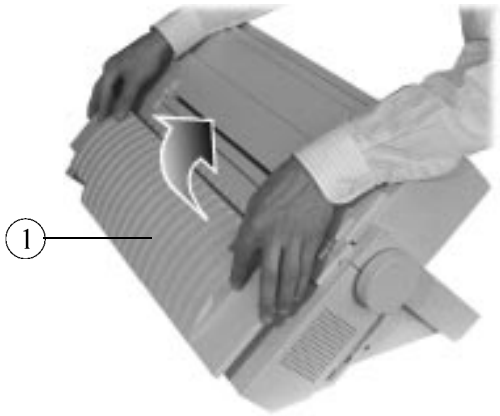
5. Close the front cover.

Handling Continuous Forms using the Push Tractor in Rear Position

Warning: Before mounting or removing any paper feeding device, power-off the printer.

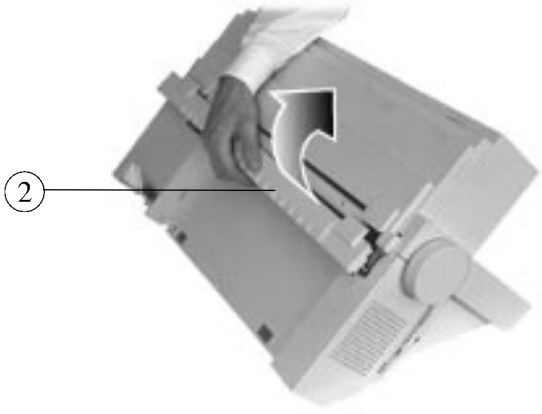
Mounting the Push Tractor in Rear Position

1. Remove the large rear cover ①.



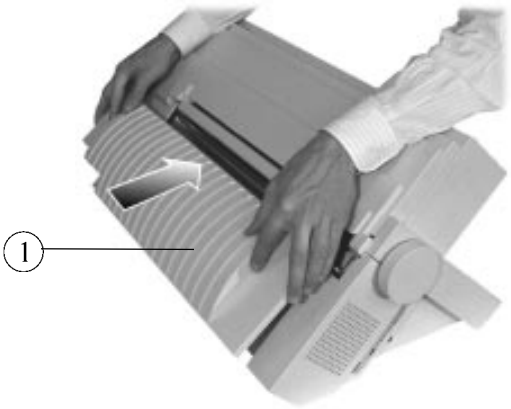
Removing the Large Rear Cover

2. Take the rear slot cover ② at the center and remove it.



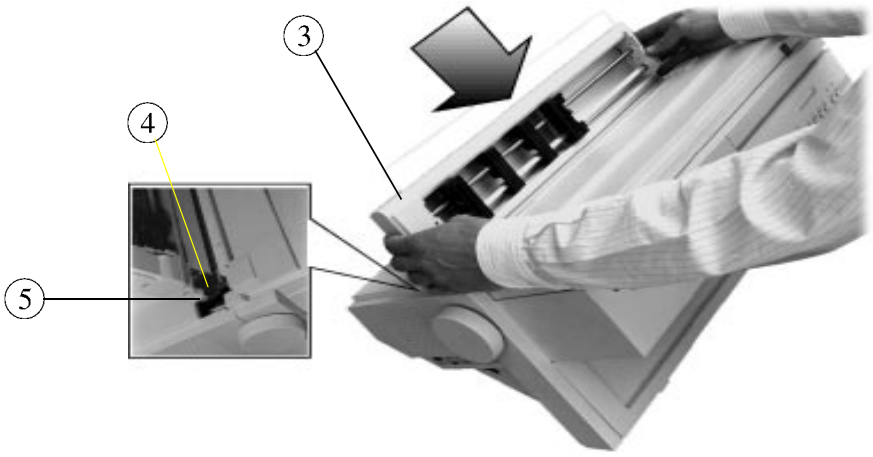
Removing the Rear Slot Cover

3. Reposition the large rear cover ①.



Repositioning the Large Rear Cover

4. Identify the correct insertion direction of the Push tractor ③: the electric connector ④ must be on the left and the tractor grooves ⑤ face down.



Orientating the Push Tractor

5. Push the Push tractor unit ③ into the printer on both sides until it engages.

Mounting the Push Tractor Unit

Note: The Push tractor is engaged when you feel and hear the click of both left and right buttons ⑥. The Push tractor locking buttons must be in the up position as shown in the following picture.

Position of the Push Tractor Locking Buttons

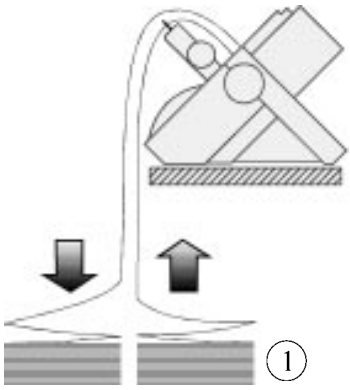
Right Position (up)

Wrong Position (down)

Loading the Paper

Your Digital LA400 MultiPrinter is factory set to have the left tractor already positioned for the first printing column. Some of the following steps may therefore not be necessary. The following photos show how to load 80-column paper.

1. Position the paper stack ① behind the printer and make sure that the paper can be fed freely into the printer.

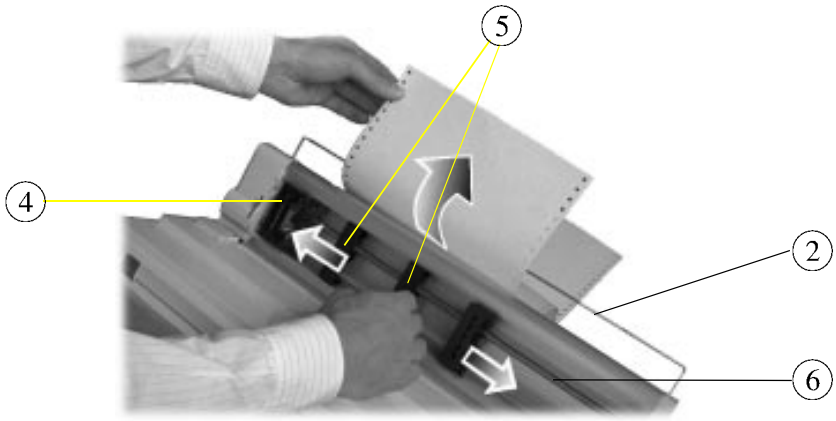


Positioning the Paper Stack

2. Lift the paper separator ② located on the tractor unit ③ holding both ends.

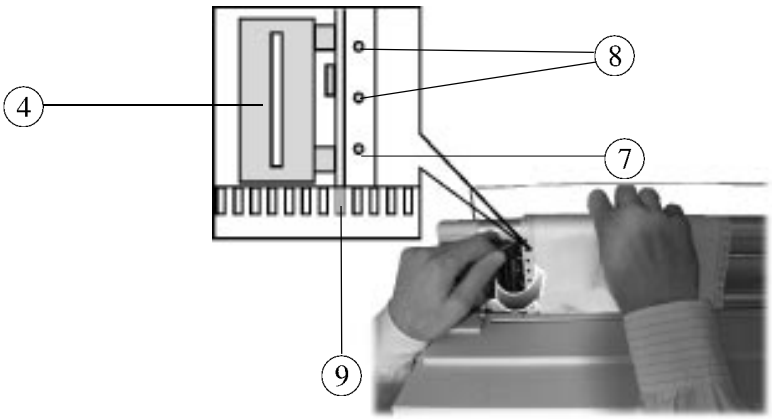
Lifting the Paper Separator

2. Open the door ④ of the left tractor. Insert the paper under the paper separator ②. If necessary, adjust the position of both paper supports ⑤ along the tractor bar ⑥ to get equal intervals between them and the edges of the paper



Positioning the Paper Supports

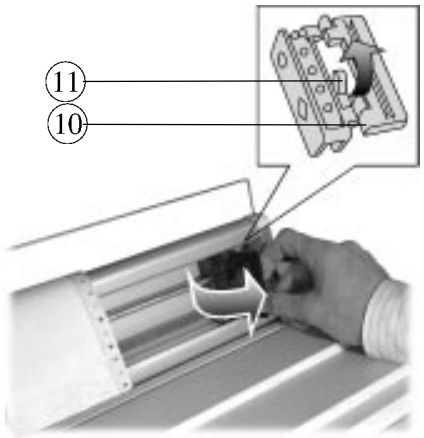
3. Insert and place the pinfeed holes ⑦ of the paper on the tractor pins ⑧.Close the door ④ of the left tractor.



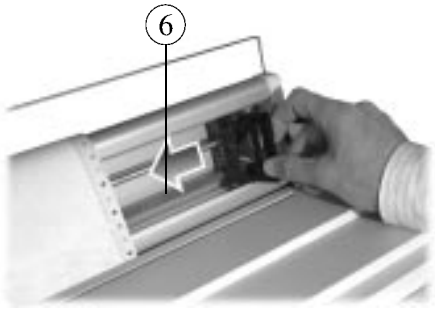
Placing the Paper on the Left Tractor

Note: It is useful to insert the paper about 1 cm inside the rear slot as shown in the figure in order to facilitate the alignment of the left paper edge with the positioning engraved marks ⑨.

4. Open the door (10) of the right tractor, then to facilitate placing of paper on the tractor pins, unlock the tractor by pushing up its locking lever ❗. If necessary, move the right tractor along the tractor bar (6) to position the pins in front of the pinfeed holes of the paper.

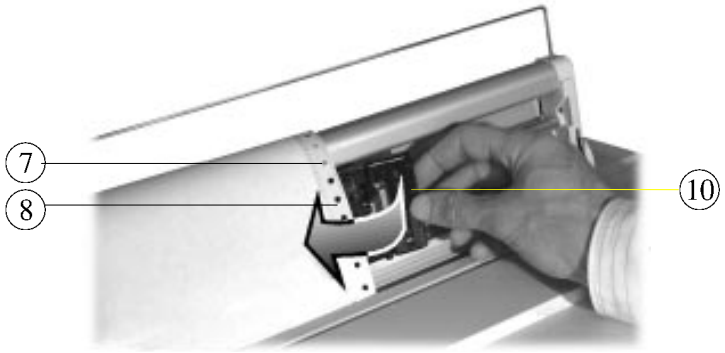


Opening and Unlocking the Right Tractor



Moving the Right Tractor along the Tractor Bar

5. Place the pinfeed holes (7) on the same tractor pins (8) as on the left tractor, so that the top edge of the paper is parallel to the tractor bar. Close the door (10).



Matching the Right Tractor with the Paper

6. Check that the left edge of the paper is aligned with the right edge of the green mark ⑨ on the printer casing. This position allows you to print the first column against the left side of the printable area (no left margin). If necessary, unlock the left tractor by pushing up its locking lever, and adjust paper position by moving both tractors.

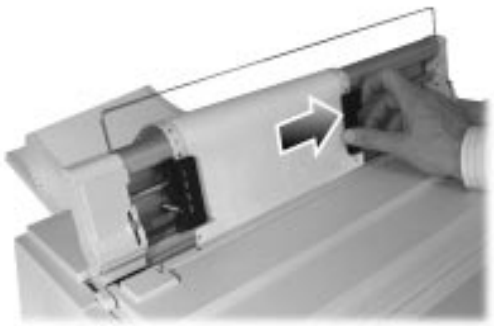
   If you do not position the paper to print on the first printable column, you must adjust the `LEFT MARGIN` Option in Set-Up mode.

Note: When you align the paper edge with the green mark on the printer casing, the leftmost position of the printhead corresponds to the first printable column on the page. It is not possible to print at the left of the green mark.
Ensure that the left edge of the paper is not outside of the positioning marks area. These marks delimit the paper detection area.

Aligning the Paper Edge

7. Lock the left tractor on the tractor bar by pushing down its locking lever. If necessary, adjust the right tractor position so that the paper is moderately taut and appears to lay flat on the paper supports. Lock the right tractor.

Caution: *Do not stretch the paper too tightly. The side perforation may tear or the pinfeed holes may enlarge and cause misfeed. Make sure that the paper is taut by moving the right tractor to the right.*



Checking that the Paper is Taut

8. Power the printer on.
9. Press the Path button until the Push-Rear path is selected.

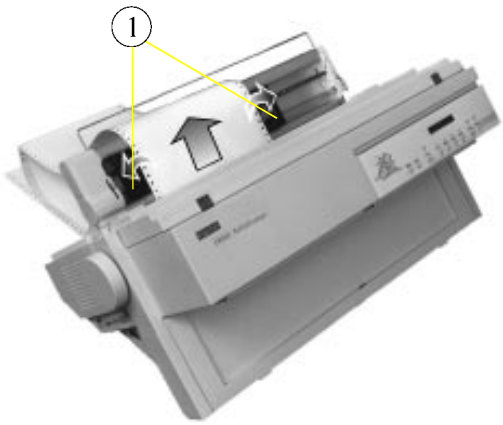
10. Press the FF/Load button.
    The message "`Loading paper...`" appears on the display and the paper is loaded into the printer. When the paper stops, the Push-Rear indicator is on, the Fault indicator is off and the display shows "`Ready M1-Aut.`". You are now ready to print.

Paper Loaded in the Push-Rear Paper Path

Removing the Push Tractor Unit from Rear Position

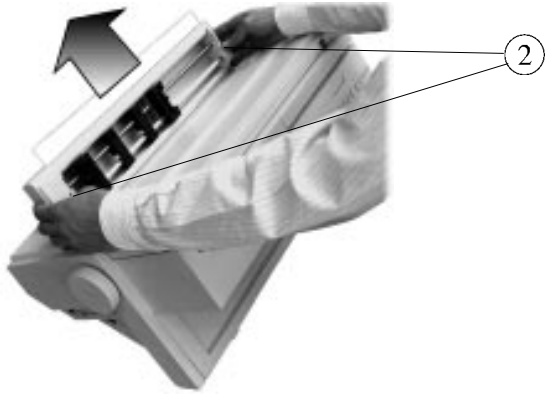
Warning: Before mounting or removing any paper feeding device, power-off the printer.

1. Park the paper on the Push tractor unit by pressing the Set-Up button followed by the *Park* button.
2. Open the left and right tractor doors ① and remove the paper.



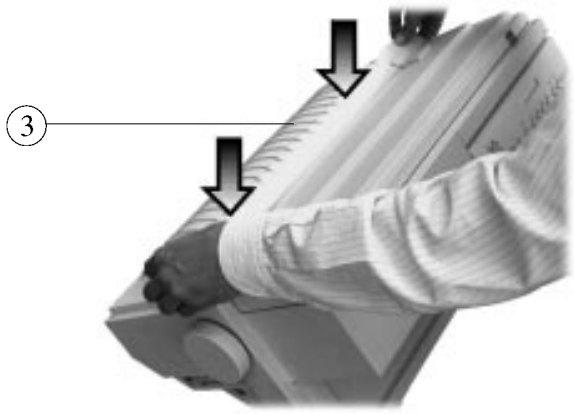
Opening the Left and Right Tractor Doors

3. Push down the left and right locking buttons ② and pull the tractor vertically up from the printer.



Removing the Push Tractor Unit

4. Mount the rear slot cover ③ again by pushing it down into place.



Installing the Rear Slot Cover

Parking the Paper

Paper parking is the function which moves the paper out of the printing sector (the area between the print head and the platen). When you decide to remove the paper from the printer, the paper must be parked first.

Note: Parking the paper allows you to use the other paper paths.

Proceed as follows:

1. Press the Set-Up button.
2. Press the *Park* button.
   The paper is moved backwards out of the printing sector.

Note: When using the Pull paper path, the function of the Park button is different. As no reverse movement is allowed with that path, the parking function is replaced by a form feed. The display shows then `Remove paper`.

If you select the `No tear/reverse` Value for the `TEAR/VIEW MODE` Option, the parking function is inhibited.

Unsuccessful Paper Parking

If the paper is not totally parked (paper still inserted in the printer), the printer enters the Fault state and the display shows:

```
1. Tear-off paper
2. Press Park
```

1. Tear-off the paper.
2. Press the Park button again.

Resetting Paper Position

Resetting the paper position is useful, if you have moved the paper with the platen knob, or if for any other reason you do not know exactly where the paper is positioned.

To reset the paper position in the current paper path:

1. Press the Set-Up button, followed by the *Park* button.
   The printer parks the paper.
2. Press the FF/Load button.
   The paper is positioned with the first printable line facing the print head.

Printing on Cut Sheets

Your printer gives you the possibility to print also on cut sheets, which are loaded through the cut sheet stand on the front part of the printer, using the Manual paper path.

Note: The Manual paper path is always available as soon as you insert a sheet. The path is automatically selected and the sheet is loaded.

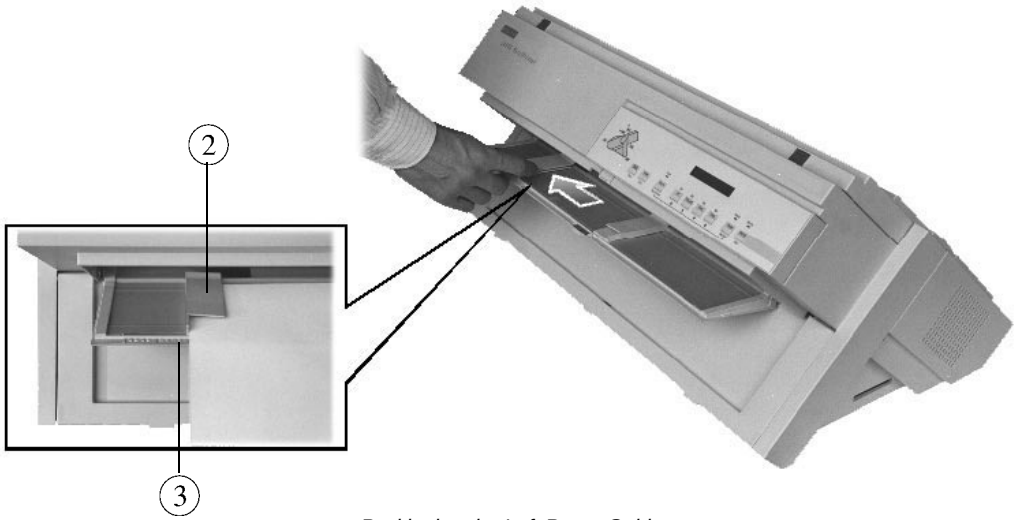
Loading Cut Sheets

1. Open the Cut sheet stand ① by pushing it down on the tab in the center of the stand as shown in the following picture.

Opening the Cut Sheet Stand

2. Position the left paper guide ② against the third large mark of the cut sheet stand and present a sheet without actually inserting it into the slot. Check that the left edge of the paper is aligned with the right edge of the third large mark ③.
   This position allows you to print the first column against the left side of the printable area (no left margin).

   If you do not position the paper to print on the first printable column, do not forget to adjust the `LEFT MARGIN` Option in Set-Up mode.



Positioning the Left Paper Guide

Caution: *Do not engage the sheet over the black area or a paper jam may occur.*

3. Adjust the right paper guide ④ according to the cut sheet width.

Note: Be careful not to fold the sheet.

Adjusting the Right Paper Guide

4. Insert the sheet in the slot until it stops against the paper feed rollers. Carefully follow the paper guides.

Inserting the Cut Sheet

5. Hold the sheet against the rollers until they load the paper.
   The message "`Loading paper...`" appears on the display and the paper is fed to the first printable line, according to Set-Up settings.

Note: It is not necessary to select the Manual paper path before inserting the sheet. The selection is performed automatically by the printer.

Ejecting Cut Sheets

When a cut sheet is inserted in the printer, to eject it press the FF/Load button.

Printing on Adhesive Labels

When printing on adhesive labels, use one of the straight paths, that is Push-Front, Pull or Push+Pull. Do not use the Push-Rear path.

You must also disable the backward movement of the paper, because the unsticking of the labels can cause paper jams when the paper is moved backwards.

Proceed as follows:

1. Press the Set-Up button to put the printer in Set-Up mode.
   The display shows `MACROS.`
2. Press the 🡻 button. `MACRO X` is displayed, where `X` is the number of the current Macro.
3. Press the 🡻 button.
   The display shows `PROTOCOL`.
4. Press the 🡺 button until the `TEAR/VIEW MODE` Option is displayed.
5. Press the 🡻 button to pass over to the Values for the Tear/View mode.
6. Press the 🡺 or 🡸 button, until `No tear/reverse` is displayed.
7. Press the *Sel/Save* button to set confirm the new setting. An asterisk is displayed to indicate that the Value has been selected.
8. Press the *Exit* button to exit the Set-Up mode.
   The message "`Save config.`" appears, indicating that you are going to save your new setting.
9. To permanently save your choice, press the *Sel/Save button.*

Note: Is is not necessary to perform the above operation when using the Pull paper path, as all backwards movements are inhibited with this path. We reccommend using the Pull path when printing on adhesive labels, but note however that the printing of landscape barcodes may generate backward movements.

Moving the Paper

To move the paper we recommend you to only use the operator panel buttons:

- LF: Advances the paper one line at the current vertical pitch.
- FF/Load: Advances the paper depending on the setting of the TEAR/VIEW MODE Option. See Chapter 6 "Configuring Your Printer".

Note: Use only the platen knob to recover from paper jams. Always reset the paper position after moving the paper with the platen knob.

Moving the Paper with the Platen Knob

Viewing the Last Printed Line

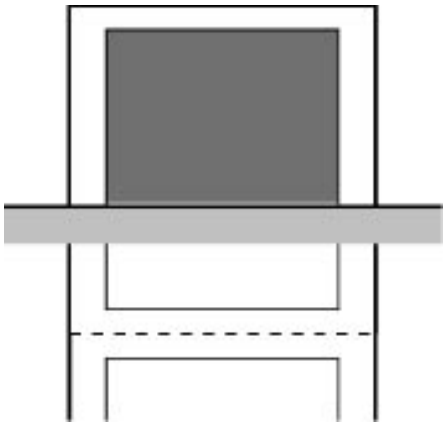
The TEAR/VIEW MODE Option of the Set-Up allows you to manage the automation of paper movements related to specific purposes. Viewing the last printed line during a print task is affected by this automation management.

The following description shows an example of how to use your printer features in the most automatic way possible. We assume that the TEAR/VIEW MODE Option is set to one of the Auto. advance Values. For more information about managing the viewing of the last printed line, see Chapter 7 "Customizing Macros".

To view the last printed line during a print task:

1. Press the Pause button.
   The printer finishes printing the current line. The paper is fed so that the last printed line is above the tear bar.

2. To resume your print task, press the Pause button again.



The Viewing Paper Position

Advancing the Paper for Tearing-off

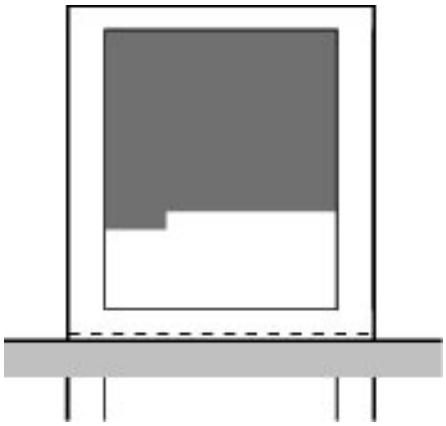
The TEAR/VIEW MODE Option of Set-Up mode allows you to manage the automation of paper movements for specific purposes. Advancing the paper for tearing-off is affected by this automation management.

The following description shows an example of how to use your printer features in the most automatic way possible. We assume that the TEAR/VIEW MODE Option is set to one of the Auto. advance Values. For more information about managing the advancing the paper for tearing-off, see Chapter 7 "Customizing Macros".

To advance the paper for tearing-off during a print task:

1. Press the Pause button.
   The printer finishes printing the current line. The paper is fed so that the last printed line is above the tear bar.

2. Press the FF/Load button.
   The paper is fed so that the perforation faces the tear bar.



The Tearing-off Paper Position

To advance the paper for tearing-off at the end of a print task:

1. Ensure that the TEAR/VIEW MODE Option in the Set-Up is set to one of the Auto. advance Values and that the printed file includes a final Form Feed command.

2. Just wait the end of the time-out to see the paper perforation automatically being fed to the tear bar.

4

Operating Your Printer

Using Macros

About Macros

A Macro is a set of pre-determined parameters allowing you to adapt your printer to your particular need. Your printer comes with four different Macros. You can customize the four Macros according to your specific needs by using Set-Up mode.

Note: For more information about using Set-Up mode, see Chapter 6 "Configuring your Printer".

In addition to the Macro, you also have to adapt the entire printer configuration by selecting other parameters defining the interface, the installation, the user adjustments etc. For the LA400 MultiPrinter, such parameters are called Values. These Values are sorted within Functions, Options and Sub-options. The Macro is one of the Functions within the printer Configuration.

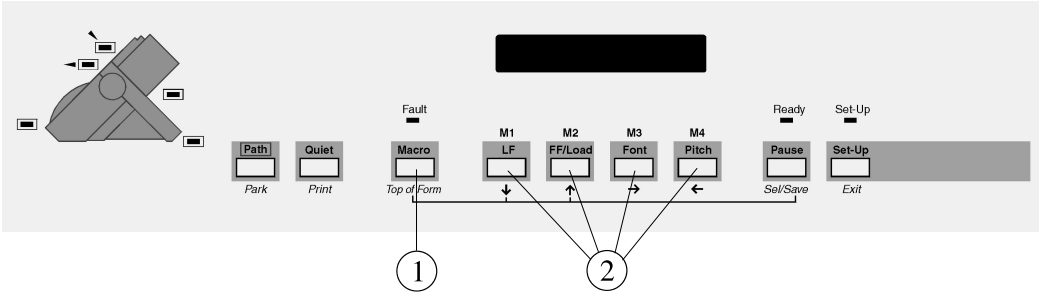
The Macro Options are described in Chapter 7 "Customizing Macros".

Macro Option Samples	Sub-options	Values
Protocol	Protocol-Serial	DEC PPL2
		IBM XL24E
		EPSON ESC/P2
	Protocol-Parallel	DEC PPL2
		IBM XL24E
		EPSON ESC/P2
Font		Draft
		High Impact Draft
		...

Switching between Macros

To switch between the Macros:

1. Press the Macro button ① on the operator panel.
   The display shows `Select a Macro`.



Selecting a Macro

2. Within 3 seconds press the M1, M2, M3 or M4 button ② corresponding to the Macro you want to use.
   The printer initializes the Values of the Macro (the display shows `Processing ...`).
   The basic screen then indicates the new current Macro.

Note: The Macro at power-on is the current Macro when you power-off the printer.

Selecting Print Features

There are three possibilities to select the print features you need for a specific print task:

- By customizing a Macro.
  This allows you to alter the greatest number of print parameters. Within the Option list of the Macros, you can define:
  - the page layout (form dimensions, margins ...)
  - the publishing style (font, character set, character spacing, line spacing, contrast of the print-out ...)
  - the printer behaviour (blank pages management, DEC mode management ...)

See Chapter 7 "Customizing a Macro" for more details.

- By using a printer driver.
  This technique reduces the number of print parameters you can alter. Please note that the parameters available in the printer driver dialog boxes override the corresponding parameters of the printer Set-Up.
- By using the operator panel.
  This allows you can alter the font and the horizontal pitch using the corresponding buttons. See the following sections for details.

Selecting the Font

The Font button allows you to select one of the following resident fonts:

Draft - HiDraft - Courier - Roman - Sans Serif - Prestige - Script - Orator - OCR-A - OCR-B

You can also select the `SoftContrl` (Software Control) Value. Software Control means that the font that is used by the printer is defined through the commands of your software application. This message blinks alternately with the Font that will be used if the printer receives no software command.

To select a resident font:

1. Press the Font button.
2. Within 3 seconds press the Font button, until the desired font is displayed (keeping the button depressed displays the different fonts continuously.
   Three seconds after releasing the button, the display shows the basic screen again and the font is set.

Note: - If a font is selected using the Font button, it is locked and cannot be changed by software commands. The basic screen then shows then the Lock symbol.

- The font selection made using the Font button is canceled as soon as you power-off the printer.

To return to Software Control, press the Font button, until `SoftContrl` is displayed.

Selecting the Pitch

The Pitch button on the operator panel allows you to select different horizontal pitches according to the selected protocol. See Chapter 7 "Customizing a Macro" for the pitch values.

You can also select the `Soft.` (Software Control) Value. Software Control means that the pitch that is used by the printer is defined through the commands of your software application. This message blinks alternately with the Pitch that will be used if the printer receives no software commands.

To select a pitch:

1. Press the Pitch button
2. Within 3 seconds press the Pitch button, until the desired pitch is displayed (keeping the button depressed displays the different pitches continuously.
   Three seconds after releasing the button, the display shows the basic screen again and the pitch is set.

Note: - If a pitch is selected using the Pitch button, it is locked and cannot be changed by software commands. The basic screen then shows then the Lock symbol.

- The pitch selection made using the Pitch button is canceled as soon as you power-off the printer.

To return to Software Control, press the Pitch button, until `Soft.` is displayed.

Holding a Print Task

To hold printing temporarily:

- Press the Pause button.
  The Ready indicator blinks, indicating that there are still data to be printed. The paper moves according to the settings of the `TEAR/VIEW MODE` Option.

To resume printing:

- Press the Pause button again.

Reducing the Print Noise Level

To print with a reduced noise level (Quiet mode).

- Press the Quiet button.
  The display shows `Quiet` instead of the current printer state.

To return to Normal mode:

- Press the Quiet button again.
  The display shows printer state that was active before pressing the Quiet button.

Recovering from a Fault State

Recovering from a Paper out Fault

If the printer is out of paper, the Fault and Ready indicators are lit and the display shows the `Load X` message, where X is the current Paper Path.

1. Make sure that paper is loaded in the current paper path.
2. Press the FF/Load button.
   The display shows `Loading...` and paper is loaded.

Note: If no paper is installed in the current Paper Path, see Chapter 3 "Handling Different Paper Types" for the paper installation procedure.

Recovering from other Faults

To recover form any other Fault state:

1. Remove the cause of the Fault state.
2. Press the Pause button, to clear the Fault state.

Note: It may happen, that two Fault states occur at the same time. In this case press the Pause button repeatedly, until both of them are cleared.

5

Printing

Print Area Definition

For the correct definition of the print area, customize the printer Set-Up Macros according to your needs.

The corresponding Options are the following:

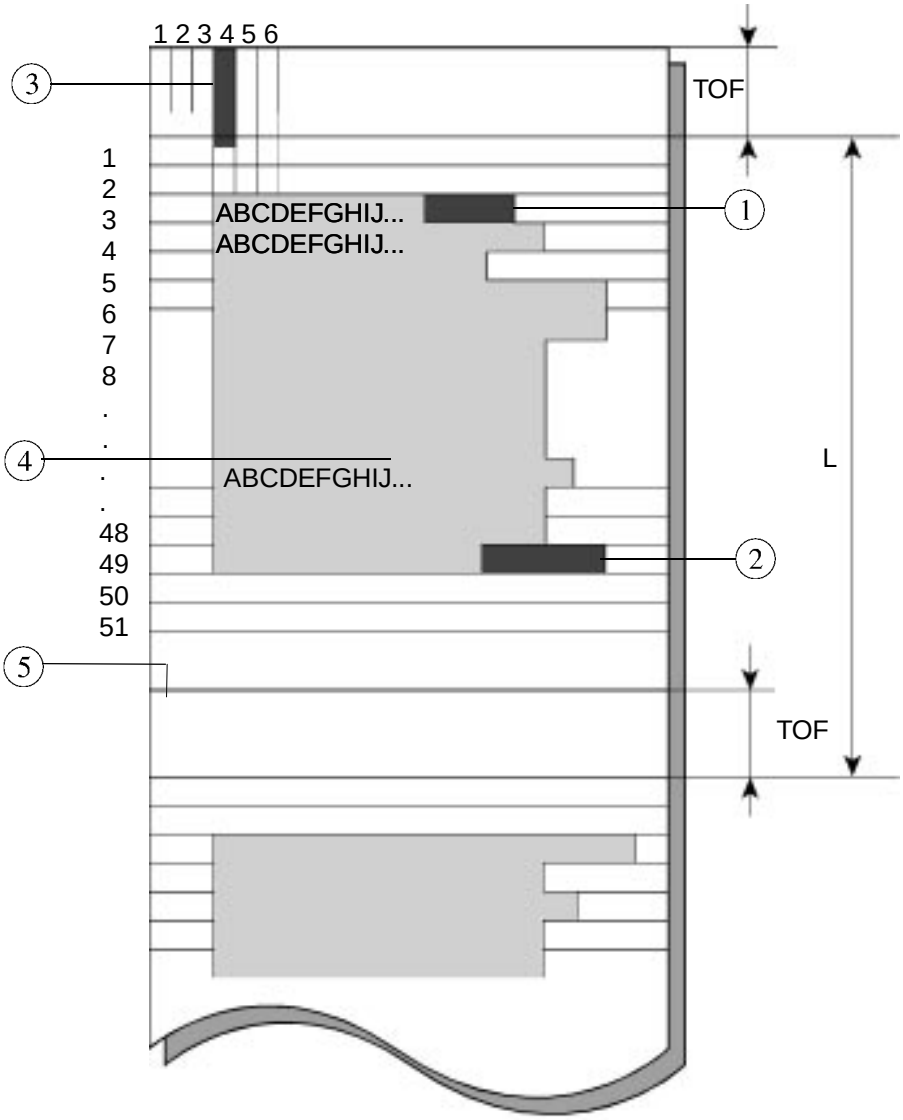
- FORM LENGTH
- LEFT MARGIN
- FORM WIDTH
- TOP MARGIN
- BOTTOM MARGIN
- TOP OF FORM

See Chapter 7 "Customizing a Macro" for a complete description of these Options.

Note: The physical print area limitations are described in Appendix B "Technical Characteristics".

Print Area Definition

- ToF (Top of Form) :
  This value defines the distance between the edge of the paper and the place where you allow the printing to begin (position of Line #1). You can adjust this distance according to the condition of your paper (for example pre-printed forms). When you load the paper, the printer feeds the paper so that the print head faces Line #1, waiting for printing commands.
- L (Form Length):
  Set the Option (`FORM LENGTH`) according to the actual physical page length (the distance between two perforations for continuous forms). This will allow the printer to know exactly where the print head is and to position it at the same position when a form feed occurs.
- Top line ①:
  This is the line where the printing actually starts. To define a top margin, select the number of this line. Example: In the following picture `TOP MARGIN` Option is set to 3.
- Bottom line ②:
  This is the line where the printing actually stops. To define a bottom margin, select the number of this line. Example: In the following picture `BOTTOM MARGIN` Option is set to 50.
- Left column ③:
  This is the column where the printing actually starts. To define a left margin, select the number of this column. Example: In the following picture `LEFT MARGIN` Option is set to 4.
- Print area ④:
  Print area defined by the corresponding Macro Options: `FORM LENGTH`, `TOP OF FORM`, `TOP MARGIN` and `BOTTOM MARGIN`.
- Paper perforation ⑤:
  The perforation defines the physical page length.



Print Area Definition

Printing on Multipart Form

Once you have decided which paper format you are using, you can start sending the print tasks. The printer loads the paper in the current paper path as soon as it receives data.

If you are using application software which uses the printer driver to manage the print jobs, make sure that the Paper Format and the Print Area match the paper installed on the printer.

Adapting to Paper Thickness

For good print quality and correct paper feeding, you should adapt the print impact strength and the print gap to the paper thickness. Your printer is factory set to adjust automatically, as it allows you to get the best printing results in most cases without any intervention. Select one of the other values only for special print tasks.

Two Macro menu Options are available to adapt the printer to specific paper thickness.

- The `PRINT GAP` Option defines the distance between the print head and the platen.
  - If you set the automatic adjustment (`Auto.adjust` Value) for the print gap the printer senses the paper thickness each time you load the paper and adjusts the gap accordingly. This is the factory setting, as it allows you to get the best printing results in most cases without any intervention. Select one of the other Values only for special print tasks. When you select this Value, set, if necessary, the corresponding `AUTO.GAP OFFSET` Option.
  - The print gap can also be set according to the number of parts of the paper (`For X parts` Values).
  - By setting the manual adjustment (`Manual adjust.` Value), you can adjust the print gap manually by using the print gap adjustment knob.
- The `PRINT IMPACT` Option gives you the possibility to choose between two print head impact strengths.
  - The factory setting `Soft impact` Value should be used for normal paper
  - The `Strong impact` Value should be used for multipart form in order to obtain good quality printing for all copies.

Hints on Printer Settings for Paper Thickness

Before starting the print job you should print some sample pages to test the print result of the different settings.

- Always set the PRINT IMPACT and the PRINT GAP Options to be compatible. For example, if you set the For 5 parts Value for the PRINT GAP Option and you do not set the PRINT IMPACT Option to Strong impact, you may not have satisfactory print quality on the last part of the multipart form.
- Avoid printing with Strong impact strength on thin paper. This could damage the paper and the platen.
- The Manual adjust. Value of the PRINT GAP Option does not allow very precise print gap adjustment and should be used only for special paper, when other settings have not produced satisfactory results.

Note: For more details about the paper thickness setting, see the section "Setting the Printing Modes" in Chapter 7 "Customizing Macros".

Managing Blank Pages

Thanks to the Tear/View mode feature for advancing paper for tear off, your Digital LA400 MultiPrinter allows you to save paper by removing unnecessary blank pages between print jobs.

To remove unnecessary blank pages:

- Select the Removed Value for the BLANK PAGES Macro Option.

To preserve blank pages voluntarily inserted within a print task:

- Select the Preserved Value for the BLANK PAGES Macro Option.

Printing on Pre-printed Forms

When printing on Pre-printed forms, you may need to reposition the paper in order to align the printout with the predefined areas on the paper. This operation is performed by adjusting the Top of Form Value (see the Top of Form definition in the section" Print Area Definition", above).

You can access the Top of Form setting, either in the Macro Option List in Set-Up mode or simply from the operator panel. The operator panel allows you to modify the Top of Form setting either temporarily or permanently.

Adjusting theTop of Form from the Operator Panel

Adjusting the Top of Form from the Operator Panel affects the current Macro setting if you decide to permanently save your setting.

Proceed as follows:

1. Press the Set-Up button.
2. Press the *Top of Form* button. The printer loads the paper in the current paper path. The display shows the current Top of Form value.
3. Press the ↑ or ↓ button to move the paper position respectively up or down in steps of 1/60 inch. The new Top of Form value appears on the display.
4. When the desired setting is reached:
   - to temporarily save the Top of Form Value, press the Exit button
   - to permanently save the Top of Form Value, press the *Sel/Save* button.

   The paper moves back to its previous position.

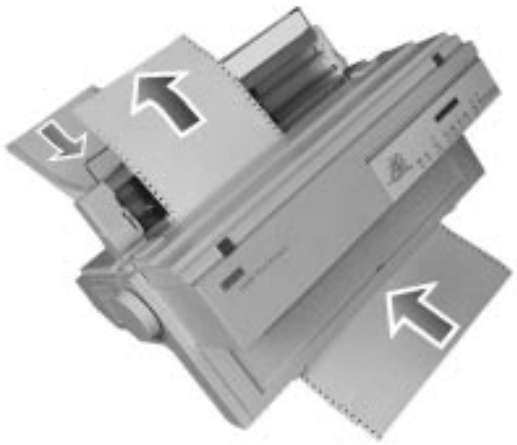
To reset the Top of Form Value:

- If you want to quickly reset the Top of Form Value to 0/60 inch, press the Top of Form button during the procedure described above.
  The paper moves to the corresponding Top of Form Value, then returns to its previous position.

Quickly Switching between Two Paper Types

The basic configuration of your Digital LA400 MultiPrinter allows you to quickly switch between the Push-Front (or the Push-Rear) and the Manual paper paths, by simply pressing the Path button at the operator panel. See Chapter 3 "Handling Different Types of Paper" for more information about selecting a paper path.

Paper handling is further enhanced with the optional additional Push tractor unit. By mounting simultaneously the two Push tractor units on your printer, you can have two types of paper loaded at the same time, one paper using the Push-Front path, the other the Push-Rear path. See Chapter 3 "Handling Different Types of Paper" for more information about mounting the Push tractor unit in Front or Rear position.



Push-Front and Push-Rear Paths Used Together

6

Configuring Your Printer

What is Configuration?

Configuration is the whole set of parameters that define the printer usage characteristics such as communication interface, protocol, fonts, paper path etc. Configuring your printer is necessary to make it operate and communicate properly with your hardware and software.

You access the Configuration using Set-Up mode. Set-Up mode provides seven configuration Functions:

- `MACROS`
  This Function lets you customize the four Macros, which are designed to quickly adapt your printer to different kinds of print tasks.
- `INSTALLATION`
  This Function contains generic parameters such as the language used for the display.
- `INTERFACE`
  This Function lets you define the interface type and to set the communication characteristics.
- `TEST/HEX-DUMP`
  This Function is dedicated for testing your printer with the self test or switching to hex-dump mode.
- `USER ACCESS`
  This Function defines the access authorization to the Set-Up Options.
- `USER ADJUSTMENTS`
  This Function allows fine adjustment of all the mechanical parameters, such as the print gap, the position of the first printable line etc.
- `SAVE`
  This Function allows you to manage your configuration in the section "Reaching, Selecting and Saving a Configuration Value" later in this chapter.

The Configuration Structure

The Set-Up Configuration contains seven Functions, which group specific Options. The Options, if necessary, are broken down into other Sub-options. The selectable parameters defining the Options or Sub-options are called Values. The following is an example of part of the Configuration structure.

Function Level	Options Level	Sub-options Level	Values Level
Macro	Protocol	Protocol-Serial	DEC PPL2
			IBM XL24E
			EPSON ESC/P2
		Protocol-Parallel	DEC PPL2
			IBM XL24E
			EPSON ESC/P2
	Font		Draft
			Hi Draft
			...
	Vertical Pitch		2 lpi
			1 lpcm
			...

In the above table, the Protocol Option has two Sub-options: Protocol-Serial and Protocol-Parallel. You have to choose one of these Sub-options to access the selectable values. The Font and the Vertical Pitch have not Sub-options: you access to the selectable Values directly.

Display Graphic Conventions

To allow you to recognize the kind of item that appears on the printer display, the following graphic conventions apply:

Display Sample	Convention	Meaning
MACRO	Uppercase	This convention applies to Functions, Options and Sub-options (all non-selectable items).
* English	Lower case with initial cap * symbol for the current/selected Value	This convention applies to the selectable Values and to the executable Values

Note: There are two types of values:

- the selectable Values which are parameters that alter the printer Configuration.
- the executable Values which generate immediate operations

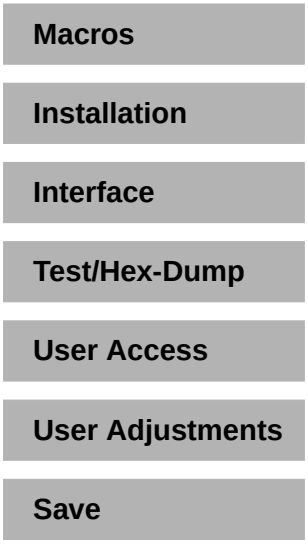
The Different Types of Selectable Values

Three types of selectable Values have been defined, according to how they are saved.

Value Type	Meaning
Factory	These are the Values that are set at the factory. You can recall them for the entire Configuration using the SAVE Option.
Power-on	These are the values that are active when powering-on the printer. They are active when you permanently save your changes by pressing the *Sel/Save* button.
Current	These are the values that are active at a given time and that are lost when you power-off the printer. They are active when you temporarily save your changes by pressing the *Exit* button, or by modifying corresponding Values at the operator panel.

Configuration Quick Reference

See the following pages to know the Functions, Options, Sub-options and Values defining the entire Configuration.



Configuration Functions

Note: In the Value list, the Factory setting is shown in bold.

Macros

Macro 1

Macro 2

Macro 3

Macro 4

See pages 6-6, 6-7

Installation

Language

Error Buzzer

Path at Power-on

See page 6-7

Interface

Interface Type

I/F Time-out

Input Buffer

Parallel Mode

AUTOFEED Signal

SLCT-IN Signal

Discon. on Fault

Word Length

Baud Rate

Parity Bit

Buffer Control

Robust XON

See page 6-11

Test/Hex-Dump

Self-Test

Hex-Dump Mode

Enable Hex-D.

Disable Hex-D.

SetUp Card init.

User Access

All Functions

Macros

Test/Hex-Dump

Minimum

User Adjustments

Bidi. Alignment

Offset: X

Line #1 - Front

X/60 inches

Line #1 - Rear

X/60 inches

Tear-Perfo Align

X/60 inches

Save

Save Config.

Restore Macro X

Rest.all Macros

Recall Factory

Macro 1/2/3/4 1/2

Protocol
Protocol Serial
DEC PPL2
EPSON ESC/P2
IBM XL24E
Protocol Paral.
DEC PPL2
EPSON ESC/P2 *(M1/M3)*
IBM XL24E *(M2/M4)*

Font
Draft
HiDraft
Courier
Roman
SansSerif
Prestige
Script
Orator
OCR-A
OCR-B

Vertical Pitch
2 lpi
3 lpi
4 lpi
6 lpi
8 lpi
10 lpi
12 lpi
1 lpcm
2 lpcm
4 lpcm

Form Length
3 inches
3.5 inches
4 inches
5.5 inches
6 inches
7 inches
8 inches
8.5 inches
11 inches(A)
A4(11.6 inches)
12 inches
14 inches
15 inches
Number of Lines
X lines *(1 to 256)*

Form Width
8 inches
13.2 inches
13.6 inches

Top Margin
Line #X ***(1)***

Bottom Margin
Line #X ***(66)***

Left Margin
Column #X ***(1)***

Top of Form
0/60 inches
(0/60 " to 127/60 ")

Paper Path
Push-Front
Push-Rear
Manual

Print Direction
Unidirectional
Bidirectional
Soft. Control

Line Mode
LF=LF,CR=CR
LF=LF+CR
CR=LF+CR
LF&CR=LF+CR

Blank Pages
Removed
Preserved

Perfo. Anti-jam
Enabled
Disabled

Print Gap
Auto. adjust.
For 1 part
For 2 parts
For 3 parts
For 4 parts
For 5 parts
For 6 parts
Manual adjust.

Auto Gap Offset
0 *(-8 to +8)*

Print Impact
Soft impact
Strong impact

Macro 1/2/3/4 2/2

Tear/View Mode
Auto.advance 1s
Auto.advance 2s
Auto.advance 3s
Auto.advance 4s
Auto.advance 5s
Manual advance
No tear/reverse

DEC Mode
Horizontal Pitch
G0 Character Set
User Pref. C-Set
Wrap vs Truncate
Printer ID
Disconnect./EOT
Init. Report
Auto. ANSWERBACK
ANWERBACK/ENQ

See page 6-8

IBM Mode
Horizontal Pitch
IBM C-Set
Code Page
IBM Dbl. Height
IBM AGM
Pitch/COMPRESS
Slashed Zero

See page 6-9

EPSON Mode
Horizontal Pitch
National C-Set
Code Page
EPSON C-Set
Slashed Zero

See page 6-10

Installation

Language
English
Deutsch
Español
Français
Italiano

Error Buzzer
1 beep
3 beeps
Continuous beep
No beep

Path at Power-on
From Macro
Last sel. Path

DEC Mode

Horizontal Pitch
5 cpi
6 cpi
6.6 cpi
8.25 cpi
8.55 cpi
9 cpi
10 cpi
12 cpi
13.2 cpi
15 cpi
16.5 cpi
17.1 cpi
18 cpi
20 cpi
Prop. Spacing

User Pref. C-Set
DEC Supplement.
DEC Spec.Graph.
DECTechnical
DEC 7Bit Hebrew
DEC Hebrew Sup.
DEC Greek Sup.
DEC 7Bit Turk.
DEC Turk. Sup.
JIS Katakana.
ISO Latin-1
ISO Latin-2
ISO Latin-5
ISO Lat.-Hebrew
ISO Latin-Greek
ISO Lat.-Cyril.

G0 Character Set
US ASCII
British
DEC Finnish
French
DEC French-Can.
German
ISO Italian
JIS Roman
DEC Norw./Dan.
ISO Spanish
DEC Swedish
Norw./Danish
DEC Dutch
DEC Swiss
DEC Portuguese
Legal
DEC Supplement.
DEC Spec.Graph.
DECTechnical
DEC 7Bit Hebrew
DEC Hebrew Sup.
DEC Greek Sup.
DEC 7Bit Turk.
DEC Turk. Sup.
JIS Katakana

Wrap vs Truncate
Wrap
Truncate

Printer ID
PPL2
LA120 ID
LA210 ID

Disconnect./EOT
Disabled
Enabled

Init. Report
Disabled
Enabled

Auto.ANSWERBACK
Disabled
Enabled

ANSWERBACK/ENQ
Disabled
Enabled

IBM Mode

Horizontal Pitch
10 cpi
12 cpi
17.1 cpi
20 cpi
Prop. Spacing

IBM C-Set (1/2)
IBM set 1
IBM set 2

Code Page
Code Page 210
Code Page 220
Code Page 437
CP 437 Greek
Code Page 850
Code Page 852
Code Page 853
Code Page 855
Code Page 857
Code Page 860
Code Page 861
Code Page 862
Code Page 863
Code Page 864
Code Page 865
Code Page 866
Code Page 869
Abicomp
Brazilian ASCII
Mazowian
Code MJK
Bulgarian
ISO 8859-7
ISO Latin 1T
New Hebrew
D-Hebrew

IBM Dbl. Height
Disabled
Enabled

IBM AGM
Disabled
Enabled

Pitch/COMPRESS
17.1 cpi
20 cpi

Slashed Zero
No
Yes

EPSON Mode

Horizontal Pitch
10 cpi
12 cpi
17.1 cpi
20 cpi
Prop. Spacing

National C-Set
USA
France
Germany
United Kingdom
Denmark 1
Sweden
Italy
Spain 1
Japan
Norway
Denmark 2
Spain 2
Latin America
Turkey
Korea
Legal
Old Hebrew

Code Page
Code Page 210
Code Page 220
Code Page 437
CP 437 Greek
Code Page 850
Code Page 852
Code Page 853
Code Page 855
Code Page 857
Code Page 860
Code Page 861
Code Page 862
Code Page 863
Code Page 864
Code Page 865
Code Page 866
Code Page 869
Abicomp
Brazilian ASCII
Mazowian
Code MJK
Bulgarian
ISO 8859-7
ISO Latin 1T
New Hebrew
D-Hebrew

EPSON C-Set
Graphic
Italic

Slashed Zero
No
Yes

Interface

Interface Type
Automatic
Parallel
Serial

I/F Time-out
2 seconds
(2 to 30 seconds)

Input Buffer
1 K (DLL)
8 K (No DLL)
16 K (No DLL)
32 K (No DLL)

Parallel Mode
Bidirectional
Centro

AUTOFEED Signal
Disabled
Enabled

SLCT-IN Signal
Disabled
Enabled

Discon. on Fault
No discon.
Yes (DTR drop)
Yes (DTR pulse)

Word Length
8 bit
7 bit

Baud Rate
600 bps
1200 bps
2400 bps
4800 bps
9600 bps
19200 bps
38400 bps

Parity Bit
None
Even
Odd

Buffer Control
XON/XOFF
XON/XOFF + DTR
DTR

Robust XON
No
Yes

How to Configure your Printer

Reaching, Selecting, Saving a Configuration Value

When you press the Set-Up button, the printer enters Set-Up mode allowing you to navigate within the Configuration structure. Use the Arrows buttons to move around in the structure.

Reaching a Configuration Item

Button	Purpose
↑ ↓	To switch from an item level to another (upwards or downwards).
→ ←	Within the same level, to switch from an item to another (forwards or backwards).

Selecting a Configuration Value

When you reach a Value (selectable or not), press the *Sel/Save* button to select it or to perform the corresponding action.

Saving the new Configuration

When you have finished selecting the Values, press the *Exit* button. The display shows `Save Config.`

- To permanently save all the changes you made, press the *Sel/Save* button.
  All your changes become the power-on Values for the entire Configuration.
- To temporarily save the changes made for the current Macro only, press the *Exit* button.
  The changes made for the current Macro only become its current Values. (Column `CURRENT VALUES` of the Configuration Sheet).

Example Configuring

The following is an example Configuration procedure, in which we will alter the Factory settings: the font is changed from Draft to Orator and the horizontal pitch is changed from 10 cpi to 17.1 cpi in DEC protocol for Macro 2.

1. Press the Set-Up button to put the printer in Set-Up mode.
   `MACROS` is displayed.
2. Press the ↓ button.
   The display shows `MACRO 1`.
3. Press the → button.
   The display shows `MACRO 2`.
4. Press the ↓ button.
   The display shows `PROTOCOL`.
5. Press the → button until `FONT` is displayed.
6. Press the ↓ button.
   The display shows `* Draft`.
7. Press the → or ← button, until the display shows `Orator`.
8. Press the *Sel/Save* button to select this font.
   An asterisk is displayed to indicate that the Value has been selected.
9. Press the ↑ button to return to the Options level.
   The display shows `FONT`.
10. Press the → or ← button, until the display shows `DEC MODE`.
11. Press the ↓ button to pass over to the value setting for the DEC defaults, the display shows `HORIZONTAL PITCH`.
12. Press the ↓ button.
    The display shows `10 cpi`.
13. Press the → or ← button, until the display shows `17.1 cpi`.
14. Press the *Sel/Save* button to select the horizontal pitch.
    An asterisk is displayed to indicate that the value has been selected.

15. Press the *Exit* button. The display shows `Save config.`.

17. To permanently save your changes, press the *Sel/Save* button.
    The display shows `Processing...`, indicating that the parameters are copied in the printer memory.

Printing the Printer Configuration

To check the values set in the printer Configuration, proceed as follows:

1. Press the Set-Up button.

2. Press the *Print* button.
   The printer prints the current printer Configuration.

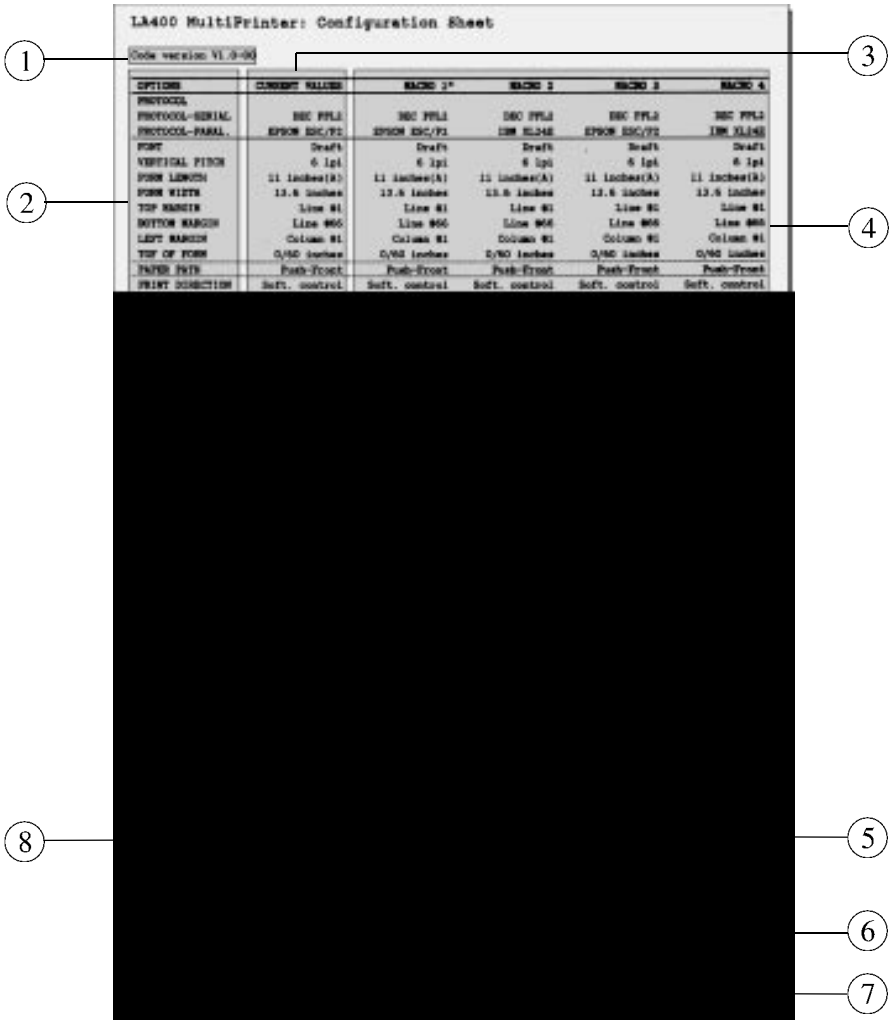
See the figure on the next page

Note: - Values that are not applicable are printed in italic style.

- Depending on specific interdependent settings, `Programmed` may be printed instead of a numeric value.

Tips for Configuring

- First print the Configuration Sheet to see the current settings.
- Once you are familiar with the Arrow button functions, use the Configuration Quick Reference to quickly reach the items you need.



The Configuration Sheet

1. Code version
2. Macro Option List
3. Current Values of the current Macro
4. Macros (the asterisk in the title bar identifies the current Macro)
5. Power-on Values of the `INSTALLATION` Function
6. Power-on Values of the `USER ADJUSTMENTS` Function
7. Power-on Value of the `USER ACCESS` Function
8. Power-on Values of the `INTERFACE` Function

How to Manage your Configuration

The SAVE Function allows you to manage your printer Configuration.

Function	Executable Values
SAVE	Save Config.
	Restore Macro X
	Rest.all Macros
	Recall Factory

You scroll the Values pressing the → or ← button.

Saving a Configuration

When you have finished selecting the Values, press the *Exit* button. The display shows Save Config.

- To permanently save all the changes you made, press the *Sel/Save* button. All your changes become the power-on Values for the entire Configuration. The display shows Processing..., then the basic screen appears.
- To temporarily save the changes made for the current Macro only, press the *Exit* button. The changes made for the current Macro only become its current Values. (Column CURRENT VALUES of the Configuration Sheet).

Restoring a Macro

To overwrite the current Values of the current Macro with the corresponding power-on Values, display Restore Macro X and press the *Sel/Save* button.

The display shows Processing..., then the basic screen appears.

Restoring all Macros

To overwrite the current Values of all the Macros with the corresponding power-on Values, display Rest.all Macros and press the *Sel/Save* button.

The display shows Processing..., then the basic screen appears.

Recalling the Factory Configuration

To overwrite the Power-on Values of the entire Configuration with the corresponding Factory Values, display Recall Factory and press the *Sel/Save* button.

The display shows Processing..., then the basic screen appears. This operation then generates a Macro 1 restore.

Setting the Printer Installation

The installation Values are generally set once when the printer is integrated within its operating environment. The settings concern the printer hardware Configuration and the communication parameters. Use the INSTALLATION Function to alter these parameters.

Note: Factory settings are shown in bold.

LCD Language

The printer display messages are available in five languages: English, German, Spanish, French and Italian. In the INSTALLATION Function select the LANGUAGE Option to set the desired language.

Value	Definition
English	English language.
Deutsch	German language.
Español	Spanish language.
Français	French language.
Italiano	Italian language.

Error Buzzer

The ERROR BUZZER Option defines the buzzer behaviour in Fault state.

Value	Definition
1 beep	The buzzer beeps once.
3 beeps	The buzzer beeps three times.
Continuous beep	The buzzer beeps continuously, until the printer exits the Fault state.
No beep	The buzzer does not sound.

Paper Path at Power-On

The PATH AT POWER-ON Option allows you to decide which path you want to be selected, when the printer is powered-on.

Value	Definition
Last sel. Path	The paper path at power-on is the one that was selected before the printer was powered off.
From Macro	The path at power-on is the one from the current Macro.

Setting the Communication Interface

The communication parameters of your printer are grouped under the INTERFACE Function. These settings must match those of the host with which you want to communicate. It is necessary to know the host settings before selecting values for the printer interface.

Note: Factory settings are shown in bold.

Interface Type

Determines the type of interface to be used.

Value	Definition
Parallel	The parallel interface only is enabled
Serial	The serial interface only is enabled.
Automatic	Both interfaces are enabled. The printer switches automatically to the proper interface type, according to the activated port. If you select this value, adjust the I/F TIME-OUT Option accordingly.

Interface Time-out

The I/F TIME-OUT Option allows you to define the duration after which the interface switches back to the Stand-by state, when the printer stops receiving data.

Value	Definition
2 seconds	Interface time-out of the corresponding duration.
...	
30 seconds	

Input Buffer Size

The INPUT BUFFER Option allows you to set the input buffer size.

Value	Definition
1 K (DLL)	1 KByte input buffer.
8 K (No DLL)	8 KByte input buffer. No Down-Line-Loading possible.
16 K (No DLL)	16 KByte input buffer. No Down-Line-Loading possible.
32 K (No DLL)	32 KByte input buffer. No Down-Line-Loading possible.

Setting the Parallel Interface

Parallel Mode

The PARALLEL MODE Option allows you to determine the type of data exchange between the printer and the host for the parallel interface.

Value	Definition
Bidirectional	The parallel interface uses the IEEE 1284 bidirectional standard mode. Select this Value to take advantage of the Plug and Play feature of Windows 95.
Centro	The parallel interface uses a Centronics monodirectional standard mode.

AUTOFEED Signal

The AUTOFEED SIGNAL Option allows you to determine if the parallel interface ignores the AUTOFEED signal or not.

Value	Definition
Disabled	The parallel interface ignores the AUTOFEED signal.
Enabled	The parallel interface uses the AUTOFEED signal.

SELECT-IN Signal

The SLCT-IN SIGNAL Option allows you to determine if the parallel interface ignores the SELECT-IN signal or not.

Value	Definition
Disabled	The parallel interface ignores the SELECT-IN signal.
Enabled	The parallel interface uses the SELECT-IN signal.

Setting the Serial Interface

Disconnection on Fault

The DISCON. ON FAULT Option defines the DTR line behaviour for any fault condition detected by the printer.

Value	Definition
No discon.	The DTR line does not change.
Yes (DTR drop)	The DTR line is dropped to low signal level.
Yes (DTR pulse)	The DTR line is pulsed to high signal level with a 5 sec pulse.

Word Length

The WORD LENGTH Option allows you to determine the data format.

Value	Definition
8 bit	The data are coded using 8 bit.
7 bit	The data are coded using 7 bit.

Baud Rate

The BAUD RATE Option allows you to set the transmission speed used for the communication between the printer and the host. Ensure that the Value matches your host settings.

Value	Option
600 bps	600 bits per seconds.
1200 bps	1200 bits per seconds.
2400 bps	2400 bits per seconds.
4800 bps	4800 bits per seconds.
9600 bps	9600 bits per seconds.
19200 bps	19200 bits per seconds.
38400 bps	38400 bits per seconds.

Parity Bit

The PARITY BIT Option allows you to set the parity check type.

Value	Definition
Even	The even parity check is used.
Odd	The odd parity check is performed.
None	No parity check is performed.

Buffer Control

The BUFFER CONTROL Option determines the data flow control to the input buffer.

Value	Definition
DTR	The DTR control regulates the data flow to the input buffer using DTR-high/DTR-low voltage signals.
XON/XOFF	The XON/XOFF control codes are used to regulate the data flow.
XON/XOFF + DTR	Both the XON/XOFF and the DTR control codes are used to regulate the data flow.

Robust XON

The ROBUST XON Option allows you to determine if the printer repeatedly sends an XON code, while in Ready state. The setting of this Option is only applicable when the BUFFER CONTROL Option is set to XON/XOFF or XON/XOFF + DTR.

Value	Definition
No	No XON code sent.
Yes	XON code repeatedly sent.

Setting the User Access Authorization

The access to the printer Configuration can be protected in different ways.

The different values of the USER ACCESS Function affect both access to Set-Up mode and use of the operator panel. The following table shows the setting effects.

User Access Value	Set-Up Mode	Operator Panel
All Functions	You can access to all Set-Up items.	You can use all the operator panel buttons.
Macros	You can only access the MACROS and SAVE Functions.	You can use all the operator panel buttons.
Test/Hex-Dump	You can only access the TEST/HEX-DUMP Option.	You can use all the operator panel buttons.
Minimum	No access to the Set-Up items is possible. When pressing the Set-Up button, the display shows Press Park.	You can only use the Park, LF, FF/Load and Pause buttons.

Note: To retrieve the access to SetUp, see Appendix H "Retrieving Access to Configuration".

7

Customizing Macros

How to Customize a Macro

Your Digital LA400 MultiPrinter allows you to use four sets of pre-determined parameters called Macros. You can alter the factory settings of the Macro Options and customize them as explained in this chapter.

Note: - For more information about the use of the Macros, see Chapter 4 "Operating Your Printer".

- In this chapter, Factory settings are shown in bold.

You access the following options using the MACRO Function and the corresponding MACRO X Option in Set-Up mode.

Selecting the Protocol

You have to set the printer protocol for the interface you use to communicate with your host.

You must first select the interface for which you want to select the protocol. The following Sub-options are available for the PROTOCOL Option:

Sub-option	Definition
PROTOCOL-SERIAL	Sets the communication protocol for the serial interface.
PROTOCOL-PARAL.	Sets the communication protocol for the parallel interface.

For each of the interfaces, you can then select one of the following protocols:

Value	Definition
DEC PPL2	Sets the DEC PPL2 protocol to communicate with Digital or ANSI-compatible host software. This is the Factory setting when using the serial protocol.
IBM XL24E	Sets the IBM Proprinter XL24E protocol to communicate with host software. This is the Factory setting for Macro 2 and 4 when selecting the parallel protocol.
EPSON ESC/P2	Sets the EPSON ESC/P2 protocol to communicate with host software. This is the Factory setting for Macro 1 and 3 when selecting the parallel protocol.

Setting the Publishing Style

Font

The FONT Option determines the typeface of the printed characters.

Value	Definition
Draft	Draft font.
HiDraft	High Impact Draft.
Courier	Courier font.
Roman	Roman font.
Sans Serif	Sans Serif font.
Prestige	Prestige font.
Script	Script font.
Orator	Orator font.
OCR-A	OCR-A font.
OCR-B	OCR-B font.

Vertical Pitch

The vertical pitch determines the density with which the lines are printed.

The VERTICAL PITCH Option allows you to select this density according to different units:

– Lines printed per inch (lpi): 2, 3, 4, 6, 8, 10 or 12 lpi

– Line per centimeter (lpcm): 1, 2 or 4 lpcm (lines per centimeter).

Note: Each time you change the value of the VERTICAL PITCH Option:

– The TOP MARGIN Option is set to Line #1

– The BOTTOM MARGIN Option is set to the maximum Value according to the formula:

Bottom margin (Line #X) = Form length (inches x Vertical pitch (lpi)

or

Bottom margin (Line #X) = Form length (number of lines).

Setting the Page Layout

For correct paper feeding, you must tell your printer which paper format you loaded into the printer and which area you want to define for printing.

Form Length

The FORM LENGTH Option allows you to set the physical form length in inches or in number of lines. Even if the logical definition of the form length changes according to interdependent Option settings, the Value of the FORM LENGTH Option is not altered as a result. It is only altered by software command.

– The Factory setting for the FORM LENGTH Option is 11 inches (A) predetermined Value. The other predetermined Values in inches are: 3, 3.5, 4, 5.5, 6, 7, 8, 8.5, A4 (11.6 inches), 12, 14 or 15 inches.

Note: Each time you change the form length using a predetermined Value:

- The TOP MARGIN Option is set to Line #1

- The BOTTOM MARGIN Option is set to the maximum Value, according to the formula: Bottom margin **(Line #X = Form Length (inches) x Vertical pitch (lpi)** (unit conversion is automatic if you define the vertical pitch unit as lpcm).

– The NUMBER OF LINES Sub-option gives you the possibility to define the logical form length as a number of lines. This length comes then from the following formula:
Form length (inches) = Vertical pitch (lpi) x Number of lines
(unit conversion is automatic if you define the vertical pitch unit as lpcm)

Note: - The maximum authorized form length is 21 inches.

- The TOP MARGIN and BOTTOM MARGIN Options do not depend on the VERTICAL PITCH Option when you define the form length using the NUMBER OF LINES Sub-option.

Left Margin

The LEFT MARGIN Option is defined by the number of the columns (numbered from the left paper edge) where the printing actually starts. The values range between Column #1 and Column #272.

Form Width

The FORM WIDTH Option lets you set the correct page width in inches. The available values are 8, 13.2 and 13.6 inches. The Factory setting of the Value is **13.6 inches**.

Note: The current value of the LEFT MARGIN Option is set to Column #1 each time you change the value of the HORIZONTAL PITCH Option. This new setting applies only for the corresponding protocol.

Top Margin

The TOP MARGIN Option lets you set the top margin with the number of the line (numbered from the top paper edge) where the printing actually starts.

The setting of this Option depends on the setting of both the VERTICAL PITCH and the FORM LENGTH Options (see the corresponding related sections in this chapter).
The Values range from Line #1 to the Value corresponding to the BOTTOM MARGIN setting.
Line #1 is the Factory setting of the Value.

Bottom Margin

The BOTTOM MARGIN Option gives you the possibility to set the bottom margin with the number of the line (numbered from the top paper edge) where the printing actually stops for a given page.

The setting of this Option depends on the setting of both the VERTICAL PITCH and the FORM LENGTH Options (see the corresponding related sections in this chapter).
The Values range from the Value for TOP MARGIN to the Value for FORM LENGTH.

Top of Form

The TOP OF FORM Option is used to set the Top of Form position. See the print area definition, in Chapter 5 "Printing". This Option is useful when printing on preprinted forms, where a precise positioning is required. The selectable Values range between 0/60 and 140/60 inches. The Factory setting is **0/60 inch**.

Selecting the Paper Path

You can set the PAPER PATH Option to select the paper path used with a given Macro. Remember that you can also select the paper path you want using the operator panel buttons.

Note: This Option is available only if the PATH AT POWER-ON Option of the INSTALLATION Function is set to From Macro. See Chapter 6 "Configuring Your Printer".

Value	Definition
Push-Front	The paper is loaded using the Push tractor in Front position.
Push-Rear	The paper is loaded using the Push tractor in Rear position.
Manual	Paper is loaded using the cut sheet stand.

Note: These settings are stored in the Macros. See also the PATH AT POWER-ON Option described in Chapter 6.

Setting the Printing Modes

Print Direction

The PRINT DIRECTION Option allows you to define the print direction when a line feed occurs.

Value	Definition
Unidirectional	The printing direction is the same each time. This setting may be necessary due to specific drivers compatibility.
Bidirectional	The print direction changes for each line feed. This setting gives the highest printing speed.
Soft. Control	The print direction depends on the software commands received by the printer.

Note: The Unidirectional and the Bidirectional settings apply to both alphanumeric and graphics printing.

Line Mode

The LINE MODE Option defines printer behaviour when receiving a carriage return or a line feed command in the following ways:

Value	Definition
LF=LF, CR=CR	When receiving a LF code, the printer executes only a line feed. When receiving a CR code, it executes only a carriage return.
LF=LF+CR	When receiving a LF code, the printer executes both a line feed and a carriage return.
CR=LF+CR	When receiving a CR code, the printer executes both a line feed and a carriage return.
LF&CR=LF+CR	When receiving a CR or a LF code, the printer executes both a line feed and a carriage return.

Blank Pages

The BLANK PAGES Option offers you another way to save paper. This Option tells the printer how to behave when receiving a form feed command that would cause a blank page:

Value	Definition
Removed	The printer does not perform form feeds that result in blank pages.
Preserved	The printer may perform form feeds that result in blank pages.

Print Impact

The PRINT IMPACT Option determines the strength of the print head needles impact. You can set this impact to a stronger impact, for example when printing on multipart form to ensure that all the copies you want to print are well printed.

Value	Definition
Soft impact	Sets the normal printing strength.
Strong impact	Strong impact of the print head needles. This setting is useful, when printing on multipart form.

Note: For more information about the proper use of this option, see the section "Adapting to Paper Thickness" in Chapter 5 "Printing".

Print Gap

The distance between the print head and the platen can be adjusted with the `PRINT GAP` Option as follows:

Value	Definition
`Auto. adjust.`	Automatic gap adjustment is performed. The print head adjusts the platen gap automatically according to the paper thickness each time you load paper into the printer or change the paper path.

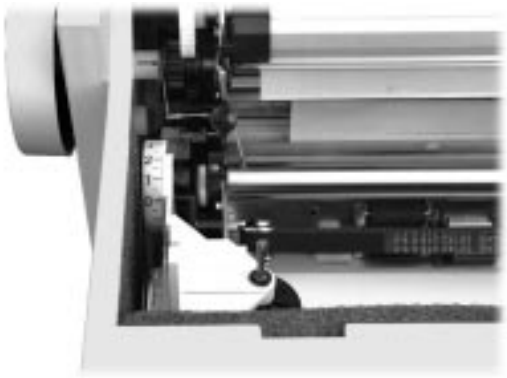
`For 1 part`
`For 2 parts`
`For 3 parts`
`For 4 parts`
`For 5 parts`
`For 6 parts`
	The print gap is set according to the number of parts of your multipart paper.

`Manual adjust.`	The print gap is manually adjusted with the print gap selection knob. See the corresponding procedure below.

Note: For more information about the proper use of this option, see the section "Adapting to Paper Thickness" in Chapter 5 "Printing.

How to Adjust the Print Gap Manually

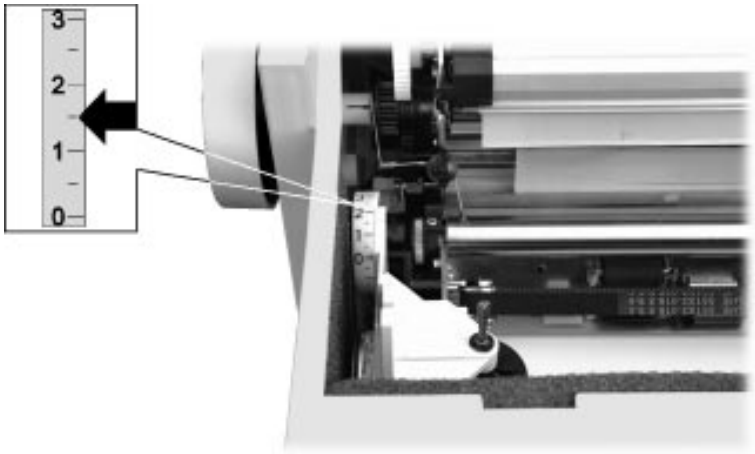
If you select manual adjustment of the print gap, you have to use the print gap selection knob to set the distance between the print head and the platen.



Print Gap Selection Knob

To adjust the print gap manually:

1. Select the `Manual adjust.` Value for the `PRINT GAP` Option.
2. Save your changes and exit the Set-Up mode.
   The display shows `Print gap: Manual/Adjust print gap`.
3. Open the top cover.
   The print head automatically moves to the center, letting you access to the print gap selection knob behind and at the left of the left cartridge support. The print gap is set at the maximum.
4. Turn the print gap selection knob with your index finger to the back of the printer so that the markings appear.
5. Position the selection knob so that the marking, indicating a number of parts, is opposite the black plastic marker at its right.



Positioning the Print Gap Selection Knob

Automatic Gap Offset

When selecting the `Auto adjust.` Value for the `PRINT GAP` Option, adjust the Value of the `AUTO.GAP OFFSET` Option according to your print out quality. Try different settings to get the expected print result.

The `AUTO.GAP OFFSET` Value is Factory set to 0. The Values range between -8 and +8.

Perforation Anti-jam

The `PERFO. ANTI-JAM` Option can be enabled for paper with specially large perforation which can cause paper jams. The use of this Option is necessary only for exceptional cases. For the paper specifications see Chapter 3 "Handling Different Types of Paper".

Value	Definition
`Enabled`	The print head is moved to the extreme right position when feeding paper over the perforation.
`Disabled`	The print head remains in the current position, when feeding the paper.

Setting the Tear/View Mode

The main purposes of the TEAR/VIEW MODE Option are the following:

- to allow you to automatically move the paper perforation to the tear bar (Tear-off position, #5) when a print task is completed.
- to allow you to automatically move the last printed line above the tear bar (Viewing position, #4) when putting the print task on hold (pressing the Pause button).

Depending on the print task definition, the printer state and the buttons you press, there are several ways to obtain the paper positions described above.

To take benefit of the highest automation level, set the TEAR/VIEW MODE Option to one of the Auto.advance Xs Values. The printer behaviour matches the above definition.

See the section "Paper Movements according to Tear/View Mode" for all the cases corresponding to specific combinations of the TEAR/VIEW MODE Option setting, the button sequence and the type of print task. The paper positions that are mentioned in this section are described further in the section "Paper Position Definitions".

Value	Definition
Auto.advance 1s Auto.advance 2s Auto.advance 3s Auto.advance 4s Auto.advance 5s	Setting one of these Values, the paper is automatically moved to the tear-off position after the specified timeout at the end of the print task (including a form feed command). Adjust the timeout according to the estimated time between data flow, in order to avoid inappropriate form feed.
Manual advance	This Value obliges you to use the buttons to move the paper to the desired position. For example, The paper is moved to the Viewing position, when pressing the Pause button.
No tear/reverse	Tear/View mode is disabled and no backwards movements are performed.

Warning: Set the TEAR/VIEW MODE Option to the No tear/reverse Value to print on adhesive labels. This Value disables all backward movements and avoids any paper jams. Backwards movement are automatically inhibited when using the Pull paper path.

Paper Movements According to Tear/View Mode

The following shows the paper positions (identified by their definition number) and the corresponding printer state depending on: the print task, the Tear/View mode setting and the button sequence.

Automatic Advance Setting

	Print Job Completed		Currently Printing
	Without final <FF> Position - State	With final <FF> Position - State	Position - State
	4 - Ready after timeout	5 - Ready after timeout	Busy
1. Pause	4 - Pause	5 - Pause	4 - Pause
2. FF/Load	5 - Pause	6 - Pause	5 - Pause
3. Pause	2, 5 after timeout - Ready	3, 6 after timeout - Ready	2 - Busy
1. Pause	4 - Pause	5 - Pause	4 - Pause
2. Pause	1, 4 after timeout - Ready	2, 5 after timeout - Ready	1 - Busy
1. FF/Load	5- Ready	6 - Ready	
2. Pause	5 - Pause	6 - Pause	
3. Pause	2, 5 after timeout - Ready	3, 6 after timeout - Ready	

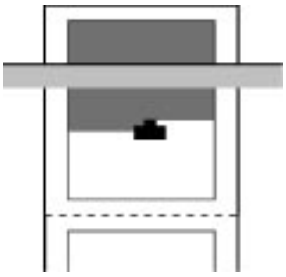
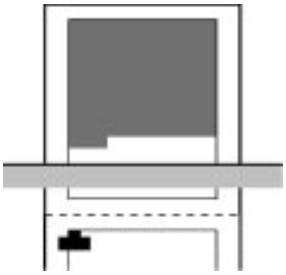
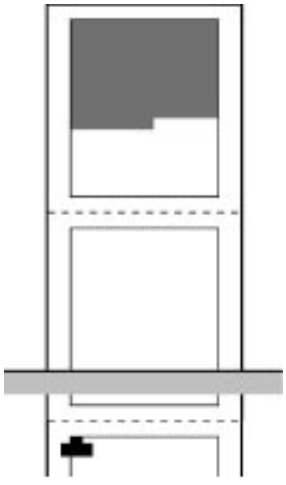
Manual Advance Setting

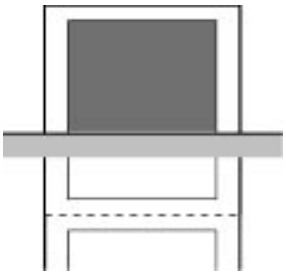
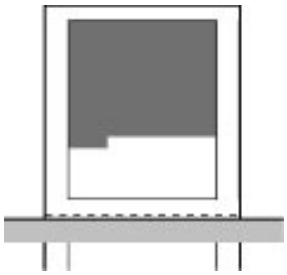
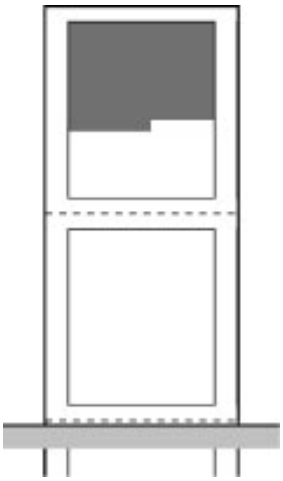
	Print Job Completed		Currently Printing
	Without final <FF> Position - State	With final <FF> Position - State	Position - State
	1 - Ready	2 - Ready	Busy
1. Pause	4 - Pause	5 - Pause	4 - Pause
2. FF/Load	5 - Pause	6 - Pause	5 - Pause
3. Pause	2 - Ready	3 - Ready	2 - Busy
1. Pause	4 - Pause	5 - Pause	4 - Pause
2. Pause	1 - Ready	2 - Ready	1 - Busy
1. FF/Load	2 - Ready	3 - Ready	
2. Pause	5 - Pause	6 - Pause	
3. Pause	2 - Ready	3 - Ready	

No Tear/Reverse Setting

	Print Job Completed		Currently Printing
	Without final <FF> Position - State	With final <FF> Position - State	Position - State
	1 - Ready	2 - Ready	Busy
1. Pause	4 - Pause	2 - Pause	1 - Pause
2. FF/Load	2 - Pause	3 - Pause	2 - Pause
3. Pause	2 - Ready	3 - Ready	2 - Busy
1. Pause	1 - Pause	2 - Pause	1 - Pause
2. Pause	1 - Ready	2 - Ready	1 - Busy
1. FF/Load	2 - Ready	3 - Ready	
2. Pause	2 - Pause	3 - Pause	
3. Pause	2 - Ready	3 - Ready	

Paper Position Definition

Position	Definition
1 	Print head on last printed character while printing or at next line at the end of a job.
2 	Print head on first next Top of Form.
3 	Print head on second next top of form.

Position		Definition
4		Viewing position Last printed line facing the tear bar.
5		Tear-off position Next perforation facing the tear bar.
6		Second perforation facing the tear bar.

Setting the DEC Mode

The DEC MODE Option sets the DEC protocol specific features. This Option comprises the following Sub-options:

Sub-options	Definition
HORIZONTAL PITCH	Sets the horizontal spacing of the printed characters
G0 CHARACTER SET	Selects the used G0 Character Set.
USER PREF. C-SET	Selects the User Preference character set.
PRINTER ID	Selects the printer ID.
WRAP vs TRUNCATE	Determines the printer behaviour when receiving data that exceeds the right margin.
DISCONNECT./EOT	Determines whether a communication line disconnection occurs at the end of data transmission.
INIT. REPORT	Determines if an initialization report is sent to the host or not.
AUTO. ANSWERBACK	Determines if an ANSWERBACK message is sent to the host or not.
ANSWERBACK/ENQ	Determines whether the ANSWERBACK message is sent to the host when receiving an ENQ code.

Horizontal Pitch

The HORIZONTAL PITCH Sub-option sets the horizontal pitch used with the DEC protocol. The values for the HORIZONTAL PITCH Sub-option are the following: 5, 6, 6.6, 8.25, 8.55, 9, **10**, 12, 13.2, 15, 16.5, 17.1, 18, 20 cpi and Proportional Spacing (Prop. Spacing Value).

G0 Character Set

The `G0 CHARACTER SET` Sub-option sets the G0 character set that will be used with the DEC protocol. The following resident character sets are available:

Value	Definition
`US ASCII`	US ASCII
`British`	British
`French`	French
`German`	German
`Norw./Danish`	Norwegian/Danish
`DEC Finnish`	DEC Finnish
`DEC French-Can.`	DEC French-Canadian
`DEC Norw.-Dan.`	DEC Norwegian/Danish
`DEC Swedish`	DEC Swedish
`DEC Dutch`	DEC Dutch
`DEC Swiss`	DEC Swiss
`DEC Portuguese`	DEC Portuguese
`DEC Supplement.`	DEC Supplemental
`DEC Spec.-Graphi.`	DEC Special Graphics
`DEC Technical`	DEC Technical
`DEC 7bit Hebrew`	DEC 7Bit Hebrew
`DEC Turkish`	DEC 7Bit Turkish
`DEC Hebrew Sup.`	DEC Hebrew Supplemental
`DEC Greek Sup.`	DEC Greek Supplemental
`DEC Turk. Sup`	DEC Turkish Supplemental
`ISO Italian`	ISO Italian
`ISO Spanish`	ISO Spanish
`JIS Katakana`	JIS Katakana
`JIS Roman`	JIS Roman
`Legal`	Legal

User Preference Character Set

The USER PREF. C-SET Option sets the user character set for the DEC protocol. The following character sets are available:

Value	Definition
DEC Supplement	DEC Supplemental
DEC Spec.Graph.	DEC Special Graphics
DEC Technical	DEC Technical
DEC 7bitHebrew	DEC 7Bit Hebrew
DEC 7bit Turkish	DEC 7BIT Turkish
DEC Hebrew Sup.	DEC Hebrew Supplemental
DEC Turkish Sup.	DEC Turkish Supplemental
DEC Greek Suppl	DEC Greek Supplemental
ISO Latin-1	ISO Latin-1
ISO Latin-2	ISO Latin-2
ISO Latin-5	ISO Latin-5
ISO Lat.-Hebrew	ISO Latin-Hebrew
ISO Lat.-Greek	ISO Latin-Greek
ISO Lat.-Cyril.	ISO Latin-Cyrillic
JIS Katakana	JIS Katakana

Printer ID

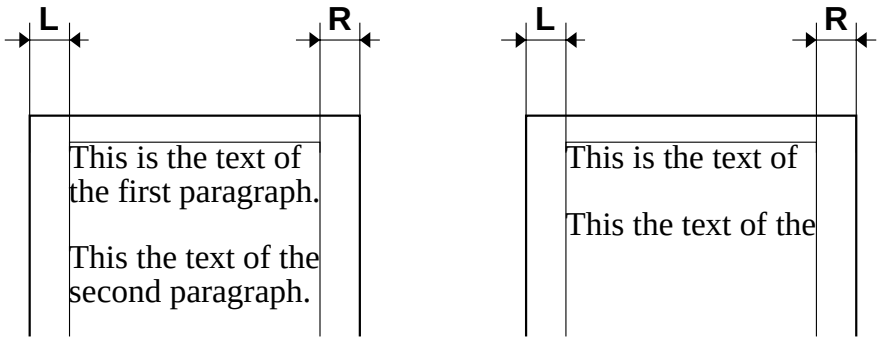
The PRINTER ID Sub-option defines the DEC printer ID used by the printer when responding to DA commands from your host computer or application software.

Value	Definition
PPL2	Allows the printer to respond as a DEC Conformance Level 2 device.
LA120ID	The printer responds as a LA120 printer.
LA210ID	The printer responds as a LA210 printer.

Wrap or Truncate

The WRAP vs TRUNCATE Option determines the printer behaviour when receiving text that exceeds the right margin.

Value	Definition
Wrap	Text beyond the right margin moves to the left margin of the next line. See the following figure.
Truncate	The printer ignores any character beyond the right margin. The exceeding text is lost. See the following figure.



Wrap Selection / Truncate Selection

Disconnection on EOT

The DISCONNECT./EOT Sub-option determines whether the communication disconnect occurs at the end of the transmission.

Value	Definition
Enabled	DTR is dropped low on receipt of the EOT.
Disabled	DTR remains high on receipt of the EOT.

Initial Report

The `INIT. REPORT` Option determines whether the printer sends an initial report to the host or not.

Value	Definition
`Enabled`	The Initial Report is sent to the host.
`Disabled`	No Initial Report is sent to the host.

Automatic ANSWERBACK

The `AUTO. ANSWERBACK` Option determines whether the printer sends an ANSWERBACK message to the printer during initialization or not.

Value	Definition
`Enabled`	An ANSWERBACK message is sent during initialization.
`Disabled`	No ANSWERBACK message is sent during initialization.

ANSWERBACK on ENQ

The `ANSWERBACK/ENQ` Option determines whether the ANSWERBACK message is sent to the host when the printer receives an ENQ code.

Value	Definition
`Enabled`	The ANSWERBACK message is sent to the host when the printer receives an ENQ code.
`Disabled`	No ANSWERBACK message is sent to the host when the printer receives an ENQ code.

Configuring the IBM Mode

The IBM MODE Option sets the IBM protocol specific features and comprises the following Sub-options:

Sub-options	Definition
HORIZONTAL PITCH	Sets the horizontal spacing of the printed characters.
IBM C-SET (1/2)	Selects whether the IBM Character Set 1 or 2 is used.
CODE PAGE	Selects the Code Page character sets.
IBM DBL. HEIGHT	Selects the double height printing.
IBM AGM	Selects the IBM Alternate Graphics Mode.
PITCH/COMPRESS	Determines the character pitch when receiving the COMPRESS command.
SLASHED ZERO	Determines whether the zero character is printed with or without a slash.

Horizontal Pitch

The HORIZONTAL PITCH Sub-option sets the horizontal pitch used with the IBM protocol. The values are **10**, 12, 17.1, 20 cpi and Proportional Spacing (Prop.Spacing).

IBM Character Set

The IBM C-SET (1/2) Sub-option identifies which character set is to use.

Value	Definition
IBM SET 1	Printer uses characters and symbols commonly used in English.
IBM SET 2	Printer uses characters and symbols commonly used in non-English languages.

Code Page

The `CODE PAGE` Sub-option identifies which Code Page is to use.

Value	Definition
`Code Page 210`	Greek
`Code Page 220`	Spain
`CP 437 GREEK`	Greek
`Code Page 437`	USA
`Code Page 850`	Multilingual
`Code Page 852`	Eastern Europe
`Code Page 853`	Turkish
`Code Page 855`	Cyrillic
`Code Page 857`	Turkish
`Code Page 860`	Portugal
`Code Page 861`	Icelandic
`Code Page 862`	Hebrew
`Code Page 863`	Canada/France
`Code Page 864`	Arabic
`Code Page 865`	Denmark-Norway
`Code Page 866`	Russian
`Code Page 869`	Greek
`Abicomp`	Brazilian-Portuguese
`Brazilian ASCII`	Brazilian
`Mazowian`	Polish
`Code MJK`	CSFR
`Bulgarian`	Bulgarian
`ISO 8859-7`	Latin Greek
`ISO Latin IT`	Turkish
`D-Hebrew`	David Hebrew
`New Hebrew`	Modern Hebrew

IBM Double Height

The IBM DBL. HEIGHT Sub-option determines whether the IBM Double Height mode should be used (Enabled) or not (**Disabled**).

IBM AGM

The IBM AGM Sub-option determines whether the Alternate Graphics Mode should be used (Enabled) or not (**Disabled**).

Horizontal Pitch on COMPRESS

The PITCH/COMPRESS Sub-option selects the character density when receiving the COMPRESS command.

Value	Definition
17.1 cpi	When the COMPRESS command is received, printing is performed at 17.1 cpi.
20 cpi	When the COMPRESS command is received, printing is performed at 20 cpi.

Slashed Zero

The SLASHED ZERO Sub-option selects whether the zero character is printed with or without a slash.

Value	Definition
Yes	Zero character is printed with a slash.
No	Zero character is printed without a slash.

Setting the EPSON Mode

The EPSON MODE Option sets the EPSON protocol specific features and comprises the following Sub-options.

Sub-option	Definition
HORIZONTAL PITCH	Sets the horizontal spacing of the printed characters.
NATIONAL C-SET	Selects the National character set to be used.
CODE PAGE	Selects the Code Page character sets.
EPSON C-SET	Applies an italic style or not to the character sets.
SLASHED ZERO	Determines whether the zero character is printed with/without a slash.

Horizontal Pitch

The `HORIZONTAL PITCH` Option sets the horizontal pitch used with the EPSON protocol. The values are **10**, 12, 17.1, 20 cpi and Proportional Spacing (`Prop. Spacing`).

National Character-Set

The `NATIONAL C-SET` Sub-option identifies which national character set is to use.

Value	Definition
USA	USA
`France`	France
`Germany`	Germany
`United Kingdom`	United Kingdom
`Denmark 1`	Denmark 1
`Denmark 2`	Denmark 2
`Sweden`	Sweden
`Italy`	Italy
`Japan`	Japan
`Spain 1`	Spain 1
`Spain 2`	Spain 2
`Norway`	Norway
`Latin America`	Latin America
`Korea`	Korea
`Turkey`	Turkey
`Legal`	Legal
`Old Hebrew`	Old Hebrew
`New Hebrew`	New Hebrew
`D-Hebrew`	David Hebrew

Code Page

The `CODE PAGE` Sub-option identifies which Code Page is to use.

Value	Definition
`Code Page 210`	Greek
`Code Page 220`	Spain
`CP 437 Greek`	Greek
`Code Page 437`	USA
`Code Page 850`	Multilingual
`Code Page 852`	Eastern Europe
`Code Page 853`	Turkish
`Code Page 855`	Cyrillic
`Code Page 857`	Turkish
`Code Page 860`	Portugal
`Code Page 861`	Icelandic
`Code Page 862`	Hebrew
`Code Page 863`	Canada/France
`Code Page 864`	Arabic
`Code Page 865`	Denmark-Norway
`Code Page 866`	Russian
`Code Page 869`	Greek
`Abicomp`	Brazilian-Portuguese
`Brazilian ASCII`	Brazilian
`Mazowian`	Polish
`Code MJK`	CSFR
`Bulgarian`	Bulgarian
`ISO 8859-7`	Latin Greek
`ISO Latin 1T`	ISO Latin-1 Turkish
`D-Hebrew`	David Hebrew
`New Hebrew`	Modern Hebrew

EPSON Character Set

The EPSON C-SET Sub-option defines the style which is applied to the character set:

Value	Definition
Graphic	The character sets are not altered.
Italic	The Italic style is applied to the character set.

Slashed Zero

The SLASHED ZERO Sub-option selects whether the zero character is printed with or without a slash.

Value	Definition
Yes	The zero character is printed with a slash.
No	The zero character is printed without a slash.

8

Testing Your Printer

The correct functioning of your printer can be checked using the TEST/HEX-DUMP Function of Set-Up mode.

Note: To perform these tests paper must be already loaded in the printer. See Chapter 3 "Handling Continuous Forms".

You access to the TEST/HEX-DUMP Function as follows:

1. Press the Set-Up button.
   MACROS is displayed.
2. Press the → button three times.
   TEST/HEX-DUMP is displayed.
3. Press the ↓ button.
4. Pressing the → or the ← button you can choose, which test you want to perform:

Sub-option	Definition
Self-Test	The printer prints the self test.
HEX-DUMP MODE	This Option allows you to enable or disable the Hex-Dump mode.
SetUp Card init.	This Value runs the initialization of the optional Set-Up card, if it is inserted within the related slot.

Note: The Set-Up Card is described in detail in Appendix A.

Printing the Self-Test

The Self-Test printout consists of a header and an ASCII swirl pattern sequence for each resident font (at 10, 12 and 15 cpi for each font).

Caution: *The Self-Test checks also the correct print head movement along the whole carriage bar. For this reason the Self-Test should always be performed with 136 columns wide paper to avoid damaging the platen.*

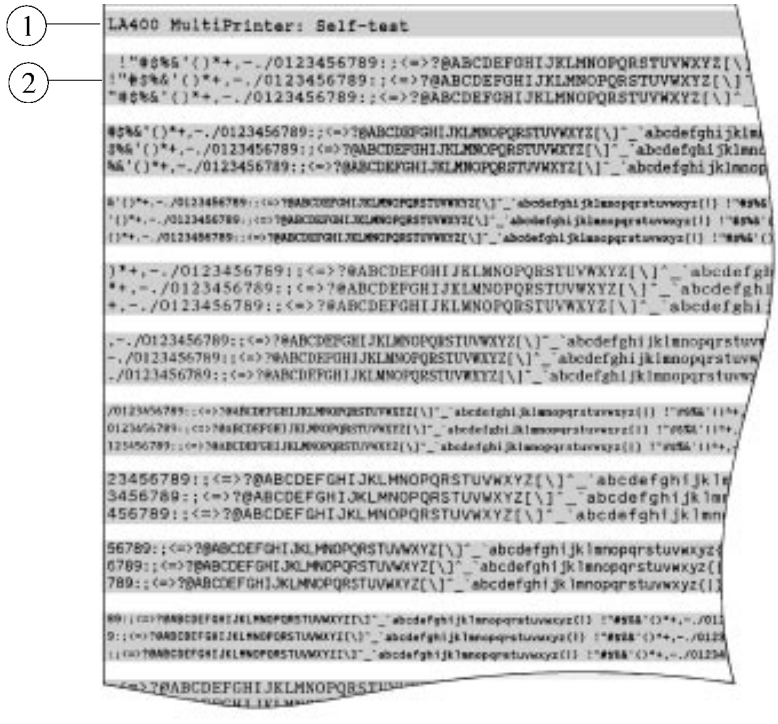
- The Self-Test printout starts as soon as you press the *Sel/Save* button.
- To stop the Self-Test, press the *Exit* button.

See the Self-Test printout on the next page.

The Self-Test is structured as follows:

(1) Test header

(2) Swirl pattern sequence



Self Test Printout

Hex Dump Printing

The Hex Dump mode lets you print the received data as hexadecimal codes.

To enable Hex-Dump mode:

1. Select the `HEX-DUMP` Mode Option of the `TEST/HEX-DUMP` Function.
2. Select the `Enable Hex-D.` Value.
   The printer switches directly to the Hex-Dump mode. The basic screen shows `Hex` instead of the current protocol.

To disable Hex-Dump mode:

1. Press the Set-Up button.
   The display shows `Disable Hex-D`.
2. Press the *Sel/Save* button.
   The printer switches back to Normal mode. The basic screen is displayed.

Initializing the Set-Up Card

The `SetUp Card init.` Value lets you initialize the optional Set-Up card (PCMCIA standard), on which you can save the whole Configuration. This card can then be used to copy the Configuration from a master printer to other printers. See Appendix A "Supplies and Options" for more details.

9

Adjusting Your Printer

This printer gives you the possibility to finely adjust bidirectional printing, the position of the first printable line for printing and the perforation position for tearing-off.

Note: Ensure that paper is loaded, before starting the tests.

How to Adjust your Printer

Use the USER ADJUSTMENTS Function to perform the adjustments mentioned above. Proceed as follows:

1. Press the Set-Up button.
   The display shows MACROS.
2. Press the → or ← button until the display shows USER ADJUSTMENTS.
3. Press the ↓ button. The display shows BIDI.ALIGNMENT.
4. Press the → or the ← button to scroll the Options of the USER ADJUSTMENTS Function.

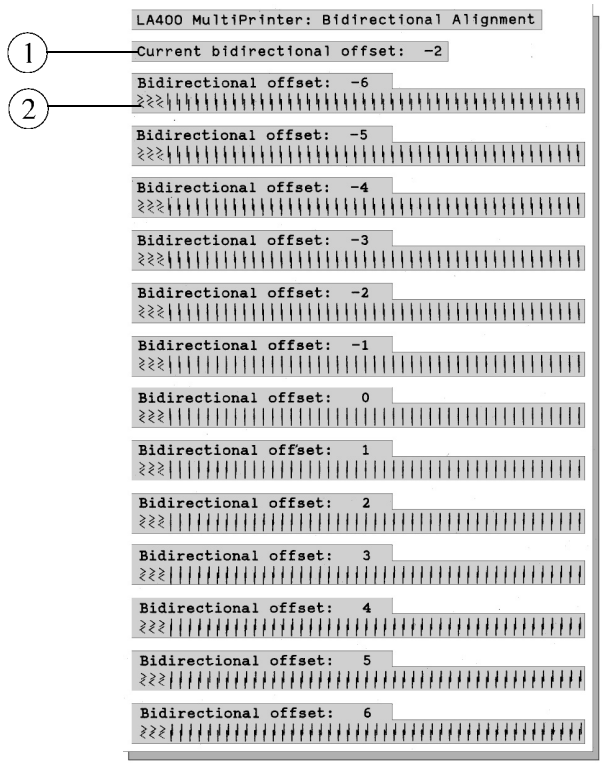
Options	Definition
BIDI.ALIGNMENT	Adjusts the bidirectional printing.
LINE #1 FRONT	Adjust the position of the first printable line for the Push-Front paper path.
LINE #1 REAR	Adjust the position of the first printable line for the Push-Rear paper path.
TEAR-PERFO ALIGN	Adjusts the position of the paper perforation with regard to the tear bar.

Note: See Chapter 6 "Configuring Your Printer" for details on how to navigate in Set-Up mode.

Adjusting the Bidirectional Alignment

To perform bidirectional alignment:

1. Display the current value of the `BIDI. ALIGNMENT` Option by pressing the ↓ button.
2. Press the *Sel/Save* button.
   The Bidirectional Alignment table is printed.



Bidirectional Adjustment Table

The current bidirectional offset Value ① is printed under the header. For each possible Value, two lines of pipe characters ② are printed.

3. Select the desired value.
4. Exit Set-Up mode.

Note: See Chapter 6 "Configuring Your Printer" for details on how to navigate in Set-Up mode.

Adjusting the Position of the First Printable Line

The positioning of the continuous form fed with the Push tractor unit in Front Position or with the Push tractor unit in Rear position can be finely adjusted with the `LINE #1-FRONT` or the `LINE # 1-REAR` respectively.

To adjust these values, insert paper on the paper path for which you want to change the position of the first printable line and proceed as follows:

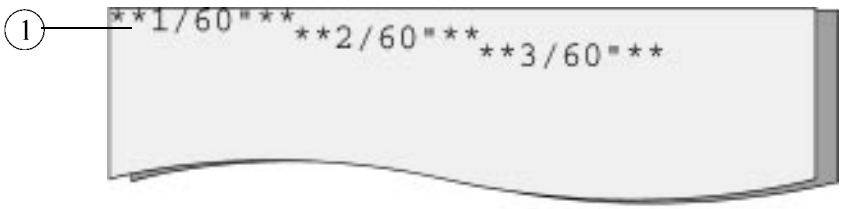
1. Enter the `USER ADJUSTMENTS` Function as described before and select the `LINE #1-FRONT` or `LINE # 1-REAR` Option according to the tractor position. The display shows the current value ath the actual corresponding position.

2. Display the desired Value and press the *Sel/Save* button. The printer parks the paper, loads it again and prints the current Value ① at the actual corresponding position. The paper is then moved to the viewing position. For example, for the value 1/60 inches, the printer prints ** 1/60"**. This allows you to check the current position.

Note: See Chapter 6 "Configuring Your Printer" for details on how to navigate in Set-Up mode.

3. If the current Value is not acceptable, choose another value and press the Sel/Save button. The same printing procedure is peformed again.

4. Once youhave selected the proper Value, press the Exit button to save modification. The display reads Save Config.



First Printable Line Adjustment

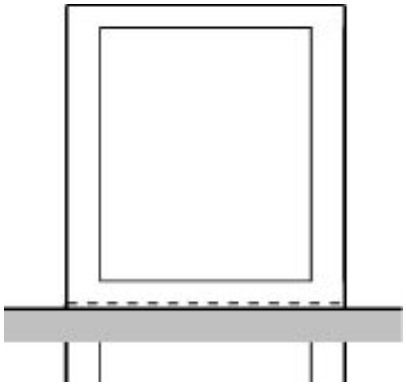
5. Press Sel/Save button to permanently save your modification.

Adjusting the Tear-off Position

You can perform a fine adjustment of the Tear-off position to facilitate paper tearing.

1. Enter the `USER ADJUSTMENTS` Function as described before and select the `TEAR-PERFO ALIGN.` Option.

2. Press the 🡻 button.
   The paper is parked, then loaded to the current tear-off position.
   The current Value is displayed.



Tear-off Position

3. Press the 🡺 or 🡸 button to adjust the Tear-off position.
   The paper moves according to the displayed Value.

4. When the paper perforation is positioned according to your needs, press the *Exit* button.
   Your modification is saved and the basic screen is displayed.

Note: See Chapter 6 "Configuring Your Printer" for details on how to navigate in Set-Up mode.

10

Maintenance

Cleaning The Printer

Caution: *Make sure the printer has been turned off for at least 15 minutes before starting any cleaning operations because the print head may be hot.*

Periodic cleaning will help keep your printer in top condition so that it will always provide optimal performance.

Cleaning and Vacuuming the Printer

When Cleaning the Printer

The printer should be cleaned periodically, to maintain it always in its best condition. If the printer faults such as paper jam or other mechanical malfunctions become more often, it is useful to vacuum the parts of the printer where dust and paper particles can be the cause of the printer malfunction.

How to Clean the Printer

- Use a neutral detergent solution or water on a soft cloth to clean dirt and grease from the casing of the printer.
- Do not use an abrasive cloth, alcohol, paint thinner or similar agents because they may cause discoloration and scratching.
- Be especially careful not to damage the electronic and mechanical components.

Replacing The Ribbon Cartridge

Caution: *Make sure the printer has been turned off for at least 15 minutes before replacing the ribbon cartridge, because the print head may be hot.*

When Replacing the Ribbon Cartridge

When the print quality starts to become poor, the ribbon cartridge must be changed.

The ribbon cartridge life is 15 million characters for the black ribbon and 2 million characters for each band of the color ribbon.

How to Replace the Ribbon Cartridge

To remove the ribbon cartridge follow the steps described in the *Setting Up Your Printer* section in reverse order and install a new cartridge as described.

Transporting the Printer

When you need to transport your printer, pack it into its original packaging to avoid damage. Follow the unpacking instructions in Step 1 of the *Setting Up Your Printer* section in reverse order.

Packing the Printer

Note: Do not forget to install the shipment locks.

11

Troubleshooting

This section describes the problems which may occur when using the printer and suggests possible solutions.

You may not need the following since the Digital LA400 MultiPrinter provides on-line help on its display.

In most cases, the display shows rolling messages when an error occurs. The first part of the message identifies the error, the second part suggests a solution.

Installation Problems and Solutions

Symptoms	Possible Cause	Action/Resolution
- No indicator lit. - Power switch in I (on) position.	Power cable not properly connected.	Check the connection of the power cable on both sides.
	Power cable damaged.	Check the power cable itself.
	Printer failure.	Call Service.
- Printer not printing. - Ready indicator lit.	Incorrect setting of the printer.	1. Perform a self-test. 2. If the self-test is OK, see the other causes. If the self-test is not OK, power the printer off and on again. 3. Perform another self-test. 4. If the self-test is not OK, call Service.
	Interface cable is not properly connected.	Check the connection of the interface cable on both sides.
	Selection of the protocol is not correct.	Check `PROTOCOL` Option in the Set-Up. See "Setting the Communication Interface" in Chapter 6.
	Printer communication settings are not appropriate to host settings.	Check the `INTERFACE` Option settings in Set-Up. See "Setting the Communication Interface" in Chapter 6.

Printing Problems and Solutions

Symptoms	Possible Cause	Action/Resolution
- Printer not printing. - Print head carriage moves.	Ribbon cartridge is not installed.	Install the ribbon cartridge. See Step 4 in the *Setting Up Your Printer* section
	Ribbon is not properly installed.	Reinstall or readjust the ribbon cartridge properly. See Step 4 in the *Setting Up Your Printer* section.
	Print head is not close enough to the paper.	Check the PRINT GAP Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
		If the PRINT GAP Option is set to Auto. adjust., check the AUTO. GAP OFFSET Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
Poor print quality.	Paper type is not correct.	Use paper conforming to the paper specifications. See "Paper Specifications" in Appendix B.
	Ribbon cartridge type is not correct.	Use a Digital ribbon cartridge. See "Supplies and Options Order Numbers" in Appendix A.
	Ribbon is not properly installed.	Reinstall or readjust the ribbon cartridge properly. See Step 4 in the *Setting Up Your Printer* section.
	Ribbon is worn or defective.	Replace the ribbon cartridge. See "Replacing the Ribbon Cartridge" in Chapter 10.
	Ribbon is jammed.	Turn the ribbon feed knob to release the ribbon. If the ribbon feed is stuck, replace the ribbon cartridge. See "Replacing the Ribbon Cartridge" in Chapter 10.
	Print head is not properly set (print head is too close or too far).	Check the PRINT GAP Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
		If the PRINT GAP Option is set to Auto. adjust., check the AUTO. GAP OFFSET Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
	Print head may be worn.	1. Perform a self-test. 2. If the self-test is OK, see the other causes. If the self-test is not OK, call Service.

Symptoms	Possible Cause	Action/Resolution
Dark or smudged printing	Print head is too close to the paper.	Check the PRINT GAP Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
		If the PRINT GAP Option is set to Auto. adjust., check the AUTO. GAP OFFSET Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
Blank spaces or missing dots within characters	Print head may be worn	1. Perform a self-test. 2. If the self-test is OK, see the other causes. If the self-test is not OK, call Service.
Print overlap.	Paper Path is obstructed.	1. Clear Paper Path. 2. Press Pause to resume printing.
	Vertical pitch setting is not correct.	Check the VERTICAL PITCH Option setting in Set-Up. See "Setting the Publishing Style" in Chapter 7.
Garbled characters.	Printer communication settings are not appropriate for host settings.	Check the INTERFACE Option settings in Set-Up. See "Setting the Communication Interface" in Chapter 6.
Poor alignment of the vertical lines.	Bidirectional alignment setting is not correct.	1. Perform the BIDI. ALIGNMENT procedure of the USER ADJUSTMENTS Function. 2. Check the result. 3. If the result is not correct, select the Unidirectional value of the PRINT DIRECTION Option.
- First line position is not precisely at the correct position. - Top of Form is set to zero. - Top Margin is set to line #1.	Line #1 setting is not correct.	1. Perform the LINE #1 - FRONT or LINE #1 - REAR procedure of the USER ADJUSTMENTS Function. 2. Check the result. 3. If the result is not correct, call Service.
Printing does not start at the right vertical position.	Top of Form or Top Margin settings are not correct.	Check the settings of the TOP OF FORM or TOP MARGIN Options in the Set-Up. See "Setting the Printing Modes" in Chapter 7.
Double spaced lines instead of single spaced.	Software setting is not correct.	Check line spacing in your software.
	Line mode setting is not correct.	Select the LF=LF, CR=CR value for the LINE MODE Option in the Set-Up. See "Setting the Printing Modes" in Chapter 7.

Symptoms	Possible Cause	Action/Resolution
Overprint on the same lines.	Line mode setting is not correct.	Select the CR=LF+CR value for the LINE MODE Option in the Set-Up. See "Setting the Printing Modes" in Chapter 7.
Next printed line starts where the previous line ended instead of at left margin.	Line mode setting is not correct.	Select the LF=LF+CR value for the LINE MODE Option in the Set-Up. See "Setting the Printing Modes" in Chapter 7.
Overprint on the same line while next printed line starts where the previous line ended instead of at left margin.	Line mode setting is not correct.	Select the LF&CR=LF+CR value for the LINE MODE Option in the Set-Up. See "Setting the Printing Modes" in Chapter 7.
- Printer not printing. - Message: Data lost Check interface	Interface cable not properly connected.	Check the connection of the interface cable on both sides.
	Selection of the protocol is not correct.	Check the PROTOCOL Option setting in Set-Up. See "Selecting the Protocol" in Chapter 7.
	Printer communication settings are not appropriate to host settings.	Check the INTERFACE Option setting in Set-Up. See "Selecting the Protocol" in Chapter 7.
- Printer not printing. - Message: Comm. failure Check line	Buffer control settings are not appropriate.	Check the BUFFER CONTROL Option setting in Set-Up. See "Setting the Communication Interface" in Chapter 6.
	Line failure.	Check the interface cable type.
		Check the physical connection and the interface itself.
- Printer not printing. - Message: Carriage error Check its moving	Print head carriage path is obstructed.	1. Clear the print head carriage path. 2. Press Pause
	Ribbon blocked in front of the print head.	Reinstall the ribbon cartridge.
- Printer not printing. - Message: Ribbon blocked Check its moving	Ribbon blocked.	1. Check that the ribbon cartridge is correctly installed. 2. Turn the ribbon feed knob to make sure the ribbon is not jammed. 3. Press the Pause button.

Paper Handling Problems and Solutions

Symptoms	Possible Cause	Action/Resolution

- Paper jam
- Possible messages:
`Push-Front jam`
`Check paper`
or
`Push-Rear jam`
`Check paper`
	Paper path is obstructed.	1. Clear the Paper Path.
		2. Press Pause to resume printing.

	Pinfeed holes of continuous form are not placed properly on the tractors.	1. Clear paper jam. 2. Reinstall the paper
	Continuous form is too taut or has too much slack.	1. Clear paper jam. 2. Reinstall the paper
	Paper supports of the tractor unit are not positioned evenly across the paper width.	1. Clear paper jam. 2. Reinstall the paper
	Print head is too close to the paper.	Check the `PRINT GAP` Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
		If the `PRINT GAP` Option is set to `Auto. adjust.`, check the `AUTO. GAP OFFSET` Option setting in Set-Up. See "Setting the Printing Modes" in Chapter 7.
The selected paper feeding device does not load the paper.	Paper feeding device is not properly mounted.	1. Power-off the printer. 2. Remount the paper feeding device. For the Push Tractor in Front position, ensure that the paper separator is properly retracted.
	Paper feeding device failure.	Call Service.

Printer Failure

Symptoms	Possible Cause	Action/Resolution

- Printer failure.
- Message:
`Printer failure`
`Call Service.`
	Electronic or mechanical internal failure.	Call Service.

Hex-Dump Mode

If the printer prints wrong characters, you can select the Hex-Dump Mode in the printer Test/Hex-Dump menu in order to analyze both printing and non-printing characters arriving on the printer.

In Hex-Dump Mode the printer prints all characters in their hexadecimal code.

See Chapter 8, "Testing Your Printer" on details for the Hex-Dump Mode setting.

A

Supplies and Options

The following supplies and options are available for your Digital LA400 MultiPrinter.

Note: See the corresponding part numbers at the end of this chapter.

Supplies

Supplies	Description
Black ribbon cartridge	15 million characters life
Color ribbon cartridge	2 million characters life for each color band

Options

Push Tractor Unit

An additional Push tractor unit can be installed on your printer, giving you the possibility to handle two continuous forms on your printer. The installation and use is the same as for the standard Push tractor unit.

Note: See the section "Quickly Switching between two Paper Types" in Chapter 5 "Printing".

Pull Tractor Unit

What is the Pull Tractor Unit for ?

The Pull tractor unit is used when loading paper which cannot be loaded with the Push tractor for example because of its weight. The Pull tractor unit used together with the Push tractor unit allows the feeding of very heavy paper.

- When you use the Pull tractor unit alone, you define the Pull paper path.
- When you combine the Pull tractor unit with the Push tractor unit in Front position, you define the Push+Pull paper path.

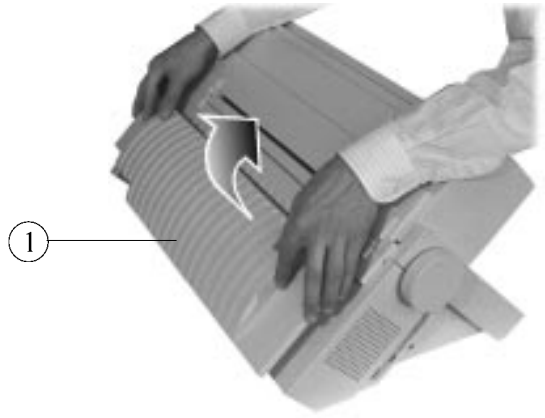
Hints on Selecting the Proper Paper Path

Paper Path	Paper type	Document Type	Advantages	Disadvantages
Pull	■ High thickness ■ Great choice: - Simple part - Multiparts with chemical or carbon paper ■ Labels with the support	■ Program listings ■ Adhesive labels	■ Straight paper routing	■ Specific routing, needs the optional Pull tractor ■ Not possible to use other paper paths ■ No reverse paper movement
Push+ Pull	■ Wide thickness ■ Great choice: - Simple part - Multiparts with chemical or carbon paper	■ Pre-Printed forms (with a large number of copies) ■ Program listings ■ Adhesive labels with `TEAR/VIEW MODE` set to `No tear/reverse`	■ Allows printing on paper which cannot be fed with the Push Front path ■ Paper driving reliability	■ Specific routing, needs the optional Pull tractor ■ First part of the paper cannot be printed. This paper path may be incompatible with printing on preprinted forms. ■ Not possible to use other paper paths.

Note: Paper with a weight > 100 g/m^2 should be operationally tested prior to use. Although the printer is perfectly able to handle paper of this weight, some of these heavy papers may have special perforations, which could cause paper jams. See also "Perforation Anti-Jam" in Chapter 7.

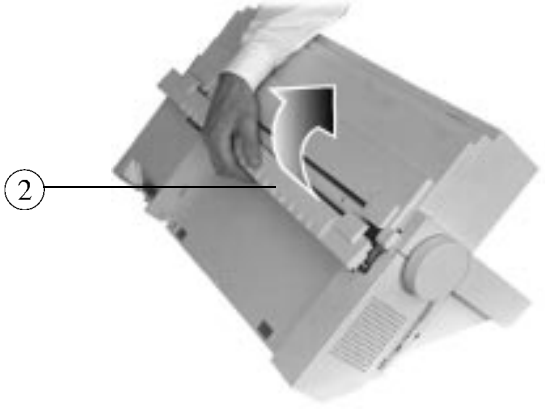
Mounting the Pull Tractor Unit

1. Power the printer off.
2. Remove the large rear cover ①.



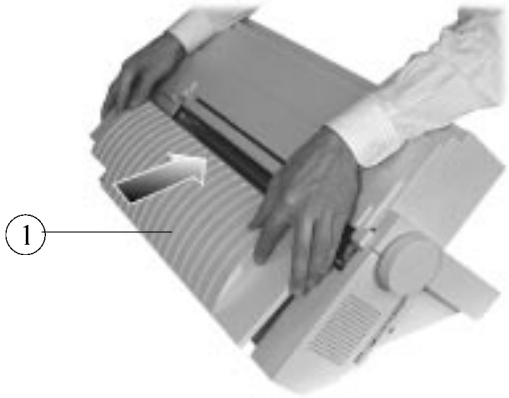
Removing the Large Rear Cover

3. Remove the rear slot cover ②.



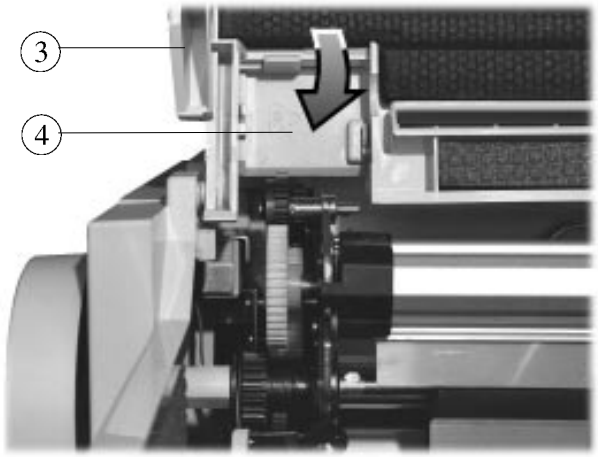
Removing the Rear Slot Cover

4. Reposition the large rear cover ①.



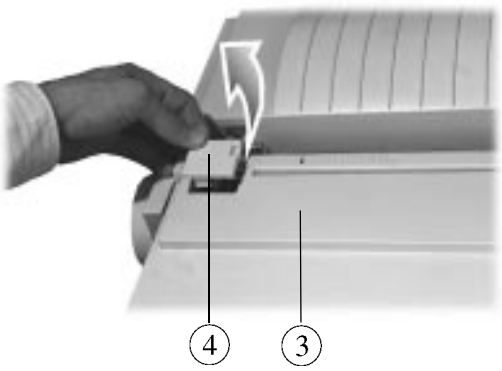
Repositioning the Large Rear Cover

5. Open the top cover ③ and unhook the Pull tractor mechanism covers ④ on the left and the right side.

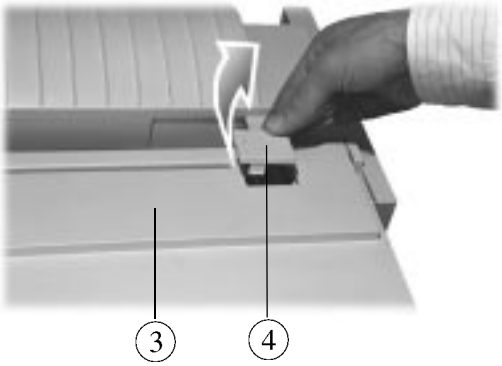


Unhooking the Pull Tractor Pins Covers

6. Close the top cover ③ and remove the Pull tractor mechanism covers ④ on the left and the right side.

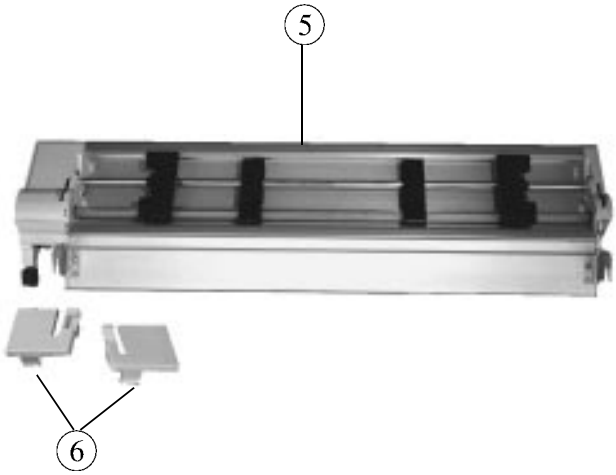


Removing the Left Pull Tractor Mechanism Cover



Removing the Right Pull Tractor Mechanism Cover

7. Remove the Pull tractor unit ⑤ and the two cut-out Pull tractor pins covers ⑥ from the plastic packet.



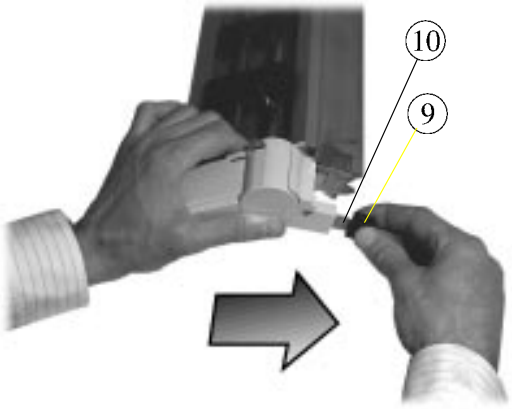
The Pull Tractor Unit and its two Cut-out Mechanism Covers

8. Hook the left cut-out Pull tractor pins cover ⑦ with the cut-out towards the center of the printer on the two lateral plastic pins and gently push it down until it clicks in place.Repeat the same operation for the right cut-out Pull tractor pins cover ⑧.

Inserting the Left Cut-out Pull Tractor Pins Cover

Inserting the Right Cut-out Pull Tractor Pins Cover

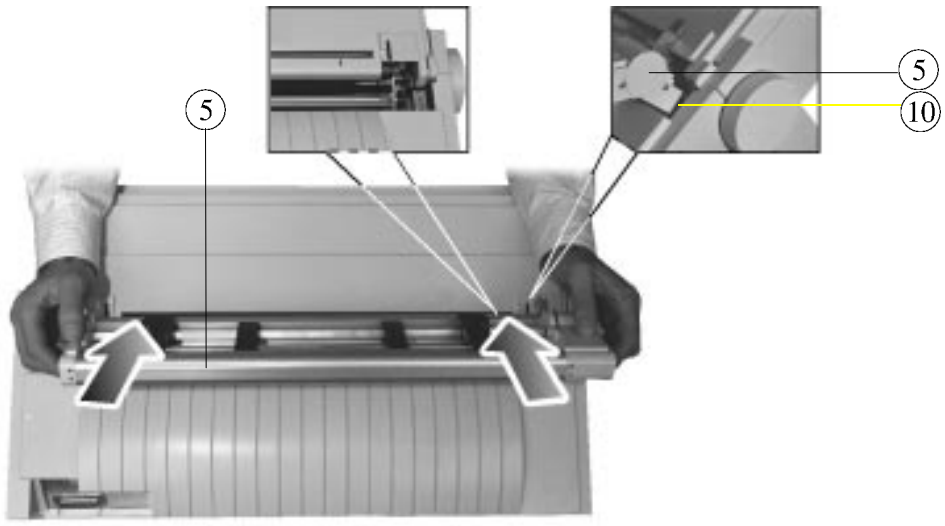
9. Remove the black plastic protection ⑨ from the electrical connector ⑩.



Removing the Black Plastic Protection

10. Present the Pull tractor unit ⑤ with the electric connector ⑩ on the left and mount it on the printer pressing it down until it clicks.

Note: Let the Push tractor unit in front position to facilitate paper loading.



Installing the Pull Tractor Unit

Loading Continuous Forms on the Pull Tractor Unit

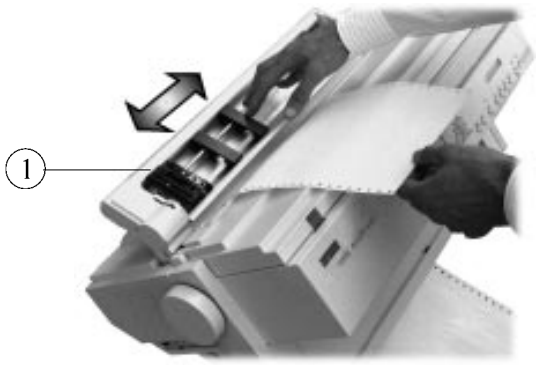
Note: Before loading thick paper into the printer, make sure that the print gap is set correctly. See Chapter 7 "Customizing Macros".

To load continuous form onto the Pull tractor unit:

1. Power the printer on with both the Push and Pull tractor units mounted.
2. Install the paper on the Push tractor unit. See the complete procedure in "Loading Continuous Forms using the Push-Front Paper Path" in Chapter 3 "Handling Different Types of Paper".
3. Press the FF/Load button.
   The paper is loaded to the Pull tractor and the message "`1.Paper->Pull/2.Press Pause`" indicates to install the paper onto the Pull tractor. The Push+Pull paper path indicators are lit.

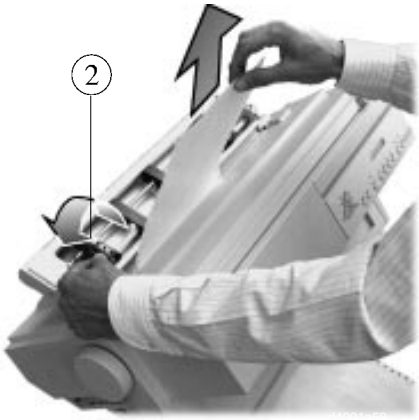
Note: The paper has been automatically loaded to the first printable line. Do not move the paper with the platen knob in order to keep this position.

4. Spread the tractors ① on the Pull tractor unit as far as possible.

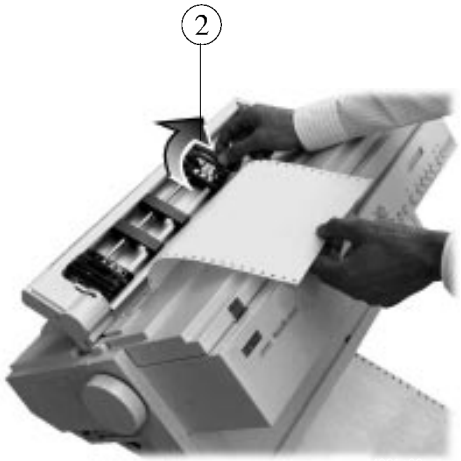


Spreading the Tractors

5. Open the left and right tractor doors ②.

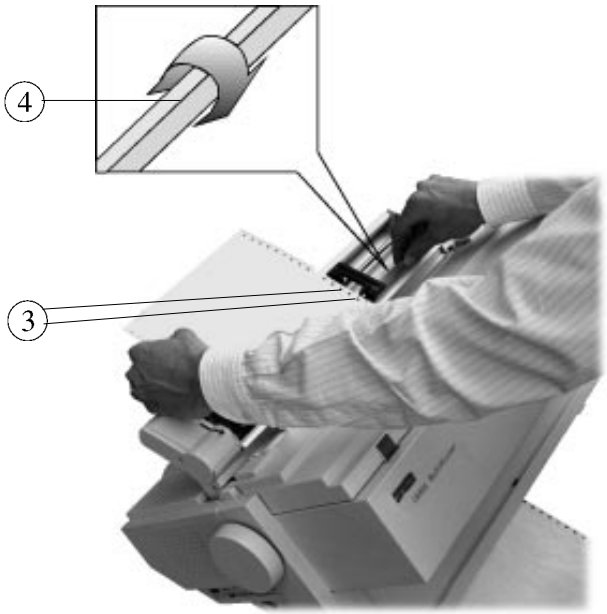


Opening the Left Tractor



Opening the Right Tractor

6. Check that the paper is taut and perfectly aligned with the paper path direction. Align the pinfeed of the Pull tractor unit with the paper pinfeed holes ③ by moving the tractor bar ④ with your fingers.

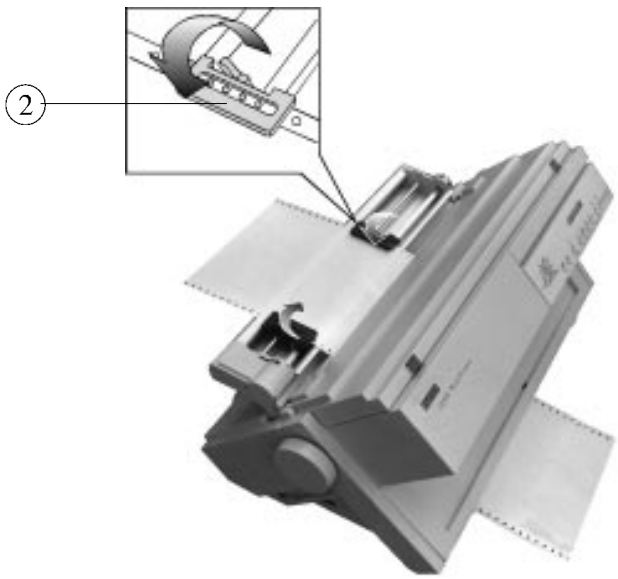


Aligning the Tractor Pinfeed

7. Move the left tractor along the tractor bar ④, in order to place the pinfeed holes of the paper on the tractor, and close the door ②.

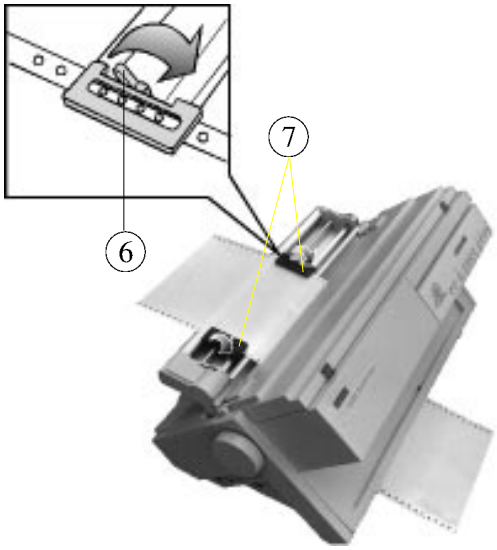
Placing the Paper on the Left Tractor

8. Move the right tractor, place the paper on it and close the door ②.



Placing the Paper on the Right Tractor

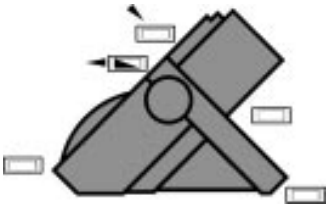
9. Check that the paper is fairly taut and lock the left and right tractors ⑦ in place by pulling the tractor locking buttons ⑥ towards the front of the printer.



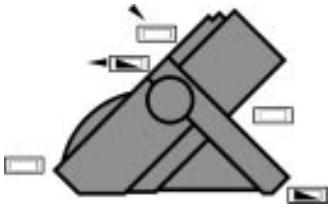
Locking the Tractors in Place

10. – If you press Pause, the current path will be the last selected path (Pull or Push+Pull). The Factory setting is Pull.
The printer is now ready to print.

– If you press Path, you can force the path selection according to your needs (Pull or Push+Pull). Then press Pause. The printer is ready to print.



Pull Path



Push+Pull Path

Note: When using the Pull path, remove the paper from the Push tractor unit, once loaded onto the Pull tractor.

Set-Up Card

What is the Set-Up Card for ?

A standard type PCMCIA card can be used with your printer to copy a Configuration from a master LA400 Multiprinter to other printers.

You prepare the Configuration on one printer, store it on the Set-Up card, copy the contents to other printers. In this way, in case you have a series of Digital LA400 MultiPrinter connected to your host, you need to configure only one printer.

How to Initialize the Set-Up Card

Before the Set-Up Card can be used, it is necessary to initialize it (in the same way as you format a PC diskette). This operation is done in the TEST/HEX-DUMP Function:

1. Ensure that the printer is powered on.
2. Insert the Set-Up Card into the slot.

Inserting the Set-Up Card

3. Press the Set-Up button.
   The display shows MACROS.
4. Press the → button three times.
   TEST/HEX-DUMP is displayed.
5. Press the ↓ button.
6. Press the → button until the display shows SetUp Card init.

7. Press the *Sel/Save* button.
   The display shows `Initializing...`. Once the initialization is complete, the display shows again the `SetUp Card init`. message.

8. Press the *Exit* button.

Copying your Configuration to the Set-Up Card

1. Make sure the printer is powered off.

2. Insert the Set-Up Card into the slot and power the printer on.
   The display shows the blinking message `SET-UP CARD MODE` for 5 seconds. Then the display shows `Printer << Card`.

3. Using the → or ← button, you can scroll between the following Values:

Value	Definition
`Printer << Card`	The contents of the card is copied into printer permanent memory.
`Printer >> Card`	The contents of the printer permanent memory is copied onto the card.
`Access:Minimum`	This value has the same effect as the `Minimum` Value of the `USER ACCESS` Function. Useful after copying the printer Configuration from the Set-Up card. See also Chapter "Setting the User Access Authorization" in Chapter 6.

4. Display the `Printer >> Card` Value.

5. Press the *Sel/Save* button.
   The display shows `Copying...`, and the `Printer >> Card` Value is displayed again.

6. Press the *Exit* button.
   The printer finishes its start-up sequence.

Copying your Configuration from the Set-Up Card

1. Make sure the printer is powered off.
2. Insert the Set-Up Card into the slot and power the printer on.
   The display shows the blinking message `SET-UP CARD MODE` for 5 seconds. Then the display shows `Printer << Card`.
3. Press the *Sel/Save* button.
   The display shows `Copying...`, and the `Printer << Card` Value is displayed again.
4. You can then select the `Access: Minimum` Value to avoid any modification of the new printer Configuration.
5. Press the *Exit* button.
   The printer finishes its start-up sequence.

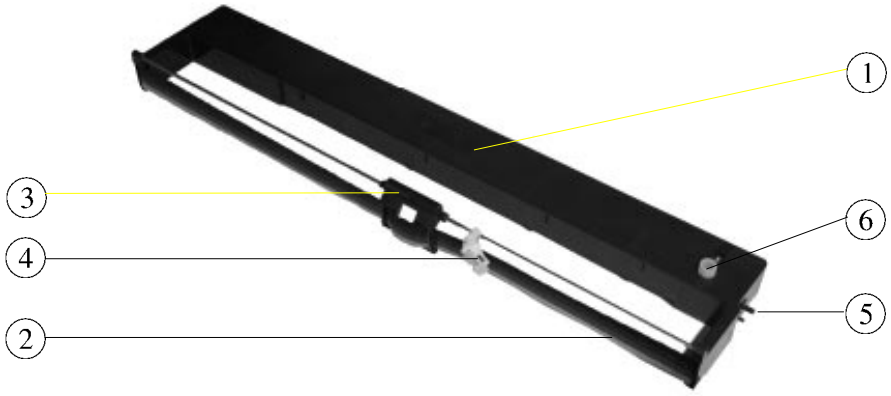
Preparing for Color Printing

To print in color you need the color mechanism option and a color ribbon cartridge. With the color ink ribbon cartridge installed, you can print up to seven colors.

Preparing the Color Ribbon Cartridge

The color ribbon cartridge is slightly different from the black ribbon cartridge.

1. Take the cartridge out of its plastic bag.
2. Turn the ribbon feed knob to take up slack.



The Color Ribbon Cartridge

1 Casing	4 Plastic bracket
2 Inked ribbon with color bands	5 Mounting pins
3 Ribbon guide	6 Ribbon feed knob

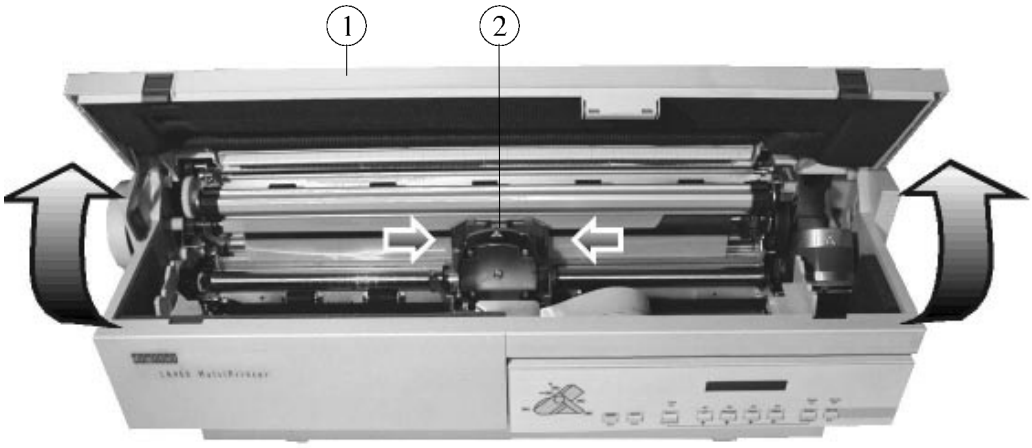
3. Locate the mounting pins, the ribbon guide and the plastic bracket.

Mounting the Color Mechanism

Note: You need to use a Phillips screwdriver specified as follows: Ø = 4 mm, length = 10 cm.

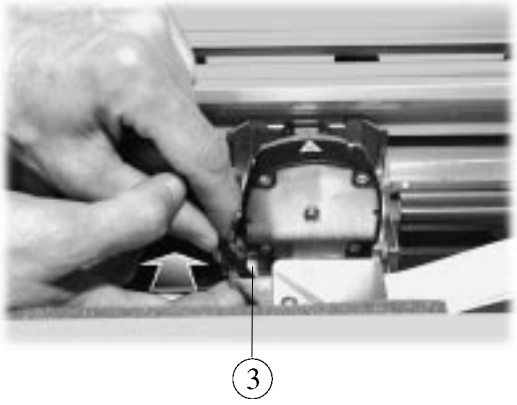
Caution: *Before beginning with this operation, make sure that the print head is not hot.*

1. Unpack the color mechanism from its carton. Be careful to check that there are two screws.
2. Check that the printer is powered on.
3. Open the top cover ①.
   The print head ② moves to the center of the printer.

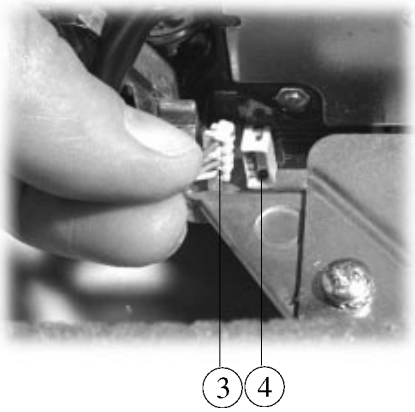


Opening the Top Cover

4. Power the printer off and remove the ribbon cartridge, if any.
5. Insert the color mechanism connector ③ into the connector of the print head ④. Plug it pushing it with the help of the screwdriver.

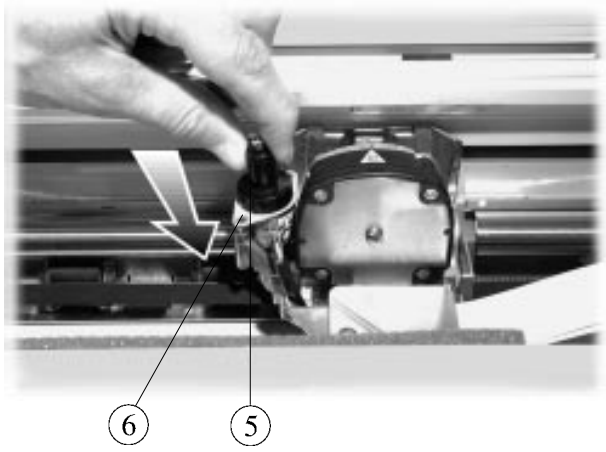


Inserting the Color Mechanism Connector



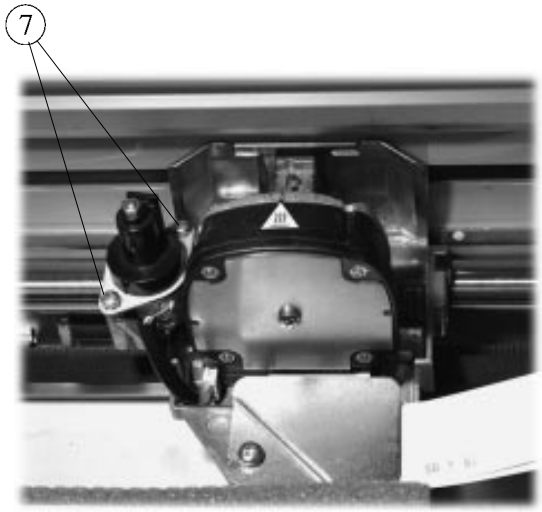
Plugging the Color Mechanism Connector

6. Put the color mechanism assembly ⑤ on the carriage assembly ⑥.



Positioning the Color Mechanism

7. Fix the color mechanism using the two screws ⑦.

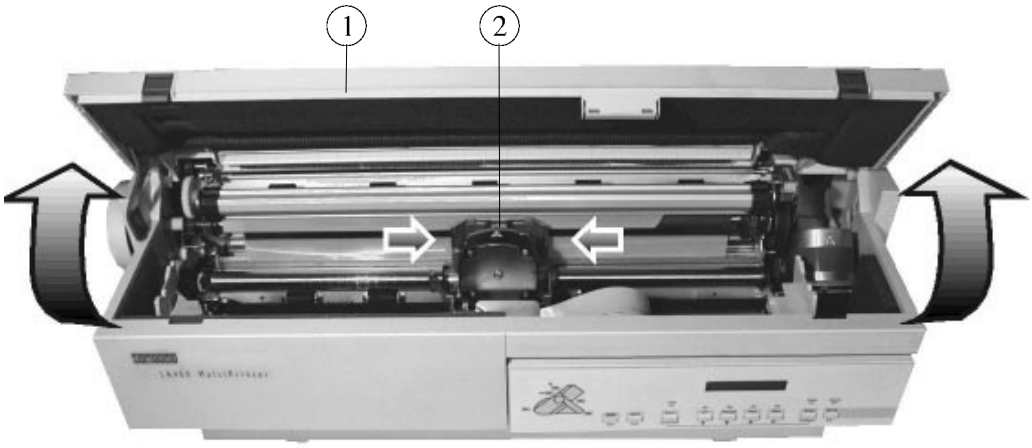


Fixing the Color Mechanism on the Carriage Assembly

8. Close the top cover.

Installing the Color Ribbon Cartridge

1. Power the printer on.
2. Open the top cover ①.
   The print head ② moves automatically to the center of the printer.



Opening the Top Cover

3. Locate the front locking grooves ③ of the left and right cartridge supports ④

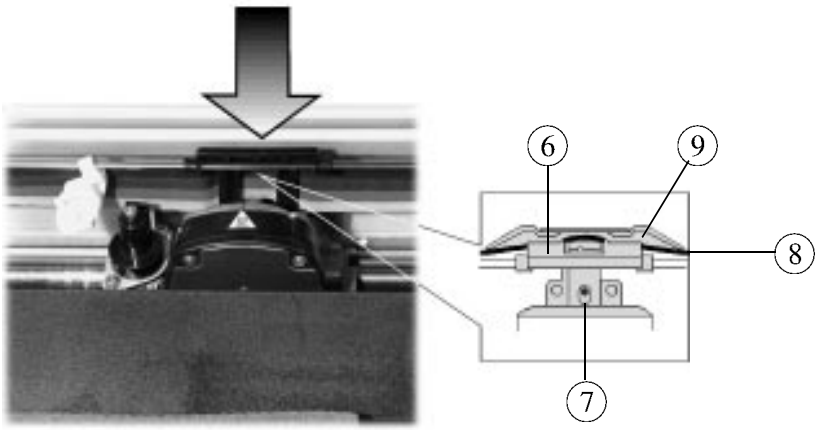
Front Locking Grooves

4. Push the mounting pins ⑤ down onto the locking grooves ③.
5. Align the center of the ribbon guide ⑥ with the print head nose ⑦.

Positioning Cartridge/Aligning Ribbon Guide with Print Head

Note: Turn the ribbon feed knob so that the left mounting pin is in contact with the locking grooves.

6. Slide the ribbon guide ⑥ down onto the print head nose ⑦ so that the ribbon ⑧ is inserted between the print head nose ⑦ and the print head guide ⑨.

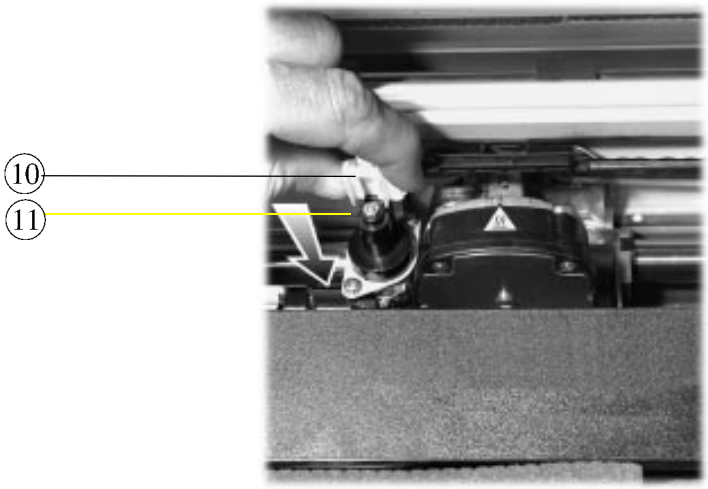


Inserting the Ribbon Guide

7. Push the cartridge down with your finger over the mounting pins.

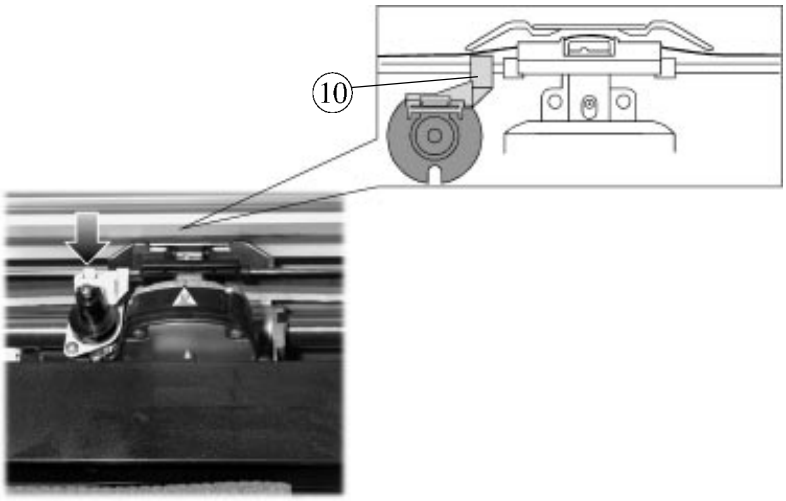
Locking the Ribbon Cartridge

8. Turn the ribbon feed knob to take up the ribbon slack.
9. Insert the plastic bracket ⑩ on the black guide of the color mechanism ！.



Inserting the Plastic Bracket

10. Push the plastic bracket ⑩ it down until it clicks.

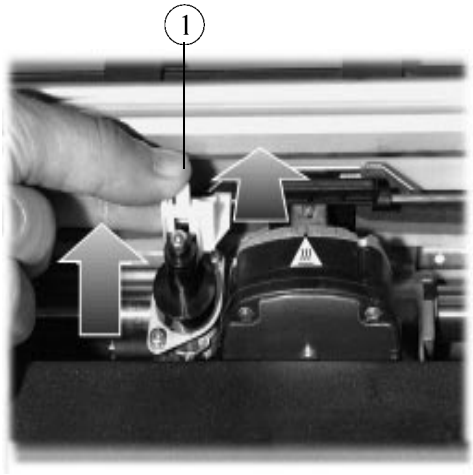


Pushing Down the Plastic Bracket

11. Close the top cover.

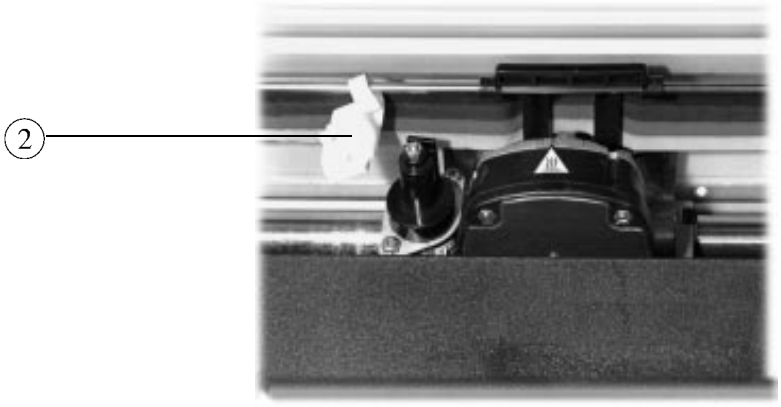
Removing the Color Cartridge

1. Power the printer on.
2. Open the top cover.
   The print head moves to the center of the printer.
3. Unlock the plastic bracket by pushing on the click ①.



Unlocking the Plastic Bracket

4. Pull the plastic bracket ② off the color mechanism.



Pulling-off the Plastic Bracket

5. Remove the ribbon guide from the print head.
6. Remove the cartridge from the locking pins and out of the printer.

Supplies and Options Order Numbers

Supplies

Supply	Order Number
Black Ribbon Cartridge (15 Million characters life)	LA40R-KA
Color Ribbon Cartridge (2 Million characters life per band)	LA40R-KC

Options

Options		Order Number
Color Mechanism		LA40X-CX
Push tractor unit		LA40X-PT
Pull tractor unit		LA40X-PL
Parallel interface cable	10 feet, shielded, Centronics	BC19M-10
	6 feet, shielded, Centronics	BC19M-06
Serial interface cable	10 feet, DECconnect cable	BC16E-10

Documentation

Documentation	Order Number
DEC PPL2 Programmer Reference Manual	EK-PPLV2-DK

B

Technical Characteristics

Technical Specifications

Printing Technique	Impact dot matrix		
Print Head	24 printing elements with density of 180 dpi		
Print Speed (cps)		Draft	Letter Quality
	10 cpi	400	133
	12 cpi	480	160
	15 cpi	600	200
Throughput (pph)	ECMA 132 - 10 cpi	Draft: 400	Quality: 210
Print Matrix		Draft	Quality
	10 cpi	12 h x 24 v	36 h x 24 v
	12 cpi	10 h x 24 v	30 h x 24 v
	15 cpi	8 h x 24 v	24 h x 24 v
Print Densities		Horizontal Pitch (cpi)	Characters for a 8" line
	Normal	10	80
		12	96
		13.2	106
		15	120
		16.5	132
		17.1	137
		18	144
	Enlarged	5	40
		6	48
		6.6	53
		7.5	60
		8.25	66
		8.55	68
		9	72
Vertical Spacing	- 6, 8 lpi - n/60, n/72, n/180, n/216 dots/inch - 3, 4, 6, 8, 12 lines/30 mm		
Non Printing Slew Speed	- Horizontal Slew Rate: 40 inch per second - Vertical Slew Rate: more than 8 inch per second		
Print Styles	- Draft - High Impact Draft - Courier - Roman - Sans Serif - Prestige - Script - Orator - OCR-A - OCR-B - Data Block		

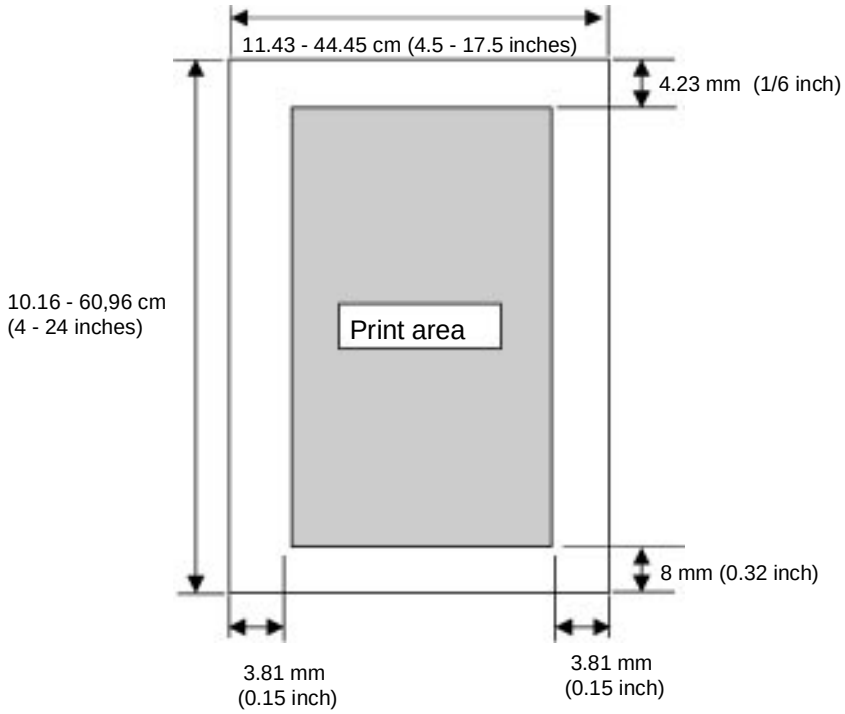
Printing Attributes	Underline - doble underline - overline - strike-through printing - bold - multicopy-double width - slant	
Character Sets	DEC Protocol	
	- G0 Character Sets:	US ASCII - British - DEC Finnish - French - DEC French-Canadian - German - ISO Italian - JIS Roman - DEC Norway/Denmark - ISO Spanish - DEC Swedish - Norwegian/Danish - DEC Dutch - DEC Swiss - DEC Portuguese - Legal - DEC Supplemental - DEC Spec. Graphics - DECTechnical - DEC 7Bit Hebrew - DEC Hebrew Supplemental - DEC Greek Supplemental - DEC 7Bit Turkish - DEC Turkish Supplemental - JIS Katakana - ISO Italian - ISO Spanish - JIS Roman - Legal
	- User Preference Character Sets:	DEC Supplemental - DEC Spec. Graphics - DECTechnical - DEC 7Bit Hebrew - DEC Hebrew Supplemental - DEC Greek Supplemental - DEC 7Bit Turkish - DEC Turkish Supplemental - JIS Katakana - ISO Latin 1 - ISO Latin 2 - ISO Latin 5 - ISO Latin Hebrew - ISO Latin Greek - ISO Latin Cyrillic
	IBM Protocol	IBM Character Set 1 - IBM Character Set 2
	Epson Protocol:	Character Set 1 - Character Set 2
	- National Variations	USA - France - Germany - United Kingdom - Denmark 1 - Sweden - Italy - Spain 1- Japan - Norway - Denmark 2 - Spain 2 - Latin America - Turkey - Korea- Legal, Old Hebrew
Code Pages	CP 210 - CP 220 - CP 437 - CP 437 GREEK - CP 850 - CP 852 - CP 853 - CP 855 - CP 857 - CP 860 - CP 861 - CP 862 - CP 863 - CP 864 - CP 865 - CP 866 - CP 869 - Abicomp - Brascii - Mazowian - Code MJK - Bulgarian - ISO 8859-7 - ISO Latin IT - D-Hebrew - New Hebrew	
Bar Codes	Code 39 - Industrial 2 of 5 - Interleaved 2 of 5 - 128 - EAN 8/13 - UPCA/E - Codabar - Postnet - Matrix 2 of 5 - Code 93 - MSI mod 10/10 - Code 128	
Graphics Resolution	Horizontal	36, 60, 72, .80, 90, 120, 144, 180, 240, 360, 480
	Vertical	36, 72, 90, 144, 180, 216
Protocols	- DEC PPL2	
	- Epson ESC/P2	
	- IBM Proprinter XL24E	
Parallel Interface	- Centronics Compatible Bidirectional (IEEE-1284) nibble mode	
	- 36 pin Amphenol connector with ESD protection	
Serial Interface	- Modular 6-pin DECconnect type.	
	- Baud Rate: 600 to 38400 bps	
	- Character Format: 1 Start Bit + 7 or 8 data bits, + optional parity bit + 1 stop bit	
Workload	Up to 10000 pages/month	
Power Supply	- 104 - 128 V USA and Canada	
	- 190 - 235 V Europe -	
Power Consumption	Standby: 28W	
	Average: 85 W	
Acoustical Noise Level	Printing: less than 57 dBA	
Physical Dimensions	Height	12.4 inches (315 mm)
	Width	26.38 inches (670 mm)
	Depth	15.85 inches (390 mm)
	Weight	18 kg

Standards, Regulations and Approvals	Printer Safety:	- UL Standard 1950 - IEC Publication 950 - European Norm 60950 - CSA Standard C22.2 No 950
	AC Power	- 110 V +10/-15V - 220 V +10/-15V
	Electromagnetic Compatibility	- FCC Rules and Regulations, Part 15 - Subpart J (B-Level) - CISPR 22 - EMC Directive EEC/89/336 - EN55022 Class B - EN 55082
	Environment	- 10 - 40 °C (50 -104 °F) - 10 - 90% relative humidity
	Approvals	- UL Listing to UL 1950 - CSA Certification to CSA C22.2 No 950 - Approval to EN60950 and IEC together with a GS Mark - Nordic deviations to EN60950: EMKO-TSE (74-SEC)
	Energy Consumption	- EPA compliant with a power consumption of max 30 W in stand-by

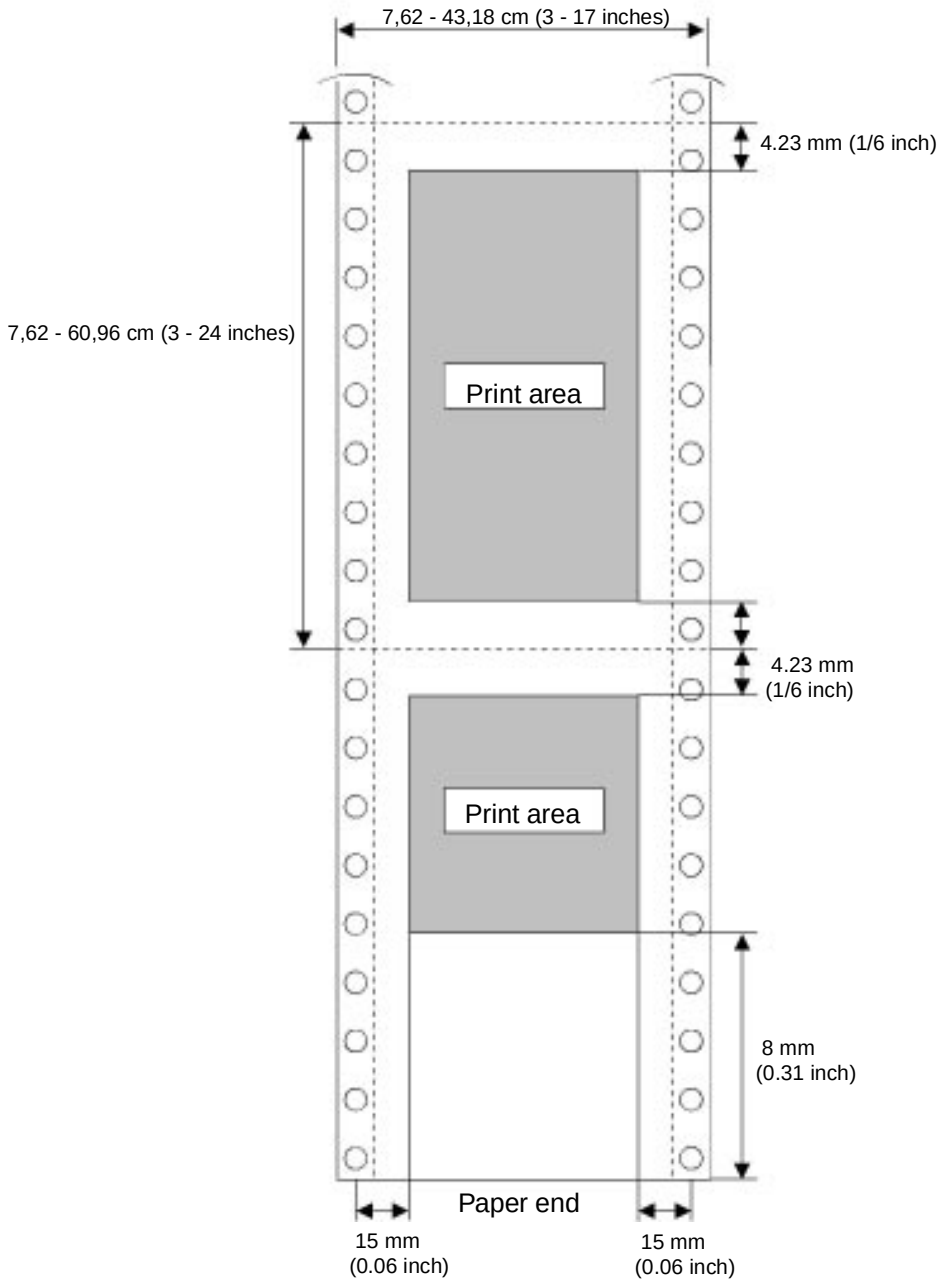
Paper Specifications

Print Area

This section illustrates the recommended print area for single sheets and continuous forms.



Print Area for Single Sheets

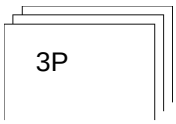
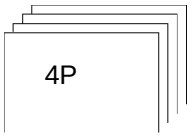
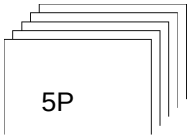
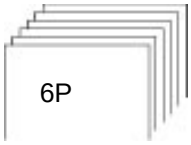


Print Area for Continuous Form

Paper Thickness

Paper thickness is given by the weight of the paper in either grams per square meter (g/m^2) or in pounds per bond (lbs/bond). The following table shows the allowable paper thickness for one-part paper or for each sheet of multipart paper.

The weight of carbonless or carbon-backed paper may vary, depending on the paper manufacturer. When using paper of borderline thickness, test the paper before running a job.

Type of Paper	No. of parts	Push-Front	Push-Rear	Pull
One-part	Single	55 to 100 g/m^2 (14 to 25 lbs/bond)	55 to 80 g/m^2 (14 to 20 lbs/bond)	55 to 100 g/m^2 (14 to 25 lbs/bond)
Carbonless				
 2P	Top	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)
	Bottom	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)
 3P	Top	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)
	Middle page	< 40 g/m^2 (10 lbs/bond)	< 40 g/m^2 (10 lbs/bond)	< 40 g/m^2 (10 lbs/bond)
	Bottom	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)
 4P	Top	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)
	Middle pages	< 40 g/m^2 (10 lbs/bond)	< 40 g/m^2 (10 lbs/bond)	< 40 g/m^2 (10 lbs/bond)
	Bottom	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)	< 60 g/m^2 (15 lbs/bond)
 5P	Top	< 60 g/m^2 (15 lbs/bond)	-	< 60 g/m^2 (15 lbs/bond)
	Middle pages	< 40 g/m^2 (10 lbs/bond)	-	< 40 g/m^2 (10 lbs/bond)
	Bottom	< 60 g/m^2 (15 lbs/bond)	-	< 60 g/m^2 (15 lbs/bond)
 6P	Top	< 60 g/m^2 (15 lbs/bond)	-	< 60 g/m^2 (15 lbs/bond)
	Middle pages	< 40 g/m^2 (10 lbs/bond)	-	< 40 g/m^2 (10 lbs/bond)
	Bottom	< 60 g/m^2 (15 lbs/bond)	-	< 60 g/m^2 (15 lbs/bond)
Carbon paper		35 g/m^2 (9 lbs/bond)	35 g/m2 (9 lbs/bond)	35 g/m2 (9 lbs/bond)

C

LCD Display Messages

Simple messages

User Instructions

Message	Meaning
`Adjust print gap`	Requires manual setting of the print gap, when exiting Set-Up after having set the `PRINT GAP` Option to `Manual adjust`. See Chapter 7 "Customizing Macros" for more details.

`Load Manual`
`Load Pull`
`Load Push-Front`
`Load Push-Rear`
`Load Push+Pull`
	Displayed when paper out occurs on the corresponding path or when the paper feeding device is not present.

`Press Park`	This message is displayed when the `USER ACCESS` Option has been set to `Minimum` and the only operator panel button to which the user is allowed access after pressing the Set-Up button, is the Park button.
`Remove paper`	Requires the loaded paper to be removed
`Select a Macro`	Requires the user to press the button (M1, M2, M3 or M4) corresponding to the Macro he wants to select.

Status Messages

Message	Meaning
`Manual`	The Manual path is selected via the operator panel.
`Pull`	The Pull path is selected via the operator panel.
`Push-Front`	The Push-Front path is selected via the operator panel.
`Push-Rear`	The Push-Rear path is selected via the operator panel.
`Push+Pull`	The Push-Pull path is selected via the operator panel.
`Top cover open`	The top cover is open.

Operating Messages

Message	Meaning
`Copying...`	The printer is copying the Set-Up Card Configuration to or from the printer.
`Initializing...`	The printer is initializing the Set-Up card after having selected the `SetUp Card init.` Value.
`Loading paper...`	The printer is loading paper in the current paper path.
`Parking paper...`	The printer is parking the paper either because the *Park* button has been pressed, or because the paper path has been changed. The paper needs to be parked in order to allow paper loading through the new path.
`Printing test...`	The printer is printing the output of one of the available printer tests.
`Processing...`	The printer is processing data. Generic wait for operation end message.
`Testing...`	The printer is executing the one of the available tests.
`Starting-up...`	The printer is performing the bootstrap operations.

Rolling messages

Message	Meaning
`1.Check paper` `2.Press Pause`	These messages are displayed during the initialization of the printer, when the Pull or Push+Pull paper path is selected. The user should check that the paper has been correctly loaded and confirm by pressing the Pause button.
`1.Paper -> Pull` `2.Press Pause`	These messages are displayed during the paper loading procedure for the Pull or Push+Pull paper path. The user should install the paper and confirm by pressing the Pause button.
`1.Power-off` `2.Push -> Front`	These messages are displayed when the Push-Front paper path is selected and the tractor is not installed in the Front position. Power the printer off and install the Push tractor unit in the Front position.
`1.Power-off` `2.Push -> Rear`	These messages are displayed when the Push-Rear paper path is selected and the tractor is not installed in the Rear position. Power the printer off and install the Push tractor in the Rear position.
`1.Tear-off paper` `2.Park Paper`	The printer was not able to park the paper, because it is too long. It indicates that the paper should be torn-off and then parked again.
`Carriage error` `Check its moving`	The print head carriage is not moving correctly. Open the top cover and check if there is anything blocking the carriage.
`Comm. failure` `Check line`	Communication error. The DSR signal is not present on the serial interface. Clear the error by pressing the Pause button twice, then check if the communication parameters for the serial interface are set correctly.
`Data lost` `Check interface`	Data has been lost due to incorrect interface settings. Check the interface parameters in the printer Set-Up.
`Print gap:Manual` `Adjust print gap`	Displayed when exiting from the printer Set-Up and the `PRINT GAP` Option has been set to `Manual adjust`. See Chapter 7 "Customizing Macros" for more details.
`Printer failure` `Call Service`	The printer is in an error condition that cannot be solved by the user. Call the Customer Service.
`Push-Front jam` `Check paper`	A paper jam occurred in the Push-Front path. Remove and reinstall the paper.
`Push-Rear jam` `Check paper`	A paper jam occurred in the Push-Rear path. Remove and reinstall the paper.
`Ribbon blocked` `Check ribbon`	The ribbon cartridge is blocked. Check the ribbon cartridge installation.

D

DEC PPL2 Quick Reference

This section contains basic information on the DEC PPL2 commands supported in the LA400 MultiPrinter.

The commands are listed by function, in the following order:

- Positioning Controls and Tabs
- Sheet size and margins
- Type size and spacing, managing implicit cursor motion
- Font management and attribute selection
- Selecting character sets
- Reports
- Miscellaneous
- Barcode printing
- Graphics

This guide is intended for use 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*. These are referred to simply as the Programming Reference Manual and the Programming Supplement, respectively.

Characters used in control functions appear in monospaced type. The following table 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:

Conventions

Code	Description
ESC	Escape (1/11), introduces an escape sequence.
CSI	Control Sequence Introducer (9/11), intoduces 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 following parameters are Digital private parameters. ">" or "?", if present must occur only once at the beginning of the parameter string.
I_n	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)
	C0 Control Characters are given in figure "Standard 8-bit Code Table (Left Half)".
	C1 Control Characters are given in figure"Standard 8-bit Code Table (Right Half)". In the 7-bit environment, C1 Control Characters can be sent with an escape sequence provided in the following tables.
	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.

Positioning Controls and Tabs

Mnemonic	Function	Command	Remarks
BS	Backspace	0/8	*C0 Control Code*
CR	Carriage Return	0/13	*C0 Control Code*
FF	Form Feed	0/12	*C0 Control Code*
HT	Horizontal Tab	0/9	*C0 Control Code*
LF	Line Feed	0/10	*C0 Control Code*
VT	Vertical Tab	0/11	*C0 Control Code*
HTS	Horizontal Tab Set at current position	8/8	*C1 Control Code* 7-bit environment: *ESC H*
IND	Index	8/4	*C1 Control Code* 7-bit environment: *ESC D*
NEL	Next Line	8/5	*C1 Control Code* 7-bit environment: *ESC E*
PLD	Partial Line Down	8/11	*C1 Control Code* 7-bit environment: *ESC K* Advance paper 1/12 in.
PLU	Partial Line Up	8/12	*C1 Control Code* 7-bit environment: *ESC L* Reverse paper 1/12 in.
VTS	Vertical Tab Set at current position	8/10	*C1 Control Code* 7-bit environment: *ESC J*
DECCAHT	Clear All Horizontal Tabs	*ESC 2*	
DECCAVT	Clear All Vertical Tabs	*ESC 4*	
DECSHTS	Set Horizontal Tab Stops	*CSI Pn ; ... ; Pn u*	Pn = tabstop position (max. 16)
DECSVTS	Set Vertical Tab Stops	*CSI Pn ; ... ; Pn v*	Pn = tabstop position (max. 16)
DECHTS	Horizontal Tab Set	*ESC 1*	
DECVTS	Vertical Tab Set	*ESC 3*	
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
HPA	Horizontal Position Absolute	*CSI Pn '*	Pn = position to move to
HPR	Horizontal Position Relative	*CSI Pn a*	Pn = position 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

Sheet Size and Margins

Mnemonic	Function	Command	Remarks
DECSLPP	Set Lines per Physical Page	*CSI Pn t*	Pn = number of lines per pages
DECVPLA	Set Vertical Page Length Alignment	*CSI Pn1; Pn2 - u*	Pn1 = Position of the origin from top of form (in 1/72 in.) Pn2 = Paper length in 1/720 in.
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* = origin Pn2* = paper width
DECSTBM	Set Top and Bottom Margins	*CSI Pn1; Pn2 r*	Pn1 = top margin Pn2 = bottom margin

* Units are in 1/12 inch

Type Size and Spacing, Managing Implicit Cursor Motion

Mnemonic	Function	Command	Remarks
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
DECPSP	Proportional Spacing Mode	*CSI ? 27 h* *CSI ? 27 l*	Sets proportional spacing mode Resets proportional spacing mode
DECSHORP	Set Horizontal Pitch	*CSI Ps w*	Ps = 0: 10 CPI Ps = 8 : 8.25 CPI Ps = 1: 10 CPI Ps = 9 : 15 CPI Ps = 2: 12 CPI Ps = 11 : 17.1 CPI Ps = 3: 13.2 CPI Ps = 12 : 8.55 CPI Ps = 4: 16.5 CPI Ps = 13 : 18 CPI Ps = 5: 5 CPI Ps = 14 : 9 CPI Ps = 6: 6 CPI Ps = 15 : 10 CPI Ps = 7: 6.6 CPI Ps = 16 : 20 CPI

Type Size and Spacing, Managing Implicit Cursor Motion (cont.)

Mnemonic	Function	Command	Remarks
DECVERP	Set Vertical Pitch	*CSI Ps z*	Ps = 0: 6 LPI 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 = 7: 10 LPI Ps = 10: same as PS =1 Ps = 21 : 4 LPcm* Ps = 22 : 2 LPcm Ps = 23 : 1 LPcm Ps = 10-17 same as 0-7; 21-23 same as 31-33
GSM	Graphic Size Modification	*CSI Pn1 ; Pn2 SP B*	Pn1 = 100: Normal height characters Pn1 = 200 : Double height Pn1 = 300 : Triple height Pn1 = 400 : Quadruple height Pn2 = 100 : Normal width characters Pn2 = 200 : Double width Pn2 = 300 : Triple width Pn2 = 400 : Quadruple width
LNM	Line Feed/New Line Mode	*CSI 2 0 h* *CSI 2 0 l*	LF acts as new line. LF acts as line feed.

* LPcm = Lines per centimeter

Font Management and Attribute Selection

Mnemonic	Function	Command	Remarks
SGR	Select Graphic Rendition *Selecting Fonts*	*CSI Ps m*	Ps = 10 : Courier Ps = 11 : Roman Ps = 12 : Sans Serif Ps = 13 : Prestige Ps = 14 : Script Ps = 15 : Courier Ps = 16 : Orator Ps = 17 : Optional card font Ps = 18 : OCR-A Ps = 19 : OCR-B Ps = ?12 : Data Block

Font Management and Attribute Selection (cont.)

Mnemonic	Function	Command	Remarks
SGR	Select Graphic Rendition - *Selecting Attributes*	*CSI Ps m*	Ps = 0: Turn off all attributes, standard and private Ps = 1: Bold on Ps = 3: Slant on Ps = 4: Underline on; double underline off Ps = 9: Strike-through on Ps = 21: Double underline on, underline off Ps = 22: Bold off Ps = 23: Slant off Ps = 24: Any underline off Ps = 29: Strike-through on Ps = 30: Print Text in black Ps = 31: Print text in red Ps = 32: Print text in green Ps = 33: Print text in yellow Ps = 34: Print text in blue Ps = 35: Print text in magenta Ps = 36: Print text in cyan Ps = 37: Print text in "white" (no printing) Ps = 39: Print text in black Ps = 53: Overline on Ps = 55: Overline off Ps = ?0: All private attributes off Ps = ?4: Superscript on, subscript off Ps = ?5: Subscript on, superscript off Ps = ?6: Overline on Ps = ?24: Superscript and subscript off Ps = ?26: Overline off
DECDLD	Download Font	*DCS parameter_string { D ... D ST*	See the *Programming Reference Manual*
DECDEN	Printing Density Selection	*CSI Ps " z*	Ps = 0 or 1: Select draft Ps = 2: Select letter quality Ps = 3: Select draft Ps = 4: Select letter quality Ps = 5: Select high impact draft

Selecting Character Sets

Mnemonic	Function	Command	Remarks
ASCEF	Announce Subset of Code Extension Facilities	*ESC SP L* *ESC SP M* *ESC SP N*	ASCII in G0 and GL. ISO Latin-1 in G1 and GR. Same as ESC SP L 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	*C1 Control Code* 7-bit environment: *ESC N*	Take the next character from G2
SS3	Single Shift 3	*C1 Control Code* 7-bit environment: *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 1Right	*ESC ~*	Invoke G1 into GR
LS2	Locking Shift 2 Right	*ESC }*	Invoke G2 into GR
LS3	Locking Shift 3 Right	*ESC |*	Invoke G3 into GR
SCS	Select Character Set	ESC I_1 I_2 F	I_1 = "(": Invoke 94-char.set into G0 I_1 = ")": Invoke 94-char.set into G1 I_1 = "*": Invoke 94-char.set into G2 I_1 = "+": Invoke 94-char.set into G3 I_1 = "-": Invoke 96-char.set into G1 I_1 = ".": Invoke 96-char.set into G2 I_1 = "/": Invoke 96-char.set into G3 I_2F = final characters from "SCS Final Characters" .

SCS Final Characters

Character Set	I_2 F Designator Characters	
94-Character Sets		
British	A	4/1
ASCII	B	4/2
DEC Dutch	4	3/4
DEC Finnish	5	3/5
French	R	5/2
DEC French-Canadian	9	3/9
German	K	4/11
DEC Hebrew Supplemental	"4	2/2, 3/4
DEC 7-Bit Hebrew	%=	2/5, 3/13
ISO Italian	Y	5/9
Legal	%4	2/5, 3/4
JIS Katakana	I	4/9
JIS Roman	J	4/10
DEC Norwegian/Danish	6	3/6
ISO Spanish	Z	5/10
DEC Swedish	7	3/7
DEC Swiss	=	3/13
Norwegian/Danish	’	6/0
DEC Supplemental	%5	2/5, 3/5
DEC Technical	>	3/14
DEC Special Graphics	0	3/0
DEC Portuguese	%6	2/5, 3/6
DEC 7-Bit Turkish	%2	2/5, 3/2
DEC 8-Bit Turkish Supplemental	%0	2/5, 3/0
DEC 8-BitGreek Supplemental	"?	2/2, 3/15
User Preference Supplemental	<	3/12
Downloaded Character Set	SP@	2/0, 4/0

SCS Final Characters (cont.)

Character Set	I_2 F Designator Characters	
96-Character Sets		
ISO Latin-1 Supplemental	A	4/1
ISO Latin-2 Supplemental	B	4/2
ISO Latin-Greek Supplemental	F	4/6
ISO Latin-Hebrew Supplemental	H	4/8
ISO Latin-Cyrillic Supplemental	L	4/12
ISO Latin-5 Supplemental	M	4/13
User Preference Supplemental	<	3/12
Downloaded Character Set	SP @	2/0, 4/0

SCS Final Characters for Fallback Character Sets

Character Set Conventions	F Designator Character	
Fallback to DEC Finnish	C	4/3
Fallback to DEC French Canadian	Q	5/1
Fallback to DEC Norwegian/Danish	E	4/5
Fallback to DEC Swedish	H	4/8

Reports

Mnemonic	Function	Command	Remarks
DA	Device Attributes	*CSI Ps c*	Request Device Attributes Report. Ps must be 0.
DAR	Device Attributes Report	*ESC [? Ps1; Ps2 ; ... ; Psn c (printer to host)*	Ps1 = 72 Ps2-Psn describe extensions. See the Programming Supplement.
DA2	Secondary Device Attributes	*CSI > Ps c*	Ps must be 0.
DA2R	Secondary Device Attributes Report	*ESC [> Ps1 ; Ps2 ; Ps3 ; Ps4 ; Ps5 c (printer to host)*	Ps1 = 69 (model LA400) Ps2 = firmware revision x 10 Ps3 = 0 (or 1 *reserved*) Ps4 = 20 Ps5 = firmware edit revision

Reports (cont.)

Mnemonic	Function	Command	Remarks
DECLANS	Load ANSWERBACK without Password	*DCS Ps1 v encoded_mess_string ST*	Message is Hex. encoded.
DECLANS	Load ANSWERBACK with Password	*DCS Ps1;Pn2;Pn3v encoded_mess_string ST*	Ps = 1 : No password - Do not store message. Ps = 2: No password - Store message: Ps = 3: Password - Store Pn2: Old password Pn3: New password Default password: 0 Password range: 0 - 9999
ENQ	Send ANSWERBACK Message	*0/5*	*C0 Control Code*
DECRFS	Request Font Status	*CSI Ps " {*	Ps must be 3
DSR	Device Status Request	*CSI Ps n*	Ps = 0 or 5: Request extended DSR Ps = ?1: Disable unsolicited reposts 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 *Programming Supplement* for extended report.

Miscellaneous

Mnemonic	Function	Command	Remarks
BEL	Bell	*0/7*	C0 Control Code
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 Protocol Mode	*CSI ? 58 h* *CSI ? 58 l*	Deprecated function

Miscellaneous (cont.)

Mnemonic	Function	Command	Remarks
ROCS	Return from Other Coding System	*ESC % @*	Return to DEC PPL2 mode
SOCS	Select Other Coding System	*ESC % =* *ESC % SP 2*	IBM Proprinter Protocol EPSON Protocol
CRM	Control Representation Mode	*CSI 3 h* *CSI 3 l*	Print hex representation for all characters Reset
DECFNVR2	Load Factory NVR Settings	*DCS Ps ; Ps2 " s data_string ST* *data_string*	Ps1 = 0: omitted, default Ps1 = 1: Store current state (data ignored) Ps1 = 2: Modify with following data, store Ps1 = 3: Load NVRAM, modify, store Ps1 = 4: Load Factory Defaults, modify, store Ps2 = 0: omitted, default Ps2 = 1: data is ASCII encoded setup Ps1 ; Ps2 ; ... ; Psi ; ... Psi: index of the value for parameter i Psi = 0 or omitted: leave unchanged
DECASFC	Automatic Sheet Feeder Control	*CSI Ps ! v*	Ps = 0: No change, eject paper Ps = 1-3: Tray n (reserved) Ps = 4: Front Tractor feeding Ps = 5: Rear Tractor feeding Ps = 99: Manual feed
DECSITF	Select Input Tray Failover	*CSI Ps1 ; Ps2 ; ... ; Psn SP w*	Ps 1 = 0: Disable all composite input trays Ps 1 = 1: Define composite tray n Ps2-Psn = n: Add tray n to the composite definition
DECPHGC	Printhead Gap Control	*CSI Ps - s*	Ps = 0: Automatic Gap Control (AGC) Ps = 1-5 : Programmable Copy Control mode (PCC) - number of copies
DECUPM	Unidirectional Print Mode	*CSI ? 41 h* *CSI ? 41 l*	Selects unidirectional printing Selects bi-directional printing
SnC1R /DEC*C1	C1 Transmit /Receive	*ESC SP 6* *ESC SP 7* *ESC SP F* *ESC SP G*	Process 7-bit, drop 8th but Process 7-bit and 8-bit Transmit 8-bit as 7-bit equivalents Transmit 8-bit (not supported)

Barcode Printing

Mnemonic	Function	Command	Remarks
DECBAR	Start or Stop Bar Codes	ESC % SP 0 ESC % @	Start bar code. Stop bar code.
DECSBCA	Select Bar Code Attributes	CSI Ps1 ; Ps2 ; ... ; Ps9 ’ q	

Parameter	Description	Value
Ps1	Bar Code System	0, 2: Code 3 of 9 1: Interleaved 2 of 5 4: EAN 8 5: EAN 13 7: Codabar a/t 8: Codabar b/n 9: Codabar c/* 10: Codabar d/e 11: UPC-A 12: UPC-E 13: Postnet 14: Industrial 2 of 5 15: Code 93 16: MSI mod 10/10 17: Code 128 (EAN 128) 18: Matrix 2 of 5
Pn2	Width of narrow bars in decipoints	Supported values: 8 to 45 (default = 10) Not applicable to UPC, EAN and Postnet systems.
Pn3	Width of quiet zones in decipoints	Supported value: 180.
Pn4	Width of wide bars in decipoints	For EAN, UPC, supported values are in the range 20 to 158 (default is 25). Pn4 is not used for Code 93, MSI 10/10 and Code 128 systems. Postnet bar code style is fixed to 0,0217" for bars and to 0,0255" for spaces. Pitch is 21,18 bars/inch.
Pn5	Ignored	
Pn6	Height of bars in decipoints	Min = 60 Max = 2400 Default = 120
Pn7	Ignored	

Barcode Printing (cont.)

Mnemonic	Function	Command	Remarks
DECSBCA (cont.)			
	Parameter	**Description**	**Value**
	Pn8	Orientation	0, 1 or none : Horizontal symbol from left to right (portrait) 3: Vertical symbol from bottom to top (landscape - not applicable for EAN 8 & 13, UPC A & E
	Ps9	Human Readable Characters	0, 1: No HRC 2, 3, 4: Print HRC in OCR B Ignored for Postnet

Notes on Barcode Printing

After printing bar code, appropriate positioning control commands, must be sent to print additional barcode strings, text or graphics.

In the following examples, HPA Pn command positions the Active Position at column Pn, VPA Pn command positions the Active Position at line Pn.

1. Two barcodes Code 39 on the same line:

DECSBCA	CSI 0;;;;;;;;’q
DECBAR(start) data DECBAR(stop) HPA Pn	ESC % SP0 data ESC % @ CSI Pn ’
DECBAR(start) data DECBAR (stop)	ESC % SP0 data ESC % @

2. Two barcodes Code 39 one above the other:

DECSBCA	CSI 0;;;;;;;;’q
DECBAR(start) data DECBAR(stop) VPA Pn	ESC % SP0 data ESC % @ CSI Pn d
DECBAR(start) data DECBAR (stop)	ESC % SP0 data ESC % @

Sixel Graphics Device Control String Envelope

Mnemonic	Function	Command
DCS	String Introducer	
Ps1; Pn2 ; Pn3 q	Protocol Selector	Ps1: macro parameter, select horizontal grid size and pixel aspect ratio. See Table D-12. Ps2: ignored. Pn3: horizontal grid size - overrides Ps1 for horizontal grid size - aspect ratio unchanged. See Table D-13.
sixel data	Picture data	Includes sixel printable characters and sixel control codes. See Table D-14.
ST	String Terminator	Exit Sixel Graphics mode and return to text mode.

Sixel Graphics Protocol Selector Ps1

Ps1 Value	Horizontal Grid Size (inches)	Aspect Ratio (Vert:Hor)*
0, 1 or none	1/144	2
2	1/360	5
3, 4	1/180	2.5
5, 6, 7, 8	1/144	2
9	1/72	1
> 9	1/144	2

*Vertical Grid Size = 1/72 inch, unless modified by Pn3 or DECGRA.

Sixel Graphics Grid Size defined by Pn3

Pn 3 Value	HGS:VGS (dpi) by Aspect Ratio (defined by Ps1)			
	1:1	2:1	2.5:1	5:1
0 or none	No change to HGS and VGS defined by Ps1			
1, 2	360:360	360:180	360:144	360:72
3, 4	180:180	180:90	180:72	180:36
5, 6, 7	144:144	144:72	180:72	180:36
8, 9	90:90	90:45	90:36	180:36
10 - 15	72:72	72:36	90:36	180:36
16, 19	45:45	72:36	90:36	180:36
> 20	36:36	72:36	90:36	180:36

Sixel Graphics Control Codes

Mnemonic	Function	Command	Remarks
DECGRA	Set Raster Attributes	" (2/2)	Defines the pixel aspect ratio. Followed by parameters Pn1 ; Pn2 ; Pn3; Pn4 Pn1: Pixel aspect ratio numerator (A) Pn2: Pixel aspect ratio denominator (R), where 0 < A/R < 1.5 corresponds to 1:1 1.5 ≤ A/R < 2.25 corresponds to 2:1 2.25 ≤ A/R < 3.75 corresponds to 2.5:1 3.75 ≤ A/R corresponds to 5:1 Pn3 and Pn4 : ignored
DECGRI	Graphics Repeat Introducer	! (2/1)	Followed by a numeric value Pn and a sixel data to be repeated Pn times.
DECGCR	Graphics Carriage Return	$ (2/4)	Returns active positions to graphics left margins
DECGNL	Graphics Next Line	- (2/13)	Returns active position to graphics left margin on the following line
DECGCI	Graphics Color Introducer	# (2/3)	Assigns a color to a color number or selects a predefined color number. Followed by parameters Pc ; Pu ; Px ; Py; Pz Pc: Color number (0-255) Pu: Universal coordinate system selector: 1=HLS, 2=RGB Px, Py, Pz: color coordinates.
	Parameter Characters	0-9 (3/0) - (3/9)	Numeric parameters - used on the above control codes
	Parameter Separator	; (3/11)	Separates parameters - used on the above control codes
	Sixel Data	(3/15 - 3/14)	Sixel printable characters. The printer substracts the offset (3F hexadecimal) from the received code, assigning each of the remaining low- order six bits to a grid position: LSB = top pixel MSB = bottom pixel Examples: ? (3/15): blank character @ (4/0): print only top pixel A (4/1) : print second-from-top pixel ~ (7/15): print one full column

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**	0 0 0	**DLE**	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
1	**SOH**	1 1 1	**DC1** (XON)	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
2	**STX**	2 2 2	**DC2**	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
3	**ETX**	3 3 3	**DC3** (XOFF)	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
4	**EOT**	4 4 4	**DC4**	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
5	**ENQ**	5 5 5	**NAK**	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
6	**ACK**	6 6 6	**SYN**	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
7	**BEL**	7 7 7	**ETB**	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
8	**BS**	10 8 8	**CAN**	30 24 18	**(**	50 40 28	**8**	70 56 38	**H**	110 72 48	**X**	130 88 58	**h**	150 104 68	**x**	170 120 78
9	**HT**	11 9 9	**EM**	31 25 19	**)**	51 41 29	**9**	71 57 39	**I**	111 73 49	**Y**	131 89 59	**i**	151 105 69	**y**	171 121 79
10	**LF**	12 10 A	**SUB**	32 26 1A	*****	52 42 2A	**:**	72 58 3A	**J**	112 74 4A	**Z**	132 90 5A	**j**	152 106 6A	**z**	172 122 7A
11	**VT**	13 11 B	**ESC**	33 27 1B	**+**	53 43 2B	**;**	73 59 3B	**K**	113 75 4B	**[**	133 91 5B	**k**	153 107 6B	**{**	173 123 7B
12	**FF**	14 12 C	**FS**	34 28 1C	**,**	54 44 2C	**<**	74 60 3C	**L**	114 76 4C	****	134 92 5C	**l**	154 108 6C	**|**	174 124 7C
13	**CR**	15 13 D	**GS**	35 29 1D	**-**	55 45 2D	**=**	75 61 3D	**M**	115 77 4D	**]**	135 93 5D	**m**	155 109 6D	**}**	175 125 7D
14	**SO**	16 14 E	**RS**	36 30 1E	**.**	56 46 2E	**>**	76 62 3E	**N**	116 78 4E	**^**	136 94 5E	**n**	156 110 6E	**~**	176 126 7E
15	**SI**	17 15 F	**US**	37 31 1F	**/**	57 47 2F	**?**	77 63 3F	**O**	117 79 4F	**_**	137 95 5F	**o**	157 111 6F	**DEL**	177 127 7F

ASCII Graphic Character Set

LEGEND

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

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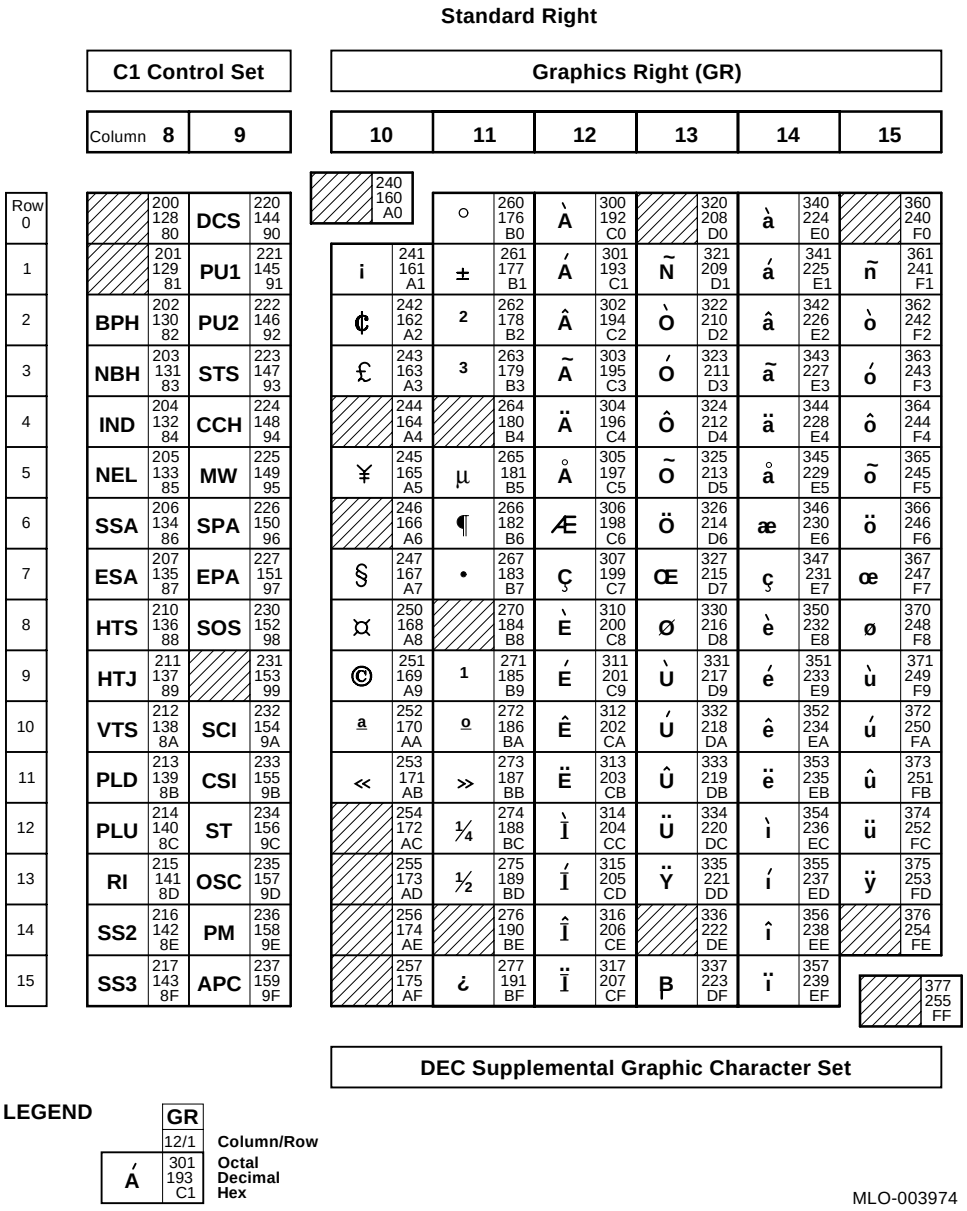
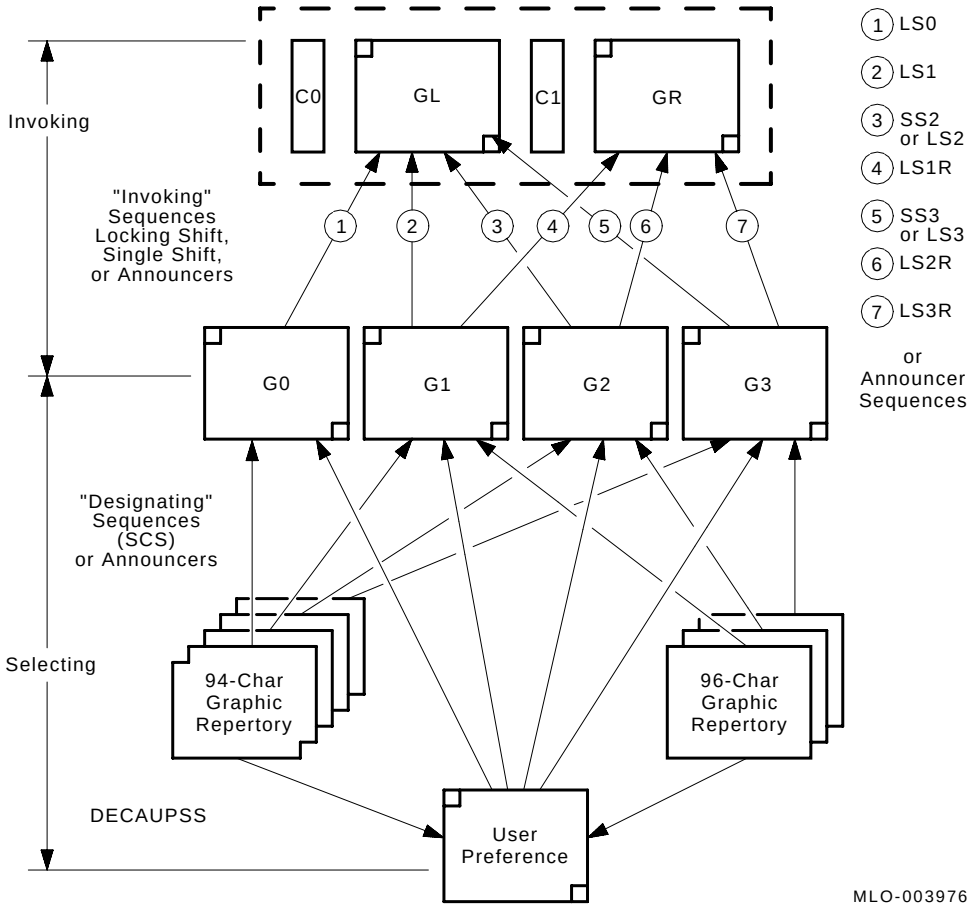
Standard 8-bit Code Table (Right Half)



Designating and Invoking Character Sets



National Replacement Character sets

Location	US ASCII	National Replacement Character Sets						
		British	DEC Finnish	French	DEC French-Canada	German	ISO Italian	JIS Roman
2/3	#	£		£			£	
4/0	@			à	à	§	§	
5/11	[		Ä	°	â	Ä	º	
5/12	\		Ö	ç	ç	Ö	ç	¥
5/13	]		Å	§	ê	Ü	é	
5/14	^		Ü		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	US ASCII	National Replacement Character Sets						
		DEC Norw.-Danish	ISO Spanish	DEC Swedish	Norw.-Danish	DEC Dutch	DEC Swiss	DEC Portu-guese
2/3	#		£			£	ù	
4/0	@	Ä	§	É		3/4	à	
5/11	[	Æ	¡	Ä	Æ	ÿ	é	Ã
5/12	\	Ø	Ñ	Ö	Ø	1/2	ç	Ç
5/13	]	Å	¿	Å	Å	|	ê	Õ
5/14	^	Ü		Ü			î	
5/15	_						è	
6/0	’	ä		é			ô	
7/11	{	æ	°	ä	æ	trema	ä	ã
7/12	|	ø	ñ	ö	ø	f	ö	ç
7/13	}	å	ç	å	å	1/4	ü	õ
7/14	~	ü		ü		’	û	

E

IBM Proprinter Quick Reference

This section describes the printer commands for the IBM Proprinter protocol. Asterisks in the "Function" column indicate extended commands that are not supported by the original printer. See the *Programmer's Reference Manual* for detailed information on using these commands.

Function	Command
Print Mode Control	
Double strike printing on.	ESC G
Double strike printing off.	ESC H
Emphasized printing on.	ESC E
Emphasized printing off.	ESC F
Double width printing (one line) on.	ESC SO
Double width printing (one line) off.	DC4
Double width printing on/off. (on: n=1, off: n=0)	ESC W *(n)*
Double height/double width characters l = 4, h = 0, m_1 = 0, m_2 = 0 m_3 controls the height and line spacing	ESC [@ l h m_1 ... m_4

m3	Height	Spacing
0	Unchanged	Unchanged
1	Normal	Unchanged
2	Double	Unchanged
16	Unchanged	Single
17	Normal	Single
18	Double	Single
32	Unchanged	Double
33	Normal	Double
34	Double	Double

Function	Command
Print Mode Control (cont.)	
m_4 controls character width:	
m_4 **Width** 0 Unchanged 1 Single width 2 Double width	
Compressed printing.	SI or ESC SI
Sets 10 cpi and disables compressed printing.	DC2
Subscript or superscript printing on. (Subscript: *n*=1, superscript: *n*=0)	ESC S *(n)*
Subscript or superscript printing off.	ESC T
Underline on/off (on: *n*=1, off: *n*=0)	ESC -*(n)*
Overscore printing (on: *n*=1, off: *n*=0).	ESC _ *(n)*
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Sets 12 cpi pitch	ESC :
Proportionally spaced characters on/off (on: $n = 1$, off: $n = 0$)	ESC P (*n*)
Vertical Control	
Line Feed	LF
Form Feed	FF
Advance paper n base units ($1 \leq n \leq 255$) set with the ESC [\ command	ESC J (*n*)
Set line spacing to 1/8 lines	ESC 0
Set line spacing to 7/72 inch	ESC 1
Set line spacing to n base units ($0 \leq n \leq 255$) set with the ESC [\ command	ESC 3 (*n*)
Set line spacing to n/180 inch (in AG mode) ($0 \leq n \leq 255$)	ESC 3 (*n*)
Preset line spacing to n/72 inch	ESC A (*n*)
Preset line spacing to n/60 inch (in AG mode)	ESC A (*n*)
Set line spacing to 1/6 inch or to the value preset by line spacing command ESC A (*n*)	ESC 2
Change graphics line spacing base to 1/216 or 1/180 inch (for ESC J and ESC 3) Default value is 1/216" (1/180" in AG Mode) $m_1 = 4$, $m_2 = 0$ $0 \leq t_1 \leq 255$, $0 \leq t_2 \leq 255$, $t_3 = 0$ $t_4 = 180$ or 216	ESC [\ (m_1)(m_2)(t_1) ... (t_4)

Function	Command
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs The values of n1 to nk in this command are the ASCII values of the print columns (at the current character width) at which tabs are to be set. ($1 \leq n \leq 255$)	ESC D (t_1) ... (t_{28}) NUL
Clear all horizontal tabs	ESC D NUL
Move print position right by n/120 inch ($0 \leq n_1, n_2 \leq 255$) ($n = n_1 + n_2 \times 256$)	ESC *d* (n_1)(n_2)
Vertical tab execution	VT
Set vertical tabs	ESC B (t_1) ... (t_{64}) NUL
Reset tabs to default values	ESC R
Page Formatting	
Set left margin at column n and right margin at column m ($0 \leq n, m \leq 255$)	ESC X (*n*) (*m*)
Set perforation skip by n lines ($1 \leq n \leq 255$)	ESC N (*n*)
Perforation skip off	ESC O
Set page length to n lines ($1 \leq n \leq 255$)	ESC C (*n*)
Set page length to n inches ($1 \leq n \leq 22$)	ESC C NUL (*n*)
Set top of form	ESC 4
Color Selection*	
Select print color* n = 0: Black 1: Magenta (red) 2: Cyan (blue) 3: Violet 4: Yellow 5: Orange 6: Green	ESC r (*n*)
Character Set Control	
Select character set 1	ESC 7
Select character set 2.	ESC 6
Print $n_1 + n_2 \times 256$ characters from all-character set (chars.: codes of characters to print, $0 \leq$ chars. ≤ 255)	ESC \ *(n_1) (n_2) (chars.)*
Print a character from all-character set (char.: a code of character to print, $0 \leq$ char. ≤ 255)	ESC ^ *(char.)*

Function	Command
Character Set Control (cont.)	
Selects a code page table n. ($0 < n_1, n_2 < 255$) ($n = n1 + n2 \times 256$)	ESC [T (n_1) (n_2) 00 (c_1) (c_2)

c_1	c_2	Code Page ID
0	210	Code Page 210
0	220	Code page 220
1	181	Code page 437
3	82	Code page 850
3	84	Code page 852
3	85	Code page 853
3	87	Code page 855
3	89	Code page 857
3	92	Code page 860
3	93	Code page 861
3	94	Code page 862
3	95	Code page 863
3	96	Code page 864
3	97	Code page 865
3	98	Code page 866
3	101	Code page 869
33	128	Mazowia
33	149	ISO 8859-7
33	151	ISO Latin 1T
35	59	Code Page 437 Greek
35	73	ABICOMP
35	74	BRASCII
35	76	Code MJK
35	77	Bulgarian

Clear one line of data	CAN
Select printer	DC1
Deselect printer (ignore input)	ESC Q #
Downloading	
Select resident or dowloaded font	ESC I (*n*)

Resident		Downloaded
0	10 cpi Draft	4
2	10 cpi LQ	6
3	Proportional	7
8	12 cpi Draft	12
10	12 cpi LQ	14
16	17 cpi Draft	20
18	17 cpi LQ	22

Create download font	ESC = (n_1) (n_2) ID (m_1) (m_2) (*data*)

Function	Command
Bit Image Graphics	
Single-density graphics	ESC K (n_1) (n_2) (*data*)
Double density graphics	ESC L (n_1) (n_2) (*data*)
High-speed double density graphics	ESC Y (n_1) (n_2) (*data*)
High resolution graphics	ESC Z (n_1) (n_2) (*data*)
Select graphics mode (in AG mode only)	ESC * (*m*) (c_1) (c_2) (*data*)
High density dot graphics printing	ESC [g (*l*) (*h*) (*m*) (n_1) ... (n_k) *(data*)
Cut Sheet Feeder Control	
Selectbin 1	ESC EM 1
Select bin 2	ESC EM 2
Select bin 3	ESC EM 3
Eject single sheet	ESC EM R
Park current path	ESC EM 8
Load current path	ESC EM 9
Select and load REAR PATH	ESC EM B
Select and load FRONT PATH	ESC EM F
Select and load ASF bin 1	ESC EM 15
Select and load ASF bin 2	ESC EM 16
Select and load ASF bin 3	ESC EM 17
Miscellaneous	
Sound the bell	BEL
Unidirectional printing on/off (on: *n* = 1, off: *n* = 0)	ESC U (*n*)
Add a line feed to all carriage returns (on: *n*=1, off: *n*=0)	ESC 5 (*n*)
Printer offline	ESC j
Select default settings	ESC [K (n_1) (n_2) (*i*) (*ID*) (p_1) (p_2)

F

EPSON ESC/P2 Quick Reference

This section describes the printer commands for the Epson ESC/P2 protocol. Asterisks in the "Function" column indicate extended commands that are not supported by the original printer. See the *Programmer's Reference Manual* for detailed information on using these commands.

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

Function	Command
Print Mode Control (cont.)	
	ESC (- (n_1) (n_2) (d_1) (d_2) (d_3)
n_1 = 3, n_2 = 0, d_1 = 1 d_2 = 1: Underline 2: Strikethrough 3: Overscore d_3 = 0: Cancel line selection 1: Single line 2: Double line 5: Single-dotted line 6 : Double-dotted line	
Select This command allows you to combine various printing styles. The value of *n* is the sum of the values of the styles you want to combine. n = 0: 10 cpi 1: 12 cpi 2: Proportional spacing 4: Condensed 8: Bold 16: Double height 32: Double width 64: Italics 128: Underline	ESC ! (*n*)
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Set 12 cpi	ESC M
Set 10 cpi.	ESC P
Set 15 cpi.	ESC g
Proportionally spaced characters on/off (on: n = 1, off: n = 0)	ESC p (*n*)
Set inter-character space to n/120 inch (for draft) or n/180 inch (for letter and proportional) ($1 \leq n \leq 127$)	ESC SP (*n*)
Set character pitch to (n_1 + n_2 x 256)/360 inch ($0 \leq n_1 \leq 255$) ($0 \leq n_2 \leq 4$)	ESC c (n_1) (n_2)

Function	Command
Horizontal Control (cont.)	
Select character pitch (specify unit of pitch) n1 = 1, n2 = 0 d = 10 : 10/3600 inch = 1/360 inch d = 20: 20/3600 inch = 1/180 inch d = 30: 30/3600 inch = 1/120 inch d = 40 : 40/3600 inch = 1/90 inch d = 50: 50/3600 inch = 1/72 inch d = 60: 60/3600 inch = 1/60 inch	ESC (U (n_1) (n_2) (d)
Vertical Control	
Line Feed	LF
Form Feed	FF
Advance paper n/180 inch ($1 \leq n \leq 255$)	ESC J (n)
Set line spacing to 1/8 inch	ESC 0
Set line spacing to n/180 inch ($0 \leq n \leq 255$)	ESC 3 (n)
Set line spacing to n/60 inch ($0 \leq n \leq 127$)	ESC A (n)
Set line spacing to 1/6 inch	ESC 2
Set line spacing to 1/360 inch	ESC + (n)
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs The values of n_1 to n_k in this command are the ASCII values of the print columns (at the current character width) at which tabs are to be set. ($1 \leq n \leq 255$) ($1 \leq k \leq 32$)	ESC D (n_1) ... (n_k) NUL
Move print position right by n/120(*1) inch (for draft) or n/180(*1) inch (for letter) right from left margin (n = n_1 + n_2 x 256)	ESC $ (n_1)(n_2)
Move print position n/120(*1) inch (for draft) or n/180(*1) inch (for letter) left or right from the current position (n = n_1 + n_2 x 256)	ESC \ (n_1)(n_2)
Vertical tab execution	VT
Set vertical tabs The values of n_1 to n_k in this command are the ASCII values of the print columns (at the current character width) at which tabs are to be set. ($1 \leq n \leq 255$) ($1 \leq k \leq 16$)	ESC B (n_1) ... (n_k) NUL
Move to dot line (d_1 + d_2 x 256)/360(*2) inch n_1 = 2, n_2 = 0 ($1 \leq d_1 \leq 255$) ($1 \leq d_2 \leq 127$)	ESC (V (n_1) (n_2) (d_1) (d_2)

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

*2 The value depends on the pitch set by the ESC (U command. The default is 1/360 inch.

Function	Command
Tabulation (cont.)	
Vertical relative move by (d_1 + d_2 x 256)/360(*1) inch n_1 = 2, n_2 = 0 (1 ≤ d_1 ≤ 255) (1 ≤ d_2 ≤ 127) -32768 ≤ d_1 + d2 x 256 ≤ 32768	ESC (v (n_1) (n_2) (d_1) (d_2)
Page Formatting	
Set right margin to column n (1 ≤ n ≤ 255)	ESC Q (n)
Set left margin to column n (1 ≤ n ≤ 255)	ESC l (n)
Set top and bottom margins from top of page n_1 = 4, n_2 = 0 Top margin = (t_1 + t_2 x 256)/360(*2) inch (0 ≤ t_1 ≤ 255)(0 ≤ t_2 ≤ 127) Bottom margin = (b_1 + b_2 x 256)/360(*2) inch (0 ≤ b_1 ≤ 255)(0 ≤ b_2 ≤ 127)	ESC (c (n_1) (n_2) (t_1) (t_2) (b_1) (b_2)
Set perforation skip by n lines (1 ≤ n ≤ 127)	ESC N (n)
Perforation skip off	ESC O
Set	ESC C (n)
Set	ESC C NUL (n)
Set page length to (d1 + d2 x 256)/360(*1) inch n1 = 2, n = 0 (0 < d1 < 255) (0 < d2 < 127)	ESC (C (n_1) (n_2) (d_1) (d_2)
Color Selection	
Select print color n = 0: Black 1: Magenta (red) 2: Cyan (blue) 3: Violet 4: Yellow 5: Orange 6: Green	ESC r (n)
Character Set Control	
Select character set 1	ESC 7
Select character set 2.	ESC 6
Select the active character set assigned with the ESC (t command (0 ≤ n ≤ 3)	ESC t (n)

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

*2 The value depends on the pitch set by the ESC (U command. The default is 1/360 inch.

Function			Command
Character Set Control (cont.)			
Select international character set			ESC R (n)
n =	0:	USA	
	1:	France	
	2:	Germany	
	3:	United Kingdom	
	4:	Denmark I	
	5:	Sweden	
	6:	Italy	
	7:	Spanish I	
	8:	Japan	
	9:	Norway	
	10:	Denmark 2	
	11:	Spanish 2	
	12:	Latin America	
	13:	Korea	
	64:	Legal	
Assign a character set to active character set number 0 to 3; n1 = 3, n2 = 0			ESC (t (n_1)(n_2)(d_1)(d_2)(d_3)
d_1 =	0:	Active character set number 0, default is Italics	
	1:	Active character set number 1, default is Graphics	
	2:	Active character set number 2, default is DLL	
	3:	Active character set number 3, default is Graphics	
d_2 =	d_3 =		
1	0	PC437 (USA)	
1	16	PC 437 (Greek)	
3	0	PC850 (Multilingual)	
4	0	PC851 (Greek)	
5	0	PC853 (Turkish)	
6	0	PC855 (Cyrillic)	
7	0	PC860 (Portuguese)	
8	0	PC863 (French Canadian)	
9	0	PC865 (Nordic)	
10	0	PC852 (Eastern Europe)	
11	0	PC 857 (Turkish)	
13	0	PC864 (Arabic)	
14	0	PC866 (Russian)	

Function			Command
Character Set Control (cont.)			
d_2 =	d_3 =		
15	0	PC869 (Greek)	
24	0	PC861 (Icelandic)	
25	0	Brazilian ASCII	
26	0	Abicomp (Brazilian portuguese)	
27	0	Mazowia (Polish)	
28	0	Code MJK (CSFR)	
29	7	ISO 8859-7 (Latin Greek)	
31	0	ISO Latin 1T (Turkish)	
32	0	Bulgarian	
Print n_1 + n_2 x 256 characters from all-character set (chars.: codes of characters to print, $(0 \leq n_1 \leq 255)$ $(0 \leq n_2 \leq 127)$ $(0 \leq n_1 + n_2 \times 256 \leq 255)$ $(0 \leq$ character codes $\leq 254)$			ESC (^ *(n_1) (n_2)* (*character codes*)
Delete last line			CAN
Delete the last character			DEL
Force most significant bit to 1			ESC >
Force most significant bit to 0			ESC =
Cancel control over most significant bit			ESC #
Font Selection and Downloading			
Select font			ESC % (n)
Ex. n =	0:	Resident	
	1:	Downloaded character set	
Select letter or draft quality			ESC x (n)
Ex. n =	0:	Draft	
	1:	Letter	
Select type style			ESC k (n)
n =	0:	Roman	
	1:	Sans Serif	
	2:	Courier	
	3:	Prestige	
	4:	Script	
	5:	OCR-B	
	7:	Orator	
	8:	Orator S (not resident)	
	9:	Script C (not resident)	

Function	Command
Font Selection and Downloading (cont.)	
Set scalable font mode. m sets character pitch m= 0: Keep previous pitch 1: Set proportional space mode m ≥ 5: Select character pitch (m/360 inch) (Reset proportional space mode) n1 and n2 set point size of font. Point size = (n_1 + n_2 x 256) x 0.5 point ($0 \leq n_1 \leq 255$) ($0 \leq n_2 \leq 127$)	ESC X m (n1)(n2)
Copy resident character set to download area	ESC : NUL (*n*) (*s*)
Create download font	ESC & NUL (n_1) (n_2) (d_0) (d_1) (d_2) (*data*)
Bit Image Graphics	
Graphics type m graphics	ESC * (*m*) (n_1) (n_2) (data)
Bit image mode definition	ESC ? (*s*) (*n*)
Single-density graphics	ESC K (n_1) (n_2) (*data*)
Double density graphics	ESC L (n_1) (n_2) (*data*)
High-speed double density graphics	ESC Y (n_1) (n_2) (*data*)
Quadruple-density graphics	ESC Z (n_1) (n_2) (*data*)
Select raster image graphics n_1 = 1, n_2 = 0 *d* = 1: Raster image graphics mode	ESC (G (n_1) (n_2) (*d*)
	ESC . (*c*) (*v*) (*h*) (*m*) (n_1) (n_2) (*data*)
Cut Sheet Feeder Control	
Select bin 1	ESC EM 1
Select bin 2	ESC EM 2
Select bin 3	ESC EM 3
Eject single sheet	ESC EM R
Park current path	ESC EM 8
Load current path	ESC EM 9
Select and load REAR PATH	ESC EM B
Select and load FRONT PATH	ESC EM F
Select and load ASF bin 1	ESC EM 15
Select and load ASF bin 2	ESC EM 16
Select and load ASF bin 3	ESC EM 17
Miscellaneous	
Sound thebell	BEL
Move print head to home position	ESC <
Unidirectional printing on/off (on: n = 1, off: n = 0)	ESC U (*n*)
Initialize printer	ESC @

DEC Character Set Tables

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	]	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

JIS Katakana Character Set

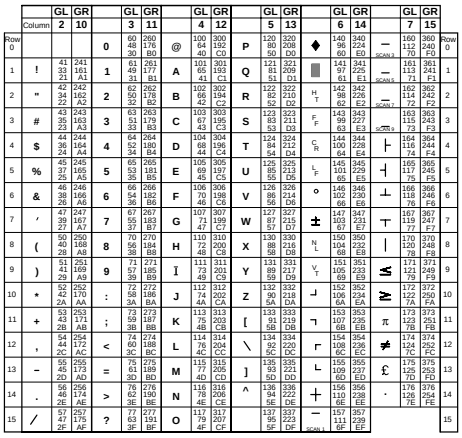
	GL	GR		GL	GR		GL	GR		GL	GR		GL	GR		GL	GR	
Column	2	10		3	11		4	12		5	13		6	14		7	15	
Row 0			—	60 48 30	260 176 B0	タ	100 64 40	300 192 C0	ミ	120 80 50	320 208 D0		140 96 60	340 224 E0		160 112 70	360 240 F0	Row 0
1	。	41 33 21	241 161 A1	ア	61 49 31	261 177 B1	チ	101 65 41	301 193 C1	ム	121 81 51	321 209 D1		141 97 61	341 225 E1		161 113 71	361 241 F1	1
2	「	42 34 22	242 162 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	」	43 35 23	243 163 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	、	44 36 24	244 164 A4	エ	64 52 34	264 180 B4	ト	104 68 44	304 196 C4	ヤ	124 84 54	324 212 D4		144 100 64	344 228 E4		164 116 74	364 244 F4	4
5	・	45 37 25	245 165 A5	オ	65 53 35	265 181 B5	ナ	105 69 45	305 197 C5	ユ	125 85 55	325 213 D5		145 101 65	345 229 E5		165 117 75	365 245 F5	5
6	ヲ	46 38 26	246 166 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	ァ	47 39 27	247 167 A7	キ	67 55 37	267 183 B7	ヌ	107 71 47	307 199 C7	ラ	127 87 57	327 215 D7		147 103 67	347 231 E7		167 119 77	367 247 F7	7
8	ィ	50 40 28	250 168 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	251 169 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	ェ	52 42 2A	252 170 AA	コ	72 58 3A	272 186 BA	ハ	112 74 4A	312 202 CA	レ	132 90 5A	332 218 DA		152 106 6A	352 234 EA		172 122 7A	372 250 FA	10
11	ォ	53 43 2B	253 171 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	254 172 AC	シ	74 60 3C	274 188 BC	フ	114 76 4C	314 204 CC	ワ	134 92 5C	334 220 DC		154 108 6C	354 236 EC		174 124 7C	374 252 FC	12
13	ュ	55 45 2D	255 173 AD	ス	75 61 3D	275 189 BD	ヘ	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	ョ	56 46 2E	256 174 AE	セ	76 62 3E	276 190 BE	ホ	116 78 4E	316 206 CE	゛	136 94 5E	336 222 DE		156 110 6E	356 238 EE		176 126 7E	376 254 FE	14
15	ッ	57 47 2F	257 175 AF	ソ	77 63 3F	277 191 BF	マ	117 79 4F	317 207 CF	゜	137 95 5F	337 223 DF		157 111 6F	357 239 EF				15

LEGEND

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

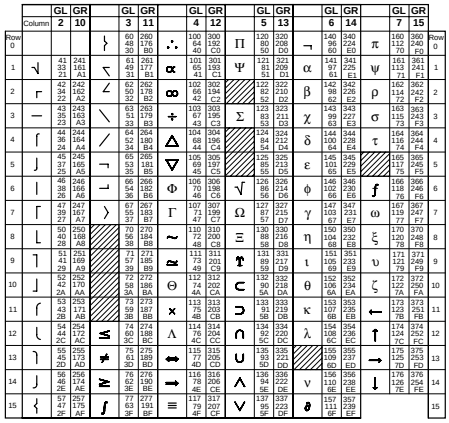
MLO-003983

DEC Special Graphics Character Set



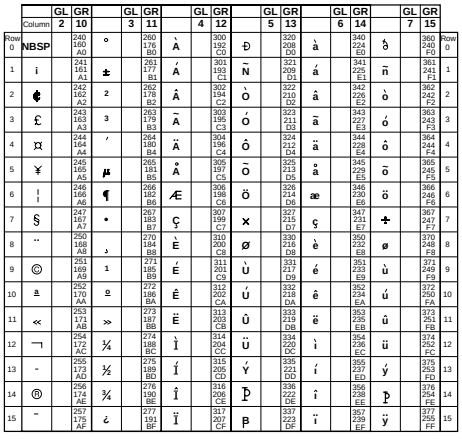
MLO-003984

DEC Technical Character Set



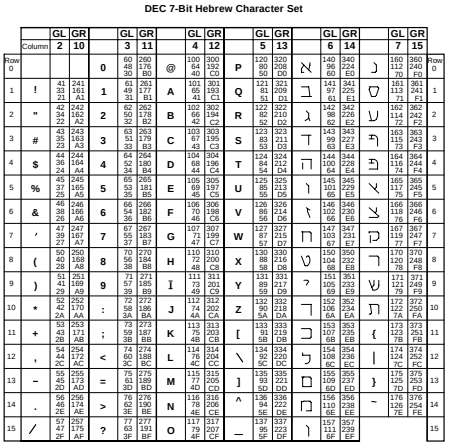
MLO-003985

ISO Latin-1 Supplemental Character Set



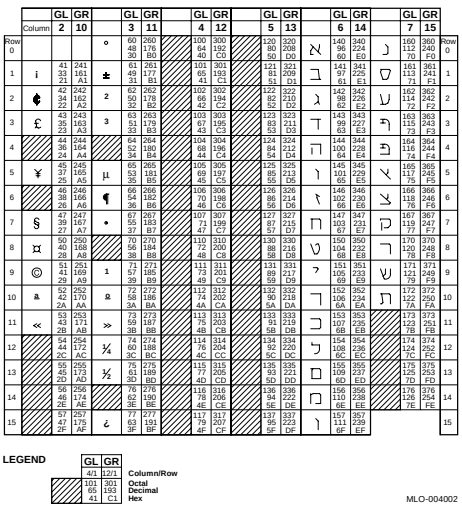
MLO-004000

DEC 7-Bit Hebrew Character Set



MLO-004001

DEC Hebrew Supplemental Character Set

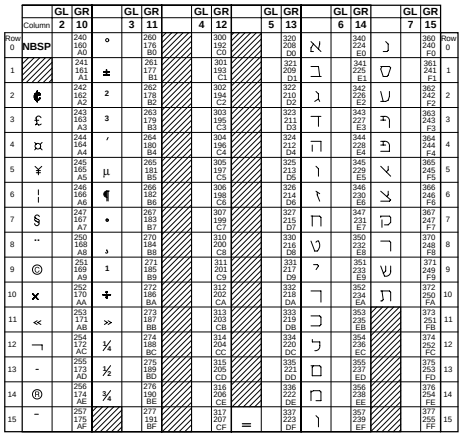


LEGEND

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

MLO-004002

ISO Latin-Hebrew Supplemental Character Set

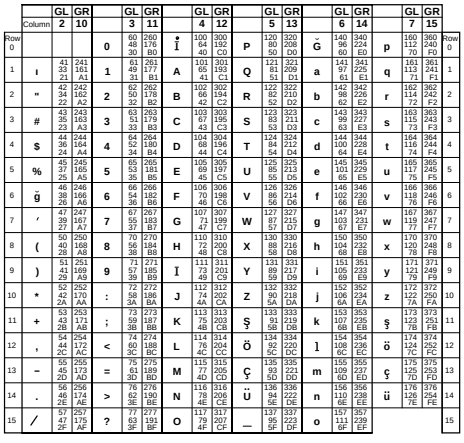


LEGEND

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

MLO-004003

DEC 7-Bit Turkish Character Set

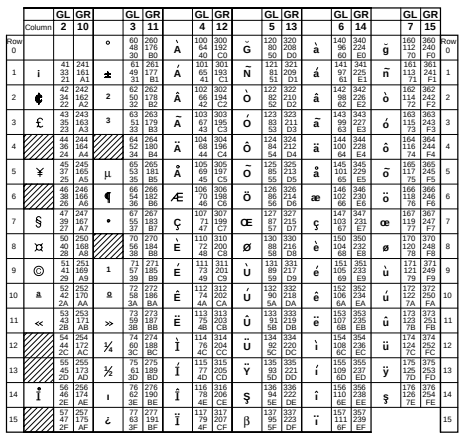


LEGEND

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

MLO-006605

DEC 8-Bit Turkish Supplemental Character Set



LEGEND

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

MLO-006606

DEC Greek Supplemental Character Set

Row	Column 2	GL 2	GR 10	Column 3	GL 3	GR 11	Column 4	GL 4	GR 12	Column 5	GL 5	GR 13	Column 6	GL 6	GR 14	Column 7	GL 7	GR 15	Row
0				°	60 48 30	260 176 B0	ϊ	100 64 40	300 192 C0		120 80 50	320 208 D0	ϋ	140 96 60	340 224 E0		160 112 70	360 240 F0	0
1	¡	41 33 21	241 161 A1	±	61 49 31	261 177 B1	Α	101 65 41	301 193 C1	Π	121 81 51	321 209 D1	α	141 97 61	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	Β	102 66 42	302 194 C2	Ρ	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	Τ	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	Ε	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	Ζ	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	Η	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 40 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 41 29	251 169 A9	¹	71 57 39	271 185 B9	Ι	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 42 2A	252 170 AA	º	72 58 3A	272 186 BA	Κ	112 74 4A	312 202 CA	ά	132 90 5A	332 218 DA	κ	152 106 6A	352 234 EA	ς	172 122 7A	372 250 FA	10
11	«	53 43 2B	253 171 AB	»	73 59 3B	273 187 BB	Λ	113 75 4B	313 203 CB	έ	133 91 5B	333 219 DB	λ	153 107 6B	353 235 EB	ύ	173 123 7B	373 251 FB	11
12		54 44 2C	254 172 AC	¼	74 60 3C	274 188 BC	Μ	114 76 4C	314 204 CC	ή	134 92 5C	334 220 DC	μ	154 108 6C	354 236 EC	ώ	174 124 7C	374 252 FC	12
13		55 45 2D	255 173 AD	½	75 61 3D	275 189 BD	Ν	115 77 4D	315 205 CD	ί	135 93 5D	335 221 DD	ν	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	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 47 2F	257 175 AF	¿	77 63 3F	277 191 BF	Ο	117 79 4F	317 207 CF	ό	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 65 41	301 193 C1	**Octal Decimal Hex**

MLO-006607

ISO Latin-2 Supplemental Character Set

Row	Column 2	GL 2	GR 10	Column 3	GL 3	GR 11	Column 4	GL 4	GR 12	Column 5	GL 5	GR 13	Column 6	GL 6	GR 14	Column 7	GL 7	GR 15	Row
0	NBSP	40 32 20	240 160 A0	°	60 48 30	260 176 B0	Ŕ	100 64 40	300 192 C0	Đ	120 80 50	320 208 D0	ŕ	140 96 60	340 224 E0	đ	160 112 70	360 240 F0	0
1	Ą	41 33 21	241 161 A1	ą	61 49 31	261 177 B1	Á	101 65 41	301 193 C1	Ń	121 81 51	321 209 D1	á	141 97 61	341 225 E1	ń	161 113 71	361 241 F1	1
2	˘	42 34 22	242 162 A2	˛	62 50 32	262 178 B2	Â	102 66 42	302 194 C2	Ň	122 82 52	322 210 D2	â	142 98 62	342 226 E2	ň	162 114 72	362 242 F2	2
3	Ł	43 35 23	243 163 A3	ł	63 51 33	263 179 B3	Ă	103 67 43	303 195 C3	Ó	123 83 53	323 211 D3	ă	143 99 63	343 227 E3	ó	163 115 73	363 243 F3	3
4	¤	44 36 24	244 164 A4	´	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	ô	164 116 74	364 244 F4	4
5	Ľ	45 37 25	245 165 A5	ľ	65 53 35	265 181 B5	Ĺ	105 69 45	305 197 C5	Ő	125 85 55	325 213 D5	ĺ	145 101 65	345 229 E5	ő	165 117 75	365 245 F5	5
6	Ś	46 38 26	246 166 A6	ś	66 54 36	266 182 B6	Ć	106 70 46	306 198 C6	Ö	126 86 56	326 214 D6	ć	146 102 66	346 230 E6	ö	166 118 76	366 246 F6	6
7	§	47 39 27	247 167 A7	ˇ	67 55 37	267 183 B7	Ç	107 71 47	307 199 C7	×	127 87 57	327 215 D7	ç	147 103 67	347 231 E7	÷	167 119 77	367 247 F7	7
8	¨	50 40 28	250 168 A8	¸	70 56 38	270 184 B8	Č	110 72 48	310 200 C8	Ř	130 88 58	330 216 D8	č	150 104 68	350 232 E8	ř	170 120 78	370 248 F8	8
9	Š	51 41 29	251 169 A9	š	71 57 39	271 185 B9	É	111 73 49	311 201 C9	Ů	131 89 59	331 217 D9	é	151 105 69	351 233 E9	ů	171 121 79	371 249 F9	9
10	Ş	52 42 2A	252 170 AA	ş	72 58 3A	272 186 BA	Ę	112 74 4A	312 202 CA	Ú	132 90 5A	332 218 DA	ę	152 106 6A	352 234 EA	ú	172 122 7A	372 250 FA	10
11	Ť	53 43 2B	253 171 AB	ť	73 59 3B	273 187 BB	Ë	113 75 4B	313 203 CB	Ű	133 91 5B	333 219 DB	ë	153 107 6B	353 235 EB	ű	173 123 7B	373 251 FB	11
12	Ź	54 44 2C	254 172 AC	ź	74 60 3C	274 188 BC	Ě	114 76 4C	314 204 CC	Ü	134 92 5C	334 220 DC	ě	154 108 6C	354 236 EC	ü	174 124 7C	374 252 FC	12
13	-	55 45 2D	255 173 AD	˝	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	ý	175 125 7D	375 253 FD	13
14	Ž	56 46 2E	256 174 AE	ž	76 62 3E	276 190 BE	Î	116 78 4E	316 206 CE	Ţ	136 94 5E	336 222 DE	î	156 110 6E	356 238 EE	ţ	176 126 7E	376 254 FE	14
15	Ż	57 47 2F	257 175 AF	ż	77 63 3F	277 191 BF	Ď	117 79 4F	317 207 CF	ß	137 95 5F	337 223 DF	ď	157 111 6F	357 239 EF	˙	177 127 7F	377 255 FF	15

LEGEND

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

MLO-006608

ISO Latin-Cyrillic Supplemental Character Set

Row	Column 2	GL 2	GR 10	Column 3	GL 3	GR 11	Column 4	GL 4	GR 12	Column 5	GL 5	GR 13	Column 6	GL 6	GR 14	Column 7	GL 7	GR 15	Row
0	NBSP	40 32 20	240 160 A0	А	60 48 30	260 176 B0	Р	100 64 40	300 192 C0	а	120 80 50	320 208 D0	р	140 96 60	340 224 E0	№	160 112 70	360 240 F0	0
1	Ё	41 33 21	241 161 A1	Б	61 49 31	261 177 B1	С	101 65 41	301 193 C1	б	121 81 51	321 209 D1	с	141 97 61	341 225 E1	ё	161 113 71	361 241 F1	1
2	Ђ	42 34 22	242 162 A2	В	62 50 32	262 178 B2	Т	102 66 42	302 194 C2	в	122 82 52	322 210 D2	т	142 98 62	342 226 E2	ђ	162 114 72	362 242 F2	2
3	Ѓ	43 35 23	243 163 A3	Г	63 51 33	263 179 B3	У	103 67 43	303 195 C3	г	123 83 53	323 211 D3	у	143 99 63	343 227 E3	ѓ	163 115 73	363 243 F3	3
4	Є	44 36 24	244 164 A4	Д	64 52 34	264 180 B4	Ф	104 68 44	304 196 C4	д	124 84 54	324 212 D4	ф	144 100 64	344 228 E4	є	164 116 74	364 244 F4	4
5	Ѕ	45 37 25	245 165 A5	Е	65 53 35	265 181 B5	Х	105 69 45	305 197 C5	е	125 85 55	325 213 D5	х	145 101 65	345 229 E5	ѕ	165 117 75	365 245 F5	5
6	І	46 38 26	246 166 A6	Ж	66 54 36	266 182 B6	Ц	106 70 46	306 198 C6	ж	126 86 56	326 214 D6	ц	146 102 66	346 230 E6	і	166 118 76	366 246 F6	6
7	Ї	47 39 27	247 167 A7	З	67 55 37	267 183 B7	Ч	107 71 47	307 199 C7	з	127 87 57	327 215 D7	ч	147 103 67	347 231 E7	ї	167 119 77	367 247 F7	7
8	Ј	50 40 28	250 168 A8	И	70 56 38	270 184 B8	Ш	110 72 48	310 200 C8	и	130 88 58	330 216 D8	ш	150 104 68	350 232 E8	ј	170 120 78	370 248 F8	8
9	Љ	51 41 29	251 169 A9	Й	71 57 39	271 185 B9	Щ	111 73 49	311 201 C9	й	131 89 59	331 217 D9	щ	151 105 69	351 233 E9	љ	171 121 79	371 249 F9	9
10	Њ	52 42 2A	252 170 AA	К	72 58 3A	272 186 BA	Ъ	112 74 4A	312 202 CA	к	132 90 5A	332 218 DA	ъ	152 106 6A	352 234 EA	њ	172 122 7A	372 250 FA	10
11	Ћ	53 43 2B	253 171 AB	Л	73 59 3B	273 187 BB	Ы	113 75 4B	313 203 CB	л	133 91 5B	333 219 DB	ы	153 107 6B	353 235 EB	ћ	173 123 7B	373 251 FB	11
12	Ќ	54 44 2C	254 172 AC	М	74 60 3C	274 188 BC	Ь	114 76 4C	314 204 CC	м	134 92 5C	334 220 DC	ь	154 108 6C	354 236 EC	ќ	174 124 7C	374 252 FC	12
13	-	55 45 2D	255 173 AD	Н	75 61 3D	275 189 BD	Э	115 77 4D	315 205 CD	н	135 93 5D	335 221 DD	э	155 109 6D	355 237 ED	§	175 125 7D	375 253 FD	13
14	Ў	56 46 2E	256 174 AE	О	76 62 3E	276 190 BE	Ю	116 78 4E	316 206 CE	о	136 94 5E	336 222 DE	ю	156 110 6E	356 238 EE	ў	176 126 7E	376 254 FE	14
15	Џ	57 47 2F	257 175 AF	П	77 63 3F	277 191 BF	Я	117 79 4F	317 207 CF	п	137 95 5F	337 223 DF	я	157 111 6F	357 239 EF	џ	177 127 7F	377 255 FF	15

LEGEND

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

MLO-006609

ISO Latin-Greek Supplemental Character Set

Row	Column 2	GL 2	GR 10	Column 3	GL 3	GR 11	Column 4	GL 4	GR 12	Column 5	GL 5	GR 13	Column 6	GL 6	GR 14	Column 7	GL 7	GR 15	Row
0	NBSP	40 32 20	240 160 A0	°	60 48 30	260 176 B0	ΐ	100 64 40	300 192 C0	Π	120 80 50	320 208 D0	ΰ	140 96 60	340 224 E0	π	160 112 70	360 240 F0	0
1	‘	41 33 21	241 161 A1	±	61 49 31	261 177 B1	Α	101 65 41	301 193 C1	Ρ	121 81 51	321 209 D1	α	141 97 61	341 225 E1	ρ	161 113 71	361 241 F1	1
2	’	42 34 22	242 162 A2	²	62 50 32	262 178 B2	Β	102 66 42	302 194 C2		122 82 52	322 210 D2	β	142 98 62	342 226 E2	ς	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	Τ	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	΅	65 53 35	265 181 B5	Ε	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	Ά	66 54 36	266 182 B6	Ζ	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	Η	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 40 28	250 168 A8	Έ	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 41 29	251 169 A9	Ή	71 57 39	271 185 B9	Ι	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		52 42 2A	252 170 AA	Ί	72 58 3A	272 186 BA	Κ	112 74 4A	312 202 CA	Ϊ	132 90 5A	332 218 DA	κ	152 106 6A	352 234 EA	ϊ	172 122 7A	372 250 FA	10
11	«	53 43 2B	253 171 AB	»	73 59 3B	273 187 BB	Λ	113 75 4B	313 203 CB	Ϋ	133 91 5B	333 219 DB	λ	153 107 6B	353 235 EB	ϋ	173 123 7B	373 251 FB	11
12	¬	54 44 2C	254 172 AC	Ό	74 60 3C	274 188 BC	Μ	114 76 4C	314 204 CC	ά	134 92 5C	334 220 DC	μ	154 108 6C	354 236 EC	ό	174 124 7C	374 252 FC	12
13	-	55 45 2D	255 173 AD	½	75 61 3D	275 189 BD	Ν	115 77 4D	315 205 CD	έ	135 93 5D	335 221 DD	ν	155 109 6D	355 237 ED	ύ	175 125 7D	375 253 FD	13
14		56 46 2E	256 174 AE	Ύ	76 62 3E	276 190 BE	Ξ	116 78 4E	316 206 CE	ή	136 94 5E	336 222 DE	ξ	156 110 6E	356 238 EE	ώ	176 126 7E	376 254 FE	14
15	―	57 47 2F	257 175 AF	Ώ	77 63 3F	277 191 BF	Ο	117 79 4F	317 207 CF	ί	137 95 5F	337 223 DF	ο	157 111 6F	357 239 EF		177 127 7F	377 255 FF	15

LEGEND

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

MLO-006610

ISO Latin-5 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	`	100 64 40	300 192 C0	˘	120 80 50	320 208 D0	à	140 96 60	340 224 E0	ğ	160 112 70	360 240 F0	Row 0
1	¡	41 33 21	241 161 A1	±	61 49 31	261 177 B1	´	101 65 41	301 193 C1	˜	121 81 51	321 209 D1	á	141 97 61	341 225 E1	ñ	161 113 71	361 241 F1	1
2	¢	42 34 22	242 162 A2	2	62 50 32	262 178 B2	ˆ	102 66 42	302 194 C2	ˋ	122 82 52	322 210 D2	â	142 98 62	342 226 E2	ò	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	ã	143 99 63	343 227 E3	ó	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	ˆ	124 84 54	324 212 D4	ä	144 100 64	344 228 E4	ô	164 116 74	364 244 F4	4
5	¥	45 37 25	245 165 A5	µ	65 53 35	265 181 B5	Å	105 69 45	305 197 C5	˜	125 85 55	325 213 D5	å	145 101 65	345 229 E5	õ	165 117 75	365 245 F5	5
6	¦	46 38 26	246 166 A6	¶	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	ö	166 118 76	366 246 F6	6
7	§	47 39 27	247 167 A7	·	67 55 37	267 183 B7	Ç	107 71 47	307 199 C7	×	127 87 57	327 215 D7	ç	147 103 67	347 231 E7	÷	167 119 77	367 247 F7	7
8	¨	50 40 28	250 168 A8	¸	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	ø	170 120 78	370 248 F8	8
9	©	51 41 29	251 169 A9	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	ù	171 121 79	371 249 F9	9
10	ª	52 42 2A	252 170 AA	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	ú	172 122 7A	372 250 FA	10
11	«	53 43 2B	253 171 AB	»	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	û	173 123 7B	373 251 FB	11
12	¬	54 44 2C	254 172 AC	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	ü	174 124 7C	374 252 FC	12
13	-	55 45 2D	255 173 AD	½	75 61 3D	275 189 BD	Í	115 77 4D	315 205 CD	İ	135 93 5D	335 221 DD	í	155 109 6D	355 237 ED	ı	175 125 7D	375 253 FD	13
14	®	56 46 2E	256 174 AE	¾	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	ş	176 126 7E	376 254 FE	14
15	¯	57 47 2F	257 175 AF	¿	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	ÿ	177 127 7F	377 255 FF	15

LEGEND

GR
12/1
Á
301
193
C1

Column/Row
Octal
Decimal
Hex

MLO-006611

Generic Character Set Tables

The following are the character set table which are common to the IBM and the EPSON protocol.

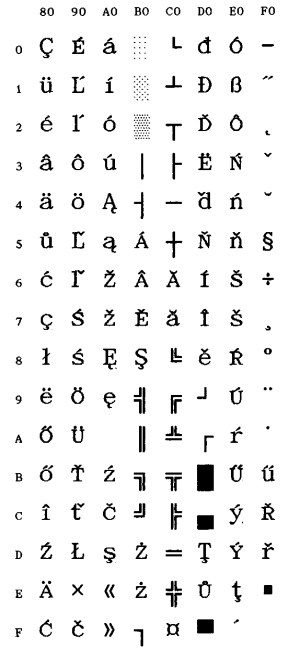
Code Page 210

Code Page 220

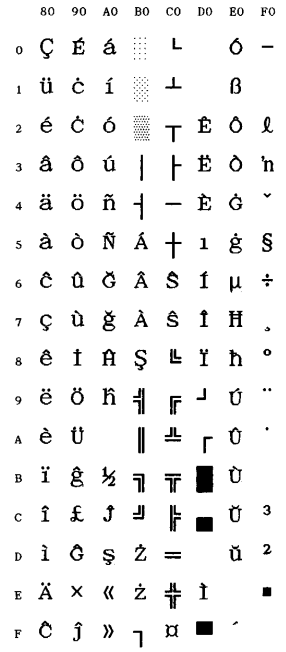
Code Page 437 Greek

Code Page 850

Code Page 852



Code Page 853



Code Page 855

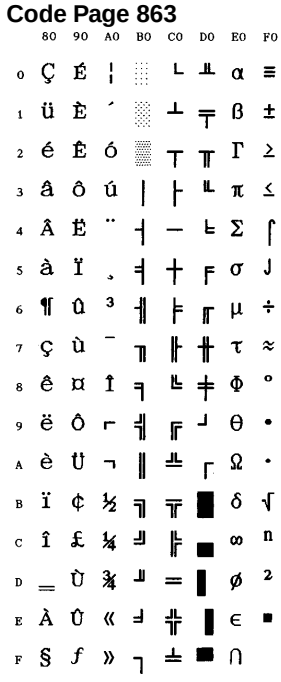
Code Page 857

Code Page 860

Code Page 861

Code Page 862

Code Page 863



Code Page 864

Code Page 865

Code Page 866

Code Page 869

	80	90	A0	B0	C0	D0	E0	F0
0		Ί	ΰ	░	└	Τ	ζ	−
1		Ϊ	ϋ	▒	┴	Υ	η	±
2		Ό	ό	▓	┬	Φ	θ	υ
3			ύ	│	├	Χ	ι	φ
4			Α	┤	─	Ψ	κ	χ
5		Ύ	Β	Κ	┼	Ω	λ	§
6	Ά	Ϋ	Γ	Λ	Π	α	μ	ψ
7		©	Δ	Μ	Ρ	β	ν	΄
8	·	Ω	Ε	Ν	╚	γ	ξ	°
9	¬	²	Ζ	╣	╔	┘	ο	¨
A	¦	³	Η	║	╩	┌	π	ω
B	‘	ά	½	╗	╦	▉	ϱ	ϋ
C	’	£	Θ	╝	╠	▄	σ	ΰ
D	Έ	έ	Ι	Ξ	═	δ	ς	ώ
E	—	ή	«	Ο	╬	∈	τ	▪
F	Ή	ί	»	┐	Σ	▌	΄	

Abicomp

	80	90	A0	B0	C0	D0	E0	F0
0				ò	¡	ò		
1			À	Ó	à	ó		
2			Á	Ô	á	ô		
3			Â	Õ	â	õ		
4			Ã	Ö	ã	ö		
5			Ä	Œ	ä	œ		
6			Ç	Ù	ç	ù		
7			È	Ú	è	ú		
8			É	Û	é	û		
9			Ê	Ü	ê	ü		
A			Ë	Ÿ	ë	ÿ		
B			Ì	¨	ì	ß		
C			Í	£	í	ª		
D			Î	·	î	º		
E			Ï	§	ï	¿		
F			Ñ	°	ñ	±		

Brazilian ASCII

	80	90	A0	B0	C0	D0	E0	F0
0				°	À	Đ	à	ð
1			¡	±	Á	Ñ	á	ñ
2			¢	²	Â	Ò	â	ò
3			£	³	Ã	Ó	ã	ó
4			¤	´	Ä	Ô	ä	ô
5			¥	µ	Å	Õ	å	õ
6			¦	¶	Æ	Ö	æ	ö
7			§	·	Ç	Œ	ç	œ
8			¨	¸	È	Ø	è	ø
9			©	¹	É	Ù	é	ù
A			ª	º	Ê	Ú	ê	ú
B			«	»	Ë	Û	ë	û
C			¬	¼	Ì	Ü	ì	ü
D			−	½	Í	Ý	í	ý
E			®	¾	Î	Þ	î	þ
F			¯	¿	Ï	ß	ï	ÿ

Mazowian

	80	90	A0	B0	C0	D0	E0	F0
0	Ç	Ę	Ź	░	└	╨	α	≡
1	ü	ę	Ż	▒	┴	╤	ß	±
2	é	ł	ó	▓	┬	╥	Γ	≥
3	â	ô	Ó	│	├	╙	π	≤
4	ä	ö	ń	┤	─	╘	Σ	⌠
5	à	Ć	Ń	╡	┼	╒	σ	⌡
6	ą	û	ź	╢	╞	╓	µ	÷
7	ç	ù	ż	╖	╟	╫	τ	≈
8	ê	Ś	§	╕	╚	╪	Φ	°
9	ë	Ö	⌐	╣	╔	┘	θ	•
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	ź	½	╗	╦	▉	δ	√
C	î	Ł	¼	╝	╠	▄	∞	n
D	ć	¥	¡	╜	═	▌	ø	²
E	Ä	ś	«	╛	╬	▐	∈	▪
F	Ą	ƒ	»	┐	╧	▄	∩	

Code MJK

	80	90	A0	B0	C0	D0	E0	F0
0	Č	É	á	░	└	╨	α	≡
1	ü	ž	í	▒	┴	╤	ß	±
2	é	Ž	ó	▓	┬	╥	Γ	≥
3	ď	ô	ú	│	├	╙	π	≤
4	ä	ö	ň	┤	─	╘	Σ	⌠
5	Ď	ó	Ň	╡	┼	╒	σ	⌡
6	Ť	ů	Ů	╢	╞	╓	µ	÷
7	č	Ú	ô	╖	╟	╫	τ	≈
8	ě	ý	š	╕	╚	╪	Φ	°
9	Ě	ö	ř	╣	╔	┘	θ	•
A	Ľ	Ü	ŕ	║	╩	┌	Ω	·
B	í	Š	Ŕ	╗	╦	▉	δ	√
C	Ľ	Ľ	¼	╝	╠	▄	∞	n
D	Ĺ	Ý	§	╜	═	▌	ø	²
E	Ä	Ř	«	╛	╬	▐	∈	▪
F	Á	ť	»	┐	╧	▄	∩	

Bulgarian

	80	90	A0	B0	C0	D0	E0	F0
0	А	Р	а	р	└	░	α	≡
1	Б	С	б	с	┴	▒	ß	±
2	В	Т	в	т	┬	▓	Γ	≥
3	Г	У	г	у	├	│	π	≤
4	Д	Ф	д	ф	─	┤	Σ	⌠
5	Е	Х	е	х	┼	№	σ	⌡
6	Ж	Ц	ж	ц	╡	§	µ	÷
7	З	Ч	з	ч	╢	╗	τ	≈
8	И	Ш	и	ш	╕	╝	Φ	°
9	Й	Щ	й	Щ	╣	┘	θ	•
A	К	Ъ	к	ъ	╩	┌	Ω	·
B	Л	Ы	л	ы	╦	▉	δ	√
C	М	Ь	м	ь	╠	▄	∞	n
D	Н	Э	н	э	═	▌	ø	²
E	О	Ю	о	ю	╬	▐	∈	▪
F	П	Я	п	я	┐	▄	∩	

ISO 8859-7

	80	90	A0	B0	C0	D0	E0	F0
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3			£	³	Γ	Σ	γ	σ
4				΄	Δ	T	δ	τ
5				΅	E	Υ	ε	υ
6			¦	Α	Z	Φ	ζ	φ
7			§	•	H	X	η	χ
8			¨	Έ	Θ	Ψ	θ	ψ
9			©	Ή	I	Ω	ι	ω
A				Ί	K	Ϊ	κ	ϊ
B			«	»	Λ	Ϋ	λ	ϋ
C			¬	Ό	M	ά	μ	ό
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E				Ύ	Ξ	ή	ξ	ώ
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ISO Latin 1T

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2			¢	²	Â	Ò	â	ò
3			£	³	Ã	Ó	ã	ó
4			¤	´	Ä	Ô	ä	ô
5			¥	µ	Å	Õ	å	õ
6			¦	¶	Æ	Ö	æ	ö
7			§	·	Ç	×	ç	÷
8			¨	¸	È	Ø	è	ø
9			©	¹	É	Ù	é	ù
A			ª	º	Ê	Ú	ê	ú
B			«	»	Ë	Û	ë	û
C			¬	¼	Ì	Ü	ì	ü
D			—	½	Í	İ	í	ı
E			®	¾	Î	Ş	î	ş
F			¯	¿	Ï	ß	ï	ÿ

Code Page 437

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2	é	Æ	ó	▒	┬	╥	Γ	≥
3	â	ô	ú	│	├	╙	π	≤
4	ä	ö	ñ	┤	─	╘	Σ	⌠
5	à	ò	Ñ	╡	┼	╒	σ	⌡
6	å	û	ª	╢	╞	╓	µ	÷
7	ç	ù	º	╖	╟	╫	τ	≈
8	ê	ÿ	¿	╕	╚	╪	Φ	°
9	ë	Ö	⌐	╣	╔	┘	Θ	•
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	¢	½	╗	╦	▉	δ	√
C	î	£	¼	╝	╠	▄	∞	n
D	ì	¥	¡	╜	═	▌	ø	²
E	Ä	₧	«	╛	╬	▐	∈	■
F	Å	ƒ	»	┐	╧	▀	∩	

D-Hebrew

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2	é	Æ	ó	▒	┬	╥	ג	ע
3	â	ô	ú	│	├	╙	ד	ף
4	ä	ö	ñ	┤	─	╘	ה	פ
5	à	ò	Ñ	╡	┼	╒	ו	ץ
6	å	û	ª	╢	╞	╓	ז	צ
7	ç	ù	º	╖	╟	╫	ח	ק
8	ê	ÿ	¿	╕	╚	╪	ט	ר
9	ë	Ö	⌐	╣	╔	┘	י	ש
A	è	Ü	¬	║	╩	┌	ך	ת
B	ï	¢	½	╗	╦	▉	כ	√
C	î	£	¼	╝	╠	▄	ל	n
D	ì	¥	¡	╜	═	▌	ם	²
E	Ä	₧	«	╛	╬	▐	מ	■
F	Å	ƒ	»	┐	╧	▀	ן	

New Hebrew

	80	90	A0	B0	C0	D0	E0	F0
0	א	נ	á	▒	└	╨	α	≡
1	ב	ס	í	▒	┴	╤	ß	±
2	ג	ע	ó	▒	┬	╥	Γ	≥
3	ד	ף	ú	│	├	╙	π	≤
4	ה	פ	ñ	┤	─	╘	Σ	⌠
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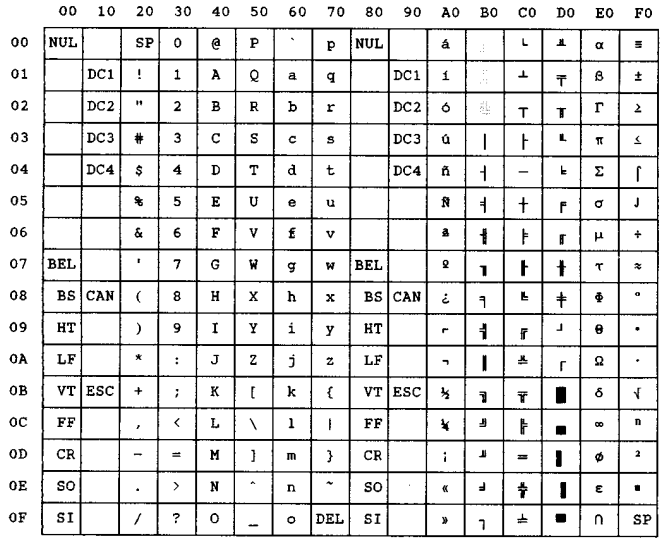
E	מ	₧	«	╛	╬	▐	ε	■
F	ן	ƒ	»	┐	╧	▀	∩	

IBM Character Set Tables

IBM Character Set 1



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01		DC1	!	1	A	Q	a	q		DC1	í	▒	┴	╤	ß	±
02		DC2	"	2	B	R	b	r		DC2	ó	▒	┬	╥	Γ	≥
03		DC3	#	3	C	S	c	s		DC3	ú	│	├	╙	π	≤
04		DC4	$	4	D	T	d	t		DC4	ñ	┤	─	╘	Σ	⌠
05			%	5	E	U	e	u			Ñ	╡	┼	╒	σ	⌡
06			&	6	F	V	f	v			ª	╢	╞	╓	µ	÷
07	BEL		'	7	G	W	g	w	BEL		º	╖	╟	╫	τ	≈
08	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	╕	╚	╪	Φ	°
09	HT		)	9	I	Y	i	y	HT		⌐	╣	╔	┘	Θ	∙
0A	LF		*	:	J	Z	j	z	LF		¬	║	╩	┌	Ω	·
0B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	╗	╦	█	δ	√
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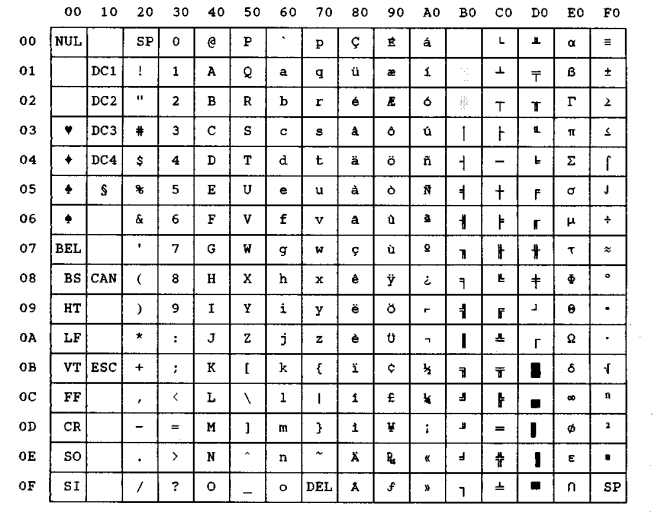
0F	SI		/	?	O	_	o	DEL	SI		»	┐	╧	▀	∩	SP

IBM Character Set 2



	00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
00	NUL		SP	0	@	P	`	p	Ç	É	á	▒	└	╨	α	≡
01		DC1	!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	ß	±
02		DC2	"	2	B	R	b	r	é	Æ	ó	▒	┬	╥	Γ	≥
03	♥	DC3	#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
04	♦	DC4	$	4	D	T	d	t	ä	ö	ñ	┤	─	╘	Σ	⌠
05	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
06	♠		&	6	F	V	f	v	a	û	ª	╢	╞	╓	µ	÷
07	BEL		'	7	G	W	g	w	ç	ù	º	╖	╟	╫	τ	≈
08	BS	CAN	(	8	H	X	h	x	ê	ÿ	¿	╕	╚	╪	Φ	°
09	HT		)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Θ	∙
0A	LF		*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
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0C	FF		,	<	L	\	l	|	î	£	¼	╝	╠	▄	∞	ⁿ
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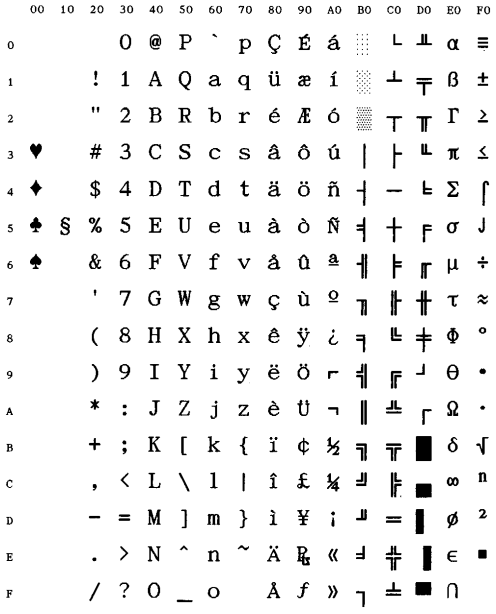
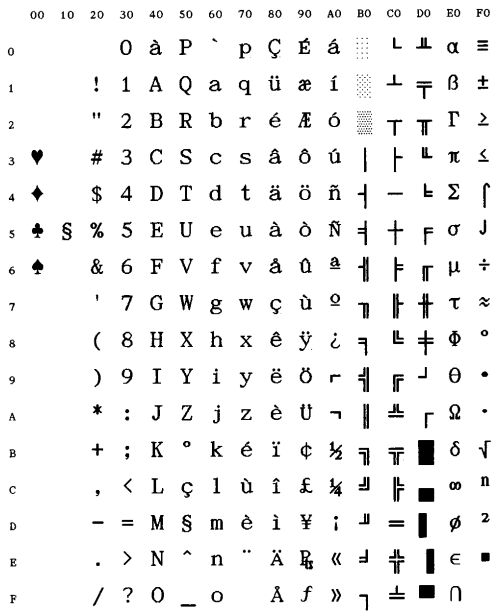
EPSON Character Set Tables

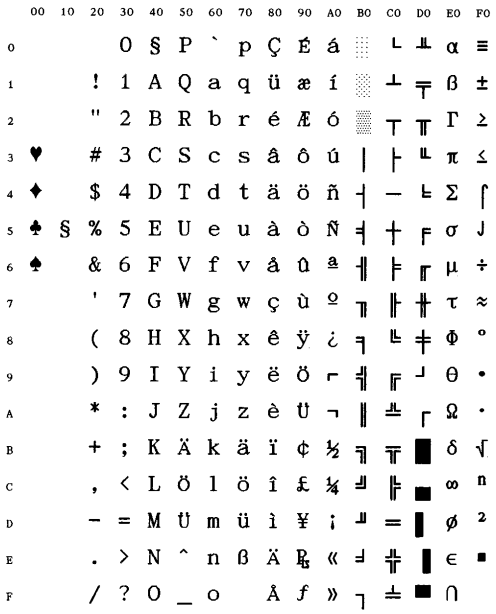
USA



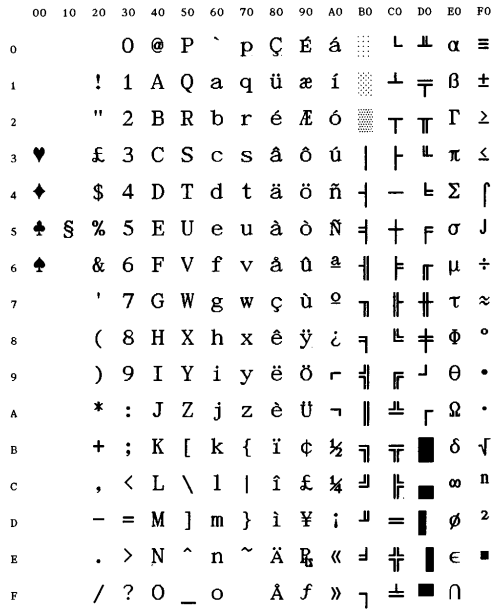
France



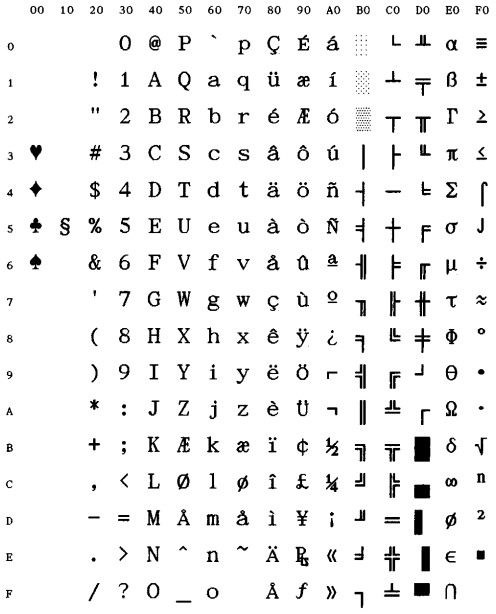
Germany



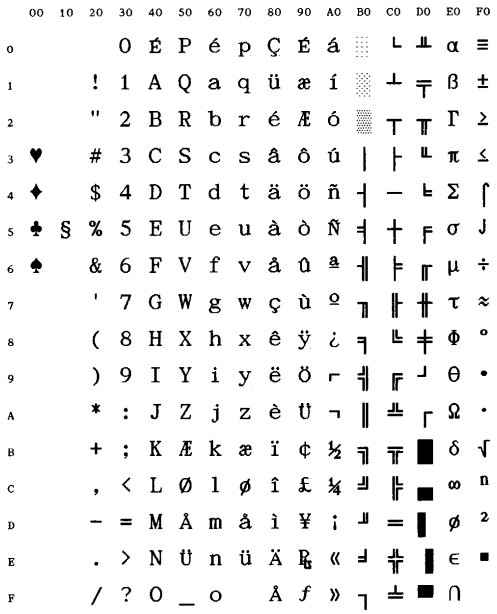
United Kingdom



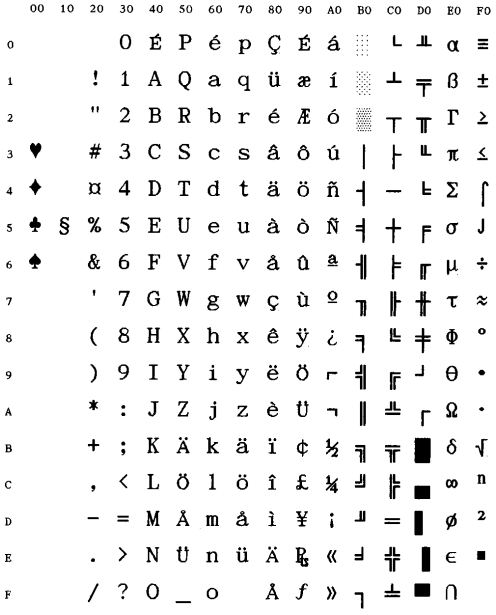
Denmark 1



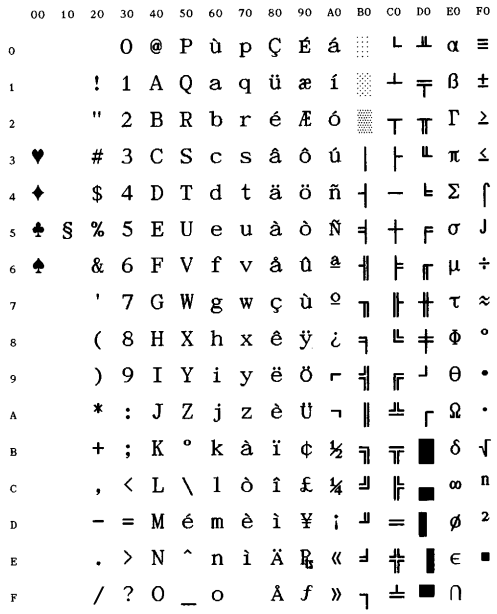
Denmark 2



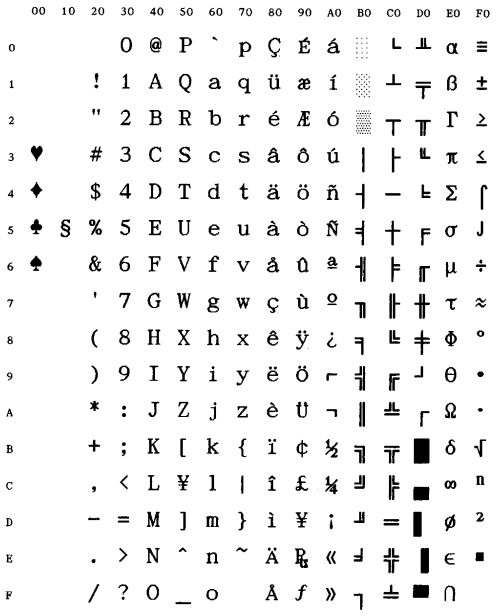
Sweden



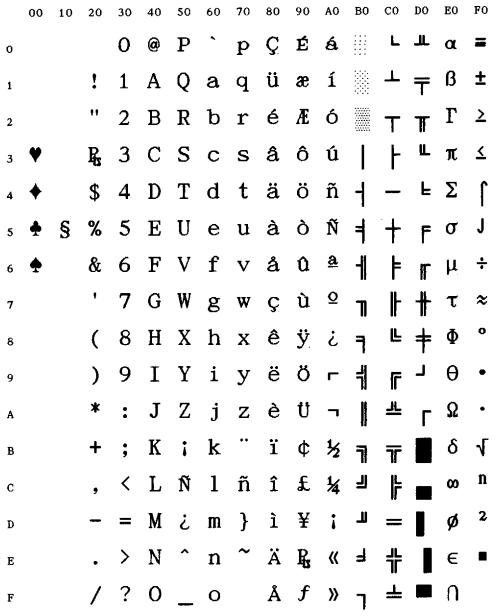
Italy



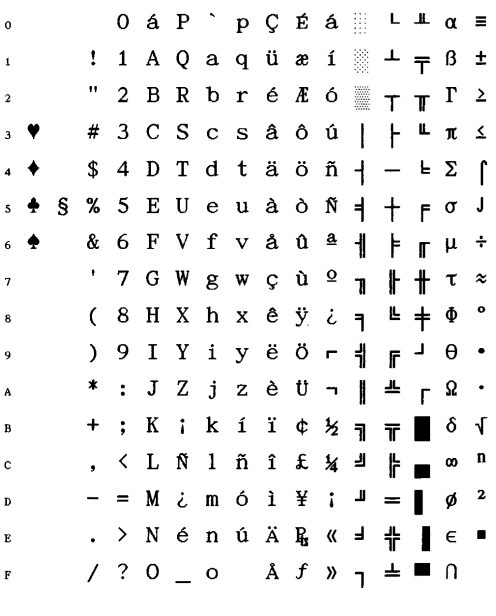
Japan



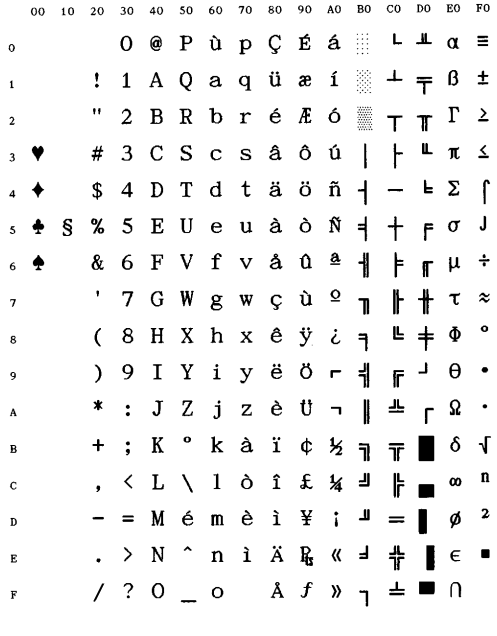
Spain 1



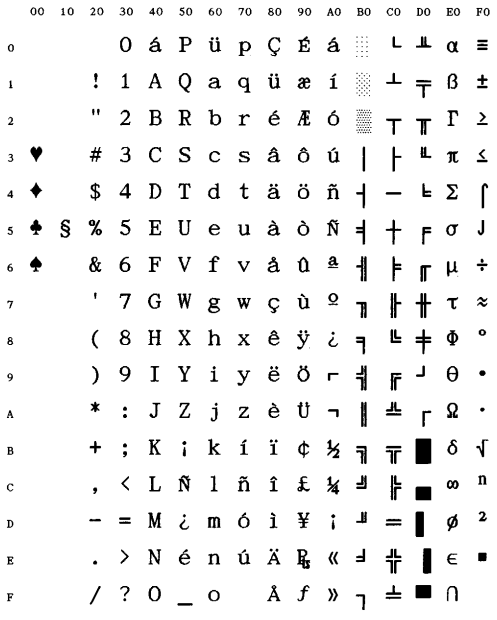
Spain 2



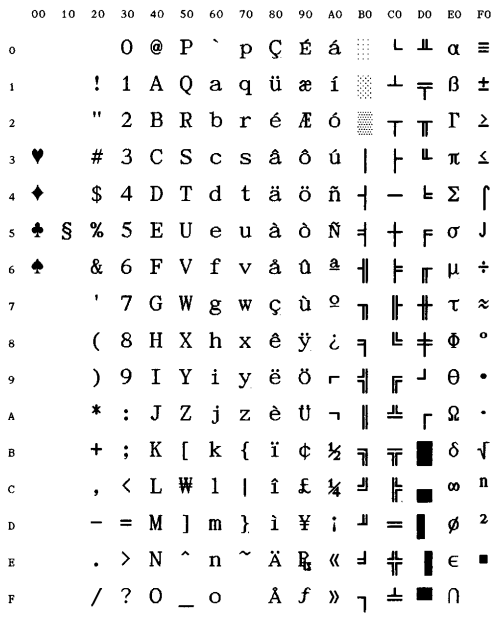
Norway



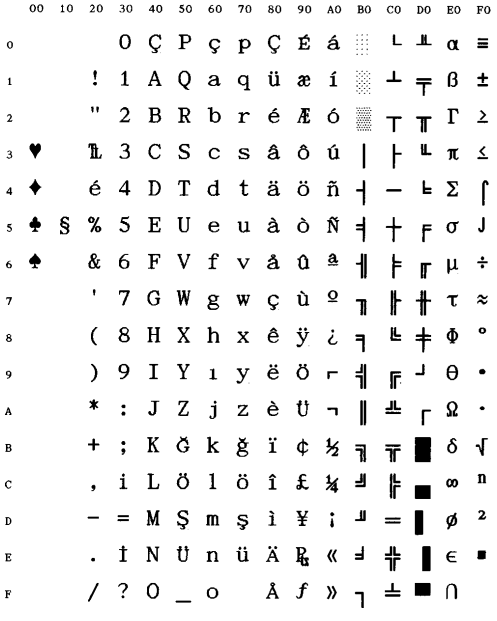
Latin America



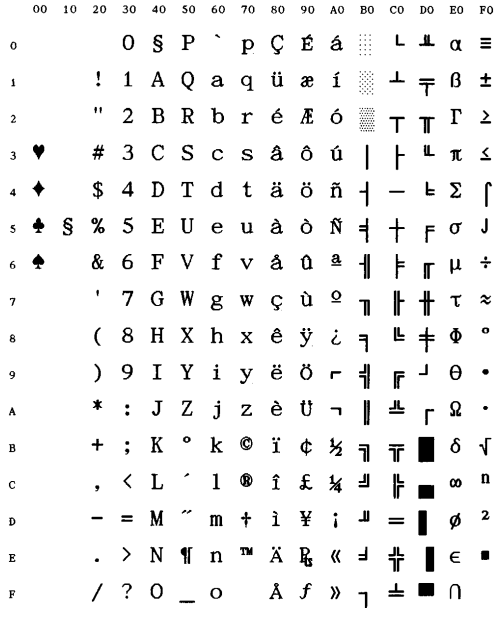
Korea



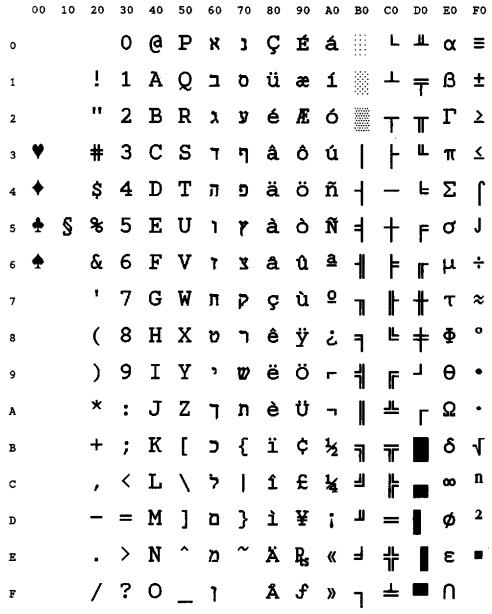
Turkey



Legal



Old Hebrew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1 ! 1 A Q ב ס ü æ í ▒ ┴ ╤ ß ±
2 " 2 B R ג ע é Æ ó ▒ ┬ ╥ Γ ≥
3 ♥ # 3 C S ד ף â ô ú │ ├ ╙ π ≤
4 ♦ $ 4 D T ה פ ä ö ñ ┤ ─ ╘ Σ ⌠
5 ♣ § % 5 E U ו ץ à ò Ñ ╡ ┼ ╒ σ ⌡
6 ♠ & 6 F V ז צ a û ª ╢ ╞ ╓ µ ÷
7 ' 7 G W ח ק ç ù º ╖ ╟ ╫ τ ≈
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A * : J Z ך ת è Ü ¬ ║ ╩ ┌ Ω ·
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F / ? O _ ן Å ƒ » ┐ ╧ ▀ ∩

H

Retrieving Access to Configuration

If you have selected the `Minimum` Value of the `USER ACCESS` Function, and you want to retrieve the access to Set-Up, proceed as follows:

1. Make sure the printer is powered-off.
2. Press the Set-up and the Pause buttons while powering the printer on and maintain the buttons depressed until `Testing...` is displayed.
   The display shows `USER ACCESS`.
3. Select the required user access level according to the procedure of the section "Setting the User Access Authorization" in Chapter 6 "Configuring your Printer".

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