
Chapter 6

Troubleshooting

Your LC24-30 Colour printer should perform without any problem most of the time. However, things will go wrong from time to time. A list of common problems and corresponding suggestions for curing them is given below.

A further section, *Checking system software settings*, suggests ways for you to check whether your system software (MS-DOS or Windows) is correctly set up for printing.

If the suggested remedies do not cure the problem, consult the store where you purchased your printer for assistance.

Note: The printer contains high voltages. Do not try any repair operation other than those described in this chapter. Otherwise, you could receive an electric shock or cause damage to the printer. Attempting such an operation will void your warranty.

Common problems and solutions

Power switch is on, but READY indicator is neither lit nor flashing	
Possible cause	Action
Printer is not receiving power	Check whether the power cord is correctly connected. If it is, try a different power cord.
	Check whether the power source is working by unplugging the printer and plugging in another device.

Printer sounds as if it is printing, but is not OR Printing is weak	
Possible cause	Action
The ribbon is jammed, twisted or not set properly between the print head and the print head shield.	Make sure that the ribbon cartridge is correctly installed. Refer to <i>Preparing the printer</i> on page 9 of Chapter 2.
The print gap is not set correctly.	Use the adjustment lever to set the print gap. Move the lever to a lower (darker) setting. See <i>Setting the print gap</i> on page 63 of Chapter 4.

Printer tests work, but printer will not print out data from attached computer

Possible cause	Action
The wrong emulation is selected.	Check the emulation selection (see <i>Selecting which emulation to use</i> on page 46 of Chapter 4), and change it if necessary.
The wrong printer has been selected by your application program or system software.	Check the printer selection in your application or system software. See the following section, <i>Checking system software settings</i> .
The computer system software is not set up properly for the printer or for the type of interface cable that you are using.	Check the system software settings. See the following section, <i>Checking system software settings</i> .
The interface cable is incorrectly connected, or damaged.	Check that the printer interface cable is correctly connected. If it is, try a different cable.

Font selection changes unexpectedly

Possible cause	Action
Your application software is overriding the control panel font selection. This does not apply to systems running Windows.	Use the control panel to inhibit font selection by application software. See the section <i>Preventing software font selection</i> on page 54 of Chapter 4.

Printer will not feed paper properly

Possible cause	Action
The paper tray cover is not properly closed.	Close the paper tray cover.
The release lever is in the wrong position.	Make sure that the lever is pushed back if you are printing on single sheets, or pulled forward if you are using fanfold stationery.
Paper is jamming.	Remove all paper from the printer. Reload paper.
The print gap is not set correctly.	Check the print gap. If necessary, use the adjustment lever to set the print gap. See <i>Setting the print gap</i> on page 63 of Chapter 4.

The printer will not print in color

Possible cause	Action
A monochrome ribbon cartridge is installed.	Install a color ribbon cartridge.
A printer that does not support color has been selected (either in Windows or in your application program).	Select a different printer driver (see <i>Setting up the printer in Windows</i> on page 15 of Chapter 2, and <i>Printing out your documents</i> on page 27 of Chapter 3).

The printer will not print in color	
Possible cause	Action
Electronic DIP Switch settings prevent use of color.	Check Electronic DIP Switch setting A4 and B3. Turn both settings to ON to enable color printing (see <i>Making Electronic DIP Switch settings</i> on page 37 of Chapter 4).

Line spacing is incorrect	
Possible cause	Action
Paper is jamming.	Check the print gap. If necessary, use the adjustment lever to set the print gap. See <i>Setting the print gap</i> on page 63 of Chapter 4.
The wrong line spacing or leading has been selected from your application program.	Choose a different setting in your application.
Auto line feed with carriage return is selected.	Check Electronic DIP Switch setting A5. Turn the setting ON to turn off automatic line feed (see <i>Making Electronic DIP Switch settings</i> on page 37 of Chapter 4).

Over-printing occurs	
Possible cause	Action
Auto line feed with carriage return is not selected.	Check Electronic DIP Switch setting A5. Turn the setting to OFF to select automatic line feed (see <i>Making Electronic DIP Switch settings</i> on page 37 of Chapter 4).
Paper is jamming.	Check the print gap. If necessary, use the adjustment lever to set the print gap. See <i>Setting the print gap</i> on page 63 of Chapter 4.

Incorrect number of lines per page	
Possible cause	Action
Printing is starting from the wrong place on the page.	Adjust the auto load position (see <i>Setting the auto load position</i> on page 60 of Chapter 4.)
Auto line feed with carriage return is selected.	Check Electronic DIP Switch setting A5. Turn the setting ON to turn off automatic line feed (see <i>Making Electronic DIP Switch settings</i> on page 37 of Chapter 4).

Incorrect number of lines per page

Possible cause	Action
The wrong line spacing or leading has been selected from your application program.	Choose a different setting in your application.

**Malformed text or graphics
OR
Poor printing quality**

Possible cause	Action
The print gap is not set correctly.	Use the adjustment lever to alter the print gap. See <i>Setting the print gap</i> on page 63 of Chapter 4.
The print head is damaged.	Return the printer to your dealer for repair.

Forms are smudged OR Printing is too dark	
Possible cause	Action
The print gap is not set correctly.	Use the adjustment lever to set the print gap. Move the lever to a higher (lighter) setting. See <i>Setting the print gap</i> on page 63 of Chapter 4.
The ribbon is jammed, twisted or not set properly between the print head and the print head shield.	Make sure that the ribbon cartridge is correctly installed. Refer to <i>Preparing the printer</i> on page 9 of Chapter 2.
Print head shield is damaged or missing.	Return the printer to your dealer for repair.

Printer case is hot

Possible cause	Action
The printer's air vents are blocked or obstructed.	Switch off the printer and allow it to cool down. Check the air vents on the underside of the printer to see if they are clogged or obstructed in any way. Remove the obstruction or clogging material if possible. If the problem persists, return the printer to your dealer for repair.

Printer makes excessive noise

Possible cause	Action
The front cover is off.	Replace the front cover.
The printer is vibrating.	Move any unrelated objects that are touching the printer. Make sure that the printer is on a level, steady surface.

Printer prints beyond the edge of the paper

Possible cause	Action
The paper guides are positioned incorrectly.	Remove the paper. Adjust the position of the paper guides and reload the paper.
The ribbon is jammed, causing the print head to jam.	Make sure that the ribbon cartridge is correctly installed. Refer to <i>Preparing the printer</i> on page 9 of Chapter 2.
The paper is jamming, causing the print head to jam.	Remove all paper from the printer. Reload paper. Check the print gap. If necessary, use the adjustment lever to set the print gap. See <i>Setting the print gap</i> on page 63 of Chapter 4.
Inappropriate margin settings have been selected from your application program.	Choose different margin settings in your application.

Left margin moves towards the right during printing

Possible cause	Action
The ribbon cartridge is incorrectly installed, causing the print head to jam.	Make sure that the ribbon cartridge is correctly installed. Refer to <i>Preparing the printer</i> on page 9 of Chapter 2.
The paper is not loaded properly, causing the print head to jam.	Remove all paper from the printer. Reload paper.
The print gap is not set correctly.	Use the adjustment lever to set the print gap. See <i>Setting the print gap</i> on page 63 of Chapter 4.
Static electricity caused by interference from nearby electrical devices or by a low level of humidity is affecting the printer's operation.	Make sure that the printer is not too close to any devices with electric motors or raise the humidity level.
Inappropriate settings have been selected from your application program.	Choose different settings in your application.

Some incorrect characters are being printed

Possible cause	Action
The wrong emulation is selected.	Check the emulation selection (see <i>Selecting which emulation to use</i> on page 46 of Chapter 4), and change it if necessary.
The wrong character table, code page or international character set is selected.	Check Electronic DIP Switch settings D2, D3, D4 and D5 (see <i>Making Electronic DIP Switch settings</i> on page 37 of Chapter 4).
Static electricity caused by interference from nearby electrical devices or by a low level of humidity is affecting the printer's operation.	Make sure that the printer is not too close to any devices with electric motors or raise the humidity level.
Inappropriate settings have been selected from your application program.	Choose different settings in your application.
There are wires missing from the print head.	Return the printer to your dealer for repair.

**Printer behaves erratically
OR
Printing ceases**

Possible cause	Action
The interface cable is incorrectly connected or damaged	Check that the printer interface cable is correctly connected. If it is, try a different cable.
Static electricity caused by interference from nearby electrical devices or by a low level of humidity is affecting the printer's operation.	Make sure that the printer is not too close to any devices with electric motors or raise the humidity level.

Checking system software settings

In Windows

If you cannot print from your Windows application, there are three things that you can check. You may also wish to refer to the *Microsoft Windows User's Guide*.

Firstly, check that the printer has been set as the *Default Printer*.

- Double-click the *Control Panel* icon in the *Main* window.
- Double-click the *Printers* icon
- Click on **LC24-30 Colour** in the list of installed printers.
- Make sure that *Set As Default Printer* is checked. If it is not, click on the check box and try printing from your application again.
- Click on *Close* to return to the *Control Panel* window.

Secondly, check that the printer is correctly selected in your application.

- Select *Print* from the application's *File* menu. A dialog box appears listing available printers.
- Make sure that **LC24-30 Colour** is highlighted. If it is not, click on it and try printing again.

Thirdly, check that the correct port is selected.

- Double-click the *Control Panel* icon in the *Main* window.
- Double-click the *Printers* icon
- Click on **LC24-30 Colour** in the list of installed printers.
- Click *Connect*.

- Make sure that your cable is connected to the port highlighted in the port list. If you are using a parallel cable, you will probably be using LPT1. If you are using the serial-to-parallel convertor, you will be using COM1 or COM2. Click on the appropriate port name.
- Click *OK*.
- Click on *Close* to return to the *Control Panel* window.

If you still cannot print successfully, consult your software dealer for assistance.

In MS-DOS

If you cannot print a text file using the MS-DOS **PRINT** command, check the AUTOEXEC.BAT file to see whether it contains a statement like either of the following:

```
MODE LPT1:=COM1:
```

or

```
MODE LPT1:=COM2:
```

These statements indicate that the computer is set up to print to a printer via a serial cable, not a parallel cable. So, if you are using a parallel cable, delete the line from AUTOEXEC.BAT. Resave AUTOEXEC.BAT and restart your computer. Now try printing again.

Conversely, if you are using a serial-to-parallel converter, make sure that one of these statements is included in the AUTOEXEC.BAT file. Also make sure that it refers to the correct serial port (COM1, COM2 etc.). See *Setting up a serial connection* on page 87 of Chapter 5.

If you still cannot print, refer to the *MS-DOS User's Guide* or consult your software dealer.

If you can print from MS-DOS but cannot print from your application, check to see which printer driver is selected in the application. See *Printing out your docu-*

ments on page 27 of Chapter 3 and check the application's manual for details of printer selection.

If you still cannot print, consult your software dealer.

Warning beeps

The printer beeps both to give you warnings that something is wrong and to indicate certain conditions that are part of normal operation. A full list of printer beeps is given on page 150 of the Appendix. The table below shows the beep combinations that are associated with printer problems.

Beep combination	Meaning
Sequence of four short tones, twice	The printer is out of paper
Single tone, two seconds	The printer detects an error condition. Turn the printer off and on again.
Single tone, continuous	

Chapter 7 Software commands

Introduction

The LC24-30 Colour has two emulation modes: Standard/Epson mode and IBM mode.

In the Standard/Epson mode, the printer emulates the Epson LQ-860/850, and can also recognize the graphics commands of NEC 24-wire printers. In IBM mode, the printer emulates the IBM Proprinter X24E. Some additional command codes, which are a superset of these emulations, are also supported.

The emulation can be changed by changing Electronic DIP Switch (EDS) setting A1. When A1 is ON, the printer is in Standard/Epson mode; when it is OFF, the printer is in IBM mode (see *Selecting which emulation to use* on page 46 of Chapter 4).

In addition, when EDS switch A2 is ON, the printer can automatically sense which emulation is required and will change emulation as necessary.

This chapter describes the printer's control commands. Some commands are common to both Standard and IBM modes. All commands will grouped by function. The name of each command is followed by a table like the one below:

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "x" <1>	27 120 1	1B 78 01

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

Std. Standard/Epson mode (EDS switch A1 is ON)

IBM IBM mode (EDS switch A1 is OFF)

- Both Both Standard/Epson and IBM modes
- ASCII: Indicates the ASCII coding of the command.
Control characters are enclosed in angle
brackets: For example, <1> means character
code 1.
- Decimal: Gives the command in decimal character
codes.
- Hexadecimal: Gives the command in hexadecimal char-
acter codes.
- Parameters for which values must be supplied are indi-
cated by letters such as *n*, *m* or *d*.

Font control commands

Select print quality

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "x" <i>n</i>	27 120 <i>n</i>	1B 78 <i>n</i>

Changes the print quality according to the value of *n*, as shown below:

<i>n</i>	Print quality
0	Draft
1	Letter quality

Ignored if the FONT LOCK mode was selected during power-up.

Select print quality

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "[" "d"	27 91 100	1B 5B 64
	<1> <0> <i>n</i>	1 0 <i>n</i>	01 00 <i>n</i>

Changes the print quality according to the value of *n*, as shown below:

<i>n</i>	Print quality
0	Unchanged
1 - 127	Draft
128 - 255	Letter quality

Ignored if the FONT LOCK mode was selected during power-up.

Select LQ font

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "k" <i>n</i>	27 107 <i>n</i>	1B 6B <i>n</i>

Selects an LQ font according to the value of *n*. In draft mode, this command remains dormant and takes effect later when LQ is selected. Ignored if the FONT LOCK mode was selected during power-up.

<i>n</i>	Font	<i>n</i>	Font
0	Roman	3	Prestige
1	Sanserif	4	Script
2	Courier		

Select italic characters

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "4"	27 52	1B 34

Causes subsequent characters (except IBM block graphic characters) to be printed in italics.

Select upright characters

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "5"	27 53	1B 35

Cancels italic printing and causes subsequent characters to be printed upright.

Emphasized printing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "E"	27 69	1B 45

Causes subsequent characters to be emphasized by adding extra thickness to horizontal strokes.

Cancel emphasized printing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "F"	27 70	1B 46

Cancels emphasized printing.

Double-strike printing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "G"	27 71	1B 47

Causes subsequent characters to be printed in double-strike mode with a slight horizontal motion in between, causing a thickening of vertical strokes.

For bold print, use of double-strike is recommended in LQ mode, and combined use of emphasized and double-strike is recommended in draft mode.

Cancel double-strike printing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "H"	27 72	1B 48

Cancels double-strike printing.

Underlining

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "-" <i>n</i>	27 45 <i>n</i>	1B 2D <i>n</i>

Causes subsequent characters to be underlined when *n* is 1, and cancels underlining when *n* is 0. Block graphics characters and spaces skipped by horizontal tabulation are not underlined.

Overlining

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> “_” <i>n</i>	27 95 <i>n</i>	1B 5F <i>n</i>

Causes subsequent characters to be overlined when *n* is 1, and cancels overlining when *n* is 0. Spaces skipped by horizontal tabulation are not overlined.

Select score

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> “(“-” <3> <0> <1> <i>n1</i> <i>n2</i>	27 40 45 3 0 1 <i>n1</i> <i>n2</i>	1B 28 2D 03 00 01 <i>n1</i> <i>n2</i>

Start score according to the values of *n1* and *n2*, as shown below.

<i>n1</i>	Function	<i>n2</i>	Function
1	Underlining	0	Cancel score
2	Strike-through	1	Single continuous line
3	Overlining	2	Double continuous line
		5	Single broken line
		6	Double broken line

Select ornament character

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "q" <i>n</i>	27 113 <i>n</i>	1B 71 <i>n</i>

Selects an ornament character according to the value of *n*, as shown below.

<i>n</i>	Character
0	Normal
1	Outline
2	Shadow
3	Shadow and outline

Superscript

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "S" <0>	27 83 0	1B 53 00

Causes subsequent characters to be printed as superscripts. Does not change the character pitch.

Subscript

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "S" <1>	27 83 1	1B 53 01

Causes subsequent characters to be printed as subscripts. Does not change the character pitch.

Cancel superscript or subscript

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "T"	27 84	1B 54

Cancels printing superscripts or subscripts and returns to normal printing.

Character set commands

Select character table

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "t" <i>n</i>	27 116 <i>n</i>	1B 74 <i>n</i>
Std.	<FS> "I" <i>n</i>	28 73 <i>n</i>	1C 49 <i>n</i>

Selects a character table according to the value of *n* as shown below:

<i>n</i>	Character table
0	Standard character set
1	IBM character set
2	Shift download character area (Standard mode only)

Select character set #1

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "7"	27 55	1B 37

Selects character set #1.

Select character set #2

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "6"	27 54	1B 36

Selects character set #2.

Select international character set

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "R" <i>n</i>	27 82 <i>n</i>	1B 52 <i>n</i>

Selects an international character set according to the value of *n*.

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

Any one of the first eight of these character sets (from U.S.A. to Spain I) can be selected as the power-up default using EDS switches D3 to D5.

International character set variations are shown on page 156 of the Appendix.

Select IBM code page

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> “ [“ “T”	27 91 84	1B 5B 54
	<4> <0> <0>	4 0 0	04 00 00
	<0> n1 n2	0 n1 n2	00 n1 n2

Changes the code page of the current IBM character set according to the values of *n1* and *n2*, as shown below.

<i>n1</i>	<i>n2</i>	Code page
1	181	#437 U.S.A.
3	82	#850 Multi-Lingual
3	92	#860 Portuguese
3	93	#861 Icelandic
3	95	#863 Canadian French
3	97	#865 Nordic

One of these code pages can be selected as the power-up default using EDS switches D3 to D5.

The various code pages are shown in the Appendix starting on page 157.

Enable printing of all character codes

MODE	ASCII	Decimal	Hexadecimal
Std.	<FS> “\” <i>n1 n2</i>	28 92 <i>n1 n2</i>	1C 5C <i>n1 n2</i>
IBM	<ESC> “\” <i>n1 n2</i>	27 92 <i>n1 n2</i>	1B 5C <i>n1 n2</i>

Enables printing of all characters in the IBM character set, including those characters which are normally considered control codes. This command remains in effect for the next $n1 + n2 \times 256$ characters, where *n1* and *n2* are between 0 and 255. During this time no control functions are executed. If a code with no assigned character is received, the printer prints a space.

Enable printing of all character codes on next character

MODE	ASCII	Decimal	Hexadecimal
Std.	<FS> “^” <i>n</i>	28 94 <i>n</i>	1C 5E <i>n</i>
IBM	<ESC> “^” <i>n</i>	27 94 <i>n</i>	1B 5E <i>n</i>

This command operates like the previous command, *Enable printing of all character codes*, except that it remains in effect for only one character.

Character size and pitch commands

Pica pitch

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "P"	27 80	1B 50
IBM	<DC2>	18	12

In Standard mode, changes from either elite or semi-condensed to pica pitch (10 cpi) or from condensed elite to condensed pica (17 cpi). In IBM mode, changes from elite or condensed to pica (10 cpi).

Elite pitch

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "M"	27 77	1B 4D
IBM	<ESC> ":"	27 58	1B 3A

In Standard mode, changes from either pica or semi-condensed to elite pitch (12 cpi) or from condensed pica to condensed elite (20 cpi). In IBM mode, changes from pica or condensed to elite (12 cpi).

Semi-condensed pitch

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "g"	27 103	1B 67

Changes from either pica or elite to semi-condensed pitch (15 cpi).

Condensed printing

MODE	ASCII	Decimal	Hexadecimal
Both	<SI>	15	0F
	<ESC> <SI>	27 15	1B 0F

In Standard mode, changes from pica to condensed pica (17 cpi) or from elite to condensed elite (20 cpi). In IBM mode, changes from pica to condensed pica.

Cancel condensed printing

MODE	ASCII	Decimal	Hexadecimal
Both	<DC2>	18	12

In Standard mode, changes from condensed pica to normal pica or from condensed elite to normal elite. In IBM mode, always changes to normal pica.

Proportional spacing

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "p" <i>n</i>	27 112 <i>n</i>	1B 70 <i>n</i>
IBM	<ESC> "P" <i>n</i>	27 80 <i>n</i>	1B 50 <i>n</i>

Causes subsequent characters to be proportionally spaced when *n* is 1, and cancels it when *n* is 0.

Select font and pitch

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "I" <i>n</i>	27 73 <i>n</i>	1B 49 <i>n</i>

Changes the print font and pitch according to the value of *n*, as shown below:

<i>n</i>	Font	Pitch
0	Draft	Pica
2	Letter Quality	Pica
3	Letter Quality	Proportional
8	Draft	Elite
10	Letter Quality	Elite
16	Draft	Pica condensed
18	Letter Quality	Pica condensed

Select print mode

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> “[“I” <2> <0> n1 n2	27 91 73 2 0 n1 n2	1B 5B 49 02 00 n1 n2

Changes the print mode according to the values of *n1* and *n2*, as shown below:

<i>n1</i>	<i>n2</i>	Font	Mode	Pitch
0	11	Courier	Normal	Pica
0	12	Prestige	Normal	Pica
0	18	Courier	Italic	Pica
0	46	Courier	Emphasized	Pica
0	57	Courier	Italic emphasized	Pica
0	60	Prestige	Emphasized	Pica
0	85	Courier	Normal	Elite
0	86	Prestige	Normal	Elite
0	92	Courier	Italic	Elite
0	108	Courier	Emphasized	Elite
0	111	Prestige	Emphasized	Elite
0	112	Prestige	Italic	Elite
0	116	Courier	Italic emphasized	Elite
0	164	Prestige	Normal	Proportional
0	171	Courier	Normal	Proportional
0	172	Courier	Italic	Proportional
0	184	Courier	Emphasized	Proportional
0	185	Courier	Italic emphasized	Proportional
0	221	Prestige	Normal	Semi-condensed
0	253	Courier	Emphasized	Pica condensed
0	254	Courier	Normal	Pica condensed

<i>n1</i>	<i>n2</i>	Font	Mode	Pitch
1	1	Prestige	Normal	Pica condensed
1	201	Prestige	Normal	Pica condensed
1	202	Prestige	Normal	Elite condensed
1	235	Courier	Normal	Elite
1	236	Courier	Normal	Semi-condensed
1	237	Courier	Normal	Pica condensed
1	238	Courier	Normal	Elite condensed
1	239	Prestige	Normal	Elite
1	240	Prestige	Normal	Semi-condensed

Expanded printing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "W" <i>n</i>	27 87 <i>n</i>	1B 57 <i>n</i>

Causes subsequent characters to be expanded to double width when *n* is 1, and cancels it when *n* is 0.

Expanded printing for one line

MODE	ASCII	Decimal	Hexadecimal
Both	<SO>	14	0E
	<ESC> <SO>	27 14	1B 0E

Causes subsequent characters in the current line to be expanded to double width. Characters return to normal width after the next line feed (<LF>). The <DC4>, <VT>, <FF>, and <ESC> "W" 0 commands also cancel expanded printing.

Cancel one-line expanded printing

MODE	ASCII	Decimal	Hexadecimal
Both	<DC4>	20	14

Cancels one-line expanded printing set with <SO> or <ESC> <SO>.

Does not cancel expanded printing set with <ESC> "W" 1.

Select character width

MODE	ASCII	Decimal	Hexadecimal
Std.	<FS> "E" <i>n</i>	28 69 <i>n</i>	1C 45 <i>n</i>

Selects a character width according to the value of *n* as shown below.

<i>n</i>	Character width
0	Normal-wide
1	Double-wide
2	Triple-wide

Select master print mode

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "!" <i>n</i>	27 33 <i>n</i>	1B 21 <i>n</i>

Selects a combined print mode according to the value of *n*. The value of *n* is the sum of the values given below for the desired characteristics.

Function	<i>n</i> value	Function	<i>n</i> value
Underline	128	Emphasized	8
Italic	64	Condensed	4
Expanded	32	Proportional	2
Double strike	16	Elite	1

Increase character spacing

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> <SP> <i>n</i>	27 32 <i>n</i>	1B 20 <i>n</i>

Increases the space between characters by *n* dots, where *n* is a number from 0 to 127. Used in micro-justification.

Print double-height characters

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "w" <1>	27 119 1	1B 77 01
	<FS> "V" <1>	28 86 1	1C 56 01

Prints subsequent characters double height without moving the base line and without changing the line spacing.

Return to normal height

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "w" <0>	27 119 0	1B 77 00
	<FS> "V" <0>	28 86 0	1C 56 00

Cancels double-height printing and prints subsequent characters normal height.

Select character height, width and line spacing

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> “[“ @”	27 91 64	1B 5B 40
	<4> <0> <0>	4 0 0	04 00 00
	<0> <i>n</i> <i>m</i>	0 <i>n</i> <i>m</i>	00 <i>n</i> <i>m</i>

Selects a combination of character height, width and line spacing according to the values of *n* and *m*, as shown below. Does not move the base line.

<i>n</i>	Line spacing	Character height
0	Unchanged	Unchanged
1	Unchanged	Single height
2	Unchanged	Double height
16	Single line	Unchanged
17	Single line	Single height
18	Single line	Double height
32	Double line	Unchanged
33	Double line	Single height
34	Double line	Double height

<i>m</i>	Character width
0	Unchanged
1	Single width (same as <ESC> “W” 0)
2	Double width (same as <ESC> “W” 1)

Vertical position commands

Set line spacing to 1/8 inch

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "0"	27 48	1B 30

Sets the distance the paper advances or reverses in subsequent line feeds to 1/8 inch.

Set line spacing to 1/6 inch

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "2"	27 50	1B 32

Sets the distance the paper advances or reverses in subsequent line feeds to 1/6 inch.

Set line spacing to n/360 inch

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "+" <i>n</i>	27 43 <i>n</i>	1B 2B <i>n</i>
	<FS> "3" <i>n</i>	28 51 <i>n</i>	1C 33 <i>n</i>

Sets the distance the paper advances or reverses in subsequent line feeds to $n/360$ inch, where n is between 0 and 255.

Set base unit for line spacing

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> “[“ \”	27 91 92	1B 5B 5C
	<4> <0> <0>	4 0 0	04 00 00
	<0> n1 n2	0 n1 n2	00 n1 n2

Sets the base unit for the line spacing commands, <ESC> “3” and <ESC> “J”, as shown below:

n1	n2	Line spacing unit
0	180	1/180 inch
0	216	1/216 inch
1	104	1/360 inch

This command becomes effective only after <ESC> “3” or <ESC> “J” is received. The default base unit is set to 1/216”.

Set line spacing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> “3” n	27 51 n	1B 33 n

Sets the distance the paper advances or reverses in subsequent line feeds to $n/180$ inch (STD and IBM mode), $n/216$ inch or $n/360$ inch (IBM mode only) according to the preceding base unit.

The value of n is between 0 and 255. If $n = 0$, in Standard mode the line-feed distance is set to 0, but in IBM mode the command is ignored.

Set line spacing to $n/60$ inch or $n/72$ inch

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "A" n	27 65 n	1B 41 n

In Standard mode, sets the distance the paper advances or reverses in subsequent line feeds to $n/60$ inch, where n is between 0 and 255. If $n = 0$, the line spacing is set to 0.

In IBM mode, this command defines the distance the paper advances or reverses in subsequent line feeds to $n/72$ inch, where n is between 1 and 85. The new line spacing does not take effect until the next <ESC> "2" command.

Execute <ESC> "A"

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "2"	27 50	1B 32

Sets the line spacing to the value defined by the last preceding <ESC> "A" command. Sets the line spacing to 1/6 inch if there is no preceding <ESC> "A" command.

Line feed

MODE	ASCII	Decimal	Hexadecimal
Both	<LF>	10	0A

Prints the current line and advances the paper to the next line. The line spacing is set by one of the commands listed previously.

Reverse line feed

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> <LF>	27 10	1B 0A
IBM	<ESC> “j”	27 93	1B 5D

Prints the current line and moves the paper in the reverse direction to the preceding line. Ignored when the printer is in friction feed mode.

The line spacing is set by one of the commands listed previously.

Select forward feed mode

MODE	ASCII	Decimal	Hexadecimal
Std.	<FS> “F”	28 70	1C 46

Cancels the reverse feed mode and selects forward feed mode. This is the default setting at power-on.

Select reverse feed mode

MODE	ASCII	Decimal	Hexadecimal
Std.	<FS> “R”	28 82	1C 52

Selects reverse feed mode. Reverses the direction of all vertical movements. Ignored when friction feed is used.

Perform one-time line feed

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> “J” <i>n</i>	27 74 <i>n</i>	1B 4A <i>n</i>

Feeds the paper once by *n* times the defined base unit (*n*/180 inches in Standard mode). The value of *n* is between 0 and 255. If *n* = 0, the line-feed distance is set to 0. Does not move the print position right or left. Does not change the line-spacing setting.

Perform one n/180-inch reverse line feed

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "j" <i>n</i>	27 106 <i>n</i>	1B 6A <i>n</i>

Feeds the paper once by $n/180$ inches in the reverse direction, where n is between 0 and 255. If $n = 0$, the line-feed distance is set to 0. Does not move the print position right or left. Does not change the line-spacing setting.

Set page length to n lines

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "C" <i>n</i>	27 67 <i>n</i>	1B 43 <i>n</i>

Sets the page length to n lines at the current line spacing, where n is between 1 and 127.

Changing the line spacing later does not alter the physical page length. The current line becomes the first line of a new page.

Set page length to n inches

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "C" <0> <i>n</i>	27 67 0 <i>n</i>	1B 43 00 <i>n</i>

Sets the page length to n inches, where n is between 1 and 32 in Standard mode or between 1 and 64 in IBM mode. The current line becomes the first line of a new page.

Set top of page at current position

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "4"	27 52	1B 34

Sets the current position as the top-of-page (top-of-form) position.

Set bottom margin

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "N" <i>n</i>	27 78 <i>n</i>	1B 4E <i>n</i>

Sets the bottom margin to *n* lines, where *n* is between 1 and 127 in Standard mode or between 1 and 255 in IBM mode. The bottom margin is reset when you change the page length.

Cancel bottom margin

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "O"	27 79	1B 4F

Cancels the bottom margin.

Form feed

MODE	ASCII	Decimal	Hexadecimal
Both	<FF>	12	0C

Feeds the paper to the top of the next page according to the current page length, and moves the print position to the left margin. When friction feed is used, this command ejects the current page.

Set vertical tab stops

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "B" <i>n1</i> <i>n2</i> ... <0>	27 66 <i>n1</i> <i>n2</i> ... 0	1B 42 <i>n1</i> <i>n2</i> ... 00

Cancels all current vertical tab stops and sets new vertical tab stops at lines *n1*, *n2*, etc., where *n1*, *n2*, etc. are numbers between 1 and 255. A maximum of 16 vertical tab stops can be set. The tab stops must be specified in ascending order; any violation of ascending order terminates the tab stop list. Standard termination is by the <0> control code. The vertical tab stops are set in terms of the current line spacing and do not move if the line spacing is changed later.

Set vertical tab stops in channel

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "b" n0 n1 n2 ... <0>	27 98 n0 n1 n2 ... 0	1B 62 n0 n1 n2 ... 00

Cancels all current vertical tab stops in channel *n0*, (where *n0* is between 0 and 7) and sets new vertical tab stops in this channel. (A channel is a set of vertical tab stops selected with the <ESC> "/" command.) See the <ESC> "B" command for parameters *n1*, *n2*, ... <0>.

Select vertical tab channel

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "/" n0	27 47 n0	1B 2F n0

Selects a set of vertical tab stops designated by a channel number (*n0*) from 0 to 7. The tab stops in each channel are set by <ESC> "b".

Vertical tab

MODE	ASCII	Decimal	Hexadecimal
Both	<VT>	11	0B

Feeds the paper to the next vertical tab stop and moves the print position to the left margin. Performs a line feed if no vertical tabs are set, such as at power-up. Feeds to the top of the next page if vertical tabs are set but the current line is at or below the last vertical tab stop.

Horizontal position commands

Set left margin

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "1" n	27 108 n	1B 6C n

Sets the left margin at column n (where n is between 0 and 255) at the current character pitch (pica pitch if proportional spacing is selected). The left margin does not move if the character pitch is changed later. The left margin must be at least two columns to the left of the right margin and within the limits given below:

Pica	$0 \leq n \leq 76$	Expanded pica	$0 \leq n \leq 38$
Elite	$0 \leq n \leq 91$	Expanded elite	$0 \leq n \leq 45$
Semi-condensed	$0 \leq n \leq 114$	Expanded semi-condensed	$0 \leq n \leq 57$
Condensed pica	$0 \leq n \leq 130$	Expanded condensed pica	$0 \leq n \leq 64$
Condensed elite	$0 \leq n \leq 152$	Expanded condensed elite	$0 \leq n \leq 76$

Set right margin

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "Q" n	27 81 n	1B 51 n

Sets the right margin at column n in the current character pitch (pica pitch if proportional spacing is currently selected). Column n becomes the last character position in the line. The right margin does not move if the character pitch is changed later. The right margin must be within the limits below:

Pica	$4 \leq n \leq 80$	Expanded pica	$2 \leq n \leq 40$
Elite	$5 \leq n \leq 96$	Expanded elite	$3 \leq n \leq 48$
Semi-condensed	$6 \leq n \leq 120$	Expanded semi-condensed	$3 \leq n \leq 60$
Condensed pica	$7 \leq n \leq 137$	Expanded condensed pica	$4 \leq n \leq 68$
Condensed elite	$8 \leq n \leq 160$	Expanded condensed elite	$4 \leq n \leq 80$

Set left and right margins

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "X" <i>n1 n2</i>	27 88 <i>n1 n2</i>	1B 58 <i>n1 n2</i>

Sets the left margin at column *n1* and the right margin at column *n2*. See the preceding commands for margin restrictions and other notes.

Carriage return

MODE	ASCII	Decimal	Hexadecimal
Both	<CR>	13	0D

Prints the current line and sets the print position to the left margin. If EDS switch A5 is set to OFF, this command also performs a line feed.

Set automatic line feed

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "5" <1>	27 53 1	1B 35 01

Causes the printer to perform both a carriage return and line feed each time it receives a <CR> code. This command overrides EDS switch A5.

Cancel automatic line feed

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "5" <0>	27 53 0	1B 35 00

Causes the printer to perform only a carriage return when it receives a <CR> code. This command takes priority over EDS switch A5.

Backspace

MODE	ASCII	Decimal	Hexadecimal
Both	<BS>	8	08

Moves the print position one column to the left. Ignored if the print position is at the left margin. This command can be used to overstrike or combine characters.

Set horizontal tab stops

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "D" <i>n1</i> <i>n2</i> ... <0>	27 68 <i>n1</i> <i>n2</i> ... 0	1B 44 <i>n1</i> <i>n2</i> ... 00

Cancels all current horizontal tab stops and sets new tab stops at columns *n1*, *n2*, etc. in the current character pitch (pica pitch if proportional spacing is currently selected), where *n1*, *n2*, etc. are numbers between 1 and 255. The maximum number of horizontal tab stops allowed is 32 in Standard mode and 28 in IBM mode. The tab stops must be specified in ascending order; any violation of ascending order terminates the tab stop list. Standard termination is by the <0> control code. To clear all tab stops, specify <ESC> "D" <0>.

Reset all tab stops

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "R"	27 82	1B 52

Resets the horizontal tab stops to their power-up values in which a tab stop is set every 8 columns starting at column 9. Also clears all vertical tab stops.

Horizontal tab

MODE	ASCII	Decimal	Hexadecimal
Both	<HT>	9	09

Moves the print position to the next horizontal tab stop. Ignored if there is no next horizontal tab stop on the current line. Note that when underlining is selected, spaces skipped by horizontal tabulation are not underlined.

Relative horizontal tab

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> “\” $n1\ n2$	27 92 $n1\ n2$	1B 5C $n1\ n2$

Moves the print position right or left a specified distance. Ignored if the resulting position is beyond the right or left margin. The formula for the distance and direction are as follows:

If $n2$ is between 0 and 63, the print head moves right by $(n1 + n2 \times 256)$ dots.

If you want to move the print head to the left, $n1$ and $n2$ are obtained by subtracting the value from 65536, and dividing the result into high and low bytes.

The unit of movement is fixed at 1/120 inch in draft mode and 1/180 inch in LQ mode.

Relative horizontal tab in inches

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> “d” $n1\ n2$	27 100 $n1\ n2$	1B 64 $n1\ n2$

Sets the next print position to $(n1 + n2 \times 256)/120$ inches from the current position.

Ignored if this position is beyond the right margin.

The maximum tab position is 8 inches.

Absolute horizontal tab in inches

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> “\$” $n1\ n2$	27 36 $n1\ n2$	1B 24 $n1\ n2$

Sets the next print position to $(n1 + n2 \times 256)/60$ inches from the left margin on the current line. Ignored if this position is beyond the right margin.

Graphics commands

Print normal-density 8-bit graphics

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "K" $n1$ $n2$ $m1$ $m2$...	27 75 $n1$ $n2$ $m1$ $m2$...	1B 4B $n1$ $n2$ $m1$ $m2$...

Prints bit-image graphics at 60 dots per inch horizontally. The graphic image is 8 dots high and ($n1 + n2 \times 256$) dots wide. Maximum width is 8 inches (480 dots). $m1$, $m2$, ... are the dot data, each a 1-byte value from 0 to 255 representing 8 vertical dots, with the most significant bit at the top and the least significant bit at the bottom. The number of data bytes must be $n1 + n2 \times 256$. Dots beyond the right margin are ignored. On completion of bit-image printing the printer returns automatically to character mode.

Print double-density 8-bit graphics

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "L" $n1$ $n2$ $m1$ $m2$...	27 76 $n1$ $n2$ $m1$ $m2$...	1B 4C $n1$ $n2$ $m1$ $m2$...

Prints bit-image graphics at 120 dots per inch horizontally (maximum 960 dots wide). See the <ESC> "K" command for other information.

Print double-density, double-speed 8-bit graphics

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "Y" $n1$ $n2$ $m1$ $m2$...	27 89 $n1$ $n2$ $m1$ $m2$...	1B 59 $n1$ $n2$ $m1$ $m2$...

Prints bit-image graphics at 120 dots per inch horizontally (maximum 960 dots wide), skipping every second dot in the horizontal direction. See the <ESC> "K" command for other information.

Print quadruple-density 8-bit graphics

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "Z" $n1$ $n2$ $m1$ $m2$...	27 90 $n1$ $n2$ $m1$ $m2$...	1B 5A $n1$ $n2$ $m1$ $m2$...

Prints bit-image graphics at 240 dots per inch horizontally (maximum 1920 dots wide), skipping every second dot in the horizontal direction. See the <ESC> "K" command for other information.

Print hex-density 24-bit graphics

MODE	ASCII	Decimal	Hexadecimal
Std.	<FS> "Z" $n1$ $n2$ $m1$ $m2$ $m3$...	28 90 $n1$ $n2$ $m1$ $m2$ $m3$...	1C 5A $n1$ $n2$ $m1$ $m2$ $m3$...

Prints 24-bit dot graphics at 360 dots per inch horizontally. The graphics image is 24 dots high and $n1 + n2 \times 256$ dots wide. Maximum width is 8 inches (2880 dots). In the data $m1$, $m2$, $m3$... each three bytes represent 24 vertical dots. In the leftmost position, the most significant bit of $m1$ is the top dot; the least significant bit of $m1$ is the eighth dot from the top; the most significant bit of $m2$ is the ninth dot; the least significant bit of $m2$ is the sixteenth dot from the top; the most significant bit of $m3$ is the seventeenth dot from the top; the least significant bit of $m3$ is the bottom dot. The rest of the data is organized in the same way. The number of data bytes must be $3 \times (n1 + n2 \times 256)$. Dots beyond the right margin are ignored. On completion of dot graphics printing, the printer returns automatically to character mode.

Select graphics mode

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "*" n0 n1 n2 m1 m2 ...	27 42 n0 n1 n2 m1 m2 ...	1B 2A n0 n1 n2 m1 m2 ...

Selects one of eleven graphics modes depending on the value of *n0* and prints bit-image graphics in this mode. See the <ESC> "K" command (for 8-bit graphics) or the <FS> "Z" command (for 24-bit graphics) for information on *n1*, *n2*, *m1*, *m2*, etc.

<i>n0</i>	Graphics mode	
0	8-bit Normal-density	(60 dots per inch)
1	8-bit Double-density	(120 dots per inch)
2	8-bit Double-density, double-speed	(120 dots per inch)
3	8-bit Quadruple-density	(240 dots per inch)
4	8-bit CRT graphics, mode I	(80 dots per inch)
6	8-bit CRT graphics, mode II	(90 dots per inch)
32	24-bit Normal-density	(60 dots per inch)
33	24-bit Double-density	(120 dots per inch)
38	24-bit CRT graphics	(90 dots per inch)
39	24-bit Triple-density	(180 dots per inch)
40	24-bit Hex-density	(360 dots per inch)

Select graphics mode

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> “[“g” n1 n2 m0 m1 m2 ...	27 91 103 n1 n2 m0 m1 m2 ...	1B 5B 67 n1 n2 m0 m1 m2 ...

Selects one of eight graphics modes depending on the value of *m0* and prints bit-image graphics in this mode. The graphics image is $(n1 + n2 \times 256) - 1$ dots wide. See the <ESC> “K” command (for 8-bit graphics) or the <FS> “Z” command (for 24-bit graphics) for information on *m1*, *m2*, etc.

<i>m0</i>	Graphics mode
0	8-bit Normal-density (60 dots per inch)
1	8-bit Double-density (120 dots per inch)
2	8-bit Double-density, double-speed (120 dots per inch)
3	8-bit Quadruple-density (240 dots per inch)
8	24-bit Normal-density (60 dots per inch)
9	24-bit Double-density (120 dots per inch)
11	24-bit Triple-density (180 dots per inch)
12	24-bit Hex-density (360 dots per inch)

Convert graphics density

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> “?” <i>n m</i>	27 63 <i>n m</i>	1B 3F <i>n m</i>

Converts graphics defined by subsequent <ESC> “K”, <ESC> “L”, <ESC> “Y” or <ESC> “Z” commands to a density mode defined by <ESC> “*”. *n* is “K”, “L”, “Y” or “Z”, indicating the mode to be converted. *m* is a code from <0> to <4> or <6> indicating one of the modes of <ESC> “*.”

Download character commands

Define download characters

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "&" <0>	27 38 0	1B 26 00
	<i>n1 n2 m0</i>	<i>n1 n2 m0</i>	<i>n1 n2 m0</i>
	<i>m1 m2 d1</i>	<i>m1 m2 d1</i>	<i>m1 m2 d1</i>
	<i>d2 ... dx</i>	<i>d2... dx</i>	<i>d2... dx</i>

Defines one or more new characters and stores them in RAM for later use. EDS switch A3 must be set to OFF; otherwise RAM is used as an input buffer only, not for storing downloaded characters, and this command is ignored.

n1 is the character code of the first character to be defined and *n2* is the character code of the last character to be defined. *n1* must be equal to or less than *n2*.

The data for each character starts with three bytes specifying proportional spacing attributes: the first byte, *m0*, specifies the left of the character; the second byte, *m1*, specifies the character width; the third byte, *m2*, specifies the right of the character.

These values must not exceed the following maximum limits:

Character mode	<i>m1</i>	<i>m0 + m1 + m2</i>
Draft	9	12
LQ pica	31	36
LQ elite	27	30
LQ semi-condensed	19	24
LQ proportional	37	42
Draft super/subscript	7	12
LQ super/subscript	19	36
LQ prop. super/subscript	37	42

Next comes the dot data. Normal character height is 24 dots, so there must be $3 \times m1$ bytes of dot data. If the printer is in super/subscript mode, however, the character height is 16 dots, so there must be $2 \times m1$ bytes of dot data.

Each data byte represents eight vertical dots, with the most significant bit representing the top dot, and the least significant bit representing the bottom dot.

Select download character set

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> “%” <1>	27 37 1	1B 25 01

Selects the download character set. Ignored when EDS switch A3 is ON.

Select ROM character set

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> “%” <0>	27 37 0	1B 25 00

Stops using the download character set and returns to the built-in ROM character set. Ignored when EDS switch A3 is ON.

Other printer commands

Select print color

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "r" <i>n</i>	27 114 <i>n</i>	1B 72 <i>n</i>

Selects the printing color according to the value of *n* as shown below. Ignored if EDS switch A4 is OFF, EDS switch B3 is OFF, or if a color ribbon is not installed.

<i>n</i>	Color	<i>n</i>	Color
0	Black	4	Yellow
1	Magenta	5	Orange
2	Cyan	6	Green
3	Violet		

Set MSB to 1

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> ">"	27 62	1B 3E

Sets the most significant bit of each subsequent byte received to 1, allowing users with a 7-bit interface to access characters with ASCII codes greater than 127.

Set MSB to 0

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "="	27 61	1B 3D

Sets the most significant bit of each subsequent byte received to 0.

Accept MSB as is

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "#"	27 35	1B 23

Cancels the preceding commands and accepts the most significant bit as it is when it is sent to the printer.

Delete last character sent

MODE	ASCII	Decimal	Hexadecimal
Std.		127	7F

Deletes the last character received. Ignored if the last character received has already been printed, or if the last character received was part of a command.

Cancel last line

MODE	ASCII	Decimal	Hexadecimal
Both	<CAN>	24	18

Deletes the last line currently in the print buffer.

Set printer off-line

MODE	ASCII	Decimal	Hexadecimal
Std.	<DC3>	19	13
IBM	<ESC> "Q" "\$"	27 81 36	1B 51 24

Sets the printer off-line (into **not-ready mode**). The printer disregards all subsequent characters and commands except <DC1>, which puts it back on-line (into **ready mode**). The printer's READY indicator will not go off.

Set printer on-line

MODE	ASCII	Decimal	Hexadecimal
Both	<DC1>	17	11

Puts the printer back on-line (into **ready mode**), allowing it to receive and process all subsequent characters and commands. This command is ignored if the printer was set off-line (into **not-ready mode**) by pressing the **READY** key on the control panel.

Stop printing

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> "j"	27 106	1B 6A

Prints the entire contents of the input buffer, then sets the printer off-line (into **not-ready mode**). The READY indicator on the control panel will go off.

Bell

MODE	ASCII	Decimal	Hexadecimal
Both	<BEL>	7	07

Sounds a brief beep tone on the printer.

Bi-directional printing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "U" <0>	27 85 0	1B 55 00

Causes subsequent printing to be performed in the normal bi-directional mode, which is faster than uni-directional printing.

Uni-directional printing

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "U" <1>	27 85 1	1B 55 01

Causes subsequent printing to be performed uni-directionally, ensuring maximum vertical alignment precision.

One-line uni-directional printing

MODE	ASCII	Decimal	Hexadecimal
Std.	<ESC> "<"	27 60	1B 3C

Immediately returns the print head to the left margin, then prints the remainder of the line from left to right. Normal bi-directional printing resumes on the next line.

Manual feed

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> <0>	27 25 0	1B 19 00

Selects manual sheet feeding even when the paper tray is in use.

Auto feed

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> <4>	27 25 4	1B 19 04

Selects automatic sheet feeding from the paper tray.

Eject paper

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "R"	27 25 82	1B 19 52

Ejects the current page.

Set print start position on paper tray feeding

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "T" <i>n</i>	27 25 84 <i>n</i>	1B 19 54 <i>n</i>

Skips $n/6$ inches at the top of the page, where n is equal to or greater than 1.

Reset printer

MODE	ASCII	Decimal	Hexadecimal
Both	<ESC> "@"	27 64	1B 40
Std.	<FS> "@"	28 64	1C 40

Re-initializes the printer. Clears the print buffer and returns settings to their power-up values. Does not clear the input buffer.

Set initial conditions

MODE	ASCII	Decimal	Hexadecimal
IBM	<ESC> “[“K” <3> <0> <0> <3> <i>n</i>	27 91 75 3 0 0 3 <i>n</i>	1B 5B 4B 03 00 00 03 <i>n</i>

Re-initializes the printer to the initial conditions determined by the value of *n*.

The value of *n* is the sum of the values given below for the desired characteristics.

Function	<i>n</i> value	Function	<i>n</i> value
Disable alarm	32	12-inch forms	4
Auto CR with LF	16	Slashed zero	2
Auto LF with CR	8	Character set #2	1

Appendix

Specifications

Printing system	Serial Impact Dot-matrix		
Printing speed	10 cpi (Pica)	12 cpi (Elite)	15 cpi (Semi- condensed)
Draft	160 cps	192 cps	240 cps
Letter Quality	53 cps	64 cps	80 cps
Print direction	Bi-directional, logic-seeking Uni-directional, logic-seeking (selectable)		
Print head	24 pins		
Life	100 million dots/pin		
Line spacing	1/6, 1/8, <i>n</i> /60, <i>n</i> /72, <i>n</i> /180, <i>n</i> /216, <i>n</i> /360 inches		
Typeface families	Draft, Roman, Sanserif, Courier, Prestige, Script		

Characters	ASCII	96
	International	16 sets (*)
	IBM special	111
	IBM block graphic	50
	IBM code page	6 sets (**)
	Download	120

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

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

Number of columns

Pica (10 CPI)	80
Elite (12 CPI)	96
Semi-condensed (15 CPI)	120
Condensed pica (17 CPI)	137
Condensed elite (20 CPI)	160
Proportional	Variable

Character matrix

	Draft	LQ
Pica	24 × 9	24 × 31
Elite	24 × 9	24 × 27
Semi-condensed	16 × 7	16 × 21
Condensed pica	24 × 9	24 × 16
Condensed elite	24 × 9	24 × 16
Proportional		24 × <i>n</i>

Bit image dot-matrix

8-pin normal (60 DPI)	8 × 480
8-pin double (120 DPI)	8 × 960
8-pin high-speed double (120 DPI)*	8 × 960
8-pin quadruple (240 DPI)*	8 × 1920
8-pin CRT I (80 DPI)	8 × 640
8-pin CRT II (90 DPI)	8 × 720
24-pin normal (60 DPI)	24 × 480
24-pin double (120 DPI)	24 × 960
24-pin CRT III (90 DPI)	24 × 720
24-pin Triple (180 DPI)	24 × 1440
24-pin Hex (360 DPI)*	24 × 2880

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

Paper feed

Standard	Friction feed with paper tray
Option	Push tractor feed

Paper feed speed 2.9 inches/second maximum

Paper specifications

Cut sheet

Width	5.8" - 11.0" (148 - 279.4 mm)
Length	5.5" - 14.0" (139.7 - 355.6 mm)
Thickness	0.08 - 0.12 mm
Weight	16 - 24 lb, 60 - 90 g/m ² , 52 - 77 kg
Fanfold (continuous)	

Width	4.0" - 10.0" (101.6 - 254.0 mm)
Length	Minimum 5.5" (139.7 mm)
Thickness	Single-ply paper 0.07 - 0.12 mm Total for multi-part forms 0.25 mm
Weight	14 - 22 lb, 52 - 82 g/m ² , 45 - 70 kg
Copies	Original + 2 copies

Maximum buffer size	
Without Download	15.0 kB
With Download	512 bytes

Emulations

Standard mode	Epson LQ-860/850, NEC 24-wire graphics commands
IBM mode	IBM Proprinter X24E

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

Ribbon type	On-carriage, dedicated
	Monochrome (black only)
	Color (black, magenta, cyan, violet, yellow, orange, green)

Ribbon life

Monochrome (Y24W)	2.5 million characters (draft pica)
Color (Y24CL)	0.4 million characters/color (draft pica)

Dimensions and Weight

Width	386 mm (15.2")
Depth	275 mm (10.8")
Height	195 mm (7.67")
Weight	6.4 kg (14.1 lb)

Power supply	120VAC, 220VAC, 230VAC, 240VAC, 50/60 Hz (varies according to the country of purchase)
--------------	---

Options	Push Tractor Unit (PT-10Q) Serial-Parallel Converter (SPC-8K)
---------	--

Default Electronic DIP Switch settings

EDS setting	Function	Default setting
A1	Emulation	Standard/Epson (ON)
A2	AEC (Automatic Emulation Change) Mode	Enabled (ON)
A3	RAM usage	Input buffer (ON)
A4	Color and Zoom	Enabled (ON)
A5	Auto LF with CR	Disabled (ON)
B1	Graphics direction	Uni-directional (OFF)
B2	Paper-out detection	Enabled (ON)
B3	Ink Ribbon Type	Color (ON)
B4	Reserved	ON
B5	Time-out printing	Enabled (ON)
C1, C2, C3	Page length	Letter (all 3 switches ON)
C4, C5	Print pitch	10 cpi (both switches ON)
D1	Print mode	Letter Quality (ON)
D2	Character table Standard mode IBM mode	Graphics (ON) Set #2 (ON)
D3, D4, D5	IBM code page or International character set Standard mode graphic character set Standard mode italic character set IBM mode	Code page #437 (U.S.A.) U.S.A. character set Code page #437 (U.S.A.) (all 3 switches ON)
E1, E2, E3	LQ font selection	Roman (all 3 switches ON)
E4, E5	Reserved	Both switches ON

Printer beep tones

The printer beeps both to warn you that something is wrong and to indicate various aspects of normal operation, for example, to indicate that a particular setting or selection has just been made. The table below gives a full list of printer beeps and their meanings

Tone sequence	Meaning
Single tone lasting 2 seconds	The printer has detected an error condition. Switch the printer off and on again.
Single tone lasting several seconds	The printer has detected an error condition. Switch the printer off and on again.
Four short tones, repeated twice	The printer is out of paper
Single short tone	One of the following: <ul style="list-style-type: none">• Vertical alignment mode has been selected• Zoom resolution has been set to 50%• Quiet mode has been selected• Electronic DIP Switch mode has been selected
Two short tones	One of the following: <ul style="list-style-type: none">• Macro (saved settings) mode has been selected• Zoom resolution has been set to 67%• Quiet mode has been cancelled
Three short tones	Macro (saved settings) mode has been cancelled
Single quarter tone	One of the following: <ul style="list-style-type: none">• Hexadecimal dump mode has been selected• Prevention of software font selection has been selected• Zoom resolution has been set to 100% (i.e. zoom is cancelled).

Interface pin outs

Parallel interface

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

Serial interface

Pin	Name	Function
1	GND	Printer chassis ground
2	TXD	Data from printer
3	RXD	Data to printer
4	RTS	Always low
5	CTS	Low when the computer is ready to transmit data Printer ignores this signal
6		Not connected
7	GND	Signal ground
8-10		Not connected
11	RCH	Printer sets line low when ready to receive data. Same signal as pin 20
12-19		Not connected
20	DTR	Printer sets line low when ready to receive data.
21-25		Not connected

Character sets

The following tables show the Standard and IBM character sets. Also shown are the IBM code pages (international variations of IBM character set #2) and the standard (Epson) mode international character sets (international variations of the Epson Standard character set).

The decimal character code for each character is shown in an inset at the bottom right of the character.

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

Control codes are indicated by abbreviations in angle brackets, e.g. <LF>.

Standard character set #2

	0	1	2	3	4	5	6	7	
0	<NUL> 0	16	32	48	@	P	`	p	
1	1	<DC1> 17	33	49	A	Q	a	q	
2	2	<DC2> 18	34	50	B	R	b	r	
3	3	<DC3> 19	35	51	C	S	c	s	
4	4	<DC4> 20	36	52	D	T	d	t	
5	5	21	37	53	E	U	e	u	
6	6	<SYN> 22	38	54	F	V	f	v	
7	<BEL> 7	23	39	55	G	W	g	w	
8	<BS> 8	<CAN> 24	(40	56	H	X	h	x
9	<HT> 9	 25)	41	57	I	Y	i	y
A	<LF> 10	*	:	42	58	J	Z	j	z
B	<VT> 11	<ESC> 27	+	43	59	K	[k	{
C	<FF> 12	<FS> 28	,	44	60	L	\	l	|
D	<CR> 13	29	-	45	61	M]	m	}
E	<SO> 14	30	.	46	62	N	^	n	~
F	<SI> 15	31	/	47	63	O	_	o	<DEL>

Standard character set #2 (continued)

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

International character sets

The character codes shown are in decimal.

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

IBM character set #2

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

	0	1	2	3	4	5	6	7
0	<NUL> 0	16	32	48	@	P	`	p
1	1	<DC1> 17	!	33	49	A	Q	a
2	2	<DC2> 18	"	34	50	B	R	b
3	♥	<DC3> 19	#	35	51	C	S	c
4	♦	<DC4> 20	\$	36	52	D	T	d
5	♣	§	%	37	53	E	U	e
6	♠	<SYN> 22	&	38	54	F	V	f
7	<BEL> 7	'	39	55	G	W	g	w
8	<BS> 8	<CAN> 24	(	40	56	H	X	h
9	<HT> 9	 25)	41	57	I	Y	i
A	<LF> 10	*	42	58	J	Z	j	z
B	<VT> 11	<ESC> 27	+	43	59	K	[	k
C	<FF> 12	<FS> 28	,	44	60	L	\	l
D	<CR> 13	-	45	61	77	M	]	m
E	<SD> 14	.	46	62	78	N	^	n
F	<SI> 15	/	47	63	79	O	_	o
								 127

Code page #437 (U.S.A.) (continued)

	8	9	A	B	C	D	E	F
0	Ç 128	È 144	Á 160	⋯ 176	Ł 192	⋈ 208	α 224	≡ 240
1	Ù 129	Æ 145	Í 161	⋯ 177	⊥ 193	⌒ 209	β 225	± 241
2	É 130	Ë 146	Ó 162	⋯ 178	⌞ 194	π 210	Γ 226	∑ 242
3	À 131	Ò 147	Ú 163	| 179	† 195	⋈ 211	π 227	≤ 243
4	Ä 132	Ö 148	Ń 164	† 180	- 196	Ł 212	Σ 228	ƒ 244
5	À 133	Ò 149	Ń 165	‡ 181	† 197	ƒ 213	σ 229	∫ 245
6	À 134	Ò 150	À 166	‡ 182	‡ 198	π 214	μ 230	+ 246
7	Ç 135	Ù 151	Ω 167	π 183	‡ 199	‡ 215	τ 231	≈ 247
8	È 136	ÿ 152	¿ 168	ƒ 184	⋈ 200	‡ 216	Φ 232	° 248
9	È 137	Ö 153	ƒ 169	‡ 185	ƒ 201	∫ 217	Θ 233	• 249
A	È 138	Ù 154	ƒ 170	‡ 186	⋈ 202	ƒ 218	Ω 234	• 250
B	Ï 139	¢ 155	½ 171	π 187	⌒ 203	■ 219	δ 235	√ 251
C	Í 140	£ 156	¾ 172	⋈ 188	‡ 204	■ 220	∞ 236	∞ 252
D	Ï 141	¥ 157	ı 173	⋈ 189	= 205	■ 221	∅ 237	² 253
E	À 142	Ŕ 158	« 174	ƒ 190	‡ 206	■ 222	€ 238	■ 254
F	À 143	ƒ 159	» 175	ƒ 191	± 207	■ 223	∩ 239	■ 255

Code page #850 (Multi-lingual)

The other characters are the same as in code page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	ß 144	á 160	••• 176	Ł 192	ø 208	ó 224	- 240
1	ü 129	æ 145	í 161	••• 177	ł 193	ð 209	β 225	± 241
2	é 130	Æ 146	ó 162	••• 178	Ṭ 194	Ḃ 210	ó 226	= 242
3	à 131	ò 147	ú 163	| 179	† 195	Ḃ 211	ò 227	* 243
4	ä 132	ö 148	ñ 164	† 180	- 196	Ḃ 212	ö 228	¶ 244
5	â 133	ô 149	ñ 165	À 181	† 197	ı 213	ö 229	§ 245
6	â 134	ô 150	æ 166	À 182	ä 198	ı 214	μ 230	+ 246
7	ç 135	ù 151	ø 167	À 183	Ä 199	ı 215	þ 231	• 247
8	è 136	ý 152	ç 168	• 184	Ł 200	ı 216	þ 232	° 248
9	ë 137	ÿ 153	• 169	‡ 185	ł 201	ı 217	ÿ 233	•• 249
A	è 138	ÿ 154	¬ 170	‡ 186	Ł 202	ı 218	ÿ 234	• 250
B	ï 139	ø 155	½ 171	¶ 187	ł 203	■ 219	ÿ 235	¹ 251
C	ı 140	£ 156	* 172	¶ 188	ł 204	■ 220	ÿ 236	³ 252
D	ı 141	ø 157	ı 173	φ 189	= 205	ı 221	ÿ 237	² 253
E	Ä 142	× 158	« 174	¶ 190	ł 206	ı 222	- 238	■ 254
F	Ä 143	f 159	» 175	‡ 191	ł 207	■ 223	' 239	255

Code page #860 (Portuguese)

The other characters are the same as in code page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	È 144	Á 160	•••• 176	Ł 192	μ 208	α 224	≡ 240
1	Ú 129	À 145	Í 161	•••• 177	Ł 193	ƒ 209	β 225	± 241
2	É 130	Ê 146	Ó 162	•••• 178	ƒ 194	π 210	Γ 226	≥ 242
3	À 131	Ô 147	Ú 163	| 179	ƒ 195	μ 211	π 227	≤ 243
4	Ã 132	Õ 148	Ï 164	† 180	— 196	Ł 212	Σ 228	∫ 244
5	À 133	Ò 149	Ñ 165	‡ 181	† 197	ƒ 213	σ 229	∫ 245
6	Á 134	Û 150	Â 166	‡ 182	ƒ 198	π 214	μ 230	+ 246
7	Ç 135	Ü 151	Û 167	π 183	‡ 199	‡ 215	τ 231	≈ 247
8	É 136	Ï 152	Ç 168	ƒ 184	Ł 200	‡ 216	Φ 232	° 248
9	Ê 137	Ö 153	Ô 169	‡ 185	ƒ 201	∫ 217	Θ 233	• 249
A	È 138	Û 154	ƒ 170	‡ 186	Ł 202	ƒ 218	Ω 234	• 250
B	Í 139	Φ 155	½ 171	π 187	ƒ 203	■ 219	δ 235	√ 251
C	Ó 140	£ 156	¼ 172	∫ 188	‡ 204	■ 220	∞ 236	n 252
D	Ì 141	Û 157	Ì 173	∫ 189	= 205	■ 221	∅ 237	² 253
E	À 142	Ř 158	« 174	‡ 190	‡ 206	■ 222	€ 238	■ 254
F	Á 143	Ó 159	» 175	ƒ 191	± 207	■ 223	∩ 239	

Code page #861 (Icelandic)

The other characters are the same as in code page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	È 144	Á 160	• 176	Ł 192	ll 208	α 224	≡ 240
1	ü 129	æ 145	í 161	• 177	ł 193	ƒ 209	β 225	± 241
2	é 130	Æ 146	ó 162	• 178	Ɔ 194	π 210	Γ 226	≥ 242
3	á 131	ø 147	ú 163	| 179	† 195	ll 211	π 227	≤ 243
4	ä 132	ö 148	Á 164	† 180	- 196	Ł 212	Σ 228	∫ 244
5	à 133	þ 149	í 165	‡ 181	† 197	F 213	σ 229	J 245
6	á 134	ú 150	ó 166	|| 182	ƒ 198	π 214	μ 230	+ 246
7	ç 135	ÿ 151	ú 167	π 183	|| 199	|| 215	τ 231	≈ 247
8	e 136	ý 152	z 168	ƒ 184	Ł 200	≠ 216	Φ 232	° 248
9	ë 137	ö 153	ƒ 169	|| 185	π 201	J 217	Θ 233	• 249
A	e 138	ü 154	ƒ 170	|| 186	ll 202	ƒ 218	Ω 234	• 250
B	Ð 139	ø 155	½ 171	π 187	ƒ 203	■ 219	δ 235	√ 251
C	ö 140	£ 156	¼ 172	ll 188	|| 204	■ 220	∞ 236	n 252
D	þ 141	ø 157	i 173	ll 189	= 205	■ 221	ø 237	² 253
E	Å 142	Ř 158	« 174	ƒ 190	|| 206	■ 222	€ 238	■ 254
F	À 143	f 159	» 175	ƒ 191	ll 207	■ 223	∩ 239	

Code page #863 (Canadian French)

The other characters are the same as in code page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	È 144	Ì 160	Ñ 176	Ò 192	Û 208	α 224	≡ 240
1	Û 129	É 145	Í 161	Ñ 177	Ó 193	Ü 209	β 225	± 241
2	É 130	Ê 146	Ó 162	Ñ 178	Ô 194	Û 210	Γ 226	≥ 242
3	À 131	Ô 147	Ú 163	Ï 179	Ù 195	Ü 211	κ 227	≤ 243
4	À 132	Ë 148	Û 164	Ï 180	Ù 196	Û 212	Σ 228	∫ 244
5	À 133	Ï 149	Ü 165	Ï 181	Ù 197	Û 213	σ 229	∫ 245
6	¶ 134	Ò 150	³ 166	¶ 182	Û 198	¶ 214	μ 230	+ 246
7	Ç 135	Ù 151	— 167	¶ 183	Û 199	¶ 215	τ 231	≈ 247
8	È 136	× 152	Ï 168	¶ 184	Û 200	¶ 216	Φ 232	° 248
9	È 137	Ó 153	Ï 169	¶ 185	Û 201	Û 217	Θ 233	• 249
A	È 138	Û 154	Ï 170	¶ 186	Û 202	Û 218	Ω 234	• 250
B	Ï 139	Ç 155	¼ 171	¶ 187	Û 203	■ 219	δ 235	√ 251
C	Ï 140	£ 156	¼ 172	Û 188	Û 204	■ 220	∞ 236	n 252
D	= 141	Ù 157	¼ 173	Û 189	= 205	■ 221	∅ 237	² 253
E	À 142	Ò 158	« 174	Û 190	Û 206	■ 222	ε 238	• 254
F	§ 143	f 159	» 175	Û 191	Û 207	■ 223	∩ 239	• 255

Code page #865 (Nordic)

The other characters are the same as in code page #437.

	8	9	A	B	C	D	E	F
0	Ç 128	Ë 144	á 160	⋯ 176	Ł 192	⋈ 208	α 224	≡ 240
1	ù 129	æ 145	í 161	⋯ 177	± 193	⌣ 209	β 225	± 241
2	é 130	Æ 146	ó 162	⋯ 178	Ƨ 194	π 210	Γ 226	≥ 242
3	à 131	ò 147	ú 163	| 179	† 195	μ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	‡ 180	- 196	⋈ 212	Σ 228	ƒ 244
5	à 133	ò 149	ñ 165	‡ 181	† 197	Ƒ 213	σ 229	Ƶ 245
6	á 134	ó 150	â 166	‡ 182	Ƒ 198	π 214	μ 230	+ 246
7	ç 135	û 151	ø 167	π 183	‡ 199	‡ 215	τ 231	≈ 247
8	è 136	ÿ 152	¿ 168	Ɔ 184	⋈ 200	≠ 216	Φ 232	° 248
9	ë 137	ÿ 153	˘ 169	‡ 185	π 201	∟ 217	Θ 233	• 249
A	è 138	ÿ 154	˘ 170	‡ 186	⋈ 202	∟ 218	Ω 234	• 250
B	ÿ 139	ø 155	½ 171	π 187	⌣ 203	■ 219	δ 235	√ 251
C	ı 140	£ 156	¼ 172	∟ 188	‡ 204	■ 220	∞ 236	n 252
D	ı 141	Ø 157	ı 173	⋈ 189	= 205	■ 221	ø 237	² 253
E	Å 142	Ř 158	« 174	∟ 190	‡ 206	■ 222	€ 238	■ 254
F	À 143	ƒ 159	α 175	Ɔ 191	± 207	■ 223	∩ 239	■ 255

Character set #1

The other characters are the same as in each version of character set #2.

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

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

IBM special character set

These characters can be printed using the *Enable printing of all character codes* and *Enable printing of all character codes on next character* commands.

	0	1
0	◊	▶
1	⊕	◀
2	●	↑
3	♥	!!
4	◆	¶
5	♣	S
6	♠	-
7	•	‡
8	◻	↑
9	◦	↓
A	■	→
B	♂	←
C	♀	↙
D	♫	↔
E	♯	▲
F	*	▼

Glossary

Adobe Type Manager	Software for Windows and Macintosh which allows you to print PostScript fonts.
Adjustment lever	Lever which lets you adjust the position of the print head for differing paper thicknesses.
AEC mode	See Automatic Emulation Change mode.
Application	Software program, such as a word-processor, from which you can print out documents.
Auto line feed	Printer function in which the printer automatically performs a carriage return and line feed whenever it receives a carriage return control code.
Auto load position	Position of the print head after paper is loaded, relative to the physical top of the page.
AUTOEXEC.BAT	MS-DOS set-up file containing statements which determine to which port the printer output is to be sent.

Automatic Emulation Change mode	Printer mode in which the printer automatically senses which emulation mode (Standard or IBM) the computer requires, and changes mode accordingly.
Bi-directional printing	Mode in which the printer prints graphics both from left to right and from right to left.
Bit	Short for "binary digit". The smallest unit of information ("On" or "Off" - "1" or "0").
Bitmap fonts	Fonts that can only be printed at a particular size. The fonts which you can select from the printer's control panel are bitmap fonts.
Carriage return	An instruction from the printer which tells the printer to move the print position to the start of the current line. See auto line feed.
Centronics connector	The type of connector which plugs into the printer's interface connector socket.
Character code	A number which stands for a letter, digit or symbol. A computer sends text to the printer in the form of character codes.

Character set	A fixed set of characters which can be printed. A character set normally includes upper and lower case letters, the digits 0-9 punctuation symbols and various other characters, for example accented characters for foreign languages or block graphic characters.
Character table	See character set.
Code page	A variant of the IBM character set with characters for a particular country or region, for example, code page #860 - Portuguese.
Compatible	See IBM compatible.
Computer paper	See fanfold paper.
Control code	A code number which instructs the computer to perform a particular operation. For example, the computer sends the printer a form feed control code (12) to make it eject the current page.
Control panel	<ol style="list-style-type: none"> 1) Panel on the printer that displays information about the printer's current working and allows you to operate the printer. 2) Windows utility which allows you to make system settings, such as printer selection and port set-up.
Cut sheets	Single sheets of paper.
Default Printer	The printer which Windows applications automatically use.

Default setting	Feature setting adopted if no user setting has been made (sometimes called "factory setting").
DOS	See MS-DOS
Dot adjustment mode	Mode in which you can realign the print head in bi-directional graphics mode.
Double-spacing	Printed text with a blank line between each printed line.
Downloaded character	User-defined character, created on the computer. Sent to and stored in the printer for later printing.
Draft	Printing mode in which only the Draft font is used. The printer can print more quickly in Draft mode than in Letter Quality mode.
EDS settings	See Electronic DIP Switch settings.
Electronic DIP Switch settings	Printer settings which take effect when you switch on the printer. You can make these settings using the control panel.
Emulation	Imitation by one type of printer of the functions of another type of printer.
Epson LQ-860	Dot matrix printer which the LC24-30 Colour can emulate.
Epson mode	See Standard mode.
Extension cover	Part of the printer which holds printed output.

Face-down printing	Output is delivered face-down in sequential order. You can select face-down printing by pushing the paper delivery selector up and back.
Face-up printing	Output is delivered face-up in reverse order. You can select face-up printing by pulling the paper delivery selector forward.
Factory settings	See Default settings
Fanfold paper	Sheets of paper joined by perforations. Fanfold paper has small holes at the edges.
Fixed pitch font	See monospaced font.
Font	A set of characters of a particular typeface, which you can select for printing.
Font lock mode	Mode in which font selection can only be made from the printer's control panel.
Form feed	Printer operation which ejects the current page and feeds the next sheet into position, ready for printing.
Forward micro feed	Control panel operation which feeds paper through the printer in small steps.
Graphics direction	The printer's method of printing graphics. See bi-directional and uni-directional printing.
Handshaking	See protocol.

Hexadecimal dump	A printout of all character codes and control codes as they are received by the printer, along with their hexadecimal (base 16) values.
IBM mode	Mode in which the printer emulates an IBM Proprinter X24E.
IBM compatible	A personal computer that can run the same system and applications software as an IBM PC.
IBM PC	Personal computer made by IBM capable of running MS-DOS and Windows system software. See also IBM compatible.
IBM Proprinter X24E	Dot matrix printer which the LC24-30 Colour printer can emulate.
Icon	On-screen symbol in Windows or Macintosh which represents a program or document. You can double-click on an icon to start the program or open the document.
Interface	Physical link between the printer and the computer.
International character set	Variant of the Standard character set containing characters for a particular country or region.
Landscape	Landscape mode is when a document is printed on paper with the longest sides of the paper at the top and bottom.

Letter Quality	Printing mode in which the built-in fonts are used to produce high-quality (suitable for correspondence) text output.
Line feed	An instruction from the computer which tells the printer to advance the paper by one line.
Long test	Repetitive printer test showing every available font and pitch setting, all characters sets, current vertical alignment and current Electronic DIP switch settings.
Macintosh	Easy-to-use personal computer which allows you to print using TrueType and PostScript fonts (to use PostScript fonts you must have installed Adobe Type Manager). To use the printer with a Macintosh, you need an additional interface cable.
Macro	Printer function which allows you to save the font, pitch, zoom resolution, single-sheet auto load position and fanfold auto load position. Macro settings come into effect each time the printer is switched on.
Manual by-pass	Printer feature which allows you to print on a single sheet of special paper (such as letter-head paper) without removing the paper already in the paper tray.
Micro feed	See forward micro feed and reverse micro feed.

MODE statement	Statement in an MS-DOS AUTOEXEC.BAT file that determines to which port the computer should send printer output.
Monospaced font	Font in which all characters are of the same width.
MS-DOS	The most common operating system software for the IBM PC and compatible machines.
Multi-part form	Forms (such as invoices) consisting of several sheets, one on top of another, enabling several copies to be made simultaneously.
NCR sets	“No Carbon Required” – multi-part forms which use pressure-sensitive chemicals to mark the lower copies.
Not-ready mode	Printer mode in which you can change printer settings using the control panel. The printer cannot print in not-ready mode.
Orientation	The rotation in which paper is loaded. See landscape orientation and portrait orientation.
Over-printing	Printing text on top of existing text. This may be caused by an incorrect auto line feed setting.
Paper delivery selector	Printer part that lets you choose whether print-outs are delivered face-up or face-down.
Paper feed	Control panel operation which allows you to feed paper through the printer one line at a time.

Paper guides	Devices which hold single sheets so that they are fed into the printer correctly.
Paper out	Printer function which automatically detects when the paper has run out and stops printing.
Paper tray	Part of the printer which holds paper for feeding into the printer. The tray can hold up to fifty-five single sheets.
Parallel cable	Standard cable for connecting the printer to a computer.
Parallel interface	An interface which transfers data between the computer and the printer 8 bits at a time.
Parity checking	A way of checking that information sent over a serial interface has been received correctly.
Parking paper	Printer function that allows you to print on single sheets without removing fanfold paper.
Pitch	The number of characters in a one-inch line of text.
Platen	Roller that guides paper through the printer and provides a solid surface against which the print head can make an impression on the paper.
Port	Socket in the back of a computer through which a computer communicates with other devices, such as the printer.

Portrait	Portrait mode is when a document is printed on paper with the longest sides of the paper at the sides.
PostScript font	Type of scalable font similar to TrueType fonts. PostScript fonts can be printed if you have installed the Adobe Type Manager program on your computer.
Print gap	The distance between the print head and the platen. This distance can be adjusted to suit different thicknesses of paper.
Print head	Printer part that transfers the image to the paper.
Print head shield	A thin metal plate between the print head and the platen.
Print pitch	See pitch.
Printable area	The part of the page on which the printer can print.
Printer driver	Computer file which enables system or application software to print to a particular printer.
Proportionally spaced font	Font in which different characters can be of different widths.
Protocol	Method of regulating information transfer between the computer and the printer. Sometimes called "handshaking".
Push tractor unit	Optional accessory that allows you to print on fanfold paper.

Quiet mode	Mode in which the printer prints more quietly (and slightly more slowly).
Ready mode	Printer mode in which the printer can receive and print data from the computer.
Release lever	Lever that grips single sheets as they are fed into the printer.
Reverse micro feed	Control panel operation which feeds paper backwards through the printer in small steps.
Ribbon cartridge	Cartridge that contains the ribbon which the head uses to mark the paper.
Scalable fonts	Fonts which you can print at any size. TrueType fonts are scalable.
Serial interface	A computer interface which transfers data one bit at a time.
Serial-to-parallel interface converter	Optional accessory that allows you to connect the printer to a serial port on your computer.
Short test	Printer test in which seven lines of characters are printed. If you have fitted a color ribbon, each line will be printed in a different color.
Stack wire	Wire that pulls out to support printed pages resting on the extension cover.
Standard mode	Mode in which the printer emulates an Epson LQ-860 printer.

System software	Software that runs on your computer to control basic computer functions (screen display, keyboard input, disk access and printer output).
Tear-off function	Printer function which allows you to remove fanfold output without altering the current position of the fanfold paper.
Thumb wheel	Printer wheel that allows you to advance paper manually.
Tractor	Part of the push tractor unit which grips the fanfold paper.
TrueType font	Type of scalable font which you can install on your computer and print on the printer (provided you are using Windows 3.1 or later).
Typeface	The design style of a font. Common typefaces are Times and Helvetica.
Uni-directional printing	Mode in which the printer prints graphics from left to right only.
Vertical alignment	See dot adjustment mode.
Weight	The thickness of the lines which make up a font's characters. Common weights are Medium, Bold and Black.
Windows	System software for the IBM PC which has an easy-to-use interface.
Zoom mode	Printer mode that allows you to print documents scaled to 50% or 67%.

Index

A

- Adjustment lever 6
- Adobe Type Manager 53
- Auto load position 60
- AUTOEXEC.BAT 17
- Automatic emulation
 - change 2, 40, 46
- Automatic line feed
 - enabling 41

B

- Beep tones 150
- Bi-directional graphics 41
- Bitmap fonts 51

C

- Cable
 - length of 13
 - parallel 47
 - selecting which type to use 47
 - serial 47
- Centronics parallel cable 13
- Character pitch 51
 - setting 43, 53
- Character set
 - selecting 43
- Character set commands 112
- Character sets 153-165
 - international 44
- Character size and pitch
 - commands 116
- Choosing a place for the printer 7
- Code page 44

Color

- enabling use of 41, 42
- Color ribbon cartridge
 - enabling use of 42

Commands

- character set 112
- character size and pitch 116
- download character 138
- font control 107
- graphics 134
- horizontal position 130
- other 140
- vertical position 123

Computer port 13

- Connecting the printer to your computer 13, 47

Control panel 5, 25, 34

Control panel keys 34

FONT 25, 34

PAPER 25, 34

READY 25, 34

Control panel lights 35

Font selection 26

Macro 26

Quiet mode 26

READY 24, 26

Zoom 26

Currently selected font 26

D

- Default Printer
 - setting printer as 27

Dot adjustment mode 65

Double-spacing		
unwanted	41	
Download character commands	138	
E		
Electronic DIP Switch settings		
default settings	149	
list of	39	
making settings	37	
Emulation		
automatic switching	40, 46	
selecting	40, 46	
Epson emulation mode	40, 46, 105	
Extension cover	5	
F		
Face-down printing	57	
Face-up printing	57	
Fanfold paper	55	
loading	76	
parking	81	
printable area	80	
printing on	79	
unparking	81	
Fixed space fonts	50	
Font control commands	107	
FONT key	25, 34	
Font pitch	51	
setting	53	
Font selection	26	
default	45	
in MS-DOS	30	
in Windows	29, 53	
using control panel	35	
Font weight	51	
Fonts		
bitmap fonts	51	
fixed space	50	
introduction to	50	
monospaced	50	
PostScript	49, 53	
preventing selection by applications software	54	
proportionally-spaced	50	
sans serif	50	
saving selection	62	
scalable fonts	52	
serif	50	
TrueType	15, 29, 52	
Form feed	59	
Forward micro feed	59	
Front cover	5	
how to open	9	
G		
Graphics commands	134	
Graphics direction setting	41	
H		
Hexadecimal dump	68	
Horizontal position commands	130	
I		
IBM code page	44	
IBM emulation mode	40, 46	
Installing the ribbon cartridge	10	
Interface connector	5	
International character sets	44	
K		
Keys		
using	34	
L		
Letter Quality		
default font selection	45	
Letter Quality printing	43	
Lights	35	
Line feed		
enabling automatic	41	

Loading paper	19	Paper out	
Long test	67	automatic detection of	42
M		Paper size	
Macintosh printer set-up	49	setting	42
Macro feature	62	Paper tray	5
Macro indicator	26, 35	fitting	12
Manual by-pass	57	Parallel cable	
Monospaced fonts	50	length of	13
MS-DOS		Parallel interface	
AUTOEXEC.BAT file	17	pin outs	151
checking settings	103	Parallel port	13
font selection	30	Parking paper	57, 81
PRINT command	48	Pausing printing	57
printer driver		Pin outs	151, 152
selection of	28	Pitch	51
printer set-up	17, 48	saving selection	62
printing from applications	49	setting	43, 53
selecting printer in	27	Platen	6
serial connection	88	PostScript fonts	49, 53
using control panel with	25	Power switch	5
Multi-part forms	55	PRINT command	48
N		Print gap	
No paper		setting	63
automatic detection of	42	Print head	5
Non-color printers	28	Print quality	
Not-Ready mode	24	setting	43
O		Printable area	56
Over-printing		Printer components	8
unwanted	41	Printer driver	
P		installing	15
Page length		selection of	28
setting	42	Printer emulation	
Paper delivery selector	5	automatic switching	40
Paper feed	59	selecting	46
Paper guides	5	Printer emulation mode	
PAPER key	25, 34	setting	40
Paper loading	19	Printer location	7
		Printing a text file in	
		MS-DOS	48
		Proportionally-spaced	
		fonts	50
		Protocol	86

Push tractor unit 71
installing 72

Q

Quiet mode 61
Quiet mode indicator 26, 35

R

READY indicator 24
READY key 25, 34
READY light 26
Ready mode 24
Release lever 5
Reverse micro feed 60
Ribbon cartridge 5
installing 10

S

Saving current settings 62
Scalable fonts 52
Scaled output 61
Selecting the printer
in MS-DOS 27
in Windows 27
Serial connection 87, 88
Serial interface pin outs 152
Serial-to-parallel converter
connecting 83
Serial-to-parallel interface
converter 71, 83
setting DIP switches 85
Serif 50
Setting up with a
Macintosh 49
Setting up with
MS-DOS 17, 48
Setting up with
Windows 15, 47
Short test 67
Stack wire 5
Standard emulation mode 105
Standard mode 40, 46

T

Tear-off function 58, 82
Thumb wheel 5
Troubleshooting 89
TrueType fonts 15, 29, 52
installing 52
Typeface 50

U

Uni-directional graphics 41
Unpacking the printer 8
Unparking 81
Using the control panel
25, 34

V

Vertical alignment
adjustment 65
Vertical position
commands 123

W

Weight 51
Windows
checking settings 102
font selection 29
printer set-up 15
printer set-up in 47
selecting fonts in 53
selecting printer in 27
serial connection 87
using control panel with 25
Windows Default Printer
setting printer as 27
Windows printer driver
installing 15

Z

Zoom indicator 26, 35
Zoom mode 61
enabling use of 41