MDP40B
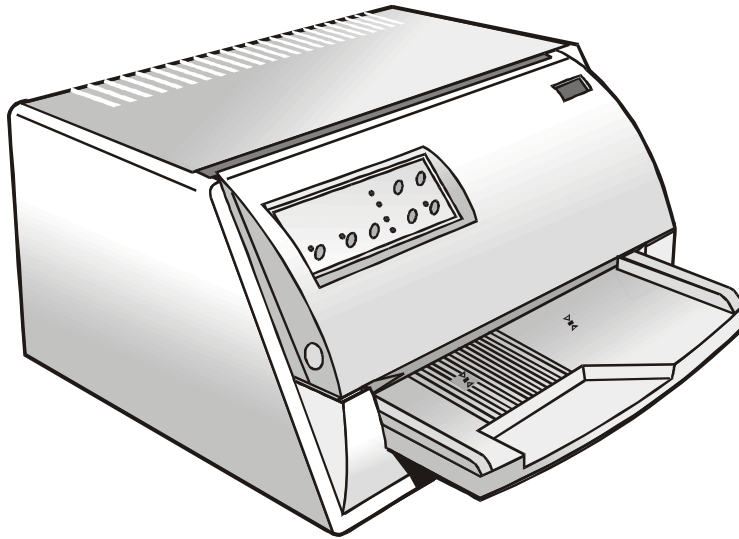
User Manual

Compuprint

Compuprint Information

Thanks *for choosing the* MDP40B *printer.*

Your printer is a reliable working equipment that will be very useful in your daily job.

Our printers have been designed to be compact and respectful of the work environment. They offer a wide range of features and multiple functions that confirm the high technological level reached by the Compuprint *S.p.A.*

To maintain these printing performances unchanged in the long run, Compuprint *has developed specific consumable accessories for each printer type (for example: ribbon cartridges for dot matrix printers, toner and OPC cartridges for laser printers, bubble ink jet cartridges for inkjet printers) that assure an excellent operation with high printing quality level reliability.*

Compuprint *recommends to use only its* **original consumables with original packaging (identified by its holographic label).** *In this way, a proper use of the printer at quality level stated in the product characteristics can be assured. All typical usage problems related to not certified consumables may be avoided, such as an overall quality print level degradation and, often, the reduction of the product life due to the fact that the proper working conditions for the print heads, OPC cartridge and other printer parts are not assured.*

Moreover, Compuprint *does not only certify its consumables in terms of working conditions but also carefully controls their compliance with the international standard rules concerning:*

- *no cancerous materials;*
- *no flammability of the plastic materials;*
- *other standards*

Compuprint *advises the customers not to use products for which the compliance to this safety rules are not warranted.*

Finally seek your dealer or contact a Compuprint *office and be sure that are provided you the original* Compuprint *consumables.*

Table of Contents

Printer Presentation

This dot-matrix printer is a multi-purpose printer for counter applications. Its compact structure is designed for integration in an ergonomic environment. The printer provides a high level of reliability, form-handling accuracy and data integrity. Its main features are:

- Printing on a **wide range of paper** media: different types of cut sheets, multiparts and passbooks.

- High print pressure for **multipart documents**

- **High print quality** supplied by a 24 wire print head

- **High reliability paper handling**
  The straight paper path allows the printing on particular documents such as multipart forms and passbooks.

- **Automatic paper thickness adjustment**
  The print head detects automatically the paper thickness for correct printing on any type of document. This printer can print also on documents with a variable thickness, such as passbooks.

- **Easy paper handling**
  The operator places the paper on the front table and the printer loads it without any other user intervention. The paper ejection towards the front or the rear of the printer allows an easy access to the printed document.

- **Automatic document alignment** feature
  The printer checks automatically the alignment of the top margin and the left margin of the document and adjusts it, if necessary. The printout is therefore performed correctly independently from the paper loading position.

- **Storage of two complete configurations** for instant recall

- **Standard parallel and serial interface** and automatic switch-over function. The financial interface is available for the IBM 4722 and the IBM 9068 protocols.

- **Easy printer setup**

- Supported **emulations**: Epson 570, IBM Proprinter XL24E, XL24E AGM, IBM 2390+, 4722, 9068 and Olivetti PR40+, PR2, 2845.

Unpacking the Printer

Together with the printer the following items are included in the shipment box:

Notify any damage to your supplier.

- Paper stand
- Ribbon cartridge
- Power cable
- CD-ROM with the printer documentation and drivers.
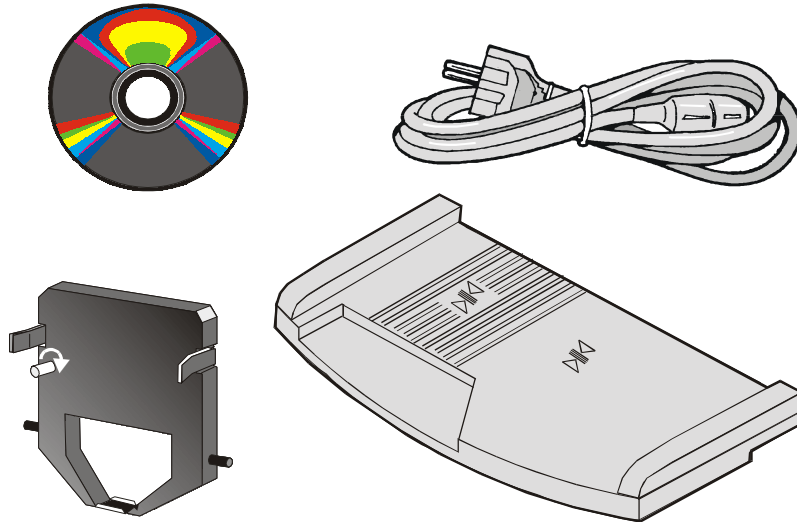
Always keep the packing material in a safe place as you must repack the printer into it, when you need to move it.

Printer Parts

Operator Panel

Printer Cover

Paper Stand
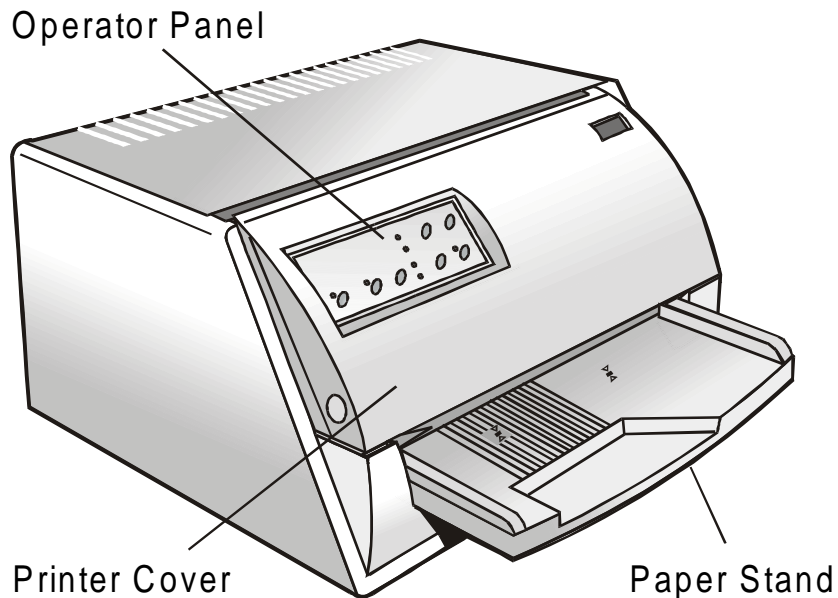
Printer Installation

Choosing a Suitable Location

Consider the following points when you choose the location for your printer:

- The distance between the printer and the host computer must not exceed the length of the interface cable;

- The location must be sturdy, horizontal and stable;

- Your printer must not be exposed to direct sunlight, extreme heat, cold, dust or humidity;

- You need an AC power outlet compatible with the plug of the printer's power cord. The voltage of the outlet <u>must</u> match the voltage shown on the printer's Name Plate;

- When printing on standard paper formats, the paper is partially ejected on the rear side of the printer. Make sure that behind the printer there is sufficient clearance to correctly move the paper.

Installing the Paper Stand

1. Open the printer cover.
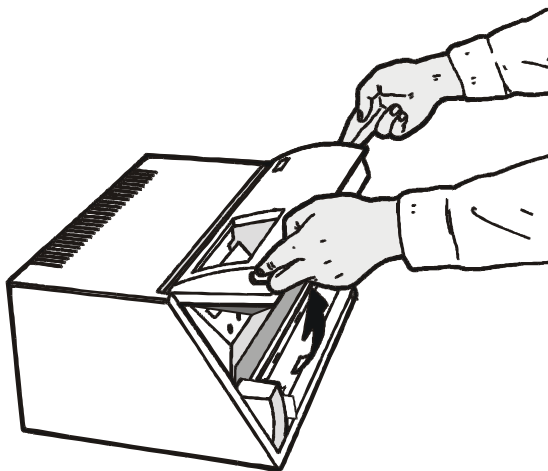
2. Match the hooks on the lower side of the paper stand with the clefts on the printer front part.
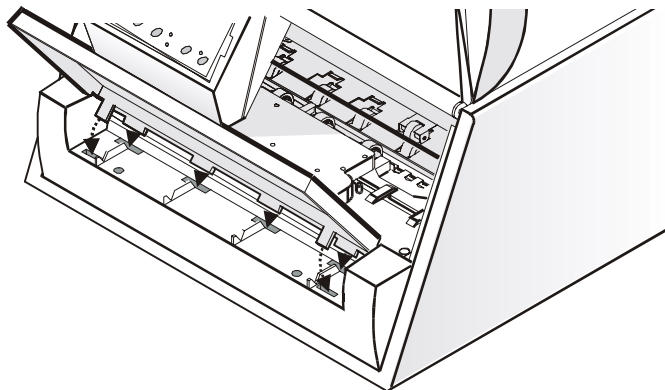
3. Holding the paper stand oblique insert the hooks into the printer clefts.

4. Lower the paper stand to horizontal position making sure that the two holders on both sides are correctly inserted into the corresponding slots. Press the paper stand down until it clips into place.
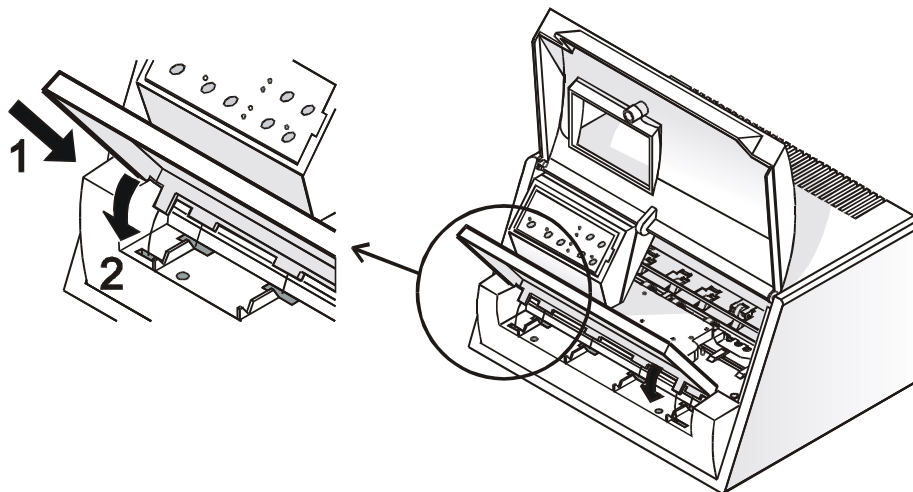
5. Close the printer cover.

Installing the Power Cable

1. Find the power cable connector and the rating plate on the rear side of the printer.

> **Make sure that your power supply matches the power rating of the printer. In case the power rating does not correspond DO NOT CONNECT THE PRINTER TO THE MAINS. Consult your dealer for help. Always use a grounded outlet.**

2. Insert the power cable into the connector on the printer and the other end into a convenient mains outlet.
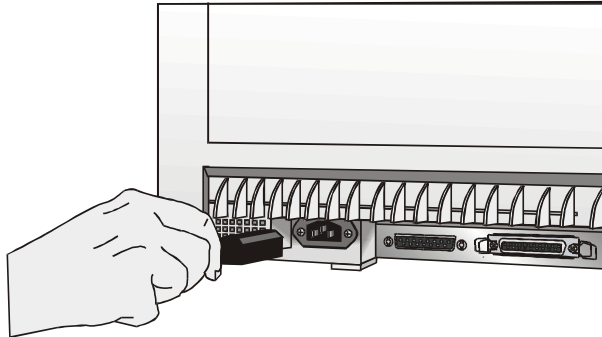
3. Press the ⏻ key on the operator panel to power the printer on.
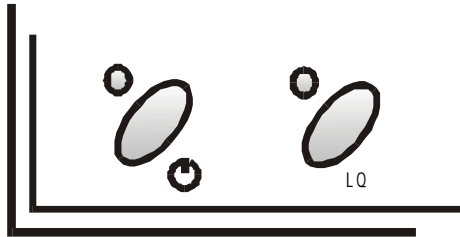
Installing the Ribbon Cartridge

To install the ribbon cartridge, the printer must be powered on.

1. Remove the cartridge from its bag. Turn the tension knob in the direction of the arrow to tighten the ribbon.
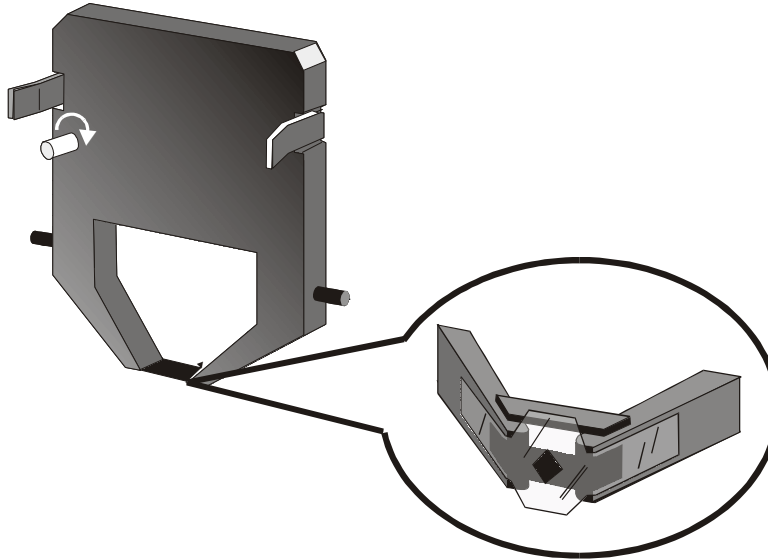
Do not remove the plastic mask from the ribbon cartridge. The ribbon cartridge may not be used without it.

2. Open the printer cover, the print head moves to the ribbon installation position.
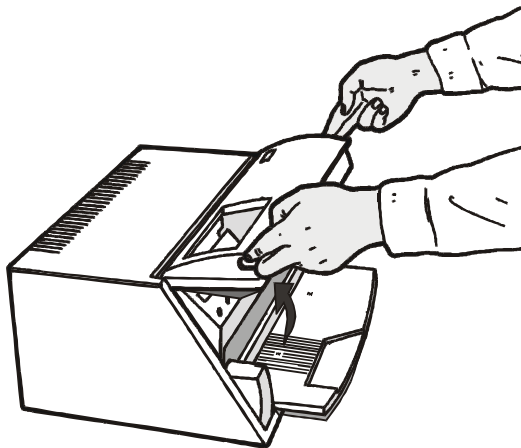
3. Hold the ribbon cartridge slightly inclined with the ribbon mask in front of the print head.
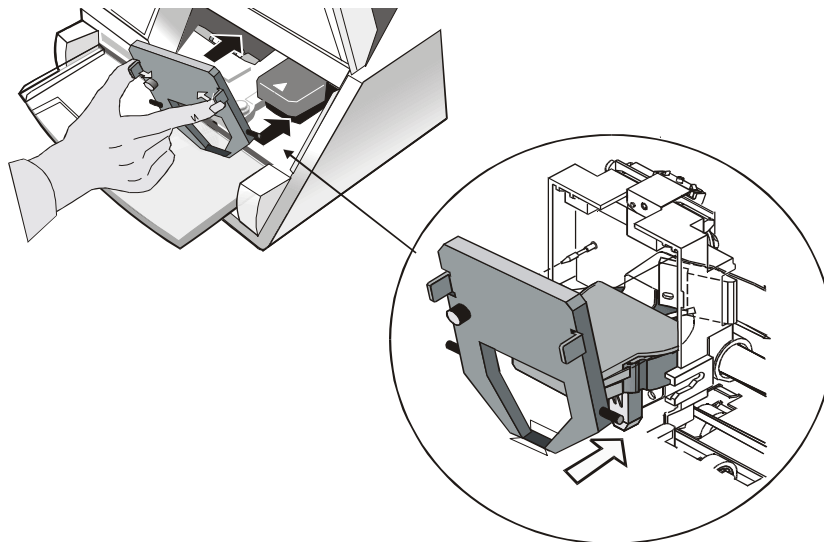
4. Insert the ribbon cartridge into the print head carriage, leading the cartridge pins into the fixing guides. In this way you assure the correct ribbon mask position in front of the print head. Push the cartridge onto the print carriage until it clicks into place.
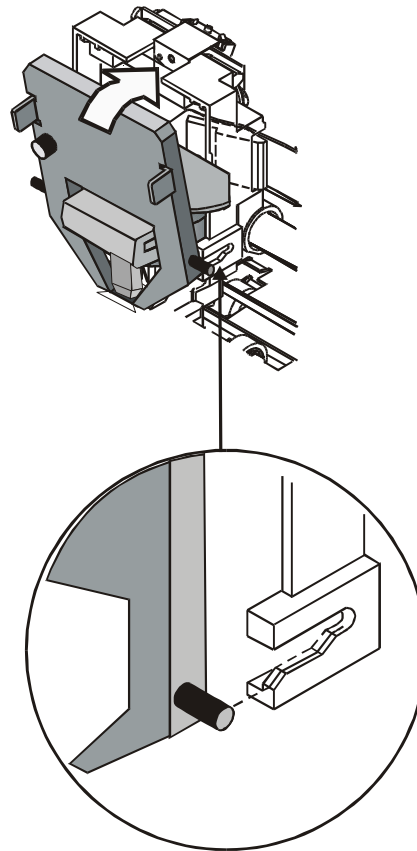
5. Turn the tension knob in the direction of the arrow to tighten the ribbon.

6. Close the printer cover.

Paper Handling

This printer is designed for versatile and reliable paper handling. The flat-bed mechanism allows the *handling of special documents*, such as multiple invoices, postcards, labels, passbooks and tickets.

The print head detects the *paper edges* automatically, the sheet can therefore be inserted in any position within the detection area according to the rules described in the following paragraph.

The *paper thickness sensors* determine the thickness of the documents and match the print head.

The *paper alignment sensors* determine the alignment of the upper and left paper margins, adjusting them if necessary.

Loading Paper

Loading Cut Sheet and Multiparts

- The inserted documents must not have folds, tears, pins, clips, staples or any foreign material.

When inserting the paper into the printer, keep the following points in mind:

- The document may not exceed the limits of the paper stand.

Left Limit   Right Limit
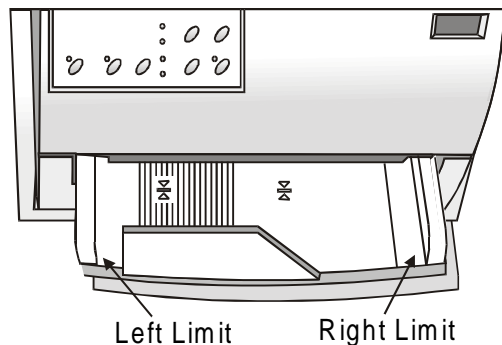
- The documents having a width of at least 90 mm must be inserted on the left hand side over the grooved area on the paper stand.

  The documents must cover the whole grooved area, otherwise the printer will not accept the paper.

NO   OK
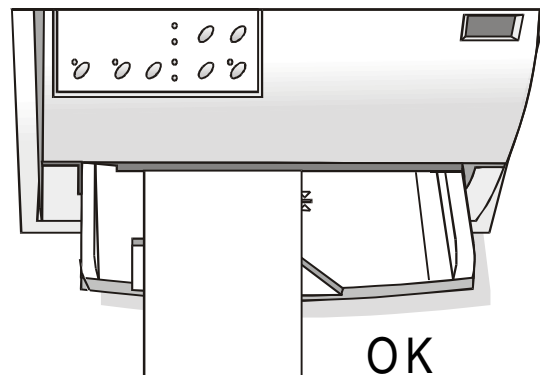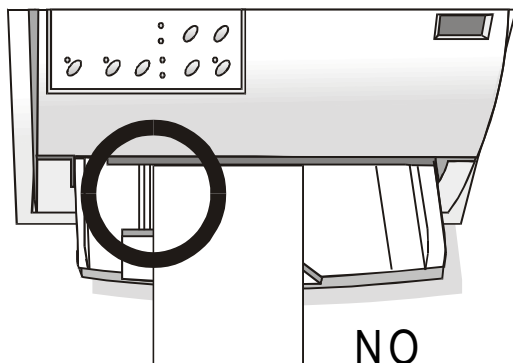
- **To load the documents having a width of less than 90 mm:**
  - make sure that in the program menu the `MANUAL LOADING` **item is** `enabled`.
  - hold the paper against the left paper guide of the paper support while inserting it into the printer
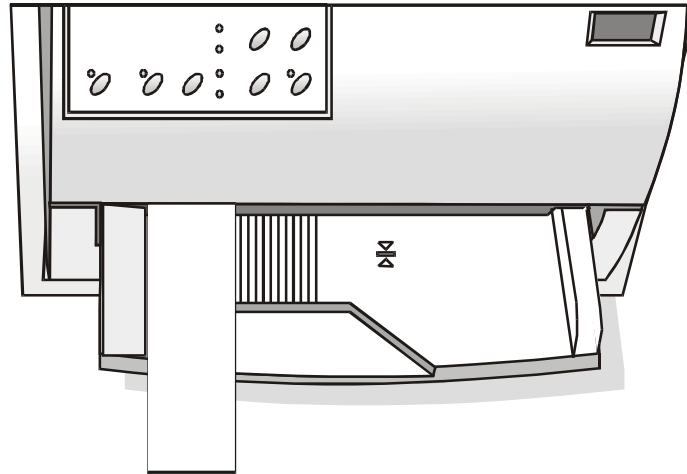
Loading Passbooks

- The inserted passbooks must not have folds, tears, pins, clips, staples or any foreign material.
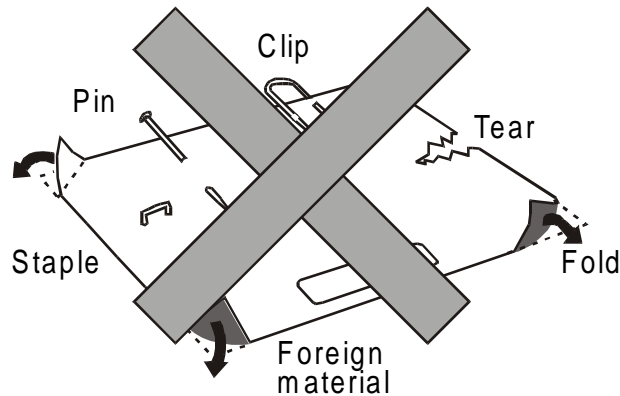
If you insert damaged documents or paper with foreign material, you can seriously damage the printer.

- Before inserting a passbook into the printer, open it and crease it in both directions along the binding stitch, so that the passbook lays flat on the paper stand when it is inserted into the printer.
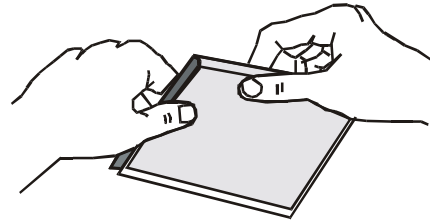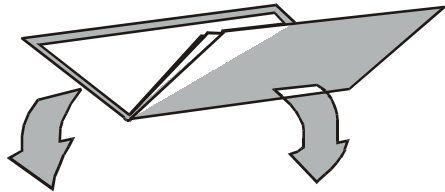
- The passbooks must be inserted on the left hand side over the grooved area on the paper stand. They must cover the whole grooved area, otherwise the printer will not accept the passbooks.

- The passbooks with *horizontal fold* must have a minimum width of 102 mm.
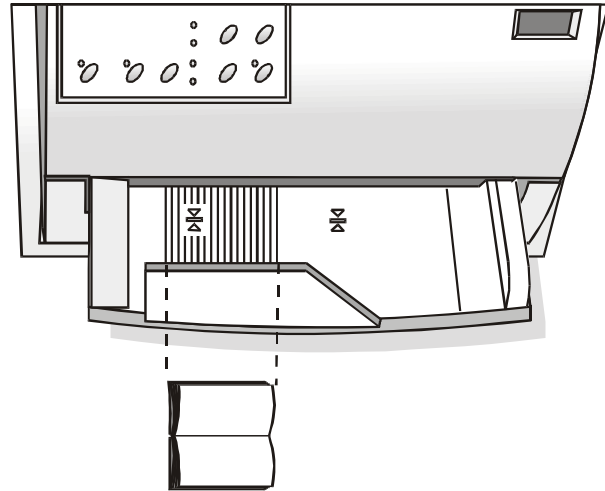
- The passbooks with *vertical fold* must at least cover the two passbook signs (⧖) on the paper stand.
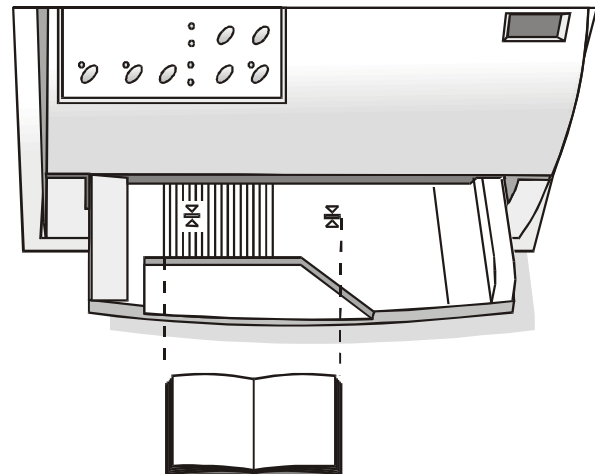
- The passbooks (both with *horizontal* and *vertical fold*) must not exceed the right passbook margin on the paper stand (second line from the right).

Right
Passbook
Margin
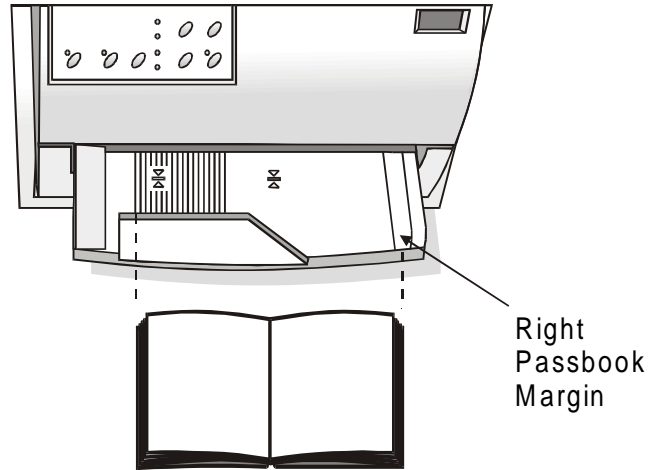
The Operator Panel

The operator panel is located on the front left side of the printer and is composed of function keys and leds with which you can easily check the printer status and select the functions as described below:

Function Keys

⏻	Turns the printer on or off.
	To turn the printer off, this key must be pressed for at least 3 seconds.
LQ	Toggles between Letter Quality and Draft printing mode.
	This key is active, when the printer is offline or when the printer is online and no print data are in the buffer.
	When pressed while powering the printer on, selects the printer setup mode. See "Printer Setup" later in this manual.

EJECT	Ejects the inserted form.
	This key is active, when the printer is offline or when the printer is online and no print data are in the buffer.
	When pressed while powering the printer on, the hexadecimal printing is selected.
	When using an Olivetti protocol, this key is enabled only, when the printer is offline.
PROGRAM	Selects one of the available configurations P1 and P2 if the PROGRAM LOCKED parameter is not enabled.
	This key is active, when the printer is offline or when the printer is online and no print data are in the buffer.
	When pressed while powering the printer on, selects the offset adjustment page. See "Offset Adjustments" later in this manual.
ON LINE	Toggles the printer between online and offline status.
	When pressed while powering the printer on, selects the Self Test printout. See "Printing a Test Page" in this manual.
STATION1 STATION2	When using the IBM 4722, IBM 9068 and the Olivetti protocols in two operators ("booking") mode, the application software determines the function of these keys. When using the other protocols, these keys are disabled.

Leds

POWER	On, if the printer is powered on.
LQ	On, if the Letter Quality mode is selected.
P1, P2	Indicate the currently selected configuration both in normal printing mode and during the Printer Setup procedure. See "Printer Setup" later in this section. If the INTERFACE TYPE function is set to auto+blink, when line 1 (parallel interface) is selected for data transmission, the P1 indicator blinks. If the INTERFACE TYPE function is set to auto+blink, when line 2 (serial interface) is selected for data transmission, the P2 indicator blinks. In a fault condition P1 and P2 blink.
ON LINE	On, if the printer is online. Off, if the printer is offline. Blinks, when receiving printing data from host.
STATION1 STATION2	When using the IBM 4722, IBM 9068 and the Olivetti protocols in two operators ("booking") mode, the application software determines the behavior of these leds. When using the other protocols, these leds are disabled.

> **In case of a printer fault during the initialization of the LQ, P1, P2 and ON LINE indicators blink contemporaneously. Turn the printer off and on again. If the problem is not solved, call the Customer Service.**

Software Driver Selection

At this point it is necessary to configure your printer for your application package. The installation procedures depend upon the host environment.

Together with the printer you receive a CD-ROM containing the printer drivers for the Windows environment. This printer supports the Plug&Play facility in the Windows95/98/2000® environment.

If you want to install the printer in the Windows environment, insert the CD-ROM and follow the instructions given.

> **The printer drivers of all Compuprint printers can be found at the Internet Address**
> **http://www.compuprint.net/drivers**

Connection to the Host

This printer can be connected to the host by means of a parallel standard Centronics or bidirectional IEEE 1284 type interface or by means of the serial RS-232/C interface.

Proceed as follows:

1. Make sure that both the host and the printer are turned off.

2. With the help of the following figure identify the connector for the interface you want to connect and insert the cable firmly into it.

3. Fix the parallel interface cable by means of the corresponding hooks or the serial cable tightening the screws on either side of the connector.

SERIAL
(Line 2)
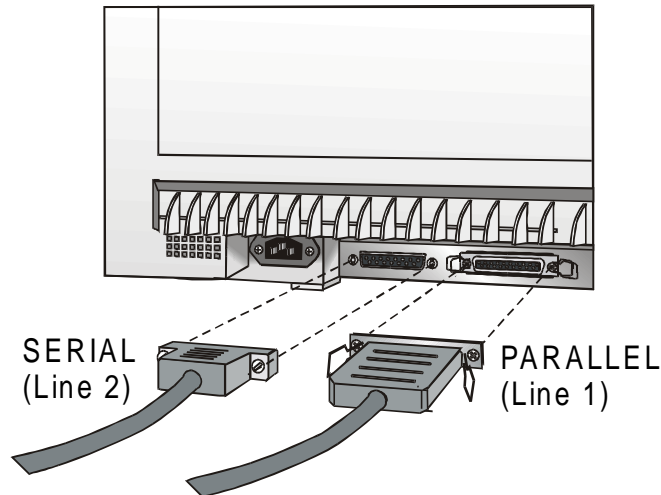
PARALLEL
(Line 1)

Setting the Interface Parameters

Parallel Interface

The parameters set for the parallel interface match most of the most common environments and the printer can be used immediately after the connection to the host.

In case you need to modify the standard parameters see "Printer Setup" later in this section.

Serial Interface

Because of the great variety of the possible connection configurations, when you use the serial interface you will need to set the parameters accordingly.

To assure a correct functioning of the printer connected through the serial interface, the transmission parameters set for the printer must match the values set for the host. Check the interface settings on the host and proceed as follows:

1. Press the LQ key while powering the printer on and keep it pressed until all leds turn briefly on. The printer enters the Setup mode.
2. Insert a blank sheet in A4 or Letter format. The printer loads the sheet and stops. The P1 and P2 leds are lit.
3. Press the PROGRAM key once. The P1 and P2 leds are unlit.
4. Press the LQ key. The printer prints the first configuration sheet.
5. To change the values of the serial interface parameters, fill in the marker ( ) beside the value you want to set with a black or blue ball-point pen or a fiber-pen.

Do not use pencils.

```
WORD LENGTH    ( )          ( )
               disabled *   enabled
BAUD RATE      ( )          ( )
               disabled *   enabled
PARITY BIT     ( )          ( )
               DTR          XON/XOFF* XON/XOFF + DTR
```

If more than one value is set for a parameter, the printer ignores these parameters and maintains the currently set value.

Do not fill in the marker beside the title of the preprinted form, otherwise the printer will not be able to read that page.

6. Once the serial interface parameters have been signed, insert the sheet back into the printer.
7. The printer reads the selected values on the configuration sheet and sets them. The settings are confirmed by a # symbol printed on the left of the corresponding marker.

The printer then returns to normal functioning mode.

For a complete description of the printer setup procedure see the paragraph "Printer Setup" later in this manual.

Printing a Test Page

It is now useful to test, if the printer has been correctly installed. For this purpose print the self test page as follows.

1. Press the ON LINE key while powering the printer on and hold the key pressed until all leds turn briefly on.

2. Insert a single sheet in A4 or Letter format.

The printer prints the Self-Test page. Check that the printout is correct. The following printout example shows also the printer setup default values.

SELF TEST

MDP40B : Code Version Vx.x xxxxxxxx CharGen:xxxxxxxx ver. x.xx

CONFIGURATION SETUP

PROGRAM	progr.1	INTERFACE TYPE	automatic
PROGRAM LOCKED	no	HONOR CTS	yes
ERROR BUZZER	1 beep	INPUT BUFFER	8 Kb
JOB BUZZER	no beep	IGNORE PE	enabled
SECURITY MODE	enabled	AUTOFEED SIGNAL	disabled
PASSBOOK TYPE	special	SLCT-IN SIGNAL	disabled
PASSBOOK WIDTH	auto	BUFFER CONTROL	XON/XOFF
	mm 213	ROBUST XON	enabled
PASSBOOK LENGTH	auto	WORD LENGTH	8 bit
	mm 176	BAUD RATE	9600 bps
AUTO GAP OFFSET	+0.000 mm	PARITY BIT	none
GET EDGE QUOTE	1/2"		

PROGRAM SETUP

	PROGRAM 1	PROGRAM 2
PROTOCOL	IBM XL24E	EPSON 570
FONT	Draft	Draft
HORIZONTAL PITCH	10 lpi	10 lpi
VERTICAL PITCH	6 lpi	6 lpi
FORM LENGTH	A4	A4
	0	0
LEFT MARGIN	0	0
RIGHT MARGIN	96	96
TOP MARGIN	0	0
BOTTOM MARGIN	0	0
IBM C-SET	IBM set 1	IBM set 1
IBM COMPRESS	17.1 cpi	17.1 cpi
EPSON C-SET	graphic	graphic
NATION C-SET	USA	USA
CODE PAGE	CP437	CP437
OLIVETTI C-SET	INTERN.	INTERN.
VERT. RESOLUTION	1/240 inch	1/240 inch
RESET WITH EJECT	yes	yes
LINE MODE	LF=LF, CR=CR	LF=LF, CR=CR
WRAP MODE	autowrap	autowrap
SLASHED ZERO	disabled	disabled
PRINT DIRECTION	sw control	sw control
EJECT ON FF	enabled	enabled
CUT SHEET EJECT	on front	on front
MANUAL LOADING	disabled	disabled
ALIGN MODE	Fast	fast
VERT.POS 1/10"	0	0
VERT.ADJ 1/60"	0	0
HORIZ.POS 1/10"	0	0
HORIZ.ADJ 1/60"	0	0

Printer Setup

The default configuration of this printer matches most of the commonly used environments, but it may be necessary to change some printer parameters. For this purpose it is necessary to use preprinted forms to be used with the printer in configuration mode.

The following is the complete description of the Setup Procedure.

> **The detailed description of the parameters that can be set on the various preprinted forms are described in the "Setup Parameters" paragraph, later in this manual.**

To enter the Printer Setup Mode press and hold the LQ key for at least 1 second while powering the printer on. The printer enters the Setup Mode.

Printing the Printer Setup Forms

> **If you already have the preprinted forms for the printer setup, go to "Filling in the Printer Setup Forms" later in this manual.**

Insert a blank sheet in A4 or Letter format. The printer loads the sheet and stops. The P1 and P2 leds are lit.

The ON LINE, PROGRAM and LQ keys are enabled.

> **If the LQ key is pressed immediately after the printer enters in Setup Mode, all printer setup modules are printed.**

If you press the ON LINE key:

- the printer self-test is printed. See "Printing a Test Page" before in this manual. In this way it is possible to check the current printer parameters.
- once the self-test is finished, the printer remains in Setup Mode.

If you press the PROGRAM key:

- the P1 and P2 leds change and you can select the Setup Page you want to print as follows:

P1 P2	○ ●	All setup pages
P1 P2	○ ○	Configuration page
P1 P2	● ○	Program 1 page
P1 P2	○ ●	Program 2 page

● = lit

○ = unlit

The printer setup forms contain all printer parameters and the values that can be set. The current value is indicated by an asterisk (*).

For a detailed description of the parameters and the settings see "Setup Parameters" later in this manual.

Each printer setup form is identified by a marker in the upper left corner of the page as follows:

Configuration Setup)	■
Program 1	■■
Program 2	▪▪ ▪

If you press the LQ key:

The printing of the printer setup forms starts. The forms are printed according to the selection made with the PROGRAM key.

The selection of the Program Setup is made simply pressing the PROGRAM key. When passing from one Program Setup to another, the printer resets before setting the parameters as defined in the new program setup.

Filling in the Printer Setup Forms

To change the values of the parameters, fill in the marker ( ) beside the value you want to set with a black or blue ball-point pen or a fiber-pen.

<div style="border:1px solid navy; text-align:center; font-weight:bold; color:navy;">
Do not use pencils.
</div>

```
AUTOFEED SIGNAL  ( )         ( )
                 disabled *   enabled
SLCT-IN SIGNAL   ( )         ( )
                 disabled *   enabled
BUFFER CONTROL   ( )         ( )
                 DTR         XON/XOFF* XON/XOFF +
```

<div style="border:1px solid navy; text-align:center; font-weight:bold; color:navy;">
If more than one value is set for a parameter, the printer ignores these parameters and maintains the currently set value.
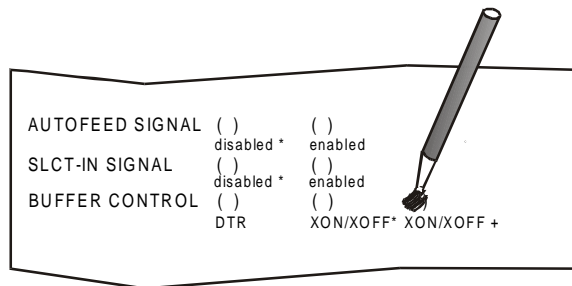
Do not fill in the marker beside the title of the preprinted form, otherwise the printer will not be able to read that page.
</div>

Reading the Preprinted Forms

When the Printer Setup Forms have been filled in, insert them back into the printer. The printer is able to recognize the Setup Forms by means of the markers on these pages. The printer reads the values marked for the various parameters and configures the printer accordingly.

The settings are confirmed by a # symbol printed on the left of the corresponding marker.

Printer Setup Flow Chart

Printer OFF

Normal Mode

Self Test
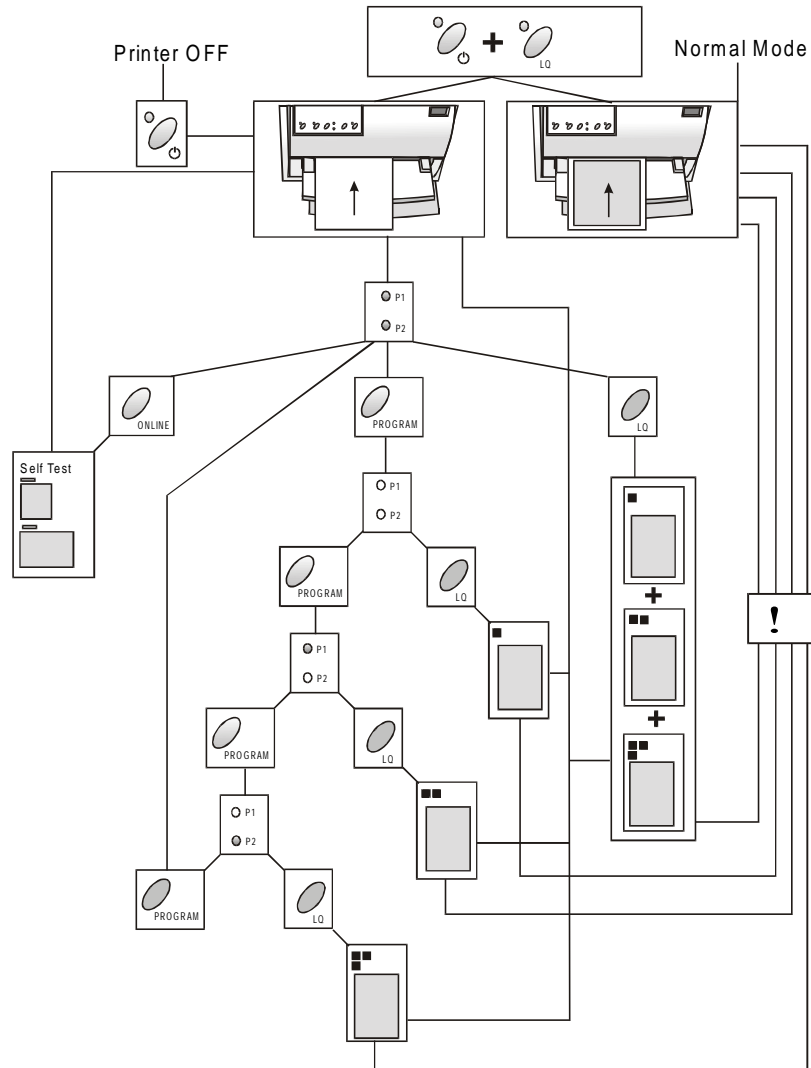
Setup Parameters

The following is a listing of the setup parameters.

Configuration Sheet ■

Setup Parameter	Values	Description
RESTORE TO MFG	no	The selected values are not set to factory defaults.
	all	The values set in all printer setups are reset to factory default values.
	config	The values set in the configuration setup are reset to factory default values.
	prog. 1, prog. 2	The values set in the corresponding program setup are reset to the factory default values.
PROGRAM	progr. 1, progr. 2	Defines the default Program Setup
PROGRAM LOCKED	no, yes	Locks the program setup selection. In case the lock is 'yes' the program setup cannot be changed pressing the PROGRAM key.
ERROR BUZZER	1 beep, no beep	Selects the behavior of the buzzer in case of an error.
JOB BUZZER	no beep, 1 beep, continuous	Selects the behavior of the buzzer when a new print job starts: no signal (`no beep`), one beep (`1 beep`) or a continuous signal (`continuous`).

Setup Parameter	*Values*	*Description*
INTERFACE TYPE	parallel, serial, financial, automatic, auto+blink	Selects the interface type. Selecting 'automatic' the interface type is selected between serial and parallel by the printer depending on data coming from host. When the auto+blink item is selected, the P1 and P2 leds blink to indicate which interface is selected: P1 blinks when the serial interface is selected, whereas P2 blinks, when the parallel interface is selected.
		The 'financial' interface should be selected for typical applications of the IBM4722 and IBM 9068 protocol with the controlled link required by the IBM financial driver. When this item is set, the parallel port is disabled and the word length is set to 8 bits.
HONOR CTS	no, yes	This setting is significant only if the 'financial' interface has been selected.
		This function sets the CTS signal, that may be considered (yes) or ignored (no).
INPUT BUFFER	1 Kb, 8 Kb, 16 Kb, 32 Kb	Selects the buffer size.
		When the 'financial' interface is selected, this setting is ignored and the printer always uses an input buffer of 2 Kb.
IGNORE PE	enabled, disabled	Selects whether the printer signals the paper empty condition (disabled) or not (enabled).
AUTOFEED SIGNAL	disabled, enabled	The parallel interface uses (enabled) or does not use (disabled) the AUTOFEED signal.
SLCT-IN SIGNAL	disabled, enabled	The parallel interface uses (enabled) or does not use (disabled) the SELECT-IN signal.

Setup Parameter	*Values*	*Description*
BUFFER CONTROL	DTR, XON/XOFF, XON/XOFF+DTR	Selection of the buffer protocol. When the 'financial' interface is selected, this setting is ignored.
ROBUST XON	enabled, disabled	Perform the Robust XON (enabled) or not (disabled).
WORD LENGTH	7 bit, 8 bit	Sets the number of the data bits. When the 'financial' interface is selected, this value is always set to 8 bits.
BAUD RATE	600 - 38400 bps	Sets the data transfer rate.
PARITY BIT	even, odd, none	Selects the parity control for the data.
SECURITY MODE	enabled, disabled	Enables or disables the security actions that assure protection against paper jams. If disabled, the paper handling is faster.
PASSBOOK TYPE	Fixed thick	Printing on a document with fixed thickness.
	Vertical	Printing on passbooks with upright fold.
	Horizontal	Printing on passbooks with horizontal fold.
	Special	Printing on passbooks with upright fold having different thickness along the document.

Setup Parameter	Values	Description
PASSBOOK WIDTH	auto, setup, auto>140mm	Selects the passbook width setting mode. Selecting auto the width of the passbook is read and set automatically by the printer, independently from the passbook width set by menu or software command. Selecting setup the width of the passbook is set by the user in the menu or by means of a software command. This selection allows a particularly accurate printing and is especially useful when printing on passbooks with vertical fold and uniform thickness or passbook with different thickness along the document. Selecting auto > 140 mm the printer handles the documents with a width exceeding 140 mm as described for the auto selection. Documents with a width less than 140 mm are treated as documents with a fixed thickness. The values range between 102 and 213 mm. To set the values combine the numbers considering that the first line corresponds to the hundreds, the second line to the tens and the third line to the units. See the example below.

Example:

How to set the passbook width to 120 mm:

```
PASSBOOK WIDTH          ▰ setup          ( ) auto
     0         1         2         3         4         5         6         7         8         9
    ( )       ▰        ( )
    ( )       ( )       ▰        ( )       ( )       ( )       ( )       ( )       ( )       ( )
    ▰        ( )       ( )       ( )       ( )       ( )       ( )       ( )       ( )       ( )
```

Setup Parameter	Values	Description
PASSBOOK LENGTH	auto setup	Selects the passbook length setting mode. Selecting auto the length of the passbook is read and set automatically by the printer, independently from the passbook length set by menu or software command. Selecting setup the length of the passbook is set by the user in the menu or by means of a software command. This selection allows a particularly accurate printing and is especially useful when printing on passbooks with horizontal fold. The values range between 99 and 210 mm. To set the values combine the numbers considering that the first line corresponds to the hundreds, the second line to the tens and the third line to the units. See the example below.

Example:

How to set the passbook length to 150 mm:

```
PASSBOOK LENGTH          ▓ setup          ( ) auto
                0     1     2     3     4     5     6     7     8     9
               ( )    ▓    ( )
               ( )   ( )   ( )   ( )   ( )    ▓    ( )   ( )   ( )   ( )
                ▓    ( )   ( )   ( )   ( )   ( )   ( )   ( )   ( )   ( )
```

Setup Parameter	Values	Description
AUTO GAP OFFSET	-0,075 mm, -0.050 mm, -0.025 mm, +0.000 mm, +0.025 mm, +0.050 mm, +0.075 mm, +0.100 mm	Sets the automatic gap offset to one of the given values.
GET EDGE QUOTE	0/2", 1/2", 2/2", 3/2", 4/2", 5/2", 6/2", 7/2"	Sets the position in which the left paper edge is checked. If set to 0, the check is performed at the first line. The other values correspond to the physical distance from the first line.

■■   **PROGRAM 1**   ▀▪   **PROGRAM 2**

Setup Parameter	Values	Description
PROTOCOL	EPSON 570, IBM X24E, X24E AGM, IBM 2390, OLI. PR40+, OLI. PR2, OLI. PR2845, IBM 4722, IBM 9068	Defines the printer protocol. **NOTE**: For the IBM 4722 and 9068 protocols, if the software driver uses the controlled link of the IBM financial driver, set the INTERFACE TYPE item in the Configuration Menu to financial.
FONT	Draft, Courier, OCR-B, Gothic, Prestige, Present, OCR-A, Script, Boldface	Selects the font.
HORIZONTAL PITCH	10 cpi, 12 cpi, 15 cpi, 16.6 cpi, 17.1 cpi, 20 cpi	Selects the character spacing in characters per inch (cpi).
VERTICAL PITCH	5 lpi, 6 lpi, 8 lpi	Selects the line spacing in lines per inch (lpi).

Setup Parameter	Values	Description
LOCK	no lock, font, hor. pitch, font+hor.pitch	The following selections made via operator panel may be locked: font, horizontal pitch (hor.pitch), or both the font and horizontal pitch (font+hor.pitch). The locked settings cannot be changed via software commands.
FORM LENGTH	# lines, A4, letter, A5, legal	Sets the page length in number of lines or standard formats A4, Letter, A5 or Legal. If you select # lines, you must indicate the number of lines you want to set in the scheme below this selection. The values range between 0 and 255. To set the values combine the numbers considering that the first line corresponds to the hundreds, the second line to the tens and the third line to the units. See the example below.

Example:

How to set the form length to 82 lines:

```
FORM LENGTH        ▦      ( )      ( )      ( )      ( )
                  #lines  A4       letter   A5       legal
           0       1       2        3        4        5        6        7        8        9
          ( )     ( )     ( )
          ( )     ( )     ( )      ( )      ( )      ( )      ( )      ( )      ▦       ( )
          ( )     ( )     ▦        ( )      ( )      ( )      ( )      ( )      ( )      ( )
```

Setup Parameter	Values	Description
LEFT MARGIN	10 x 1 x	Sets the left margin in number of columns. The values range between 0 and 90. To set the values combine the numbers considering that the first line corresponds to the tens, the second line to the units. See the example below.

How to set the Left Margin to 20.

```
LEFT MARGIN
```

	0	1	2	3	4	5	6	7	8	9
10 x	( )	( )	▉	( )	( )	( )	( )	( )	( )	( )
1 x	▉	( )	( )	( )	( )	( )	( )	( )	( )	( )

Setup Parameter	Values	Description
RIGHT MARGIN	100 x 10 x 1 x	Sets the right margin in number of columns. The values range between 0 and 190. The physical position of margin depends on the current character spacing. To set the values combine the numbers considering that the first line corresponds to the hundreds, the second line to the tens and the third line to the units. See the example below:

Example:

How to set the Right Margin to 101.

```
RIGHT MARGIN
```

	0	1	2	3	4	5	6	7	8	9
100 x	( )	▉								
10 x	▉	( )	( )	( )	( )	( )	( )	( )	( )	( )
1 x	( )	▉	( )	( )	( )	( )	( )	( )	( )	( )

Setup Parameter	Values	Description
TOP MARGIN	10 x 1 x	Sets the top margin in number of lines. The values range between 0 and 90. To set the values combine the numbers considering that the first line corresponds to the tens, the second line to the units. See the example below.

Example:

How to set the Top Margin to 15.

```
TOP MARGIN
```

	0	1	2	3	4	5	6	7	8	9
10 x	( )	▉	( )	( )	( )					
1 x	( )	( )	( )	( )	( )	▉	( )	( )	( )	( )

Setup Parameter	Values	Description
BOTTOM MARGIN	10 x 1 x	Sets the bottom margin in number of lines. The values range between 0 and 90. To set the values combine the numbers considering that the first line corresponds to the tens, the second line to the units. See the example below.

Example:

How to set the bottom margin to 34 lines:

```
BOTTOM MARGIN
```

	0	1	2	3	4	5	6	7	8	9
10 x	( )	( )	( )	▉	( )					
1 x	( )	( )	( )	( )	▉	( )	( )	( )	( )	( )

Setup Parameter	Values	Description
IBM C-SET	IBM set 1, IBM set 2	Selects the IBM character set.
IBM COMPRESS	17.1 cpi, 20 cpi	Selects the pitch for the compressed mode printing in IBM emulation.
EPSON C-SET	Italic, graphic	Selects italic or graphic Epson character set.

Setup Parameter	Values	Description
NATION C-SET	USA, FRANCE, GERMANY, ENGLAND, DENMARK1, SWEDEN, ITALY, SPAIN1, JAPAN, NORWAY, DENMARK2, SPAIN2, LATIN A1	Selects the national character sets.
CODE PAGE	CP437, CP437G, 96GREEK, CP850, CP851, CP852, CP853, CP855, CP857, CP858, CP860, CP862, CP863, CP864, CP865, CP866, CP867, CP876, CP877, CP1098, CP1250, CP1251, CP1252, GOST, TASS, MAZOWIA, CP437SL, UKRAIN, 8859/1, 8859/2, 8859/3, 8859/4, 8859/5, 8859/6, 8859/7, 8859/8, 8859/9, 8859/15, ROMAN-8, ID 12, ID 14, ID 17, SANYO, KU, PHILIP, CP874	Selects the code page for both the IBM and the EPSON emulations.
OLIVETTI C-SET	CODE PAGE*, INTERN., GERMANY, PORTUGAL, SPAIN1, DEN/NORW, FRANCE, ITALY, SWE/FIN, SWISS, G. BRITAIN, USA ASCII, GREECE, ISRAEL, SPAIN 2, JUGOSLAVIA, TCV 370, CANADA, SDC, TURKEY, CIBC, PC-DEN/NORW, PC-DEN OPE, PC-210, PC-220, OLI-UNIX	Selects the character sets for the OLIVETTI protocol. Selecting CODE PAGE, it is possible to select one of the above Code Pages to be used with the Olivetti protocol.
VERT. RESOLUTION	1/216 inch, 1/240 inch	Sets the vertical character resolution. Setting used for the OLIVETTI protocols.

Setup Parameter	*Values*	*Description*
RESET WITH EJECT	no, yes	When the printer receives a reset command, selecting `yes` it ejects the paper, selecting `no` it performs only the reset command. Setting used for the OLIVETTI protocols.
LINE MODE	LF=LF, CR=CR	If the printer receives a LF code (LF), it only performs a line feed. If the printer receives a CR code (CR), it only performs a carriage return.
	CR=LF+CR	If the printer receives a CR code (CR), it performs a carriage return followed by a line feed. If the printer receives a LF code (LF), it performs a line feed.
	LF=LF+CR	If the printer receives a LF code (LF), it performs a line feed followed by a carriage return. If the printer receives a CR code (CR), it only performs a carriage return.
	LF&CR=LF+CR	If the printer receives a LF code (LF) or a CR code (CR), it performs both a line feed and a carriage return.
WRAP MODE	truncate, autowrap	The data exceeding the line length are truncated (`truncate`) or printed on the following line (`autowrap`).
SLASHED ZERO	no, yes	Selects the printing character for zero, with a slash (`yes`) or without (`no`).
PRINT DIRECTION	unidir., bidir., sw control	Selects the printing direction of the print head: unidirectional (`unidir.`), bidirectional (`bidir.`) or selected via software (`sw control`).
EJECT ON FF	no, yes	Performs a form feed according to the selected page format (`no`) or ejects a cut sheet loaded into the printer (`yes`).

Setup Parameter	Values	Description
CUT SHEET EJECT	on front, on rear	Selects whether the cut sheet loaded into the printer is ejected towards the front or the rear of the printer.
MANUAL LOADING	enabled, disabled	Selects the manual loading mode. Setting it to `enabled` the printer loads any kind of document according to the described procedures. Select `disabled`, when a more precise paper alignment is necessary. With this selection it is not possible to load documents with a width of less than 90 mm.
ALIGN MODE	fast, normal	Selects the paper alignment mode. Selecting `fast` the printer performs less checks on the alignment, whereas, if you need a particularly precise alignment of the documents, select `normal`.

Offset Adjustments

For a precise adjustment of the position of the printed characters on a preprinted form, this printer allows to easily adjust the first line and the first printing column as follows:

1. Press the PROGRAM key while powering the printer on.

2. Insert a blank sheet into the printer.

The following sheet will be printed:

■ ■ ■ OFFSET TUNING SETUP

Vertical Position Offset (1/10 INCH)

	0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PROGRAM 1	( )*	( )	( )	( )	( )	( )	( )	( )	( )	( )
PROGRAM 2	( )*	( )	( )	( )	( )	( )	( )	( )	( )	( )

Vertical Offset Tuning (1/60 INCH)

	X	X	X	X	X	X	X	X	X	X	X	X	X
PROGRAM 1	( )	( )	( )	( )	( )	( )	( )*	( )	( )	( )	( )	( )	( )
PROGRAM 2	( )	( )	( )	( )	( )	( )	( )*	( )	( )	( )	( )	( )	( )
	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6

Horizontal Position Offset (1/10 INCH)

	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9
PROGRAM 1	( )	( )	( )	( )	( )	( )	( )*	( )	( )	( )	( )	( )	( )	( )	( )	( )
PROGRAM 2	( )	( )	( )	( )	( )	( )	( )*	( )	( )	( )	( )	( )	( )	( )	( )	( )

Horizontal Offset Tuning (1/60 INCH)

	PROGRAM 1	PROGRAM 2	
X	( )	( )	-6
X	( )	( )	-5
X	( )	( )	-4
X	( )	( )	-3
X	( )	( )	-2
X	( )	( )	-1
X	( ) *	( ) *	0
X	( )	( )	+1
X	( )	( )	+2
X	( )	( )	+3
X	( )	( )	+4
X	( )	( )	+5
X	( )	( )	+6

The `Vertical Offset Tuning` values correspond to 1/60 inches and set the vertical offset of the first print line starting from the default standard position at 1 mm from the upper paper margin.

The `Horizontal Offset Tuning` values correspond to 1/60 inches and set the horizontal offset of the first print line starting from the default standard position at 3 mm from the left paper margin.

If you need to change the default position of the first print line the vertical offset can be set in the `Vertical Position Offset` lines and/or the horizontal offset in the `Vertical Position Offset` lines. Both these values correspond to 1/10 inch values.
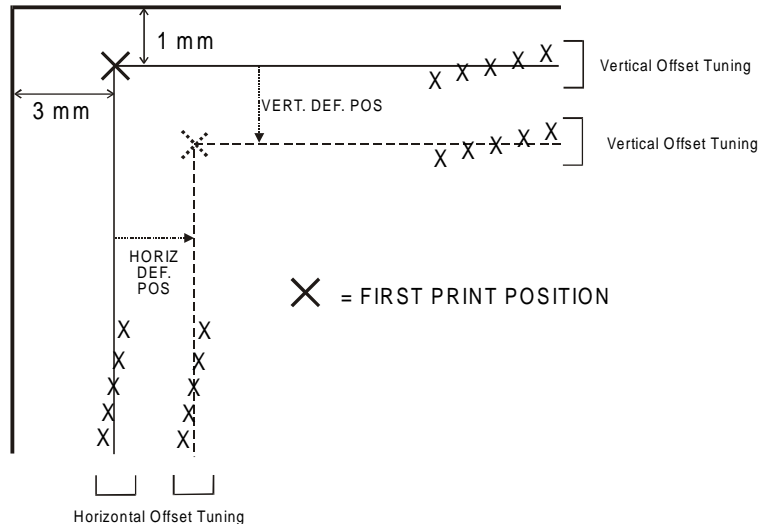
3. Fill in the marker corresponding to the value you want to set and reinsert the sheet into the printer. The printer reads the selected values and sets them.

4. Turn the printer off.

Troubleshooting

Clearing Paper Jams

The straight paper path of this printer is designed for trouble-free handling of a great variety of documents.

In case a paper jam condition occurs, proceed as follows:

1. Open the printer cover.
2. Pull the lever on the right inner side of the printer towards the printer front side to open the paper path and with the other hand hold pressed the paper path cover.
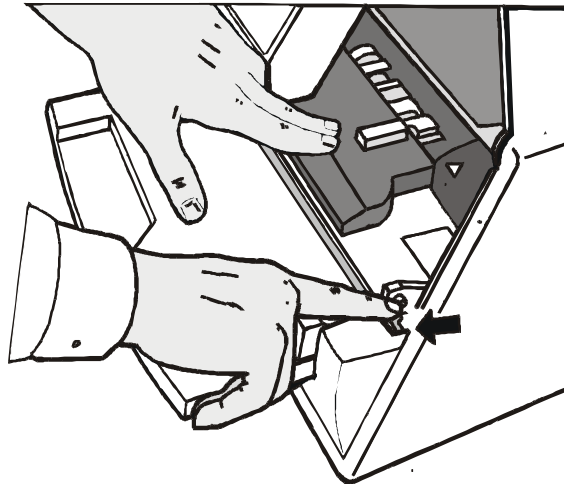
3. Remove the jammed paper.
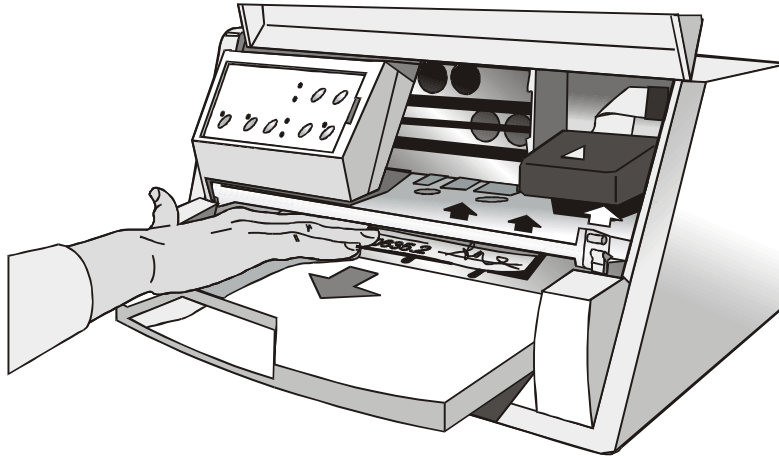
4. In case it is not possible to remove the jammed paper because you cannot reach it with your hand or it is embedded so that you cannot move it, rotate the white cog-wheel beside the paper path lever to free the paper.
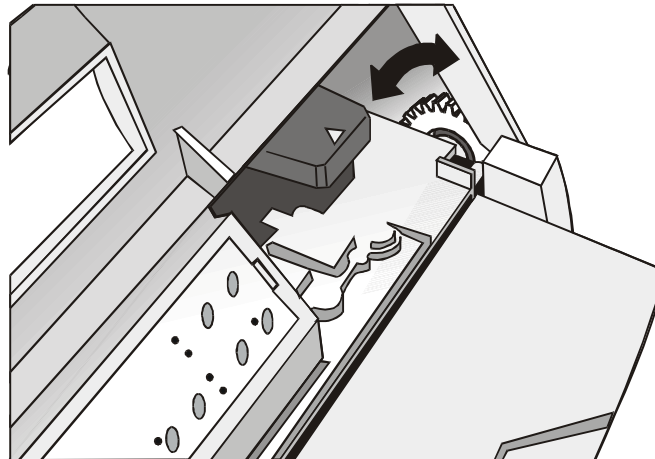
5. To close the paper path, push the paper path cover down until it locks in position.

Print Quality Problems

The following table is useful to identify and solve print quality problems.

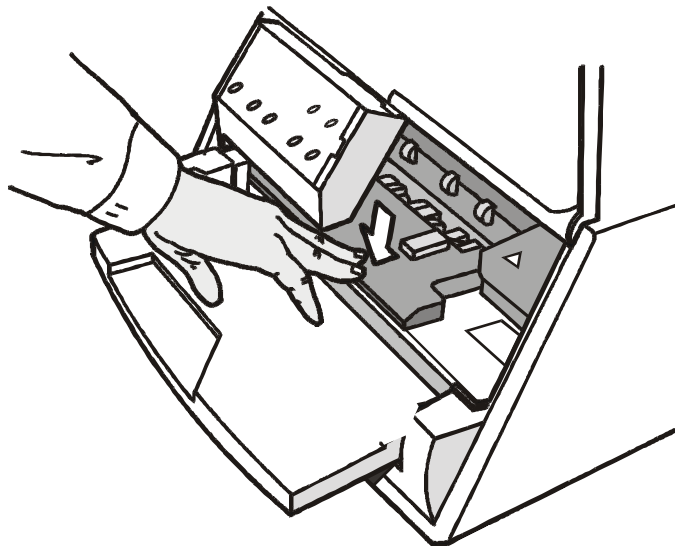| Problem	Cause	Solution
Fading print	The ribbon is not fed	Check that the ribbon is correctly inserted (see "Installing the Ribbon Cartridge".
		Turn the ribbon tension knob to verify, that the ribbon is not blocked.
		If the problem is not solved, change the ribbon cartridge.
	The ribbon is used up or torn	Change the ribbon cartridge.
Paper damaged after printing	The paper does not correspond to the specifications given in this manual or was not loaded according to the indications given	Verify that the paper corresponds to the specifications and has been loaded according to the indications given.

Hexadecimal Dump

If you need to check the data transmission and want to print in hexadecimal mode, proceed as follows:

1. Press the EJECT key until all leds briefly light up while powering the printer on.
2. The data sent to the printer are printed in three columns where the first column indicates the number of the line, the second shows the hexadecimal values corresponding to the transferred data and the third column shows the corresponding ASCII values.
3. To exit form the hexadecimal mode turn off the printer.

Paper Specifications

The documents must all guarantee the following characteristics:

- Use paper matching the *indicated characteristics*.

- They must have well defined top and left *edges*, with a square *angle tolerance* of 0.1° on all edges.

- The paper must *not have holes, perforations, folds or tears* anywhere within the print area of the document.

- The *radius on a corner* of the form must be within 9.5 mm from the left or right edge.

- The form to be printed must not contain *foreign material*.

- Form *opacity* must be at least 75%. Forms with a lower opacity may cause feed errors.

- Never print on documents with *metallic or hard plastic fasteners or staples*, they may damage the printer. Use only *sewn* passbooks.

- To get the maximum *print contrast* you should print on white or light colored paper. You may overstrike to improve the low contrasting paper.

- It is preferable to use single and multiple documents with the *fibre* running in the insertion direction of the printing unit.

- *Recycled* paper is permitted on principle.

- It is preferable to print on multiple forms with *a narrow glue strip or top-gluing*. The gluing must not cause waving in the set of forms.

Cuts Sheets
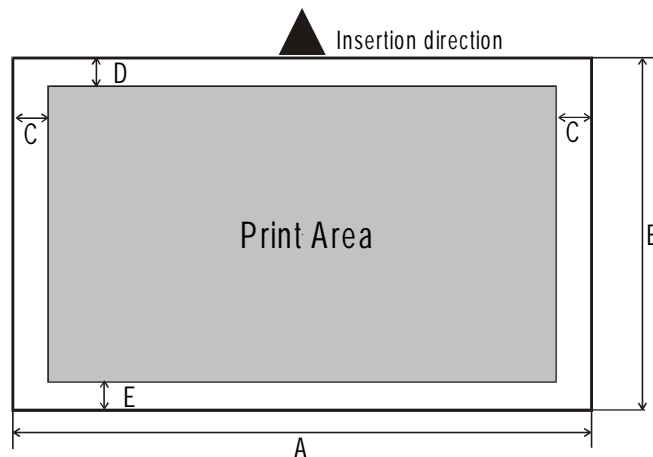
	Dimensions	Maximum	Minimum
A	Form width	240 mm (226 mm if paper thickness is more than 0,2 mm)	70 mm (manual alignment) 90 mm (automatic alignment)
B	Form length	711.2 mm	68.6 mm
C	Distance between dot position and left or right paper edge	-	3.0 mm if length is less than 355.6 mm 8.0 mm if length is between 335.6 and 711.2 mm
D	Distance between top of the first printed line and top margin of the document	-	1 mm
E	Distance between the lower margin and the lower part of the last printed line	-	6.6 mm
	Weight	-	60 g/m²
	Thickness	0,6 mm	0,06 mm
	Copies	Original + 5 copies	

Passbooks

	Minimum	Maximum
Paper Weight	75	120 g/m^2
Thickness		
Multiple Page Passbooks		
Horizontal Fold	0.28 mm (0.011 in.)	1.80 mm (0.071 in.)
Thickness difference across the fold of an open passbook		
Horizontal Fold	-	1.42 mm (0.056 in.)
Vertical Fold	-	1.22 mm (0.048 in.)
Single Page Passbook or Ledger Cards	0.18 mm (0.011 in.)	0.28 mm (0.0071 in.)

- Passbooks with torn, folded, creased, incomplete or warped pages or covers should not be used.

- Printing on or across holes, edges, cut outs or folds is not permitted.

- Passbook covers must be of uniform thickness under the printing area.

- The fold of all pages and the stitching must coincide with the cover fold. The stitches should be spaced at 6 to 10 stitches per inch.

- Fiber flow on the inner sheets should be parallel to the center fold.

Passbooks with Horizontal Fold
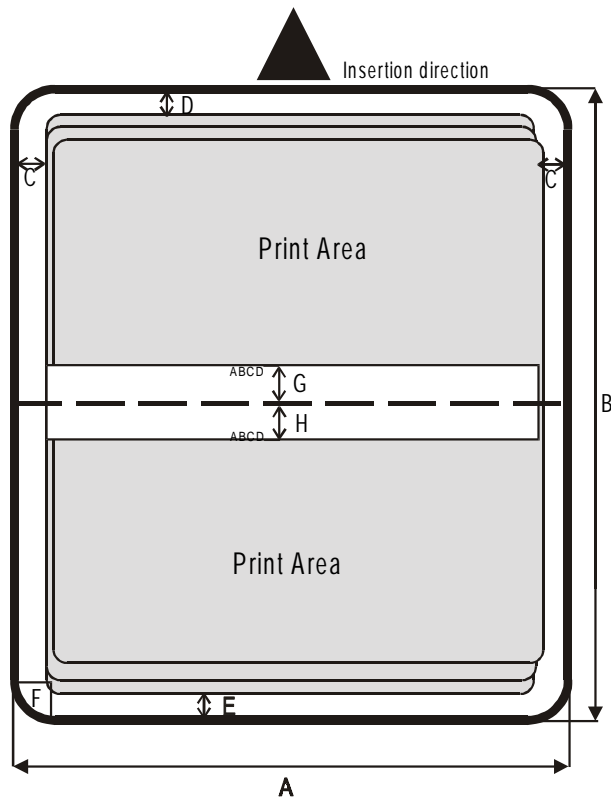
	Dimension	Maximum	Minimum
A	Passbook width	213 mm	102 mm
B	Passbook length	210 mm	127 mm
C	Distance between print character position and left or right edge	-	3.0 mm
D	Distance between top edge of the document and top edge of first printed line	-	6.6 mm
E	Distance between bottom of last printed line and bottom edge of the document	-	6.6 mm
F	Outer corner radius	9.35 mm	-
G	Distance from fold to bottom of the first printed line above the fold.	-	5.1 mm
J	Distance from fold to top of the first printed line below the fold.	-	5.1 mm

Passbooks with Vertical Fold
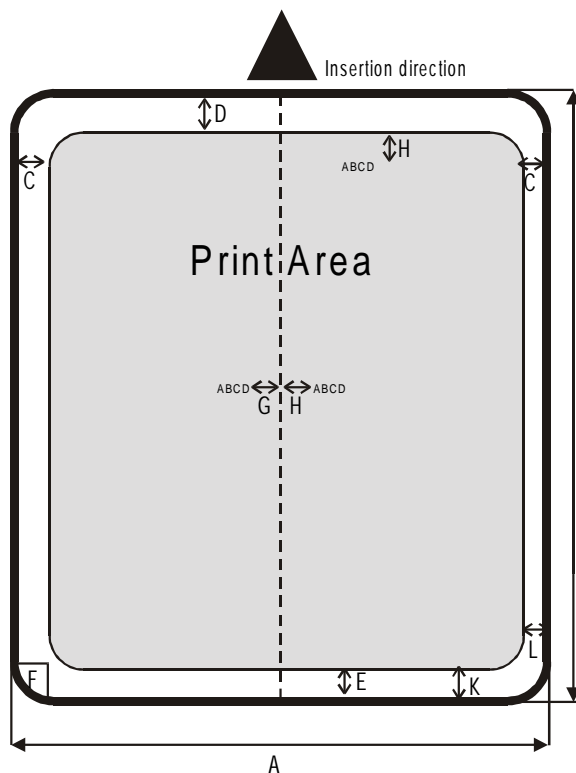
	Dimension	Maximum	Minimum
A	Passbook width	213 mm	127 mm
B	Passbook length	210 mm	99 mm
C	Distance for the dot position nearest to the left or right edge	-	3,0 mm
D	Distance from the top edge of the document to the top edge of the first printed line	-	6,6 mm
E	Distance from the bottom of the last printed line to the bottom edge of the document	-	6,6 mm
F	Outer corner radius	9,35 mm	-
G	Distance from the fold to the first character position beside the fold.	-	5,1 mm
H	Distance from the fold to the first character position beside the fold.	-	5,1 mm
K-L	Short Page Offset	-	0,0 mm

Insertion direction

Print Area

Technical Specifications

Printing Technology

Print head:	24 pin
Resolution:	360 x 360 dpi (HxV)

Line Length (@ 10 cpi)

94 columns (cut sheets)

Printing Speed

480/400 cps @ 12/10 cpi (Draft)

160/133 cps @ 12/10 cpi (LQ)

Emulation

IBM ® Personal Printer 2390+, Proprinter XL24E, Proprinter XL24AGM, IBM 4722, 9068, Epson 570 and Olivetti PR40+, PR2, 2845

Resident Fonts

Draft, Courier, Gothic, Prestige, Presentor, Script, OCR-A, OCR-B, Boldface

Character Sets (IBM and Epson protocols)

PC standard set (CS1-CS2) - 13 National Epson sets - CP437 (USA) - CP437G (Greek) - CP850 (Multilanguage) – CP851 (Greek) - CP852 (Latin 2) - CP853 (Turkish) - CP855 (Russian) - CP857 (Turkish) - CP 858 (Euro) - CP860 (Portuguese) - CP862 (Hebrew) - CP863 (French/Canadian) - CP864 (Arabic) - CP865 (Norwegian) - CP866 (Cyrillic) - CP867 (Turkish) – CP874 (Thai) - CP876 (OCRA) - CP877 (OCRB) - CP1250 (Central Europe) – CP1251 (Cyrillic) – CP1252 (Windows Latin1 Ansi) - Gost - Tass – Mazowia - ISO 8859/1/2/3/4/5/6/7/8/9/15 - 96GREEK- Ukrainian – ID 12 – ID 14 – ID 17 – CP1098 (Farsi Arabic) – Roman-8, CP437 Slavic – Sanyo – Ku - Philip

Character Sets (OLIVETTI protocols)

CS000 – CS010 International, CS020 Germany, CS030 Portugal, CS040 Spain1, CS050 Denmark/Norway, CS060 France, CS070 Italy, CS080 Sweden/Finland, CS090 Switzerland, CS100 Great Britain, CS110 USA ASCII, CS140 Greece, CS150 Israel, CS170 Spain 2, CS200 Jugoslavia, CS410 Olivetti TCV 370, CS510 SDC, CS520 Turkey, CS540 CIBC, CS680 OLI-UNIX, CS701 PC-220 Spain2, CS711 PC-Denmark/Norway, CS712 PC-Denmark OPE, CS771 PC-210 Greek

Barcodes

UPC/A, UPC/E, EAN8, EAN13, Code 39, Code 128, Postnet, Codabar, ADD-ON 2, ADD-ON 5, Code 11, Code 93, BCD, MSI, 2/5 Interleaved, 2/5 Matrix, 2/5 Industrial

Interfaces

Parallel IEEE 1284 bidirectional,

Serial RS-232/C

Automatic Interface Switching

Memory

32 Kbytes buffer

Special Functions

Automatic Gap Adjustment (AGA)

Auto Alignment

Auto Border Recognition

Ribbon Life

4 million characters (black)

Reliability

MTBF: 10,000 hours

Print Head Life

400 million characters

Physical Dimensions & Weight

390 (W) x 210 (H) x 320 (D) mm

14 Kg

Power Supply

Tension:	110V and 220V
Frequency :	60 Hz and 50 Hz
Power consumption:	120 W max. (printing), 10 W (standby)

Environmental conditions

Temperature:	working 5/40 °C, stock -25/60 °C
Humidity:	working from 20 to 85% (r.h.), stock from 10% to 90% (r.h.) (without condensation)

Standard

EN 60950, IEC 950

Environment

Energy star compliant

Noise Level

54dbA

FCC Notes

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

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

A shielded Centronics IEEE1284 compliant bi-directional parallel cable, maximum length 3 meters (10 feet), and a shielded RS-232 serial cable, maximum length 15 meters (50 feet), are necessary for this device to meet the requirements of a Class B digital device pursuant to part 15 of the FCC rules.

The above specified cables are readily available as Personal Computer or Peripheral accessories from multiple retail outlets. Please consult your dealer for details concerning such cables and also for information about FCC rules for digital devices.

Changes or modifications to the device covered by this manual, which are not expressly approved by the party responsible for compliance, could void the user's authority under the FCC rules to operate the equipment.

Canadian D.O.C. Radio Interference Regulation

This digital apparatus complies with the Canadian ICES-003 Class B limits for radio frequency emissions.

Cet appareil numérique est conforme aux limites de Classe B de la norme NMB-003 du Canada.

EEC Regulations

This equipment conforms to the EEC Directive 89/392 (the sound pressure, measured according to ISO 7779, does not exceed 70 dBA).