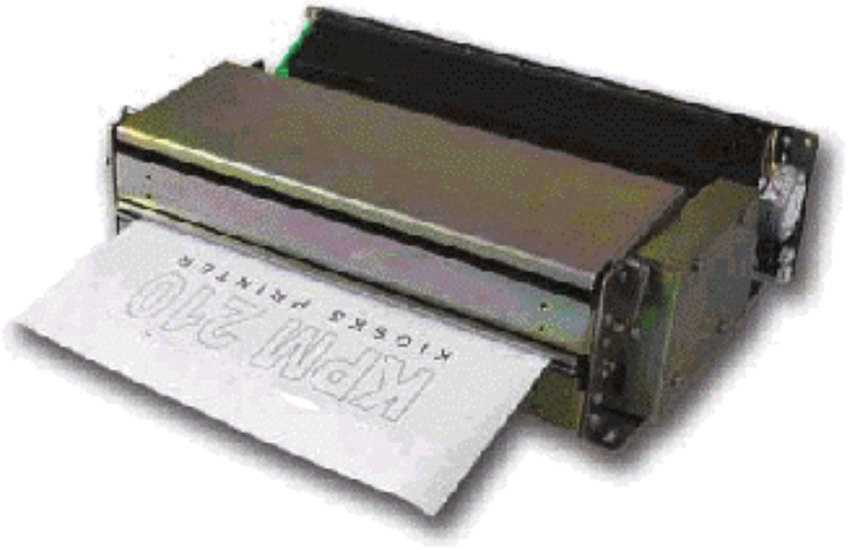
User Manual
Kiosk thermal printer

KPM-210/216



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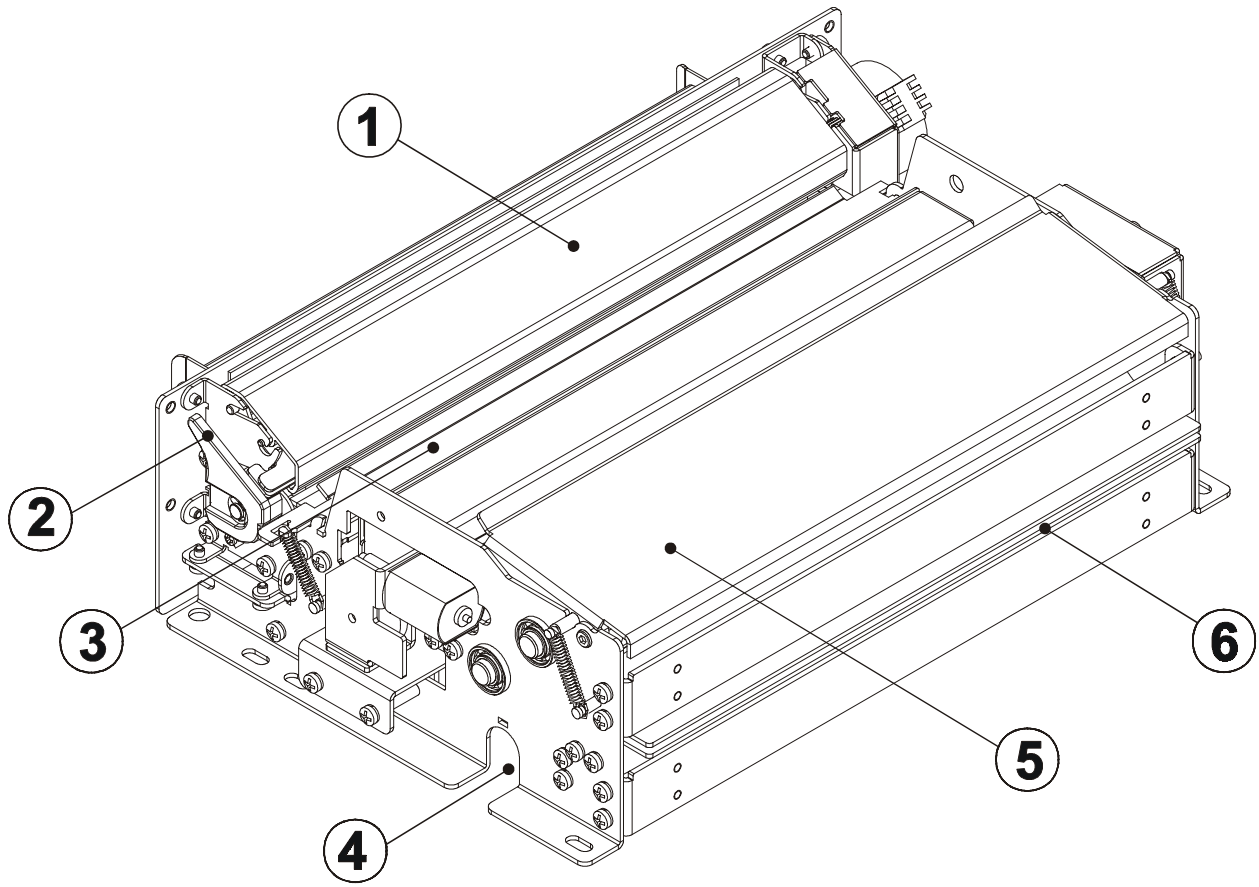
PRINTER COMPONENTS

A. KPM210/216 – Front external view

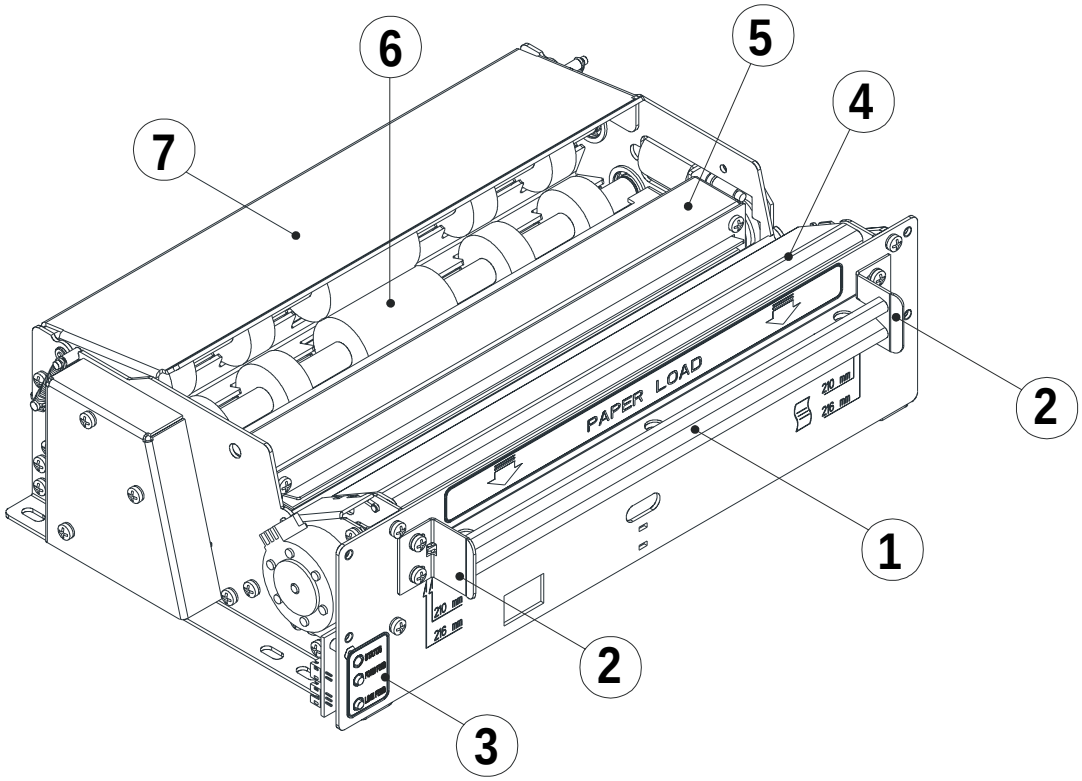
1- Printing mechanism
2- Release lever
3- Tilting paper holder
4- Cable connections (power supply, serial)
5- Roller cover
6- Paper exit [1]

[1] *Available in two versions: horizontal or vertical (option 0090) paper delivery.*



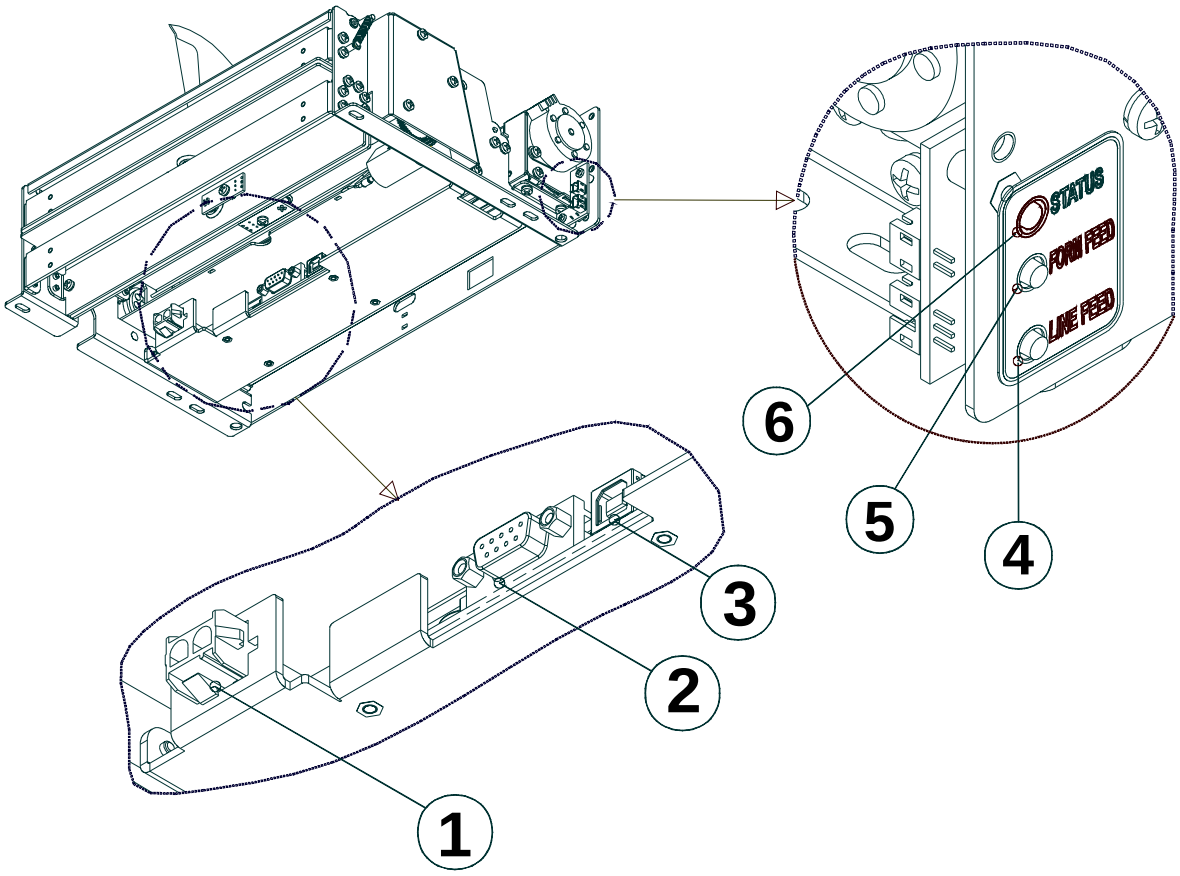
B. KPM210/216 – Rear external view

1- Paper load
2- Paper feed guides (adjustable)
3- Keypad
4- Printing mechanism
5- Cutter
6- Paper ejector rollers unit
7- Roller cover



C. KPM210/216 – Under view

1- Power supply connection
2- Serial connection
3- USB connection
4- Line Feed key
5- Form Feed key
6- Status LED



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MANUAL CONTENTS

In addition to the Introduction which includes a description of the explanatory notes used in the manual, general safety information, how to unpack the printer and a brief description of the printer including its basic features, this manual is organized as follows:

Chapter 1: Contains the information required for correct printer installation and its proper use

Chapter 2: Contains information on interface specifications

Chapter 3: Contains a description of the printer command set

Chapter 4: Contains Technical Specifications of the printer

Chapter 5: Contains the character sets (fonts) used by the printer

EXPLANATORY NOTES USED IN THIS MANUAL

N.B.
Gives important information or suggestions relative to the use of the printer.

WARNING
Information marked with this symbol must be carefully followed to guard against damaging the printer.

DANGER
Information marked with this symbol must be carefully followed to guard against operator injury or damage.

GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Follow all warnings and instructions indicated on the printer.
- Before cleaning the printer, disconnect the power supply.
- Clean the printer with a damp cloth. Do not use liquid or spray products.
- Do not operate the printer near water.
- Do not use the printer on unstable surfaces that might cause it to fall and be seriously damaged.

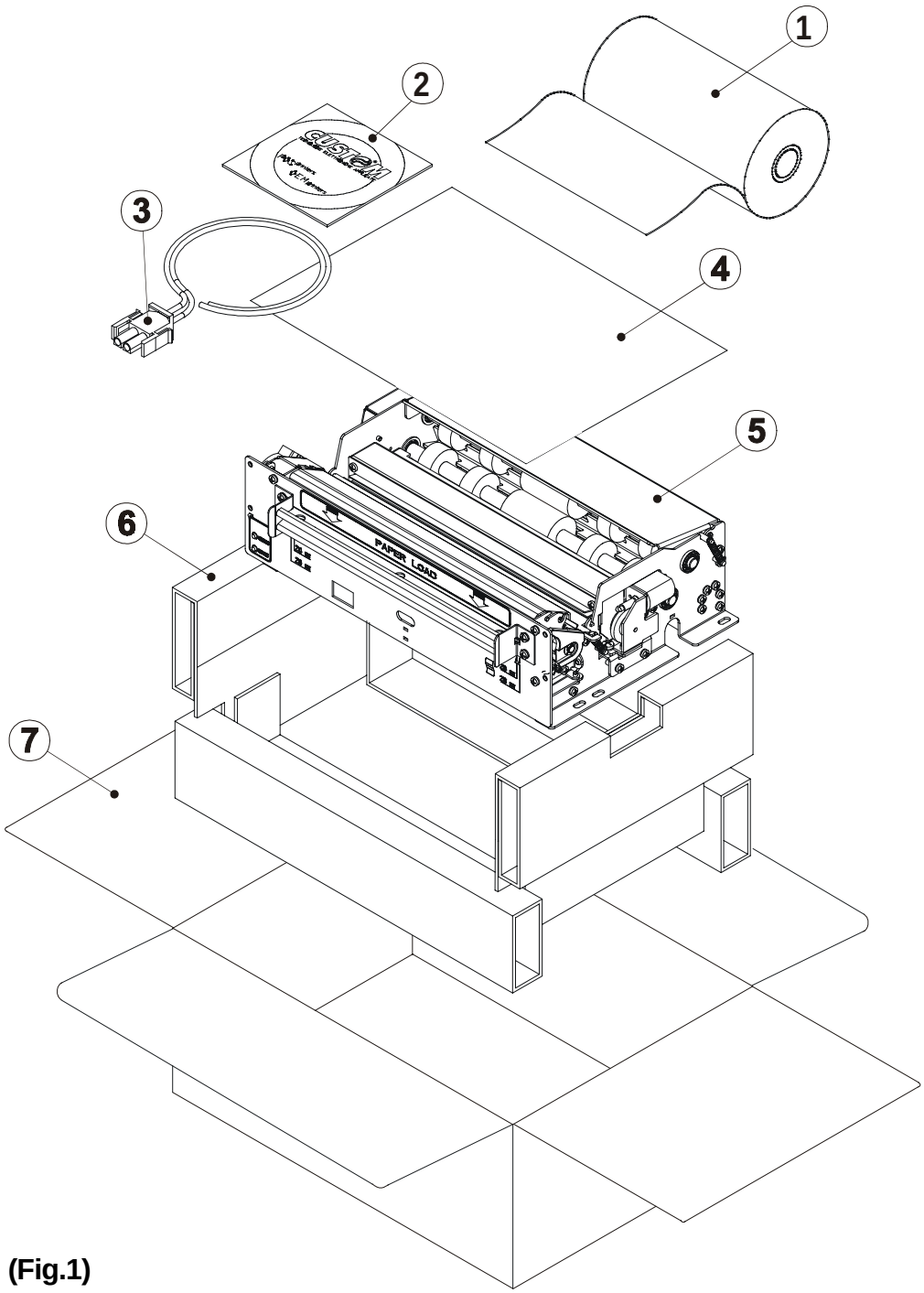
- Only use the printer on hard surfaces and in environments that guarantee proper ventilation.
- Make sure the printer is placed in such a way as to avoid damage to its wiring. (Tab A3)
- Use the type of electrical power supply indicated on the printer label. If in doubt, contact your retailer.
- Do not block the ventilation openings.
- Do not introduce foreign objects of any kind into the printer as this could cause a short circuit or damage parts that could jeopardize printer functioning.
- Do not spill liquids onto the printer.
- Do not carry out technical operations on the printer, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
- Disconnect the printer from the electricity supply and have it repaired by a specialized technician when:

A. The feed connector has been damaged.
B. Liquid has seeped inside the printer.
C. The printer has been exposed to rain or water.
D. The printer is not functioning normally despite the fact that all instructions in the users manual have been followed.
E. The printer has been dropped and its outer casing damaged.
F. Printer performance is poor.
G. The printer is not functioning.

UNPACKING THE PRINTER

Remove the printer from its carton being careful not to damage the packing material so that it may be re-used if the printer is to be transported in the future.
Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.

1. Paper roll (216mm)
2. Manual (or CD-Rom)
3. Electrical supply cable
4. Upper tray
5. Printer
6. Foam packing shell
7. Box



(Fig.1)

- Open the printer packaging
- Remove the paper roll
- Remove the manual (or CD-Rom)
- Remove the electrical power cable
- Remove the upper tray
- Take out the foam packing shell
- Take out the printer and remove it from its plastic covering.
- Keep the box, trays and packing materials in the event the printer must be transported/shipped in the future.

PRINTER FEATURES

The KPM210-216 is an A4/US letter format thermal printer designed for Internet, information and reservation kiosks and automatic teller (ATM) machines.
It is available in two models: 204 dpi (8 dots/mm) thermal printing mechanism version and 300 dpi (11.8 dots/mm) thermal printing mechanism version. Both versions utilize 210/216 mm-wide paper rolls.
In addition to normal printing functions, the KPM210-216 offers a wide array of special features:

- High speed printing:

Power consumption	KPM210/216
Low current	50 mm/sec
Medium Current	60 mm/sec
High current	65 mm/sec

- Easy paper changing (automatic paper loading).
- ESC/POS™ emulation.
- Paper width: 210/216 mm (8.5”).
- Bar code UPC-A. UPC-E, EAN13, EAN8, CODE39, ITF, CODABAR, CODE93, CODE128 and CODE32.
- 3 standard and international character set fonts.
- Programmable fonts.
- Option of setting character width-height from 1 to 8, boldface, italic, underlined, rotated 90/180°.
- Definition of function macros for automatic operation re-call.
- Graphic mode printing.
- Print density (-50% to +150%).
- Serial interfaces: RS232 (1200 to 57600 bps) and USB.
- Receive buffer: 16 bytes to 8 Kbytes.
- Rotating cutter.
- Double function ticket presentation: “ejecting” and “retracting”.
- Sensors: paper out, last ticket, ticket present.
- Optional 90° paper output (option -0090).

PRINTER DESCRIPTION

The KPM210/216 printer (fig.2) is comprised of a metal frame, printing mechanism, a cutter and an ejector
Located on the keypad are the following keys: LINE FEED (1), FORM FEED (2) and status LED (3).

- LINE FEED key. When the LINE FEED key is pressed, the printer advances the paper so that the paper may be inserted in the printing mechanism. During power-up, if the LINE FEED key is held down, the printer will perform the FONT TEST routine.

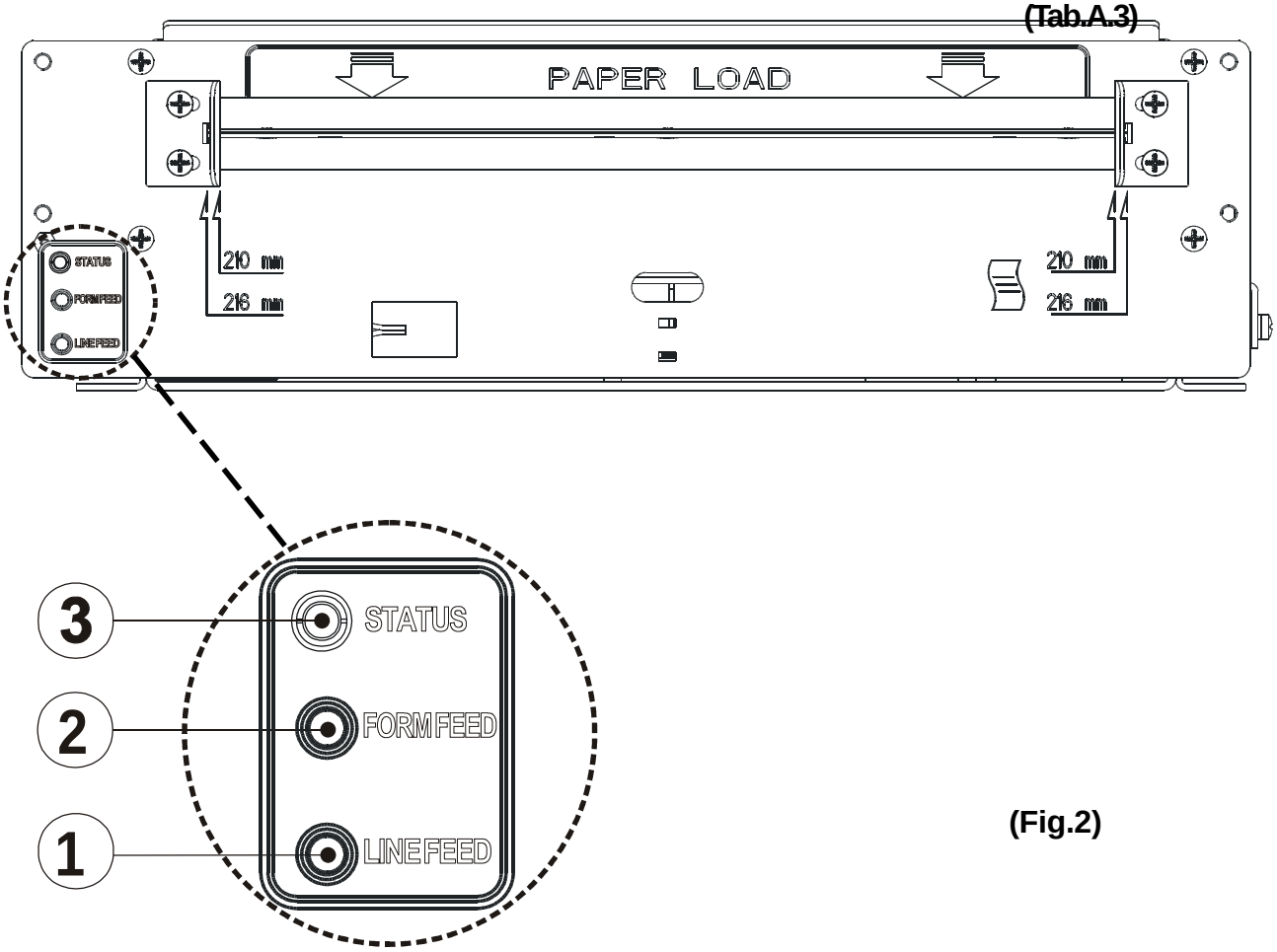
- FORM FEED key. When the FORM FEED key is pressed, the printer advances the paper by a pre-set length. During power-up, if the FORM FEED key is held down, the printer enters the SETUP routine.

- STATUS LED indicates printer hardware status. In the event of malfunction, blinking speed will vary as follows:

(Tab.1)

STATUS LED	DESCRIPTION	
ON	Printer on: no error	
Blinking	**Communication status**	
	No. blinks	Description
	1	Data reception
	8	Command not interpreted properly
	9	Command reception time out
Blinking	**Recoverable error**	
	No. blinks	Description
	2	Head overheating
	3	Paper end
	4	Paper jam
	5	Incorrect voltage
	6	Head raised
	7	Cutter error
Blinking	**Nonrecoverable error**	
	No. blinks	Description
	10	RAM error
	11	EEPROM error

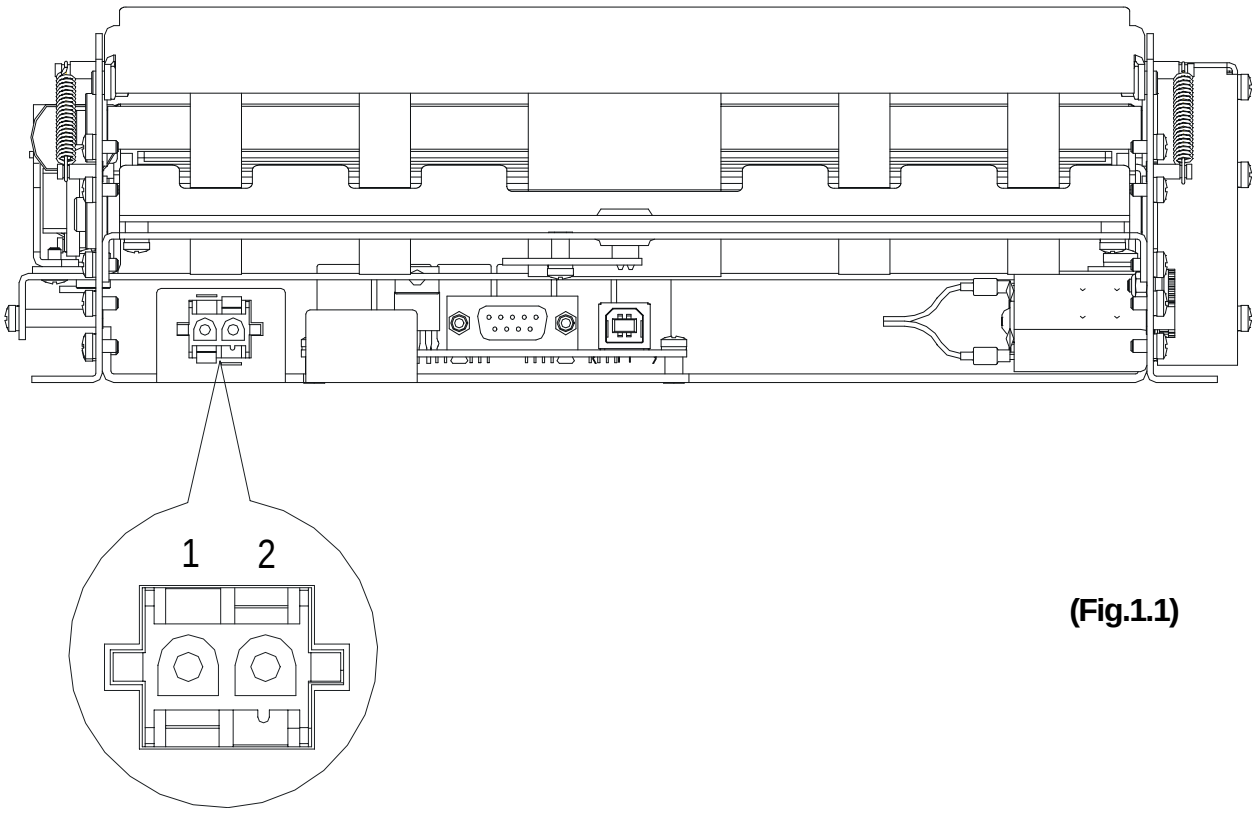
(Tab.A.3)


PAPER LOAD
STATUS
FORM FEED
LINE FEED
210 mm
216 mm
210 mm
216 mm

3
STATUS
2
FORM FEED
1
LINE FEED

(Fig.2)

1.1 CONNECTIONS



(Fig.1.1)

1.1.1 Power Supply

The printer is equipped with an external power supply outlet (see Fig. 1.1). The connector pin configuration is as follows:

PIN	SIGNAL
1	GND
2	+ 24 V

(Tab.1.1)

WARNING:
Respect power supply polarity.

1.2 CONFIGURATION

This printer permits the configuration of default parameters. The printer's configurable parameters are: **(Tab.A.3)**

- **Interface** [1]**:** RS232*D*, USB (if present).
- **Baud Rate** [2]**:** 57600, 38400, 19200*D*, 9600, 4800, 2400, 1200.
- **Data length** [2]**:** 7, 8*D* bits/char.
- **Parity** [2]**:** None*D*, even or odd.
- **Handshaking** [2]**:** XON/XOFF*D* or Hardware.
- **Receive buffer size** [2]**:** 16, 64, 1K, 4K, 8K*D* bytes.
- **Autofeed:** CR deactivated*D* or CR activated.
- **Print mode:** Normal*D* or Reverse.
- **Characters per inch:**
  204 dpi version: A=11 B=15 cpi*D*, A=15 B=20 cpi.
  300 dpi version: A=17 B=23 cpi*D*, A=23 B=30 cpi.
- **Speed/Consumption:** Low, Medium*D*, High.
- **Paper retract at power-up** [3]**:** Deactivated*D* or Activated.
- **Print density:** -50%, -37%, -25%, -12%, Normal*D*, +12%, +25%, +37%, +50%.

Please note: the parameters marked with the symbol *D* represent the default values.

[1] **N.B.***: This parameter is displayed if the printer has an USB interface.*

[2] **N.B.***: If the printer has an USB interface, the serial interface configuration parameters are not displayed.*

[3] **N.B.***: If, at power-up, paper is present on the ejector and if this parameter has been activated, the printer will retract the paper. Otherwise, if the parameter is deactivated, the printer will eject the paper.*

The settings made are stored in EEPROM (nonvolatile memory).
During power-up, if the FORM FEED key is held down, the printer enters the autotest routine and prints out the setup report. The printer will remain in standby in Hexadecimal dump mode (see section 1.3) until another key is pressed or characters are received through the printer communication port.
When the FORM FEED key is pressed, the printer enters parameter configuration.
When the LINE FEED key is pressed, the printer exits setup and terminates the Hexadecimal dump function.

When the receive buffer is full, if handshaking is set to XON/XOFF, the printer sends the XOFF ($13) on the serial port.
When the receive buffer has cleared once again, if handshaking is set to XON/XOFF, the printer sends the XON ($11) on the serial port.

1.3 HEXADECIMAL DUMP

This function is used to display the characters received from the communications port; the printer prints out both the hexadecimal code received as well as the corresponding ASCII code.
Once the autotest routine has finished, the printer enters Hexadecimal Dump mode. The printer remains in standby until a key is pressed or characters are received from the communications port; for every 24 characters received (204 dpi version) or every 32 characters received (300 dpi version), it prints hexadecimal values and ASCII codes (if the characters appear underlined, it means the receive buffer is full).

Shown below is an example of a Hexadecimal Dump for the 204 dpi (24 character) version:

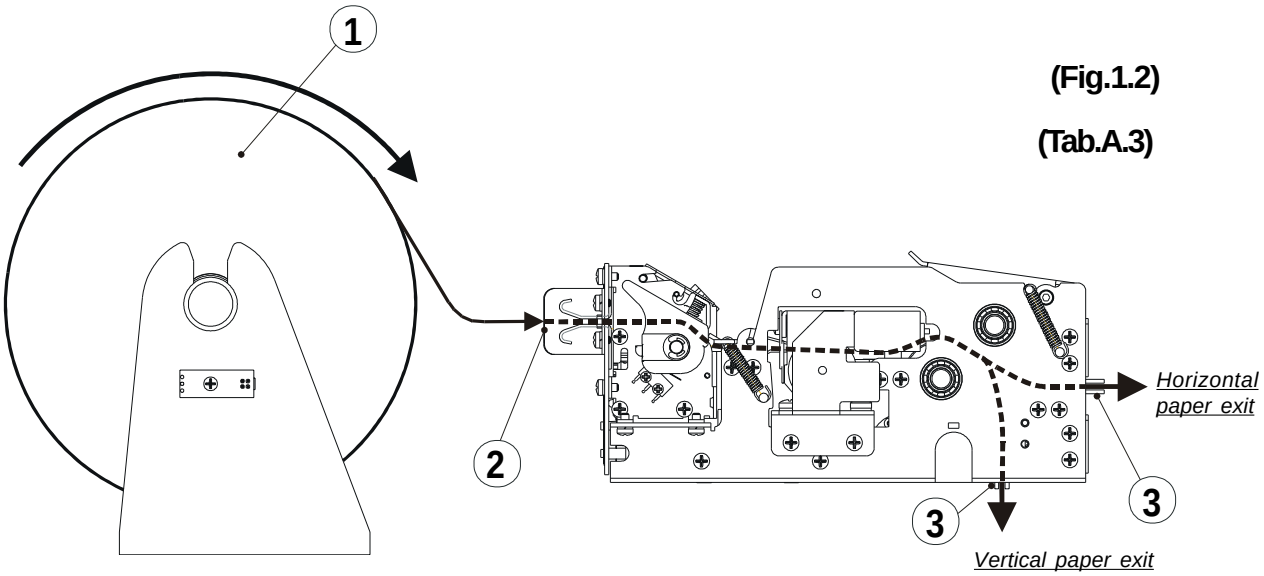
```
48 65 78 61 64 65 63 69 6D 61 6C 20 64 75 6D 70 20 66 75 6E 63 74 69 6F
6E 20 30 31 32 33 34 35 36 37 38 39 61 62 63 64 65 66 67 68 69 6A 6B 6C
6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A

Hexadecimal dump functio
n 0123456789abcdefghijkl
mnopqrstuvwxyz
```

1.4 MAINTENANCE

1.4.1 Changing the paper roll

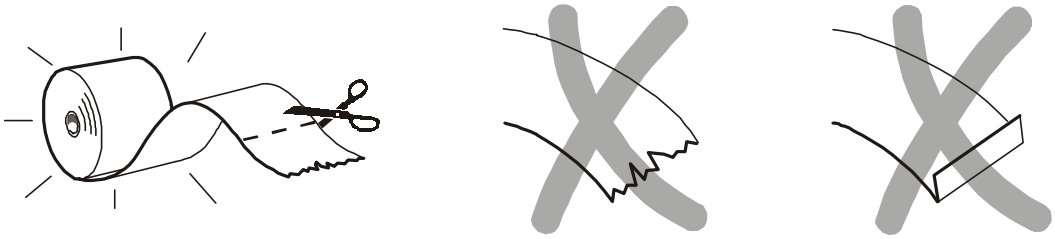
To change the roll of paper, proceed as follows:
1) Position the paper roll (1) so that it unrolls correctly as shown in fig.1.2;
2) Insert the end of the paper roll in the paper load opening on the printing mechanism (2) and wait for the paper to load automatically (see fig. 1.2);
3) Remove the paper from the paper exit opening (3)[4].

[4] N.B.: *The paper exit opening may be assembled in one of two positions, depending on the model in use (see fig. 1.2).*



(Fig.1.2)

(Tab.A.3)



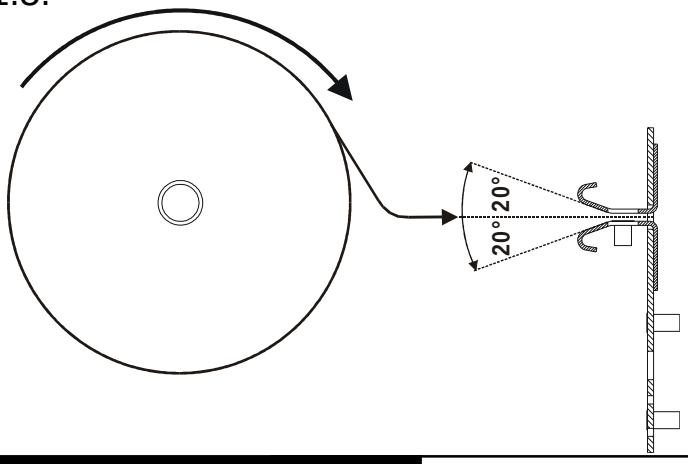
(Fig.1.3)

WARNING
Before inserting the paper, make sure it is cut cleanly.

WARNING
Make sure the paper and printer are aligned (fig.1.4 and fig. 1.5)

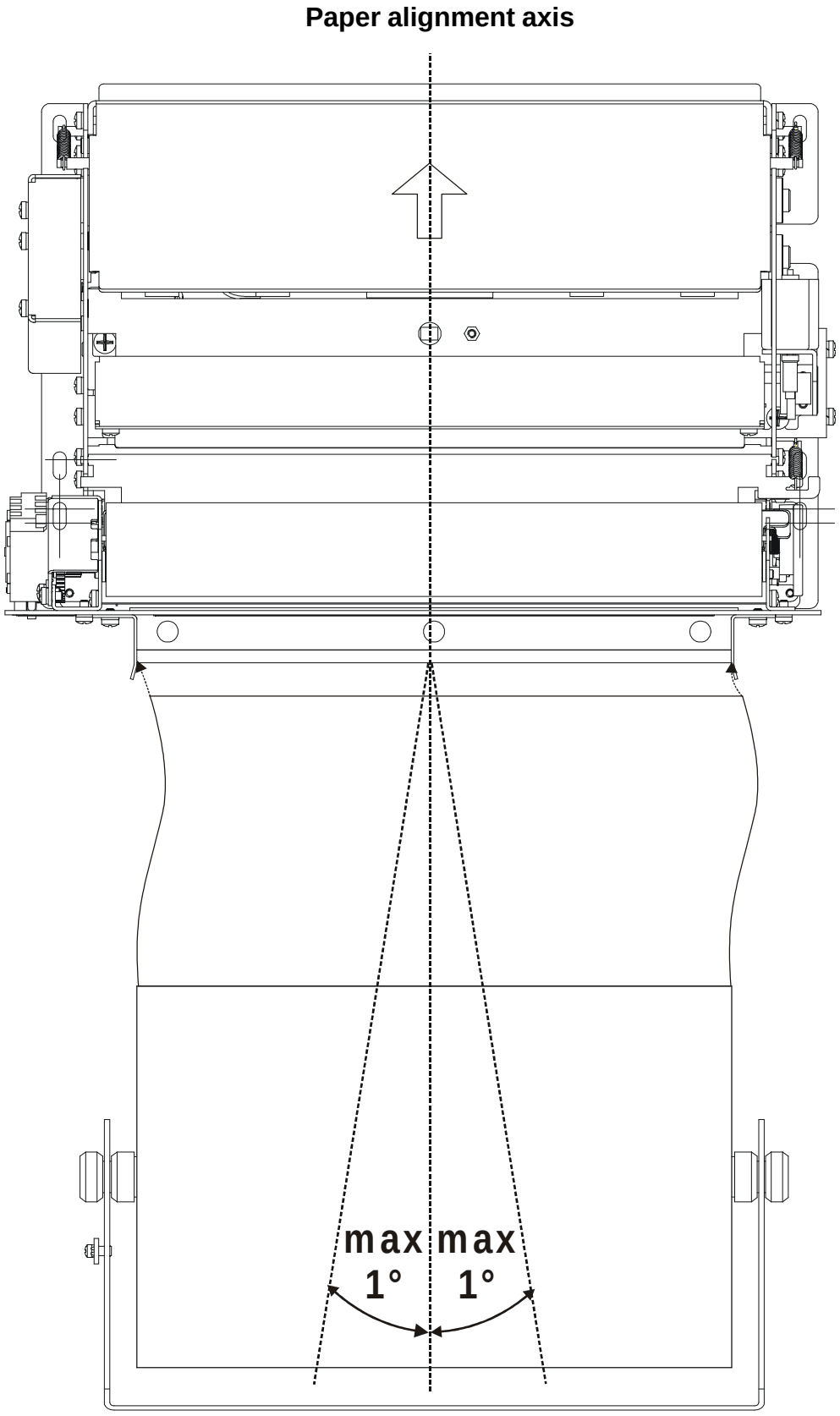
1.4.2 Paper load specifications

To correctly load the paper, follow the alignment instructions shown in figs. 1.4 and 1.5.



CROSS-SECTION VIEW OF FRONT PANEL FROM PAPER INFEED SIDE

(Fig.1.4)



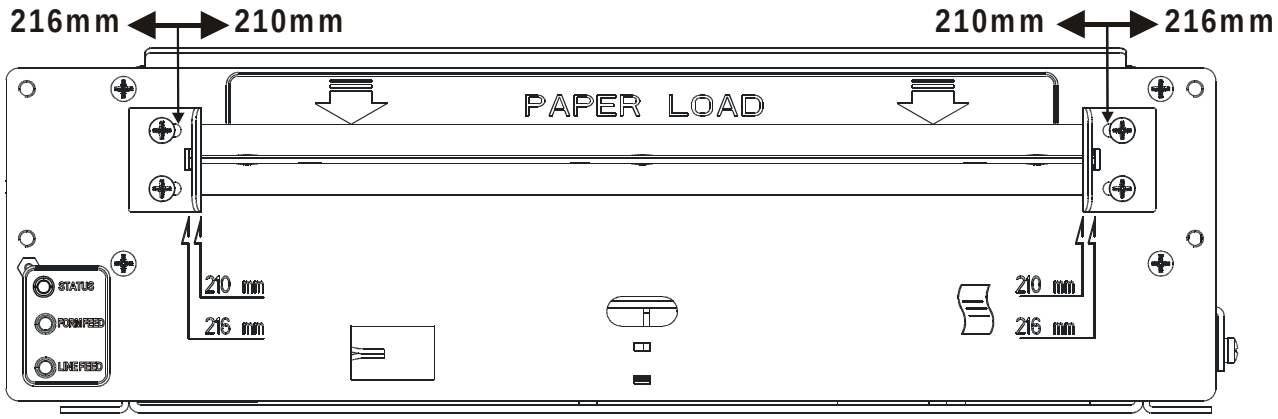
(Fig.1.5)

WARNING
The roll must be perfectly aligned with the printer (fig. 1.5). The maximum play allowed is ± 1%.

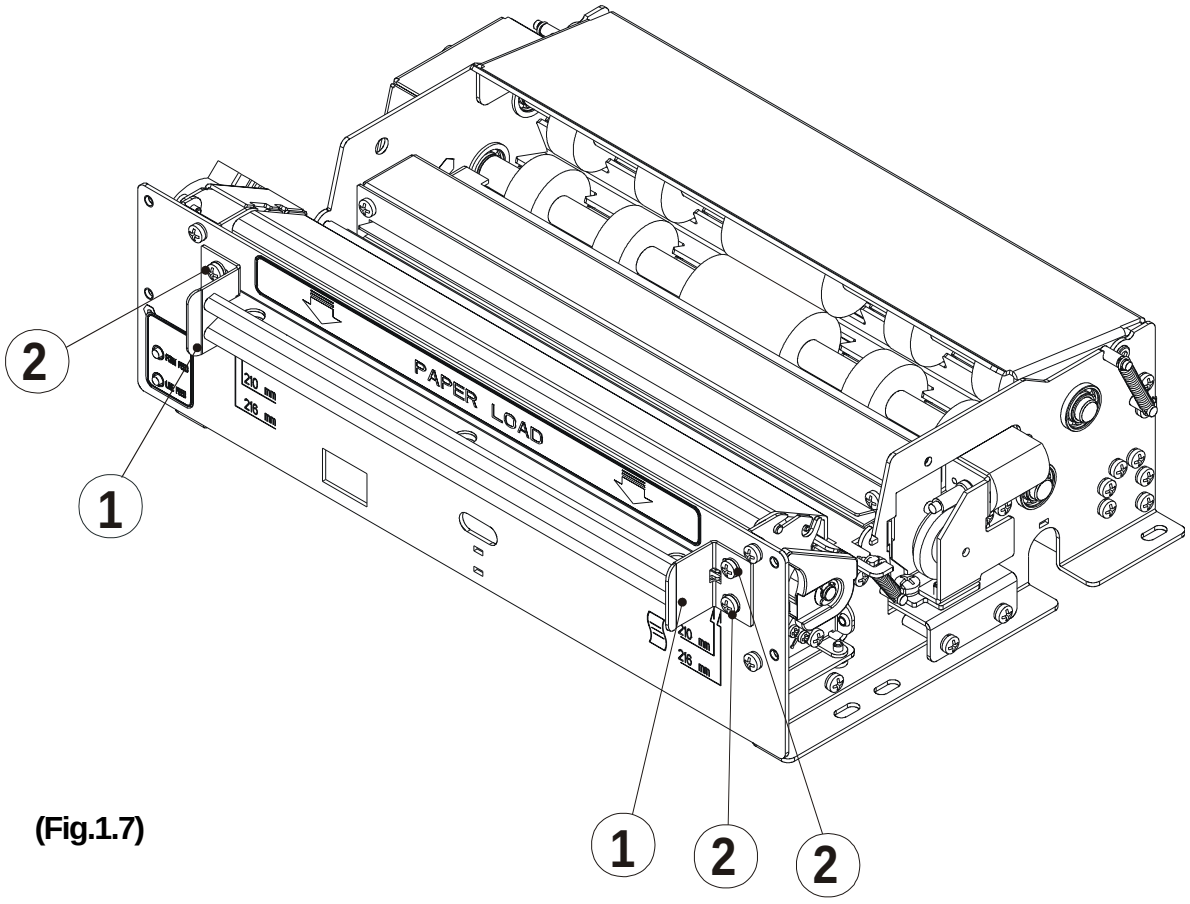
1.4.3 Adjusting paper width

Figure 1.6 illustrates the two positions of the side guides used to adjust paper width to 210mm and 216mm. **(Tab.A.3)**

(Fig.1.6)



To adjust paper width to 210mm or 216mm, proceed as follows:
- from the paper load opening (see fig. 1.7) loosen the fastening screws (2) of the side guides (1) and, sliding them along the slot, position them according to the paper width desired (use the notches on the front as a guide, as shown in fig. 1.6).



(Fig.1.7)

- Re-tighten the fastening screws (2).

WARNING
• Assemble the side guides so that they are aligned and perpendicular to the paper load opening.

1.4.4 Paper jams

In the event of a jam along the paper path, proceed as follows:

Turn the printer on and off before removing the paper in order to cut the paper and attempt to have it ejected.
If this does not solve the problem, proceed as follows:

Paper jammed on ejector (see fig. 1.8):

1) Lift the roller cover (1) .
2) Remove any pieces of paper present in the ejector rollers (2).
3) Remove any paper present in the paper exit opening[(5)] .

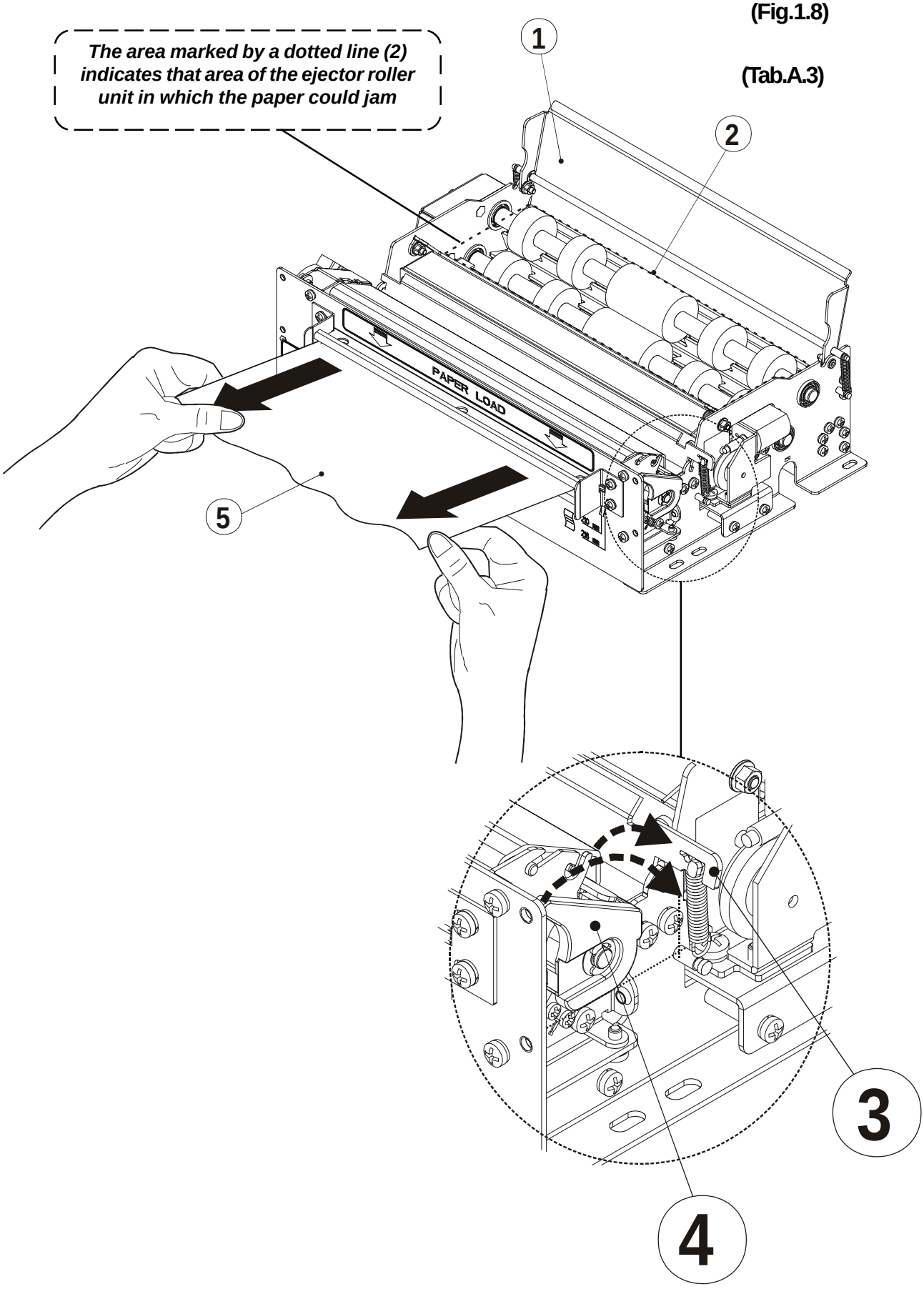
[(5)] **N.B.:** *The paper exit opening may be assembled in one of two positions, depending on the model in use (see fig. 1.2).*

Paper jammed before the cutter (see fig. 1.8), lift the paper guide (3) and perform one of the two operations below:

1) Lift the head lever (4) and pull the paper back (5); remove any pieces of paper.
2) Remove the print head (see section 1.4.5) and pull the paper back (5); remove any pieces of paper.

(Fig.1.8)

(Tab.A.3)


The area marked by a dotted line (2) indicates that area of the ejector roller unit in which the paper could jam
1
2
PAPER LOAD
5
3
4

1.4.5 Cleaning the printing head

WARNING

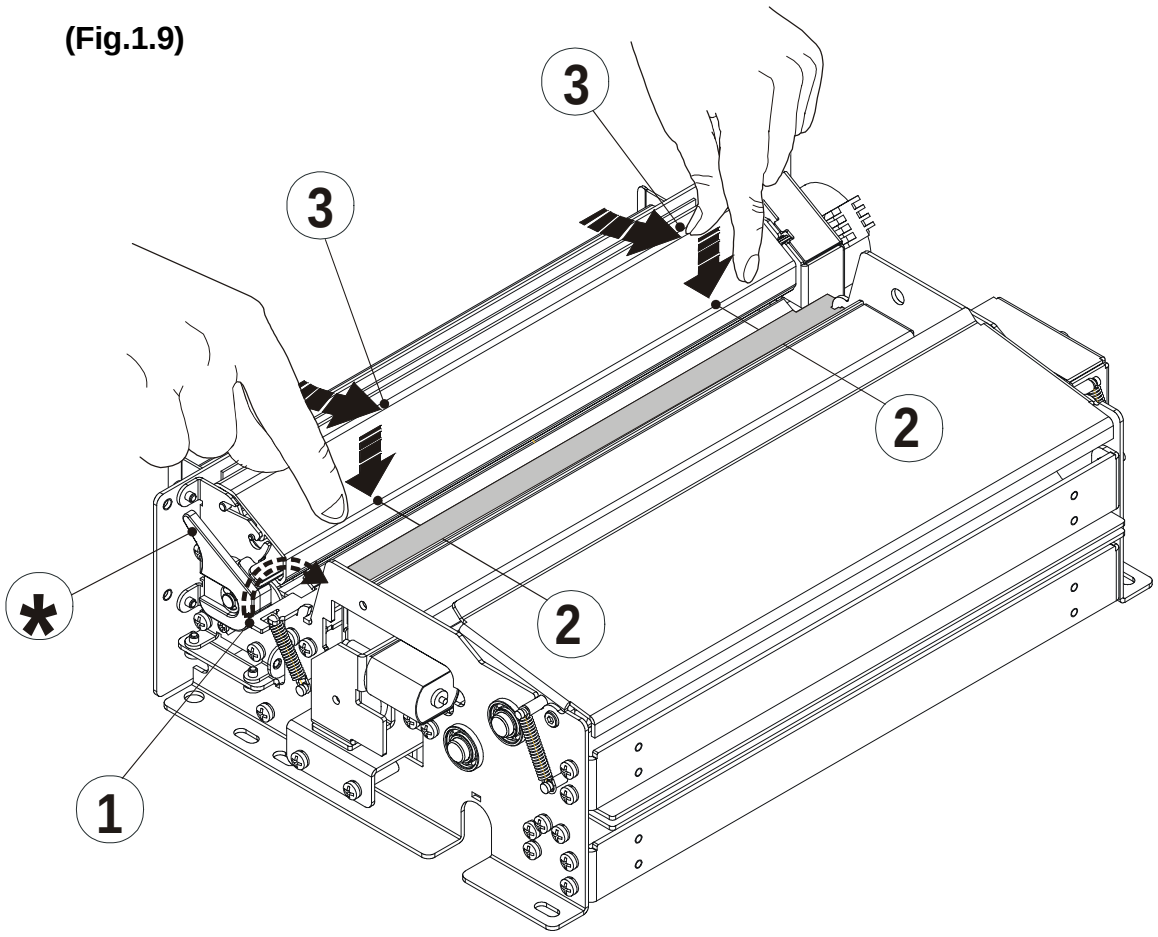
• Do not touch the head heating line with bare hands or metal objects.
• Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.
• The printer must be turned off when the printing head unit is removed.

WARNING

(*) During cleaning operations the printing head lever must remain in its standby position.

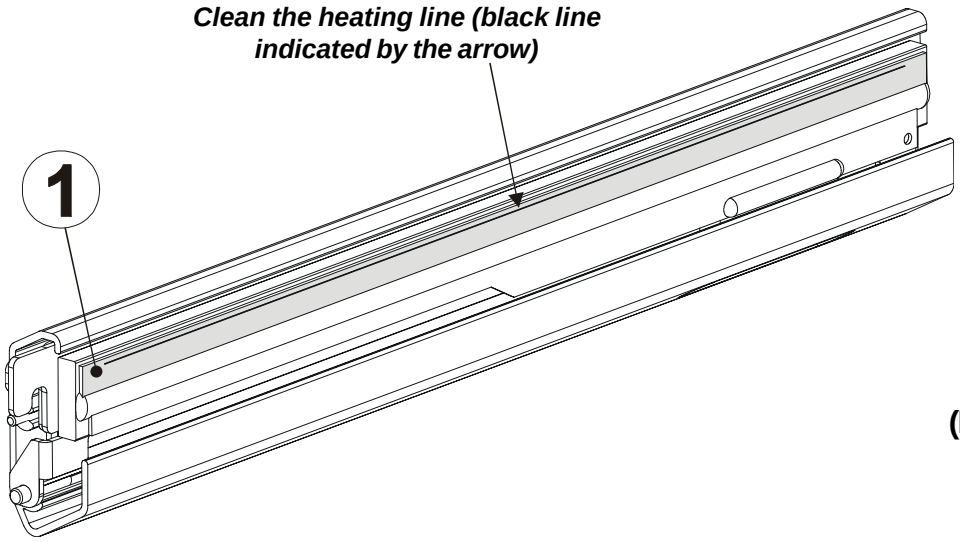
Turn off the printer and proceed as follows:
1) Lift the paper guide (1) as shown in fig. 1.9.
2) Pressing down on the two sides of the head (2) with your index fingers, use your thumbs to push forward as shown in fig. 1.9.
3) Clean the printing head heating line (1) using a non-abrasive cloth

(Fig.1.9)



moistened with denatured alcohol (see fig. 1.10)

(Tab.A.3)



(Fig.1.10)

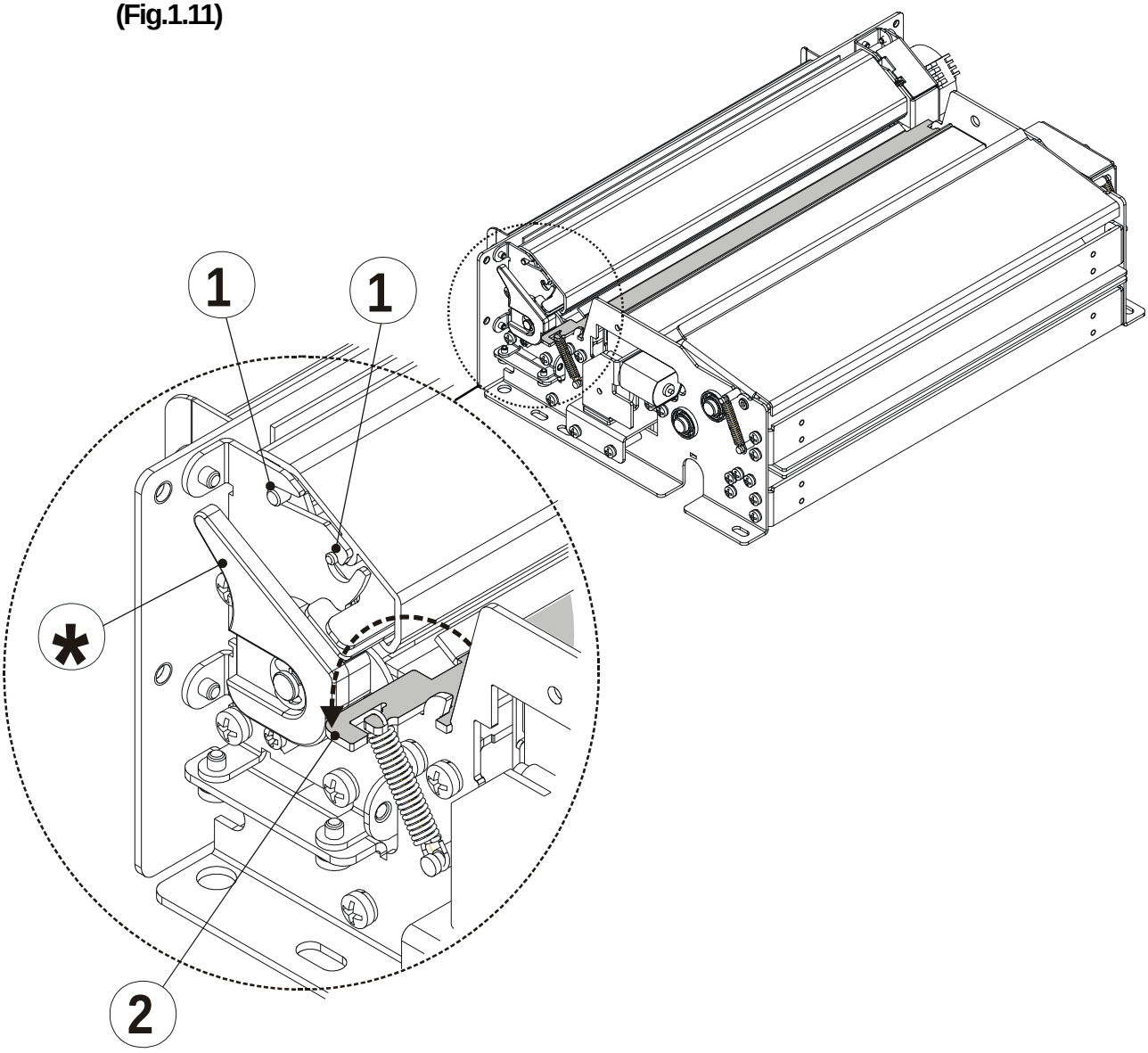
4) Return the printing head to its original position, being careful to insert the fastening pins (1) in their slots (see fig. 1.11) and to not damage the head cable[6] [7].

5) Lower the paper guide (2) as shown in fig. 1.11.

[6] **N.B.:** *Make sure the head cable is not crushed and that it does not obstruct the paper path.*

[7] **N.B.:** *Make sure the head cable connector remains attached.*

(Fig.1.11)

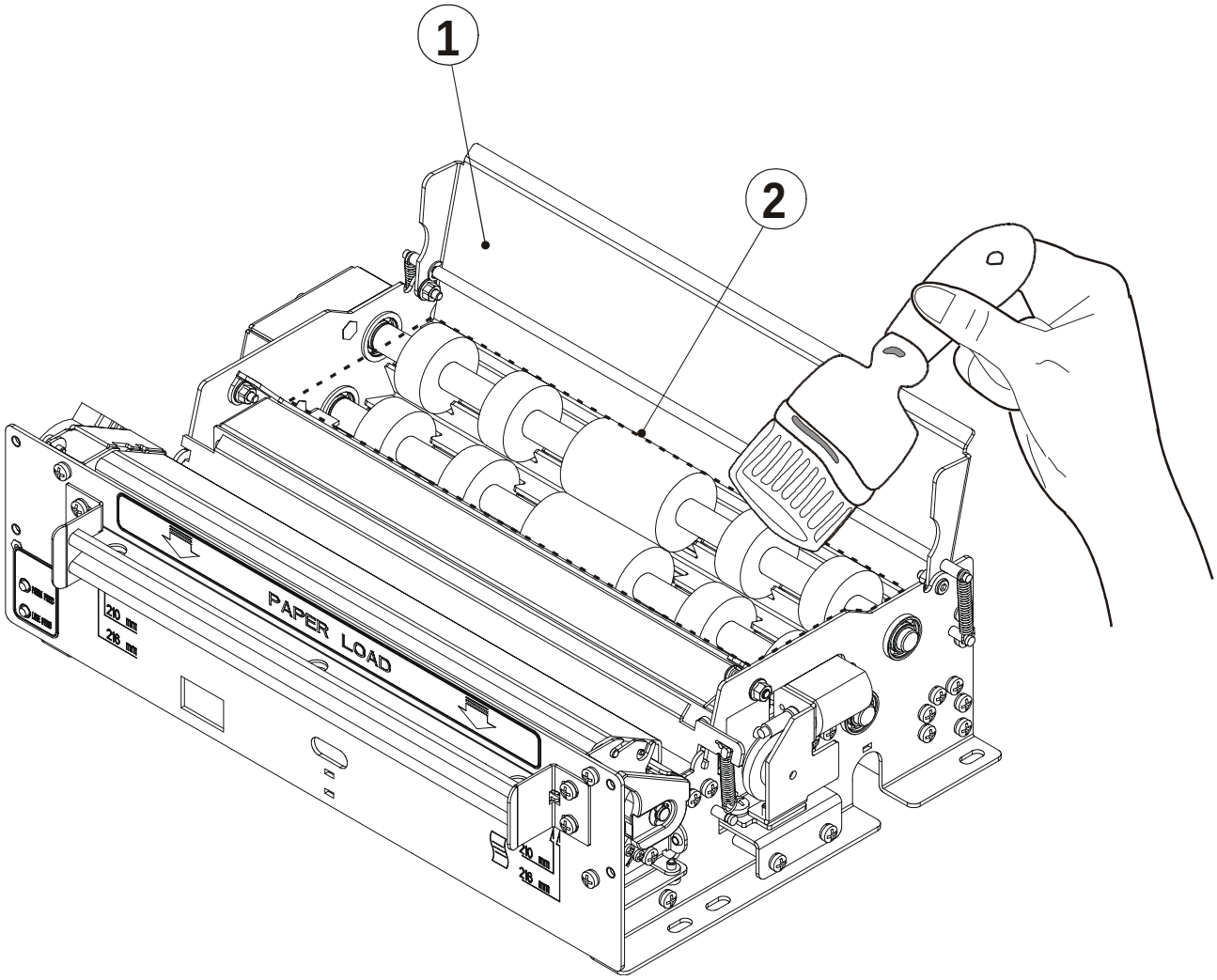


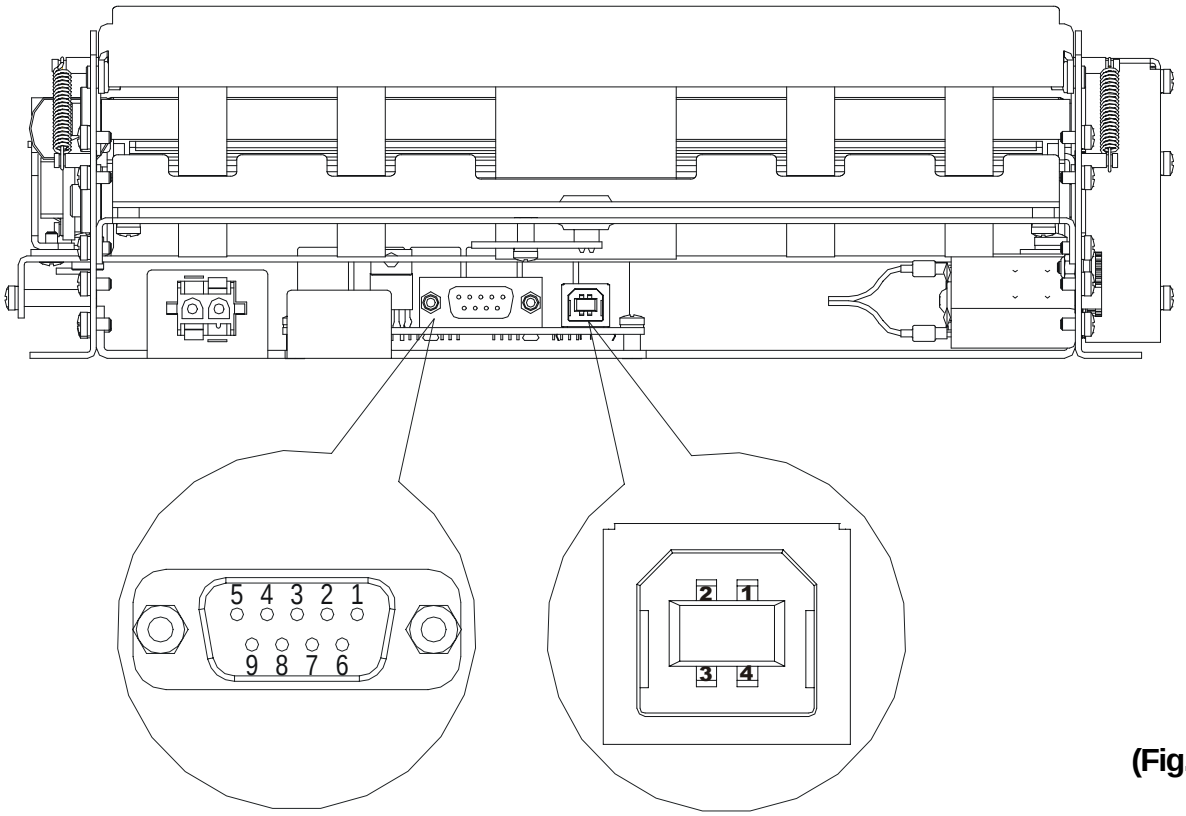
1.4.6 Cleaning the ejector rollers

WARNING
• The printer must be turned off during cleaning operations.

Turn off the printer and proceed as follows:
1) Lift the roller cover (1) as shown in fig. 1.12.
2) Clean the rollers (2) using a medium-stiff brush to avoid them being scratched.

(Tab.A.3)
(Fig.1.12)





(Fig.2.1)

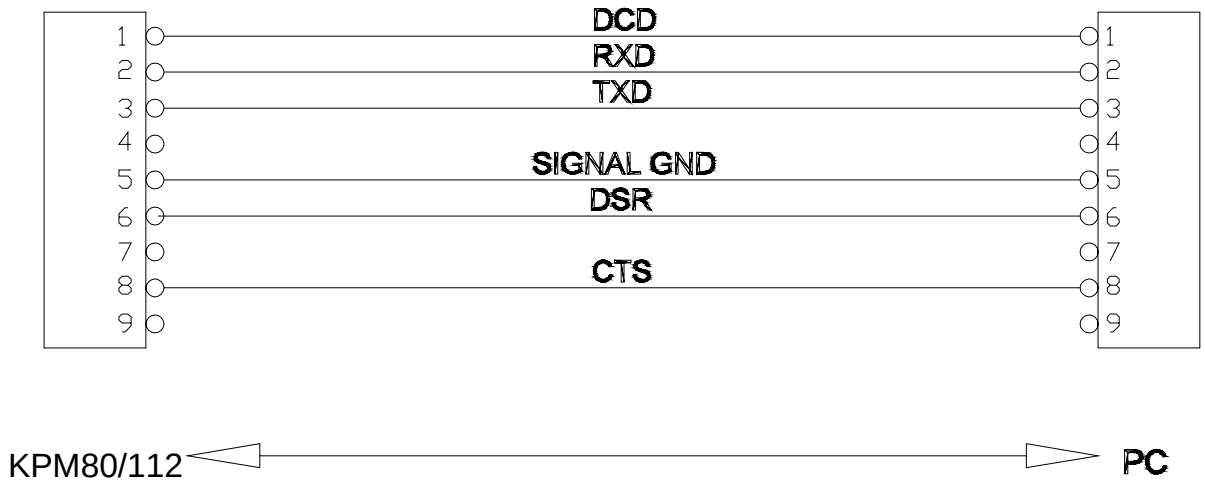
2.1 RS232 SERIAL

The printer has an RS232 interface with 9-pin female connector. Refer to the table below for the connector pin signals: **(Tab.2.1)**

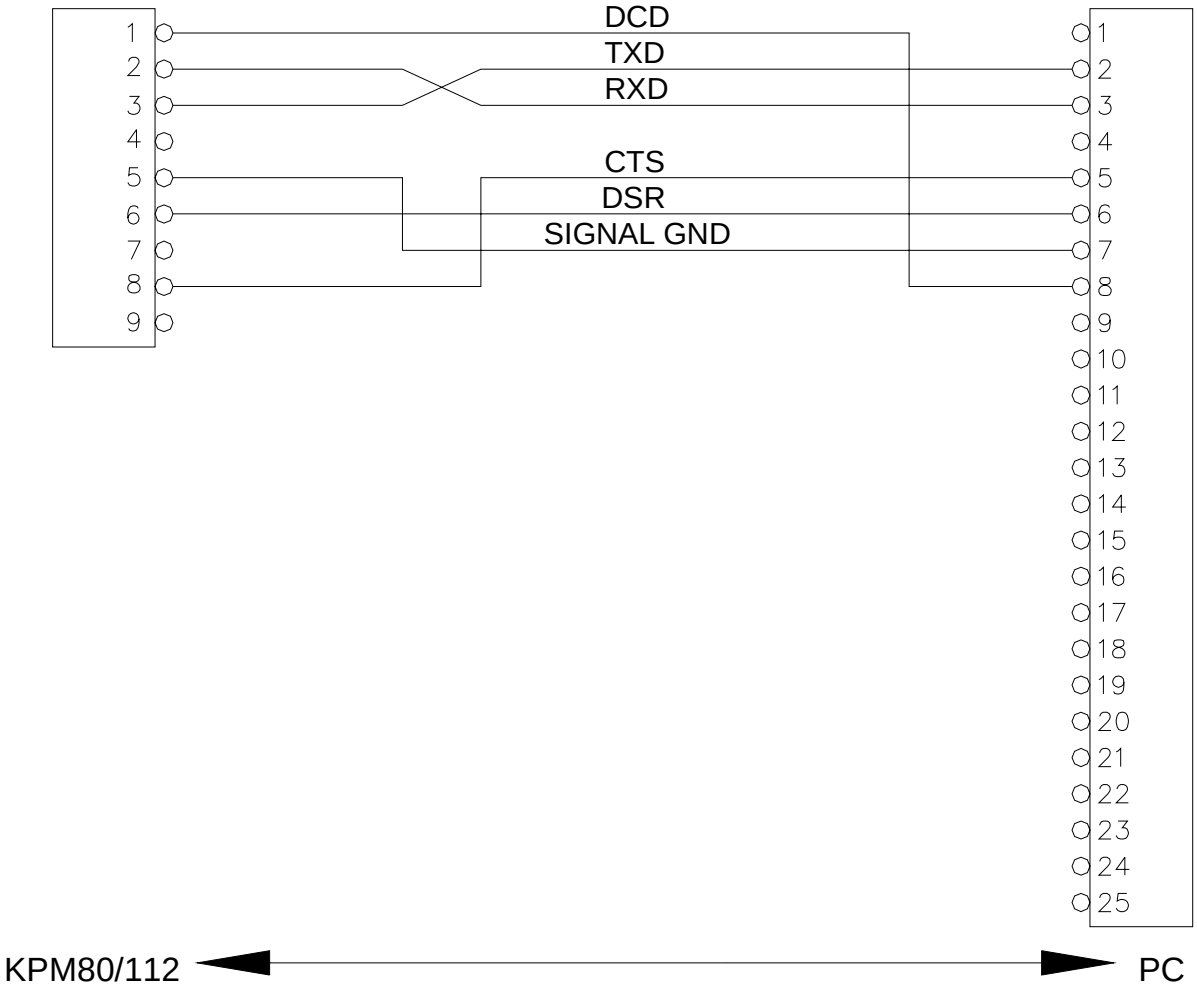
PIN	SIGNAL	IN/OUT	DESCRIPTION
1	DCD	OUT	Individuazione Data Carrier. Printer on (active with RS232 level high)
2	TXD	OUT	Transmit data
3	RXD	IN	Receive data
4	N.C.	-	Not connected
5	GND	-	Ground
6	DTR	OUT	Ready to send. Printer on and operational (active with RS232 level high)
7	N.C.	-	Not connected
8	RTS	OUT	Ready to send. Ready to receive data (active with RS232 level high)
9	N.C.	-	Not connected

The diagrams below illustrate a sample connection between the printer and PC using a 25- or 9-pin female connector.

(Tab.A.3)



(Fig.2.2)



(Fig.2.3)

2.2 USB SERIAL INTERFACE (OPTIONAL)

Printers with USB serial interface conform to USB 1.0 standards and have the following specifications:

- Communication speed 12 Mbit/sec
- “Receptacle series B”-type connector.

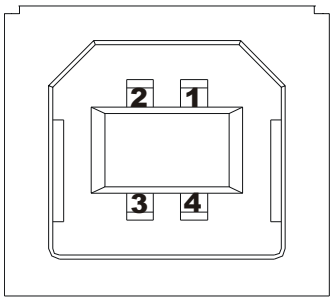
Refer to the table below for the connector pin signals and connection to a device:

(Tab.2.2)

PIN	SIGNAL	DESCRIPTION
1	VBUS	N.C.
2	D-	Data -
3	D+	Data +
4	GND	Ground signal
Shell	Shield	Cable shield

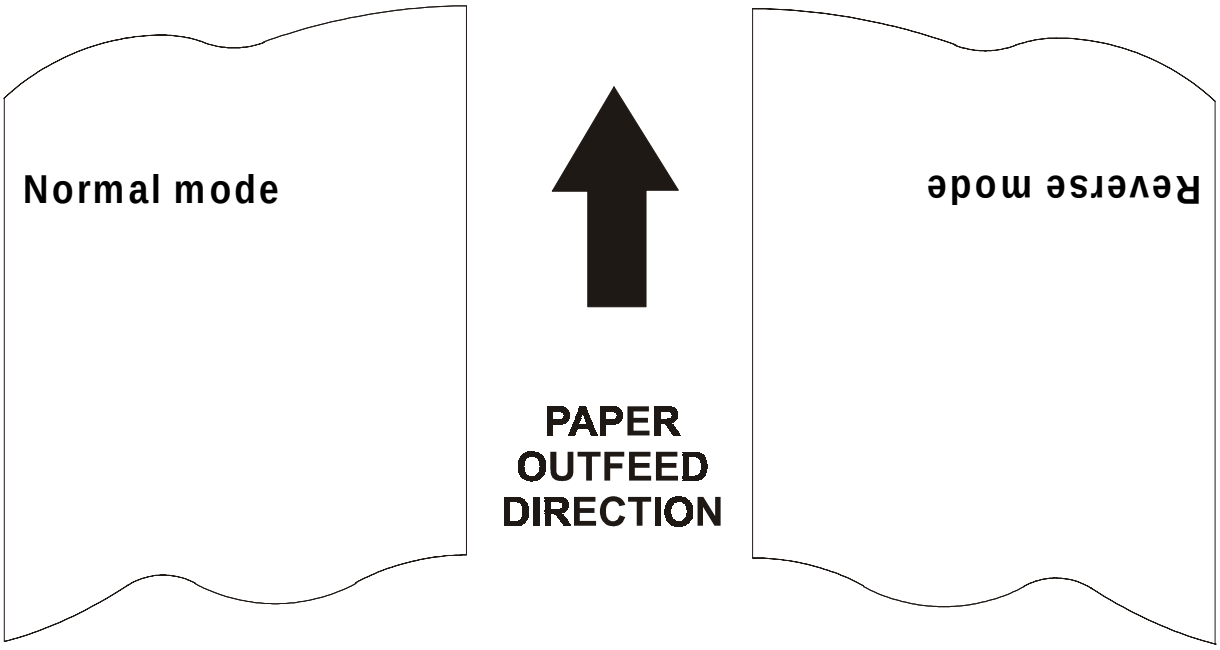
Fig. 2.4 illustrates USB interface connector pin layout:

(Fig.2.4)



3.1 PRINT DIRECTION

The printer has two printing directions which can be selected by means of the control characters:normal and reverse.



(Fig.3.1)

3.2 COMMAND DESCRIPTIONS

3.2.1 ESC/POS Emulation (Tab.A.3)

The following table lists all the commands for function management in ESC/POS™ Emulation of the printer. The commands can be transmitted to the printer at any moment, but they will only be carried out when the commands ahead of them have been executed. The commands are carried out when the circular buffer is free to do so.

(Tab.3.1) COMMAND DESCRIPTION TABLE

ASCII	HEX	Description
BS	$08	Back space
HT	$09	Horizontal tab
LF	$0A	Print and line feed
FF	$0C	Form feed
CR	$0D	Print and carriage return
DLE EOT n	$10 $04 (n)	Real-time status transmission
CAN	$18	Cancel current line transmitted
ESC SP n	$1B $20 (n)	Set character right-side spacing
ESC ! n	$1B $21 (n)	Set print mode
ESC $ nL nH	$1B $24 nL nH	Set absolute position
ESC % n	$1B $25 (n)	Select/cancel user-defined character set
ESC & y c1 c2	$1B $26 y c1 c2	Define user-defined characters
ESC (v nL nH	$1B $28 $76 nL nH	Set relative vertical print position
ESC * m nL nH d1...dk	$1B $2A m nL nH d1...dk	Select image print mode
ESC - n	$1B $2D (n)	Turn underline mode on/off
ESC 0	$1B $30	Select 1/8-inch line spacing
ESC 2	$1B $32	Select 1/6-inch line spacing
ESC 3 n	$1B $33 (n)	Set line spacing using minimum units
ESC 4 n	$1B $34 (n)	Set/reset script mode
ESC = n	$1B $3D (n)	Select device
ESC ? n	$1B $3F (n)	Cancel user-defined characters
ESC @	$1B $40	Initialize printer

ASCII	HEX	Description
ESC D n1...nk NUL	$1B $44 n1...nk 00	Set horizontal tab positions
ESC E n	$1B $45 (n)	Select emphasized mode
ESC G n	$1B $47 (n)	Select double-strike mode
ESC J n	$1B $4A (n)	Print and feed paper
ESC R n	$1B $52 (n)	Select international character set
ESC V n	$1B $56 (n)	Select print mode 90° turned
ESC \ nL nH	$1B $5C nL nH	Set relative print position
ESC a n	$1B $61 (n)	Select justification
ESC c 5 n	$1B $63 $35 (n)	Enable/disable front panel buttons
ESC d n	$1B $64 (n)	Print and feed paper n lines
ESC i	$1B $69	Total cut
ESC t n	$1B $74 (n)	Select character code table
ESC v	$1B $76	Transmit printer status
ESC { n	$1B $7B (n)	Set/cancel upside-down character printing
ESC ⊥ n	$1B $C1 (n)	Set/cancel cpi mode
ESC · n xL xH yH yL	$1B $FA n xL xH yH yL	Print graphic
ESC ¹ nL nH	$1B $FB nL nH	Transmit graphic page to communication port
ESC ³ n	$1B $FC (n)	Transfer flash bank into graphic page
ESC ² nL nH	$1B $FD nL nH	Receive graphic page from communication port
ESC ¦ n	$1B $FE (n)	Transfer graphic page into flash bank
GS ! n	$1D $21 (n)	Select character size
GS :	$1D $3A	Set start/end of macro definition
GS B n	$1D $42 (n)	Turn white/black reverse printing mode on/off
GS C 0 n m	$1D $43 $30 n m	Select counter print mode
GS C 1 aL aH bL bH n r	$1D $43 $31 aL aH bL bH n r	Select count mode (A)
GS C 2 nL nH	$1D $43 $32 nL nH	Select counter
GS C ; sa ; sb ; sn ; sr ; sc ;	$1D $43 $3B sa $3B sb $3B sn $3B sr $3B sc $3B	Select count mode (B)

ASCII	HEX	Description
GS H n	$1D $48 (n)	Select printing position of HRI characters (Tab.A.3)
GS I n	$1D $49 (n)	Transmit printer ID
GS L nL nH	$1D $4C nL nH	Set left margin
GS P x y	$1D $50 x y	Set horizontal and vertical motion units (mode 1)
GS W nL nH	$1D $57 nL nH	Set printing area width
GS ^ r t m	$1D $5E r t m	Execute macro
GS c	$1D $63	Print counter
GS e n [m]	$1D $65 (n) [m]	Ejector commands
GS f n	$1D $66 (n)	Select font for HRI characters
GS h n	$1D $68 (n)	Select height of bar code
GS k m NUL	$1D $6B m 00	Print bar code
GS r n	$1D $72 (n)	Transmit status
GS w n	$1D $77 (n)	Select horizontal side (enlargement) of bar code
GS | n	$1D $7C (n)	Set printing density
GS ~ n	$1D $7E (n)	Set superscript/subscript
GS $D0 xH xL yH yL	$1D $D0 xH xL yH yL	Set horizontal and vertical motion units (mode 2)
GS α n	$1D $E0 n	Enable / disable automatic FULL STATUS back
GS β	$1D $E1	Reading of length paper (cm) available before virtual paper end
GS Γ	$1D $E2	Reading number of cuts performed from the printer
GS Π	$1D $E3	Reading of length (cm) of printed paper
GS Σ	$1D $E4	Reading number of retracting
GS σ	$1D $E5	Reading number of power up
GS µ nH nL	$1D $E6 nH nL	Virtual paper-end limit
GS - n	$1D $F0 (n)	Set printing speed and current consumption
FS ⌊ ...	$1C $C0 $18 $10 $14 $1A	Hardware reset

Given below are more detailed descriptions of each command.

BS

[Name]	**Back space**
[Format]	ASCII BS
	Hex 08
	Decimal 8
[Description]	Moves print position to previous character.
[Notes]	• Can be used to put two characters at the same position.
[Default]	
[Reference]	
[Example]	

HT

[Name]	**Horizontal tab**
[Format]	ASCII HT
	Hex 09
	Decimal 9
[Description]	Moves the print position to the next horizontal tab position.
[Notes]	• Ignored unless the next horizontal tab position has been set. • If the command is received when the printing position is at the right margin, the printer executes print buffer full printing and horizontal tab processing from the beginning of the next line. • Horizontal tab positions are set using ESC D**.**
[Default]	
[Reference]	**ESC D**
[Example]	

LF

[Name] **Print and line feed** **(Tab.A.3)**

[Format] ASCII LF
Hex 0A
Decimal 10

[Description] Prints the data in the buffer and feeds one line based on the current line spacing.

[Notes] • Sets the print position to the beginning of the line.

[Default]

[Reference] **ESC 2, ESC 3**

[Example]

FF

[Name] **Form Feed**

[Format] ASCII FF
Hex 0C
Decimal 12

[Description] Prints the data in the buffer, cuts the paper and presents the ticket.

[Default]

[Reference]

[Example]

CR

[Name] **Print and carriage return**

[Format] ASCII CR
Hex 0D
Decimal 13

[Description] When autofeed is “CR enabled”, this command functions in the same way as **LF**, otherwise it is disregarded.

[Notes] • Sets the print position to the beginning of the line.

[Default] See “Autofeed in setup” parameter.

[Reference] **LF**

[Example]

DLE EOT n

[Name] **Real-time status transmission**

[Format]

ASCII	DLE	EOT	n
Hex	10	04	n
Decimal	16	4	n

[Range] $1 \leq n \leq 4$; n=17, n=20

[Description] Transmits the selected printer status specified by *n* in real time according to the following parameters:

n = 1 transmit printer status
n = 2 transmit off-line status
n = 3 transmit error status
n = 4 transmit paper roll sensor status
n = 17 transmit print status
n = 20 transmit FULL STATUS

[Notes]
- This command is executed when the data buffer is full.
- This status is transmitted whenever data sequence 10H 04H n is received.

[Default]

[Reference] See tables below.

[Example]

n=1: Printer status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Not used. Fixed to Off.
3	Off	00	0	On-line.
	On	08	8	Off-line.
4	On	10	16	Not used. Fixed to On.
5	-	-	-	Undefined.
6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

n=2: Off-line status

Bit	Off/On	Hex	Decimal	Function (Tab.A.3)
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Print head lowed.
	On	04	4	Print head lifted.
3	Off	00	0	Paper isn't feeded by FEED button.
	On	08	8	Paper is feeded by FEED button.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	No paper end stop.
	On	20	32	Printing stop due to paper end.
6	Off	00	0	No error.
	On	40	64	Error.
7	Off	00	0	Not used. Fixed to Off.

n=3: Error status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Not used. Fixed to Off.
3	Off	00	0	Cutter ok.
	On	03	8	Cutter error.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Not used. Fixed to Off.
6	Off	00	0	No auto-recoverable error.
	On	40	64	Auto-recoverable error.
7	Off	00	0	Not used. Fixed to Off

n=4: Paper roll sensor status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2,3	Off	00	0	Paper present in abundance.
	On	0C	12	Near paper end.
4	On	10	16	Not used. Fixed to On.
5, 6	Off	00	0	Paper present.
	On	60	96	Paper not present.
7	Off	00	0	Not used. Fixed to Off.

n=17: Print status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Paper drag motor off.
	On	04	4	Paper drag motor on.
3	Off	00	0	Not used. Fixed to Off.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Paper present.
	On	20	32	Paper absent.
6	Off	00	0	Not used. Fixed to Off.
7	Off	00	0	Not used. Fixed to Off.

n=20: FULL status (6 bytes)
1° Byte = 0x10 (DLE)
2° byte = 0x0F
3° byte = Paper status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Paper present.
	On	01	1	Paper not present.
1	Off	00	0	Not used. Fixed to Off.
2	Off	00	0	Paper present in abundance.
	On	04	4	Near paper end.
3	Off	00	0	Not used. Fixed to Off.
4	Off	00	0	Not used. Fixed to Off.
5	Off	00	0	Ticket not present in output.
	On	20	32	Ticket present in output.
6	Off	00	0	Not virtual paper end ***(*)***.
	On	40	64	Virtual paper end ***(*)***.
7	-	--	-	RESERVED.

(*) Virtual paper end is set when the paper length available, readed by GS ß**,** is 0.

4° byte = USER STATUS

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Print head lowed. **(Tab.A.3)**
	On	00	1	Print head lifted.
1	Off	00	0	Not used. Fixed to Off.
2	Off	00	0	Not used. Fixed to Off.
3	Off	00	0	Drag paper motor off.
	On	08	8	Drag paper motor on.
4	Off	00	0	Not used. Fixed to Off.
5	Off	00	0	LF key released.
	On	20	32	LF key pressed.
6	Off	00	0	FF key released.
	On	40	64	FF key pressed.
7	Off	00	0	Not used. Fixed to Off.

5° byte = Recoverable error Status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Head temperature ok.
	On	01	1	Head temperature error.
1	Off	00	0	Not used. Fixed to Off.
2	Off	00	0	Not used. Fixed to Off.
3	Off	00	0	Power supply voltage ok.
	Off	00	0	Power supply voltage error.
4	Off	00	0	Not used. Fixed to Off.
5	Off	00	0	Acknowledge command.
	On	20	32	Not acknowledge command error.
6	Off	00	0	Free paper route.
	On	40	64	Paper jam.
7	Off	00	0	Black Maker found or in searching.
	On	80	128	Black Maker not found.

6° byte = Unrecoverable error Status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Cutter ok.
	On	01	1	Cutter error.
1	Off	00	0	Not used. Fixed to Off.
2	Off	00	0	RAM ok.
	On	04	4	RAM error.
3	Off	00	0	EEPROM ok.
	Off	00	0	EEPROM error.
4	Off	00	0	Not used. Fixed to Off.
5	Off	00	0	Not used. Fixed to Off.
6	Off	00	0	Flash ok.
	On	40	64	Flash error.
7	Off	00	0	Not used. Fixed to Off.

CAN

[Name] **Cancel current line transmitted**

[Format]

ASCII	CAN	
Hex	18	
Decimal	24	

[Description] Deletes current line transmitted.

[Notes]
- Sets the print position to the beginning of the line.
- However, this command does not clear the receive buffer.

[Default]

[Reference]

[Example]

ESC SP n

[Name] **Set right-side character spacing**

[Format]

ASCII	ESC	SP	n
Hex	1B	20	n
Decimal	27	32	n

[Range] $0 \leq n \leq 255$

[Description] Sets the character spacing for the right side of the character to [n x horizontal or vertical motion units].

[Notes]
- The character spacing is added on right of each character.
- The right character spacing for double-width mode is twice the normal value. **(Tab.A.3)**

When the characters are enlarged, the right side character spacing is m (2 or 4) times the normal value.
- The horizontal and vertical motion units are specified by **GS P**. Changing the horizontal or vertical motion units does not affect the current right side spacing.
- The **GS P** command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount.
- In standard mode, the horizontal motion unit is used.
- The maximum right side spacing is:

  255/204 inches for the 204 dpi model

  255/300 inches for the 300 dpi model.

[Default] n = 0

[Reference] **GS P or GS $D0**

[Example]

ESC ! n

[Name] **Select print modes**

[Format]

ASCII	ESC	!	n
Hex	1B	21	n
Decimal	27	33	n

[Range] $0 \le n \le 255$

[Description] Selects print modes using *n* (see table below):

Bit	Off/On	Hex	Decimal	Function	11/15 cpi (200 dpi) 17/23 cpi (300 dpi)	15/20 cpi (200 dpi) 23/30 cpi (300 dpi)
0	Off	00	0	Character font A selected.	18 x 24	13 x 24
	On	01	1	Character font B selected.	13 x 24	10 x 24
1	-	-	-	Undefined.		
2	-	-	-	Undefined.		
3	Off	00	0	Expanded mode not selected.		
	On	08	8	Expanded mode selected.		
4	Off	00	0	Double-height mode not selected.		
	On	10	16	Double-height mode selected.		
5	Off	00	0	Double-width mode not selected.		
	On	20	32	Double-width mode selected.		
6	Off	00	0	Italic mode not selected.		
	On	40	64	Italic mode selected.		
7	Off	00	0	Underline mode not selected.		
	On	80	128	Underline mode selected.		

[Notes]

- The printer can underline all characters, but cannot underline the spaces set by **HT**, **ESC $**, **ESC ** and 90°/270° rotated characters.
- When characters are enlarged to different heights on one line, the characters are aligned at the baseline or topline (see **GS ~**).
- This command resets the left and right margin at default value (see **GS L**, **GS W**).
- **ESC E** can also be used to turn the emphasized mode on/off. However, the last-received setting command is the effective one.
- **ESC -** can also be used to turn the underlining mode on/off. However, the last-received setting command is the effective one.
- **ESC 4** can also be used to turn the italic mode on/off. However, the last-received setting command is the effective one.
- **GS !** can also be used to select character height/width. However, the last-received setting command is the effective one.

[Default] n = 0

[Reference] **ESC -, ESC E, ESC 4, GS !**

[Example]

ESC $ nL nH

[Name] **Set absolute print position** **(Tab.A.3)**

[Format]

ASCII	ESC	$	nL	nH
Hex	1B	24	nL	nH
Decimal	27	36	nL	nH

[Range] $0 \le nL \le 255$
$0 \le nH \le 255$

[Description] Sets the distance from the beginning of the line to the position at which subsequent characters are to be printed.

The distance from the beginning of the line to the print position is $[(nL + nH \times 256) \times$ (vertical or horizontal motion unit)] inches.

[Notes]
- Settings outside the specified printable area are ignored.
- The horizontal and vertical motion unit are specified by **GS P or GS $D0**.
- **GS P or GS $D0** can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount.
- In standard mode, the horizontal motion unit (x) is used.
- If the setting is outside the printing area width, it sets the absolute print position, but the left or right margin is set at default value.

[Default]

[Reference] **ESC \, GS P or GS $D0**

[Example]

ESC % n

[Name] **Select/cancel user-defined characters**

[Format]

ASCII	ESC	%	n
Hex	1B	25	n
Decimal	27	37	n

[Range] $0 \le n \le 255$

[Description] Selects or cancels the user-defined character set.
When the Least Significant Bit (LSB) of n is 0, the user-defined character set is canceled.
When the LSB of n is 1, the user-defined character set is selected.

[Notes] • Only the LSB of n is applicable.
• When the user-defined character set is canceled, the internal character set is automatically selected.

[Default] n=0

[Reference] **ESC &, ESC ?**

[Example]

ESC & Y C1 C2 [x1 d1...d(y × x1)]...[xkd1...d(y × xk)]

[Name] **Defines user-defined characters**

[Format]

ASCII	ESC	&	Y	C1	C2
Hex	1B	26	Y	C1	C2
Decimal	27	37	Y	C1	C2

[Range] Y = 3
$32 \le C1 \le C2 \le 126$
$0 \le x \le 16$ (Font (18×24))
$0 \le x \le 13$ (Font 13×24)
$0 \le x \le 10$ (Font 10×24)
$0 \le d1 \ldots d (y \times xk) \le 255$
$k = C2 - C1 + 1$

[Description] Defines user-defined characters.
Y specifies the number of bytes in the vertical direction.
C1 specifies the beginning character code for the definition, and C2 specifies the final code.
X specifies the number of dots in the horizontal direction.

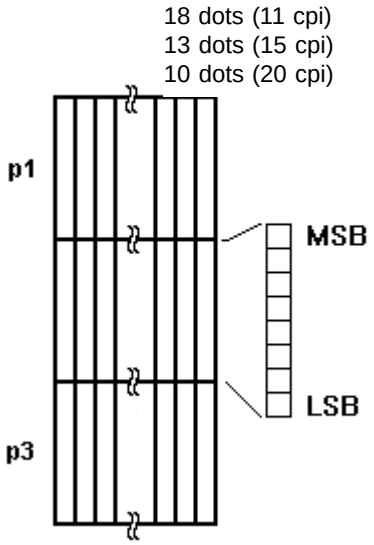
[Notes] • The allowable character code range is from ASCII 20H (32) to 7EH (126) (95 characters).
• It is possible to define multiple characters for consecutive character codes. If only one character is desired, use C1 = C2.
• If C2 < C1, the command is not executed.
• d is the dot data for the characters. The dot pattern is in the horizontal direction starting from the left. Any remaining dots on the right remain blank.
• The data to define a user-defined character is (x x y) bytes.
• To print a dot, set the corresponding bit to 1; to not have it print, set to 0.
• This command can define different user-defined character patterns for each font. To select the font, use **ESC !, ESC ⊥**.

• The user-defined character definitions are cleared when:
ESC @ or
GS * or **(Tab.A.3)**
ESC ? are executed or the printer is reset or the power shut off.

[Default] Internal character set.

[Reference] **ESC %, ESC ?**

[Example]



ESC (v nL nH

[Name] **Set relative vertical print position**

[Format]

ASCII	ESC	(	v	nL	nH
Hex	1B	28	76	nL	nH
Decimal	27	10	118	nL	nH

[Range] $0 \le nL \le 255$

$0 \le nH \le 255$

[Description] Sets the print vertical position based on the current position by using the horizontal or vertical motion unit.

• This command sets the distance from the current position to [(*nL* + *nH* x 256) x (horizontal or vertical motion unit)].

[Notes] • When the starting position is specified by N motion unit to the bottom :

nL + *nH* x 256 = N

When the starting position is specified by N motion unit to the top (negative direction), use the complement of 65536 :

nL + *nH* x 256 = 65536 - N

• The horizzontal and vertical motion unit are specified by **GS P**.

• The **GS P** command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum horizontal movement amount.

• In standard mode, the vertical motion unit is used.

[Default]

[Reference] **GS P**

[Example]

ESC * m nL nH d1...dk

[Name] **Select bit image mode**

[Format]

ASCII	ESC	*	m	nL	nH	d1...dk
Hex	1B	2A	m	nL	nH	d1...dk
Decimal	27	42	m	nL	nH	d1...dk

[Range] m = 0, 1, 32, 33

$0 \le nL \le 255$

$0 \le nH \le 3$

$0 \le d \le 255$

[Description] Selects a bit image mode using *m* for the number of dots specified by *nL* and *nH*, as follows:

for the 204 dpi model :

m	Mode	Vertical direction		Horizontal direction	
		N. dots	DPI	DPI	N. of Data (k)
0	8 dot single density	8	68	102	nL + nH x 256
1	8 dot double density	8	68	204	nL + nH x 256
32	24 dot single density	24	204	102	(nL + nH x 256) x 3
33	24 dot double density	24	204	204	(nL + nH x 256) x 3

for the 300 dpi model :

(Tab.A.3)

m	Mode	Vertical direction		Horizontal direction	
		N. dots	DPI	DPI	N. of Data (k)
0	8 dot single density	8	100	150	nL + nH x 256
1	8 dot double density	8	100	300	nL + nH x 256
32	24 dot single density	24	300	150	(nL + nH x 256) x 3
33	24 dot double density	24	300	300	(nL + nH x 256) x 3

[Notes]

• The *nL* and *nH* commands indicate the number of dots of the bit image in the horizontal direction. The number of dots is calculated using: nL + nH × 256.

• If the bit image data input exceeds the number of dots to be printed on a line, the excess data is ignored.

• *d* indicates the bit image data. Set a corresponding bit to 1 to print a dot, or to 0 to not print the dot.

• If the value of *m* is outside the specified range, *nL* and data following it are processed as normal data.

• If the width of the printing area set by **GS L** and **GS W** is less than the width required by the data set using **ESC *** , the excess data are ignored.

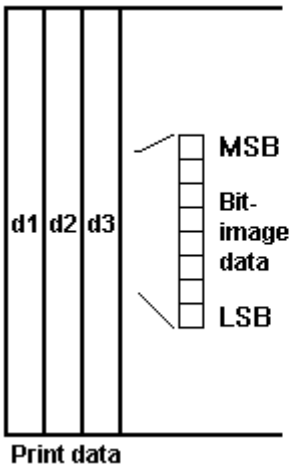
• To print the bit image use **LF**, **CR**, **ESC J** or **ESC d**.

• After printing a bit image, the printer returns to normal data processing mode.

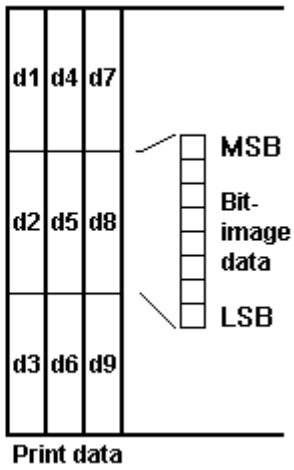
• This command is not affected by the emphasized, double-strike, underline (etc.) print modes, except for the upside-down mode.

• The relationship between the image data and the dots to be printed is as follows:

8-dot bit image



24-dot bit image



[Default]
[Reference]
[Example]

ESC - n

[Name] **Turn underline mode on/off**

[Format]

ASCII	ESC	-	n
Hex	1B	2D	n
Decimal	27	45	n

[Range] $0 \le n \le 2, 48 \le n \le 50$

[Description] Turns underline mode on or off, based on the following values of *n*:

n = 0, 48 Turns off underline mode
n = 1, 49 Turns on underline mode (1-dot thick)
n = 2, 50 Turns on underline mode (2-dot thick)

[Notes]
- The printer can underline all characters, but cannot underline the space set by **HT** and right-side character spacing.
- The printer cannot underline 90°/270° rotated characters and white/black inverted characters.
- When underline mode is turned off by setting the value of *n* to 0 or 48, the data which follows is not underlined.
- Underline mode can also be turned on or off by using **ESC !**. Note, however, that the last received command is the effective one.

[Default] n=0

[Reference] **ESC !**
[Example]

(Tab.A.3)

ESC 0

[Name] **Select 1/8-inch (for 204 dpi) or 1/12-inch line spacing**
[Format] ASCII ESC 0
Hex 1B 30
Decimal 27 48
[Description] Selects 1/8-inch (for 204 dpi) or 1/12-inch (for 300 dpi) line spacing .
[Notes]
[Default]
[Reference] **ESC 2, ESC 3**
[Example]

ESC 2

[Name] **Select 1/6-inch (for 204 dpi) or 1/9-inch (for 300 dpi) line spacing**
[Format] ASCII ESC 2
Hex 1B 32
Decimal 27 50
[Description] Selects 1/6-inch (for 204 dpi) or 1/9-inch (for 300 dpi) line spacing.
[Notes]
[Default]
[Reference] **ESC 0, ESC 3**
[Example]

ESC 3 n

[Name] **Set line spacing**
[Format] ASCII ESC 3 n
Hex 1B 33 n
Decimal 27 51 n
[Range] $0 \leq n \leq 255$

[Description] Sets line spacing to [$n \times$ (vertical or horizontal motion unit)] inches.

[Notes]
- The horizontal and vertical motion unit are specified by **GS P or GS $D0**. Changing the horizontal or vertical motion unit does not affect the current line spacing.
- The **GS P or GS $D0** command can change the horizontal (and vertical) motion unit. However, the value cannot be less than the minimum vertical movement amount.
- In standard mode, the vertical motion unit is used.

[Default] n = 64

[Reference] **ESC 0, ESC 2, GS P or GS $D0**

[Example]

ESC 4 n

[Name] **Set/reset italic mode**

[Format]

ASCII	ESC	4	n
Hex	1B	34	n
Decimal	27	52	n

[Range] $0 \le n \le 1, 48 \le n \le 49$

[Description] Turns italic mode on or off, based on the following values of *n*:

n	Function
0, 48	Turns off italic mode
1, 49	Turns on italic mode

[Notes]
- The printer can print any character in italic mode.
- When italic mode is turned off by setting the value of *n* to 0 or 48, the data which follows is printed in normal mode.
- Italic mode can also be turned on or off using **ESC !**. Note, however, that the last received command is the effective one.

[Default] n = 0

[Reference] **ESC !**

[Example]

ESC = n

[Name] **Select peripheral device** **(Tab.A.3)**

[Format]

ASCII	ESC	=	n
Hex	1B	3D	n
Decimal	27	61	n

[Range] $0 \leq n \leq 255$

[Description] Select the device to which the host computer sends data, using *n* as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Printer disabled
	On	01	1	Printer enabled
1	-	-	-	Undefined
2	-	-	-	Undefined
3	-	-	-	Undefined
4	-	-	-	Undefined
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Pass-trough function disabeld
	On	80	128	Pass-trough function enabeld

[Notes]
- When the printer is disabled, it ignores all transmitted data until the printer is enabled through this command.
- When the Pass-trough function is enabled, all transmitted data are sent on the 2nd serial.

[Default] n = 1

[Reference]

[Example]

ESC ? n

[Name] **Cancel user-defined characters**

[Format]

ASCII	ESC	?	n
Hex	1B	3F	n
Decimal	27	63	n

[Range] $32 \leq n \leq 126$

[Description] Cancels user-defined characters.

[Notes]
- This command cancels the pattern defined for the character code specified by *n*. After the user-defined character is can-

celled, the corresponding pattern for the internal character is printed.
• This command deletes the pattern defined for the specified character code in the font selected by **ESC !**.
• If the user-defined character has not been defined for the specified character code, the printer ignores this command.

[Default]
[Reference] **ESC &**, **ESC %**
[Example]

ESC @

[Name] **Initialize printer**

[Format]

ASCII	ESC	@	
Hex	1B	40	
Decimal	27	64	

[Description] Clears the data in the print buffer and resets the printer mode to that in effect when power was turned on.

[Notes]
• The data in the receiver buffer is not cleared.
• The macro definitions are not cleared.

[Default]
[Reference]
[Example]

ESC D [n1...nk] NUL

[Name] **Set horizontal tab positions**

[Format]

ASCII	ESC	D	n1...nk	NUL
Hex	1B	44	n1...nk	00
Decimal	27	68	n1...nk	0

[Range] $1 \leq n \leq 255$
$0 \leq k \leq 32$

[Description] Sets horizontal tab positions
• *n* specifies the column number for setting a horizontal tab position calculated from the beginning of the line.
• *k* indicates the total number of horizontal tab positions to be set.

[Notes]
• The horizontal tab position is stored as a value of [character width x *n*] measured from the beginning of the line. The character width includes the right-side character spacing (Tab A-3) and double-width characters are set with twice the width of normal characters.
• This command cancels previous tab settings.
• When setting n = 8, the print position is moved to column 9, by sending **HT**.
• Up to 32 tab positions can be set. Data exceeding 32 tab positions is processed as normal data.
• Send [*n*] *k* in ascending order and place a 0 NUL code at the end. When [*n*] *k* is less than or equal to the preceding value [*n*] *k*-1, the setting is complete and the data which follows is processed as normal data.
• **ESC D NUL** cancels all horizontal tab positions.
• The previously specified horizontal tab position does not change, even if the character width is modified.

[Default] Default tab positions are set at intervals of 8 characters (columns 9, 17, 25, …) when the right-side character spacing is 0.

[Reference] **HT**

[Example]

ESC E n

[Name] **Turn emphasized mode on/off**

[Format]

ASCII	ESC	E	n
Hex	1B	45	n
Decimal	27	69	n

[Range] 0 ≤ n ≤ 255

[Description] Turns emphasized mode on/off.
• When the LSB of *n* is 0, the emphasized mode is off.
• When the LSB of *n* is 1, the emphasized mode is on.

[Notes]
• Only the LSB of *n* is effective.
• **ESC !** also turns on and off the emphasized mode. However, the last received command is the effective one.

[Default] n = 0

[Reference] **ESC !**

[Example]

ESC G n

[Name] **Turn double-strike mode on/off**

[Format]

ASCII	ESC	G	n
Hex	1B	47	n
Decimal	27	71	n

[Range] $0 \leq n \leq 255$

[Description] Turns double-strike mode on or off.
- When the LSB of *n* is 0, the double-strike mode is off.
- When the LSB of *n* is 1, the double-strike mode is on.

[Notes]
- Only the LSB of *n* is effective.
- Printer output is the same in double-strike and emphasized mode.

[Default] n = 0

[Reference] **ESC E**

[Example]

ESC J n

[Name] **Print and paper feed**

[Format]

ASCII	ESC	J	n
Hex	1B	4A	n
Decimal	27	74	n

[Range] $0 \leq n \leq 255$

[Description] Prints the data in the print buffer and feeds the paper [n × (vertical or horizontal motion unit)] inches.

[Notes]
- After printing has been completed, this command sets the print starting position to the beginning of the line.
- The paper feed amount set by this command does not affect the values set by **ESC 2** or **ESC 3**.
- The horizontal and vertical motion units are specified by **GS P or GS $D0**.
- **GS P or GS $D0** can change the vertical (and horizontal) motion unit. However, the value cannot be less than the minimum vertical movement amount.
- In standard mode, the vertical motion unit is used.
- The maximum paper feed amount is 4095 mm (161 inches).

[Default]

[Reference] **GS P or GS $D0**
[Example]

(Tab.A.3)

ESC R n

[Name] **Select an international character set**
[Format] ASCII ESCR n
Hex 1B 52 n
Decimal 27 82 n
[Range] $0 \le n \le 10$
[Description] Selects the international character set *n* according to the table below:

	Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
n	Character set												
0	U.S.A.	#	$	@	[	\	]	^	`	{	|	}	~
1	France	#	$	à	°	ç	§	^	`	é	ù	è	"
2	Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	β
3	United Kingdom	£	$	@	[	\	]	^	`	{	|	}	~
4	Denmark I	#	$	@	Æ	∅	Å	^	`	æ	ϕ	å	~
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	$	@	°	\	è	^	ù	à	ò	è	ì
7	Spain 1	Pt	$	@	¡	Ñ	¿	^	`	"	ñ	}	~
8	Japan	#	$	@	[	¥	]	^	`	{	|	}	~
9	Norway	#	¤	É	Æ	∅	Å	Ü	é	æ	ϕ	å	ü
10	Denmark II	#	$	É	Æ	∅	Å	Ü	é	æ	ϕ	å	ü

[Default] n = 0
[Reference]
[Example]

ESC V n

[Name] **Set 90° rotated print mode.**

[Format]

ASCII	ESC	V	n
Hex	1B	56	n
Decimal	27	86	n

[Range] $0 \le n \le 1$
$48 \le n \le 49$

[Description] Turns 90° rotation mode on/off.

n is used as follows :

n	Function
0, 48	Turns off 90° rotation mode
1,49	Turns on 90° rotation mode

[Notes]
- When underlined mode is turned on, the printer does not underline 90° rotated characters. All the same it's possible select the underline mode.
- Double-width and double-height commands in 90° rotation mode enlarge characters in the opposite directions from double-height *and* double-width commands in normal mode.
- This command is not available in Page mode.
- If this command is entered in Page mode, the printer all the same save the setting.

Default] n = 0

[Reference] **ESC !, ESC -**

ESC \ nL nH

[Name] **Set relative print position**

[Format]

ASCII	ESC	\	nL	nH
Hex	1B	5C	nL	nH
Decimal	27	92	nL	nH

[Range] $0 \le nL \le 255$
$0 \le nH \le 255$

[Description] Sets the print starting position based on the current position

by using the horizontal or vertical motion unit.
Sets the distance from the current position to [(nL+ nH × 256) × (horizontal or vertical motion unit)]. **(Tab.A.3)**

[Notes]
- Any setting that exceeds the printable area is ignored.
- When the starting position is specified by *n* motion units to the right:
  nL + nH × 256 = n
  When the starting position is specified by *n* motion units to the left (negative direction), use the complement of 65536:
  nL + nH × 256 = 65536 – n
- If setting exceeds the printing area width, the left or right margin is set to the default value.
- The horizontal and vertical motion unit are specified by **GS P or GS $D0**.
- **GS P or GS $D0** can change the horizontal (and vertical) motion units. However, the value cannot be less than the minimum horizontal movement amount.
- In standard mode, the horizontal motion unit is used.

[Default]

[Reference] **ESC $**, **GS P or GS $D0**

[Example]

ESC a n

[Name] **Select justification**

[Format]

ASCII	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

[Range] 0 ≤ n ≤ 2, 48 ≤ n ≤ 50

[Description] Aligns all data in one line to the specified position.
n selects the type of justification as follows:

n	Justification
0, 48	Flush left
1, 49	Centered
2, 50	Flush right

[Notes]
- This command is only enabled when inserted at the beginning of a line.
- Lines are justified within the specified printing area.
- Spaces set by **HT**, **ESC $** and **ESC ** will be justified ac-

cording to the previously-entered mode.

[Default] n = 0

[Reference]

[Example]

Flush left	Centered	Flush right
ABC ABCD ABCDE	ABC ABCD ABCDE	ABC ABCD ABCDE

ESC c 5 n

[Name] **Enable/disable front panel buttons**

[Format]

ASCII	ESC	c	5	n
Hex	1B	63	35	n
Decimal	27	99	53	n

[Range] $0 \leq n \leq 255$

[Description] Enables/disables the buttons on the front panel.
- When the LSB of *n* is 0, the panel buttons are enabled.
- When the LSB of *n* is 1, the panel buttons are disabled.

[Notes]
- Only the LSB of *n* is effective.
- On the printer, the panel buttons are FORM FEED and LINE FEED.
- When the panel buttons are disabled, the buttons may only be used after the printer has been reset.

[Default] n = 0

[Reference] See “Panel Key” parameter from setup.

[Example]

ESC d n

[Name] **Print and feed paper *n* rows**

[Format]

ASCII	ESC	d	n
Hex	1B	64	n
Decimal	27	100	n

[Range] $0 \leq n \leq 255$

[Description] Prints the data in the print buffer and feeds the paper *n* rows.

[Notes]
- Sets the print starting position at the beginning of the line.
- This command does not affect the line spacing set by

ESC 2 or **ESC 3**.
• The maximum paper feed amount is 254 rows. Even if a paper feed amount of more than 254 rows is set, the printer feeds the paper only 254 rows.

[Default]
[Reference] **ESC 2, ESC 3**
[Example]

ESC i

[Name] **Total cut**
[Format]

ASCII	ESC	i
Hex	1B	69
Decimal	27	105

[Description] This command prints the data in the buffer and enables cutter operation. If there is no cutter, a disabling flag is set and any subsequent cut commands will be ignored.
[Notes] • The printer waits to complete all paper movement commands before it executes a total cut.
[Default]
[Reference]
[Example]

ESC t n

[Name] **Select character code table**
[Format]

ASCII	ESC	t	n
Hex	1B	74	n
Decimal	27	116	n

[Range] n = 0, 2, 3, 4, 5, 19, 255
[Description] Selects a page *n* from the character code table, as follows:

n	Page
0	0 (PC437 [U.S.A., Standard Europe])
2	2 (PC850 [Multilingual])
3	3 (PC860 [Portuguesel])
4	4 (PC863 [Canadian-French])
5	5 (PC865 [Nordic])
19	19 (PC858 for Euro symbol at position 213)
255	Space page

[Notes]

[Default] n = 0

[Reference] See character code tables

[Example] For printing Euro symbol (•), the command sequence is: 1B, 74, 13, D5

ESC v

[Name] **Transmit paper sensor status**

[Format]

ASCII	ESC	v
Hex	1B	76
Decimal	27	118

[Description] When this command is received, transmit the current status of the paper sensor.

The status to be transmitted is shown in the table below:

Bit	Off/On	Hex	Decimal	Function
0,1	Off	00	0	Near paper-end sensor: Paper present
	On	03	3	Near paper-end sensor: Paper not present
2,3	Off	00	0	Paper-end sensor: Paper present
	On	(0C)	(12)	Paper-end sensor: Paper not present
4	Off	00	0	Not used. Fixed to Off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off.

(Tab.A.3)

[Notes] • This command is executed immediately, even when the data buffer is full (Busy).

• After the paper autoload all buffers (receive and print) are cleared.

[Default]

[Reference] **DLE EOT**

[Example]

ESC { n

[Name] **Turn upside-down printing mode on/off**

[Format]

ASCII	ESC{	n	
Hex	1B	7B	n
Decimal	27	123	n

[Range] $0 \leq n \leq 255$

[Description] Turns upside-down printing mode on or off.

• When the LSB of *n* is 0, the upside-down printing mode is off.

• When the LSB of *n* is 1, the upside-down printing mode is on.

[Notes] • Only the LSB of *n* is effective.

• This command is valid only if entered at the beginning of a line.

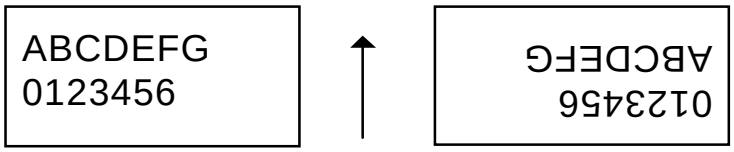
• In upside-down printing mode, the printer rotates the line to be printed 180° and then prints it.

[Default] n = 0

[Reference]

[Example]

Upside-down printing Off Upside-down printing On



Printing direction

ESC ⊥ n

[Name] **Set/cancel cpi mode**

[Format]

ASCII	ESC⊥	n	
Hex	1B	C1	n
Decimal	27	193	n

[Range] 0 ≤ n ≤ 1, 48 ≤ n ≤ 49

[Description] Sets cpi mode based on the following values of *n*:

n	Function	
	204 dpi	300 dpi
0, 48	Font A = 11 cpi Font B = 15 cpi	Font A = 17 cpi Font B = 23 cpi
1, 49	Font A = 15 cpi Font B = 20 cpi	Font A = 23 cpi Font B = 30 cpi

[Default] n = 0

[Reference] **ESC !**

ESC · n xH xL yH yL

[Name] **Print graphic.**

[Format]

ASCII	ESC	·	n	xH	xL	yH	yL
Hex	1B	FA	n	xH	xL	yH	yL
Decimal	27	250	n	xH	xL	yH	yL

[Range] 0 ≤ *n* ≤ 1

0 ≤ *xH*, *xL*, *yH*, *yL* ≤ 255

[Description] Prints graphic logo from flash or current graphic page located

in ram.

n selects the graphic source as follows:

(Tab.A.3)

n	Function
0	Print graphic page from ram (used at the moment)
1	Print logo 1 from flash

The maximum printable vertical dimension *dhmax* is :

• for the 204 dpi model *dhmax* = 315

• for the 300 dpi model *dhmax* = 212

xL + *xH* × 256 specifies the starting dotline (1 ÷ *dhmax*).
yL + y*H* × 256 specifies the number of lines to print.

[Notes] • If (*xL* + (*xH* × 256)) > *dhmax* the printer does not execute the command.

• If (*xL* + (*xH* × 256) + *yL* +(y*H* × 256))> *dhmax* the printer prints only *dhmax* - *xL* + (*xH* × 256) +1 dotline.

• After the print of the logo from RAM (n= 0), the graphic page is deleted. If the user wants to print again or save the logo into the flash, the user must retransmit or reload it with the command **ESC ³**.

• To print a text string before the logo, send a LF, because the logo printing buffer and the characters buffer is the same.

• If don't modify the logo stored into flash bank, use this command with n = 1.

[Default]

[Reference] **ESC ³, ESC ², ESC ¦**

[Example] To print from ram bank dotline 100 to dotline 199, send:
1BH FAH 00H 00H 64H 00H C7H

ESC ¹ nL nH

[Name] **Transmit graphic page to communication port**

[Format]

ASCII	ESC	¹	nL	nH
Hex	1B	FB	nL	nH
Decimal	27	251	nL	nH

[Description] Transmits [*nL* + (*nH* × 256)] word of graphic page used at the moment to the communication port.

[Default]
[Reference] **ESC ³, ESC ², ESC ¦**
[Example]

ESC ³ n

[Name] **Transfer flash bank into graphic page**
[Format]

ASCII	ESC	³	n
Hex	1B	FC	n
Decimal	27	252	n

[Range] n = 1
[Description] Transfers flash bank into graphic page used at the moment *n* selects the flash bank as follows:

n	Function
1	Transfers flash bank logo 1 into ram

[Notes] • Don't lose the logo holded into the graphic page don't send, after this command, other control characters to the printer which operate on the printing buffer (LF, FF) as the logo printing buffer and the characters is the same. The only commands which don't cancel the logo stored in the graphic page are the commands **ESC ·**, **ESC ¹, ESC ¦** and the status commands**.**

• To print strings character and logo from ram proceed as follows :

1) send strings character with a LF ending command;

2) send 0x1B 0xFC 0x01 for transfer logo into ram;

3) send 0x1B 0xFA 0x00 xH xL yH yL to print logo.

[Default]
[Reference] **ESC ·, ESC ², ESC ¦**
[Example]

ESC ² nL nH

[Name] **Receive graphic page from communication port** (Tab.A.3)

[Format]

ASCII	ESC	²	nL	nH
Hex	1B	FD	nL	nH
Decimal	27	253	nL	nH

[Range] $0 \le nL, nH \le 255$

[Description] Receives [$nL + (nH \times 256)$] words from the port and puts them into the ram bank.

[Notes]
- The number of data bytes received is [$nL + (nH \times 256)$] $\times$ 2.
- Each word is first received as MSByte and then as LSByte.
- If [$nL + (nH \times 256)$] is greater than 32768, the data which follows is processed as normal data.
- The flash bank dimensions for the graphic print are :

  with 204 dpi model have 1664 horizontals dots (208 bytes/ dot line) x 315 verticals dots (65312 bytes).

  with 300 dpi model have 2464 horizontals dots (308 bytes/ dot line) x 212 verticals dots (65296 bytes).
- if the logo height is smaller than the maximum height of 816 pixel, the area not used is deleted.

[Default]

[Reference] **ESC ·, ESC ³, ESC ¦**

[Example]

ESC ¦ n

[Name] **Transfer graphic page into flash bank**

[Format]

ASCII	ESC	¦	n
Hex	1B	FE	n
Decimal	27	254	n

[Range] n = 1

[Description] Transfers the graphic page used at the moment into the flash bank .

n selects the bank as follows:

n	Function
1	Transfers graphic page used at the moment into flash bank logo 1

[Notes] • This command makes the flash copy of the graphic page in use. If the graphic page has been cancelled by a printing command, the stored logo will be white.

[Default]

[Reference] **ESC ·, ESC ², ESC ³**

[Example]

GS ! n

[Name] **Select character size**

[Format]

ASCII	GS	!	n
Hex	1D	21	n
Decimal	29	33	n

[Range] $0 \leq n \leq 255$

[Description] Selects character height and width, as follows:
• Bits 0 to 3: to select character height (see table 2).
• Bits 4 to 7: to select character width (see table 1).

Table 1 Select Character Width

Hex	Decimal	Width
00	0	1 (normal)
10	16	2 (width = 2x)
20	32	3 (width = 3x)
30	48	4 (width = 4x)
40	64	5 (width = 5x)
50	80	6 (width = 6x)
60	96	7 (width = 7x)
70	112	8 (width = 8x)

Table 2 Select character height

Hex	Decimal	Height
00	0	1 (normal)
01	1	2 (height = 2x)
02	2	3 (height = 3x)
03	3	4 (height = 4x)
04	4	5 (height = 5x)
05	5	6 (height = 6x)
06	6	7 (height = 7x)
07	7	8 (height = 8x)

[Notes] • This command is effective for all characters (except HRI characters).
• If *n* falls outside the defined range, this command is ignored.
• Characters enlarged to different heights on the same line are aligned at the baseline or topline (see **GS ~**).

• **ESC !** can also be used to select character size. However, the setting of the last received command is the effective one. **(Tab.A.3)**

[Default] n = 0

[Reference] **ESC !**

[Example]

GS :

[Name] **Start/end macro definition**

[Format]

ASCII	GS	:
Hex	1D	3A
Decimal	29	58

[Description] Starts or ends macro definition.

[Notes]
• Macro definition starts when this command is received during normal operation.
• When **GS ^** is received during macro definition, the printer ends macro definition and clears all definitions.
• Macros are not defined when power is turned on to the machine.
• Macro content is not cancelled by the **ESC** @ command. Therefore, **ESC** @ may be included in the content of macro definitions.
• If the printer receives **GS :** a second time after previously receiving **GS :**, the printer remains in macro undefined status.
• The contents of the macro can be defined up to 1024 bytes. If the macro definition exceeds 1024 bytes, excess data is not stored.

[Default]

[Reference] **GS ^**

[Example]

GS B n

[Name] **Turn white/black reverse printing mode on/off**

[Format]

ASCII	GS	B	n
Hex	1D	42	n
Decimal	29	66	n

[Range] $0 \leq n \leq 255$

[Description] Turns white/black reverse printing mode on or off.
• When the LSB of *n* is 0, white/black reverse printing is turned off.
• When the LSB of *n* is 1, white/black reverse printing is turned on.

[Notes] • Only the LSB di *n* is effective.
• This command is available for both built-in and user-defined characters.
• This command does not affect bit image, downloaded bit image, bar code, HRI characters and spacing skipped by **HT, ESC $** and **ESC \.**
• This command does not affect white space between lines.
• White/black reverse mode has a higher priority than underline mode. Even if underline mode is on, it will be disabled (but not cancelled) when white/black reverse mode is selected.

[Default] n = 0

[Reference]

[Example]

GS C 0 n m

[Name] **Select counter print mode**

[Format]

ASCII	GS	C	0	n	m
Hex	1D	43	30	n	m
Decimal	29	67	48	n	m

[Range] $0 \le n \le 5$
m = 0, 1, 2, 48, 49, 50

[Description] Selects a print mode for the serial number counter.
• *n* specifies the number of digits to be printed as follows:
when *n* = 0, the printer prints the actual digits indicated by the numeric value.
when *n* = 1 to 5, the command sets the number of digits to be printed.
• m specifies the printing position within the entire range of printed digits as follows:

m	Printing position	Processing of digits less than those specified (Tab.A.3)
0, 48	Flush right	Adds spaces to the left
1, 49	Flush right	Adds a '0' to the left
2, 50	Flush left	Adds spaces to the right

[Notes] • If *n* or *m* is out of the defined range, the previously set print mode is not changed.
• If *n* = 0, *m* is not applicable.

[Default] *n* = 0, *m* = 0

[Reference] **GS C 1, GS C 2, GS C ;, GS c**

[Example] n = 3,m = 0 n = 3, m = 1 n = 3, m=2
□□1 001 1□□

□ indicates a space

GS C 1 aL aH bL bH n r

[Name] **Select count mode (A).**

[Format]

ASCII	GS	C	1	aL	aH	bL	bH	n	r
Hex	1D	43	31	aL	aH	bL	bH	n	r
Decimal	29	67	49	aL	aH	bL	bH	n	r

[Range] 0 ≤ aL, aH ≤ 255
0 ≤ bL, bH ≤ 255
0 ≤ n, r ≤ 255

[Description] Selects a count mode for the serial number counter.
• *aL*, *aH* or *bL*, *bH* specify the counter range.
• *n* indicates the unit amount when counting up or down.
• *r* indicates the repetition number when the counter value is fixed.

[Notes] • Count-up mode is specified when:
[a*L* + (a*H* × 256)] < [b*L* + (b*H* × 256)] and *n* ≠ 0 and *r* ≠ 0
• Count-down mode is specified when:
[a*L* + (a*H* × 256)] > [b*L* + (b*H* × 256)] and *n* ≠ 0 and *r* ≠ 0
• Counting stops when:
[a*L* + (a*H* × 256)] = [b*L* + (b*H* × 256)] or *n* = 0 or *r* = 0
• Setting the count-up mode, the minimum counter value is

[a*L* + (a*H* × 256)] and the maximum value is [b*L* + (b*H* × 256)].
• Setting the count-down mode, the maximum counter value is [a*L* + (a*H* × 256)] and the minimum value is [b*L* + (b*H* × 256)]. If the counting down reaches a value less than the minimum, it resets to the maximum value.
• When this command is executed, the internal count that indicates the repetition number specified by *r* is cleared.

[Default] aL = 1, aH = 0, bL = 255, bH = 255, n = 1, r = 1

[Reference] **GS C 0, GS C 2, GS C ;, GS c**

[Example]

GS C 2 nL nH

[Name] **Set counter**

[Format]

ASCII	GS	C	2	nL	nH
Hex	1D	43	32	nL	nH
Decimal	29	67	50	nL	nH

[Range] 0 ≤ nL, nH ≤ 255

[Description] Sets the serial number counter value.
• *nL* and *nH* determine the value of the serial number counter set by [*nL* + (*nH* × 256)].

[Notes] • In count-up mode, if the counter value specified by this command goes out of the counter operation range specified by **GS C 1** or **GS C ;** it is forced to convert to the minimum value through **GS c**.
• In count-down mode, if the counter value specified by this command goes out of the counter operation range specified by **GS C 1** or **GS C ;** it is forced to convert to the maximum value through **GS c**.

[Default] nL = 1, nH = 0

[Reference] **GS C 0, GS C 1, GS C ;, GS c**

[Example]

GS C ; sa ; sb ; sn ; sr ; sc ;

[Name] **Select count mode (B)** **(Tab.A.3)**

[Format]

ASCII	GS	C	;	sa	;	sb	;	sn	;	sr	;	sc	;	
Hex	1D	43	3B	sa	3B	sb	3B	sn	3B	sr	3B	sc	3B	
Decimal	29	67	59	sa	59	sb	59	sn	59	sr	59	sc	59	

[Range] $0 \leq sa, sb, sc \leq 65535$

$0 \leq sn, sr \leq 255$

These values are all character strings.

[Description] Selects a count mode for the serial number counter and specifies the value of the counter.

- *sa*, *sb*, *sn*, *sr* and *sc* are all displayed as ASCII characters using codes from '0' to '9'.
- *sa* and *sb* specify the counter range.
- *sn* indicates the unit amount for counting up or down.
- *sr* indicates the repetition number when the counter value is fixed.
- *sc* indicates the counter value.

[Notes]

- Count-up mode is specified when:
  $sa < sb$ and $sn \neq 0$ and $sr \neq 0$
- Count-down mode is specified when:
  $sa > sb$ and $sn \neq 0$ and $sr \neq 0$
- Counting stops when:
  $sa = sb$ or $sn = 0$ or $sr = 0$
- In setting count-up mode, the minimum value of the counter is *sa* and the maximum value is *sb*. If counting up reaches a value exceeding the maximum, it resets to the minimum value. If the counter value set by *sc* is outside the counter operation range, the counter value is forced to convert to the minimum value by executing **GS c**.
- In setting count-down mode, the maximum value of the counter is *sa* and the minimum value is *sb*. If counting down reaches a value less than the minimum, it resets to the maximum value. If the counter value set by *sc* is outside the counter operation range, the counter value is forced to convert to the maximum value by executing **GS c**.
- Parameters *sa* to *sc* can be omitted. If omitted, they remain unchanged.
- Parameters *sa* to *sc* cannot contain characters other than '0' to '9'.

[Default] sa = 1, sb = 65535, sn = 1, sr = 1, sc = 1
[Reference] **GS C 0, GS C 2, GS C 1, GS c**
[Example]

GS H n

[Name] **Select printing position of Human Readable Interpretation (HRI) characters**
[Format]

ASCII	GS	H	n
Hex	1D	48	n
Decimal	29	72	n

[Range] $0 \le n \le 3, 48 \le n \le 51$
[Description] Selects the printing position of HRI characters when printing bar codes.
n selects the printing positions as follows:

n	Function
0, 48	Not printed
1, 49	Above the bar code
2, 50	Below the bar code
3, 51	Both above the below the bar code

[Notes] • HRI characters are printed using the font specified by **GS f**.
[Default] n = 0
[Reference] **GS f, GS k**
[Example]

GS I n (ONLY WITH SERIAL INTERFACE)

[Name] **Transmit printer ID**
[Format]

ASCII	GS	I	n
Hex	1D	49	n
Decimal	29	73	n

[Range] $1 \le n \le 3, 49 \le n \le 51$
[Description] Transmits the printer ID specified by *n* follows:

n	Printer ID	Specification
1, 49	Printer model ID	45H (204 dpi) 56H (300 dpi)
2, 50	Type ID	See table below
3, 51	ROM version ID	Depends on ROM version (4 character)

(Tab.A.3)

n = 2, Type ID

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	2-byte character codes not supported
1	Off	00	0	Autocutter not supplied
				Autocutter supplied
2	Off	00	0	Thermal paper w/o label
	On	04	4	Thermal paper w/label
3	-	-	-	Undefined
4	Off	00	0	Not used. Fixed to Off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off.

[Notes]

- Tthe printer only transmits 1 byte (printer ID) without confirmation that the host is ready to receive data.
- This command is executed when the data is processed in the data buffer. Therefore, there could be a time lag between command reception and data transmission, depending on data buffer status.

[Default]

[Reference]

[Example]

GS L nL nH

[Name] **Set left margin**

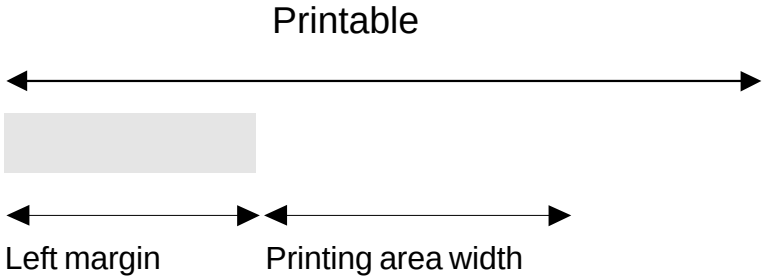
[Format]

ASCII	GS	L	nL	nH
Hex	1D	4C	nL	nH
Decimal	29	76	nL	nH

[Range] $0 \le nL, nH \le 255$

[Description] Sets the left margin.

• The left margin is set to [(nL + nH × 256) × (horizontal motion unit)] inches.



[Notes]

• This command is enabled only if set at the beginning of the line.

• If the setting exceeds the printable area, the maximum value of the printable area is used.

• If the left margin + printing area width is greater than the printable area, the printing area width is set at maximum value.

• The horizontal and vertical motion unit are specified by **GS P or GS $D0**. Changing the horizontal or vertical motion unit does not affect the current left margin.

• The **GS P or GS $D0** command can change the horizontal (and vertical) motion unit.

• However, the value cannot be less than the minimum horizontal movement amount and it must be in even units of the minimum horizontal movement amount.

[Default]

[Reference] **GS P or GS $D0, GS W**

[Example]

GS P x y (mode 1)

[Name] **Set horizontal and vertical motion units** **(Tab.A.3)**

[Format]

ASCII	GS	P	x	y
Hex	1D	50	x	y
Decimal	29	80	x	y

[Range] 0 ≤ x, y ≤ 255

[Description] Sets the horizontal and vertical motion units to 1/x inch and 1/y inch respectively.
When *x* is set to 0, the default setting value is used.
When *y* is set to 0, the default setting value is used.

[Notes]
• The horizontal direction is perpendicular to the paper feed direction.
• In standard mode, the following commands use *x* or *y*, regardless of character rotation (upside-down or 90° clockwise rotation):
① **Commands using *x* :** ESC SP, ESC $, ESC \, GS L, GS W**.**
② **Commands using y :** ESC 3, ESC J**.**
• This command does not affect the previously specified values.
• The calculated result from combining this command with others is truncated to the minimum value of the mechanical pitch or an exact multiple of that value.

[Default]
x = 204, y = 408 (for the 204 dpi model)
x = 300, y = 600 (for the 300 dpi model)

[Reference] **ESC SP, ESC $, ESC \, ESC 3, ESC J, GS L, GS W, GS $D0**

[Example]

GS W nL nH

[Name] **Set printing area width**

[Format]

ASCII	GS	W	nL	nH
Hex	1D	57	nL	nH
Decimal	29	87	nL	nH

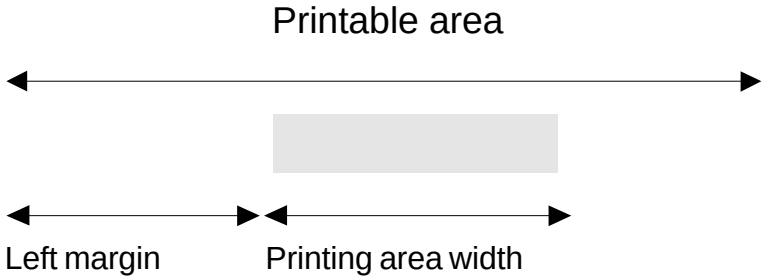
[Range] 0 ≤ nL, nH ≤ 255
0 ≤ nL + nH x 256) ≤ nMax

[Description] Sets the printing area width to the area specified by *nL* and *nH*.

• The value of nMax is :

- 1664 for the 204 dpi model
- 2484 for the 300 dpi model

• The left margin is set to [(nL + nH × 256) × (horizontal motion unit)] inches.



[Notes]

• This command is only enabled if set at the beginning of the line.

• If the right margin is greater than the printable area, the printing area width is set at maximum value.

• If the printing area width = 0, it is set at the maximum value.

• The horizontal and vertical motion units are specified by **GS P**. Changing the horizontal or vertical motion unit does not affect the current left margin.

• The **GS P** command can change the horizontal (and vertical) motion unit.

• However, the value cannot be less than the minimum horizontal movement amount and it must be in even units of the minimum horizontal movement amount.

[Default]

[Reference] **GS L, GS P**

[Example]

GS ^ r t m

[Name] **Execute macro**

[Format]						
	ASCII	GS	^	r	t	m
	Hex	1D	5E	r	t	m
	Decimal	29	94	r	t	m

[Range] 0 ≤ r, t ≤ 255

$0 \leq m \leq 1$

[Description] Executes a macro. (Tab A.3)
• *r* specifies the number of times to execute the macro.
• *t* specifies the waiting time for executing the macro.
The waiting time is $t \times 100$ msec. for each macro execution.
• *m* specifies macro executing mode:
When the LSB of *m* = 0, the macro is executed *r* times continuously at the interval specified by *t*.
When the LSB of *m* = 1, after waiting for the period specified by *t*, the LED indicator blinks and the printer waits for the FEED button to be pressed. After the button is pressed, the printer executes the macro once. The printer repeats the operation *r* times.

[Notes] • This command has an interval of ($t \times 100$ msec.) after a macro is executed by *t*.
• If this command is received while a macro is being defined, the macro definition is aborted and the definition is cleared.
• If the macro is not defined or if *r* is 0, nothing is executed.
• When the macro is executed by pressing the FEED button (*m*=1), the paper cannot be fed using the FEED button.

[Default]

[Reference] **GS :**

[Example]

GS c

[Name] **Print counter**

[Format]

ASCII	GS	c
Hex	1D	63
Decimal	29	99

[Description] Sets the serial counter value in the print buffer and increments or decrements the counter value.

[Notes] • After setting the current counter value in the print buffer as print data (a character string), the printer counts up or down based on the count mode set. The counter value in the print buffer is printed when the printer receives a print command or the buffer is full.
• The counter print mode is set using **GS C 0**.
• The counter mode is set using **GS C 1** or **GS C ;**.

• In count-up mode, if the counter value set by this command goes out of the counter operation range set by **GS C 1** or **GS C ;** it is forced to revert to the minimum value.
• In count-down mode, if the counter value set by this command goes out of the counter operation range set by **GS C 1** or **GS C ;** it is forced to revert to the maximum value.

[Default]

[Reference] **GS C 0, GS C1, GS C 2, GS C ;**

[Example]

GS e n [m]

[Name] **Ejector commands**

[Format]

ASCII	GS	e	n [m]
Hex	1D	65	n [m]
Decimal	29	101	n [m]

[Range] $1 \le n \le 6$

[Description] This command checks tickets ejector.
n = 1
n = 2 Ticket retracted (only if Paper retracting is enabled)
n = 3 Ticket produced with m steps (1 step = 0.625 mm)
n = 4
n = 5 Ticket ejection
n = 6 Transmit the status byte of the ejector

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Paper present in abundance.
	On	01	1	Near paper end.
1	Off	00	0	Not used. Fixed to Off.
2	Off	00	0	Paper end sensor (paper not present).
	On	04	4	Paper end sensor (paper present).
3	Off	00	0	Ticket not present on the output.
	On	08	8	Ticket present on the output.
4	Off	00	0	Printer's stepper motor off.
	On	10	16	Printer's stepper motor on.
5	Off	00	0	Ejector motor off.
	On	20	32	Ejector motor on.
6	Off	00	0	Not error.
	On	40	64	Error.
7	Off	00	0	Free paper route.
	On	80	128	Paper jam.

[Notes] m must be sent with n = 3;
with n = 3 if the ticket is not yet cutted, before to perform the command, the printer made a total cut. **(Tab.A.3)**

[Reference]

[Example] The correct commands sequence to print a ticket is :

1. Clear dispenser
   Ejection (Hex : 1D 65 05) or Retraction (Hex : 1D 65 02)
2. Prints ticket
3. Cuts paper
   Total cut (Hex : 1B 69)
4. Dispense
   Presents ticket (Hex : 1D 65 03 00)

GS f n

[Name] **Select font for HRI characters**

[Format]

ASCII	GS	f	n
Hex	1D	66	n
Decimal	29	102	n

[Range] n = 0, 1, 48, 49

[Description] Selects a font for the HRI characters used when printing a bar code.
n selects a font from the following table:

n	Font
0, 48	Font A
1, 49	Font B

[Notes] HRI characters are printed at the position specified by **GS H**.

[Default] n = 0

[Reference] **GS H, GS k**

[Example]

GS h n

[Name] **Set bar code height**

[Format]

ASCII	GS	h	n
Hex	1D	68	n
Decimal	29	104	n

[Range] $1 \leq n \leq 255$

[Description] Sets the height of the bar code.
n specifies the number of vertical dots.

[Notes]

[Default] n = 162 (20.25 mm) for the 204 dpi model
n = 243 (20.57 mm) for the 300 dpi model

[Reference] **GS k**

[Example]

Œ GS k m [d1...dk] NUL , GS k m n [d1...dn]

[Name] **Print bar code**

[Format]

①	ASCII	GS	k	m	NUL
	Hex	1D	6B	m	00
	Decimal	29	107	m	0
②	ASCII	GS	k	m	n
	Hex	1D	6B	m	n
	Decimal	29	107	m	n

[Range] ① $0 \leq m \leq 20$
② $65 \leq m \leq 90$

[Description] Selects a bar code system and prints the bar code.
m selects a bar code system as follows:

	m	Bar code system	No. of characters	Remarks
	0	UPC-A	11 ≤ k ≤ 12	48 ≤ d ≤ 57 (Tab.A-3)
	1	UPC-E	11 ≤ k ≤ 12	48 ≤ d ≤ 57
	2	EAN13 (JAN)	12 ≤ k ≤ 13	48 ≤ d ≤ 57
	3	EAN8 (JAN)	7 ≤ k ≤ 8	48 ≤ d ≤ 57
Œ	4	CODE39	1 ≤ k	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, 32, 36, 37, 43, 45, 46, 47
	5	ITF	1≤ k (even number)	48 ≤ d £ 57
	6	CODABAR	1 ≤ k	48 ≤ d ≤ 57, 65 ≤ d1 ≤ 68, 36, 43, 45, 46, 47, 58
	7	CODE93	1 ≤ k ≤ 255	1 ≤ d ≤ 127
	8	CODE128	2 ≤ k ≤ 255	1 ≤ d ≤ 127
	20	CODE32	8 ≤ k ≤ 9	48 ≤ d ≤ 57
	65	UPC-A	11 ≤ n ≤ 12	48 ≤ d ≤ 57
	66	UPC-E	11 ≤ n ≤ 12	48 ≤ d ≤ 57
	67	EAN13 (JAN)	12 ≤ n ≤ 13	48 ≤ d ≤ 57
	68	EAN8 (JAN)	7 ≤ n ≤ 8	48 ≤ d ≤ 57
	69	CODE39	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, 32, 36, 37, 43, 45, 46, 47
’	70	ITF	1 ≤ n ≤ 255	48 ≤ d ≤ 57
	71	CODABAR	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d1 ≤ 68, 36, 43, 45, 46, 47, 58
	72	CODE93	1 ≤ n ≤ 255	0 ≤ d ≤ 127
	73	CODE128	2 ≤ n ≤ 255	0 ≤ d ≤ 127
	90	CODE32	8 ≤ n ≤ 9	48 ≤ d ≤ 57

[Notes]

- If *d* is outside of the specified range, the printer prints the following message: “BAR CODE GENERATOR IS NOT OK!” and processes the data which follows as normal data.
- If the horizontal size exceeds the printing area, the printer only feeds the paper.

• This command feeds as much paper as is required to print the bar code, regardless of the line spacing specified by **ESC 2** or **ESC 3**.
• After printing the bar code, this command sets the print position to the beginning of the line.
• This command is not affected by print modes (emphasized, double-strike, underline or character size), except for upside-down and justification mode.

[Notes per ①]
• This command ends with a NUL code.
• When the bar code system used is UPC-A or UPC-E, the printer prints the bar code data after receiving 11 (without check digit) or 12 (with check digit) bytes bar code data.
• When the bar code system used is EAN13, the printer prints the bar code data after receiving 12 (without check digit) or 13 (with check digit) bytes bar code data.
• When the bar code system used is EAN8, the printer prints the bar code data after receiving 7 (without check digit) or 8 (with check digit) bytes bar code data.
• The number of data for ITF bar code must be even numbers. When an odd number of data is input, the printer ignores the last received data.

[Notes per ②]
• If *n* is outside of the specified range, the printer stops command processing and processes the following data as normal data.

When CODE93 is used:
• The printer prints an HRI character (o) as a start character at the beginning of the HRI character string.
• The printer prints an HRI character (o) as a stop character at the end of the HRI character string.
• The printer prints an HRI character (n) as a control character (00H to 1FH and 7FH).

When CODE128 is used:
• When using CODE128 in this printer, please note the following regarding data transmission:
• The top part of the bar code data string must be a code set selection character (CODE A, CODE B or CODE C) which selects the first code set.
• Special characters are defined by combining two characters “{“ and one character. ASCII character “{” is defined by transmitting “{“ twice, consecutively.

Specific character	Data transmission (Tab.A.3)		
	ASCII	Hex	Decimal
SHIFT	{S	7B, 53	123, 83
CODE A	{A	7B, 41	123, 65
CODE B	{B	7B, 42	123, 66
CODE C	{C	7B, 43	123, 67
FNC1	{1	7B, 31	123, 49
FNC2	{2	7B, 32	123, 50
FNC3	{3	7B, 33	123, 51
FNC4	{4	7B, 34	123, 52
'{'	{{	7B, 7B	123, 123

[Default]
[Reference] **GS H, GS f, GS h, GS w**
[Example]

GS r n

[Name] **Transmit status**
[Format] ASCII GS r n
Hex 1D 72 n
Decimal 29 114 n
[Range] n = 1, 49
[Description] Transmits the status specified by *n* as follows:

n	**Function**
1, 49	Transmits paper sensor status (as for **ESC v**).

Paper sensor status (n = 1, 49)

Bit	Off/On	Hex	Decimal	Function
0,1	Off	00	0	Near paper-end sensor: Paper present
	On	03	3	Near paper-end sensor: Paper not present
2,3	Off	00	0	Paper-end sensor: Paper present
	On	(0C)	(12)	Paper-end sensor: Paper not present
4	Off	00	0	Not used. Fixed to Off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off.

[Notes] • This command is executed when the data is processed in the data buffer. Therefore, there may be a time lag between receiving the command and transmitting the status, depending on data buffer status.

[Default]

[Reference] **DLE EOT, ESC u, ESC v**

[Example]

GS w n

[Name] **Set bar code width**

[Format]

ASCII	GS	w	n
Hex	1D	77	n
Decimal	29	119	n

[Range] $1 \leq n \leq 6$

[Description] Sets the horizontal size of the bar code.
n specifies the bar code width as follows:

n	Module width (mm)	
	204 dpi	300 dpi
1	0.125	0.085
2	0.25	0.17
3	0.375	0.254
4	0.5	0.339
5	0.625	0.423
6	0.75	0.508

(Tab.A.3)

[Notes]
[Default] n = 3
[Reference] **GS k**
[Example]

GS | n

[Name] **Set printing density**
[Format] ASCII GS | n
Hex 1D 7C n
Decimal 29 124 n
[Range] $0 \le n \le 8$, $48 \le n \le 56$, $65 \le n \le 67$
[Description] Sets printing density.
n specifies printing density as follows:

n	Printing density
0, 48	- 50%
1, 49	- 37.5%
2, 50	- 25%
3, 51	- 12%
4, 52	Normal
5, 53	+ 12.5%
6, 54	+ 25%
7, 55	+ 37.5 %
8, 56	+ 50%

[Notes] • Printing density reverts to the default value when the printer is reset or turned off.

[Default] n = 4

[Reference]

[Example]

GS ~ n

[Name] **Set superscript/subscript**

[Format]

ASCII	GS	~	n
Hex	1D	7E	n
Decimal	29	126	n

[Range] n = 0, 1, 48, 49

[Description] Sets superscript or subscript character position.
n specifies the position as follows:

n	Function
0, 48	Subscript character position
1, 49	Superscript character position

[Notes] • This command is executed if there are characters of different height on the same line.

[Default] n = 0

[Reference] **ESC !, GS !**

[Example]

GS $D0 xH xL yH yL (mode 2)

[Name] **Set horizontal and vertical motion units**

[Format]

ASCII	GS	$D0	xH	xL	yH	yL
Hex	1D	D0	xH	xL	yH	yL
Decimal	29	208	xH	xL	yH	yL

[Range] $0 \le ((xH * 256) + xL) \le 2040$

$0 \le ((yH * 256) + yL) \le 4080$

[Description] Sets the horizontal and vertical motion units to 1/((*xH* * 256) + *xL*) inch and 1/((*yH* * 256) + *yL*) inch respectively.
When *x* is set to 0, the default setting value is used.

When *y* is set to 0, the default setting value is used.

[Notes] • The horizontal direction is perpendicular to the paper feed direction. **(Tab.A.3)**

• In standard mode, the following commands use *x* or *y*, regardless of character rotation (upside-down or 90° clockwise rotation):

① **Commands using *x* :** ESC SP, ESC $, ESC \, GS L, GS W**.**

② **Commands using y :** ESC 3, ESC J**.**

• This command does not affect the previously specified values.

• The calculated result from combining this command with others is truncated to the minimum value of the mechanical pitch or an exact multiple of that value.

[Default] x = 204, y = 408 for the model 204 dpi

x = 300, y = 600 for the model 300 dpi

[Reference] **ESC SP, ESC $, ESC \, ESC 3, ESC J, GS L, GS W, GS P**

[Example]

GS α n

[Name] **Enable / disable automatic FULL STATUS back**

[Format]

ASCII	GS	α	n
Hex	1D	E0	n
Decimal	29	224	n

[Range] $0 \le n \le 255$

[Description] Enable / disable automatic full status back.

n specifies the composition of FULL STATUS as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Disable Paper status.
	On	01	1	Enable Paper status.
1	Off	00	0	Disable User status.
	On	02	2	Enable User status.
2	Off	00	0	Disable Recoverable Error Status.
	On	04	4	Enable Recoverable Error Status.
3	Off	00	0	Disable Unrecoverable Error Status.
	On	08	8	Enable Unrecoverable Error Status.
4	-	-	-	Undefined.
5	-	-	-	Undefined.
6	-	-	-	Undefined.
7	-	-	-	Undefined.

[Notes] • Once enable at least one byte of the FULL STATUS, for each change of at least one of the bits which compose the required status, the status sent in automatic from the printer will be so composed as follows:
1° Byte = 0x10 (DLE)
2° Byte = n
Next byte (depends how many bits are active in n)

[Reference] **DLE EOT n**

[Example]

GS β

[Name] **Reading of length paper (cm) available before virtual paper-end**

[Format]

ASCII	GS	β
Hex	1D	E1
Decimal	29	225

[Description] Reading of length (cm) paper available before virtual paper-end.
The command return a string pointing out how much paper is available, for example if there are 5.1 m before the paper end, it will be:
‘510cm’

[Notes] • The lenght of residual paper reported is just as an indication because tolerances and other factors are not taken into consideration (paper thickness, roll core diameter, roll core thickness). The virtual paper-end limit is set by the command **GS µ**. (Tab.A.3)

• To set virtual paper-end limit, measure the length of the paper from near paper end to the end of the roll, using several of them.

[Default]

[Reference]

[Example]

GS Γ

[Name] **Reading number of cuts performed from the printer**

[Format]

ASCII	GS	Γ
Hex	1D	E2
Decimal	29	226

[Description] Reading the number of cuts performed from the printer.
The command return a string that points out how many cuts are performed by the printer, for example if there are performed 2376 cuts, it will be:
‘2376 cuts’

[Notes]

[Default]

[Reference]

[Example]

GS Π

[Name] Reading of length (cm) of printed paper

[Format]

ASCII	GS	Π
Hex	1D	E3
Decimal	29	227

[Description] Reading of length (cm) of printed paper.
The command return a string pointing out how much paper is printed, for example if the printer has print about 2515,5 m, it will be:

‘251550cm’

[Notes]

[Default]

[Reference]

[Example]

GS Σ

[Name] **Reading number of retracting**

[Format] ASCII GS Σ

Hex 1D E4

Decimal 29 228

[Description] Reading number of retracting of the printer.

[Notes] • The command return a string pointing out the number of retracting of the printer, for example if the printer has retracted the paper 512 times, it will be:
‘512ret’

[Default]

[Reference]

[Example]

GS σ

[Name] **Reading number of power up**

[Format] ASCII GS σ

Hex 1D E5

Decimal 29 229

[Description] Reading number of power up of the printer.

[Notes] • The command return a string pointing out the number of turning on of the printer, for example if the printer is turned on 512 times, it will be:
‘512on’

[Default]

[Reference]

[Example]

GS μ nH nL

[Name] **Virtual paper-end limit** **(Tab.A.3)**

[Format]

ASCII	GS	μ	nH	nL
Hex	1D	E6	nH	nL
Decimal	29	230	nH	nL

[Range] $0 \le nH \le 255$
$0 \le nL \le 255$

[Description] This command sets the limit after which is pointed out the virtual paper-end.

[Notes]
- The calculation limit of the near paper-end is in centimetres.
- This value is expressed as [(nH x 256)+nL]

[Default] nH = 0x04
nL = 0xB0

[Reference]

[Example] If you want that the virtual paper-end is pointed out after 15 metres from first near paper-end data acquisition, you have to convert 15 metres in 1500 centimetres, and after you have to calculate nH and nL as it follows:

nH = 1500 / 256 = 5
nL = 1500 - (nH x 256) = 1500 - (5 x 256) = 220
And which the command will be:

Hex:	1D	E6	05	DC
Decimal:	29	230	5	220

GS - n

[Name] **Set printing speed and current consumption.**

[Format]

ASCII	GS	-	n
Hex	1D	F0	n
Decimal	29	240	n

[Range] $0 \le n \le 2$

[Description] Sets printing speed and current consumption in printing.
n specifies the printing speed and the absorption as follows:

n	Printing speed	Maximum dots ON at the same time	
		204 dpi	300 dpi
0	Low	416	616
1	Normal	832	1232
2	High	1664	2464

[Notes] • Printing speed reverts to the default value when the printer is reset or turned off.

[Default] n = 1

[Reference]

[Example]

FS ⌊ $18 $10 $14 $1A

[Name] **Hardware reset**

[Format]

ASCII	FS	⌊	$18	$10	$14	$1A
Hex	1C	C0	18	10	14	1A
Decimal	28	192	24	16	20	26

[Description] When this command is received, the printer perform an hardware reset (like a printer power-up).

Notes] • This command is executed immediately, even when the data buffer is full (Busy).

[Default]

[Reference]

[Example]

4.1 TECHNICAL SPECIFICATIONS

Table 4.1 gives the main technical specifications of the 204 dpi printer.

(Tab.4.1)

Printing method	Thermal fixed head (8 dot/mm)	
Resolution	204 DPI (8 dot/mm)	
Paper specifications		
Width	210mm / 216 mm (8.5" letter)	
Paper width tolerance	216 mm	210 mm
	215 +1mm / -0mm	210 +1mm / -0mm
Weight	60 gr. - 100 gr.	
Internal roll core diameter	25mm (smooth without internal ridges)	
Sensors	Paper End, Last Ticket, Ticket Present	
Printing mode	Straight, 90°, 180°, 270°	
Printing format	Height / Width from 1 to 8, bold face, reverse, underlined, italic	
Character fonts	PC437, PC850, PC860, PC863, PC865, International	
Interfaces available	RS232, USB	
Baud rate	1200 to 57600 bps	
Receive buffer	16 bytes to 8 Kbytes	
Flash memory	256 Kbytes	
Graphic memory	1 logo - 1664 x 315 dots	
Printer drivers	Windows™ 95, 98, ME, 2k, NT4, Linux	
Printing speed (1)		
Low current	50 mm/sec	
Medium current	60 mm/sec	
High current	65 mm/sec	
Eject speed	400 mm/sec	
Power supply	24 Vdc ± 10% (optional external power supply)	

Note: (1) Dependent of power of power supply utilized.

Electrical input (current setting = Normal)			
Stand-by	0.7 A **(Tab.A.3)**		
Average (100% dots on)	6.6 A		
Peak (100% dots on)	9 A		
Environmental conditions			
Operating temperature	5°C¸ 50°C		
Relative humidity	10%, 70% w/o condensation		
Storage temperature / humidity	-20 °C¸ +70 °C / 10% , 90%		
OPTIONS	Roll holder support, paper almost out and black mark sensors, 90° paper exit		
Emulation	ESC/POS™		
Character density	**11 cpi**	**15 cpi**	**20 cpi**
Number of columns	92	128	166
Characters / sec	920	1280	1660
Lines / sec	10	10	10
Characters			
Normal	2.3 x 3	1.7 x 3	1.2 x 3
Double width	4.6 x 3	3.4 x 3	2.4 x 3
Double height	2.3 x 6	1.7 x 6	1.2 x 6
Double height and width	4.6 x 6	3.4 x 6	2.4 x 6
Quadruple width	9.2 x 3	6.8 x 3	4.8 x 3
Quadruple height	2.3 x 12	1.7 x 12	1.2 x 12
Quadruple width and height	9.2 x 12	6.8 x 12	4.8 x 12

Table 4.2 gives the main technical specifications of the 300 dpi printer.

(Tab.4.2)

Printing method	Thermal fixed head (11.8 dot/mm)	
Resolution	300 DPI (11.8 dot/mm)	
Paper specifications		
Width	210mm / 216 mm (8.5" letter)	
Paper width tolerance	216 mm	210 mm
	215 +1mm / -0mm	210 +1mm / -0mm
Weight	60 gr. - 100 gr.	
Internal roll core diameter	25mm (smooth without internal ridges)	
Sensors	Paper End, Last Ticket, Ticket Present	
Printing mode	Straight, 90°, 180°, 270°	
Printing format	Height/Width from 1 to 8, boldface, reverse, underscored, italic	
Character fonts	PC437, PC850, PC860, PC863, PC865, International	
Interfaces available	RS232, USB	
Baud rate	1200 to 57600 bps	
Receive buffer	16 bytes to 8 Kbytes	
Flash memory	256 Kbytes	
Graphic memory	1 logo - 2464 x 212 dots	
Printer drivers	Windows™ 95, 98, ME, 2k, NT4, Linux	
Printing speed (1)		
Low current	50 mm/sec	
Medium current	60 mm/sec	
High current	65 mm/sec	
Eject speed	400 mm/sec	
Power supply	24 Vdc ± 10% (external power supply optional)	

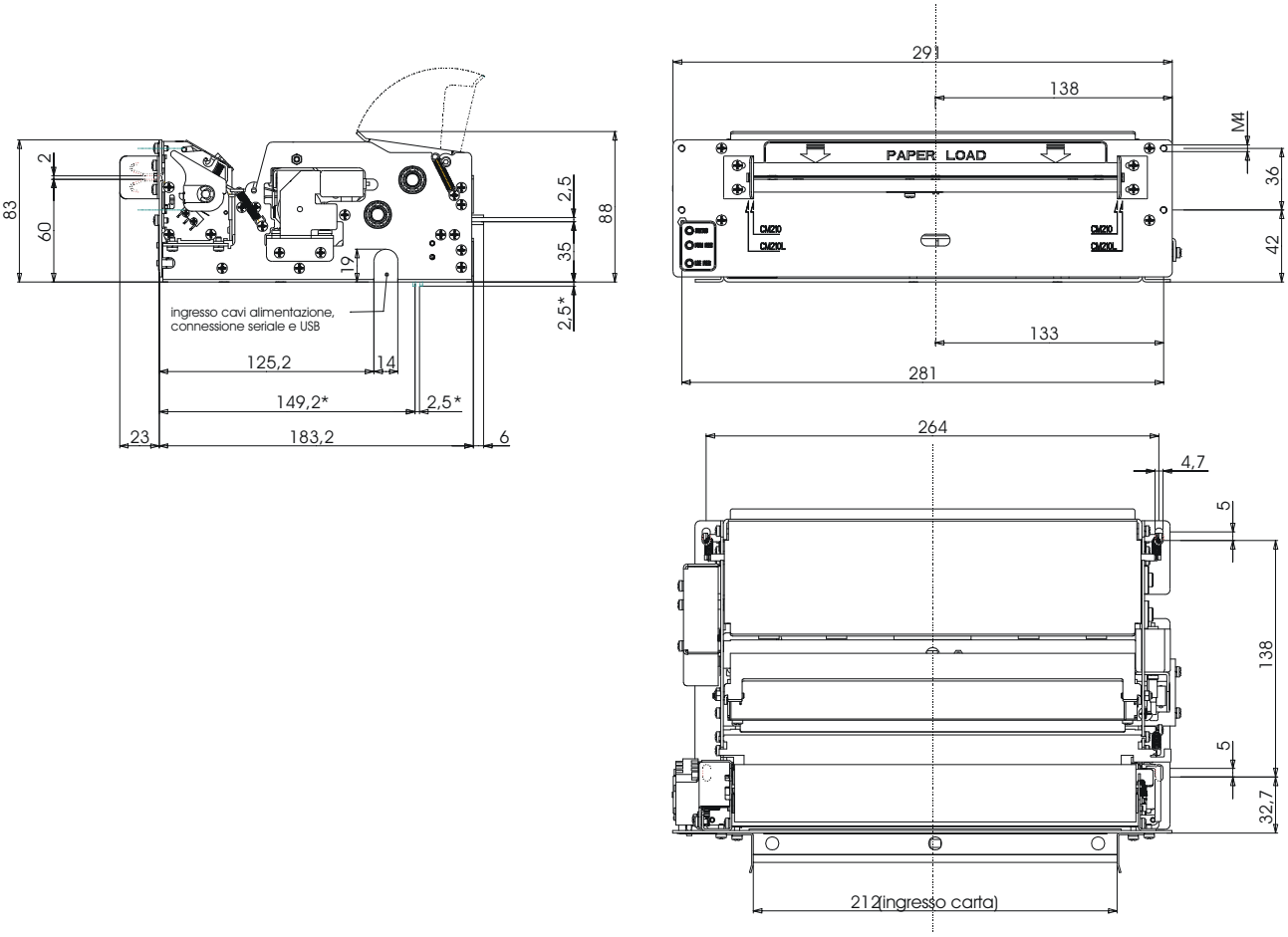
Note : (1) Dependent of power of power supply utilized.

Electrical input (current setting = Normal)			
Stand-by	0.7 A (Tab.A.3)		
Average (100% dots on)	7.5 A		
Peak (100% dots on)	10.5 A		
Environmental conditions			
Operating temperature	5°C¸ 50°C		
Relative humidity	10%¸ 70% w/o condensation		
Storage temperature/humidity	-20 °C, +70 °C / 10%¸ 90%		
OPTIONS	Roll holder support, paper almost out and black mark sensors, 90° paper exit		
Emulation	ESC/POS™		
Character density	**17 cpi**	**23 cpi**	**30 cpi**
Number of columns	136	189	247
Characters / sec	1360	1890	2470
Lines / sec	10	10	10
Characters			
Normal	1.5 x 2	1.1 x 2	0.85 x 2
Double width	3 x 2	2.2 x 2	1.7 x 2
Double height	1.5 x 4.1	1.1 x 4.1	0.85 x 4.1
Double height and width	3 x 4.1	2.2 x 4.1	1.7 x 4.1
Quadruple width	6.1 x 2	4.4 x 2	3.4 x 2
Quadruple height	1.5 x 8.1	1.1 x 8.1	0.85 x 8.1
Quadruple height and width	6.1 x 8.1	4.4 x 8.1	3.4 x 8.1

4.2 DIMENSIONS

Figure 4.1 shows the dimensions of the table top printer.

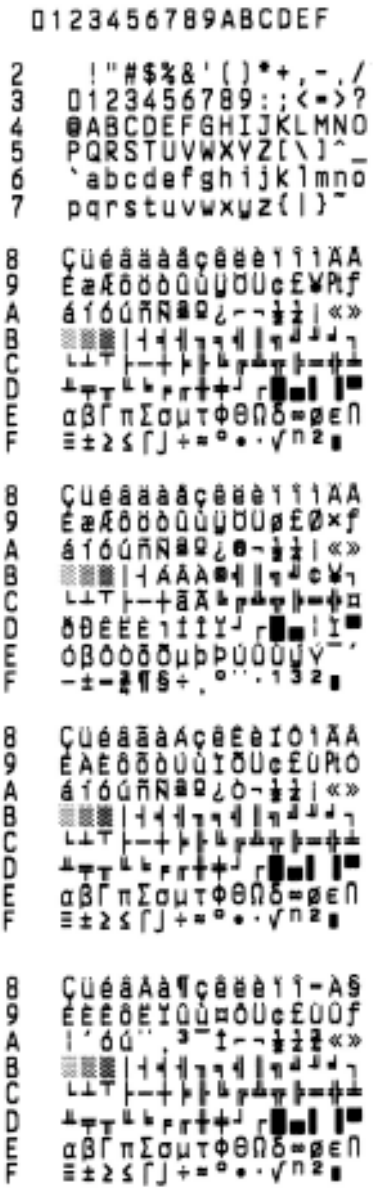
(Fig.4.1)



5.1 CHARACTER SETS

The printer has 3 fonts of varying width for the 204 dpi (11, 15 and 20 cpi) and 300 dpi (17, 23 and 30 cpi) models, which may be accessed through programming (section 1.2) or control characters (section 3.2). Each of these fonts offers the following code tables: PC437, PC850, PC860, PC863, PC865, PC858.
Shown below in figures 5.1 and 5.2 are examples of the 11 cpi character set for the 204 dpi model.

FONT 11 cpi



PC437
(USA, Standard Europe)

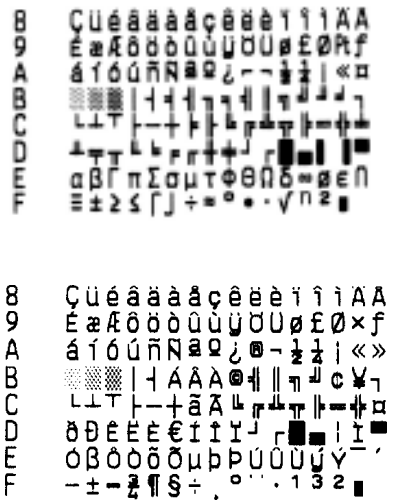
PC850
(Multilingual)

PC860
(Portuguese)

PC863
(Canadian-French)

(Fig.5.1)

(Tab.A.3)



PC865
(Nordic)

PC858
(Euro symbol)

(Fig.5.2)

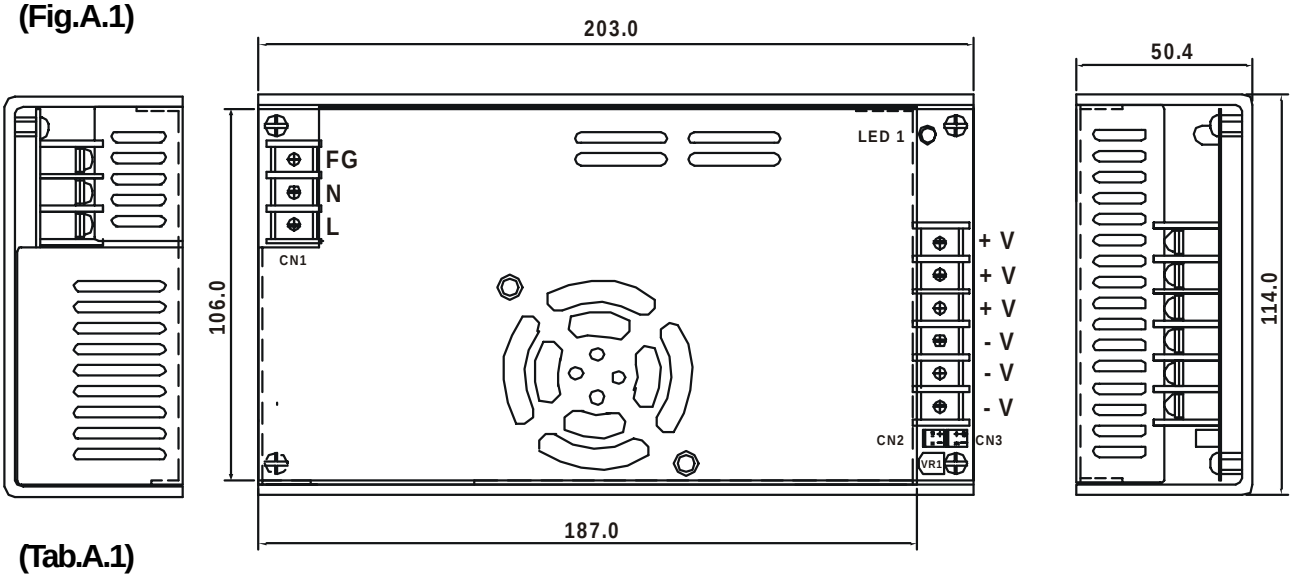
To print the Euro (€) symbol, the command sequence is:
1B, 74, 13, D5 (see Chapter 3)

A.1 ACCESSORIES

A.1.1 Power Supply

The figure below illustrates the power supply provided by Custom to be used for printer operation.

(Fig.A.1)



(Tab.A.1)

PPSPS-230-24	**Switching power supply 24V 230W**	
Input Specifications		
Input voltage		115V – 230V
Current		5.8A – 3.2A
Input frequency		47 Hz – 63 Hz
Output Specifications		
Output voltage		24 V
Output current	Min. - Max.	0 A – 9.5 A
Efficiency	Min.	78%
Environmental Conditions		
Operating temperature	0°C – 70°C	
Humidity	20% – 85% Rh (w/o condensation)	
Storage temperature / humdity	-10°C – 75°C/ 10% – 95% (w/o condensation)	

Protection devices: Shortcircuit, overload and overvoltage.

A.1.2 External roll holder

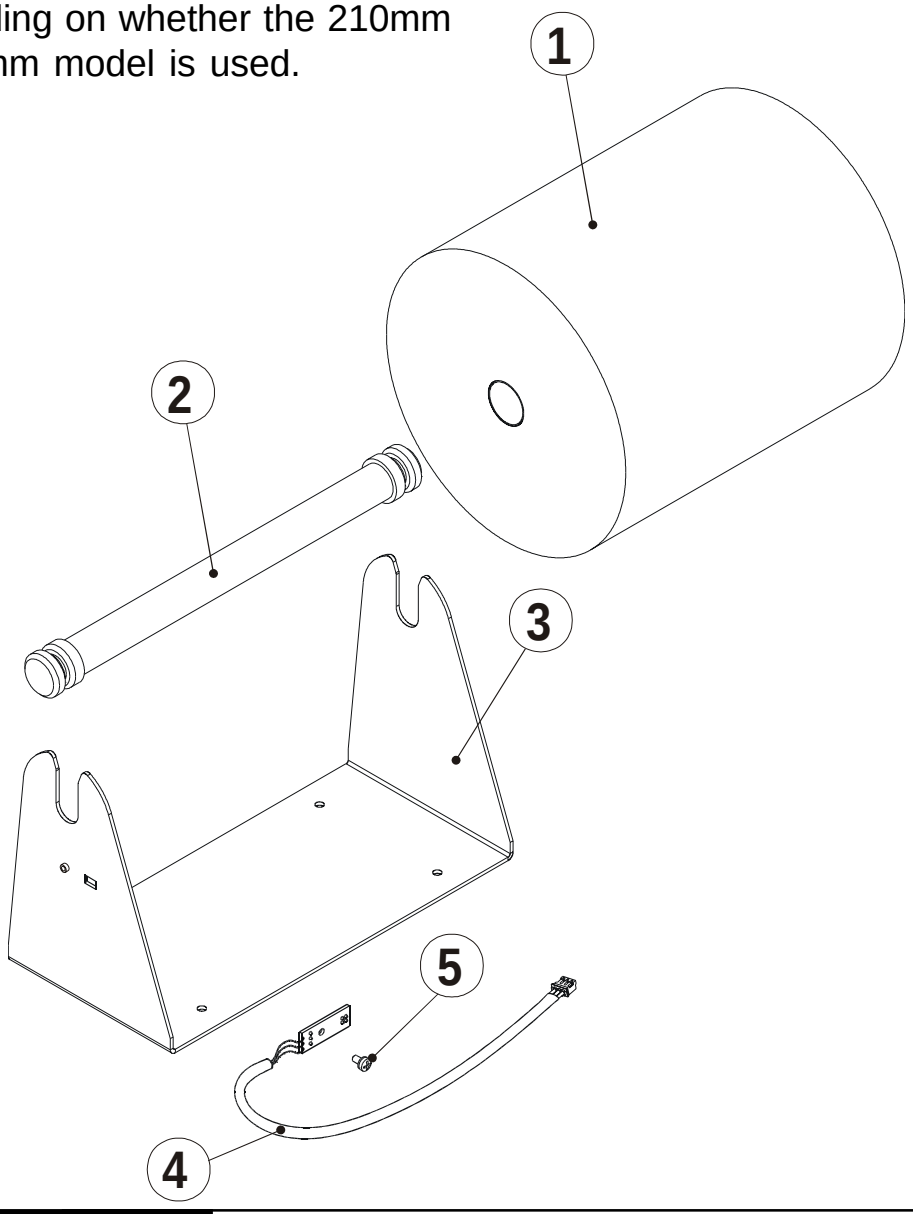
The printer includes a paper roll support kit for both the KPM210 and KPM216 models as shown in tab. A-2:

(Tab.A.3) **(Tab.A.2)**

PCXSP-210	**Paper roll support kit - 210mm**
PCXSP-216	**Paper roll support kit - 216mm**

The kit includes (see fig. A-2) :
- Paper roll (*) (1);
- Roll pin (*) (2);
- Roll holder support (3);
- Paper almost out sensor (4);
- Fastening screw (5).

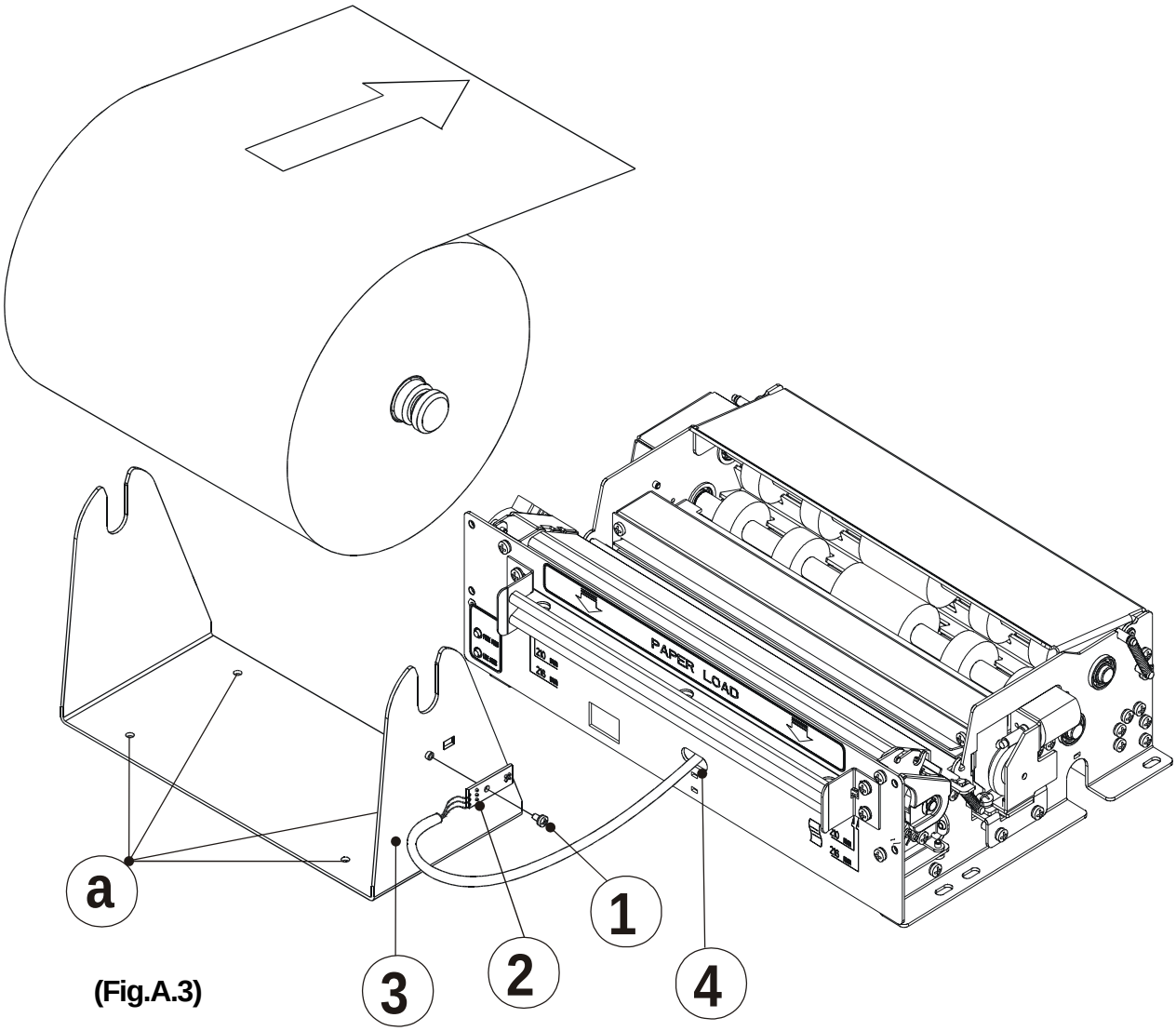
Note : (*) Depending on whether the 210mm or 216mm model is used.



(Fig.A.2)

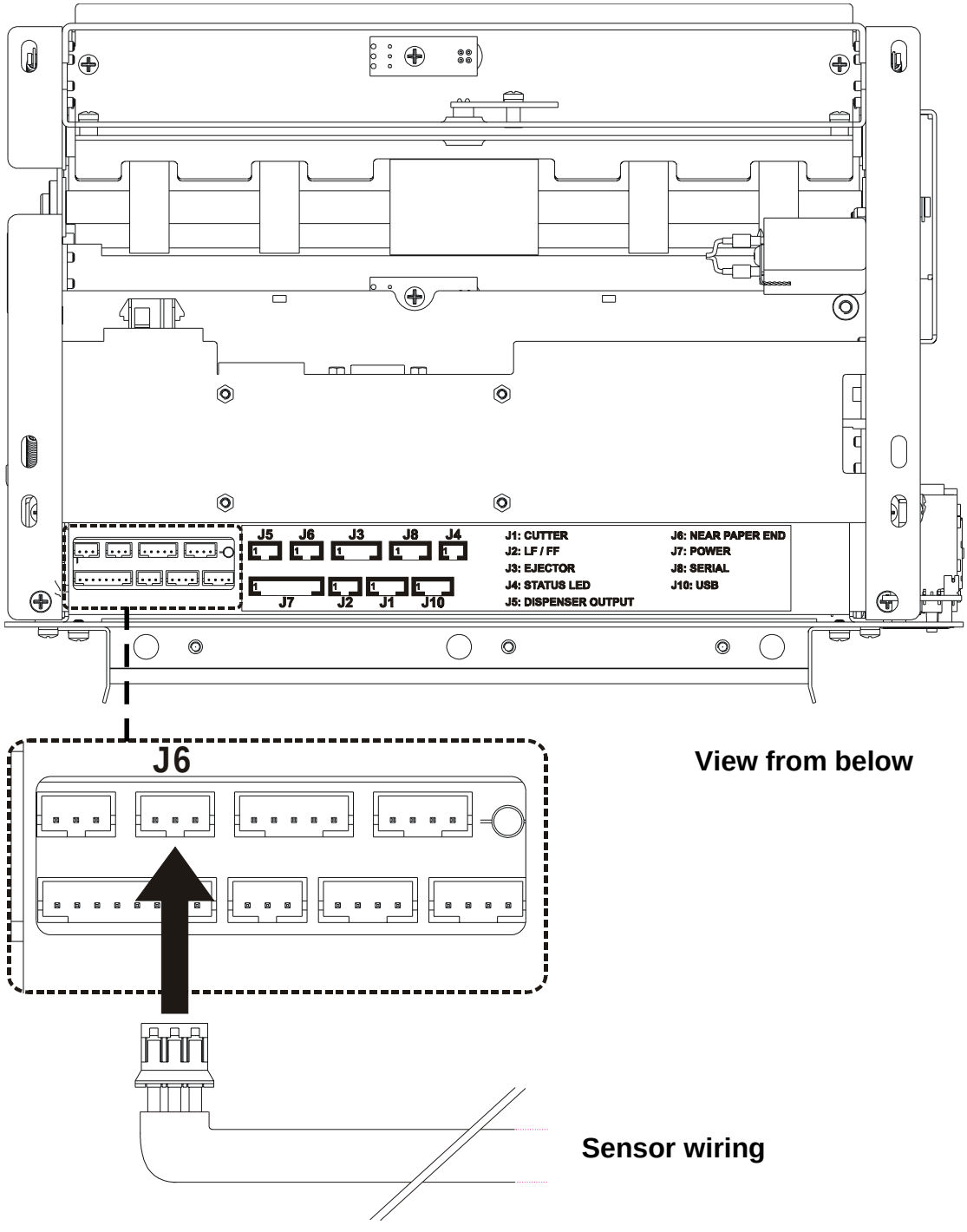
Assembly Instructions

1. Screw the sensor card (2) to the support (3) using the fastening screw (1) supplied with the kit as shown in fig. A-3.
2. Thread the sensor wiring connector into its respective slot on the front of the printer (4) as shown in fig. A-3.
3. To perform this operation, turn the printer upside-down and, lifting the black wiring protection adhesive, insert the wiring connector into printer connector J6 as shown in fig. A-4.
4. Attach the roll holder support by inserting 4 screws (not provided) into the holes (a) as shown in fig. A-3.
5. Insert the paper roll into the holder and set it into the support in the direction shown.
6. Insert the paper into the printer paper load opening and load the paper as described in section 1.4.1 of this manual.



(Fig.A.3)

(Fig.A.4)


J5
J6
J3
J8
J4
J7
J2
J1
J10
J1: CUTTER
J2: LF / FF
J3: EJECTOR
J4: STATUS LED
J5: DISPENSER OUTPUT
J6: NEAR PAPER END
J7: POWER
J8: SERIAL
J10: USB
J6
View from below
Sensor wiring

A.2 SUPPLIES

(Tab.A.3)

RCT210X140-25MM-70GR	**Thermal paper roll - 210mm**
RCT216X140-25MM-70GR	**Thermal paper roll - 216mm**