USER MANUAL

VKP80II-SX

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THE IMAGES USED IN THIS MANUAL ARE USED AS AN ILLUSTRATIVE EXAMPLES. THEY COULDN'T REPRODUCE THE DESCRIBED MODEL FAITHFULLY.

UNLESS OTHERWISE SPECIFIED, THE INFORMATION GIVEN IN THIS MANUAL ARE REFERRED TO ALL MODELS IN PRODUCTION AT THE ISSUE DATE OF THIS DOCUMENT.

GENERAL SAFETY INFORMATION
Your attention is drawn to the following actions that could compromise the characteristics of the product:
- Read and retain the instructions which follow.
- Follow all indications and instructions given on the device.
- Make sure that the surface on which the device rests is stable. If it is not, the device could fall, seriously damaging it.
- Make sure that the device rests on a hard (non-padded) surface and that there is sufficient ventilation.
- When positioning the device, make sure cables do not get damaged.
- Use the type of electrical power supply indicated on the device label. If uncertain, contact your dealer.
- Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
- Do not block the ventilation openings.
- Do not insert objects inside the device as this could cause short-circuiting or damage components that could jeopardize printer functioning.
- Do not carry out repairs on the device yourself, except for the normal maintenance operations given in the user manual.
- Make sure that there is an easily-accessible outlet with a capacity of no less than 10A closely to where the device is to be installed.
- Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
- Before any type of work is done on the machine, disconnect the power supply.
- 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.

GENERAL INSTRUCTIONS
CUSTOM S.p.A. declines all responsibility for accidents or damage to persons or property occurring as a result of tampering, structural or functional modifications, unsuitable or incorrect installations, environments not in keeping with the equipment's protection degree or with the required temperature and humidity conditions, failure to carry out maintenance and periodical inspections and poor repair work.

The format used for this manual improves use of natural resources reducing the quantity of necessary paper to print this copy.

MANUAL

For details on the commands,
refer to the manual with code **77200000001600**

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7 SPECIFICATION

8 CONSUMABLES

9 ACCESSORIES

10 ALIGNMENT

11 TECHNICAL SERVICE

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1 INTRODUCTION

1.1 Document structure

his document includes the following chapters:

1.2 Explanatory notes used in this manual

NOTE:	Gives important information or suggestions relative to the use of the device
ATTENTION:	Gives information that must be carefully followed to guard against damaging the device
DANGER:	Gives information that must be carefully followed to guard against operator injury or damage

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2 DESCRIPTION

2.1 Box content

Remove the device 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. Documentation (Short guide, installation instruction sheet)

2. Power supply cable

3. Device
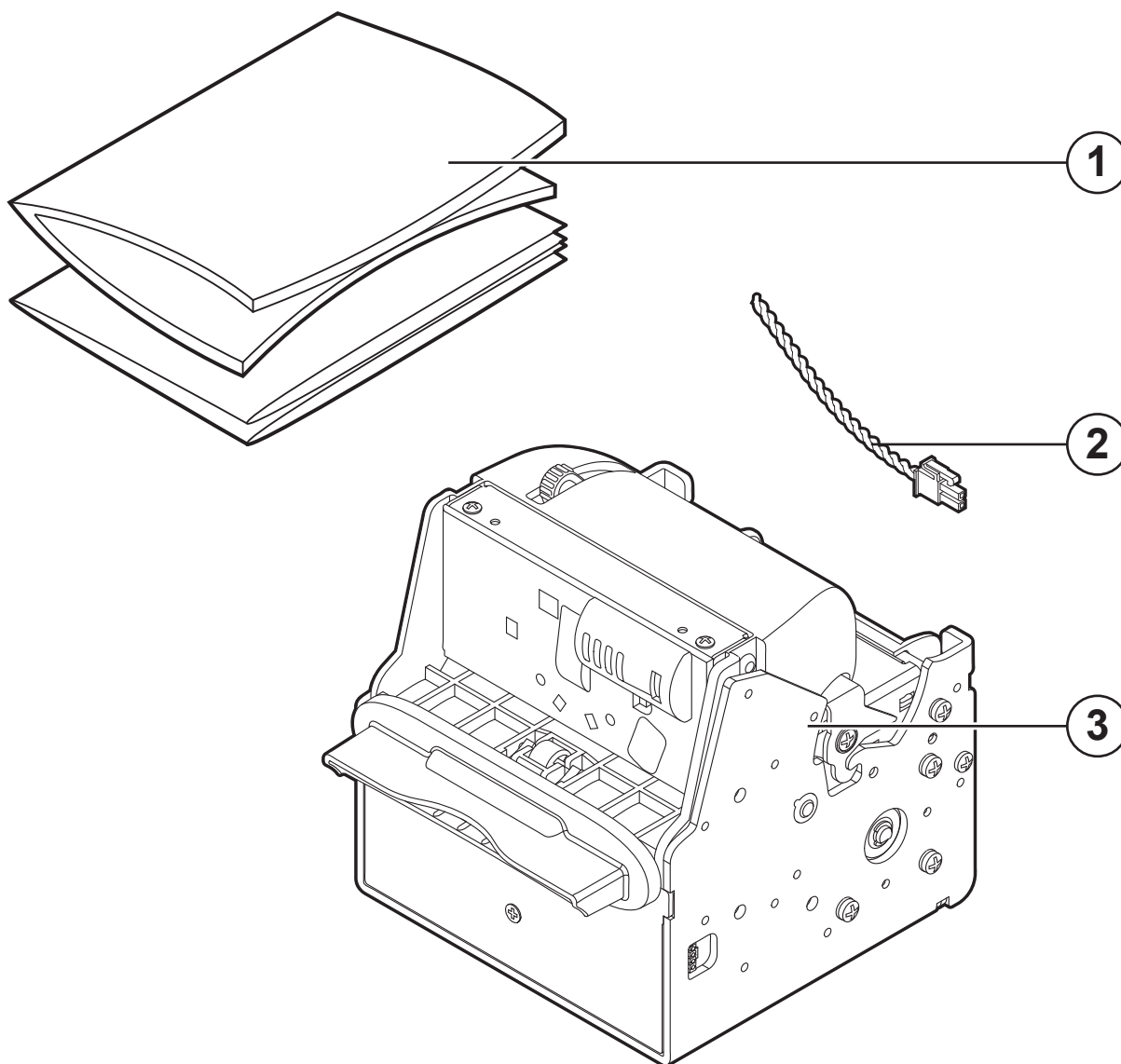
- Open the device packaging.

- Take out the device.

- Take out the rest of the content.

- Keep the box, trays and packing materials in the event the printer must be transported/shipped in the future.

2.2 Device components: external views

1. Opening lever
2. Cutter
3. Paper output
4. Status LED
5. LF LINE FEED key
6. FF FORM FEED key

7. Right cursor for paper input
8. Paper input
9. Left cursor for paper input
10. Power supply port
11. USB port
12. RS232 serial port

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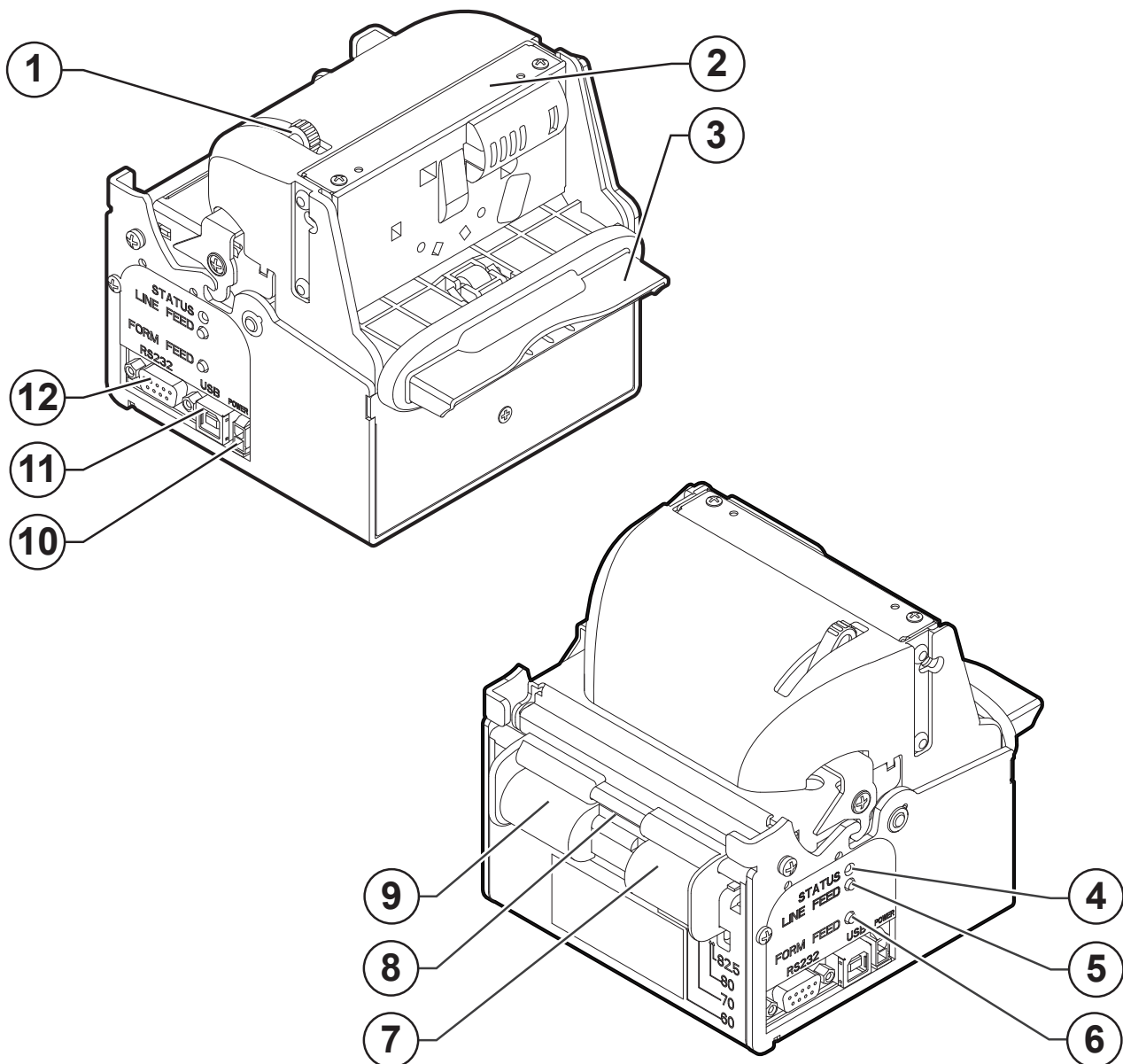
2.3 Device components: internal views

1. Printing head
2. Paper out presence sensor
3. Roller ejector
4. Sensor for paper in presence
5. Sensor for black mark
6. Cutter
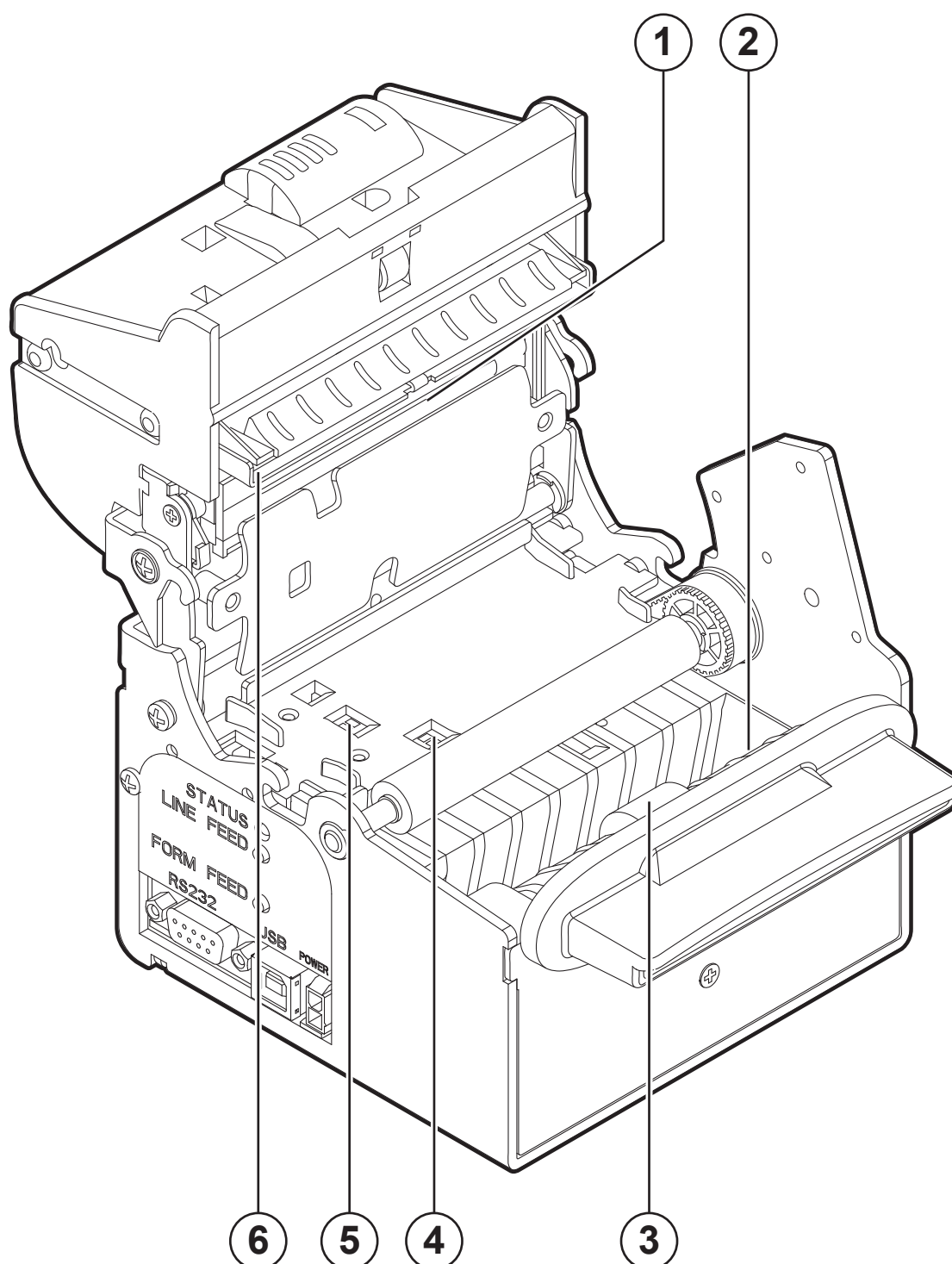
2.4   Product label

PC = Product code (14 digits)
SN = Serial number
HW = Hardware release

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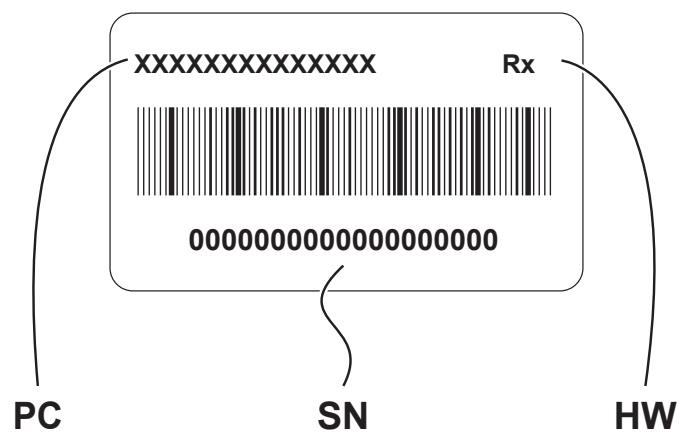
2.5 Key functions: power up

POWER UP

LF

FF

Hold down

*print the
SETUP report*

LF

FF

Hold down

*print the
FONT TEST*

LF

FF

Fast push

*skip the
SETUP MODE*

LF

FF

Fast push

**enter the
SETUP MODE**

LF

FF

Fast push

*next
parameter*

LF

FF

Fast push

*modify
selected parameter*
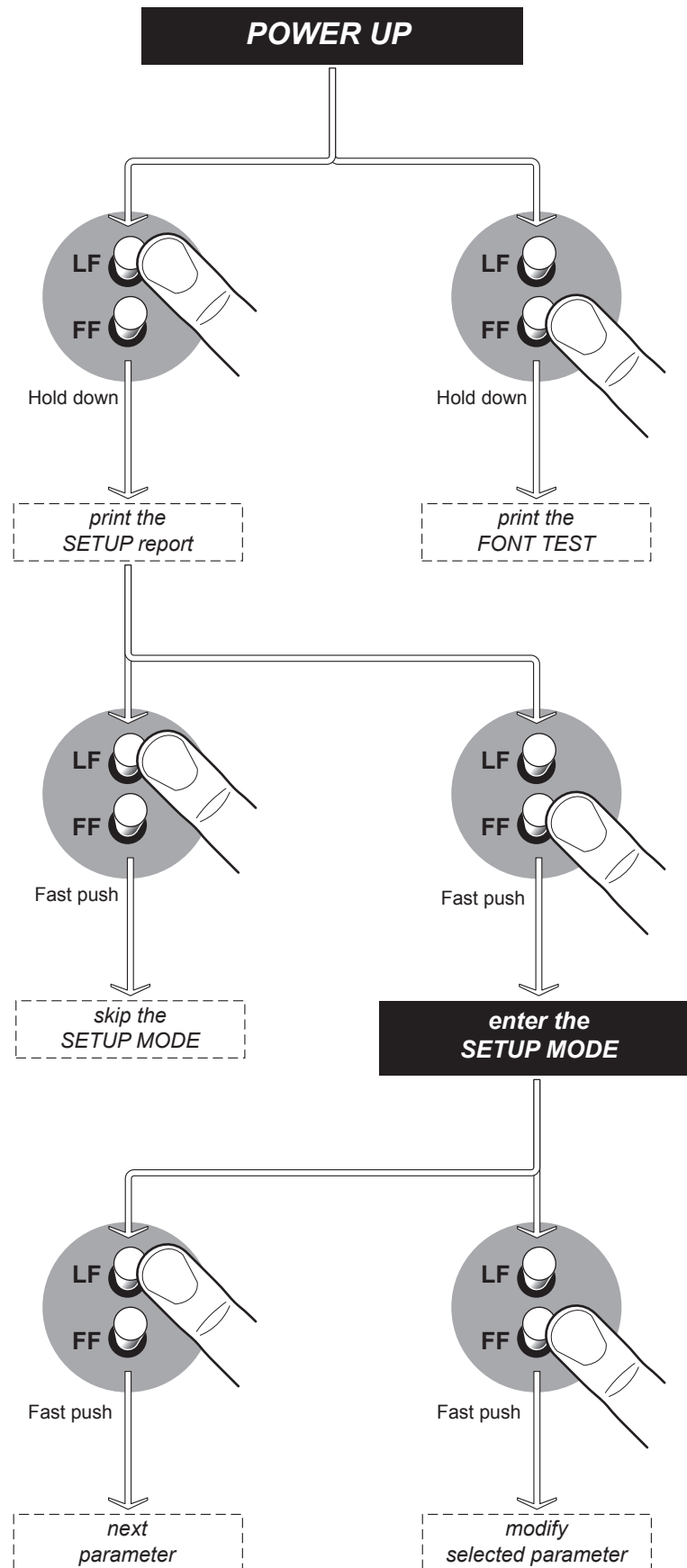
2.6   Key functions: standby

STANDBY

LF
FF

Fast push

Advance the paper
(manual insertion)

LF
FF

Fast push

Advance the paper
(preset length)

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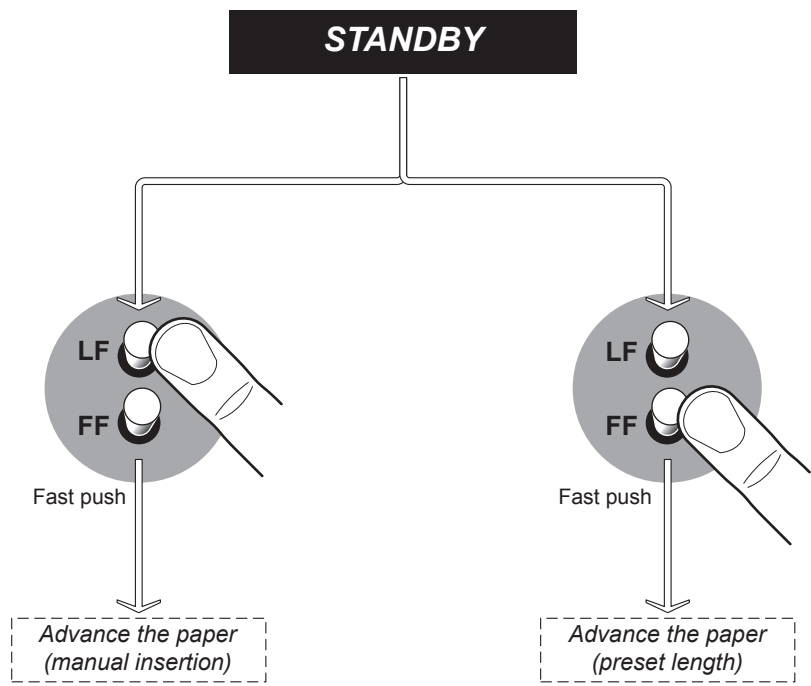
2.7 Status messages

The Status LED indicates hardware status of device. Given in the table below are the various LED signals and the corresponding device status.

STATUS LED			DESCRIPTION
-	○	*OFF*	DEVICE OFF
GREEN	⬤	*ON*	DEVICE ON: NO ERROR
GREEN COMMUNICATION STATUS	⬤	*x 1*	RECEIVE DATA
		x 2	RECEPTION ERROR (PARITY, FRAME ERROR, OVERRUN ERROR)
		x 3	COMMAND NOT RECOGNIZED
		x 4	COMMAND RECEPTION TIME OUT
YELLOW RECOVERABLE ERROR	⬤	*x 2*	HEADING OVER TEMPERATURE
		x 3	PAPER END
		x 4	PAPER JAM
		x 5	POWER SUPPLY VOLTAGE INCORRECT
		x 6	COVER OPEN
RED UNRECOVERABLE ERROR	⬤	*x 3*	RAM ERROR
		x 4	EXTERNAL FLASH ERROR
		x 5	CUTTER ERROR

3   INSTALLATION

3.1   Fastening

The device is provided with three fixing holes on the bottom of device (see following figure). To fasten the device on a panel, use three M4 screws.
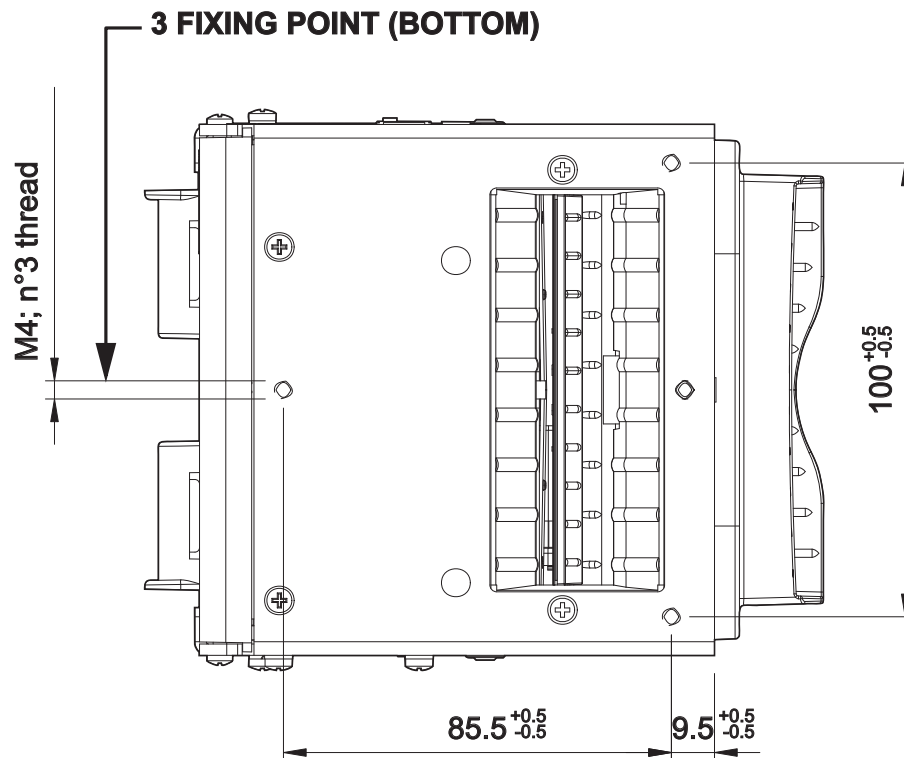
It's very important to consider the screws length not to damage the internal components placed near the fixing holes (see following figure).

Section E-E
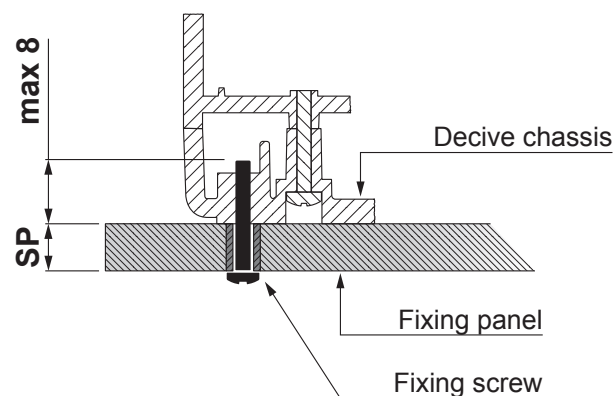
The screw length (L) will be calculated according to the thickness of the panel (Sp) on which the device is fixed, as follows:

$$L \leq 8mm + Sp$$

For example, if panel thickness is 10mm (Sp = 10mm), the maximum length for screws will be 18mm.

Additionally, the panel must provide an opening for loop of paper that meets the following measures (in millimetres):

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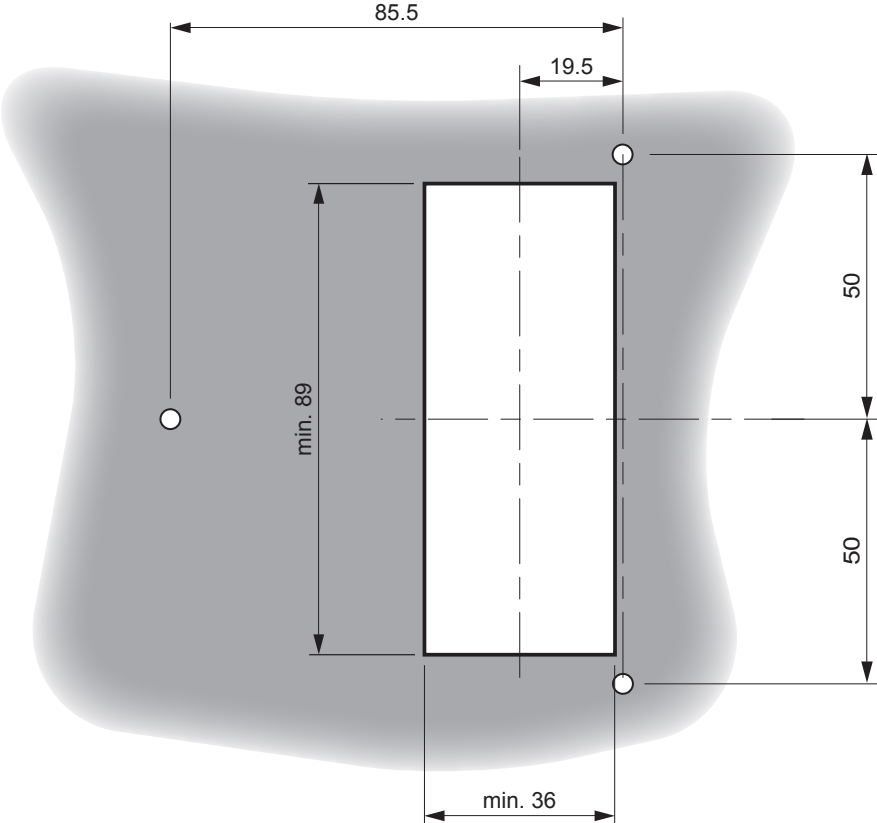
3.2 Collections

The following figures show the possible connections for the device.

Power supply

*Power supply cable
(supplied)*

PC
USB device

Standard USB cable

PC
serial device

Standard serial cable
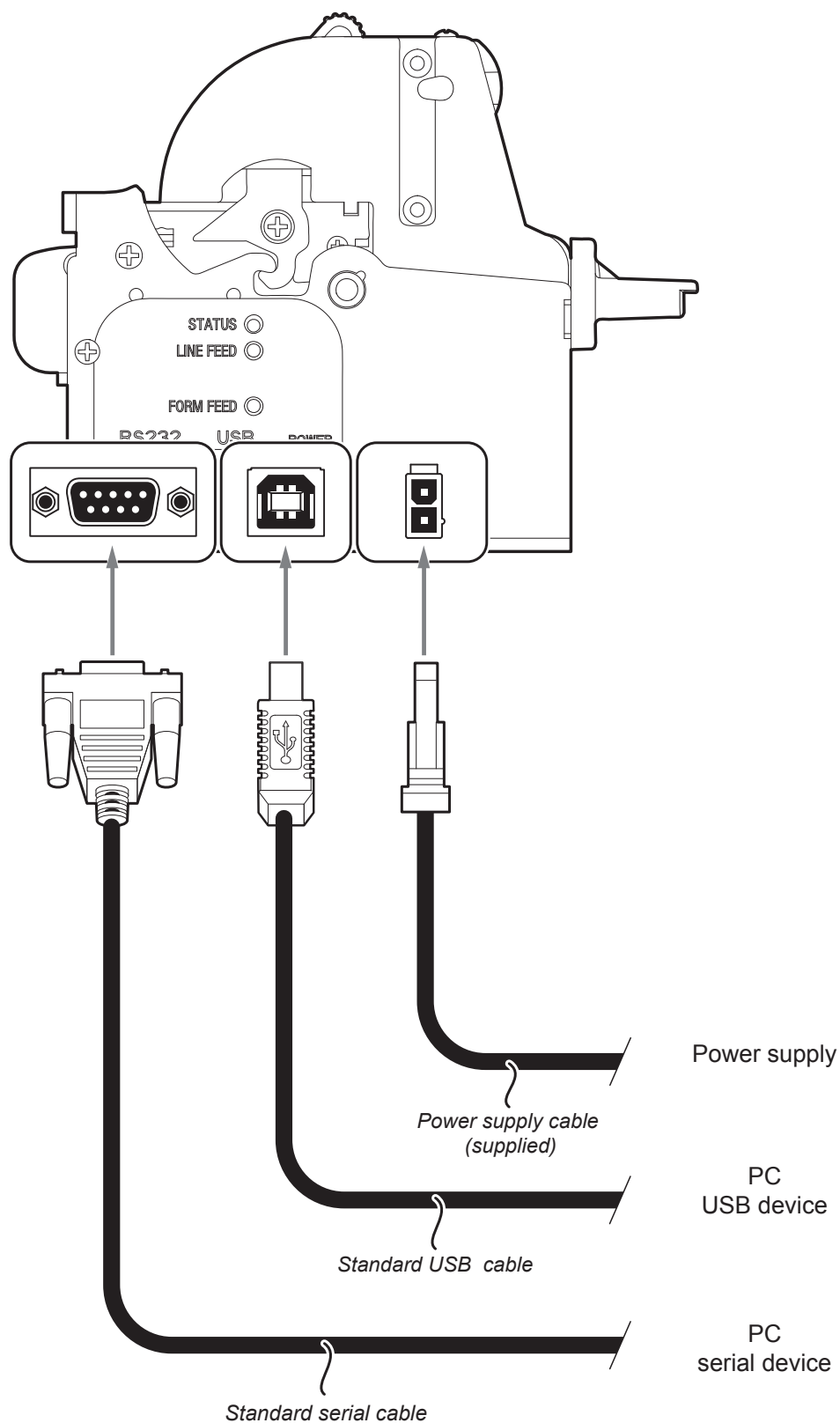
ATTENTION:
In some using conditions, we recommend the installation of a ferrite core on the power supply cable.

NOTE: If RS232 and USB connectors are inserted, communication port is USB.

3.3 Pinout

POWER SUPPLY
Male Molex connector series 5569 vertical (n° 39-30-1020)

J7	1	+24 Vdc
	2	GND

ATTENTION:
Respect power supply polarity.

NOTE *Power supply cable*
The following figure shows the connector pinout of the power supply cable for device:

Female Molex connector series 5557 (n.39-01-3022)

PIN	Cable color	Signal
1	Red	+24V
2	Black	GND
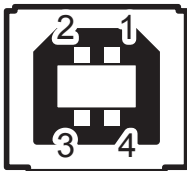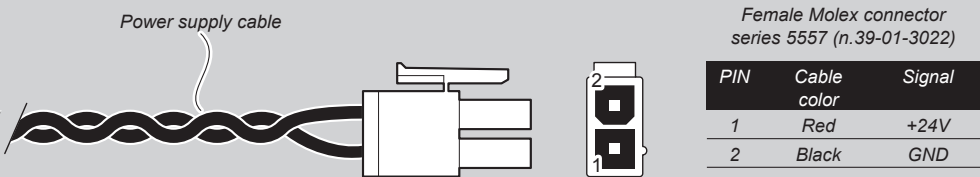
USB INTERFACE
Female USB type B connector

J12	1	USB-VBUS	(in)
	2	D -	(in/out)
	3	D +	(in/out)
	4	GND	
	SH1	SHIELD	
	SH2	SHIELD	

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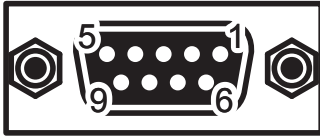
SERIAL INTERFACE
Female DB9 connector

J11	1	DTR	(out)	When "1", printer is fed
	2	TX	(out)	During transmission, oscillates between "0" and "1" depending on data
	3	RX	(in)	During reception, oscillates between "0" and "1" depending on data
	4	n.c.		
	5	GND		
	6	DTR	(out)	When "1", printer is fed
	7	n.c.		
	8	RTS-O	(out)	When "1", printer is ready to receive data
	9	+5VO		

NOTES
Given the presence of the RS232 standard, logic value "0" corresponds to a voltage level of between +3 Vdc and +15 Vdc and logic value "1" corresponds to a voltage level of between -3 Vdc and -15 Vdc.

DEVICE > PC connection
Use an RS232 serial cable to connect the printer to a personal computer. The following picture shows an example of connection between the device and a personal computer using a 9 pin serial connector.
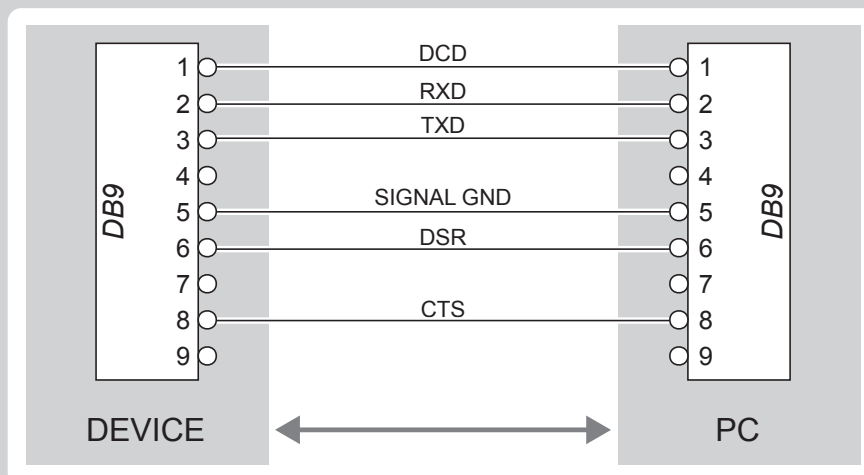
When use a serial cable, we recommend the installation of a ferrite core on the serial cable..

3.4 Driver and SDK

The drivers are available for the following operating system:

OPERATING SYSTEM	DESCRIPTION	INSTALLATION PROCEDURE
Windows	Driver for Windows XP	From the START menu, press Run and type-in the path where the SW was saved on your PC, then click OK. Follow the instructions that appear on the screen to install the driver.
	Driver for Windows VISTA (32/64bit)	
	Driver for Windows 7 (32/64bit)	
	Driver for Windows 8 (32/64bit)	
	Driver for Windows 8.1 (32/64bit)	
	Driver for Opos	
Linux		Follow the instruction get back on the README.TXT file. You can find it in the software package downloaded in advance.
Windows / Linux	Driver for JavaPOS	Extract the zipped folder to the destination path desired.
Android	Library for CustomAndroidAPI	Extract the zipped folder to the destination path desired. Follow the instructions present in the software package that you downloaded on how to install and use the library.
iOS	Library for CustomiOSApi	Extract the zipped folder to the destination path desired. Follow the instructions present in the software package that you downloaded on how to install and use the library.

NOTE:
All drivers can be found in the DOWNLOAD section of the web site www.custom.biz.

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3.5   Paper reduction guides kit (optional)

The printer includes a kit for the reduction of paper width up to 45mm. The kit includes the reductions for both the left paper guide and the right paper guide.

With both the guides assembled, do not go below 45mm wide paper: below this value, the sensor the sensor can not detect the paper presence.
To assemble the reductions refer to the following figure.

minimum paper width 45mm

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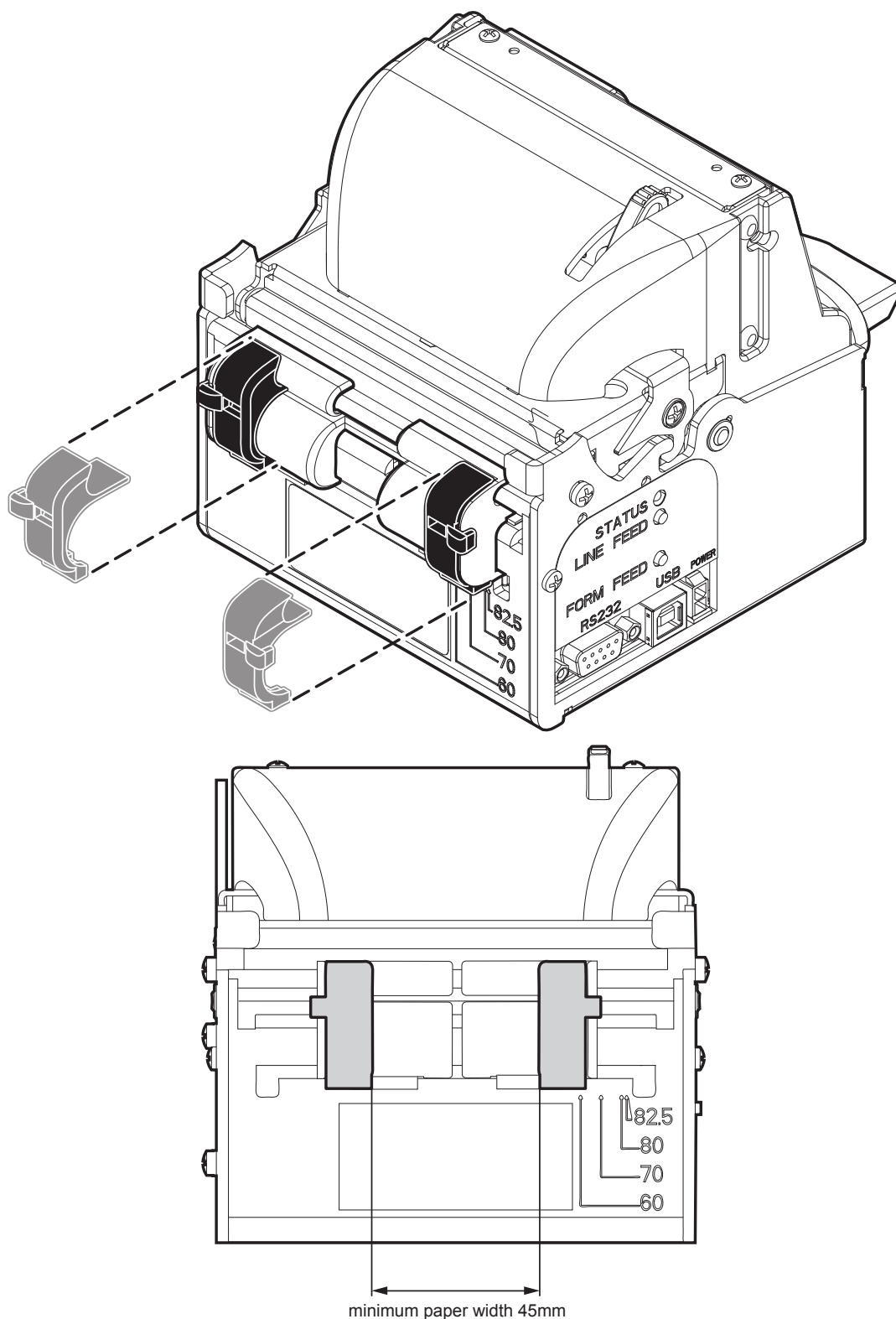
4 OPERATION

4.1 Adjusting paper width

Paper width may be adjusted from 60mm to 82.5mm using the right (Dx) and Left (Sx) slides located at the paper infeed opening.
Move the right and left slides to adjust the paper width (see following figure). Below the right slide there are four point of reference for paper width (60, 70, 80 and 82.5mm).
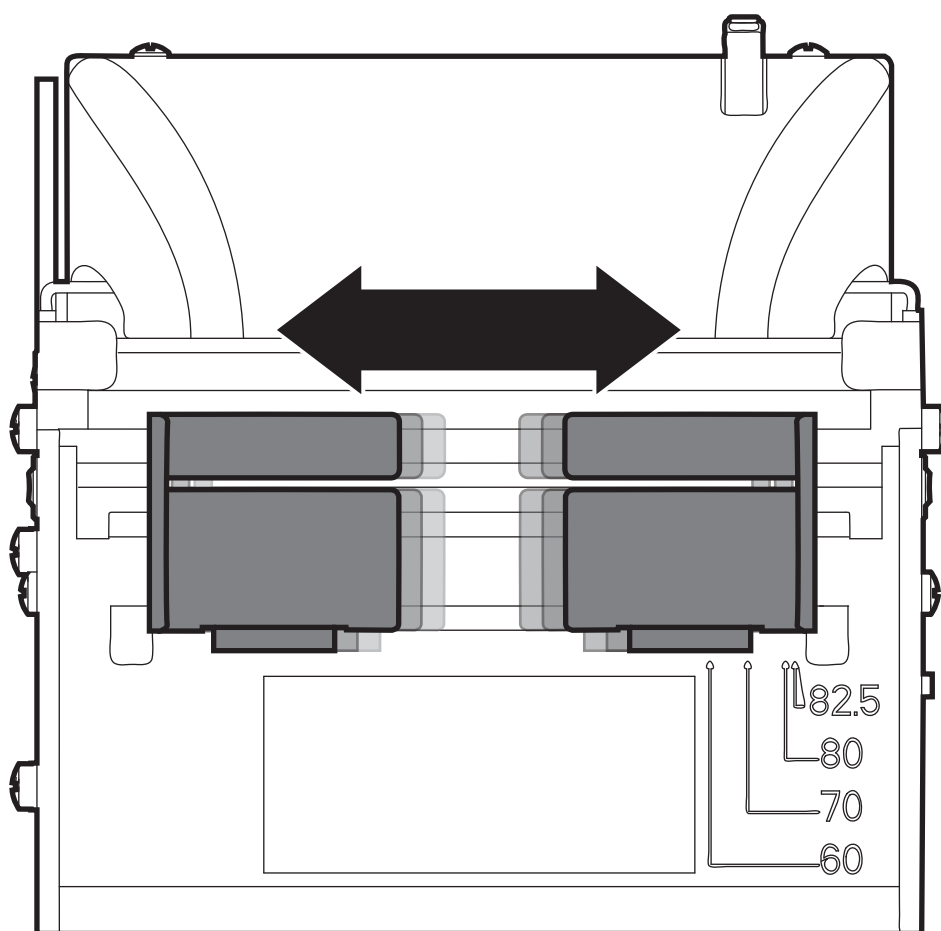
NOTE:
To use the paper reduction kit (optional) see previous paragraph.

4.2 Switch the device ON

1

Power supply cable

**EXTERNAL POWER SUPPLY
(OPTIONAL)**
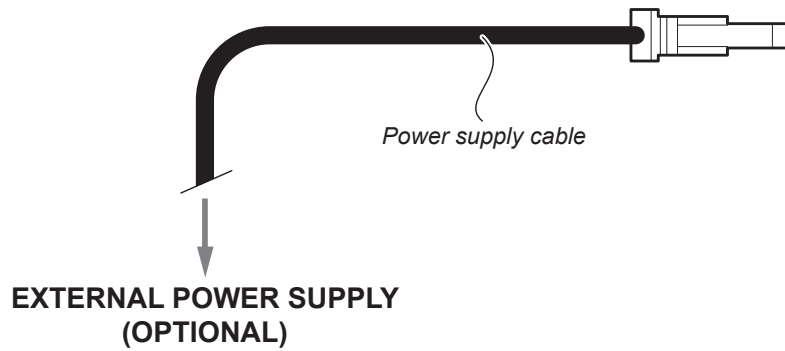
Connect the power supply cable
to an external power supply unit.

2

RoHS

IN DC 24V === 2A

STATUS
LINE FEED
FORM FEED
RS232   USB   POWER
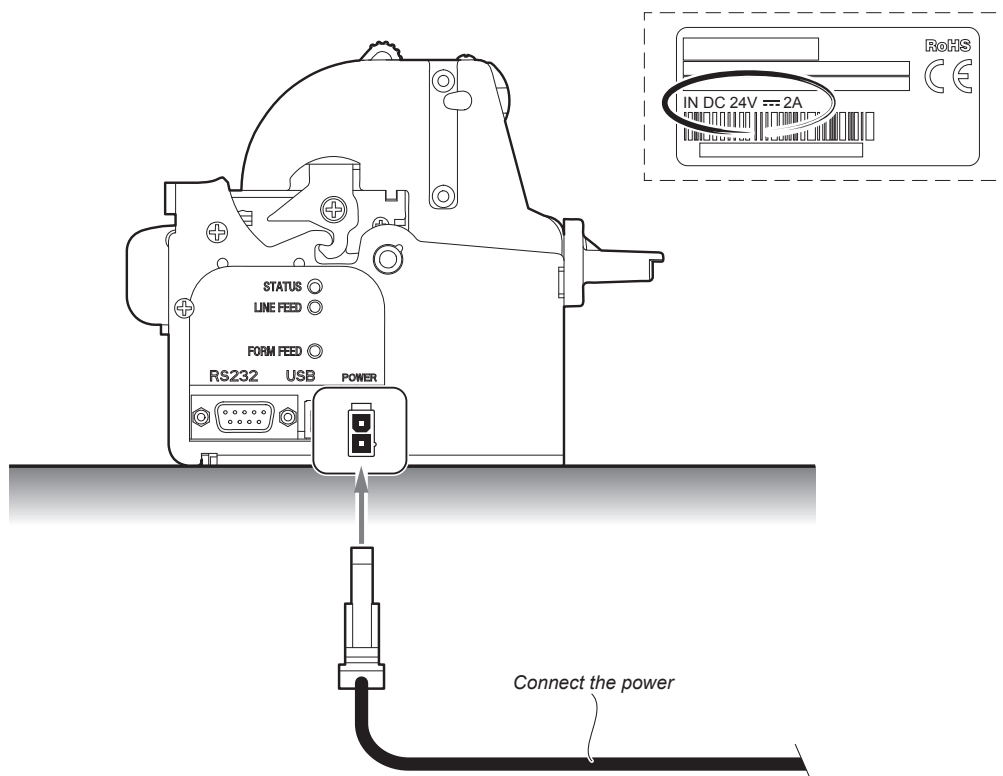
Connect the power

Connect the power supply cable to the device.
Use the type of electrical power supplyindicated on the label.The green status LED turn on and the devicev is ready.

4.3 Opening cover

1
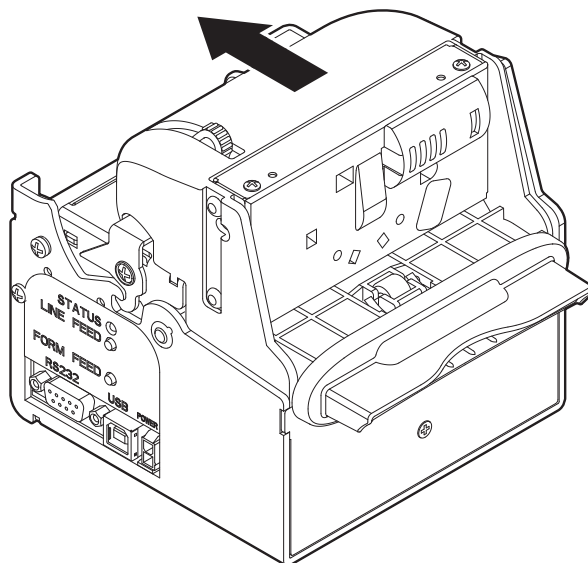
Push the release lever
in the direction shown in the figure.

2
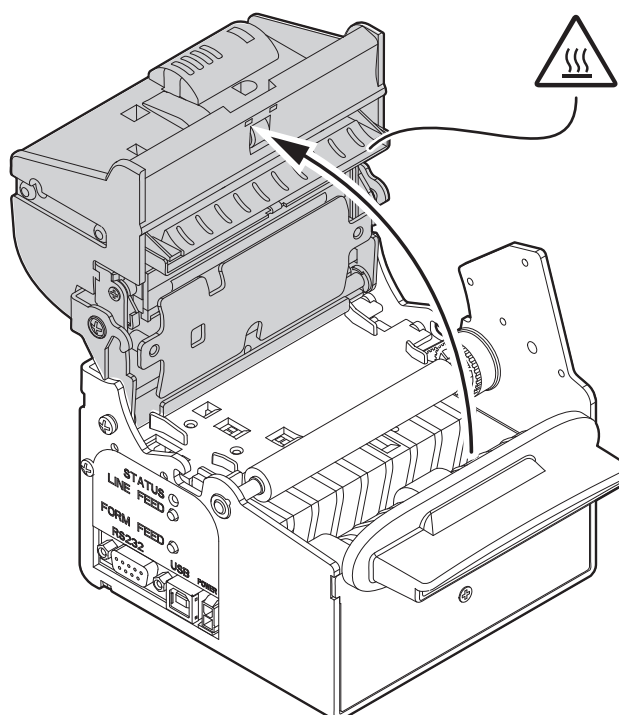
Open the
device cover.

4.4   Loading the paper roll

At every change of paper, check inside the device. To change the paper proceed as follows.

1
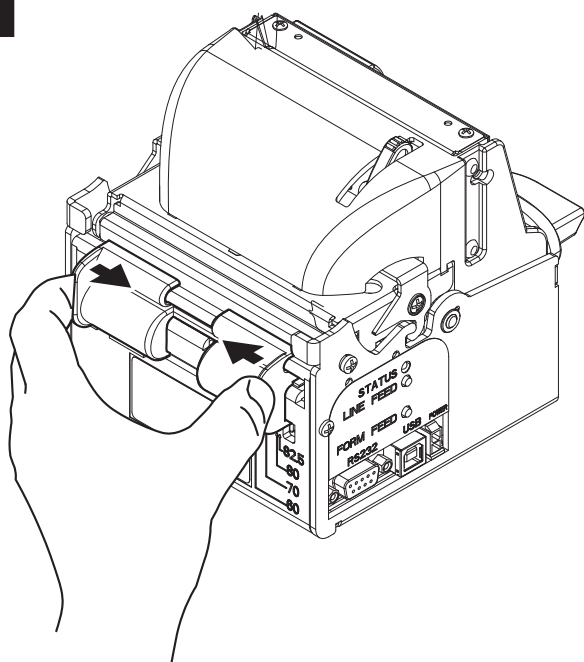
Adjust the paper width
(see previous paragraphs).

2
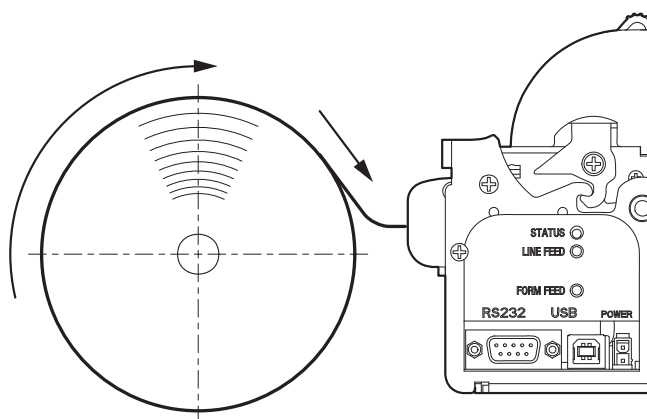
Insert the paper into the input mouth so that it unrolls
correctly. Be sure that the paper is
correctly positioned into paper guides.

3

VROOM
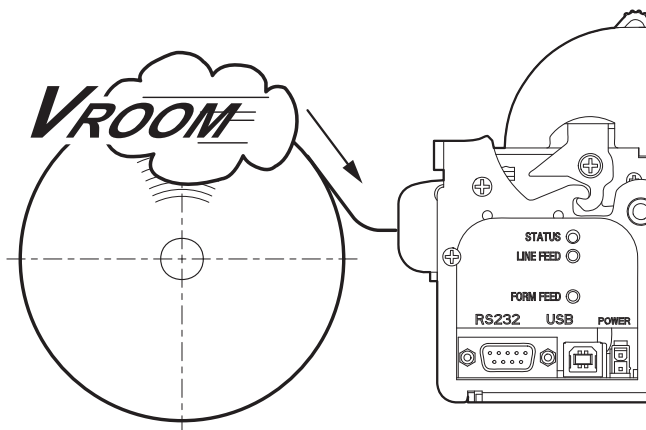
Wait until the paper is
automatically loaded.

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The following figure gives the limit positions of the paper roll related to the printer for a correct paper loading without a paper roll holder support.

The direction of the paper will always form a maximum angle of 90 ° or -90 ° with the insertion plane of paper inside the printer.
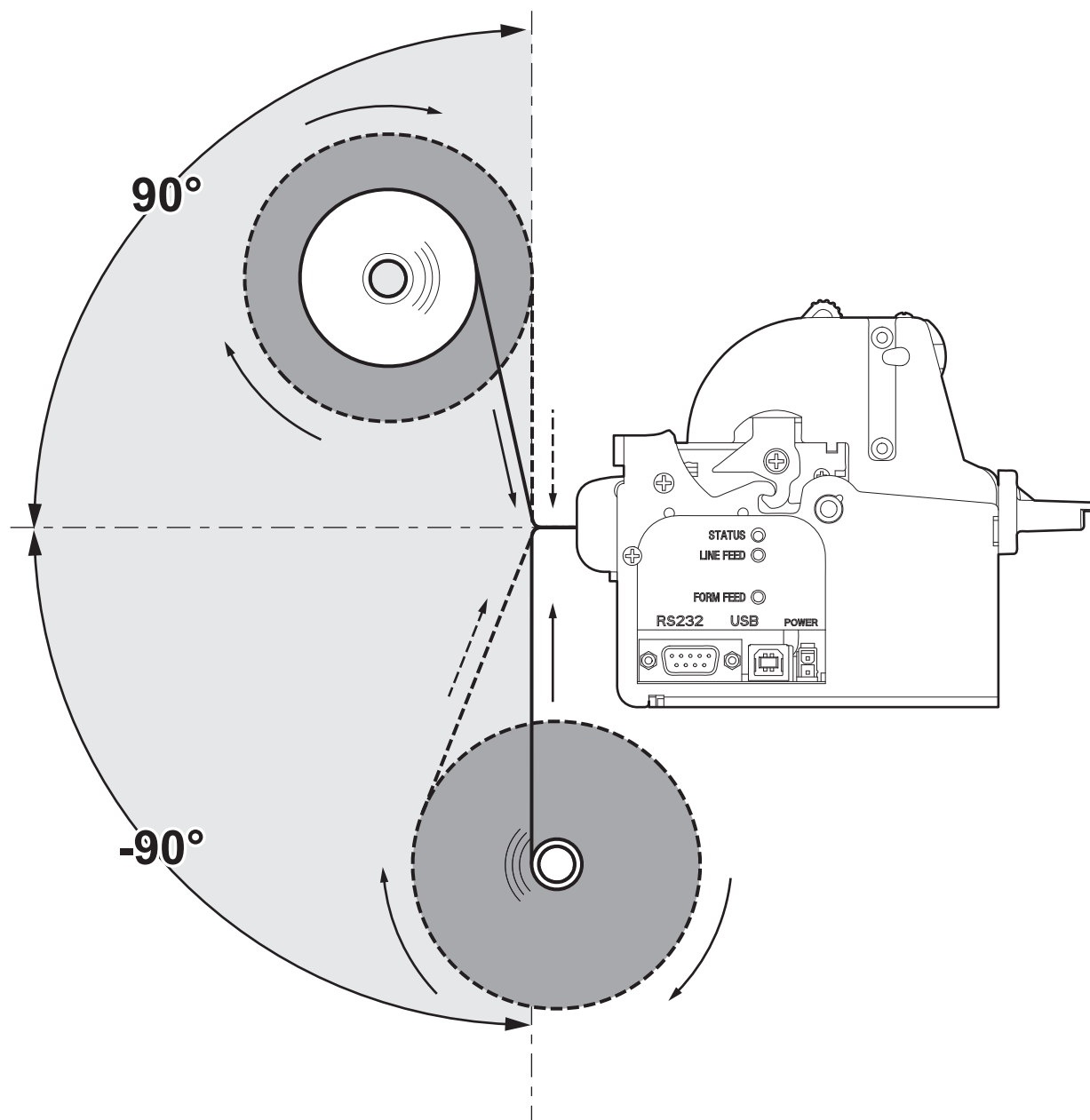
4.5 Issuing ticket

The device allows you to choose between different operating modes for the issuance of printed tickets.
The operating modes shown in the following images, depend on the settings of the configuration parameters and commands sent to the device.

NOTE: To enable this issuing mode, you need to correctly set the operation mode of the ejector with the command 0x1D 0x65 (see Commands Manual) and the setup parameter "Automatic Ejecting" (see chapter 5 of this manual).

 "PRESENT/EJECT" model

For the minimum and maximum length of the ticket refer to"Paper specifications". The ticket presentation will be performed in this way:

TICKET LENGTH	PRESENTATION
from 70mm to 80mm	10mm
from 80mm to 220mm	from 10mm to 30mm (set from command)

Printing head   Paper input

The device starts the ticket printing.

2

Ejector rollers

Cutter

Ejector
duct

The ticket advances ahead to the ejector and is caught between the ejector rollers. The printed part of ticket is collected into the ejection canal while the device continues printing.

3

Ejector rollers

Cutter

Ejection
duct

When printing ends, the device cuts the ticket printed.

4

Paper output   Ejector rollers

Ticket
presented

The device presents a portion of the ticket printed on the paper mouth.

5

The ticket is waiting on the paper mouth for a preset period of time.

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6

Paper output

Ejector rollers

Ticket ejector

The device directly ejects the ticket.

"PRESENT/RETRACT" model

NOTE: To enable this issuing mode, you need to correctly set the operation mode of the ejector with the command 0x1D 0x65 (see Commands Manual) and the setup parameter "Paper Retracting" (see chapter 5 of this manual).

1

For the minimum and maximum length of the ticket refer to"Paper specifications". The ticket presentation will be performed in this way:

TICKET LENGTH	PRESENTATION
from 70mm to 80mm	10mm
from 80mm to 220mm	from 10mm to 30mm (set from command)

Printing head   Paper input

The device starts the ticket printing.

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2

Ejector rollers   Cutter

Ejector
duct

The ticket advances ahead to the ejector and is caught between the ejector rollers. The printed part of ticket is collected into the ejection canal while the device continues printing.

3

Ejector rollers   Cutter

Ejection
duct

When printing ends, the device cuts the ticket printed.

4

Paper output   Ejector rollers

Ticket
presented

The device presents a portion of the ticket printed on the paper mouth.

5

The ticket is waiting on the paper mouth for a preset period of time.

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Ejector rollers

Ticket
withdrew

Ejector
duct

The device retracts and collects the ticket from the mouth paper

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5 CONFIGURATION

5.1 Configuration mode

To enter the configuration mode and print a SETUP report with the operating parameters of the device, proceed as follows.

1

LINE FEED KEY (hold down)

LF

FF

+
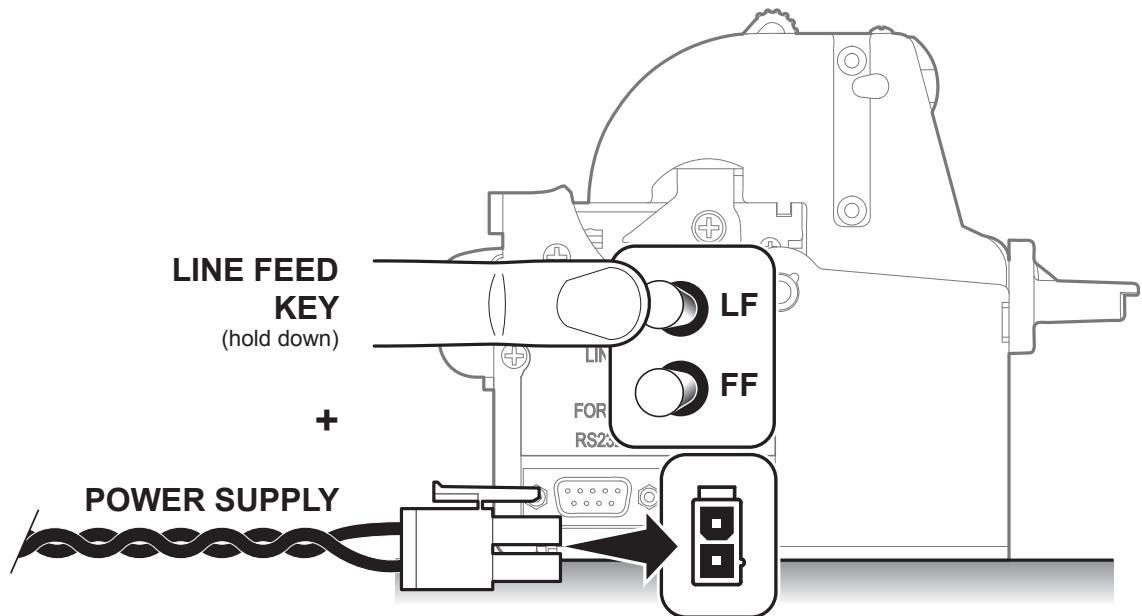
POWER SUPPLY

During power-up, hold down the LINE FEED key
while the wiring is plugged into the power supply connector of the printer.

2
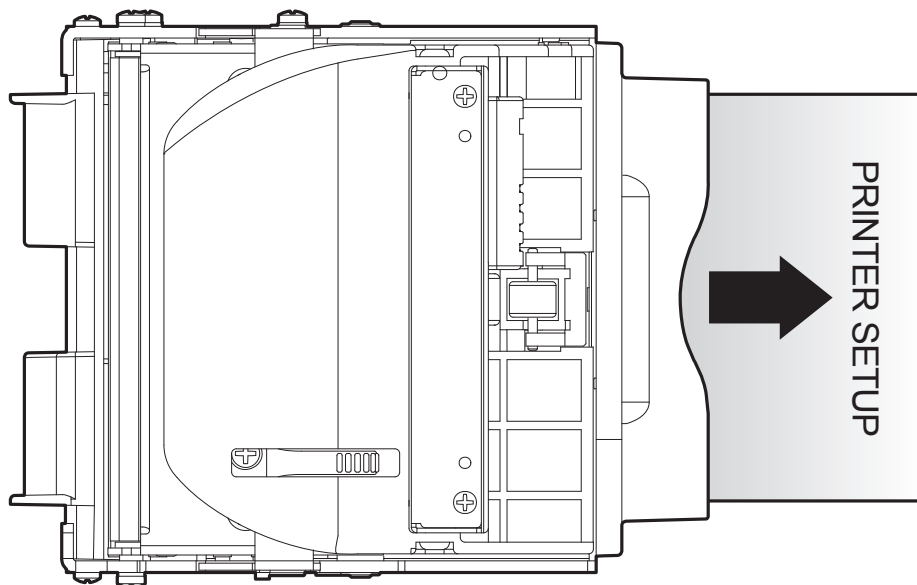
PRINTER SETUP

The device prints a SETUP report.

3

**FORM FEED
KEY**
(fast push)

LF

FF
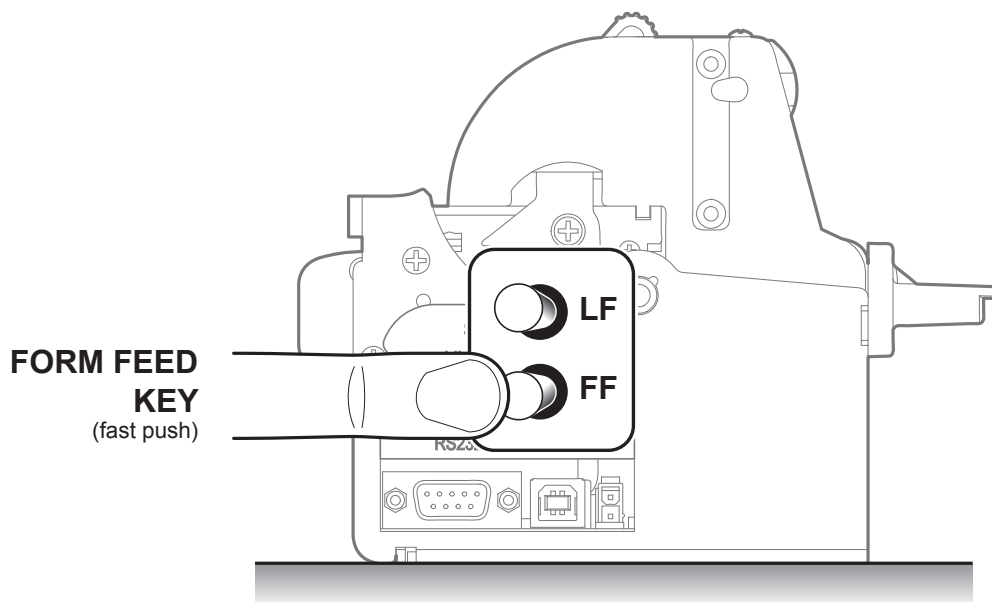
Press the FORM FEED key to enter the configuration mode.

4
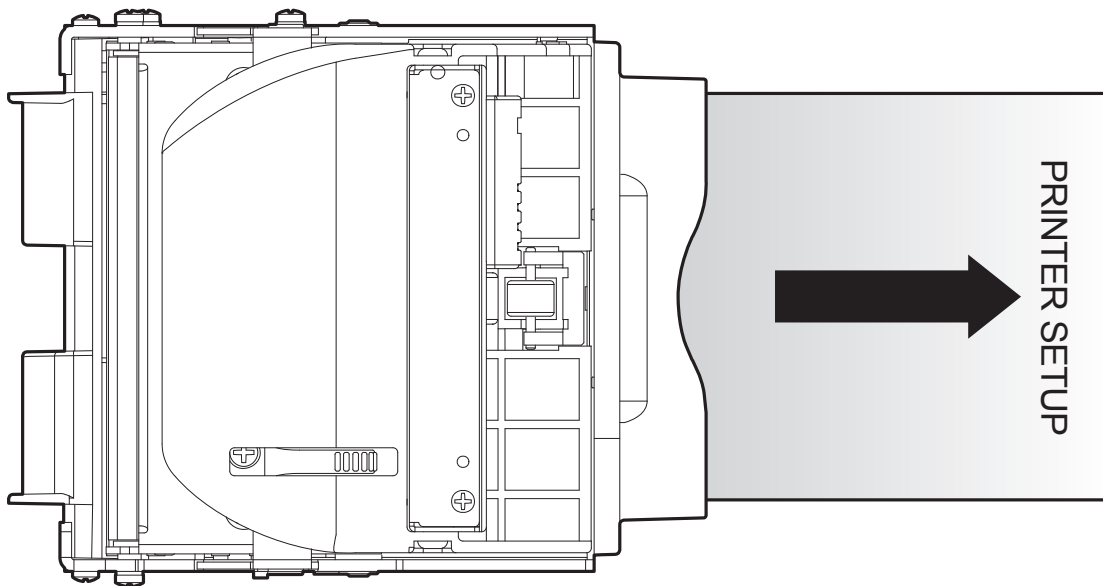
PRINTER SETUP

Proceed with the configuration by using the keys according the functions printed on paper.

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5.2 Setup report

The following figure shows the setup report of the device. The shown values for parameters are sample values; for the list and the description of device parameters see the following paragraphs.

PRINTER NAME and
FIRMWARE RELEASE {

```
              <device name>
SCODE. <code>              -   rel  1.00
FCODE. <code>              -   rel  1.00
```

PRINTER SETUP

PRINTER STATUS {

```
INTERFACE ...................................RS232
PROGRAM MEMORY TEST..........OK
DYNAMIC RAM TEST....................OK
EEPROM TEST.............................OK
CUTTER TEST...............................OK
HEAD VOLTAGE [V]          =  24.01
HEAD TEMPERATURE [°C]    =  23
PAPER PRINTED [cm]       =  4695
CUT COUNTER             =  263
RETRAC COUNTER          =  0
FPD                     =  0
POWER ON COUNTER        =  12
PRINTING HEAD TYPE      =  T80
```

PRINTER PARAMETERS {

RS232 Baud Rate ....:	**19200 bps**
RS232 Data Length ....:	**8 bits/chr**
RS232 Parity ....:	**None**
RS232 Handshaking ....:	**Xon/Xoff**
Busy Condition ....:	**RcFull**
USB Address Number ....:	**0**
Autofeed ....:	**CR Disabled**
Print Mode ....:	**Normal**
Chars / inch ....:	**A=15 B=20 cpi**
Speed / Quality..........................:	**Normal**
Paper Retracting ....:	**Disabled**
Notch Alignment ....:	**Enabled**
Notch Threshold ....:	**1.98V**
Notch Distance [mm] ....:	**+ 00**
Current ....:	**Normal**
Left Margin Offset ....:	**0**
Right Spacer. ....:	**None**
Font Type...................................:	**International**
Code Table [num] ....:	**00**
Print Density..............................:	**0%**

KEYS FUNCTIONS {

[FF] *key to enter setup*
[LF] *key to skip setup*

5.3   Printer status

The printer operating status is indicated in the configuration print-out in which, next to the name of the components displayed, the following information is given:

INTERFACE	*interface present*
PROGRAM MEMORY TEST	*OK appears if functioning and NOT OK if faulty*
DYNAMIC RAM TEST	*OK appears if functioning and NOT OK if faulty*
EEPROM TEST	*OK appears if functioning and NOT OK if faulty*
CUTTER TEST	*OK appears if functioning and NOT OK if faulty*
HEAD VOLTAGE	*voltage of the head*
HEAD TEMPERATURE	*temperature of the head*
PAPER PRINTED	*centimetres of paper printed*
CUT COUNTER	*number of cuts made*
RETRACT COUNTER	*number of "retracts" made*
FPD	*number presentations failed*
POWER ON COUNTER	*number of power-ups made*
PRINTING HEAD TYPE	*print head model*

5.4 Printer parameters

This printer allows the configuration of the parameters listed in the following table.
The parameters marked with the symbol ^{D} are the default values.
Settings remain active even after the printer has been turned off and they are stored in non-volatile memory.

RS232 BAUD RATE	*Communication speed of the serial interface:* *1200 9600 57600* *2400 19200 ^{D} 115200* *4800 38400*
RS232 DATA LENGTH	*Number of bit used for characters encoding:* *7 bits/char* *8 bits/char ^{D}*
RS232 PARITY	*Bit for the parity control of the serial interface:* *None ^{D} = parity bit omitted* *Even = even value for parity bit* *Odd = odd value for parity bit*
RS232 HANDSHAKING	*Handshaking:* *XON/XOFF ^{D} = software handshaking* *Hardware = hardware handshaking (CTS/RTS)*
BUSY CONDITION	*Activation mode for Busy signal:* *RXFull ^{D} = Busy signal is activated when the buffer is full* *OffLine/ RXFull = Busy signal is activated when the printer is both in OffLine status and the buffer is full* NOTE: Parameter valid only with serial interface; using this parameter, it is possible to select whether the Busy signal is activated when the printer is both in Off Line status and the buffer is full or only if the reception buffer is full.
USB ADDRESS NUMBER	Numerical address code for the univocal identification of the USB device (in case of more than a USB device connected with the same PC): 0 ^{D} 3 6 9 1 4 7 2 5 8 NOTE: This parameter is used to identify univocally the USB printer by a numerical address code, if on the PC are connected two printers that are the same models.
AUTOFEED	*Setting of the Carriage Return character:* *CR disabled ^{D} = Carriage Return disabled* *CR enabled = Carriage Return enabled*

PRINT MODE	*Printing mode:*
	Normal [D] = enables printing in normal writing way *Reverse = enables printing rotated 180 degrees*
CHARS / INCH	*Font selection:*
	A = 11 cpi, B = 15 cpi *A = 15 cpi, B = 20 cpi [D]* *A = 20 cpi, B = 15 cpi*
	NOTE: CPI = Characters Per Inch)
SPEED / QUALITY	*Setting of printing speed and printing quality:*
	High Quality *Normal [D]* *High Speed*
PAPER RETRACTING	*Setting of the "retract" function of the paper, with paper presence on ejector during power-up:*
	Disabled [D] = "retract" function disabled *Enabled = "retract" function enabled*
	NOTE**:** During power-up, if paper is present on the ejector and if this parameter is set to "Enabled", the printer will retract the paper. Otherwise, if the parameter is set to "Disabled", the printer will eject the paper.
NOTCH ALIGNMENT	*Alignment management:*
	Disabled [D] = the black mark alignment is not performed *Enabled = the black mark alignment is performed*
NOTCH THRESHOLD	*Threshold value (in percent) for the recognition of the presence of black mark by the black mark sensor:*
	0.33 1.32 2.31 *0.66 1.65 2.64* *0.99 1.98 [D] 2.97*
	NOTE: If the "Notch Alignment" parameter is disabled, this parameter is not printed.

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NOTCH DISTANCE	*"Notch Distance" is the minimum distance (in mm) between the upper edge of ticket and the black mark.* *The numeric value of the distance is made up with the following four parameters for the setting of three digits (two for the integer part of the number and one for the decimal part) and of the sign:*

	Setting the digit for tens:
NOTCH DISTANCE [mm x 10]	0 [D] 2 4 6 8 1 3 5 7 9

	Setting the digit for units:
NOTCH DISTANCE [mm x 1]	0 [D] 2 4 6 8 1 3 5 7 9

> NOTES:
> For example, to set the black mark distance to 15 mm, modify the parameters as follows:
>   Notch Distance [mm x 10] = 1
>   Notch Distance [mm x 1]   = 5
> If the "Notch Alignment" parameter is disabled, the parameters for the "Notch Distance" are not printed.
> In Setup mode, it is possible to set the black mark distance using a values range from 0mm to 39mm. The maximum distance accepted is 32mm, so even if values from 33mm to 39mm are inserted, the distance remains 32mm.

CURRENT	*Setting of the current consumption:* *Low* *High* *Normal [D]*

LEFT MARGIN OFFSET	*Reserved*

RIGHT SPACER	*Reserved*

FONT TYPE	*Setting of the Font Type:*

International [D]	=	*Enables the use of font tables to 256 characters*
Chinese GB18030	=	*Enables the use of the Chinese extended font GB18030-2000*
Korean PC949	=	*Enables the use of the Korean extended font PC949*

> NOTE: When the Chinese and Korean font is enabled, the selection of the character code table is suspended (parameter "CODE TABLE"). When the Chinese and Korean fonts is disabled, it returns the character code table previously in use (parameter "CODE TABLE").

CODE TABLE [num]	*Identifier number of the character code table to use.* *The numeric value of the identifier is made up with the following two parameters for the setting of two digits for the tens and the units:*				

		Setting the digit for tens:			
CODE TABLE [num x 10]		0 ^{D}	2	4	6	8
		1	3	5	7	9

		Setting the digit for units::			
CODE TABLE [num x 1]		0 ^{D}	2	4	6	8
		1	3	5	7	9

> NOTE:
> See the paragraph 7.7 to learn about the character tables corresponding to the identification numbers set with this parameter.
> The character tables set with this parameter are the same set with the command 0x1B 0x74 (refer to the Commands Manual of the device).

PRINT DENSITY	*Adjusting the printing density:* *-25%* *-12%* *0 ^{D}* *+12%* *+25%*

5.5 Hexadecimal dump

This function is used for the diagnosis of the characters received from the communications port. Characters are printed as hexadecimal code and the corresponding ASCII code (see below). Each line is preceded by a counter in hexadecimal that indicates the number of bytes received.

During the startup, if you hold down the FEED key, the printer enters the self-test routine and print the setup report.
The printer remains in standby until a key is pressed or characters are received through the communication port (Hexadecimal Dump mode). For each character sent, the ticket shows the hexadecimal value and the ASCII codes (if the characters are underlined, the receive buffer is full). Shown below is an example of a Hexadecimal Dump:

```
            HEXADECIMAL DUMP

31  32  33  34  35  ...        12345 ...
39  30  31  32  33  ...        90123 ...
37  38  39  75  69  ...        789ui ...
68  6B  6A  73  64  ...        hkjsd ...
73  64  66  6B  6A  ...        sdfkj ...
66  73  64  66  6B  ...        fsdfk ...
65  69  6F  79  75  ...        eioyu ...
6F  72  69  75  77  ...        oriuw ...
6F  75  77  65  72  ...        ouwer ...
77  65  72  69  6F  ...        werio ...
72  69  6F  75  77  ...        riouw ...
6B  6C  73  64  66  ...        klsdf ...
64  66  6B  73  64  ...        dfksd ...
73  64  66  6B  6A  ...        sdfkj ...
66  6B  F2  6A  73  ...        fk≥j ...
6A  6B  6C  68             jklh
```

6   MAINTENANCE

6.1   Planning of cleaning operations

The regular cleaning of the device keeps the print quality and extends its life. The following table shows the recommended planning for the cleaning operations.

EVERY PAPER CHANGE	
Printhead	Use isopropyl alcohol
Rollers	Use isopropyl alcohol
EVERY 5 PAPER CHANGES	
Cutter	Use compressed air
Cutter compartment	Use compressed air or tweezers
Paper path	Use compressed air or tweezers
Sensors	Use compressed air
EVERY 6 MONTHS OR AS NEEDED	
Printer case	Use compressed air or a soft cloth

For specific procedures, see the following pages.
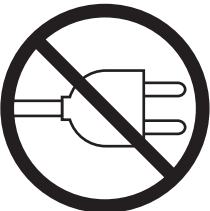
NOTE:
If you use the device in dusty environments, you must reduce the intervals between the cleaning operations.

6.2 Cleaning

For periodic cleaning of the device, see the instructions below

Sensors

1

Disconnect the power supply cable and open the device cover (see par. 4.3)

2

COMPRESSED AIR

COMPRESSED AIR

ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the device.

ON   Alcohol, solvent

Clean the device sensors
by using compressed air.

Paper path

1

Disconnect the power supply cable and open the device cover (see par. 4.3)

2

STATUS
LINE FEED
FORM FEED
RS232   USB

COMPRESSED AIR

COMPRESSED AIR

ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the device.

ON   Alcohol, solvent

Remove any scraps of paper and the accumulated
paper dust on the paper mouths, on the printing roller,
on the cutter and on the area around the sensors.

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Printhead

1
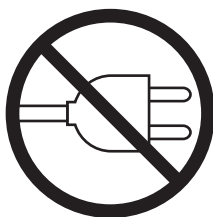
Disconnect the power supply cable and
open the device cover (see par. 4.3)
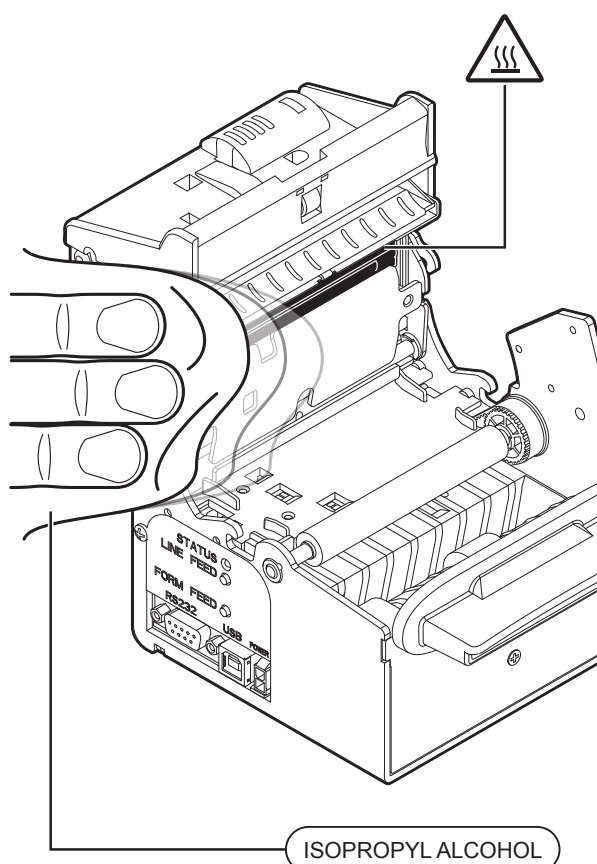
2

ISOPROPYL ALCOHOL

ATTENTION:
Do not use solvents, or hard brushes.
Do not let water or other liquids get inside the machine.

Clean the printing head by using
a non-abrasive cloth moistened with isopropyl

Rollers

1
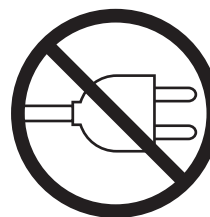
Disconnect the power supply cable and open
the frontal cover of the device (see par. 4.3)

2
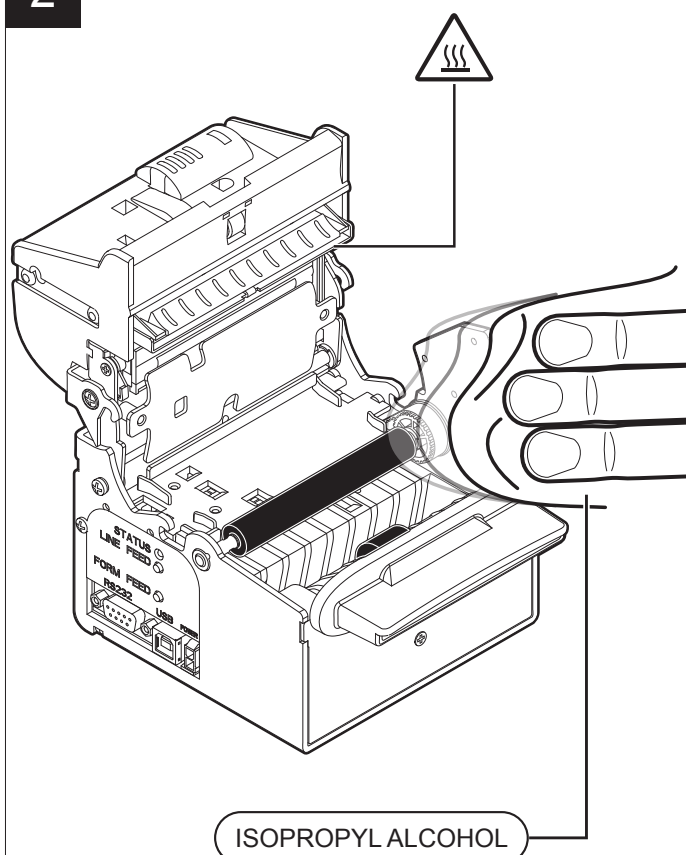
ISOPROPYL ALCOHOL

ATTENTION:
Do not use solvents, or hard brushes.
Do not let water or other liquids get inside the machine.

Clean the dragging roller
and the ejector roller by using
a non-abrasive cloth moistened with isopropyl.

Case
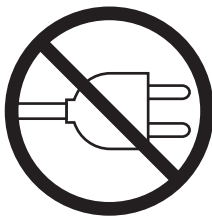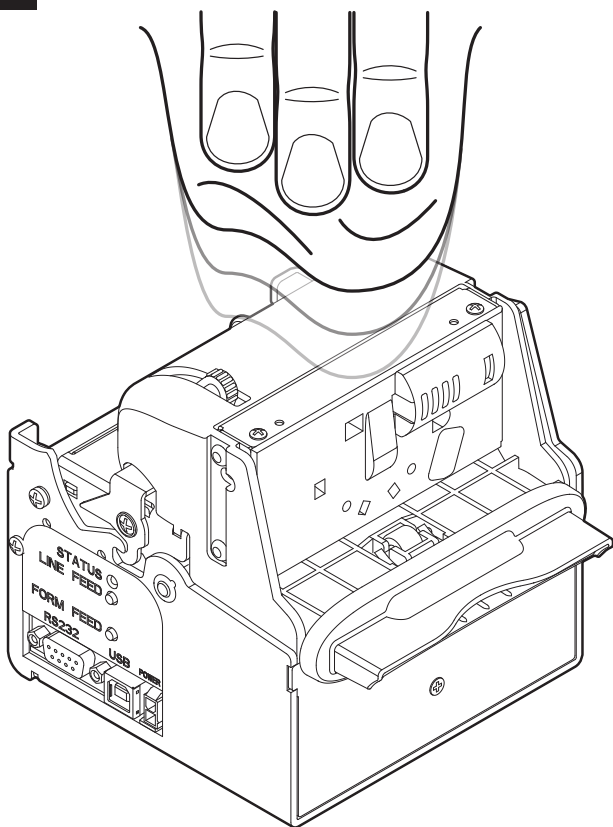
Cutter
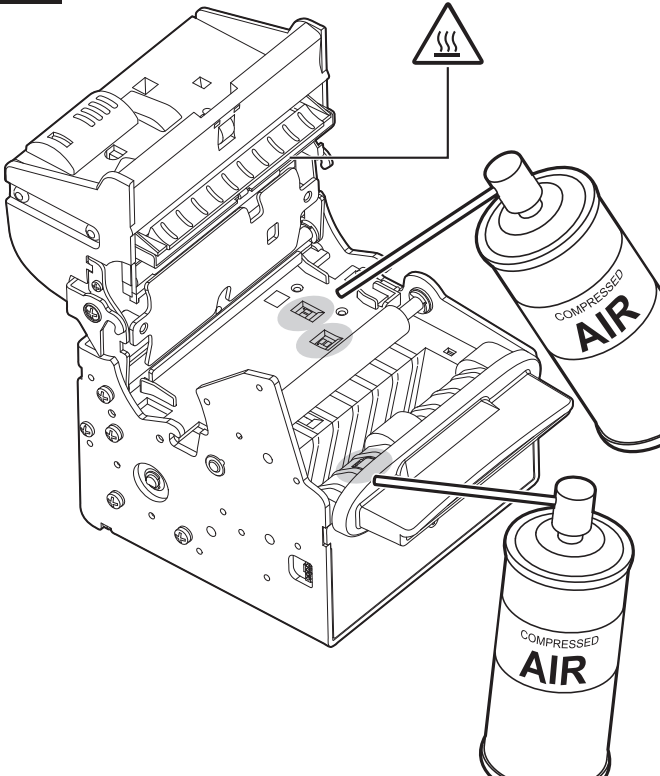
1

Disconnect the
power supply cable
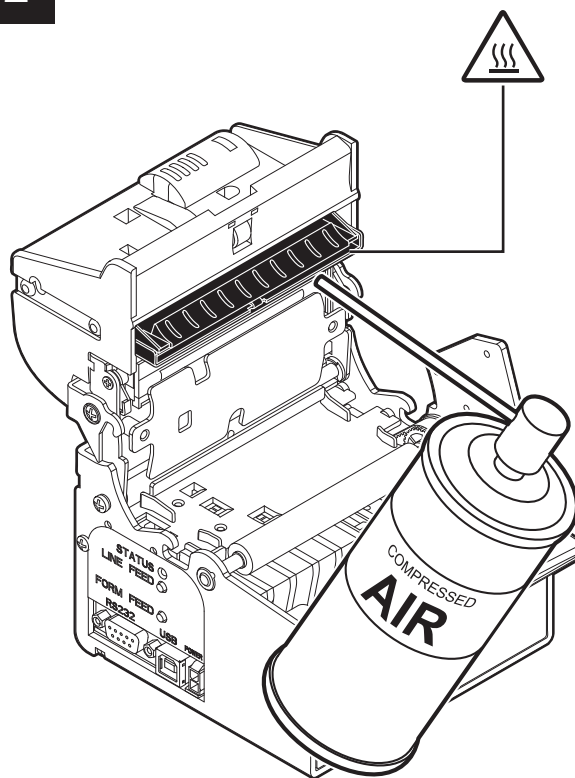
1

Disconnect the power supply cable and
open the device cover (see par. 4.3)

2

ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the device.

To clean the device,
use compressed air or a soft cloth

2

ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the device.
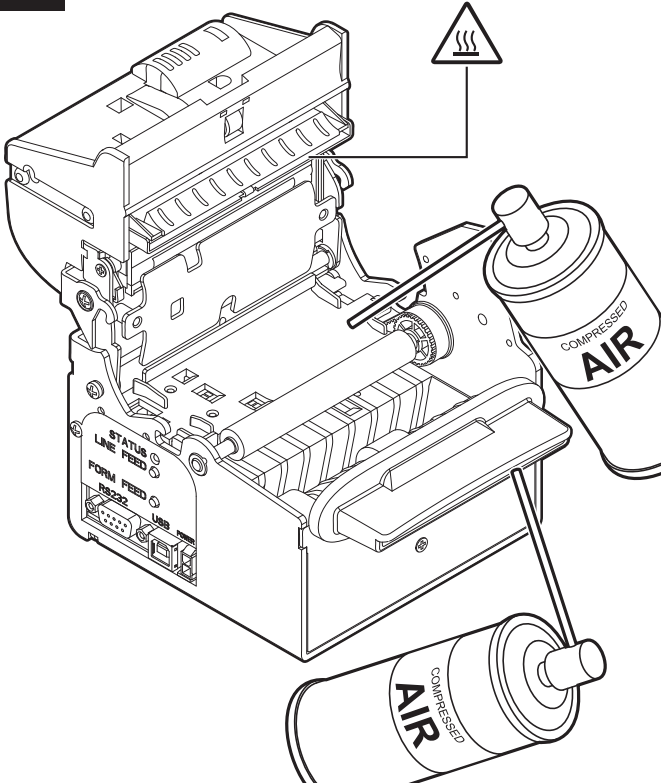
Clean the cutter by
using compressed air

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6.3 Upgrade firmware

WARNING: During communication between PC and device for the firmware update it is strictly forbidden to disconnect the communication cable or to remove the power supply of the devices not to endanger the proper functioning of the machine.

NOTES:
The latest firmware of the device is available in the download area of the web site www.custom.biz

Install on the PC used for printer upgrading the UPG-CEPRN software available in the download area of the web site www.custom.biz.

Update via serial interface

Proceed as follows:

1. Write down the product code (14 digits) printed on the product label (see par.2.4).
2. Go to the web site www.custom.biz and download the appropriate firmware release from the DOWNLOAD area.
3. Print the SETUP report (see chapter 5).
4. Switch OFF the device.
5. Connect the device to the PC using a serial cable (see paragraph 3.2).
6. Switch ON the device.
7. Launch the software UPGCEPRN.
8. Select the update file .PSW location:

Firmware rel.:	None	Printer type:	None
Hardware rel.:	None	Select port:	None
PSW Version :	None		
File [*.cfg] :	None		

File (*.psw):

[Select (*.psw):]   [Begin upgrade]

Data flush status...

Upgrade status:
No upgrade thread active...

Port config:
Communication port not init
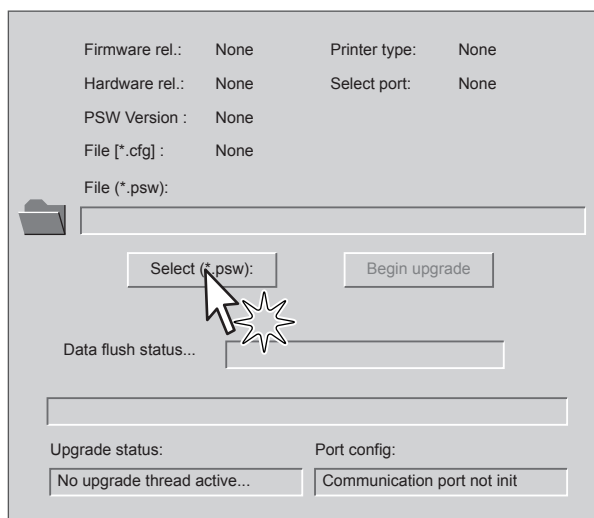
9. Select the serial communication port (ex. COM1):

Select the system communication port

Available port
COM1
COM2
COM3
COM4
COM5
COM6

[OK]
[Cancel]

Selected port
COM1

Firmwar
Hardwa
PSW Ve
File [*.cf
File (*.psw):
C:\<device>.PSW

[Select (*.psw):]   [Begin upgrade]

Data flush status...

Upgrade status:
No upgrade thread active...

Port config:
Communication port not init

10. Detecting and setting of the parameters necessary for serial communication are performed automatically and then updating begins.
11. After a few minutes a message on the screen warns that the update is completed.

Upgrade OK
⚠ Upgrade succesfully completed.
[OK]
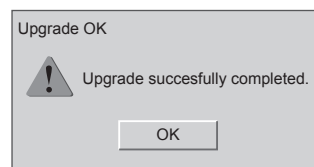
12. Print a new SETUP report to verify the new firmware release (see chapter 5).

Update via USB interface

ATTENTION:
Only during the firmware update, the connection between PC and device must be direct, without the use of HUB device.

Only during the firmware update, do not connect or disconnect other USB devices.

NOTE: For communication via USB you must install on PC the deice driver available in the DOWNLOAD area of the web site www.custom.biz.

Proceed as follows:

1. Write down the product code (14 digits) printed on the product label (see par.2.4).
2. Go to the web site www.custom.biz and download the appropriate firmware release from the DOWNLOAD area.
3. Print the SETUP report (see chapter 5).
4. Switch OFF the device.
5. Connect the device to the PC using a USB cable (see paragraph 3.2).
6. Switch ON the device.
7. Launch the software UPGCEPRN.
8. Select the update file .PSW location:

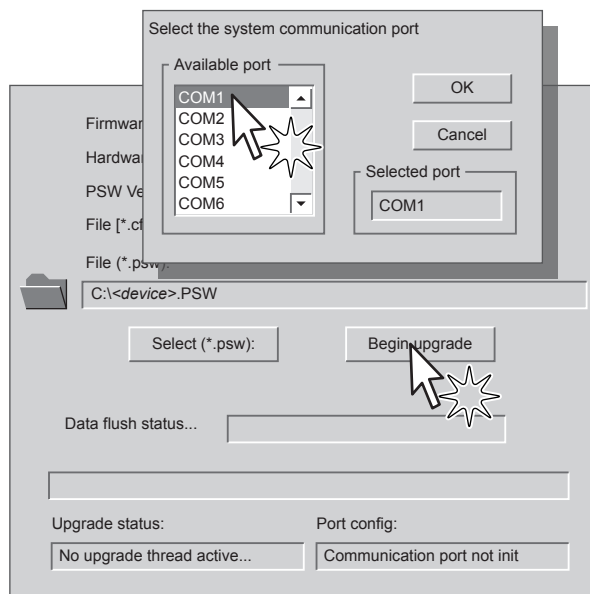| Firmware rel.: | None | Printer type: | None |
Hardware rel.:	None	Select port:	None
PSW Version :	None		
File [*.cfg] :	None		

File (*.psw):

Select (*.psw):   Begin upgrade

Data flush status...

Upgrade status: Port config:
No upgrade thread active...   Communication port not init

9. Select item USB and then select the USB device among those proposed (e.g. device1):
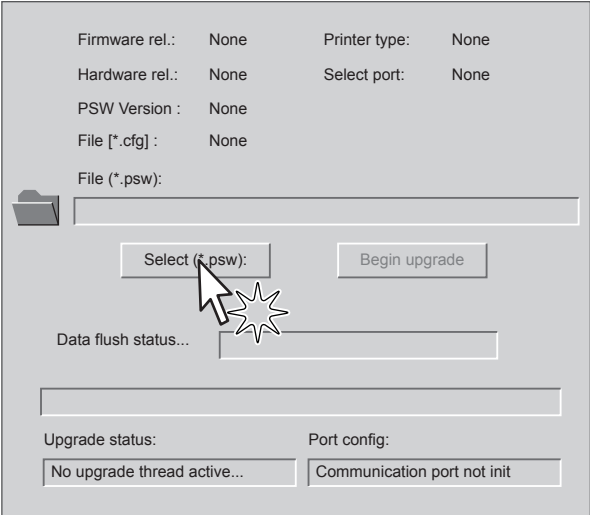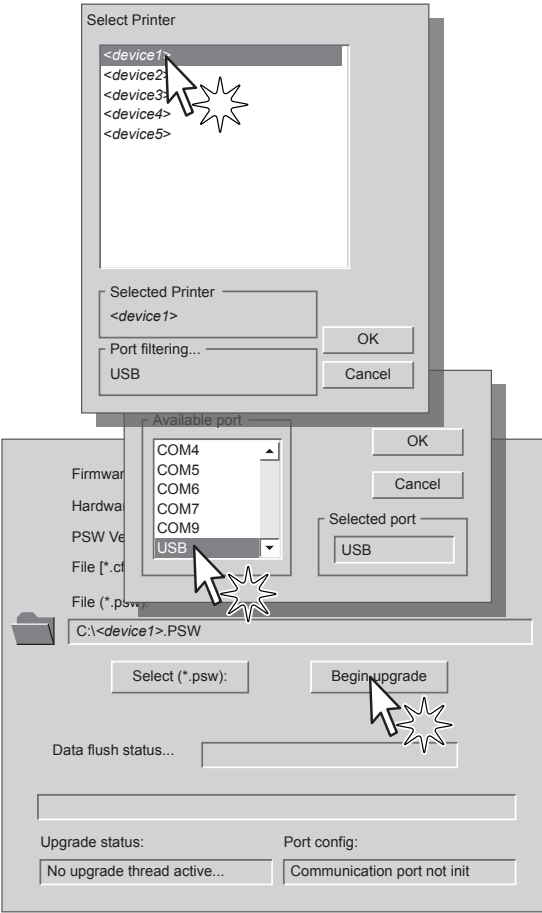
Select Printer

<device1>
<device2>
<device3>
<device4>
<device5>

Selected Printer
<device1>

Port filtering...   OK
USB   Cancel

Available port   OK
COM4
COM5   Cancel
COM6
COM7   Selected port
COM9
USB   USB

Firmwar
Hardwa
PSW Ve
File [*.cf
File (*.ps
C:\<device1>.PSW

Select (*.psw):   Begin upgrade

Data flush status...

Upgrade status: Port config:
No upgrade thread active...   Communication port not init

10. After a few minutes a message on the screen warns that the update is completed.

Upgrade OK

⚠ Upgrade succesfully completed.

OK
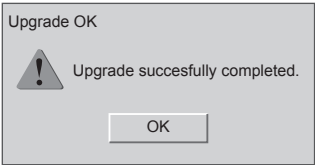
11. Print a new SETUP report to verify the new firmware release (see chapter 5).

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7 SPECIFICATION

7.1 Hardware specifications

GENERAL	
Sensor	Printing head temperature, black mark presence, paper presence, paper presence on output, printing unit open, (near paper end on external paper roll holder optional)
Emulations	CUSTOM/POS
Printing driver	Windows XP VISTA (32/64bit) Windows 7 (32/64bit) Windows 8 (32/64bit) Windows 8.1 (32/64bit) Opos Linux JavaPOS Android iOS
INTERFACES	
RS232 serial connector	from 1200 to 115200 bps
USB connector SB	12 Mbit/sec
MEMORIES	
Flash memory	384 Kbytes
Receive buffer	16 Kbytes
Graphic memory	2 logos of 608 x 862 (for 80/82.5mm paper width)
PRINTER	
Resolution	203 DPI (8 dot/mm)
Printing method	thermal, fixed head
Printing mode	normal, 90°, 180°, 270°
Printing format	height/width from 1 to 8, bold, reverse, underlined, italic
Character fonts	54 character code tables (see par. 7.7) Extended chinese GB18030-2000, Korean PC949

Printable barcode formats	UPCA, UPCE, EAN13, EAN8, CODE39, ITF, CODABAR, CODE93, CODE128, CODE32, PDF417, QRCODE
Printing speed	High quality = 80mm/sec Normal = 180mm/sec High speed = 220mm/sec

PAPER

Type of paper	Thermal rolls, thermal side on outside of roll
Paper width [1]	from 60mm to 82.5mm
Paper weight	from $58g/m^2$ to $110g/m^2$
Recommended types of paper [2]	KANZAN KF50, KP460 and KP390 MITSUBISHI PF5075, TL4000 and TF1067
External roll diameter [3]	max 180mm [4] upper fixing : max 150mm [5] rear or lower fixing : max 180mm [5]
Internal roll core diameter	25mm
Core type	Cardboard or plastic

ELECTRICAL SPECIFICATIONS

Power supply	24 Vdc ±10% (optional external power supply)
Medium consumption [6]	2 A
Typical consumption [7] [8]	1 A
Stand-by consumption [6]	0.04 A

ELECTRICAL SPECIFICATIONS POWER SUPPLY cod.963GE020000003 (OPTIONAL)

Power supply voltage	from 100Vac to 240Vac
Frequence	from 50Hz to 60Hz
Current (output)	2.5 A
Power	60 W

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ENVIRONMENTAL CONDITIONS	
Operating temperature	from -20°C to +70°C ±10%
Relative humidity	from 10% to 80% Rh
Storage temperature	from -20 °C to 70 °C
Storage relative humidity	from 10% to 90% Rh

NOTES:
[1] : For ticket width = 60mm do not exceed a max length of 250mm.
[2] : For paper from 90g/m^2 to 110g/m^2 enable the dispenser continuous mode with command (0x1D 0x65, see Command Reference).
[3] : It is recommended to use an external shock absorber for rolls with a diameter higher than or equal to 100mm.
[4] : Referred to model without paper holder support.
[5] : Referred to model with paper holder support.
[6] : Referred to the UL measurements (High speed, Density = 50% dot on, Print density = +25%, Current = Normal).
[7] : Referred to "Normal" value for "Current" parameter (see Printer Setup).
[8] : Referred to a standard CUSTOM receipt (L = 10cm, Density = 12.5% dots on.

7.2   Character specifications

Character set	3		
Character density	11 cpi	15 cpi	20 cpi
Number of columns	33	43	60
Chars / sec	2251	2895	4053
Lines / sec	66	66	66
Characters (L x H mm)-Normal	2.25 x 3	1.75 x 3	1.25 x 3

NOTE: Theoretical values.

7.3   Ejector specifications

	Ticket length	Ticket presentation
"Retracting" function	from 70mm to 80mm	10mm
	from 80mm to 220mm	from10mm to 30mm [1]
	Ticket length	**Ticket presentation**
"Ejecting" function	from 70mm to 80mm	10mm
	from 80mm to 350mm [2]	from 10mm to 30mm [1]

NOTES:
(1): Maximum length recommended to guarantee the printer efficiency.
(2): Maximum ticket length recommended to guarantee the device efficiency.

7.4 Device dimensions

<u>**Standard model**</u>

Length	149.5mm
Height	121.2mm
Width	123.5mm
Weight	1600 g

NOTE:
Dimensions refers to the device without paper roll.
All the dimensions shown in following figures are in millimetres.

Standard model with roll holder bracket

Length	Upper positions: 160.7mm Rear positions: 306.2mm Lower positions: 160.7mm
Height	Upper positions: 292.1mm Rear positions: 189.4mm Lower positions: 313.2mm
Width	123.5mm
Weight	1874g

NOTES:
Above dimensions refer to devices without paper roll.
All the dimensions shown in following figures are in millimetres.

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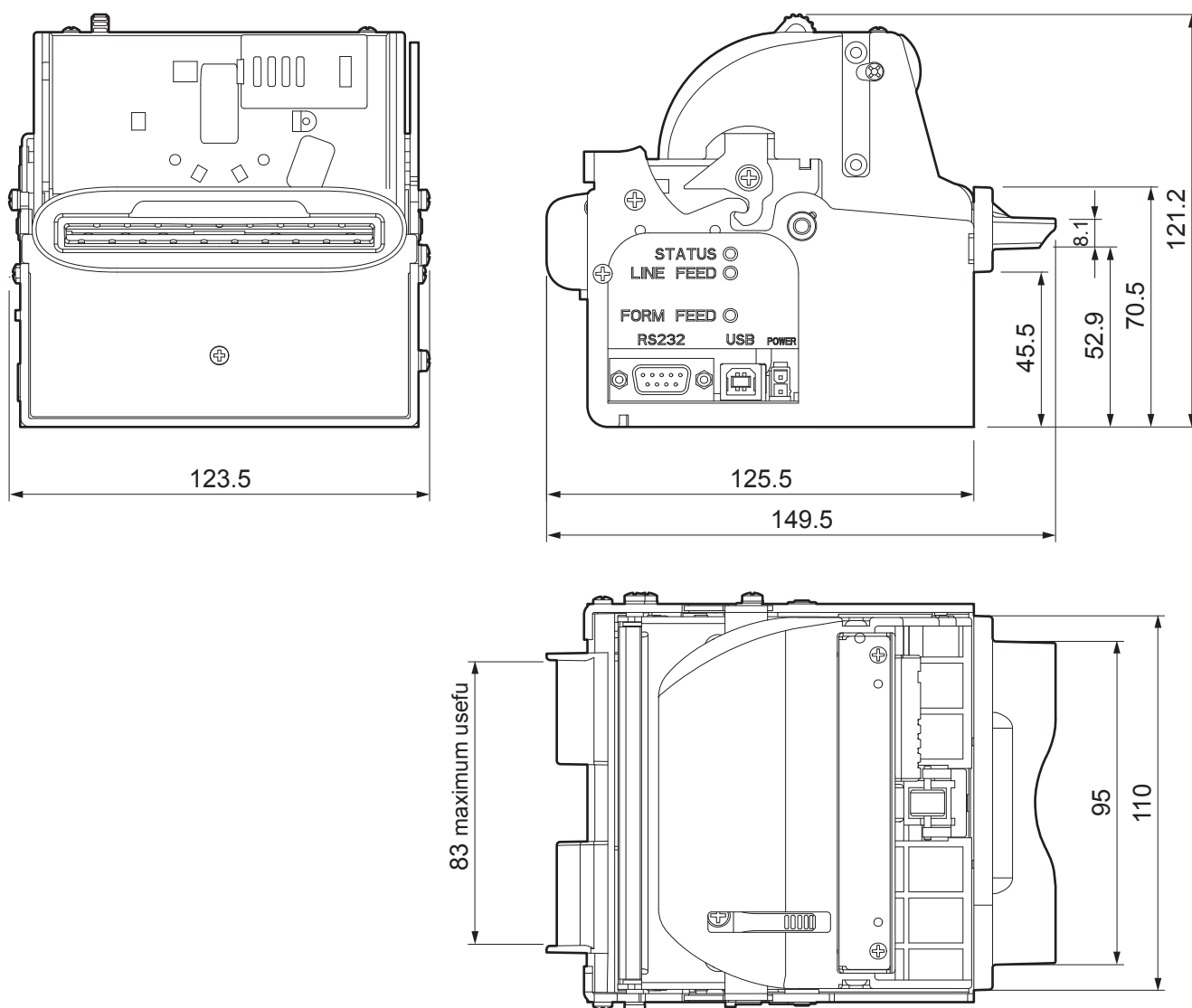
Model with "Shutter"

Length	163.5mm
Height	121.2mm
Width	123.5mm
Weight	1600 g

NOTES:
Dimensions refer to devices without paper roll.
All the dimensions shown in following figures are in millimetres.
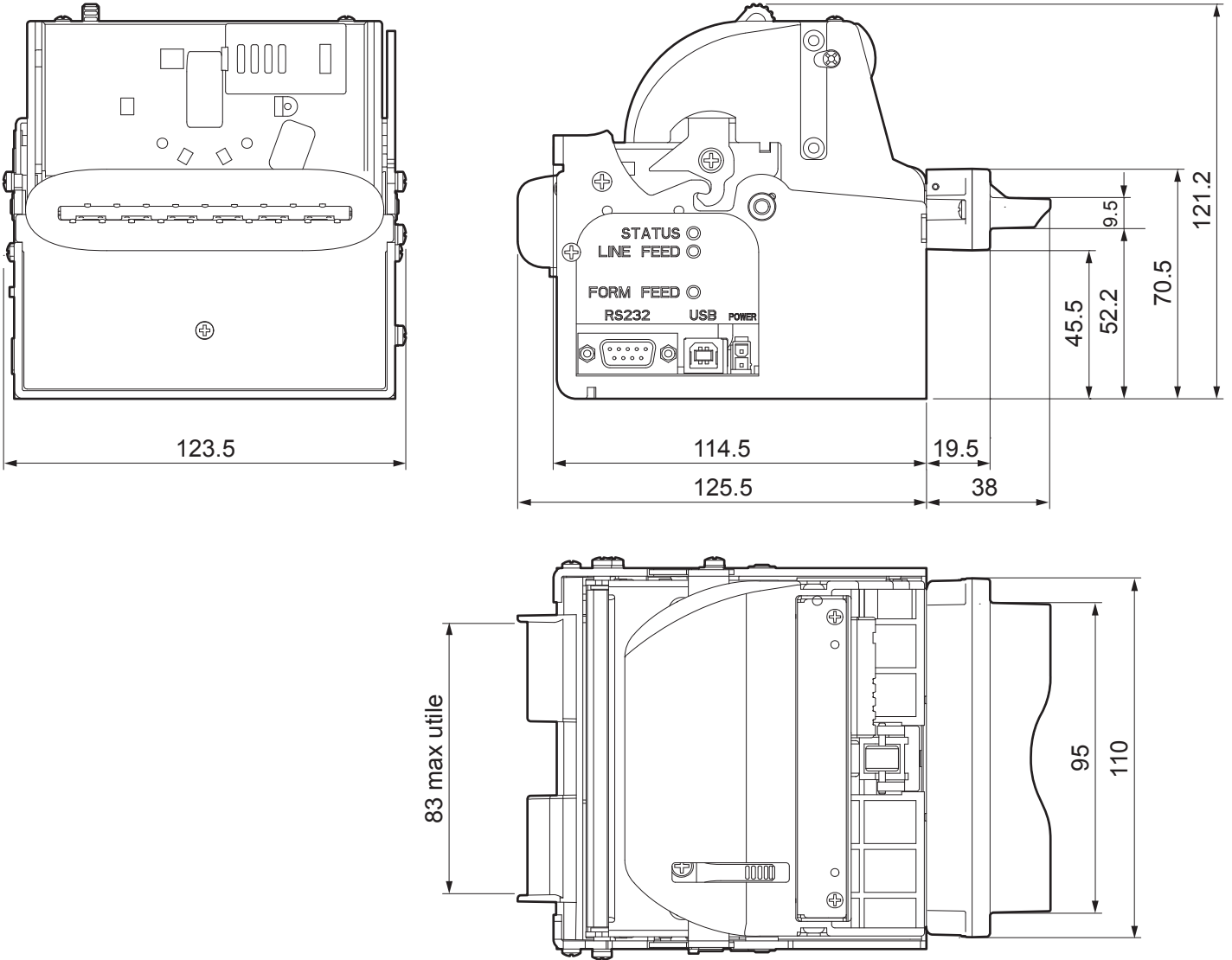
7.5   Power supply dimensions cod.963GE020000003 (optional)

Length	127mm
Height	35.5mm
Width	56mm

NOTE:
All the dimensions shown in following figures are in millimetres.

AC INLET

DC OUTPUT WIRE

N.C

GND   +24V

CUSTOM®
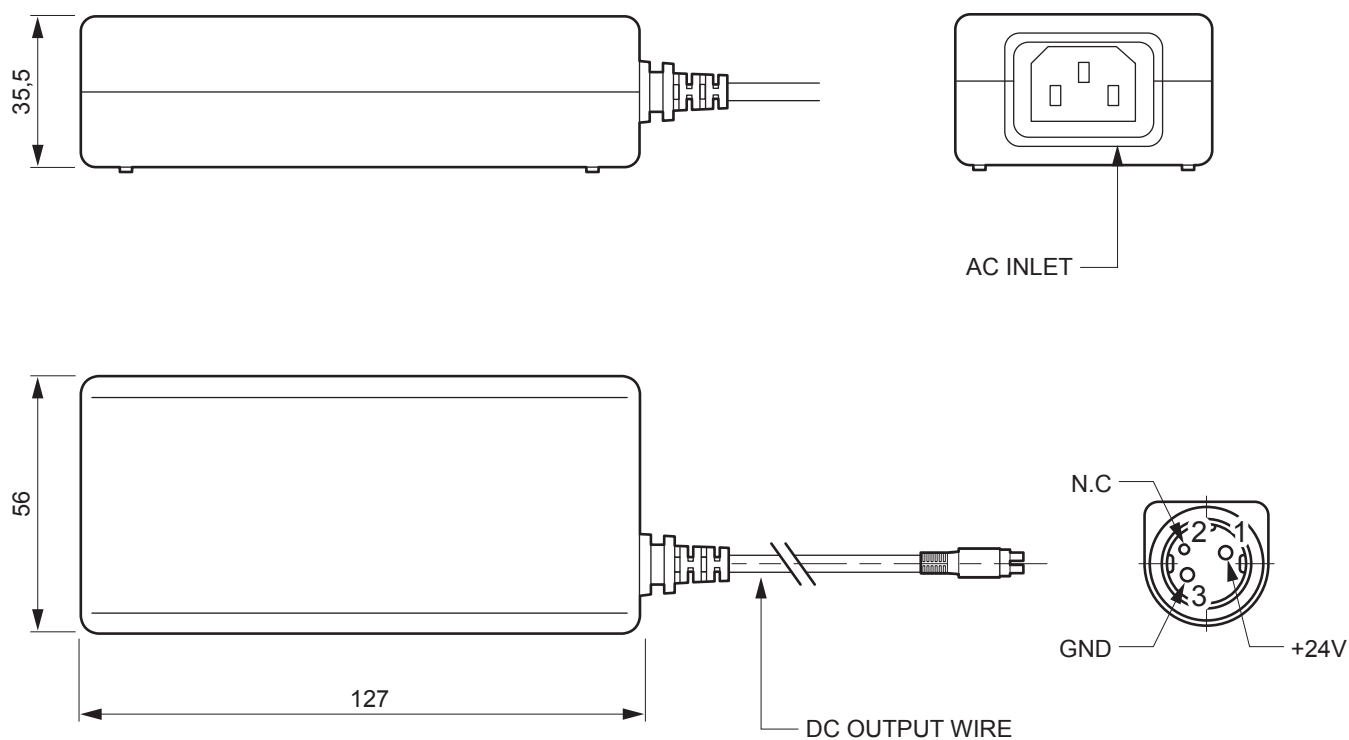
7.6   Paper specification

The following image shows the placement of the black mark on the non-thermal side of paper.
For more information about the use of paper with black mark see chapter 10.

*For lengths over 220mm,
be sure to leave adequate
space for the paper loop below

$26^{+0.5}_{-0.5}$

5^{+1}_0

min 9^{+1}_0

min 70 / max 220*

NON-THERMAL SIDE
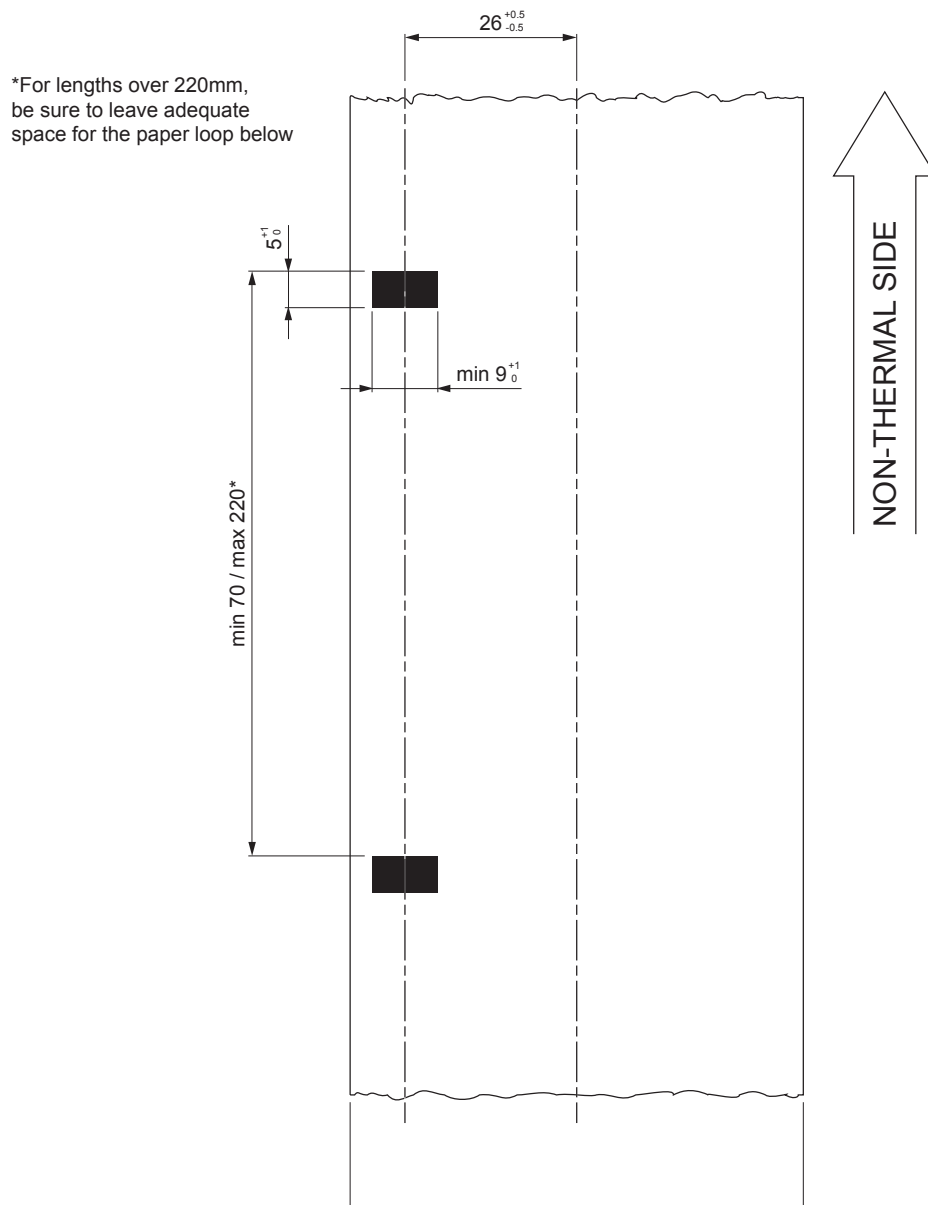
NOTE:
All the dimensions shown in following figures are in millimetres.

7.7 Character sets

The device has 3 fonts of varying width (11, 15 and 20 cpi) which may be related one of the coding tables provided on the device.

To know the coding tables actually present on the device, you need to print the font test (see par.2.5).

You can set font and coding table by using the commands (see the Commands Manual of the device) or using the "Code Table" and the "Chars / Inch" parameters during the Setup procedure (see par.5.4).
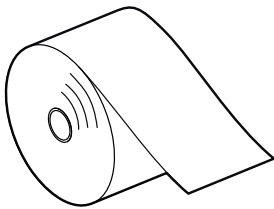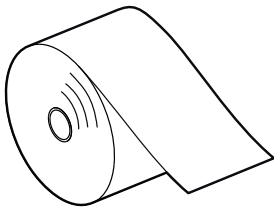
The following is the full list of coding tables that can be installed on the device.

<CodeTable>	Coding table	
0	PC437 - U.S.A., Standard Europe	
1	Katakana	
2	PC850 - Multilingual	
3	PC860 - Portuguese	
4	PC863 - Canadian/French	
5	PC865 - Nordic	
11	PC851 - Greek	on request
12	PC853 - Turkish	on request
13	PC857 - Turkish	on request
14	PC737 - Greek	on request
15	ISO8859-7 - Greek	on request
16	WPC1252	
17	PC866 - Cyrillic 2	
18	PC852 - Latin 2	on request
19	PC858 with Euro symbol in position 213	
20	KU42 - Thai	on request
21	TIS11 - Thai	on request
26	TIS18 - Thai	on request
30	TCVN_3 - Vientamese	on request
31	TCVN_3 - Vientamese	on request
32	PC720 - Arabic	on request
33	WPC775 - Baltic Rim	on request
34	PC855 - Cyrillic	on request

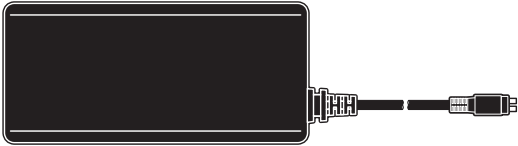| <CodeTable>	Coding table	
35	PC861 - Icelandic	on request
36	PC862 - Hebrew	
37	PC864 - Arabic	
38	PC869 - Greek	on request
39	ISO8859-2 - Latin 2	on request
40	ISO8859-15 - Latin 9	on request
41	PC1098 - Farci	on request
42	PC1118 - Lithuanian	on request
43	PC1119 - Lithuanian	on request
44	PC1125 - Ukranian	on request
45	WPC1250 - Latin 2	
46	WPC1251 - Cyrillic	
47	WPC1253 - Greek	
48	WPC1254 - Turkish	
49	WPC1255 - Hebrew	
50	WPC1256 - Arabic	
51	WPC1257 - Baltic Rim	
52	WPC1258 - Vientamese	
53	KZ1048 - Kazakhstan	on request
255	Space page	

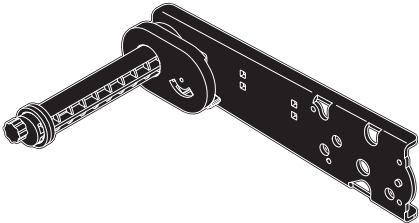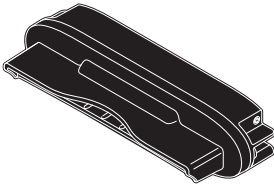# 8 CONSUMABLES

The following table shows the list of available consumables for device:

DESCRIPTION	CODE
THERMAL PAPER ROLL WITH BACK SIDE PRE-PRINTED weight = 58g/m^2 width = 80mm Ø external = 48mm Ø core = 25mm	**67300000000395**
THERMAL PAPER ROLL weight = 58g/m^2 width = 80mm Ø external = 130mm Ø core = 25mm	**67300000000380**

9   ACCESSORIES

The following table shows the list of available accessories for device:

| DESCRIPTION	CODE
POWER SUPPLY (for technical specifications, see the paragraph 7.1)	**963GE020000003**
ADAPTER CABLE FOR POWER SUPPLY (see the paragraph 9.1)	**26900000000005**
PAPER ROLL HOLDER WITH NEAR PAPER END SENSOR to assemble on the right side of the device (see the paragraph 9.2)	**974DW010000318**
"SHUTTER" DEVICE KIT (see the paragraph 9.3)	**976DX010000001**

9.1 Adapter cable for power supply

For the device is available an adapter cable (cod. 26900000000005) supplied as an accessory, for connecting the device to the external power supply unit (cod. 963GE020000003 - optional).

Assembly instructions

Connect the adapter cable to the power supply unit as follows:

CUSTOM®
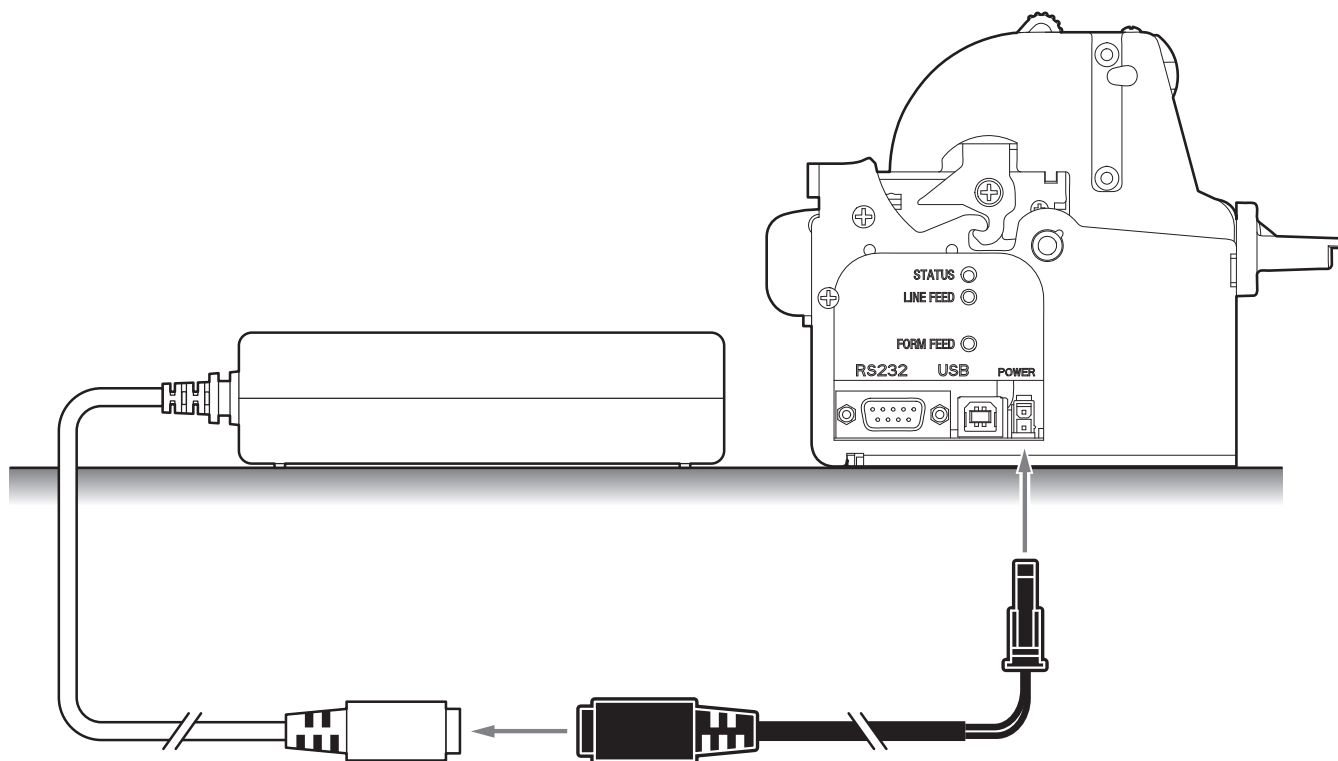
9.2 Paper roll holder

A paper roll holder kit (cod.974DW010000318) is available for the device to make it possible to use larger-width rolls of paper (max. Ø150 mm).
The paper roll holder can be only assembled on the right side of the device as shown in the following figures.

The kit includes (see figure):
1. Instruction sheet
2. Tie for roll blocking
3. No. 4 fastening screws
4. Paper holder support with near paper end sensor and regulating system for paper width
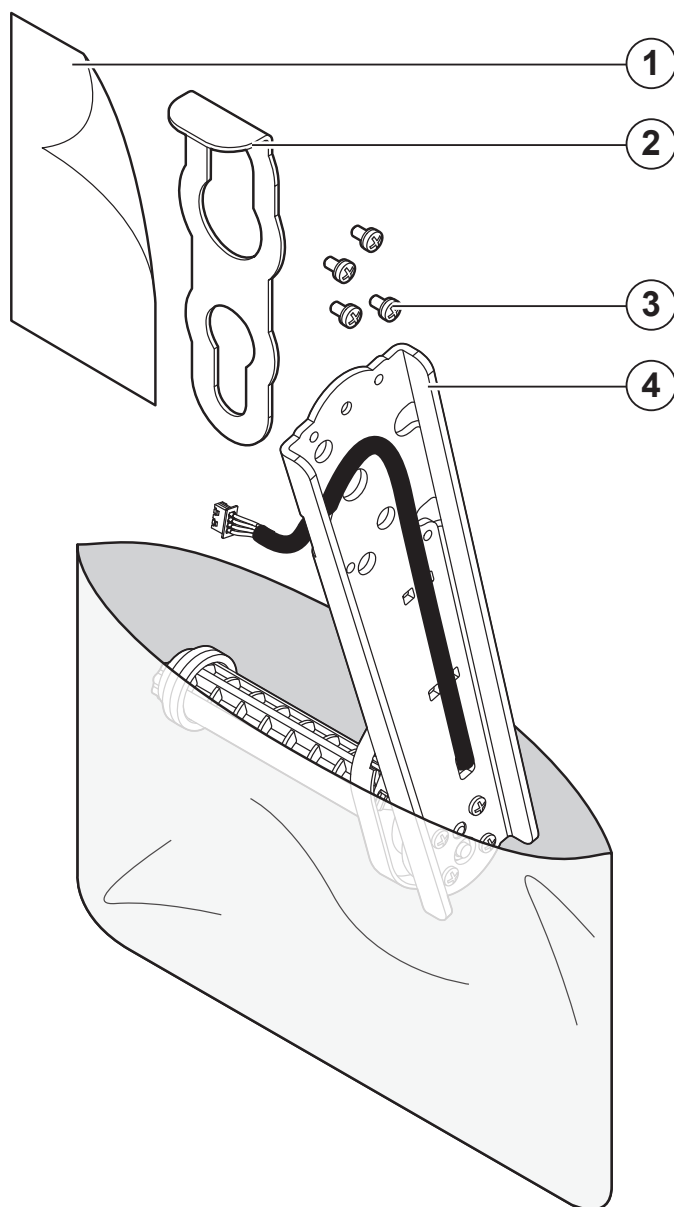
9.3 "Shutter" device

A "shutter" device (cod.976DX010000001) is available for the machine. This device prevents the insertion of paper or foreign objects into the outlet of the paper.

The kit includes (see figure):
1. Instruction sheet
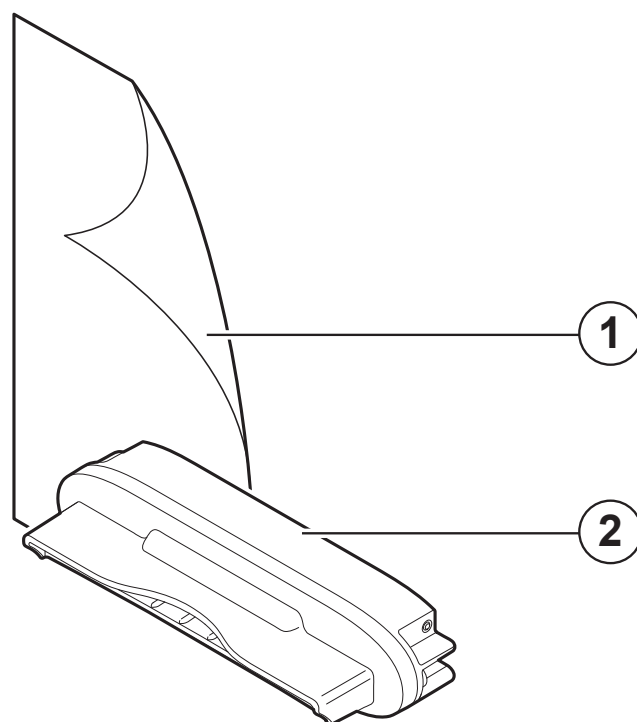2. "Shutter" group

10 ALIGNMENT

The device is provided with sensors for the use of alignment black mark in order to handle rolls of tickets with pre-printed fields and a fixed length.

All alignment sensors are "reflection" sensors: this kind of sensor emits a band of light and detects the quantity of light reflected to it. The presence of the black mark is therefore detected by the amount of light that returns to the sensor, considering that the light is reflected by the white paper and absorbed by the black mark.

The following paragraphs show how to correctly set the configuration parameters of device in order to assure the alignment.

10.1 Enable alignment

Device is provided with one mobile sensor facing the non-thermal side of paper.
To guarantee the alignment, you must enable the parameter "Notch Alignment" during the Setup procedure (see chapter 5)

SENSOR USED (see following figures)	VALUE OF THE "NOTCH ALIGNAMENT" PARAMETER	USING MODE OF SENSOR	BLACK MARK TYPE
-	Disabled	-	Alignment disabled
1	Enable	Reflection	Black mark printed on the non-thermal side of paper

BLACK MARK

CUSTOM®
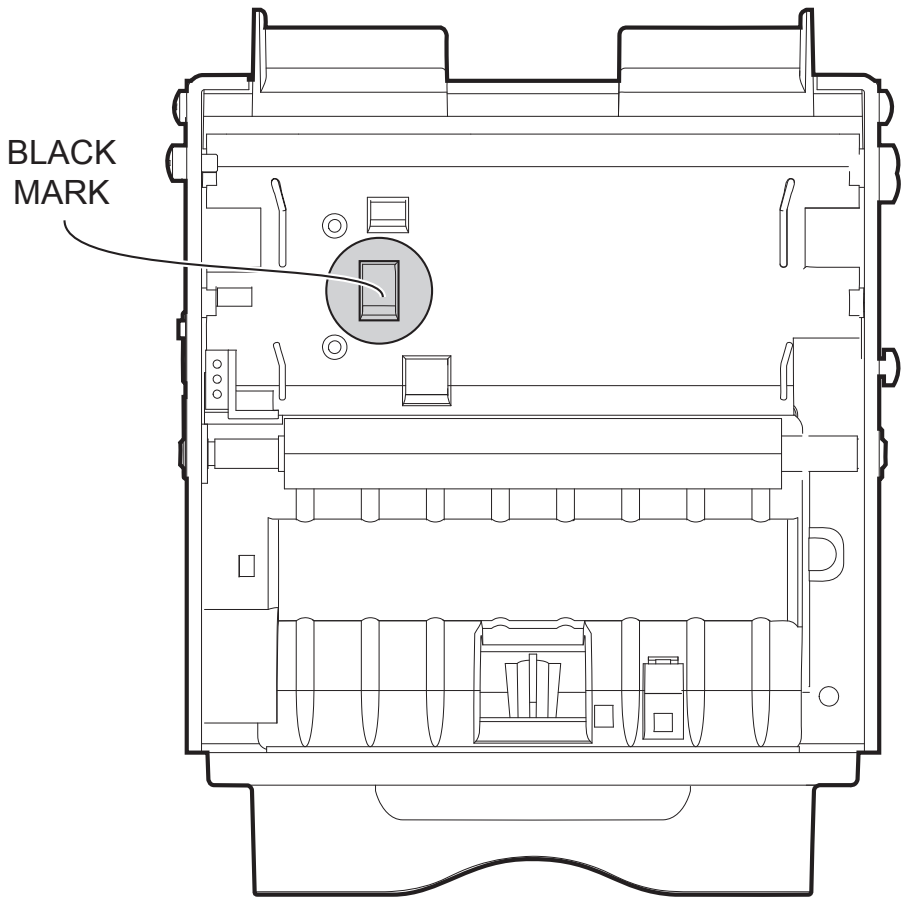
Paper with black mark

In standard model, the detection of black mark is performed on the non-thermal side of paper by the fixed sensor.

direction
of paper
feed

BACK
MARK

NON THERMAL
SIDE
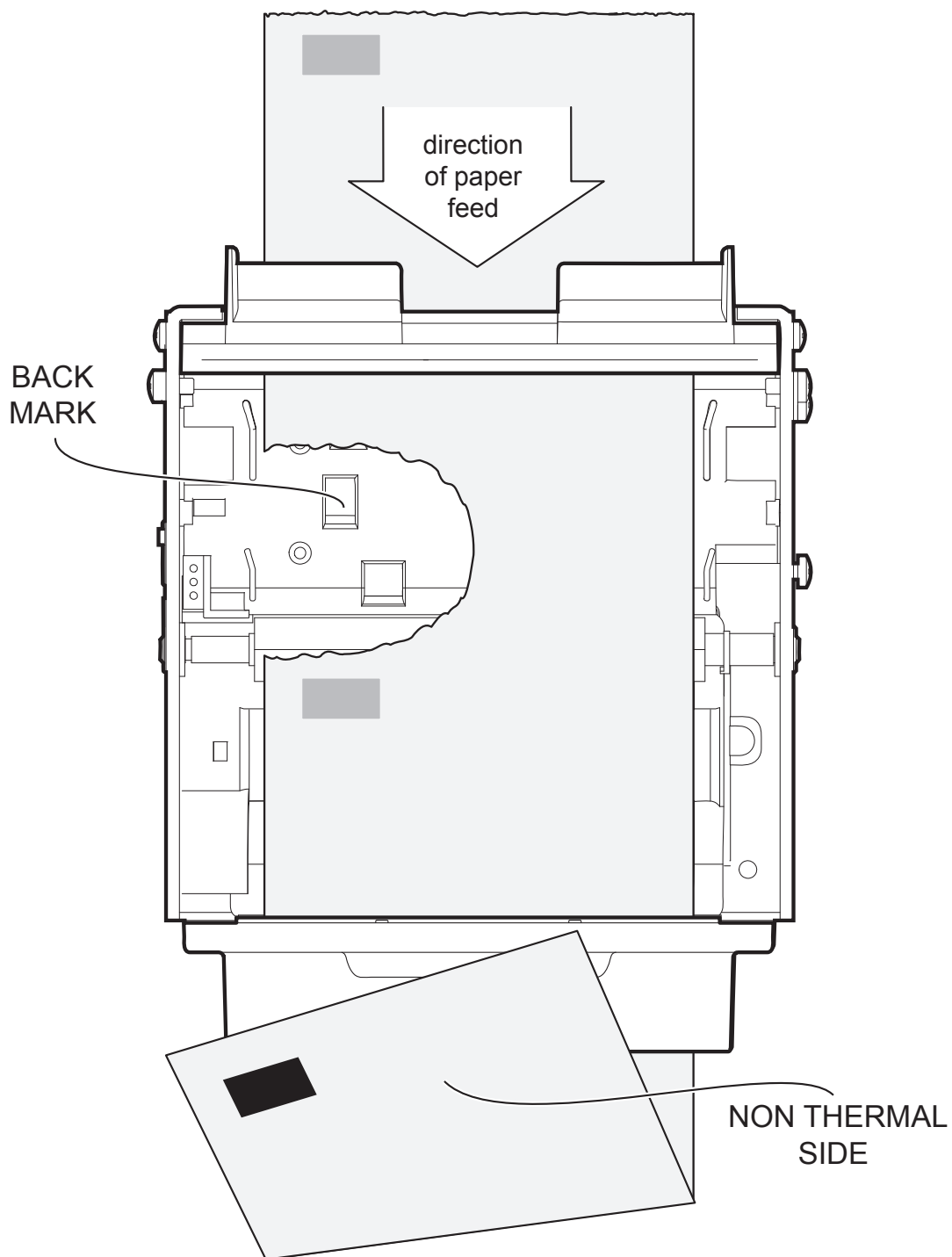
10.2 Calibration

The sensor calibration occurs automatically and consists in adjusting the quantity of light emitted to match the degree of whiteness of the paper used and the degree of black of the mark printed on paper.

The device automatically performs the self-calibration during the Setup procedure only if the "Notch Alignment" parameter is set to "Enabled" value (see chapter 5).

When self-calibration starts, the device performs some paper feeds and then it prints the calibration result and the value (numeric and as a percentage) of the *"Threshold White"* parameter that indicates the power-up level of the sensor emitting side (the value ranges from 0V to 5V):

     Autosetting Notch : OK
   Threshold White : 1.9V [39%]

The "Autosetting Notch" parameter indicates the result of the self-calibration procedure; OK will appear if it has been successful, NOT OK will appear if the procedure has failed.

After the printing of the procedure result, the device offers the execution of the function of paper characterization "Characterize Paper" and the change of the "Notch Threshold" parameter which represents the detection threshold of the black mark. Choosing the "Yes" value for the "Characterize Paper" parameter, the device prints a graphic representation (see following figures) of the outgoing voltage of the alignment sensor (expressed as a percentage) and the "Notch Threshold" value. This graphic representation is useful to set the most suitable value to assign to the "Notch Threshold" parameter and then to better identify the optimal threshold value which takes into account the variations of the signal and the small oscillations around zero.

The following figure shows an example of paper with the non-thermal paper printed with black marks: the outgoing voltage is constant while passing the white paper between two black marks and presents a peak at each black mark.
In this case, the optimal value for the "Notch Threshold" parameter is placed about half of the peak.
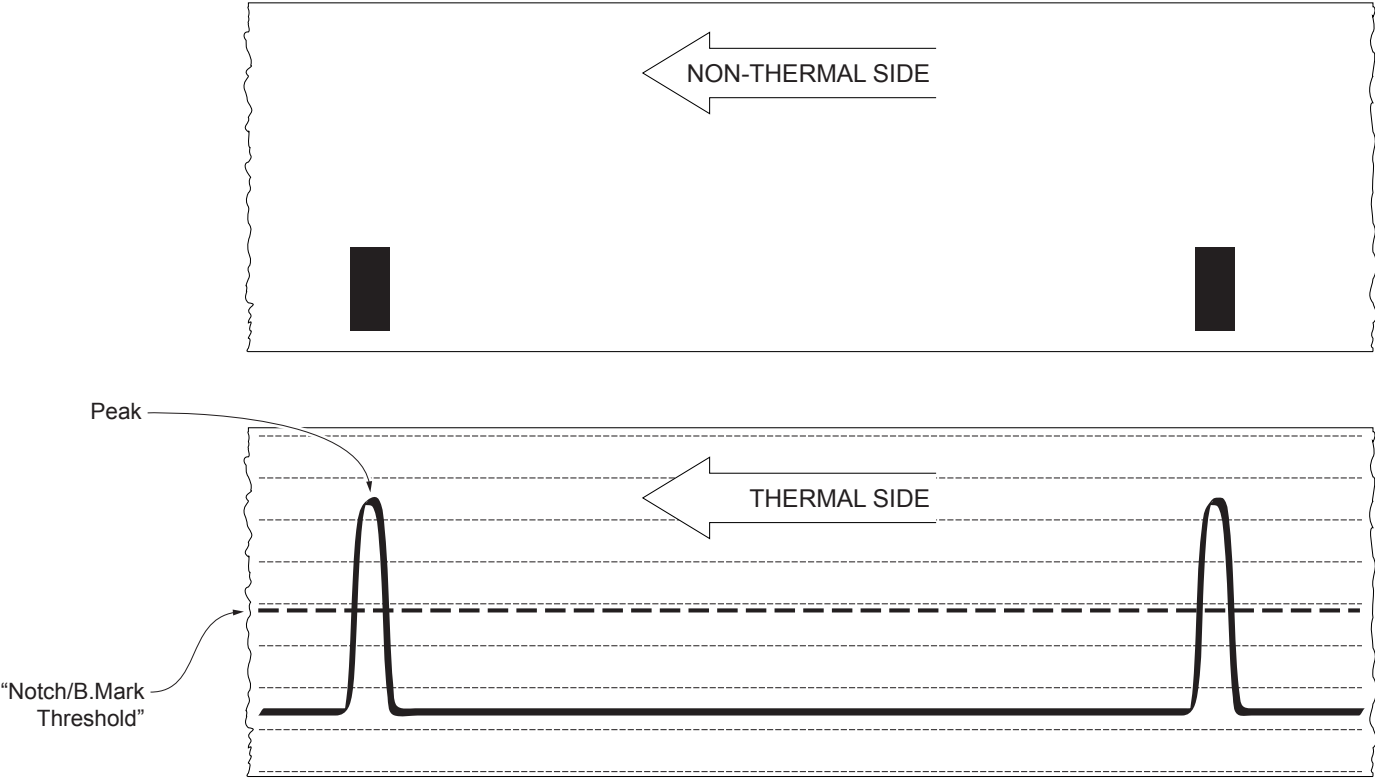
The following figure shows an example of paper with the non-thermal paper printed with black marks and other graphics (for example, a barcode): the outgoing voltage is constant while passing the white paper between two black marks, presents a peak at each black mark and presents some "noise" at each barcode.
In this case, the optimal value for the "Notch Threshold" parameter is located about halfway between the peak value and the maximum value of the "noise".
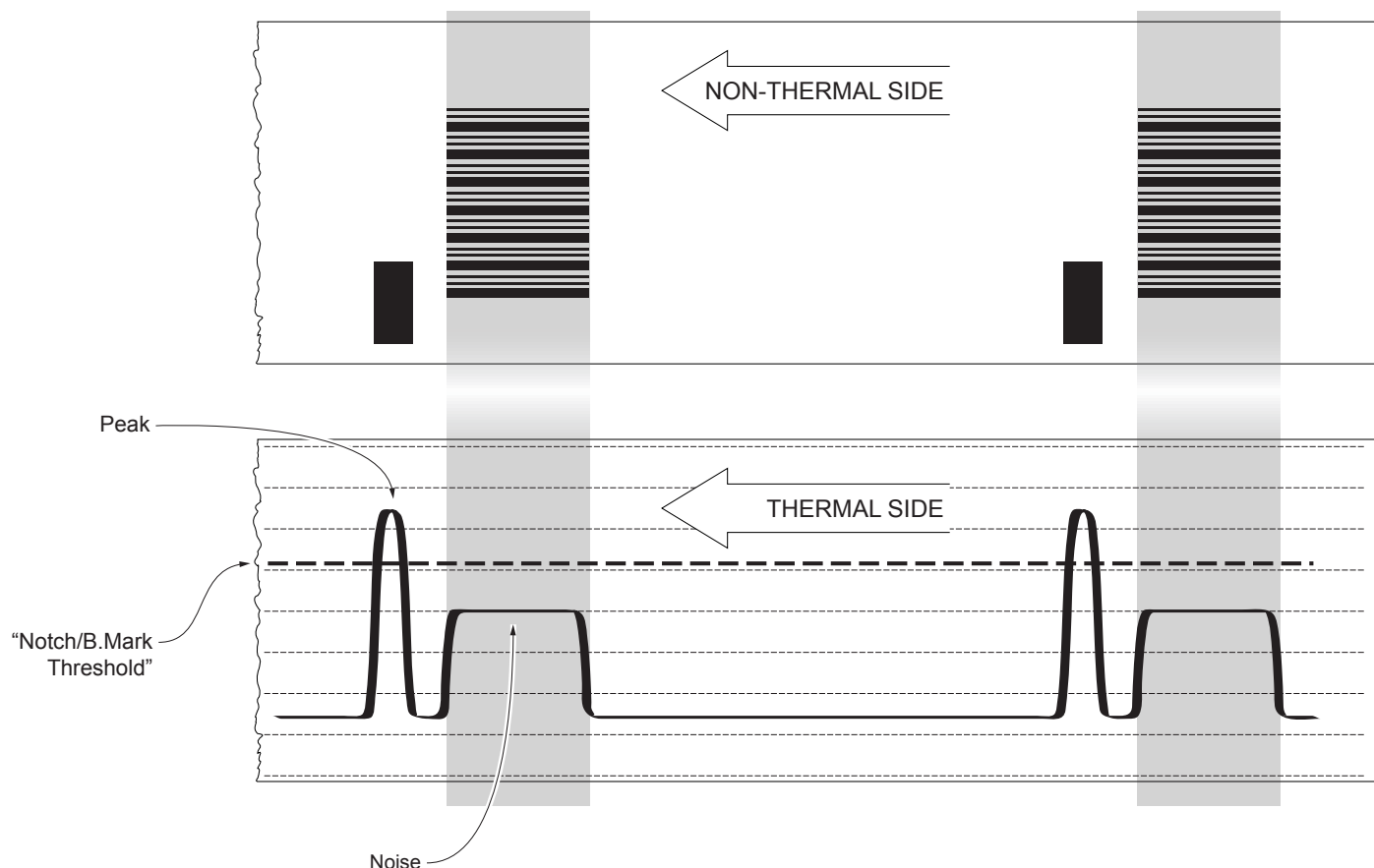
If the maximum value of "noise" read by the sensor is very close to the peak value, it might be difficult to place the value of the "Notch/B.Mark Threshold" at an intermediate point. In these cases, it is mandatory that the portion of paper between the point of printing end and the front black mark is completely white (no graphics). In this way, the only next graphic detected by the sensor for alignment after the printing end will be the black mark.

10.3   Alignment parameters

The "alignment point" is defined as the position inside the ticket to use for the black mark alignment.
The distance between the black mark edge and the alignment point is defined as "Notch Distance".

"Notch/Distance" value varies from 0mm minimum and 32mm maximum.

If the "Notch Distance" value is set to 0, the alignment point is set at the beginning of the black mark.
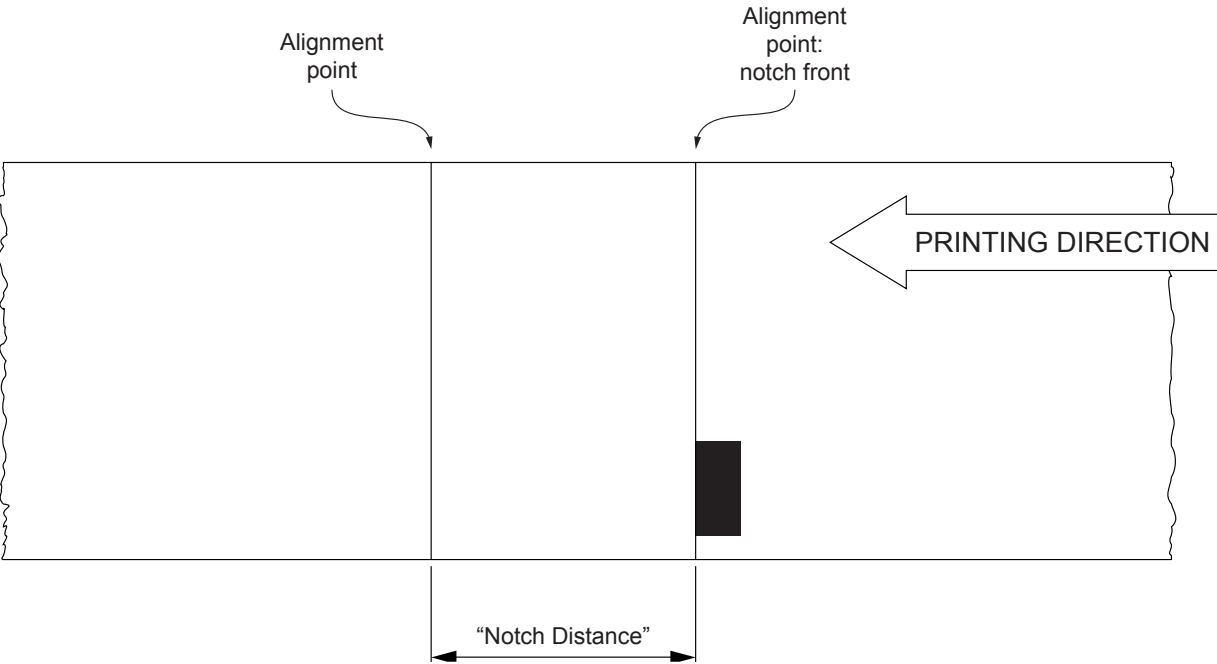
The following figure shows a section of the device with the paper path and the distances between the alignment sensors, the printing head and the cutter (cutting line), where:

A = 11.9mm = distance between the cutting line and the printing line on paper
B = 28.5mm = distance between the the printing line and the mobile alignment sensors.
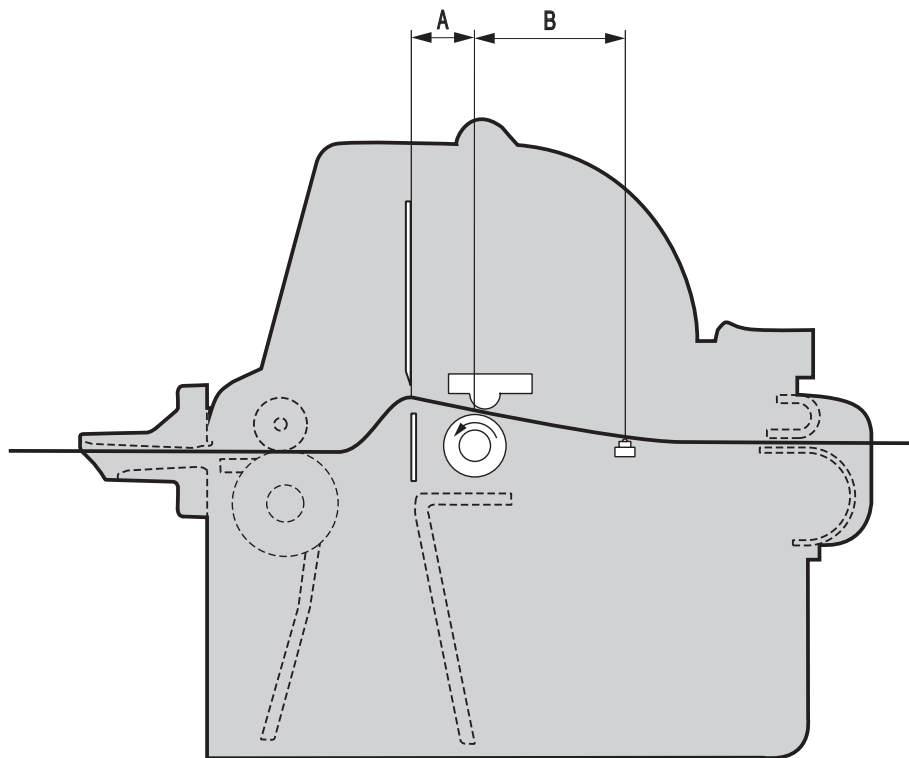
To define the alignment point you need to set the device parameters that compose the numerical value of the "Notch Distance" parameter.
For example, to set a black mark distance of 15mm between the black mark and the alignment point, the parameters must be set on the following values:

Notch Distance [mm x 10]   : 1
Notch Distance [mm x 1]   : 5

The "Notch Distance" parameter, may be modified as follows:
• during the Setup procedure of the device (see chapter 5)
• by using the 0x1D 0xE7 command (for more details, refer to the Commands Manual)
• by driver.

10.4 Printing area

In order to print ticket containing only one black mark and to not overlay printing to a black mark (that will make it useless for the next alignment), it is important to well calibrate:

- the length of the printing area of ticket according to the inter-black mark distance;
- the value for the paper recovery after a cut (if present).

The following figure shows an example of tickets with "Notch Distance" set to 0:
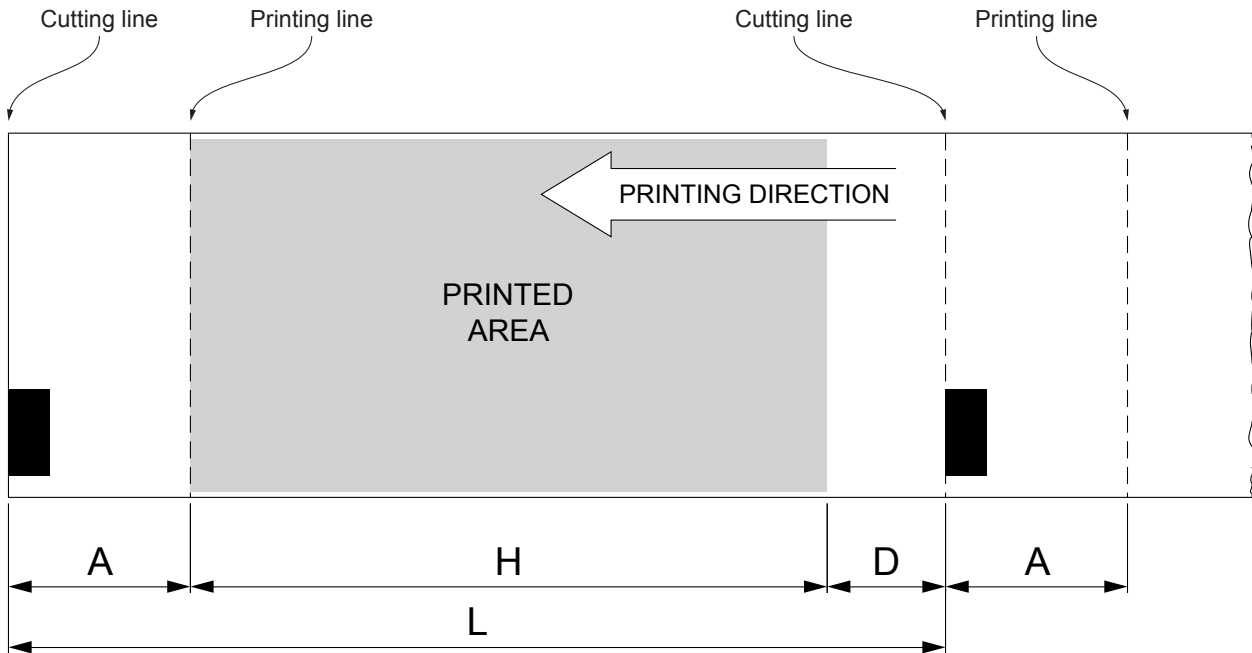
"Non-printable area" generated from:

"Distance between cutter/printing head" - "Value for the paper recovery after a cut"

where:
"Distance between printhead and cutter" = 11.9mm (fixed distance)
"Value for the paper recovery after a cut" = 0mm,

H   Distance between the first and the last print line, called "Height of the printing area".

L   Distance between an edge of the black mark and the next one, called "Inter-notch distance".

D   Automatic feed for alignment at the next black mark.

To use all the black marks on the paper, you must comply with the following equation:

$$H + A \leq L$$

The height of the printing area H can be increased to make no progress on alignment D but no further.

11 TECHNICAL SERVICE

In case of failure, send the 4 pieces of information listed below to our support team:

1. Product code
2. Serial number
3. Hardware release
4. Firmware release

To get the necessary data, proceed as follows:

1

XXXXXXXXXXXXXX   **Rx**

0000000000000000000

Write down the data printed
on the product label (see par.2.4).

2

FW

VKP80 II SX

SCODE. *<code>*   -   rel   1.00

FCODE. *<code>*   -   rel   1.00

PRINTER SETUP

INTERFCE...USB
PROGRAM MEMORY TEST.................OK
DYNAMIC RAM TEST...........................OK
EEPROM TEST......................................OK
CUTTER TEST......................................OK
HEAD VOLTAGE   = 24.01
HEAD TEMPERATURE   = 24

Print a Setup report (see paragraph 5.1)
The Setup report shows
the firmware release.

3

Customer Service Department:

support@custom.it
(worldwide)

or

support@customamerica.com
(specific for North/South American customers)

Send an e-mail to the Technical Service,
with the data collected.

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