USER MANUAL

VKP80II-SX

CUSTOM®

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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 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.

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.
- Do not fix indissolubly the device or its accessories such as power supplies unless specifically provided in this manual.
- When positioning the device, make sure cables do not get damaged.
- [Only OEM equipment] The equipment must be installed in a kiosk or system that provides mechanical, electrical and fire protection.
- The mains power supply must comply with the rules in force in the Country where you intend to install the equipment.
- 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.
- Make sure the power cable provided with the appliance, or that you intend to use is suitable with the wall socket available in the system.
- Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
- Before any type of work is done on the machine, disconnect the power supply.
- Use the type of electrical power supply indicated on the device label.
- These devices are intended to be powered by a separately certified power module having an SELV, non-energy hazardous output. (IEC60950-1 second edition).
- [Only POS equipment] The energy to the equipment must be provided by power supply approved by CUSTOM S.p.A.
- Take care the operating temperature range of equipment and its ancillary components.
- 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.
- The equipment must be accessible on these components only to trained, authorized personnel.
- Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
- 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.
- Use consumables approved by CUSTOM S.p.A.

THE CE MARK AFFIXED TO THE PRODUCT CERTIFY THAT THE PRODUCT SATISFIES THE BASIC SAFETY REQUIREMENTS.

The device is in conformity with the essential Electromagnetic Compatibility and Electric Safety requirements laid down in Directives 2014/30/EU and 2014/35/EU inasmuch as it was designed in conformity with the provisions laid down in the following Standards:

- EN 55032 *(Electromagnetic compatibility of multimedia equipment - Emission Requirements)*
- EN EN55024/EN55035 *(Electromagnetic compatibility of multimedia equipment - Immunity requirements)*
- EN IEC/EN62368-1 *(Audio/video, information and communication technology equipment)*

The device is in conformity with the essential requirements laid down in Directives 2014/53/EU about devices equipped with intentional radiators. The Declaration of Conformity and other available certifications can be downloaded from the site www.custom4u.it.



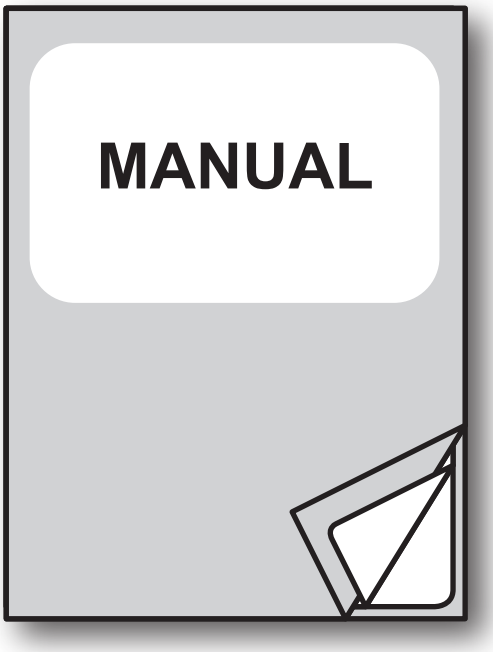
GUIDELINES FOR THE DISPOSAL OF THE PRODUCT

The crossed-out rubbish bin logo means that used electrical and electronic products shall NOT be mixed with unsorted municipal waste. For more detailed information about recycling of this product, refer to the instructions of your country for the disposal of these products.

- Do not dispose of this equipment as miscellaneous solid municipal waste, but arrange to have it collected separately.
- The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
- In accordance with European Directive WEEE 2012/19/EU, special collection points are available to which to deliver waste electrical and electronic equipment and the equipment can also be handed over to a distributor at the moment of purchasing a new equivalent type.
- The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
- Unauthorised disposal of waste electrical and electronic equipment is punishable by law with the appropriate penalties.
- For the waste sorting of the packaging materials, please check the local waste disposal laws.



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



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

For further information about the use of “PrinterSet” tool
refer to the manual with code **78200000001800**

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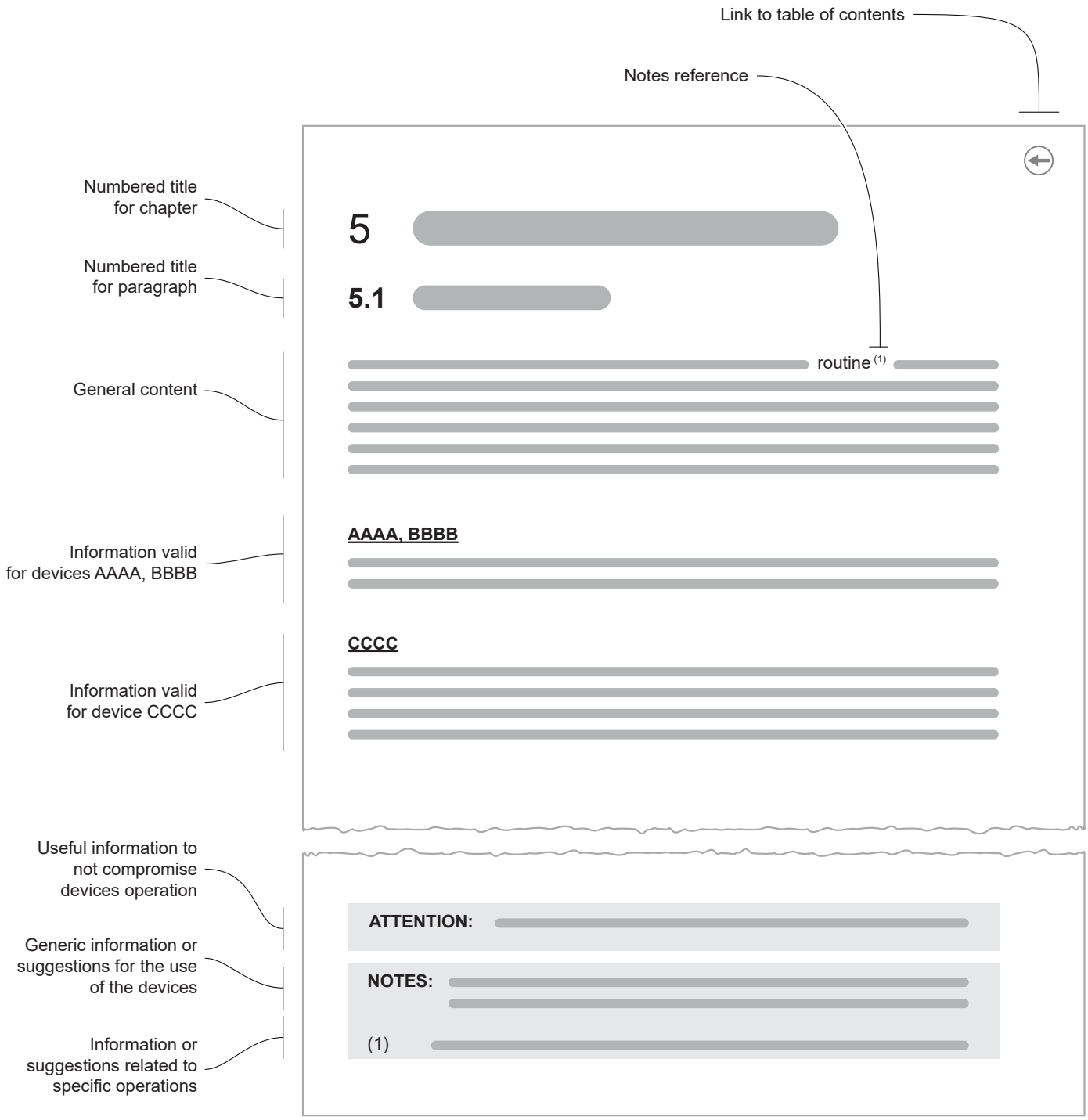
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1 INTRODUCTION

This document is divided into sections and chapters. Each chapter can be reached by the index at the beginning of this document. The index can be reached by the button on each page as shown in the diagram below.

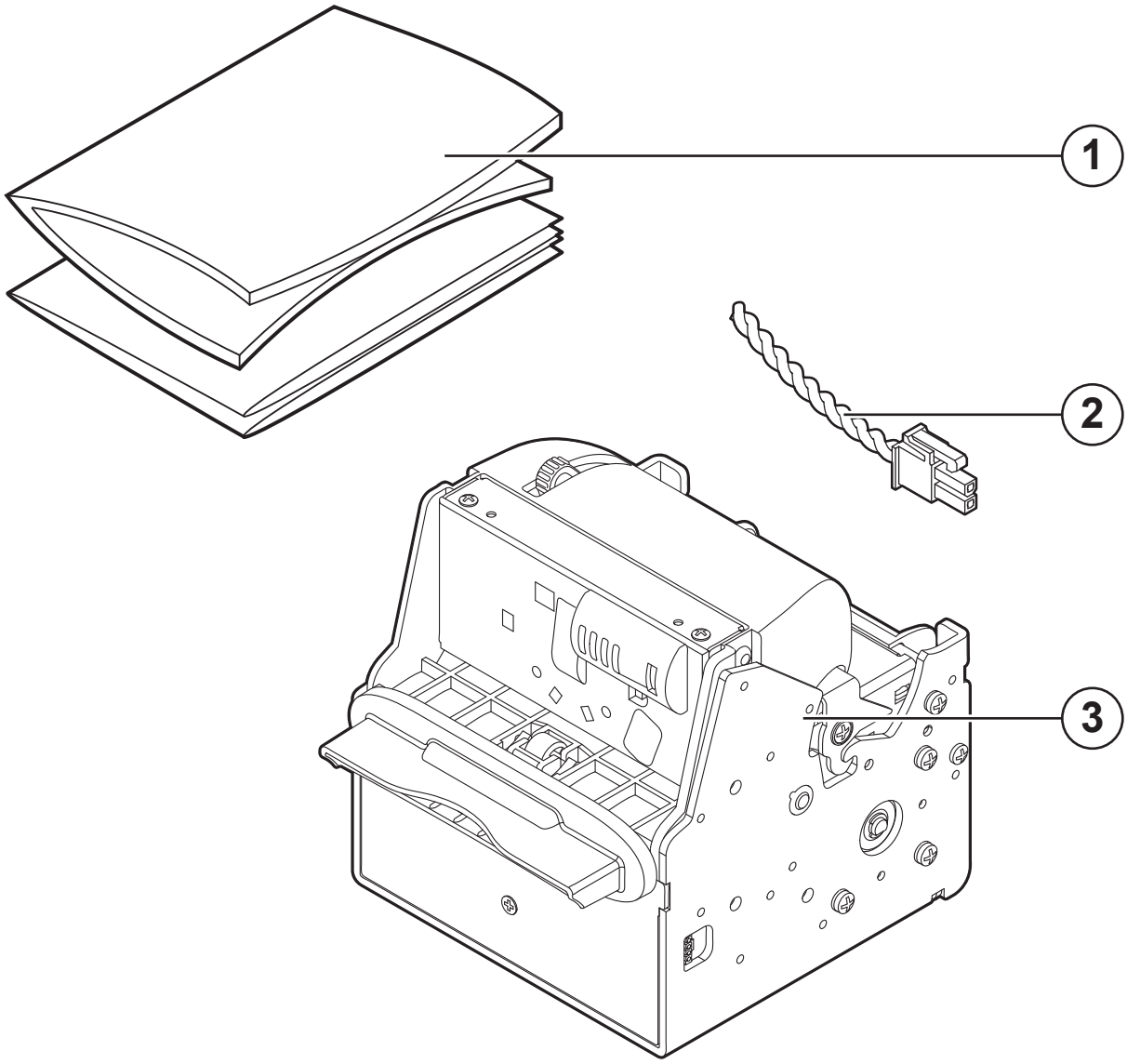


2 DESCRIPTION

2.1 Box content

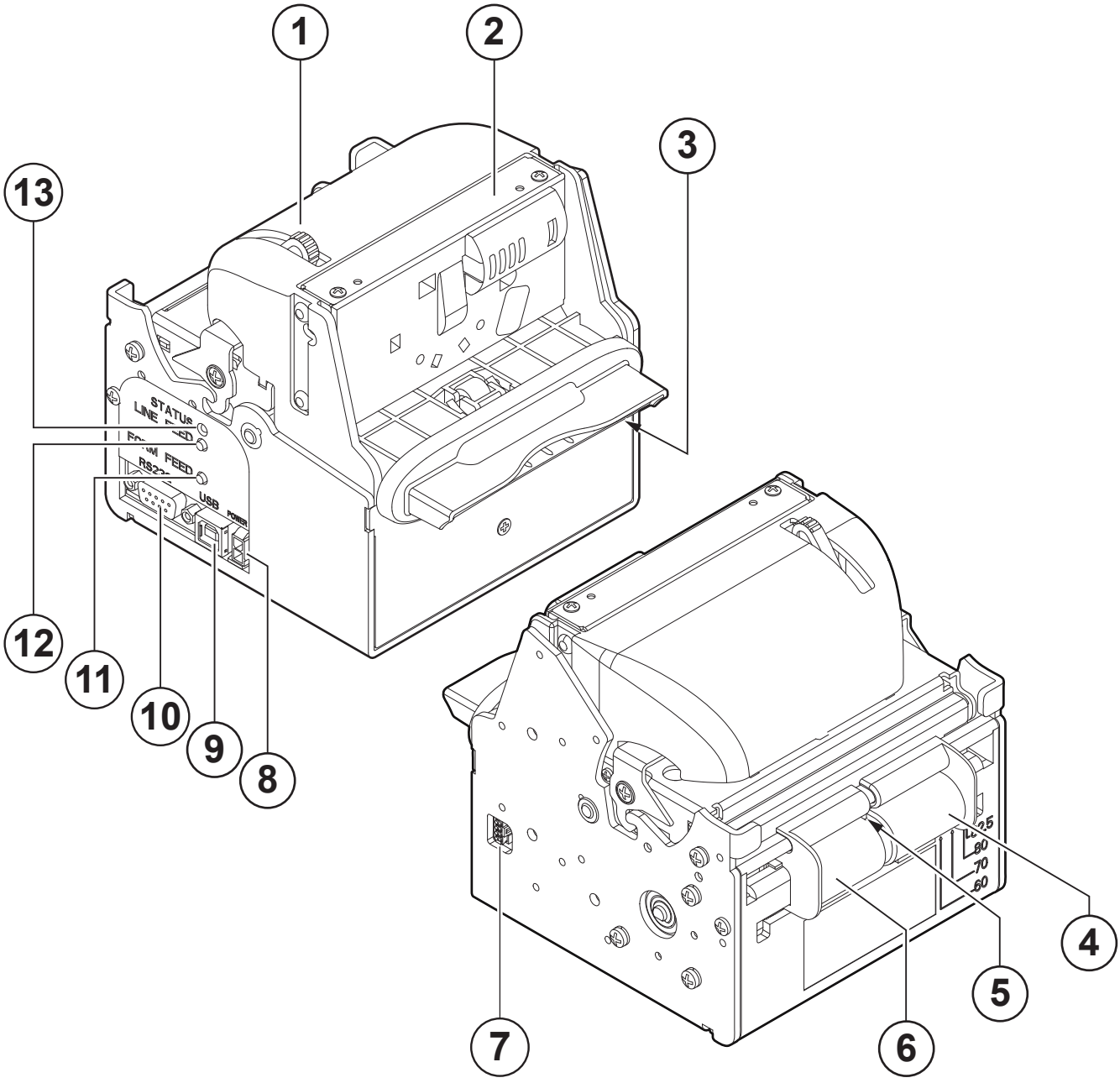
Remove the device from its carton being careful not to damage the packing material so that it may be re-used if the printer is to be transported in the future.
Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.

1. Documentation (Short guide, installation instruction sheet)
2. Power supply cable
3. Device



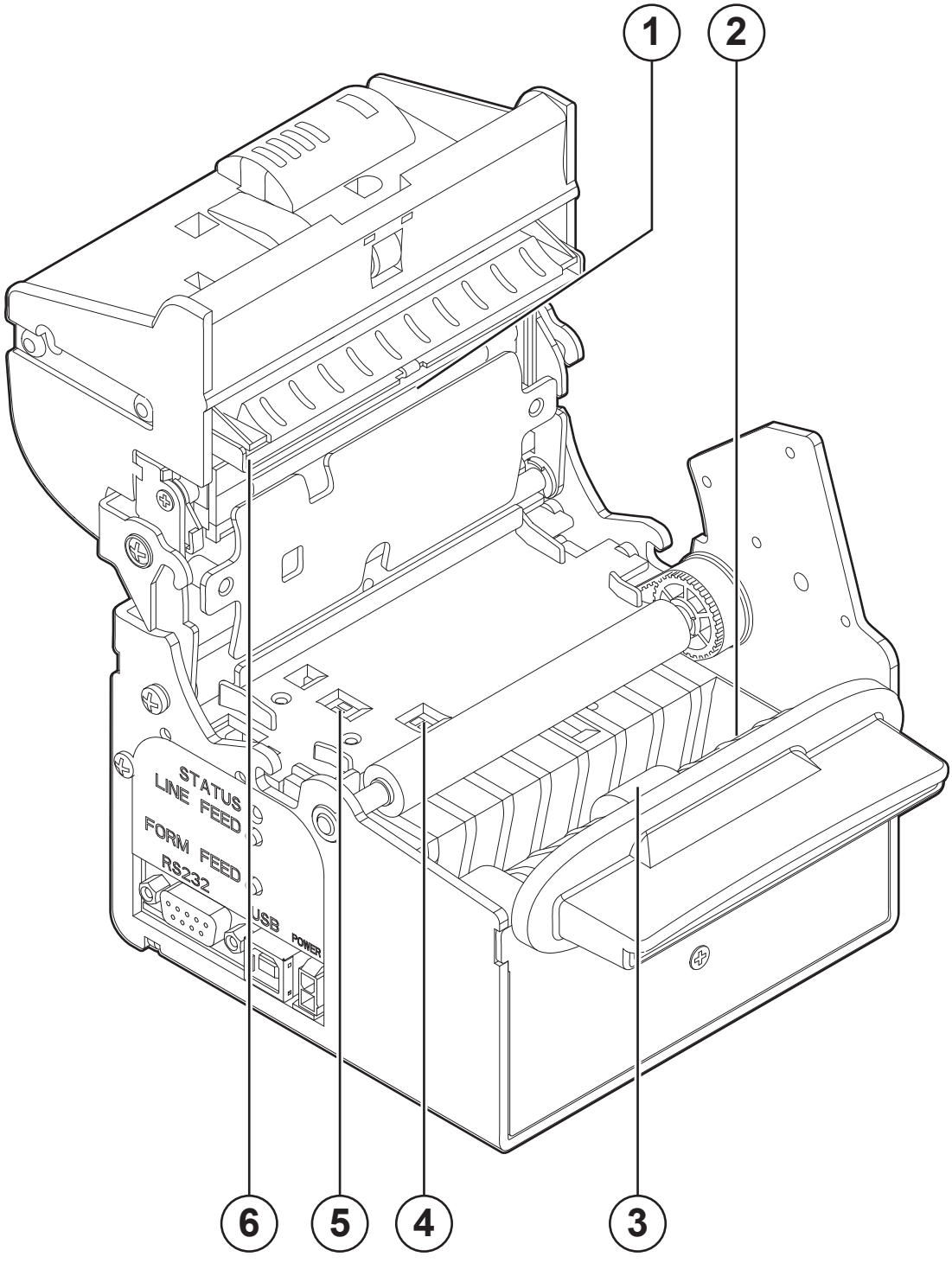
2.2 Device components: external views

1. Opening lever
2. Autocutter
3. Paper output
4. Right cursor for paper input
5. Paper input
6. Left cursor for paper input
7. Port for low paper sensor (external)
8. Power supply port
9. USB port
10. RS232 serial port
11. FORM FEED key
12. LINE FEED key
13. Status LED



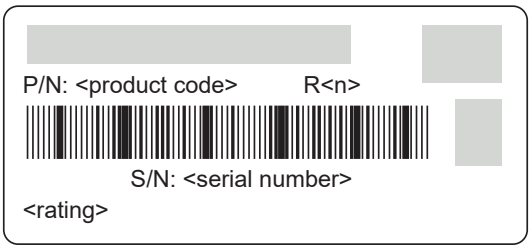
2.3 Device components: internal views

1. Printing head
2. Paper out presence sensor
3. Ejector roller
4. Sensor for paper in presence
5. Sensor for black mark
6. Autocutter

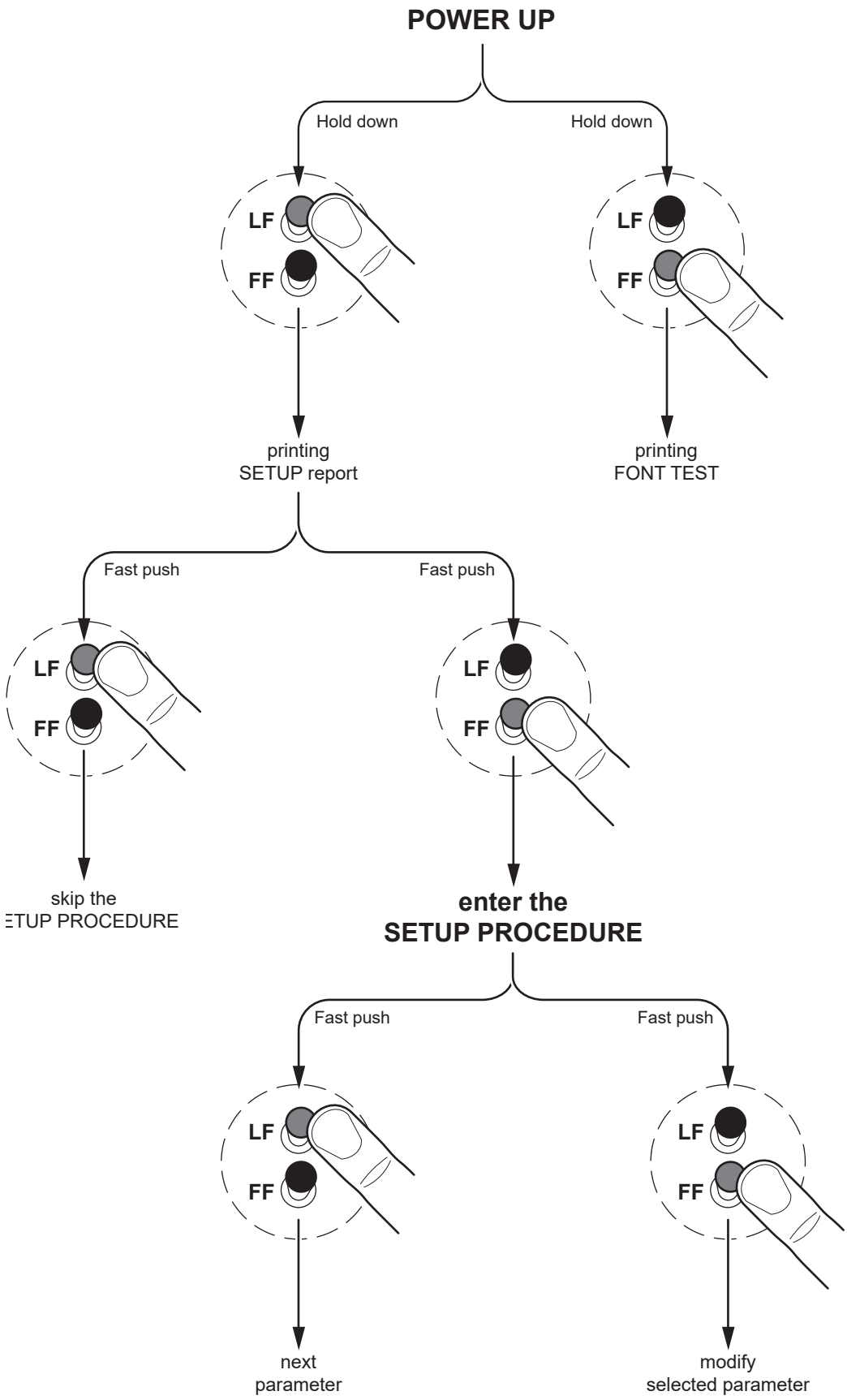


2.4 Product label

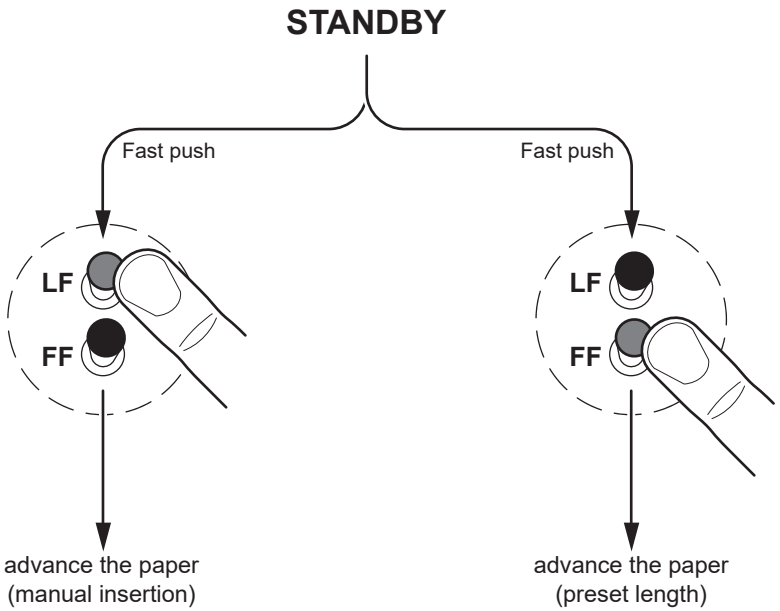
The main data used to identify the machine are shown on the label attached to the bottom of the device.
In particular, it shows the electrical data for the connection to a power source. It also shows the product code, the serial number and the hardware revision (R).



2.5 Key functions: power up



2.6 Key functions: standby



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.

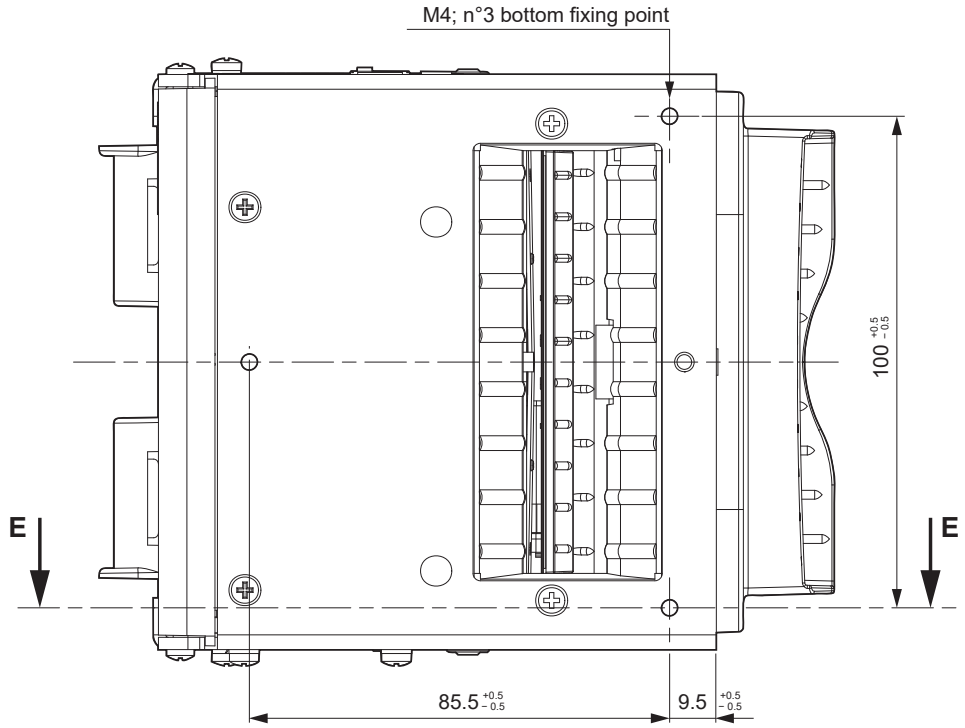
STATUS LED		DESCRIPTION
-	***OFF***	DEVICE OFF
GREEN	***ON***	DEVICE ON: NO ERROR
GREEN COMMUNICATION STATUS	***x 1***	RECEIVE DATA
	x 2	RECEPTION ERROR (PARITY, FRAME ERROR, OVERRUN ERROR)
	x 3	COMMAND NOT RECOGNIZED
	x 4	COMMAND RECEPTION TIME OUT
YELLOW RECOVERABLE ERROR	***x 2***	HEADING OVER TEMPERATURE
	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	AUTOCUTTER ERROR

3 INSTALLATION

3.1 Fastening

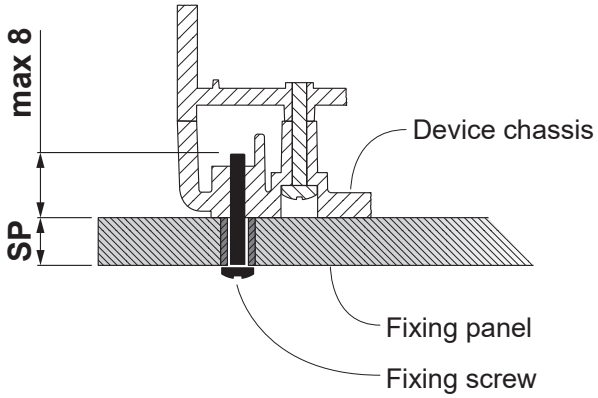
NOTE: All the dimensions shown in following figures are in millimetres.

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

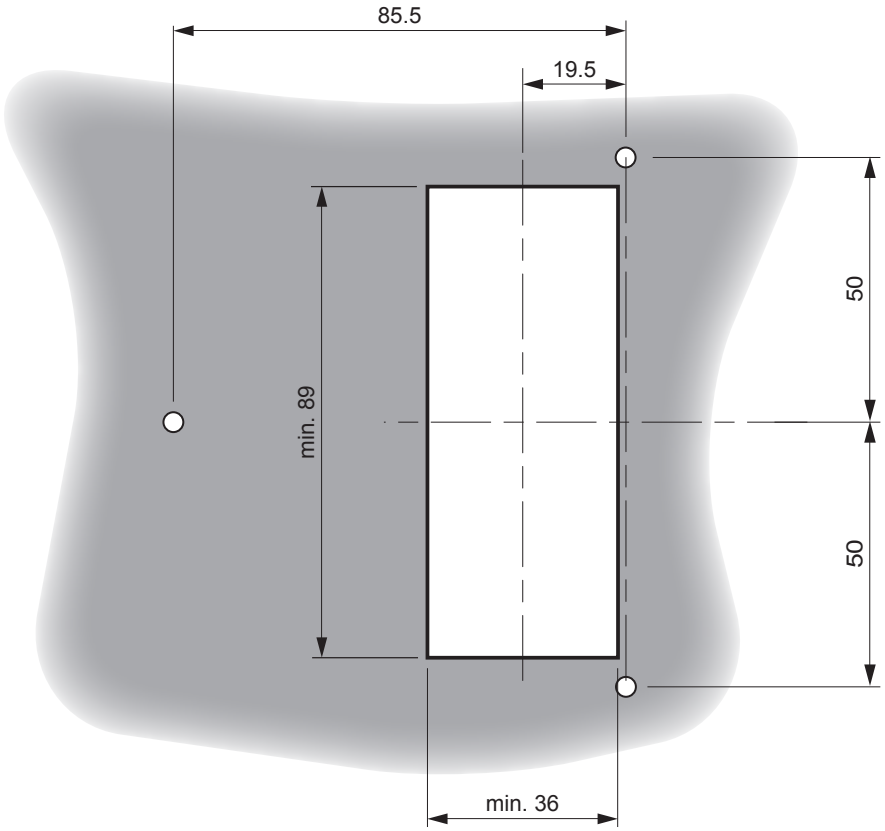


The screw length (L) will be calculated according to the thickness of the panel (Sp) on which the device is fixed, as follows:

$$L \leq 8 \text{ mm} + Sp$$

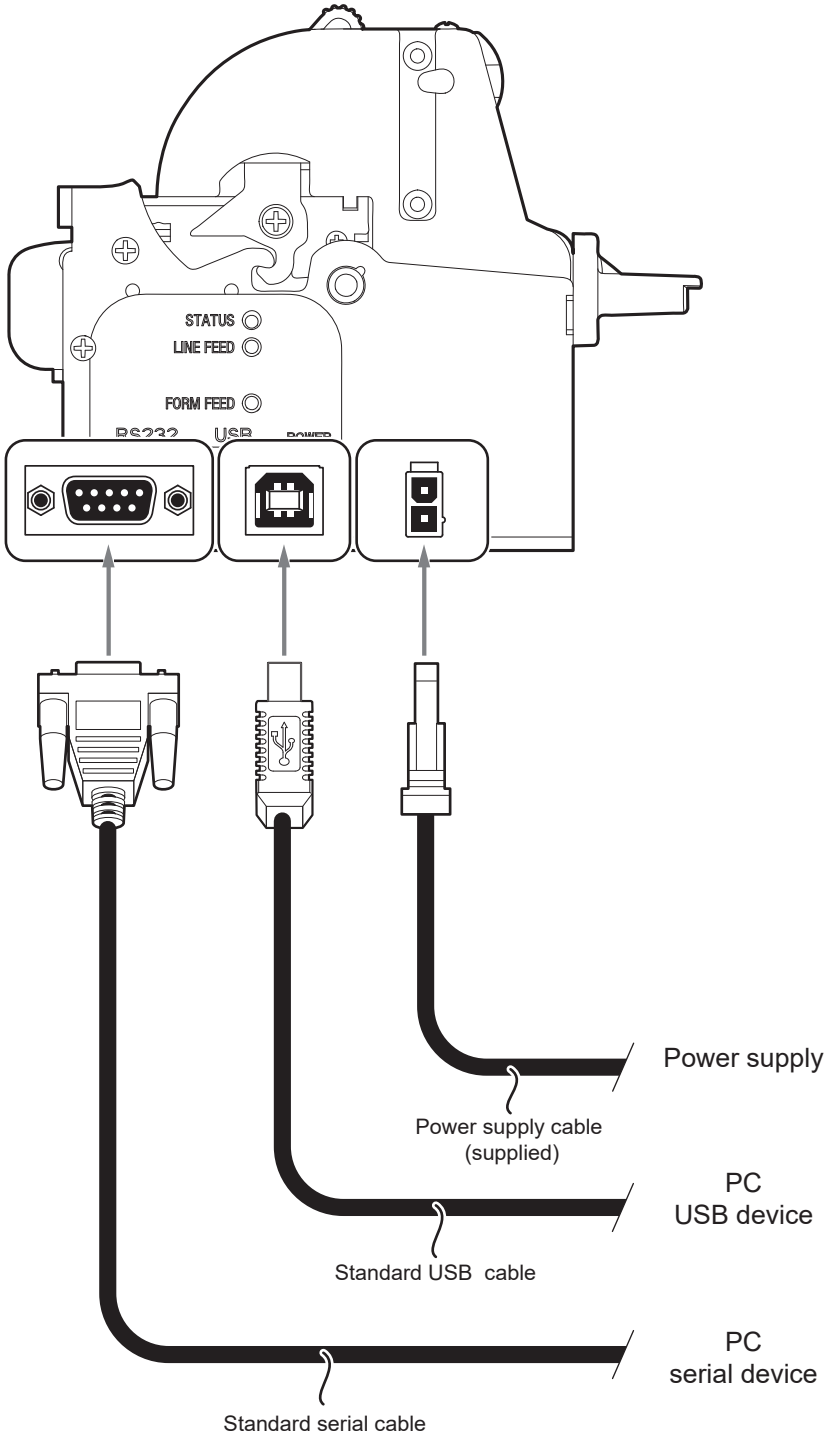
For example, if panel thickness is 10mm (Sp = 10 mm), the maximum length for screws will be 18 mm.

Furthermore, the panel must provide an opening for the paper handling that respects the measures shown below:



3.2 Connections

The following figure show the possible connections for the device. When the RS232 and USB communication cables are connected to the device at the same time, communication takes place via the USB port.



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

3.3 Pinout

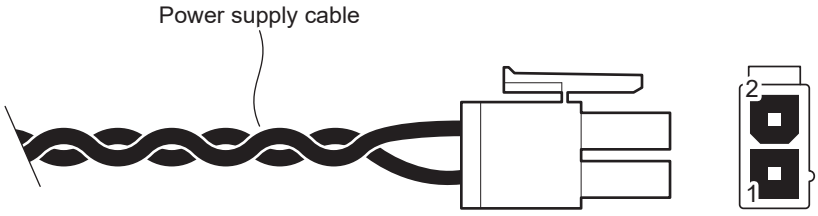


POWER SUPPLY

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

J7	1	+24 Vdc
	2	GND

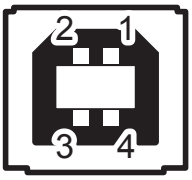
The following figure shows the connector pinout of the power supply cable for device:



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

PIN	Cable color	Signal
1	Red	+24V
2	Black	GND

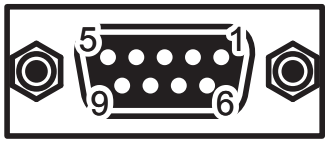
ATTENTION:
Respect power supply polarity.



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	



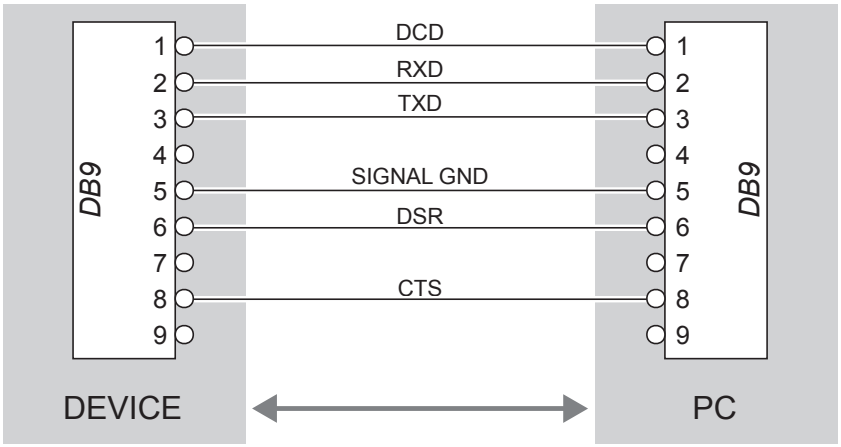
SERIAL INTERFACE

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		

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.

Given the presence of the RS232 standard, logic value “0” corresponds to the voltage value +VRS232 (voltage value between +3Vdc and +15Vdc) and logic value “1” corresponds to the voltage value -VRS232 (voltage value between -3Vdc and -15Vdc).

3.4 Driver and SDK

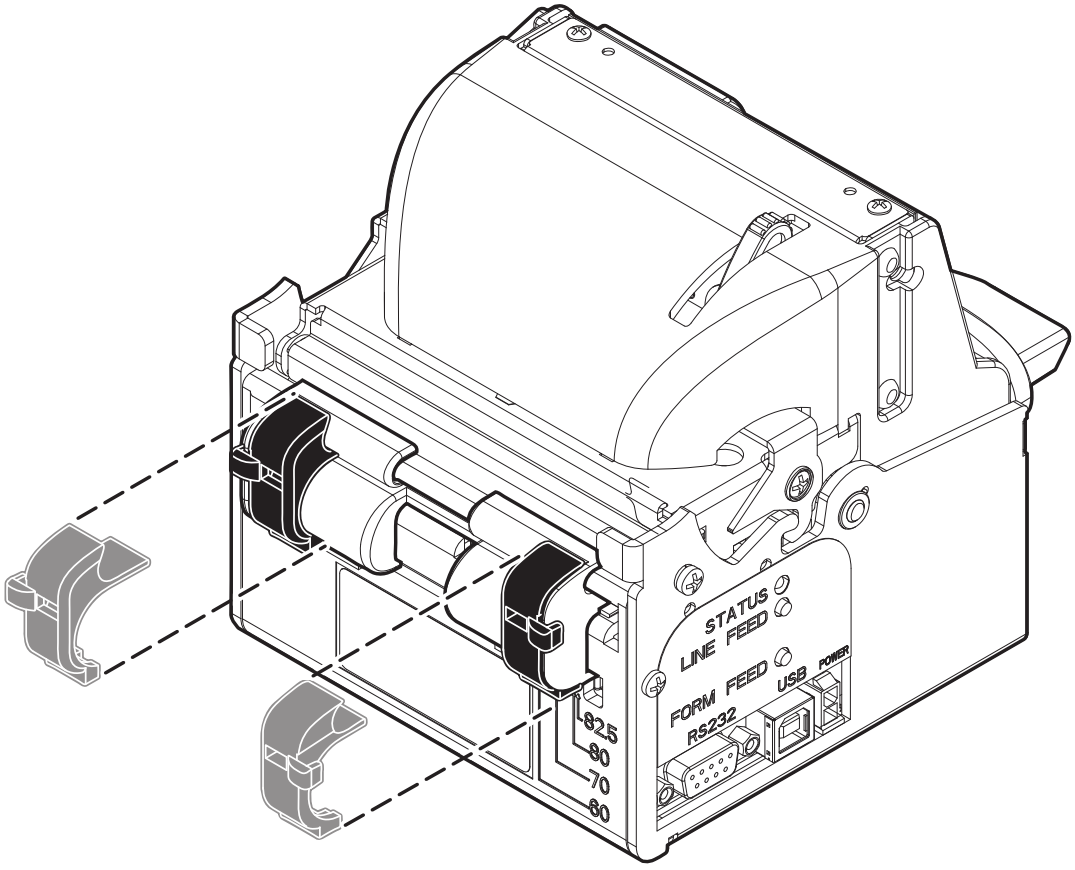
In the website www.custom4u.it are available the drivers for the following operating system:

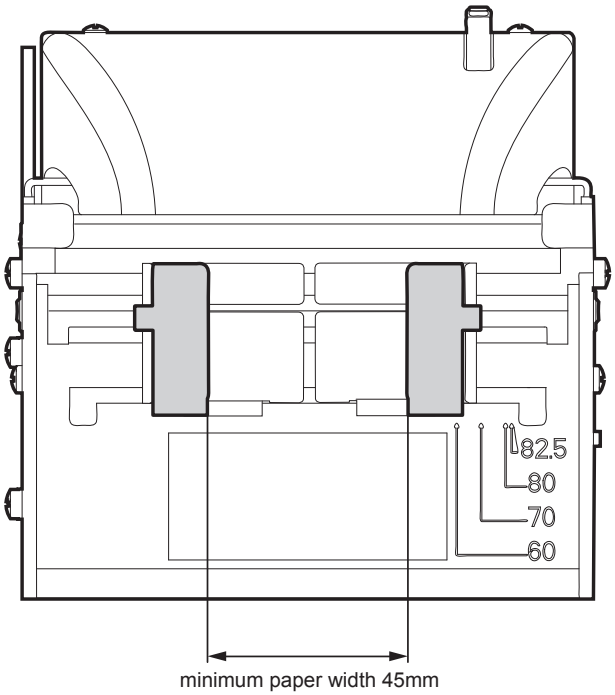
OPERATING SYSTEM	DESCRIPTION	INSTALLATION PROCEDURE
Windows	Driver for Windows XP	From the Start menu, press Run and type-in the path where the SW was saved on PC, then click OK. Follow the instructions on the screen to install the driver.
	Driver for Windows VISTA (32/64bit)	
	Driver for Windows 7 (32/64bit)	
	Driver for Opos	
Linux	32/64 bit	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	SDK for Custom Android API	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 SDK.
iOS	SDK for Custom iOS API	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 SDK.

3.5 Paper width 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 can not detect the paper presence.
To assemble the reductions refer to the following figure.



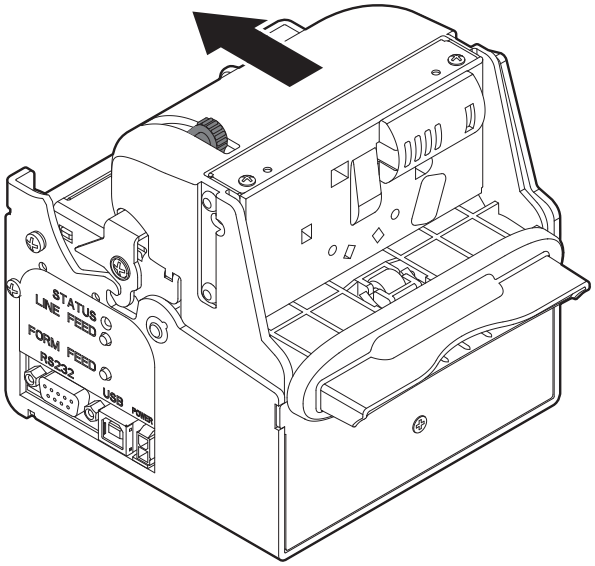


4 OPERATION

4.1 Cover opening

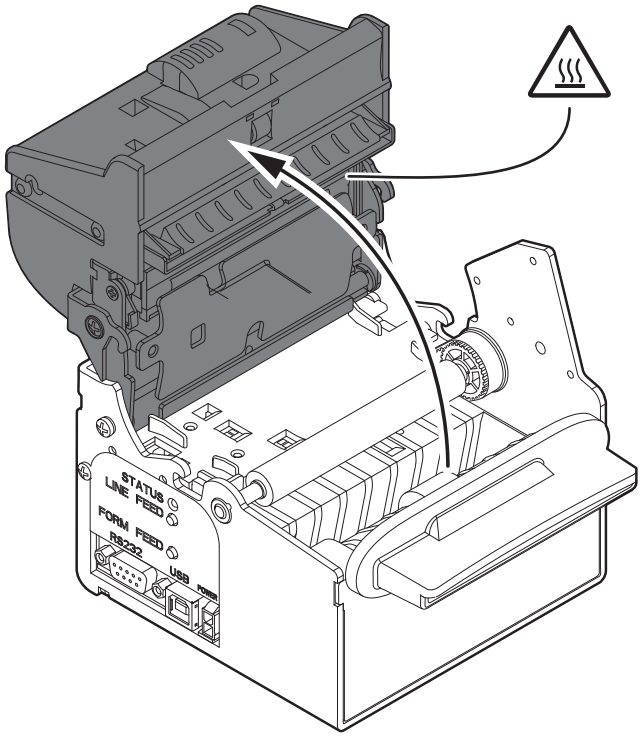
To open the device cover proceed as follows:

1



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

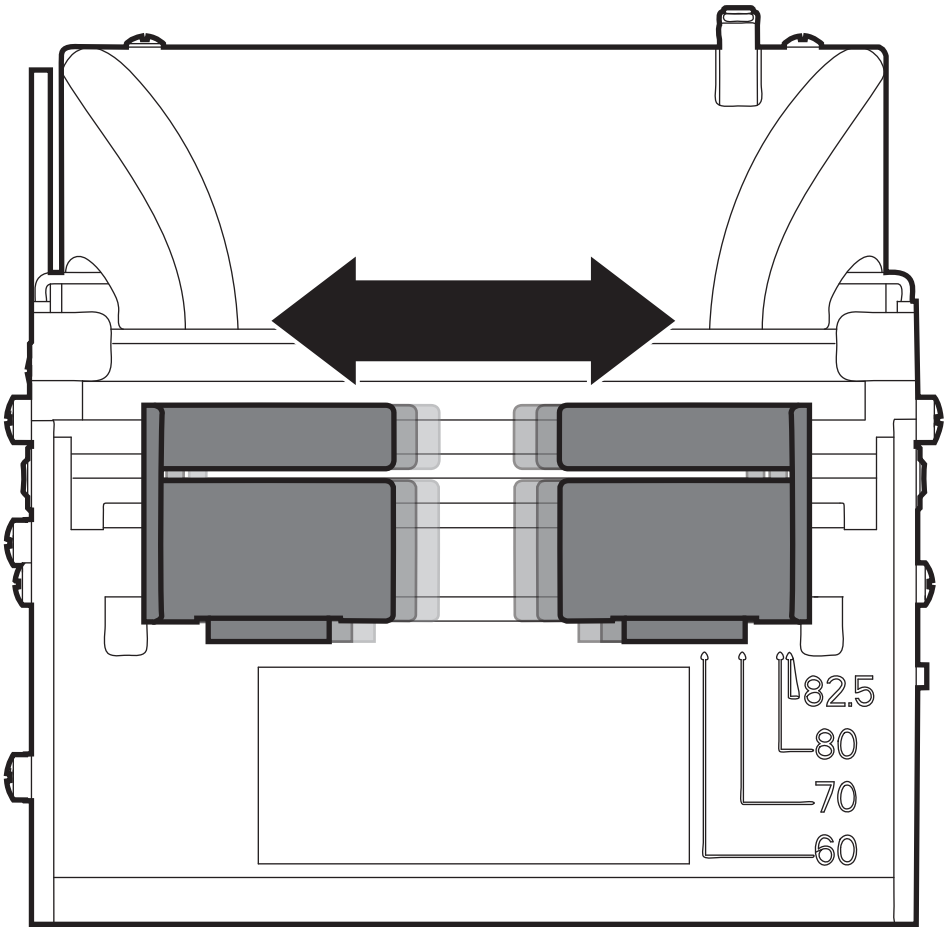
2



Open the device cover to the lock position.

4.2 Adjusting paper width

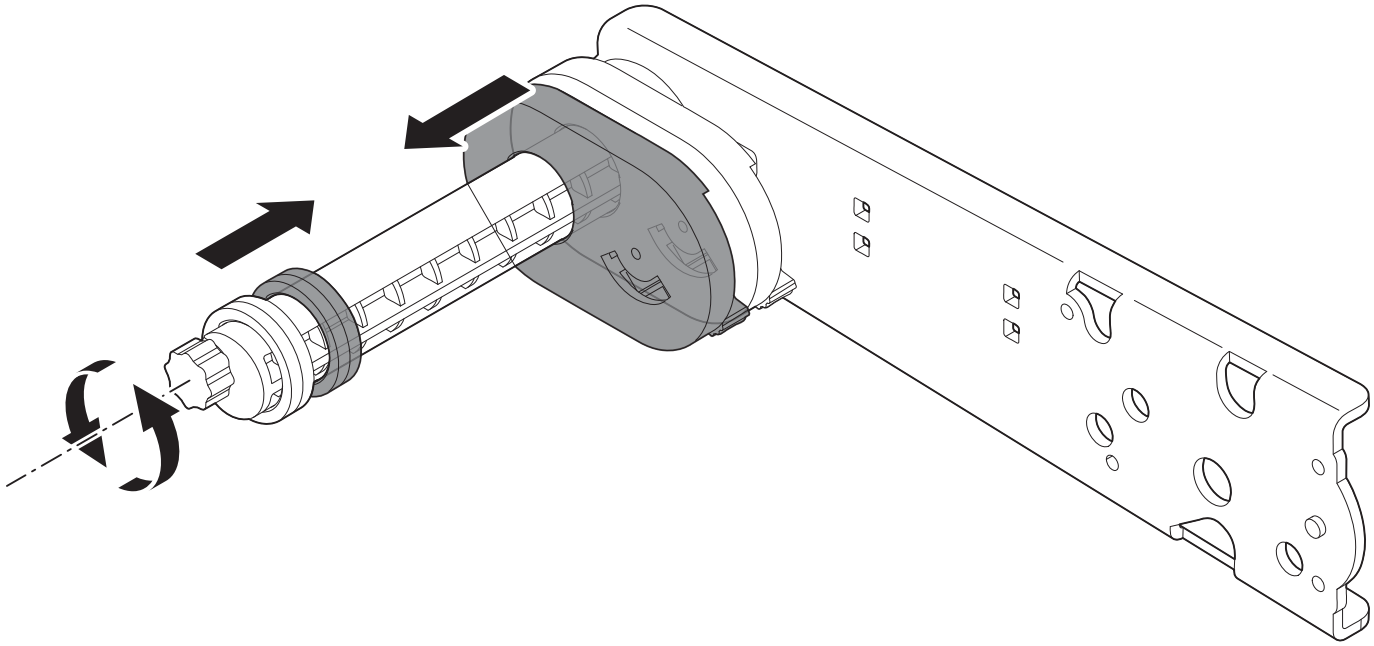
Paper width may be adjusted from 60mm to 82.5mm using the right (Dx) and Left (Sx) slides located at the paper infeed opening.
Move the right and left slides to adjust the paper width (see following figure). Below the right slide there are four point of reference for paper width (60, 70, 80 and 82.5mm).



NOTE:
To use the paper reduction kit (optional) see previous paragraph.

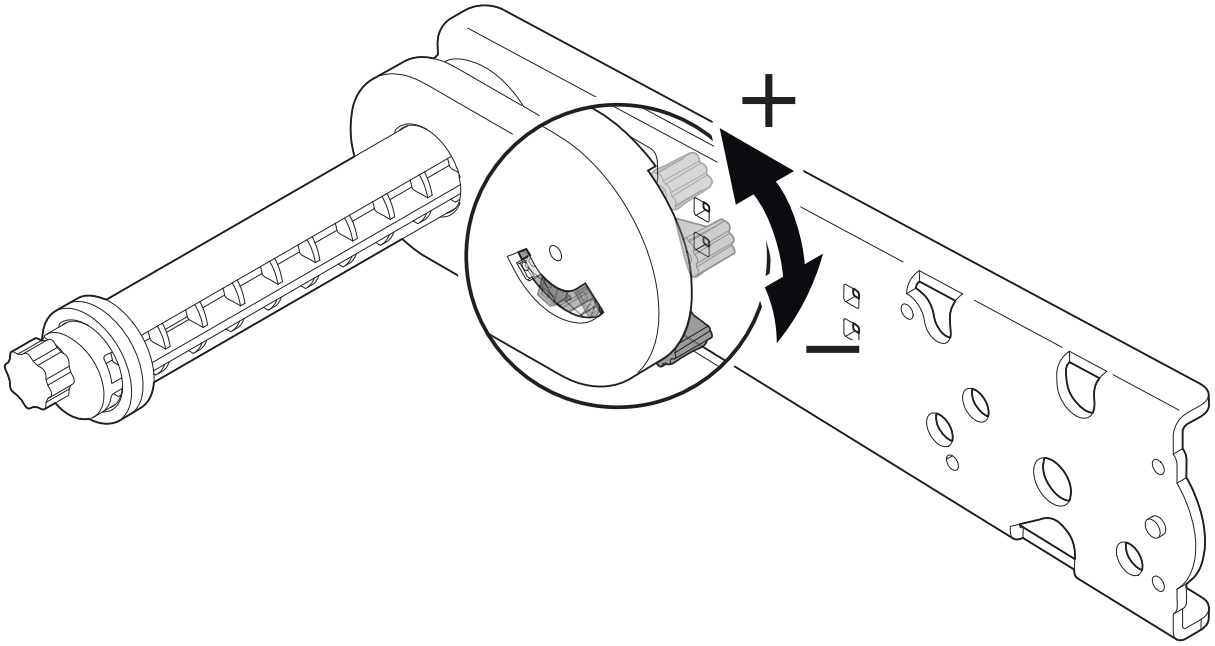
4.3 Adjusting paper width with the paper roll holder code 974DW010000001 (optional)

This accessory allows the use of paper roll width from 60 mm to 82.5 mm. To adjust the width of the paper roll case, rotate the knob as shown in the following figure.



4.4 Adjusting the paper stock with the paper roll holder code 974DW010000001 (optional)

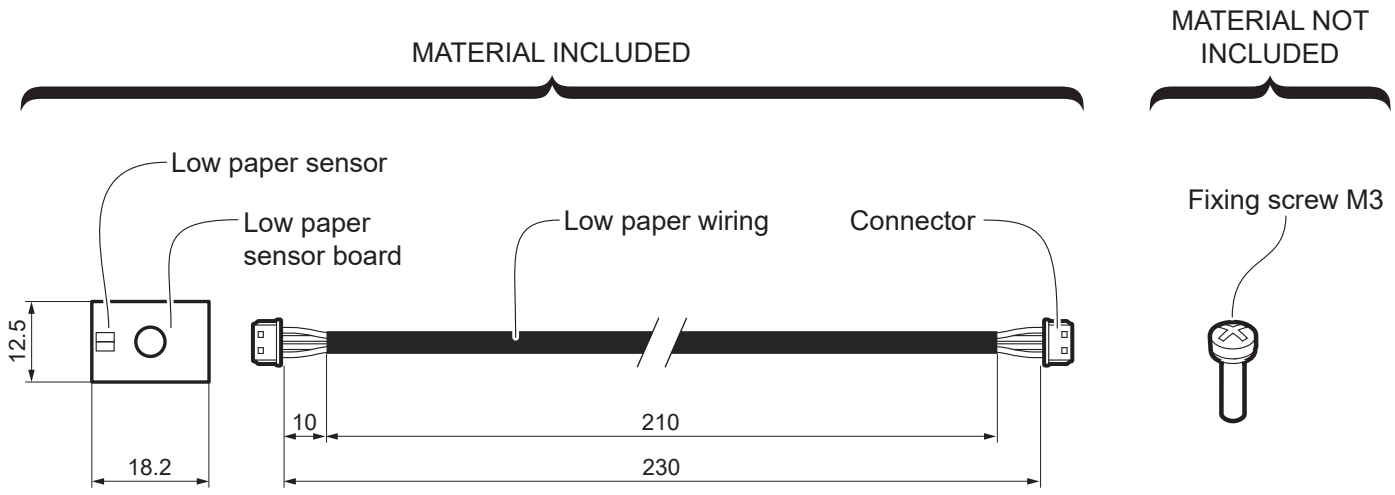
This accessory allows the move the position of the low paper sensor to adjust the amount of paper on the roll under which report the low paper.
Use the lever shown in figure to move the low paper sensor: move the lever up to increase the paper stock, move the lever down to decrease the paper stock.



4.5 Low paper sensor

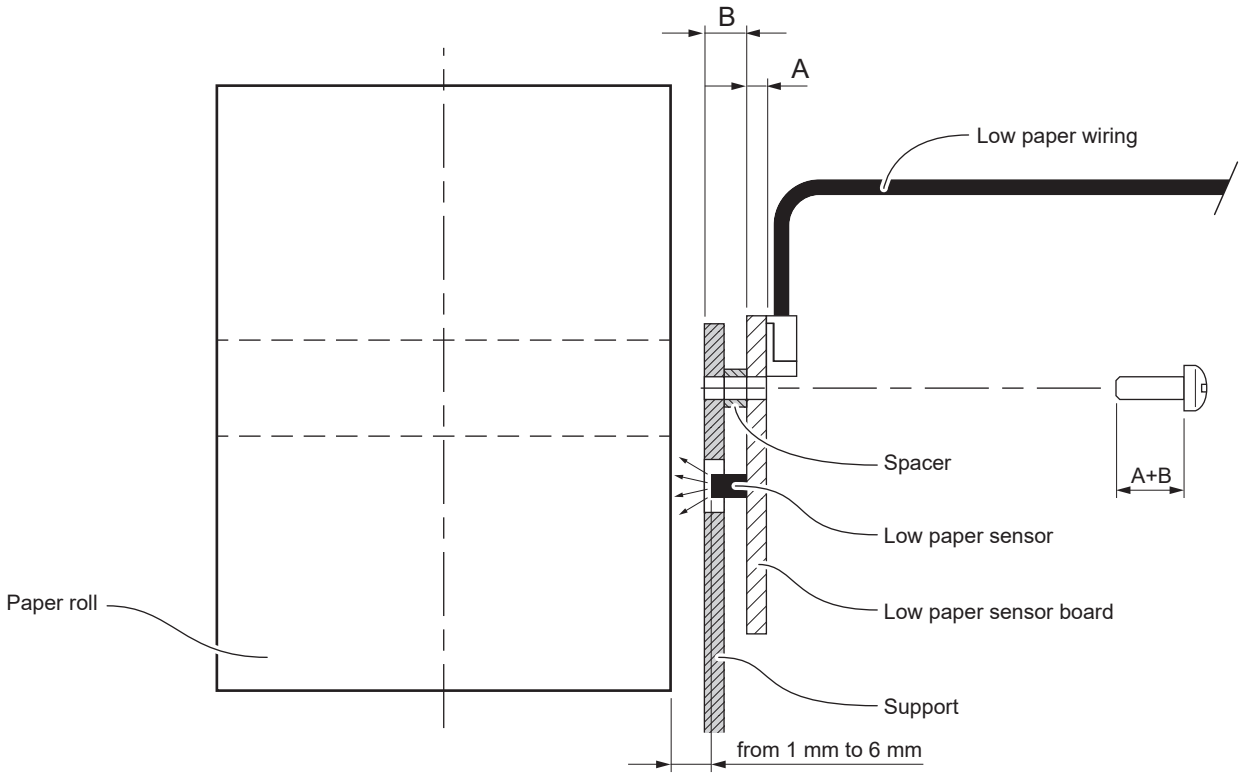
The device provides as an accessory (see chapter 10) a low paper sensor with the cable (see following figure). To fix the sensor, use an M3 screw not supplied.

All the dimensions shown in following figures are in millimetres.



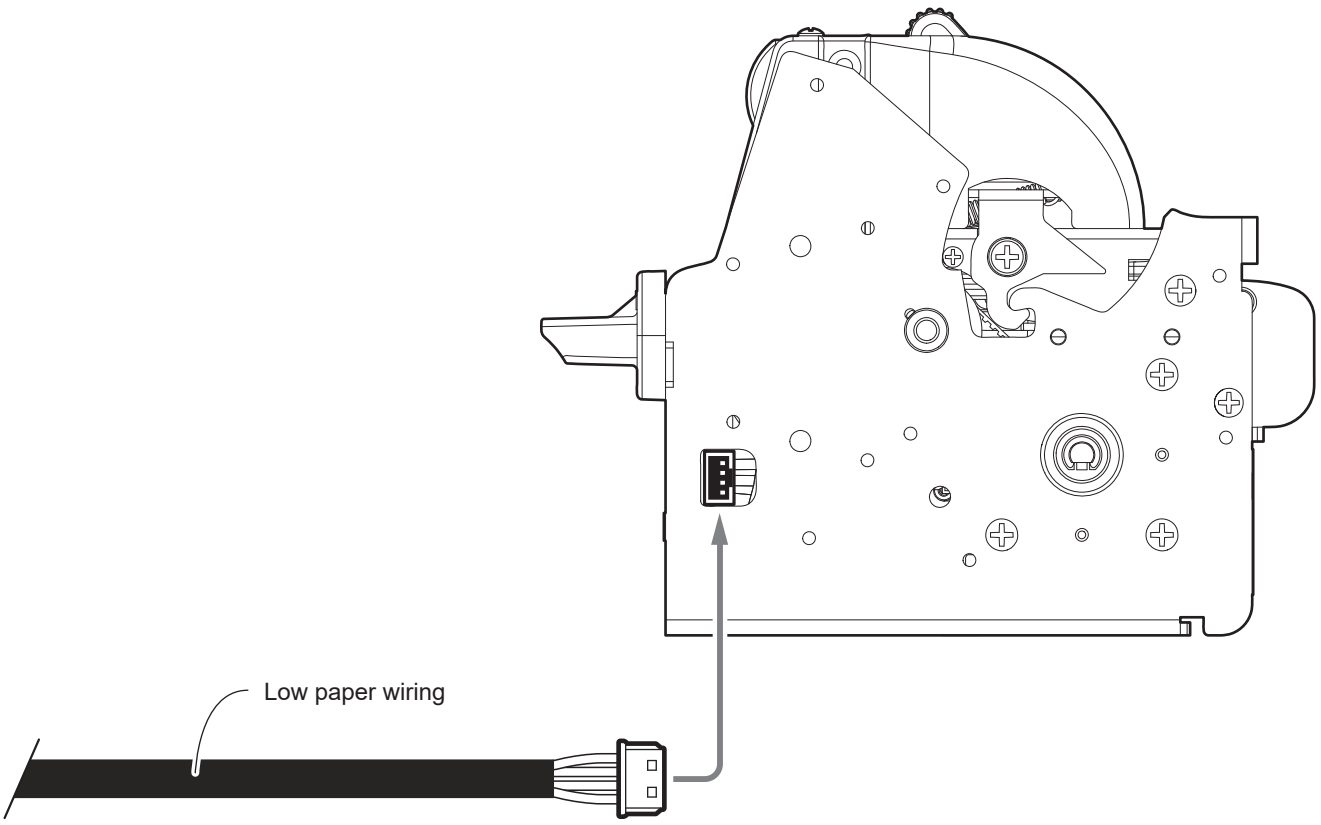
For the assembly procedure, proceed as follows:

1



Fix the low paper sensor board to the support by using an M3 screw not included.
For the correct functioning of the low paper sensor, comply with the measures specified.

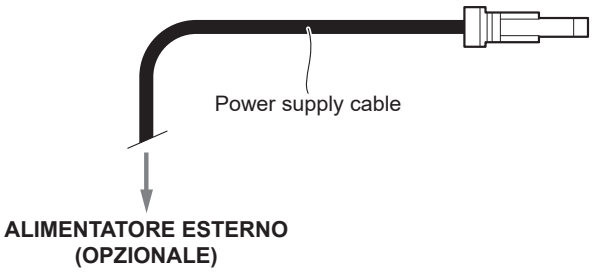
2



Connect the wiring coming from the low paper sensor board
at the connector shown in figure.

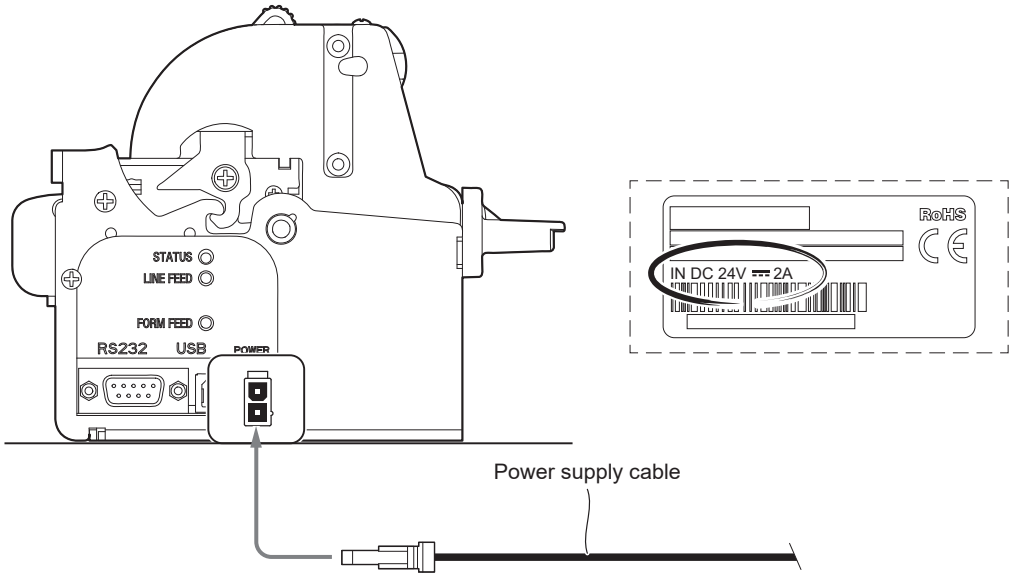
4.6 Switch the device ON

1



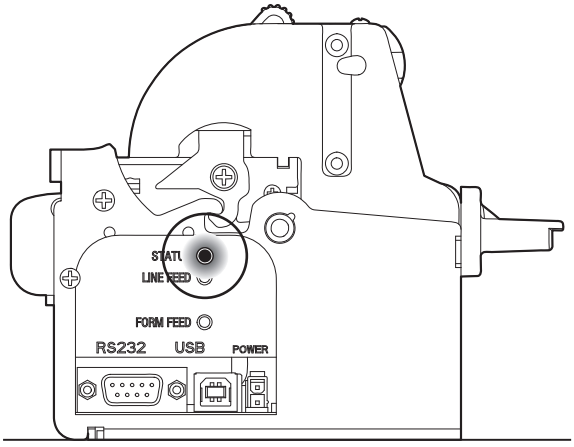
Connect the power supply cable to an external power supply unit.

2



Connect the power supply cable to the device.
Use the type of electrical power supply indicated on the label.

3

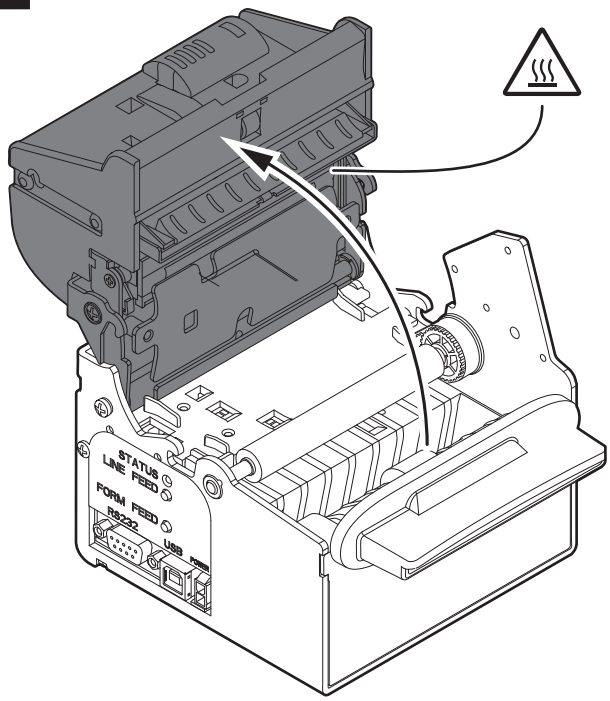


The green status LED turns on and the device is ready.

4.7 Loading the paper roll

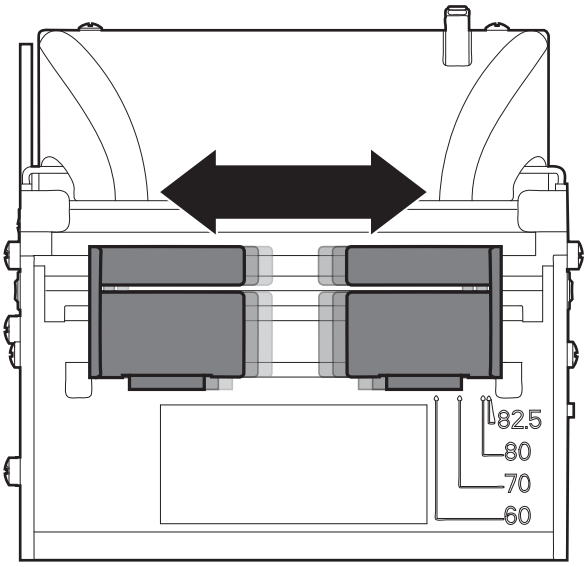
At every change of paper, check inside the device. To change the paper proceed as follows.

1



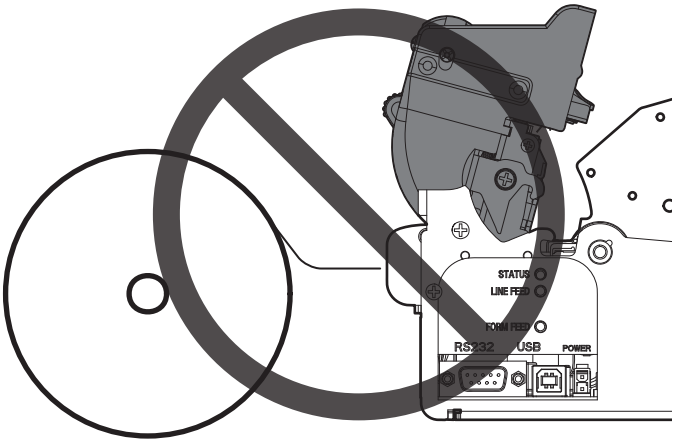
Open the device cover
(see paragraph 4.1).

2



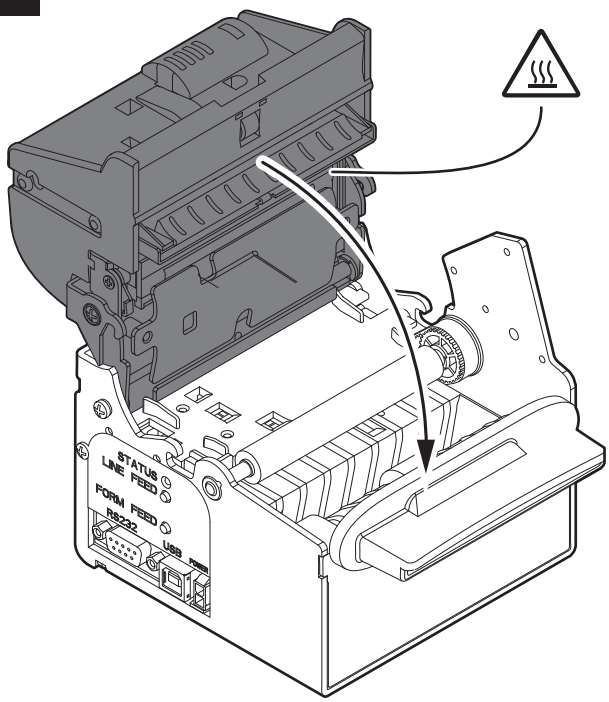
Adjust the paper width
(see paragraph 4.2).

3



ATTENTION !!!
Do not load the paper with the device cover open.

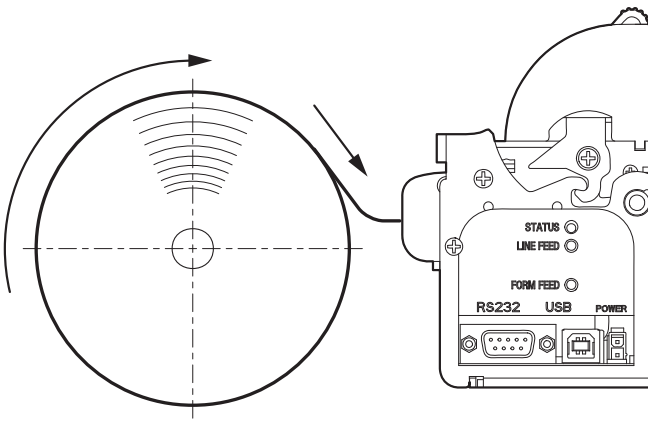
4



Close the device cover.

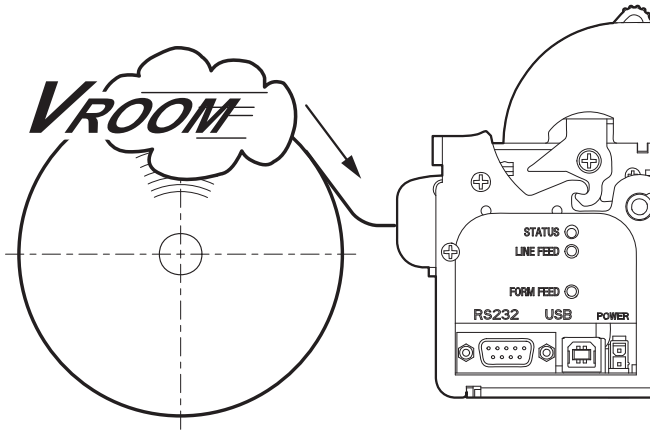
5





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

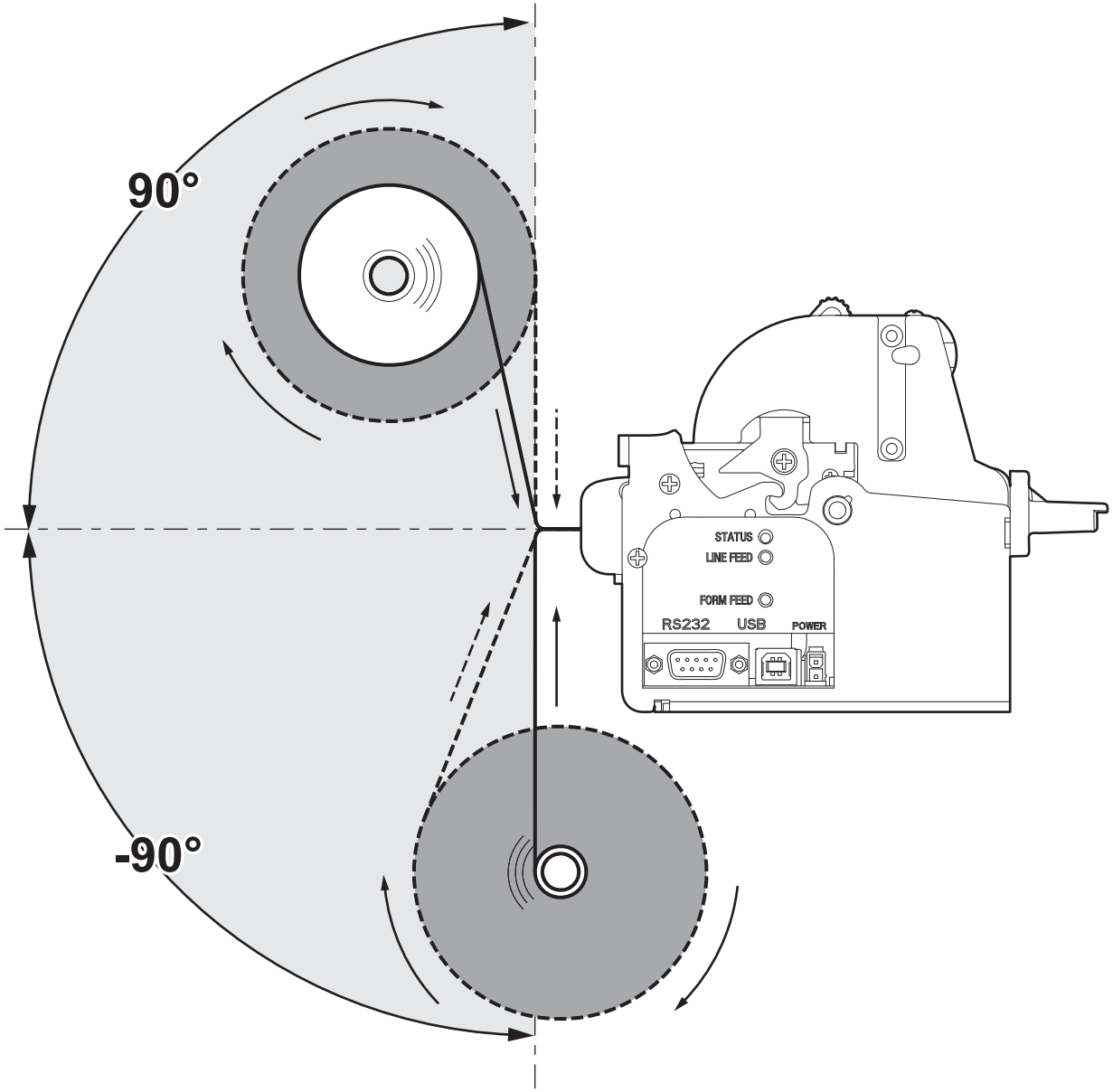
6



Wait until the paper is automatically loaded.

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.



4.8 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.

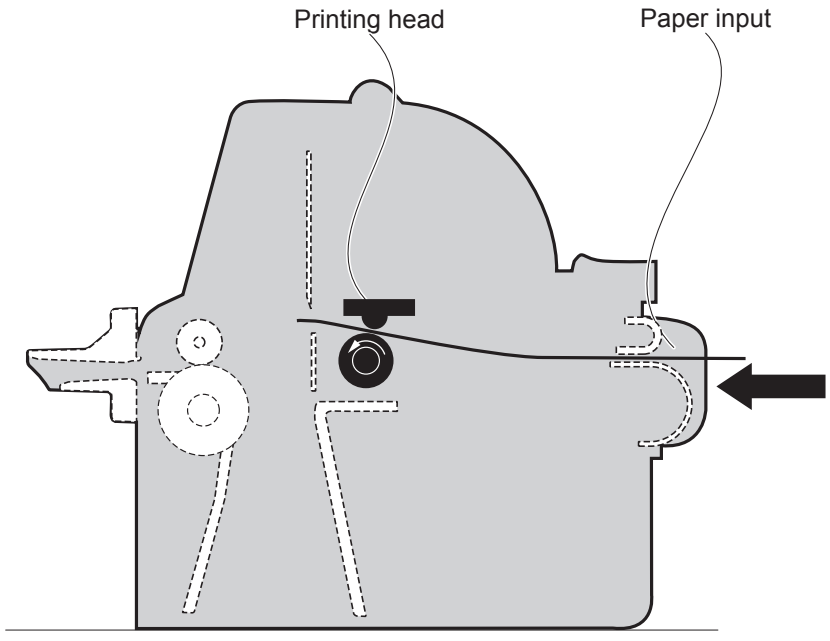
NOTE: To enable this issuing mode, you need to correctly set the operation mode of the ejector with the command 0x1D 0x65 (see Commands Manual) and the setup parameter “Automatic Ejecting” (see chapter 5 of this manual).

“PRESENT/EJECT” mode

1

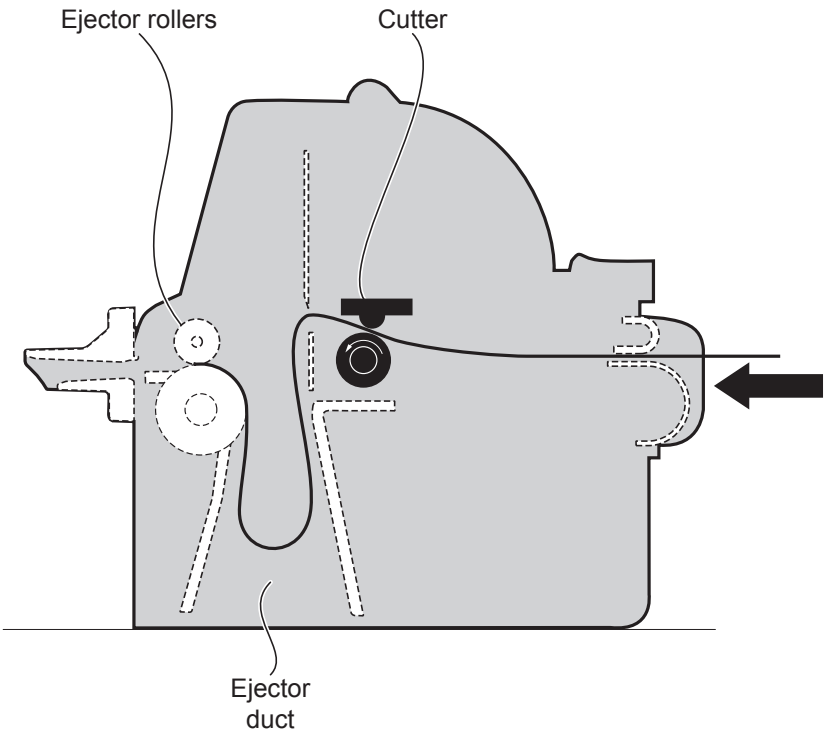
For the minimum and maximum length of the ticket refer to"Paper specifications". The ticket presentation will be performed in this way:

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



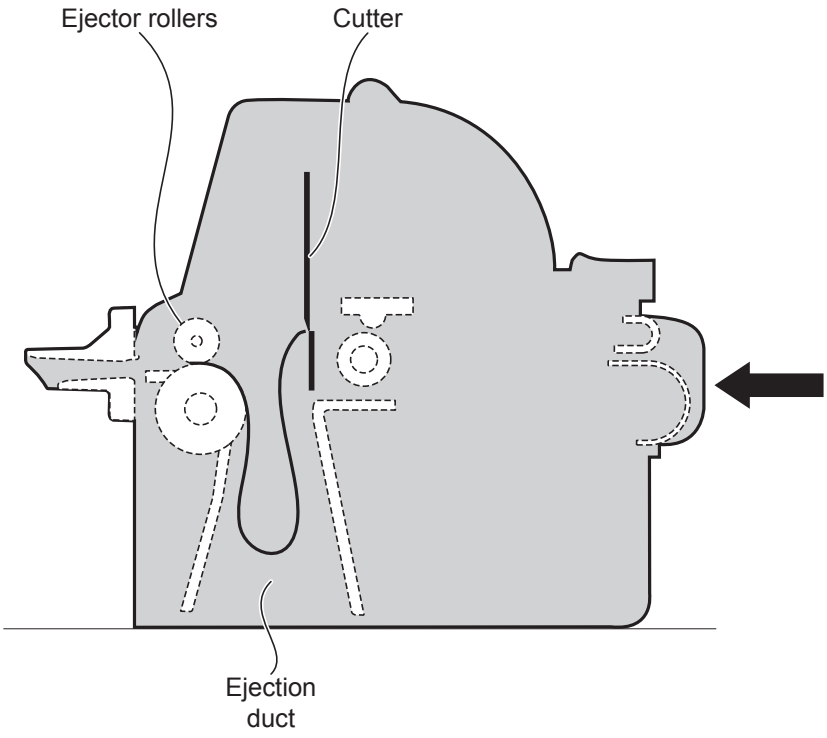
The device starts the ticket printing.

2



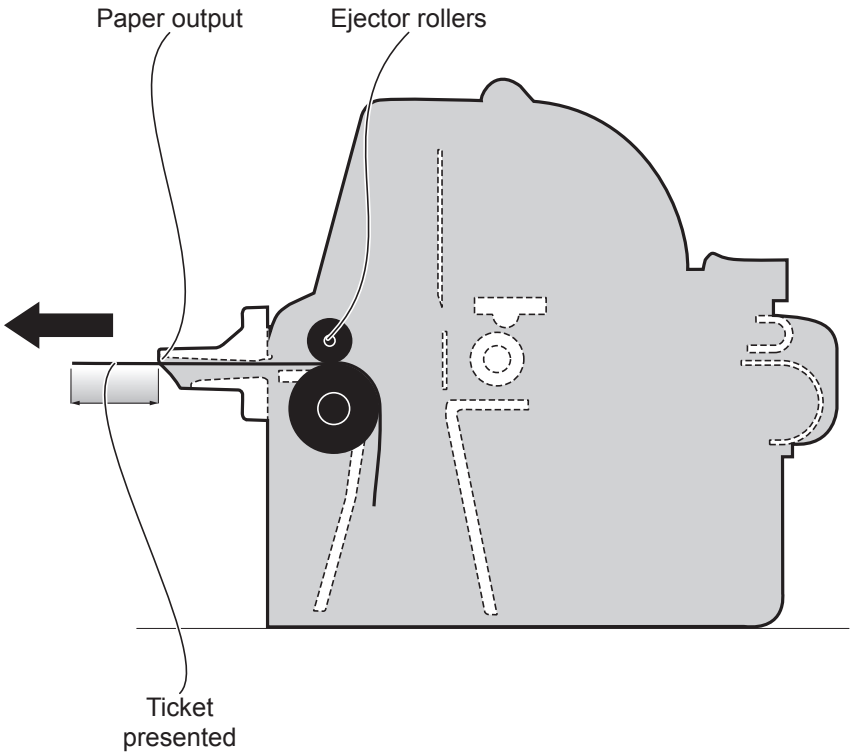
The ticket advances ahead to the ejector and is caught between the ejector rollers. The printed part of ticket is collected into the ejection canal while the device continues printing.

3



When printing ends, the device cuts the ticket printed.

4



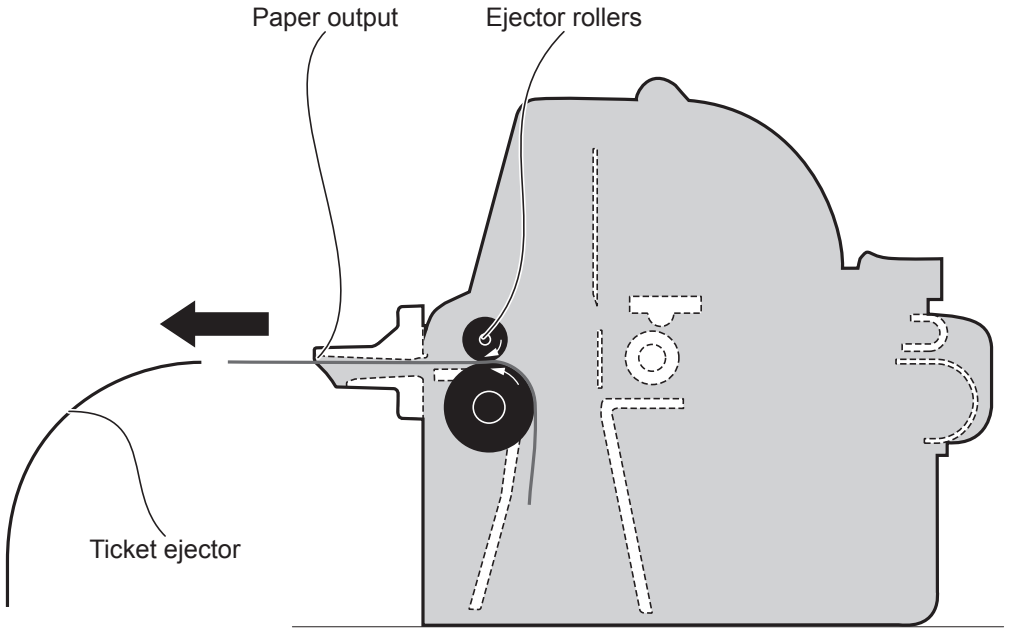
The device presents a portion of the ticket printed on the paper mouth.

5



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

6



The device directly ejects the ticket.

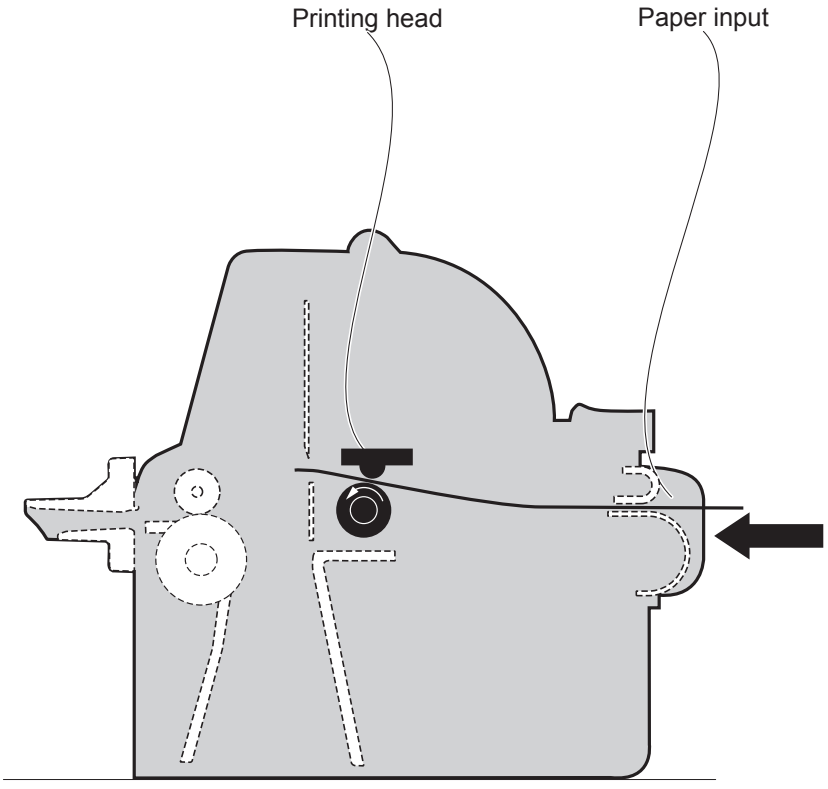
“PRESENT/RETRACT” mode

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

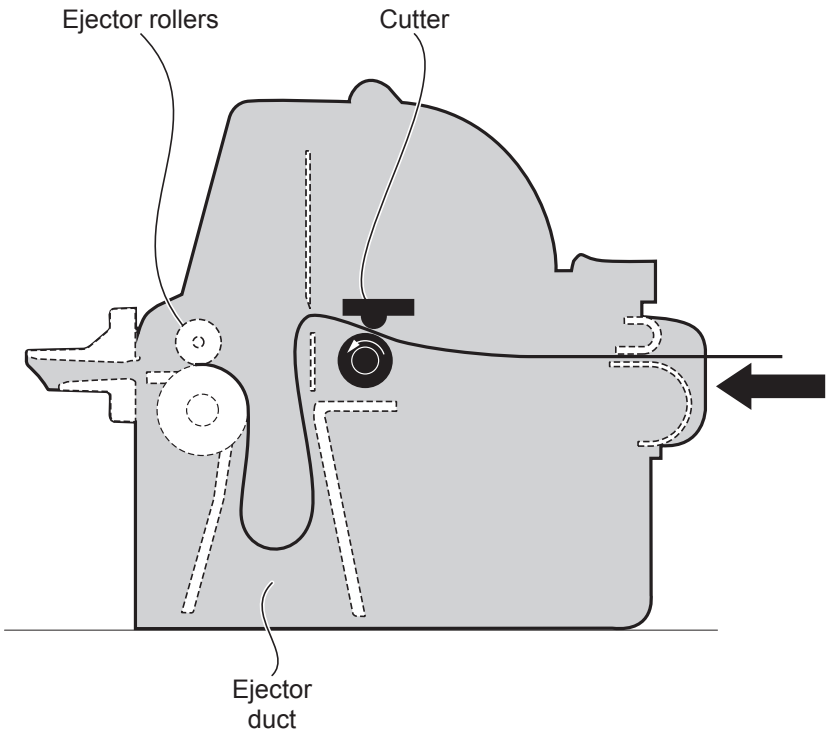
For the minimum and maximum length of the ticket refer to"Paper specifications". The ticket presentation will be performed in this way:

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



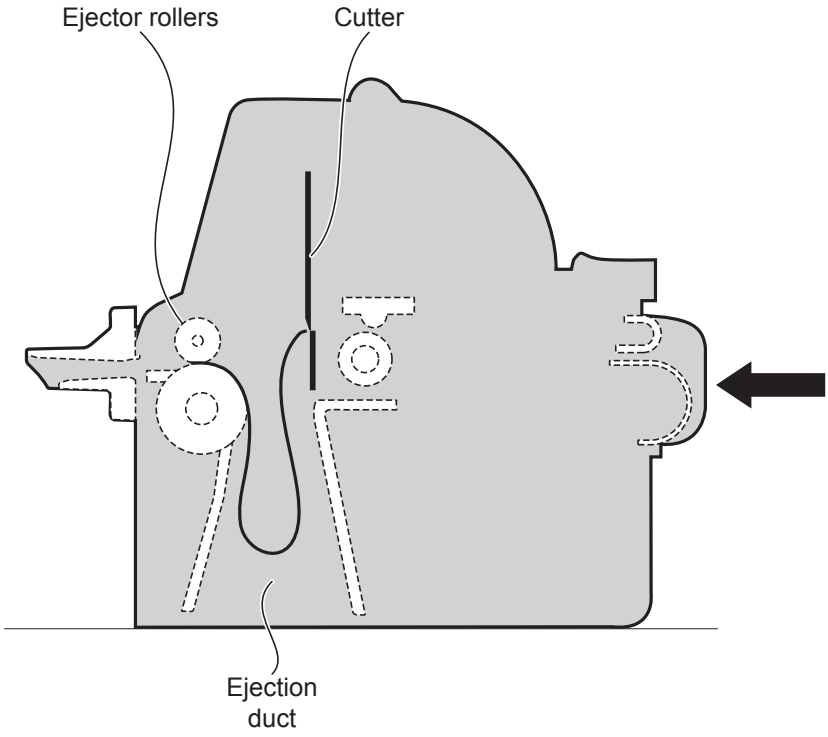
The device starts the ticket printing.

2



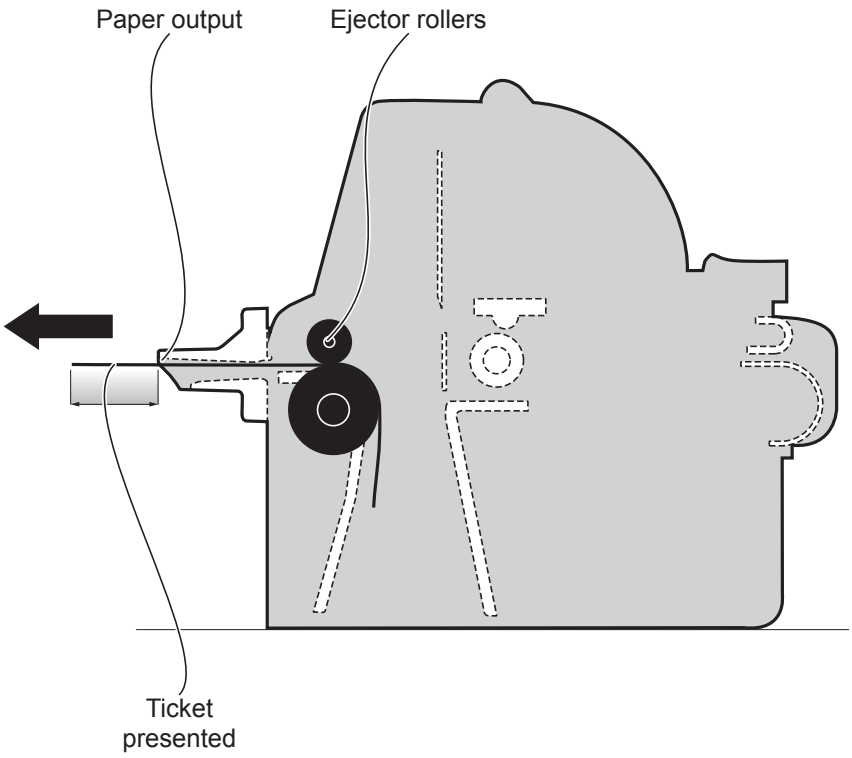
The ticket advances ahead to the ejector and is caught between the ejector rollers. The printed part of ticket is collected into the ejection canal while the device continues printing.

3



When printing ends, the device cuts the ticket printed.

4



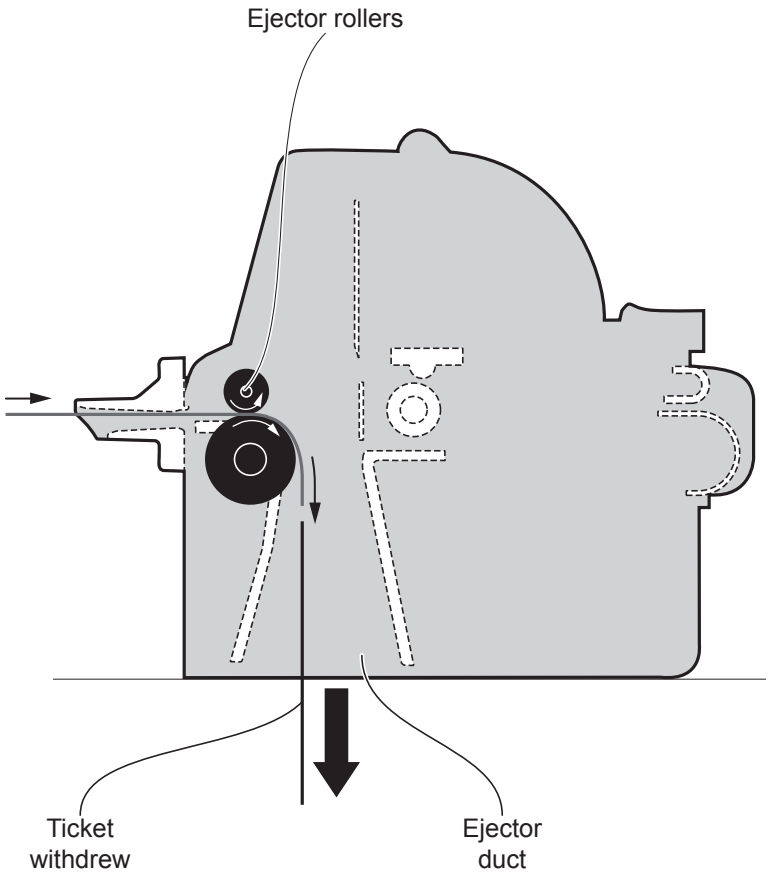
The device presents a portion of the ticket printed on the paper mouth.

5



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

6



The device retracts and collects the ticket from the mouth paper

5 CONFIGURATION

5.1 Configuration by keys

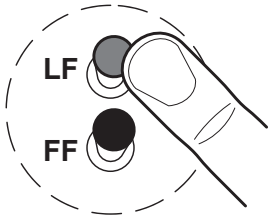
To enter the configuration mode and print a SETUP report with the operating parameters of the device, proceed as follows.

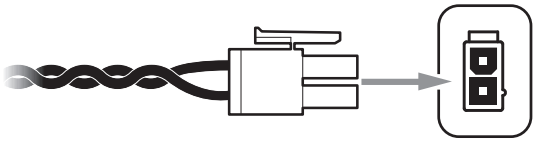
1

LINE FEED KEY
(hold down)

+

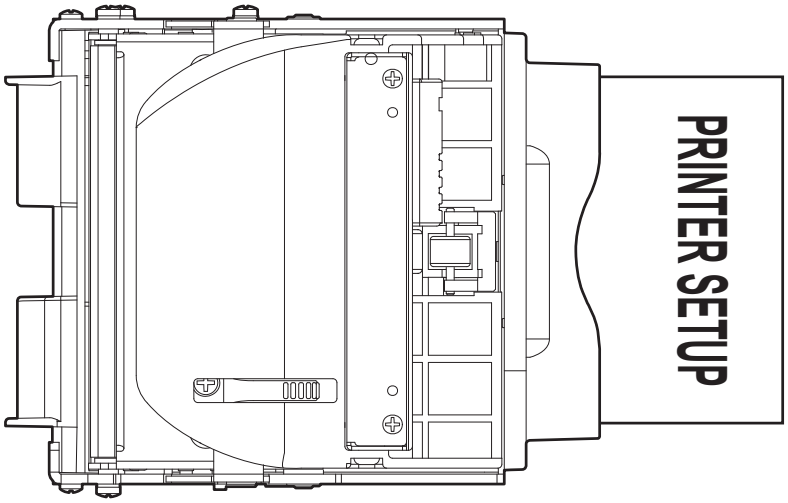
POWER SUPPLY





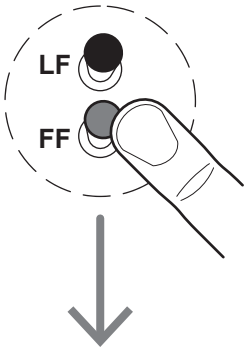
During power-up, hold down the LINE FEED key
while the wiring is plugged into the power supply connector of the device.

2



The device prints the report with settings parameters.

3



Enter setup

Press the FORM FEED key to enter the configuration mode.

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.

DEVICE NAME AND FIRMWARE MODULES RELEASE

DEVICE STATUS

PARAMETERS FOR DEVICE CONFIGURATION

KEYS FUNCTIONS

< device name >

SCODE. <*code*> - rel 1.00

FCODE. <*code*> - rel 1.00

PRINTER SETUP

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

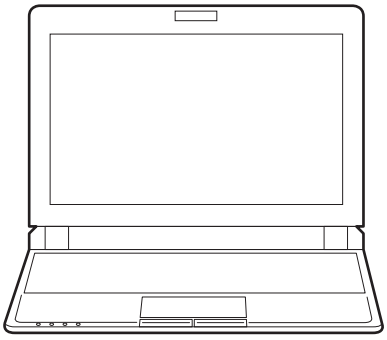
RS232 Baud Rate .....: **19200 bps**
RS232 Data Length.....: **8 bits/chr**
RS232 Parity.....: **None**
RS232 Handshaking .....: **Xon/Xoff**
Busy Condition .....: **RxFull**
USB Address Number.....: **0**
Autofeed .....: **CR Disabled**
Print Mode .....: **Normal**
Chars / inch .....: **A=15 B=20 cpi**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

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

5.2 Configuration by software

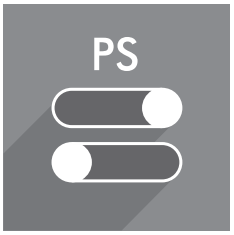
The setup parameters can be set by using the “PrinterSet” software tool available on www.custom4u.it.
For a detailed description of the device operating parameters see the following paragraphs.
To configure the device by software, proceed as follows:

1



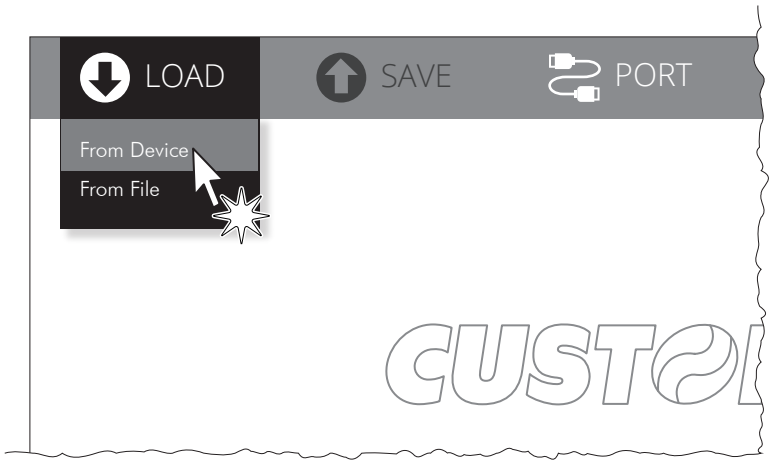
Connect the device to a PC directly (see paragraph 3.2),
without using HUB devices.

2



Start “PrinterSet” software tool.

3



Click on LOAD > FROM DEVICE and select
the device connected to the PC.

5.3 Device 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 Communication parameters

The device 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 device 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	115200 [D]
4800	38400	

This parameter is valid only for with serial interface.

RS232 DATA LENGTH

Number of bit used for characters encoding:

7 bits/char
8 bits/char [D]

This parameter is valid only for with serial interface.

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

This parameter is valid only for with serial interface.

RS232 HANDSHAKING

Handshaking:

XON/XOFF =	software handshaking
Hardware [D] =	hardware handshaking (CTS/RTS)

This parameter is valid only for with serial interface.

When the receive buffer is full, if handshaking is set to XON/XOFF, the device sends the XOFF (0x13) on the serial port. When the receive buffer has cleared once again, if handshaking is set to XON/XOFF, the device sends the XON (0x11) on the serial port.

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 device is both in OffLine status and the buffer is full

This parameter is valid only for 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] 2 4 6 8 1 3 5 7 9

5.5 Operating parameters

The device 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 device has been turned off and they are stored in non-volatile memory.

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 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 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.
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 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. See the paragraph 8.9 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% The print quality is strongly influenced by the type of chemical treatment and the type of storage to which the thermal paper has been subjected, as well as by the weight of the same. It may therefore necessary to act on this parameter to obtain the desired print quality.

5.6 Alignment 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.

BLACK MARK ALIGNMENT

Alignment management (see chapter 6):

Disabled [D] = the black mark alignment is not performed
Enabled = the black mark alignment is performed

BLACK MARK THRESHOLD

Threshold value (in percent) for the recognition of the presence of black mark by the black mark sensor:

0.33V	1.32V	2.31V
0.66V	1.65V	2.64V
0.99V	1.98V [D]	2.97V

If the “Black mark alignment” parameter is disabled, this parameter is not printed.

BLACK MARK DISTANCE

“Black mark distance” is the minimum distance (in millimetres) between the upper edge of ticket and the black mark (see chapter 6).

The numeric value of the distance is made up with the following two parameters for the setting of two digits (one for the tens and one for the units) :

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

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

For example, to set the black mark distance to 15 mm, modify the parameters as follows:
Black mark Distance [mm x 10] = 1
Black mark Distance [mm x 1] = 5

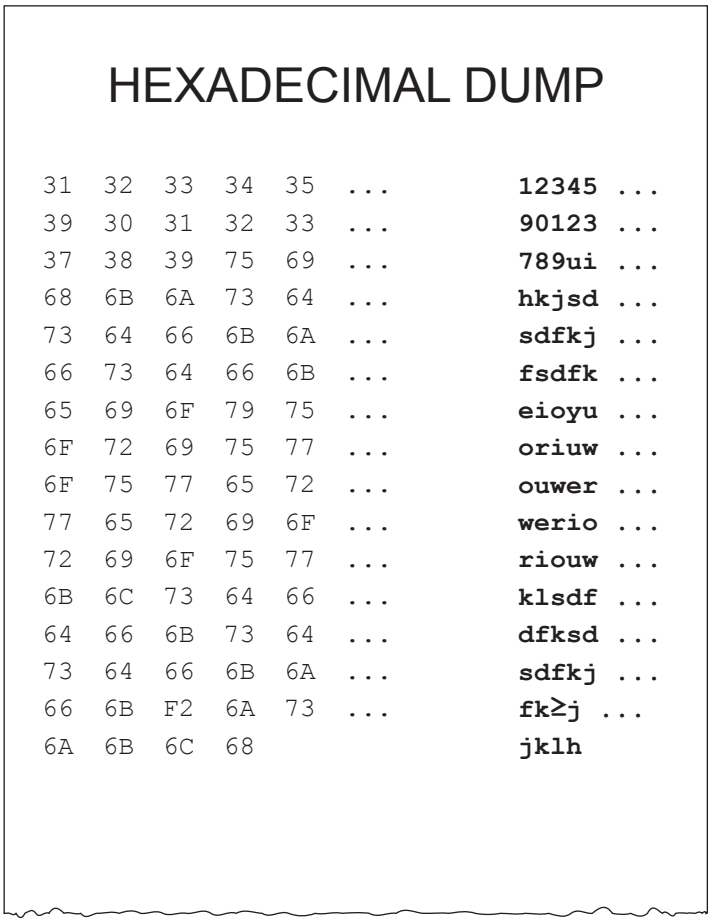
If the “Black mark alignment” parameter is disabled, the parameters for the “Black mark distance” are not printed.

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.

5.7 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:



6 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.

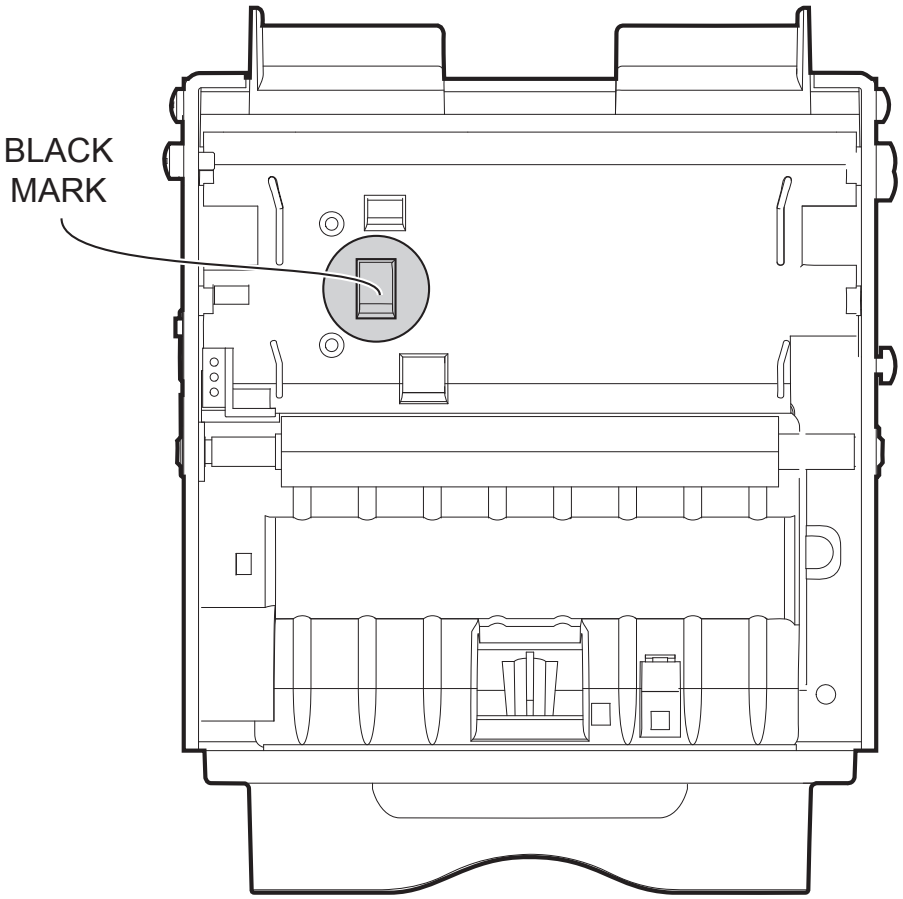
All alignment sensors are “reflection” sensors: this kind of sensor emits a band of light and detects the quantity of light reflected to it. The presence of the black mark is therefore detected by the amount of light that returns to the sensor, considering that the light is reflected by the white paper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

6.1 Enable alignment

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

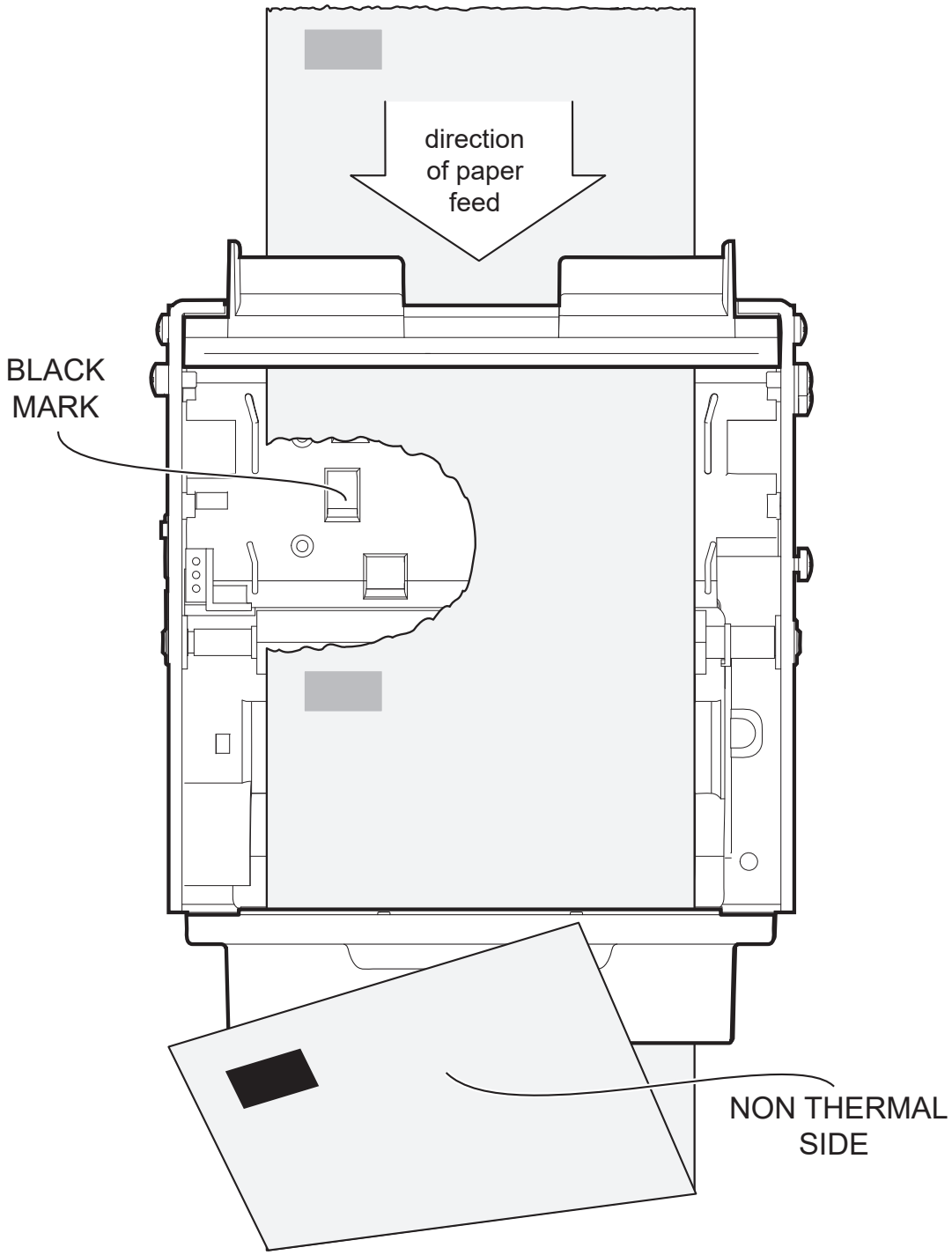
SENSOR USED (see following figures)	VALUE OF THE “BLACK MARK ALIGNMENT” PARAMETER	USING MODE OF SENSOR	BLACK MARK TYPE
-	Disabled	-	Alignment disabled
1	Enabled	Reflection	Black mark printed on the non-thermal side of paper



The following figure show the usable format of paper and the corresponding sensors used for alignment:

Paper with black mark on the non thermal side

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



6.2 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 “Black Mark Alignment” parameter is set to “Enabled” value (see chapter 5).

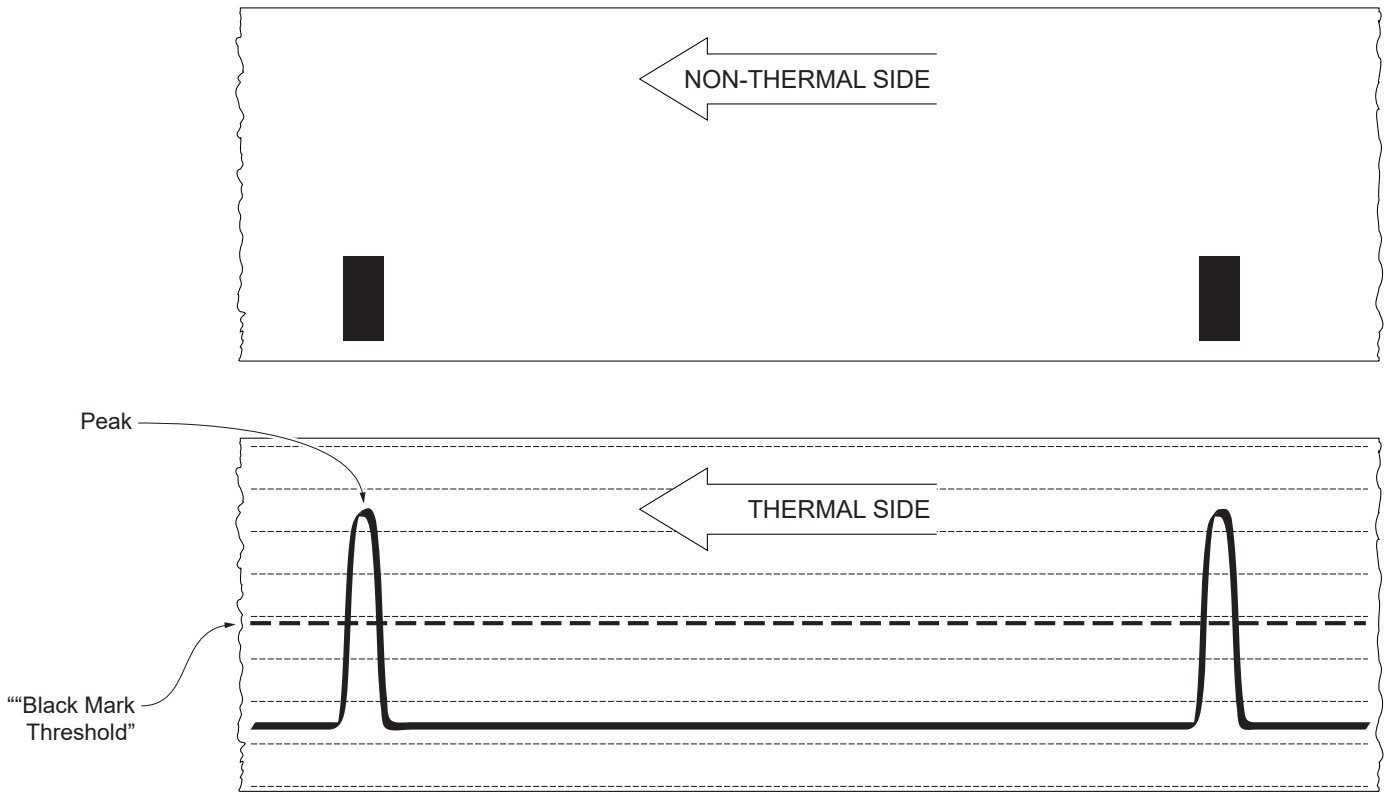
When self-calibration starts, the device performs some paper feeds and then it prints the calibration result and the value (numeric and as a percentage) of the *“Threshold White”* parameter that indicates the power-up level of the sensor emitting side (the value ranges from 0V to 5V):

Autosetting Black Mark : OK
Threshold White : 1.9V [39%]

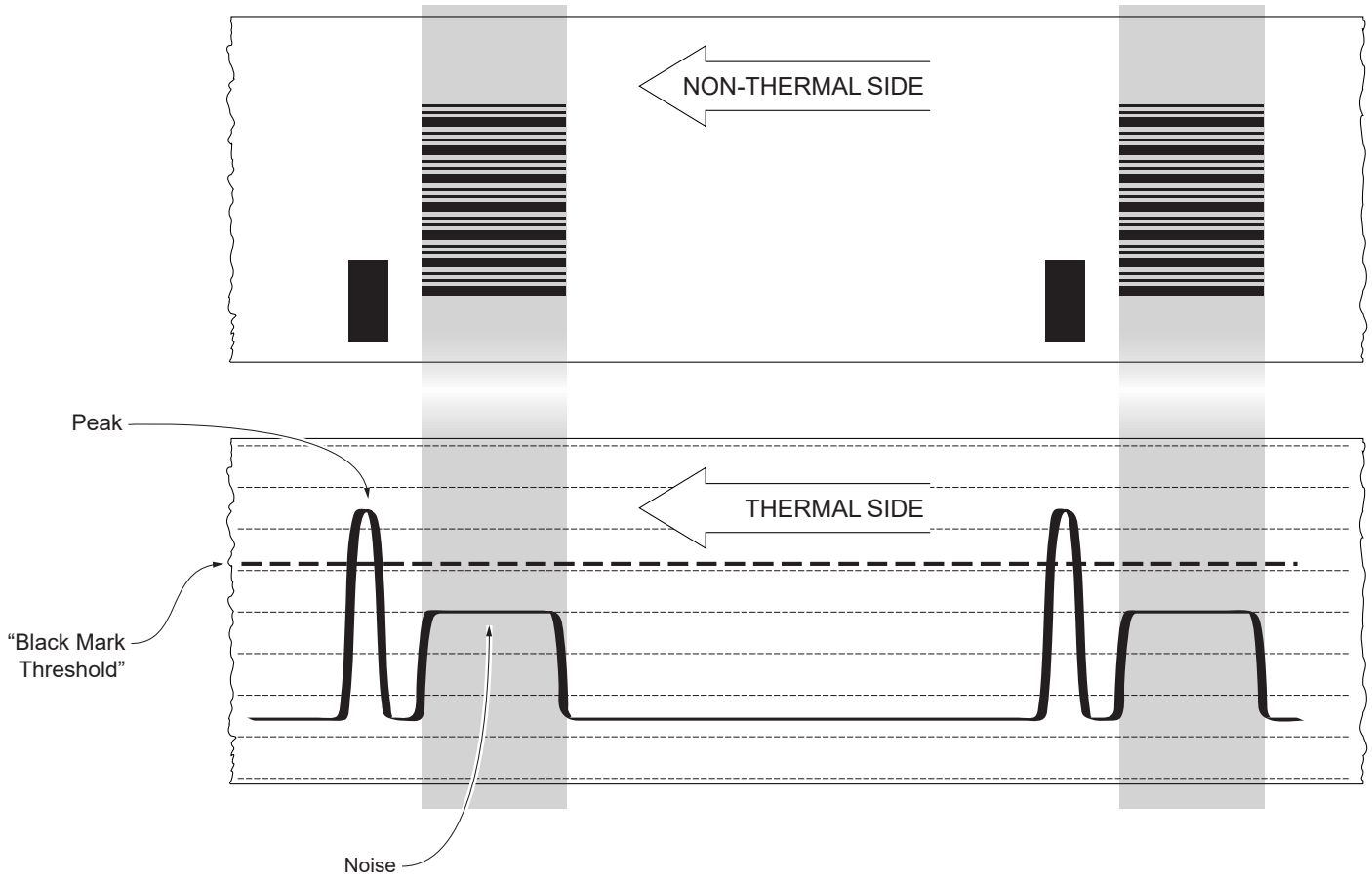
The “Autosetting Black Mark” parameter indicates the result of the self-calibration procedure; OK will appear if it has been successful, NOT OK will appear if the procedure has failed.

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 “Black Mark 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 “Black Mark Threshold” value. This graphic representation is useful to set the most suitable value to assign to the “Black Mark 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 “Black Mark 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 “Black Mark Threshold” parameter is located about halfway between the peak value and the maximum value of the “noise”.



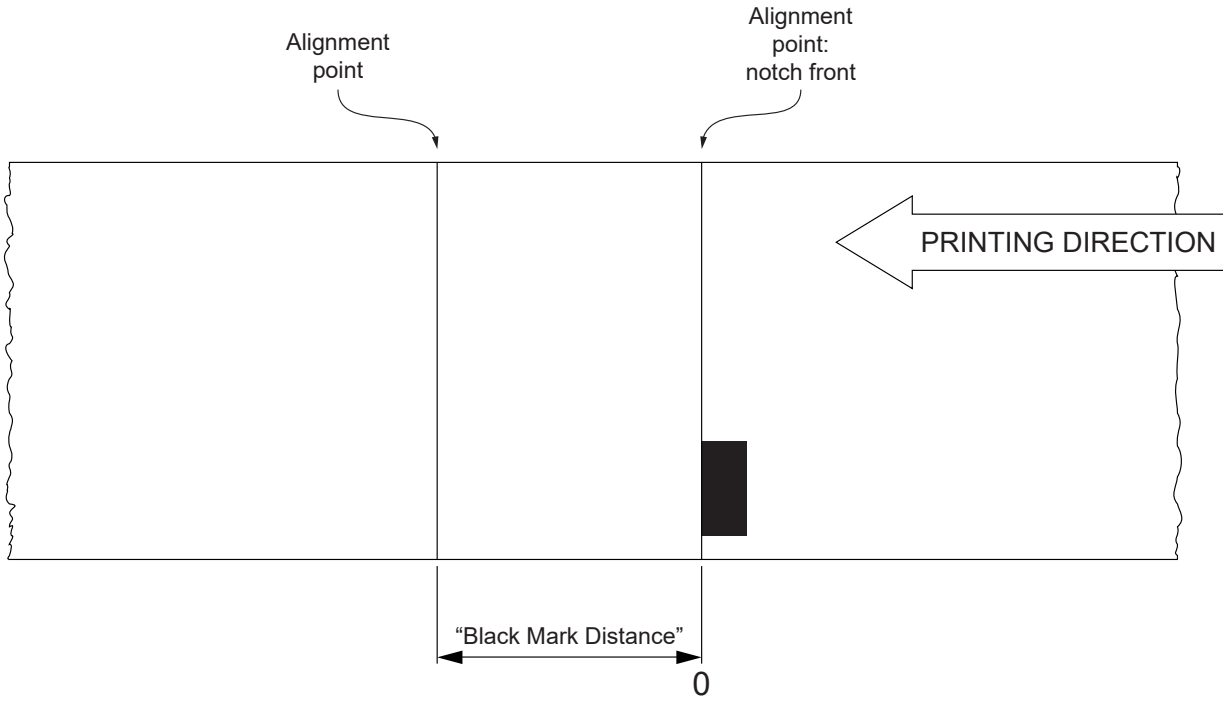
If the maximum value of “noise” read by the sensor is very close to the peak value, it might be difficult to place the value of the “Black Mark Threshold” at an intermediate point. In these cases, it is mandatory that the portion of paper between the point of printing end and the front black mark is 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.

6.3 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 “Black Mark Distance”.

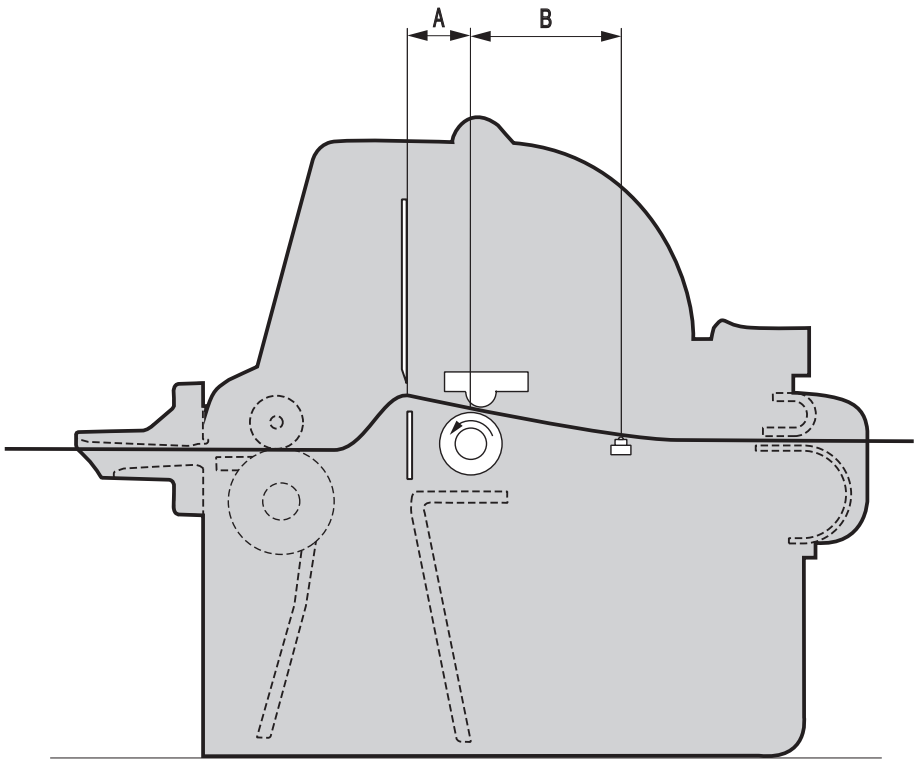
“Black Mark/Distance” value varies from 0 mm minimum and 32 mm maximum.

If the “Black Mark 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 autocutter (cutting line), where:

A = 11.9 mm = distance between the cutting line and the printing line on paper
B = 28.5 mm = distance between the printing line and the alignment sensor.



To define the alignment point you need to set the device parameters that compose the numerical value of the “Black Mark Distance” parameter (see paragraph 5.6).
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:

Black Mark Distance [mm x 10] : 1
Black Mark Distance [mm x 1] : 5

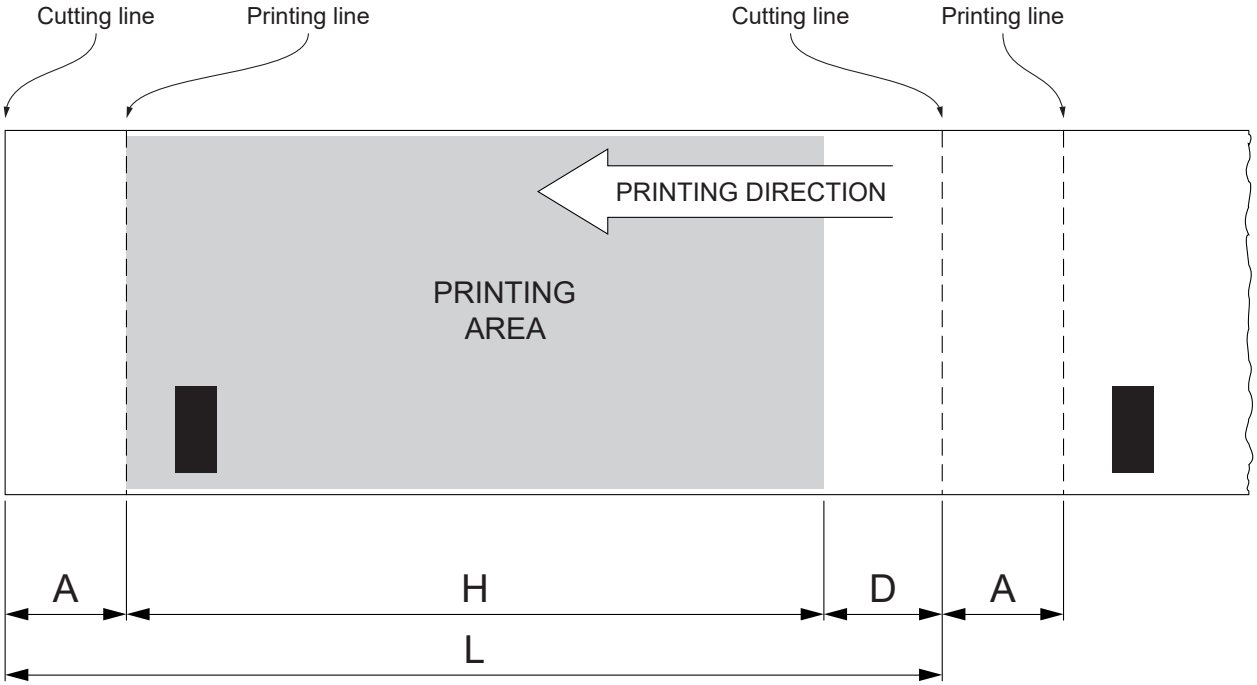
The “Black Mark Distance” parameter, may be modified as follows:
- during the Setup procedure of the device (see chapter 5).
- by using the 0x1D 0xE7 command (for more details, refer to the Commands Manual).
- by driver.

6.4 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 “Black Mark Distance” set to 0:



A “Non-printable area” generated from:

“Distance between autocutter/printing head” - “Value for the paper recovery after a cut”

where:
“Distance between printhead and autocutter” = 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-Black Mark 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.

7 MAINTENANCE

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

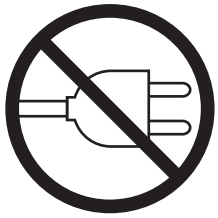
EVERY PAPER CHANGE	
Printhead	Use isopropyl alcohol
Rollers	Use isopropyl alcohol
EVERY 5 PAPER CHANGES	
Autocutter	Use compressed air
Paper path	Use compressed air or tweezers
Sensors	Use compressed air
EVERY 6 MONTHS OR AS NEEDED	
Case	Use compressed air or a soft cloth

7.2 Cleaning

For periodic cleaning of the device, see the instructions below

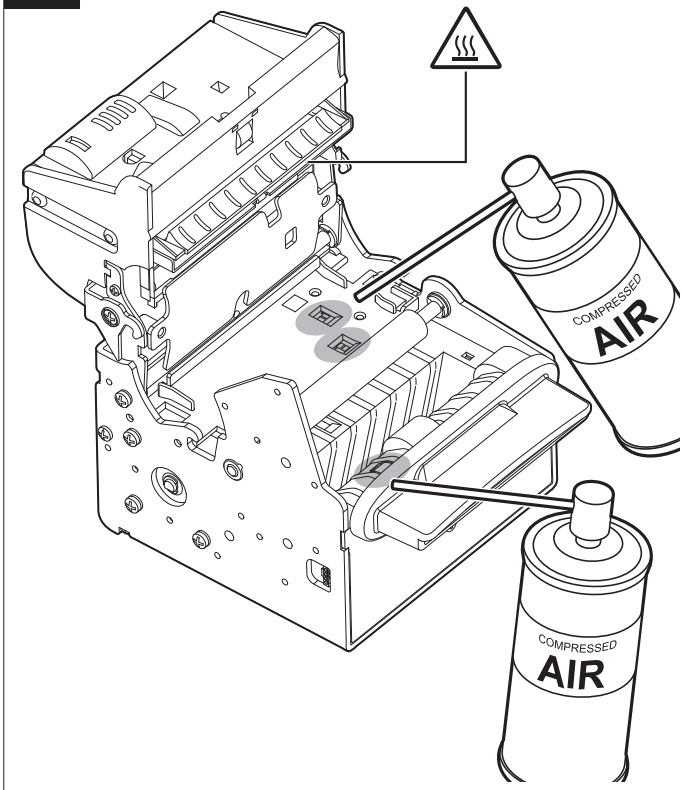
Sensors

1



Disconnect the power supply cable and open the device cover (see paragraph 4.1).

2



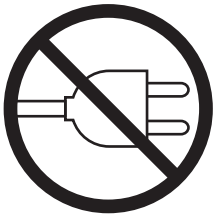
ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the device.



Clean the device sensors by using compressed air.

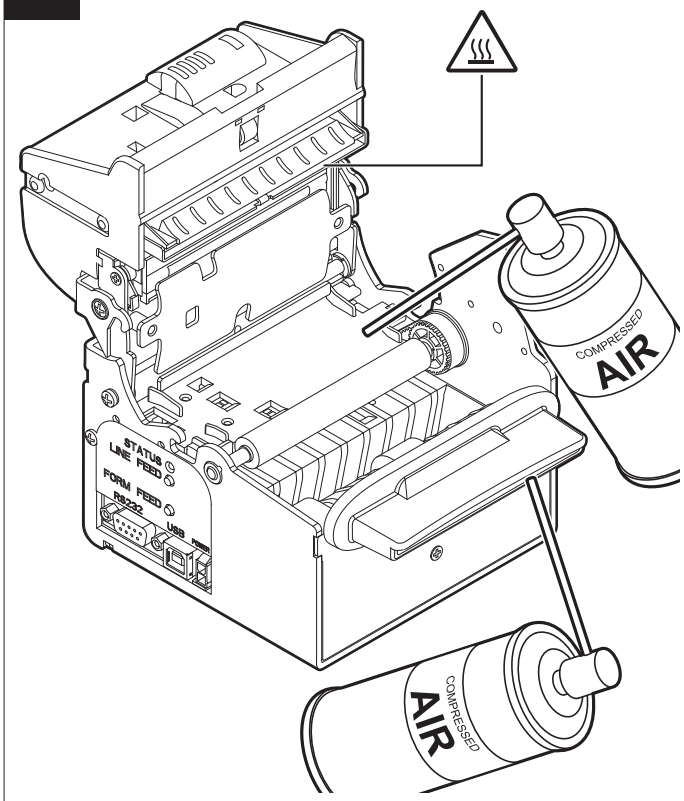
Paper path

1



Disconnect the power supply cable and open the device cover (see paragraph 4.1).

2



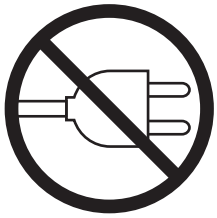
ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the device.



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.

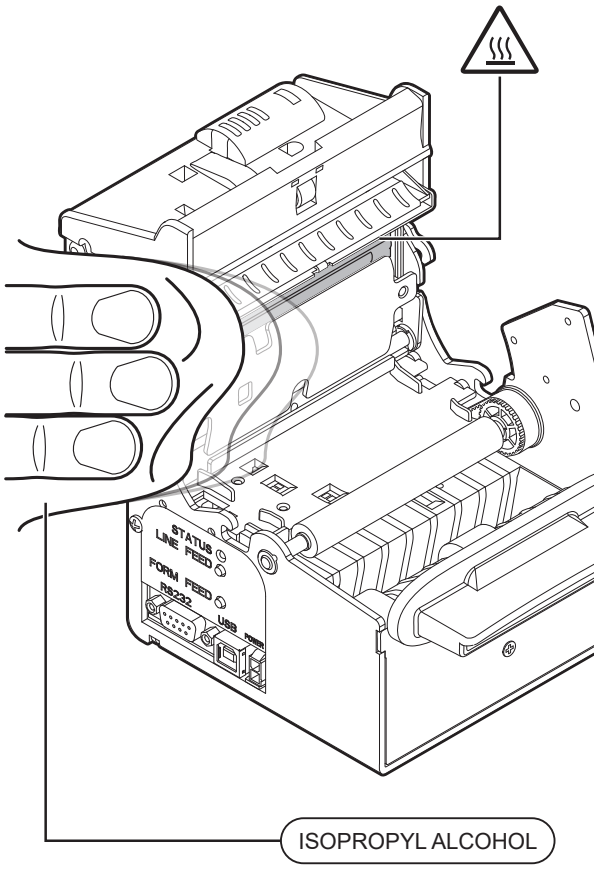
Printhead

1



Disconnect the power supply cable and open the device cover (see paragraph 4.1).

2



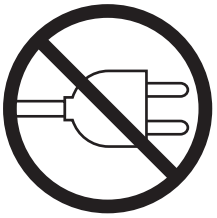
ATTENTION:
Do not use solvents, or hard brushes.
Do not let water or other liquids get inside the machine.



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

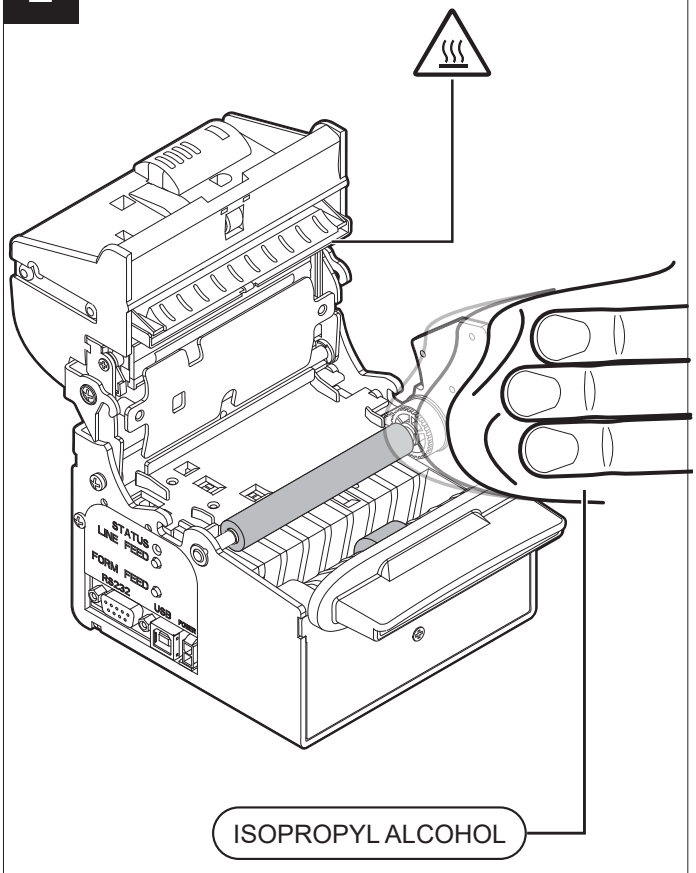
Rollers

1



Disconnect the power supply cable and open the device cover (see paragraph 4.1).

2



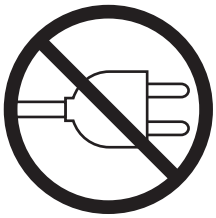
ATTENTION:
Do not use solvents, or hard brushes.
Do not let water or other liquids get inside the machine.



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

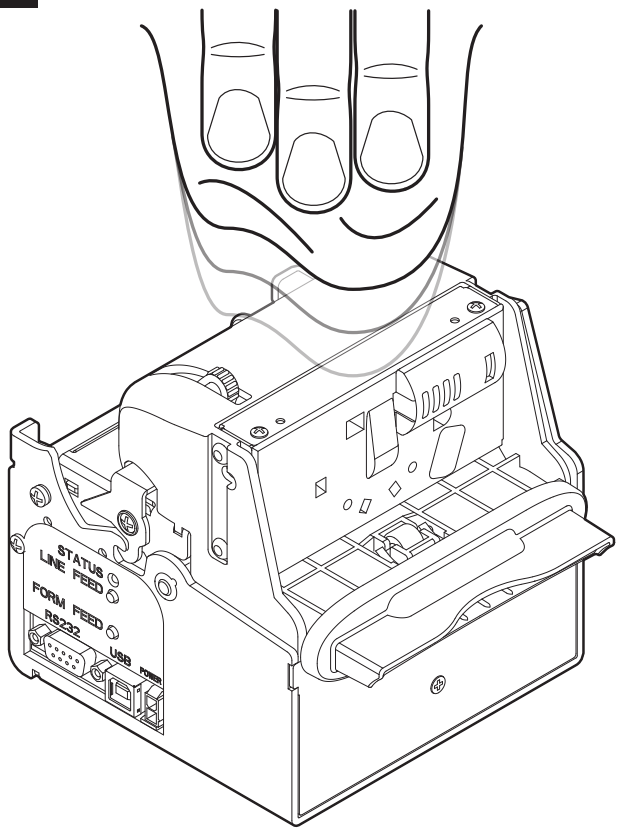
Case

1



Disconnect
the power supply cable

2



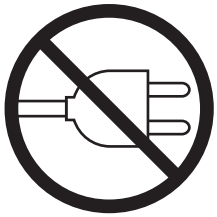
ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the device.



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

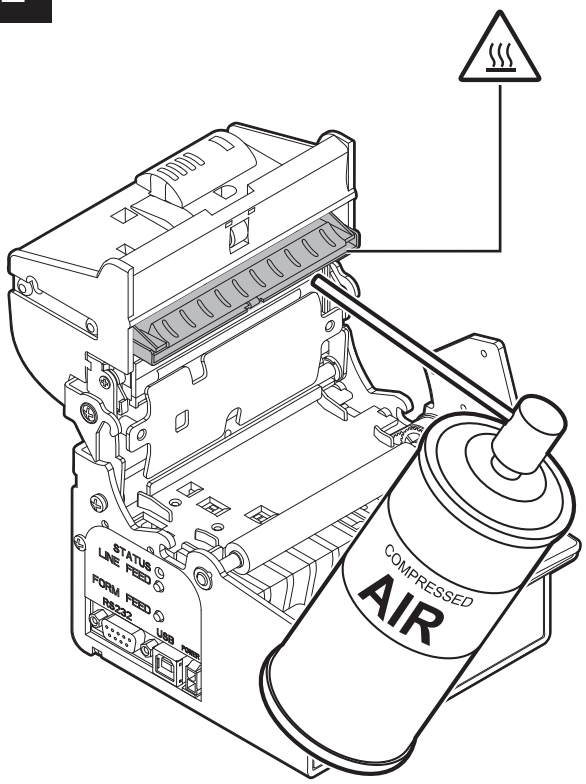
Cutter

1



Disconnect the power supply cable and
open the device cover (see paragraph 4.1).

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

7.3 Upgrade firmware

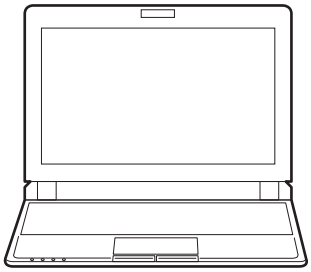
Firmware upgrade can be performed by using the “PrinterSet” software tool available on www.custom4u.it.
To upgrade firmware, proceed as follows:

1

www.CUSTOM4U.it

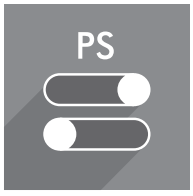
Login to the website www.custom4u.it, type in the product code of the device and download the latest firmware release available.

2



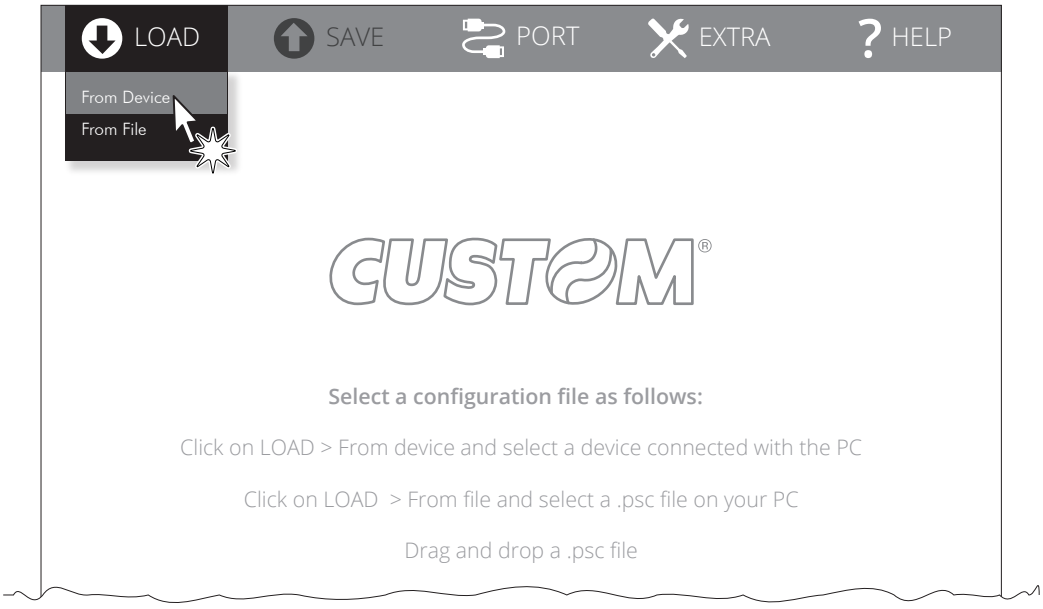
Connect the device to a PC directly (see paragraph 3.2), without using HUB devices.

3



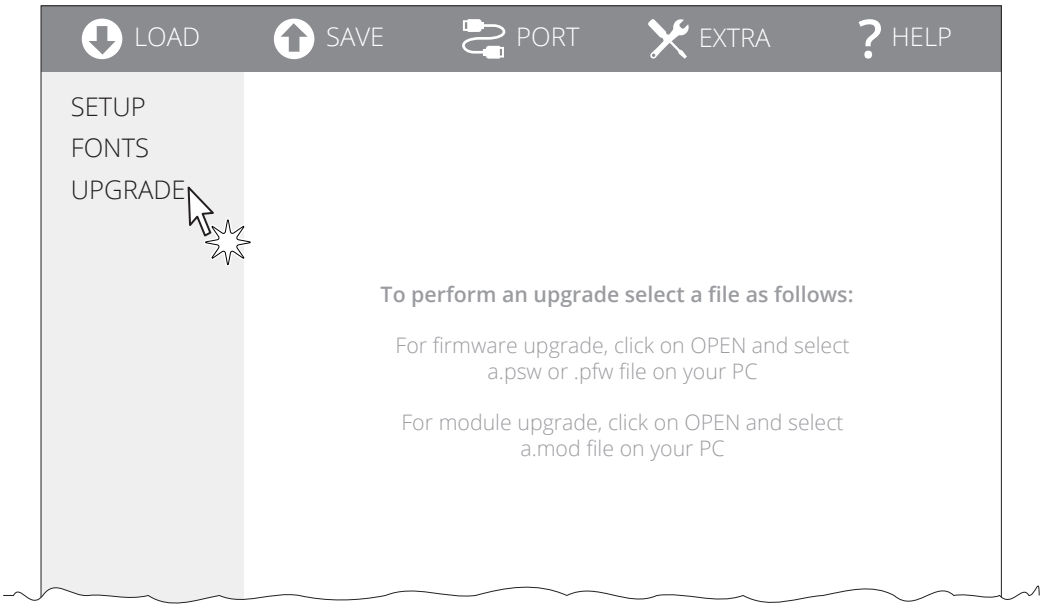
Start the “PrinterSet” software tool.

4



Click on LOAD > FROM DEVICE and select the device connected to the PC.

5



Click on UPGRADE and follow the instructions shown on the screen.

ATTENTION:
During saving, it is strongly discouraged to disconnect the communication cable or to remove the power supply of the PC or the device.

8 SPECIFICATION

8.1 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)
Emulation	CUSTOM/POS
Printing driver	Windows XP VISTA (32/64bit) Windows 7 (32/64bit) Opos Linux JavaPOS Android iOS
INTERFACES	
RS232 serial port	from 1200 to 115200 bps
USB port	12 Mbit/s
MEMORIES	
Receive buffer	16 kB
Flash memory	384 kB
Graphic memory	1 logo of 608 x 862 dots (for 80/82.5 mm paper width)
PRINTER	
Resolution	203 dpi (8 dots/mm)
Printing method	thermal, fixed head
Head life (1)	
Abrasion resistance (2)	100 km (with recommended paper, 12.5% duty cycle)
Pulse durability	100 M (referred to each dot)
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 paragraph 8.9) 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 = 80 mm/s Normal = 180 mm/s High speed = 220 mm/s
PAPER	
Type of paper	Thermal rolls, thermal side on outside of roll
Paper width (3)	from 60 mm to 82.5 mm
Paper weight	from 58 g/m^2 to 110 g/m^2
Recommended types of paper (4)	APPVION ALPHA PLUS 600 - 3.2; KANZAKI LOTTO 500; KANZAN KLS46 e KP460, MITSUBISHI PF5075, TF1067, TF7067 e TL3000; RICOH 140GA
External roll diameter (5)	max 180 mm (6) upper fixing : max 150 mm (7) rear or lower fixing : max 180 mm (7)
Internal roll core diameter	25 mm
Core type	Cardboard or plastic
AUTOCUTTER	
Paper cut	Total cut
Estimated life (1)	1000000 cuts
ELECTRICAL SPECIFICATIONS	
Power supply	24 Vdc ±10% (optional external power supply)
Medium consumption (8)	2 A
Typical consumption (9) (10)	1 A

Stand-by consumption (8)	0.04 A
ELECTRICAL SPECIFICATIONS POWER SUPPLY code 963GE020000071 (OPTIONAL)	
Power supply voltage	from 90 Vac to 264 Vac
Frequence	from 47 Hz to 63 Hz
Output	24 V, 2.5 A
Power	60 W
ENVIRONMENTAL CONDITIONS	
Operating temperature	from -20 °C to +70 °C (11)
Relative humidity (RH)	from 10% to 80% (without condensation)
Storage temperature	from -20 °C to 70 °C
Storage relative humidity (RH)	from 10% to 90% (without condensation)

NOTES:
(1) : Respecting the regular schedule of cleaning for the device components.
(2) : Damages caused by scratches, ESD and electromigration are excluded.
(3) : For ticket width = 60mm do not exceed a max length of 250mm.
(4) : For paper from 90g/m2 to 110g/m2 enable the dispenser continuous mode with command (0x1D 0x65, see commands manual).
(5) : It is recommended to use an external shock absorber for rolls with a diameter higher than or equal to 100mm.
(6) : Referred to model without paper holder support.
(7) : Referred to model with paper holder support.
(8) : Referred to the UL measurements (High speed, Density = 50% dot on, Print density = +25%, Current = Normal).
(9) : Referred to “Normal” value for “Current” parameter (see Printer Setup).
(10) : Referred to a standard CUSTOM receipt (L = 10cm, Density = 12.5% dots on.
(11) : If you use the device with the power supply code 963GE020000071, supplied as an accessory, the operating temperature range is from 0 °C to +40 °C.

8.2 Character specifications

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

NOTE: Theoretical values.

8.3 Ejector specifications

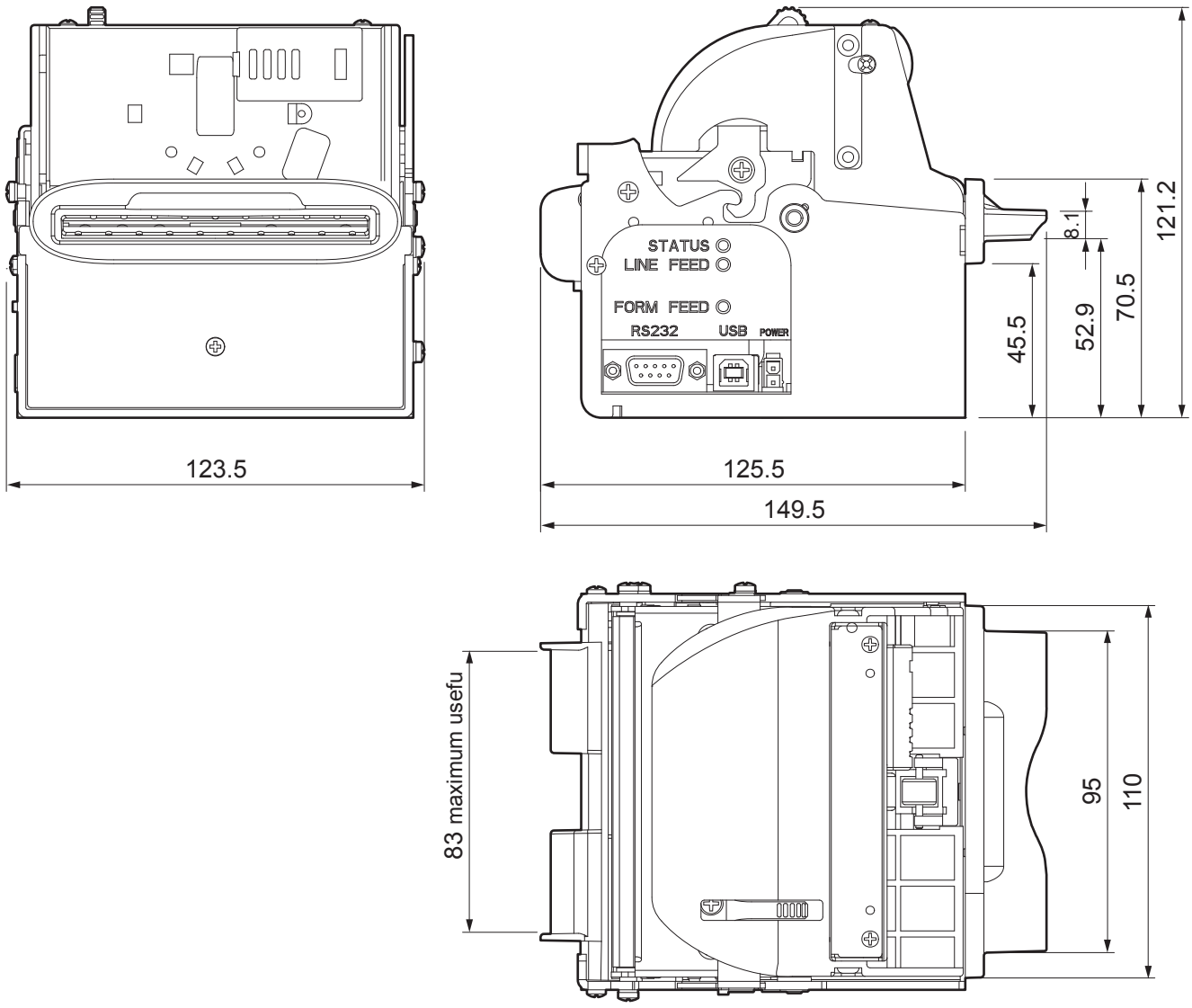
	Ticket length	Ticket presentation
“Retracting” function	from 70 mm to 80 mm	10 mm
	from 80 mm to 220 mm	from10 mm to 30 mm (1)
	Ticket length	Ticket presentation
“Ejecting” function	from 70 mm to 80 mm	10 mm
	from 80 mm to 350 mm (2)	from 10 mm to 30 mm (1)

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

8.4 Device dimensions

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

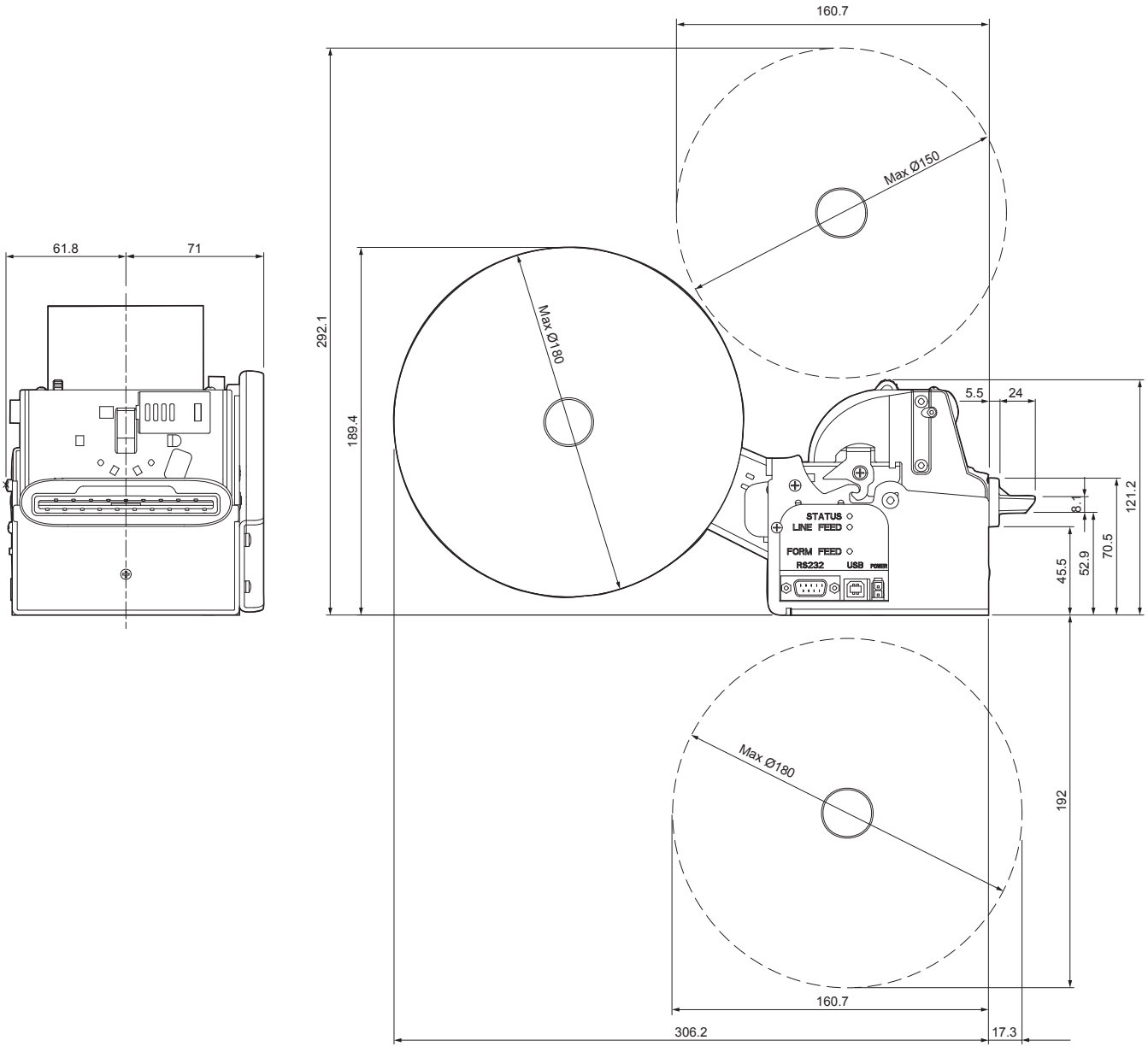
All the dimensions shown in following figures are in millimetres and referred to the devices without paper roll.



8.5 Device dimensions with adjustable paper roll holder code 974DW010000001 (optional)

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

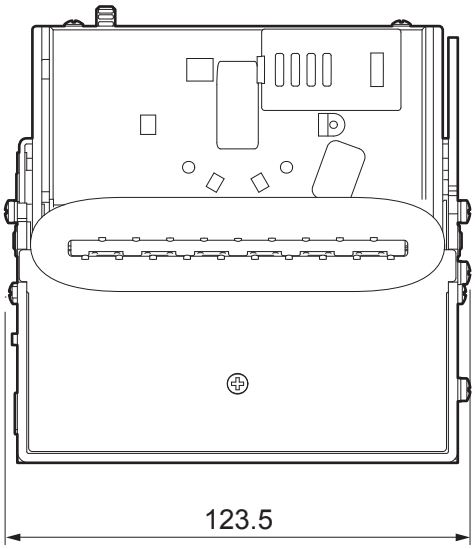
All the dimensions shown in following figures are in millimetres.

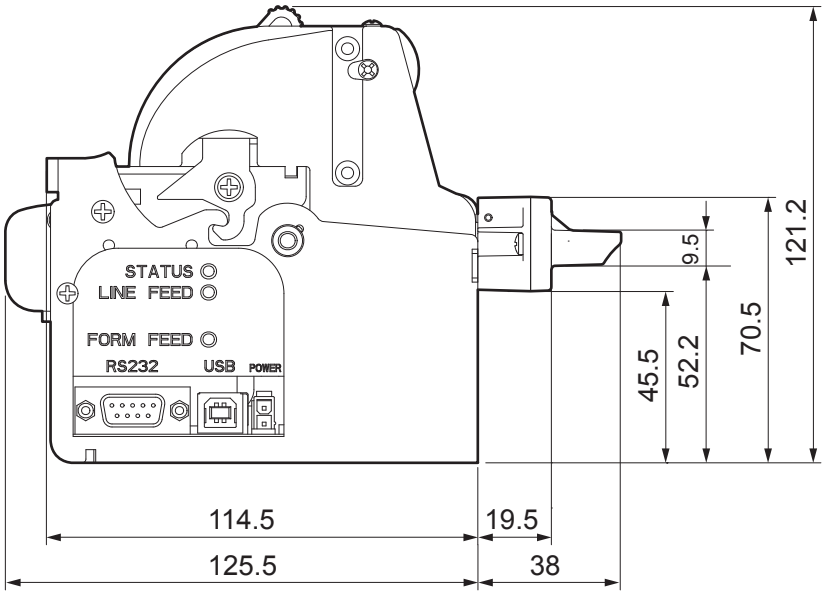


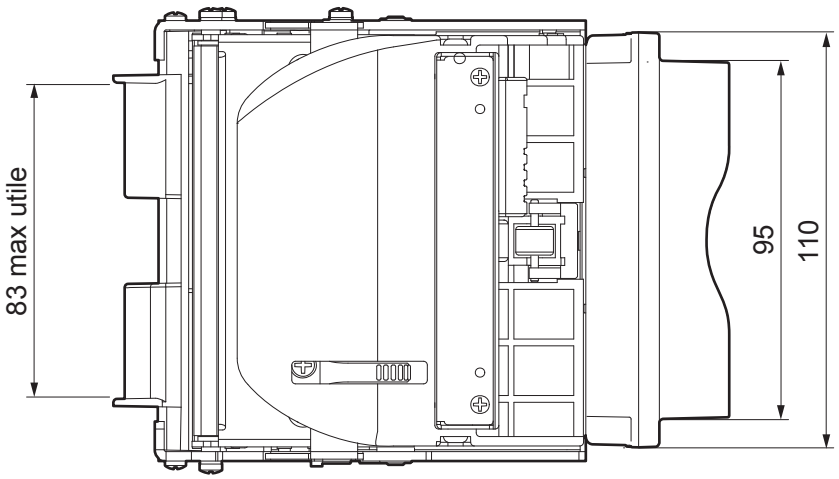
8.6 Device dimensions with shutter device code 976DX010000008 (optional)

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

All the dimensions shown in following figures are in millimetres.







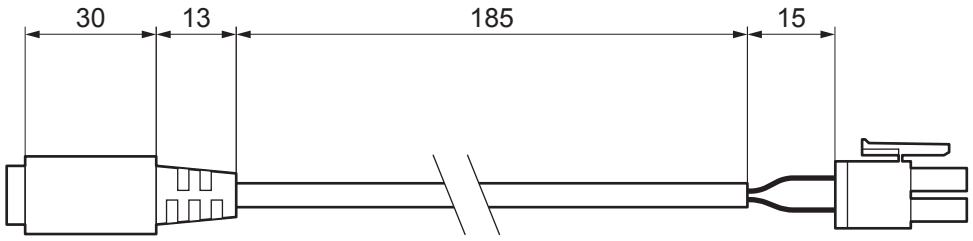
8.7 Dimensions of power supply, power cord and adapter cable (optionals)

The following table shows the dimensions of the power supply, the power cord and the adapter for power supply optionals for the device:

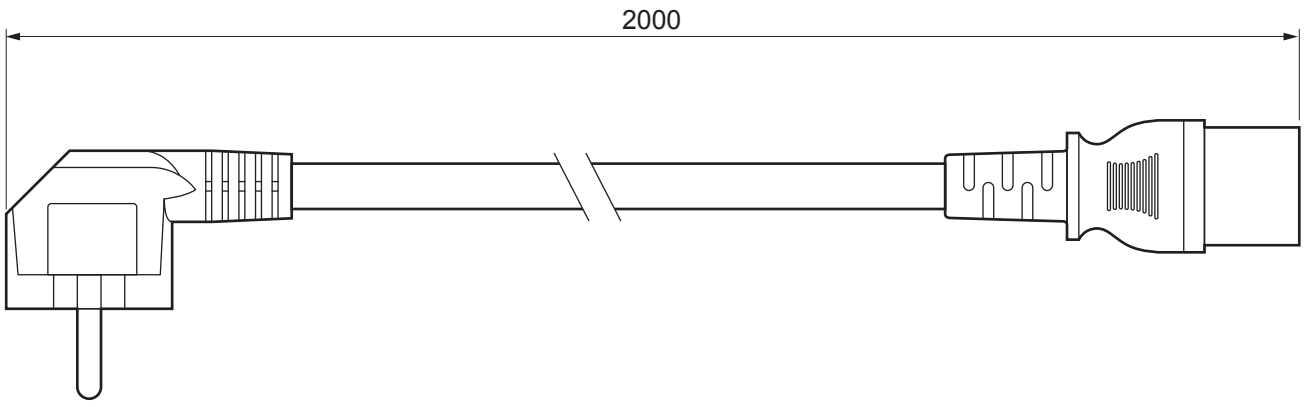
POWER CORD code 26100000000311	
Length	2000 mm
ADAPTER FOR POWER SUPPLY code 26900000000005	
Length	200 mm
POWER SUPPLY code 963GE020000071	
Length	130 mm
Height	36 mm
Width	57 mm

All the dimensions shown in following figures are in millimetres.

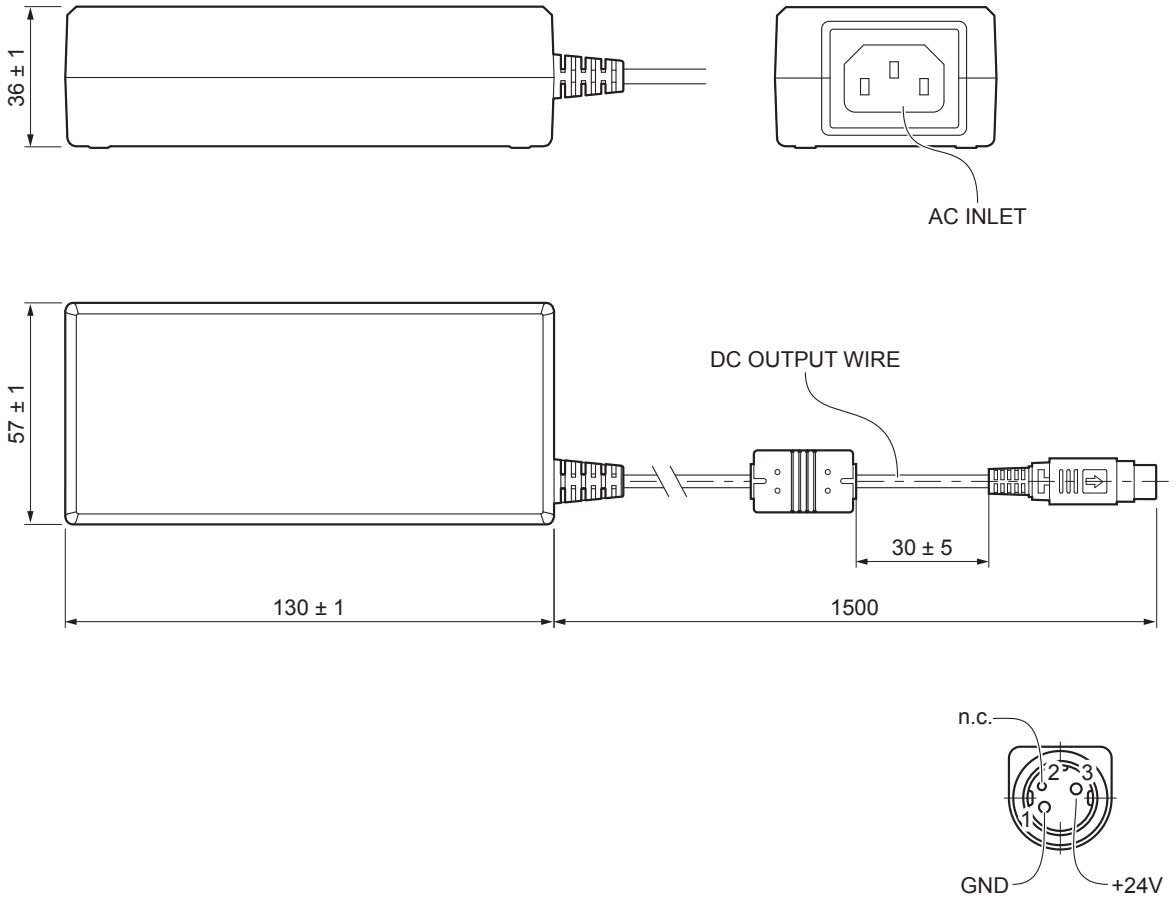
ADAPTER FOR POWER SUPPLY code 26900000000005



POWER CORD code 26100000000311



POWER SUPPLY code 963GE020000071

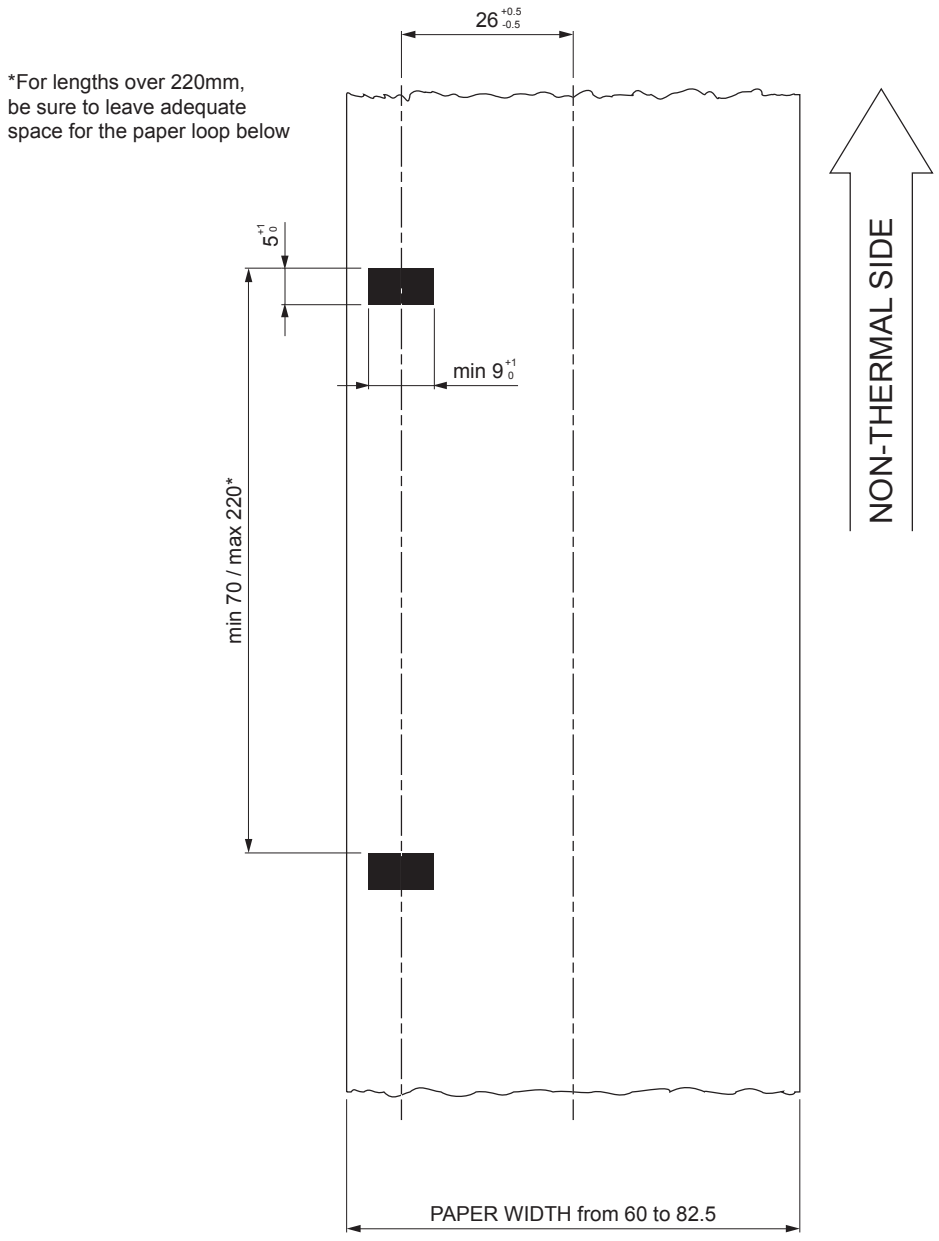


8.8 Paper specification

Paper with black mark on the non-thermal side

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 6.

All the dimensions shown in following figures are in millimetres.



8.9 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 paragraph 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 paragraph 5.5).

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 - Vietnamese	on request
31	TCVN_3 - Vietnamese	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 - Farsi	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 - Vietnamese	
53	KZ1048 - Kazakhstan	on request
255	Space page	

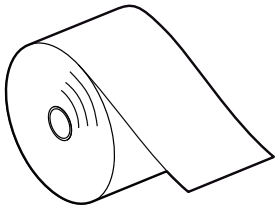
9 CONSUMABLES

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

67300000000401

THERMAL PAPER ROLL

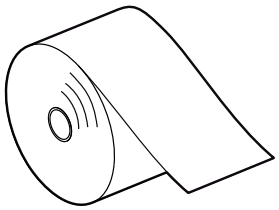
weight = 74 g/m^2
width = 80 mm
Ø external = 80 mm
Ø core = 25 mm



67300000000388

THERMAL PAPER ROLL

weight = 74 g/m^2
width = 80 mm
Ø external = 180 mm
Ø core = 26 mm

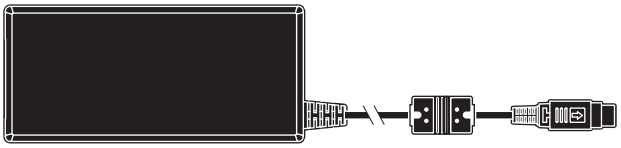


10 ACCESSORIES

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

963GE020000071

POWER SUPPLY
(for technical specifications, see paragraph 8.1)



26100000000311

POWER CORD SCHUKO PLUG
length = 2 m
(see paragraph 8.7)



26300000000579

POWER SUPPLY CABLE
length = 1 m



26500000000352

SERIAL CABLE DB9M-DB9F
length = 1.8 m



26500000000060

USB CABLE TYPE A-B with two ferrite cores
length = 2 m



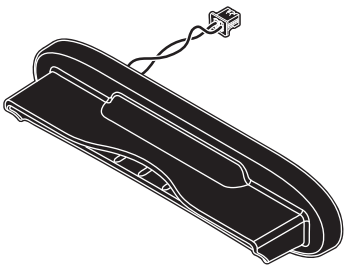
26900000000005

ADAPTER CABLE FOR POWER SUPPLY
length = 200 mm
(see paragraph 8.7)



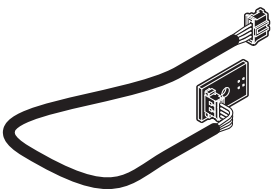
81900000000017

ILLUMINATED BLACK PAPER MOUTH



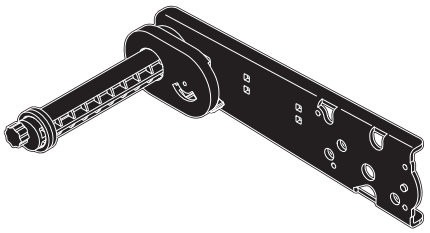
976DX010000004

EXTERNAL LOW PAPER SENSOR
board with cable 230 mm long



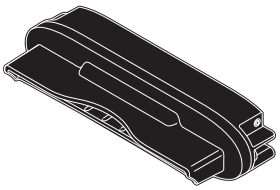
974DW010000001

PAPER ROLL HOLDER WITH
LOW PAPER SENSOR
to assemble on the right side of the device



976DX010000008

“SHUTTER” DEVICE KIT



11 TECHNICAL SERVICE

In case of failure, contact the technical service accessing the website www.custom4u.it and using the support tools on the homepage. It is advisable to keep the identification data of the product at hand.

The product code, the serial number and the hardware release number can be found on the product label (see paragraph 2.4). The firmware release number (SCODE) can be found:

- on the setup report (see paragraph 5.1)
- connecting the device to a PC and starting the “PrinterSet” tool (see paragraph 5.2).

Part Number : 76200000005800 Rev.2.05

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