OEM

USER MANUAL

KPM302-TF

Commands manual **DOMC-0004e**

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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 15A in the vicinity of 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 battery pack.
- 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 ENGINEERING 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.

CE 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 2006/95/CE and 2004/108/CE inasmuch as it was designed in conformity with the provisions laid down in the following Standards:

- EN 55022 Class B *(Limits and methods of measurements of radio disturbance characteristics of Information Technology Equipment)*
- EN 55024 *(Information Technology Equipment – Immunity characteristics – Limits and methods of measurement)*
- EN 60950 *(Safety of information equipment including electrical business equipment)*

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.

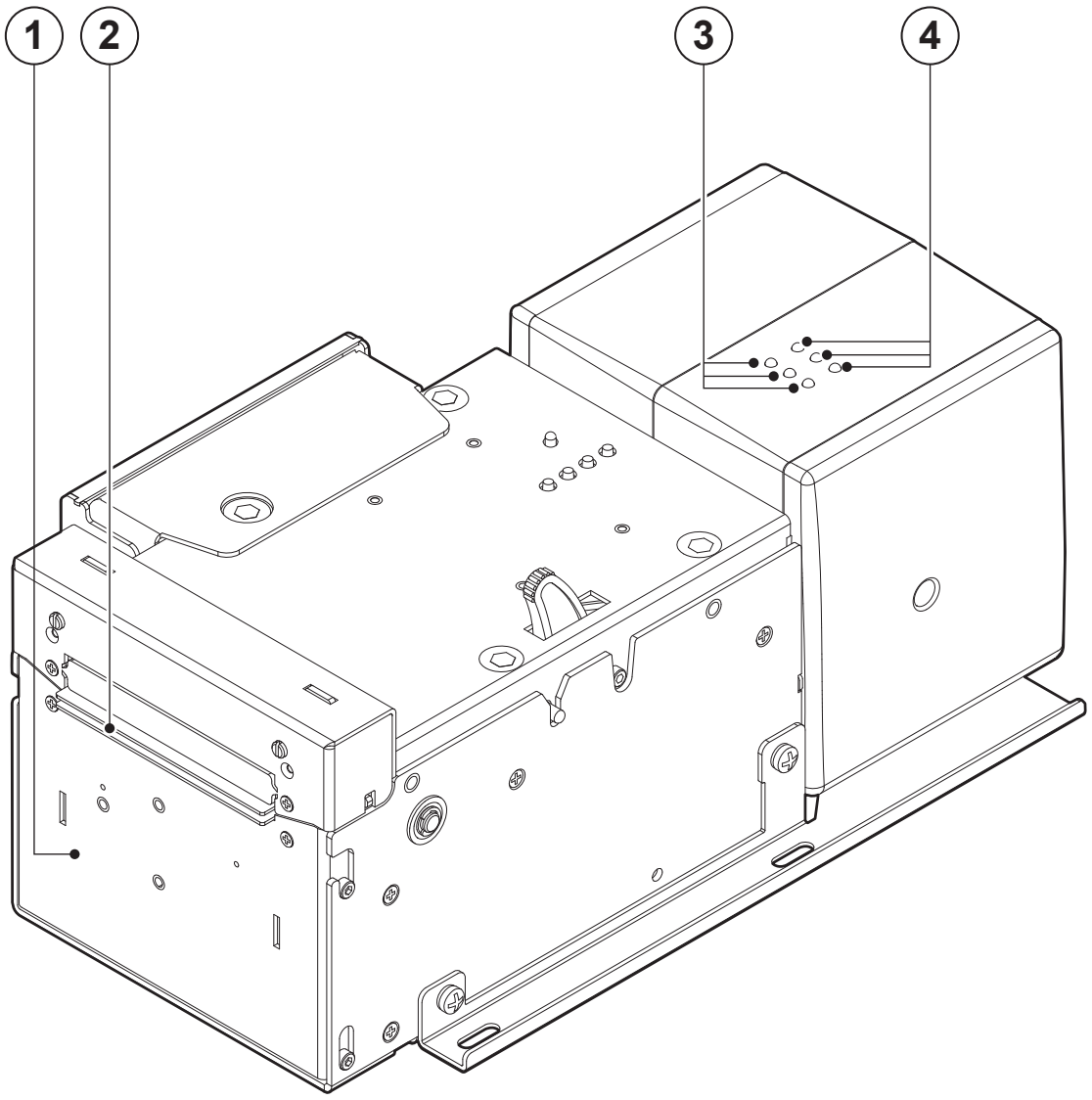
- Do not dispose of this equipment as miscellaneous solid municipal waste, but arrange to have it collected separately.
- The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
- In accordance with European Directive WEEE 2002/96/EC, 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.

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

PRINTER COMPONENTS

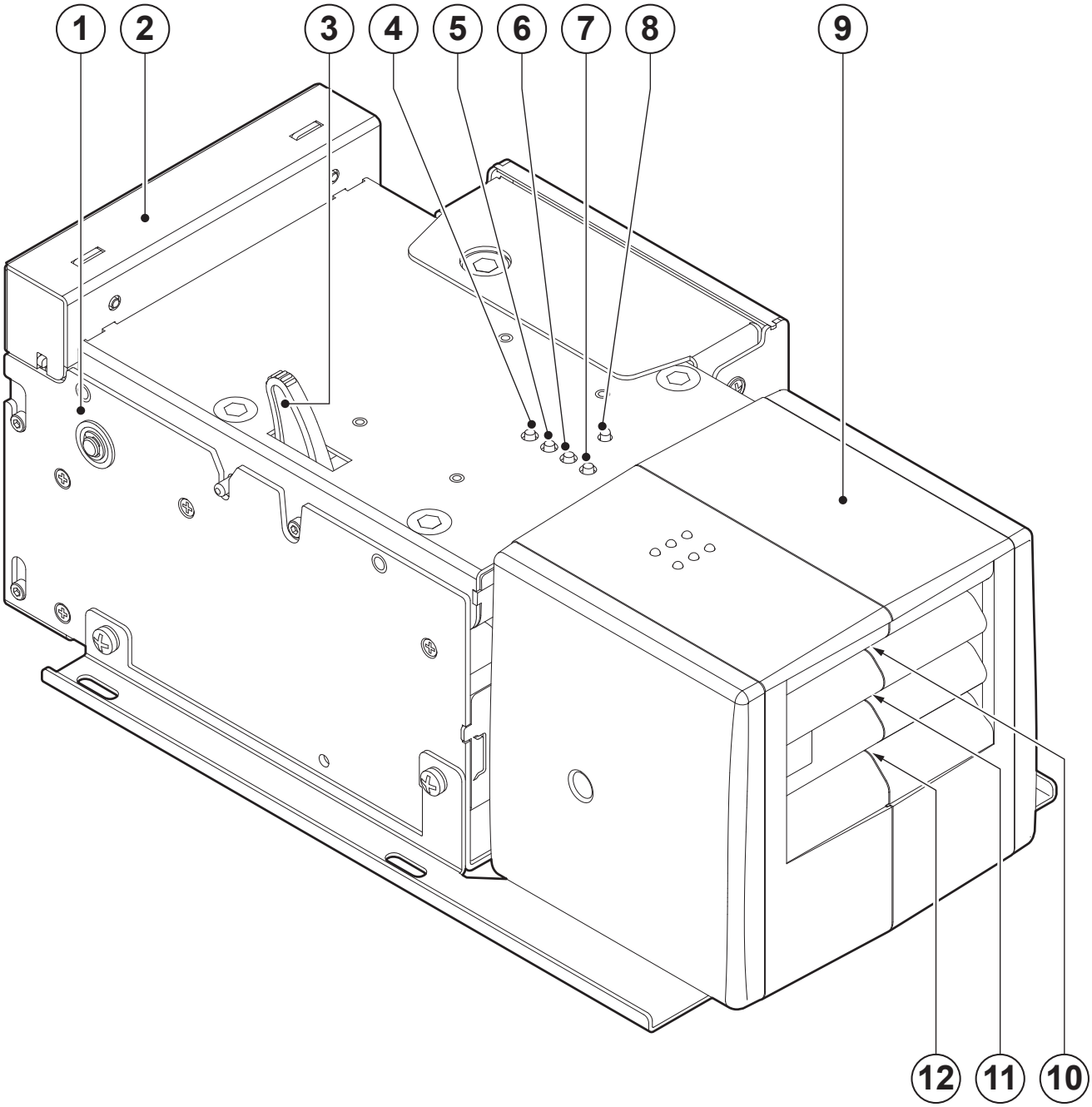
A. KPM302-TF - External front view

1. Cutter cover
2. Paper outfeed
3. Triple feeder led (red)
4. Triple feeder led (green)



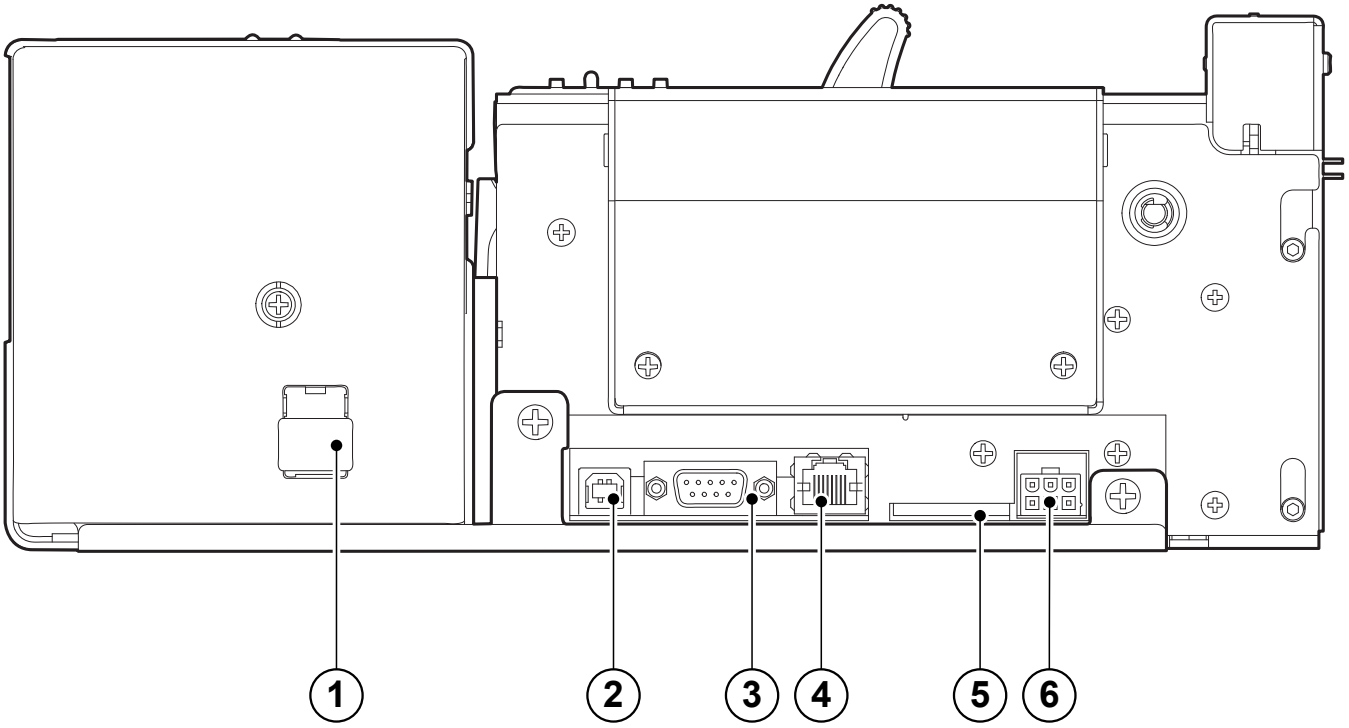
B. KPM302-TF - External rear view

1. Printer chassis
2. Printing head group
3. Release lever
4. LINE FEED key
5. FORM FEED key
6. S1 key
7. S2 key
8. Status led
9. Triple feeder
10. Paper input feeder 1
11. Paper input feeder 2
12. Paper input feeder 3



C. KPM302-TF – External connectors view

1. Cover for triple feeder connectors
2. USB connector
3. RS232 connector
4. ETHERNET connector
5. SD/MMC card
6. Power supply connector



D. KPM302-TF - Inside view

1. Sensors for paper presence on output
2. Opening/closing front cover sensor
3. Cutter position sensor
4. Unlocking button for mobile paper guide
5. Mobile sensors for notch
6. Head temperature sensor
7. Sensor of paper presence
8. Opening/closing printer cover sensor

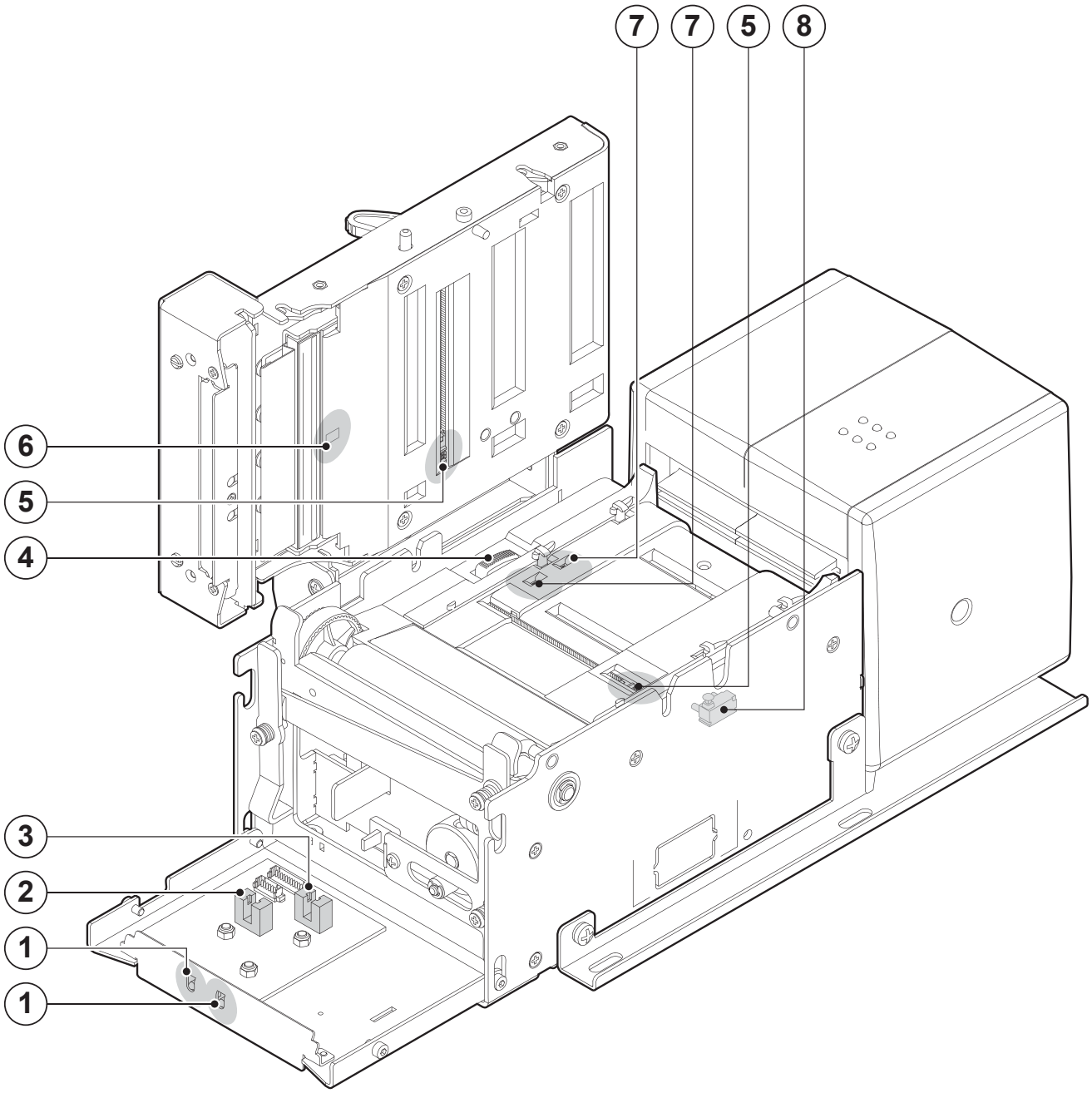


TABLE OF CONTENTS

1 INTRODUCTION 11
1.1 EXPLANATORY NOTES USED IN THIS MANUAL 11
1.2 GENERAL SAFETY INFORMATION 11
1.3 UNPACKING THE PRINTER 12
1.4 PRINTER FEATURES 13
1.5 PRINTER DESCRIPTION 14

2 INSTALLATION AND USE 17
2.1 POWER SUPPLY 17
2.2 SELF-TEST 19
2.3 CONFIGURATION 20
2.3.1 Ethernet setup 21
2.3.2 Printer setup 23
2.4 HEXADECIMAL DUMP 24
2.5 CALENDAR CLOCK 25
2.6 PAPER SPECIFICATIONS 26
2.6.1 Specifications for ticket with barcode (for models with barcode reader) 26
2.6.2 Specifications for ticket with notch 27
2.6.3 Specifications for ticket with gap 30
2.6.4 Specifications for ticket with RFID Tag (for models with RFID reader) 31
2.7 MAINTENANCE 34
2.7.1 Changing the paper roll 34
2.7.2 “BURSTER” configuration 35
2.7.3 “CUT AND DROP” configuration 38
2.7.4 Printer paper jam 41
2.7.5 Triple feeder paper jam 43
2.7.6 Printer cleaning 44
2.7.7 Triple feeder cleaning 49

3 INTERFACES 51
3.1 RS232 SERIAL 51
3.2 ETHERNET INTERFACE 53
3.3 USB INTERFACE 54

4 TECHNICAL SPECIFICATIONS 55
4.1 HARDWARE SPECIFICATIONS 55
4.2 DIMENSIONS 58

5 CHARACTER SETS 61
5.1 CHARACTER SETS IN ESC/POS™ EMULATION 61
5.2 CHARACTER SETS IN SVELTA EMULATION 63

A. ACCESSORIES AND SPARE PARTS 65
A.1 ACCESSORIES 65
A.1.1 Power Supply 65
A.1.2 External paper roll holder 66
A.1.3 Kit with wirings for near paper end 69
A.2 SPARE PARTS 70

B. TICKET ALIGNMENT 71
B.1 ENABLING, CALIBRATING AND SETTING OF PARAMETERS 71
B.2 COMMANDS 74
B.2.1 Ticket alignment 74
B.2.2 Setting the alignment distance 74
B.2.3 Examples 74
B.3 MECHANICAL CHARACTERISTICS 77
B.3.1 Position of the sensors 77
B.3.2 Dimension of tickets 78
B.4 METHODS OF USAGE 79
B.4.1 Command sequences 79
B.4.1.1 Alignment at the cut 79
B.4.1.2 Alignment at printing 79
B.4.1.3 Combined alignment 79

C. ADVANCED FUNCTIONS 81
C.1 CONNECTIONS 81
C.2 EMBEDDED WEB SERVER 82
C.2.1 Connection check 82
C.2.2 Embedded Web Server access 83
C.2.3 Embedded Web Server functions 85
C.3 LOCATOR 87
C.4 DRIVERS INSTALLATION 88
C.5 LOGOS MANAGEMENT 89
C.6 FONTS MANAGEMENT 91
C.7 SETUP 93

1 INTRODUCTION

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

Chapter 1: Contains a general description
Chapter 2: Contains the information required for correct printer installation and its proper use
Chapter 3: Contains information on interface specifications
Chapter 4: Contains technical specifications of the printer
Chapter 5: Contains the character sets (fonts) used by the printer

1.1 EXPLANATORY NOTES USED IN THIS MANUAL

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

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

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

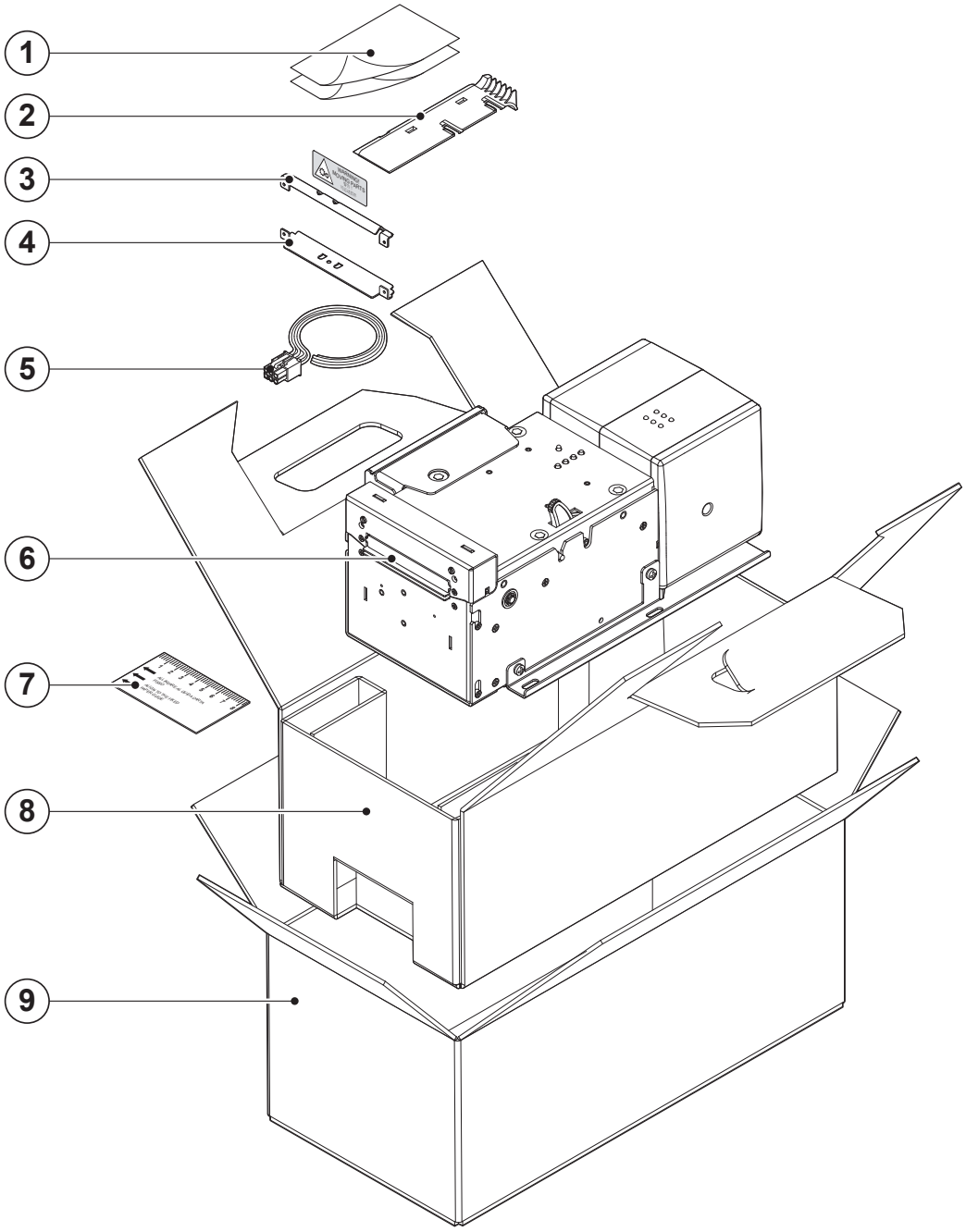
1.2 GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Follow all warnings and instructions indicated on the device.
- Before cleaning the device, disconnect the power supply.
- Clean the device with a damp cloth. Do not use liquid or spray products.
- Do not operate the device near water.
- Do not use the device on unstable surfaces that might cause it to fall and be seriously damaged.
- During the integration of the device, we strongly warn to keep an adequate paper loop outlet underneath the presenter, in order to allow the receipt being properly printed out.
- Only use the device on hard surfaces and in environments that guarantee proper ventilation.
- Make sure the device is placed in such a way as to avoid damage to its wiring.
- Use the type of electrical power supply indicated on the device label. If in doubt, contact your retailer.
- Do not block the ventilation openings.
- Do not introduce foreign objects of any kind into the device as this could cause a short circuit or damage parts that could jeopardize device functioning.
- Do not spill liquids onto the device.
- Do not carry out technical operations on the device, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
- Disconnect the device from the electricity supply and have it repaired by a specialized technician when:
    A. The feed connector has been damaged.
    B. Liquid has seeped inside the device.
    C. The device has been exposed to rain or water.
    D. The device is not functioning normally despite the fact that all instructions in the users manual have been followed.
    E. The device has been dropped and its outer casing damaged.
    F. Device performance is poor.
    G. The deviceis not functioning.

1.3 UNPACKING THE PRINTER

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

1. Installation instructions sheet
2. Spacer
3. “CUT AND DROP” configuration kit
4. “BURSTER” configuration kit
5. Power supply cable
6. Printer
7. Ruler
8. Protection tray
9. Box



- Open the printer packaging
- Remove the upper packing frame content and remove the upper packing frame.
- Take out the printer.
- Keep the box, trays and packing materials in the event the printer must be transported/shipped in the future.

1.4 PRINTER FEATURES

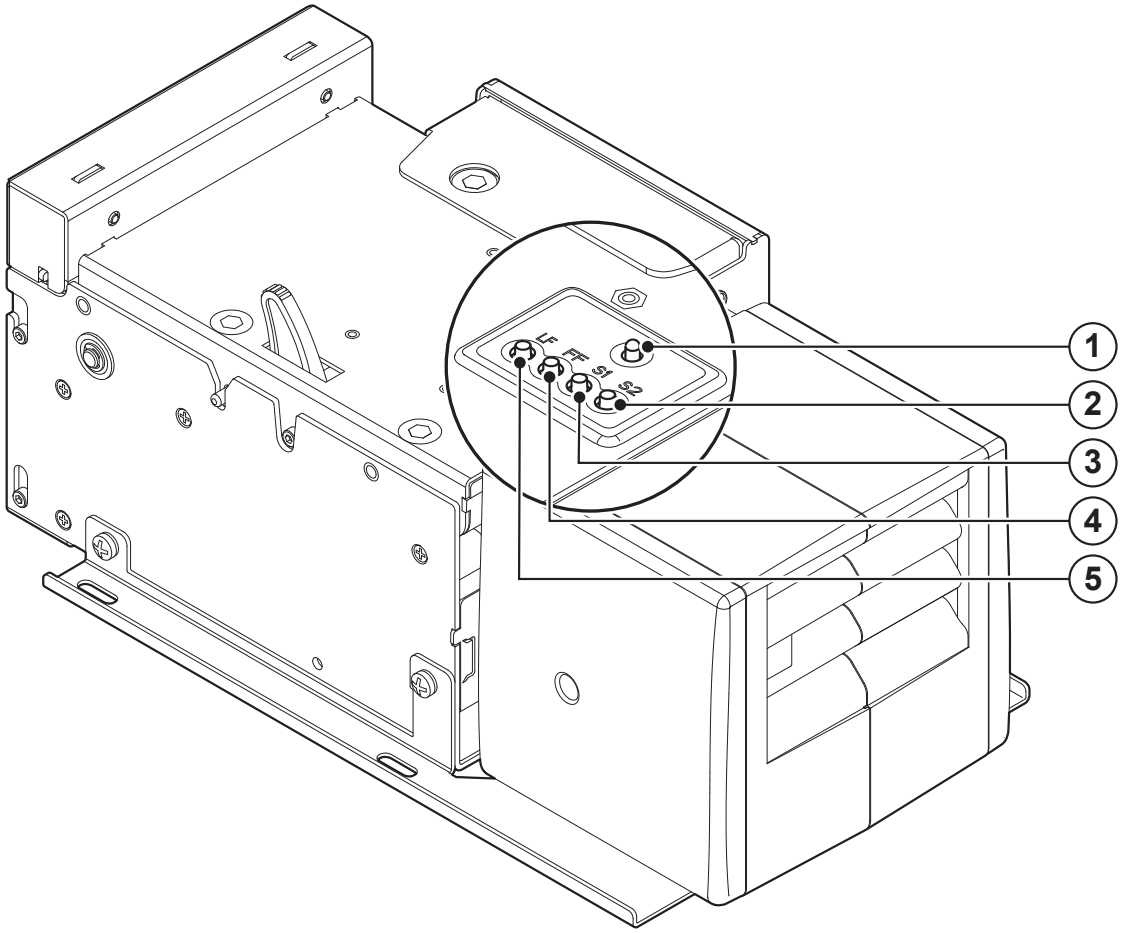
KPM302-TF is a very fast ticket printer, on high quality and full printing. The ARM processor (266MHz) allows high and fast processing capability. Printer is available with optional barcode reader for reading pre-printed modules and manages both paper roll and fan-fold.

KPM302-TF offers a wide range of features:

- Ticket width: 54mm or 82.5mm.
- Paper thickness from 100 to 255 gr/m^2.
- High printing speed.
- Printing head resolution: 203dpi
- Arm processor (266 MHz).
- Interfaces : Serial RS232, USB, ETHERNET.
- ESC/POS™ emulation, SVELTA emulation.
- Character set fonts (ESC/POS™ emulation: 3 standard and international; SVELTA emulation: 20 fonts) and TrueType fonts management.
- Completely or partially programmable fonts.
- Double width/height, quadruple width/height, expanded, italic, rotated 90°, 180° and 270°.
- Receive buffer: 64 Kbytes.
- Definition of function macros for automatic operation repetition.
- Internal programmable counter.
- Graphic print mode.
- Print density (from -50% to +50%).
- Sensors: mobile detector for black mark and translucent gap, ticket presence, hole mark sensor (set by software)
- Working with paper roll or Fanfold module
- Paper cutter.
- Equipped with SD/MMC Multimedia Card for logo, font storage expansion.
- Equipped with Real Time clock.
- Optionally equipped with barcode reader for reading pre-printed modules (Bar code UPC-A. UPC-E, EAN13, EAN8, CODE39, ITF, CODABAR, CODE93, CODE128, CODE32, PDF417, DATAMATRIX, AZTEC and QR-CODE).
- Optionally equipped with RFID Reader/writer (mifare/icode).
- Accessories: external paper holder support.

1.5 PRINTER DESCRIPTION

The printer is comprised of a metal frame, printing mechanism, a cutter, an ejector and the triple feeder.
The keypad panel of printer includes: the STATUS led (1), the LINE FEED key (5), the FORM FEED key (4), the S1 key (3) and the S2 key (2).



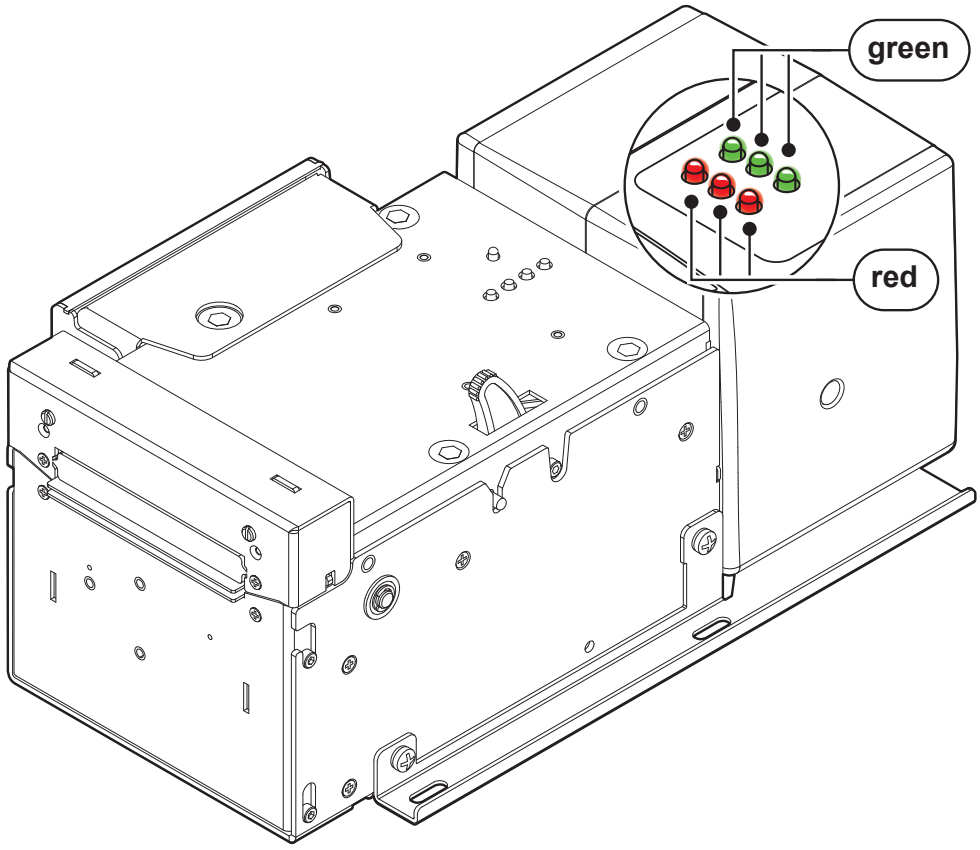
KEY	FUNCTION
LF LINE FEED	When the LINE FEED key is pressed, the printer advances the paper so that it may be inserted manually in the printing mechanism. During power-up, if the LINE FEED key is held down, the printer enters the print setup routine. Following the print-out of the setup report, the printer remains in standby until a key is pressed or signals arrive from the serial port; each 8 characters it prints out hexadecimal and ASCII codes (if the characters are underlined, the receive buffer is full); see Receive buffer hexidecimal print-out.
FF FORM FEED	When the FORM FEED key is pressed, the printer execute the form feed. During power-up, if the FORM FEED key is held down, the printer executes the FONT TEST.
S1	Normally, when the S1 key is pressed, doesn't execute any function. During power-up, if the S1 key is held down, the printer initializes the notch sensor and characterizes the paper.
S2	If the Alignment is enabled, when the S2 key is pressed, the printer executes a ticket alignment and performs a cut

NOTE: During power-up, do not press the S2 key because the printer enter in a test modality that becomes unusable by keys; if this event occurs then turn off the printer and turn on without pressing any key.

The Status led indicates printer status; the check is made on-line. Given in the table below are the various LED signals and the corresponding printer status.

STATUS LED			DESCRIPTION
-	○	*OFF*	Printer off
GREEN	●	*ON*	Printer on : no error
GREEN COMMUNICATION STATUS	☼	*1 x*	Receiving data
		2 x	Receipt error (parity, frame error, overrun error)
		3 x	Command not recognized
		4 x	Command receipt time out
YELLOW RECOVERABLE ERROR	☼	*2 x*	Print head over temperature
		3 x	Paper end
		4 x	Paper jam
		5 x	Power supply voltage incorrect
		6 x	Cover open
RED UNRECOVERABLE ERROR	☼	*3 x*	RAM error
		4 x	EEPROM error
		5 x	Cutter error
		6 x	Cutter cover open

The led panel of triple feeder is comprised of two led (one of green colour and one of red colour) for each of the three paper input feeder.



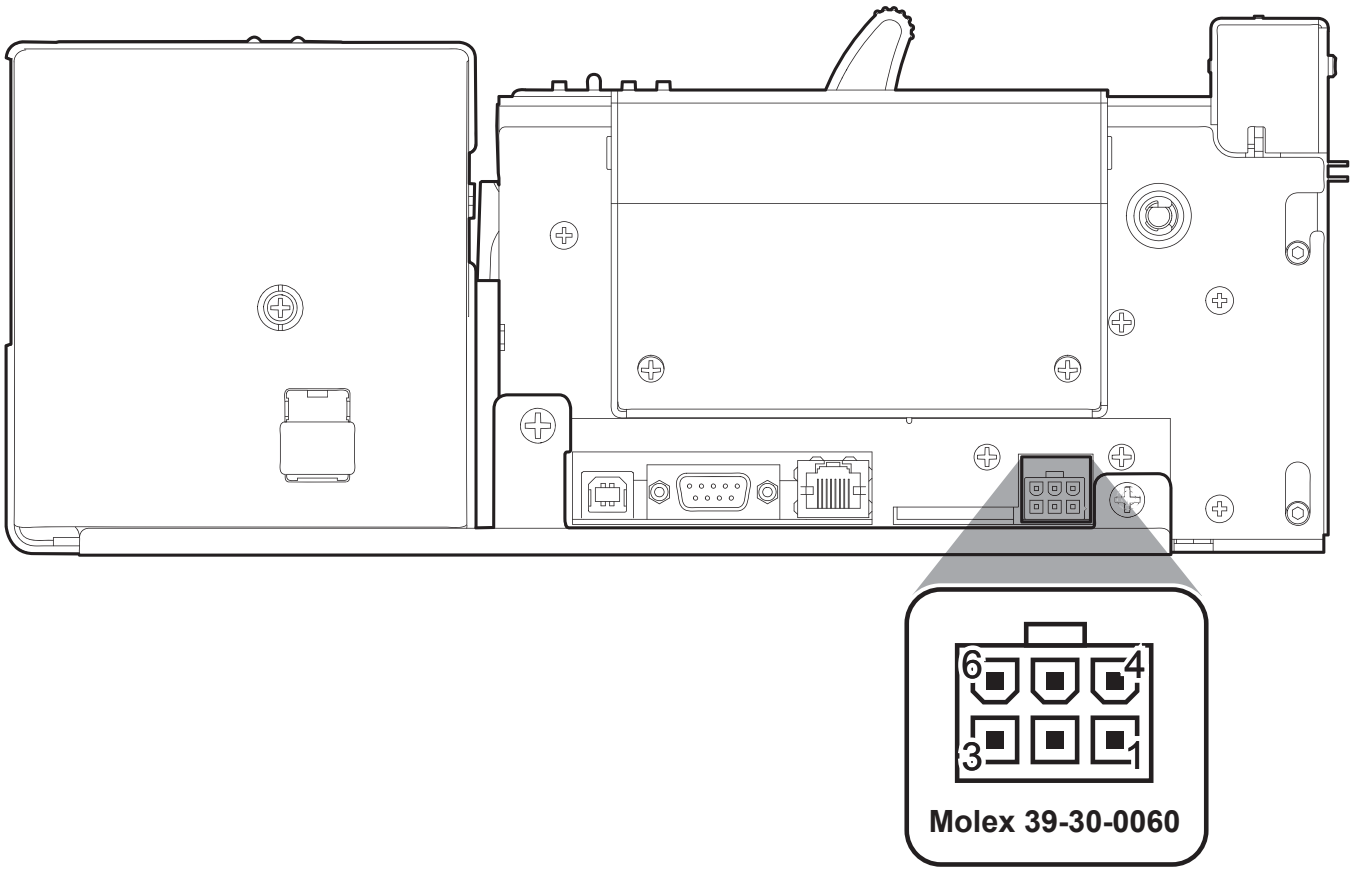
The led indicate the triple feeder status and the paper status. Given in the table below are the various LED signals and the corresponding triple feeder status.

STATUS LED			DESCRIPTION
RED PAPER END WARNING	○	***OFF***	Paper presence
	●	***ON***	Near paper end
GREEN TRIPLE FEEDER STATUS	○	***OFF***	No paper or paper in parking space (1)
	●	***ON***	Paper loaded
	☀	***slow***	Paper end during printing
		fast	Paper jam

NOTA: The paper is in “parking space” when it is present on the entrance of feeder but it is not loaded into the printer.

2 INSTALLATION AND USE

2.1 POWER SUPPLY



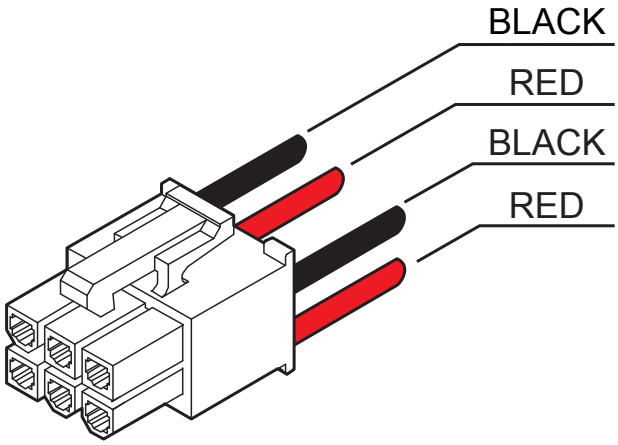
The printer is equipped with an external power supply outlet. For the connector pin configuration refer to the table below:

PIN	SIGNAL
1	+24V
2	+24V
3	+24V
4	GND
5	GND
6	GND

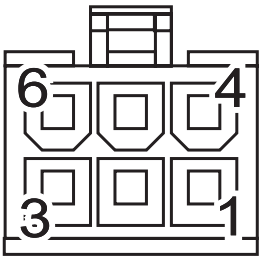
Model no. type: Header : Molex 39-30-0060 (vertical)
Housing : Molex 39-01-2065

WARNING:
Respect power supply polarity.

The following picture shows the power supply cable included in the printer packaging:



FEMALE CONNETTOR
6 PIN (3x2)



OPPOSITE VIEW SIDE
CABLE INSERTION

For the connector pin configuration of this cable refer to the table below:

PIN Female connector	Cable colour	Signal
Pin 1	Red	+24V
Pin 2	Not connected	+24V
Pin 3	Red	+24V
Pin 4	Black	GND
Pin 5	Not connected	GND
Pin 6	Black	GND

NOTE: The red cable is for +24 Vdc.
The black cable is for signal ground (GND).

2.2 SELF-TEST

During power-up, if the LF LINE FEED key is held down, the printer enters the autotest routine and prints out the Setup report. The printer will remain in standby in Hexadecimal dump mode until another key is pressed or characters are received through the printer communication port.

PRINTER SETTINGS

PRINTER TYPE KPM302
Barcode Reader.....Not Present
RFID Module.....Not Present
PRINTING HEAD TYPE KPA80
INTERFACE RS232
PROGRAM MEMORY TEST.....OK
DYNAMIC RAM TEST.....OK
EEPROM TEST.....OK
CUTTER TEST.....OK
PRINTER HEAD Rav 561
HEAD VOLTAGE [V] = 24.55
HEAD TEMPERATURE [°C] = 26
POWER ON COUNTER = 141
PAPER PRINTED [cm] = 22870
CUT COUNTER = 35

Printer Emulation.....: **ESC/POS (TM)**
RS232 Baud Rate .....: **115200 bps**
RS232 Data Length.....: **8 bits/chr**
RS232 Parity .....: **None**
RS232 Handshaking .....: **Xon/Xoff**
Busy Condition .....: **RxFull**
USB Mass Storage.....: **Enabled**
USB Address Number .....: **0**
Print Mode .....: **Normal**
Autofeed .....: **CR disabled**
Chars / inch .....: **A=15 B=20 cpi**
Speed / Quality.....: **Normal**
Paper Width.....: **82 mm**
Paper Threshold .....: **60%**
Notch Position .....: **Down**
Notch Threshold .....: **40%**
Notch Distance [mm] .....: **+00.0**
Ticket Locking.....: **Disabled**
PaperEnd Buffer Clear .....: **Disabled**
Ticket Management .....: **Disabled**
Print Density.....: **0%**

[LF] *enter Printer Setup*
[FF] *enter Ethernet Setup*
[S1] *enter Clock Setup*
[S2] *skip Setup*

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	is given the interface present (RS232).
PROGRAM MEMORY TEST	the message OK appears if functioning and NOT OK if faulty.
DYNAMIC RAM TEST	the message OK appears if functioning and NOT OK if faulty.
EEPROM TEST	the message OK appears if functioning and NOT OK if faulty.
CUTTER TEST	the message OK appears if functioning and NOT OK if faulty.
PRINTER HEAD Rav	is given the resistance of a dot head.
HEAD VOLTAGE	is given the voltage of the head.
HEAD TEMPERATURE	is given the temperature of the head.
POWER ON COUNTER	is given the number of power-ups made.
PAPER PRINTED	is given the number of centimeters of paper printed.
CUT COUNTER	is given the number of cuts made.

2.3 CONFIGURATION

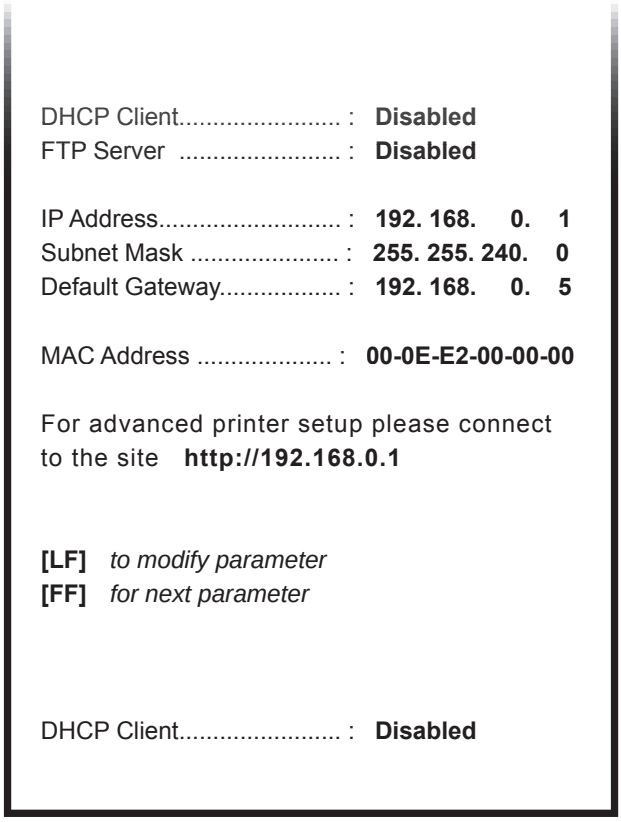
Printer permits the configuration of default parameters divided into two groups:
- parameters for Ethernet setup;
- parameters for printer setup.

Both the groups of parameters are configurable in three different ways (see the following paragraphs):
1. by entering the Setup Mode;
2. by entering the “Printer Setup” page and the “Ethernet Setup” page of the Embedded Web Server;
3. by editing the “Setup.ini” file from Mass Storage or by FTP Server connection.

In the Setup Mode, it’s possible to configure both the groups or skip one of them following the instructions printed on the paper for the FORM FEED key and LINE FEED key functionality.

2.3.1 Ethernet setup

After printing the Setup report with printer's parameters, press the FF FORM FEED key to enter the Ethernet parameters (see following figure).



The Ethernet configurable parameters are:

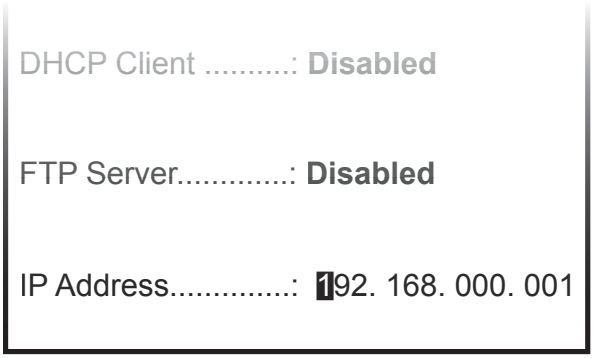
- **DHCP Client:** Disabled[D] or Enabled.
- **FTP Server:** Disabled[D] or Enabled
- **IP Address:** printer IP network address; the network administrator assigns it.
- **Subnet Mask:** this parameter identifies the local network address.
- **Default gateway:** this parameter identifies the Gateway IP address used to send applications to the external network.
- **Mac address:** this is the number, provided by the constructor, that identifies the printer; this number is unique. This parameter can't be modified by set up.

General notes:
The parameters marked with the symbol [D] are the default values.
Settings remain active even after the printer has been turned off.

After printing the Ethernet parameters, the first parameter to be modifies (DHCP Client) is printed. To configure Ethernet parameter, press LF LINE FEED key to modify the parameter and press FF FORM FEED key to move to the next parameter.

ATTENTION: any changes to network parameters will interrupt browser connection!!! If the server not responding you MUST reconnect to the new IP address set.

The “IP Address” parameter is a number, in dotted decimal, composed by 4 bytes that identifies the IP address in 32 bit. Each byte is composed by three-digit number, of a maximum value of 255.



To change this value is possible to modify the digits of each byte

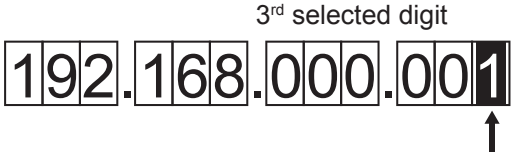
192	.	168	.	000	.	007
1st byte		2nd byte		3rd byte		4th byte

1° byte:	1	9	2
	1st digit	2nd digit	3rd digit

where
1st digit: 0 - 2
2nddigit ; 3rd digit: 0 - 9

The selected digit is highlighted (the number is written in negative mode).
Press FORM FEED key to modify the value of the highlighted digit; every single FORM FEED key pressure increases of 1 his value. Once the value 9 (or 2) is reached the counting starts again from 0.
Pressing LINE FEED key to move the cursor on the next digit; if the cursor position is on the latest digit, proceed to next parameter pressing the LINE FEED key again.

For example to modify the value of “IP Address” parameter from 192.168.0.1 to 192.168.0.7 you have to change the 3rd digit of 4th byte replacing 1 with 7.



NOTE: The first digit of each byte can assumes only values between 0-2 because the maximum value is 255.

2.3.2 Printer setup

This printer permits the configuration of following default parameters:

- **Printer Emulation :** SVELTA[D], ESC/POS™.
- **RS232 Baud Rate [(1)] :** 115200[D], 57600, 38400, 19200, 9600, 4800, 2400, 1200.
- **RS232 Data Length [(1)] :** 7, 8[D] bits/car.
- **RS232 Parity [(1)] :** None[D], even, odd.
- **RS232 Handshaking [(1)] :** XON/XOFF[D] , Hardware.
- **Busy condition [(2)] :** RXFull[D] , OffLine/RXFull.
- **USB Mass Storage :** Disabled[D] , Enabled.
- **USB Address Number [(3)] :** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Print mode :** Normal[D] , Reverse.
- **Autofeed [(4)] :** CR disabled[D] , CR enabled.
- **Chars / Inch [(4)] :** A=11 B=15 cpi[D], A=15 B=20 cpi.
- **Speed / Quality :** Normal, High quality , High Speed[D].
- **Paper width** : 20mm, 24mm, 26mm, 28mm, 30mm, 32mm, 34mm, 36mm, 38mm, 40mm, 42mm, 44mm, 46mm, 48mm, 50mm, 52mm, 54mm, 56mm, 58mm, 60mm, 62mm, 64mm, 66mm[D], 68mm, 70mm, 72mm, 74mm, 76mm, 78mm, 80mm, 82mm.
- **Paper Threshold [(5)]** : 30%, 40%, 50%, 60%[D], 70%, 80%, 90%.
- **Notch Position [(6)]** : Disabled[D], Up, Down, Transparence.
- **Notch Threshold [(7) (8)] :** 30%, 40%[D], 50%, 60%, 70%, 80%, 90%.
- **Notch Distance Sign [(8)] :** +[D], -.
- **Notch Distance [mm x 10] [(8) (9)] :** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Notch Distance [mm x 1] [(8) (9)] :** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Notch Distance [mm x .1] [(8) (9)] :** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Ticket Locking [(8) (10)] :** Disabled[D] , Enabled, By Printer, By Feeder, Complete.
- **PaperEnd Buffer Clear :** Disabled[D] , Enabled.
- **Ticket Management [(11)] :** Disabled[D] , Short Ticket, Check First.
- **Print Density:** -50%, -37%, -25%, -12%, 0[D],+12%, +25%, +37%, +50%.

General notes:
The parameters marked with the symbol [D] are the default values.
Settings remain active even after the printer has been turned off.

NOTE:

(1) : Parameter valid only with serial interface.

(2) : 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.

(3) : 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 for example two USB printers.

(4) : This parameter is displayed if the printer emulation is set to ESC/POS™.

(5) : This parameter indicates the threshold value under the sensor detect the paper.

(6) : This parameter sets which sensor is used as notch sensor. There are two sensor operating mode: reflection or transparence.

(7) : This parameter is used to detect the presence of the notch. In order to better identify the optimum threshold for the paper being used, a paper characterization function is also available in the setup.

(8) : If the “Notch Position” parameter is set to “Disabled” this parameter doesn’t appear in the “Printer Setup”.

(9) : The “Notch distance” parameter represents the distance in mm from the upper margin of the ticket to the black mark on the ticket. For example, to set notch distance to 15 mm, modify the following parameters in order to obtain the desired values as indicated :

Notch Dist. [mm x 10] : 1
Notch Dist. [mm x 1] : 5
Notch Dist. [mm x .1] : 0

(10) : The “Ticket locking” parameter is used to set the ticket block when the paper is inside the printer. The available values are:

By Printer : the motor remain switched on also at the printing end.
By Feeder: stops the paper of the not active (idle) feeders in order to avoid that the paper parked in a idle feeder, is dragged inside the printer.
Complete: ticket locking by printer and feeder (combination of the two previous effects).

(11) : When the parameter is set to “Short Ticket”, it is possible to manage tickets with length less than the distance between the notch sensors and the printing line. When the parameter is set to “Check First”, printers checks the integrity of the first ticket.

After pressing LF LINE FEED key, the first parameter to be modified (Printer Emulation) is printed. To modify printer’s parameters follow the instructions printed on the paper for the FF FORM FEED key and LF LINE FEED key functionality.
The settings made are stored in EEPROM (nonvolatile memory).

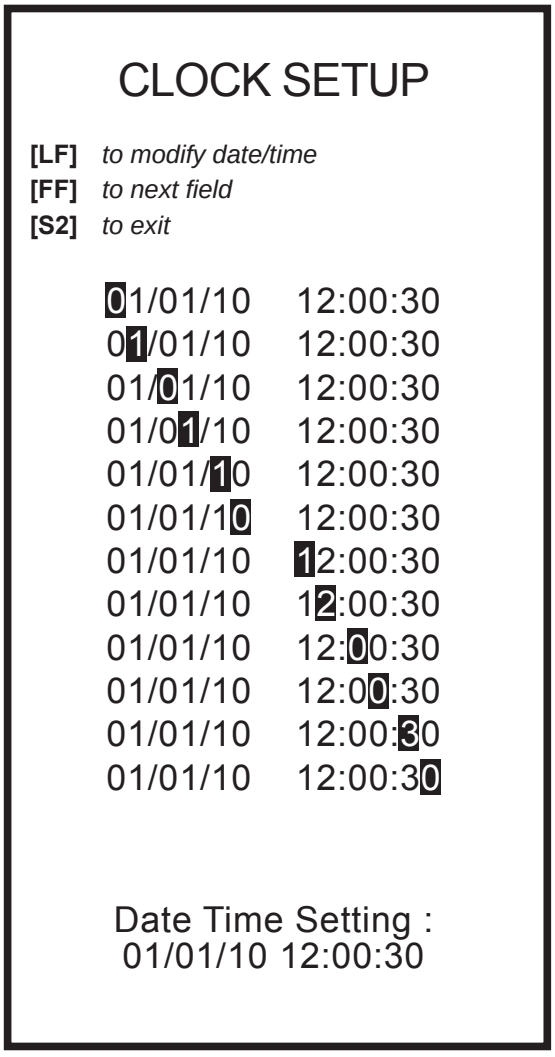
2.4 HEXADECIMAL DUMP

This function is used to diagnose the characters received through the communication port; the characters are printed out both as hexadecimal codes and ASCII codes.
Once the self-test routine has finished, the printer enters Hexadecimal Dump mode. The printer remains in standby until a key is pressed or characters are received through the communication port. For example, in the 200 dpi model, for every 8 characters received, the hexadecimal and corresponding ASCII codes are printed out (if the characters are underlined, the receive buffer is full). Shown below is an example of a Hexadecimal Dump:

48	65	78	61	64	65	63	69	Hexadeci
6D	61	6C	20	64	75	6D	70	mal dump
20	66	75	6E	63	74	69	6F	functio
6E	20	30	31	32	33	34	35	n 012345
36	37	38	39	61	62	63	64	6789abcd
65	66	67	68	69	6A	6B	6C	efghijkl
6D	6E	6F	70	71	72	73	74	mnopqrst
75	76	77	78	79	7A			uvwxyz

2.5 CALENDAR CLOCK

The printer is equipped with a Real Time Clock. During power-up, held down the LF LINE FEED key to enter in the printer configuration mode. Pressing the S1 key to enter in the clock configuration.
Pressing the LF LINE FEED key to modify date / time; the printer will be print the upated the date and time.
Follow the instructions printed on the paper for the key functionality. The highlighted digit (the number is written in negative mode) indicates the digit to be modified. Pressing LF LINE FEED key to modify the value of the highlighted digit; every single LF LINE FEED key pressure increases of 1 his value. Once the value 9 is reached the counting starts again from 0.
Pressing FF FORM FEED key to move the cursor on the next digit; if the cursor position is on the latest digit you can proceed to next parameter pressing the FF FORM FEE key again.
Pressing S2 key to exit and terminate the setting procedure.

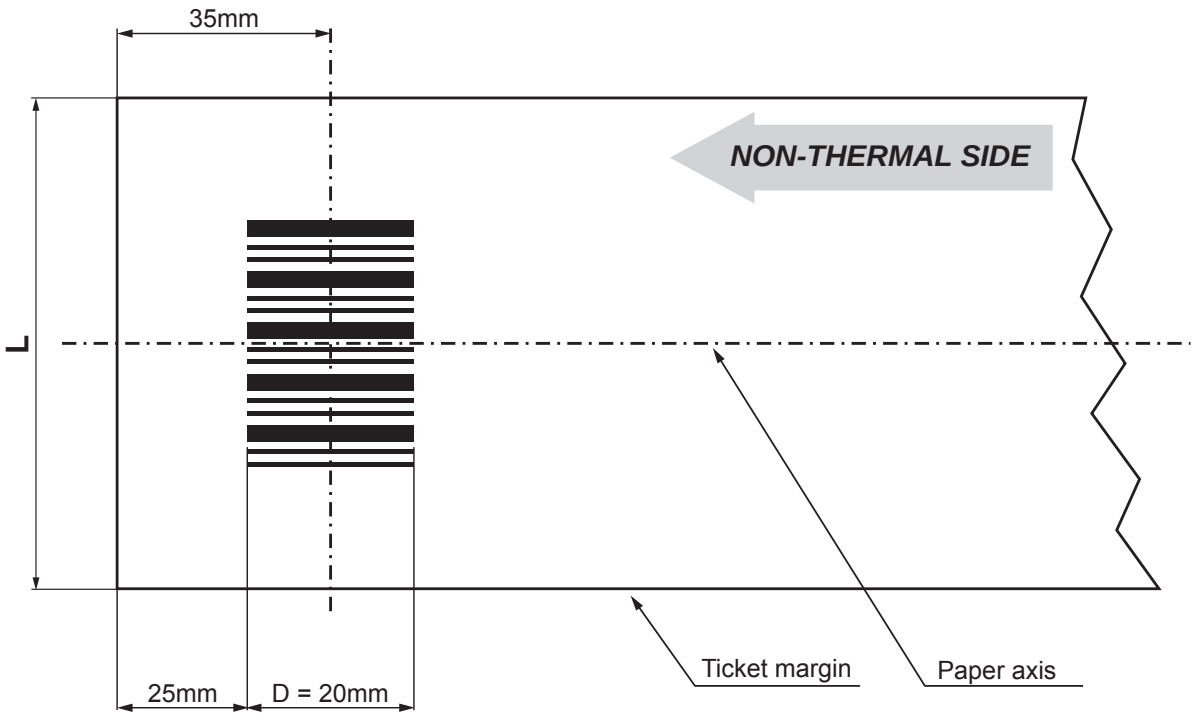


2.6 PAPER SPECIFICATIONS

Printer manages ticket width of 54mm or 82,5mm adjustable by the user; this printer manages both paper roll, fan-fold and ticket with notch. The printer is available with optional barcode laser reader (CCD scanner) for reading pre-printed modules and optional RFID reader/writer (mifare/Icode)
The following paragraphs give the specifications and dimensions for each ticket configuration.

2.6.1 Specifications for ticket with barcode (for models with barcode reader)

Place the barcode on the non-heat sensitive side of the ticket, 25mm far from the margin to allow a correct reading when the ticket is aligned with the print, as shown in the following figure.



where:
L = paper width used (54mm or 82,5mm).
D = minimum barcode width

NOTE: See the table “Technical specifications” for the main barcode reader specifications (for models with barcode reader).

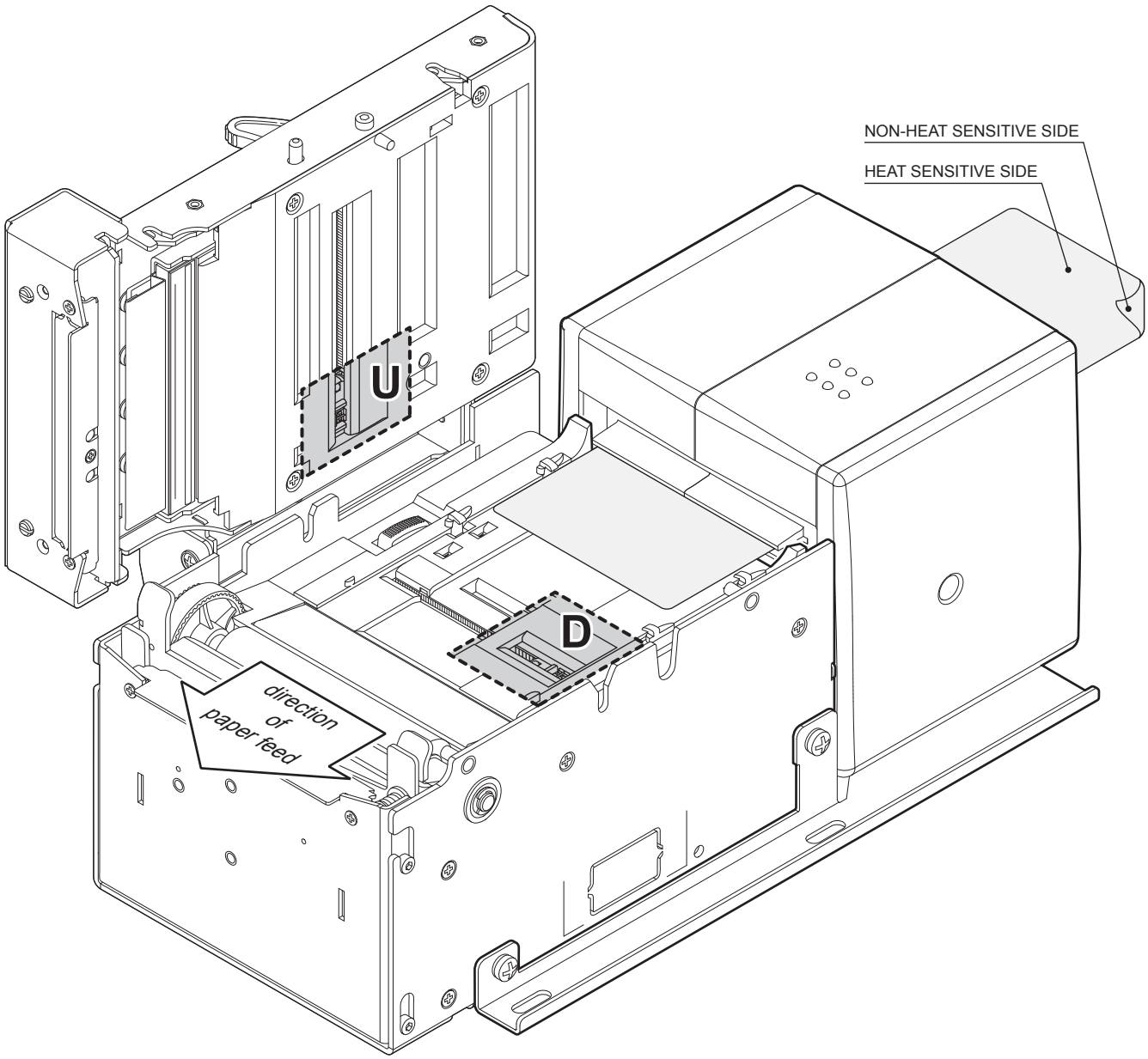
2.6.2 Specifications for ticket with notch

Printer is provided with 2 mobile sensors for the notch detection as shown in the following figure, where
- **U** = upper sensor
- **D** = lower sensor.

The printer manages tickets with notch placed both on the heat sensitive side and on the non-heat sensitive side of the ticket.
“Notch Position” parameter (see printer Setup) sets the positions for the notch as follows:

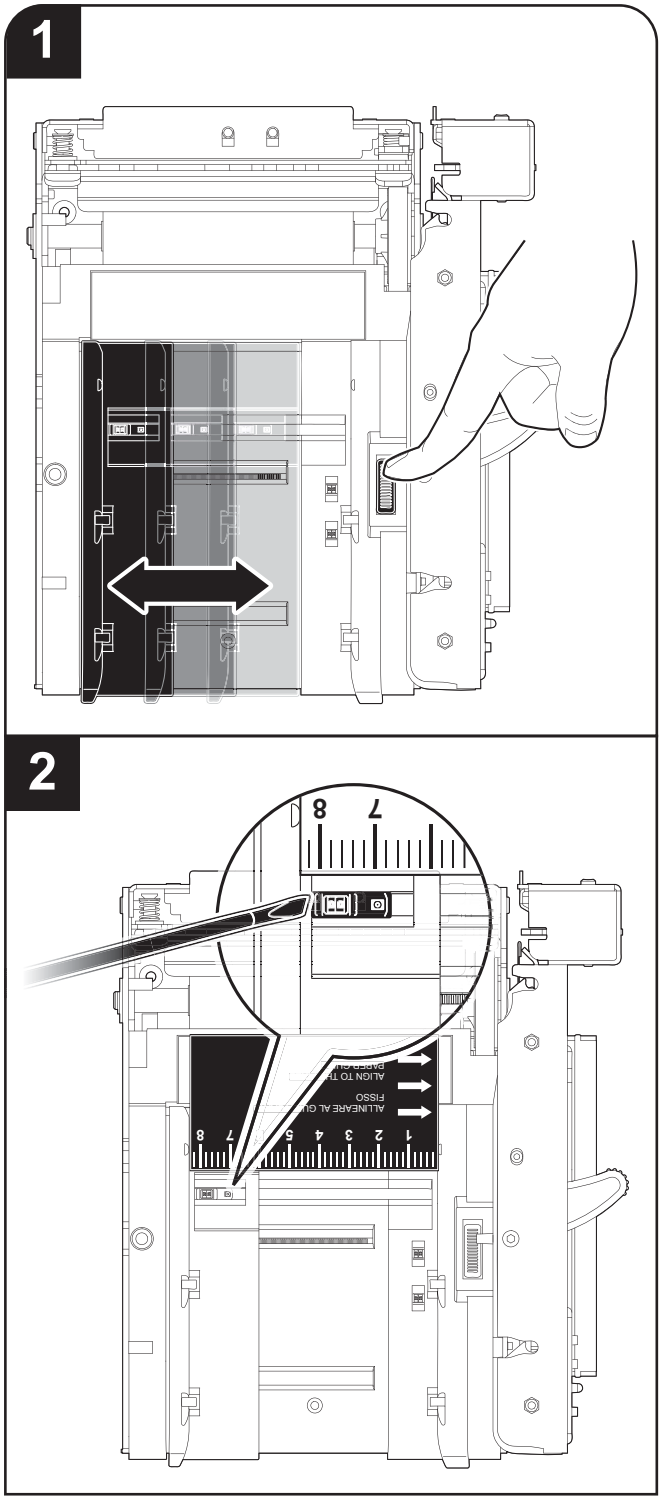
- Notch positioned on the heat sensitive side:
  “Notch position” = Up

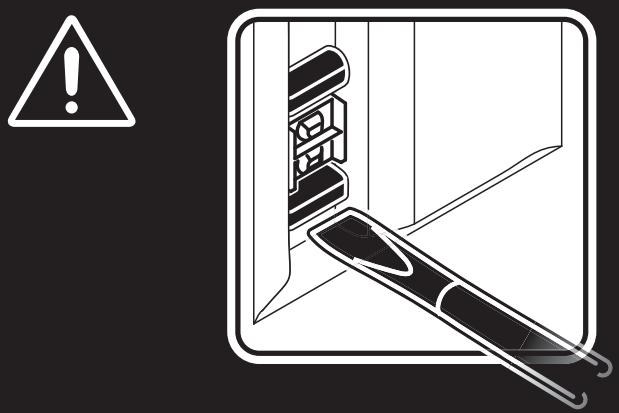
- Notch positioned on the non-heat sensitive side:
  “Notch position” = Down



To adjust the position of the sensors based on the positioning of the notch on the ticket, proceed as follows:

1. Adjust the paper width by pressing the unlocking button and by moving the mobile paper guide.
2. Place the ruler supplied against the fixed paper guide on the lower flat. Move the lower sensor to the desired position using a small screwdriver or a pointed object.
3. Place the ruler supplied against the appropriate fin on the upper flat. Move the upper sensor to the desired position using a small screwdriver or a pointed object.



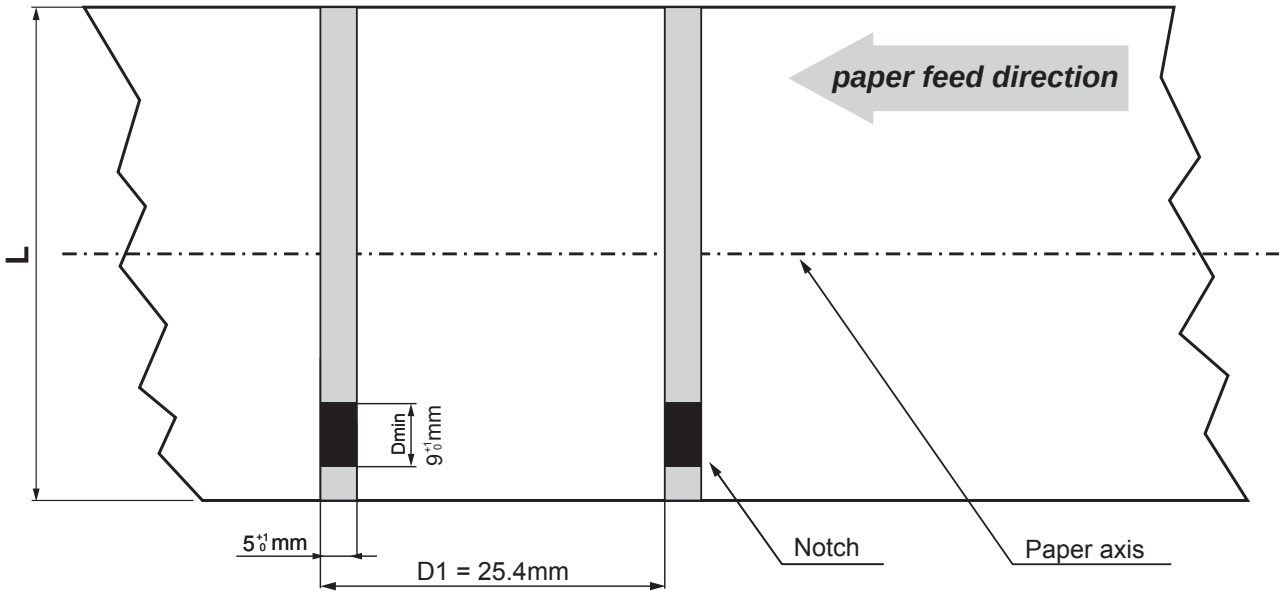


ATTENTION:
To avoid damaging the sensors, use the plastic tabs as foothold for the screwdriver to push the sensor in the desired position.

NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

The following figure shows an example of paper roll with notch, where:

L = represents the paper width used (54mm or 82,5mm);
Dmin = indicates the minimum notch dimension;
D1 = indicates the minimum notch to notch distance.



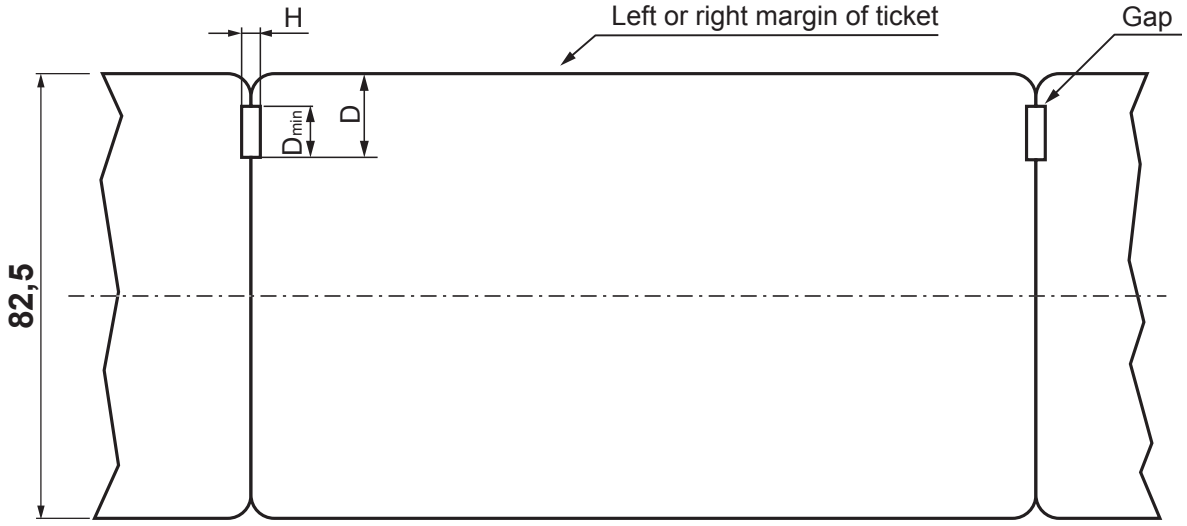
- The notch can be positioned anywhere across the width of the paper.
- The printer automatically choice the sensor used to detect the paper presence according to the selected notch sensor.
- For a correct alignment, the notch distance from the margin must be between -5 and 66mm (notch sensor/print head distance).

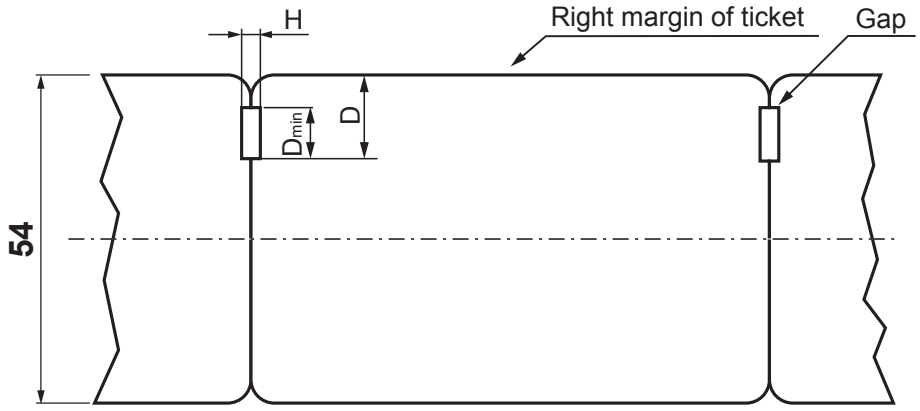
2.6.3 Specifications for ticket with gap

To use ticket with gap, set the “Notch position” parameter (see printer setup) as “Transparence” value and place both the notch sensors in the gap position, so as to be facing.

The gap must be positioned in a lateral position on ticket (see the following figures):

- for paper width = 82,5mm the gap may be positioned both on the left and on the right side of the ticket
- for paper width = 54mm the gap may be positioned only on the right side of the ticket (next to the fixed paper guide)





where

H = indicates the managed minimum height (2mm)
Dmin = indicates the minimum width (10mm)
D = indicates the maximum distance allowed between the edge of the hole and the edge of the ticket (20mm)

2.6.4 Specifications for ticket with RFID Tag (for models with RFID reader)

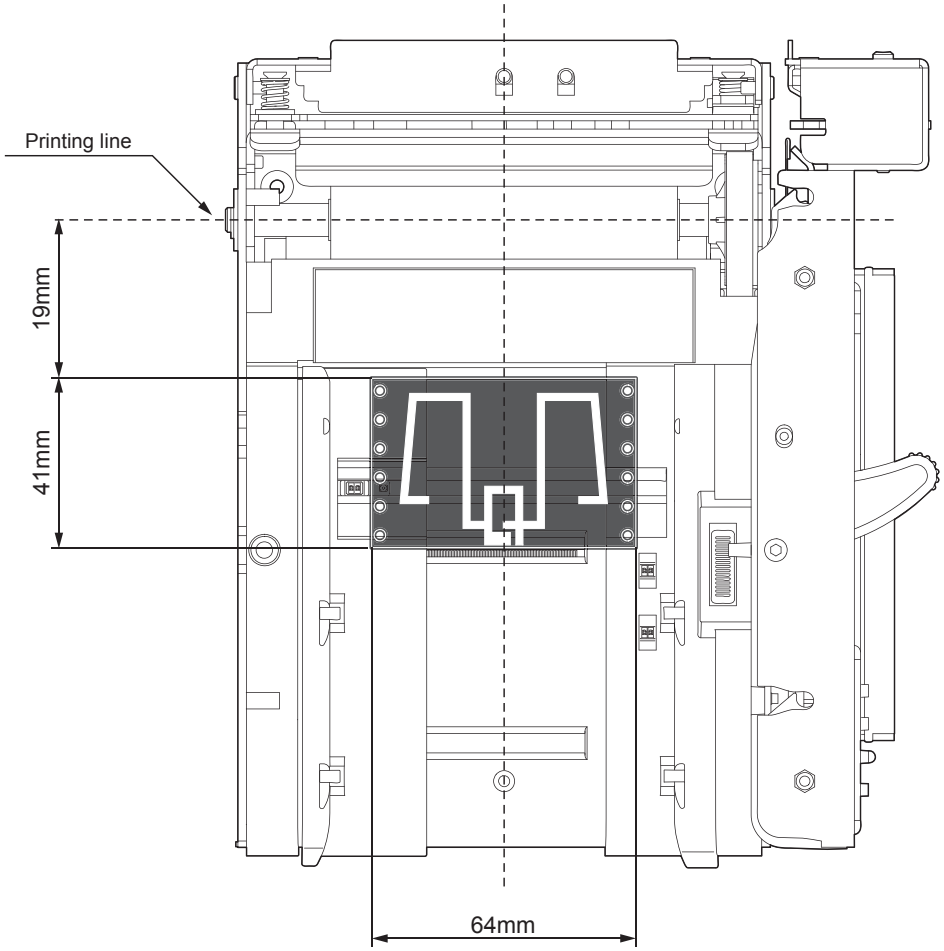
The models equipped with RFID reader, manages ISO format and IATA format of ticket with RFID Tag.
RFID (acronym for Radio Frequency IDentification) is a technology to identify automatically items using radio waves; this system is based on wireless data capture from RFID tag using appropriate readers. The RFID tag, or transponder, is made up of :

- the microchip that stores the data (including also a unique serial number written);
- an RFID antenna.

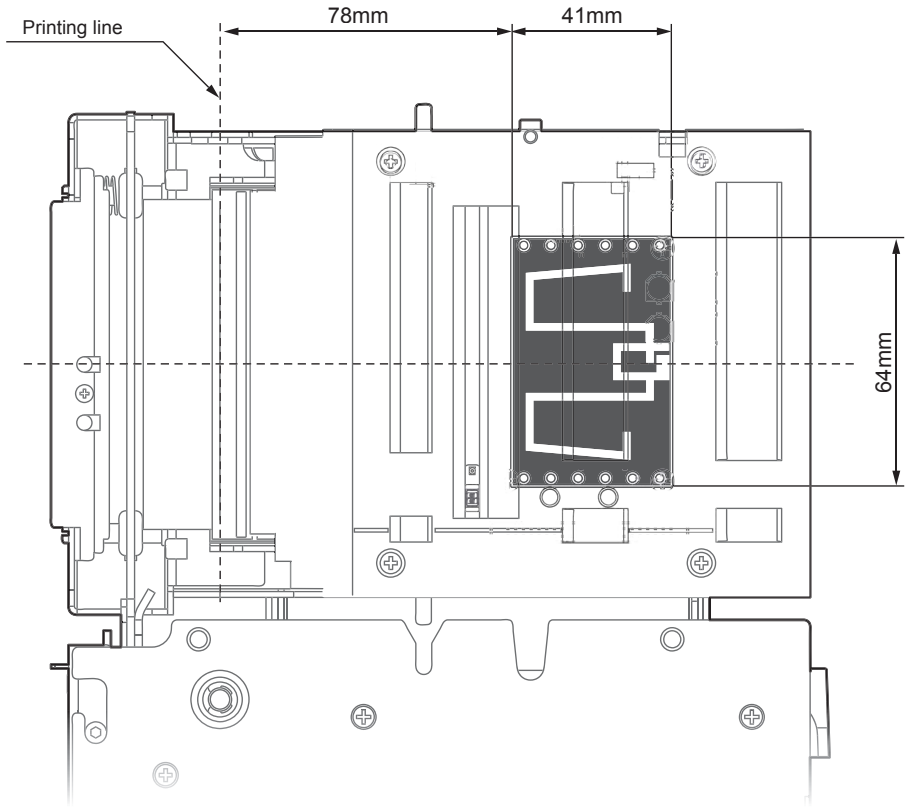
An RFID transceiver module is mounted inside the printer, provided with antenna, that allows to send and receive RF data to and from the tag. For this application the ticket dimensions are not binding but for good reading is important that the tag inside the ticket, after alignment, intersects the antenna area.

The following figures show the available positions of antenna RFID inside the printer.

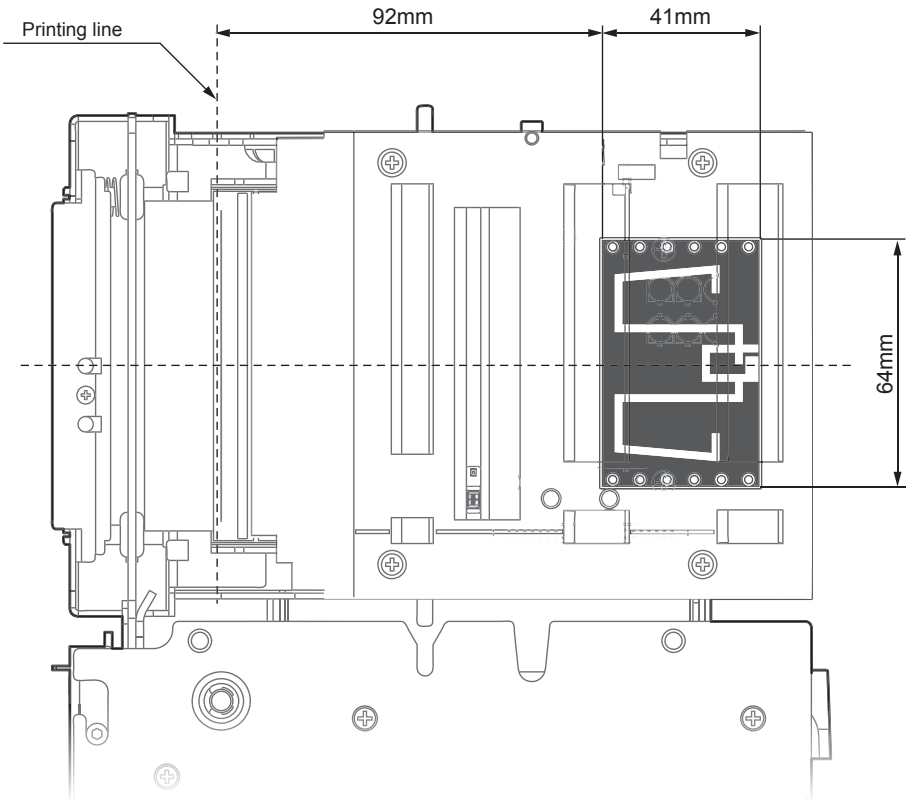
Position 1 (lower plastic flat)



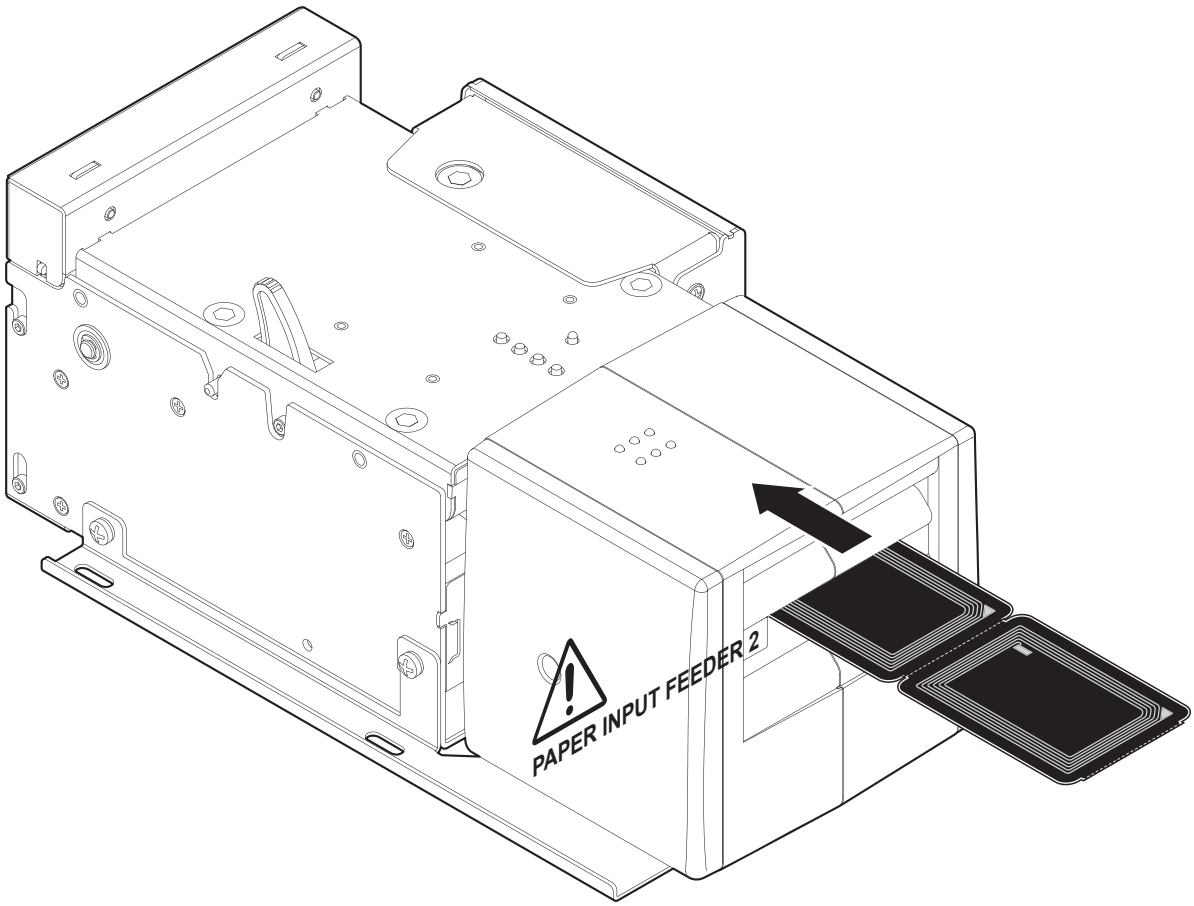
Position 2 (upper plastic flat)



Position 3 (upper plastic flat)



It is possible to load ticket with RFID tag only into the central feeder, as shown in following figure.



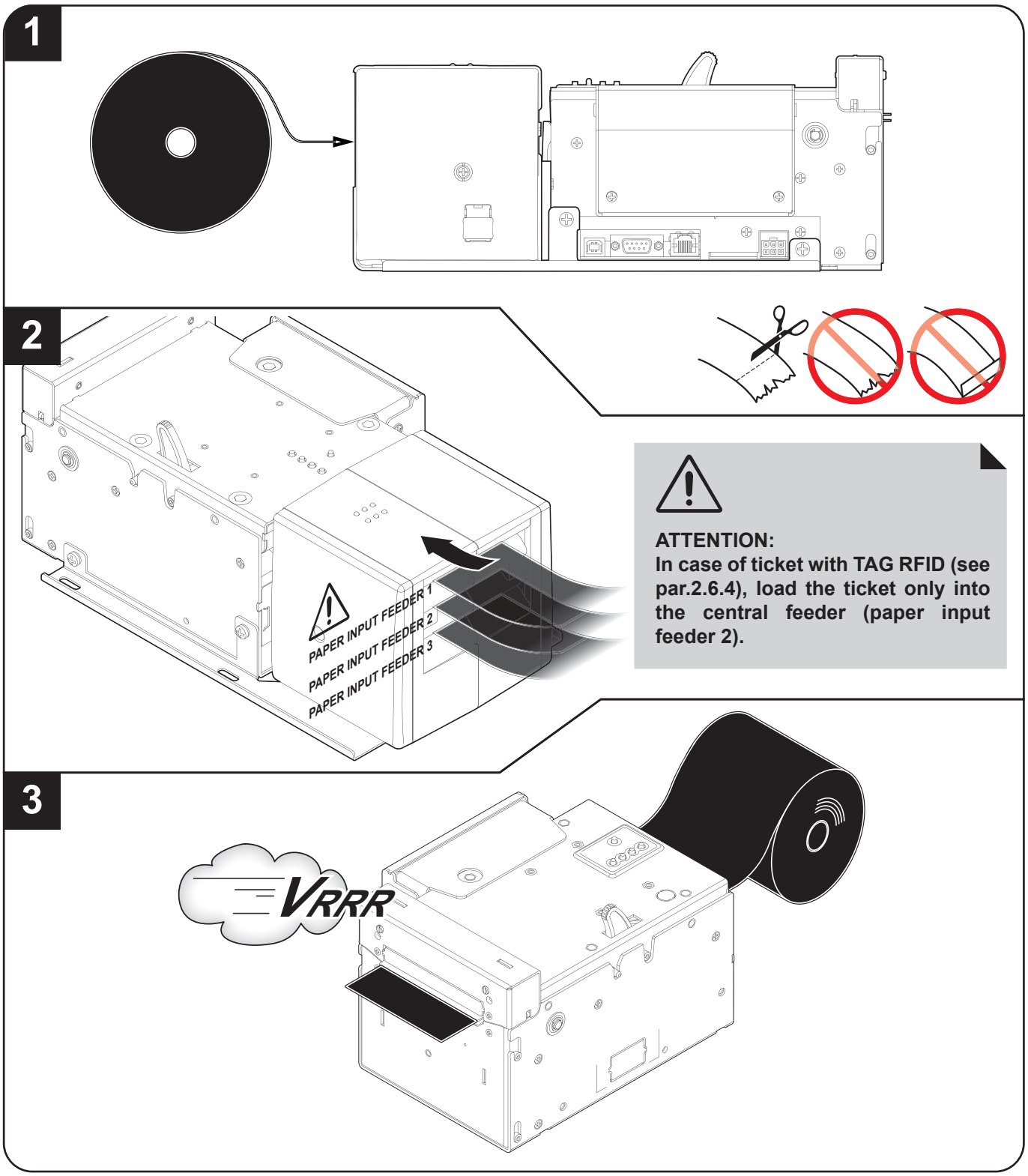
NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

2.7 MAINTENANCE

2.7.1 Changing the paper roll

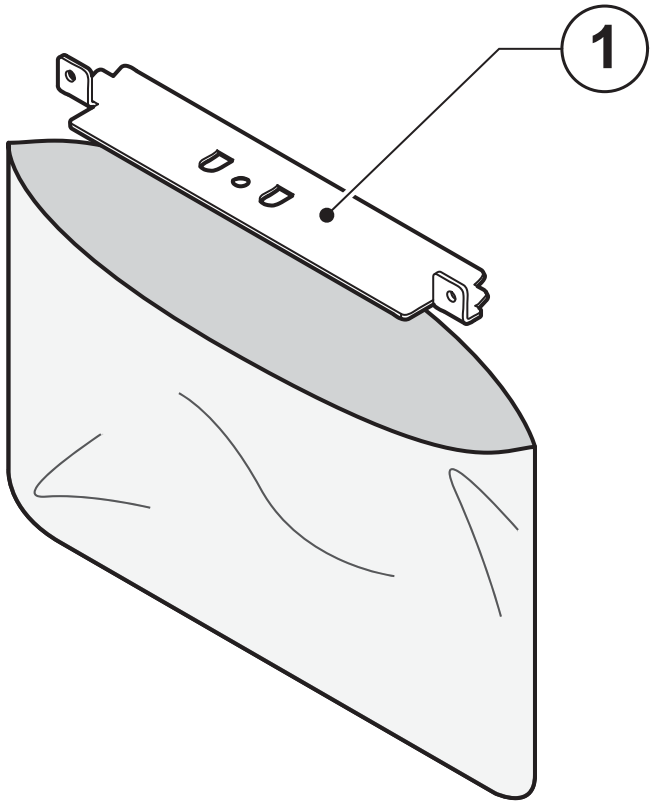
Each time you change the paper, check inside the printer. To change the paper roll proceed as follows:

1. Position the paper roll, so that it unrolls correctly as shown in figure.
2. Insert the end of the paper roll in the paper load opening on the triple feeder unit.
3. Wait for the paper to load automatically.



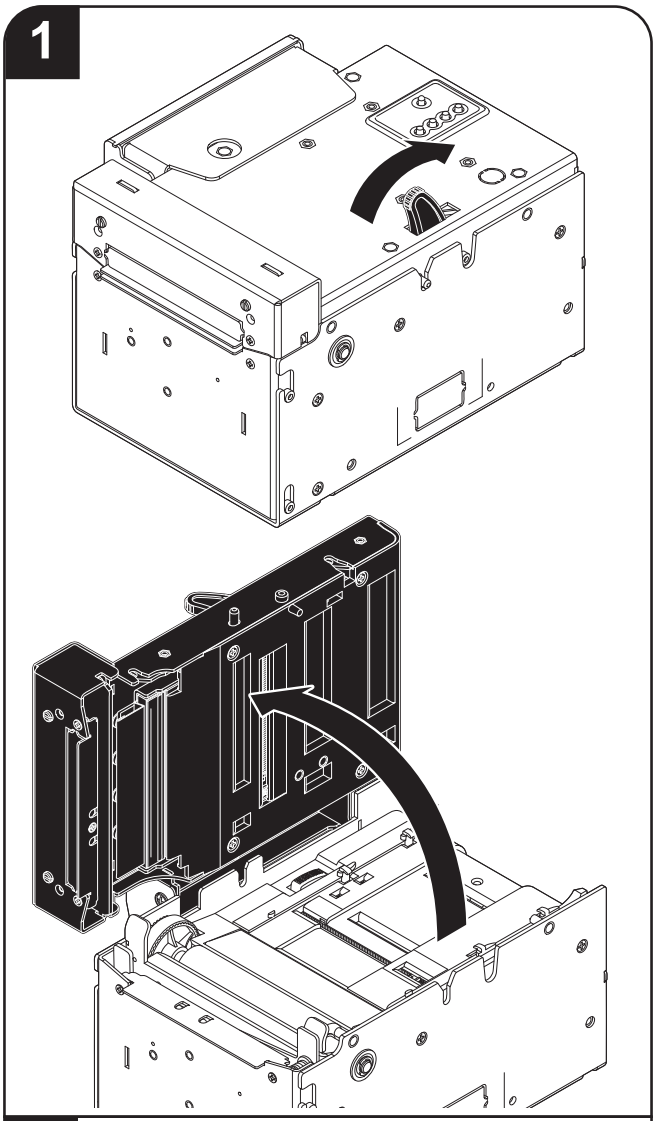
2.7.2 “BURSTER” configuration

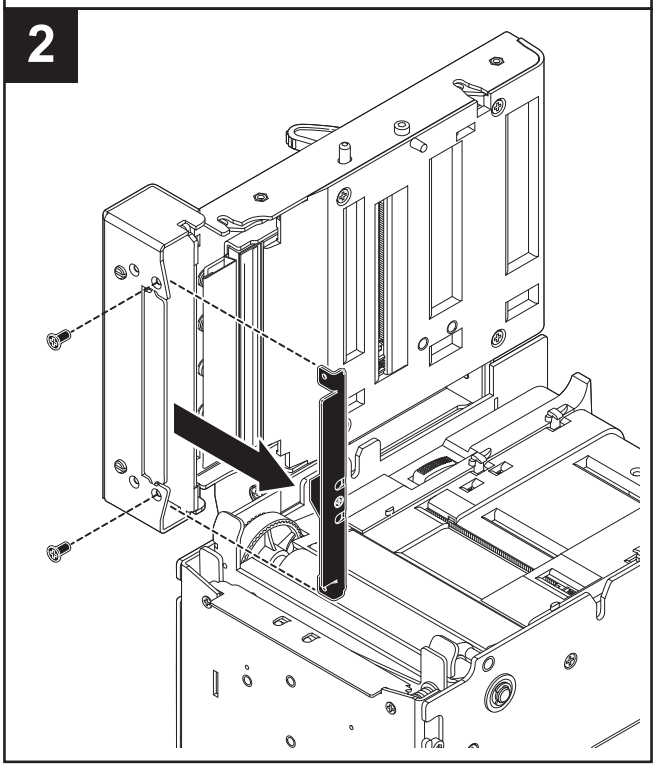
Printer is provided with a kit for the “BURSTER” configuration.
The kit contains the upper paper outfeed mouth (1).

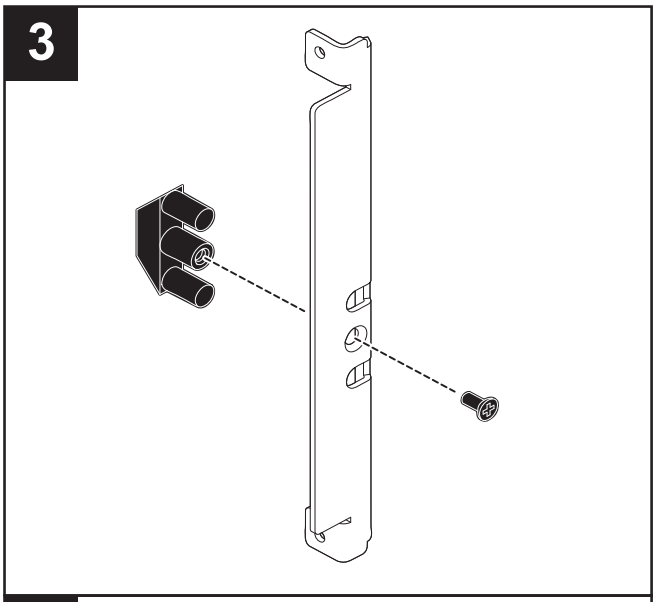


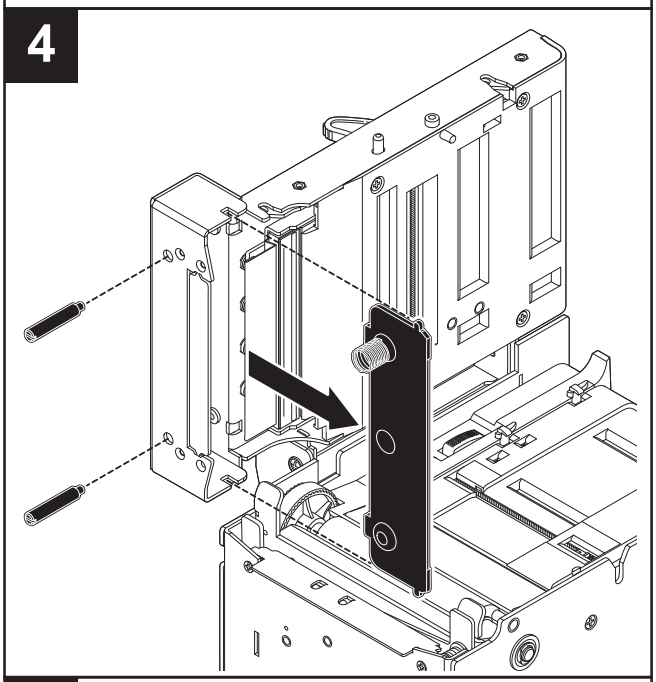
Assembly instruction

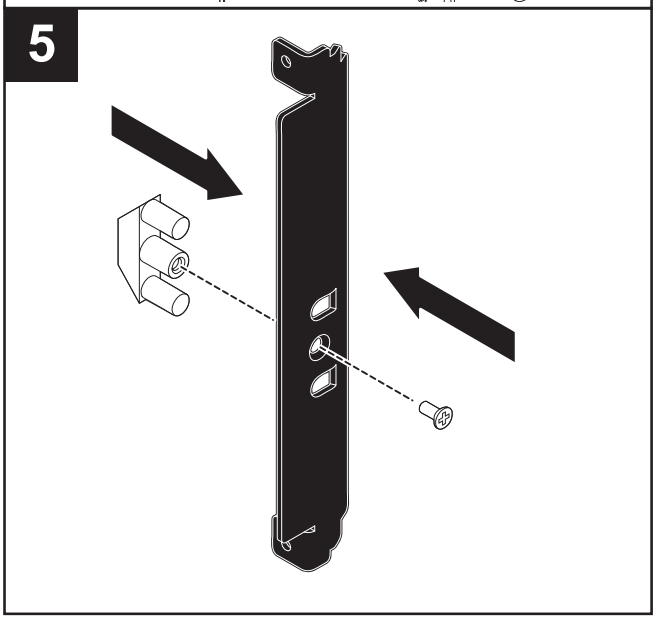
1. Open the printer cover.
2. Unscrew the two fixing screws and take off the upper paper mouth group of the “STANDARD” configuration.
3. Unscrew the central fixing screw and divide the paper mouth of the “STANDARD” configuration from the light guide.
4. Unscrew the fixing pins and take off the fixed blade and the spring.
5. Fix the light guide with the upper paper mouth of the “BURSTER” configuration using the screw previously removed.
6. Fix the upper paper mouth group for the “BURSTER” configuration using the screws previously removed.

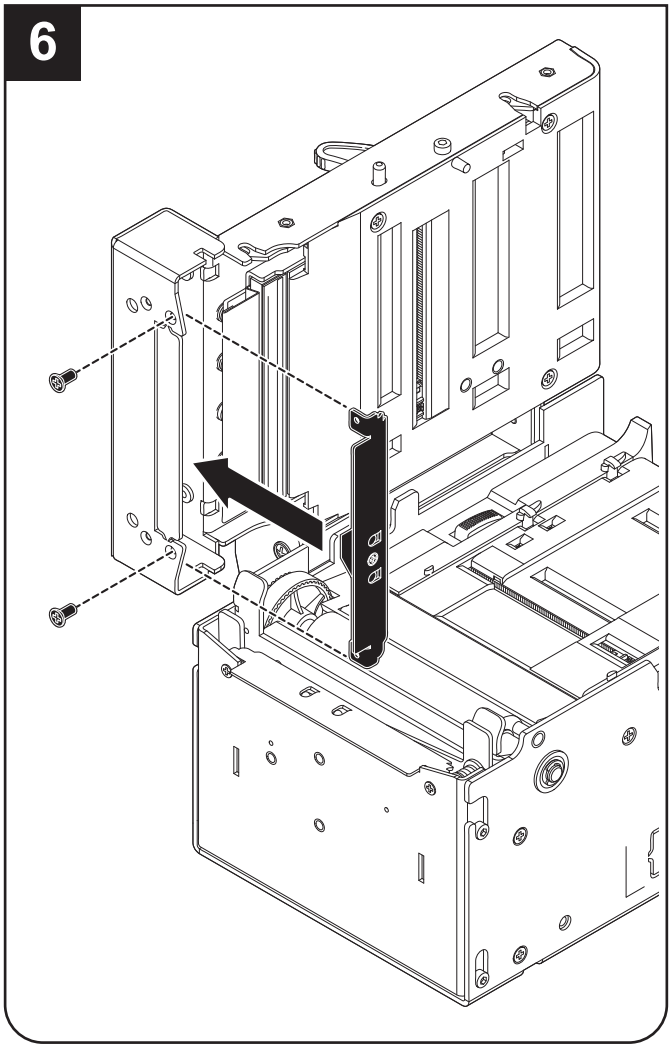

1


2


3


4

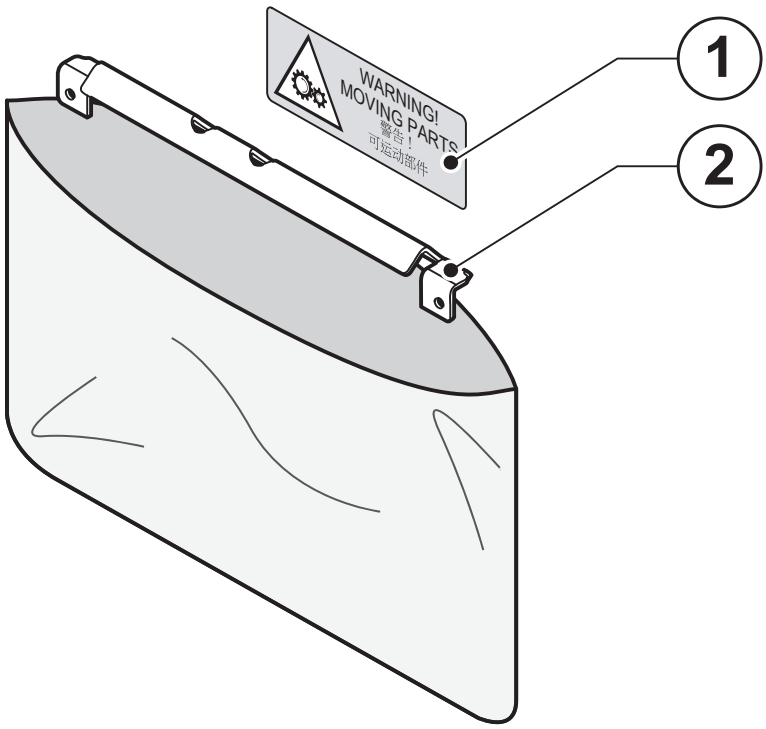

5



NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

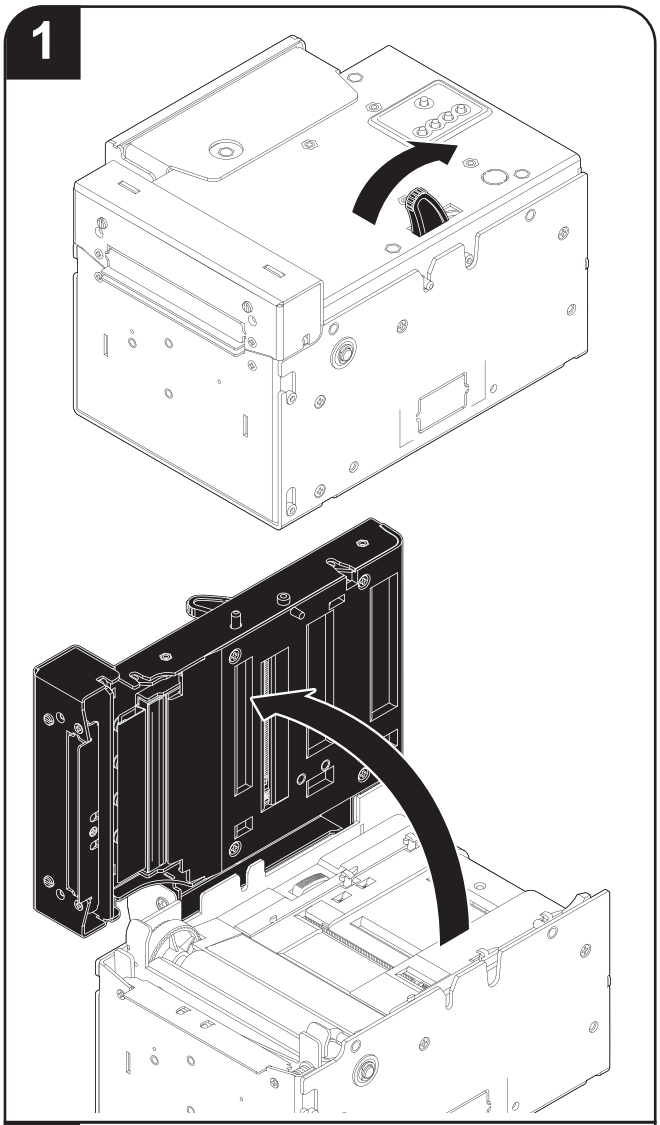
2.7.3 “CUT AND DROP” configuration

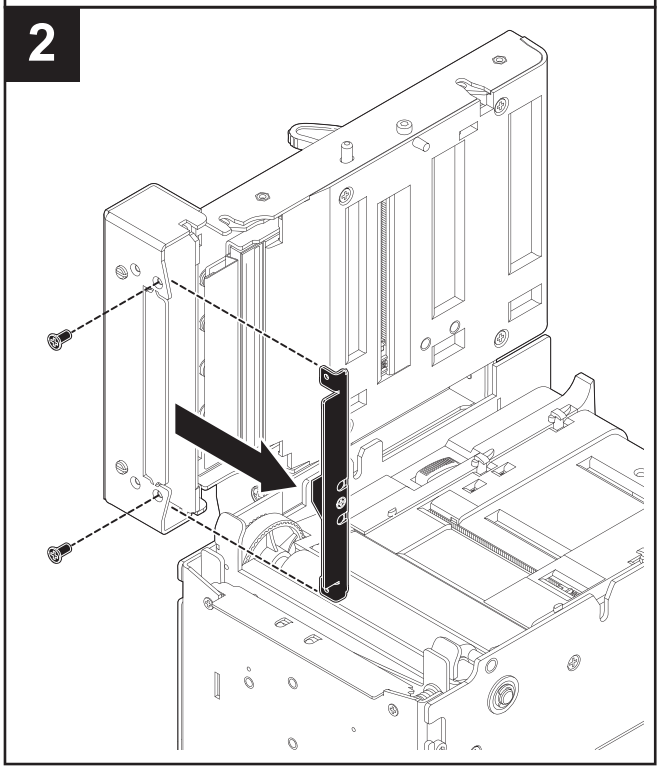
Printer is provided with a kit for the “CUT AND DROP” configuration.
The kit contains the lower paper outfeed mouth (2) and a label with safety advice (1).

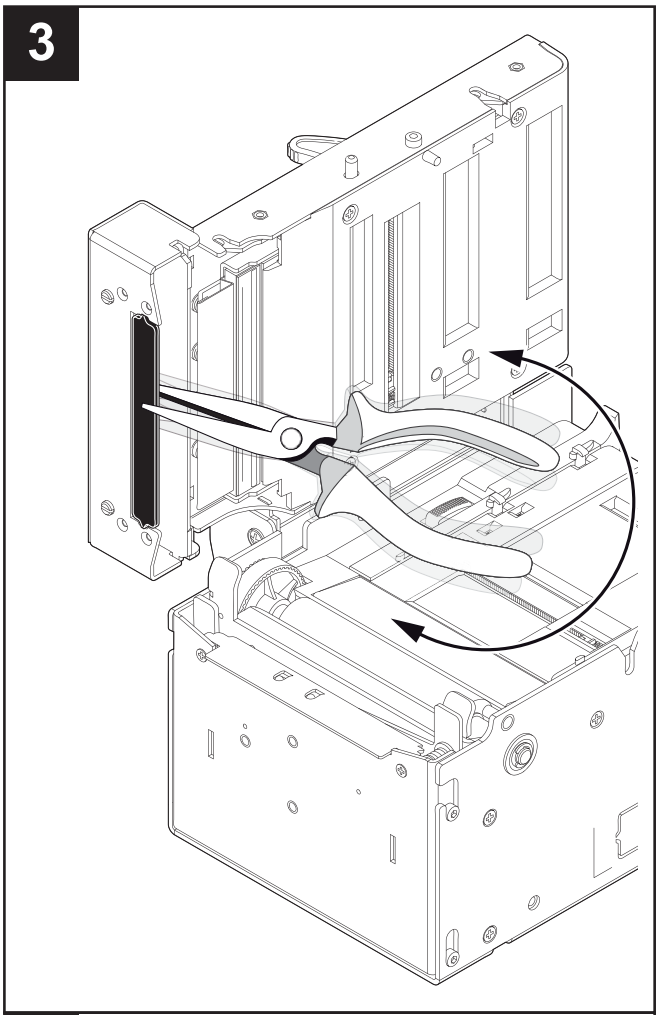


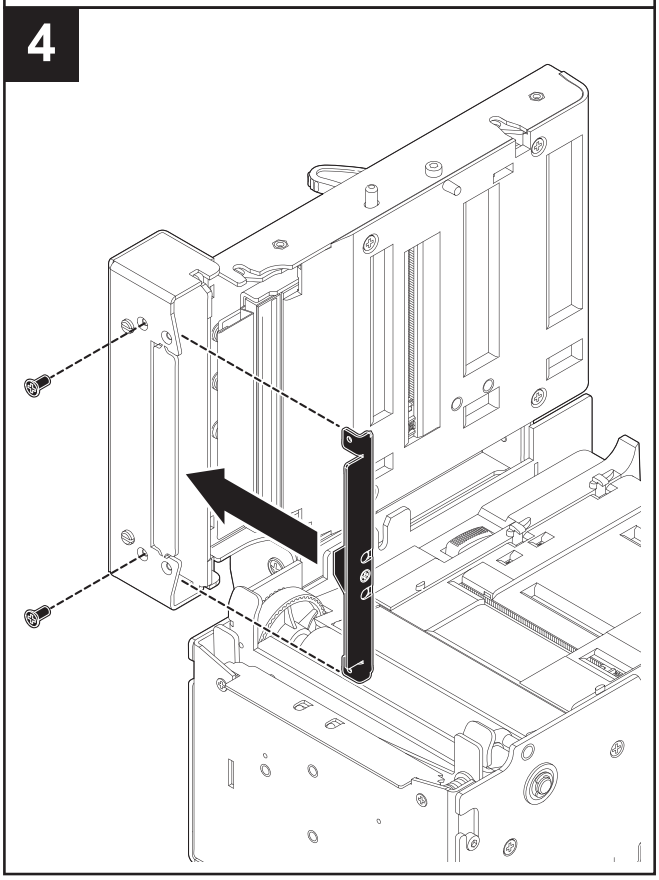
Assembly instruction

1. Open the printer cover.
2. Unscrew the two fixing screws and take off the upper paper mouth group of the “STANDARD” configuration.
3. Using a clamp, remove the precut sheet metal on the printer cover.
4. Fix the upper paper mouth group for the “STANDARD” configuration in the upper holes on the printer cover using the screws previously removed.
5. Unscrew the two fixing screws on the cutter cover and take off the lower paper mouth of the “STANDARD” configuration.
6. Fix the lower paper mouth for the “CUT AND DROP” configuration using the screws previously removed.
7. Close the printer cover.
8. Paste the label on the cutter cover as shown in the following figure.

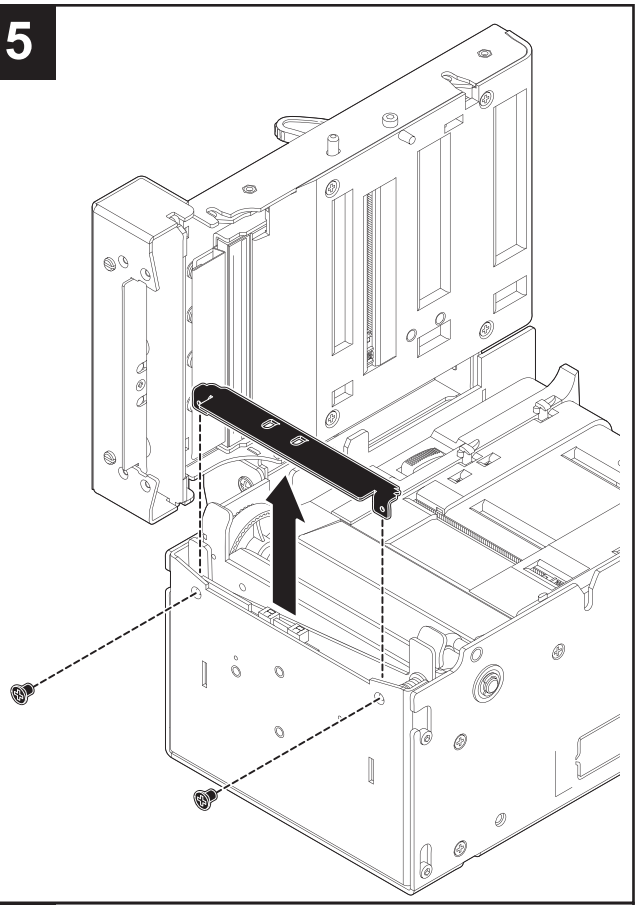

1


2

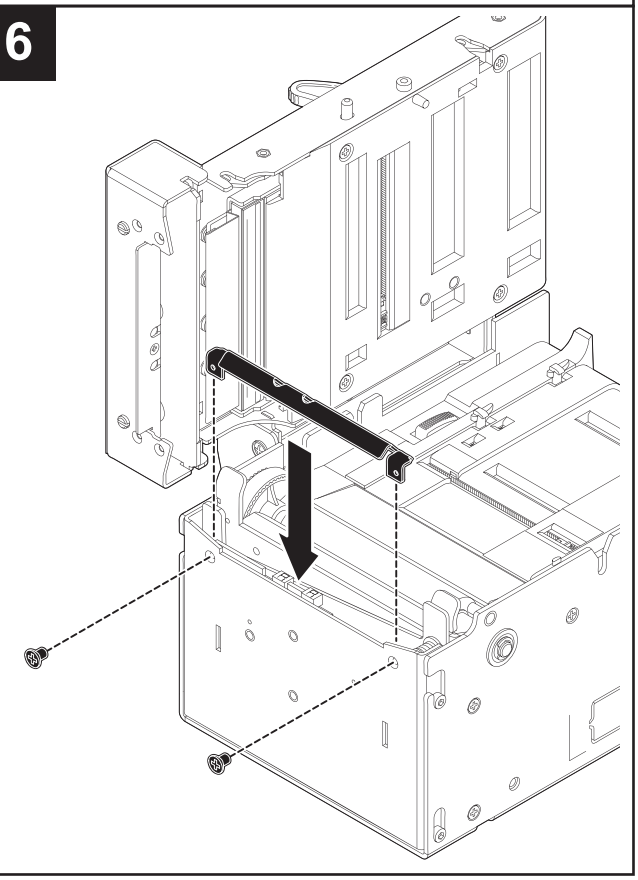

3


4

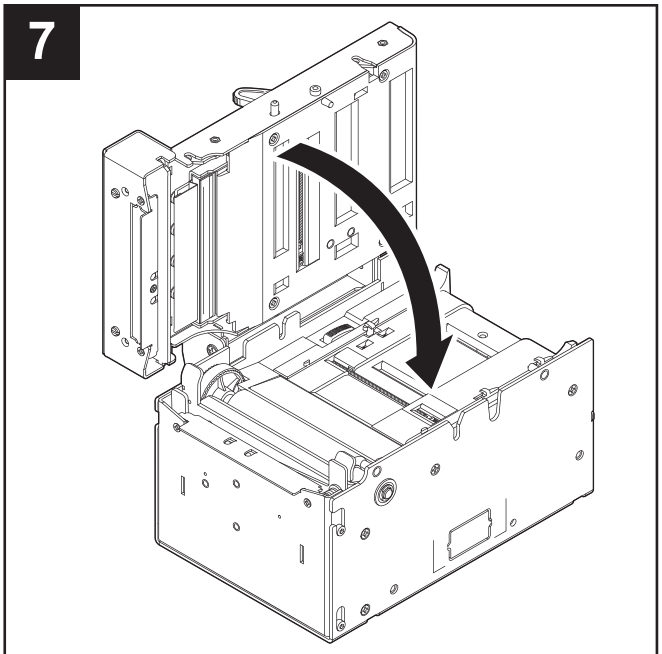
5



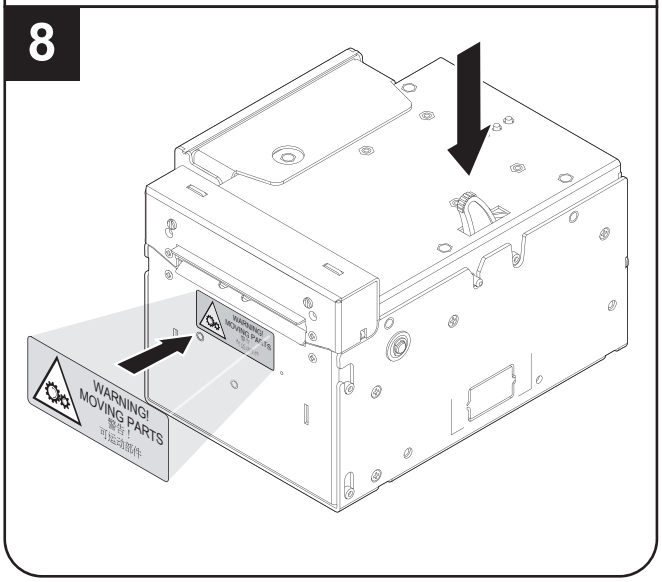
6



7



8

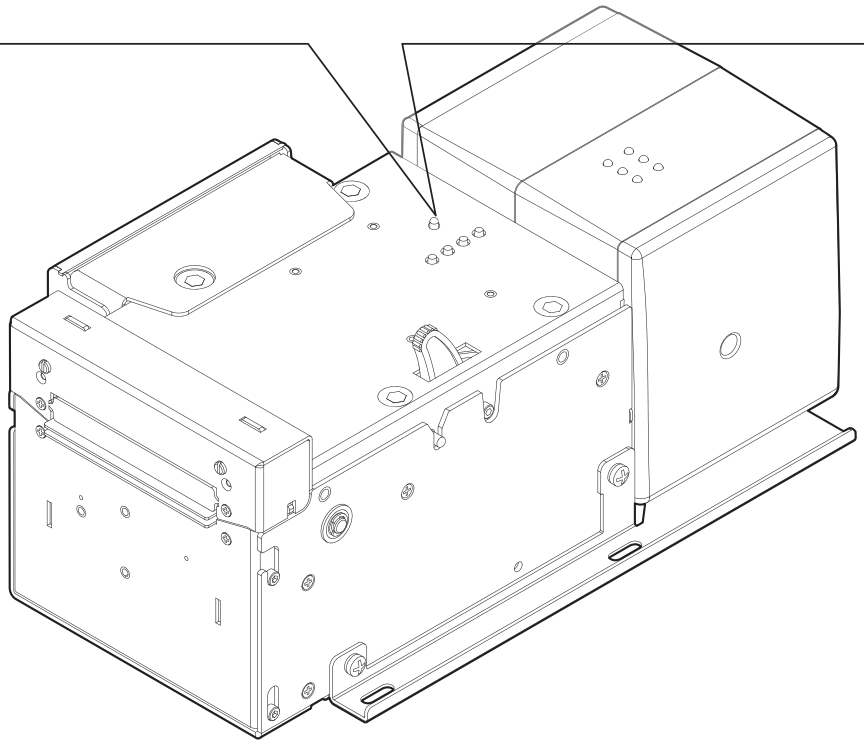


NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

2.7.4 Printer paper jam

When occurs a paper jam the “status LED” signals the corresponding printer status as follows:

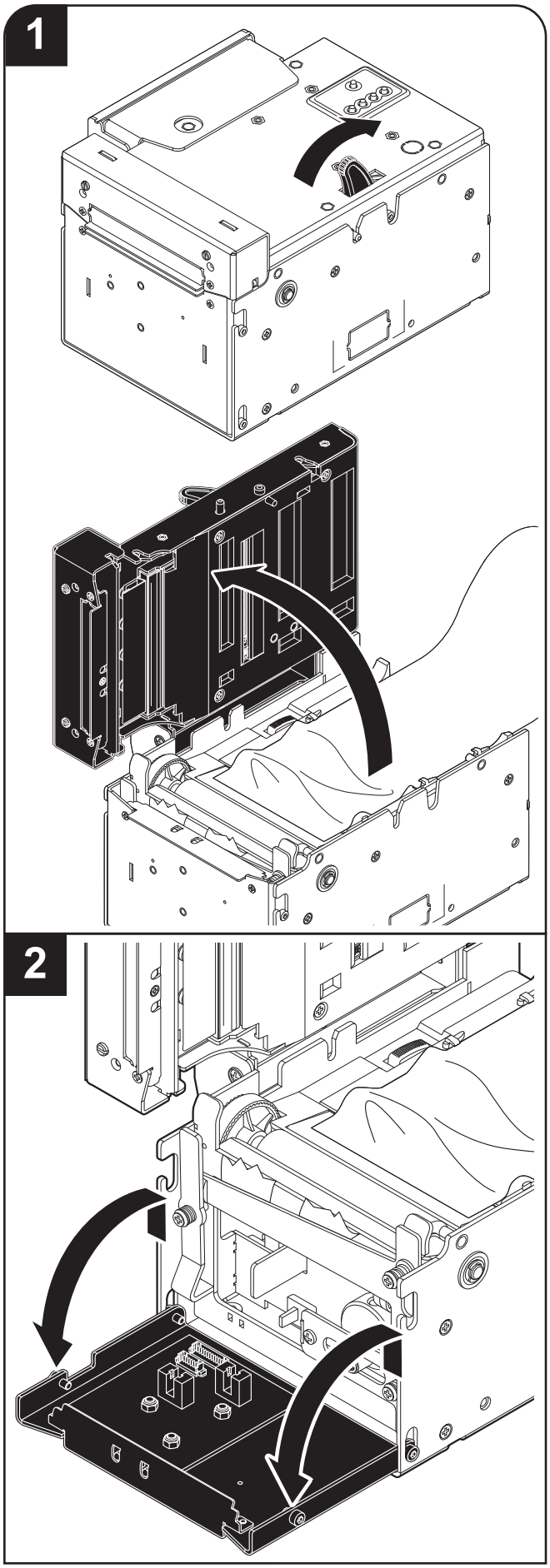
STATUS LED		Flashing Number	DESCRIPTION
☼	YELLOW	4	PAPER JAM

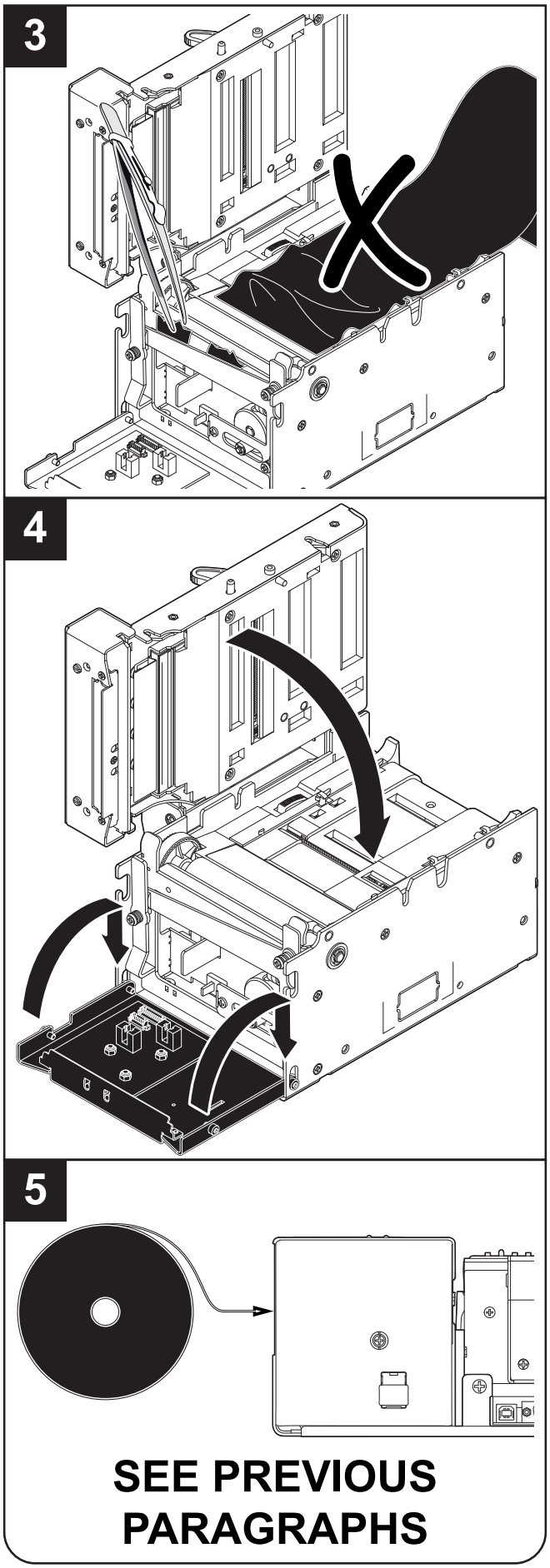


In case of paper jam proceed as follows :

1. Open the printer cover.
2. Unlock the cutter cover.
3. Remove the damaged paper and check for scraps of paper in the printer and in that case remove it; carefully remove all scraps of paper from the cutter zone. If you have difficulty in doing so, use tweezers. DO NOT insert any kind of object inside the cutter.
4. Lock the cutter cover.
5. Change the paper roll and close the printer cover following instructions of “Changing the paper roll” paragraph.

NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.


1
2

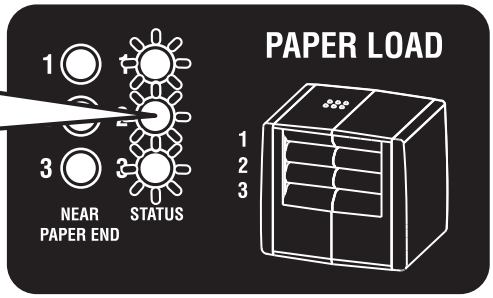

3
4
5
SEE PREVIOUS
PARAGRAPHS

2.7.5 Triple feeder paper jam

When occurs a paper jam inside the triple feeder, the green led that corresponds to the input paper jammed flashes quickly. In this case, contact Customer Service.

1

STATUS LED	COLOUR
FAST FLASHING	GREEN



2

support@custom.it

Customer Service Department

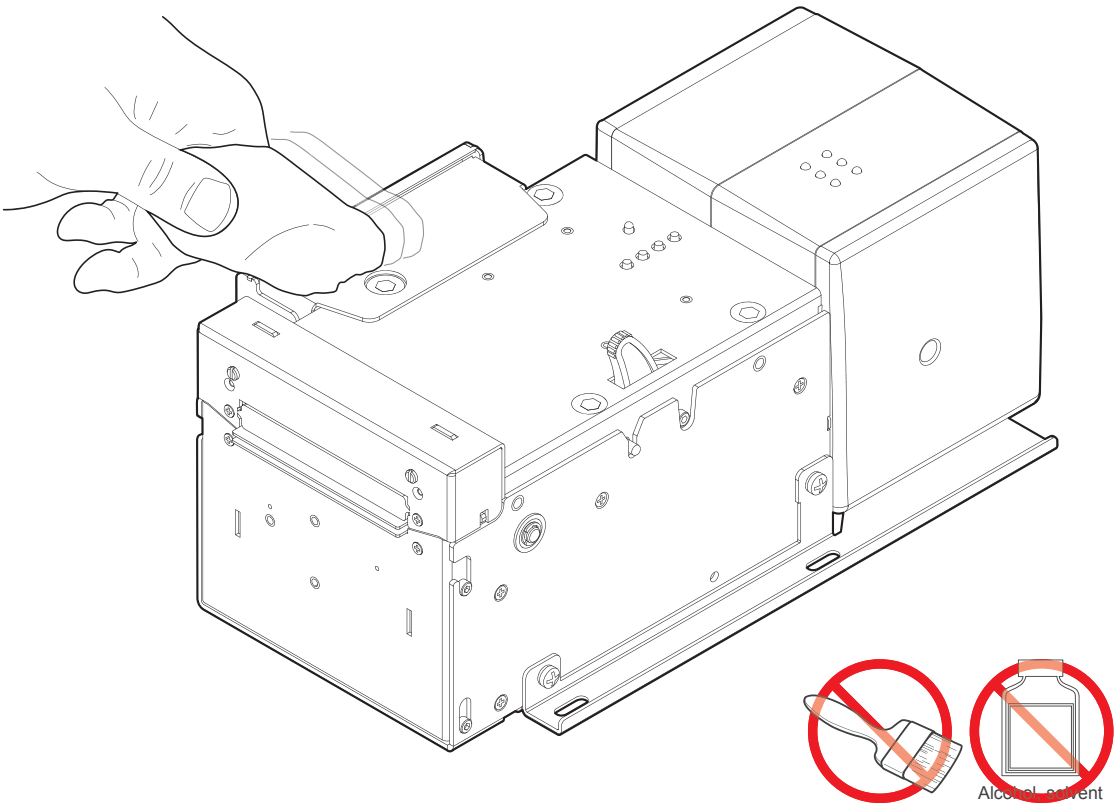
2.7.6 Printer cleaning

WARNING:

- First remove the mains plug from the wall socket.
- 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.
- Do not let water or other liquids get inside the machine.

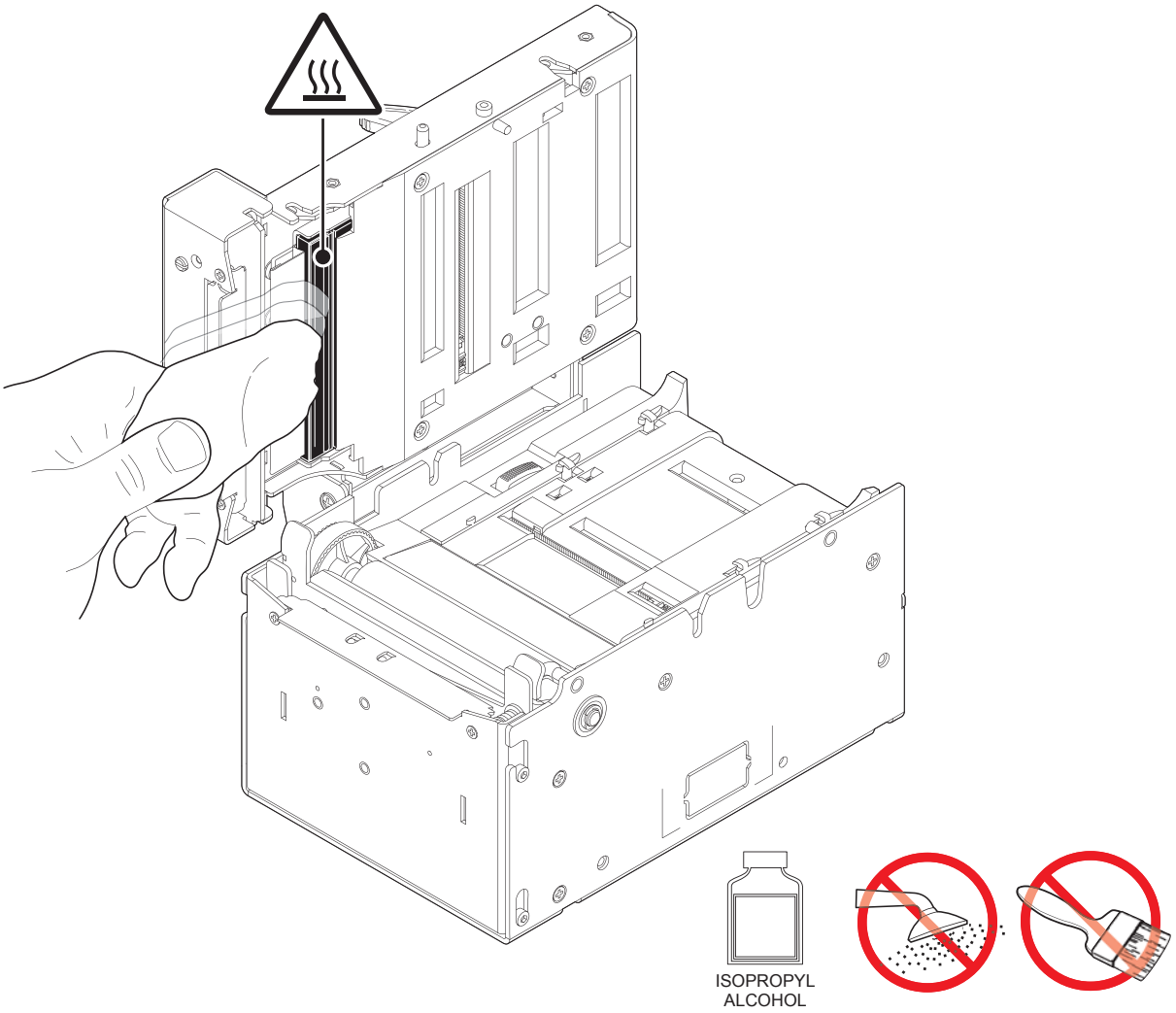
Outside cleaning

The user is responsible for cleaning the printer case. To clean the device, use pneumatic air or a soft cloth. Do not use alcohol, solvents or stiff brushes.



Printing head cleaning

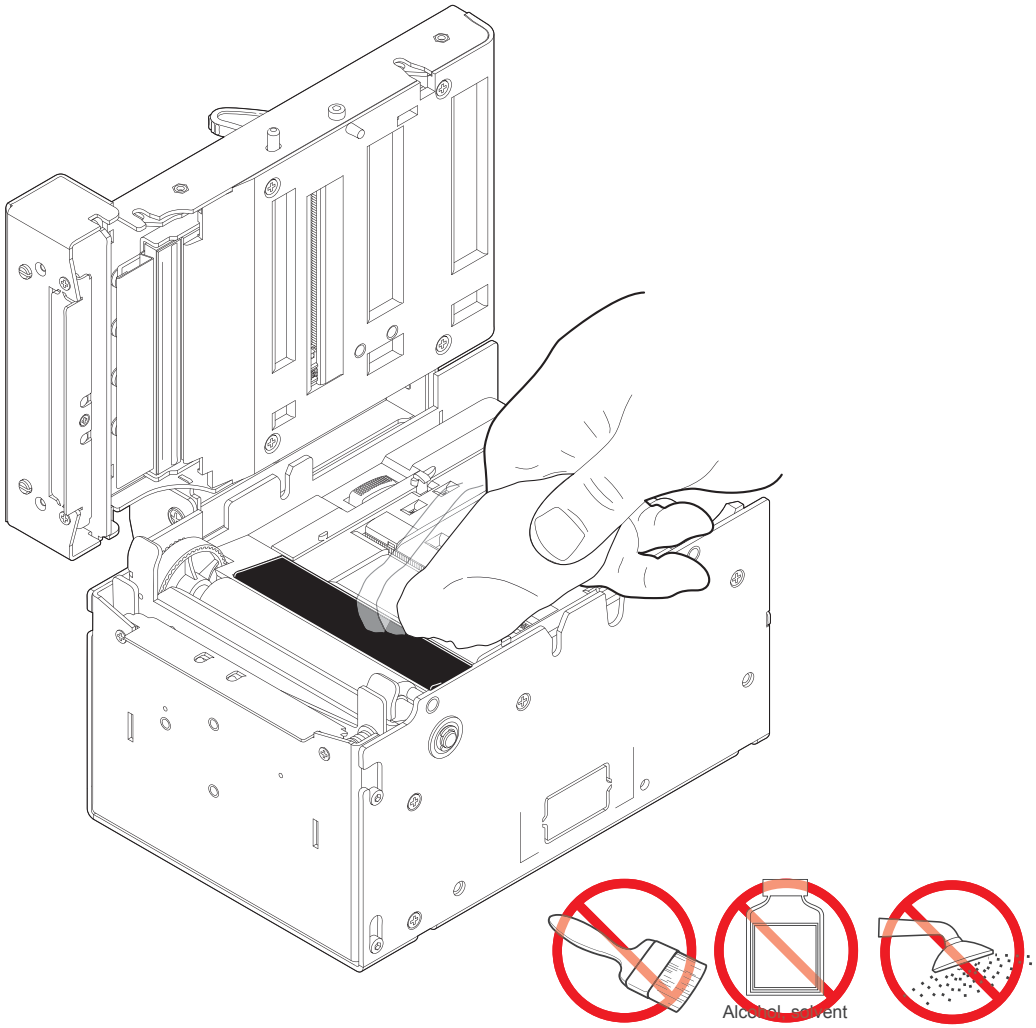
To clean the printing head use a non-abrasive cloth moistened with isopropyl. Do not use stiff brushes.



NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

Glass window cleaning (only for models with barcode reader)

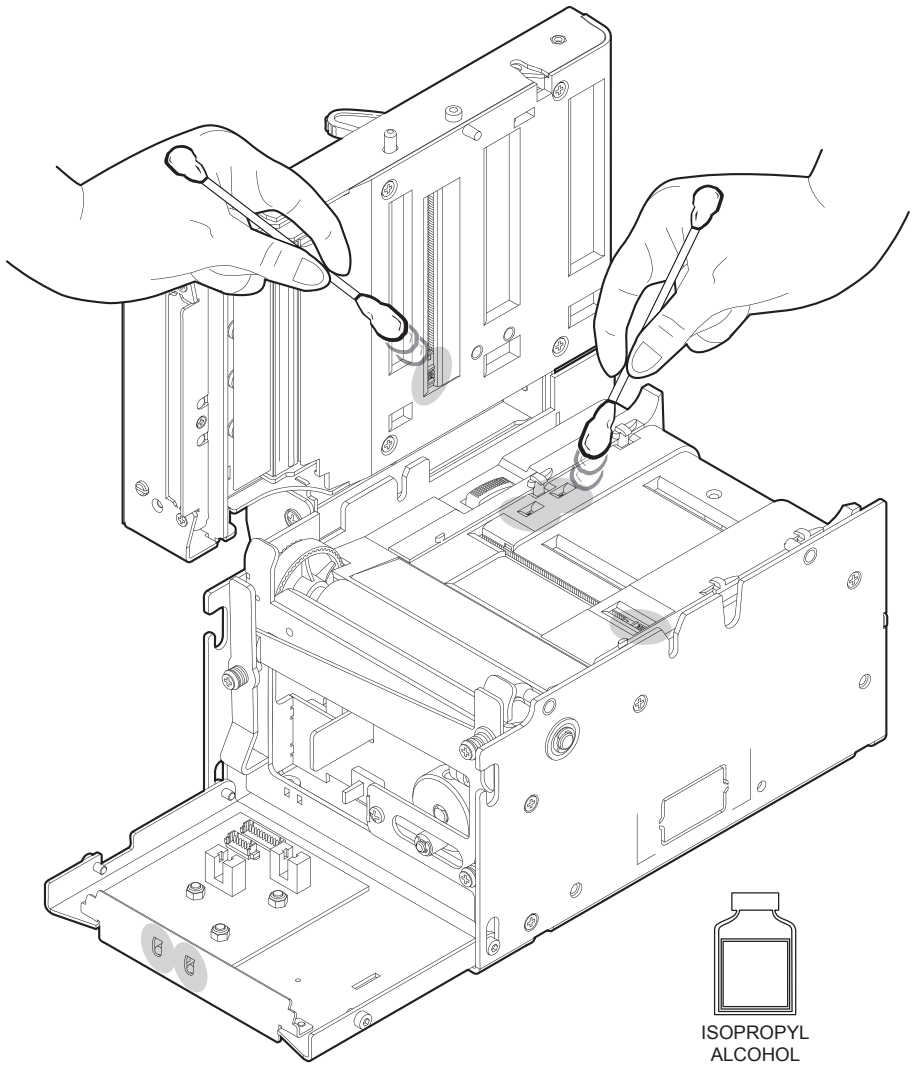
To clean the glass window use a soft cloth to avoid scratching its surface. Do not use alcohol, solvents or hard brushes.



NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

Notch and paper presence sensors cleaning

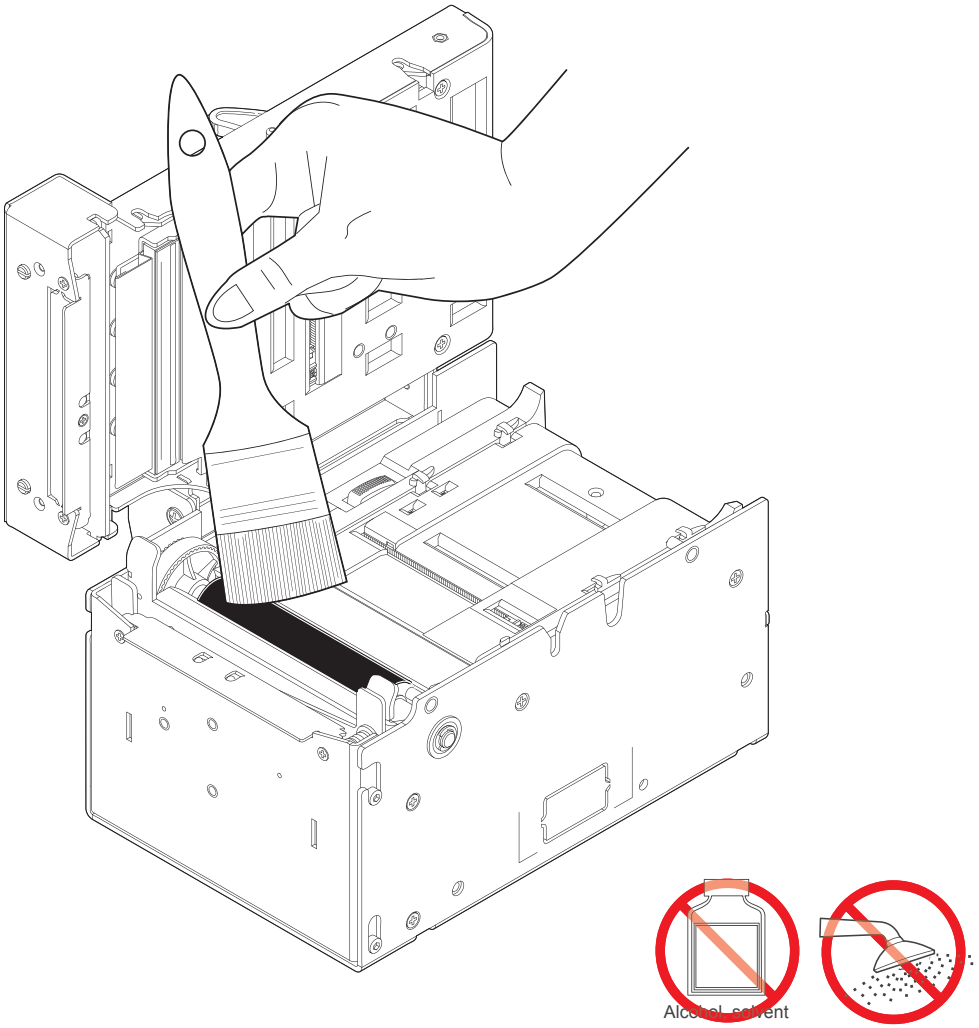
To clean the sensors for notch and paper presence wipe the sensors surface gently with a clean cloth soaked in isopropyl alcohol. Do not use solvents.



NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

Rubber roller cleaning

To clean the roller use a medium-stiff brush to avoid scratching its surface. Do not use alcohol or solvents.

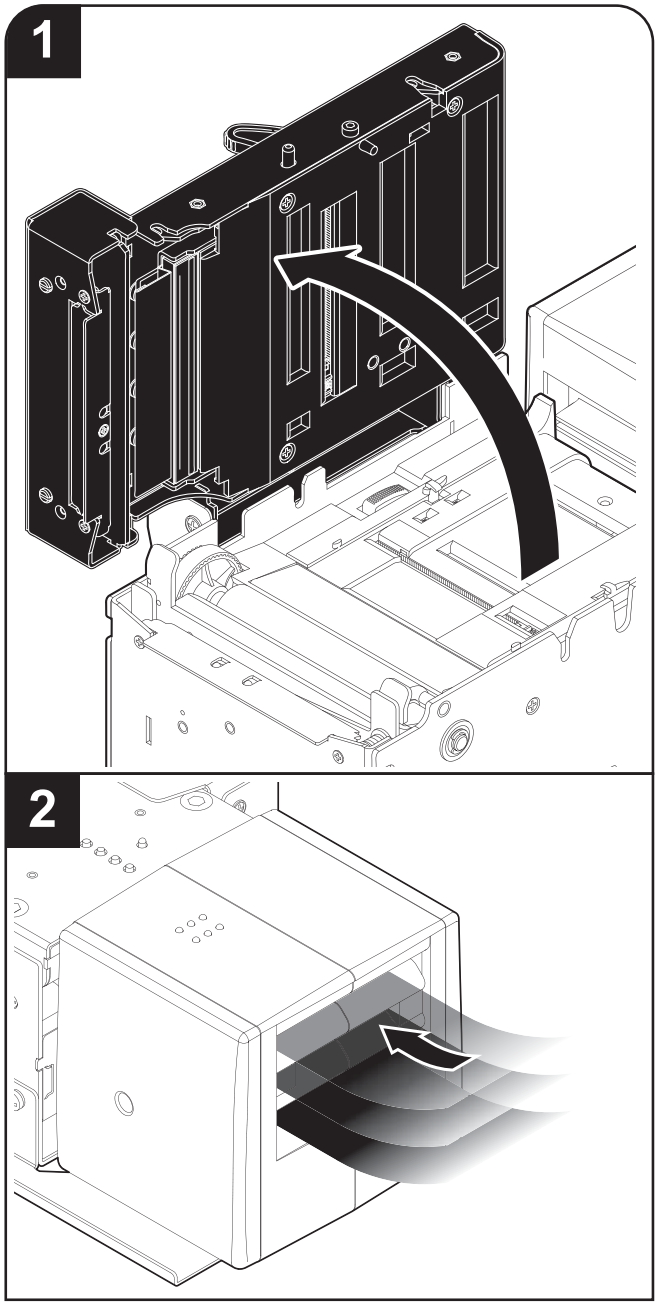


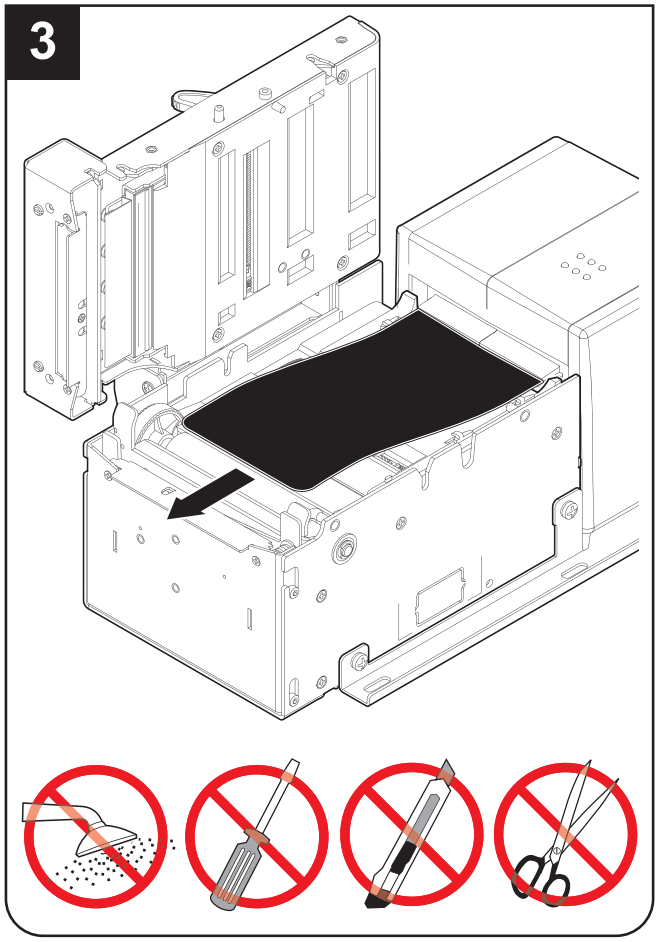
NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

2.7.7 Triple feeder cleaning

WARNING:
- First remove the mains plug from the wall socket.
- 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.
- Do not let water or other liquids get inside the machine.

1. Open the printer cover.
2. Insert the edge with the rounded corners of the ticket of the cleaning kit in each of the three feeders.
3. Push the ticket to make out a few centimetres on the flat inside the printer and ppull the ticket out of the internal floor.



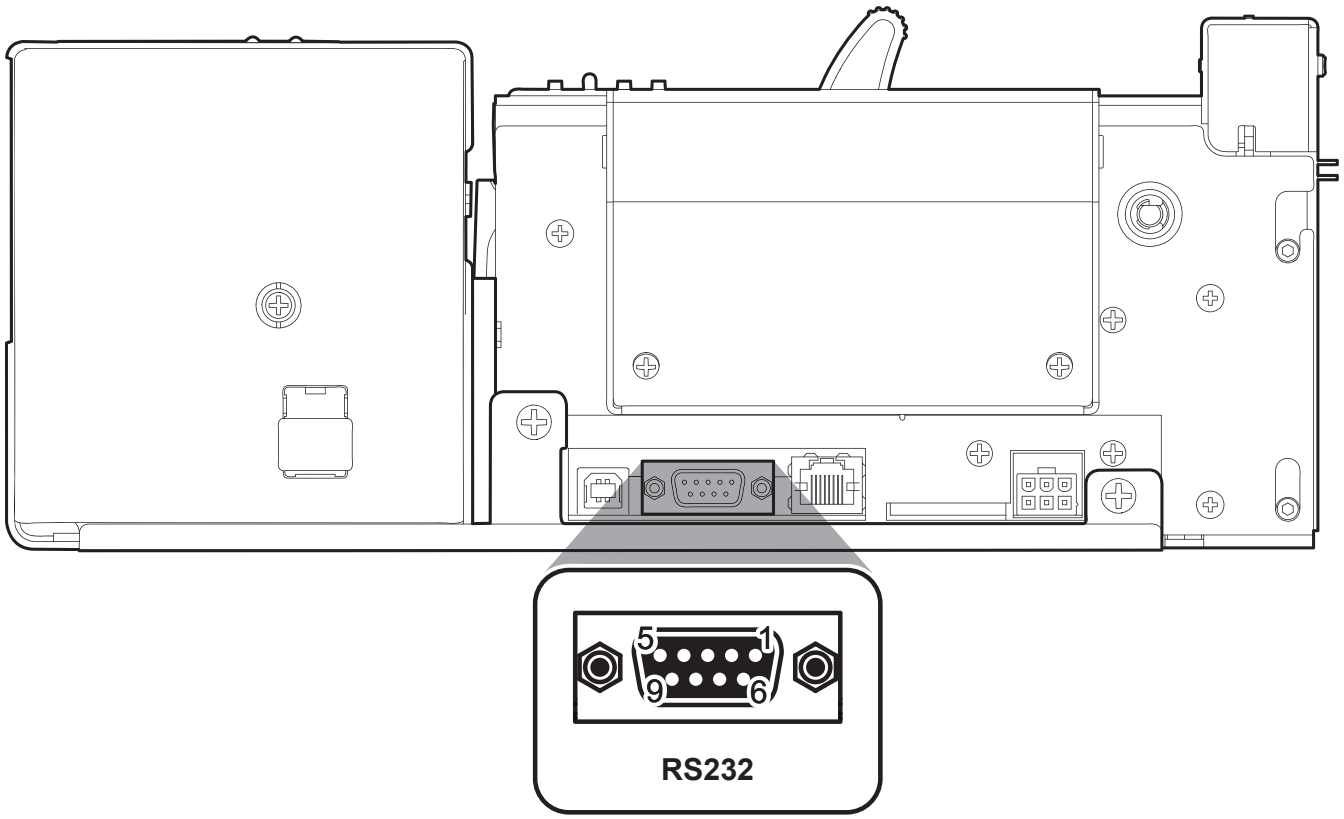


NOTE: For cleaning kit, contact Customer Service.

3 INTERFACES

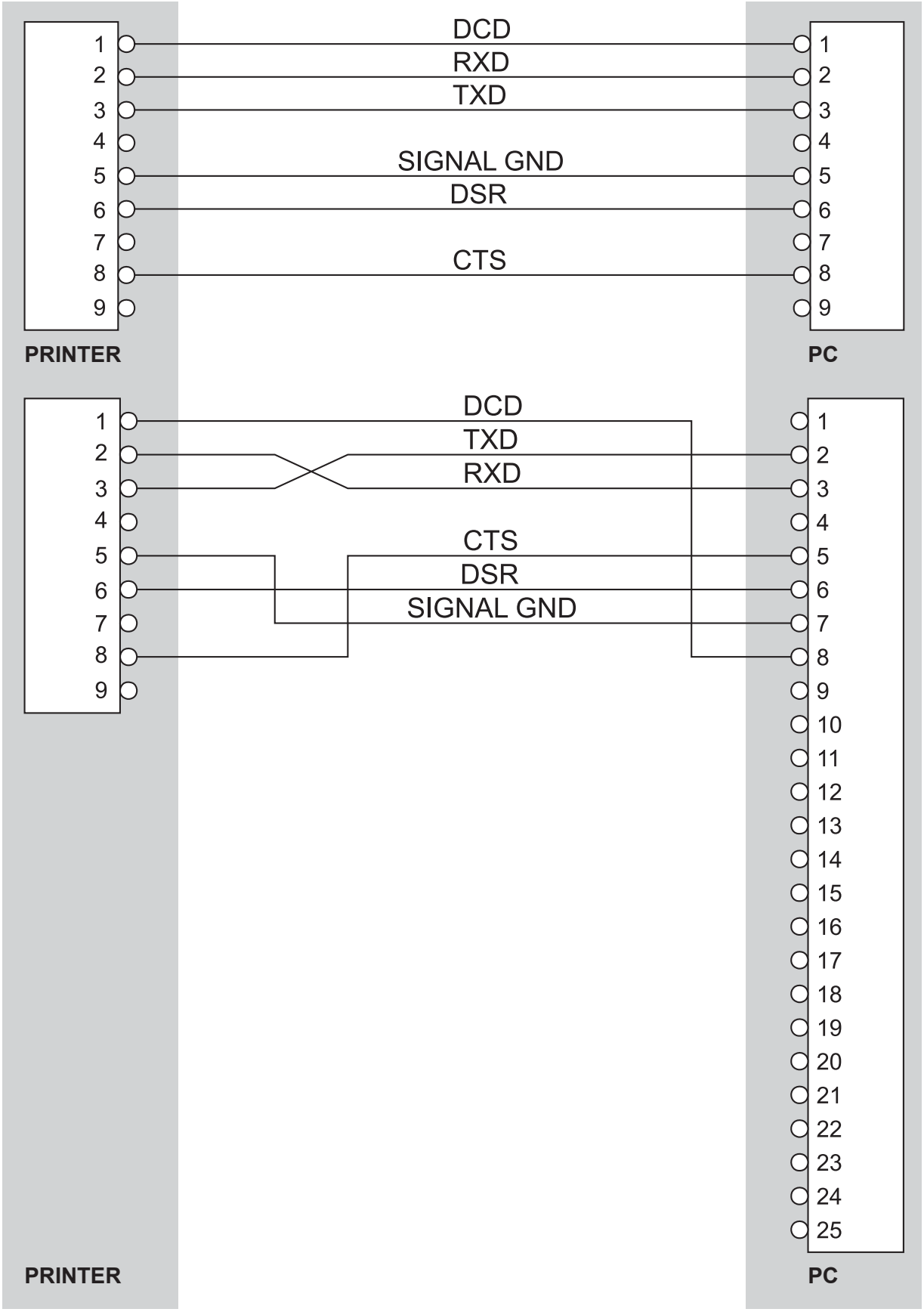
3.1 RS232 SERIAL

Printer has an RS232 serial interface and is connected by means of a 9 pin female connector. In the following table, the signals present on the connector are listed.



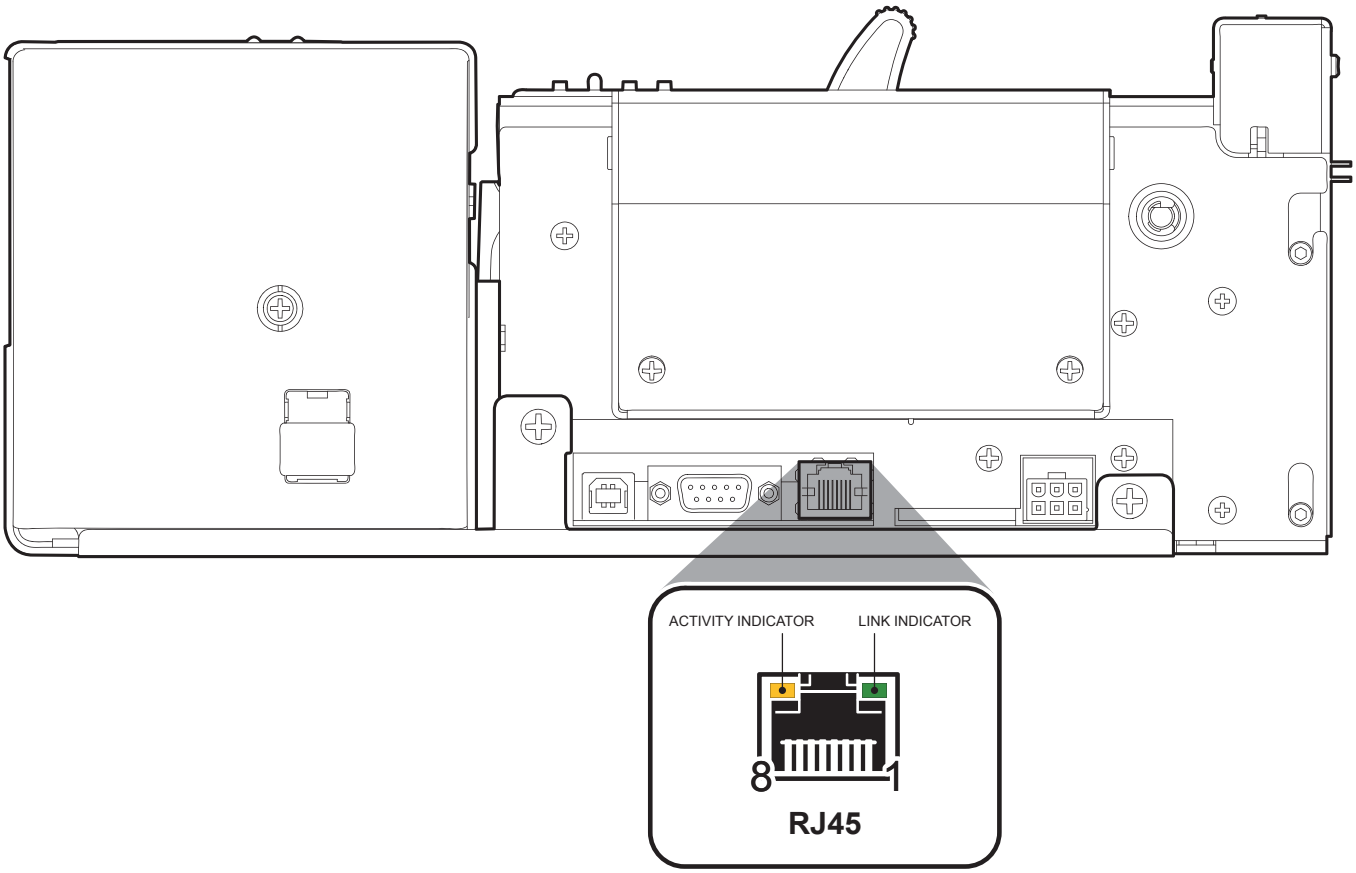
PIN	SIGNAL	IN/OUT	DESCRIPTION
1	DCD	OUT	Data Carrier detect. Printer ON (active at level RS232 high).
2	TXD	OUT	Receive data. Serial output (from Host).
3	RXD	IN	Transmit data. Serial data input (towards Host).
4	N.C.	-	Not connected.
5	GND	-	Ground signal.
6	DSR	OUT	Data Set Ready. Printer on and operating (active at RS232 level high).
7	N.C.	-	Not connected.
8	RTS	OUT	Clear to send. Ready to receive data (active at RS232 high level).
9	N.C.	-	Not connected

The following diagrams show an examples of connections between the printer and the Personal Computer using 25 and 9 pin female connectors.



3.2 ETHERNET INTERFACE

Printer is equipped with an RJ45 interface with 8-pin connector. Refer to the table below for the connector pin signals.



PIN	SIGNAL	DESCRIPTION
1	ETX+	ETX+
2	ETX-	ETX-
3	ERX+	ERX+
4	N.C.	Not connected
5	N.C.	Not connected
6	ERX-	ERX-
7	N.C.	Not connected
8	N.C.	Not connected

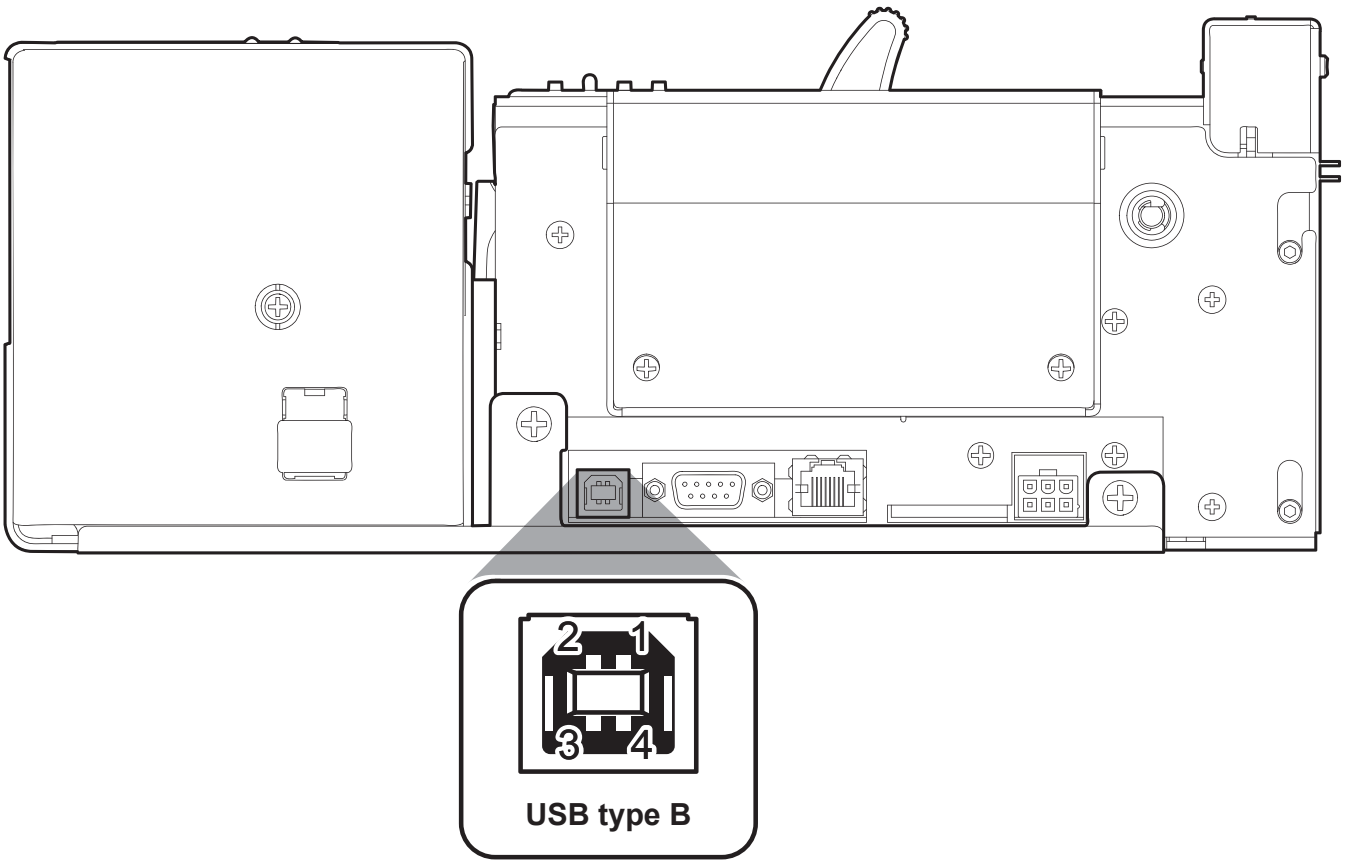
NOTE: The functionality of two leds, Sx e Dx, are specified in the following table:

LED	HW version 2.00 or later
Sx	Link (yellow color): the led lights up when a connection is active.
Dx	Rx/Tx (green color): the led lights up when occurs a data reception or transmission.

NOTE : To directly connect the printer to a PC use a cross-cover cable.

NOTE : To connect the printer to a hub device use an UTP Ethernet cable (Pin to Pin).

3.3 USB INTERFACE



Printers with USB serial interface conform to USB 1.1 standards and have the following specifications:

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

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

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

4 TECHNICAL SPECIFICATIONS

4.1 HARDWARE SPECIFICATIONS

The following table gives the main technical specifications for the printer models.

GENERAL	
Sensors	Ticket presence, head temperature, mobile detector for black mark and translucent gap/hole mark (setting by software), ticket presence on output, cover open, cutter compartment open, external near paper end.
Interfaces	USB (communication speed: 12 Mbit/sec) RS232 (communication speed: from 1200 to 115200 bps) ETHERNET (communication speed: 10 Mbit/sec)
Head life	100 Km / 100M pulses
MCBF	2 000 000 cutter number
MTBF (1)	550 000 hours
Noise level	75 dB
Printable barcode	UPCA, UPCE, EAN13, EAN8, CODE39, ITF, CODABAR, CODE93, CODE128, CODE32, PDF417, DATAMATRIX, AZTEC, QRCODE
Emulations	ESC/POS™, SVELTA
Flash memory	16 Mbytes
Receive buffer	64 Kbytes
Graphic memory	Logos dynamic management (max 2MB graphics memory)
Memory Card SD/MMC	Capacity = max 2 Gbytes
PRINTER SPECIFICATIONS	
Resolution	203 DPI (8 dot/mm)
Printing method	Thermal, fixed head
Printing speed (2)	High quality = 110 mm/sec Normal = 170 mm/sec High speed = 200 mm/sec
Printing mode	Normal, 90°, 180°, 270°
Printing format	Height/Width from 1 to 8, bold, reverse, underlined, italic
Character fonts	ESC/POS™ emulation: PC437, PC850, PC860, PC863, PC865, PC858 (euro), 2 TrueType fonts (3) SVELTA emulation : 20 embedded fonts, 2 TrueType fonts (3)
PAPER SPECIFICATIONS	
Type of paper	Thermal rolls Heat-sensitive side on outside of roll Fan Fold thermal paper with notch
Recommended types of paper	from 100 g/m^2 to 255 g/m^2 from 100 g/m^2 to 250 g/m^2 (for the “BURSTER” configuration)
Paper thickness	max 280 µm
Paper roll size	54mm, 82,5mm

External roll diameter		max Ø300 mm (4)	
Paper end		Not attached to roll core	
Internal roll core diameter		25 mm (+1 mm)	
Core thickness		2 mm (+1 mm)	
Core type		Cardboard or plastic	
ELECTRICAL SPECIFICATIONS			
Power supply		24 Vdc ±10%	
Absorptions			
Average (2)		1 A	
Stand-by		0,15 A	
ENVIRONMENTAL CONDITIONS			
Operating temperature		0-50°C	
Relative humidity		10-80% Rh	
Storage temperature		-20 °C – 70 °C	
Storage relative humidity		10% - 90% Rh	
ESC/POS™ EMULATION			
Character set		3	
Character density	11 cpi	15 cpi	20 cpi
Number of columns	35	45	64
Chars / sec	2900	3800	5300
Lines / sec	83	83	83
Characters (L x H mm)-Normal	2,25x3	1,75 x 3	1,25 x 3
BARCODE READER (mod.CX002) SPECIFICATIONS (5)			
Scan rate		200 scans/sec	
Sensors		Liner CCD Sensor	
Light source		Red Leds, 630 nm	
Ambient light		3000 LUX MAX (Fluorescent lamp)	
Resolution		5 mil. (0.127 mm)	
Readable Barcode		ALL UPC/EAN/JAN, Code 39, Code 39 Full ASCII, Code 128, Code 93, Inter-leave 25, Industrial 25, Matrix 25, China Postage, CODABAR/NW7, Code 11, MSI/PLESSEY, Code 32	
TRANSPONDER SPECIFICATIONS (6)			
Supported transponders		HF high frequency RFID (13,5Mhz) (7) : ISO 14443A (Mifare 1K, 4K) and Ultralight ISO 15693 (i-Code tags) UHF ultra high frequency RFID (900 Mhz) (8) : ETSI fully compliant to the European Regulation ETSI EN 300 220 (869.525 MHZ), FCC compliant to the US telecommunication regulation FCC part 15 (902-928 MHZ), ISO 18000-6B, Philips UCODE EPC 1.19 EPC Class1 Gen2	

MECHANICAL SPECIFICATIONS	
DIMENSIONS [9]	
Length	307,5
Height	123 mm *(with printer cover closed)*
Width	168 mm
WEIGHT [9]	5200 g

NOTE:

[1] : Electronic board.

[2] : Referred to a standard CUSTOM receipt (L=10cm, Density = 12,5% dots on).

[3] : “Veramono.ttf” and “Mono.ttf” are installed on printer flash disk. It is possible to install additional TrueType fonts.

[4] : For external rolls diameter higher to Ø100mm it’s recommended to use a paper pretensioning device.

[5] : Only for printer models equipped with barcode reader.

[6] : Only for printer models equipped with reader/writer RFID.

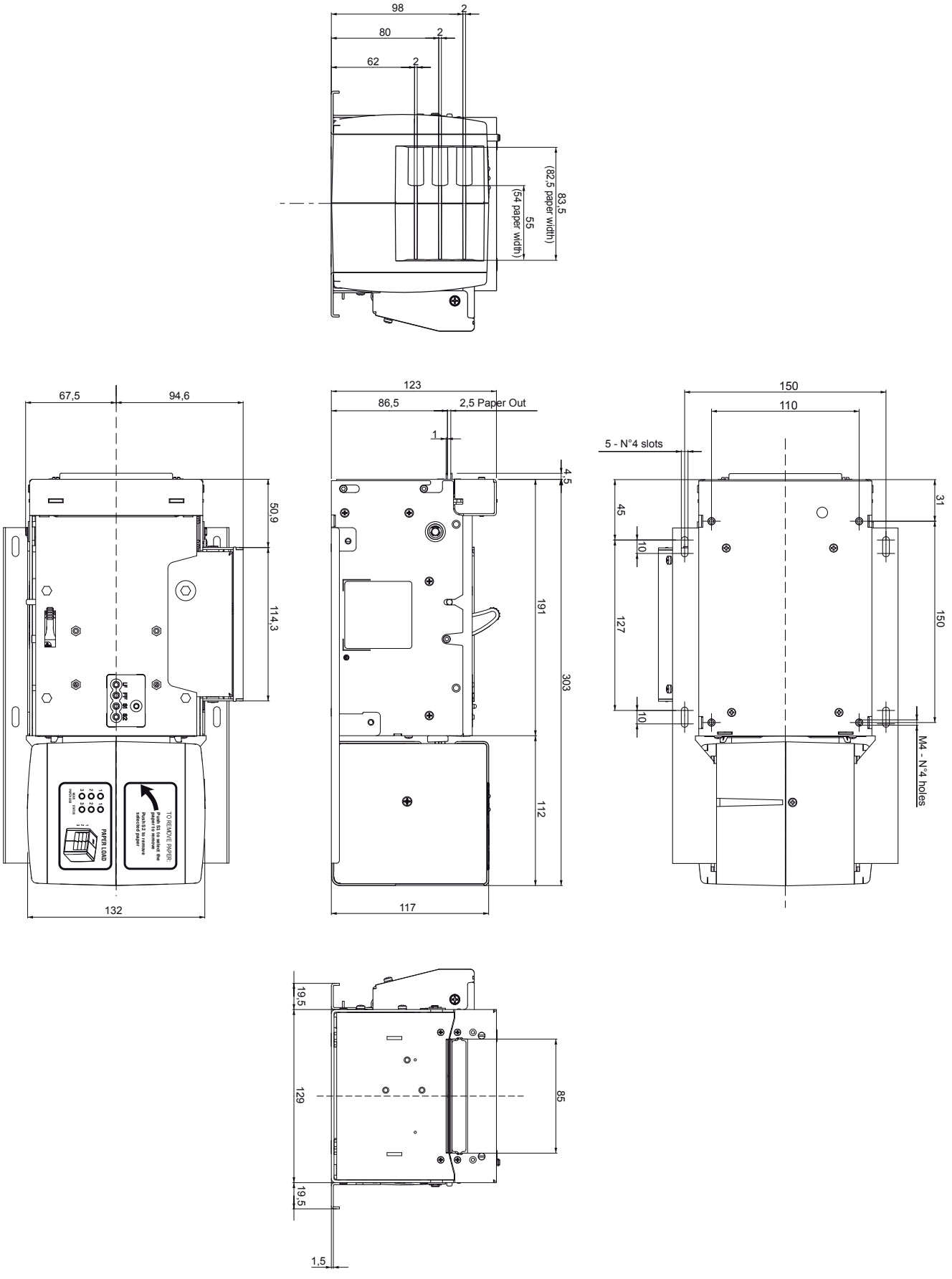
[7] : With optional ASK support also the ISO 14443B, Felica , Calypso and also other minor RFID standards.

[8] : Other UHF protocols are available with firmware upgrade.

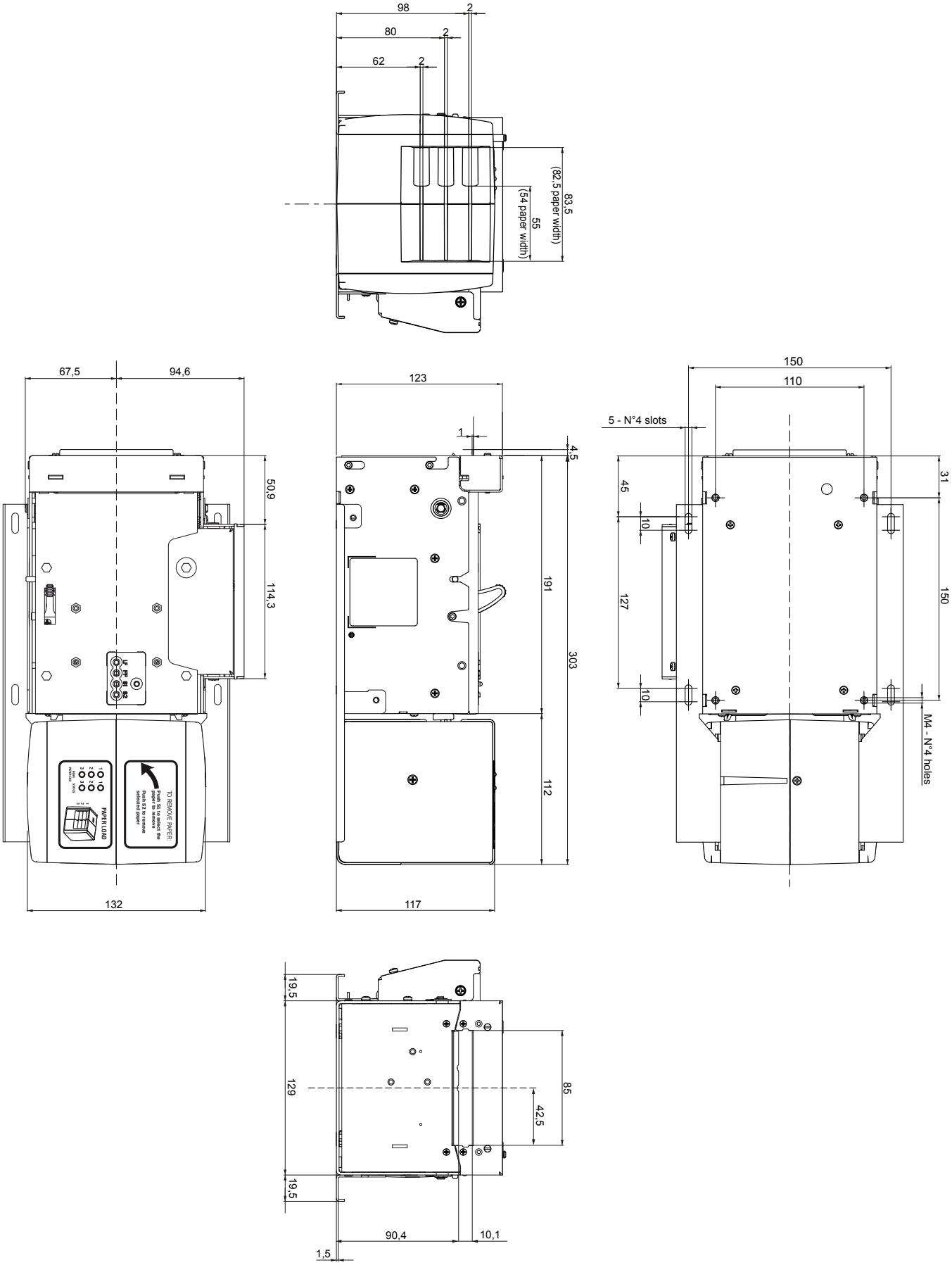
[9] : Referred to model in the “STANDARD” configuration” and without paper roll.

4.2 DIMENSIONS

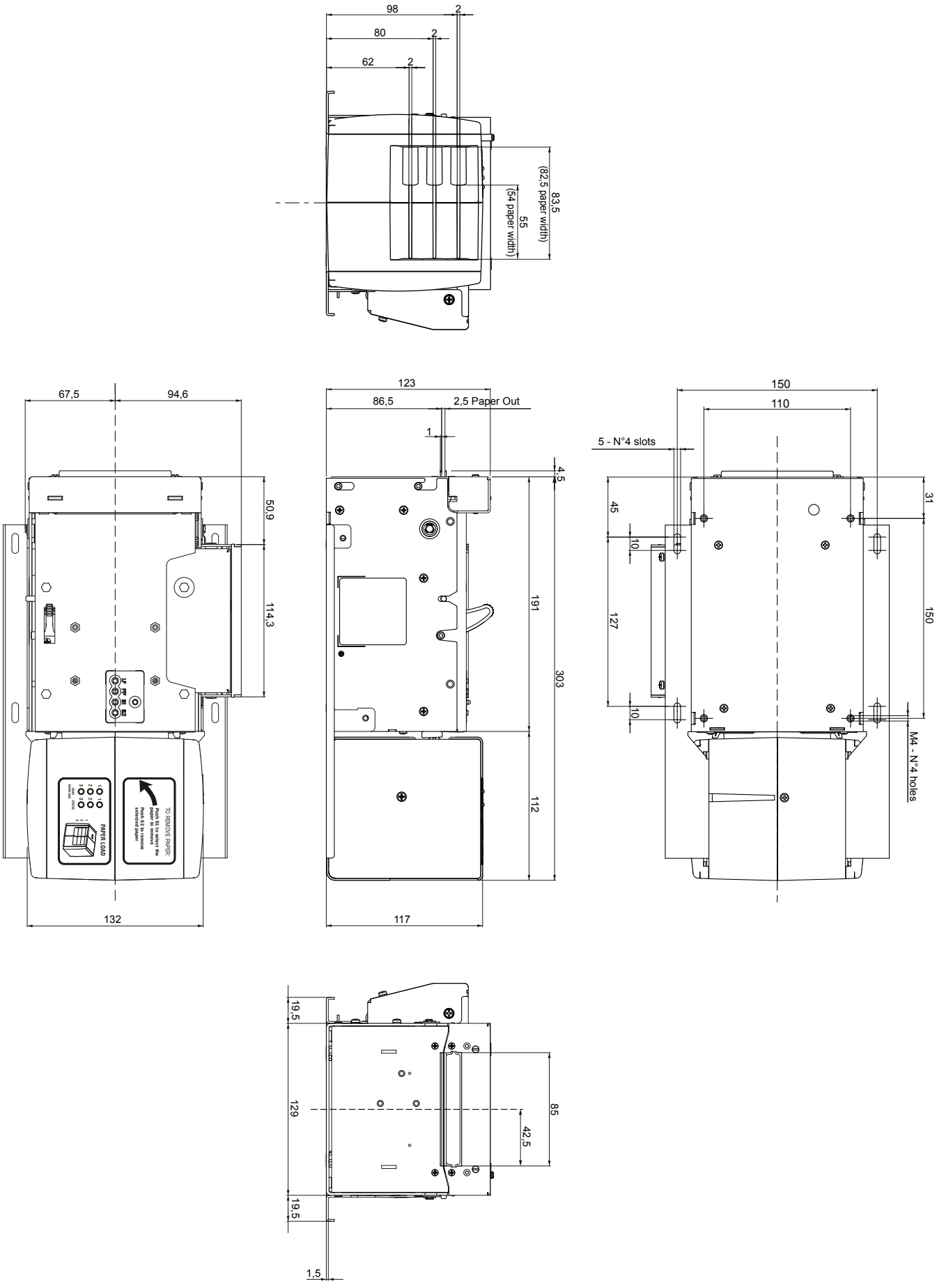
The following figure shows the dimensions of the printer.



The following figure shows the dimensions of the printer with the “CUT AND DROP” configuration.



The following figure shows the dimensions of the printer with the “BURSTER” configuration.



5 CHARACTER SETS

5.1 CHARACTER SETS IN ESC/POS™ EMULATION

Printer has 3 embedded fonts of varying width: 11, 15, 20 cpi. The font sets may be accessed through programming or control characters (see Command Reference). Each of these fonts offers the following code tables: PC437, PC850, PC860, PC863, PC865, PC858. Shown below in figures 5.1 are examples of the 11 cpi character set.

PC437
(Usa, Standard, Europe)

PC850
(Multilingual)

PC860
(Portuguese)

PC863
(Canadian-French)

PC865
(Nordic)

PC858
(Euro symbol)

To print the Euro (€) symbol, the command sequence is: $1B, $74, $13, $D5 (see Command Reference).

In ESC/POS™ emulation, it is possible to use TrueType fonts. To be used, a TrueType font must be monospace type (every character of the font must have the same dimension). The check is made by the printer when the font is selected. TrueType fonts will be automatically scaled by the printer in order to obtain the same available width for the embedded fonts (11, 15 and 20 cpi).

The quality of TrueType fonts and the correct positioning into the printable area will result from the font producers and the font implementation.

The available code tables are : PC437, PC850, PC860, PC863, PC865, PC858, PC866, PC852, WPC1252.
For the correct printing of the code tables, it is necessary that the selected TrueType font contains all the characters in the tables. Otherwise, the '□' symbol will be printed instead the missing character.

All commands for printing configuration are usable both with TrueType fonts and with embedded fonts.
It is possible to address the TrueType font respects the UNICODE™ standard (see www.unicode.org), by using UTF-8 or UTF-16 encoding.

5.2 CHARACTER SETS IN SVELTA EMULATION

In SVELTA emulation, printer has 20 embedded fonts of varying width which may be accessed through control characters. The following list shows the font availables and relative dimensions in dot:

- Font HEL8PT8 (A) Proportional Font with fixed height (H = 28 dot)
- Font HEL10PT8 (A) Proportional Font with fixed height (H = 34 dot)
- Font HEL14PT8 (A) Proportional Font with fixed height (H = 50 dot)
- Font HEL16PT8 (A) Proportional Font with fixed height (H = 55 dot)
- Font 18x24 (Font 18x24 in ESC/POS emulation)
- Font 14x24 (Font 14x24 in ESC/POS emulation)
- Font 10x24 (Font 10x24 in ESC/POS emulation)
- Font 8x12 (B) Fixed Font
- Font 8x12-2 (B) Fixed Font
- Font 12x12 (B) Fixed Font
- Font 14x11 (B) Fixed Font
- Font 16x24 (B) Fixed Font
- Font 16x24_1 (B) (C) Fixed Font
- Font 16x24_2 (B) (C) Fixed Font
- Font 20x15 (B) Fixed Font
- Font 28x20 (B) Fixed Font
- Font 14x24_1 (B) (C) Fixed Font
- Font 16x24CN (B) (C) Fixed Font
- Font OCRB (20x32) (B) Fixed Font

For further informations to characters representations print directly the Font Test(D).

In SVELTA emulation, it is possible to use TrueType fonts. True Type fonts are printable with every angle of rotation and in bold, reverse, italic and underlined mode.

It is possible to address the TrueType font respects the UNICODE™ standard (see www.unicode.org), by using UTF-8 or UTF-16 encoding.

For the correct printing of the code tables, it is necessary that the selected TrueType font contains all the characters in the tables. Otherwise, the '□' symbol will be printed instead the missing character.

NOTE:

(A) : A proportional font is a font in which different characters have different pitches (widths).

(B) : A fixed font is the opposite of a proportional font and is a fixed-pitch font.

(C) : The fonts with the same name and dimension contain different characters in different positions from theirs.

(D) : During power-up, if the FORM FEED (FF) key is held down, the printer executes the FONT TEST.

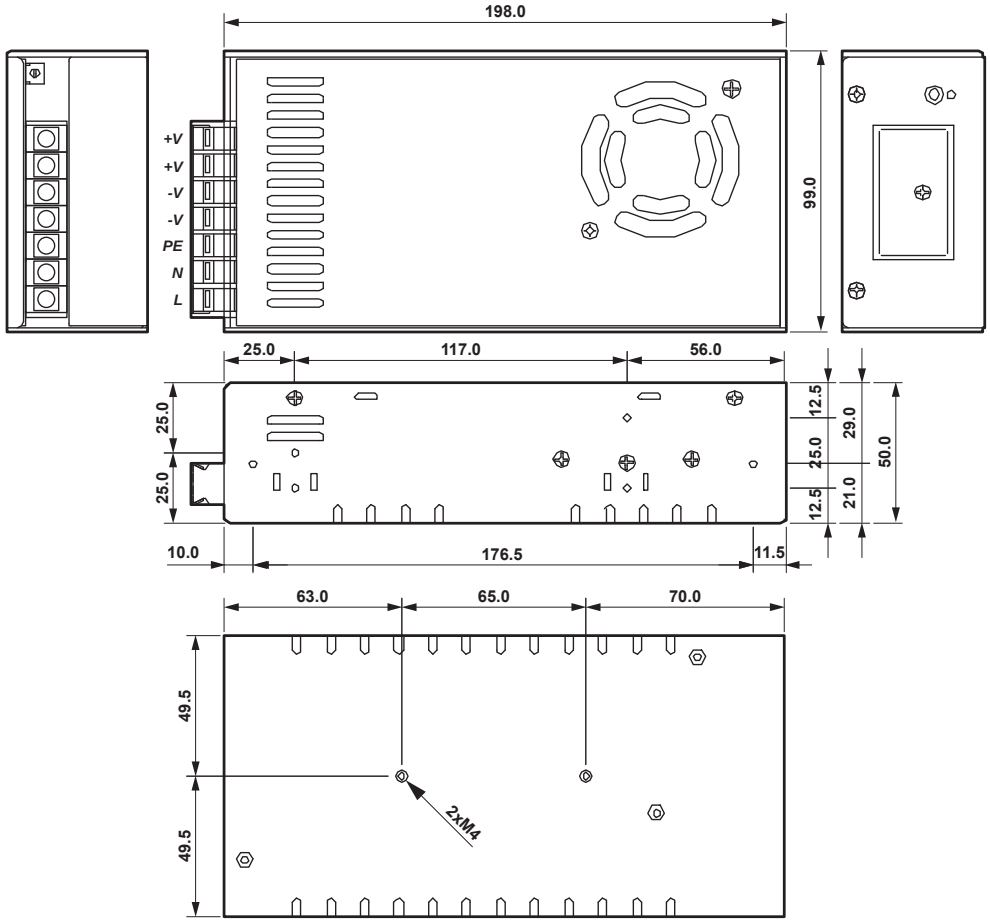
A. ACCESSORIES AND SPARE PARTS

A.1 ACCESSORIES

A.1.1 Power Supply

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

Dimensions in mm:



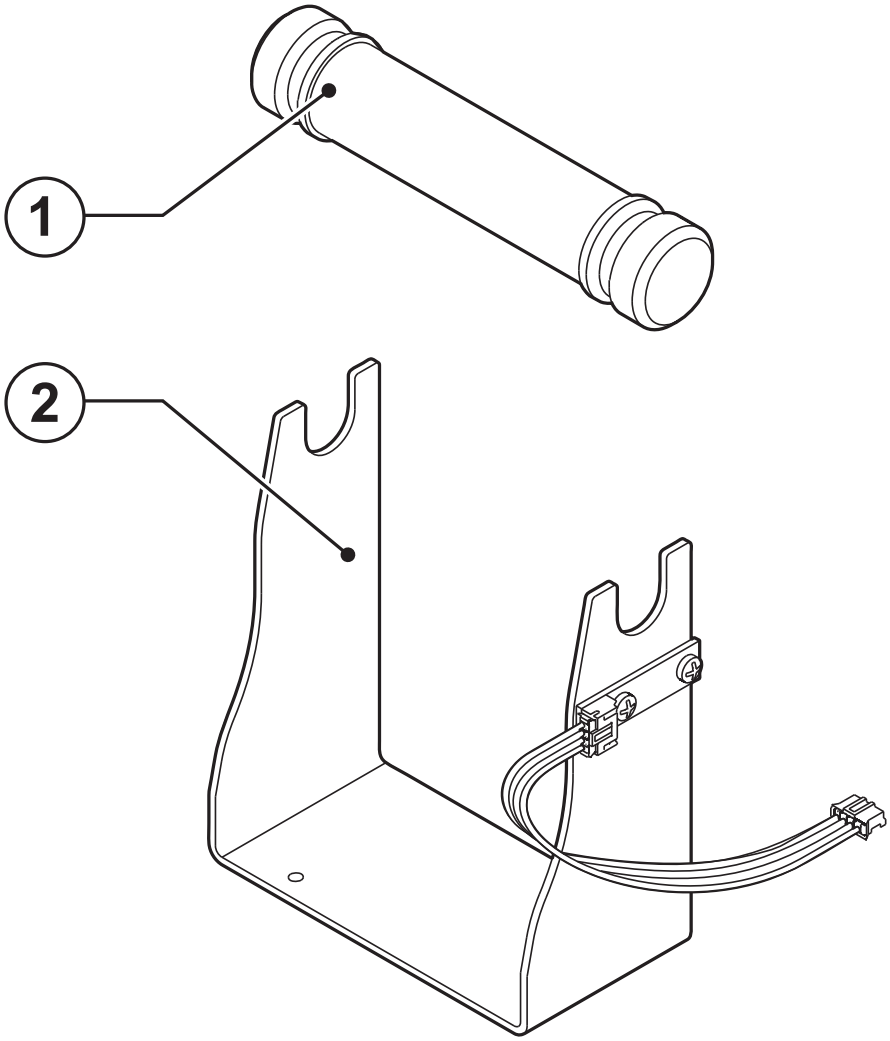
PPSPS-230-P24	Switching power supply 24V 230W	
Input specifications	AC Input	100V ÷ 240V (~ 3,2A - 100V - full load)
	Input frequency	47Hz ÷ 63Hz
Output specifications	Output voltage	24V
	Output current	Max. 9,6A
	Efficiency	Typ. 85%
	Power	Max. 230W
Protections	Over load	Over 105% ~ 150% of rating, recovers automatically after fault condition has been removed
	Over voltage	27.6 ~ 33.6V
	Short circuit	Shutdown, recovers automatically after fault condition has been removed.
Environmental condition	Operating temperature	-20°C ÷ +70°C
	Humidity	+20% ÷ +90% Rh (w/o condensation)
	Storage temperature / Humidity	-40°C ÷ +85°C / 10% ÷ 95% (w/o condensation)

A.1.2 External paper roll holder

An external paper roll holder kit is available for the printer to make it possible to use larger-width rolls of paper (Øext.150mm max).

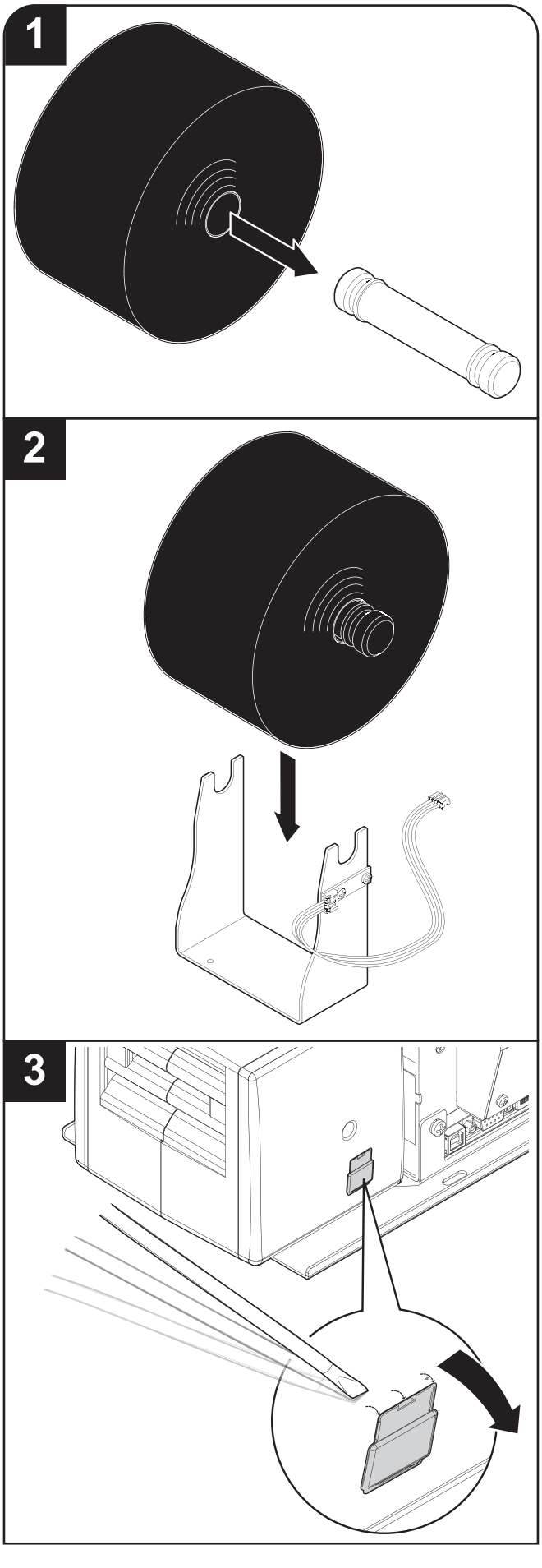
PCXSP-KPM300	Paper roll holder kit with sensor

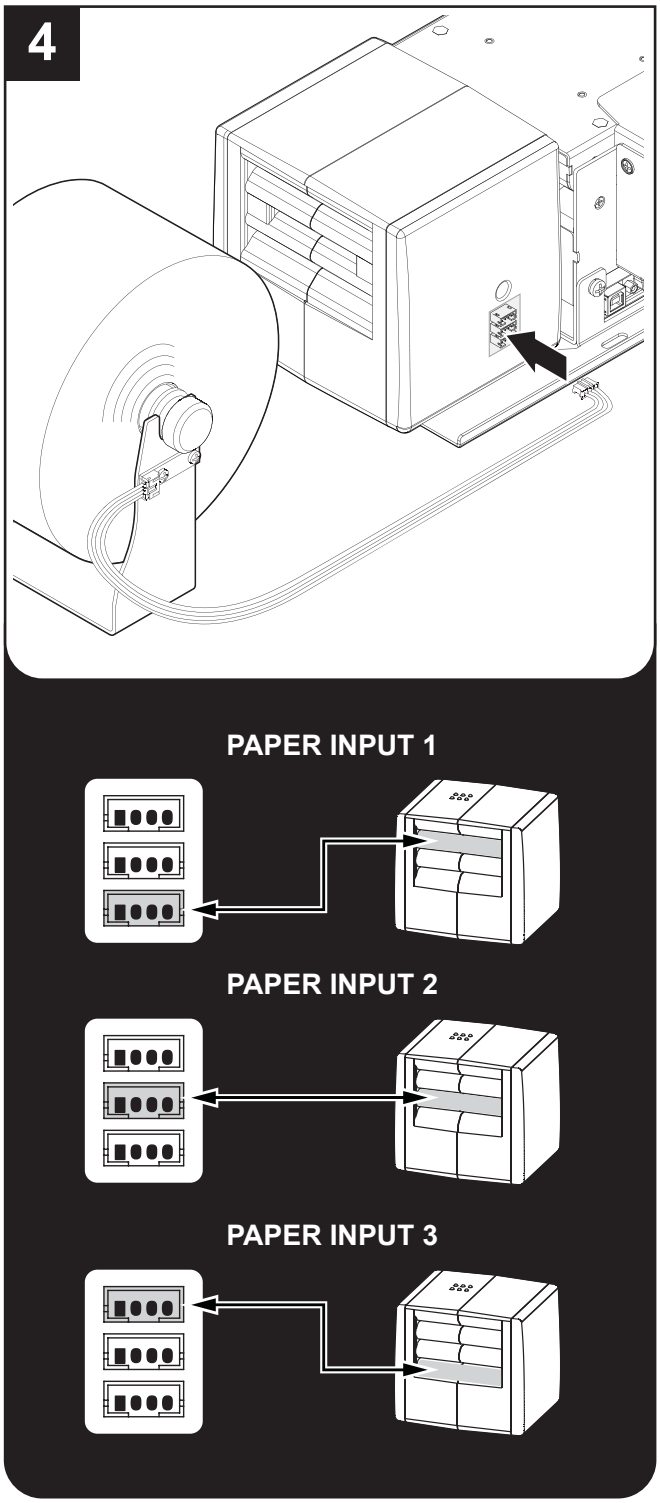
The kit includes (see figure):
1. Paper roll pin;
2. Paper holder support with near paper end sensor.



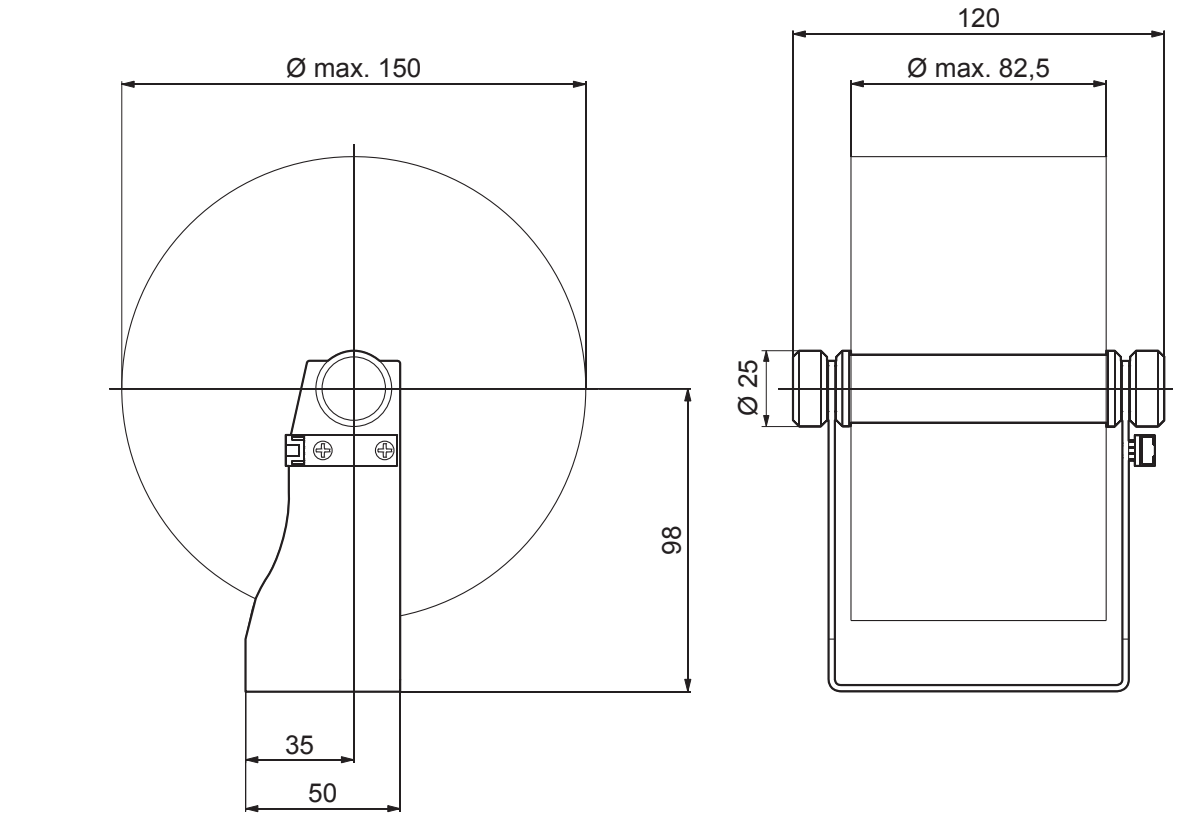
Assembly instructions
1. Insert the pin in the paper roll.
2. Put the roll assembled to the pin on the support.
3. Remove the cover for the triple feeder connectors by levering with a small slotted head screwdriver,
4. Connect the near paper end sensor with printer.
5. Connect the near paper end sensor to the printer by inserting the wiring in the relative connector of the paper input that is used.

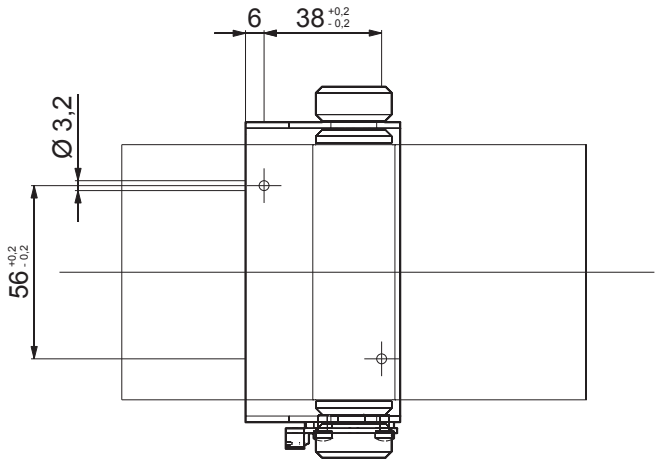
NOTE: To load paper referred to the instructions indicated in “Changing the paper roll” paragraph of this manual.


1
2
3


4
PAPER INPUT 1
PAPER INPUT 2
PAPER INPUT 3

Paper roll holder dimensions and paper roll specifications (in mm)





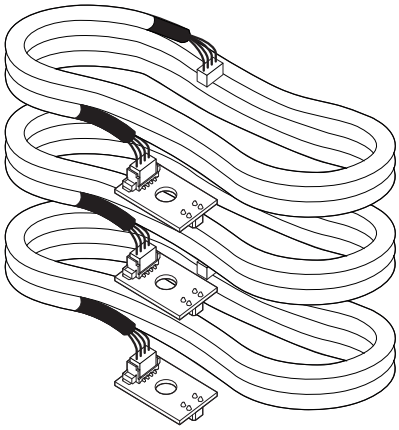
NOTE: For external rolls diameter higher to 100mm it's recommended to use a paper pre tensioning device.

A.1.3 Kit with wirings for near paper end

A kit is available with wirings for the connection between triple feeder and near paper end sensors.

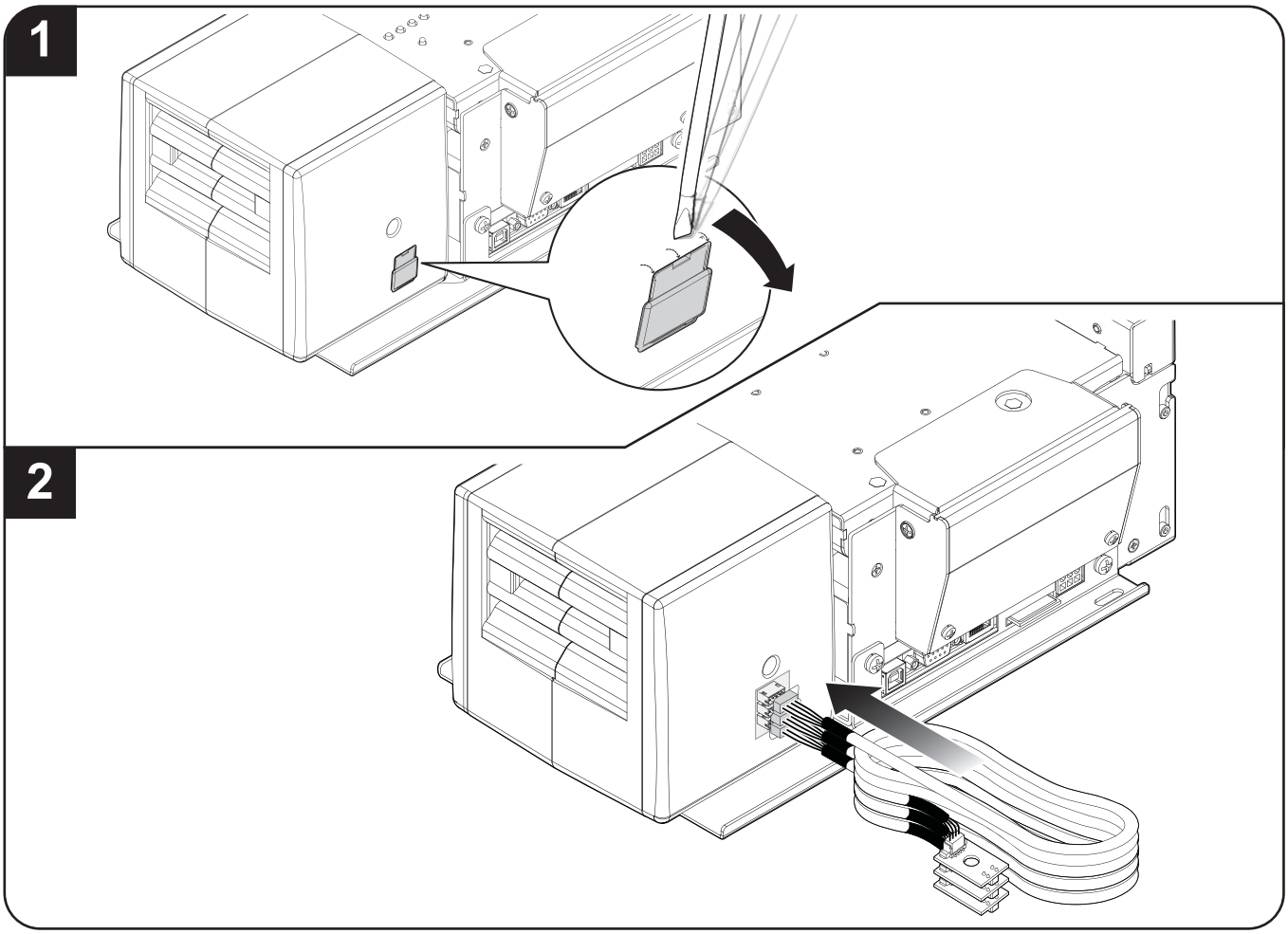
CBQFC13	3 wirings + 3 sensors NPE for triple feeder

The kit includes three wirings assembled with three near paper end sensor boards.

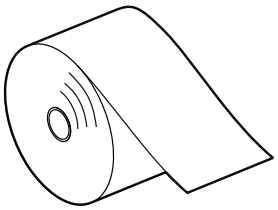
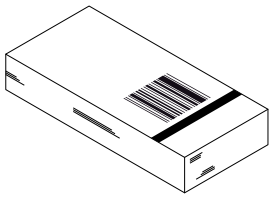


Assembly instructions

1. Remove the cover for the triple feeder connectors by levering with a small slotted head screwdriver,
2. Connect the three wirings to the connectors board of triple feeder.



A.2 SPARE PARTS

COMPONENT		CODE
	Thermal paper roll 80mm (Øext= 180mm, Øcore= 25mm, 165gr)	**RCT80X180-25MM-165GR**
	Thermal FANFOLD module 155x165 (255 grams)	**RCTFF-B-155-65-255GR-N**

B. TICKET ALIGNMENT

Paper with an alignment notch can be used in order to handle tickets with pre-printed fields and a fixed length.
To guarantee the alignment it is necessary that the “Notch Position” parameter is correctly set from the printer setup (see setting configuration parameters), that the alignment sensor is calibrated and that the parameters are set.
The calibration of the sensor occurs automatically within the printer setup or pressing the S1 key during power-up.

B.1 ENABLING, CALIBRATING AND SETTING OF PARAMETERS

The printer manages tickets with notch placed on the heat sensitive side or on the non-heat sensitive side of the ticket at any position along the width of the paper (see “Specifications for ticket with notch” paragraph).
To guarantee a correct alignment it is necessary that the *“Notch Position”* parameter is set with the right value because the printer must know which sensor utilize from notch searching.

All printer 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 notch is therefore detected by the amount of light that returns to the sensor, taking into account that the light is reflected by the white paper and absorbed by the black mark.

However is possible to use sensors coupled two by two (transparence sensors), using the sensor’s transmitter with the receiver of the opposite: during this operating condition a beam of light is emitted by a sensor and the quantity of light which reaches the opposite receiver is detected.

The presence of the notch so is detected evaluating the amount of light that arrives to the opposite sensor, considering that the paper doesn’t allow the beam of light to reach the receiver, whereas a gap or hole, lets the light to reach the receiver.

“Notch Position” parameter	Using mode	Notch position on ticket	Notes
Disabled	N.A.	N.A.	Alignment disabled
Down	REFLECTION	Non-thermal side	Using notch printed on ticket to align
Up	REFLECTION	Thermal side	Using notch printed on ticket to align
Transparence	TRANSPARENCE	-	Using ticket with gap

Calibration of the sensor occurs automatically and consists in adjusting the quantity of light emitted to adapt it to the degree of whiteness of the paper used.

To start self-calibration, the “Notch Position” parameter will be set in a different value by “Disabled” value from the printer setup (see setting configuration parameters) or pressing the S1 key during power-up.

The printer will perform some paper feeds, at the end of which it will print the calibrations result and the value of the PWM duty-cycle of the alignment sensor driver so that it can be perform an optimal notch detection, for example:

Autosetting Notch : **OK**
PWM Duty Cycle : **85.3%**

The *"Autosetting Notch"* parameter indicates the operating condition of the self-calibration process; OK will appear if it has been successful, but if it has failed the words NOT OK will appear.
Another parameter that needs to be set is the threshold:

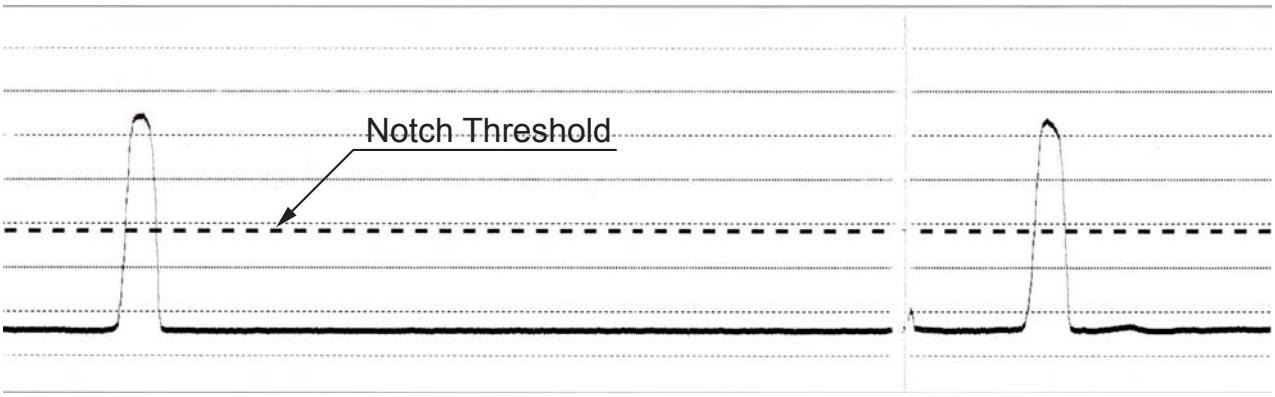
Notch Threshold.. : 40%

It is used to detect the presence of the notch: if the voltage value read by the sensor exceeds the threshold value set the notch is identified, otherwise the white paper is considered.
In order to better identify the optimum threshold for the paper being used, a paper characterization function is also available in setup.

Characterize Paper. :Yes

By activating this parameter the outgoing voltage of the sensor will be presented in a graphic form as shown in the following figure:

PAPER CHARACTERIZATION



The graphic shows the outgoing voltage of the sensor and the threshold value previously set. It is clear that by adjusting the threshold value it is possible to find the best position that takes into account the signal peak and the small oscillations around zero.

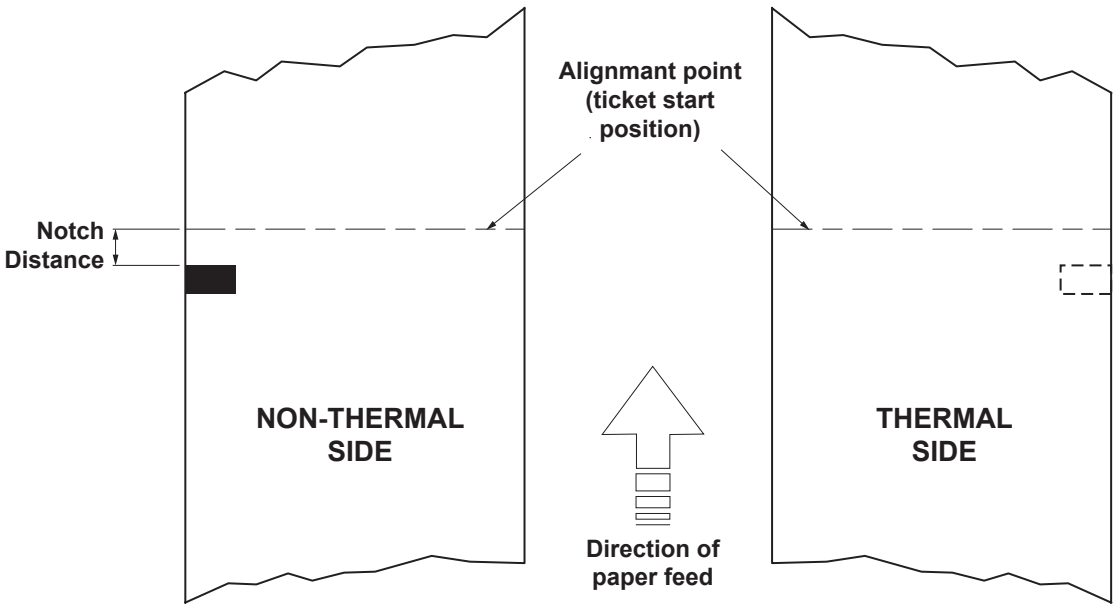
NOTE:
The outgoing voltage of the sensor will be presented in a graphic as a percentage value.

The ALIGNMENT POINT is defined as the position inside the ticket that is the desired alignment point.
The ALIGNMENT POINT can be defined over the notch or near this one; for this reason, the final parameters to be set in setup are:

Notch Dist. [mm x 10] . : 1
Notch Dist. [mm x 1] . : 5
Notch Dist. [mm x .1] . : 0

These parameters define the "Nocth Distance" that represents the distance from the notch to align or simply identify the notch distance from the ticket margin; in the above example the notch distance is 15 mm.

The following figure shows how the “Notch Distance” parameter represents the distance that exists between the notch and the desired alignment point. This parameter can have a minimum value of -5mm (negative value) and a maximum of 67 mm. In reality the maximum distance corresponds to the mechanical distance between the notch sensor and the head, and it is for this reason that higher values are not permitted.



To place the “ALIGNMENT POINT” before the notch, (or rather that the notch is external to the ticket used), setting the “Notch distance” to a negative value.

B.2 COMMANDS

B.2.1 Ticket alignment

The commands to manage ticket alignment are present only in ESC/POS™ emulation; in SVELTA emulation are automatically performed with the printing commands <p> <P> <q> <Q>.
In ESC/POS™ emulation the two alignment available commands are : $1D $F6 and $1D $F8.
The command $1D $F6 performs an alignment to the print head: the paper is fed through until the print head is at the ticket start.
The command $1D $F8 on the other hand refers to the cutter: the paper is fed through until the cutter is at the set alignment point of the next ticket, so that a subsequent cut will occur precisely at the end of the ticket.
For further clarification refer to the Commands Manual for command documentation.

B.2.2 Setting the alignment distance

The “Notch Distance” parameter can be changed via the printer setup or by using the command $1D $E7 nH nL. For further information refer to the command itself.
In SVELTA emulation the parameter used to set the alignment is not the “Notch Distance” modifiable in the printer setup, but it is necessary set using the command LHT.

B.2.3 Examples

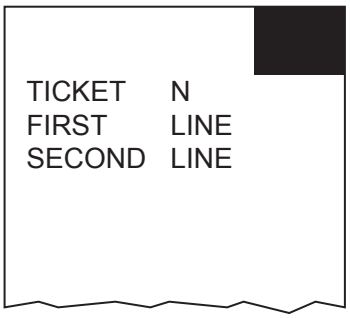
NOTE: To a better comprehension, in the following figures, the Notch is indicated on the same side of the printing text.

Example 1

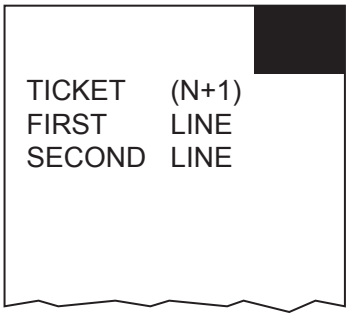
To print a ticket’s sequence witch the cut is made over the notch it’s necessary set the notch distance to zero as follows (this setting have effect after the ticket already in the printer):

{Set Notch Distance}
$1D,$E7,$00,$00,

{Print text}
‘TICKET 1’,$0A,’FIRST LINE’,$0A,’SECOND LINE’,$0A
{Cut alignment}
$1D, $F8,
{Cut}
ESC,’i’,
...



{Print text}
‘TICKET 1’,$0A,’FIRST LINE’,$0A,’SECOND LINE’,$0A
{Cut alignment}
$1D,$F8,
{Cut}
ESC,’i’,
...

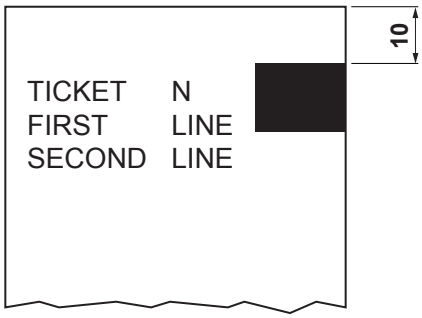


Example 2

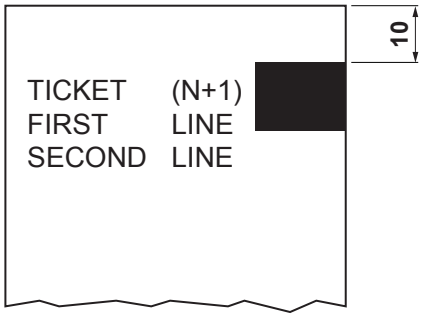
To cut 10mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

$1D, $E7, $00, $0A,

{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D, $F8,
{Cut}
ESC,'i',
...



{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D,$F8,
{Cut}
ESC,'i',
...

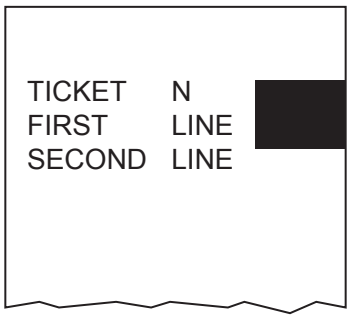


Example 3

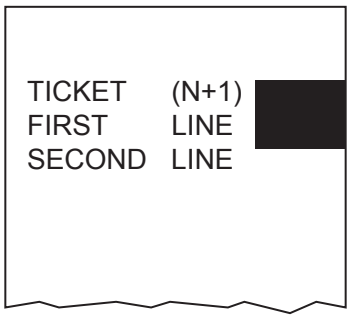
To print over the notch the command sequence is (this setting have effect after the ticket already in the printer):

{Set Notch Distance}
$1D,$E7,$00,$00,

{Print head alignment}
$1D, $F6,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'
...



{Print head alignment}
$1D, $F6,
{Print text}
'TICKET N',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'

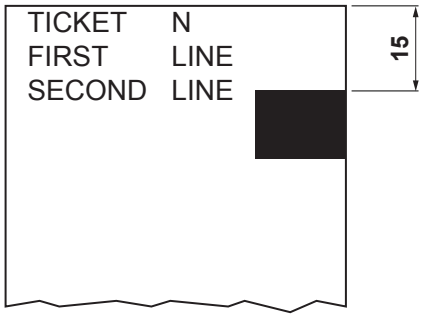


Example 4

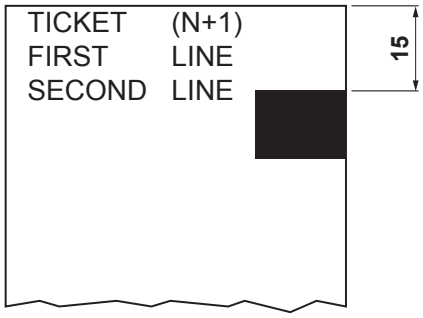
To print 15mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

{Set Notch Distance}
$1D,$E7,$00,$0F,

{Print head alignment}
$1D, $F6,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'
...



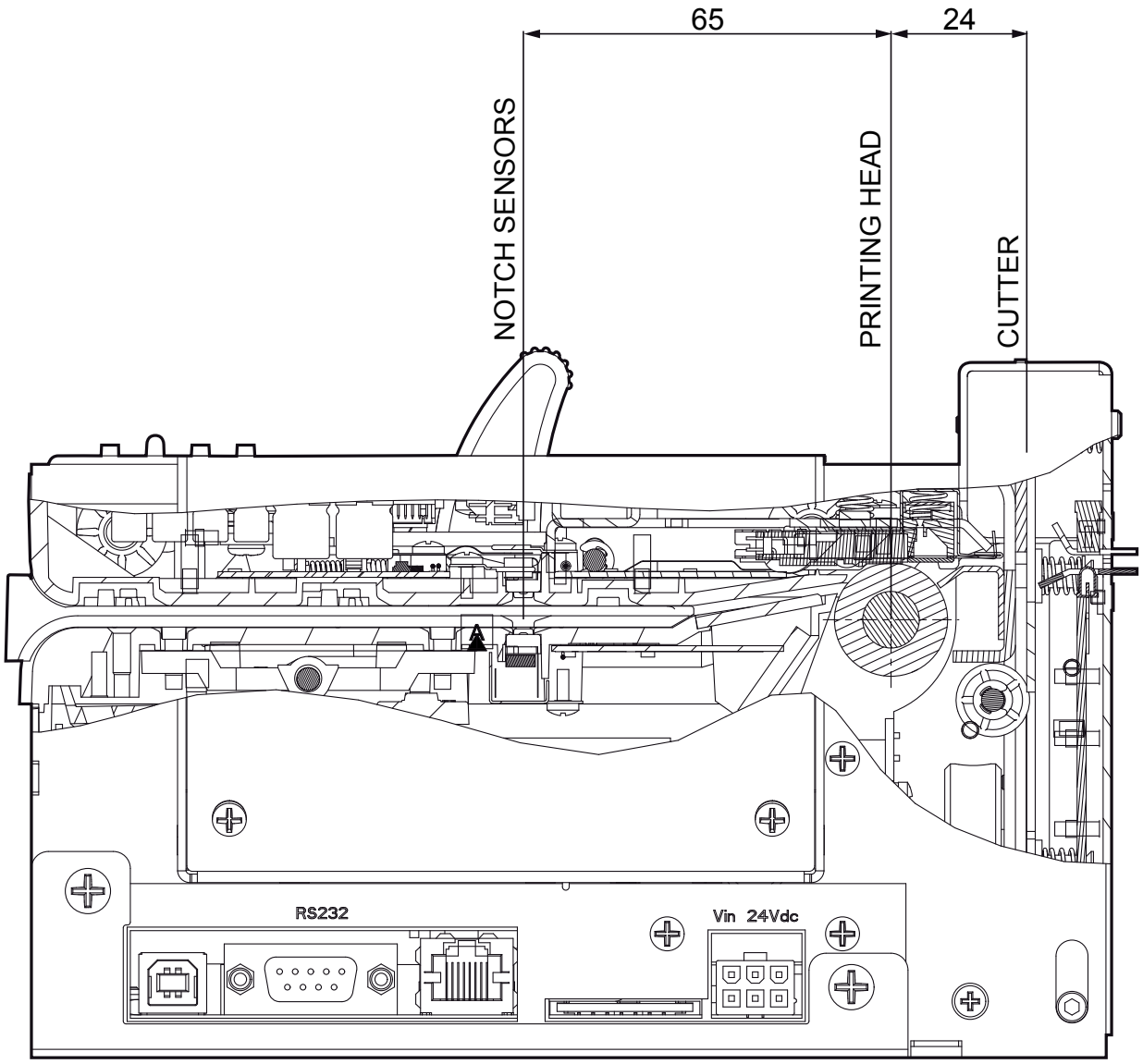
{Print head aliment}
$1D, $F6,
{Print text}
'TICKET N',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'



B.3 MECHANICAL CHARACTERISTICS

B.3.1 Position of the sensors

The following figure shows a section of the printer with the distances between the head, the cutter and the notch sensor.



NOTE: For ease of reference, in some images was represented only the printer without the triple feeder.

B.3.2 Dimension of tickets

It is very important to well calibrate the height of the printer area, according to the distance between the two edges of the notch. In order not to miss a notch (a ticket must therefore contain only one notch) the following equation must be used:

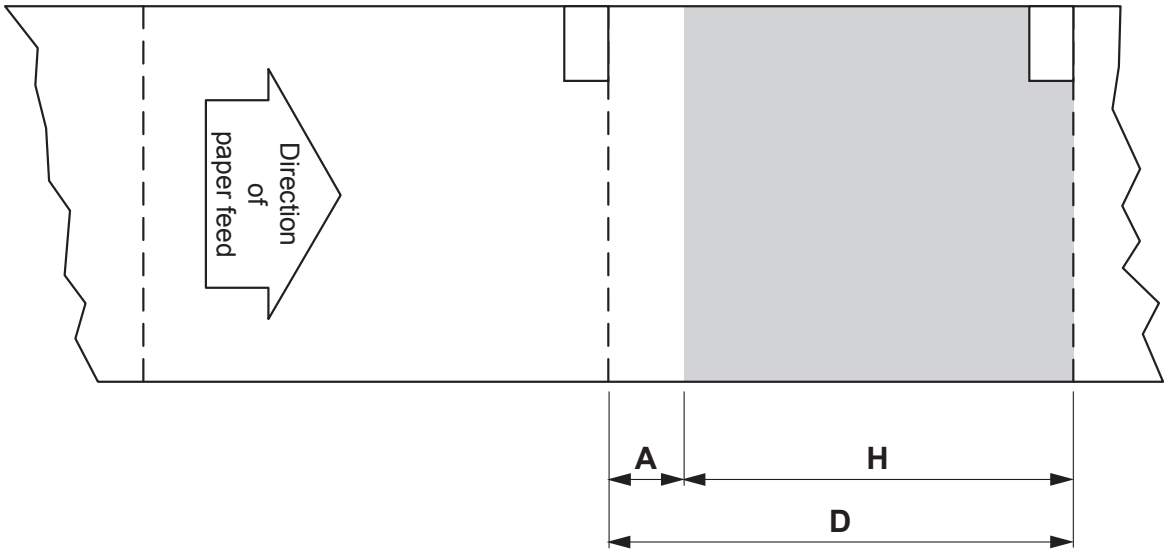
INTER-NOTCH DISTANCE > PRINTED AREA HEIGHT

where

INTER-NOTCH DISTANCE = the distance between two notch edges

The following figure shows a sequence of printed tickets aligning each one at the cut. It can be noted that increasing the printed area will result in superimposing what is to be printed at the subsequent notch. The size of the print area can be enlarged until it renders the alignment feed void, but not beyond.

LEGEND:
A = Alignment feed
H = Printing area height
D = Inter-notch distance



NOTE: In ESC/POS™ emulation to prevent any jamming, after cut, the paper is not completely recovered, but it remains outside the printing line of 10mm; so it's very important to consider this distance, in this emulation, during the ticket layout definition.
In SVELTA emulation, directly designed for ticketing, on the contrary the paper recovering is not necessary, because after a cut non-printable areas are not produced.

B.4 METHODS OF USAGE

B.4.1 Command sequences

It is possible, when printing sequences of tickets, to primarily identify two different methods of operation that involve the alignment:

- ticket aligned at the cut
- ticket aligned at printing
- combined alignment.

B.4.1.1 Alignment at the cut

The sequence of commands to be entered when wanting to align a ticket at the cut is as follows:

1. Ticket general setting; formatting of characters, print density, margins etc.
2. Print ticket: Printing of text, logos or any other graphics.
3. Alignment at the cut command: $1D $F8.
4. Cut command.

B.4.1.2 Alignment at printing

Alignment at printing requires the following sequence of commands:

1. Ticket general setting; formatting of characters, print density, margins etc.
2. Print alignment commands: $1D $F6.
3. Print ticket: Printing of text, logos or any other graphics.
4. Cut command.

Unlike the previous case, the alignment feed takes place before the start of printing, so as to align the print area in the position required.

B.4.1.3 Combined alignment

The combined alignment at printing and at the cut is the most alignment used on ticketing applications and requires the following sequence of commands:

1. Ticket general setting; formatting of characters, print density, margins etc.
2. Print alignment commands: $1D $F6
3. Print ticket: Printing of text, logos or any other graphics.
4. Alignment at tha cut command.
5. Cut command.

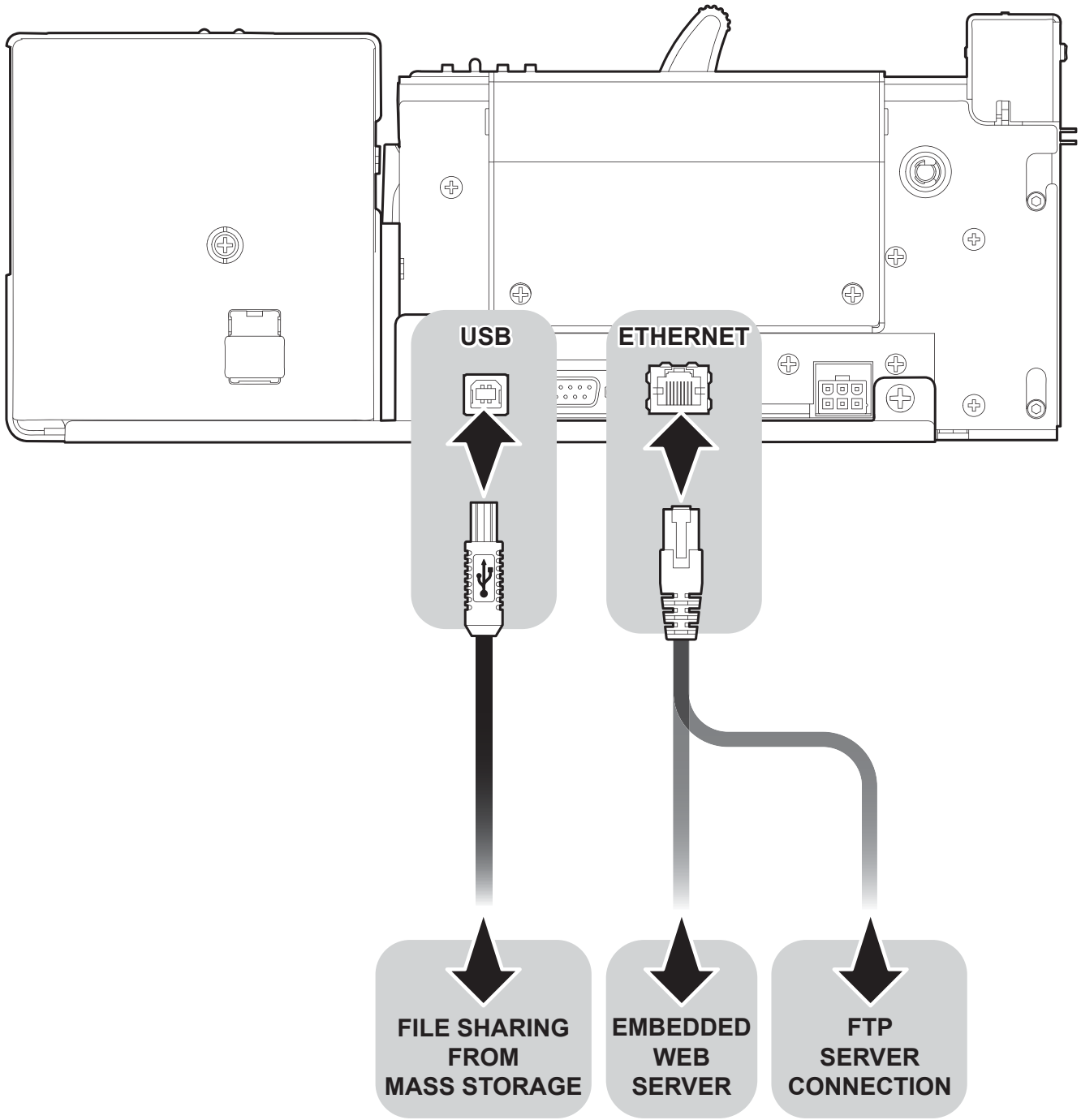
This method of operation has favourable, compared with previously methods, because all printed thickets are the same length apart from length of printable area.

C. ADVANCED FUNCTIONS

C.1 CONNECTIONS

The printers can be connected to a PC through two types of connections:
1. with USB cable (see “USB interface” paragraph)
2. with Ethernet cable (see “Ethernet interface” paragraph).

According to the connection made, it is possible to manage drivers, fonts and logos of the printer and configure the operating parameters in three different ways
1. by files sharing from Mass Storage, in case of USB connection
2. by files sharing from FTP Server connection, in case of Ethernet connection
3. by entering the Embedded Web Server, in case of Ethernet connection.



C.2 EMBEDDED WEB SERVER

Printers are equipped with an Embedded Web Server that allows to execute some operations on printers, through a clear web interface, including:

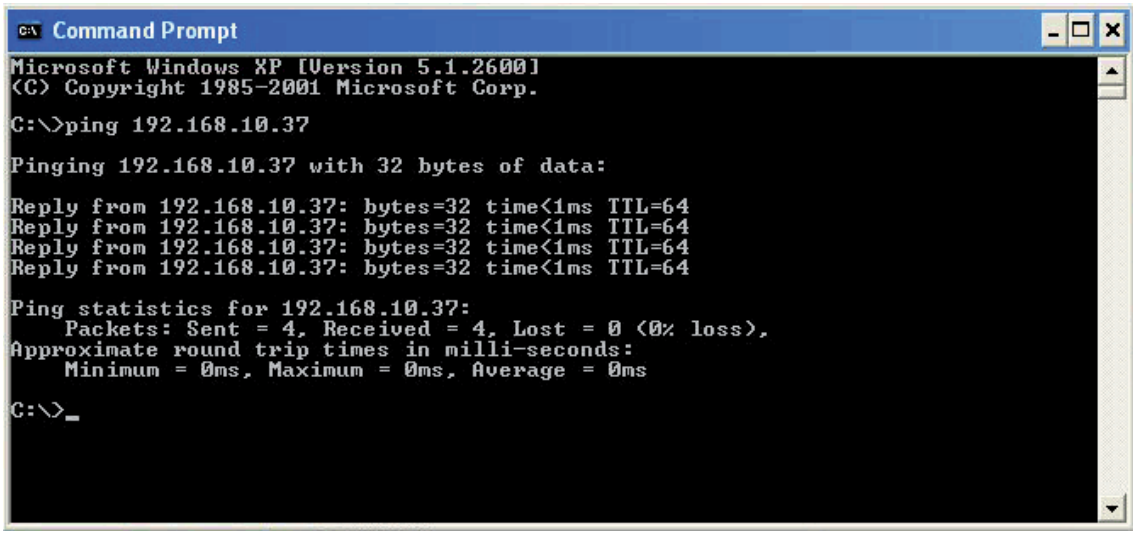
- monitoring the printer status;
- setting operating parameters;
- configuring network settings;
- managing the logos;
- configuring the email service to make diagnostics and maintenance operations easier;
- download printing drivers.

C.2.1 Connection check

Before entering in the Embedded Web Server, check that:

- the printer is connected and turned on;
- the printer has a network connection based on the IP protocol;
- the following ports are opened (if a Firewall is present on computer): 9100 (or differently set up). 15000, 15001, 15002;
- have a Web browser on the computer;
- the printer is connected to the network and its IP address and its Subnet Mask are set up in a correct way. To check the setting of these parameters, open a new terminal window and type “ping” on the command bar followed by the IP address of the printer. The picture shows an example of a positive result after the “ping” command. Otherwise, if connection isn’t possible, to its IP address, a failure notice will appear.

Example: ping 192. 168. 10. 37



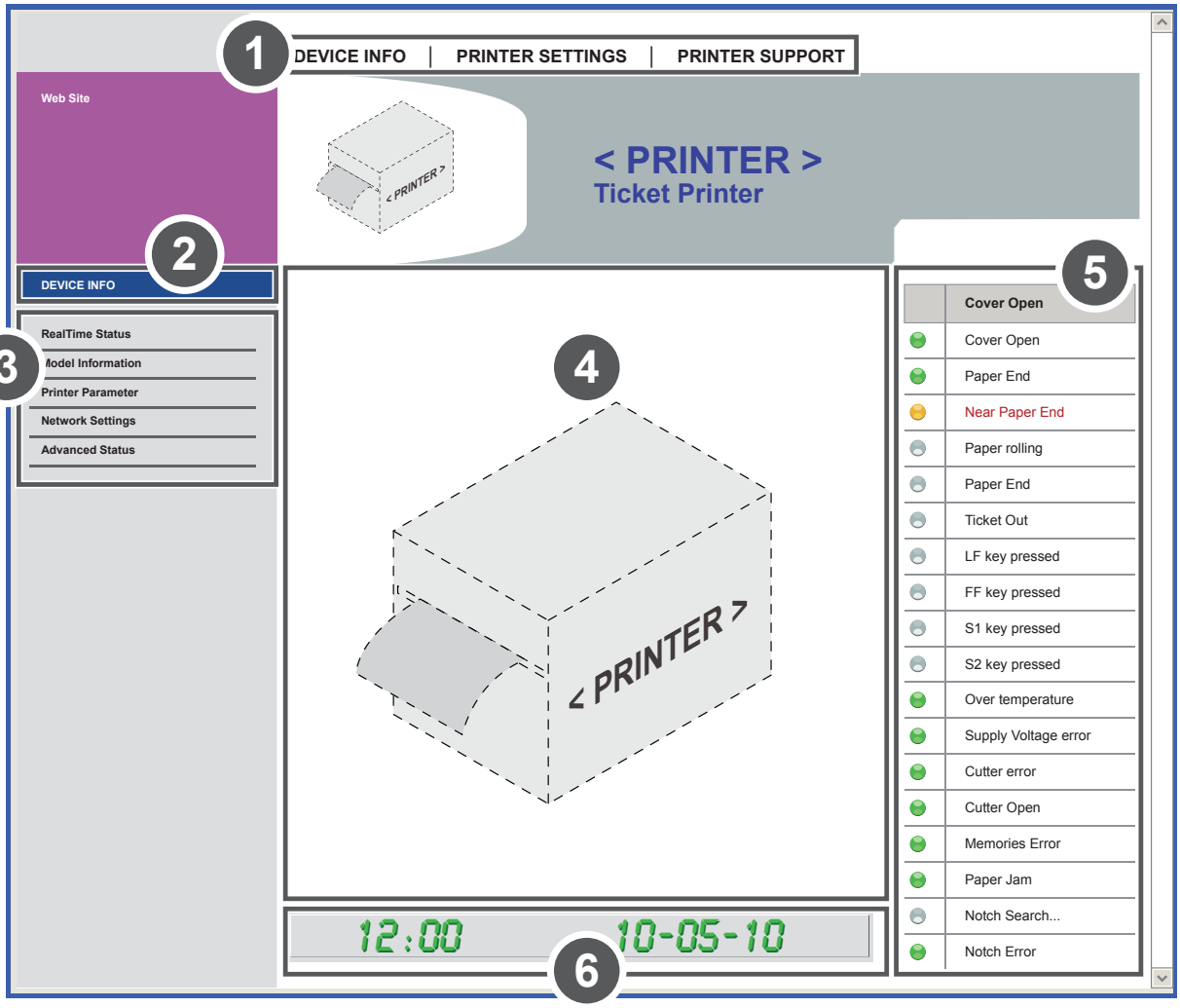
C.2.2 Embedded Web Server access

To enter the Embedded Web Server, type the IP address assigned to the printer into Web browser. For example, if IP address of the printer is 192.168.10.37, type in the Web browser:

http://192.168.10.37

On the screen will appear the internal default page that corresponds to the section “Device Info” The home page is divided into 6 areas whose functions are described below:

1. **SECTIONS:** The web server has three sections listed within each web page. These sections are: Device Info, Printer Settings, Printer Support.
2. **CURRENT PAGE** Reports section currently displayed.
3. **TOOLS** Lists the tools available within the chosen section.
4. **PRINTER PICTURE** Displays a picture representative of the printer operational status. The picture changes depending on the parameters reported in area number 5.
5. **REAL TIME STATUS** Report a list of operating parameters controlled and monitored in real time (with a regular refresh from 5 to 15sec).
6. **TIME AND DATE** Displays the current time and date.



NOTE: To know the IP address of the printer, print the Set-up report of the printer (see “Self-test” paragraph) or use “Locator” (see following paragraphs).

To enter some sections and some configuration services, it is required the identification of the user and password. To make registration and to obtain the access to the restricted areas, when it is required insert the user name and the password as indicated in the following table:

User Name	**Custom**
Password	**AlwaysOn**

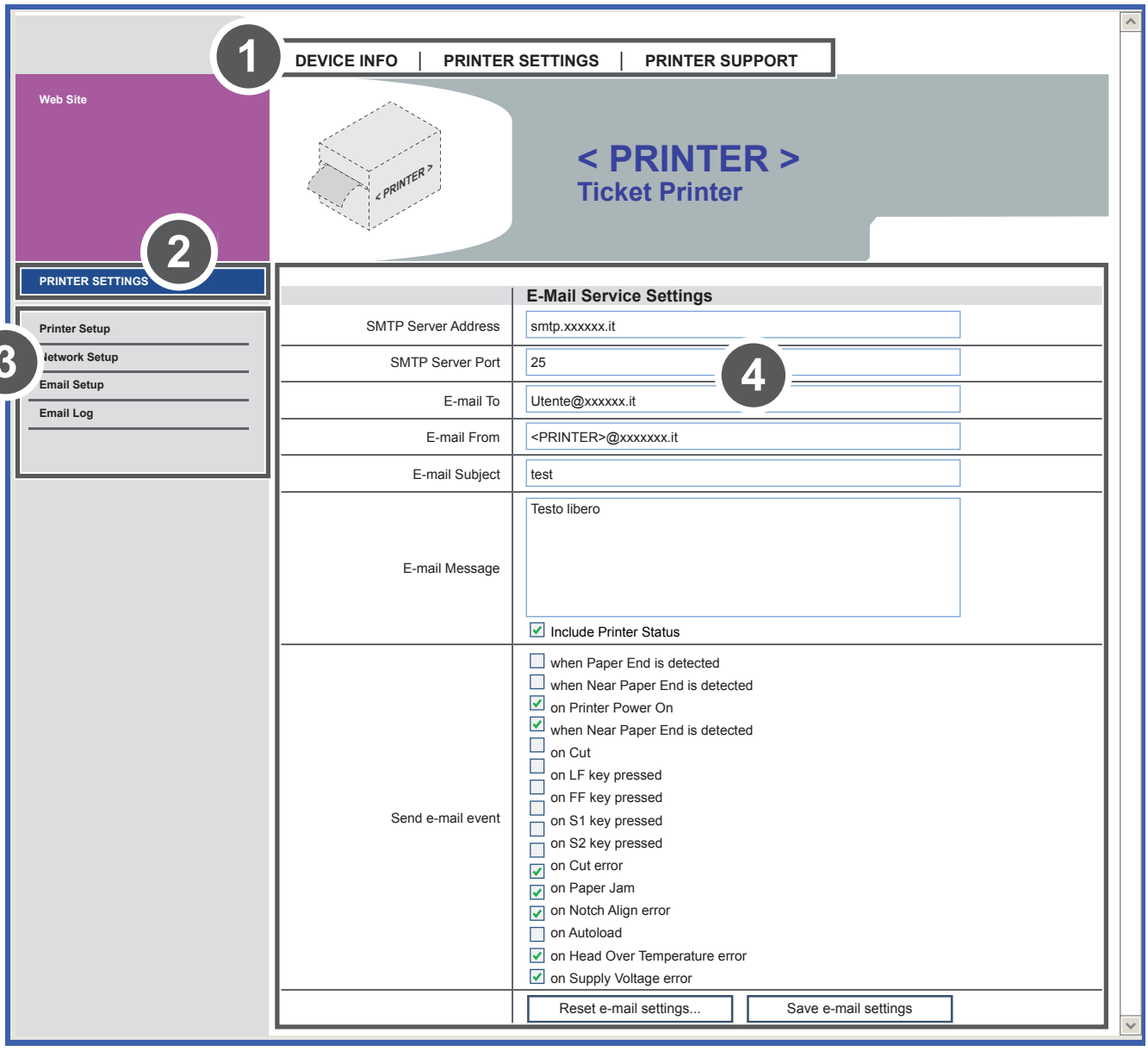
NOTE: Respect capital and small letters as indicated in table.

C.2.3 Embedded Web Server functions

The “Printer Settings” section is a restricted one. To enter the section, it is required the identification of the user and password. With the tools of this section, it is possible to set up the same parameters of the printer that are configurable in the printer’s Set-up mode (see “Configuration” paragraph”).

The following figure shows the page for the “EMAIL SETUP” tool. It is divided into 4 areas:

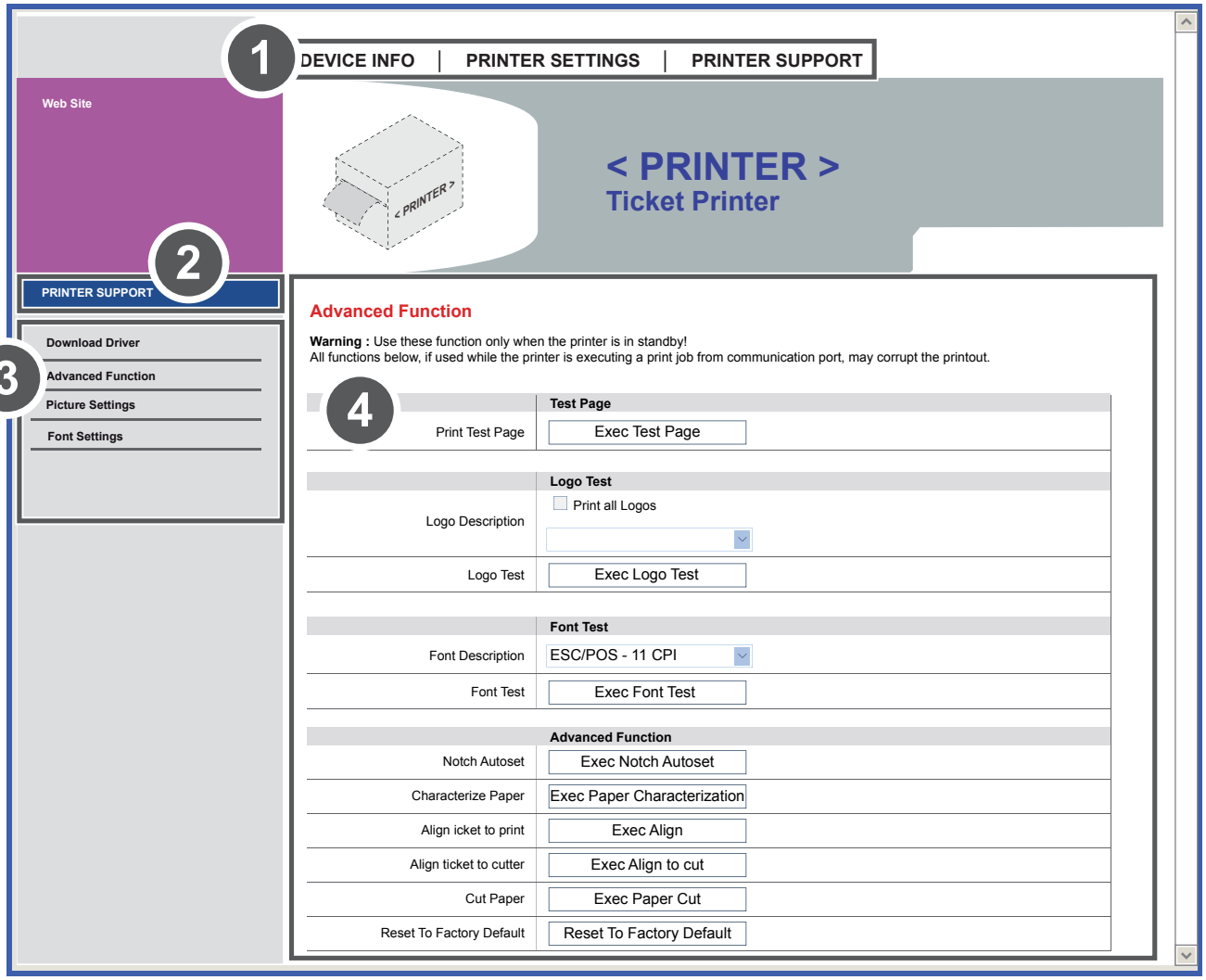
1. **SECTIONS:** The web server has three sections listed within each web page. These sections are: Device Info, Printer Settings, Printer Support.
2. **CURRENT PAGE** Reports section currently displayed.
3. **TOOLS** Lists the tools available within the chosen section.
4. **EMAIL SETUP** Displays the fields available to configure the automatically delivery of service email in order to inform the user when a change occurs to operating status of the printer. It is possible to select the events to enable the sending of the email



With the tools in the “Printer Support” section, it is possible to download drivers, manage logos and test some printer function for demonstrative and service purpose,

The following figure shows the page for the “ADVANCED FUNCTIONS” tool. It is divided into 4 areas:

1. **SECTIONS:** The web server has three sections listed within each web page. These sections are: Device Info, Printer Settings, Printer Support.
2. **CURRENT PAGE** Reports section currently displayed.
3. **TOOLS** Lists the tools available within the chosen section.
4. **ADVANCED FUNCTION** Displays all the tests available for the printer: printing a test page, the font test and the logos test, the self-calibration of the notch sensors and the ticket alignment.

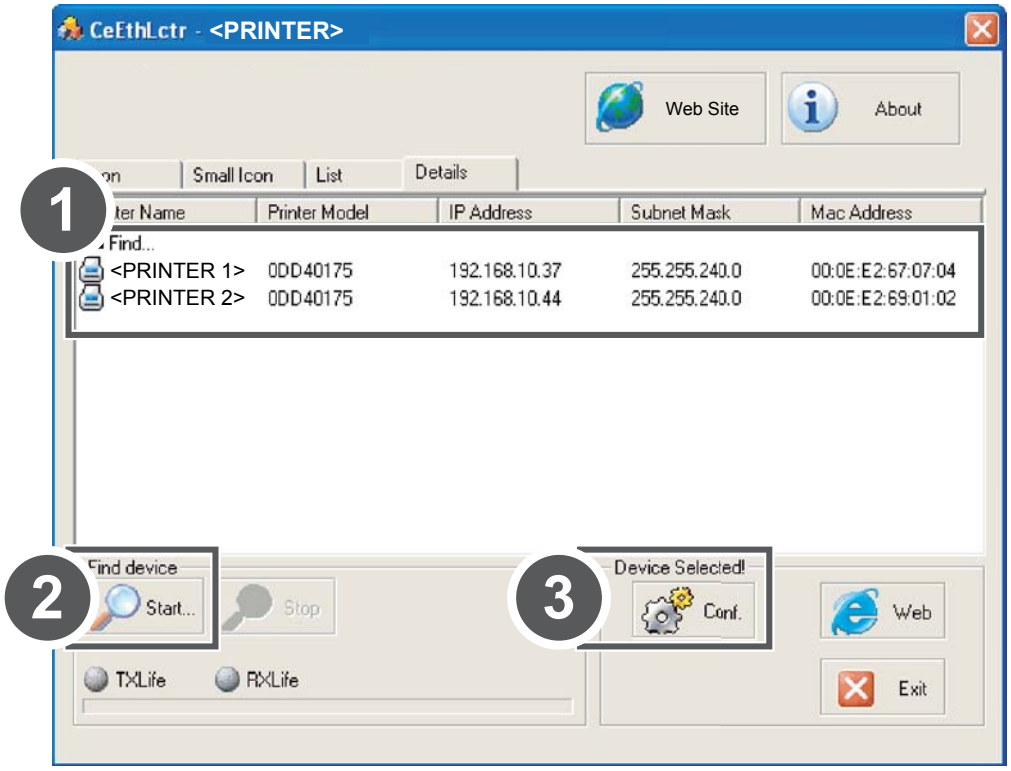


C.3 LOCATOR

With the printers it is possible to use an external software to perform a search for printers connected to the network with Ethernet cable, even without knowing the IP addresses of individual printers

The following figure shows the software interface:

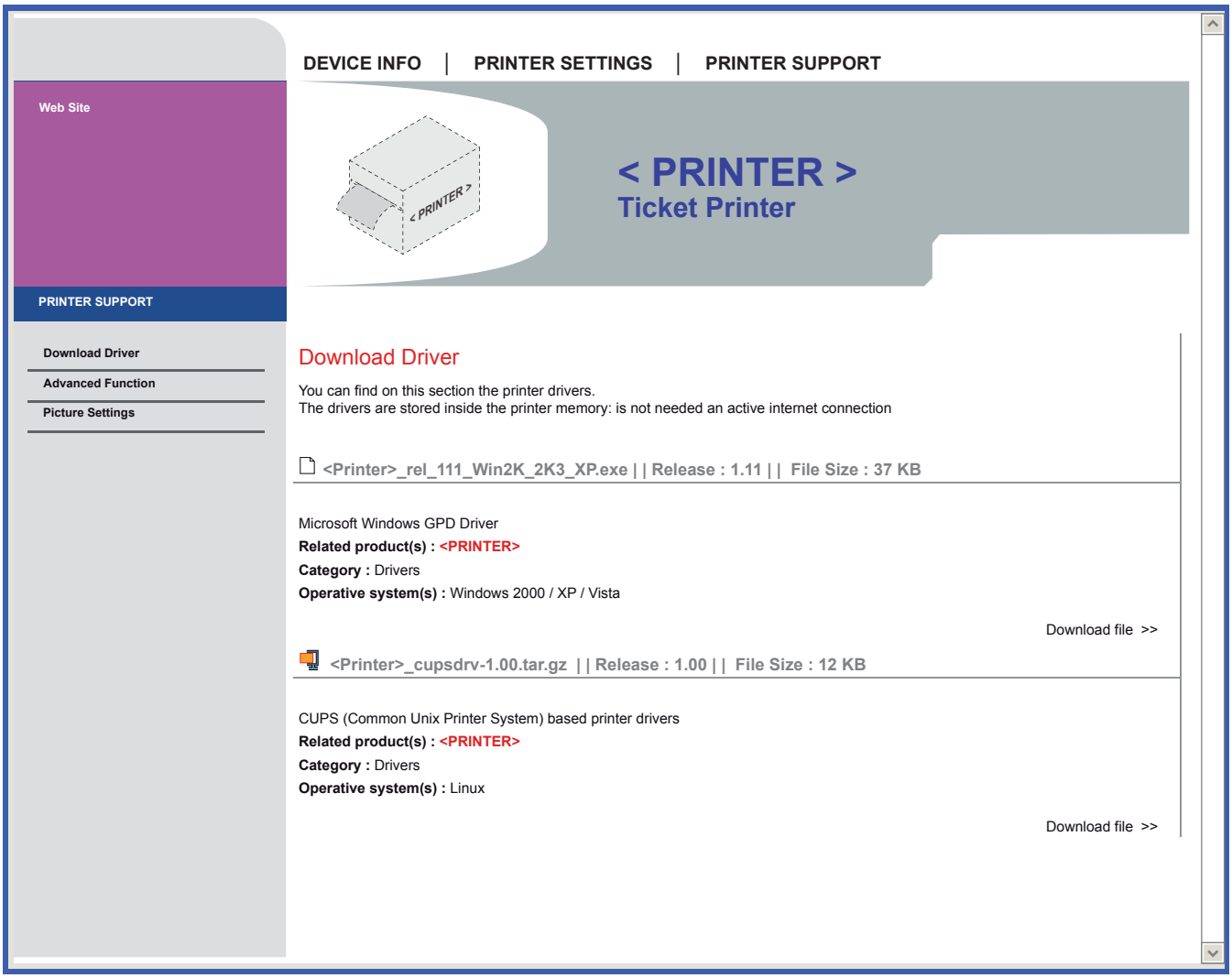
1. **DEVICES:** Displays the list of the connected printers.
2. **"START..."** Stars a new search.
3. **"CONF."** Enters the configuration window of the network parameters of the selected printer.



C.4 DRIVERS INSTALLATION

Embedded Web Server

To install a new driver update for the printer, enter the “DRIVER” page of the “PRINTER SUPPORT” section of the embedded Web Server (see the following figure).



Mass Storage / FTP Server

It is possible to install the new driver update directly into the folder “DRIVER” on the Flash Drive of the printer.
You can enter the Flash Drive by files sharing from Mass Storage or by files sharing from FTP Server connection (see “Connections” paragraph).
In both cases, the relative parameter should be enabled during the configuration process (see “Printer Setup” paragraph).

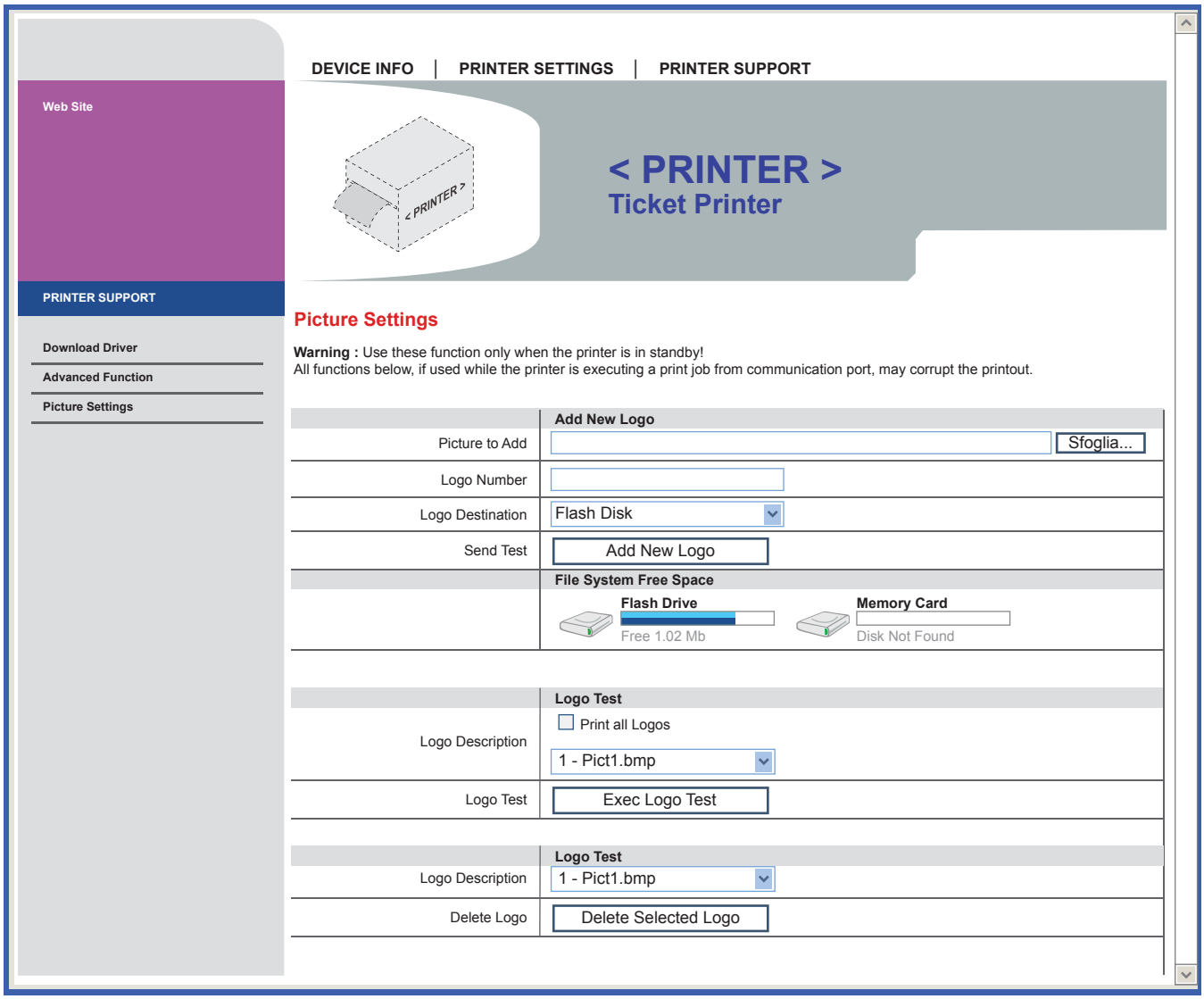
NOTE:
To know the IP address of the printer, print the Set-up report of the printer (see “Self-Test” paragraph) or use “Locator” . Type in the address bar **“ftp://”** followed by the IP address of the printer.

C.5 LOGOS MANAGEMENT

It is possible to store new logos in addition to default logos stored on Flash Disk. The printer automatically provides to convert BMP image to the error-diffusion format in black and white.
Logos may be stored both on Flash Disk and on the Memory Card. The use of the Memory Card allows to handle more logos (however, the max number of manageable logos is limited by the RAM memory reserved for logos management).

Embedded Web Server

To add a new logo to the printer enter the “PICTURE SETTINGS” page of the “PRINTER SUPPORT” section of the embedded Web Server (see the following figure).



Mass Storage / FTP Server

It is possible to add the new logo directly into the folder “PICTURES” on the Flash Drive of the printer.
You can enter the Flash Drive by files sharing from Mass Storage or by files sharing from FTP Server connection (see “Connections” paragraph).
In both cases, the relative parameter should be enabled during the configuration process (see “Printer Setup” paragraph).

After adding the logo, open the configuration file “PictList.ini” and add a new line with a number associated to the logo (to be used with printer’s commands), a letter for the memory unit and the logo file name, as indicated in the instructions written inside the “PictList.ini” file.

To delete a logos stored in the printer, proceed as follows:
1. delete the selected logo from the “Pictures” folder on Flash Disk or SD/MMC card;
2. in the configuration file “PictList.ini”, delete the line related to the erased logo.

The logos stored into a unit memory and converted by the printer, can be printed by using the number associated to the logo during the conversion step.
The correspondence between file-name and logo-number is warrant by the configuration file “PIctList.ini” and it is verifiable with the logo test.

NOTE:
To know the IP address of the printer, print the Set-up report of the printer (see “Self-Test” paragraph) or use “Locator” . Type in the address bar **“ftp://”** followed by the IP address of the printer.

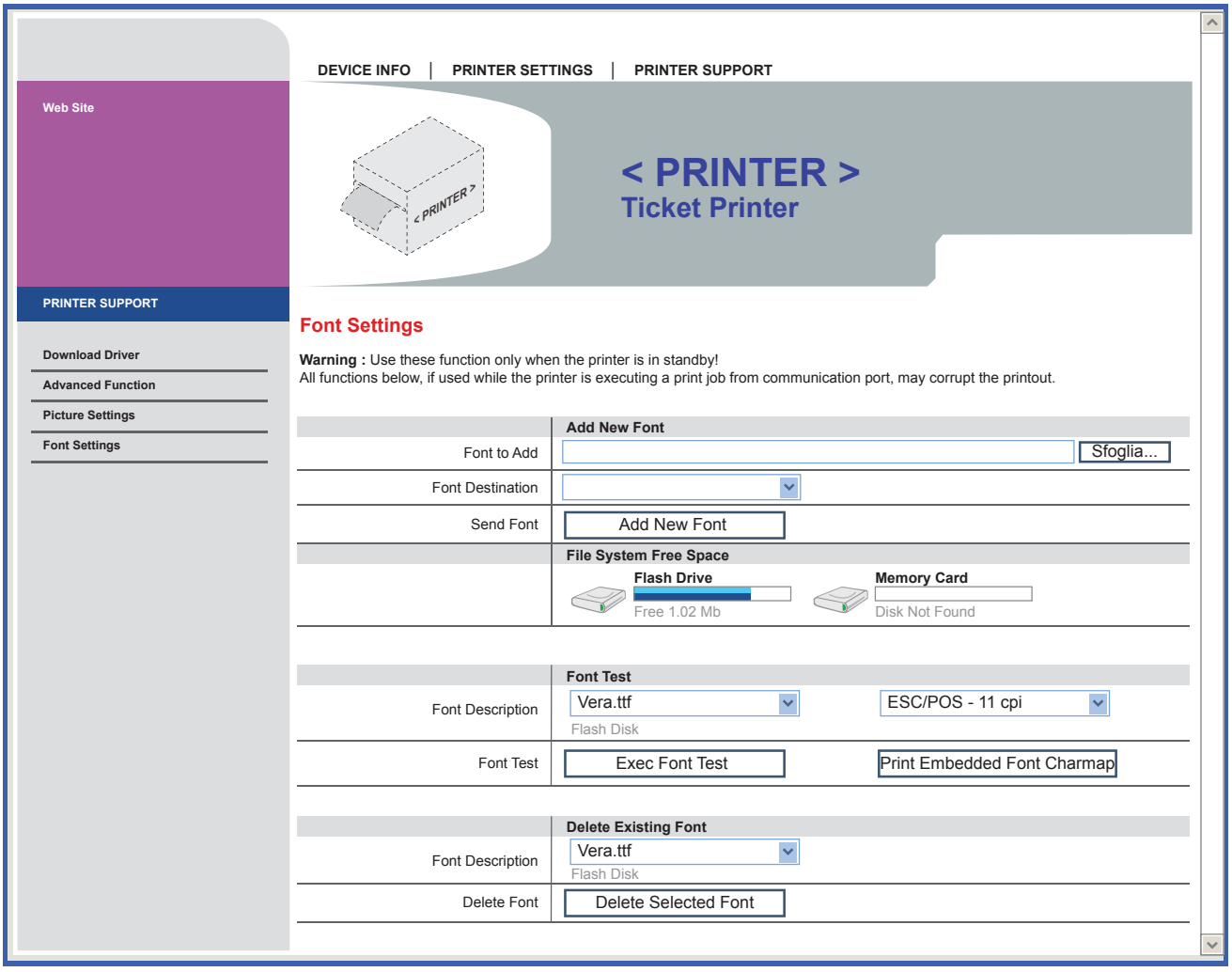
ATTENTION: The configuration file “PictList.ini” on the printer’s Flash Disk, has to be modified even if the new added logo is stored on SD/MMC.

C.6 FONTS MANAGEMENT

It is possible to store new font in addition to default fonts stored on Flash Disk. Fonts may be stored both on Flash Disk and on the Memory Card.
The use of the Memory Card allows to handle more fonts (however, the max number of manageable fonts is limited by the RAM memory reserved for fonts management).

Embedded Web Server

To add a new font to the printer enter the “FONT SETTINGS” page of the “PRINTER SUPPORT” section of the embedded Web Server (see the following figure).



Mass Storage / FTP Server

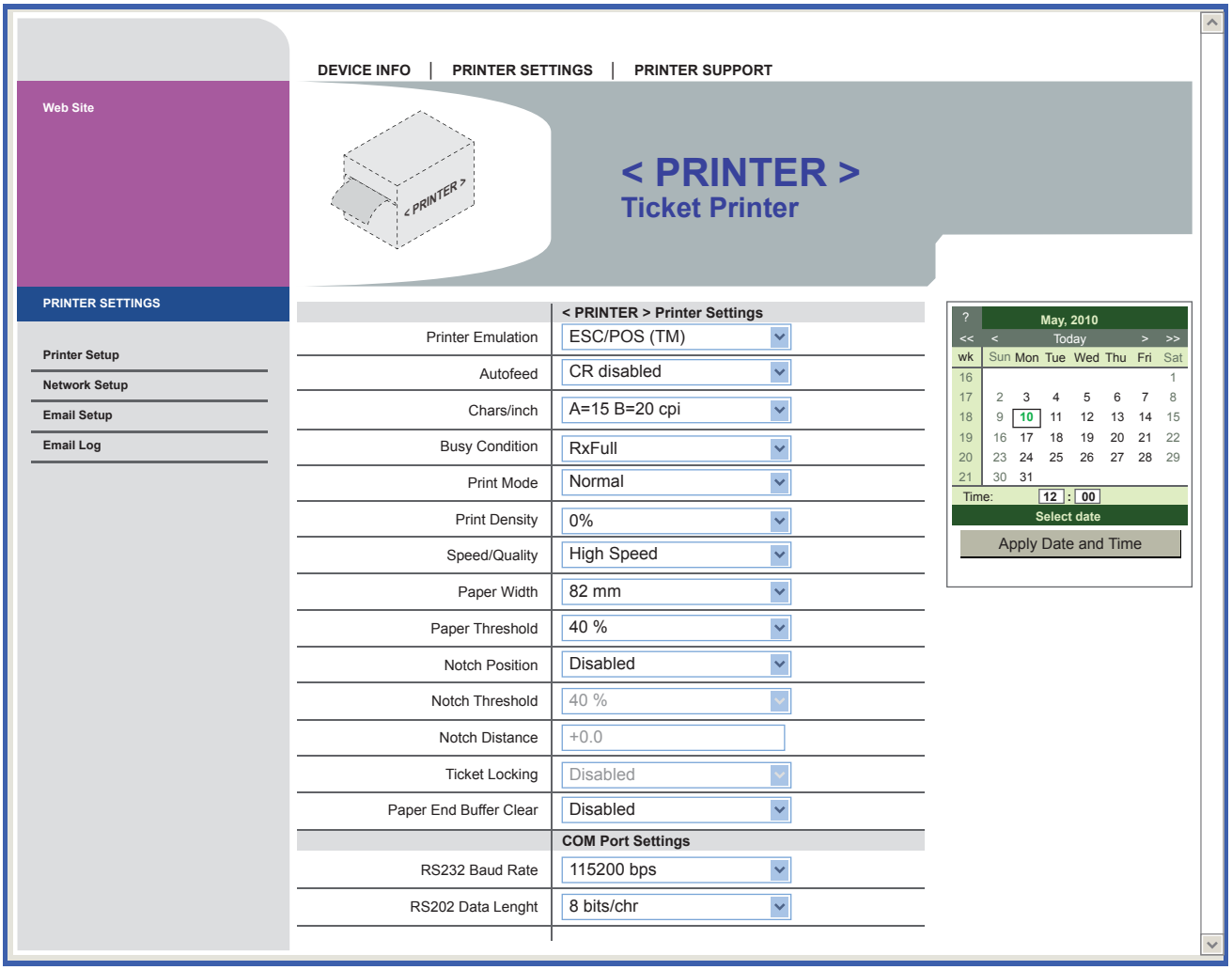
It is possible to add the new font directly into the folder “FONTS” on the Flash Drive of the printer.
You can enter the Flash Drive by files sharing from Mass Storage or by files sharing from FTP Server connection (see “Connections” paragraph).
In both cases, the relative parameter should be enabled during the configuration process (see “Printer Setup” paragraph).

NOTE:
- To know the IP address of the printer, print the Set-up report of the printer (see “Self-Test” paragraph)or use “Locator” . Type in the address bar **“ftp://”** followed by the IP address of the printer
- Uploading the new font directly from the “Font” folder of Microsoft® Windows® directory, remember that the displayed font name into the “Font” folder may not match the real name of the font file.

C.7 SETUP

Embedded Web Server

Printer permits the configuration of default parameters for printer and network setup by entering the “PRINTER SETUP” page and the “NETWORK SETUP” page of the “PRINTER SETTINGS” section of the embedded Web Server (see the following figure).



Mass Storage / FTP Server

It is possible to configure the default parameters for printer and network setup by editing the “Setup.ini” file on the printer Flash Drive.

You can enter the Flash Drive by files sharing from Mass Storage or by files sharing from FTP Server connection (see “Connections” paragraph).
In both cases, the relative parameter should be enabled during the configuration process (see “Printer Setup” paragraph).

After editing printer’s parameter, simply save the “Setup.ini” file to make the modifies activated.

The “Setup.ini” file is a configuration file that contains all the configurable parameters listed in text format and divided into some sections (indicated in square brackets).
The available values for every parameter, are listed after the parameter name. The value marked with the symbol ‘ * ’ is the default one.
To modify printer’s parameters, change the numeric value after the name of parameters. To set the parameter to the default value, change the numeric value with the symbol D.
The “Setup.ini” file permits the configuration of the following parameters:

[PRINT]

Printer Emulation:	0, 1*	0 = ESC/POS™ 1 = SVELTA		
Print Mode:	0, 1*	0 = Normal 1 = Reverse		
Autofeed:	0, 1*	0 = CR disabled 1 = CR enabled		
Chars / inch:	0, 1*	0 = A=11 B=15 cpi 1 = A=15 B=20 cpi		
Speed / Quality:	0, 1, 2*	0 = High Quality 1 = Normal	2 = High Speed	
Paper Width:	0, 1, 2, 3, 4, 5, 6, 7, 8,9, 10, 11, 12, 13, 14*, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25,26, 27, 28, 29, 30	0 = 54 mm 1 = 56 mm 2 = 58 mm 3 = 60 mm 4 = 62 mm 5 = 64 mm 6 = 66 mm 7 = 68 mm 8 = 70 mm 9 = 72 mm 10 = 74 mm	11 = 76 mm 12 = 78 mm 13 = 80 mm 14 = 82 mm 15 = 20mm 16 = 22 mm 17 = 24 mm 18 = 26 mm 19 = 28 mm 20 = 30 mm 21 = 32 mm	22 = 34 mm 23 = 36 mm 24 = 38 mm 25 = 40 mm 26 = 42 mm 27 = 44 mm 28 = 46 mm 29 = 48 mm 30 = 50 mm 31 = 52 mm
Paper Threshold:	0, 1, 2, 3*, 4, 5, 6	0 = 30 % 1 = 40 % 2 = 50 %	3 = 60 % 4 = 70 % 5 = 80 %	6 = 90 %
Notch Position:	0*, 1, 2, 3	0 = Disabled 1 = Up	2 = Down 3 = Transparence	
Notch Threshold:	0, 1*, 2, 3, 4, 5, 6	0 = 30 % 1 = 40 % 2 = 50 %	3 = 60 % 4 = 70 % 5 = 80 %	6 = 90 %
Notch Distance [mm]:				

Ticket Locking:	0*, 1, 2, 3, 4	0 = Disabled 1 = Enabled	2 = By Printer 3 = By Feeder	4 = Complete
PaperEnd Buffer Clear:	0*, 1	0 = Disabled 1 = Enabled		
Ticket Management:	0*, 1, 2	0 = Disabled 1 = Short Ticket	2 = Check first	
Print Density:	0, 1, 2, 3, 4*, 5, 6, 7, 8	0 = - 50 % 1 = - 37 % 2 = - 25 %	3 = - 12 % 4 = 0 % 5 = + 12 %	6 = + 25 % 7 = + 37 % 8 = + 50 %

[INTERFACE]

RS232 Baud Rate:	0, 1, 2, 3, 4, 5, 6, 7, 8*	1 = 1200 bps 2 = 2400 bps 3 = 4800 bps	4 = 9600 bps 5 = 19200 bps 6 = 38400 bps	7 = 57600 bps 8 = 115200 bps
RS232 Data Length:	0*	0 = 8 bits/chr 1 = 7 bits/chr		
RS232 Parity:	0*, 1, 2	0 = None 1 = Even 2 = Odd		
RS232 Handshaking:	0*, 1	0 = Xon/Xoff 1 = Hardware		
Busy Condition:	0*, 1	0 = RxFull 1 = OffLine/RxFull		
USB Mass Storage:	0*, 1	0 = Disabled 1 = Enabled		
USB Address Number:	0*, 1, 2, 3, 4, 5, 6, 7,8, 9	0 = 0 1 = 1 2 = 2 3 = 3	4 = 4 5 = 5 6 = 6 7 = 7	8 = 8 9 = 9

[SVELTA]

Ticket X Dimension
Ticket Y Dimension
Notch Distance
Notch Width
Barcode Timeout
Ticket Offset X
Ticket Offset Y

[NETWORK]

DHCP Client:	0*, 1	0 = Disabled 1 = Enabled	
FTP Server:	0*, 1	0 = Disabled 1 = Enabled	
IP Address			
Subnet Mask			
Default Gateway			

Domain Name System
TCP Printer Port
MAC Address *(read only)*

NOTE:
To know the IP address of the printer, print the Set-up report of the printer (see “Self-Test” paragraph) or use “Locator” . Type in the address bar **“ftp://”** followed by the IP address of the printer.

Part Number : DOME-KPM302-TF Rev. 1.50

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