User manual

Witty 2000
Witty 2001 CS
Witty 3001 CS

with Electronic EL7B

Rev.1

italora

1 Revisions table

Version No.	Date	Revision description
0	20/04/2022	Updated to Electronic EL7B
1	04/07/2023	Graphics updates, internal components updated

2 Summary

3 Technical specifications

	Witty 2000	Witty 2001 CS	Witty 3001 CS
Printing method	direct thermal and thermal transfer		
Printing mode	dispensing and strip		
Printing speed	up to 170mm/s	up to 250mm/s	up to 200mm/s
Resolution	8 dot/mm - 384 dot/line - 200 DPI		12 dot/mm 640 dot/line - 300 DPI
Printing area	up to 51x2280mm	up to 51x2300mm	up to 54x1000mm
Media types	die cut labels, tags and continuous strips		
Labels sizes	width 30 to 60mm spacing 2mm minimum depth 7mm minimum from inner edge		
Labels length	6 to 2280mm	6 to 2300mm	6 to 1000mm
Media roll sizes	external diameter up to 130mm - internal diameter 40mm		
Thermal ribbon width	32 to 54mm		
Thermal ribbon sizes	width 220m maximum external diameter 58mm maximum internal diameter 25.4mm		
Display	-		
Keypad	print button		
Sensors	paper end and sync, thermal ribbon end, printhead temperature		
CPU	32bit RISC 40MHz		
Memory	64MB flash - 32MB RAM		
Communication ports	RS232/422/485, USB, Ethernet		
Power requirements	90/260 VAC 50/60 Hz		
Fuses	mains 2xT2A		
Operating temperature and humidity	0/40°C - 10/95% non-condensing		
Storage temperature	-20/60°C		
Sizes and weight	170x180x380mm (HxWxD) - 8Kg		

4 Printing media description

Paper specifications

Paper

woodfree pigmented white with glossy finish	
weight	65 ÷ 90 g/mq (ISO536)
thickness	0.075 ÷ 0.083 mm (ISO534)

Adhesive

peel adhesion (90°C)	430 N/m
operating temperature	-20 ÷ 70 °C

Backing paper

BG 40 brown, supercalendered glassine paper	
weight	65 g/mq (ISO536)
thickness	0.057 mm (ISO534)
transparency	45%

Tags and continuous strip

weight	200 g/mq max

Printing media

Materials suitable for direct thermal printing or thermal transfer
(the materials used affect print quality and speed)

Labels and tickets sizes

width	30 to 60 mm
length	6 to 2280 mm (**Witty 2000**)
	6 to 2300 mm (**Witty 2001 CS**)
	6 to 1000 mm (**Witty 3001 CS**)
spacing	2 mm minimum
depth	7 mm minimum from inner edge

Thermal ribbon specifications

Film

thickness	4.5 ÷ 6 µm
internal diameter	25.4 mm
external diameter	58 mm max
width	32 ÷ 54 mm
length	220 m = ⌀ 58 mm

Recommended carbonated ribbons

TOIKO C 250 (for matt paper)
TOIKO CR 150 (for glossy paper and polypropylene)
TOIKO R 300 (for plastic media)

Store labels and ribbons in a dry place at a temperature below 40°C.
Avoid exposure to sunlight.

5 Package contents

Check if the content of the package is the following:

- **italora** printer model **Witty 2000** or **Witty 2001 CS** or **Witty 3001 CS**
- power cable
- labels roll
- thermal ribbon roll
- RS232 serial cable
- USB cable
- print test

6 Main features

These printers offer high print quality, the ability to hold up to 1750 labels (54x40mm) and to save up to 26 formats in flash memory.

They support printing, through XY positioning, of:

- fixed and variable texts (26+12 preloaded fonts), counters and date/time fields via internal RTC
- barcode
- programmable graphics and rectangles, lines and shaded areas

There is also the possibility to add fonts and update the firmware through PC.

There are some options available such as:

- label taken photosensor
- cutter
- external labels roll holder with 220mm maximum diameter
- Pick & Place interface with optoisolated signals
- WiFi interface
- ETIK graphical label editor for Windows

The printers of this family have obtained certification No. 01/001 - C, issued by the Central Metric Office of the Ministry of Industry, Commerce and Crafts, according to European standard EN 45501.

7 Initial inspection

Open the main compartment, check the presence of the label and thermal ribbon rolls and lower the printhead by moving the lever #25 to work position #25a (see chapter “Description of the main compartment”).
Connect the printer to a computer and to the power and turn on the printer using switch #103 on the rear panel (see chapter "External description").
The red and green LEDs will light up steadily: this means the printer is ready.
Press the print key #1 (see chapter "External description") to print a test label with the main parameters and information of the printer.
By sending data from a computer, a label will be printed.
Press the print key #1 to reprint the last label sent.

The printer stores the size and transparency values of the media type in use.
If the type of label is changed, refer to the chapter “Label format setup procedure”.

8 Label format setup procedure

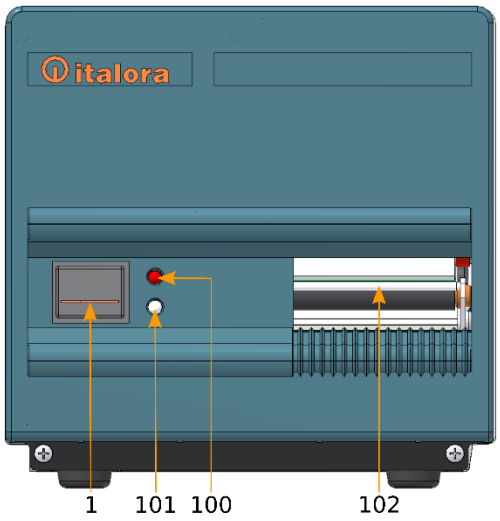
The printer stores the format and transparency values of the label.
If the type or size of label is changed, it is necessary to perform the following procedure to update the stored parameters:

- Turn off the printer and check that the print media is correctly positioned under the photosensor, as indicated in the chapter “Replacing the label roll”.
- Turn on the printer while holding down the print button #1 (see chapter "External description"). A few blank labels will be output as the printer reads the new transparency values.

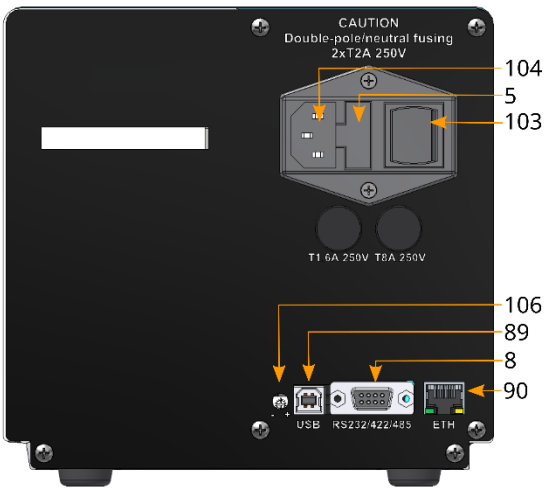
At the end of the procedure the printer will return to normal operating conditions, with the red and green LEDs on steady.

For more information about the print media that can be used on these printer models, refer to the chapter “Printing media description”.

9 External description

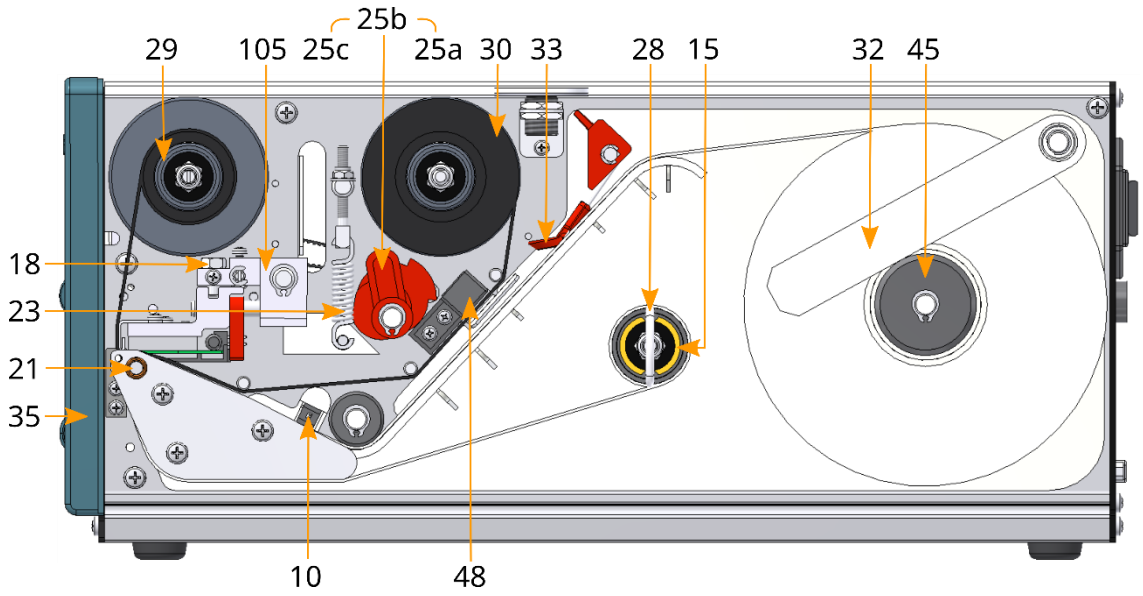


1	print button
100	power LED red → printer on
101	status LED fixed green → normal operation blinking green → print end fixed yellow → syntax error blinking yellow → printhead overheating blinking yellow/green → ribbon end
102	label exit



5	2x T2A fuse (main)
8	serial port
89	USB 2.0 type B port
90	RJ45 Ethernet port
103	main switch
104	IEC C14 power plug
106	print intensity trimmer ↻ rotation → higher intensity ↺ rotation → lower intensity

10 Description of the main compartment

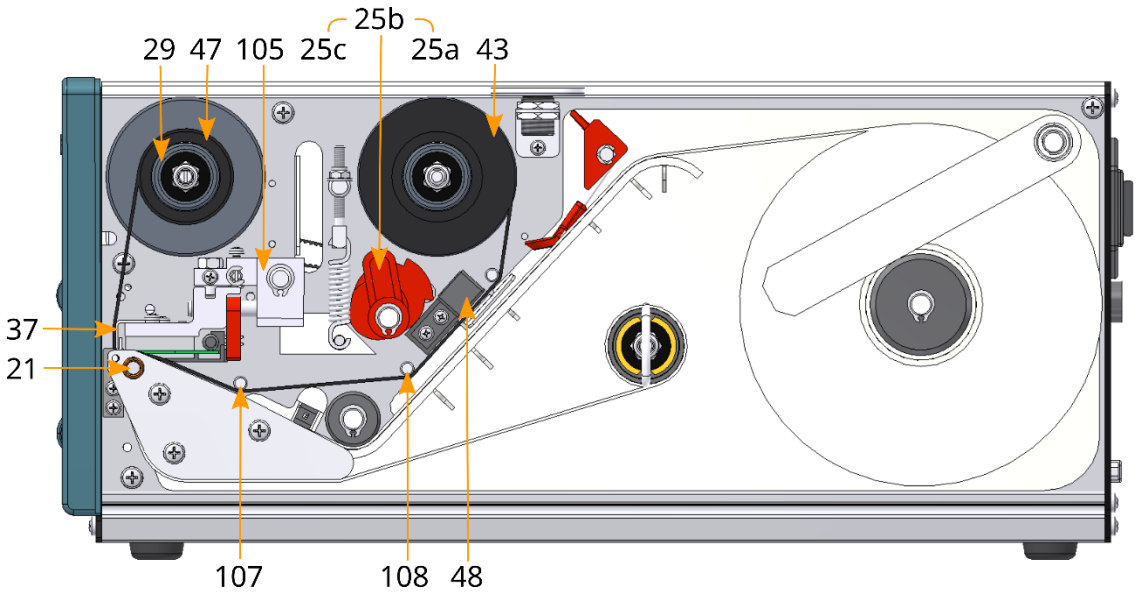


10 paper end and sync fork photosensor
15 rewinding shaft with adjustable clutch
18 printhead position adjustment
21 rubber feed roller
23 printhead pressure spring
25 printhead position lever
- 25a working position
- 25b lifted position
- 25c cleaning position

29 thermal ribbon rewinder
30 thermal ribbon stock
32 label guide arm
33 pressure clip
35 front cover
45 label stock
48 ribbon end reflection photosensor
105 printhead assembly

12 Replacing the thermal ribbon roll

Open the main compartment and remove the ribbon rewound on the cardboard tube #47 inserted on the ribbon rewinder #29.
Lift the printhead assembly #105 by turning the lever #25 to position #25b, freeing up access to the feed roller #21.
Insert a new roll of ribbon #43, taking care to slide the ribbon underneath the reflective photosensor #48 and the transmissions #108, #107 and #37, until reaching the rewinder #29.
Attach the tape to the cardboard tube #47 using an adhesive media.
Lower the printhead assembly by moving lever #25 to working position #25a and close the main compartment.

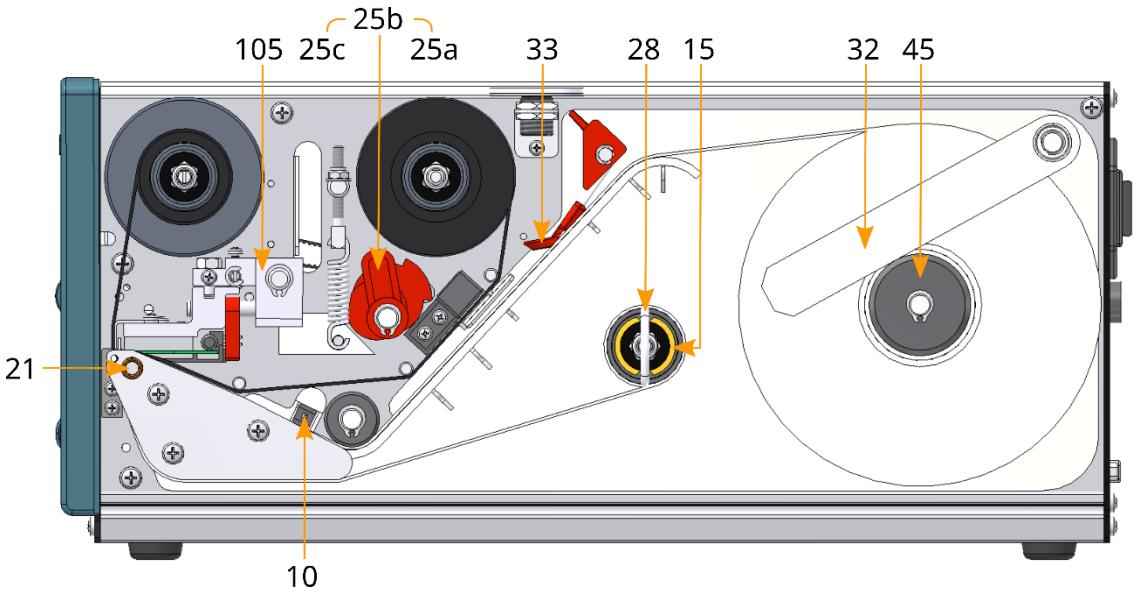


13 Replacing the label roll

If the label format or the type of print media is changed, perform the "Label format setup procedure”.

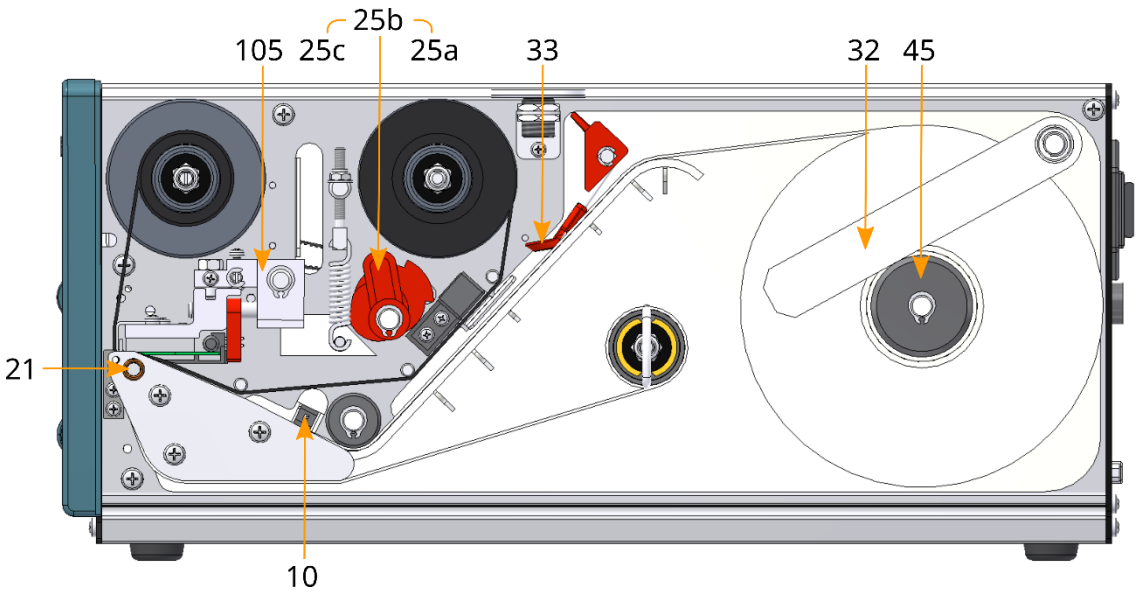
Dispensing mode

Open the main compartment and remove the empty roll.
Lift the paper guide arm #32 and insert the new label roll onto roller #45.
Lower the paper guide arm #32, placing it against the side of the roll.
Lift the printhead assembly #105 by turning the lever #25 to position #25b, freeing up access to the feed roller #21.
Remove clip #28 from the rewinding shaft #15 and remove the backing paper.
Remove the first labels from the new roll leaving about 50cm of backing paper.
While holding up the pressure clip #33, slide the paper up to rewind roller #15, rolling it over and locking it with clip #28.
Rotate the rewinder to tighten the paper.
Lower the printhead assembly by moving lever #25 to working position #25a.
Check that the paper is positioned correctly under the fork photosensor #10 and that the pressure clip #33 is placed between the center and the outer edge of the label.
Close the main compartment.



Strip form mode

Open the main compartment and remove the empty roll.
Lift the paper guide arm #32 and insert the new label roll onto roller #45.
Lower the paper guide arm #32, placing it against the side of the roll.
Lift the printhead assembly #105 by turning the lever #25 to position #25b, freeing up access to the feed roller #21.
While holding up the pressure clip #33, slide the paper between the feed roller #21 and the printhead #105.
Lower the printhead assembly by moving lever #25 to working position #25a.
Check that the paper is positioned correctly under the fork photosensor #10 and that the pressure clip #33 is placed between the center and the outer edge of the label.
Close the main compartment.



14 Cleaning

Printhead

Turn off the printer and wait for the printhead to cool down.
Lift the printhead assembly #105 by turning the lever #25 to position #25c and remove the thermal ribbon roll.
Wipe the underside of the printhead with a soft cotton cloth moistened with denatured alcohol.
Never use metal or sharp tools, as they could cause irreparable damage to the printhead.
Wait for the cleaned parts to dry before using the printer.

Feed roller

Turn off the printer.
Lift the printhead assembly #105 by turning the lever #25 to position #25c and remove the labels roll.
Clean the feed roller using alcohol-based cleaners.

Photosensor

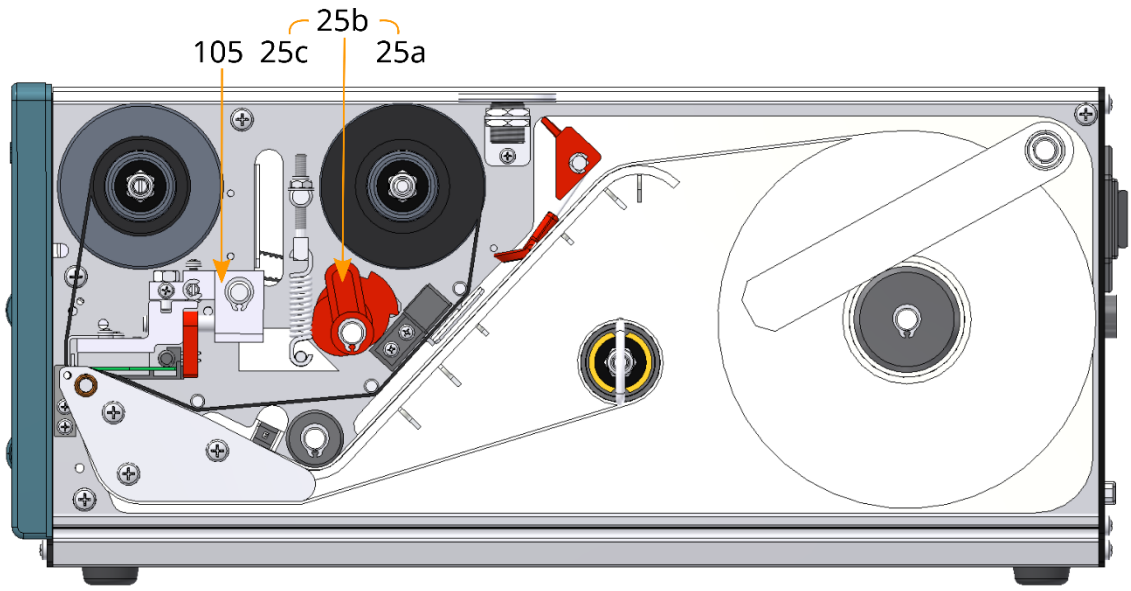
Turn off the printer.
Lift the printhead assembly #105 by turning the lever #25 to position #25b and remove either the labels or thermal ribbon roll depending on the photosensor to be cleaned.
Use a soft brush to clean.

Metallic and plastic parts

Use a soft cloth moistened with a detergent.
Do not use solvents or thinners.

Adhesive traces or parts of labels

Use denatured alcohol making sure that drops of liquid do not come into contact with electrical parts.

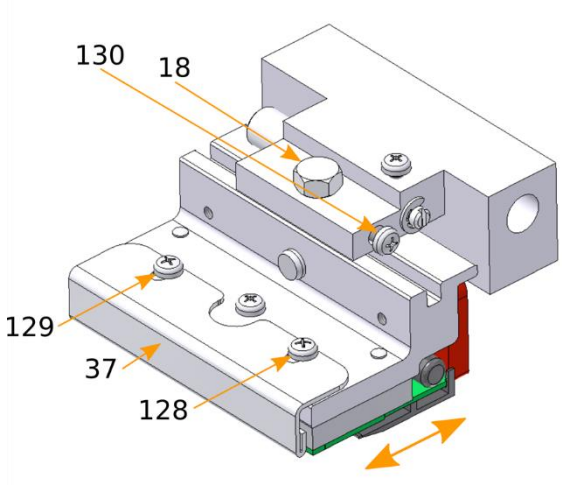


15 Maintenance

If the printer is not used for prolonged periods of time, it is recommended to turn it off the and lift the printhead assembly #105 to avoid damaging the rubber feed roller #21.

Printhead alignment

To have the best print quality, the dots of the printhead must be aligned with the tangency point of the feed roller.
If this alignment is incorrect, the printout may be faded and the ribbon may crease. The presence of these creases can cause the thermal ribbon to rewind incorrectly and produce white print areas.

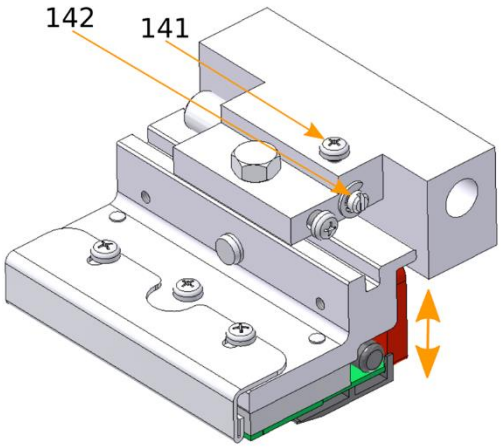


The fine-tuning of this alignment can be done by rotating the eccentric nut #18 placed in the center of the printhead assembly, thus adjusting the position of the printhead with respect to the tangent point of the feed roller.

A rotation of 360° and multiples will bring the printhead back to the initial position; adjust the eccentric nut by turning it a few degrees at a time.

Before proceeding with the adjustment, it is necessary to loosen the locking screw #130.

In case the thermal ribbon is not rewound with sufficient tension, loosen screws #128 and #129 and adjust the alignment of plate #37 until correct rewinding is obtained. Finally lock the screws.



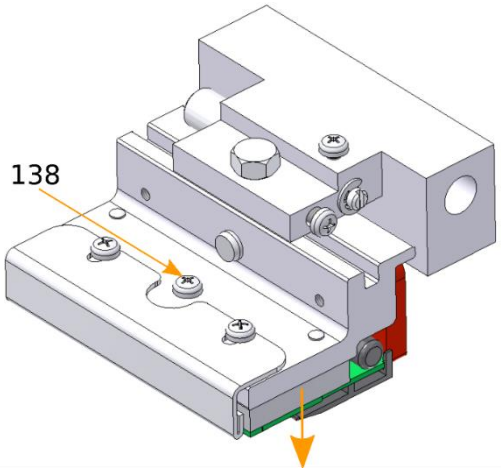
If the label is lighter on one side, it will be necessary to turn the slotted screw #142 to adjust the angle of the printhead. By turning this screw clockwise or counterclockwise it is possible to increase or decrease the pressure of the printhead on one side of the label.
By acting on this adjustment it will also be possible to solve any alignment problems of the thermal ribbon with the feed roller and eliminate any crease.

Before proceeding with the adjustment, it is necessary to loosen the locking screw #141.

This procedure is especially useful when printing on narrow labels.

Printhead replacement

Turn off the printer, lift the printhead assembly #105 by turning the lever #25 to position #25c and remove the thermal ribbon roll.
Disconnect cable #112 (or cables, in case of **Witty 2001 CS** and **Witty 3001 CS**) on the back of the head and unscrew screw #138.

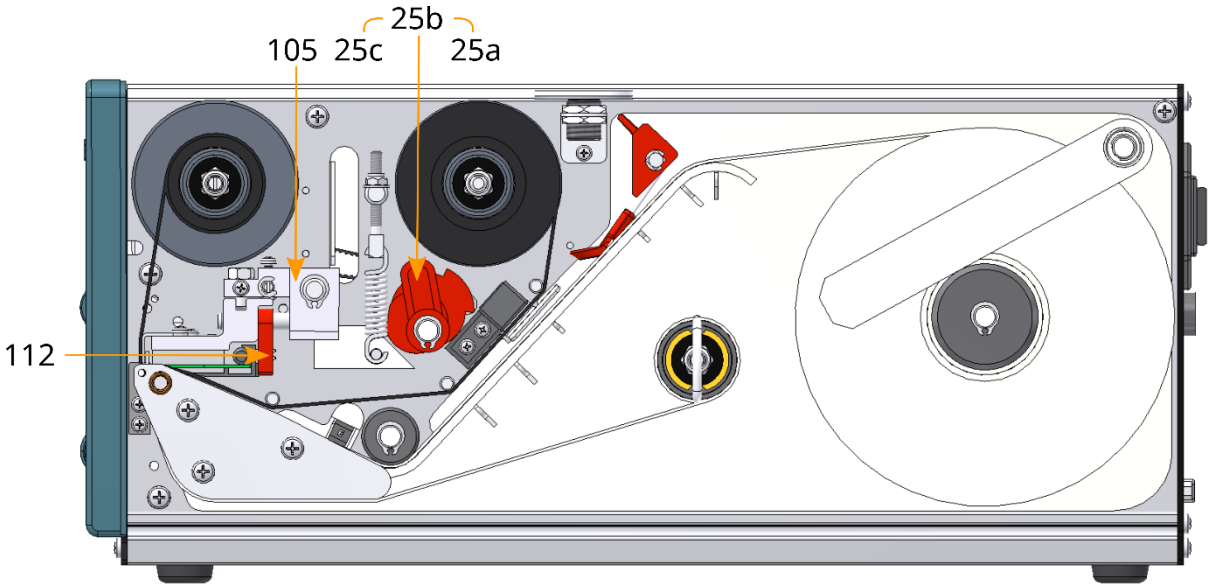


The printhead has two holes that match two pins on the support: remove it by pulling it downwards.

Replace the printhead by proceeding backwards with the operations just performed.

Pay close attention to the connection of the printhead: incorrect insertion of cable #112 (or cables, in case of **Witty 2001 CS** and **Witty 3001 CS**) could cause irreversible damage to the printhead itself.

In case of print quality problems, refer to the "Printhead alignment" chapter.



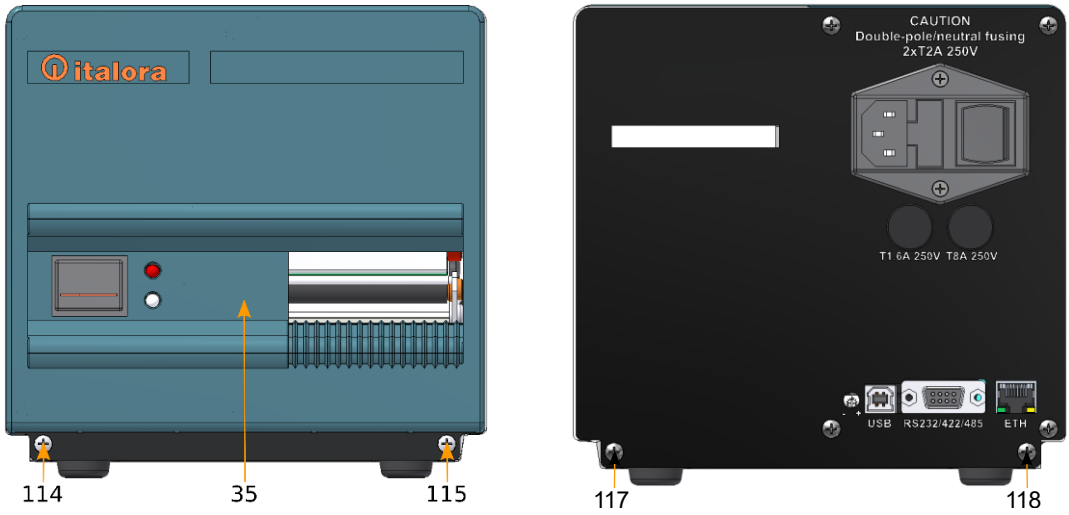
Access the electronics compartment

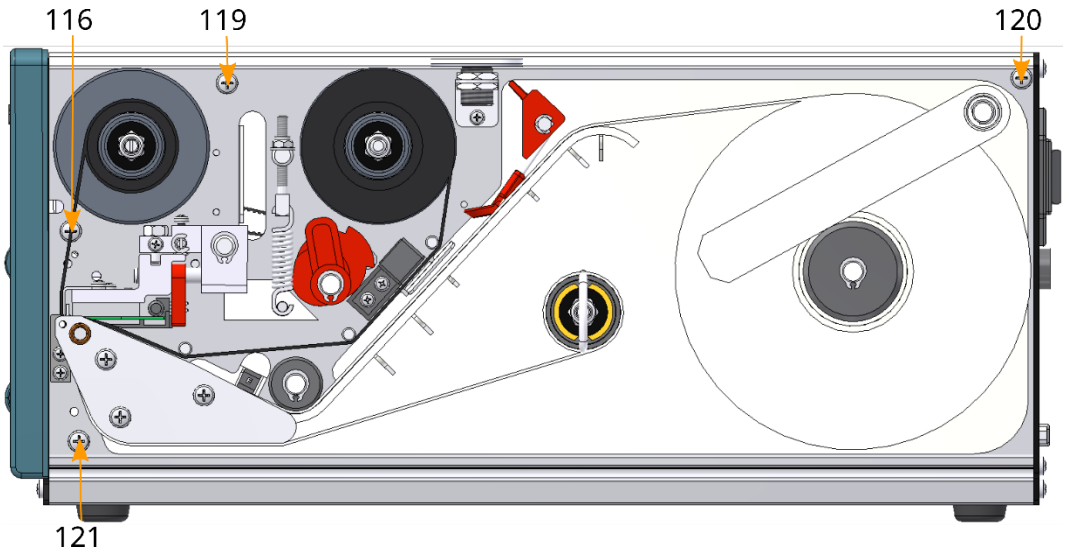
Before accessing the electronics compartment, **disconnect** the printer power cable.

Open and remove the front panel #35 by unscrewing screws 114, #115 and #116. Unscrew the screws #117 and #118 from the rear panel and the screws #119, #120 and #121. Separate the electronics compartment from the base structure and disconnect the following connectors from the CPU board (see chapter "CPU board connectors"):

Y2	thermal ribbon photosensor
Y3	LEDs and print button
Y4	stepper motor
Y5	labels photosensor
Y9	printhead (**Witty 2000**)
YGM	printhead (**Witty 2001 CS** and **Witty 3001 CS**)
Y15	printhead power (**Witty 2001 CS** and **Witty 3001 CS**)

Disconnect the ground cable by unscrewing the nut on the base structure.





CPU board and power supply replacement

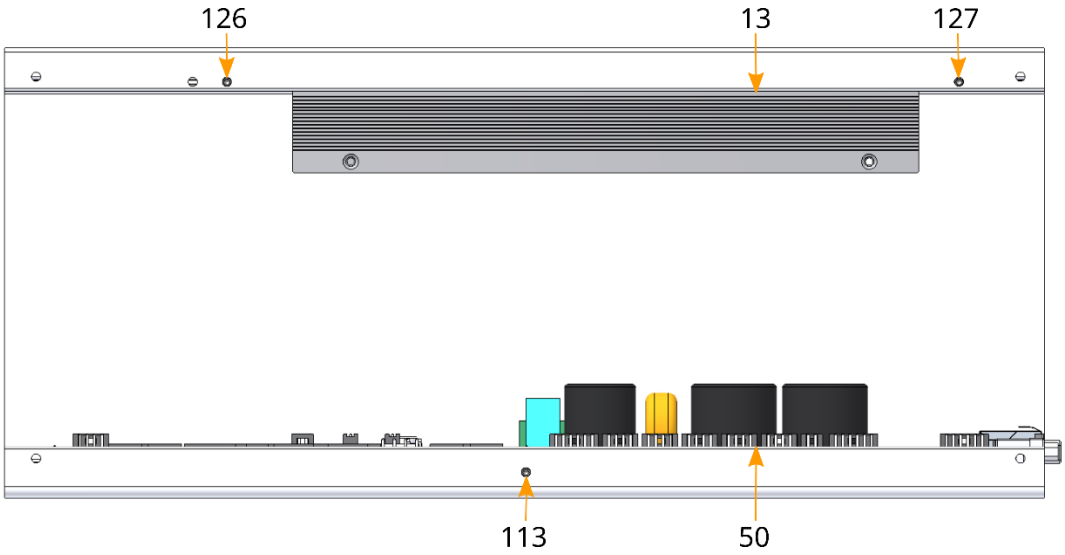
Follow the procedure indicated in the “Access the electronics compartment” chapter to separate the electronics compartment from the base structure of the printer.

Disconnect the following connectors from the CPU board (see chapter “CPU board connectors”):

Y1	RJ45 Ethernet interface
Y13	DB9 serial interface
Y29	USB 2.0 type B interface
Y30	power supply

Remove screws #122, #123, #124 and #125 from the rear panel.
Unscrew the side grub screw #113 and then remove the CPU board #50.

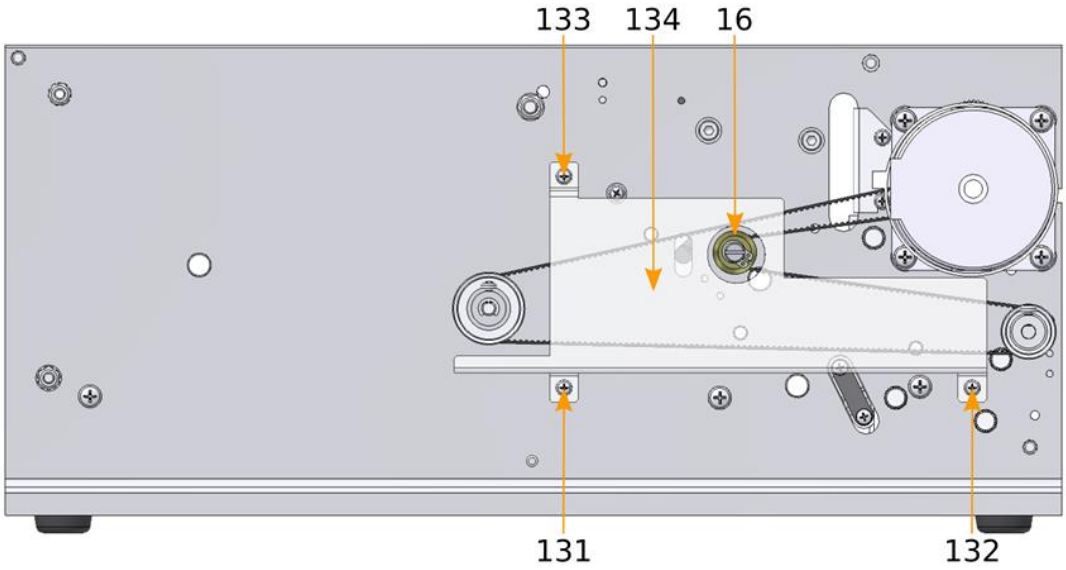
Disconnect the connectors of the mains switch.
Unscrew grub screws #126 and #127 then remove power supply board #13.



Drive belt replacement

Follow the procedure indicated in the “Access the electronics compartment” chapter to separate the electronics compartment from the base structure of the printer.

Remove the protection plate #134 by unscrewing the screws #131, #132 and #133.
Loosen the belt tensioner #16 and proceed with the replacement of the belt, subsequently adjusting its tension using the belt tensioner itself.



Fuses replacement

Turn off the printer and disconnect it from the mains before replacing any fuse.

T2A mains fuses

Remove, using a slotted screwdriver, the special plastic support #5 containing the fuses, located on the rear panel.
Replace the damaged fuse and reinstall the plastic holder in the rear panel of the printer.

16 Troubleshooting

Labels not advancing

The following conditions may occur:

Red LED off

Check that the power supply #104 of printer is present, that the mains switch #103 is on and that fuses #5 are intact.
Refer to the chapters “External description” and “Fuse replacement”.

Red LED on and status LED blinking green

Check that the roll of labels is not finished and that the paper is correctly positioned under the photosensor #10.
Refer to the chapter “Replacing the label roll”.

Red LED on and status LED blinking yellow/green

Check that the thermal ribbon is not finished and that it is correctly positioned under the reflection photosensor #48.
Refer to the chapter “Replacing the thermal ribbon”.

Red LED on and status LED blinking yellow

Printhead temperature control is active.
The printer waits until the temperature is within the set values.

Red LED on and status LED steady yellow

The printer is in a syntax error condition due to receiving incorrect commands.
Press the print button #1 or turn the printer off and on again using the mains switch #103.
Refer to the chapter “External description”.

Incorrect labels alignment

Make sure that:

- the printhead assembly #105 is in working position, with the lever #25 in position #25a
- the paper is correctly positioned under the fork photo sensor #10
- the backing paper is correctly rewound
- the pressure clip #33 is positioned between the center and the outer edge of the label
- the paper guide arm #32 is positioned against the outside of the label roll

Also follow the chapter “Label format setup procedure”.

Labels slide to the right

Check that:

- the pressure clip #33 is positioned between the center and the outer edge of the label
- the paper guide arm #32 is positioned against the outside of the label

Print defects

Proceed with cleaning the printhead, as described in the “Cleaning - Printhead” chapter.

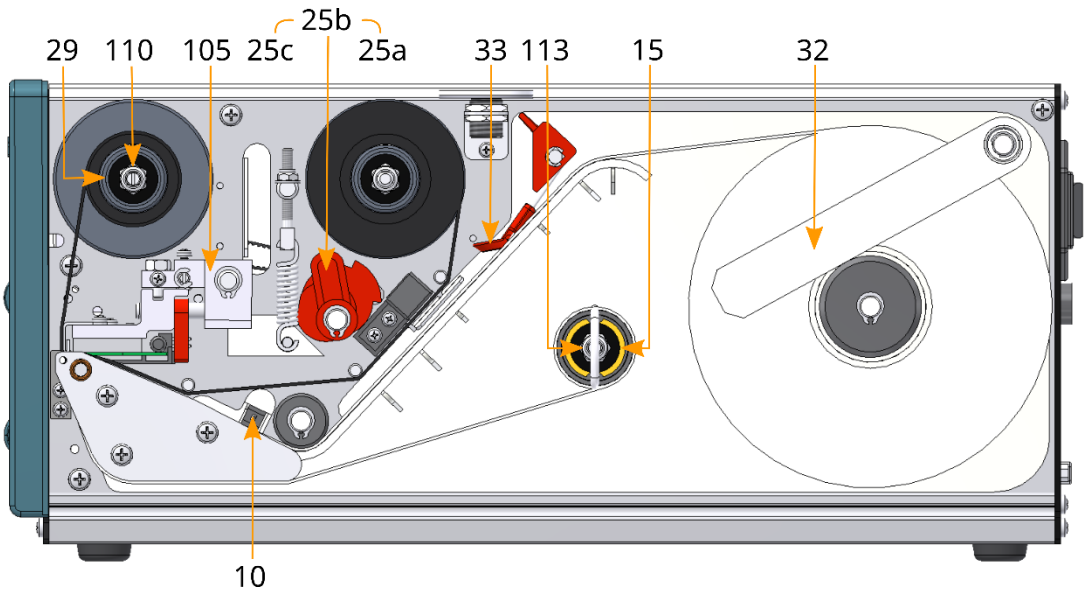
Check that the thermal ribbon rewinds properly and without wrinkles.
In case of wrinkles, turn the nut #110 clockwise (1/4 of a turn max) while keeping the roller #29 locked, in order to increase the rewind tension.

Labels are not properly peeled off

(valid in dispensing mode)

Make sure that the characteristics of the adhesive comply with the specifications indicated in the chapter "Print media description - Paper specifications”.

Turn the nut #113 clockwise (1/2 turn max) keeping the roller #15 locked, in order to increase the rewinding tension.
Excessive rewinding tension could cause incorrect label feed.



Blank labels

Check that:

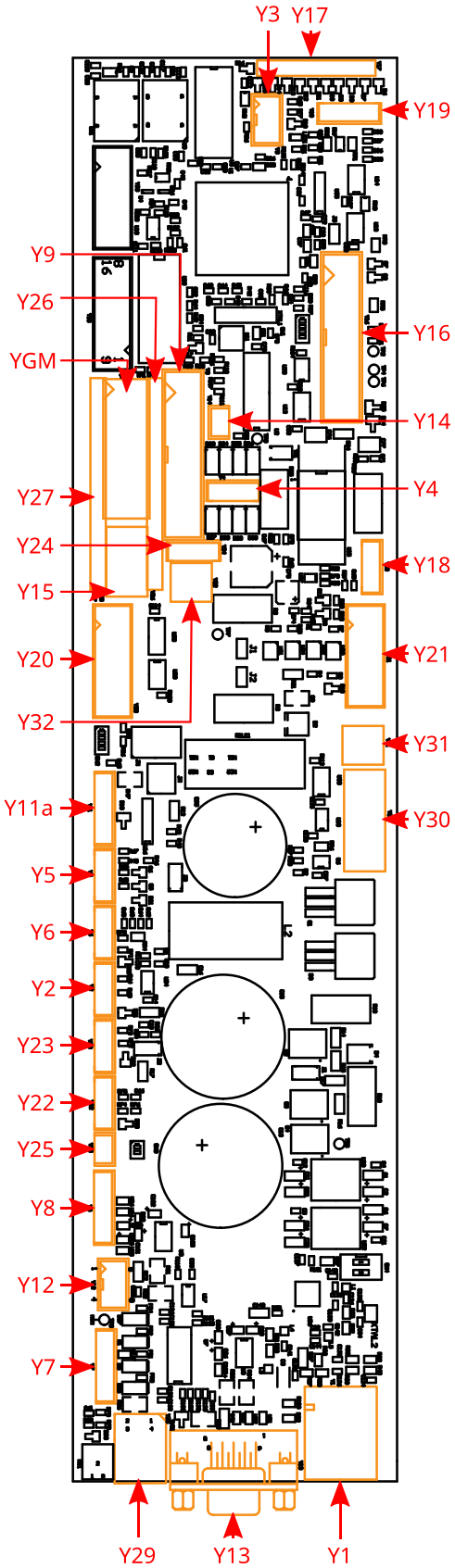
- connector #112 of the printhead is correctly connected, with the polarity key upwards, referring to the chapter “Printhead replacement”
- the thermal ribbon is correctly positioned, with the inked surface facing the labels

Insufficient print intensity

Turn trimmer #106, accessible from the rear panel of the printer, clockwise to increase or counterclockwise to decrease the print intensity.
Alternatively, use the software command ?77& described in the “Programming Manual”.

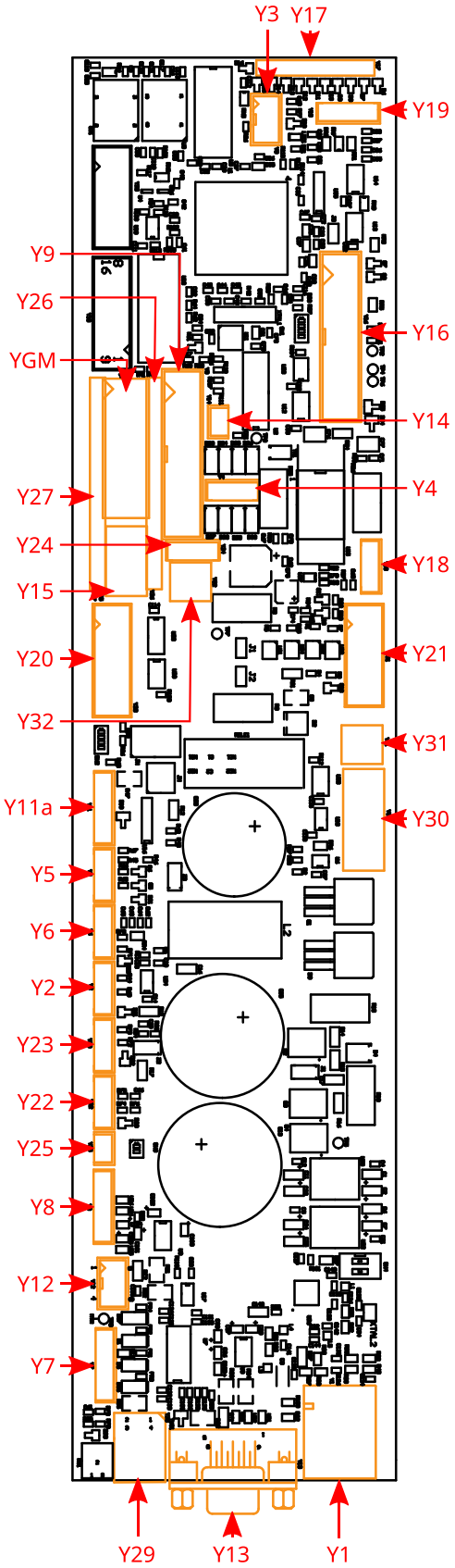
Excessive printing intensity could shorten the life of the printhead and cause the thermal ribbon to melt.

17 CPU board connectors



Witty 2000 - Electronic EL7B

Y1	RJ45 Ethernet
Y2	Ribbon photosensor
Y3	Print button and LEDs
Y4	Motor
Y5	Labels photosensor
Y6	Label taken photosensor
Y7	
Y8	
Y9	Printhead
Y10	
Y11a	Optoisolated signals
Y12	
Y13	DB9 serial port
Y14	
Y15	
YGM	
Y16	
Y17	
Y18	
Y19	
Y20	
Y21	
Y22	
Y23	
Y24	
Y25	
T26	
Y27	
Y28	
Y29	USB 2.0 type B
Y30	Power supply



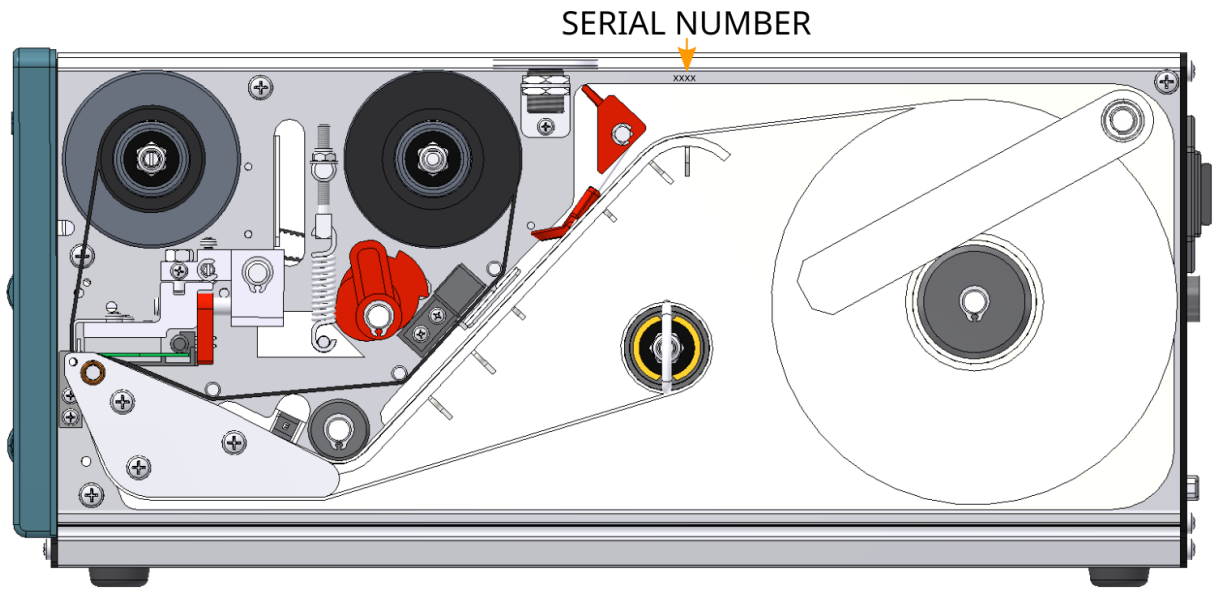
Witty 2001 CS - Electronic EL7B
Witty 3001 CS - Electronic EL7B

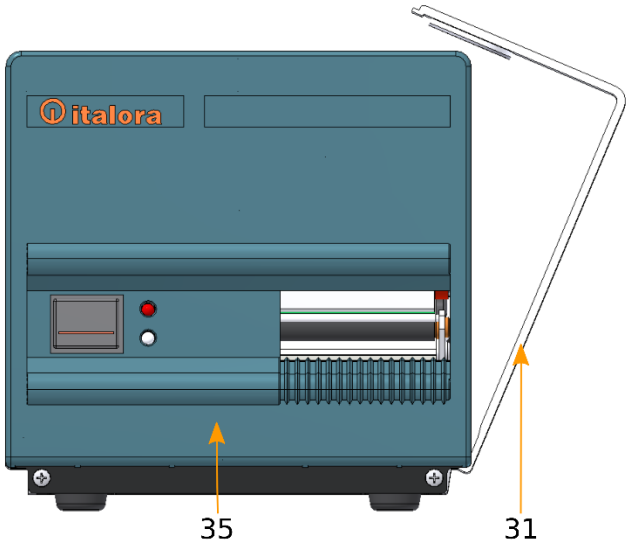
Y1	RJ45 Ethernet
Y2	Ribbon photosensor
Y3	Print buttons and LEDs
Y4	Motor
Y5	Label photosensor
Y6	Label taken photosensor
Y7	
Y8	
Y9	
Y10	
Y11a	Optoisolated signals
Y12	
Y13	DB9 serial port
Y14	
Y15	Printhead power
YGM	Printhead
Y16	
Y17	
Y18	
Y19	
Y20	
Y21	
Y22	
Y23	
Y24	
Y25	
T26	
Y27	
Y28	
Y29	USB 2.0 type B
Y30	Power supply

18 Replacement parts

#	Code	Description	Witty 2000	Witty 2001 CS	Witty 3001 CS
3	80094C620000000	backplate ass. EL7B 53mm	✓	✓	✓
5	PMQC05610208000	T2A fuse	✓	✓	✓
10	PLEQ80129504000	labels photosensor	✓	✓	✓
12	PLJU80166521000	printhead 26 pins flat cable	✓		
12	PLIB05150766000	printhead 20 pins flat cable		✓	✓
12	PLMO05150765000	printhead power cable		✓	✓
13	PM9J80094C66000	power supply	✓	✓	✓
15	PLNA80092509000	ribbon rewinder assembly	✓	✓	✓
16	PLFT80092531000	belt idler assembly	✓	✓	✓
18	PLBM80131240000	printhead eccentric nut	✓	✓	✓
19	PLAL06170205000	bushing	✓	✓	✓
20	PLHE80092608000	peeling plate assembly	✓	✓	✓
21	PLBE80131213000	feed roller	✓	✓	✓
23	PLCP80074210000	printhead spring	✓	✓	✓
24	PLD780168201000	pinion	✓	✓	
24	PLBP80131222000	pinion			✓
25	PLFH80092588000	printhead lever	✓	✓	✓
26	PT0580081205000	printhead (8 dot)	✓		
26	PT0480081204000	printhead (8 dot CS)		✓	
26	PT0380081203000	printhead (12 dot CS)			✓
28	PMTW80076234000	2” backing paper clip	✓	✓	✓
29	PLEP80094267000	ribbon rewinder assembly	✓	✓	✓
30	PLGB80094268000	ribbon stock assembly	✓	✓	✓
31	PLFJ80162203400	side cover	✓	✓	✓
33	PLRK81094002900	pressure clip	✓	✓	✓
34	PLKU80187202000	pinion	✓	✓	
34	PLBP80131222000	pinion			✓
35	PLEX80092593100	front cover	✓	✓	✓

36	PLFK80162201300	electronics cabinet	✓	✓	✓
37	PLSW80162204000	ribbon plate	✓	✓	✓
38	PLEV80162210000	belt	✓	✓	✓
39	PLGH80162216000	ribbon rewinding gear	✓	✓	✓
48	PLKT80162503000	ribbon photosensor	✓	✓	✓
49	PLFR80094623000	stepper motor assembly	✓	✓	
49	PLRY80162505000	stepper motor assembly			✓
50	printer serial number	CPU board	✓	✓	✓
51	PMAT80092663000	heatsink assembly	✓		
51	PMLP80092755000	heatsink assembly CS		✓	✓

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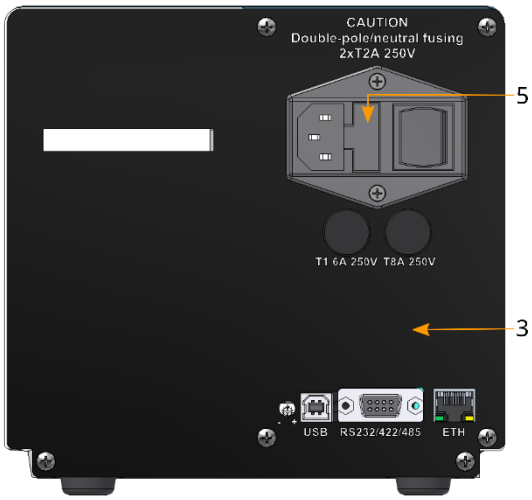
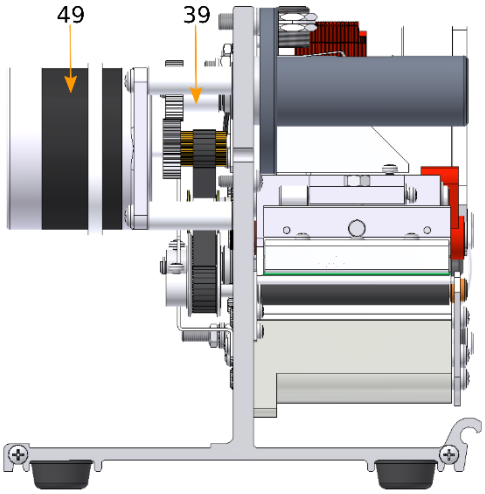

CAUTION
Double-pole/neutral fusing
2xT2A 250V
5
T1 6A 250V T8A 250V
3
USB
RS232/422/485
ETH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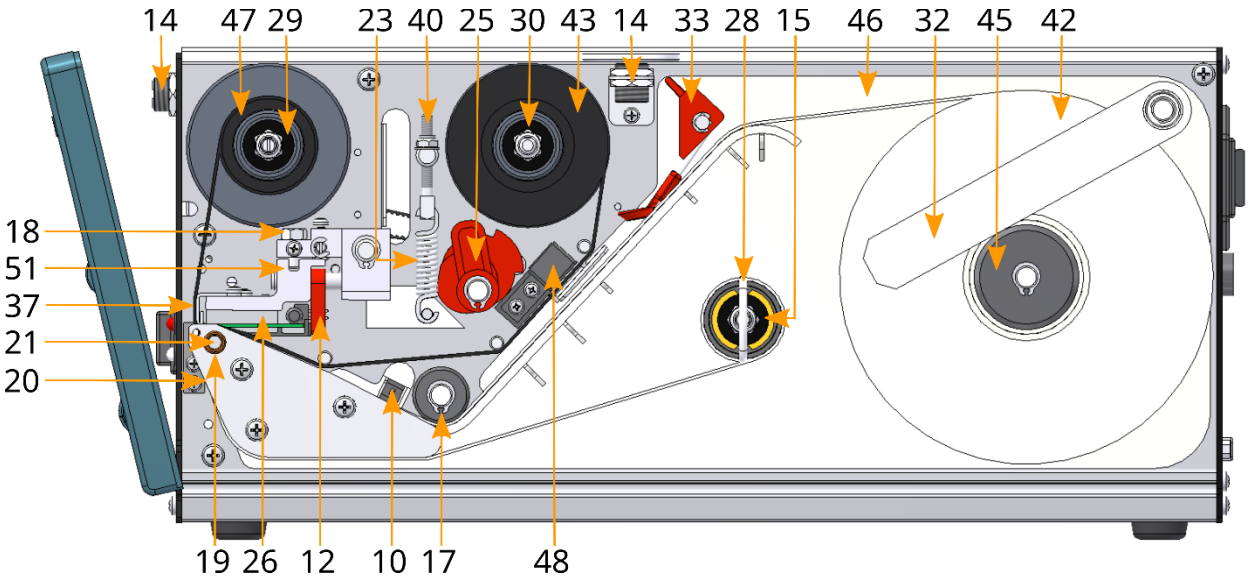
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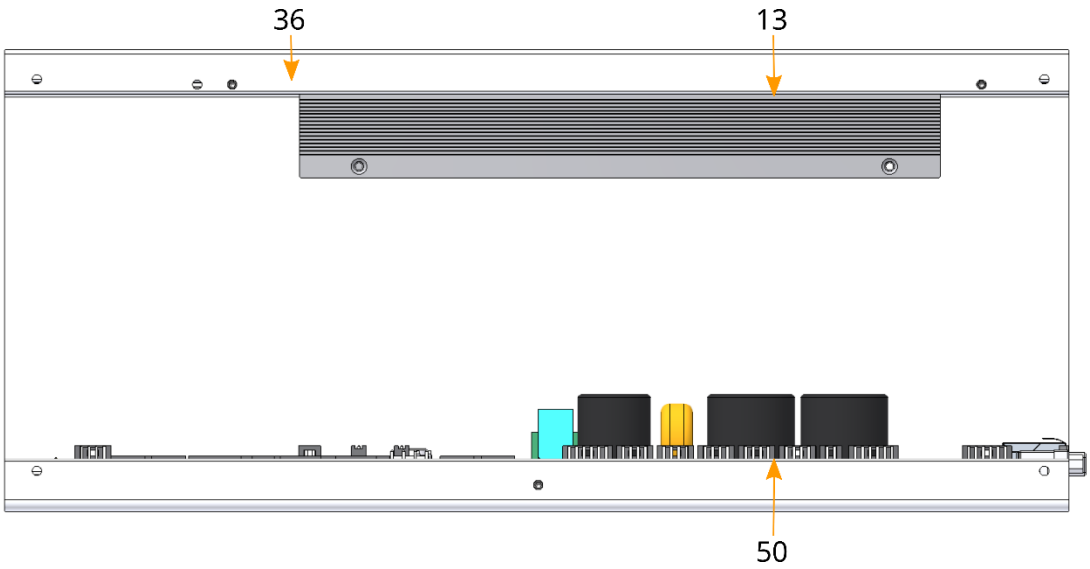
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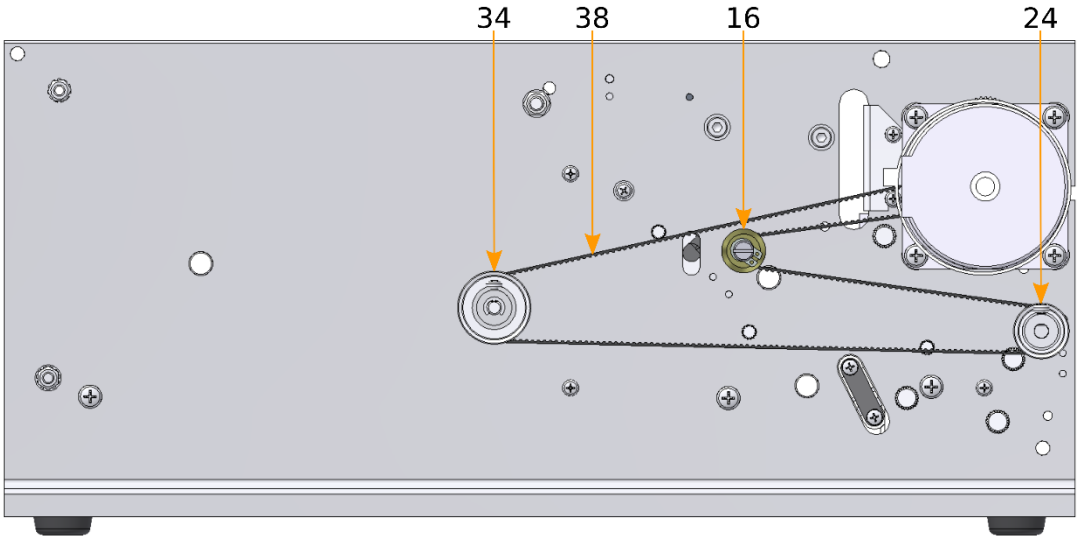
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