

# Service Manual



Label Printer

**XD4M**

Made in Germany

Family	Type
XD4M	XD4M/300

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## 1.1 Instructions

Important information and instructions in this documentation are designated as follows:



### **Danger!**

Draws your attention to an exceptionally grave, impending danger to your health or life.



### **Warning!**

Indicates a hazardous situation that could lead to injuries or material damage.



### **Attention!**

Draws attention to possible dangers, material damage or loss of quality.



### **Notice!**

Gives you tips. They make a working sequence easier or draw attention to important working processes.



### **Environment!**

Gives you tips on protecting the environment.



Handling instruction



Reference to section, position, illustration number or document.



Option (accessories, peripheral equipment, special fittings).

Zeit Information in the display.

## 1.2 General Safety Instructions

This service manual is intended for use by qualified service and maintenance personnel. For more operation and configuration information, refer to the user or configuration manual.

### **Follow the general safety rules below:**

- Keep the area around the device clean at all times!
- Work with safety in mind.
- Parts of device that are removed during the maintenance work must be put in a safe place.
- Avoid risks of tripping over.



### **Danger!**

**Danger to life and limb from increased current flow through metal parts in contact with the device.**

- ▶ Do not wear clothing with metal parts.
- ▶ Do not wear jewelry.



### **Warning!**

Items of clothing drawn into the device by moving parts can lead to injuries.

- ▶ Do not wear any items of clothing which could get caught by moving parts.

## 1.3 Protective Devices



### Warning!

There is a risk of injury if protective devices are missing or defective.

- ▶ Replace all protective devices (covers, safety notices, grounding cables etc) after maintenance work has been completed.
- ▶ Replace parts that have become defective or unusable.

### Wear protective goggles for:

- Knocking pins or similar parts in or out with a hammer.
- Using spring hooks.
- Inserting or removing springs, retaining rings or grip rings.
- Using solvents, cleansers or other chemicals.

## 1.4 Handling Electricity

The following work may only be done by trained and qualified electricians:

- Work on electrical components.
- Work on an open device still connected to the mains supply.

### General precautions before starting maintenance work:

- Find out where the emergency and power switches are so that they can be quickly thrown in an emergency.
- Disconnect the current supply before carrying out the following work:
  - Installing or removing power units.
  - Working in the immediate vicinity of open power supply components.
  - Mechanical check of power supply components.
  - Modifying circuits in the device.
- Test the zero potential of the device parts.

## 1.5 Procedure in Case of Accidents

- Act calmly and with great care.
- Avoid danger to yourself.
- Switch off power.
- Request medical assistance.
- Give first aid, if necessary.



### Notice!

The complete documentation is included in the scope of delivery on CD ROM, and can also currently be found in the Internet.

## 2.1 Cleaning by Operator

The following cleaning work is described in the "Operator's Manual":

- Cleaning the device
- Cleaning the printhead
- Cleaning the print roller

## 2.2 Cleaning the Label Sensor

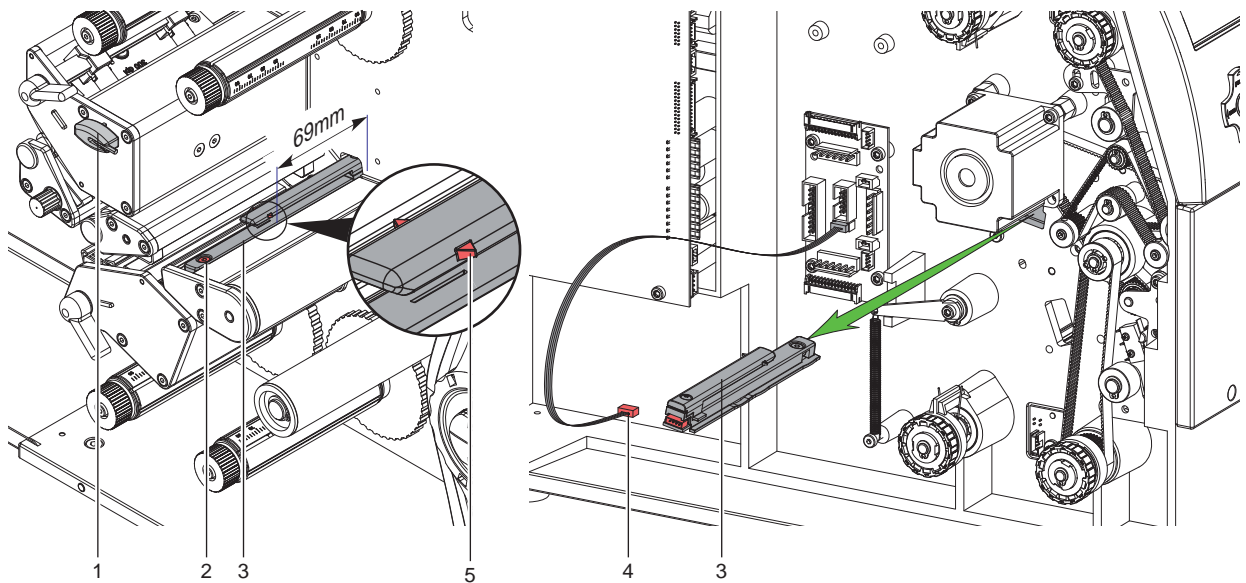


Fig.1 Cleaning the label sensor



### **Danger!**

**Risk of death via electric shock!**

- **Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.**

1. Remove media from the printer.
2. Remove the Allen key (1) from its retainer.
3. Remove the rear cover of the printer. ► 3.2 on page 7
4. Loosen screw (2) .
5. Unplug the cable (4) from the plug on the rear end of the label sensor (3).
6. Push the label sensor (3) so deep as possible into the guide profile toward the chassis.
7. Slide out the label sensor assembly (3) toward the back side cover.
8. Clean label sensor and sensor units (3) with brush or cotton swab soaked in pure alcohol.
9. Push label sensor (3) back toward the print head side of printer so you can see the hole in the label sensor over the long hole in the profile (guide).
10. Connect the cable (4) to the label sensor (3).
11. Pull the label sensor (3) via knurled thumb screw (1) so far as possible toward cover side. This prevents the cable (4) from being pinched when installing the rear cover.
12. Install the rear cover of the printer. ► 3.2 on page 7
13. Adjust label sensor (3) that the marker (5) has a distance of 69 mm to the chassis.
14. Tighten screw (2).
15. Insert the Allen key (1) into its retainer.

### 3.1 Tools

- ▶ Do not use any worn or damaged tools.
- ▶ Only use tools and testing devices that are suitable for the task at hand.

#### **cab special tools:**

- Test collar for transfer ribbon winder (cab item number: 5534199)
- Label material 110x68 (cab item number: 5556478) for adjusting the print mechanics

#### **Standard tools:**

- Phillips-head screwdriver, size 1
- Allen key 1,5 mm, 2 mm
- Screw driver Torx, size TX 20
- Snap ring pliers ZGG 0
- Cylindrical dynamometer (spring scale), 0 - 10 N
- Jaw wrench 10 mm
- Calibrator

### 3.2 Removing and installing the rear cover

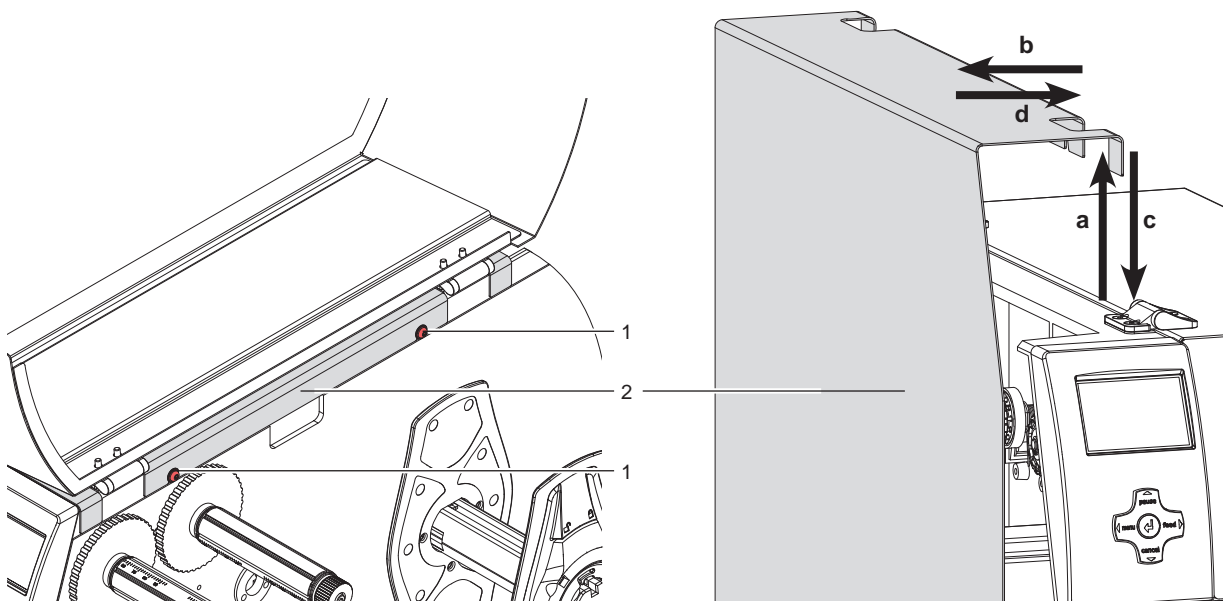


Fig.2 Removing and installing the rear cover

#### **Removing rear cover :**

1. Open the front cover.
2. Loosen screws (1).
3. Close the front cover.
4. Move the rear cover (2) upside (a) at first. Second move to the side like (b).

#### **Mount rear cover :**

1. Close the front cover.
2. Move the rear cover (2) from the side to the chassis (d) and move it down like (c).  
In this movement the gaps of the rear cover (2) must be between the chassis and the screw heads over the screws (1).
3. Open the front cover.
4. Tighten screws (1).

### 3.3 Replace the printhead

The printhead of the label printer can be replaced without the need for fine adjustment. The printhead must be replaced if worn.

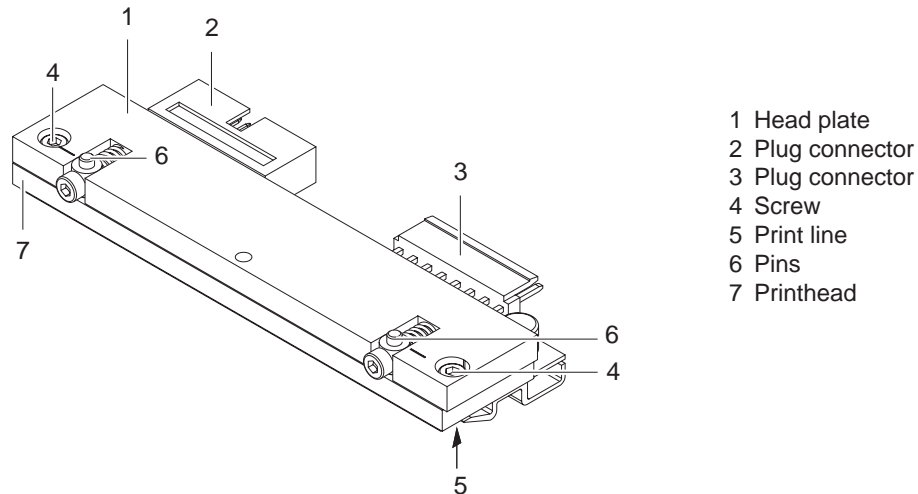


Fig.3 Printhead components



#### Warning!

Printhead will be very hot on the print line after printing. Risk of burn. Before you remove the printhead, wait five minutes after switched off.



#### Attention!

The printhead (7) is adjusted on a head plate (1) and precisely aligned at the factory. Do not loosen the screws (4) under any circumstances.



#### Attention!

The printhead can be damaged by static electricity discharges and impacts!

- ▶ Set up printer on a grounded, conductive surface.
- ▶ Ground your body, e.g. by wearing a grounded wristband.
- ▶ Do not touch contacts on the plug connections (2, 3).
- ▶ Do not touch printing line (5) with hard objects or your hands.



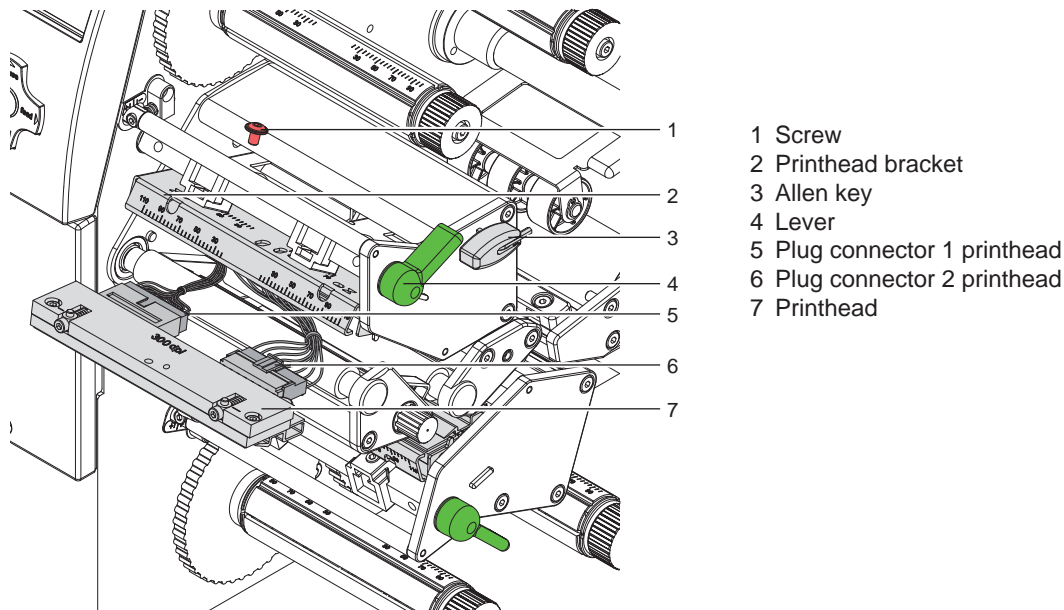


Fig.4 Printhead change

**Notice!**

The printhead changing is described in follow for the upper printhead. This are the sam procedures for the lower printhead, only mirrored.

**Removing the printhead**

1. Remove lever (4) counterclockwise to swing the printhead (7) from the print roller away.
2. Remove labels and transfer ribbon from the printer. ▷ Operator's Manual
3. Remove the allen key (3) from its retainer.
4. Lightly keep printhead mounting bracket (2) on the print roller with one finger and loosen screws (1) with the Allen key.
5. Swivel printhead mounting bracket (2) upward
6. Remove printhead (7) from the printhead mounting bracket (2) if necessary.
7. Loosen both plug connections (5, 6) on the printhead (7).

**Installing the printhead**

1. Attach plug connectors (5,6).
2. Position the printhead (7) in such a way that the threaded holes of the printhead are centered into the slots (Figure 3/6) of the printhead carriage.
3. Lightly keep printhead mounting bracket (2) on the print roller with one finger and check for correct positioning of the printhead mounting bracket (2).
4. Screw in screw (1) with washer with the Allen key (3) and tighten it.
5. Reload labels and transfer ribbon. ▷ Operator's Manual

### 3.4 Replacing the Print Roller

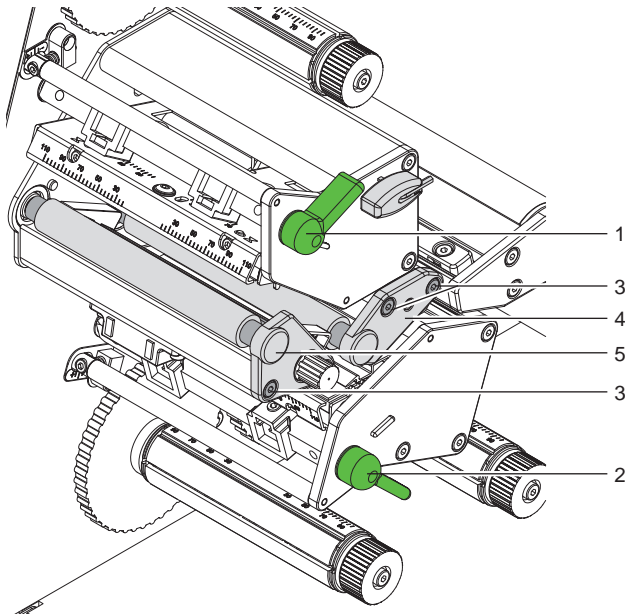


Fig.5 Removing the side plate

#### Dismount side plates

1. Turn lever (1) counterclockwise and/or Lever (2) counterclockwise, to swing the printhead from the print roller away.
2. Remove labels and transfer ribbon from the printer.  
▷ Operator's Manual
3. Loosen screws (3) on plate (4 / 5) with Allen key.
4. Remove the plate (4 / 5).

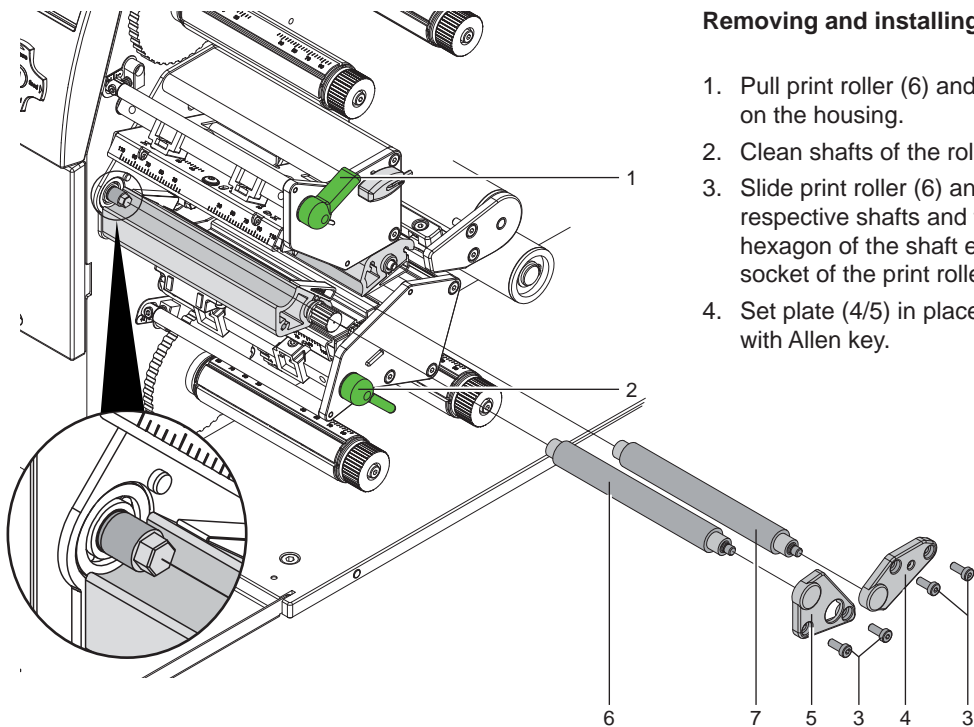


Fig.6 Removing and installing rollers

#### Removing and installing Rollers

1. Pull print roller (6) and/or (7) from the shafts on the housing.
2. Clean shafts of the roller ▷ expanded view.
3. Slide print roller (6) and/or (7) onto their respective shafts and turn slightly until the hexagon of the shaft engages in the hexagon socket of the print roller.
4. Set plate (4/5) in place and tighten screws (3) with Allen key.

## 3.5 Replacing the Slipping Clutches

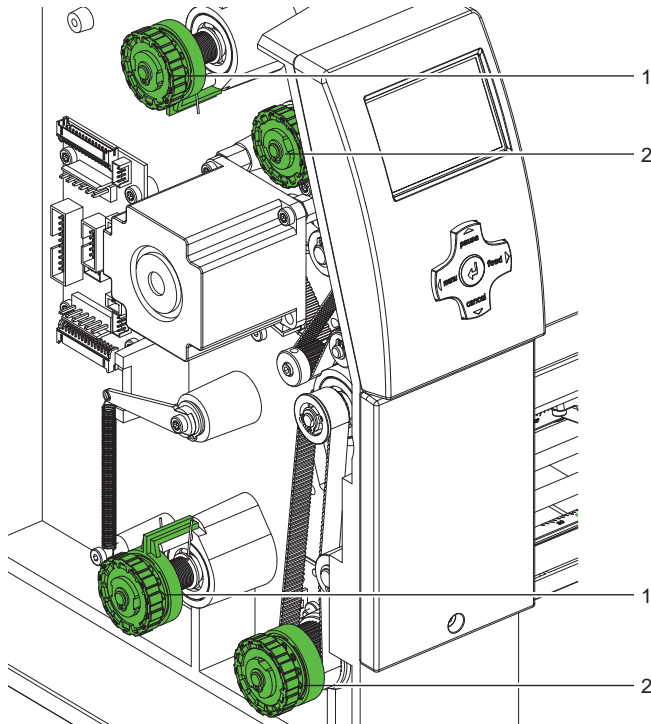


Fig.7 Slipping clutches

The rewinder for the transfer ribbon are coupled to slipping clutches in the main drive. The supply hub of the transfer ribbon is braked with a slipping clutch during printing.

Change the slipping clutch when it can no longer be set ▷ 4.1 on page 18.

Removal and installation of the slipping clutch is also required for replacement of a winder.

- 1 Transfer ribbon supply hub: brake
- 2 Transfer ribbon take up hub: coupling

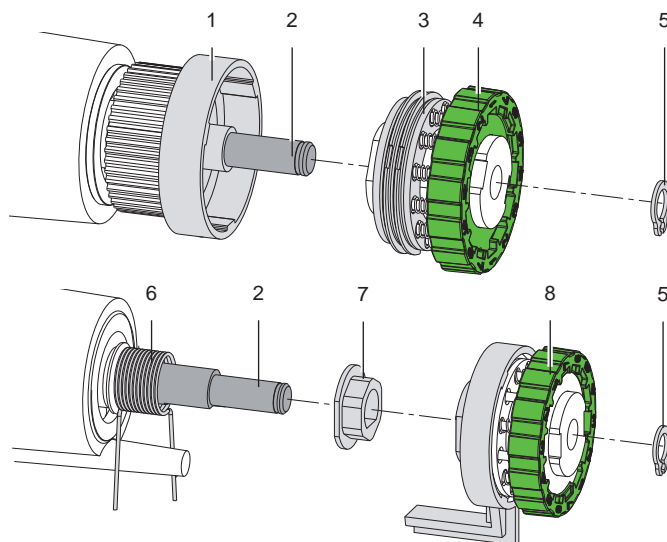


### Danger!

Risk of death via electric shock!

- Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.

### Removing the slipping clutch



- 1 Collar of the gear
- 2 Winder axle
- 3 Coupling disks
- 4 Slipping clutch
- 5 Snap ring
- 6 Spring
- 7 Carrier
- 8 Brake

Fig.8 Slipping clutch/ Brake on winders

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover of the printer. ▷ 3.2 on page 7
3. Remove the snap ring (5).
4. Pull coupling (4) or brake (8) from the winder axis (2).

Ensure that the carrier (7) remains on the winder axis (2) when pulling the brake (8) off. Reattach the pin to the winder axis if it has been pulled off. The axis profile is shaped in such a way that the pin only fits on the winder axis in one way.

### Installing slipping clutch on transfer ribbon hub

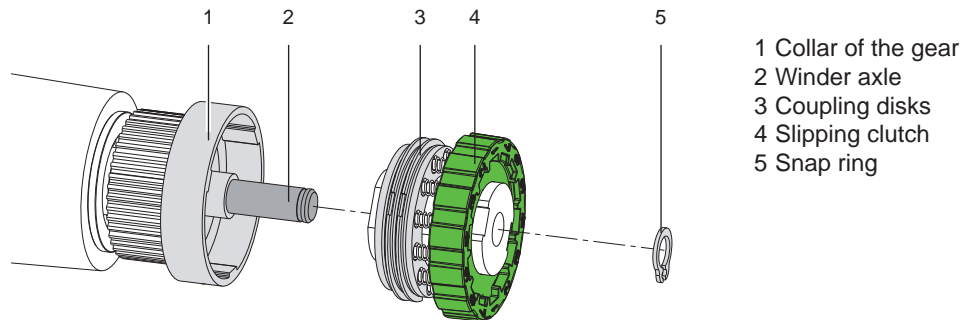


Fig.9 Slipping clutch on the rewinders

1. Slide coupling (5) onto the winder axis (7).
2. Align grooves in the coupling disks (6) with the guides in the collar of the gear (8).
3. Slide coupling further until it stops.
4. Secure the snap ring (4).
5. Adjust the coupling ▷ 4.1 on page 18
6. Install rear cover. ▷ 3.2 on page 7

### Installing the brake on the transfer ribbon supply hub

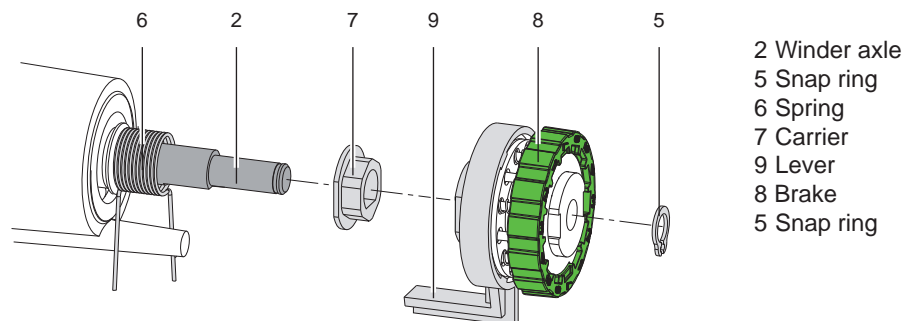


Fig.10 Brake on transfer ribbon supply hub

1. Slide the brake (8) onto the winder axis (2) in such a way that it fits on the hexagonal profile of the carrier (7).
2. Ensure that the lever (9) grasps between the two ends of the spring (6).
3. Secure the snap ring (5).
4. Adjust the coupling ▷ 4.1 on page 18.
5. Install rear cover. ▷ 3.2 on page 7

## 3.6 Replacing the Label Sensor

**Notice!**

Soiling of the label sensor can cause malfunctions. Before replacing the label sensor, check whether it is soiled and clean it if necessary

Cleaning of the label sensor ▷ 2.2 on page 6.

**Danger!**

Risk of death via electric shock!

► Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.

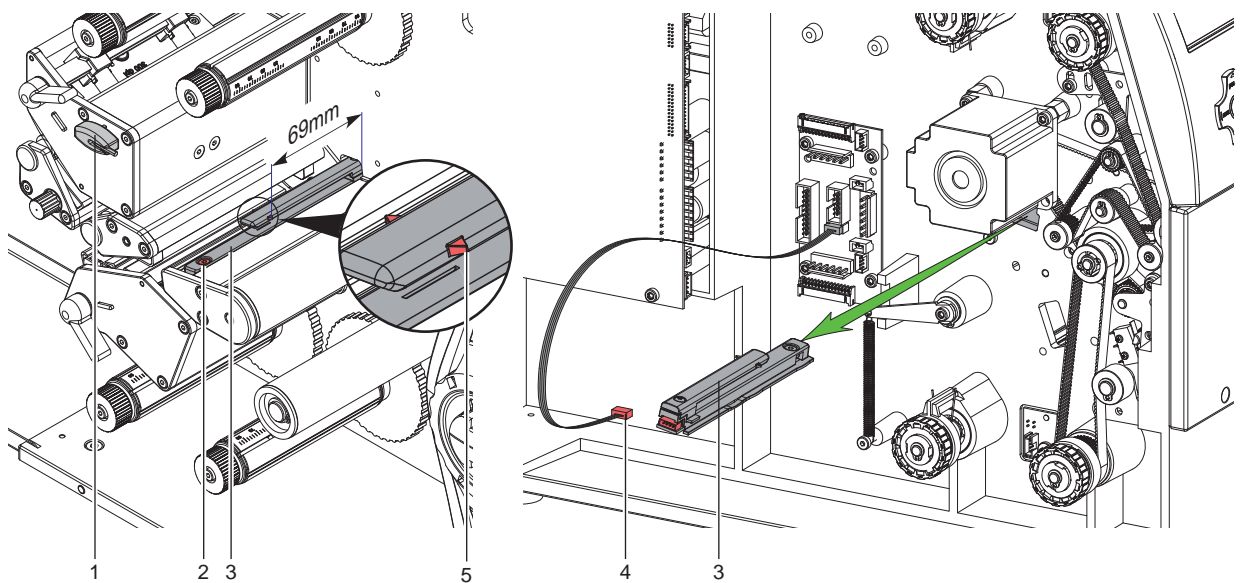


Fig.11 Replacing the label sensor

**Removing the label sensor**

1. Remove media from the printer. ▷ Operator's Manual
2. Remove the Allen key (1) from its retainer.
3. Remove the rear cover of the printer ▷ 3.2 on page 7
4. loosen screw (2) on the label sensor (3).
5. Unplug the cable (4) from the plug on the rear end of the label sensor (3).
6. Push the label sensor (3) so far as possible out of the print mechanics side to the chassis side.
7. Pull out the label sensor (3) in the rear cover direction.

**Installing the label sensor**

1. Put in the label sensor (3) into the guiding from the rear side and push it in the print mechanics direction.
2. Connect cable (4) to the label sensor (3).
3. Pull the label sensor (3) via the tab (4) as far as possible toward the cover side.  
This prevents the cable (4) from being pinched when installing the rear cover.
4. Install the rear cover of the printer. ▷ 3.2 on page 7
5. Adjust the label sensor (3) that the marker (5) has a distance to the chassis of 69 mm.
6. Tighten screw (2).
7. Insert the Allen key (5) into its retainer.
8. Adjust the label sensor ▷ Configuration Manual.

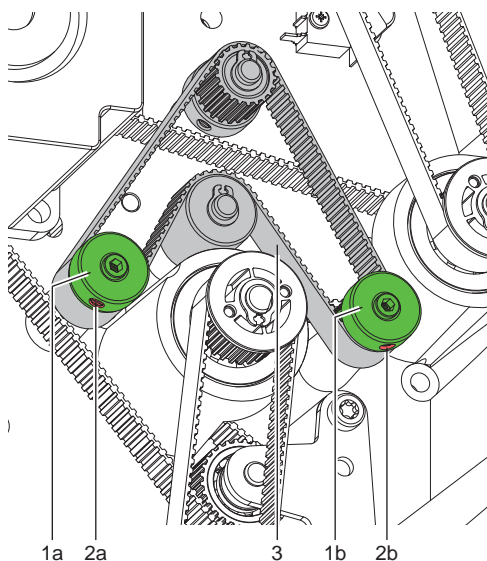
### 3.7 Replacing Guides and Spindle


**Notice!**

Both guides are coupled by a belt. Make sure that in case of mounting the upper and the lower guides are in alignment to the upper guides. Otherwise will the material run out of the print area.


**Notice!**

The guides with spindle will be delivered pre-assembled and adjusted with a transit support. Remove the transit support not until before mounting.



- 1a Gear - lower guide,  
important for the lower print image
- 1b Gear - upper guide,  
important for the upper print image
- 2a Headless screw to fix gear 1a
- 2b Headless screw to fix gear 1b
- 3 Belt

Fig.12 Coupling of the guides via belt

1. Before dismount a guide turn that the guides will be maximum conjoined to got a defined position.
2. Dismount the rear cover. ▷ 3.2 on page 7
3. Move down the belt (3) from the upper gear.
4. Loosen the headless screw (2a) or (2b) of the guide which will change and pull down the gear.

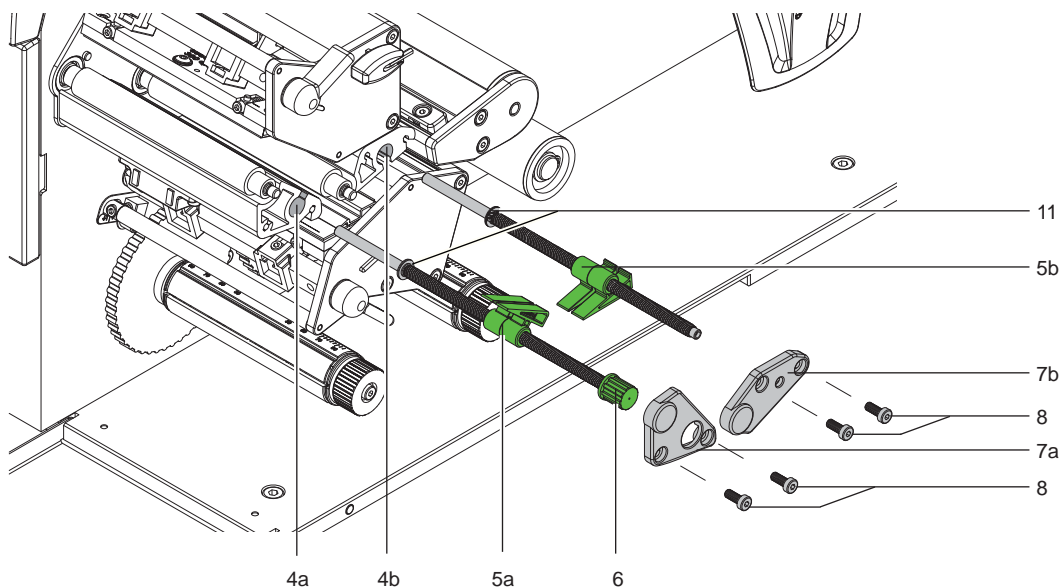


Fig.13 Removing guides with spindle



5. Loosen screws (8) of the respective side plates (7a) or (7b) and remove it.
6. Pull out the guide out of the profile (4a) or (4b) .
7. Check that the other guides are maximum conjoined. In case of not turn it by hand in this position.
8. Pull down the spacer (11) from the removed guide and put it on the new guide.
9. Put in the new guide into the profile (4a) or (4b) .
10. Attach the gear (1a) or (1b) again.
11. Stretch the belt (3) over all gears.
12. Attach the side plates and make sure that the spindle axle will be in the right bearing.
13. Fix the side plate with the screws (8) again.

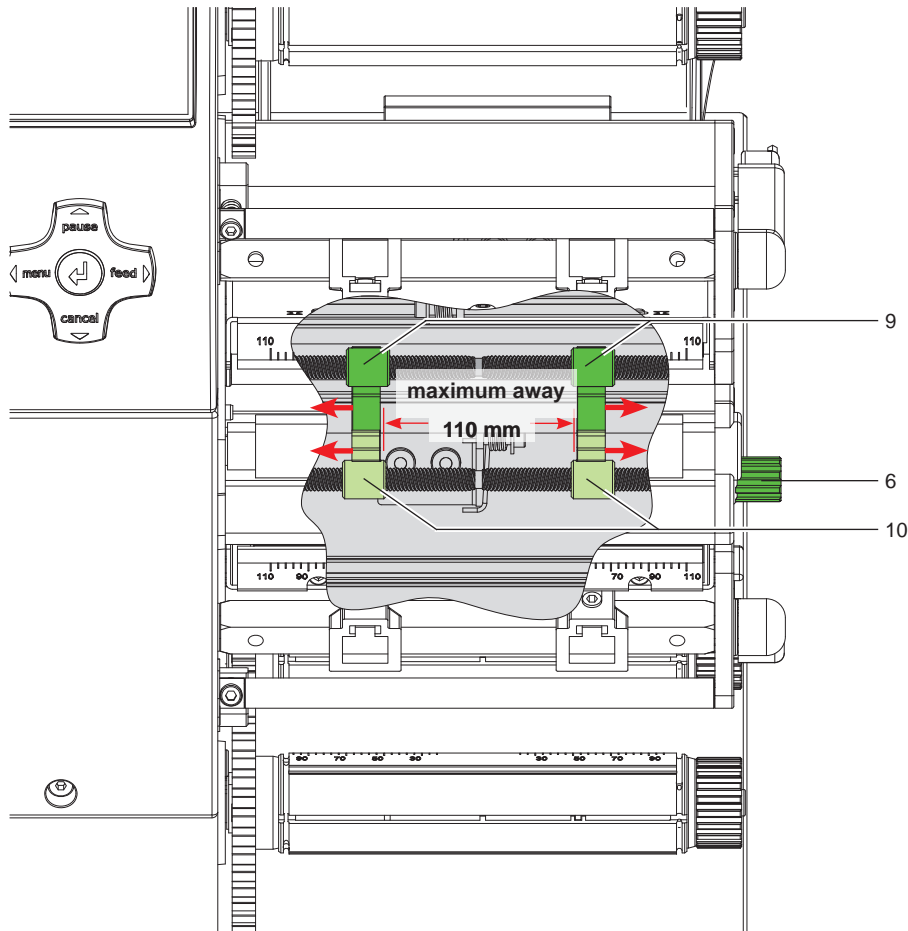


Fig.14 Adjusting the guides

14. Turn the knurled knob (6) counter clockwise to get a maximum distance between the guides (9/10) .
15. The distance between the guide blades must be exactly 110 mm. The distance of both guides must be the same.
16. In case of differences between the upper and the lower guides loosen the headless screw (2b) of the upper guide.
17. Adjust the distance via turning the axle by hand.
18. Tighten headless screw (2b) .
19. Mount rear cover. ▷ 3.2 on page 7

## 3.8 Replacing the PCB CPU

**Danger!**

Risk of death via electric shock!

- Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.

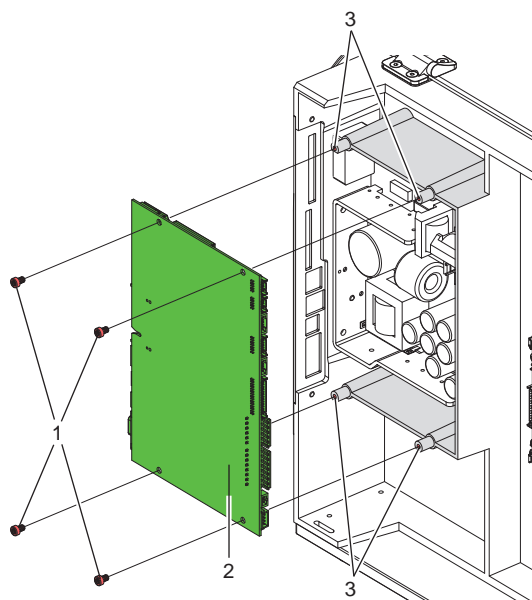


Fig.15 Changing the PCB CPU

**Removing the PCB CPU**

1. If possible, save the printer configuration to a Compact-Flash card ▷ Configuration Manual.
2. Unplug the printer from the electrical outlet.
3. Detach all interface cables from the back of the printer.
4. Remove all memory cards from the slots.
5. Screw off the rear cover. ▷ 3.2 on page 7
6. Unplug all side plug connections from the PCB CPU (2).
7. Remove the four fixing screws (1) from the PCB CPU (2).
8. Remove the PCB CPU (2).

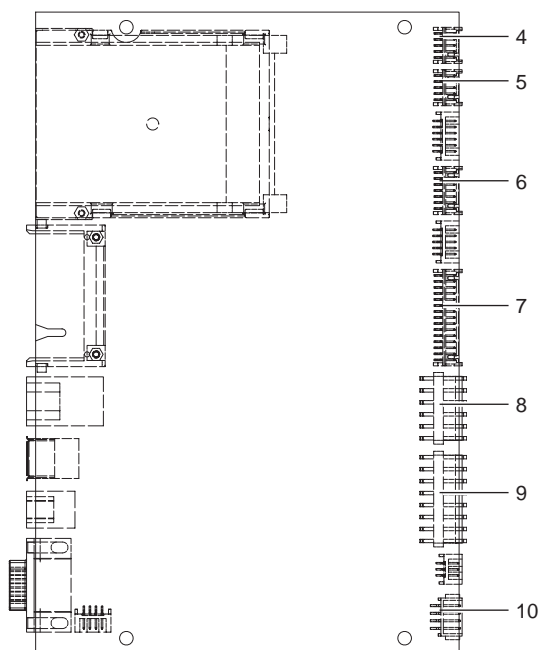


Fig.16 Interfaces on the PCB CPU

- 4 Control panel
- 5 Peripheral port
- 6 Sensors
- 7 Printhead signals
- 8 Printhead power supply
- 9 Power supply unit
- 10 Stepper motor

**Installing the PCB CPU**

1. Place PCB CPU (2) onto the retainers (3).
2. Secure the PCB with four screws (1).
3. Insert all plug connections on the PCB CPU (2).
4. Pull the label sensor toward the cover side as far as possible and install the rear cover of the printer.
5. Restore all interface connections on the back of the printer.
6. Connect the power cable at the rear of the printer.
7. Update the firmware if necessary.
8. Adjust the label sensor ▷ Configuration Manual.
9. Load the printer configuration from the memory card if possible. Otherwise, set the printer configuration via the control panel ▷ Configuration Manual.



## 3.9 Replacing the Power Supply Unit

**Danger!**

Risk of death via electric shock!

- Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.

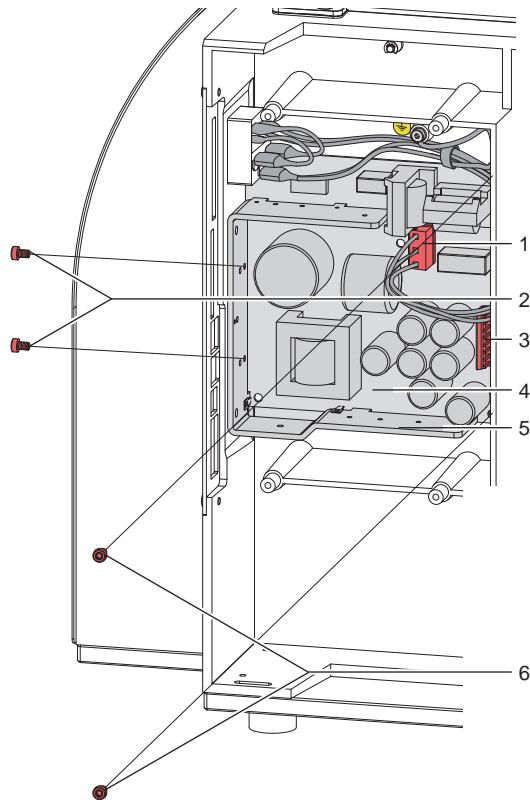


Fig.17 Replacing the power supply unit

**Removing the power supply unit**

1. Unplug the printer from the electrical outlet.
2. Remove the PCB CPU ▷ 3.8 on page 16
3. Unplug the plug at the power supply unit input (1).
4. Unplug the plug at the power supply unit output (3).
5. Remove the two screws on the back of the printer (2).
6. Hold the power supply unit firmly at the metal bracket (5) and remove the two screws (6).
7. Remove the power supply.

**Installing the power supply unit**

1. Insert the power supply unit and secure the PCB with two screws (6).
2. Secure the metal bracket (5) of the power supply unit to the back of the printer with two screws (2).
3. Connect the power supply unit cable to the power supply output (3).
4. Insert the power input cable (1).
5. Install the PCB CPU. ▷ 3.8 on page 16

## 4.1 Measuring and Adjusting the Winding Torques

The rewinder for the transfer ribbon are coupled to slipping clutches in the main drive. The supply hub of the transfer ribbon is braked with a slipping clutch during printing.

The correct setting of the torques of these slipping clutches is necessary for:

- Precise conveyance of the transfer ribbon during label transport
- The prevention of wrinkles in the feed path of the transfer ribbon

If the winding torque differs from the set value, it must be adjusted. ▷ 4.1.2 on page 20.

### 4.1.1 Measuring the Winding Torques

#### Transfer ribbon take up and supply hub

Measurement of the winding torque at the transfer ribbon take up and supply hub occurs by determining the pulling forces on a test collar attached to the winder.

The physical relation between the torque and the pulling force is:

$$F = M / r$$

F: Pulling force [N],

M: Winding torque [Ncm],

r: Radius of the test collar (30 mm)

The set values for the winding torque and the resulting pulling force at the test collar are:

Slipping clutch on	Direction of rotation	Winding torque M	Pulling force F
Ribbon take up hub Figure 18/3	clockwise (top) counterclockwise (bottom)	17,5 - 9,0 Ncm	2,5- 3,0 N
Ribbon supply hub Figure 18/4	any	3,6 - 4,5 Ncm	1,2 - 1,5 N

Table 1 Winding torques at the transfer ribbon hubs

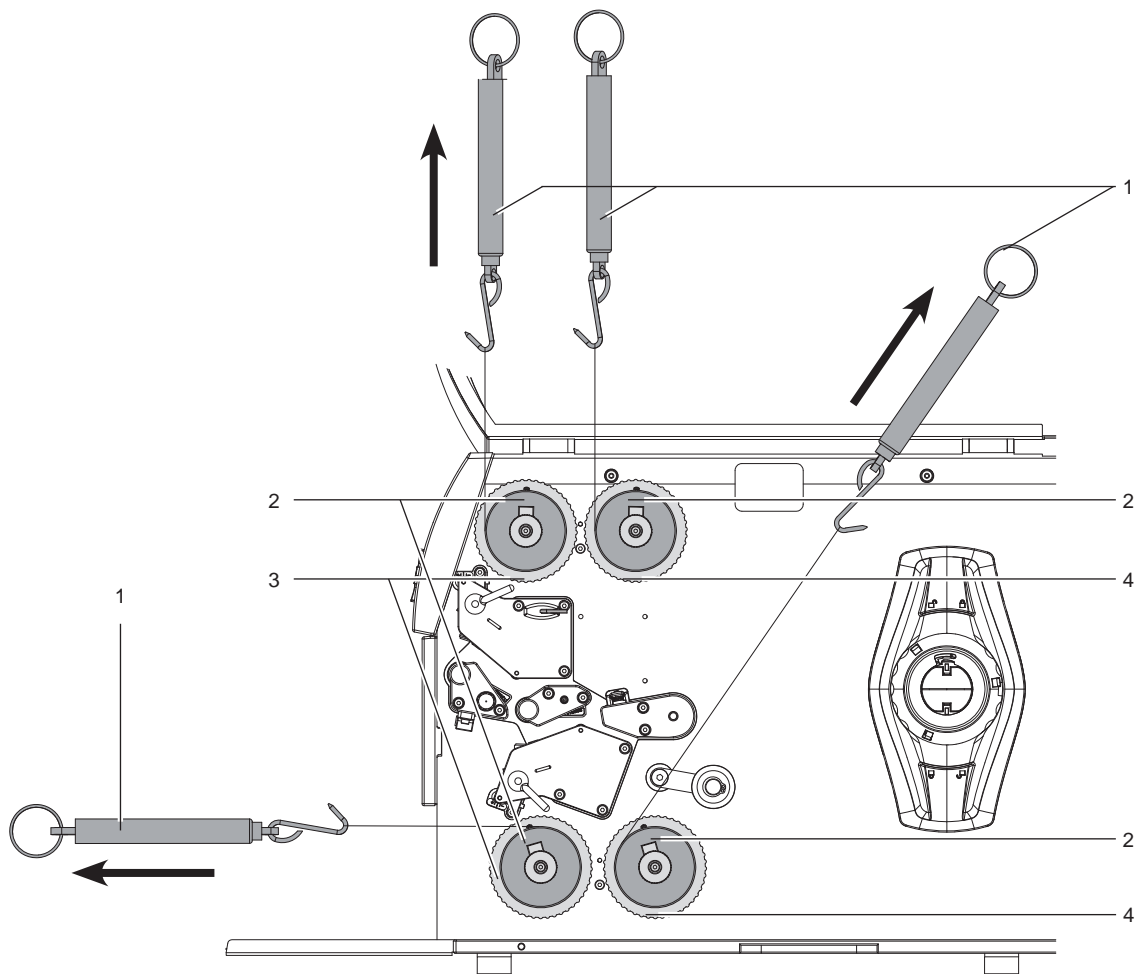


Fig.18 Measuring the winding torque at the transfer ribbon hubs



### **Danger!**

**Risk of death via electric shock!**

► **Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.**

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover. ▷ 3.2 on page 7
3. Remove the transfer ribbon from the printer.
4. Attach the test collar (2) to the winder (3/4).
5. Turn the knurled nut counterclockwise to clamp the test collar.
6. Wind the cord attached to the test collar around the test collar several times.
7. Secure spring scale [10 N] (1) at the end of the cord.
8. Move the spring scale straight from the winder away until begins turning.
9. If the drive belt at the rewinder (3) is also moving, hold it in place during the measurement. Otherwise, the measurement will be not accurate.
10. Allow the cord to unwind from the test collar at least one full turn and read the pulling force  $F$  on the spring scale at the same time.
11. If the winding torque differs from the set value, it must be adjusted ▷ 4.1.2 on page 20.

### 4.1.2 Adjusting the Winding Torques

The winding torque of a winder can be changed at the knurled ring of the respective slipping clutch. The numbers on the knurled ring stand for the value of the winding torque:

- 1: Lowest winding torque
- 7: Highest winding torque

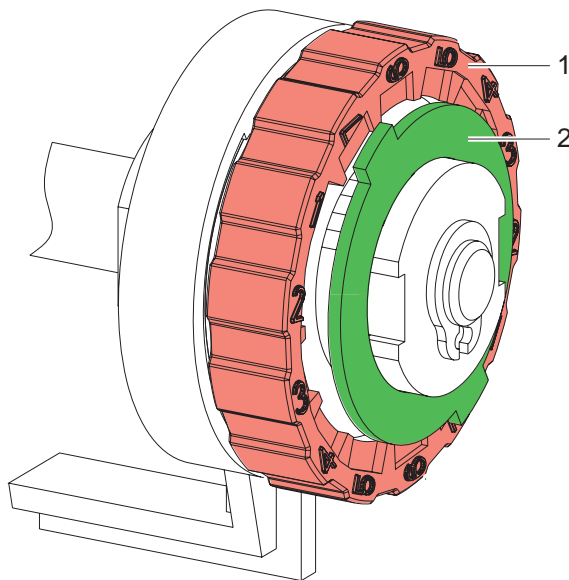
The current value is indicated by the number located at the positions of the two locking tabs.



#### **Danger!**

**Risk of death via electric shock!**

- **Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.**



1. Unplug the printer from the electrical outlet.
2. Remove the rear cover. ▷ 3.2 on page 7
3. Press the knurled ring (1) of the slipping clutch toward the housing wall.  
The lock (2) of the knurled ring is released.
4. Turn the knurled ring while pushing it and release it in the desired position.
5. Ensure that the tabs of the lock are located completely in the grooves of the setting value.
6. Measure the winding torque again and compare it to the set value. ▷ 4.1.1 on page 18
7. Repeat the adjustment until the measured winding torque is within the tolerance range.  
In case it is impossible to adjust the clutch change the clutch ▷ 3.5 on page 11.
8. Install rear cover.  
▷ 3.2 on page 7

Fig.19 Adjusting the winding torque

## 4.2 Adjusting the Printing Mechanism

Major adjustment of the printing mechanism beyond format-based settings is only required if the printhead assembly has been removed or parts in this area have been replaced. Excluded from this is the replacement of the printhead, after which readjustment is generally not required.

The following print quality imperfections may indicate maladjustment of the printing mechanism:

- Print image too light
- Print image is spotty
- Print image lighter on one side
- Horizontal lines not parallel to the horizontal label edges
- Clear lateral drift of the transfer ribbon

### Notice!

**Print image errors can also arise from wrinkling of the transfer ribbon. This is why you should check the transfer ribbon feed path and the head locking system for correct adjustment before making adjustments to the printing mechanism** ▷ Operator's Manual.

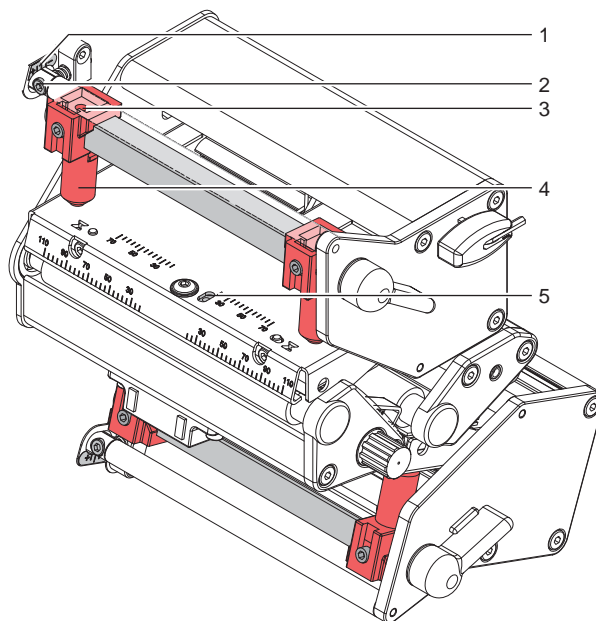
### Notice!

**It is only possible to adjust the print image with print material consisting label material and transfer ribbon with a width over the full print area.** ▷ 3.1 on page 7

Adjustment of the printing mechanism comprises the following procedures in the order specified:

1. Prepare the label printer for adjustment ▷ 4.2.1 on page 21.
2. Adjust the position of the printhead ▷ 4.2.2 on page 22.
3. Adjust the printhead pressure ▷ 4.2.3 on page 23.
4. Adjust the transfer ribbon feed path ▷ 4.2.4 on page 24.
5. Perform a final test ▷ 4.2.5 on page 24.

### 4.2.1 Preparing the Printer for Adjustment



1. Load labels and transfer ribbon which extend across the entire printing width.
2. In the printer configuration, set the `Heat level` parameter to -5 and the `Print speed` parameter to 100 mm/s.
3. Move the transfer ribbon deflection to the central position (1) with the screw (2).
4. Position the plungers (4) in such a way that the adjustment screws are accessible through the holes (3) of the square axis.
5. Loosen the screw (5) for the printhead bowing with an Allen key (1.5 mm) and turn it counterclockwise until turning becomes perceptibly easier. This should occur after a maximum of a half a rotation.
6. Continue with the adjustment of the printhead position  
▷ 4.2.2 on page 22.

Fig.20 Printer preparing for adjustment

### 4.2.2 Adjusting the Printhead Position

In order to achieve the best possible print image the following printhead settings are necessary:

- Align the heating line with the highest point of the print roller. Density of the print image is the greatest at this point.
- Set the parallelism of horizontal lines with the edge of the label.



#### Attention!

The printhead assembly can be damaged.

Attempting to adjust the printhead when the fixing screws (3) are tight can lead to defects at the printhead assembly.

► Always loosen the fixing screws (3) before adjusting the printhead.

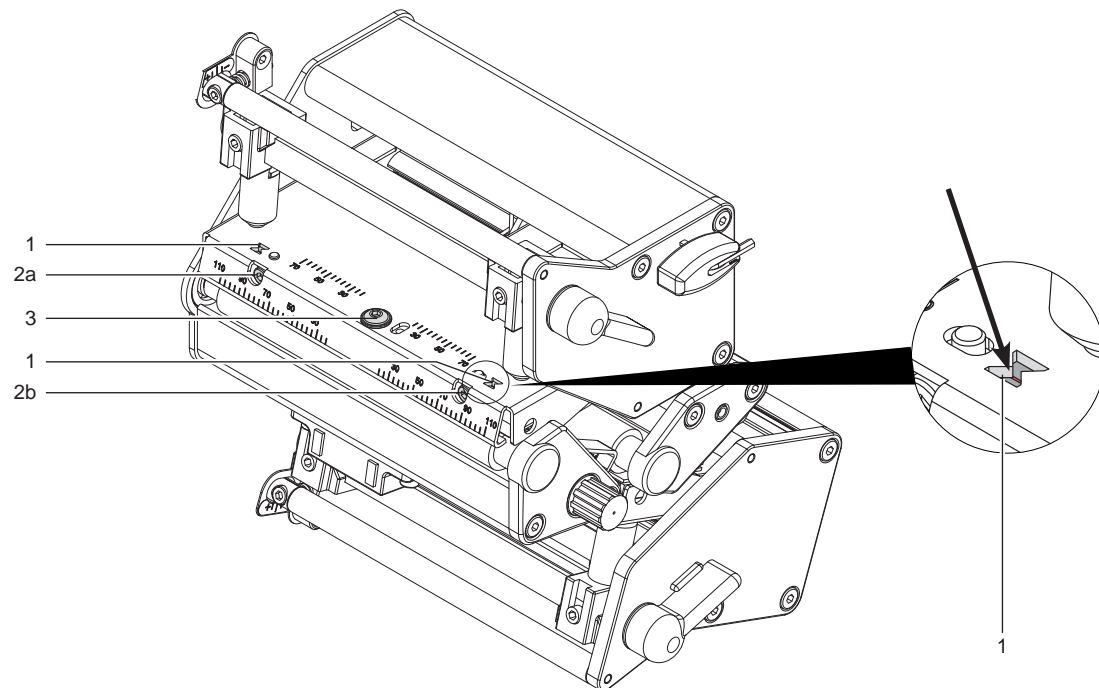


Fig.21 Adjusting the printhead position



#### Notice!

► Open and close the printhead lock after each step of the adjustment.

1. Check the alignment of the printhead in the adjustment windows (1).
2. If the printhead is not aligned properly, loosen the screw (3) about one quarter turn.
3. If the printhead is not aligned properly, use the screws (2) to align the lines on the printhead with the tips of the grooves.
  - For the upper printhead screw (2a) effects the inner half of the printhead, and screw (2b) the outer half. For the lower printhead it is mirrored.
  - Turning clockwise moves the printhead forward.
4. Create print samples with the test function `Test grid` (► Configuration Manual) or a similar print pattern.
5. If the horizontal lines in the test grid are not parallel with the label edges, adjust the parallelism with the screws (2).
6. Set the best possible image quality by maintaining parallelism via turning the screws (2a) and (2b) in an alternating fashion. Differences in the density between the two sides are still permissible.
7. Tighten the screws (3).
8. When the parallelism of the printhead is set, continue with the adjustment of the printhead pressure ► 4.2.3 on page 23.

### 4.2.3 Adjusting the Printhead Pressure

The printhead pressure can be changed with the screws (1a) and (1b) at the inside and outside of the printhead. Increasing the head contact pressure leads to an improvement of the print image density on the corresponding side and to a shifting of the ribbon feed path in the corresponding direction.

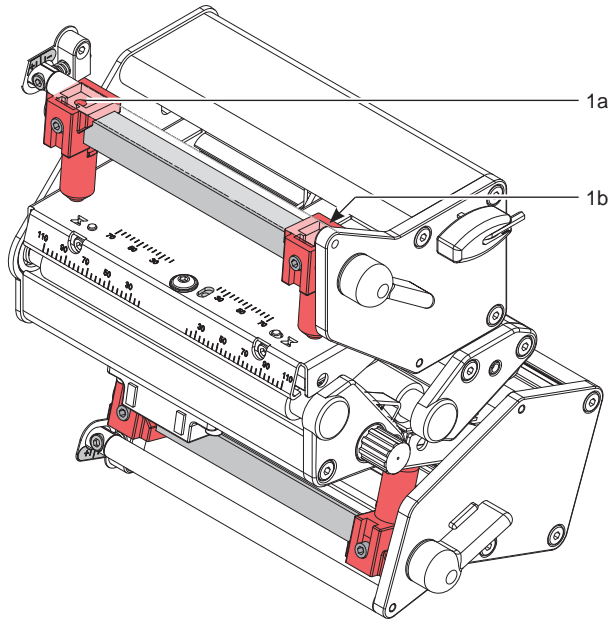


Fig.22 Adjusting the printhead pressure

1. Turn the adjustment screws (1) counterclockwise until turning becomes perceptibly easy.
2. The heat level is to be reduced in the printer configuration until the print image is only barely recognizable. Under these conditions, inaccuracies become clearly visible during adjustment.
3. Create print samples with the test function *Test grid* (▷ Configuration Manual) or a similar print pattern.
4. Adjust the adjustment screw (1a or 1b) clockwise in small increments on the side with the weaker print image until the print image is even across the entire width.  
It may happen that you must turn the adjustment screws in an alternating fashion, resulting in a print image which is too light overall.
5. Move the plunger to the standard position (middle of the head bracket ▷ operator's manual) and repeat the test print. Possibly rerun procedure and adjust new.
6. When the print image is set evenly, continue with setting of the transfer ribbon feed path  
▷ 4.2.4 on page 24.

#### 4.2.4 Adjusting the Transfer Ribbon Feed Path

You can adjust the transfer ribbon feed path by changing the head contact pressure and adjusting the transfer ribbon deflection. Increasing the head contact pressure with the screws (2a) and (2b) shifts the ribbon feed path in the corresponding direction. The skew of the transfer ribbon deflection is used to suppress wrinkles in the transfer ribbon feed path. Wrinkles which cannot be remedied with the skew of the transfer ribbon deflection can be suppressed by bowing the printhead

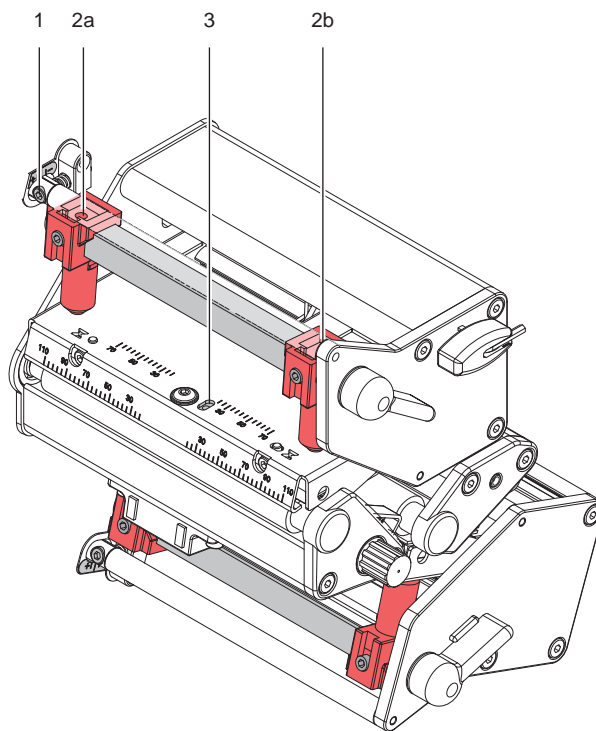


##### Attention!

The printhead assembly can be damaged when bowing the printhead.

Turning the adjustment screw (3) too hard can cause damage to the printhead assembly.

- ▶ As soon as you perceive clear resistance when turning the adjustment screw (3), you may only continue turning the screw in very small increments, but no more than one eighth of a turn.
- ▶ Only turn the adjustment screw (3) as far as is absolutely necessary.



1. Check the transfer ribbon feed path.  
The wound up ribbon should be the same distance from the disk of the winder as the supply roll is from the disk of the supply hub.
2. If the ribbon runs inward or outward, turn the corresponding screw (2a) or (2b) clockwise in small increments.
3. Wait until the ribbon feed path has stabilized after each step of the adjustment.
4. Check the ribbon feed path for wrinkles.
5. If wrinkles arise on the inside, turn the screw (1) counterclockwise.
6. If wrinkles arise on the outside, turn the screw (1) clockwise.
7. If the wrinkles cannot be remedied (e.g. wrinkles in the center), turn the adjustment screw (3) clockwise **with extreme care** using an Allen key (1.5 mm) and observe the ribbon feed path.  
When the adjustment screw (3) is tightened, the printhead is bent downward slightly in the center. It is possible that a slight lightening at the edge areas of the print image could occur here.
8. If bowing is not necessary, turn the screw (1) clockwise until the screw is just barely clamping.
9. When the transfer ribbon feed path is set, continue with the final test.

Fig.23 Adjusting the transfer ribbon feed path

#### 4.2.5 Final Test

- ▶ Reset the `Heat level` to 0 in the printer configuration ▷ Configuration Manual.
  - ▶ Recheck the setting with the test function `Test grid` (▷ Configuration Manual) or a similar print pattern.
- When using standard cab media (▷ 3.1 on page 7) the test printout must show lines with sharp contours and black areas without any parts missing.



## 4.3 Adjusting the Belt Tension

**Danger!**

Risk of death via electric shock!

- Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.

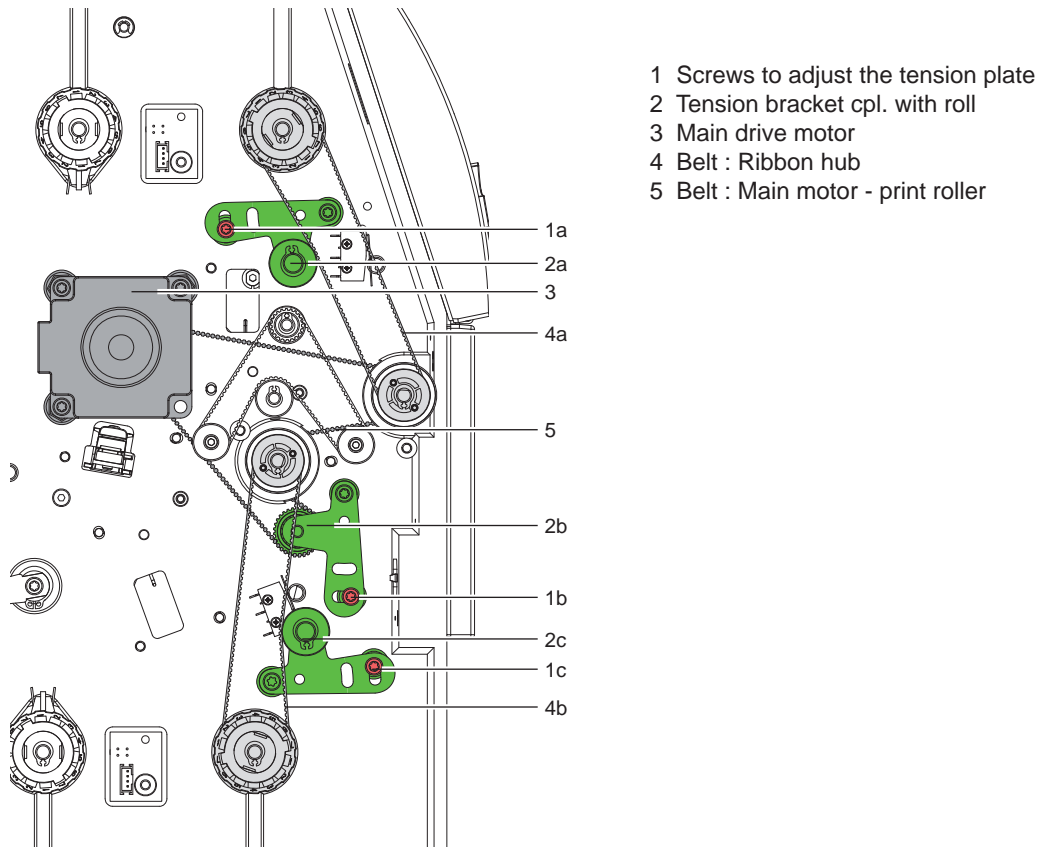


Fig.24 Adjusting the belt tension

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover. ► 3.2 on page 7

**Belt: Main motor-print roller**

3. Loosen screw (1b) .
4. Adjust tension bracket (2b) that the belt is tightly. If it is too strong, the system will slowdown.
5. Tighten screw (1b) .

**Belt: Ribbon hub**

6. Loosen screw (1a) or (1c) .
7. Adjust associated tension bracket (2a) or (2c) so that the belt is tightly. If it is too strong, the system will slowdown.
8. Install rear cover. ► 3.2 on page 7

#### 4.4 Adjusting the Head Switch

The head switch prevents printing from occurring when the printhead is open.

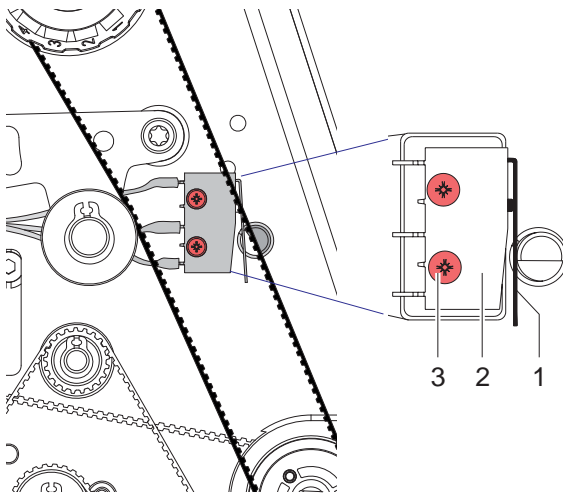
Adjust the head switch if the error message `Head open` appears in the display even though the printhead is locked.



##### **Danger!**

**Risk of death via electric shock!**

- ▶ **Before opening the housing cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.**



1. Unplug the printer from the electrical outlet.
2. Remove the rear cover. ▷ 3.2 on page 7
3. Lock printhead.
4. Slightly loosen the fixing screws (3) of the head switch (2).
5. Move the head switch housing and switching lever (1) to a parallel position (see magnified cutout).
6. Screw down the head switch in this position.
7. Check whether the Head open message is still shown in the display. If this is the case, replace the switch with cable.
8. Install the rear cover of the printer.  
▷ 3.2 on page 7

Fig.25 Adjusting the head switch

##### **Notice!**



The upper and the lower printhead bracket has an own head switch. The failure signal can initial by both switches. Check the upper and lower switch in case of adjusting.

Functional error	Possible remedy
Medium is not transported	Check electrical connections between PCB CPU and motor
	Check drive mechanism
	Replace the PCB CPU
	Replace the motor
No print image with medium transport	Check plug connections at the printhead
	Examine printhead cable for damage and replace if necessary
	Replace the printhead
	Replace the PCB CPU
Display and navigator pad are not functioning	Check whether LED1 (green) is illuminating on the PCB CPU ▷ Fig. 29 on page 31:
	<ul style="list-style-type: none"> <li>LED1 is not illuminating: The power supply unit or CPU PCB is defective. Replace PCB CPU or Power supply unit.</li> <li>LED1 flashes: Firmware update unsuccessful. Reload the firmware ▷ Configuration Manual</li> </ul>
	Check cable connection between PCB CPU and control panel
	Check whether the correct voltages are active at the 3,3 V and 5 V measurement points on the PCB CPU ▷ Fig. 30 on page 32
	<ul style="list-style-type: none"> <li>No voltage at either measurement point: The power supply unit may be defective. Replace the power supply unit</li> <li>No voltage at one measurement point: The PCB CPU may be defective. Replace the PCB CPU.</li> </ul>
	Replace LCD Display cpl.
	Replace PCB Navi Button assem.
The display is not functioning, but the navigator pad is functioning	Replace LCD Display cpl.
The navigator pad is not functioning, but the display is functioning	Check the cable connection between LCD Display cpl. and PCB Navi Button assem. and replace if necessary
	Replace PCB Navi Button assem.
	Replace LCD Display cpl.
Communication via an interface is not functioning	Check whether the interface configurations of the printer and computer match
	For an Ethernet connection, check the validity of the IP address and the Subnet mask
	Check the interface cable and replace it if necessary
	If all functionality of the interface has been lost, replace the PCB CPU
A peripheral device is not functioning	Check whether the peripheral device is activated via programming
	Check the USB cable of the peripheral device and replace it if necessary
	Check the peripheral device
	Replace the PCB CPU

Table 2 Failure of device functions

## 5.2 Hardware Faults

Error message	Cause	Fault recovery
ADC malfunction	Fault on the PCB CPU	Replace the PCB CPU
FPGA malfunction	Fault on the PCB CPU	Replace the PCB CPU
Invalid setup	Fault on the PCB CPU	Replace the PCB CPU
Voltage error		
$V_{BAT}$	Voltage of the battery on the PCB CPU is too low	Replace the PCB CPU
$V_{MOT}$	Motor voltage is too low	Check motor voltage (+38 V) at the measurement point $V_{mot}$ ▷ Fig. 30 on page 32: <ul style="list-style-type: none"> <li>Voltage too low: Replace the power supply unit</li> <li>Voltage is correct: Replace the PCB CPU</li> </ul>
24 V	24 V too low	Check voltage at measurement point +24V ▷ Fig. 30 on page 32: <ul style="list-style-type: none"> <li>Voltage too low: Replace the power supply unit</li> <li>Voltage is correct: Replace the PCB CPU</li> </ul>
24 V ext.	24 V at peripheral connection too low	Disconnect peripheral device <ul style="list-style-type: none"> <li>Fault still exists: Replace the PCB CPU</li> <li>Fault remedied: Repair or replace peripheral device</li> </ul>
5 V ext.	5 V at Centronics connection too low Interface converter with excessive power consumption may be connected	Disconnect interface converter <ul style="list-style-type: none"> <li>Fault still exists: Replace the PCB CPU</li> <li>Fault remedied: Replace interface converter</li> </ul>

Table 3 Hardware faults

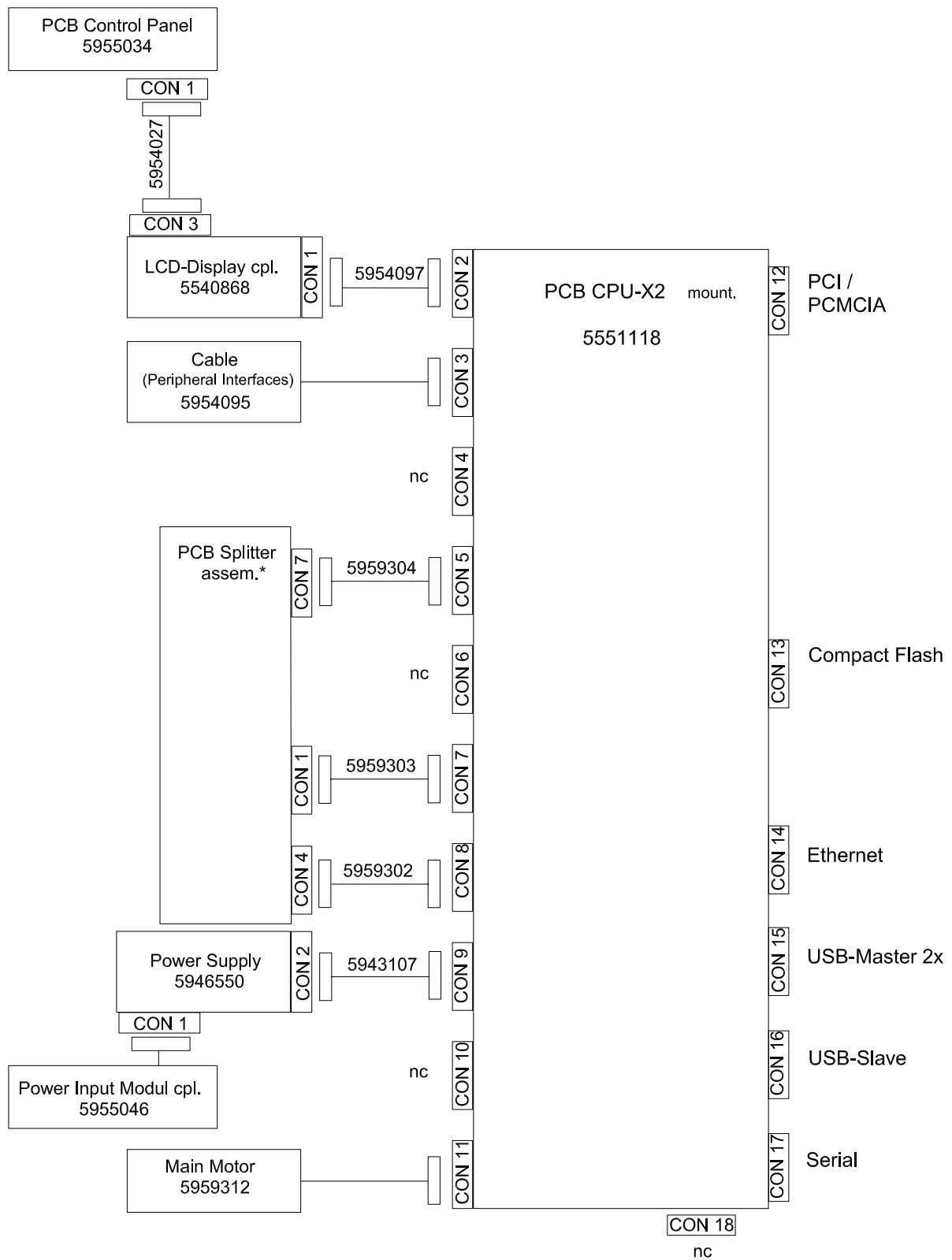


Fig.26 Block diagram Part 1

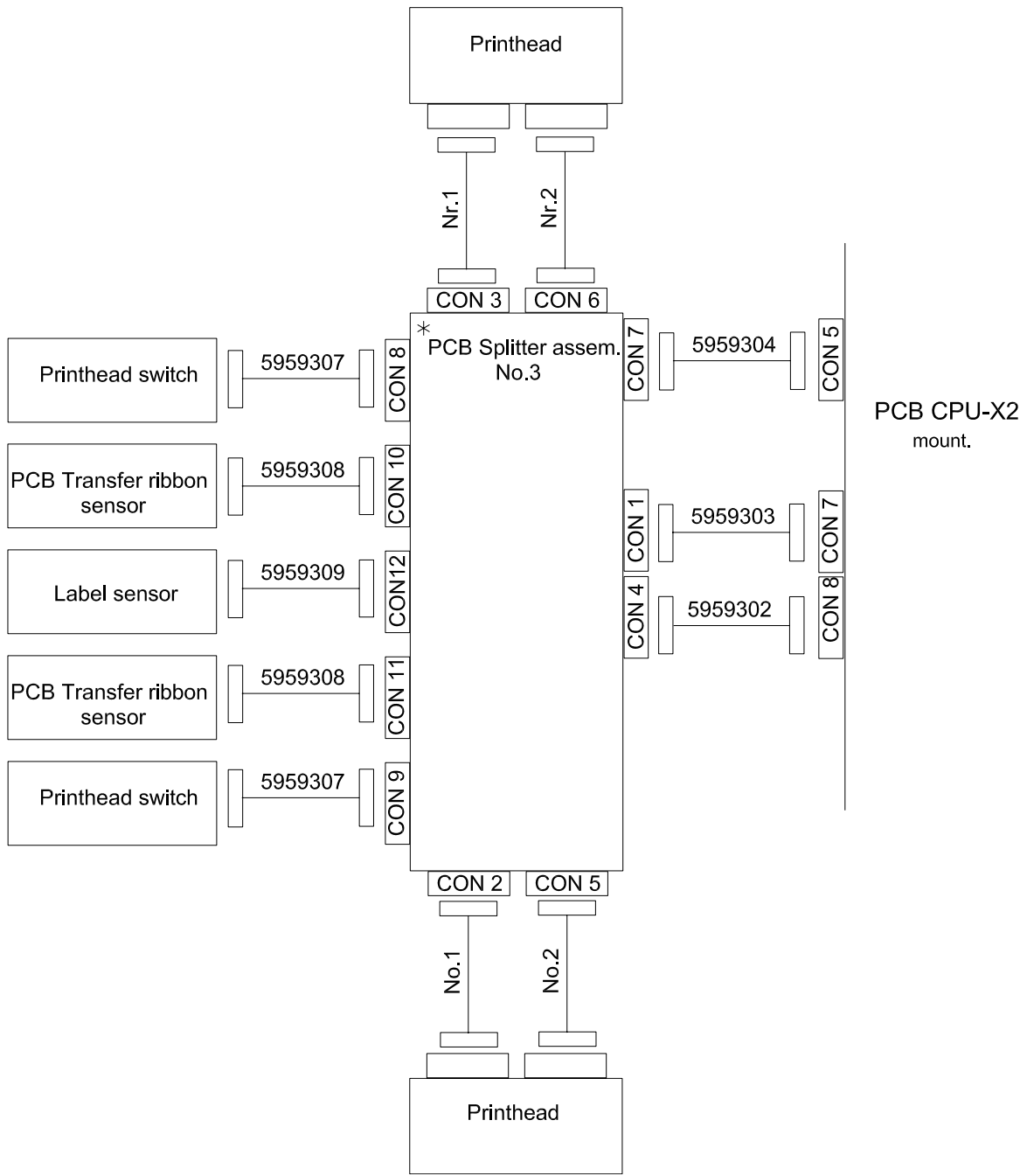


Fig.27 Block Diagram Part 2

Printer	Serial Number	No. 1	No. 2	No. 3
XD	to 70575	5959305	5959306	5959301
	from 70576	5954066	5954067	5959761

Table 4 Changings, depend of serial numbers

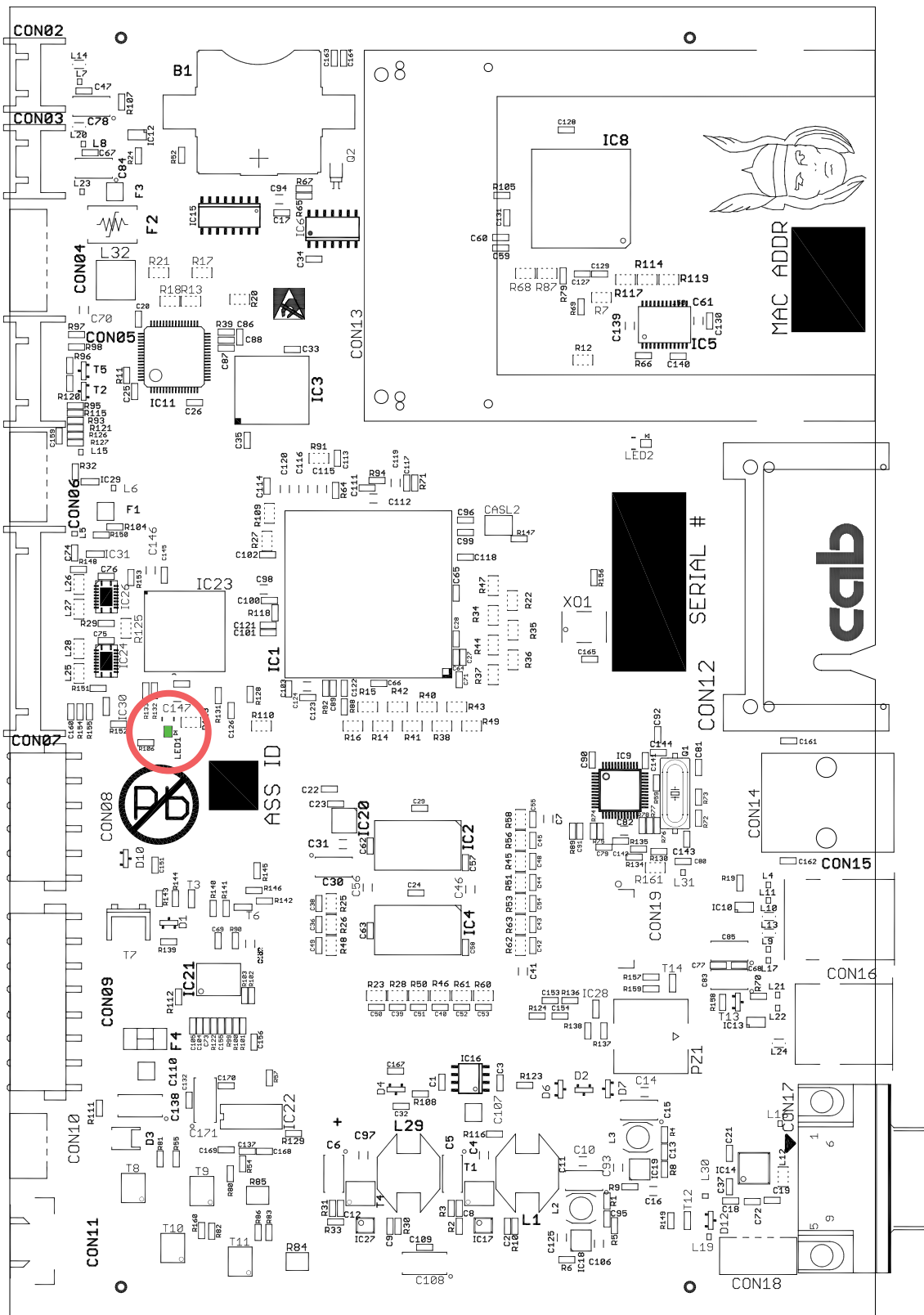


Fig.28 Layout diagram PCB CPU - components side

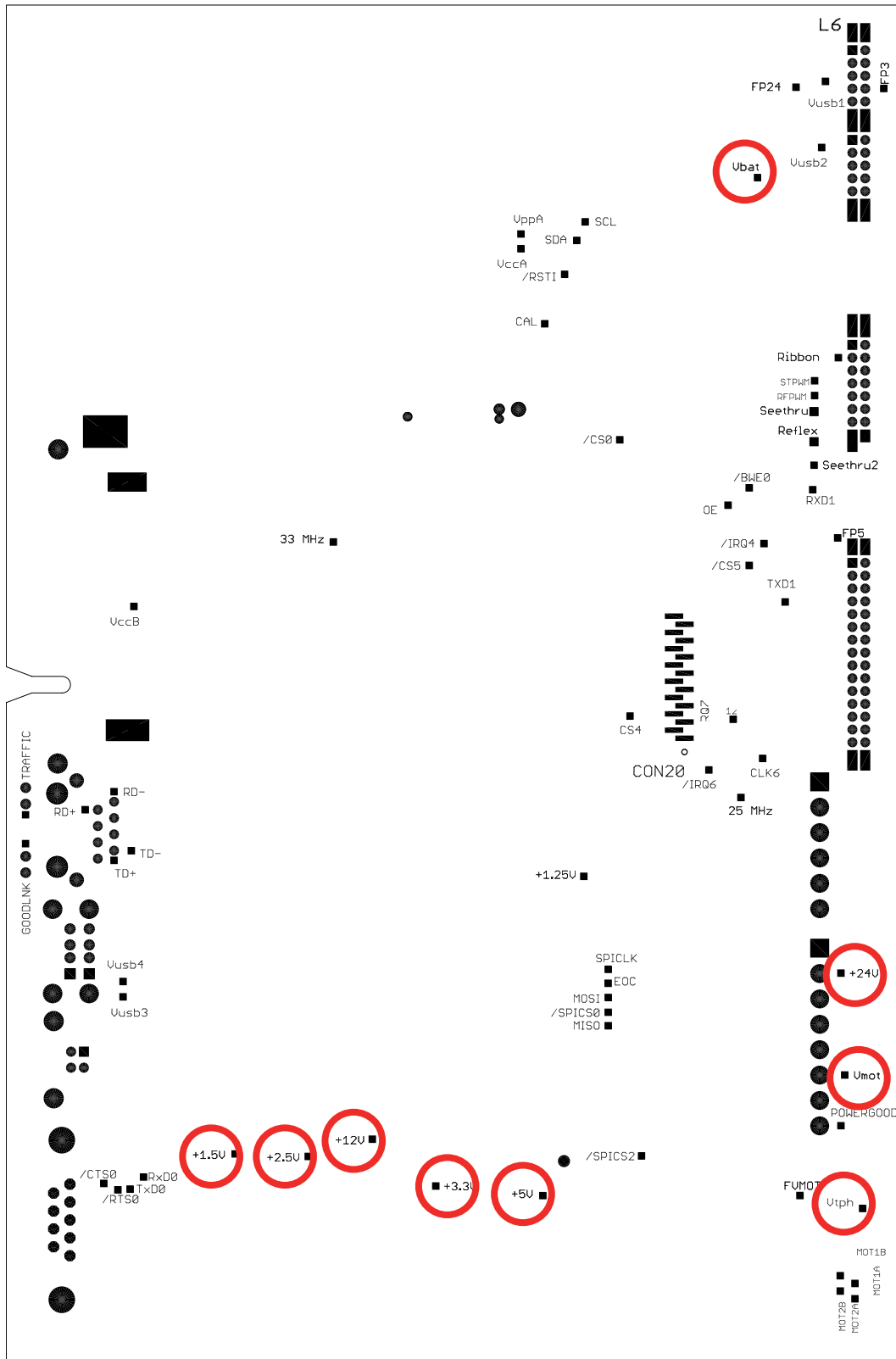


Fig.29 Layout diagram PCB CPU - soldering side with measurement points



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