

## Service Manual



Print Module

# PX Q

Family	Type
Print Module PX Q	PX Q4L
	PX Q4R
	PX Q4.3L
	PX Q4.3R
	PX Q6.3L
	PX Q6.3R

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## 1.1 Instructions

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



### **Danger!**

Draws attention to an exceptionally great, imminent danger to your health or life due to hazardous voltages.



### **Danger!**

Draws attention to a danger with high risk which, if not avoided, may result in death or serious injury.



### **Warning!**

Draws attention to a danger with medium risk which, if not avoided, may result in death or serious injury.



### **Caution!**

Draws attention to a danger with low risk which, if not avoided, may result in minor or moderate injury.



### **Attention!**

Draws attention to potential risks of property damage or loss of quality.



### **Note!**

Advices to make work routine easier or on important steps to be carried out.



### **Environment!**

Gives you tips on protecting the environment.



Handling instruction



Reference to section, position, illustration number or document.



Option (accessories, peripheral equipment, special fittings).

*Time*

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!**

Double pole/neutral fusing.



### **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.
- ▶ Do not wear spectacles with metal frames.



### **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.
- Check the working area for possible sources of danger, such as wet floors, defective extension cables, defective protective conductor connections.

**Additional precautions in the case of exposed voltages:**

- Ask a second person to remain near the working site. This person must know where the emergency and power switches are, and how to switch the current off if danger arises.
- Only use one hand to work on electric circuits of devices that are switched on. Keep the other hand behind your back or in your pocket.  
This prevents electricity from flowing through your own body.

## 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.

## 1.6 Environment



Obsolete assemblies contain valuable recyclable materials that should be sent for recycling.

- ▶ Send to suitable collection points, separately from residual waste.
- ▶ Send the parts for recycling.

## 2.1 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 Part-No. 5540932)
- Distance caliber 0,1 mm (cab Part-No. 5961064)

### **Standard tools:**

- Screw driver Torx, size TX 10
- Allen key 1,5 mm
- Allen key 2,5 mm (included)
- Phillips-head screwdriver, size 1
- Snap ring pliers ZGG 0
- Snap ring pliers ZGG 1
- Socket wrench 5
- Socket wrench 5,5
- Cylindrical dynamometer (spring scale), 0 - 10 N
- Digital circuit analyzer

## 2.2 Removing and Installing the Rear Cover



### **Attention!**

The rear cover or cables can be damaged via careless handling.

- ▶ Move cable out of the risk area.
- ▶ Put cover into the guiding complete.

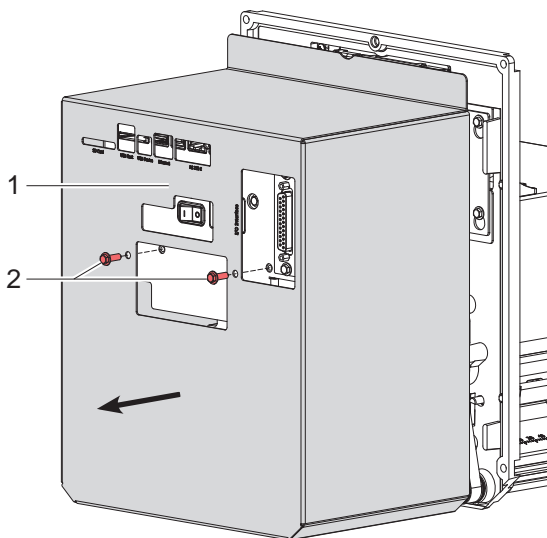


Figure 1 Removing and installing the rear cover

### **Removing the cover:**

1. Loosen two screws (2).
2. Remove the cover (1) in the arrow direction.

### **Installing the cover:**

1. Move cover (1) against the arrow direction to the device.
2. Make sure that all cables are out of the risk area at the edges of cover.
3. Move the cover (1) complete in the circumferential guiding.
4. Fix the cover (1) with the screws (2) and tighten the screws.

### 3.1 Cleaning by the Operator

The following cleaning work is described in the "Mounting Instructions":

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

### 3.2 Cleaning the Label Sensor

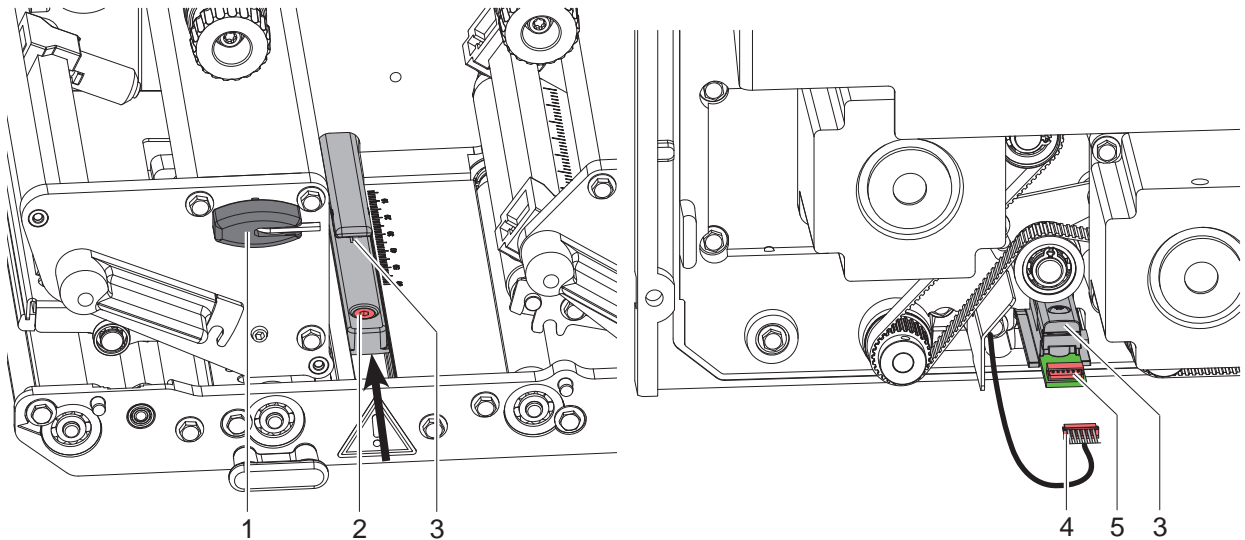


Figure 2 Cleaning the label sensor



#### **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. Unplug the device from the electrical outlet and remove the rear cover.
2. Remove the material from the printer.
3. Disconnect the cable (4) from the connector (5) of the label sensor (3) .
4. Loosen the screw (2) with the Allen key (1).
5. Push the label sensor (3) in the arrow direction and remove it to the backside
6. Clean the label sensor and the sensor units (3) with brush or cotton swab soaked in pure alcohol.
7. Move label sensor (3) against the arrow direction in the former position.
8. Connect the cable (4) to the connector (5) .
9. Mount the rear cover and restore all connections.
10. Adjust the label sensor ▷ Mounting Instructions.
11. Tighten the screw (2) .

### 4.1 Replacing the Printhead

The printhead of the label printer can be replaced without the need for fine adjustment. The printhead must be replaced if worn or when switching to a printhead with higher or lower resolution.

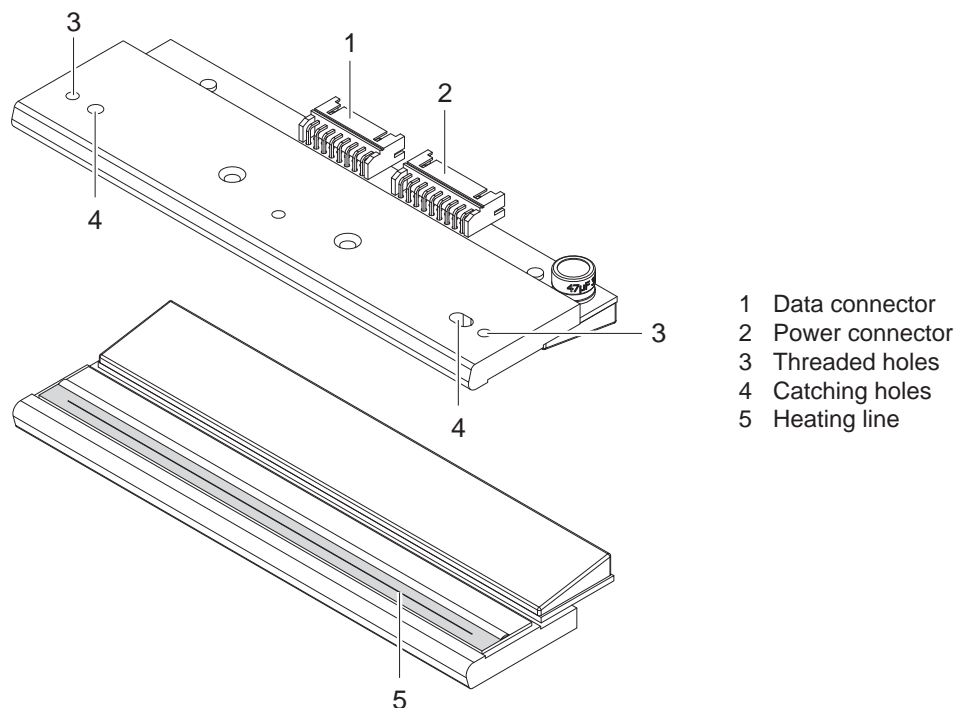


Figure 3 Structure of the printhead



#### 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 (1, 2).
- ▶ Do not touch heating line (5) with hard objects or your hands.



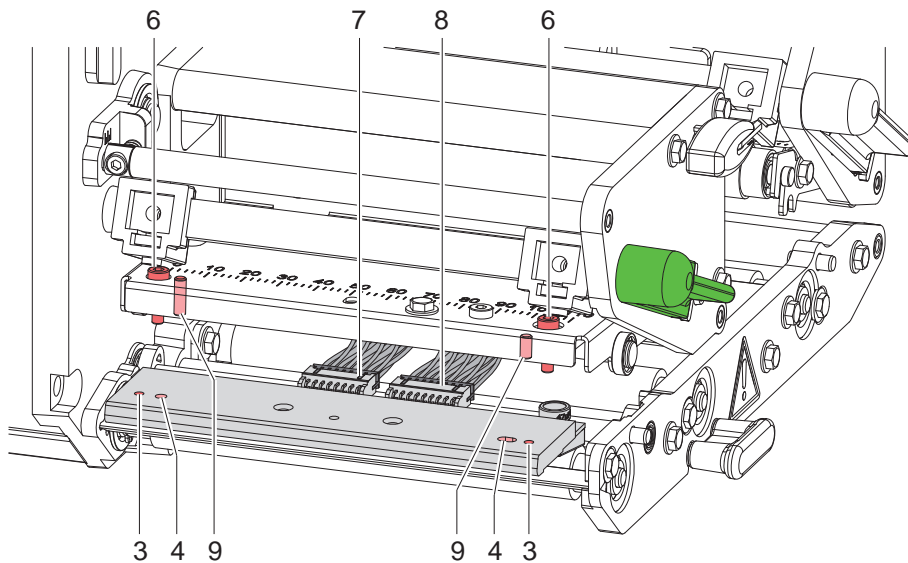


Figure 4 Replacing the printhead

#### Dismounting the Printhead

1. Remove the media from the printer.
2. Lock the printhead.
3. Loosen two screws (6).
4. Open the printhead locking and if necessary remove the printhead from the pins (9).
5. First unplug the power cable (8), followed by the data cable (7).

#### Mounting the Printhead

1. First connect the data cable (7), followed by the power cable (8).
2. Place the printhead into the printhead assembly and insert the pins (9) into the holes (4).
3. Press down the printhead carriage and fix the printhead with the screws (6) at the carriage using the threaded holes (3).
4. Clean the heating line with the cleaning cloth included in the contents of delivery.
5. Reload labels and transfer ribbon.

## 4.2 Replacing the Rollers and the Dispense Edge

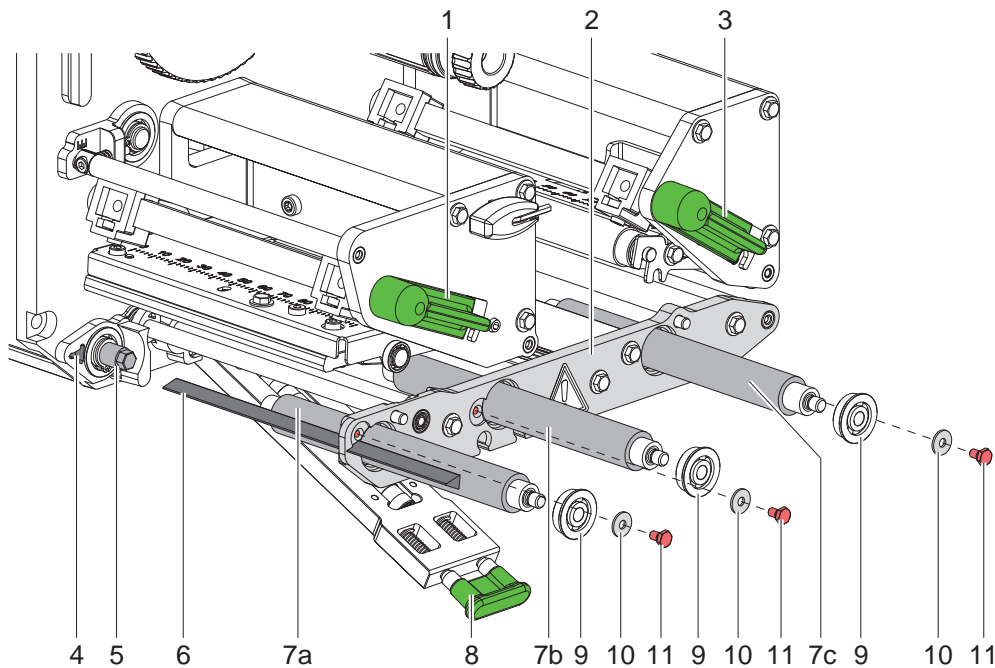


Figure 5 Replacing the rollers and the dispense edge

1. Unlock the levers (1,3) to lift the printhead and the pinch roller. Open the locking system (8) and swing it down.
2. Loosen the screws (11) and the washers (10) and remove the ball bearings (9) from the bearing plate (2).
3. Pull out the rollers (7) and/or the dispense edge (6).
4. Insert new rollers (7) and push them onto the hexagonal ends of the concerning axles (5) while turning slightly.
5. Insert the dispense edge (6) through the bearing plate (2) into the notch (4).
6. Insert the ball bearings (9) into the bearing plate (2) and secure them with the screws (11) and the washers (10).

### 4.3 Replacing the Slipping Clutches

The rewinder for the transfer ribbon is coupled to the main drive using a slipping clutch (2L, 2R). The supply hub of the transfer ribbon is braked with a slipping clutch (1L, 1R) during printing.

Replace a slipping clutch when it can no longer be set ▷ 5.1 on page 16.

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

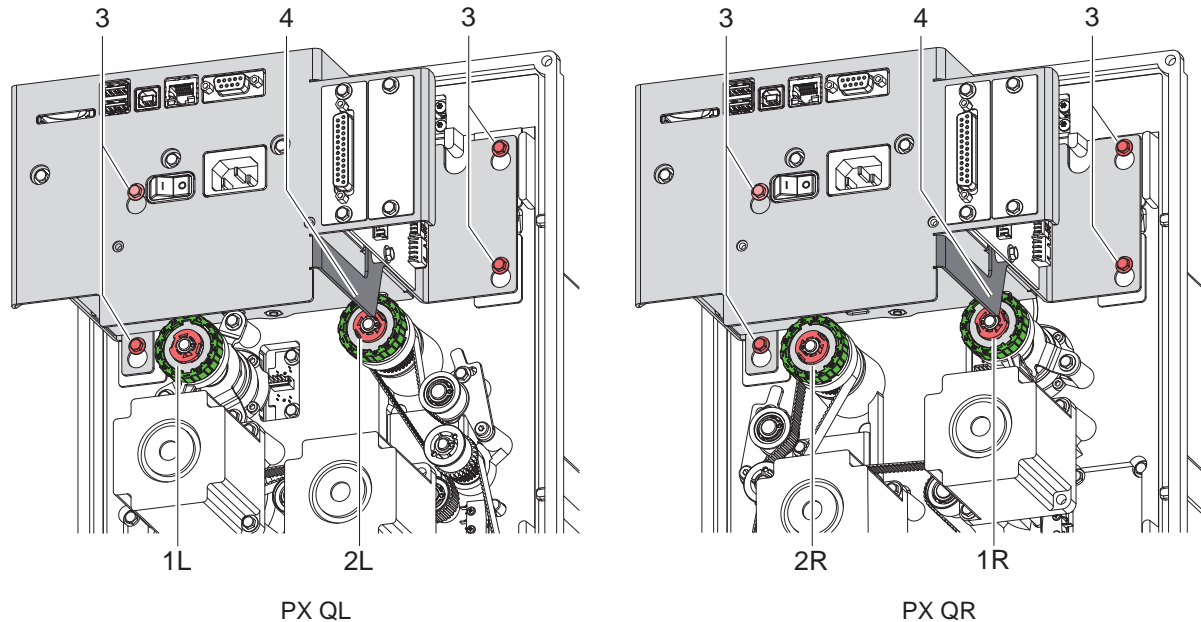


Figure 6 Slipping clutches

#### Preparation



#### **Danger!**

**Risk of death via electric shock!**

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

- ▶ Unplug the printer from the electrical outlet.
- ▶ Remove the rear cover of the printer.



#### **Note!**

The clutch (2L) on the rewinder of PX QL and the brake (1R) on the unwinder of PX QR cannot be replaced when the electronics unit (4) is mounted.

- ▶ Loosen 4 screws (3).
- ▶ Lift the electronics unit until the described clutches are accessible.
- ▶ After clutch replacement push the electronics unit to the normal position and fix it with the screws (3).

### Replacing the Slipping Clutch at the Ribbon Rewinder

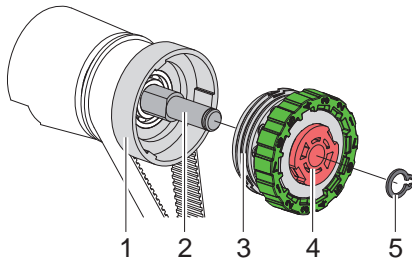
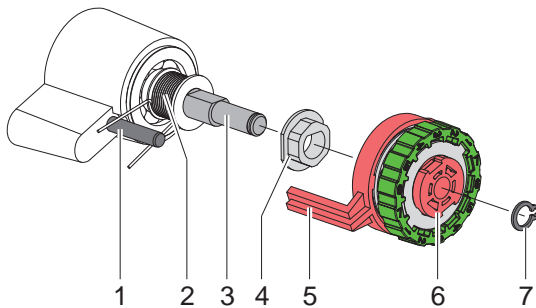


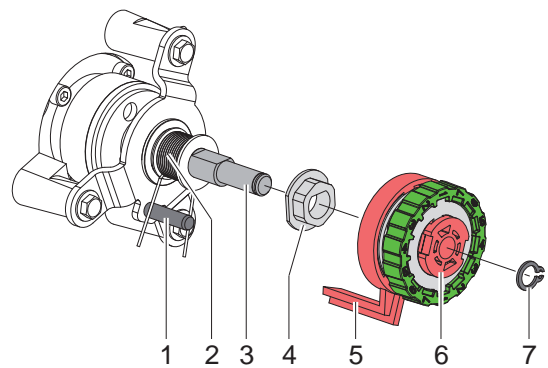
Figure 7 Slipping clutch at the ribbon rewriter

1. \* PX QL: Lift the electronics unit ▷ page 11.
2. Remove the snap ring (5).
3. Pull the clutch (4) from the winder axle (2).
4. Slide the new clutch (4) onto the winder axle (2).
5. Align grooves in the coupling disks (3) with the guides in the collar of the belt gear (1).
6. Slide coupling further until it stops.
7. Secure the snap ring (5).
8. \* PX QL: Fix the electronics unit ▷ page 11.
9. Adjust the clutch ▷ 5.1 on page 16.

### Replacing the Brake at the Ribbon Unwinder



PX Q without automatic ribbon saver



PX Q with automatic ribbon saver

Figure 8 Brake at the ribbon unwinder

1. \* PX QR: Lift the electronics unit ▷ page 11.
2. Remove the snap ring (7).
3. Pull the brake (6) from the winder axle (3). Ensure that the tappet (4) remains on the winder axle. Reattach the tappet to the winder axle if it has been pulled off. The axle profile is shaped in such a way that the tappet only fits in one way.
4. Check the position of the spring (2). Ensure that the pin (1) grasps between the spring arms.
5. Slide the new brake (6) onto the winder axle (3) in such a way that it fits on the hexagonal profile of the tappet (4).
6. Push the brake further until it stops in such a way that lever (5) grasps between the spring arms..
7. Secure the snap ring (7).
8. \* PX QR: Fix the electronics unit ▷ page 11.
9. Adjust the brake ▷ 5.1 on page 16.

## 4.4 Replacing the Label Sensor

**Note!**

Soiling of the label sensor can also cause malfunctions.

► Before replacing the label sensor, check whether it is soiled and clean it if necessary ► 3.2 on page 7.

**Danger!**

Risk of death via electric shock!

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

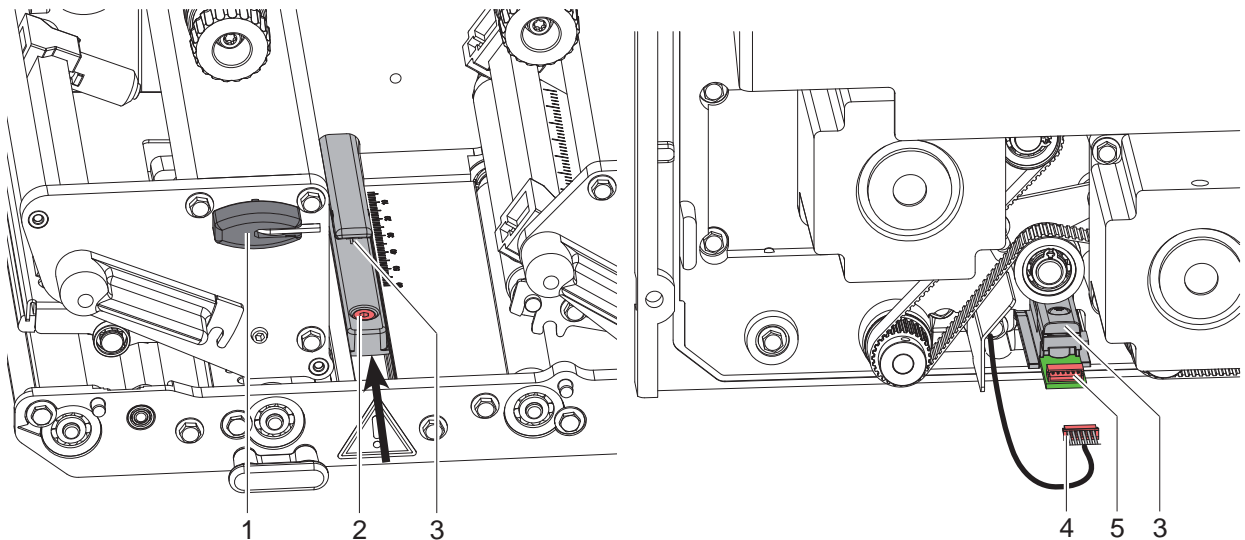


Figure 9 Replacing the label sensor

**Removing the label sensor**

1. Unplug the device from the electrical outlet and remove the rear cover.
2. Remove the material from the printer.
3. Disconnect the cable (4) from the connector (5) of the label sensor (3) .
4. Loosen the screw (2) with the Allen key (1).
5. Push the label sensor (3) in the arrow direction and remove it to the backside

**Installing the label sensor**

1. Move the new label sensor (3) against the arrow direction in the former position.
2. Connect the cable (4) to the connector (5) .
3. Mount the rear cover and restore all connections.
4. Adjust the label sensor ► Mounting Instructions.
5. Tighten the screw (2) .
6. Calibrate the label sensor ► Configuration Manual.

### 4.5 Replacing the PCB CPU



#### **Danger!**

**Risk of death via electric shock!**

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

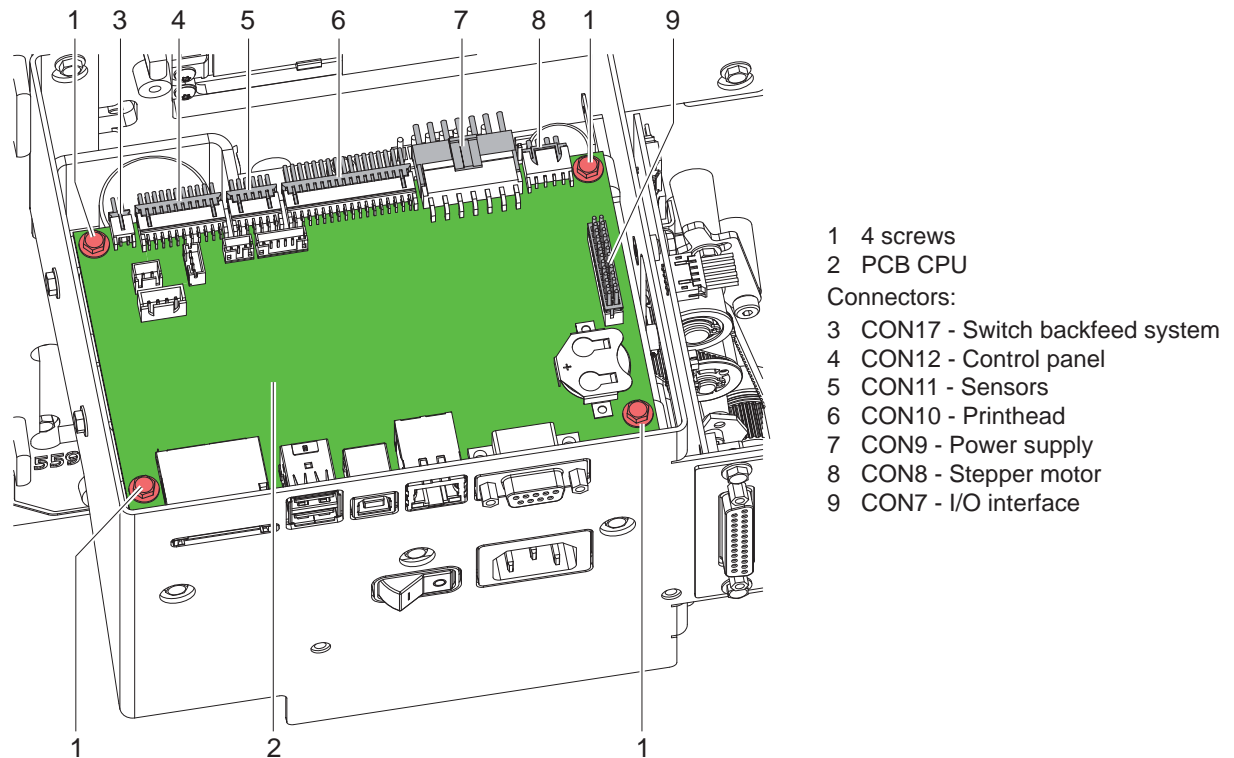


Figure 10 Replacing the PCB CPU

1. If possible, save the printer configuration to an external medium ▷ 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 media from the slots.
5. Dismount the rear cover.
6. Unplug all plug connections (3-9) from the PCB CPU (2).
7. Loosen screws (1) and remove PCB CPU (2).
8. Attach the new PCB CPU (2) with four screws (1).
9. Connect all cables to the PCB CPU (2).
10. Mount the rear cover.
11. Restore all interface connections on the back of the printer.
12. Connect the power cable.
13. Update the firmware if necessary.
14. Select the matching *Printer model* ▷ Configuration Manual.
15. Adjust the label sensor ▷ Configuration Manual.
16. Load the printer configuration from the memory medium if possible. Otherwise, set the printer configuration via control panel ▷ Configuration Manual.

## 4.6 Replacing the Power Supply Unit

**Danger!**

Risk of death via electric shock!

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

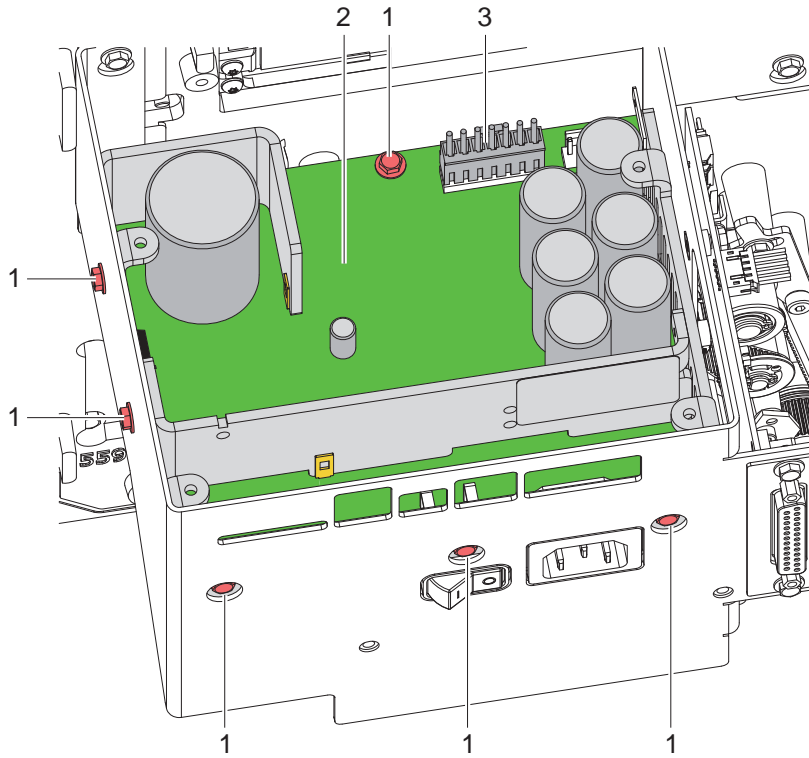


Figure 11 Replacing the power supply unit

1. Dismount the PCB CPU ▷ 4.5 on page 14.
2. Unplug the cable from the connectors (3).
3. Loosen 6 screws (1) and remove the power supply unit (2).
4. Insert the new power supply unit and fix it with the screws (1).
5. Connect the cable at the connectors (3).
6. Re-mount the PCB CPU ▷ 4.5 on page 14.
7. Mount the rear cover.

## 5.1 Measuring and Adjusting the Winding Torques

The rewinder for the transfer ribbon is coupled with a slipping clutch to the main drive. The unwinder of the transfer ribbon is braked with slipping clutches 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

The winding axle of the rewinder is not actively driven by the belt during label backfeed, but rather solely by the pull of the print roller. The torque required to disengage the rewinder from the belt drive is implemented via a brake in the winding reel, which works in both directions. The measured torque against the winding direction is the sum of the coupling torque and the torque of the brake. Only the torque of the brake is measured when the winding axis is rotating in the winding direction. For this reason, measurements of the torques at the rewinder are required in both directions.

If the winding torques differ from the set values, the clutches must be adjusted.

### 5.1.1 Measuring the Winding Torques

The measurement of the winding torque at the ribbon winder 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 (3 cm)

#### Removing the Front Cover



#### Note!

The pulling forces are measured with a spring scale. For a correct measurement the spring scale must be vertically moved up. Therefore the front cover must be removed intermediately.

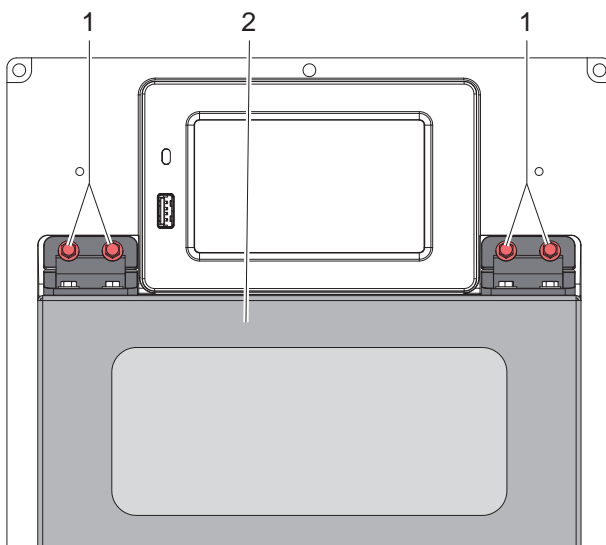


Figure 12 Removing the front cover

- Loosen 4 screws (1) and remove the front cover (2).
- Re-mount the cover after measuring and adjusting the clutches.



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

Winder	Measurement	Direction of rotation	Winding torque M	Pulling force F
Ribbon rewinder	A	against winding direction	12,9 - 13,5 Ncm	4,3 - 4,5 N
	B	in winding direction	2,1 - 3,0 Ncm	0,7 - 1,0 N
Ribbon unwinder	C	any	3,6 - 4,5 Ncm	1,2 - 1,5 N

Table 1 Winding torques at the transfer ribbon winders

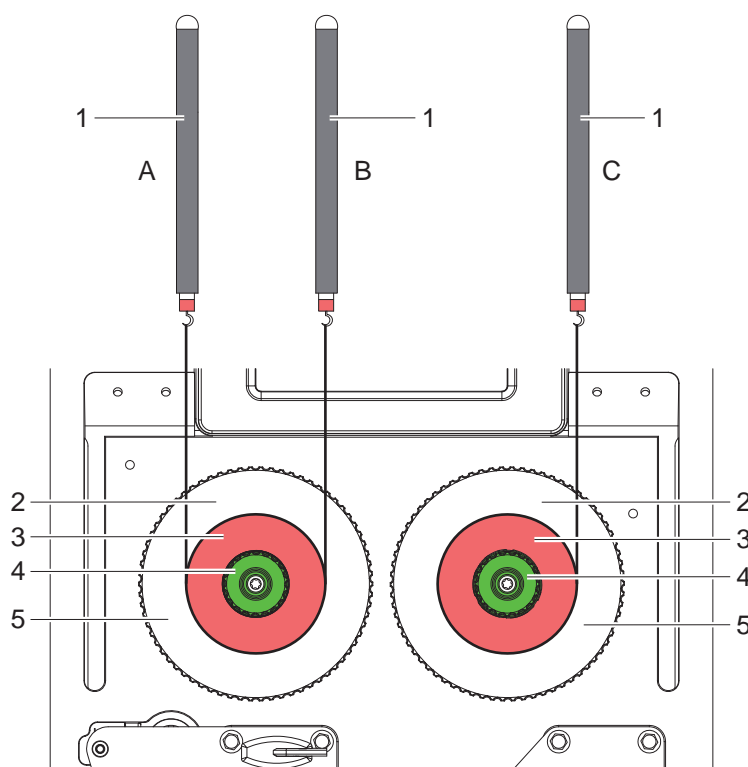


Figure 13 Measuring the winding torques



### **Danger!**

**Risk of death via electric shock!**

► **Before opening the rear 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 ▷ 2.2 on page 6.
3. Remove the transfer ribbon from the printer.
4. Attach the test collar (3) to the winder (5).
5. Turn the knurled nut (4) 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 upward vertically until the winder begins to turn.
9. Hold the drive belt in place during the measurement. Otherwise, the measurement is 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 ▷ 5.1.2 on page 18.

### 5.1.2 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 rear cover, disconnect the device from the mains supply and wait at least one minute until the power supply unit has discharged.**

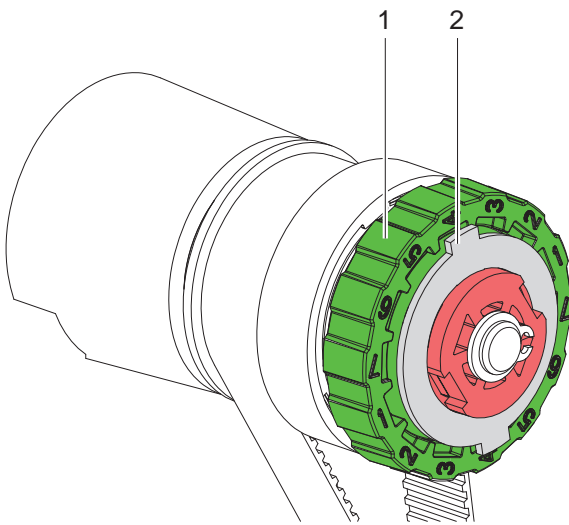


Figure 14 Adjusting the winding torque

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover ▷ 2.2 on page 6.
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.
7. Repeat the adjustment until the measured winding torque is within the tolerance range.  
Is it not possible change the slipping clutch ▷ 4.3 on page 11.
8. Mount the rear cover.

## 5.2 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
- Lateral displacement of the print image
- 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 ▸ Assembly Instructions.**

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

1. Preparing the printer for adjustment ▸ 5.2.1 on page 19.
2. Aligning the printhead to the print roller ▸ 5.2.2 on page 20.
3. Adjusting the printhead pressure ▸ 5.2.3 on page 21.
4. Adjusting the distance of the printhead to the paper guiding edge ▸ 5.2.4 on page 21.
5. Adjusting the transfer ribbon feed path ▸ 5.2.5 on page 22.
6. Performing a final test ▸ 5.2.6 on page 22.

### 5.2.1 Preparing the Printer for Adjustment

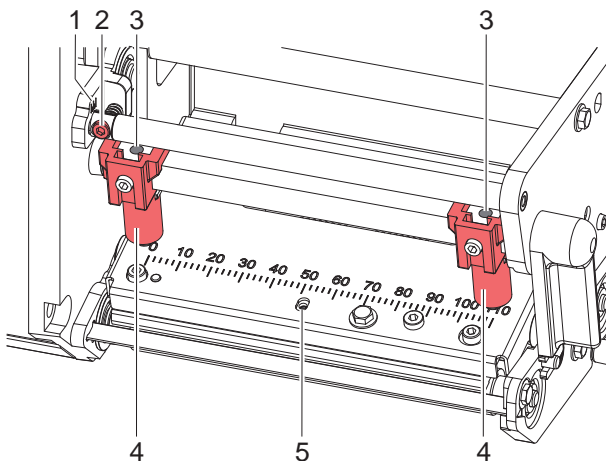


Figure 15 Preparing the printer for adjustment

1. Load labels and transfer ribbon which extend across the entire printing width
2. In the printer configuration, set the *Print speed* parameter to 100 mm/s.
3. Move the transfer ribbon deflection to the central position (2) with the screw (1).
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.

### 5.2.2 Aligning the Printhead to the Print Roller

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

- Setting the parallelism of horizontal lines and the edge of the label.
- Aligning the heating line to the top of the print roller. This is the position with the highest print image density.

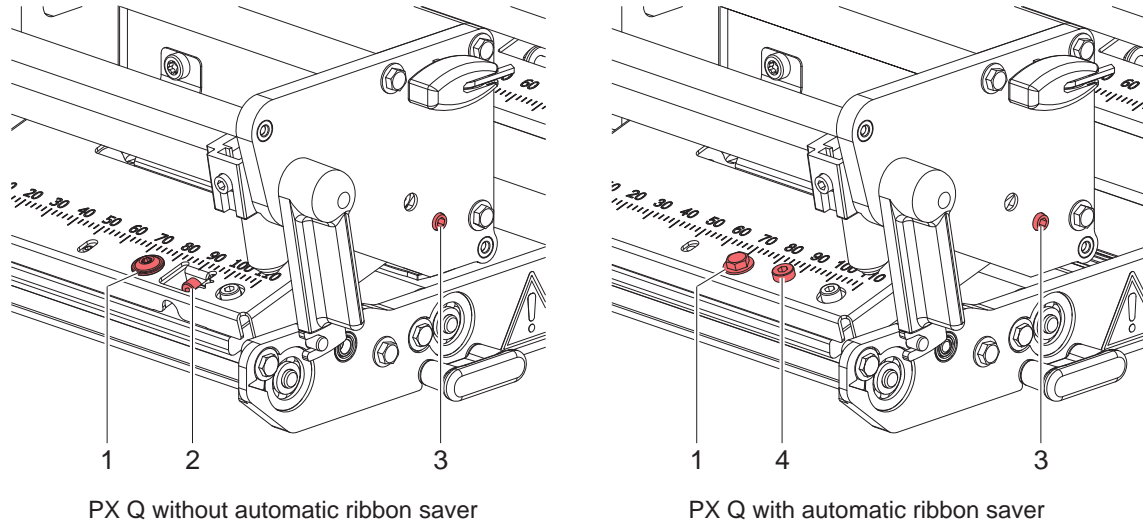


Figure 16 Aligning the printhead to the print roller

#### Setting the parallelism of horizontal lines and the front label edge



#### Attention!

Risk of damage.

Attempting to adjust the printhead when the fixing screws (1) are tight can lead to defects at the printhead assembly.

- Always loosen the fixing screws (1) before adjusting the printhead.



#### Note!

- Open and close the printhead after each step of the adjustment.

1. Check the printhead alignment with the test function *Test grid* (► Configuration Manual) or a similar pattern.
2. If horizontal lines are not parallel to the label edges, loosen the screw (1) by a quarter turn and adjust the parallelism with the screw (2) or eccentric (4).
3. Tighten the screw (1).

#### Aligning the heating line to the top of the print roller

4. Print more test labels.
5. Set the best possible image quality by turning the eccentric (3).  
Differences in the density between the two sides are still permissible.

### 5.2.3 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 printhead pressure leads to an improvement of the print image density on the corresponding side and to a shifting of the ribbon feed path to the opposite side.

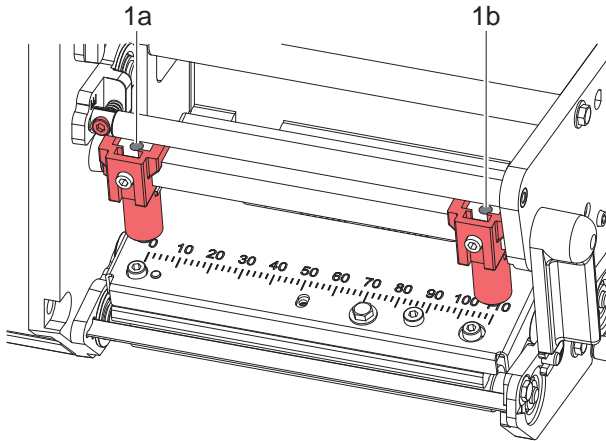


Figure 17 Adjusting the printhead pressure

1. Turn the adjustment screws (1a, 1b) counterclockwise until turning becomes perceptibly easy.
2. Reduce the *Heat level* 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.
5. Set the original *Heat level* in the printer configuration.

### 5.2.4 Adjusting the Distance of the Printhead from the Paper Guiding Edge

\* Not at PX Q with automatic ribbon saver

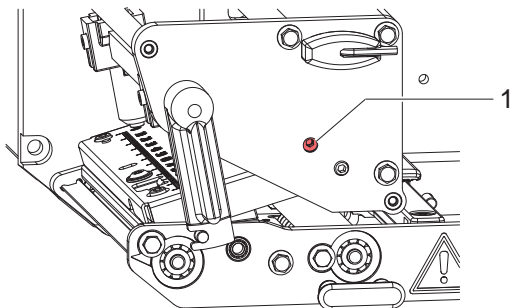


Figure 18 Adjusting the distance of the printhead to the paper guiding edge

The purpose of the adjustment is the positioning of the first printing dot 1 mm away from the paper guiding edge.

1. Print labels with vertical lines at a defined X-position.
2. Measure the distance of the vertical lines from the edge of the media.  
Set value:  $X + 1$  mm.
3. If the measured value differs from the set value, shift the printhead carriage by turning the screw (1) and repeat the measurement.



**Note!**

The screw (1) is accessible only when the printhead is closed.

### 5.2.5 Adjusting the Transfer Ribbon Feed Path

The transfer ribbon feed path can be affected by the following adjustments:

Method	Purpose
Fine-tuning of the printhead pressure	Avoiding wrinkles in the print zone arising from the inner or outer side
Bowing the printhead	Avoiding wrinkles in the print zone arising from the middle
Adjusting the ribbon deflection	Adapting the feed path to the print image

Table 2 Adjusting the transfer ribbon feed path

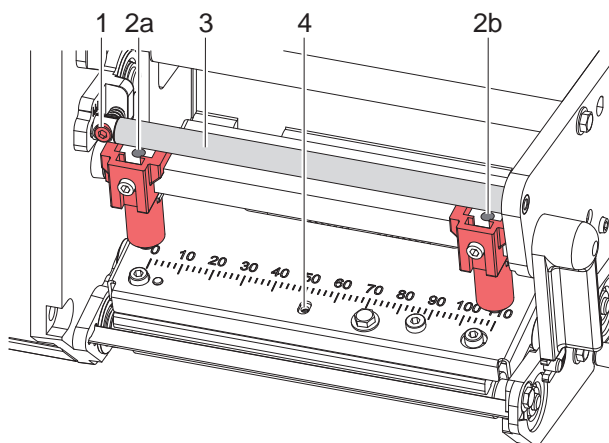


Figure 19 Adjusting the transfer ribbon feed path

#### Fine-tuning of the printhead pressure

- If the ribbon shifts to one side in the print zone, turn the screw (2a) or (2b) on the opposite side clockwise in small increments. Wait until the ribbon feed path has stabilized after each step of the adjustment.

#### Bowing the printhead



#### Attention!

The printhead assembly can be damaged when bowing the printhead.

Turning the adjustment screw (4) too hard can cause damage to the printhead assembly.

- As soon as you perceive clear resistance when turning the adjustment screw (4), 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 (4) as far as is absolutely necessary.
- If the wrinkles cannot be remedied (e.g. wrinkles in the center), turn the adjustment screw (4) clockwise **with extreme care** using an Allen key (1.5 mm) and observe the ribbon feed path. When the adjustment screw (4) 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.
- If bowing is not necessary, turn the screw (4) clockwise until the screw is just barely clamping.

#### Adjusting the front transfer ribbon deflection (3)

- Turn screw (1) with Allen key and observe the behavior of the ribbon. If wrinkles arise from the inner side turn the screw counterclockwise, if wrinkles arise from the outer side turn the screw clockwise

### 5.2.6 Final Test

- Recheck the setting with the test function *Test grid* (► Configuration Manual) or a similar print pattern.

When using standard cab media, the test printout must show lines with sharp contours and black areas without any parts missing.

## 5.3 Adjusting the Belt Tension at the Main Drive Motor

**Danger!**

Risk of death via electric shock!

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

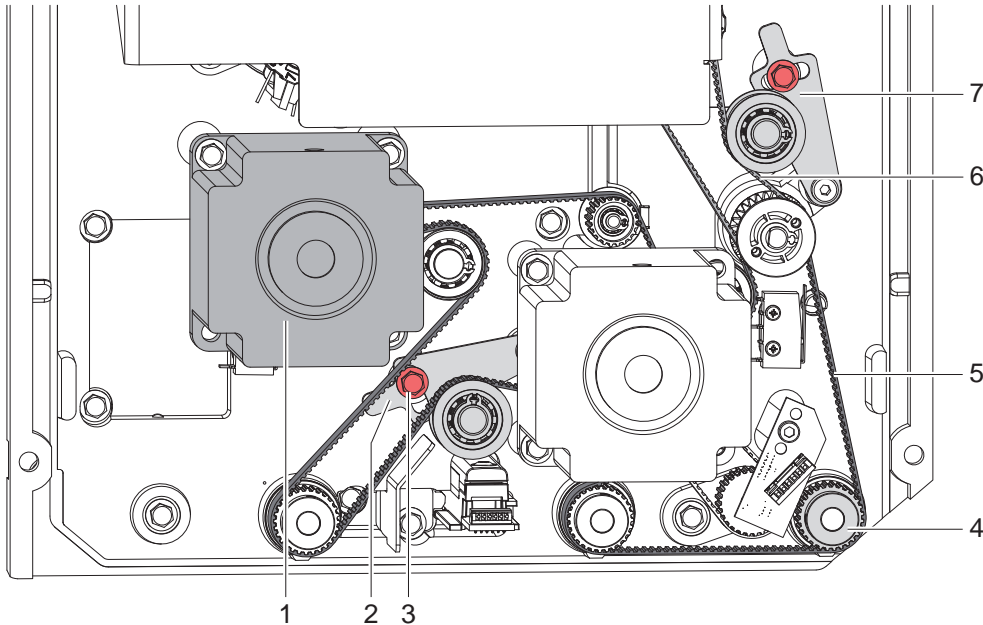


Figure 20 Adjusting the belt tension

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover ▷ 2.2 on page 6.
3. Loosen screw (3) of the belt tension bracket (2) to adjust the tension of belt (5) between motor and print roller (4) .
4. Swing the belt tension bracket (2) so that the toothed belt (5) is tensioned tightly between motor and print roller (4).
5. Tighten screw (3) in this position of the belt tension bracket .
6. Adjust the tension on the toothed belt (6) to the ribbon take up hub with belt tension bracket (7) in the same manner.
7. Mount the rear cover.

## 5.4 Adjusting the Head Switches

The head switches prevent printing when the printhead or the backfeed system are open.

Adjust the head switches if the error message *Head open* appears in the display even though the printhead and the backfeed system are locked.



### **Danger!**

**Risk of death via electric shock!**

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

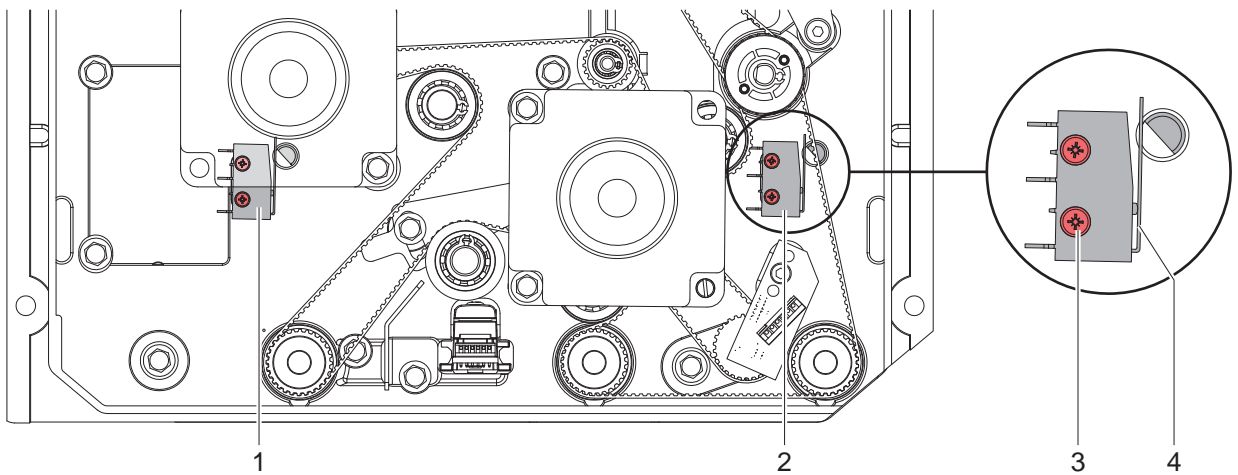


Figure 21 Adjusting the head switches

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover ▸ 2.2 on page 6.
3. Lock printhead and pinch roller.
4. Slightly loosen the fixing screws (3) of the head switch (1 or 2).
5. Move the head switch housing and switching lever (4) to a parallel position.
6. Fix 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. Mount the rear cover.



### 5.5 Adjusting the Automatic Ribbon Saver

The ribbon saver reduces the consumption of transfer ribbon by lifting the printhead while feeding blank label areas. The printhead will be lifted by eccentrics and the ribbon unwinder will be blocked by a magnetic clutch.

	Print phase	Saver phase
Eccentrics	Printing position -> Printhead is pressed down	Saving position -> Printhead is lifted
Magnetic clutch	Off -> Ribbon unwinder can be turned	On -> Ribbon unwinder is blocked

Table 3 Phases of the saver mode

#### 5.5.1 Setting the Eccentrics

A misalignment of the eccentrics can cause a reduction of the saver effect in the saver phase or a deterioration of the print image and a stagnant ribbon transport in the print phase.

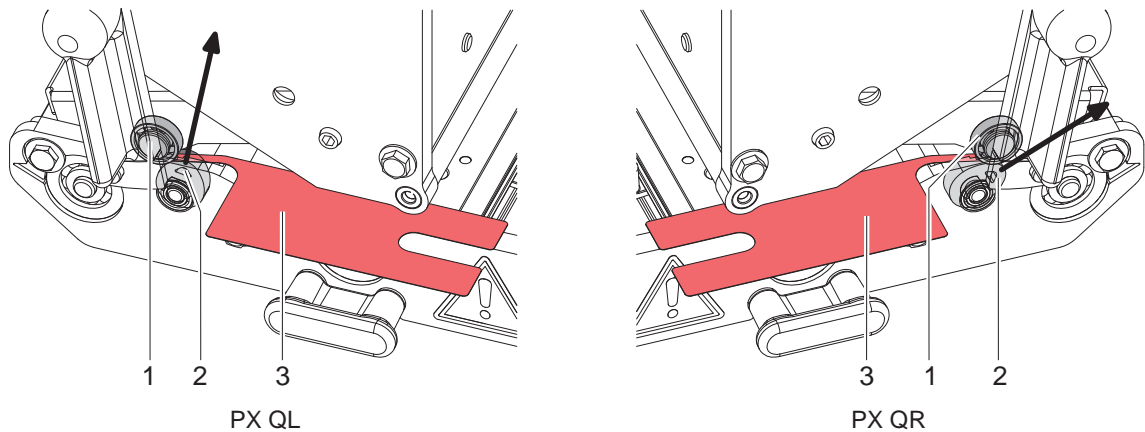


Figure 22 Checking the eccentrics position

1. Remove the label material.
2. Lock the printhead.
3. Switch on the printer.  
The ribbon saver will be synchronized. After this the eccentrics are in the print position.
4. Check the orientation of the eccentrics.



#### Attention!

**Risk of ribbon saver malfunction.**

**In the print position the peak of the eccentric (2) at PX QL and at PX QR must**

- point upwards and
- stand on the right of the ball bearing (1) ▷ Figure 22.



**Access to the following functions only with service key installed!**

5. If the peak of the eccentric points downwards invert the setting of *Setup > Ribbon > Invert eccentric position*.
6. Check the distance between ball bearing (1) and eccentric (2) with the 0,1 mm gauge (3).  
If necessary select *Setup > Ribbon > Saver eccentric position* and adjust the angle setting of the eccentric.
7. Check the setting by changing between print and saver position using the function *Setup > Ribbon > Toggle ribbon saver*.

### 5.5.2 Adjusting the Magnetic Clutch

A misaligned magnetic clutch can cause a very high and not adjustable torque at the ribbon supply hub. The distance between chassis of the magnetic clutch (2) and the armature disk (3) must be 0.1 mm.



#### **Danger!**

**Risk of death via electric shock!**

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

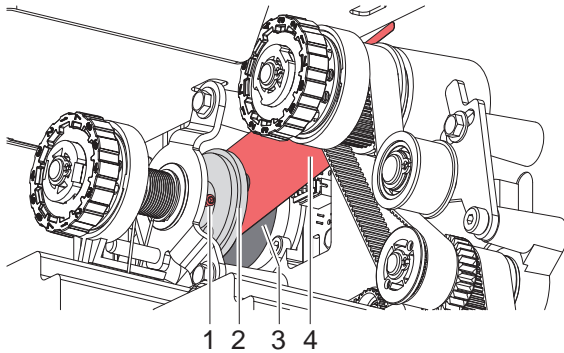


Figure 23 Adjusting the magnetic clutch

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover.
3. Loosen two screws (1).
4. Pull armature disk (2) to the slipping clutch.
5. Insert the distance caliber 0.1 mm (4) between armature disk (2) and chassis of magnetic clutch (3) .
6. Slide armature disk (2) to the chassis so that the distance caliber (4) will clamp slightly and tighten the screws (1).
7. Remove the caliber.
8. Adjust the torque at the ribbon supply hub.
9. Mount the rear cover.

## 6.1 Failure of Device Functions

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
	Check the automatic ribbon saver
	Replace the printhead
	Replace the PCB CPU
No display function	Check cable connection between PCB CPU and control panel
	Replace the control panel
	Replace the PCB CPU
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

Table 4 Failure of device functions

## 6.2 Permanent Hardware Faults

Error message	Cause	Fault recovery
<i>Printhead thermistor broken</i>	Thermistor at the printhead defective	Replace the printhead
<i>Voltage error</i>		
$V_{BAT}$	Voltage of the battery on the PCB CPU is too low	Replace the PCB CPU
24 V	24 V too low	Check voltage at measurement point +24V ▷ Figure 25 on page 29: <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 TPH	24 V for the printhead too low	Check voltage at measurement point +24V TPH ▷ Figure 25 on page 29: <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>

Table 5 Hardware faults

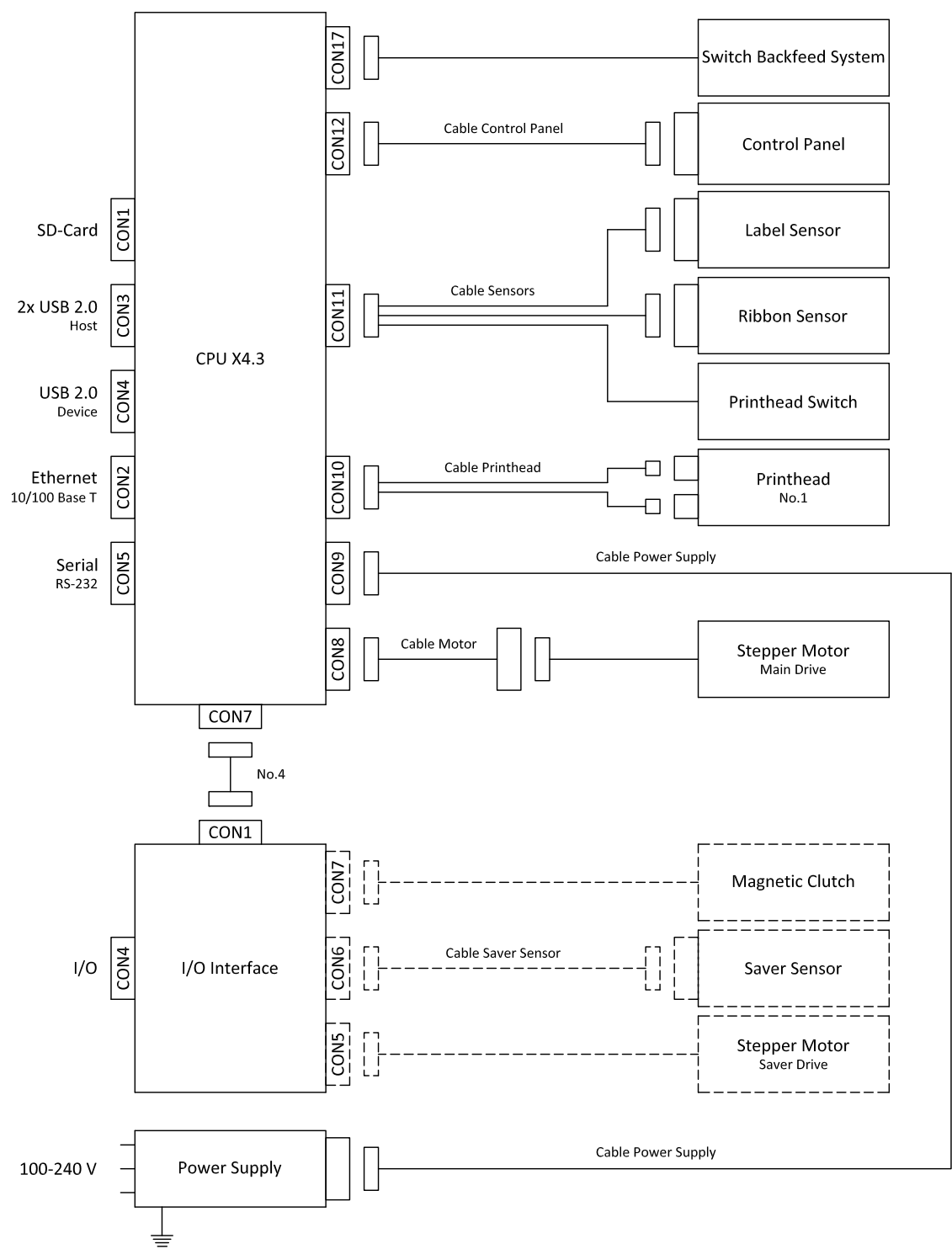
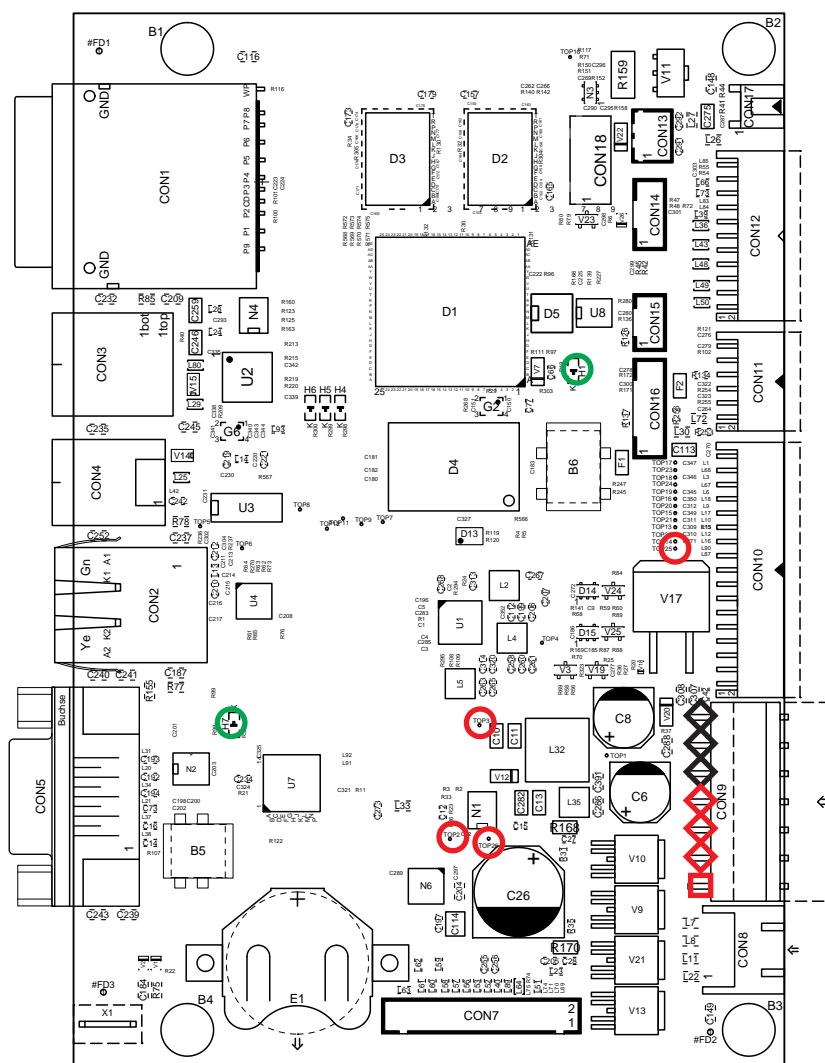


Figure 24 Block diagram PX Q



Measuring points at CON9:

◇	GND
◇	+24V
□	+V <sub>MOT</sub> (+24V)

Measuring points on the PCB:

○	TOP2	+24V
○	TOP3	+5V
○	TOP25	+24V TPH
○	TOP26	+V <sub>MOT</sub> (+24V)

LEDs on the PCB:

○	H1	+3,3V
○	H7	LED FPGA on during start procedure blinking after start procedure

Figure 25 Layout diagram PCB CPU X4.3

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