



Service Manual

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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 Introduction

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.

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.

Standard tools:

- Screw driver Torx, size TX 10
- Adjusting pliers flat-nosed, form A straight Type 135
- Cylindrical dynamometer (spring scale), 0 - 5 N

Auxiliary Materials:

- Grease for plastic materials

2.2 Replacing the Printhead

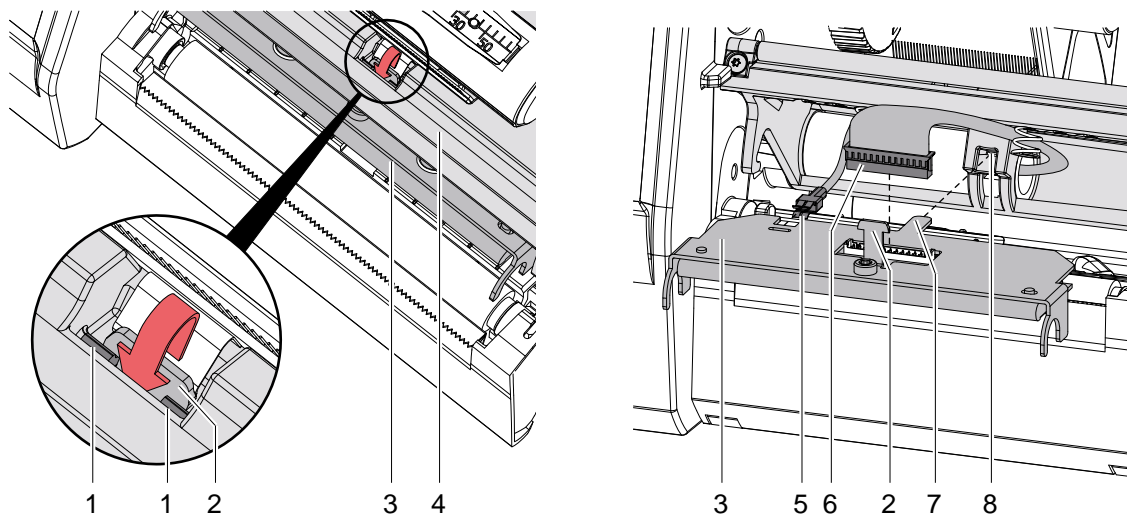


Fig. 1 Replacing the printhead



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 (5,6).
- ▶ Do not touch heating line with hard objects or your hands.

1. Fold up printhead retainer (4).
2. Remove material and ribbon from the printer.
3. Push printhead (3) up against the printhead retainer, slide the holding lug (2) over the web (1) and pull it out of the slit in the printhead retainer.
4. Remove printhead from the guide (8) in the printhead retainer.
5. Detach the cables (5,6) from the printhead.
6. After changing the printhead, attach the cables (5,6) to the printhead.
7. Insert the holding lug (7) of the printhead into the guide (8) in the retainer.
8. Push printhead up against the printhead retainer. While doing so, guide the holding lug (2) of the printhead upwards through the slit in the retainer.
9. Slide the printhead into the printhead retainer until the holding lug (2) latches over the web (1).

2.3 Replacing the Print Roller

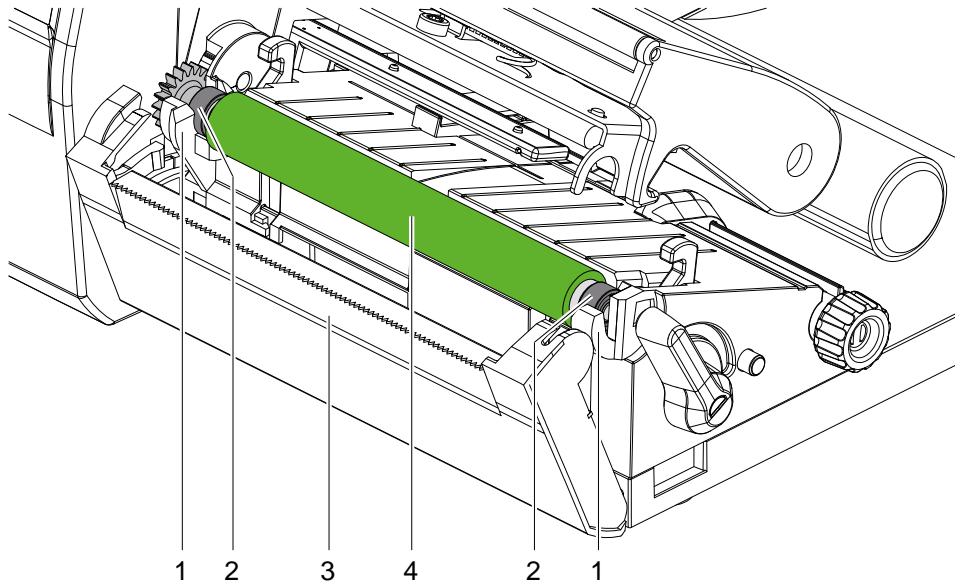


Fig. 2 Replacing the print roller

1. Open the printhead.
2. Remove material and transfer ribbon from the printer.
3. Fold down the cover (3) with the tear-off plate.
4. Lift the print roller (4) from its retainers (1).
5. Push the new roller with bearings (2) into the retainers (1) until they click into place.
6. Fold up the cover (3) with the tear-off plate.

2.4 Removing the Casing

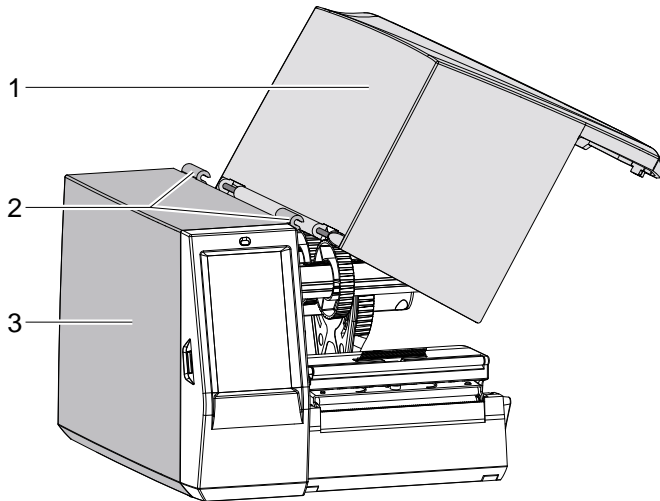


Fig. 3 Removing the cover

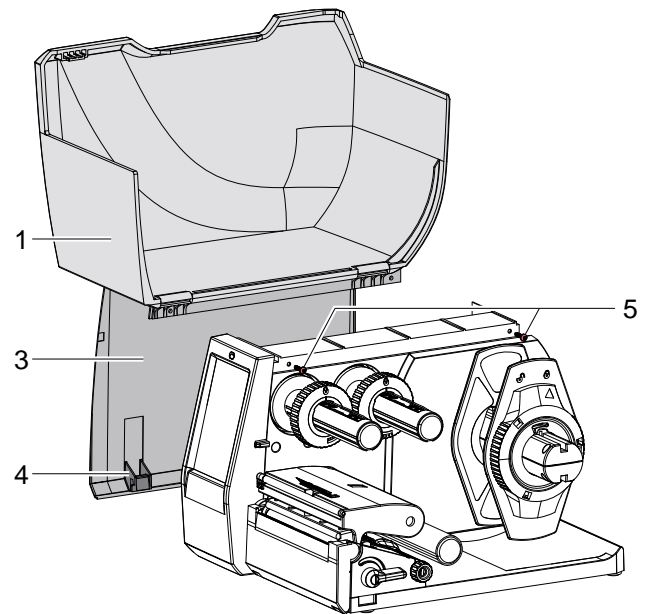


Fig. 4 Removing / mounting the casing

Removing the cover

- ▶ Lift the cover (1) by turning by 60°.
- ▶ Push the cover out of the hinges (2) of the cover plate (3) diagonally to the ground.



Note!

For service work it is recommended to remove the casing consisting of cover (1) and cover plate (3) connectedly. It is not necessary to separate the cover from the cover plate.



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 casing

- ▶ Open the cover (1).
- ▶ Loosen 2 screws (5).
- ▶ Push the cover plate (3) with the cover (1) to the connector side.
- ▶ Lift the cover plate (3) with the cover (1) from the printer.

Mounting the casing

- ▶ Insert the hooks (4) into the slot of the bottom and push the casing to the control panel side.
- ▶ Fix the cover plate with 2 screws (5).

2.5 Replacing the Control Panel

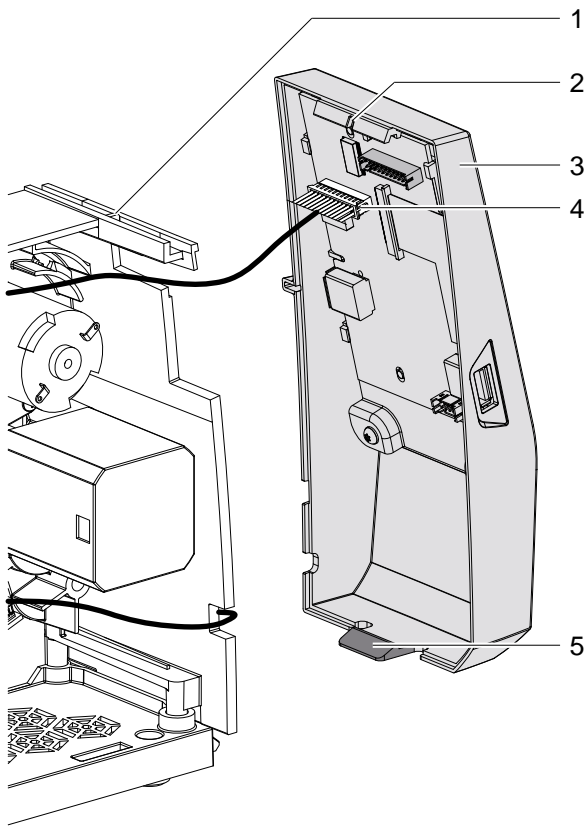


Fig. 5 Removing / mounting the control panel

Removing

- ▶ Remove the casing.
- ▶ Unlock the control panel (3) at the latch (5) swing it away from the printer and remove it by lifting.
- ▶ Unplug the connector of the display cable (4).

Mounting

- ▶ Re-connect the cable (4).
- ▶ Hook the slot (2) of the cover into the guide (1) and press the control panel against the printer until the latch (5) clicks into place.
- ▶ Mount the casing.

2.6 Replacing the Transport Module

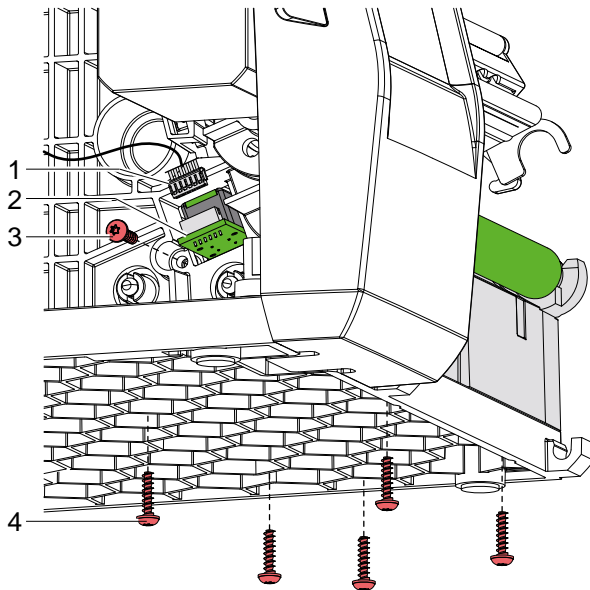


Fig. 6 Removing / mounting transport module 1

Removing

- ▶ Remove the tear-off plate/cutter.
- ▶ Remove the casing.
- ▶ Unplug the connector (1) of the label sensor (2).
- ▶ Move the label sensor as far as possible to the operator's side ▷ Operator's Manual.
- ▶ Remove screw (3) and 5 screws (4).

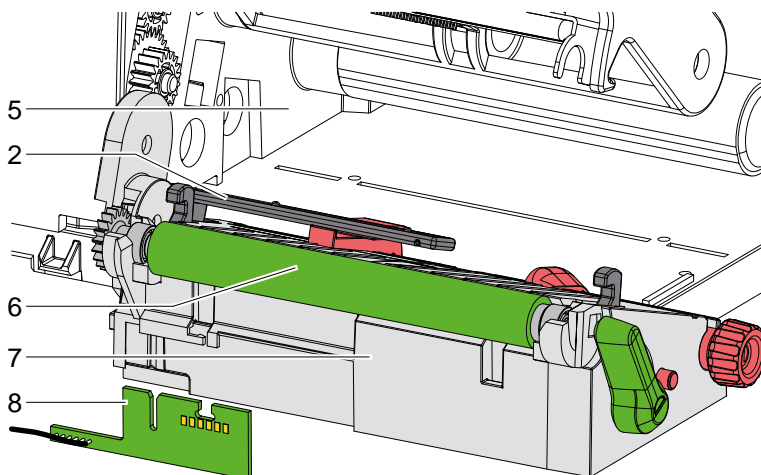


Fig. 7 Removing / mounting transport module 2

- ▶ Remove control panel.
- ▶ Remove the transport module (7) with the printing roller (6) by tilting from the chassis (5).
- ▶ Pull the cutter connection cable (8) downward out of the transport module (7).

Mounting

- ▶ Mount the assembly units in reverse order.

2.7 Replacing the Stepper Motor

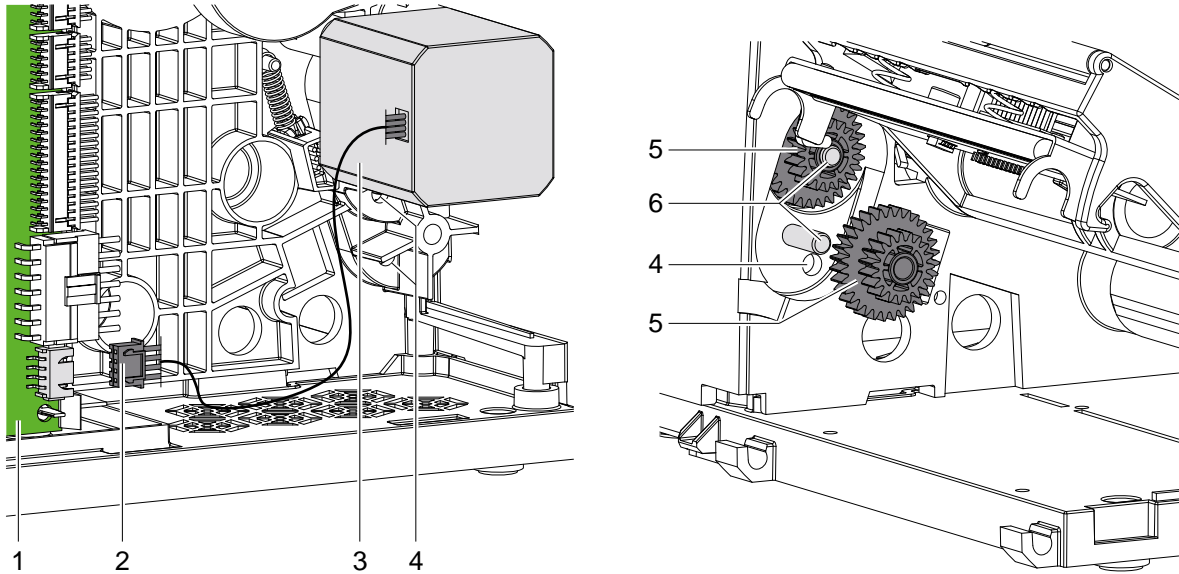


Fig. 7 Removing / mounting stepper motor 1

Removing

- ▶ Remove the casing
- ▶ Remove the transport module.
- ▶ Unplug the connector (2) of the stepper motor (3) from the CPU (1).
- ▶ Remove the gearwheels (5) from the axles (6).



Note!

The gearwheels (5) are reachable from the inner side of the chassis through the holes (4) with a pointed tool and can be pushed that way from the axles.

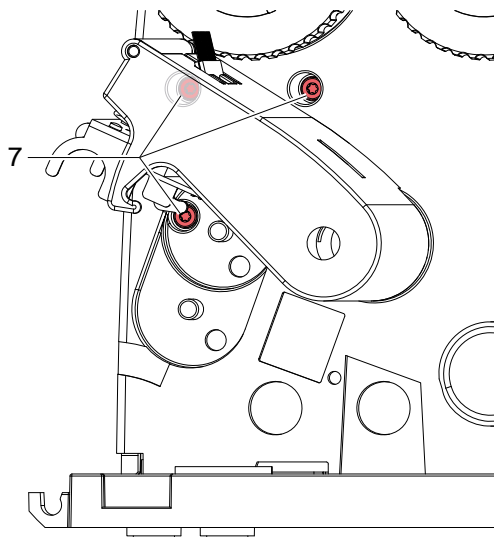


Fig. 8 Removing / mounting stepper motor 2

- ▶ Loosen 3 screws (7) and remove the stepper motor (3).

Mounting

- ▶ Mount the assembly units in reverse order.

2.8 Replacing the Printhead Holder

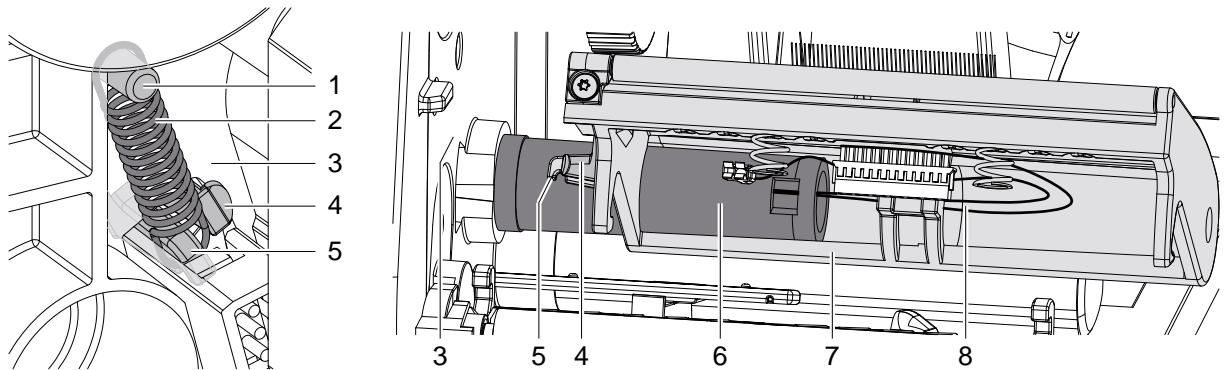


Fig. 9 Removing / mounting printhead holder

Removing

- ▶ Remove the casing.
- ▶ Remove the printhead.
- ▶ Remove the spring (2) from the spring bolt (1).
- ▶ Lift the printhead holder (7), unlock the latch (4) and push the printhead holder with the spring (2) to the operator's side out of the chassis (3).
- ▶ Remove the printhead holder (7) with the spring (2) completely from the retainer (6). In doing so remove the printhead cable (8) from the printhead holder.
- ▶ Keep the spring (2).

Mounting

- ▶ Push the printhead holder (7) onto the retainer (6). In doing so insert the printhead cable (8) into the printhead holder.
- ▶ Push latch (4) and spring hook (5) of the printhead holder through the gap of the chassis (3).



Note!

For the following mounting of the spring (2) it is recommended to push the printhead holder in a position, where the latch (4) is clamped by the chassis but not completely locked yet.

- ▶ Mount the spring (2) onto the spring hook (5).
- ▶ Push the printhead holder (7) further until the latch (4) clicks into place.
- ▶ Mount the spring (2) onto spring bolt (1).
- ▶ Mount the printhead.
- ▶ Mount the casing.

2.9 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.

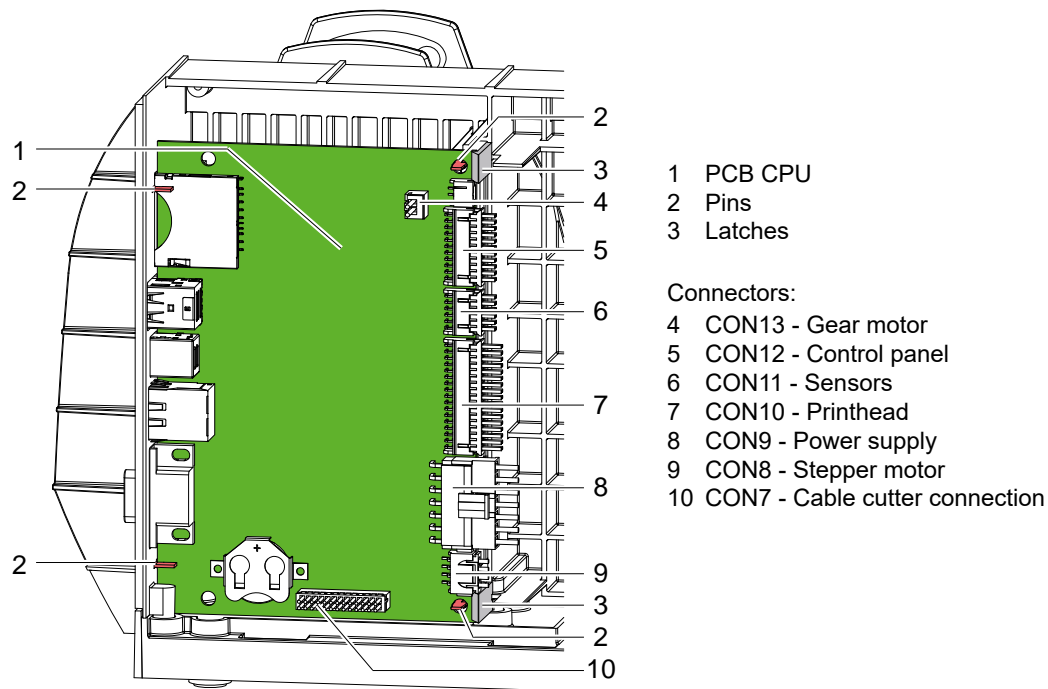


Fig. 10 Replacing the PCB CPU

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. Remove the casing..
6. Unplug all plug connections (4-10) from the PCB CPU (1).
7. Unlock the latches (3) and remove the PCB CPU from the pins (2).
8. Put the PCB CPU onto the pins (2) and snap it in into the latches (3).
9. Connect all cables (4-10) to the PCB CPU.
10. Mount the casing.
11. Restore all interface connections on the back of the printer.
12. Connect the power cable.
13. Update the firmware if necessary.
14. Adjust the label sensor ▷ Configuration Manual.
15. Load the printer configuration from the memory medium if possible. Otherwise, set the printer configuration via control panel ▷ Configuration Manual.

2.10 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.

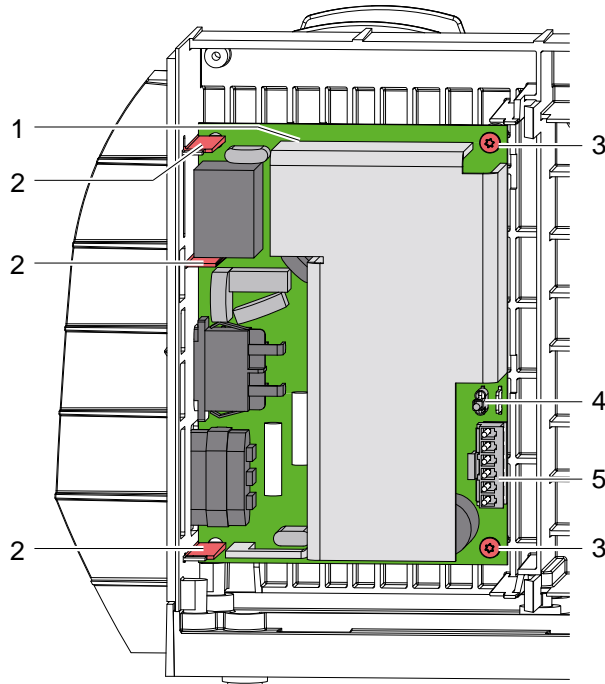


Fig. 11 Replacing the power supply unit

1. Unplug the printer from the electrical outlet.
2. Remove the casing.
3. Dismount the PCB CPU ▷ 2.9 on page 14.
4. Unplug the cables from the connectors (4,5).
5. Loosen two screws (3).
6. Pull the power supply unit (1) from the pins (2).
7. Insert the new power supply unit and fix it with the screws (3).
8. Connect the cables at the connectors (4,5).
9. Re-mount the PCB CPU.
10. Mount the casing.

2.11 Checking the Braking Force at the Ribbon Supply Hub

During printing operation the spring on the transfer ribbon supply hub functions as a brake. The braking force on the supply hub influences the transport of the transfer ribbon.

The braking force on the transfer ribbon supply hub is measured with a test collar.

The set values for the braking force at the test collar are:

Spring on	Direction of rotation	Braking Force
Transfer Ribbon Supply Hub	any direction	1,6 - 2,0 N

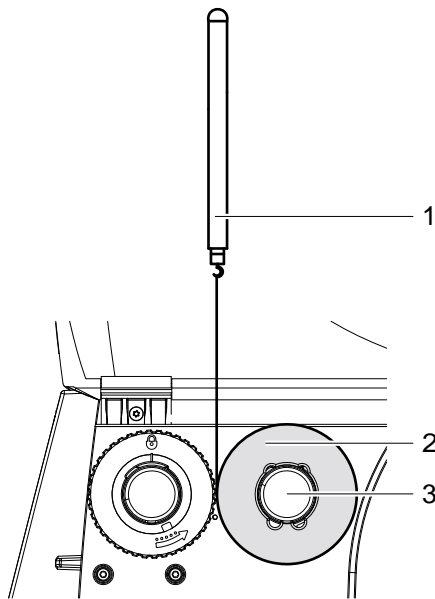


Fig. 12 Measure braking force on supply hub - for ink side-out transfer ribbon

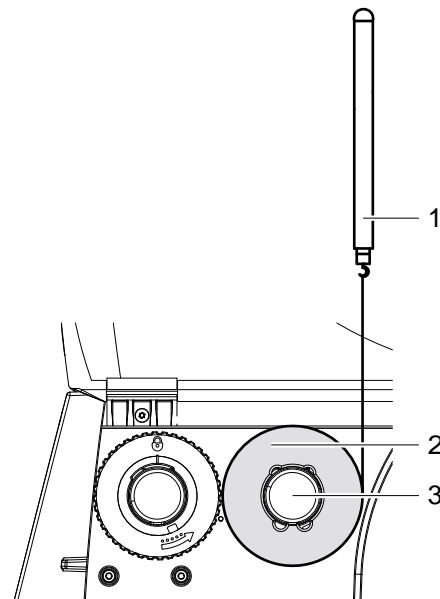


Fig. 13 Measure braking force on supply hub - for ink side-in transfer ribbon

1. Remove transfer ribbon from the printer.
2. Put test collar (2) on the supply hub (3).
3. Wind the cord around the test collar several times.
4. Secure spring scale (1) at the end of the cord.
5. Pull at the spring scale until the supply hub begins turning.
6. Allow the cord to unwind from the test collar at least one full turn and read the pulling force on the spring scale at the same time.
7. Compare the braking force with the set values.

3.1 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
	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
A peripheral device is not functioning	Check whether the peripheral device is activated via programming
	Check the peripheral device
	Replace the PCB CPU

Table 1 Failure of device functions

3.2 Permanent Hardware Faults

Error message	Cause	Fault recovery
<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 ▷ Fig. 15 on page 19: <ul style="list-style-type: none"> • Voltage too low: Replace the power supply unit • Voltage is correct: Replace the PCB CPU
24 V TPH	24 V for the printhead too low	Check voltage at measurement point +24V TPH ▷ Fig. 15 on page 19: <ul style="list-style-type: none"> • Voltage too low: Replace the power supply unit • Voltage is correct: Replace the PCB CPU

Table 2 Hardware faults

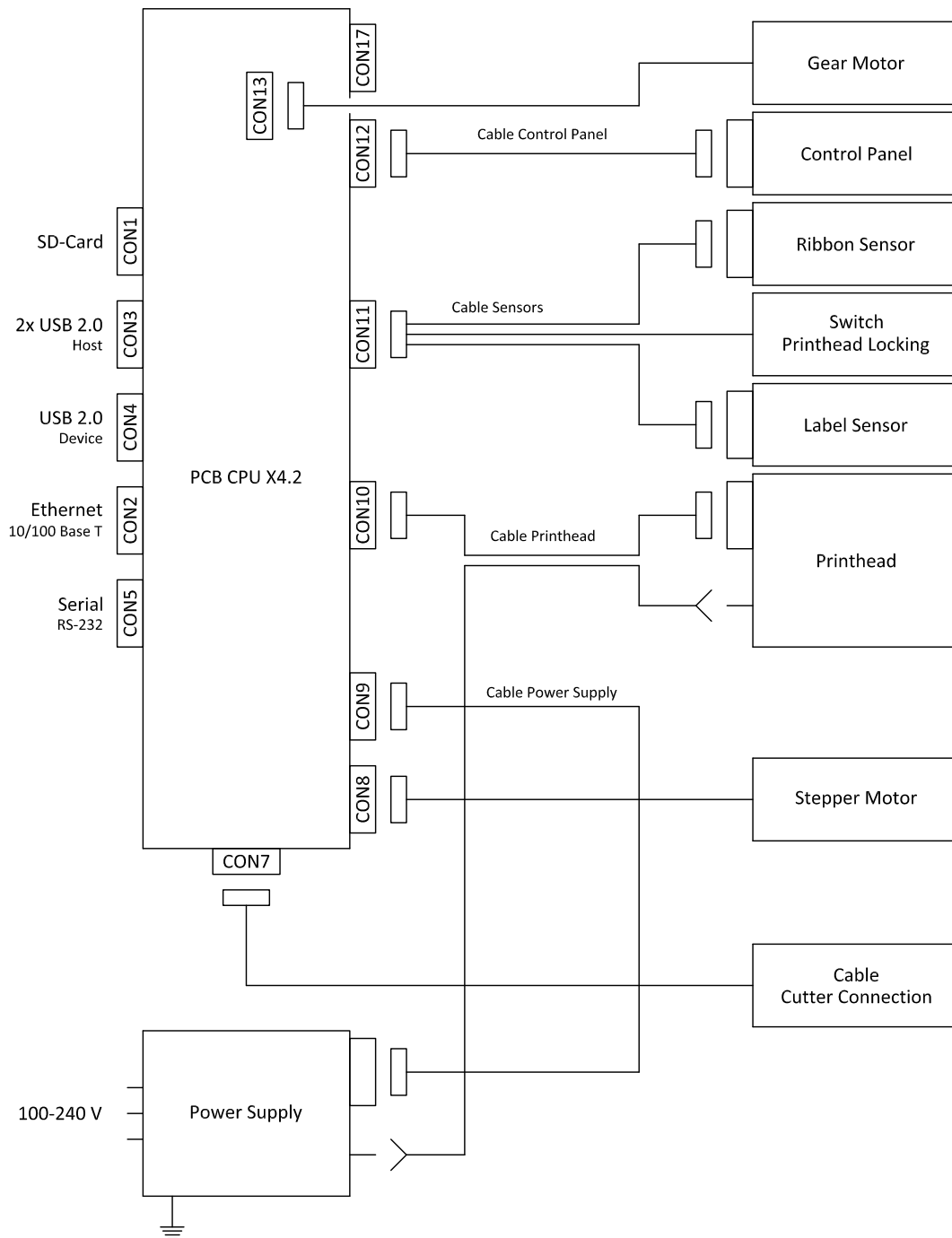
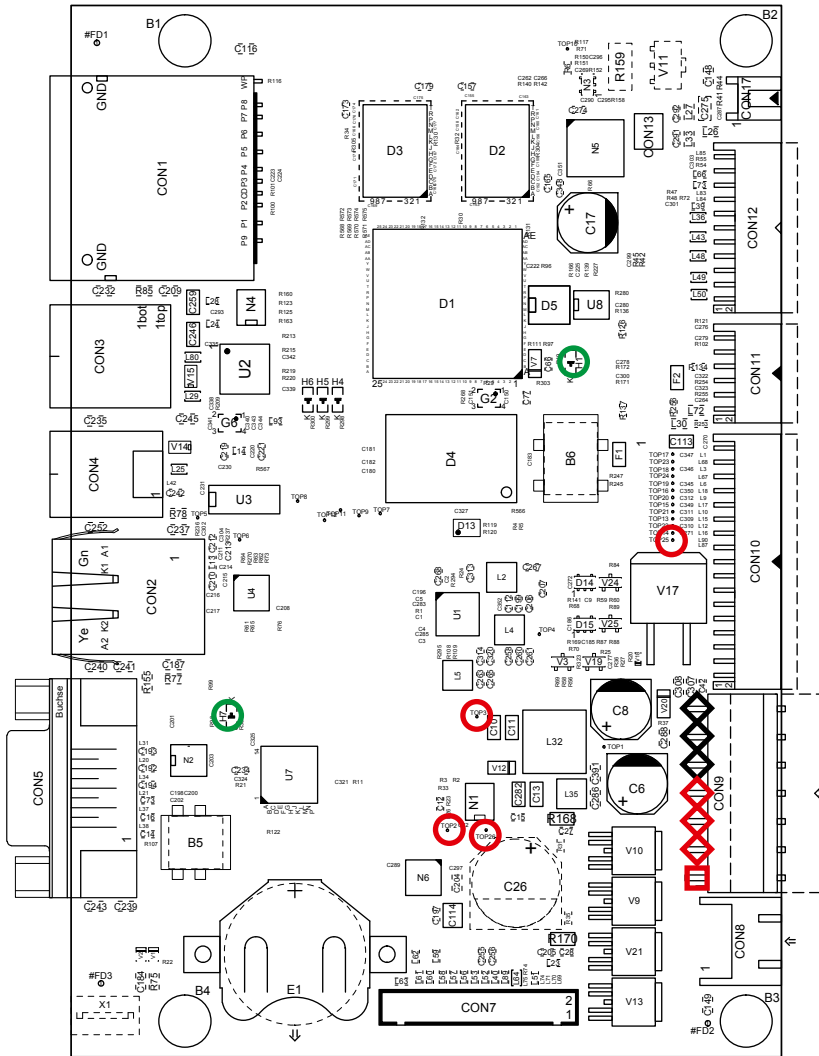


Fig. 14 Block diagram



Measuring points of CON9:

	GND
	+24V
	+V _{MOT} (+24V)

Measuring point on the PCB:

	TOP2	+24V
	TOP3	+5V
	TOP25	+24V TPH
	TOP26	+V _{MOT} (+24V)

LED on the PCB:

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

Fig. 15 Layout Diagram PCB CPU

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