# COMPA II
## Service Instructions

Quality . Tradition . Innovation

Carl Valentin label printers comply with the following safety guidelines:

CE    EG Low-Voltage Directive (2006/95/EC)
       EG Electromagnetic Compatibility Directive (2004/108/EC)

# Table of Contents

# 1    Notes on this Document

## 1.1   User Notes

This service manual is intended for qualified service and maintenance staff.

This manual contains information about hardware and mechanical part of the label printers.

Information about operation of printer can be taken from our operating manual.

If a problem arises that cannot be solved with help of this service of manual, then please contact your responsible distributor.

## 1.2   Instructions

Basic information and warning references with the corresponding signal words for the danger level are as follows specified in this manual:

**DANGER** identifies an extraordinarily great and immediate danger which could lead to serious injury or even death.

**WARNING** identifies a possible danger would could lead to serious bodily injury or even death if sufficient precautions are not taken.

**WARNING** of cutting injuries.
Pay attention that cutting injuries caused by blades, cutting devices or sharp-edged parts are avoided.

**WARNING** of hand injuries.
Pay attention that hand injuries caused by closing mechanical parts of a machine/equipment are avoided.

**WARNING** of hot surfaces.
Pay attention so as not to come into contact with hot surfaces.

**CAUTION** indicates a potentially dangerous situation which could lead to moderate or light bodily injury or damage to property.

**NOTICE** gives you tips. They make a working sequence easier or draw attention to important working processes.

Gives you tips on protecting the environment.

⇒        Handling instruction

∗        Optional accessories, special fittings

Date     Information in the display

## 1.3   Cross References

**Item numbers**

References to specific items in a figure are marked with item numbers. They are identified with parentheses in the text, e.g. (9). If no figure number is provided, item numbers in the text always refer to the graphic directly above the text. If a reference is made to another graphic, the figure number is specified, e.g. (2, in figure 5).

**Cross references to chapters and sections**

For a cross reference to chapters and sections, the chapter number and page number are specified, e.g. a reference to this section: see chapter 1.3.2, on page 35).

**References to other documents**

References to other documents have the following form: See *'operating manual'*.

# 2    Safety Instructions

## 2.1    General Safety Instructions

**Workplace and method of working**

⟹    Keep the area around the device clean during and after maintenance.

⟹    Work in a safety-conscious manner.

⟹    Store dismantled device parts in a safe place while maintenance is being performed.

**Clothing**

!    **CAUTION!**

The drawing in of items of clothing by moving parts can lead to injuries.

⟹    If possible, do not wear clothing which could be caught by moving device parts.

⟹    Button or roll up shirt or jacket sleeves.

⟹    Tie or pin up long hair.

⟹    Tuck the ends of scarves, ties and shawls into your clothing or secure them with non-conductive clips.

**DANGER!**

Risk of death from increased flow of current via metals parts which come into contact with the device.

⟹    Do not wear clothing with metal parts.

⟹    Do not wear jewellery.

⟹    Do not wear glasses with a metal frame.

**Protective clothing**

If a possible danger to your eyes is present, wear protective goggles, especially in the following cases:

•    when knocking in or knocking out pins and similar parts with a hammer
•    when using an electric drill
•    when using spring hooks
•    when loosening or inserting springs, snap rings and gripping rings
•    when soldering
•    when using solvents, cleaning agents or other chemicals

**Protective equipment**

**WARNING!**

Risk of injury in case of missing or faulty protective equipment.

$\implies$ After performing maintenance work, attach all safety equipment (covers, safety precautions, ground cables etc.).

$\implies$ Replace faulty parts and those which have become unusable.

**General safety instructions**

The printer is designed for power supply systems from 110 … 230 V AC. Connect the label printer only to electrical outlets with a ground contact.

Couple the label printer to devices using extra low voltage only.

Before making or undoing connections, switch off all devices involved (computer, printer, accessories etc.).

Operate the label printer in a dry environment only and do not get it wet (sprayed water, mist etc.).

Maintenance and servicing work can only be carried out by trained personnel.
Operating personnel must be trained by the operator on the basis of the operating manual.

If the label printer is operated with the cover open, ensure that clothing, hair, jewellery and similar personal items do not contact the exposed rotating parts.

The print unit and parts of it (e.g. printhead) can get hot during printing. Do not touch the printhead during operation. Cool down the print unit before changing material, removal or adjustment.

Never use highly inflammable consumables.

Carry out only the actions described in these operating instructions. Any work beyond this may only be performed by the manufacturer or upon agreement with the manufacturer.

Unauthorized interference with electronic modules or their software can cause malfunctions.

Other unauthorized work or modifications to the direct print module can endanger operational safety.

Always have service work done in a qualified workshop, where the personnel have the technical knowledge and tools required to do the necessary work.

There are warning stickers on the direct print modules that draw your attention to dangers. Therefore the warning stickers are not to be removed as then you and others cannot be aware of dangers and may be injured.

**DANGER!**

Danger to life and limb from power supply!

$\implies$ Do not open the casing.

## 2.2   Safety Handling when Working with Electricity

**Qualifications of personnel**

$\Longrightarrow$ The following work may only be performed by instructed and trained electricians:

- work on the electrical assemblies
- work on the device while it is open and connected to the power supply.

**General precautions to be heeded when beginning maintenance**

$\Longrightarrow$ Locate the emergency-stop or power switch so that it can be actuated in case of an emergency.

$\Longrightarrow$ Unplug the device from the electrical outlet before performing the following work:

- removing or installing power supply units
- working in the immediate vicinity of exposed power supply parts
- mechanical inspection of power supply parts
- modifying the device circuits.

$\Longrightarrow$ Ensure that the device is de-energized.

$\Longrightarrow$ Check the workplace for possible sources of danger, e.g. moist floors, defective extension cables, faulty protective conduction connections.

**Additional precautions to be heeded for devices with exposed energized parts**

$\Longrightarrow$ Give another person the task of remaining near the workplace. This person must be familiar with the location and operation of the emergency-stop and power switches and switch off the power if danger arises.

$\Longrightarrow$ Use only one hand while working on electrical circuits when a device is switched on. Hold the other hand behind your back or put it in your jacket pocket.
This prevents the electricity from flowing through your body.

**Tools**

$\Longrightarrow$ Do not use worn or damaged tools.

$\Longrightarrow$ Use only tools and testing equipment that is suitable for the respective task.

**What to do in case an accident occurs**

$\Longrightarrow$ Proceed in a very cautions and calm manner.

$\Longrightarrow$ Avoid endangering yourself.

$\Longrightarrow$ Switch the power off.

$\Longrightarrow$ Request medical help (emergency physician).

$\Longrightarrow$ Call for first aid if necessary.

# 3    Printer Rear (Ports)
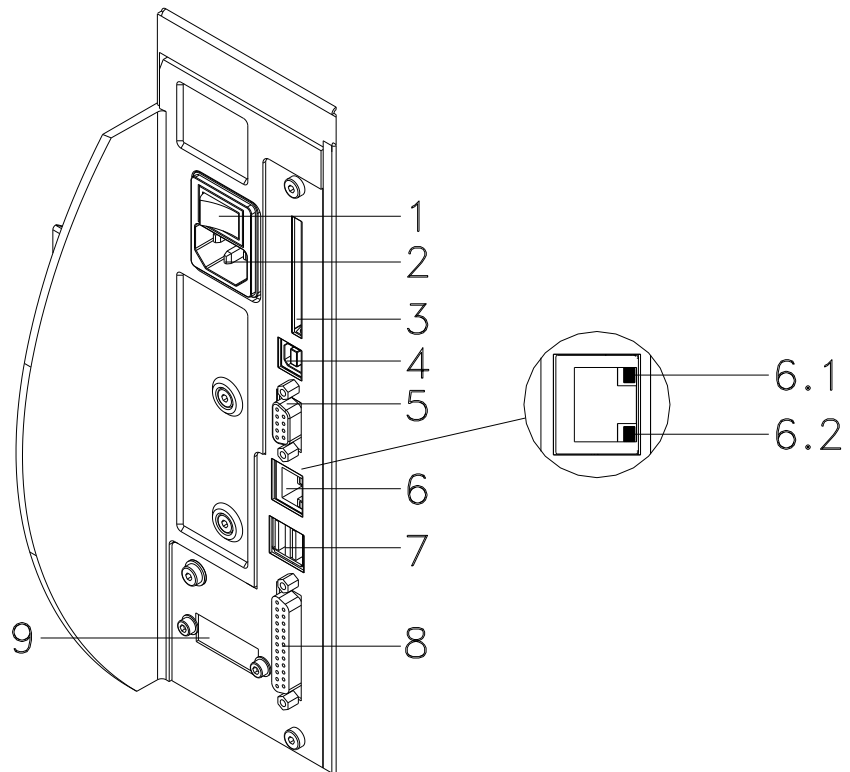


**Figure 1**

1 = Switch On/Off

2 = Power supply

3 = Plug-in for CF card

4 = USB interface

5 = Serial interface RS-232
   Pin 2 = TXD, Pin 3 = RXD, Pin 5 = GND,
   Pin 7 = CTS, Pin 8 = RTS

6 = Ethernet 10/100 interface
   6.1 - LED orange
       Lighting = Connection active
       Flashing = Data transfer
       Off = No connection
   6.2 - LED green
       Lighting = Speed 100 MBit
       Off = Speed 10 MBit

7 = USB host for USB keyboard and USB memory stick

8 = Parallel interface

9 = External input/output (option)

# 4    Cleaning

**DANGER!**

Risk of death via electric shock!

$\Longrightarrow$    Before opening the housing cover, disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.

**Cleaning plan**

| Task | Frequency |
|---|---|
| General cleaning (see chapter 4.1, on page 14). | As necessary. |
| Clean the print roller (see chapter 4.2, on page 14). | Each time the label roll is changed or when the printout and label transport are adversely affected. |
| Clean the printhead (see chapter 4.3, on page 14). | **Direct thermal printing:** Each time the label roll is changed. **Thermal transfer printing:** Each time the transfer ribbon is changed or when the printout is adversely affected. |
| Clean the label photocell (see chapter 4.4, on page 15). | When the label roll is changed. |

**WARNING!**

Risk of fire by easily inflammable label soluble!

$\Longrightarrow$    When using label soluble, dust must be completely removed from the label printer and cleaned.

**Tools and cleaning agents**

**NOTICE!**

For adjustments and simple installation work, use the accompanying hexagonal wrench located in the bottom section of the print unit.
No other tools are required for the work described here.

## 4.1   General Cleaning

**CAUTION!**

Abrasive cleaning agents can damage the label printer!

⟹   Do not use abrasives or solvents to clean the outer surface of the label printer.

⟹   Remove dust and paper fuzz in the printing area with a soft brush or vacuum cleaner.

⟹   Clean the outer surfaces with an all-purpose cleaner.

## 4.2   Clean the Print Roller

A soiled print roller can lead to reduce the print quality and can affect transport of material.

**CAUTION!**

Print roller can be damaged!

⟹   Do not use sharp or hard objects to clean the print roller.

1.   Turn the lever (1, Figure 2) counter clockwise to lift up the printhead.
2.   Remove labels and transfer ribbon from the label printer.
3.   Remove deposits with the roller cleaner and a soft cloth.
4.   If the roller appears damaged, replace it (see chapter 5.3, on page 20).

## 4.3   Clean the Printhead

Printing can cause accumulation of dirt at printhead e.g. by colour particles of transfer ribbon, and therefore it is necessary to clean the printhead in regular periods depending on operating hours, environmental effects such as dust etc.

**CAUTION!**

Printhead can be damaged!

⟹   Do not use sharp or hard objects to clean the printhead.

⟹   Do not touch protective glass layer of the printhead.

1.   Turn the lever (1, Figure 2) counter clockwise to lift up the printhead.
2.   Remove labels and transfer ribbon from the label printer.
3.   Clean the printhead surface with a special cleaning pen or a cotton swab dipped in pure alcohol.
4.   Before using the label printer, let the printhead dry for about two to three minutes.

## 4.4  Clean the Label Photocell

**Compa II 103 T, 104, 106 and 108 T**

<table>
<tr><td>!</td><td><strong>CAUTION!</strong></td></tr>
</table>

Label photocell can be damaged!

⟹  Do not use sharp or hard objects or solvents to clean the label photocell.

The label photocell can be soiled with paper dust. This may affect the label scanning.



**Figure 2**

1. Turn the lever (1) counter clockwise to lift up the printhead.
2. Remove labels and transfer ribbon from the label printer.
3. Remove the hexagonal wrench (5) from its retainer.
4. Press the latch (3) and slowly pull the label photocell outwards via the tab (4). Ensure that the label photocell cable is not tensioned by this.
5. Clean the label photocell and sensor units (2) with a brush or cotton swab soaked in pure alcohol.
6. Push the label photocell back via tab (3) and set it.
7. Push the hexagonal wrench (5) into retainer.
8. Reload labels and transfer ribbon.
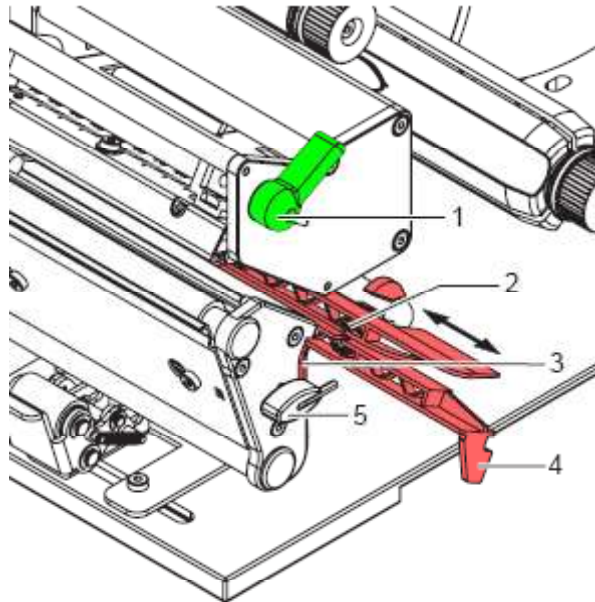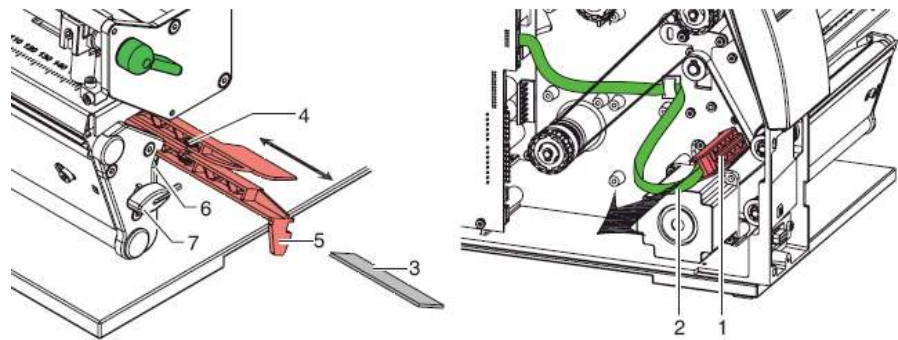
**Compa II 162 + 162 T**



**Figure 3**

1. Turn the lever (1) counter clockwise to lift up the printhead.
2. Remove labels and transfer ribbon from the label printer.
3. Remove the hexagonal wrench (7) from its retainer and remove the rear cover of printer.
4. Slide the label photocell assembly onto the tab (5) toward the rear cover until it stops and unplug the cable (2) from the plug on the rear end of the label photocell (1).
5. Press the latch (6) and slowly pull the label photocell outward via the tab (5). That way the distance plate (3) is pushed out of label photocell guide.
6. Clean the label photocell and sensor units (4) with brush or cotton swab soaked in pure alcohol.
7. Push the label photocell back via tab (5).
8. Press the latch (6) and push the distance plate (3) into the guide of the label photocell.
9. Reload labels and transfer ribbon.

# 5    Replacing Components

**DANGER!**

Risk of death via electric shock!

$\Longrightarrow$    Before opening the housing cover, disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.

## 5.1    Tool List

**NOTICE!**

For adjustments and simple installation work, use the accompanying hexagonal wrench located in the bottom section of the print unit.

Some service work requires other tools:

- Philips-head screwdriver, size 1
- Hexagonal wrench 1.5 mm
- Torx screwdriver TX20
- Snap ring pliers, ZGG 0
- Spring scale 10 N
- Spring scale 25 N

## 5.2   Replace the Printhead

**NOTICE!**

The printhead (7) is preinstalled on a head plate (1) and aligned at the factory.

1    Head plate
2    Plug connection
3    Plug connection
4    Screw
5    Printing line
6    Pins
7    Printhead



Figure 4

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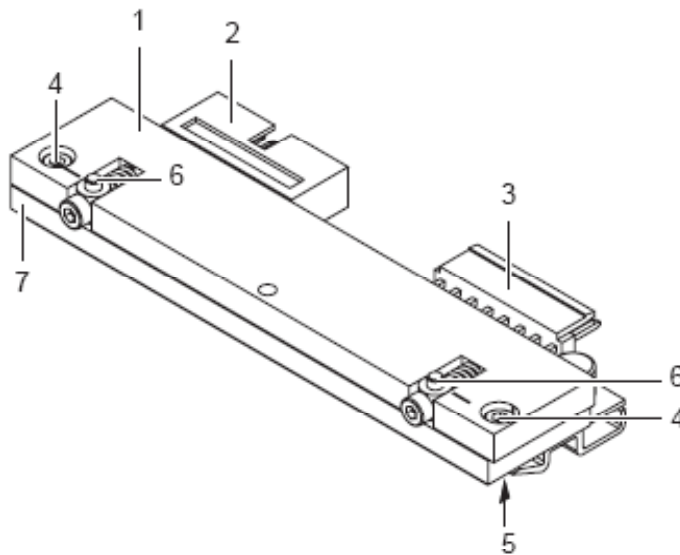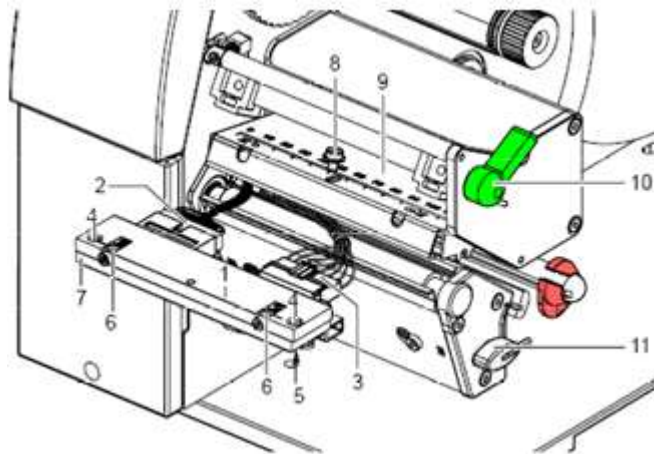
The printhead can be damaged by static electricity discharges and impacts!

$\Longrightarrow$    Set up the printer on a grounded, conductive surface.

$\Longrightarrow$    Ground your body, e.g. by wearing a grounded wristband.

$\Longrightarrow$    Do not touch contacts on the plug connections (2, 3).

$\Longrightarrow$    Do not touch printing line (5) with hard objects or your hands.

**Figure 5**

| | | |
|---|---|---|
| **Remove the printhead** | 1. | Turn the lever (10) counter clockwise to lift up the printhead. |
| | 2. | Remove labels and transfer ribbon from the label printer. |
| | 3. | Remove the hexagonal wrench (11) from its retainer. |
| | 4. | Lightly keep the printhead mounting bracket (9) on the print roller with one finger and screw out the screw (8) with the hexagonal wrench and remove it and the washer. |
| | 5. | Swivel the printhead mounting bracket (9) upwards. |
| | 6. | Remove the printhead from the printhead mounting bracket (9) if necessary. |
| | 7. | Loosen both plug connections (2, 3) on the printhead and set printhead down on a clean, soft surface. |

| | | |
|---|---|---|
| **Install the printhead** | 1. | Attach the plug connections (2, 3). |
| | 2. | Position the printhead in printhead mounting bracket (9) in such a way that the pins (6) are secured in the corresponding holes in the printhead mounting bracket (9). |
| | 3. | Lightly keep the printhead mounting bracket (9) on the print roller with one finger and check for correct positioning of the printhead mounting bracket (9). |
| | 4. | Screw in the screw (8) with the hexagonal wrench and tighten it. |
| | 5. | Reload labels and transfer ribbon. |
| | 6. | Check the resistance value on the type plate of printhead and if necessary change the value in the service functions/heater resistance. |

## 5.3   Adjust the Print Position

Press the key $\boxed{F}$ to access the function menu.

Press the key ⭤ until the menu *Service Functions* is displayed.

Press the key ⬤ to select the menu.

Press the key ⭤ until the menu *Zero point adjustment* is displayed

**Zero point adjustment in Y direction**

Indication of value in 1/100 mm.
After replacing the printhead - the print cannot be continued at the same position on the label; the difference can be corrected in printing direction.

> **NOTICE!**
>
> The value for zero point adjustment is set ex works. After replacing the printhead, only service personnel are allowed to set this value anew.

Press the key ▶ to move to the next menu item.

**Zero point adjustment in X direction**

Indication of value in 1/100 mm.
After replacing the printhead - the print cannot be continued at the same position on the label; the difference can be corrected across the printing direction.

> **NOTICE!**
>
> The value for zero point adjustment is set ex works. After replacing the printhead, only service personnel are allowed to set this value anew.

## 5.4   Replace the Print Roller and Rewind Assist Roller
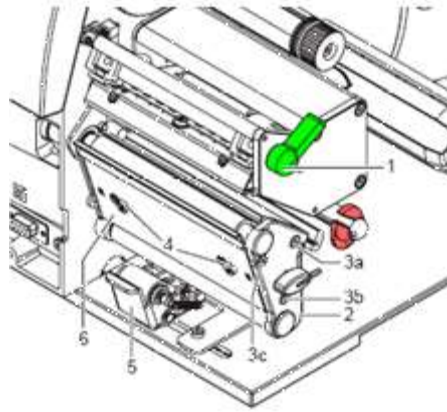


**Figure 6**

**Remove the side plate**

1.  Turn the lever (1) counter clockwise to lift up the printhead.
2.  Lift the pinch roller (5) off the rewind assist roller.
3.  Remove labels and transfer ribbon from the label printer.
4.  Loosen the screws (4) on the plate (6) with the hexagonal wrench by several turns and remove the plate (6).
5.  Unscrew  screws (3a, b, c) of the side plate (2) with the hexagonal wrench.
6.  Remove the side plate (2).
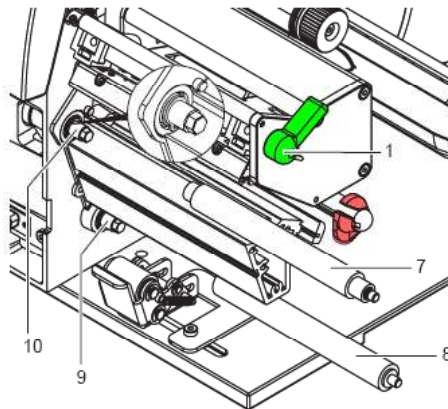


**Figure 7**

**Remove and install the rollers**

1.  Pull the print roller (7) and rewind the assist roller (8) from the shafts (9, 10) on the housing.
2.  Clean the shafts (9, 10) of the rollers (see expanded view at shaft 10).
3.  Slide the print roller (7) and rewind the assist roller (8) onto their respective shafts and turn slightly until the hexagon of the shaft engages in the hexagon socket of the print roller.
4.  Set the side plate (2, Figure 6) in place and screw it down with the screws (3a, b, c, Figure 6) by tightening the screws in order a-b-c.
5.  Set the plate (6, Figure 6) in place and tighten the screws (4, Figure 6) with the hexagonal wrench.

## 5.5   Replace the Slipping Clutches

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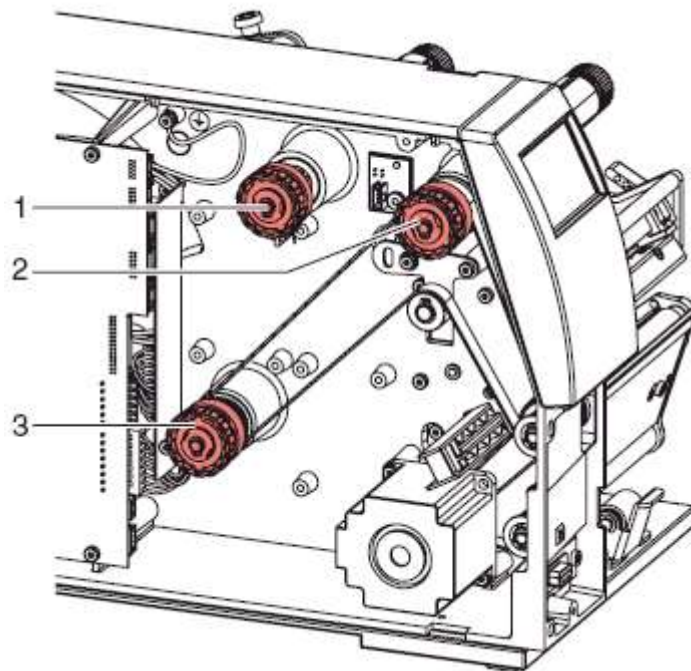


**Figure 8**

1 = Transfer ribbon supply hub: brake
2 = Transfer ribbon take up hub: coupling
3 = Internal rewinder: coupling

Change the slipping clutch when it can no longer be set. Removal and installation of the slipping clutch is also required for replacement of a winder.

**Remove the slipping clutch**

1.  Unplug the printer from the electrical outlet.
2.  Remove the rear cover of the printer.
3.  Remove the snap ring (1).
4.  Pull the coupling or brake (2) from the winder axis (4, Figure 9).
5.  Ensure that the pin (4, Figure 22) remains on the winder axis when pulling the brake 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.

**Install the slipping
clutch on the rewinder**
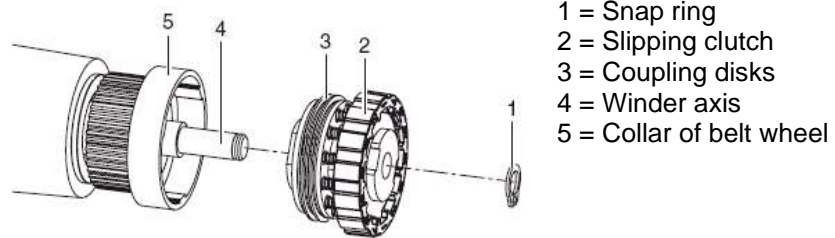


1 = Snap ring
2 = Slipping clutch
3 = Coupling disks
4 = Winder axis
5 = Collar of belt wheel

**Figure 9**

1.  Slide the coupling (2) onto the winder axis (4).
2.  Align the grooves in the coupling disks (3) with the guides in the collar of the belt wheel (5).
3.  Slide the coupling further until it stops.
4.  Secure the snap ring (1).
5.  Adjust the coupling (see chapter 6.1, on page 29).
6.  Pull the label photocell toward the cover side as far as possible (see chapter 5.6, on page 24) and install the rear cover of the printer.

**Install the brake
on the transfer ribbon
supply hub**
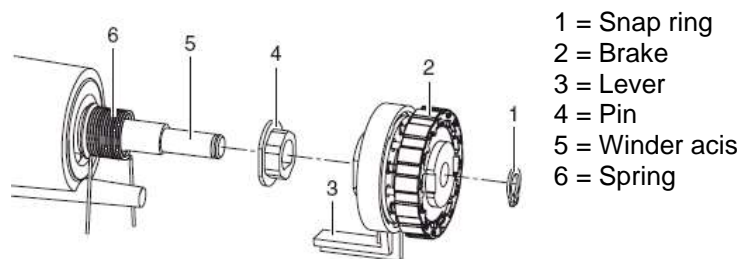


1 = Snap ring
2 = Brake
3 = Lever
4 = Pin
5 = Winder acis
6 = Spring

**Figure 10**

1.  Slide the brake (2) onto the winder axis (5) in such a way that it fits on the hexagonal profile of the pin (4).
2.  Ensure that the lever (3) grasps between the two ends of the spring (6).
3.  Secure the snap ring (1).
4.  Adjust the coupling (see chapter 6.1, on page 29).
5.  Pull the label photocell toward the cover side as far as possible (see chapter 5.6, on page 24) and install the rear cover of the printer.

## 5.6    Replace the Label Photocell

**NOTICE!**

Soiling of the label photocell can also cause malfunctions. Before replacing the label photocell, check whether it is soiled and clean it if necessary (see chapter 4.4, page 15).
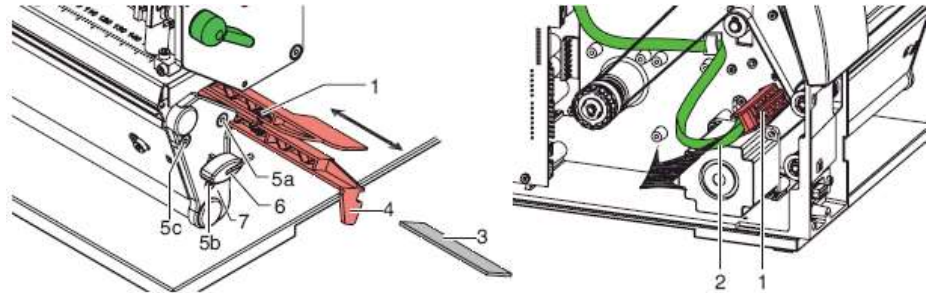


**Figure 11**

**Remove label photocell**

1. Remove media from the printer.
2. Remove the hexagonal wrench (6) from its retainer.
3. Remove the rear cover of the printer.
4. Slide the label photocell assembly onto the tab (4) toward the rear cover until it stops.
5. Unplug the cable (2) from the plug on the rear end of the label photocell (1).
6. Unscrew the screws (5a, b, c) with a hexagonal wrench and remove the side plate (7).
7. Pull out the label photocell (1) via the tab (4) toward the cover side.
   **Compa II 162 + 162 T:** That way the distance plate (3) is pushed out of label photocell guide.

**Install the label photocell**

1. Insert the label photocell (1) into the guide from the cover side and slide it onto the tab (5) toward the rear cover until it stops.
   **Compa II 162 + 162 T:** Push the distance plate (3) into the guide of the label photocell.
2. Remount the side plate (7) with screws (5a, b, c) by tightening the screws in order, i.e. a, b then c.
3. Connect the cable (2) to the label photocell (1).
4. Pull the label photocell (1) via the tab (4) as far as possible toward the cover side.
   This prevents the cable (2) from being pinched when installing the rear cover.
5. Install the rear cover of the printer.
6. Insert the hexagonal wrench (6) into its retainer.
7. Adjust the label photocell.

## 5.7   Replace the CPU PCB
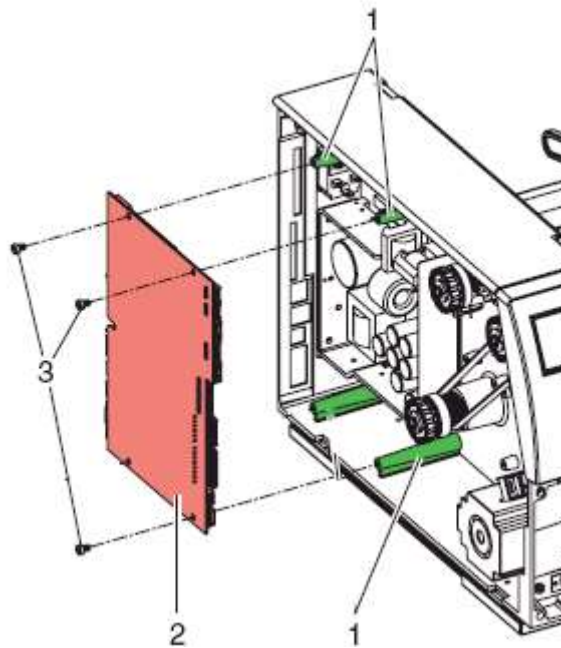


**Figure 12**

**Remove the CPU PCB**

1. If possible, save the printer configuration to a CompactFlash card.
2. Unplug the printer from the electrical outlet.
3. Detach all interface cables from the back of the printer.
4. Remove the memory card from the slot.
5. Screw off the rear cover.
6. Unplug all side plug connections from the CPU PCB (2).
7. Remove the three fixing screws (3) from the CPU PCB.
8. Carefully remove the CPU PCB.

**Install the CPU PCB**

1. Place CPU PCB (2) onto the retainers (1).
2. Secure the PCB with three screws (3).
3. Insert all plug connections on the PCB.
4. Pull the label photocell toward the cover side as far as possible (see chapter 5.6, on page 24) 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 photocell.
9. Load the printer configuration from the memory card if possible. Otherwise, set the printer configuration via the operating panel.

## 5.8  Replace the Power Supply Unit
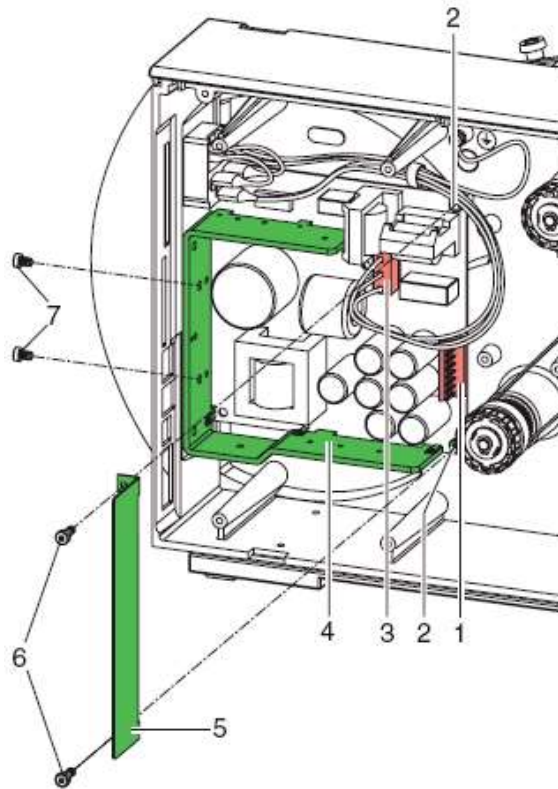


**Figure 13**

**Remove the
power supply unit**

1.  Unplug the printer from the electrical outlet.
2.  Remove the CPU PCB (see chapter 5.7, on page 25).
3.  Remove the two screws (6) of the cover plate (5).
4.  Remove the cover plate (5).
5.  Unplug the plug at the power supply unit input (3).
6.  Unplug the plug at the power supply unit output (1).
7.  Remove the two screws on the back of the printer (7).
8.  Hold the power supply unit firmly at the metal bracket (4) and remove the two screws (2).
9.  Remove the power supply unit.

**Install the
power supply unit**

1.  Insert the power supply unit and secure the PCB with two screws (2).
2.  Secure the metal bracket (4) of the power supply unit to the back of the printer with two screws (7).
3.  Connect the power supply unit cable to the power supply output (1).
4.  Insert the power input cable (3).
5.  Insert the cover plate (5) and secure it with the two screws (6).
6.  Install the CPU PCB (see chapter 5.7, on page 25).

## 5.9    Replace the WLAN Module
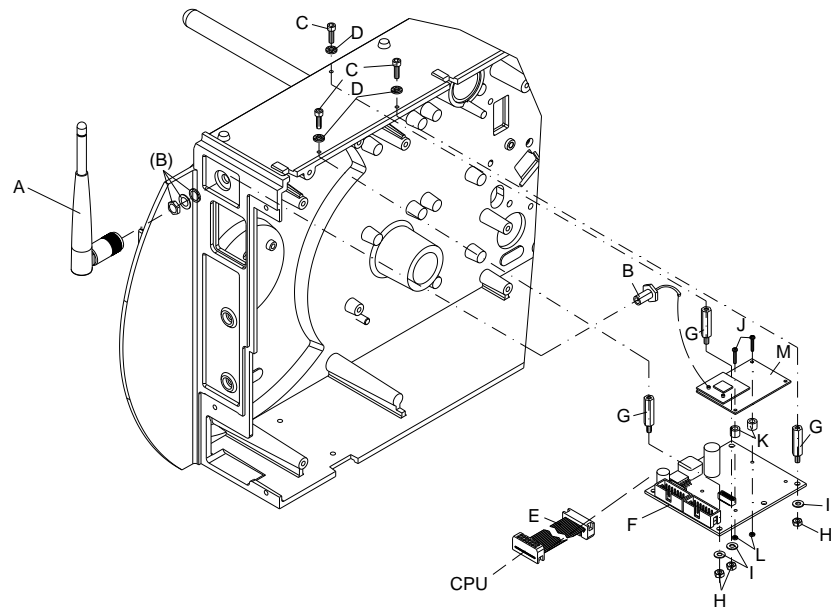


**Figure 14**

**Remove the WLAN module**

1.   Unplug the printer from the electrical outlet.
2.   Screw off the left printer cover.
3.   Remove the CPU PCB (see chapter 5.7, on page 25).
4.   Loosen hex-nuts (H) and washers (I) and dismount the WLAN adapter (F).
5.   Remove the hot melt glue from the WLAN module (M) and then remove the antenna cable (B) from WLAN module (M).
6.   Remove the connecting cable (E) from the WLAN adapter (F).
7.   Dismount the screws (J), spacer rings (K) and hex nuts (L) and remove the WLAN module (M) from the WLAN adapter (F).

**Install the WLAN module**

1.   Insert the new WLAN module (M) to the WLAN adapter (F) and fix it with screws (J), spacer rings (K) and hex nuts (L) at the WLAN adapter (F).
2.   Insert the connection cable (E) in the WLAN adapter (F).
3.   Connect the antenna cable (B) with the WLAN module (M) and fix the plug connectors with a drop of hot melt glue.
4.   Mount the WLAN adapter (F) to the hexagon bolt (G) and fix it with the hex nuts (H) and screws (I).
5.   Install the CPU PCB (see chapter 5.7, on page 25).
6.   Install the left printer cover.

## 5.10 Replace the Printhead FPGA

1. Remove the defective FPGA (2) from the PLCC support base with a suitable displacement pincer.
2. Pay attention to polarity and press the new FPGA into the support base.
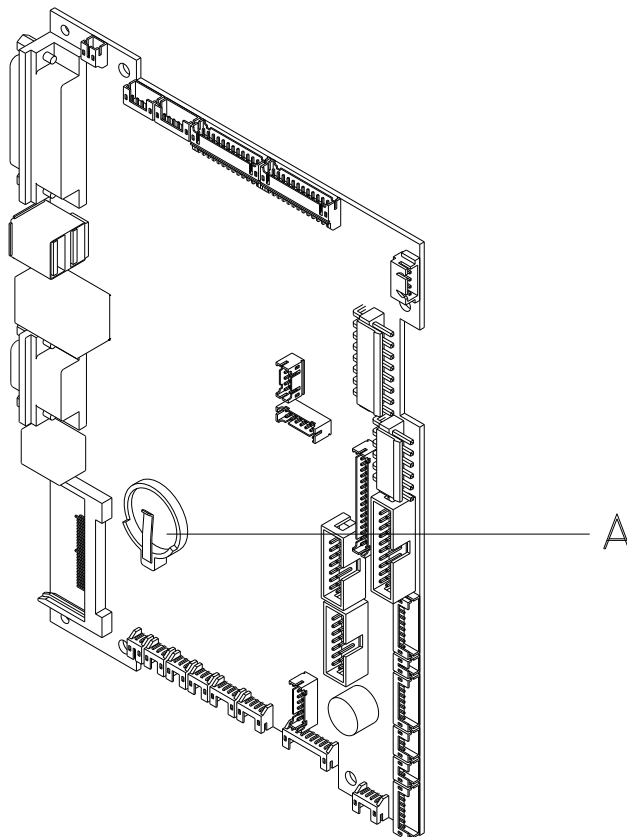
## 5.11 Replace the Battery

**DANGER!**

Danger of explosion due to improper replacement of the battery!

⟹   Use non-conductive tools.

⟹   Pay attention to polarity.



**Figure 15**

1. Lift up the fixing bracket by means of a non-metallic device (e.g. plastic ruler).
2. Remove the battery.
3. Insert a new battery (CR 2032) into the support (A) and pay attention to position of polarity.

# 6    Adjustments, Settings and Alignments

**DANGER!**

Risk of death via electric shock!

$\Longrightarrow$   Before opening the housing cover, disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.

## 6.1   Adjust the Winding Torques

The rewinder for the transfer ribbon and the internal rewinder 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
- sufficiently tight peel-off tension of the liner and thus easy peeling off of labels in peel-off mode
- a sufficiently tightened label strip

The winding axes of the rewinder are not actively driven by the belts during label backfeed, but rather solely by the pull of the print roller. The torque required to decouple the rewinder from the belt drive is implemented via a brake in the winding reel, which works in both directions. The measured clockwise torque 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 counter clockwise. For this reason, measurement of the torques at the rewinders is required in both directions.

The type of measurement differs for the various types of slipping clutches:

- measurement of the winding torques at the transfer ribbon rewinder and unwinder (see chapter 6.2, on page 30)
- measurement of the winding torque at the internal rewinder (see chapter 6.3, on page 31).

If the winding torque differs from the setpoint, it must be adjusted. The procedures for adjusting the winding torques of the transfer ribbon winders and the internal rewinder are identical.

## 6.2   Measure the Winding Torques at Ribbon Rewinder/Unwinder

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 = traction [N]
$\qquad\qquad$ M = rewind torque [Ncm]
$\qquad\qquad$ r = radius of test collar (30 mm)

| | | | |
|---|---|---|---|
| **Setpoints for transfer ribbon rewinder** | **Compa II 104, Compa II 106:** | $M_{Auf}$ = 13,5 … 15,0 Ncm | $F_{Auf}$ = 4,5 … 5,0 N |
| | **Compa II 162:** | $M_{Auf}$ = 21,0 … 22,5 Ncm | $F_{Auf}$ = 7,0 … 7,5 N |
| **Setpoints for transfer ribbon unwinder** | **Compa II 104, Compa II 106:** | $M_{Ab}$ = 4,0 … 4,5 Ncm | $F_{Ab}$ = 1,3 … 1,5 N |
| | **Compa II 162:** | $M_{Ab}$ = 6,0 … 7,0 Ncm | $F_{Ab}$ = 2,0 … 2,3 |
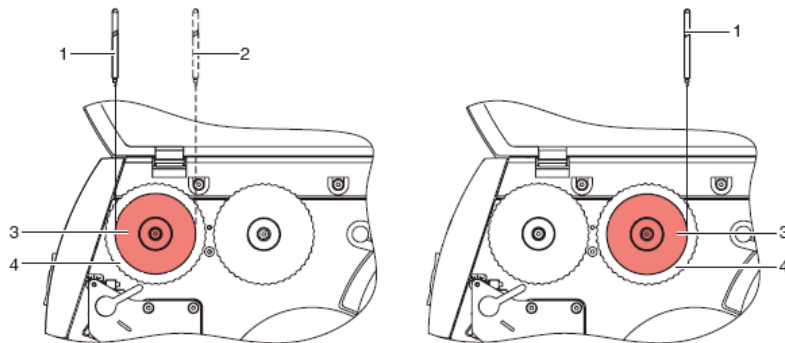


**Figure 16**

1.   Unplug the printer from the electrical outlet and remove the rear cover.
2.   Remove the transfer ribbon from the printer.
3.   Attach the test collar (3) to the winder (4).
4.   Turn the knurled nut counter clockwise to clamp the test collar.
5.   Wind the cord attached to the test collar around the test collar several times.
6.   Secure spring scale [10 N] (1) at the end of the cord and move the spring scale upward vertically until the winder begins turning.
7.   If the drive belt at the rewinder is also moving, hold it in place during the measurement. Otherwise, the measurement is not accurate.
8.   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.
9.   Determine the pulling force at the transfer ribbon rewinder in the same manner, except in the opposite rotation direction (2).

If the winding torque differs from the setpoint, it must be adjusted.

## 6.3   Measure the Torques at the Internal Rewinder

Measurement of the winding torque at the internal rewinder occurs by determining the pulling forces with a cord wrapped around the rewinder. Measurement occurs without a test collar.
The physical relation between the torque and the pulling force is:

**F = M / r**        F = traction [N]
                          M = rewind torque [Ncm]
                          r = radius of test collar (20 mm)

**Setpoints for internal transfer ribbon rewinder**

| | | |
|---|---|---|
| **Compa II 104, Compa II 106:** | $M_{Auf}$ = 28 … 32 Ncm | $F_{Auf}$ = 14 … 16 N |
| **Compa II 162:** | $M_{Auf}$ = 36 … 44 Ncm | $F_{Auf}$ = 18 … 22 N |
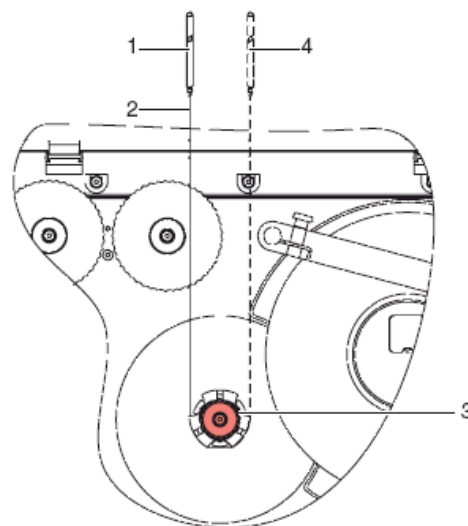


**Figure 17**

1.  Unplug the printer from the electrical outlet and remove the rear cover.
2.  Remove the label media from the printer.
3.  Push the cord (2) under a bracket of the internal rewinder (3) and wind it around the rewinder.
4.  Secure the spring scale [25 N] (1) at the end of the cord.
5.  Move the spring scale (1) upward vertically until the winder begins turning.
6.  If the drive belt is also moving, hold it in place during the measurement. Otherwise, the measurement is not accurate.
7.  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.
8.  Determine the pulling force in the same manner, except in the opposite rotation direction (4).

If the winding torque differs from the setpoint, it must be adjusted.

## 6.4   Set the Winding Torque

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: Smallest winding torque
- 7: Greatest winding torque

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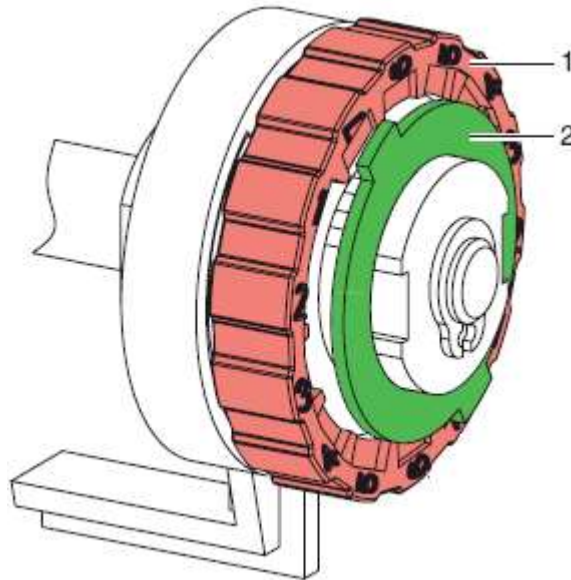


**Figure 18**

1.  Unplug the printer from the electrical outlet and remove the rear cover.
2.  Press the knurled ring (1) of the slipping clutch toward the housing wall.
    The lock (2) of the knurled ring is released.
3.  Turn the knurled ring to the desired position while pushing it.
4.  Release the knurled ring 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 setpoint.
    Transfer ribbon winders (see chapter 6.2, on page 30)
    Internal rewinder (see chapter 6.3, on page 31).
7.  Repeat the adjustment until the measured winding torque is within the tolerance range.
8.  Pull the label photocell toward the cover side as far as possible (see chapter 5.6, on page 24) and install the rear cover of the printer.

## 6.5   Adjust the Print 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

**i** **NOTICE!**

Print image errors can also arise from wrinkling of the transfer ribbon. This is why the transfer ribbon feed path and the head locking system should be checked before making adjustments to the printing mechanism (see *'operating manual'*).

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

1. Prepare the label printer for adjustment (see page 34).
2. Adjust the position of printhead (see chapter 6.6, on page 35).
3. Adjust the head contact pressure (see chapter 6.7, on page 36).
4. Adjust the transfer ribbon feed path (see chapter 6.8, on page 37).

**Prepare the label
printer for adjustment**
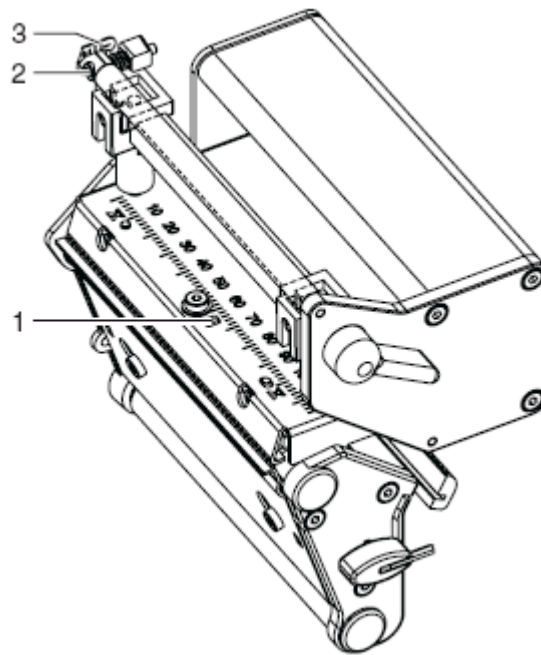


**Figure 19**

1. Load labels and transfer ribbon which extend across the entire printing width.
2. Move the transfer ribbon deflection to the central position (3) with the screw (2).
3. Position the plunger in such a way that the adjustment screws are accessible through the holes of the square axis.
4. Loosen the screw (1) for the printhead bowing with a hexagonal wrench (1.5 mm) and turn it counter clockwise until turning becomes perceptibly easier. This should occur after a maximum of a half a rotation.

When the label printer is prepared for adjustment, continue with the adjustment of the printhead position (see chapter 6.6, on page 35).

## 6.6   Adjust the Position of Printhead

Complete the following printhead settings to achieve the best possible print image:

$\Longrightarrow$   Align the heating line with the highest point of the print roller. Density of the print image is the greatest at this point.

$\Longrightarrow$   Set the parallelism of horizontal lines with the edge of the label.

> **！ CAUTION!**
>
> The printhead assembly can be damaged.
> Attempting to adjust the printhead when the fixing screw (3) is tight can lead to defects at the printhead assembly.
>
> $\Longrightarrow$   Always loosen the fixing screws (3) before adjusting the printhead.
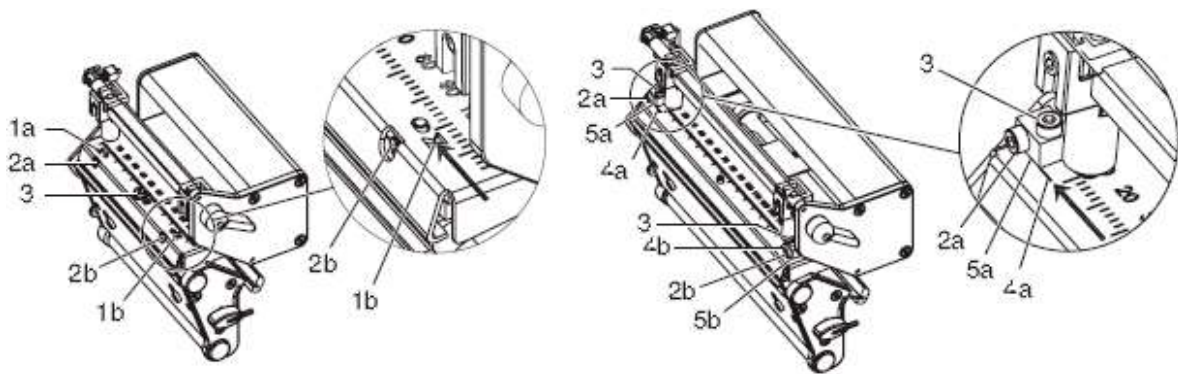


**Figure 20**

> **ⓘ NOTICE!**
>
> Open and close the printhead locking device after each step of the adjustment.

1.  Check the alignment of printhead in the adjustment windows (1).
    **Compa II 162 + 162 T:** Check the alignment of printhead at the slides (5).
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 and/or with **Compa II 162 + 162 T** to align the lines on the printhead mounting bracket with the front edge of the slides (5).
    Screw (2a) effects the inner half of the printhead, and screw (2b) the outer half.
    Turning clockwise moves the printhead forward.
    **Compa II 162 + 162 T:** Turning clockwise moves the printhead backward.

4. Start a test print (see *'operating manual'*).

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 screw (3).

When the parallelism of the printhead is set, continue with the adjustment of the head contact pressure.

## 6.7   Adjust the Head Contact Pressure



**Figure 21**
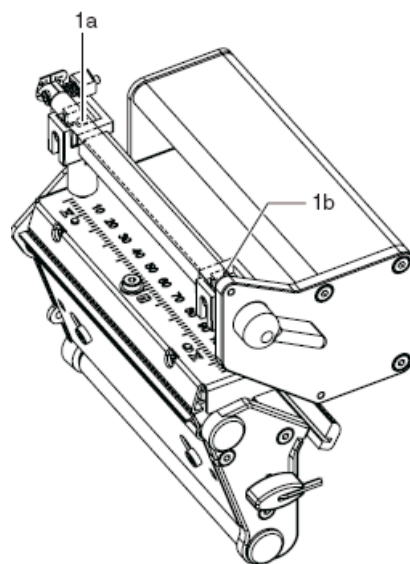
Change the head contact pressure with the screws (1a) and (1b) at the inside and outside of the printhead. Increasing the head contact pressure leads to an improvement of the print image density on the corresponding side and to a shifting of the ribbon feed path in the corresponding direction.

1. Turn the adjustment screws (1) counter clockwise until turning becomes perceptibly easy.

2. The contrast value (in function menu) 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. Start a test print (see *'operating manual'*).

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 both adjustment screws must be turned in an alternating fashion, resulting in a print image which is too light overall.

When the print image is set evenly, continue with setting of the transfer ribbon feed path (see chapter 6.8, on page 37).

## 6.8 Adjust the Transfer Ribbon Feed Path[*]

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 (3a) and (3b) 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.

> **!** **CAUTION!**
>
> The printhead assembly can be damaged when bowing the printhead.
>
> Turning the adjustment screw (1) too hard can cause damage to the printhead assembly.
>
> ⟹ As soon as a clear resistance is perceived when turning the adjustment screw (1), only continue turning the screw in very small increments, but no more than one eighth of a turn.
>
> ⟹ Only turn the adjustment screw (1) as far as is absolutely necessary.
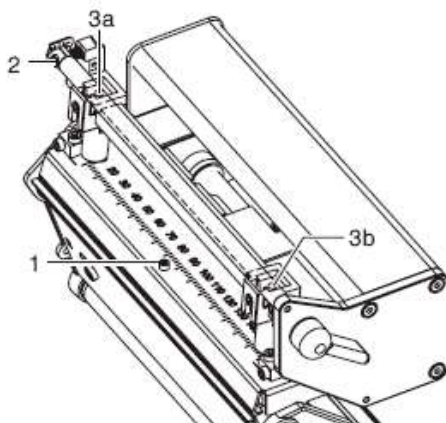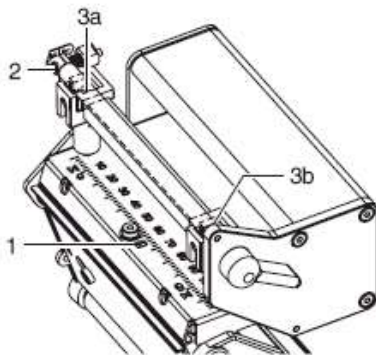


1. Check the transfer ribbon feed path.
   The wound up ribbon should be the same distance from the disk of the winder as the supply roll is from the disk of the rewinder.
2. If the ribbon runs inward or outward, turn the corresponding screw (3a) or (3b) clockwise in small increments.
3. Wait until the 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 (2) counter clockwise.
6. If wrinkles arise on the outside, turn the screw (2) clockwise.
7. If the wrinkles cannot be remedied (e.g. wrinkles in the centre), turn the adjustment screw (1) clockwise with extreme care (see warnings) using a hexagonal wrench (1.5 mm) and observe the ribbon feed path.
   When the adjustment screw (1) is tightened, the printhead is bent downward slightly in the centre. A slight lightening at the edge areas of the print image could occur.
8. If bowing is not necessary, turn the screw (2) clockwise until the screw is just barely clamping.



Figure 22

---

[*] only for Compa II 104/8, 106/12, 106/24, 162/12

## 6.9  Adjust the Belt Tension at Main Drive Motor

**!**  **CAUTION!**

The toothed belt could be damaged if adjustment is carried out improperly.

Improper adjustment or insufficient tension of the toothed belt could cause it to rub against the label photocell during printing, which would damage the belt.

$\Rightarrow$  Tension the toothed belt in such a way that it cannot rub against the label photocell.
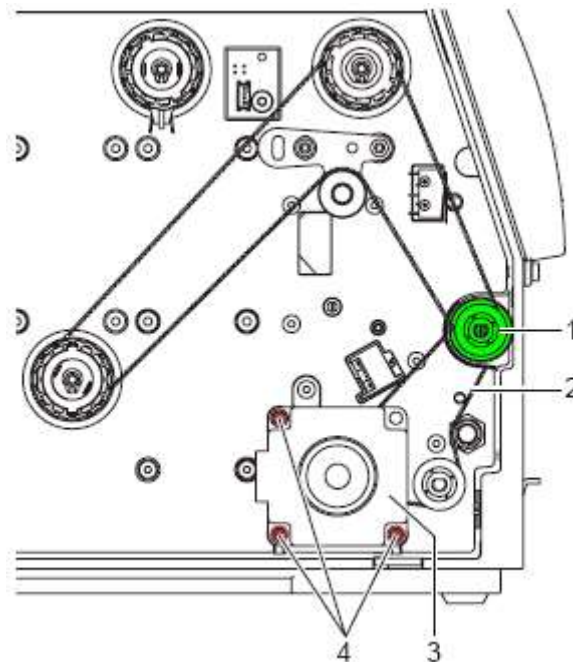


**Figure 23**

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover.
3. Loosen the three fixing screws (4) of the main drive motor (3).
4. Swivel the main drive motor (3) in such a way that the toothed belt (2) is tensioned tightly between the motor and the print roller (1).
5. Tighten the fixing screws (4) in this position of the motor.
6. Pull the label photocell toward the cover side as far as possible (see chapter 5.6, on page 24) and install the rear cover of the printer.

## 6.10 Adjust the Head Switch

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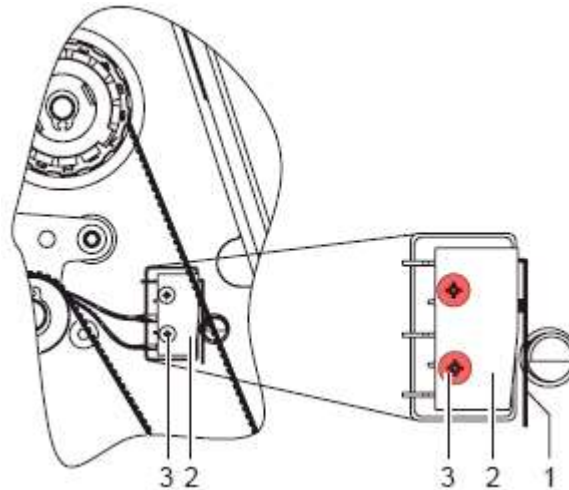


**Figure 24**

1.  Unplug the printer from the electrical outlet.
2.  Remove the rear cover.
3.  Lock the 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 cut-out).
6.  Screw down the head switch in this position.
7.  Pull the label photocell toward the cover side as far as possible (see chapter 5.6, on page 24) and install the rear cover of the printer.

# 7    Retrofit with Options

⚠️ **DANGER!**

Risk of death via electric shock!

⟹    Before opening the housing cover, disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.

## 7.1  I/O Plate
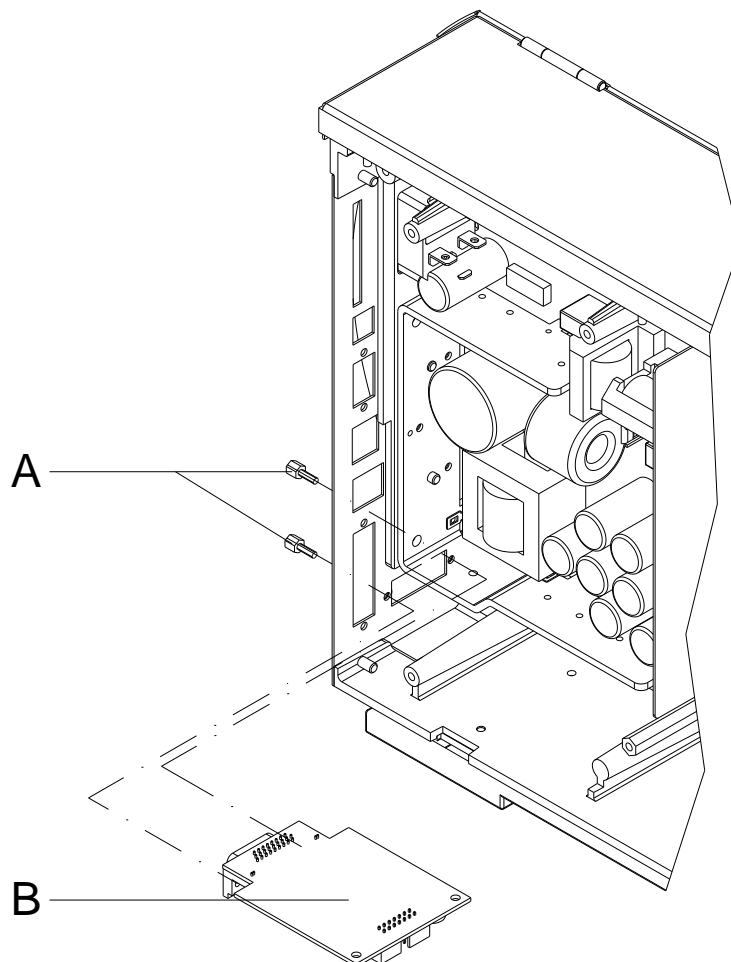


**Figure 25**

1.  Remove the CPU PCB (see chapter 5.7 on page 25).
2.  Remove the cover at the interface disruption from the chassis rear.
3.  Fix the I/O plate (B) with the fixing screws (A) at the interface disruption.
4.  Insert the connecting cables for inputs/outputs corresponding to the wiring plan (see chapter 10, on page 61) into the appropriate plug-in positions of the I/O plate.
5.  Install the CPU PCB (see chapter 5.7, on page 25).

### 7.2 Internal Rewinder
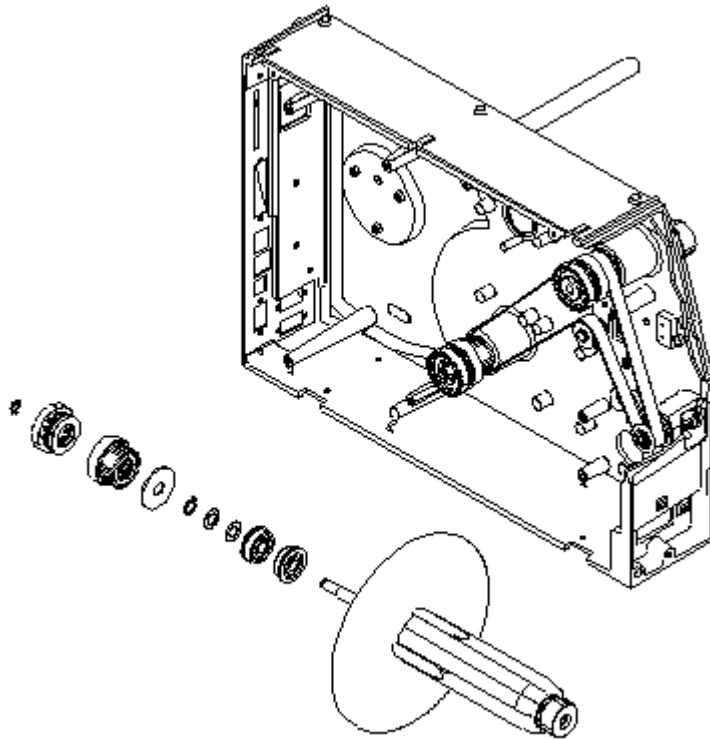


**Figure 26**

1. Remove the label material.
2. Remove the left printer cover.
   Unscrew two screws at the upper left printer edge.
3. Remove the black protective cap in order to use the opening for the internal rewinding unit.
4. Mount the single components of the internal rewinding unit in illustrated order from the front through the chassis opening.
5. Build the illustrated course of the belt.
6. Attach again the printer cover.

## 7.3  Cutter

**!**  **CAUTION!**

Risk of injury, particularly during maintenance, the cutter blades are sharp!

$\Longrightarrow$   Switch off before attaching the cutter!

$\Longrightarrow$   The cutter may only be used when it is mounted on the printer!

$\Longrightarrow$   Do not try to cut any materials which exceed the maximum width or thickness specifications.

$\Longrightarrow$   Do NOT touch the area of the moving blades!


1.  Open the right printer cover.
2.  Remover the lower front plate.
3.  Insert the cutter unit with the guiding pilots in the appropriate guiding holes.
    Take care of the plug-in connector!
4.  Fix the cutter unit with the knurled screw at the chassis.
5.  Tighten the front plate with the enclosed hex-nut and washer at the right cover.
6.  Insert the label material (see *'operating manual'*).

# 8    Error Correction

| Error message | Cause | Remedy |
|---|---|---|
| 1    Line too high | Line rises up completely or partly over the upper edge of label. | Move line down (increase Y value).<br><br>Check rotation and font. |
| 2    Line too low | Line rises up completely or partly over the bottom edge of label. | Move line up (reduce Y value).<br><br>Check rotation and font. |
| 3    Character set | One res. several characters of the text is res. are not available in the selected font. | Change text.<br><br>Change font. |
| 4    Unknown BC type | Selected code is not available. | Check code type. |
| 5    Illegal rotation | Selected rotation is not available. | Check rotation. |
| 6    CV font | Selected font is not available. | Check font. |
| 7    Vector font | Selected font is not available. | Check font. |
| 8    Measuring label | While measuring no label was found.<br><br>Set label length is too large. | Check label length and if labels are inserted correctly.<br><br>Restart measuring anew. |
| 9    No label found | No label available.<br><br>Soiled label photocell.<br><br>Labels not inserted correctly. | Insert new label roll.<br><br>Check if labels are inserted correctly.<br><br>Clean the label photocell. |
| 10    No ribbon | During the print order the ribbon roll becomes empty.<br><br>Defect at the transfer ribbon photocell. | Change transfer ribbon.<br><br>Check transfer ribbon photocell (service functions). |
| 11    COM FRAMING | Stop bit error. | Check stop bits.<br><br>Check baud rate.<br><br>Check cable (printer and PC). |
| 12    COM PARITY | Parity error. | Check parity.<br><br>Check baud rate.<br><br>Check cable (printer and PC). |
| 13    COM OVERRUN | Loss of data at serial interface (RS-232). | Check baud rate.<br><br>Check cable (printer and PC). |

| Error message | Cause | Remedy |
|---|---|---|
| 14    Field number | Received line number is invalid. | Check sent data.<br><br>Check connection PC - printer. |
| 15    Length mask | Invalid length of received mask statement. | Check sent data.<br><br>Check connection PC - printer. |
| 16    Unknown mask | Transferred mask statement is invalid. | Check sent data.<br><br>Check connection PC - printer. |
| 17    Missing ETB | No end of data found. | Check sent data.<br><br>Check connection PC - printer. |
| 18    Invalid character | One res. several characters of the bar code is res. are not valid. | Change bar code data.<br>Change font. |
| 19    Invalid statement | Unknown transferred data record. | Check sent data.<br><br>Check connection PC - printer. |
| 20    Invalid check digit | For check digit control the entered res. received check digit is wrong. | Calculate check digit anew.<br><br>Check code data. |
| 21    Invalid SC code | Selected SC factor is invalid for EAN res. UPC. | Check SC factor. |
| 22    Invalid number of digits | Entered digits for EAN res. UPC are invalid<br><br>< 12; > 13. | Check number of digits. |
| 23    Type check digit | Selected check digit calculation is not available in the bar code. | Check calculation of check digit.<br><br>Check bar code type. |
| 24    Invalid extension | Selected zoom factor is not available. | Check zoom factor. |
| 25    Offset sign | Entered sign is not available. | Check offset value. |
| 26    Offset value | Entered offset value is invalid. | Check offset value. |
| 27    Printhead temperature | Printhead temperature is too high.<br><br>Defective printhead sensing device. | Reduce contrast.<br><br>Change printhead. |
| 28    Cutter error | With cut an error occurred.<br><br>Paper jam. | Check label run.<br><br>Check cutter run. |
| 29    Invalid parameter | Entered data do not correspond to the characters allowed from the application identifier. | Check code data. |

| Error message | Cause | Remedy |
|---|---|---|
| 30   Application Identifier | Selected application identifier is not available in GS1-128. | Check code data. |
| 31   HIBC definition | Missing HIBC system sign.<br><br>Missing primary code. | Check definition of HIBC code. |
| 32   System clock | Real Time Clock function is selected but the battery is empty.<br><br>Defective RTC. | Change battery.<br><br>Change RTC component. |
| 33   No CF interface | Interrupted connection CPU - CF card.<br><br>Defective CF card interface. | Check connection CPU - CF card interface.<br><br>Check CF card interface. |
| 34   No print memory | Not enough print memory available. | Check CF assembly on CPU. |
| 35   Printhead open | At start of a print order the printhead is open. | Close the printhead and start print order anew. |
| 36   BCD invalid format | BCD error<br><br>Invalid format for the calculation of Euro variable. | Check entered format. |
| 37   BCD overflow | BCD error<br><br>Invalid format for the calculation of Euro variable. | Check entered format. |
| 38   BCD division | BCD error<br><br>Invalid format for the calculation of Euro variable. | Check entered format. |
| 39   FLASH ERROR | Flash component error. | Run a software update.<br><br>Change CPU. |
| 40   Length command | Invalid length of the received command statement. | Check data sent.<br><br>Check connection PC - printer. |
| 41   No drive | CF card not found / not correctly inserted. | Insert CF card correctly. |
| 42   Drive error | Impossible to read CF card (faulty). | Check CF card, if necessary change it. |
| 43   Unformatted | CF Card not formatted. | Format CF card. |
| 44   Delete directory | Attempt to delete the actual directory. | Change directory. |
| 45   Invalid path | Too long indication of path. | Indicate a shorter path. |

| Error message | Cause | Remedy |
|---|---|---|
| 46  Drive write-protected | Memory card is write-protected. | Deactivate write protection. |
| 47  Directory not file | Attempt to indicate a directory as file name. | Correct your entry. |
| 48  File already open | Attempt to change a file during an access is active. | Select another file. |
| 49  No file/directory | File does not exist on CF card. | Check file name. |
| 50  Invalid file name | File name contains invalid characters. | Correct entry of name, remove special characters. |
| 51  Internal file error | Internal file system error. | Please contact your distributor. |
| 52  Root full | The max. number (64) of main directory entries is reached. | Delete at least one main directory entry and create subdirectories. |
| 53  Drive full | Maximum CF capacity is reached. | Use new CF Card, delete no longer required files. |
| 54  File/directory exists | The selected file/directory already exists. | Check name, select a different name. |
| 55  File too large | During copying procedure not enough memory space onto target drive available. | Use a larger target card. |
| 56  No update file | Errors in update file of firmware. | Start update file anew. |
| 57  Invalid graphic file | The selected file does not contain graphic data. | Check file name. |
| 58  Directory not empty | Attempt to delete a not empty directory. | Delete all files and sub-directories in the desired directory. |
| 59  No CF interface | No CF card drive found. | Check connection of CF card drive.<br><br>Contact your distributor |
| 60  No media | No CF card is inserted. | Insert CF card in the slot. |
| 61  Webserver error | Error at start of web server. | Please contact your distributor. |
| 62  Wrong PH FPGA | The direct print module is equipped with the wrong FPGA. | Please contact your distributor. |
| 63  End position | The label length is too long.<br><br>The number of labels per cycle is too much. | Check label length res. the number of labels per cycle. |

| Error message | Cause | Remedy |
|---|---|---|
| 64    Zero point | Defective photocell. | Change photocell. |
| 65    Compressed air | Pressure air is not connected. | Check pressure air. |
| 66    External release | External print release signal is missing. | Check input signal. |
| 67    Column too wide | Wrong definition of column width res. number of columns. | Reduce the column width res. correct the number of columns. |
| 68    Scanner | The connected bar code scanner signals a device error. | Check the connection scanner/printer. Check scanner (dirty). |
| 69    Scanner NoRead | Bad print quality. Printhead completely soiled or defective. Print speed too high. | Increase contrast. Clean printhead or replace (if necessary). Reduce print speed. |
| 70    Scanner data | Scanned data does not correspond to the data which is to print. | Replcace printhead. |
| 71    Invalid page | As page number either 0 or a number > 9 is selected. | Select a number between 1 and 9. |
| 72    Page selection | A page which is not available is selected. | Check the defined pages. |
| 73    Undefined page | The page is not defined. | Check the print definition. |
| 74    Format user guiding | Wrong format for customized entry. | Check the format string. |
| 75    Format date/time | Wrong format for date/time. | Check the format string. |
| 76    Hotstart CF | No CF card found. | If option hotstart was activated, a CF card must be inserted. Switch off the printer before inserting the memory card. |
| 77    Flip/Rotate | Selection of print of several columns and also mirror/rotate. | It is only possible to select one of both functions. |
| 78    System file | Loading of temporary hotstart files. | Not possible. |
| 79    Shift variable | Faulty definition of shift times (overlapping times). | Check definition of shift times. |
| 80    GS1 Databar | General GS1 Databar error. | Check definition and parameter of GS1 Databar code. |
| 81    IGP error | Protocol error IGP. | Check sent data. |

| Error message | Cause | Remedy |
|---|---|---|
| 82    Time generation | Printing creation was still active at print start. | Reduce print speed.<br><br>Use printers' output signal for synchronization.<br><br>Use bitmap fonts to reduce generating time. |
| 83    Transport protection | Both DPM position sensors (start/end) are active. | Displace zero point sensor<br><br>Check sensors in service functions menu |
| 84    No font data | Font and web data is missing. | Run a software update. |
| 85    No layout ID | Layout ID definition is missing. | Define layout ID onto the label. |
| 86    Layout ID | Scanned data does not correspond to defined ID. | Wrong label loaded from CF card. |
| 87    RFID no label | RFID unit cannot recognize a label. | Displace RFID unit or use an offset. |
| 88    RFID verify | Error while checking programmed data. | Faulty RFID label.<br><br>Check RFID definitions |
| 89    RFID timeout | Error at programming the RFID label. | Label positioning.<br><br>Faulty label. |
| 90    RFID data | Faulty or incomplete definition of RFID data. | Check RFID data definitions. |
| 91    RFID tag type | Definition of label data does not correspond with the used label. | Check storage partitioning of used label type |
| 92    RFID lock | Error at programming the RFID label (locked fields). | Check RFID data definitions.<br><br>Label was already programmed. |
| 93    RFID programming | Error at programming the RFID label. | Check RFID definitions. |
| 94    Scanner timeout | The scanner could not read the bar code within the set timeout time.<br><br>Defective printhead.<br><br>Wrinkles in transfer ribbon.<br><br>Scanner wrong positioned.<br><br>Timeout time too short. | <br><br><br><br>Check printhead.<br><br>Check transfer ribbon.<br><br>Position scanner correctly, corresponding to the set feeding.<br><br>Select longer timeout time. |

| Error message | Cause | Remedy |
|---|---|---|
| 95   Scanner layout difference | Scanner data does not correspond to bar code data. | Check adjustment of scanner.<br><br>Check scanner settings / connection. |
| 96   COM break | Serial interface error. | Check settings for serial data transmission as well as cable (printer-PC). |
| 97   COM general | Serial interface error. | Check settings for serial data transmission as well as cable (printer-PC). |
| 98   No software printhead FPGA | No printhead-FPGA data available. | Please contact your responsible distributor. |
| 99   Load software printhead FPGA | Error when programming printhead-FPGA. | Please contact your responsible distributor. |
| 100  Upper position | Option applicator:<br><br>Sensor signal up is missing | Check input signals / compressed-air supply. |
| 101  Lower position | Option applicator:<br><br>Sensor signal down is missing. | Check input signals / compressed-air supply. |
| 102  Vacuum plate empty | Option applicator:<br><br>Sensor does not recognize a label at vacuum plate. | Check input signals / compressed-air supply. |
| 103  Start signal | Print order is active but device not ready to process it. | Check start signal. |
| 104  No print data | Print data outside the defined label.<br><br>Selection of wrong module type (design software). | Check selected module type.<br><br>Check selection of left/right version. |
| 105  Printhead | No original printhead is used. | Check the used printhead.<br><br>Contact your distributor. |
| 106  Invalid Tag type | Wrong Tag type.<br><br>Tad data do not match the Tag type in the printer. | Adapt data or use the correct Tag type. |
| 107  RFID inactive | RFID module is not activated.<br><br>No RFID data can be processed. | Activate RFID module or remove RFID data from label data. |
| 108  GS1-128 invalid | Transferred GS1-128 bar code is invalid. | Verify bar code data (see GS1-128 bar code specification). |
| 109  EPC parameter | Error at EPC calculation. | Verify data (see EPC specification). |

| Error message | Cause | Remedy |
|---|---|---|
| 110   Housing open | When starting the print order the housing cover is not closed. | Close the housing cover and start the print order anew. |
| 111   EAN.UCC code | Transferred EAN.UCC code is invalid. | Verify bar code data (see corresponding specification). |
| 112   Print carriage | Printing carriage does not move. | Check gear belt (possibly broken). |
| 113   Applicator error | Option applicator: Error while using applicator. | Check applicator. |
| 114   Left position | Option applicator: Left final position switch is not in correct position. | Check LEFT final position switch for correct function and position. Check function of pneumatics for cross traverse. |
| 115   Right position | Option applicator: Right final position switch is not in correct position. | Check RIGHT final position switch for correct function and position. Check function of pneumatics for cross traverse. |
| 116   Print position | Option applicator: The applicator is not in the print position when trying to print a label. | Check TOP and RIGHT final position switch for correct function and position. Check pneumatics for function |
| 117   XML parameter | The parameters in the XML file are not correct. | Please contact your responsible distributor. |
| 118   Invalid variable | Transferred variable is invalid with customized entry. | Select correct variable without customized entry and transfer it. |
| 119   No ribbon | During the print order the ribbon roll becomes empty. Defect at the transfer ribbon photocell. | Change transfer ribbon. Check transfer ribbon photocell (service functions). |
| 120   Wrong directory | Invalid target directory when copying. | Target directory must not be within the source directory. Check target directory. |
| 121   No label PH2 | No label found at the rear printhead (DuoPrint). Soiled label photocell. Labels not inserted correctly. | Insert new label roll. Clean the label photocell. Check if labels are inserted correctly. |
| 122   IP occupied | The IP address was already assigned. | Assign a new IP address. |

| Error message | Cause | Remedy |
|---|---|---|
| 123   Print asynchronous | The label photocell does not work in the order as it is expected according to print data. | Check label size and gap size. |
|  | The settings of the photocell are not correct. | Check label photocell settings. |
|  | Settings of label size and gap size are not correct. | Check correct loading of label material. |
|  | No label found at the rear printhead. | Insert new label roll. |
|  | Soiled label photocell. | Clean the label photocell. |
|  | Labels not inserted correctly. | Check if labels are inserted correctly. |
| 124   Speed too low | The print speed is too slow. | Increase the speed of customers' machine. |
| 125   DMA buffer | Communication problem HMI. | Restart the printer. |
| 126   UID conflict | Configuration RFID programming faulty. | Run RFID initialising. |
| 127   Module not found | RFID module not available. | Check the RFID module connection. Please contact your responsible distributor. |
| 128   No release signal | No print release by higher-level control (customer machine). | Activate release signal at the higher-level control. |
| 129   Wrong firmware | Firmware does not match the used printer type. | Use firmware that fits to the printer type. Please contact your responsible distributor. |
| 130   Language missing | Language file for the set printer language is not available. | Please contact your responsible distributor. |
| 131   Wrong material | Label material does not fit to printing data. | User label material with suitable label and/or gap length. |
| 132   Invalid mark-up tag | Invalid mark-up formatting characters in text. | Correct the formatting characters in the text. |
| 133   Script not found | LUA script file not found. | Check the file name. |
| 134   Script failure | LUA script is incorrect. | Check the script. |

| Error message | Cause | Remedy |
|---|---|---|
| 135   Script user error | Error in LUA script user input. | Correct the input value. |
| 136   No reprint available | No label data for reprinting available. | Send new label data to the printer. |
| 137   Printhead short circuit | Electrical short at the printhead. | Check the used printhead. Please contact your distributor. |
| 138   Too less ribbon | Transfer ribbon ends. | Change transfer ribbon. |
| 139   Hardware error | A hardware component could not be found. | Please contact your responsible distributor. |

# 9    Control Inputs and Outputs

By means of a maximum of 16 control inputs and outputs which, in the following, are also referred to as ports, different functions of the printer system can be triggered and operating states can be displayed.

The ports are provided by means of a D-Sub bushing (26pin HD) at the rear panel of the printer system and are galvanically isolated from protective earth (PE) by means of an optocoupler semi-conductor route.

Each port can be configured as input and as output. This function however, is predefined in the printer software and cannot be changed by the user.
The following parameters can be changed and set by using the menu: debounce times and high or low active.

**Printer, internal circuitry**
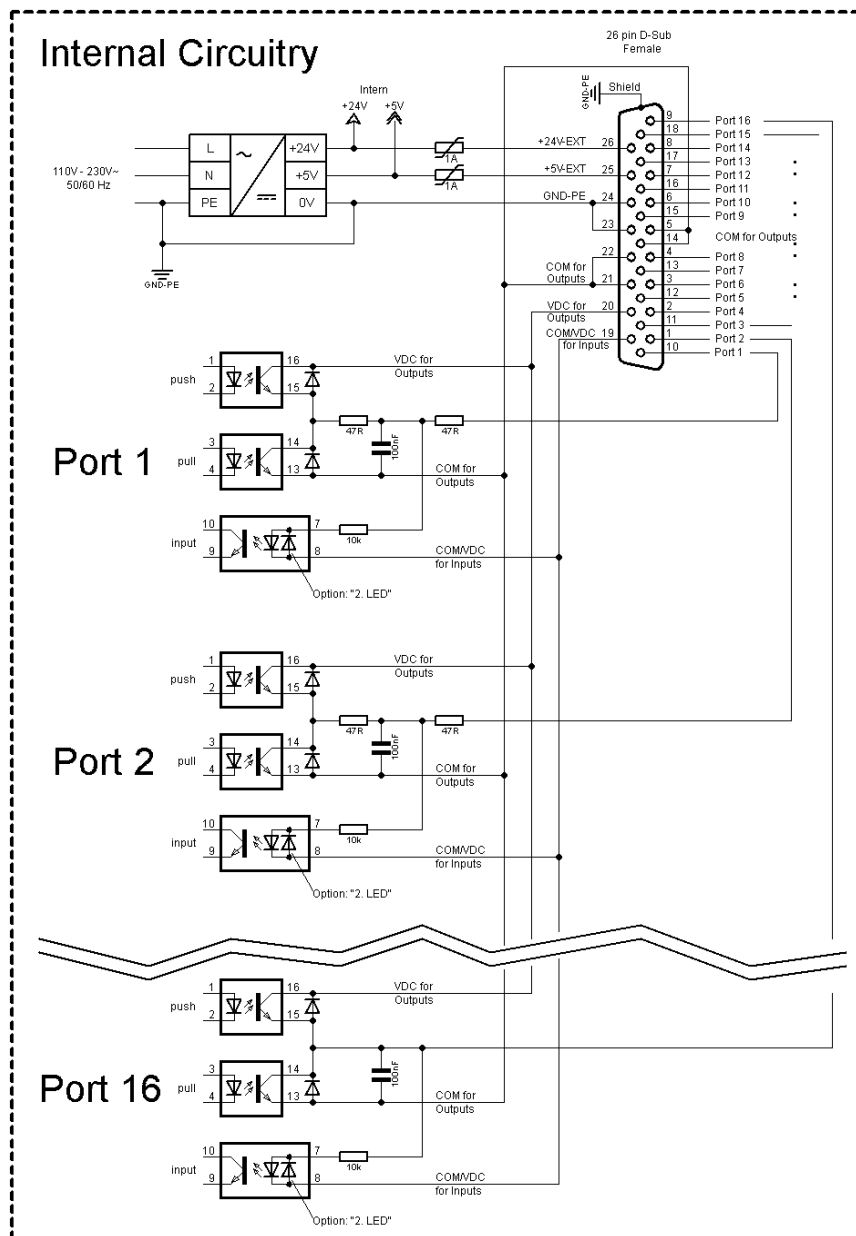


**Figure 27**

**Configuration of
D-Sub socket**
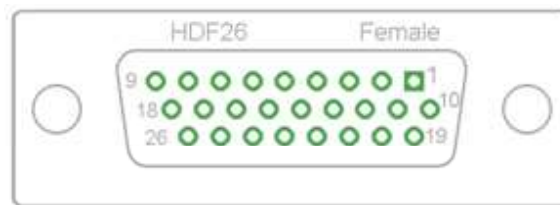


**Figure 28**

**Cable identification**

| Number | Color |
|--------|-------|
| 1 | white |
| 2 | brown |
| 3 | green |
| 4 | yellow |
| 5 | grey |
| 6 | pink |
| 7 | blue |
| 8 | red |
| 9 | black |
| 10 | violet |
| 11 | grey-pink |
| 12 | red-blue |
| 13 | white-green |
| 14 | brown-greed |
| 15 | white-yellow |
| 16 | yellow-brown |
| 17 | white-grey |
| 18 | grey-brown |
| 19 | white-pink |
| 20 | pink-brown |
| 21 | white-blue |
| 22 | brown-blue |
| 23 | white-red |
| 24 | brown-red |
| 25 | white-black |
| 26 | brown-black |

Port 1 to Port 16 = Assignment for I/O Profile 'Std_Label'

| Identification | Pin | Description / Function |
|---|---|---|
| Port 1 | 10 | Print start and cut (Input) |
| Port 2 | 1 | Reprint last printed label (Input) |
| Port 3 | 11 | Counter Reset (Input) |
| Port 4 | 2 | Option applicator only:<br>Start application (Input) |
| Port 5 | 12 | Error reset (Input) |
| Port 6 | 3 | Cancel all print jobs (Input) |
| Port 7 | 13 | No function |
| Port 8 | 4 | No function |
| Port 9 | 15 | Error (Output) |
| Port 10 | 6 | Print order activ (Output) |
| Port 11 | 16 | Dispenser photocell:<br>Label exists at dispenser photocell (Output) |
| Port 12 | 7 | Single print (Output) |
| Port 13 | 17 | Ready (Output) |
| Port 14 | 8 | Option applicator only:<br>Ready for application (Output) |
| Port 15 | 18 | Option scanner only<br>Bar code not readable (Output) |
| Port 16 | 9 | Prior warning for transfer ribbon end (Output) |
| COM/VDC for Inputs | 19 | Common reference potential of all control inputs. 'COM/VDC for Inputs' is usually connected with the (-) terminal of the control voltage and the control inputs are switched to active (+).<br>By means of the option '2nd LED', 'COM/VDC for Inputs' can optionally be connected with the (+) terminal of the control voltage. Then, the control inputs are switched to active (-). |
| VDC for Outputs | 20 | Common supply connection of all control outputs. 'VDC for Outputs' must be connected with the (+) terminal of the control voltage.<br>Never leave 'VDC for Outputs' open even if no output is used. |
| COM for Outputs | 5,14 21,22 | Common reference potential of all control outputs. 'COM for Outputs' must be connected with the (-) terminal of the control voltage.<br>Never leave 'COM for Outputs' open even if no output is used. |
| GND-PE | 23,24 | 'GND-PE' is the reference potential of the '+5 VDC EXT' and '+24 VDC EXT' voltages provided by the printer system.<br>'GND-PE' is printer internally connected with protective earth (PE). |

| Identification | Pin | Description / Function |
|---|---|---|
| + 5 VDC EXT | 25 | 5 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output. |
| + 24 VDC EXT | 26 | 24 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output. |

**Technical data**

| Plug Connector | |
|---|---|
| Type | D-Sub connector High Density 26-pin. / connector |
| Manufacturer | W+P-Products |
| Reference number | 110-26-2-1-20 |
| Output Voltages (connected with GND-PE) | |
| + 24 V / 1 A | Fuse: Polyswitch / 30 V / 1 A |
| + 5 V / 1 A | Fuse: Polyswitch / 30 V / 1 A |
| Port 1 - 15 | |
|    Input | |
|    Voltage | 5 VDC … 24 VDC |
|    Impedance | 47Ω + (100nF \|\| 10 kΩ) |
|    Output | |
|    Voltage | 5 VDC … 24 VDC |
|    Impedance | 47Ω + (100nF \|\| 10 kΩ \|\| 47Ω) |
|    Current max. | High +15 mA<br>Low   -15 mA |
| Port 16 | |
|    Input | |
|    Voltage | 5 VDC … 24 VDC |
|    Impedance | 100nF \|\| 10 kΩ |
|    Output | |
|    Voltage | 5 VDC … 24 VDC |
|    Impedance | 100nF \|\| 10 kΩ |
|    Current max. | High  +500 mA    (Darlington BCP56-16)<br>Low   - 500 mA    (Darlington BCP56-16) |
| Optocoupler | |
| Output | TCMT4106, CTR 100 % - 300 %, Vishay or TLP281-4(GB), CTR 100 % - 600 %, Toshiba |
| Input | TCMT4106, CTR 100 % - 300 %, Vishay or TLP281-4(GB), CTR 100 % - 600 %, Toshiba |
| Input Option 2nd LED | TCMT4600, CTR 80 % - 300 %, Vishay or TLP280-4, CTR 33 % - 300 %, Toshiba |

**Example 1**          Device connection to a machine with S7-300 SPS.
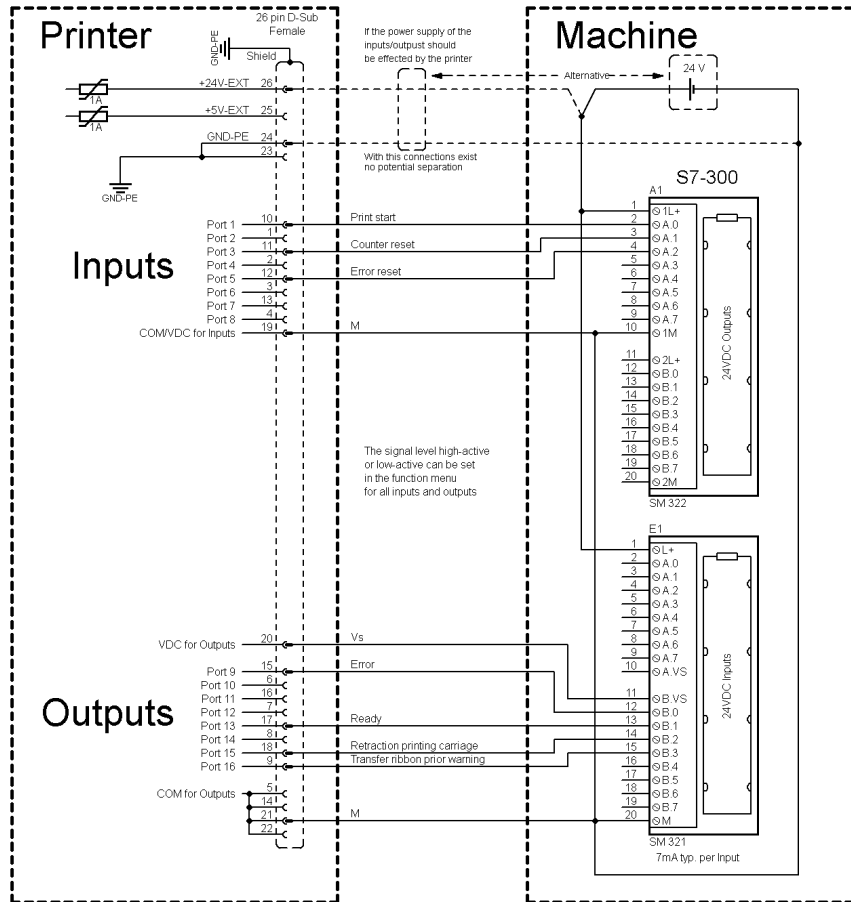


**Figure 29**

**Example 2**          Device connection to a operating panel.
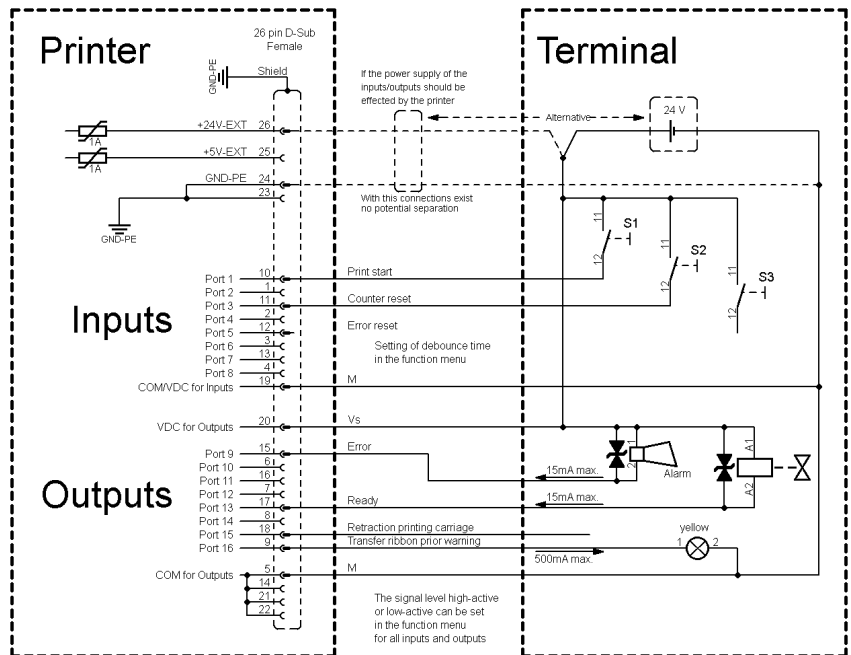


**Figure 30**

**Example 3**                     Device connection version if 'Option: 2. LED'.
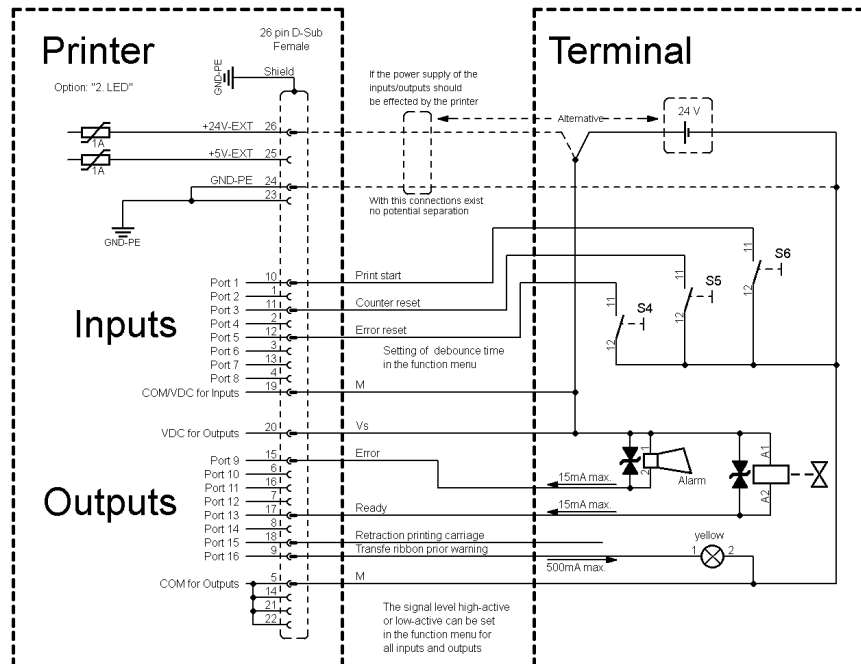


**Figure 31**

**Precautions**              When connecting a reed contact with a control input, the contact must have a switching capacity of min. 1 A in order to prevent the contact from sticking due to the inrush current. As an alternative, a suitable resistor can be connected in series.

If one of the printer's internal voltages '+5 VDC EXT' or '+24 VDC EXT' is used, an external fuse e.g. 0.5 AF, should be additionally installed to protect the printer electronics.

In the event of an inductive load, an antiparallel connected diode, for instance, must be used to discharge the induction energy.

In order to minimise the influence of leakage currents at control outputs, a resistor must, depending on what is connected, be installed in parallel with the load.

In order to avoid any damages to the printing system, the max. output currents must not be exceeded or outputs shorted.

# 10   Wiring Plan
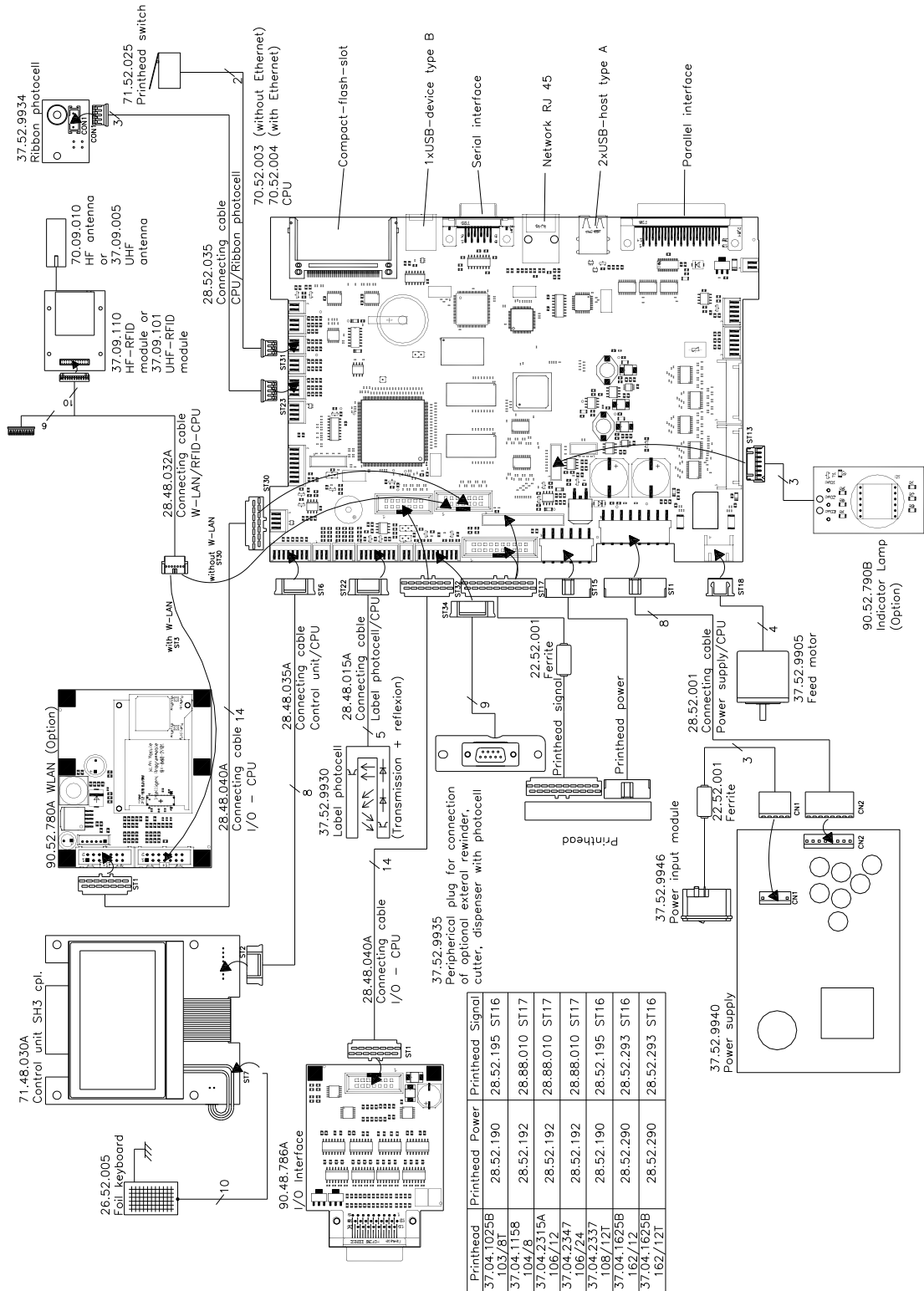


**Figure 32**

## 10.1 CPU Component Placement Specification
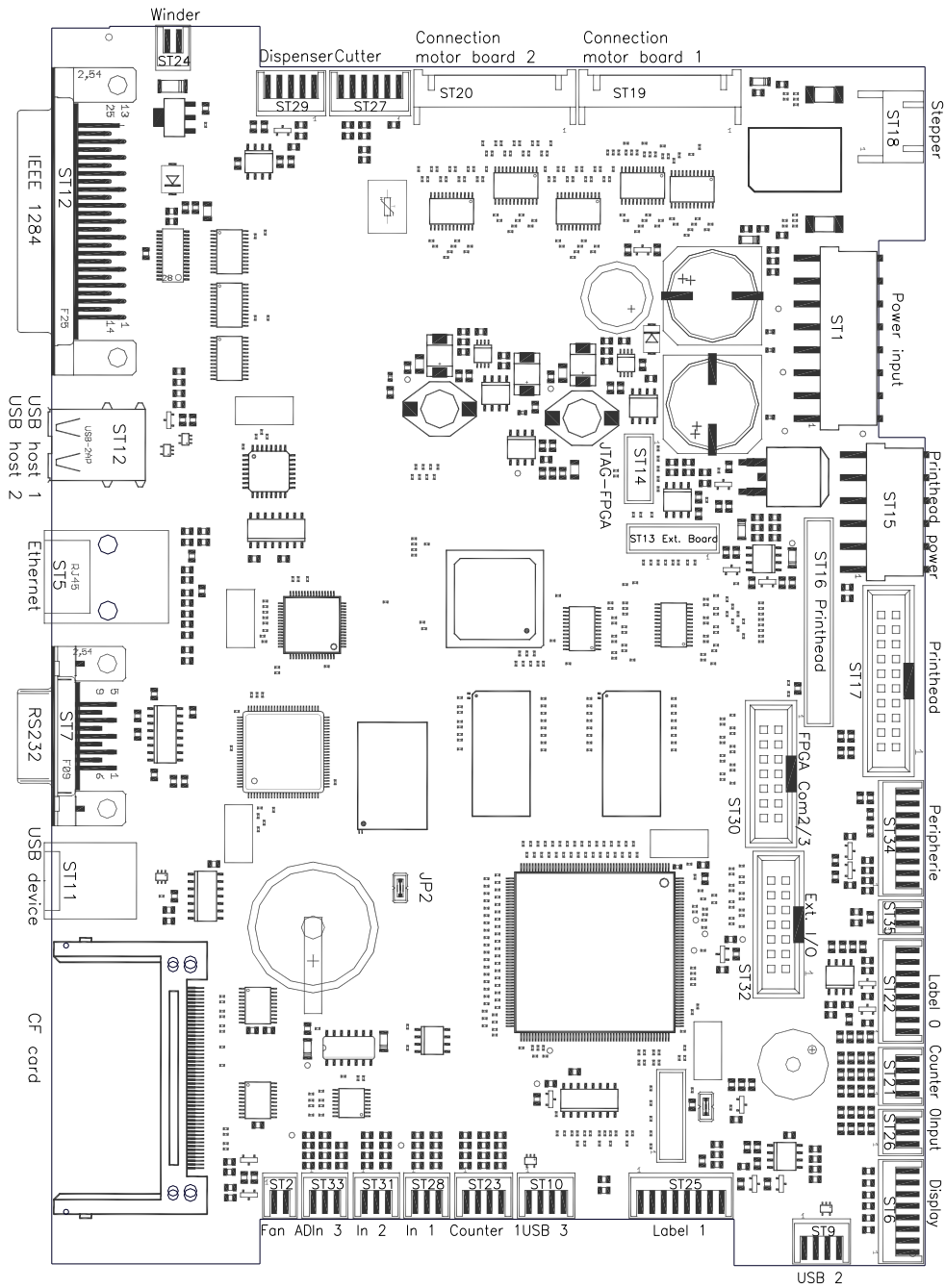


**Figure 33**

**Jumper plan**

|  | JP1 (Debug) | JP2 (Write-protection) |
|---|---|---|
| Boot sector Programming | closed | closed |
| Delivery | closed | open |

# 11   Environmentally-Friendly Disposal
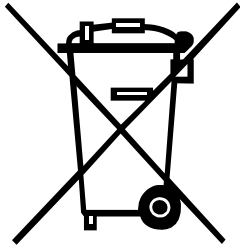
Manufacturers of B2B equipment are obliged to take back and dispose of old equipment that was manufactured after 13 August 2005. As a principle, this old equipment may not be delivered to communal collecting points. It may only be organised, used and disposed of by the manufacturer. Valentin products accordingly labelled can therefore be returned to Carl Valentin GmbH.

This way, you can be sure your old equipment will be disposed of correctly.

Carl Valentin GmbH thereby fulfils all obligations regarding timely disposal of old equipment and facilitates the smooth reselling of these products. Please understand that we can only take back equipment that is sent free of carriage charges.

The electronics board of the printing system is equipped with a battery. This must only be discarded in battery collection containers or by public waste management authorities.

Further information on the WEEE directive is available on our website www.carl-valentin.de.

# 12  Index

## A

## B

## C

## D

## E

## H

## I

## J

## L

## N

## P

## R

## S

## T

## W