

# COMPA V

Service Instructions



**Edition:** 04/23

### **Copyright**

Copyright by Carl Valentin GmbH

Subject to modifications.

All rights, including those regarding the translation, are reserved.

No part of this document may be reproduced in any form (print, photocopy, or any other method) or edited, copied, or distributed electronically without written permission from Carl Valentin GmbH.

### **Trademarks**

All named brands or trademarks are registered brands or registered trademarks of their respective owners and may not be separately labelled. It must not be concluded from the missing labelling that it is not a registered brand or a registered trademark.

### **Topicality**

Information on the scope of delivery, appearance, performance, dimensions, and weight reflect our knowledge at the time of printing.

Due to constant further development of our products discrepancies between documentation and product can occur.

Please check [www.carl-valentin.de](http://www.carl-valentin.de) for the latest update.

### **Terms and Conditions**

Deliveries and services are effected under the General Conditions of Business of Carl Valentin GmbH

### **Licences**

**CE** Low-Voltage Directive (2014/35/EU)  
Electromagnetic Compatibility Directive (2014/30/EU)  
RoHS Directive (2011/65/EU)



### **Carl Valentin GmbH**

Postfach 3744  
78026 Villingen-Schwenningen  
Neckarstraße 78 – 86 u. 94  
78056 Villingen-Schwenningen

Phone +49 7720 9712-0  
Fax +49 7720 9712-9901

E-Mail [info@carl-valentin.de](mailto:info@carl-valentin.de)  
Internet [www.carl-valentin.de](http://www.carl-valentin.de)

## Table of Contents

<b>1</b>	<b>Notes on this Document .....</b>	<b>5</b>
1.1	User Notes.....	5
1.2	Instructions .....	5
1.3	Cross References.....	6
<b>2</b>	<b>Safety Instructions .....</b>	<b>7</b>
2.1	General Safety Instructions .....	7
2.2	Safety Handling when Working with Electricity .....	10
<b>3</b>	<b>Printer Rear (Ports) .....</b>	<b>11</b>
<b>4</b>	<b>Cleaning .....</b>	<b>13</b>
4.1	General Cleaning.....	14
4.2	Pressure Roller .....	14
4.3	Printhead .....	15
4.4	Label Photocell .....	16
4.5	Cutter Unit .....	18
4.6	Reset the Cutter to Initial Position .....	19
<b>5</b>	<b>Replacing Components .....</b>	<b>21</b>
5.1	Tool List .....	21
5.2	Printhead .....	22
5.3	Adjust the Print Position .....	24
5.4	Pressure Roller and Dispenser Roller .....	25
5.5	Slipping Clutches.....	26
5.6	Label Photocell .....	28
5.7	CPU PCB.....	29
5.8	Power Supply Unit.....	30
5.9	Battery .....	31
5.10	Cutter Blades.....	32
<b>6</b>	<b>Adjustments, Settings and Alignments .....</b>	<b>35</b>
6.1	Adjust the Winding Torques .....	35
6.2	Measure the Winding Torques at Ribbon Rewinder/Unwinder.....	36
6.3	Measure the Torques at the Internal Rewinder .....	38
6.4	Set the Winding Torque.....	40
6.5	Adjust the Print Mechanism.....	41
6.6	Adjust the Position of Printhead .....	43
6.7	Adjust the Head Contact Pressure .....	45
6.8	Adjust the Transfer Ribbon Feed Path .....	46
6.9	Adjust the Belt Tension at Main Drive Motor .....	48
<b>7</b>	<b>Retrofit with Options .....</b>	<b>49</b>
7.1	I/O Plate.....	49
7.2	Dispenser Unit with Photocell.....	50
7.3	Cutter .....	51
<b>8</b>	<b>Error Correction.....</b>	<b>53</b>
<b>9</b>	<b>Control Inputs and Outputs.....</b>	<b>63</b>
<b>10</b>	<b>Wiring Plan.....</b>	<b>71</b>
10.1	CPU Component Placement Specification.....	72
<b>11</b>	<b>Environmentally-Friendly Disposal .....</b>	<b>73</b>
<b>12</b>	<b>Index .....</b>	<b>75</b>





# 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 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, 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.

- ⇒ After performing maintenance work, attach all safety equipment (covers, safety precautions, ground cables etc.).
- ⇒ Replace faulty parts and those which have become unusable.

**General safety instructions**

The printer is designed for power supply systems from 100 ... 240 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.).

Do not use the label printer in an explosive atmosphere.

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.

**CAUTION!**

Risk of crushing when closing the cover.

- ⇒ When closing the cover, only touch it from the outside and do not reach into the pivoting range of the cover.

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!

⇒ Do not open the casing.

## 2.2 Safety Handling when Working with Electricity

### Qualifications of personnel

- ⇒ 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

- ⇒ Locate the emergency-stop or power switch so that it can be actuated in case of an emergency.
- ⇒ 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.
- ⇒ Ensure that the device is de-energized.
- ⇒ 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

- ⇒ 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.
- ⇒ 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.

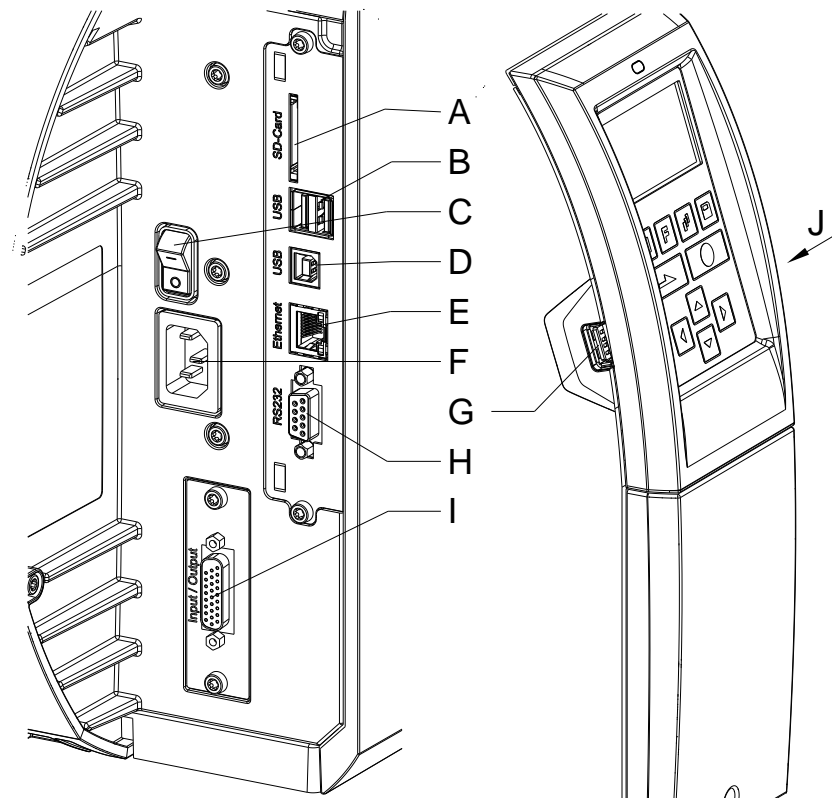
### Tools

- ⇒ Do not use worn or damaged tools.
- ⇒ Use only tools and testing equipment that is suitable for the respective task.

### What to do in case an accident occurs

- ⇒ Proceed in a very cautious and calm manner.
- ⇒ Avoid endangering yourself.
- ⇒ Switch the power off.
- ⇒ Request medical help (emergency physician).
- ⇒ Call for first aid if necessary.

### 3 Printer Rear (Ports)



**Figure 1**

A = Slot for SD card

B = 2 x USB host

C = Switch On/Off

D = USB 2.0 Hi-Speed Device (PC connection)

E = Ethernet 10/100 interface

LED orange

Lighting = Connection active

Flashing = Data transfer

Off = No connection

LED green

Lighting = Speed 100 MBit

Off = Speed 10 MBit

F = Power supply

G = USB host

H = Serial RS-232 port

I = External I/O (option)

J = USB host (USB WLAN stick)





## 4 Cleaning



### **DANGER!**

Risk of death by electric shock!

⇒ Disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.



### **CAUTION!**

Risk of injury when cleaning.

⇒ Pay attention to sharp edges.



### **NOTICE!**

When cleaning the label printer, personal protective equipment such as safety goggles and gloves are recommended.

### Cleaning plan

Task	Frequency
General cleaning (see chapter 4.1, page 14).	As necessary.
Clean the pressure roller (see chapter 4.2, 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, page 15).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Clean the label photocell (see chapter 4.4, page 16).	When exchanging the label roll.
Clean the cutter unit (see chapter 4.5, page 18)	In case of deposits of dust and label residues on the cutter blades.



### **NOTICE!**

The handling instructions for the use of Isopropanol (IPA) must be observed. In the case of skin or eye contact, immediately wash off the fluid thoroughly with running water. If the irritation persists, consult a doctor. Ensure good ventilation.



### **WARNING!**

Risk of fire by easily inflammable label soluble!

⇒ 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 upper 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 Pressure Roller**

A soiled pressure roller can lead to reduced print quality and can affect transport of material.

**CAUTION!**

Pressure roller can be damaged!

- ⇒ Do not use sharp or hard objects to clean the pressure roller.
1. Open the printer cover.
  2. Turn the lever (C, Figure 7) counterclockwise to lift the printhead.
  3. Remove labels and transfer ribbon.
  4. Remove deposits with the roller cleaner and a soft cloth.
  5. If the roller appears damaged, replace it (see chapter 5.4 Pressure Roller and Dispenser Roller, page 25).
  6. Reload labels and transfer ribbon.
  7. Turn the lever (C, Figure 7) clockwise to lock the printhead.
  8. Close the printer cover.

### 4.3 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. Open the printer cover.
2. Turn the lever (C, Figure 7) counterclockwise to lift the printhead.
3. Remove labels and transfer ribbon.
4. Clean the printhead surface with a special cleaning pen or a cotton swab dipped in pure alcohol.
5. Before using the label printer, let the printhead dry for about two to three minutes.
6. Reload labels and transfer ribbon.
7. Turn the lever (C, Figure 7) clockwise to lock the printhead.
8. Close the printer cover.

## 4.4 Label Photocell



### CAUTION!

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.

### Compa V 10X

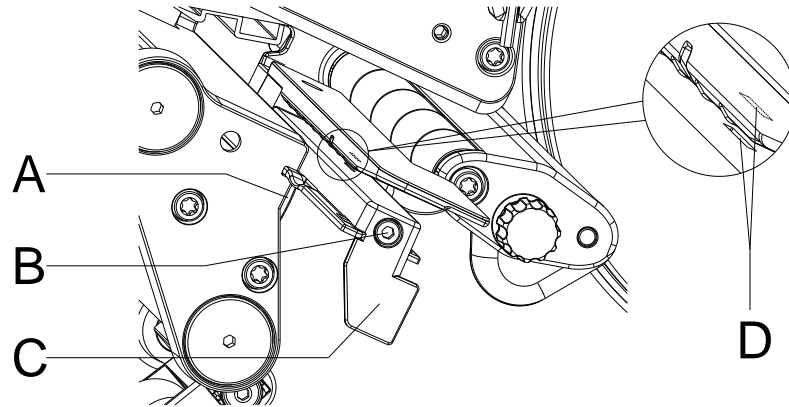


Figure 2

1. Open the printer cover.
2. Turn the lever (C, Figure 7) counterclockwise to lift the printhead.
3. Remove labels and transfer ribbon.
4. Loosen the screw (B).
5. Press the locking (A) and slowly pull the label photocell outward via the handle (C). Make sure that the photocell cable is not stretched.
6. Clean the label photocell and the sensor slots (D) with a brush or a cotton bud soaked in pure alcohol.
7. Push back the label photocell at the handle (C) and set it (see chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**, page **Fehler! Textmarke nicht definiert.**).
8. Reload labels and transfer ribbon.
9. Turn the lever (C, Figure 7) clockwise to lock the printhead.
10. Close the printer cover.

## Compa V 162

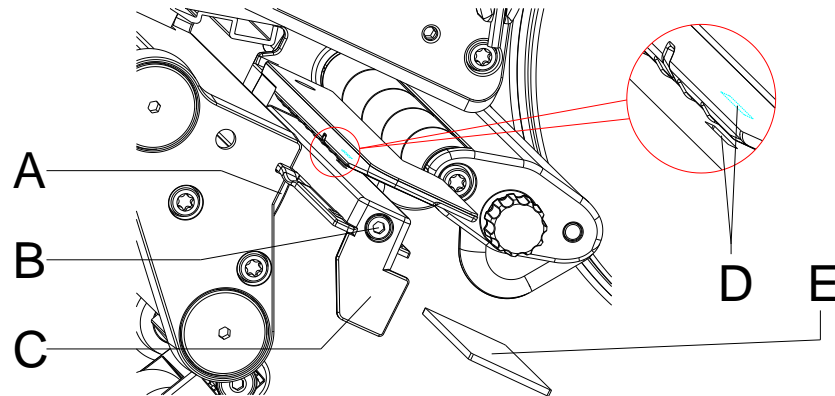


Figure 3

**DANGER!**

Danger to life from mains voltage/electric shock!

- ⇒ Before maintenance work, disconnect the label printer from the power supply and wait briefly until the power supply unit has discharged.
- ⇒ The following work must be carried out by trained service personnel!

1. Turn the lever (C, Figure 7) counterclockwise to lift the printhead.
2. Remove labels and transfer ribbon.
3. Loosen two hexagon socket screws on the upper cover edge and then remove the left cover of printer.
4. Push the label photocell on the handle (C) as far as it will go in the direction of the housing and pull the connection cable out of the plug at the rear end of the label photocell.
5. Press the locking (A) and slowly pull the label photocell outward via the handle (C). In this process, push the spacer plate (E) out of the guiding of the photocell.
6. Clean the label photocell and the sensor slots (D) with a brush or a cotton bud soaked in pure alcohol.
7. Push the label photocell on the handle (C) towards the housing wall.
8. Press the locking (A) and push the spacer plate (E) back into the guiding of photocell.
9. Connect the connecting cable at the label photocell.
10. Install the left cover of label printer.
11. Adjust the label photocell.
12. Reload labels and transfer ribbon.
13. Turn the lever (C, Figure 7) clockwise to lock the printhead.

## 4.5 Cutter Unit

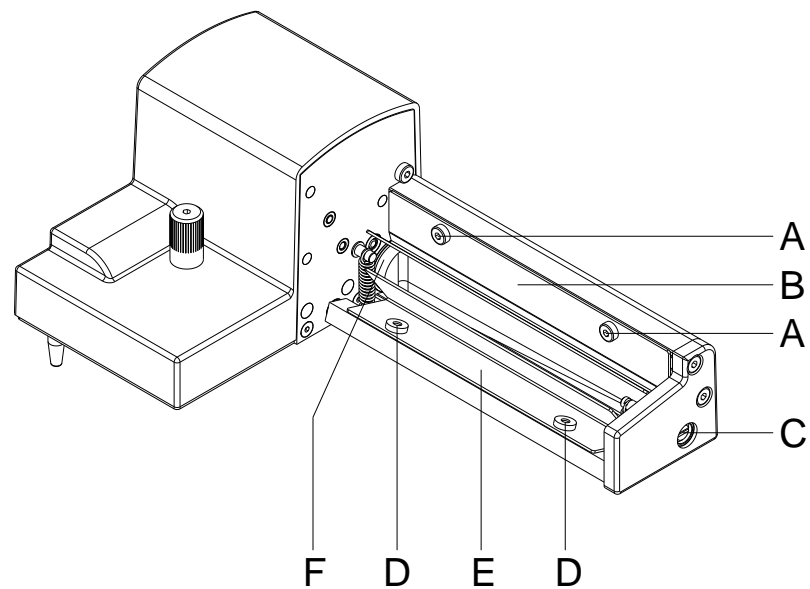


### CAUTION!

There is a risk of injury from the blades of the cutter knife.

⇒ The assembly/disassembly of the cutter is only to be carried out when the printer is switched off.

⇒ The cutter blades are sharp!



**Figure 4**

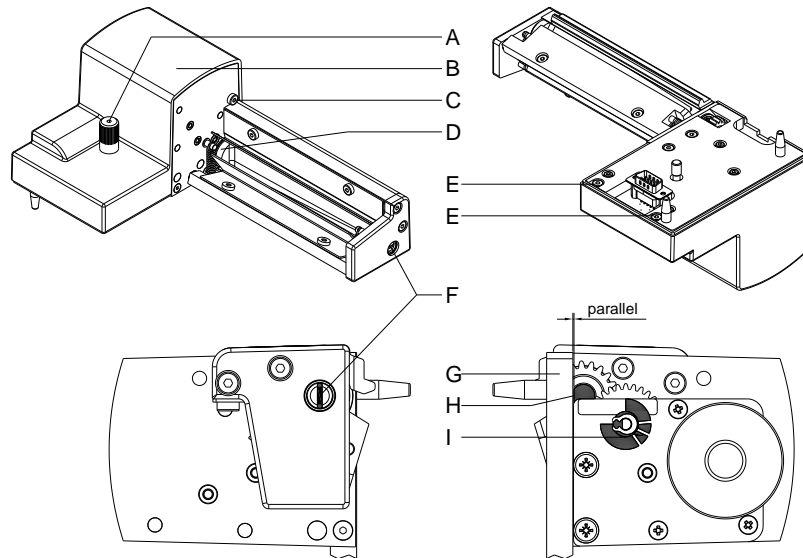
1. Dismount the cutter from the printer.
2. Loosen the screws (A) and remove the top protective plate (B).
3. Loosen the screws (D) and remove the lower protective plate (E).
4. Remove dust particles and label residue with a soft brush or vacuum cleaner.
5. To clean the cutter shaft, turn the shaft (C) slightly with a slotted screwdriver (width 7 mm).
6. Remove any deposits on the blades with pure alcohol and a soft cloth.
7. Lubricate the cylindrical surface (F) of the cutter shaft with an all-round high-performance grease.  
For this purpose, hold a greased brush against the cylindrical surface and turn the shaft (C) with a slotted screwdriver (width 7 mm).
8. Position the cutter into initial position (see following chapter).
9. Attach again the protective plates (B and E) with screws (A and D).

## 4.6 Reset the Cutter to Initial Position



### NOTICE!

After cleaning or replacing the cutter blades, the cutter shaft (D) and the cycle disk (I) must be aligned to each other to ensure the proper cutter function.



**Figure 5**

1. Completely unscrew the knurled screw (A) and screws (C and E).
2. Remove the cover (B).
3. Turn the shaft (F) with a slotted screwdriver (width 7 mm) so that the surface (H) of the cutter shaft (D) is parallel to the base plate (G).
4. Check the position of cycle plate (I).
5. The cycle plate (I) must be in the position shown, otherwise turn the cutter shaft one or two full turns.
6. Reinstall the cover (B) with screws (C and E) and knurled screw (A).





## 5 Replacing Components



### **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.

### 5.1 Tool List



### **NOTICE!**

For adjustments and simple installation work, use the accompanying hexagonal wrench located in the upper 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 Printhead



### CAUTION!

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

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

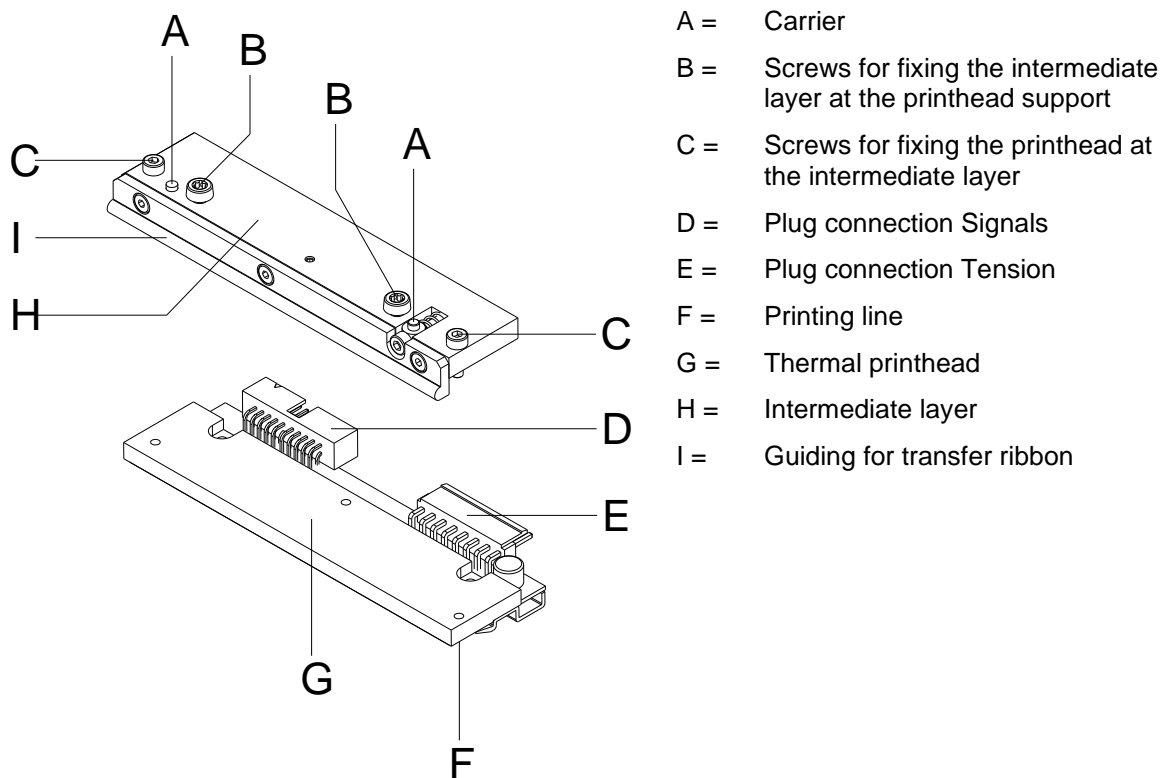


Figure 6



### NOTICE!

The intermediate layer (H) remains on the printer. Only the printhead (G) is replaced.



### CAUTION!

Danger of abrasion when removing/installing the printhead!

- ⇒ Pay attention to the toothing when the tear-off edge is installed.

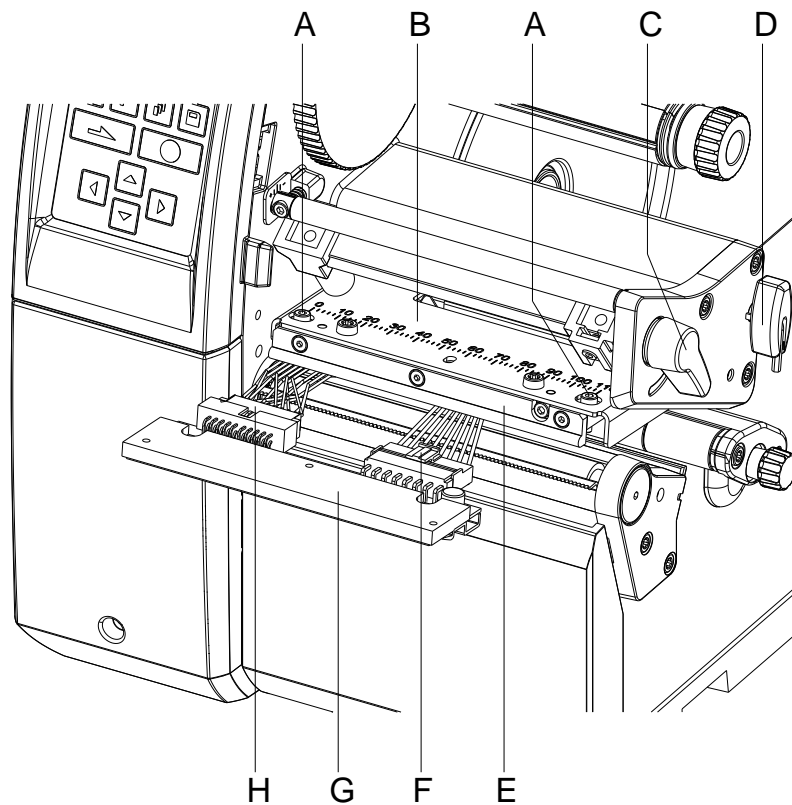


Figure 7


**Remove the printhead**


1. Open the printer cover.
2. Turn the lever (C) counterclockwise to lift up the printhead.
3. Remove labels and transfer ribbon.
4. Remove the hexagonal wrench (D) from its retainer.
5. Hold the printhead holder (B) on the pressure roller with one finger and unscrew the screws (A) with an Allen key until the printhead (G) is loose.
6. Swivel the printhead holder (B) upwards.
7. Pull the printhead (G) forward.
8. Loosen both plug connections (F, H) at the printhead and put the printhead on a clean, soft surface.


**Install the printhead**


1. Connect the plug connections (F, H):
2. Position the printhead (G) in the intermediate layer (E) so that the screws lock.
3. Hold the printhead holder (B) on the pressure roller with one finger and check the correct position of the printhead.
4. Screw in the screws (A) with an Allen key and tighten them.
5. Reload labels and transfer ribbon.
6. Turn the lever (C) clockwise to lock the printhead.
7. Close the printer cover.

### 5.3 Adjust the Print Position

Press the key  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.

#### Zero point adjustment in X direction

Press the key  to move to the next menu item.

Indication of value in 1/100 mm.

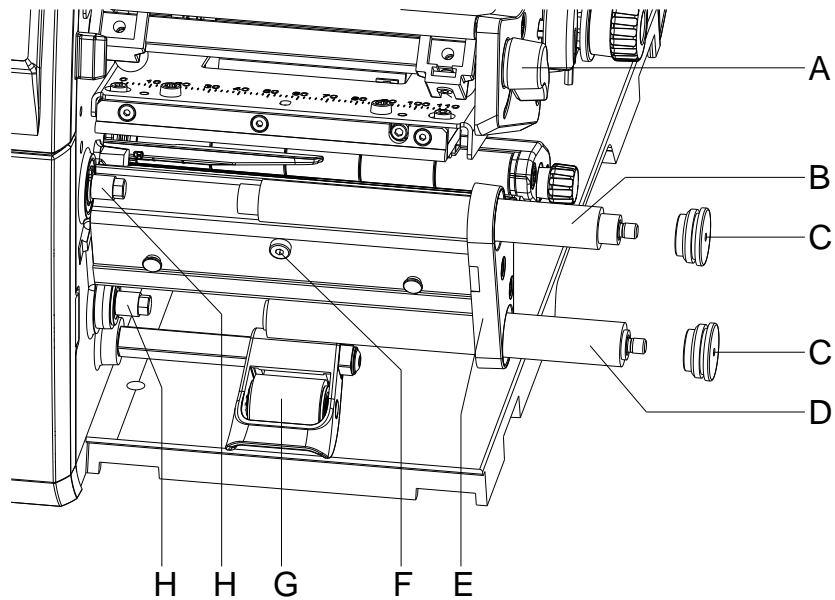
After replacing the printhead - the print cannot be continued at the same position on the label; the difference can be corrected across the printing direction.



#### 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 Pressure Roller and Dispenser Roller



**Figure 8**

### **Remove the pressure roller/dispenser roller**

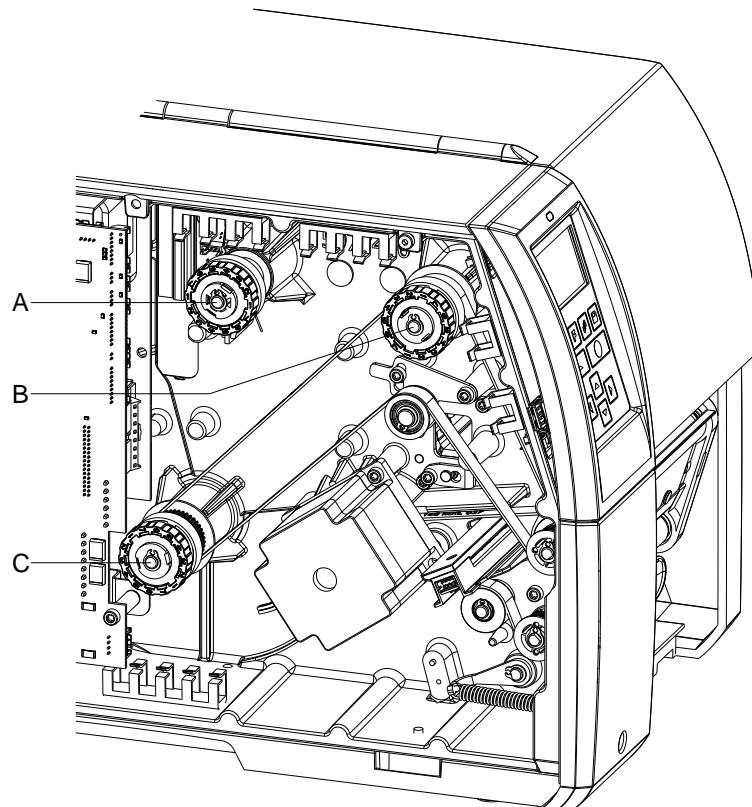
1. Open the printer cover.
2. Turn the lever (A) counterclockwise to lift the printhead.
3. Lift the pressure system (G) from the dispenser roller.
4. Remove labels and transfer ribbon.
5. Loosen the screw (F) by several turns and remove the dispenser edge, tear-off edge or rewind guide plate, if necessary.
6. Unscrew the roller bearings (C) from the bearing plate (E) using an Allen key.
7. Pull the pressure roller (B) and dispenser roller (D) from the shafts (H) through the bearing plate (E).

### **Install the pressure roller/dispenser roller**

1. Clean the shafts (H) of the roller and then lubricate them with all-round high-performance grease.
2. Place the pressure roller (B) and dispensing roller (D) onto the respective shaft and turn slightly until the hexagon of the shaft engages in the hexagon socket of the roller.
3. Place the roller bearings (C) on the pins of the roller and screw them into the bearing plate (E).
4. If necessary, remount the dispenser edge, tear-off edge or rewind guide plate.
5. Reload labels and transfer ribbon.
6. Turn the lever (1) clockwise to lock the printhead.
7. Close the printer cover.

## 5.5 Slipping Clutches

The rewriter for the transfer ribbon and the internal rewriter 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 9**

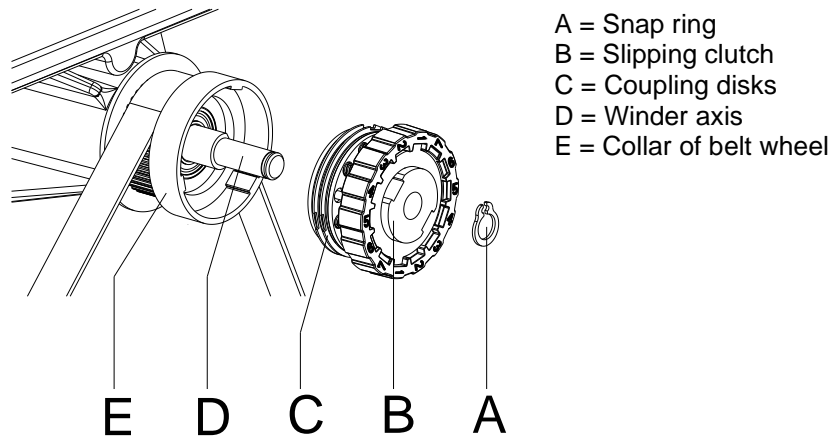
A = Transfer ribbon supply hub: brake  
 B = Transfer ribbon take up hub: coupling  
 C = Internal rewriter: coupling

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/brake

1. Unplug the printer from the electrical outlet.
2. Loosen two hexagon socket screws on the upper cover edge and then remove the left cover of printer.
3. Remove the snap ring (A, Figure 10).
4. Pull the coupling or brake (B, Figure 10) from the winder axis (D, Figure 10).
5. Ensure that the pin (D, Figure 11) 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.

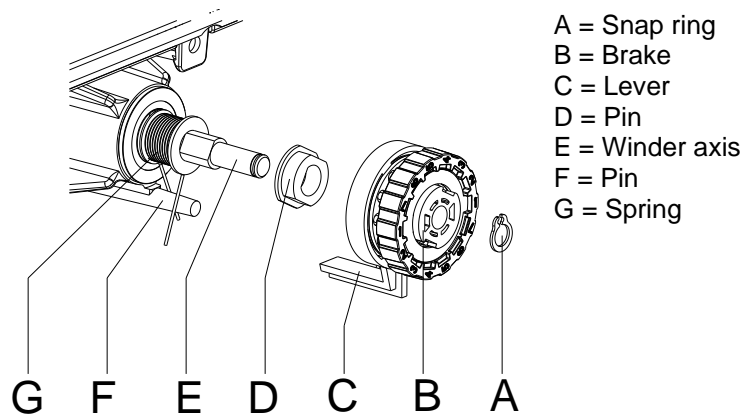
### Install the slipping clutch on the rewinder



**Figure 10**

1. Slide the coupling (B) onto the winder axis (D).
2. Align the grooves in the coupling disks (C) with the guides in the collar of the belt wheel (E).
3. Slide the coupling further until it stops.
4. Secure the snap ring (A).
5. Adjust the coupling (see chapter 6.1, Adjust the Winding Torques, page 35).

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



**Figure 11**

1. Check the position of the spring (G). The pin (F) must interlock between the two spring legs.
2. Slide the brake (B) onto the winder axis (E) in such a way that it fits on the hexagonal profile of the pin (D).
3. Push the brake as far as it will go and ensure that the lever (C) grasps between the two legs of the spring (G).
4. Secure the snap ring (A).
5. Adjust the coupling (see chapter 6.1, Adjust the Winding Torques, page 35).
6. Mount again the left printer cover.

## 5.6 Label Photocell



### NOTICE!

Soiling of the label photocell can cause malfunctions. Before replacing the label photocell, check whether it is soiled and clean it if necessary (see chapter 4.4, Label Photocell, page 16).

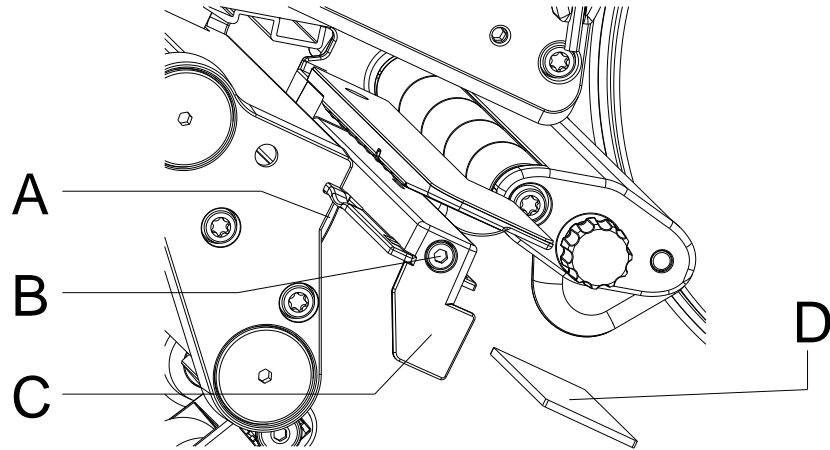


Figure 12

### Remove label photocell

1. Remove media from the printer.
2. Loosen two hexagon socket screws on the upper cover edge and then remove the left cover of the printer.
3. Slide the label photocell assembly onto the handle (C) toward the casing until it stops.
4. Unplug the connecting cable from the plug on the rear end of the label photocell.
5. Unscrew the screw (B).
6. Press the locking (A) and slowly pull the label photocell outwards by the handle (C).

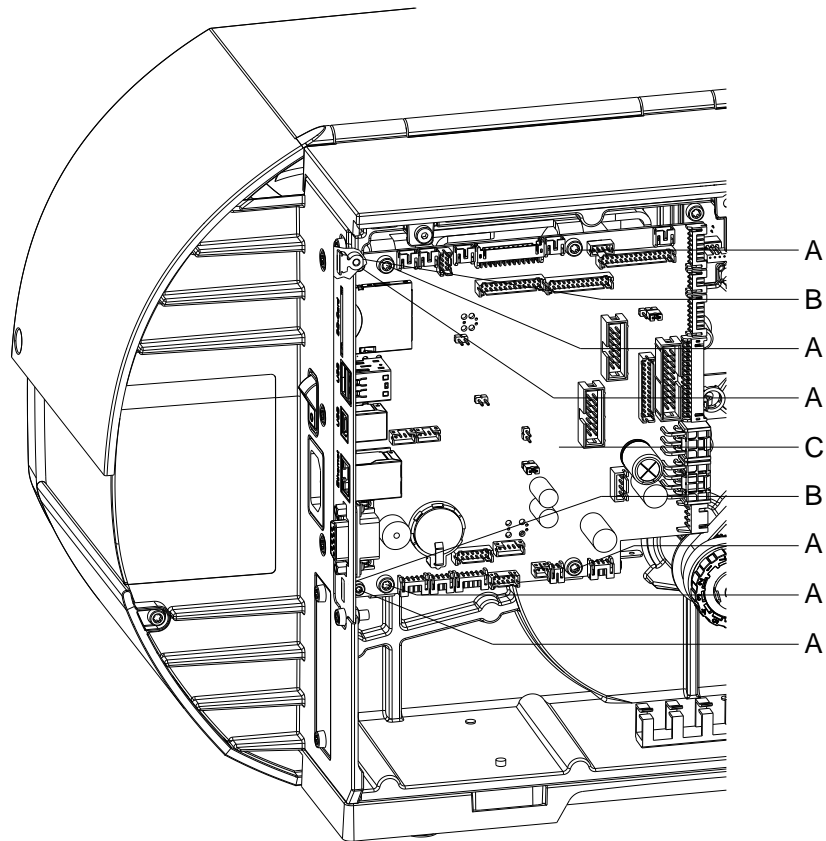
**Compa V 162:** That way the distance plate (D) is pushed out of label photocell guide.

### Install the label photocell

1. Insert the label photocell into the guide from the cover side and slide it onto the handle (C) towards the housing until it stops.  
**Compa V 162:** Push the distance plate (D) into the guide of the label photocell.
2. Connect the connecting cable to the label photocell.
3. Pull the label photocell by the handle (C) outwards as far as possible.  
This prevents the cable (B) from being pinched when installing the left printer cover.
4. Mount again the left printer cover.
5. Position the label photocell as required and tighten the screw (B).



## 5.7 CPU PCB



**Figure 13**

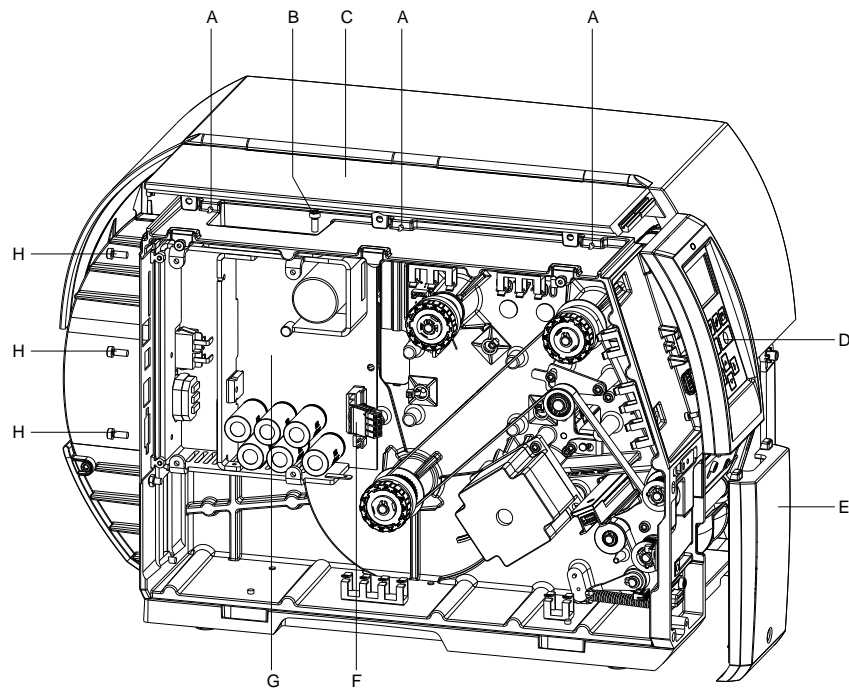
### Remove the CPU PCB

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. Loosen two hexagon socket screws on the upper cover edge and then remove the left cover of the printer.
6. Unplug all side plug connections from the CPU PCB (C).
7. Remove the six fixing screws (A) from the CPU PCB.
8. Carefully remove the CPU PCB (C).

### Install the CPU PCB

1. Insert the CPU PCB (C) into the rear connection plate and place it on the threaded bushings (B).
2. Secure the CPU PCB (C) with six screws (A).
3. Insert all plug connections on the CPU PCB.
4. Mount again the left 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 Power Supply Unit



**Figure 14**

### Remove the power supply unit

1. Unplug the printer from the electrical outlet.
2. Remove the CPU PCB (see chapter 5.7, CPU PCB, page 29).
3. Remove the front panel at the bottom left (E).
4. Remove the screw under the front panel at the top left (D) and lift out the panel of the fixation of the cover at the top left (C).
5. Remove three screws (A) on the right side of the cover at the top left (C) and remove the complete hinged cover unit.
6. Remove the connecting cable power unit/CPU PCB (F).
7. Unscrew the three screws (H) at the back of the printer.
8. Hold the power supply (G) at the heat sink and unscrew the screw (B).
9. Remove the power supply unit.

### Install the power supply unit

1. Insert the power supply unit and tighten it with four screws (B, H).
2. Plug in the connecting cable power unit/CPU PCB (F).
3. Mount the hinged cover unit and front panels.
4. Insert the CPU PCB (see chapter 5.7, CPU PCB, page 29).

## 5.9 Battery

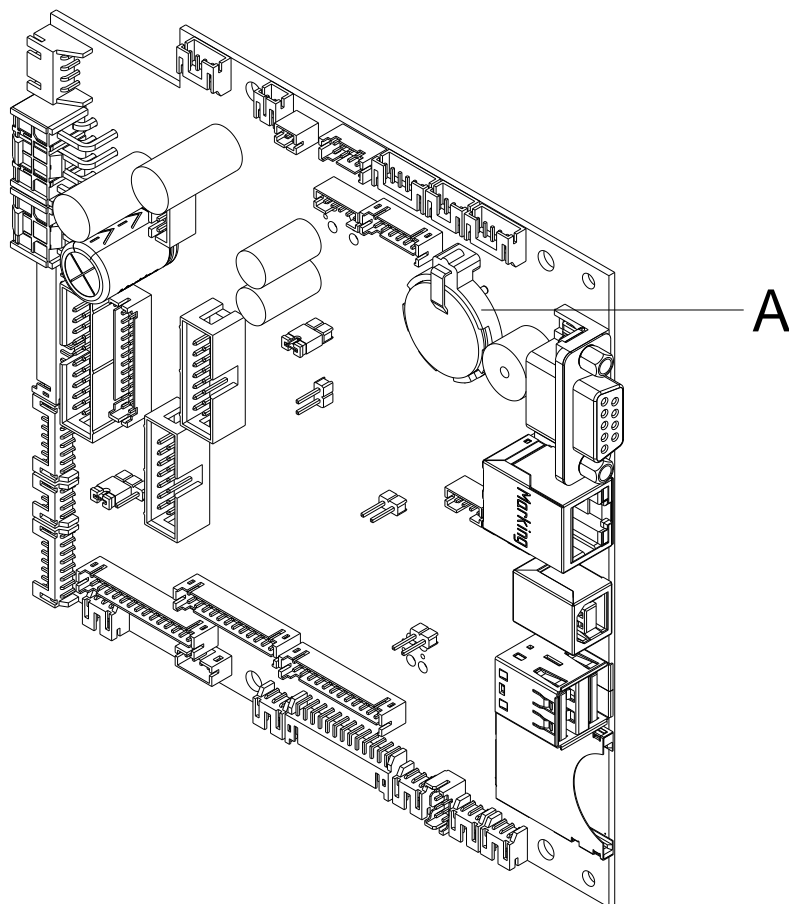


### **DANGER!**

Danger of explosion due to improper replacement of the battery!

⇒ Use non-conductive tools.

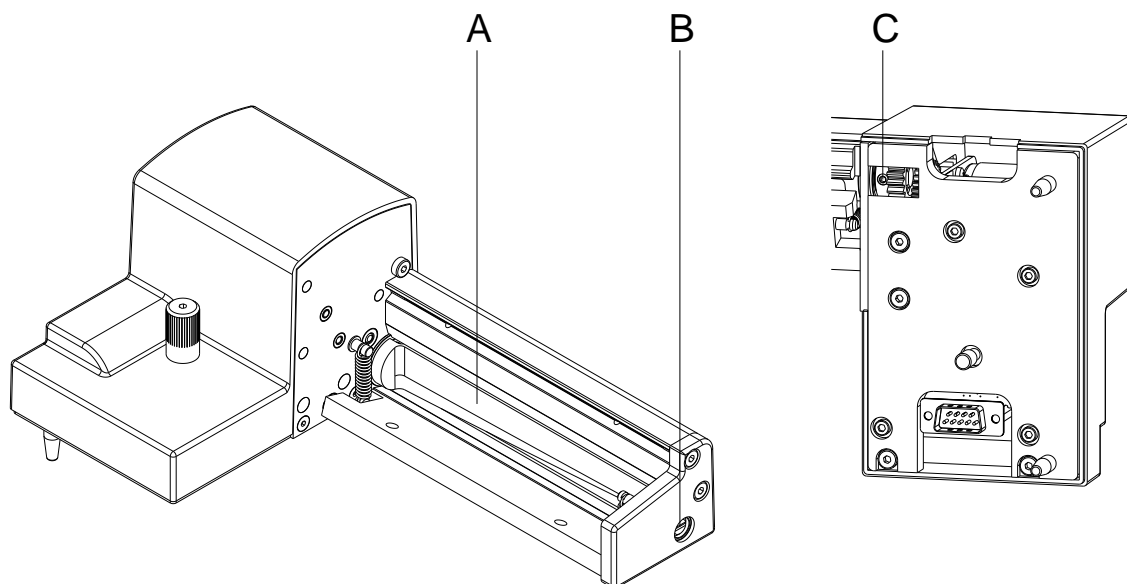
⇒ Pay attention to polarity.



**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.

## 5.10 Cutter Blades



**Figure 16**

### Remove the cutter blades

1. Disassemble the cutter from the printer.
2. Remove the protective plates (see chapter 4.5, page 18).
3. Turn the shaft (B) with a slotted screwdriver (width 7 mm) so that the labelling on the cutter blade (A) is pointing downwards. In this position, the threaded pin (C) at the gear can be reached from the back of the cutter.
4. Loosen the threaded pin (C) a few turns.



### NOTICE!

When dismantling, ensure the washers (O, P, Q, R, Figure 17) at the axes of the cutter shaft (A) and cutter blade (H, Figure 17).



### CAUTION!

The built-in springs (G and K, Figure 17) are tensioned. This can lead to injuries or the loss of the springs when dismantling the cutter blade.

⇒ Hold the cutter blade (H, Figure 17) firmly and press the cutter axis slightly against the mounting panel.

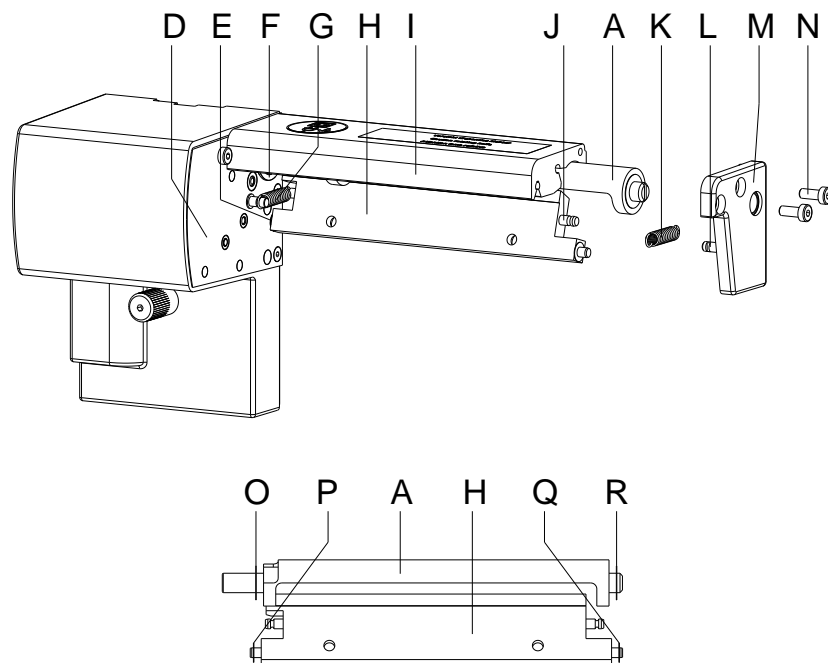


Figure 17

**Install the cutter blades**

1. Loosen the screws (N) and remove the bearing plate (M). The spring (K) is released the tension.
2. Remove the spring (K) from the cutter blade (H).
3. Pull the cutter shaft (A, Figure 16) out of its bearing (F). The spring (G) is released the tension.
4. Remove the spring (G) and cutter blade (H).
5. Insert the axis of the new cutter blade (H) with the washer (16) into the bearing bush (E) on the mounting panel (4).
6. Mount the released spring (G) to the pins of the mounting panel (D) and cutter blade (H).
7. Push the cutter blade (H) backwards. The spring (G) is tensioned.
8. Insert the axis of the new cutter blade (A, Figure 16) with the washer (15) into the bearing bush (F) on the mounting panel (D).
9. Place the washer (Q) on the axis of the cutter blade and the washer (R) on the axis of the cutter shaft (A, Figure 16).
10. Mount the released spring (K) to the pins (J and L) of the cutter blade (H) and bearing plate (M).
11. Place the bearing plate (M) onto the axes of the cutter (A, Figure 16 and H). This causes the spring (K) to tensioned.
12. Loosely fasten the bearing plate (M) with the screws (N) at the profile (I).

13. Align the bearing plate (M, Figure 17) precisely to the profile (9, Figure 17) and tighten the screws (N, Figure 17).
14. Tighten again the threaded pin (C, Figure 16) at the gear.
15. Lubricate the cutter shaft (A, Figure 16; see chapter 4.5, page 18) and bring it into initial position (see chapter 4.6 Reset the Cutter to Initial Position, page 19).
16. Reinstall the protective plates (see chapter 4.5, page 18).

**NOTICE!**

After replacing the cutter blades, the cutter shaft (D, Figure 5) and cycle disk (H, Figure 5) must be aligned to each other to ensure the cutter function (see chapter 4.6 Reset the Cutter to Initial Position, page 19).

## 6 Adjustments, Settings and Alignments



### **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.

### 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

The winding axes of the rewinder are not actively driven by the belts during label backfeed, but rather solely by the pull of the pressure 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 counterclockwise. 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, page 36)
- measurement of the winding torque at the internal rewinder (see chapter 6.3, page 38).

If the winding torque differs from the setpoint, it must be adjusted. The procedure 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]  
 $M$  = rewind torque [Ncm]  
 $r$  = radius of test collar (30 mm)

### Setpoints for transfer ribbon rewinder

Clockwise

Compa V (all):  $M_{Auf} = 12.9 \dots 14.4 \text{ Ncm}$   $F_{Auf} = 4.3 \dots 4.8 \text{ N}$

Counterclockwise

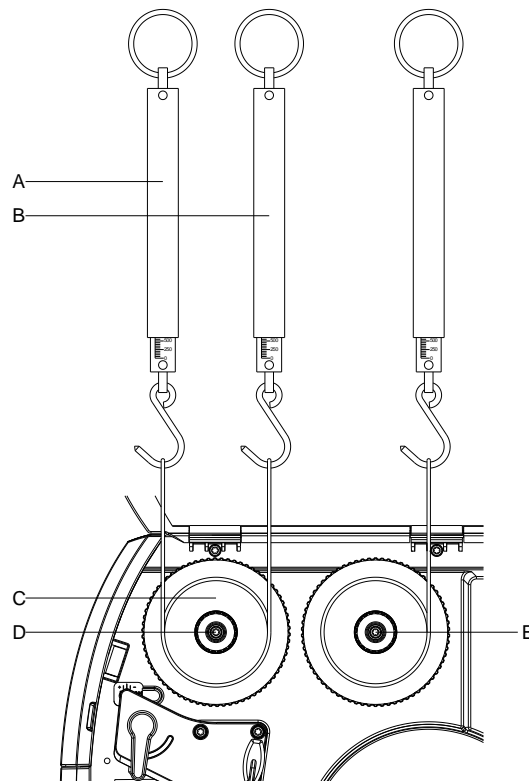
Compa V (all):  $M_{Auf} = 2.1 \dots 3.0 \text{ Ncm}$   $F_{Auf} = 0.7 \dots 1.0 \text{ N}$

### Setpoints for transfer ribbon unwinder

Any direction

Compa V 10X:  $M_{Ab} = 3.6 \dots 4.5 \text{ Ncm}$   $F_{Ab} = 1.2 \dots 1.5 \text{ N}$

Compa V 162:  $M_{Ab} = 6.0 \dots 7.5 \text{ Ncm}$   $F_{Ab} = 2.0 \dots 2.5 \text{ N}$



**Figure 18**

1. Unplug the printer from the electrical outlet and remove the left cover.
2. Remove the transfer ribbon from the printer.
3. Attach the test collar (C) to the transfer ribbon rewinder (D).



4. Turn the knurled nut counterclockwise to clamp the test collar.
5. Wind the cord attached to the test collar several times clockwise around the test collar.
6. Secure spring scale [10 N] (A) at the end of the cord and move the spring scale upward vertically until the transfer ribbon rewinder 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. In the same way, determine the traction counterclockwise (B) on the transfer ribbon rewinder. Check the traction in any direction on the transfer ribbon unwinder (E).
10. Mount again the left printer cover.

If the winding torque differs from the setpoint, it must be adjusted (see chapter 6.4 Set the Winding Torque, page 40).

### 6.3 Measure the Torques at the Internal Rewinder

Measurement of the winding torque at the internal rewriter occurs by determining the pulling forces with a cord wrapped around the rewriter. 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)

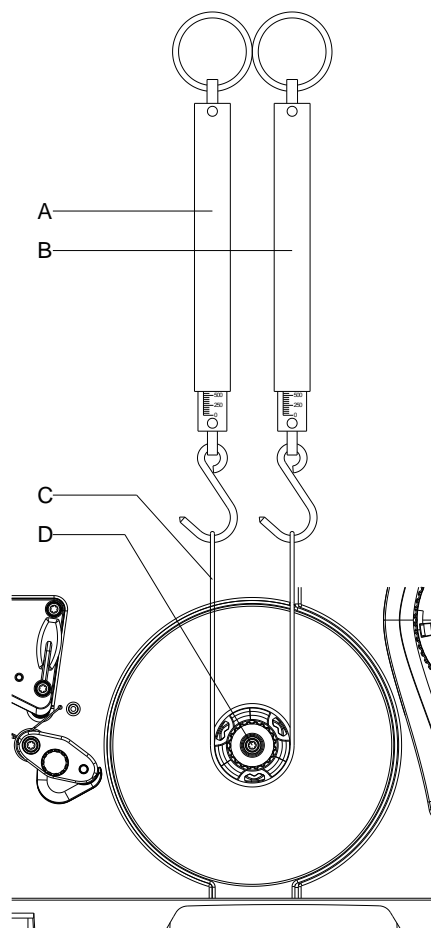
#### Setpoints for internal transfer ribbon rewriter

Clockwise

Compa V (alle):  $M_{Auf} = 28 \dots 32 \text{ Ncm}$   $F_{Auf} = 14 \dots 16 \text{ N}$

Counterclockwise

Compa V 162:  $M_{Auf} = 8 \dots 12 \text{ Ncm}$   $F_{Auf} = 4 \dots 6 \text{ N}$



**Figure 19**

1. Unplug the printer from the electrical outlet and remove the left printer cover.
2. Remove the label media from the printer.
3. Push the cord (C) under a bracket of the internal rewriter (D) and wind it several times clockwise around the rewriter.

4. Secure the spring scale [25 N] (A) at the end of the cord.
5. Move the spring scale (A) 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 rewinder at least one full turn and read the pulling force  $F$  on the spring scale at the same time.
8. In the same way, determine the traction counterclockwise (B).
9. Mount again the left printer cover.

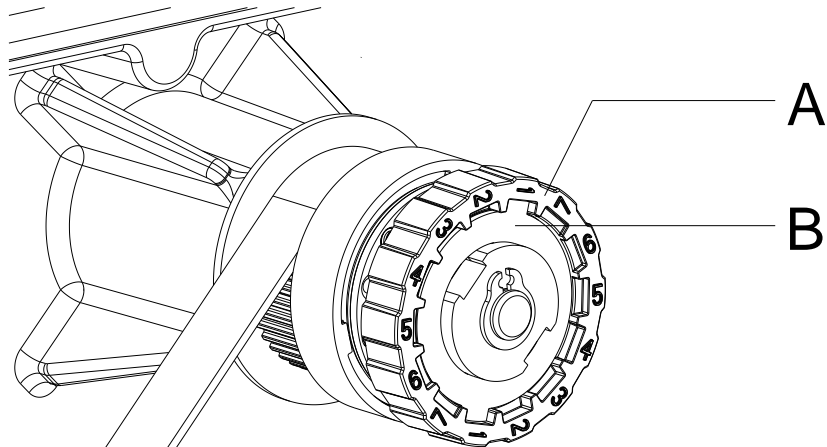
If the winding torque differs from the setpoint, it must be adjusted (see chapter 6.4 Set the Winding Torque, page 40).

## 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 (B).



**Figure 20**

1. Unplug the printer from the electrical outlet and remove the left printer cover.
2. Press the knurled ring (A) of the slipping clutch toward the housing wall.  
The lock (B) of the knurled ring (A) is released.
3. Turn the knurled ring (A) to the desired position while pushing it.
4. Release the knurled ring (A) 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, page 36)  
Internal rewriter (see chapter 6.3, page 38).
7. Repeat the adjustment until the measured winding torque is within the tolerance range.
8. Mount again the left printer cover.

## 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

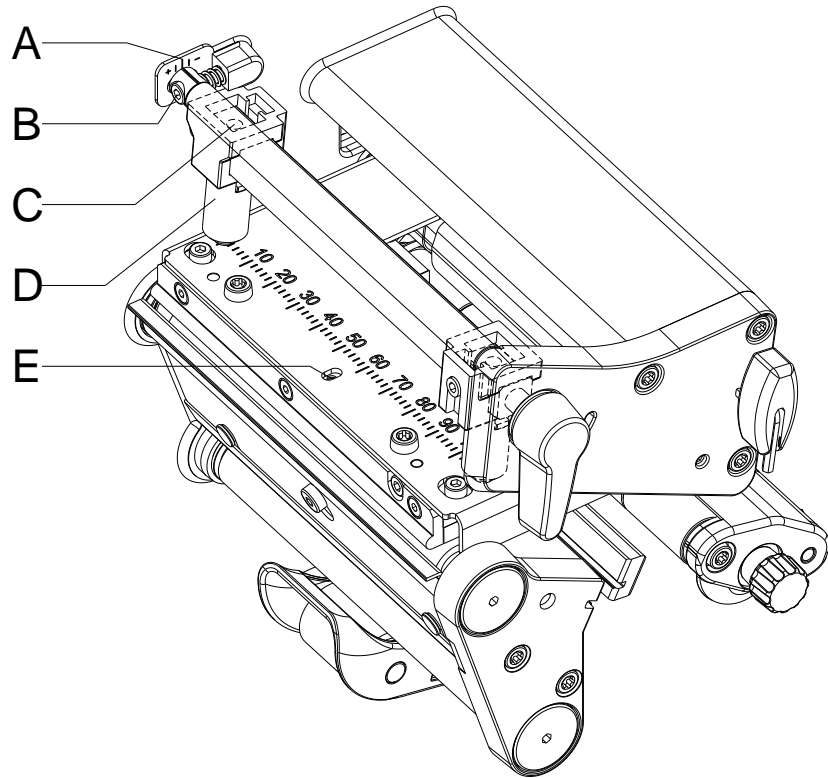


### NOTICE!

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 42).
2. Adjust the position of printhead (see chapter 6.6, page 43).
3. Adjust the head contact pressure (see chapter 6.7, page 45).
4. Adjust the transfer ribbon feed path (see chapter 6.8, page 46).

**Prepare the label printer for adjustment****Figure 21**

1. Load labels and transfer ribbon which extend across the entire printing width.
2. Move the transfer ribbon deflection to the central position (A) with the screw (B).
3. Position the plunger (D) in such a way that the adjustment screws are accessible through the holes (C) of the square axis.
4. Loosen the screw (E) for the printhead bowing with a hexagonal wrench (1.5 mm) and turn it counterclockwise 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, Adjust the Position of Printhead, page 43).

## 6.6 Adjust the Position of Printhead

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

- ⇒ Align the heating line with the highest point of the pressure roller. Density of the print image is the greatest at this point.
- ⇒ 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 (A) is tight can lead to defects at the printhead assembly.

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

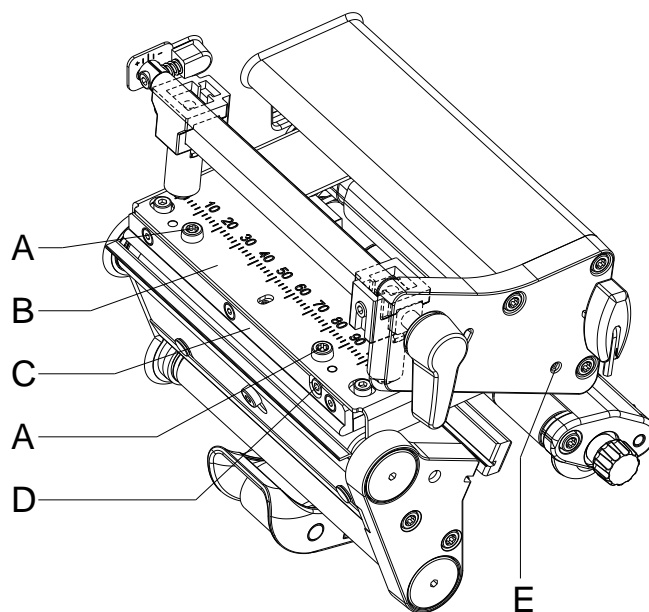
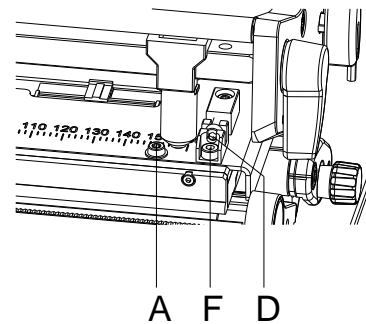


Figure 22

### Compa V 162



### NOTICE!

Open and close the printhead locking device after each step of the adjustment.

1. Check the alignment of the printhead based on the parallelism between the printhead holder (B) and the transfer ribbon guiding (C).
2. If the printhead is not aligned properly, loosen the screw (A) about a quarter turn.

**Compa V 162:** Loosen the screws (F) a quarter turn.

3. Align the parallelism of the printhead with the screw (D).  
Turning clockwise moves the printhead forward.  
**Compa V 162:** Turning clockwise moves the printhead backwards.
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 (D).
6. Tighten the screws (A).  
**Compa V 162:** Tighten the screws (F).
7. Set the best possible image quality by turning the eccentric (E).  
Differences in the density between the two sides are still permissible.

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

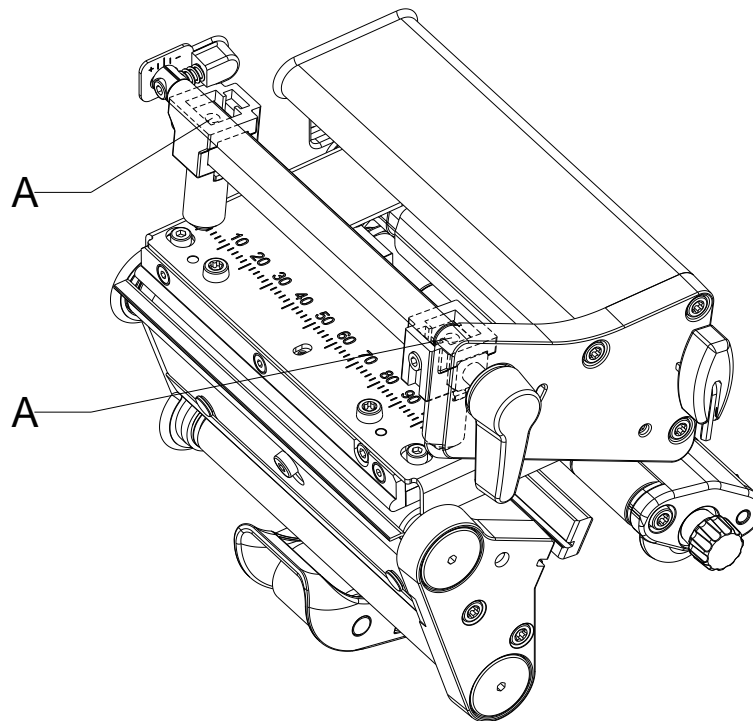


## 6.7 Adjust the Head Contact Pressure



### NOTICE!

Change the head contact pressure with the screws (1) and (1) 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.



**Figure 23**

1. Turn the adjustment screws (A) counterclockwise 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 (A) 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.
5. In the function menu of the printer, reset the contrast value to the original value (see '*operating manual*').

When the print image is set evenly, continue with setting of the transfer ribbon feed path (see chapter 6.8, Adjust the Transfer Ribbon Feed Path, page 46).

## 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 (B) 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 (C) too hard can cause damage to the printhead assembly.

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

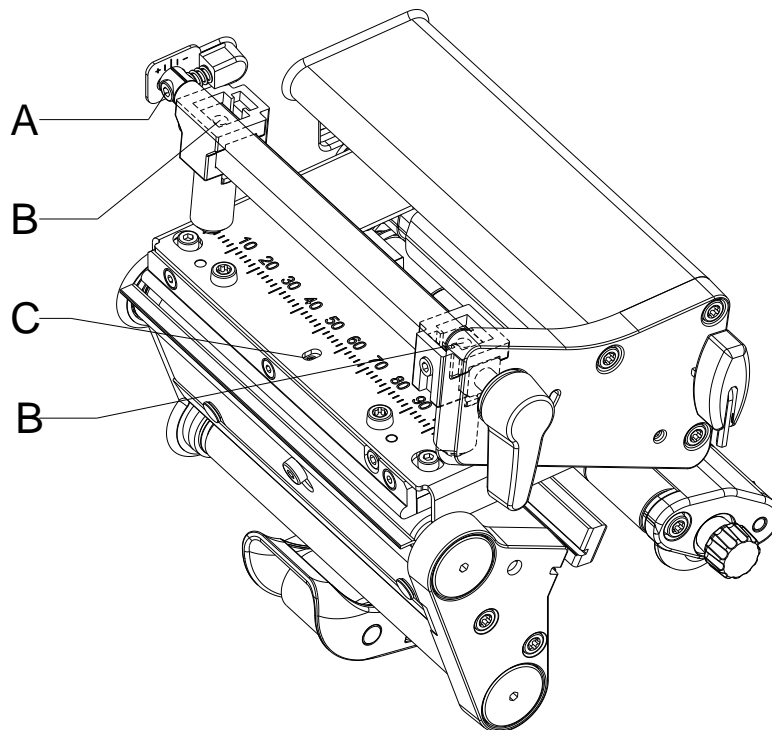


Figure 24

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 (2) 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 (A) counterclockwise.
6. If wrinkles arise on the outside, turn the screw (A) clockwise.
7. If the wrinkles cannot be remedied (e.g. wrinkles in the centre), turn the adjustment screw (C) clockwise with extreme care (see warnings) using a hexagonal wrench (1.5 mm) and observe the ribbon feed path.  
When the adjustment screw (C) 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 (C) clockwise until the screw is just barely clamping.

## 6.9 Adjust the Belt Tension at Main Drive Motor

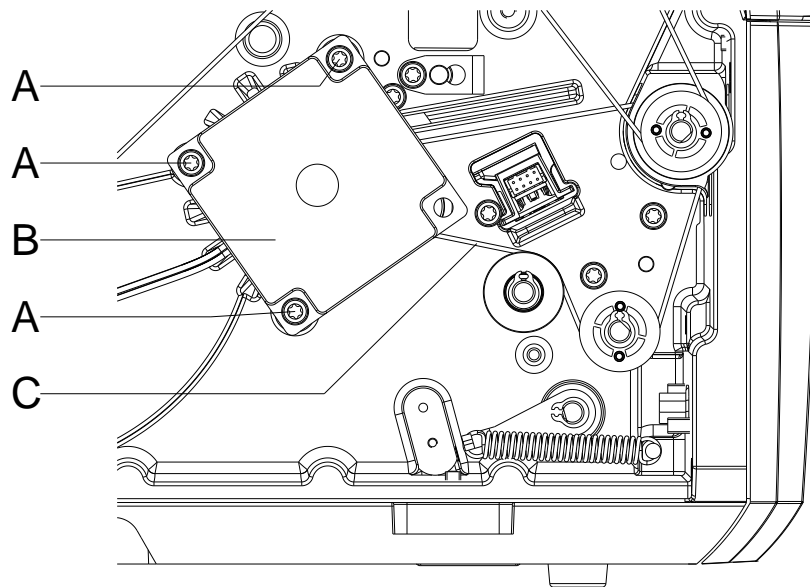


### CAUTION!

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.

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



**Figure 25**

1. Unplug the printer from the electrical outlet.
2. Remove the rear cover.
3. Loosen the three fixing screws (A) of the main drive motor (B).
4. Swivel the main drive motor (B) in such a way that the toothed belt (C) is tensioned tightly between the motor and the pressure roller (A).
5. Tighten the fixing screws (A) in this position of the motor.
6. Mount again the left cover of the printer.

## 7 Retrofit with Options

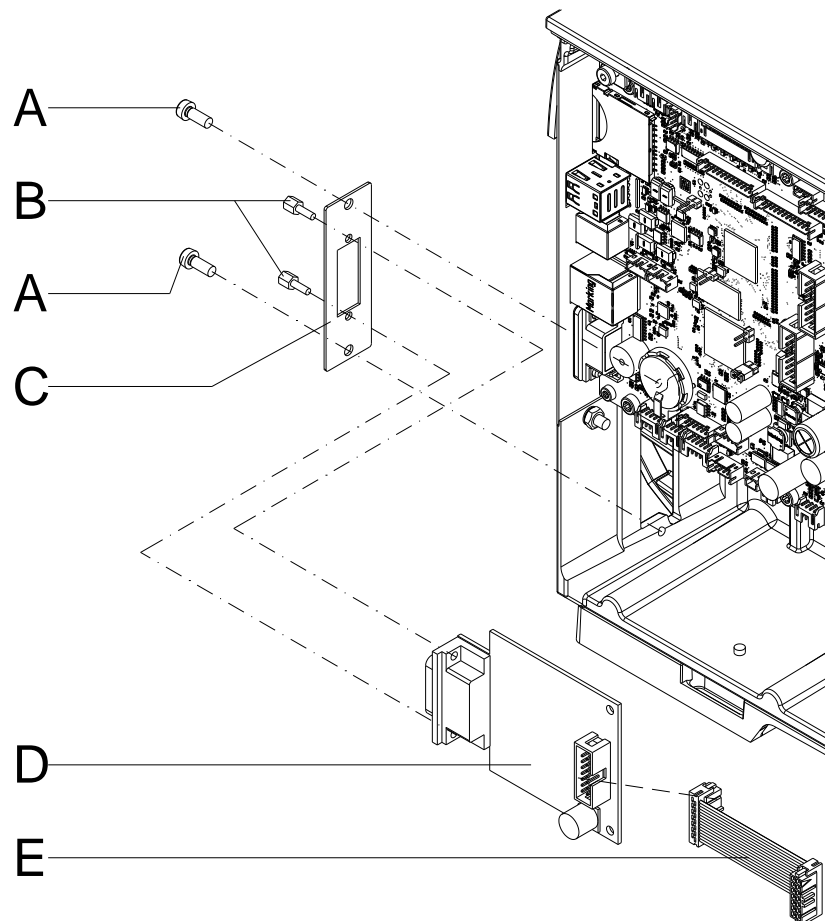


### **DANGER!**

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.

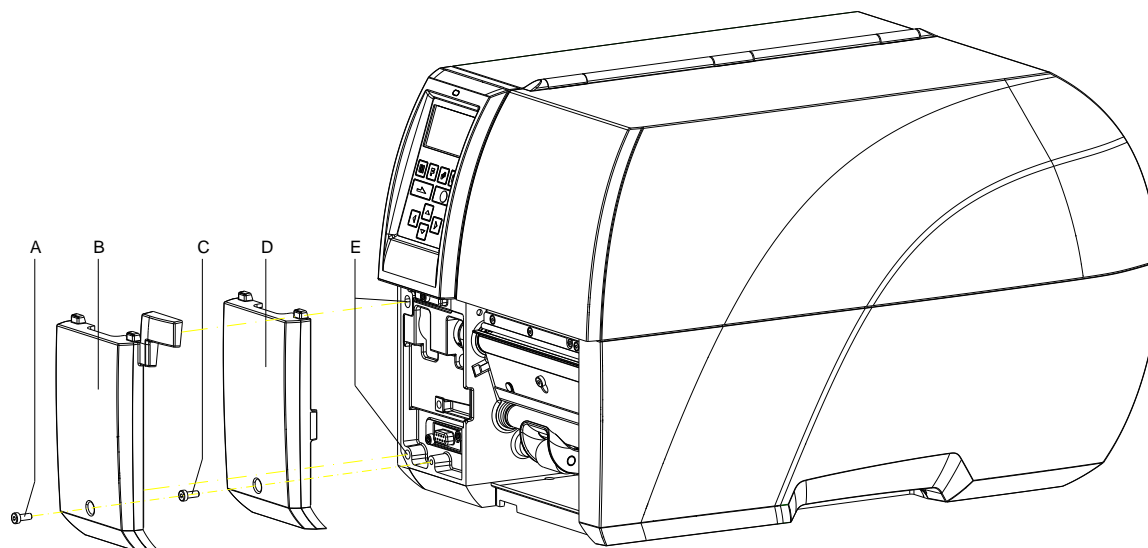
### 7.1 I/O Plate



**Figure 26**

1. Loosen two screws (A) and remove the cover at the breach of the cover rear.
2. Fasten the I/O connection plate (C) with two screws (A) at the cover rear.
3. Fasten the I/O board (D) with hexagon bolts (B) to the I/O connection plate (C)
4. Insert the connecting cable (E) for inputs/outputs corresponding to the wiring plan (see chapter 10, Wiring Plan, page 71) into the appropriate plug-in positions of the I/O plate.

## 7.2 Dispenser Unit with Photocell



**Figure 27**

1. Unscrew the screw (C) and remove the front panel at bottom left (D).
2. Align the dispenser unit with photocell (B) with the fixing lugs in the front panel towards the top and push the guiding pins into the provided guide holes (E).  
Take care of the plug connection!
3. Fasten the dispenser unit with photocell (B) with the screw (A) to the front of the cover.
4. Insert the label material (see '*operating manual*').

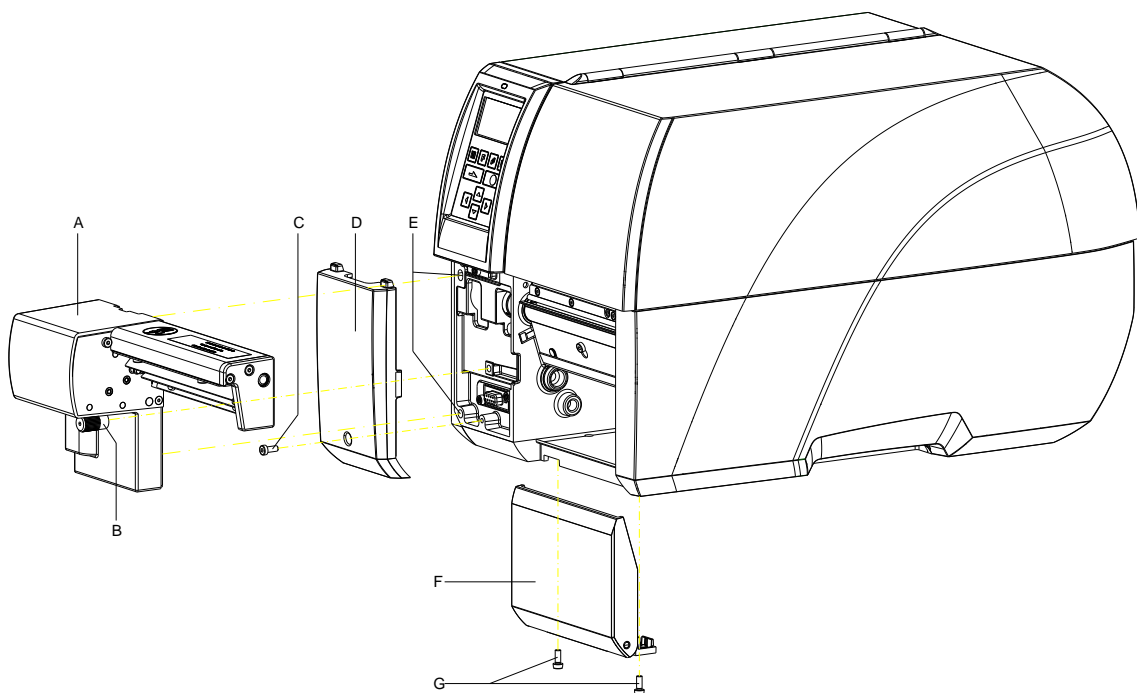
### 7.3 Cutter



#### CAUTION!

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

- ⇒ Switch off before attaching the cutter!
- ⇒ The cutter may only be used when it is mounted on the printer!
- ⇒ Do not try to cut any materials which exceed the maximum width or thickness specifications.
- ⇒ Do NOT touch the area of the moving blades!



**Figure 28**

1. Unscrew the screw (C) and remove the front panel at bottom left (D).
2. If existing, remove the front cover (F) with hinges after removing the two screws (G).
3. Insert the cutter unit (A) with the guiding pins in the appropriate guiding holes (E).  
Take care of the plug connection!
4. Fix the cutter unit (A) with the knurled screw (B) at the case front.
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). 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). 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. 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. Set label length is too large.	Check label length and if labels are inserted correctly. Restart measuring anew.
9 No label found	No label available. Soiled label photocell. Labels not inserted correctly.	Insert new label roll. Check if labels are inserted correctly. Clean the label photocell.
10 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).
11 COM FRAMING	Stop bit error.	Check stop bits. Check baud rate. Check cable (printer and PC).
12 COM PARITY	Parity error.	Check parity. Check baud rate. Check cable (printer and PC).
13 COM OVERRUN	Loss of data at serial interface (RS-232).	Check baud rate. Check cable (printer and PC).
14 Field number	Received line number is invalid.	Check sent data. Check connection PC - printer.
15 Length mask	Invalid length of received mask statement.	Check sent data. Check connection PC - printer.

Error message	Cause	Remedy
16 Unknown mask	Transferred mask statement is invalid.	Check sent data. Check connection PC - printer.
17 Missing ETB	No end of data found.	Check sent data. Check connection PC - printer.
18 Invalid character	One res. several characters of the bar code is res. are not valid.	Change bar code data. Change font.
19 Invalid statement	Unknown transferred data record.	Check sent data. Check connection PC - printer.
20 Invalid check digit	For check digit control the entered res. received check digit is wrong.	Calculate check digit anew. 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 < 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. 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. Defective printhead sensing device.	Reduce contrast. Change printhead.
28 Cutter error	With cut an error occurred. Paper jam.	Check label run. Check cutter run.
29 Invalid parameter	Entered data do not correspond to the characters allowed from the application identifier.	Check code data.
30 Application Identifier	Selected application identifier is not available in GS1-128.	Check code data.
31 HIBC definition	Missing HIBC system sign. Missing primary code.	Check definition of HIBC code.
32 System clock	Real Time Clock function is selected but the battery is empty. Defective RTC.	Change battery. Change RTC component.

Error message	Cause	Remedy
33 No CF interface	Interrupted connection CPU - CF card. Defective CF card interface.	Check connection CPU - CF card interface. 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 Invalid format for the calculation of Euro variable.	Check entered format.
37 BCD overflow	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
38 BCD division	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
39 FLASH ERROR	Flash component error.	Run a software update. Change CPU.
40 Length command	Invalid length of the received command statement.	Check data sent. 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.
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.

Error message	Cause	Remedy
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. 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. The number of labels per cycle is too much.	Check label length res. the number of labels per cycle.
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 exchange (if necessary). Reduce print speed.

Error message	Cause	Remedy
70 Scanner data	Scanned data does not correspond to the data which is to print.	Exchange 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.
82 Time generation	Printing creation was still active at print start.	Reduce print speed. Use printers' output signal for synchronization. Use bitmap fonts to reduce generating time.
83 Transport protection	Both DPM position sensors (start/end) are active.	Displace zero point sensor 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. Check RFID definitions

Error message	Cause	Remedy
89 RFID timeout	Error at programming the RFID label.	Label positioning. 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. 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.	
	Defective printhead. Wrinkles in transfer ribbon. Scanner wrong positioned. Timeout time too short.	Check printhead. Check transfer ribbon. Position scanner correctly, corresponding to the set feeding. Select longer timeout time.
95 Scanner layout difference	Scanner data does not correspond to bar code data.	Check adjustment of scanner. 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: Sensor signal up is missing.	Check input signals / compressed-air supply.
101 Lower position	Option applicator: Sensor signal down is missing.	Check input signals / compressed-air supply.
102 Vacuum plate empty	Option applicator: Sensor does not recognize a label at vacuum plate.	Check input signals / compressed-air supply.

Error message	Cause	Remedy
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. Selection of wrong module type (design software).	Check selected module type. Check selection of left/right version.
105 Printhead	No original printhead is used.	Check the used printhead. Contact your distributor.
106 Invalid Tag type	Wrong Tag type. Tag 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. 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).
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.

Error message	Cause	Remedy
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.
123 Print asynchronous	The label photocell do not work in the order as it is expected according to print data.  The settings of the photocell are not correct.  Settings of label size and gap size are not correct.  No label found at the rear printhead.  Soiled label photocell.  Labels not inserted correctly.	Check label size and gap size.  Check label photocell settings.  Check correct loading of label material.  Insert new label roll.  Clean the label photocell.  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.



Error message	Cause	Remedy
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.
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 Rewinder error	Label band is torn	Load a new label roll. Stick together the label band.
140 Rewinder motor blocked	External rewinder motor is blocked.	Switch off the printing system and check mechanical resistance. Change the full label roll.
141 Hardware error	A hardware component could not be found.	Please contact your responsible distributor.
142 No print mechanics	No print mechanics connected.	Check connection (print mechanics – control unit)



## 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

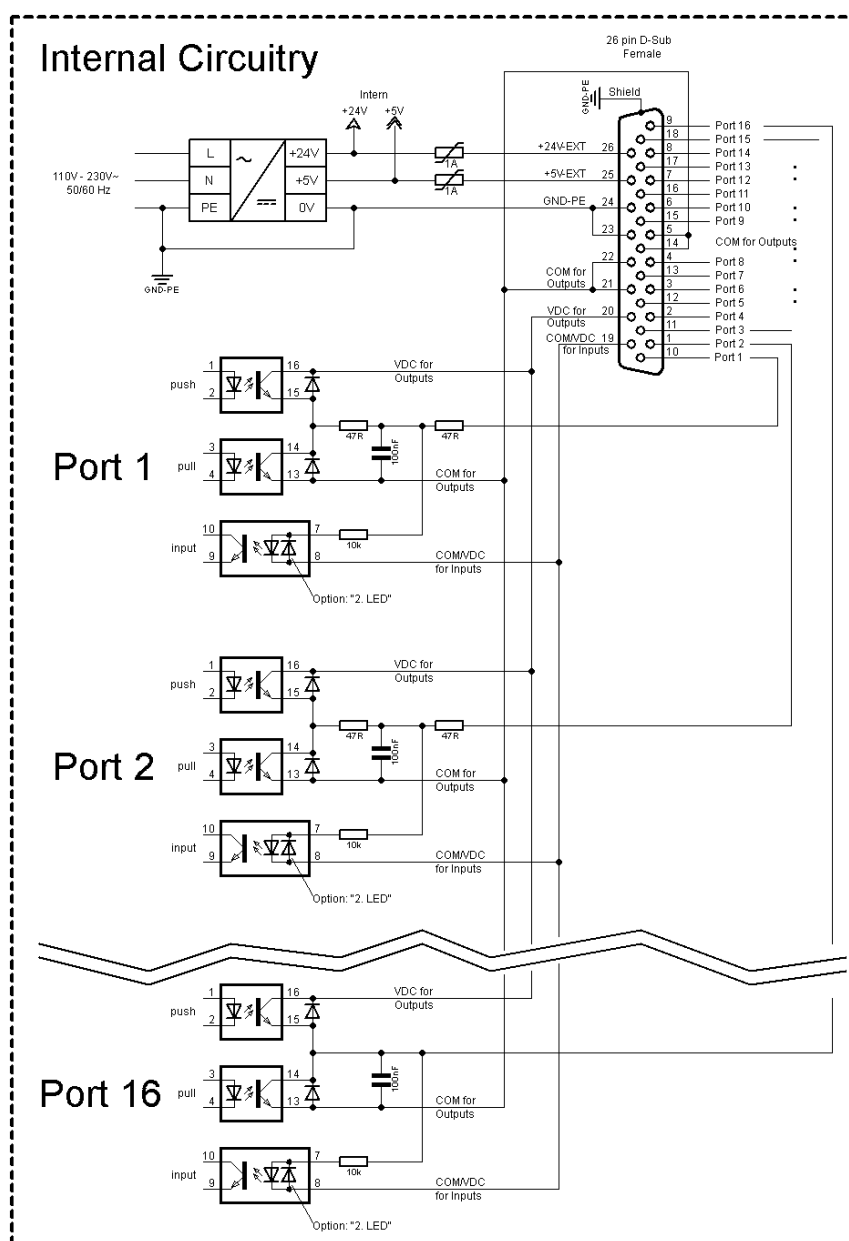
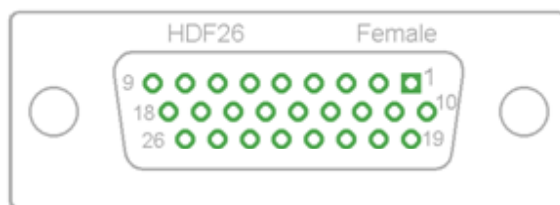


Figure 29

**Configuration of  
D-Sub socket****Figure 30****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: 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: Label exists at dispenser photocell (Output)
Port 12	7	Single print (Output)
Port 13	17	Ready (Output)
Port 14	8	Option applicator only: Ready for application (Output)
Port 15	18	Option scanner only: 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 (+). 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. 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. 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. 'GND-PE' is printer internally connected with protective earth (PE).
+ 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.

Port 1 to Port 16 = Assignment for I/O Profile *StdFileSelLabel*

Identification	Pin	Description / Function
Port 1	10	Print start and cut (Input)
Port 2	1	Error reset (Input)
Port 3	11	Number of the file to load Bit 0 (Input)
Port 4	2	Number of the file to load Bit 1 (Input)
Port 5	12	Number of the file to load 2 (Input)
Port 6	3	Number of the file to load 3 (Input)
Port 7	13	Number of the file to load 4 (Input)
Port 8	4	Number of the file to load 5 (Input)
Port 9	15	Error (Output)
Port 10	6	Print order active (Output)
Port 11	16	Dispenser photocell: Label exists at dispenser photocell (Output)
Port 12	7	Printing (Output)
Port 13	17	Ready (Output)
Port 14	8	No function
Port 15	18	Option scanner only: Bar code not readable (Output)
Port 16	9	Transfer ribbon prior warning (Output)

Port 1 to Port 16 = Assignment for I/O Profile *APL*

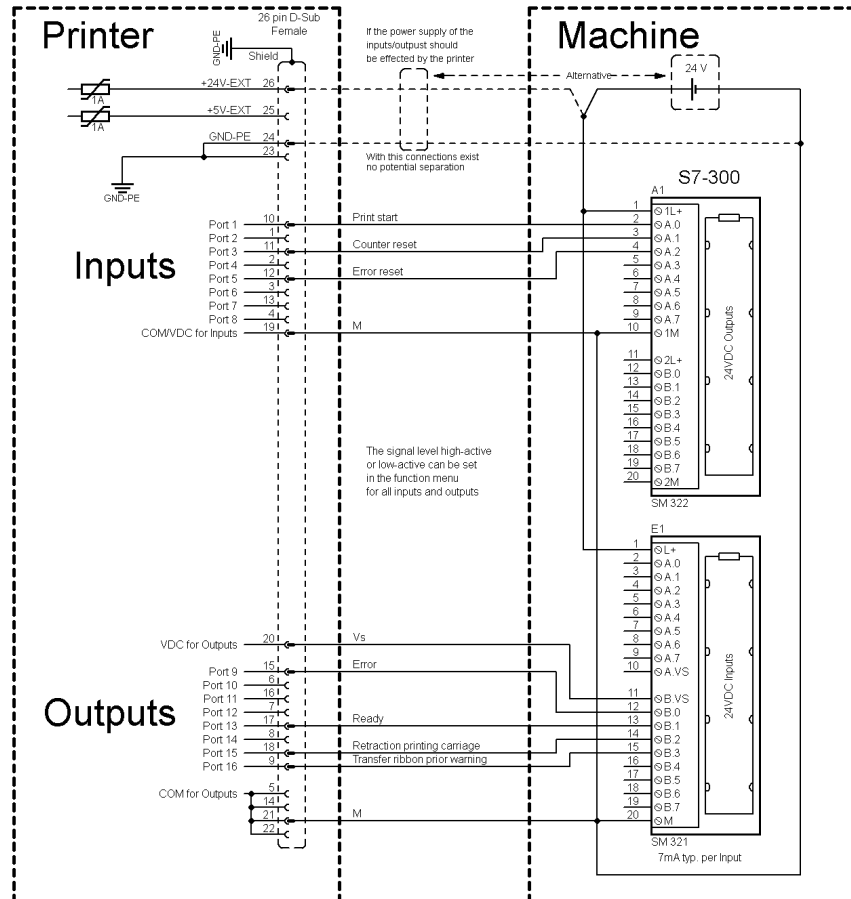
Identification	Pin	Description / Function
Port 1	10	Print start and cut (Input)
Port 2	1	Reprint last printed label (Input)
Port 3	11	Counter reset (Input)
Port 4	2	Option applicator only: Start application (Input)
Port 5	12	Error reset (Input)
Port 6	3	Cancel all print jobs (Input)
Port 7	13	No function
Port 8	4	No function
Port 9	15	Error (Output)
Port 10	6	Print order active (Output)
Port 11	16	Option applicator only: Applicator is in final position down (Output)
Port 12	7	Printing (Output)
Port 13	17	Ready (Output)
Port 14	8	Option applicator only: Ready for application (Output)
Port 15	18	Option applicator only: Pad is in printing position (Output)
Port 16	9	Transfer ribbon prior warning (Output)

**Technical data**

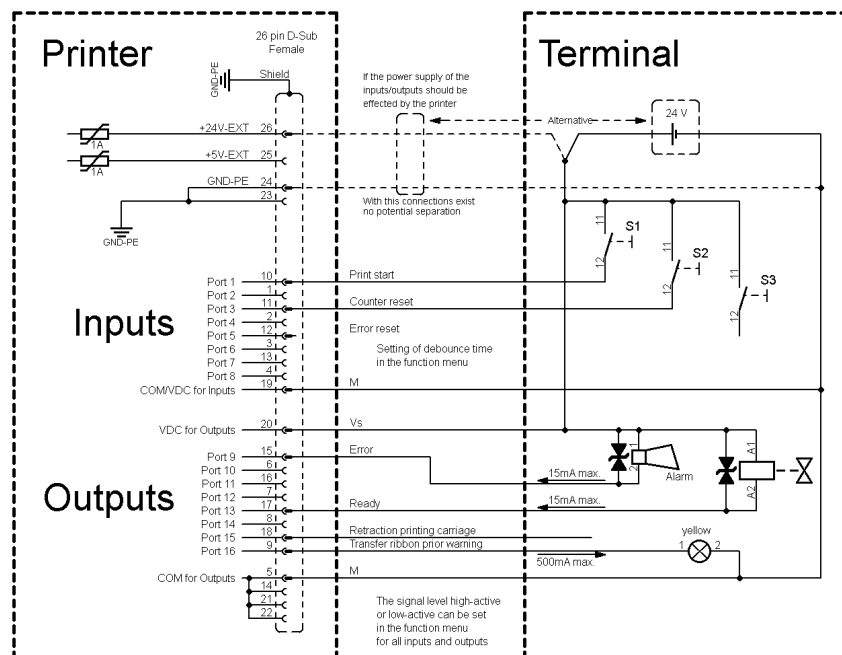
Plug Connector	
Type	D-Sub connector High Density 26-pin. / connector
Manufacturer	W+P-Products
Reference number	110-26-2-1-20
Output Voltages (connected with GND-PE)	
+ 24 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
+ 5 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
Port 1 - 15	
Input	
Voltage	5 VDC ... 24 VDC
Impedance	$47\Omega + (100\text{nF} \parallel 10\text{ k}\Omega)$
Output	
Voltage	5 VDC ... 24 VDC
Impedance	$47\Omega + (100\text{nF} \parallel 10\text{ k}\Omega \parallel 47\Omega)$
Current max.	High +15 mA Low -15 mA
Port 16	
Input	
Voltage	5 VDC ... 24 VDC
Impedance	$100\text{nF} \parallel 10\text{ k}\Omega$
Output	
Voltage	5 VDC ... 24 VDC
Impedance	$100\text{nF} \parallel 10\text{ k}\Omega$
Current max.	High +500 mA (Darlington BCP56-16) 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 31****Example 2**

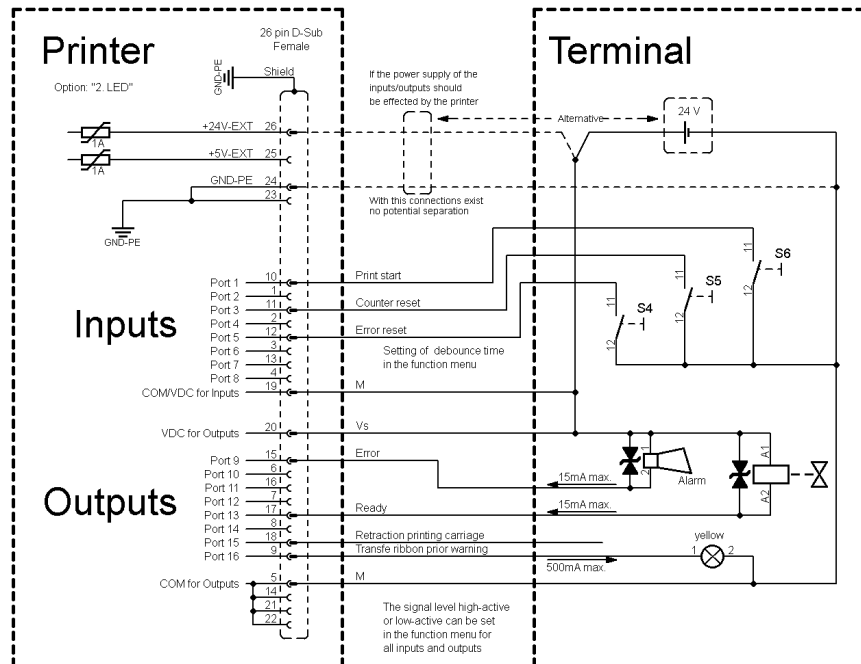
Device connection to an operating panel.

**Figure 32**



**Example 3**

Device connection version if 'Option: 2. LED'.

**Figure 33****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.

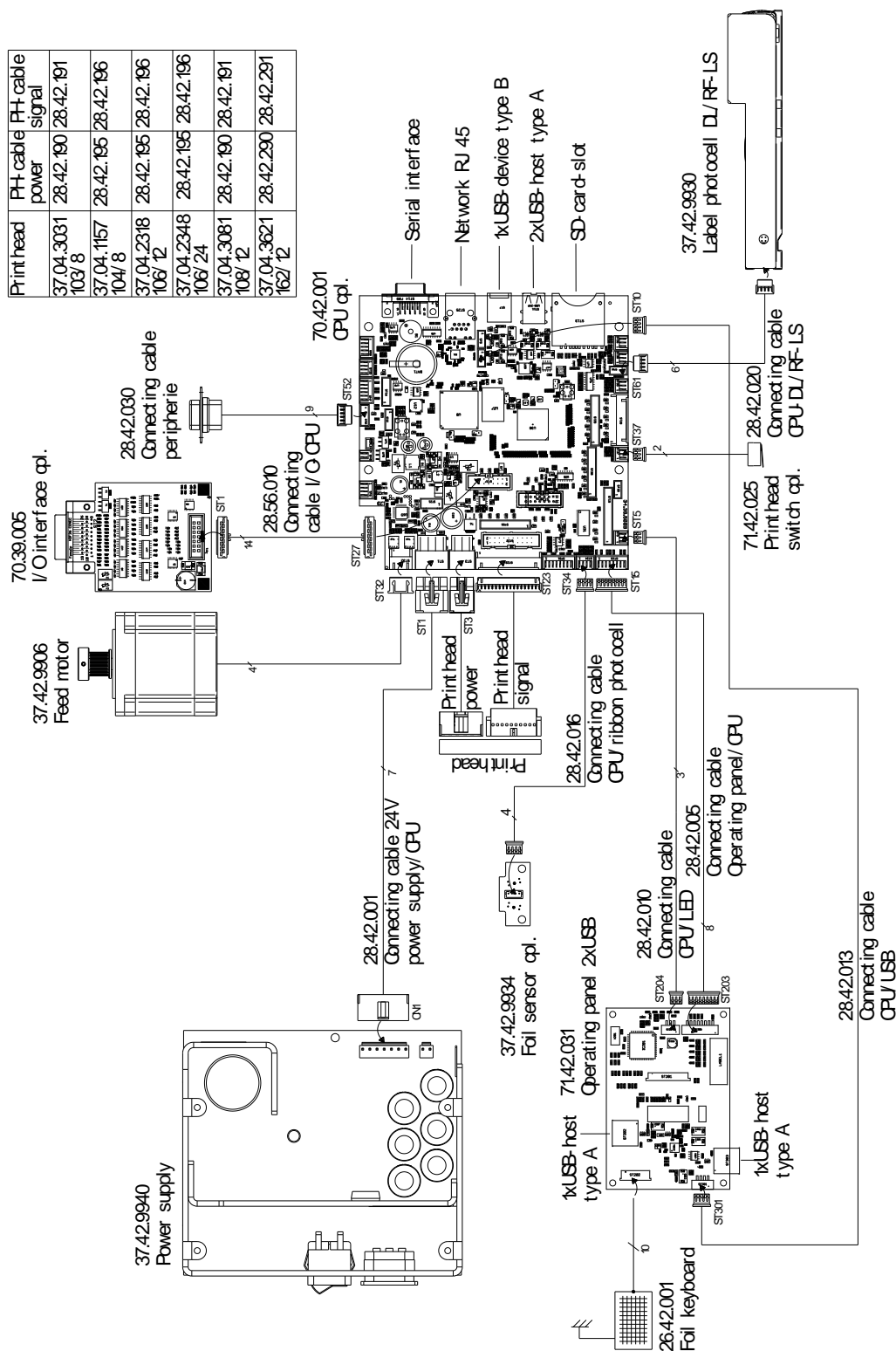
In the event of an inductive load, an antiparallel connected diode, for instance, must be used to discharge the induction energy.

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.

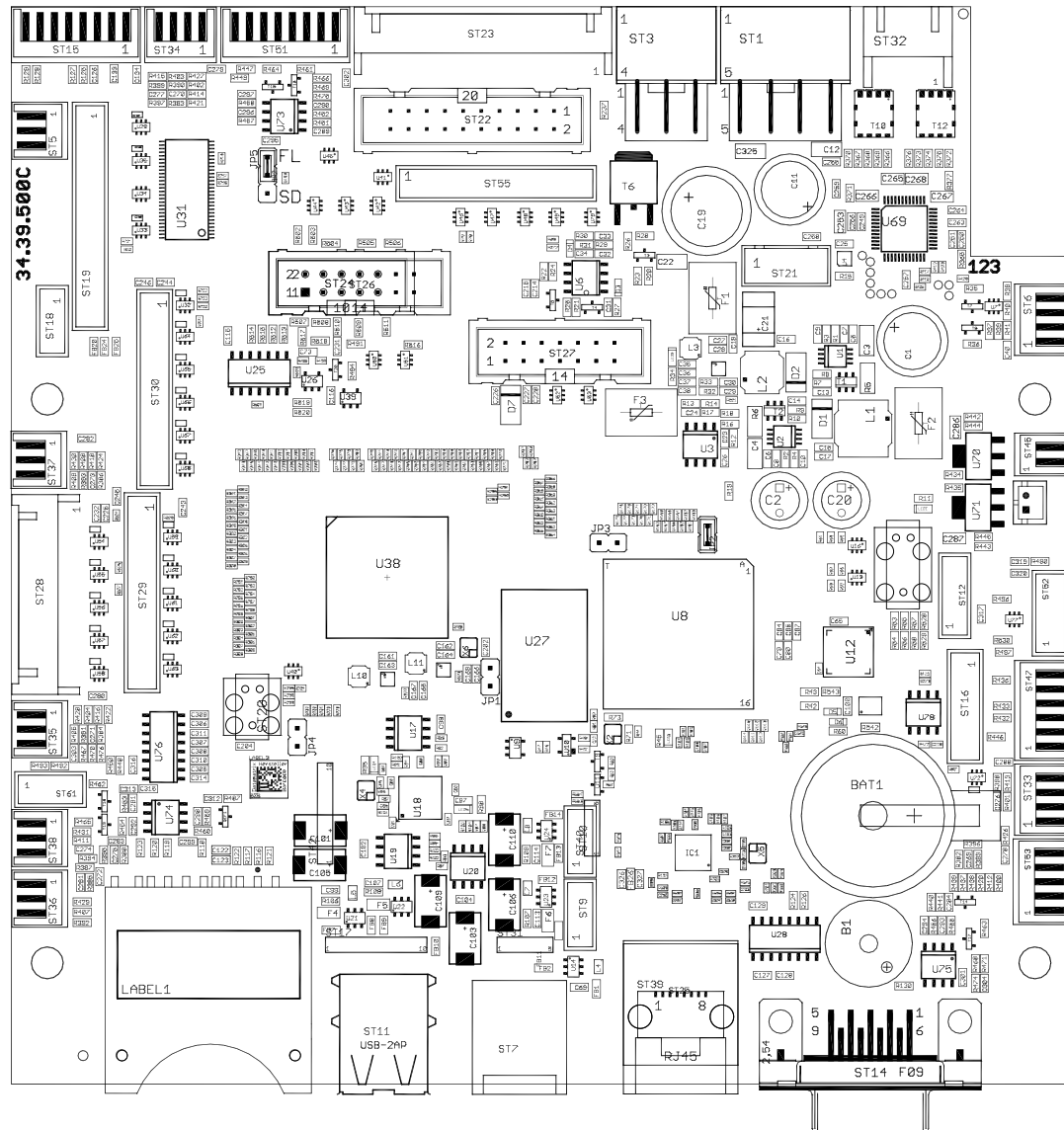


## 10 Wiring Plan



**Figure 34**

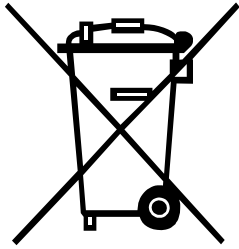
## 10.1 CPU Component Placement Specification



**Figure 35**

Delivery state	JP5	plugged in above
Boot from SD card	JP5	plugged in below

## 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](http://www.carl-valentin.de).



## 12 Index

### A

adjustments, settings, alignments	
belt tension (main drive motor) .....	48
head contact pressure .....	45
print mechanism .....	41, 42
printhead position .....	43, 44
transfer ribbon feed path.....	46
winding torques.....	35, 36, 38, 40
assembly drawings.....	11

### B

battery, replacing.....	31
belt tension (main drive motor), adjusting .....	48

### C

cleaning	
cutter unit .....	18
general cleaning .....	14
label photocell cleaning .....	16, 17
maintenance schedule.....	13
pressure roller .....	14
printhead .....	15
tools .....	13
component plan CPU .....	72
component replacing	
battery .....	31
CPU PCB.....	29
cutter blades .....	32, 33, 34
dispenser roller .....	25
label photocell.....	28
power supply unit.....	30
pressure roller .....	25
printhead .....	22, 23
slipping clutch .....	26, 27
tool list.....	21
control inputs and outputs .....	64, 65, 66, 67
control inputs/control outputs .....	63, 68, 69
CPU	
jumper plan .....	72
replacing CPU PCB .....	29
CPU component plan .....	72
cutter unit	
cleaning.....	18
cutter blades, replacing.....	32, 33, 34
reset to initial position .....	19
cutter, retrofit .....	51
<b>D</b>	
dispenser roller, replacing .....	25
dispenser unit with photocell, retrofit.....	50
drawings .....	11
<b>E</b>	
electricity, safety handling .....	10
environmentally-friendly disposal .....	73

error messages/error corrections .....	53, 54, 55, 56, 57, 58, 59, 60, 61
<b>H</b>	
head contact pressure, adjusting .....	45
<b>I</b>	
I/O plate, retrofit.....	49
instructions .....	5
<b>J</b>	
jumper plan, CPU .....	72
<b>L</b>	
label photocell replacing .....	28
<b>N</b>	
notes	
document .....	5
user .....	5
<b>P</b>	
power supply unit, replacing.....	30
pressure roller, replacing.....	25
print mechanism, adjusting.....	41, 42
print position, adjusting.....	24
printhead	
position, adjusting .....	44
replacing .....	22, 23
<b>R</b>	
retrofit with options	
cutter .....	51
dispenser unit with photocell .....	50
I/O plate .....	49
<b>S</b>	
safety handling when working with electricity .....	10
safety instructions.....	8
clothing.....	7
protective clothing.....	7
protective equipment .....	8
workplace.....	7
slipping clutch, replacing .....	26, 27
<b>T</b>	
tool list .....	21
transfer ribbon feed path, adjusting.....	46
<b>W</b>	
winding torques	
adjusting .....	35
measuring (internal rewinder) .....	38
measuring (ribbon rewinder).....	36
measuring (ribbon unwinder) .....	36
setting .....	40
wiring plan .....	71







---

Carl Valentin GmbH  
Neckarstraße 78 – 86 u. 94 . 78056 Villingen-Schwenningen  
Phone +49 7720 9712-0 . Fax +49 7720 9712-9901  
info@carl-valentin.de . [www.carl-valentin.de](http://www.carl-valentin.de)