valentin DRUCKSYSTEME

SPE II

Service Instructions

Quality . Tradition . Innovation

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

We reserve the rights to make modifications.

Due to the constant further development of our devices discrepancies between manual and device can occur.
Please check www.carl-valentin.de for the latest update.

Trademarks

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Carl Valentin printing systems comply with the following safety guidelines:

CE Low-Voltage Directive (2014/35/EU)
Electromagnetic Compatibility Directive (2014/30/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
Internet www.carl-valentin.de

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 the electronics and the mechanical part of the printing system.

Information about operation of the printing system 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

Drawings

References to specific items in a figure are marked with letters. They are identified with parentheses in the text, e.g. (A). If no figure number is provided, letters 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. (A, 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

WARNING!

The print mechanics is designed to be integrated into a machine. It is essential to ensure that national safety regulations are observed. Particular attention must be paid to the following points:

⇒ The print mechanics must be secured so that it is not possible to reach into the working area during the printing process.

⇒ It must be ensured that the required fire-protection device according to IEC 62368-1 is given (see chapter 6.4 in the IEC 62368-1).

The printing system is configured for a voltage from 110 … 240 V AC. It has to be plugged into a grounded socket only.

NOTICE!

The protective earthing conductor of the socket is to be examined by a qualified technician.

The printing system may only be operated in the commercial area by persons over the age of 14 who have been instructed in its use.

Couple the printing system to devices using extra low voltage only.

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

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

Do not operate the printing system in explosive atmosphere and not in proximity of high voltage power lines.

Operate the printing system only in an environment protected against abrasive dust, swarf and other similar impurity.

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.

Depending on use, ensure that clothing, hair, jewellery and similar personal items do not contact the exposed rotating parts and/or the moving parts.

The print unit and parts of it (e.g. motor, 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 printing system can endanger operational safety.

There are warning stickers on the printing systems 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.

CAUTION!

Two-pole fuse.

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

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 control unit 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 cautions and calm manner.

⇒ Avoid endangering yourself.

⇒ Switch the power off.

⇒ Request medical help (emergency physician).

⇒ Call for first aid if necessary.

3 Connector Pin Assignment

3.1 Print Mechanics

Right type

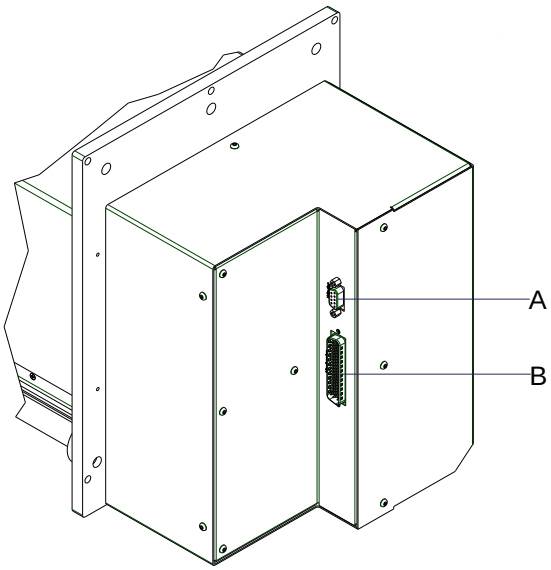


Figure 1

Left type

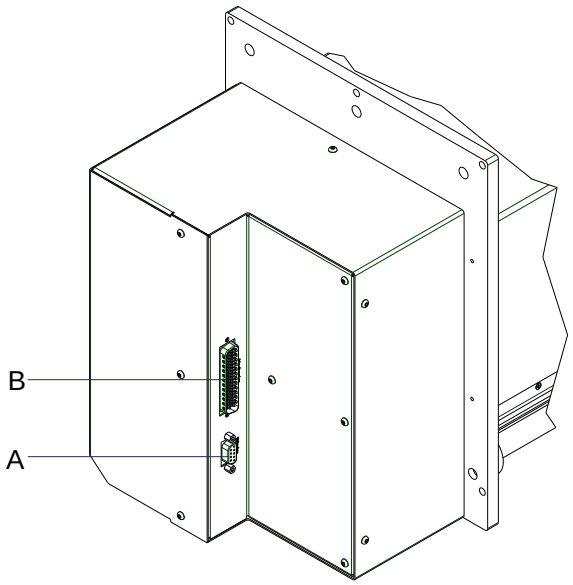


Figure 2

A Winder connection

CAUTION!

The printing system can be damaged by non-compliant winders.

⇒ Attach only winders of Carl Valentin.

B Connecting cable connection
print mechanics – control unit

3.2 Control Unit (Panel Enclosure)

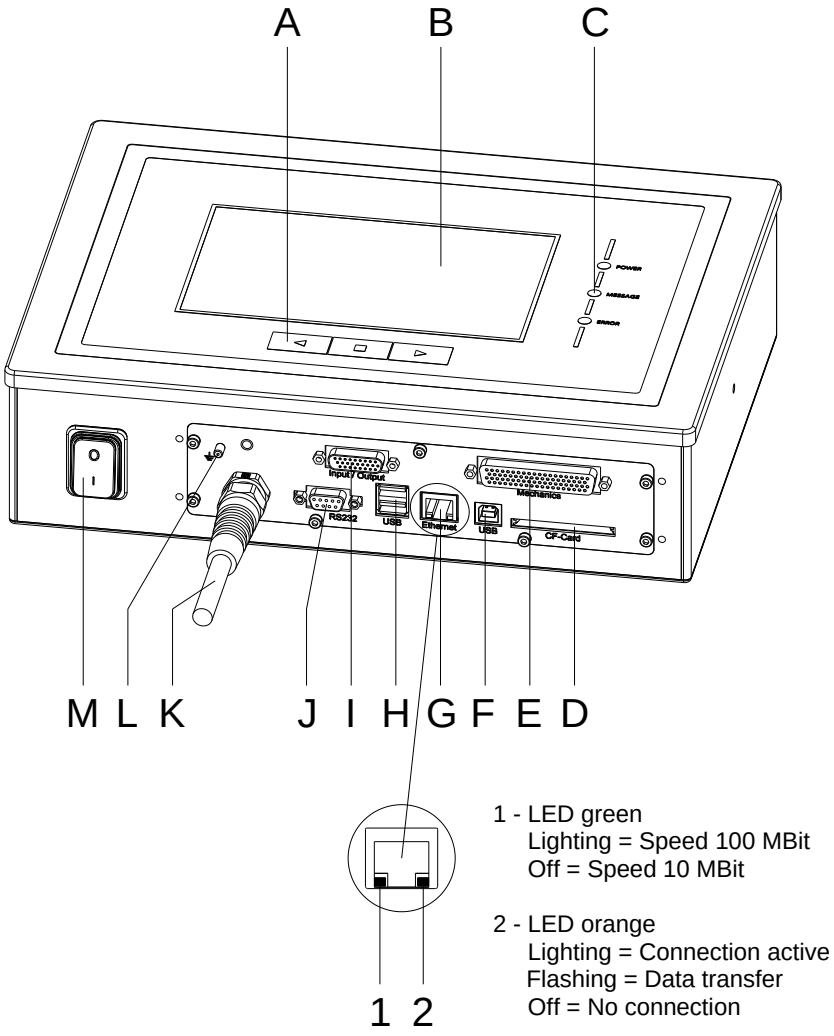


Figure 3

A = Function keys
B = Touch panel
C = Status LED
D = Slot for CF card
E = Connecting cable connection print mechanics – control unit
F = USB port
G = Ethernet interface
H = USB host for USB keyboard and USB stick
I = External inputs/outputs
J = Serial interface RS 232
K = Mains connection
L = Grounding bolt
M = Power switch

3.3 Control Unit (Desktop Enclosure)

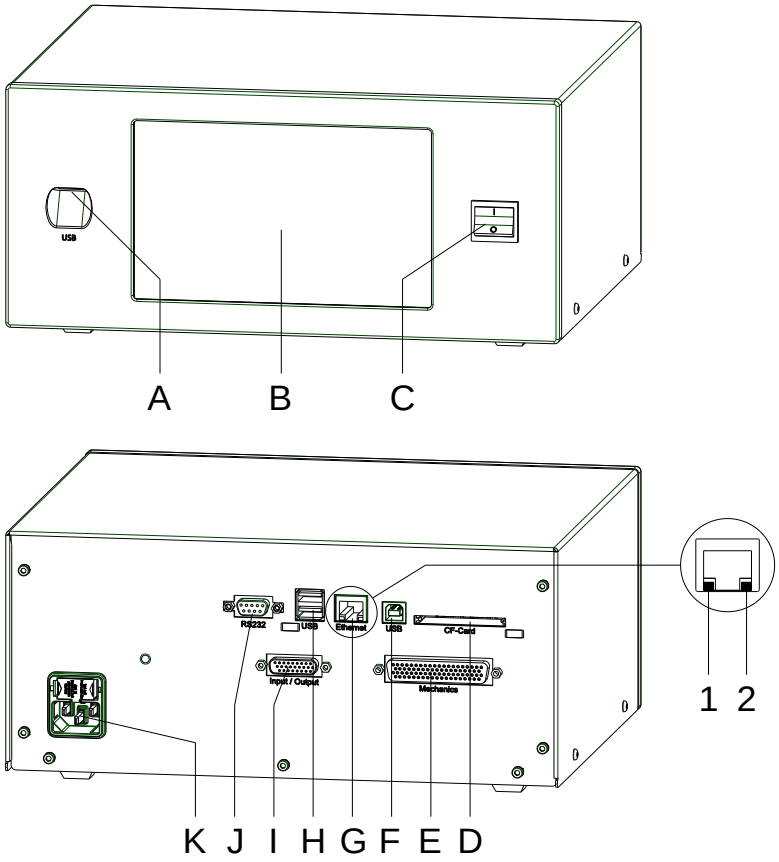


Figure 4

A = USB host for USB keyboard and USB stick

B = Touch panel

C = Power switch

D = Slot for CF card

E = Connecting cable connection
print mechanics – control unit

F = USB port

G = Ethernet interface
1 - LED green
Lighting = Speed 100 Mbit
Off = Speed 10 MBit
2 - LED orange
Lighting = Connection active
Flashing = Data transfer
Off = No connection

H = USB host for USB keyboard and USB stick

I = External inputs/outputs

J = Serial interface RS 232

K = Mains connection

4 Cleaning

DANGER!

Risk of death by 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.

NOTICE!

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

Cleaning plan

Cleaning task	Frequency
General cleaning (see chapter 4.1, page 16).	As necessary.
Clean the transfer ribbon drawing roller (see section 4.2, page 16).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Clean the pressure roller (see chapter 4.3, page 16).	Each time the label roll is changed or when the printout and label transport are adversely affected.
Clean the printhead (see chapter 4.4, page 18).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Clean the label photocell (see chapter 4.5, page 19).	When replacing the label roll.

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 printing system and cleaned.

4.1 General Cleaning

CAUTION!

Abrasive cleaning agents can damage the printing system!

⇒ Do not use abrasives or solvents to clean the outer surface of the printing system.

⇒ 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 Transfer Ribbon Drawing Roller

A soiled drawing roller can lead to a reduced print quality and can affect the transport of material.

1. Open the cover of printing system.
2. Remove transfer ribbon from the printing system.
3. Remove deposits with the roller cleaner and a soft cloth.
4. If the roller appears damaged, replace it.

4.3 Pressure Roller

A soiled pressure roller can lead to a 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.

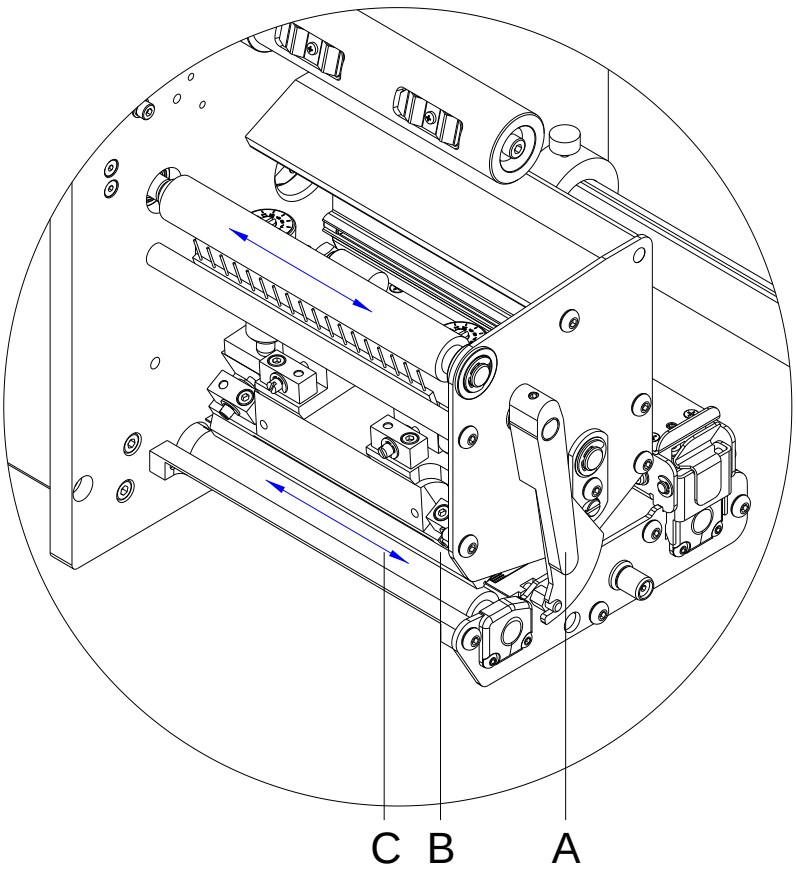


Figure 5

1. Open the cover of printing system.
2. Turn the lever (A) counter clockwise to lift up the printhead (B).
3. Remove labels and transfer ribbon from the printing system.
4. Remove deposits with the roller cleaner and a soft cloth.
5. Turn the roller (C) manually step by step to clean the complete roller (only possible when printer is switched off, as otherwise the step motor is full of power and the roller is kept in its position).

4.4 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 the protective glass layer of the printhead.

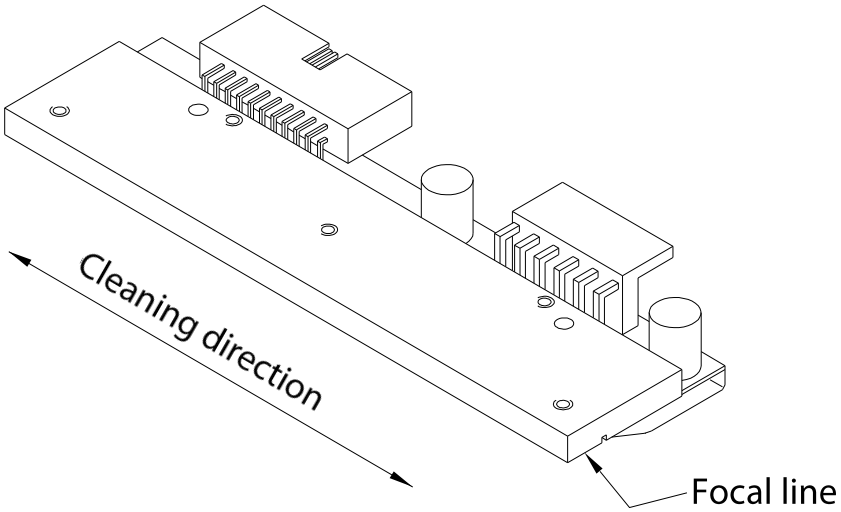


Figure 6

1. Open the cover of printing system.
2. Turn the lever (A, Figure 5) counter clockwise to lift up the printhead.
3. Remove labels and transfer ribbon from the printing system.
4. Clean the printhead surface with a special cleaning pen or a cotton swab dipped in pure alcohol.
5. Before using the printing system, let the printhead dry for about two to three minutes.

4.5 Clean the 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 detection.

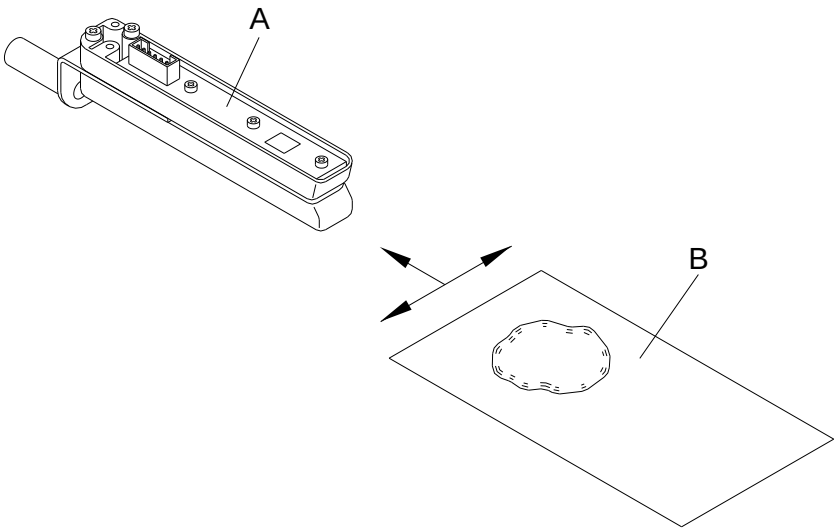


Figure 7

1. Open the cover of printing system.
2. Turn the lever counter clockwise to lift up the printhead.
3. Remove labels and transfer ribbon from the printing system.
4. Blow out the photocell (A) with pressure gas spray.
   Observe strictly the instructions on the spray can!
5. Clean the label photocell (A) additionally with a cleaning card (B) before soaked in pure alcohol. Move the cleaning card from one side to the other (see illustration).
6. Reload labels and transfer ribbon.

5 Electronics – Panel Enclosure (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 Primary Fuses

NOTICE!

The primary fuses are not accessible from the outside.

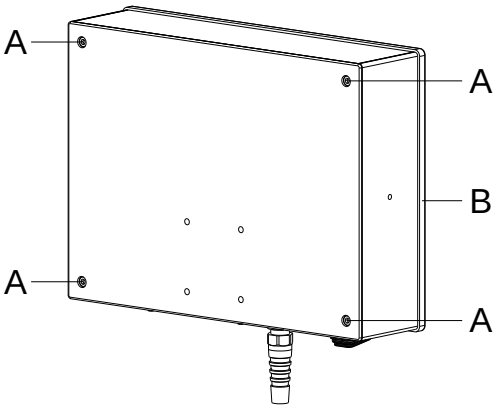


Figure 8

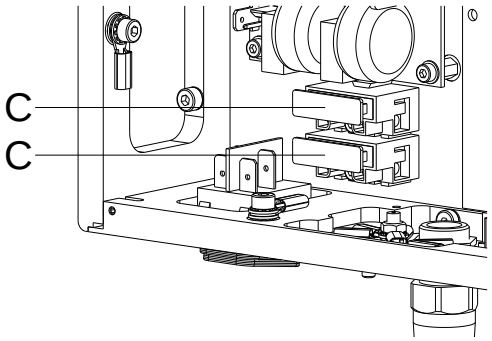


Figure 9

Removing the primary fuses

1. Unplug the control unit from the electrical outlet.
2. Remove four screws (A).
3. Remove the front plate (B) vertically. Pull off the disturbing connection cables at the connectors.
4. Pull out the fuse-holder (C) from the housing

Installing the primary fuses

1. Replace the fuses (two T4A 250 V).
2. Push the fuse-holder (C) into the housing until it locks.
3. Install the front plate (B) and insert the connection cables.

5.2 Input/Output Board

NOTICE!

The inputs/outputs can be tested in the *Service Functions / I/O status*.

In case of an active input, the position corresponding to this input changes to 1.

To activate an output, move the cursor to the corresponding position and set value 1. To deactivate the output, set the corresponding position again to 0.

Inputs and outputs marked with 'x' are not occupied.

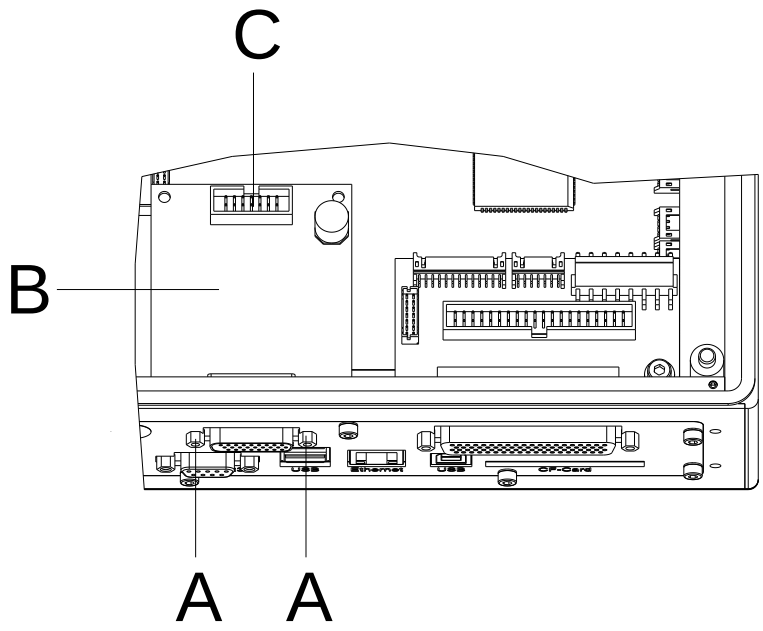


Figure 10

Removing the input/output board

1. Unplug the control unit from electrical outlet.
2. Unscrew four screws at the rear and remove the front plate (see chapter 5.1, page 21).
3. Unscrew the retaining screws (A) at the SUB-D socket.
4. Remove the I/O plate (B) and disconnect the plug-in connector (C).

Installing the input/output board

1. Connect the new I/O board (B) with the appropriate cable (C) and place it.
2. Fasten the retaining screws (A).
3. Install the front plate.
4. Reconnect the power supply cable.

5.3 Distributor Board

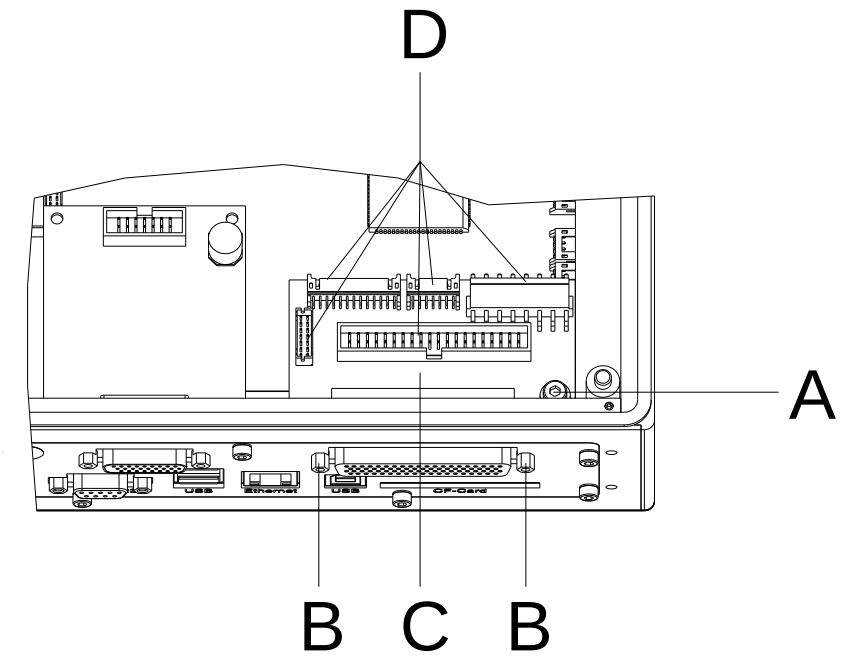


Figure 11

Removing the distributor board

1. Remove the control unit from the electrical outlet.
2. Unscrew four screws at the rear and remove the front plate (see chapter 5.1, page 21).
3. Disconnect all plug-in connectors (D) from the distributor board (C).
4. Unscrew the retaining screws (B) at the SUB-D socket.
5. Unscrew the screw (A).
6. Remove the distributor board (C).

Installing the distributor board

1. Place the new distributor board (C).
2. Fasten the retaining screws (B) and screw (A).
3. Connect all plug-in connectors (D) with the new distributor board (C).
4. Install the front plate.
5. Reconnect the power supply cable.

5.4 CPU PCB

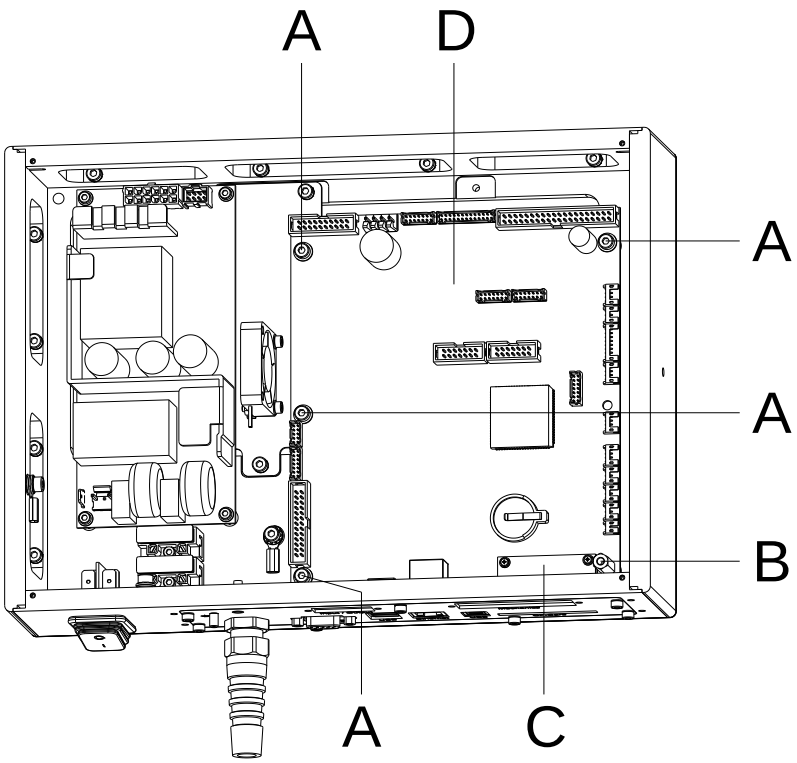


Figure 12

Removing the CPU PCB

NOTICE!

Save the configuration onto a CF card.

1. Unplug the control unit from the electrical outlet.
2. Unscrew four screws at the rear and remove the front plate (see chapter 5.1, page 21).
3. Remove the distributor board (see chapter 5.3, page 23).
4. Remove the I/O board (see chapter 5.2, page 22).
5. Disconnect all plug-in connectors from the CPU PCB (D).
6. Unscrew the screws (A).
7. Remove the hexagon bolts (B).
8. Carefully remove the CPU PCB (D).

Installing the CPU PCB

1. If not available, move the cover of the CF card slot (C) from the old CPU to the new CPU.
2. Insert the CPU PCB (D) with the interface sockets into the connection plate and turn the hexagonal bolts of the serial interface if necessary.
3. Fasten again the CPU PCB (D) with the screws (B) and the hexagon bolt (B).
4. Connect all plug-in connectors to the PCB.
5. Install the I/O borad (see chapter 5.2, page 22).
6. Install the distributor plate (see chapter 5.3, page 23).
7. Install the front plate.
8. Restore all interface connections.
9. Reconnect the power supply cable.
10. Check the firmware version and update it, if necessary.
11. Load the configuration from the CF card. Otherwise set the configuration with the function menu.

5.5 Battery

DANGER!

Danger of explosion due to improper replacement of the battery!

⇒ Use non-conductive tools.

⇒ Pay attention to polarity.

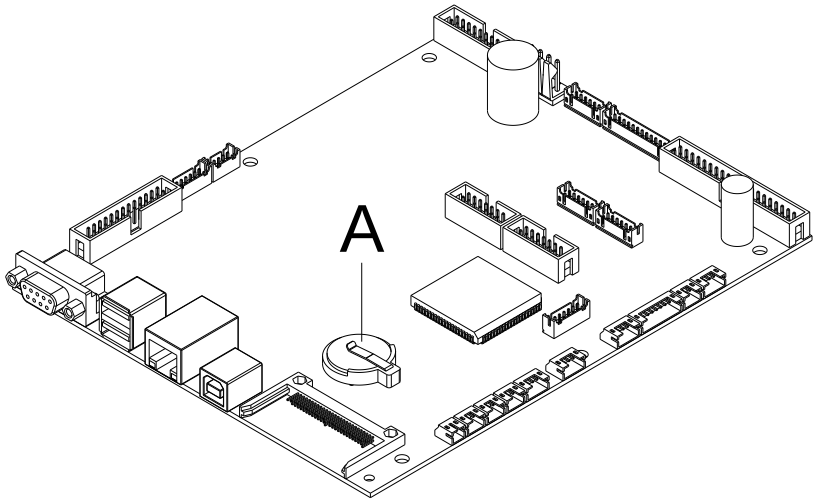


Figure 13

Removing the battery

1. Unplug the control unit from the electrical outlet.
2. Unscrew four screws at the rear and remove the front plate (see chapter 5.1, page 21).
3. Remove the distributor plate (see chapter 5.3, page 23).
4. Lift up the fixing bracket by means of a non-metallic device (e.g. plastic ruler).
5. Remove the battery.

Installing the battery

1. Install a new battery (CR 2032) in the bracket (A).

   NOTICE!

   Please pay attention to the correct polarity.
2. Install again the distributor plate (see chapter 5.3, page 23).
3. Install the front plate.
4. Reconnect the power supply cable.

5.6 Power Supply

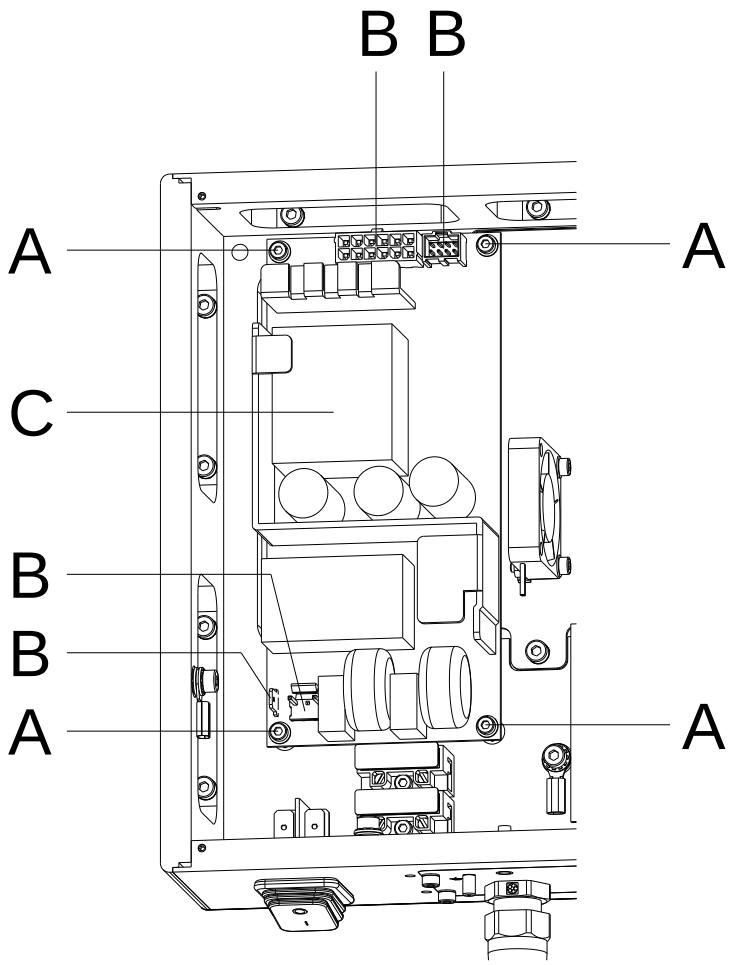


Figure 14

Remove the power supply

1. Unplug the control unit from the electrical outlet.
2. Unscrew four screws at the rear and remove the front plate (see chapter 5.1, page 21).
3. Remove the plug-in connectors (B) from the power supply unit (C).
4. Unscrew the retaining screws (A) of the power supply unit (C). Hold the power supply unit while unscrewing the retaining screws.
5. Remove the power supply unit.

Install the power supply

1. Place the new power supply unit in the control unit housing and tighten it with the retaining screws (A).
2. Connect the plug-in connectors (B) with the power supply unit (C).
3. Install the front plate.
4. Reconnect the power supply cable.

5.7 HMI Components

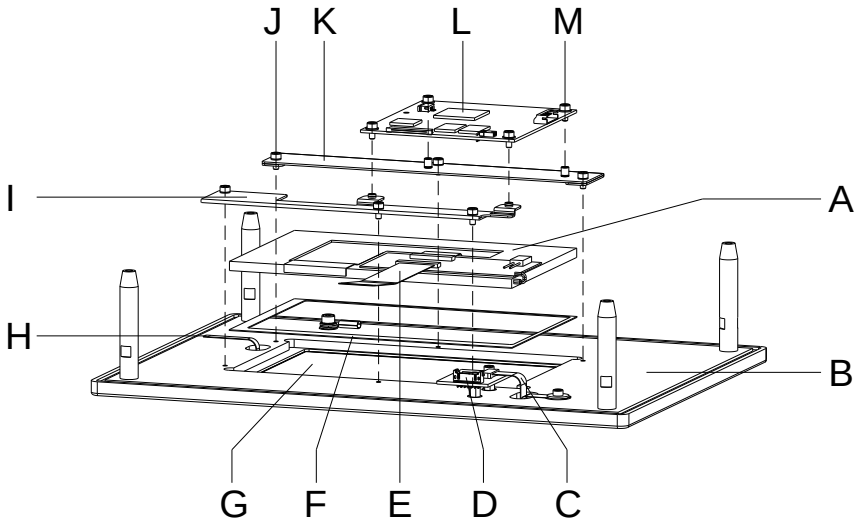


Figure 15

Removing HMI components

1. Unplug the control unit from the electrical outlet.
2. Unscrew four screws at the rear and remove the front plate (see chapter 5.1, page 21). Disconnect all connecting cables at the plug-in connectors while removing the front plate.

   NOTICE!

   During subsequent work, take care of a dust-free atmosphere in order to bring no unwanted particles in the field of view of the display.
3. Carefully remove the FFC cable (E) from the plug-in connector of the CPU HMI (L).
4. Carefully remove the connection line (H) of touch panel from the plug-in connector of CPU HMI (L).
5. After removing the connection cable to CPU and removing the four screws (M), remove the CPU HMI (L).
6. Remove the six screws (J).
7. Lift the top display bar (K) and the bottom display bar (I).
8. Remove the graphic module (A) and the seal (F) from the depression.
9. The touch panel (G) laminated onto the transparent keyboard is visible now. The touch panel is interchangeable only in combination with the transparent keyboard.
10. After careful loosening of the connecting cable (C) and removing the screws positioned directly next to the cable, remove the connection board (D) for the transparent keyboard.

Installing HMI components

1. Place the connection board (D) for the transparent keyboard, tighten the screws and plug in the connection cable (C).
2. Place the seal (F) into the depression and carefully place the new graphic module (A) onto it.

   NOTICE!

   The seal (F) must be properly arranged and must not project into the field of view of the touch panel.

3. Apply the top display bar (K) and the bottom display bar (I) on the edge of the graphic module (A).
4. Tighten the six screws (J).
5. Insert the new CPU HMI (L), tighten the four screws (M) and plug again the connection cable to the CPU.
6. Plug the FFC cable (E) into the plug-in connector of the CPU HMI (L).
7. Plug all connecting cables into the plug-in connectors. Reinstall the front plate (B) and fasten four screws on the rear.
8. Reconnect the power supply cable.

6 Electronics – Desktop Enclosure (Replacing Components)

DANGER!

Risk of death via electric shock!

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

6.1 Primary Fuses

NOTICE!

The primary fuses are in the line filter block that can be accessed from outside.

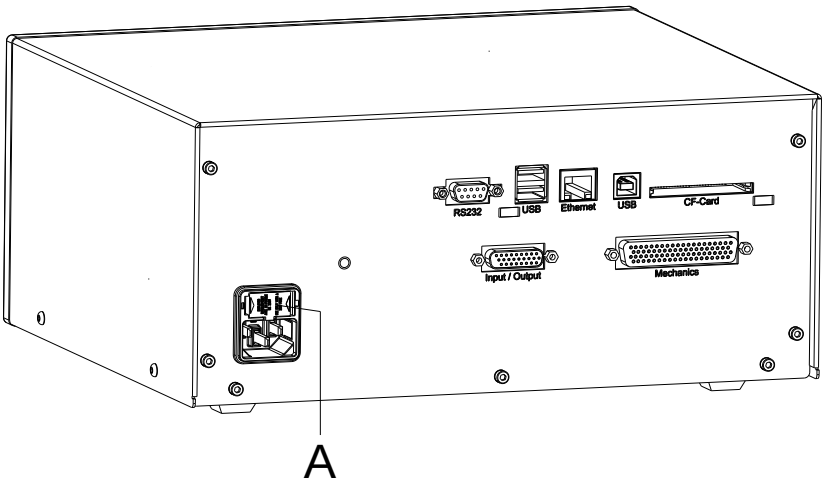


Figure 16

Removing the primary fuses

1. Unplug the control unit from the electrical outlet and pull out the power plug.
2. To unlock the fuse holder (A) press both locking lugs together (e.g. with a srewdriver) and pull them out.

Installing the primary fuses

1. Replace the fuses (two T4A 250 V).
2. Push the fuse holder (A) back into the power entry module.
3. Reconnect the power supply cable.

6.2 Input/Output Board

NOTICE!

The inputs/outputs can be tested in the *Service Functions / I/O status*.

In case of an active input, the position corresponding to this input changes to 1.

To activate an output, move the cursor to the corresponding position and set value 1. To deactivate the output, set the corresponding position again to 0.

Inputs and outputs marked with 'x' are not occupied.

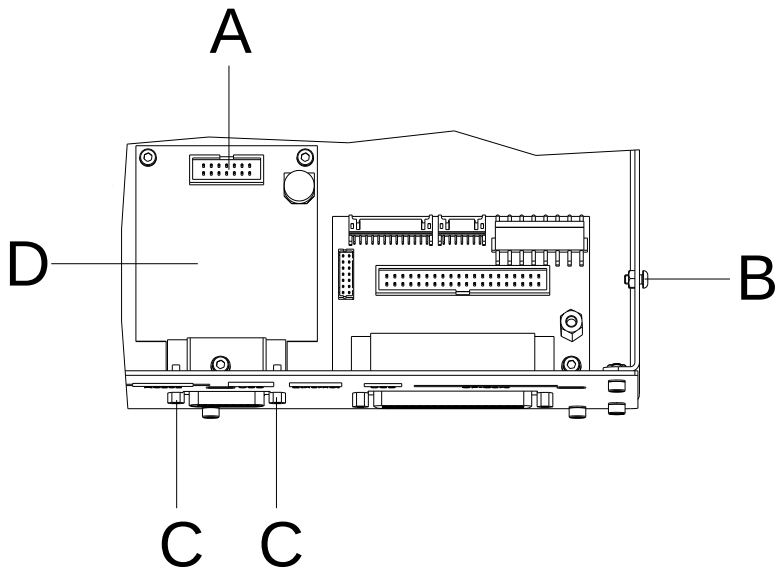


Figure 17

Removing the input/output board

1. Unplug the control unit from electrical outlet.
2. Unscrew the four screws (B) and remove the control unit cover.
3. Remove the CPU PCB (see chapter 6.4, page 34).
4. Unscrew the retaining screws (C) at the SUB-D socket.
5. Remove the I/O plate (D) and disconnect the plug-in connector (A).

Installing the input/output board

1. Connect the new I/O board (D) with the appropriate cable (A) and place it.
2. Fasten the retaining screws (C).
3. Install the CPU PBCB (see chapter 6.4, page 34).
4. Install the control unit cover.
5. Reconnect the power supply cable.

6.3 Distributor Board

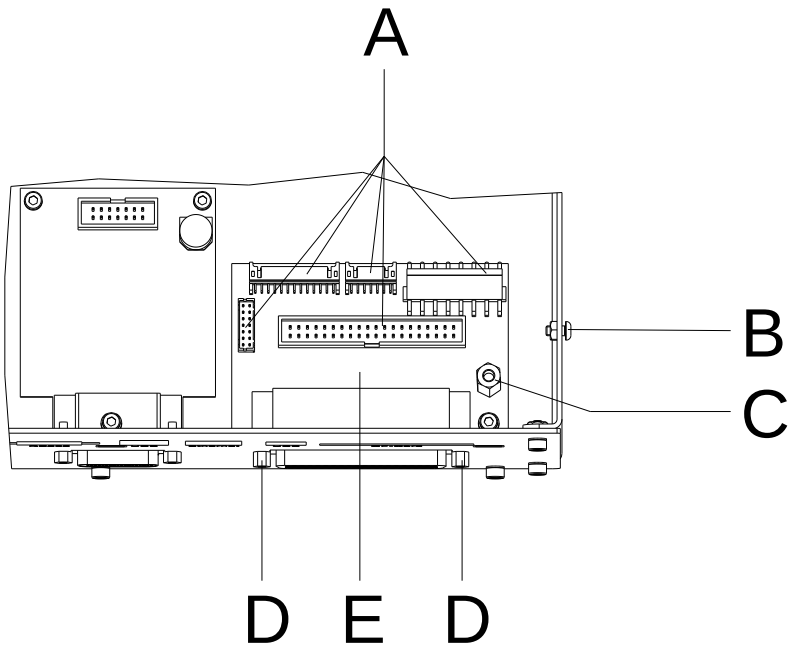


Figure 18

Removing the distributor board

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (B) and remove the control unit cover.
3. Remove the CPU PCB (see chapter 6.4, page 34).
4. Disconnect all plug-in connectors (A) from the distributor board (E).
5. Unscrew the retaining screws (D) at the SUB-D socket.
6. Remove the distributor board (C).

Installing the distributor board

1. Reposition the hexagon bolt (C) from the old distributor board to the new one.
2. Place the new distributor board (E).
3. Fasten the retaining screws (D).
4. Connect all plug-in connectors (A) with the new distributor board (E).
5. Install the CPU PCB (see chapter 6.4, page 34).
6. Install the control unit cover.
7. Reconnect the power supply cable.

6.4 CPU PCB

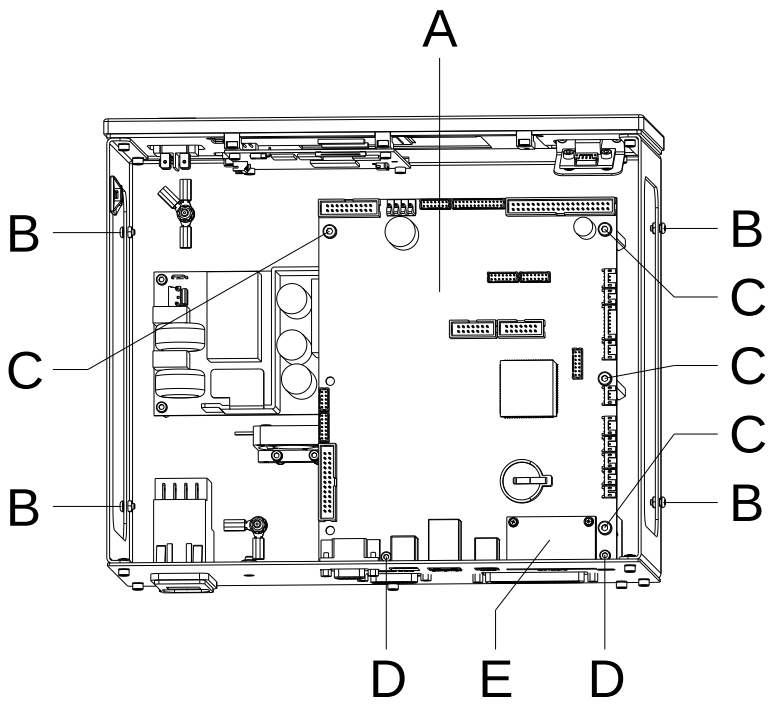


Figure 19

Removing the CPU PCB

NOTICE!

Save the configuration onto a CF card.

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (B) and remove the control unit cover.
3. Disconnect all plug-in connectors from the CPU PCB (A).
4. Unscrew the screw (C).
5. Remove the screws (D).
6. Carefully remove the CPU PCB (A).

Installing the CPU PCB

1. If not available, move the cover of the CF card slot (E) from the old CPU to the new CPU.
2. Insert the CPU PCB (A) with the interface sockets into the connection plate and turn the hexagonal bolts of the serial interface if necessary.
3. Fasten again the CPU PCB (A) with the screws (C and D).
4. Connect all plug-in connectors to the PCB.
5. Install the control unit cover.
6. Restore all interface connections.
7. Reconnect the power supply cable.
8. Check the firmware version and update it, if necessary.
9. Load the configuration from the CF card. Otherwise set the configuration with the function menu.

6.5 Battery

DANGER!

Danger of explosion due to improper replacement of the battery!

⇒ Use non-conductive tools.

⇒ Pay attention to polarity.

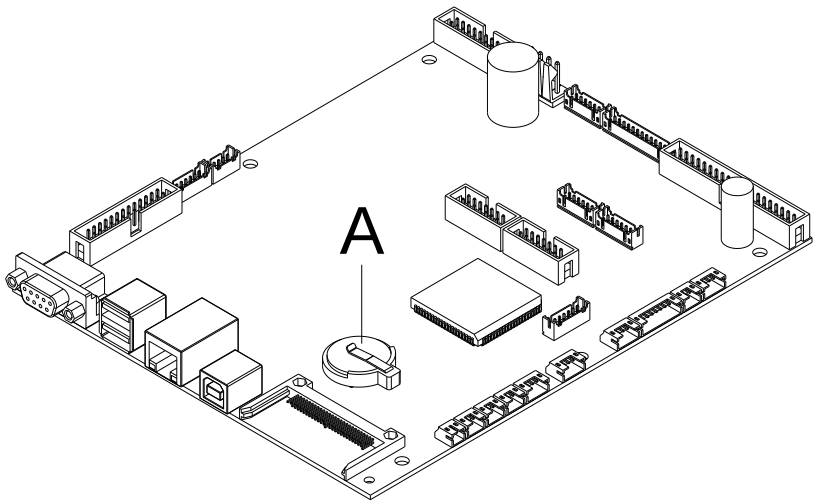


Figure 20

Removing the battery

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (B, Figure 19) and remove the control unit cover.
3. Lift up the fixing bracket by means of a non-metallic device (e.g. plastic ruler).
4. Remove the battery

Installing the battery

1. Install a new battery (CR 2032) in the bracket (A).

   NOTICE!

   Please pay attention to the correct polarity.

2. Install the control unit cover.
3. Reconnect the power supply cable.

6.6 Power Supply

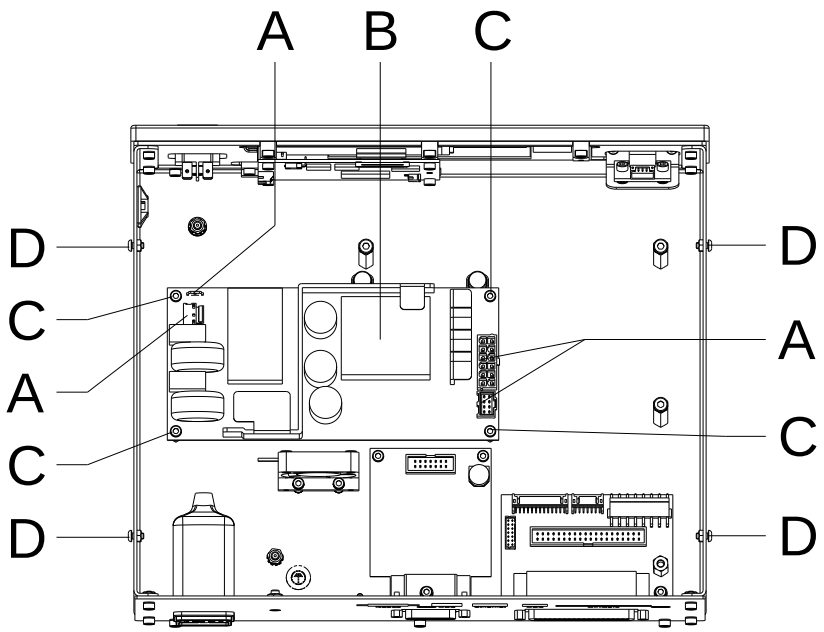


Figure 21

Removing the power supply

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (D) and remove the control unit cover.
3. Remove the CPU PCB (see chapter 6.4, page 34).
4. Remove the plug-in connectors (A) from the power supply unit (B).
5. Unscrew the retaining screws (C) of the power supply unit (B). Hold the power supply unit while unscrewing the retaining screws.
6. Remove the power supply unit.

Installing the power supply

1. Place the new power supply unit in the control unit housing and tighten it with the retaining screws (C).
2. Connect the plug-in connectors (A) with the power supply unit (B).
3. Install the CPU PCB (see chapter 6.4, page 34).
4. Install the control unit cover.
5. Reconnect the power supply cable.

6.7 HMI Components

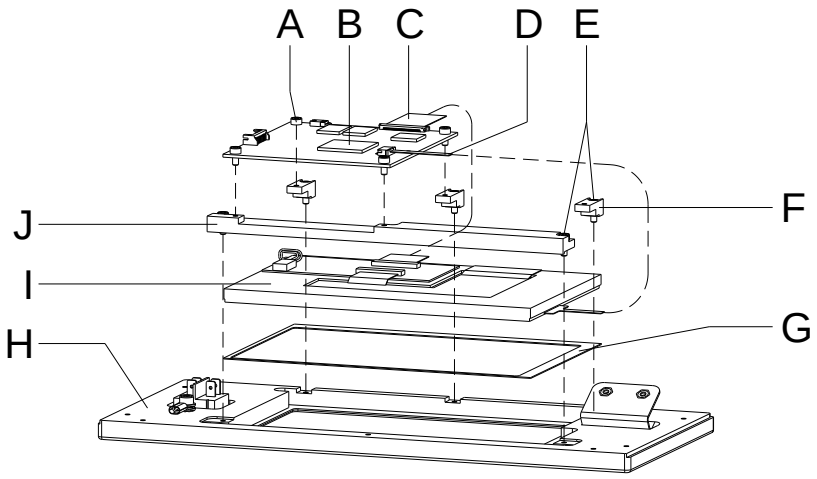


Figure 22

Removing HMI components

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (D) and remove the control unit cover.
3. Remove the CPU PCB (see chapter 6.4, page 34).
4. Carefully remove the FFC cable (C) from the plug-in connector of the CPU HMI (B).
5. Carefully remove the connection line (D) of touch panel from the plug-in connector of CPU HMI (B).
6. After removing the connection cable to CPU and removing the four screws (A), remove the CPU HMI (B).
7. Remove the five screws (E).
8. Lift the display bar (J) and the display support (F).
9. Remove the graphic module (I) and the seal (G) from the depression.

Installing HMI components

1. Place the seal (G) into the depression and carefully place the new graphic module (I) onto it.

   NOTICE!

   The seal (G) must be properly arranged and must not project into the field of view of the touch panel.

2. Apply the display bar (J) and the display support (F) on the edge of the graphic module (I).
3. Tighten the five screws (E).
4. Insert the new CPU HMI (B) and tighten the four screws (A).
5. Plug the FFC cable (C) into the plug-in connector of the CPU HMI (B).
6. Plug the connecion line (D) of the touch panel into the connector of CPU GMI (B).
7. Install the CPU PCB (see chapter 6.4, page 34).
8. Install the control unit cover.
9. Reconnect the power supply cable.

7 Retrofit with Options

7.1 Protective Cover for the Control Unit (Panel Enclosure)

NOTICE!

By mounting the optional protective cover, the protection class IP 65 according to DIN EN 60529 is achieved for the control unit of SPE II.

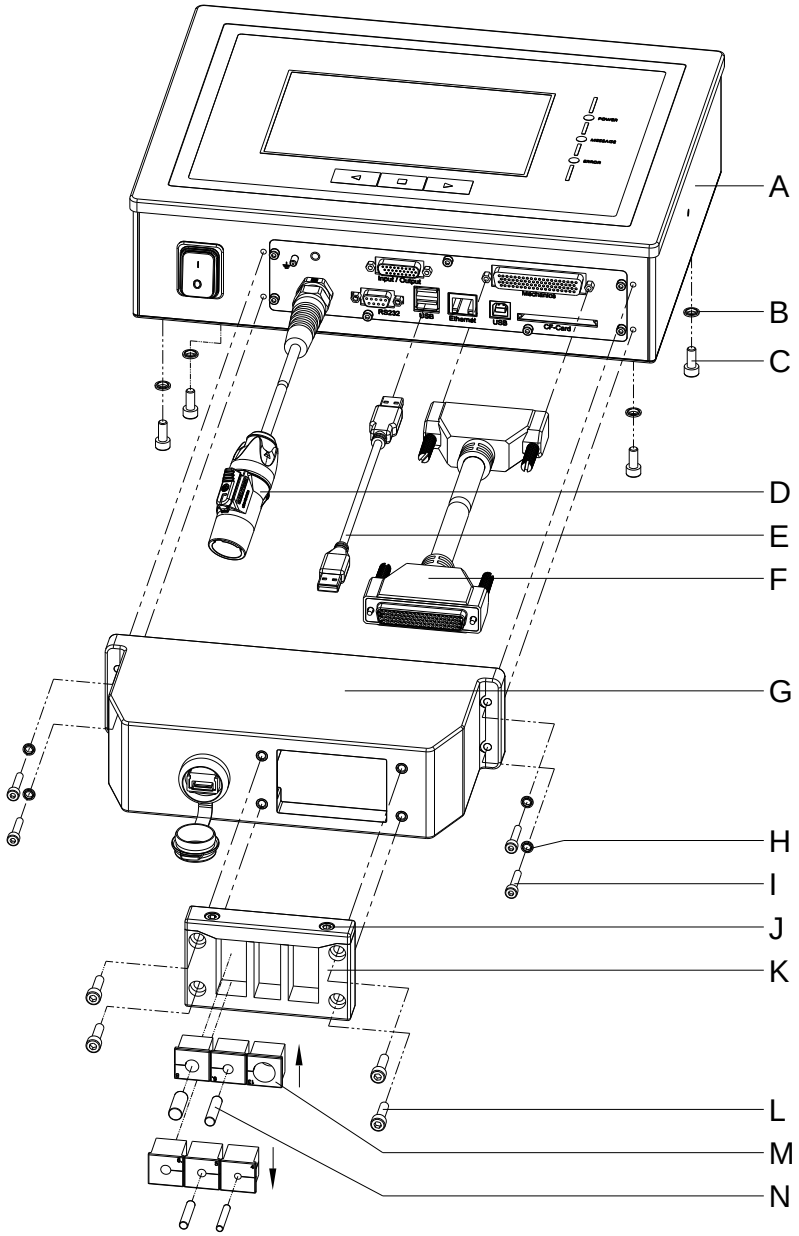


Figure 23

1. Successively remove the four screws (C) on the back on the control unit (A), slide on the sealing rings (B) and screw in the screws (C) again.
2. Connect the connection cable print mechanics/control unit (F) to the control unit (A).
3. If necessary, connect a connection cable for external inputs/outputs to the appropriate socket of the control unit (A).
4. If necessary, connect an Ethernet or USB data cable to the control unit (A).
5. Insert the USB data cable (E) on the inside of the protective cover (E) into the USB socket.
6. Guide the open end of the connection cable print mechanics / control unit (F) through the opening of the protective cover (G). The plug must be tilted sideways. Then guide the power cable (D) and if necessary, the data and I/O cable through the opening of the protective cover (G).
7. Guide the protective cover (G) in the direction of the control unit (A) until the USB data cable (E) can be connected to the control unit (A).
8. Screw the protective cover (G) to the control unit (A) with the four screws (I) and the sealing rings (H).
9. Remove the upper part of the cable entry strip (K) after removing both screws (J).
10. Remove the cable grommets (M) that fit to the respective connection cables from the cable entry strip (K) and enclose the cables two to three centimeters in front of the protective cover (G).
11. Place the cable entry strip (K) in front of the protective cover and insert the cable grommets (M) with connection cables into the slots. The connection cable print mechanics/control unit (F) must be placed in the upper right corner and the power cable (D) should be placed on the bottom left (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).

    NOTICE!

    The side of the cable entry strip (K) with the seal injected must point in the direction of the protective cover (G).

    The smooth, even sides of the grommets (M) must face each other in the middle of the entry strip.

    Unnecessary cable grommets (M) must be closed with the enclosed suitable plugs (N).
12. Fix the upper part of the cable entry strip (K) with the screws (J), so that the connecting cables are still movable.
13. Fix the cable entry strip (K) to the protective cover (G) with the screws (L).
14. Screw tight the upper part of the cable entry strip (K).

NOTICE!

Check that all cables are safely enclosed by the grommets (M) so that no water or dust can enter. Too large grommets and loose cables lead to entering of impurities into the case.
Suitable cable grommets in different sizes are available ex works. The size (diameter) is indicated on the respective grommet.

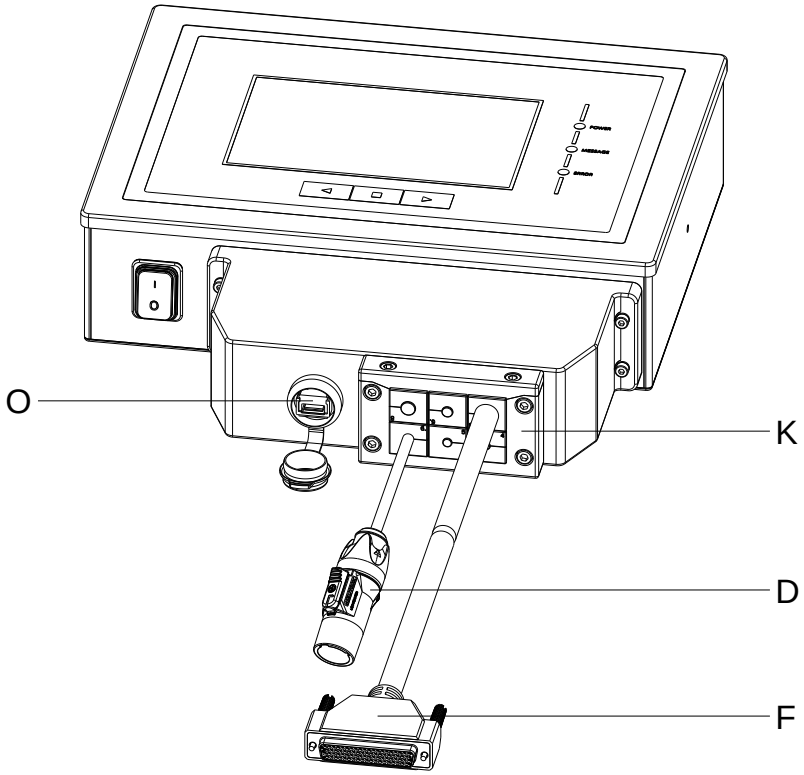


Figure 24

For loading of print data, the integrated USB interface (O) is accessible from the outside.

NOTICE!

The protection class IP 65 is only achieved if the cap of the interface is firmly closed, i.e., no USB stick or data cable is inserted.
Do not bend the connection cable (D, F and others) directly at the cable entry strip (K).

8 Mechanics – Flat Type (Replacing Components)

DANGER!

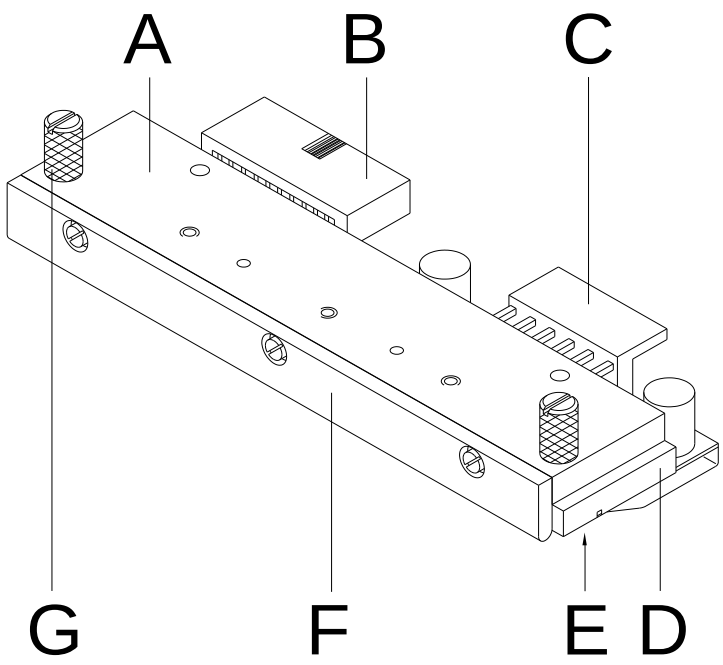
Risk of death via electric shock!

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

8.1 Printhead (General)

NOTICE!

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



A	Head plate
B	Plug connection signal
C	Plug connection tension
D	Printhead
E	Focal line
F	Guiding
G	Knurled screw

Figure 25

CAUTION!

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

⇒ Ground your body, e.g. by wearing a grounded wristband.

⇒ Do not touch the contacts on the plug connections (B, C).

⇒ Do not touch the printhead (D) with hard objects or your hands.

8.2 Printhead

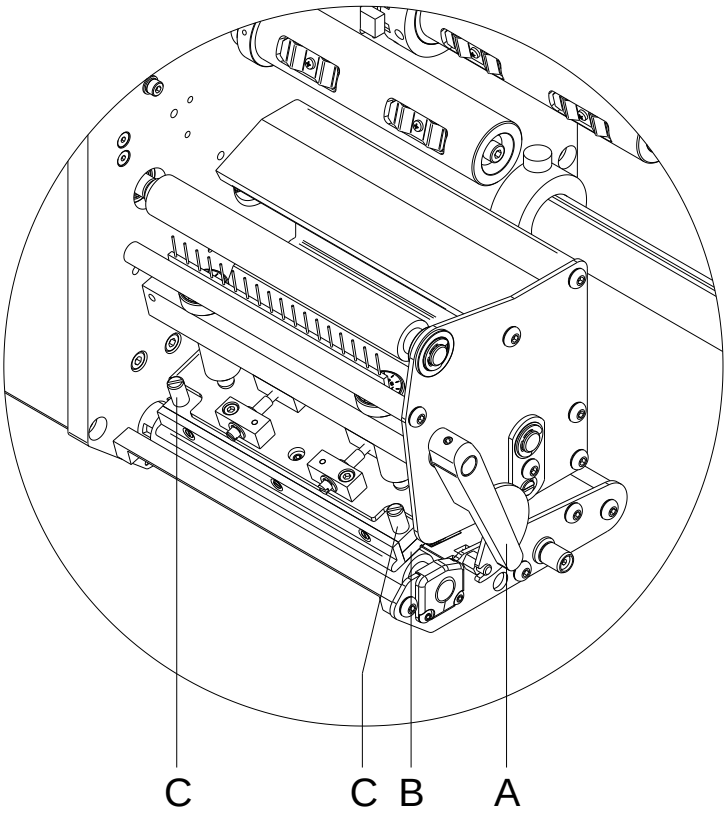


Figure 26

Remove the printhead

1. Remove labels and transfer ribbon from the printing system.
2. When the printhead is closed, loosen the screws (C).
3. Turn the lever (A) counter clockwise to lift up the printhead (B).
4. If the printhead (B) is not disengaged on the pressure roller, continue loosen the screws (C).
5. Remove the printhead carefully to the front until the plug connections are reached.
6. Remove the plug connections and then remove the printhead (B).

Install the printhead

1. Attach the plug connections.
2. Position the printhead (B) in the printhead mounting bracket in such a way that the pin is secured in the corresponding hole in the head plate.
3. Lightly keep the printhead mounting bracket on the pressure roller with one finger and check for correct positioning of the printhead.
4. Tighten again the screws (C).
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*.

8.3 Adjust the Print Position

On the Home menu screen, tap **Functions** > **Service Functions** > **Print Optimization**.

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

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.

8.4 Pressure Roller

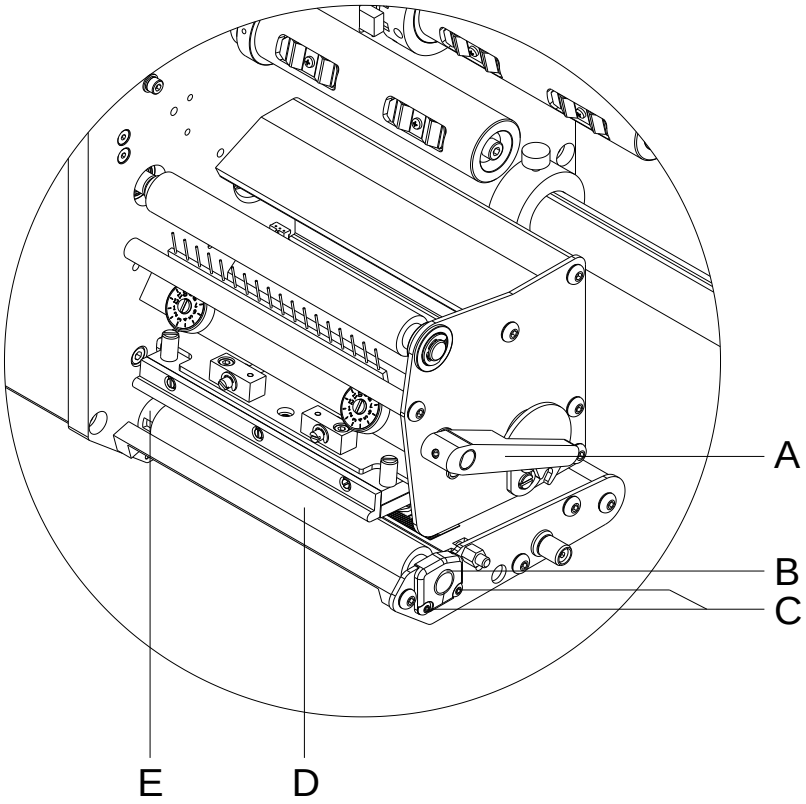


Figure 27

Remove the pressure roller

1. Remove labels and transfer ribbon from the printing system.
2. Turn the lever (A) counter clockwise to lift up the printhead.
3. Unscrew two screws (C) at the bearing cover (B) and then remove the bearing cover (B).
4. Remove the pressure roller (D) from the striker arm (E).

Install the pressure roller

1. Press the pressure roller (D) into the striker arm (E).
   Pay attention to the correct position of striker arm pins of the pressure roller (D).
2. Mount the bearing cover (B) with two screws (C) to the bottom side of sole plate.
3. At reassembly pay attention to a precise fitting of the pressure roller (D).
4. Remove the possible axial play of the pressure roller (D) by interlocking the striker arm (E) and the mounted pressure roller (D).

8.5 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 4.5, page 19).

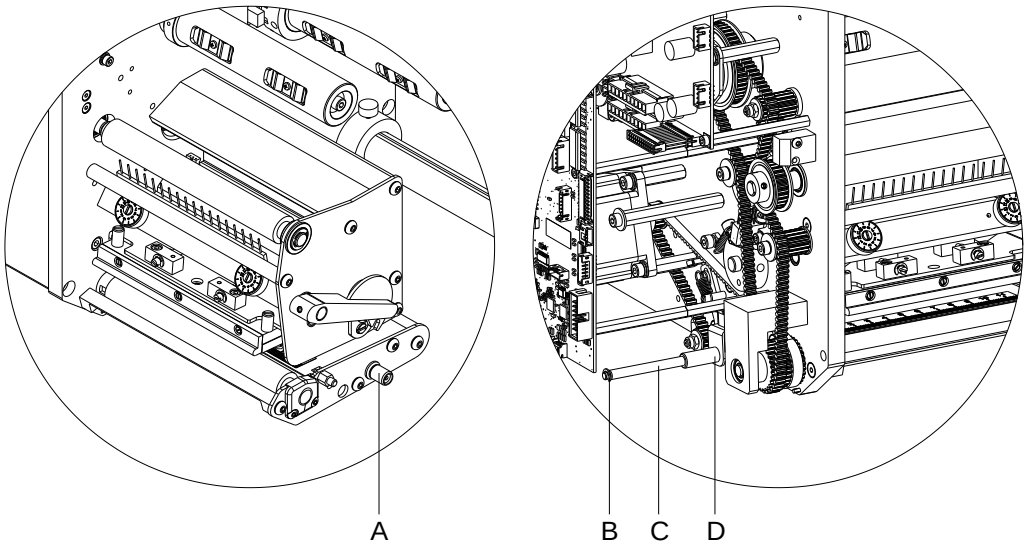


Figure 28

Remove the label photocell

1. Remove labels and transfer ribbon from the printing system.
2. Remove the cover of the printing system.
3. Disconnect all interface cables from the rear of the printing system.
4. Remove the protective disc (B).
5. Turn the knurled knop (B) counter clockwise until the photocell (D) can be removed from the adjusting axis (C).
6. Pull out the cable of the plug at the rear end of the label photocell (D).

Install the label photocell

1. Connect the cable with the label photocell (D).
2. Place the photocell (D) on the adjusting axis (C) and turn the knurled knob (A) in clockwise direction until the photocell arrives at the desired position.
3. Attach the protective disc (B).
4. Restore all interface connections.
5. Install the cover of printing system.
6. Adjust the label photocell.

NOTICE!

When reinstalling the photocell take care that the photocell runs centrically in the plate aperture. One-sided tilting can entail a worse signal level or label accumulation.

8.6 Distributor Board

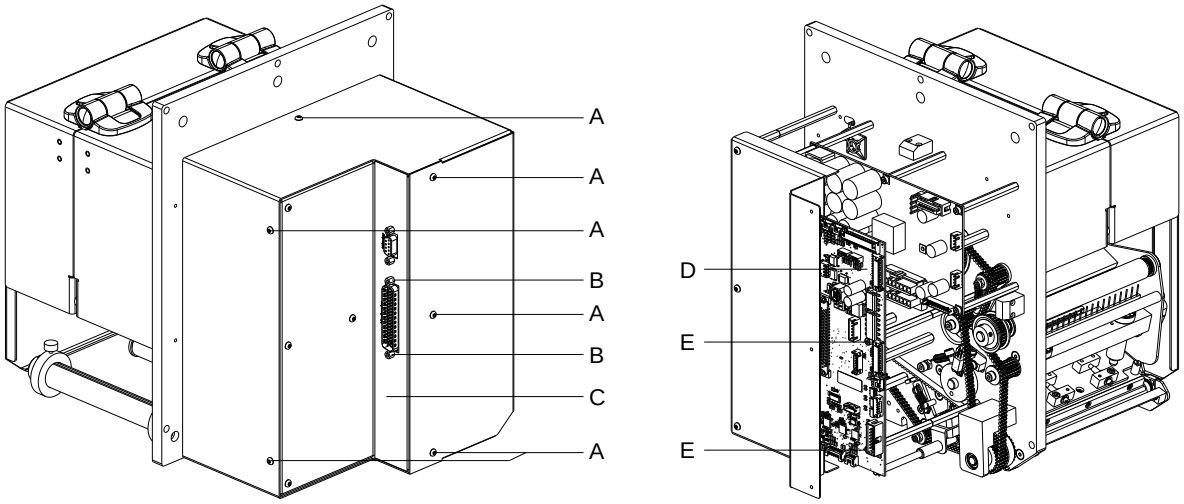


Figure 29

Remove the distributor board

1. Unplug the control unit from the electrical outlet.
2. Disconnect all interface cables from the rear of the printing system.
3. Unscrew the screws (A) and remove the cover of the printing system (C).
4. Disconnect all plug-in connectors from the distributor board (D).
5. Unscrew the hexagon bolts (B) and screws (E).
6. Carefully remove the distributor board (D).

Install the distributor board

1. Insert the new distributor board (D) into the printing system.
2. Fasten the new distributor board (D) with the hexagon bolts (B) and screws (E).
3. Insert all plug connectors on the new distributor board (D).
4. Restore all interface connexions at the rear of the printing system.
5. Install the cover of the printing system (C) with the screws (A).

8.7 Power Electronics

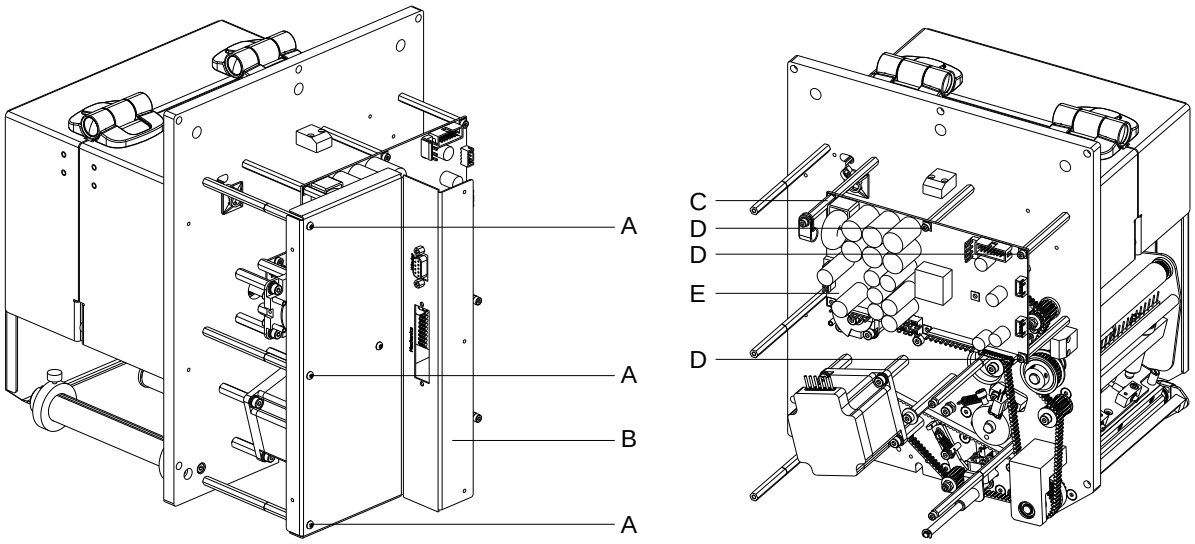


Figure 30

Remove the power electronics

1. Unplug the control unit from the electrical outlet.
2. Disconnect all interface cables from the rear of the printing system.
3. Remove the cover of printing system and the distributor board (see chapter 8.6, page 50).
4. Unscrew the screws (A) and remove the connection plate (B).
5. Disconnect all interface cables at the power electronics (E).
6. Unscrew the hegagon bolts (C) and screws (D).
7. Carefully remove the power electronics (E).

Install the power electronics

1. Insert the new power electronics (E) into the printing system.
2. Fasten the new power electronics (E) with the hexagon bolts (C) and screws (D)..
3. Insert all plug connections on the new power electronics (E).
4. Install the connection plate (B).
5. Install the distributor board and the cover of printing system (see chapter 8.6, page 50).

9 Mechanics – Corner Type (Replacing Components)

DANGER!

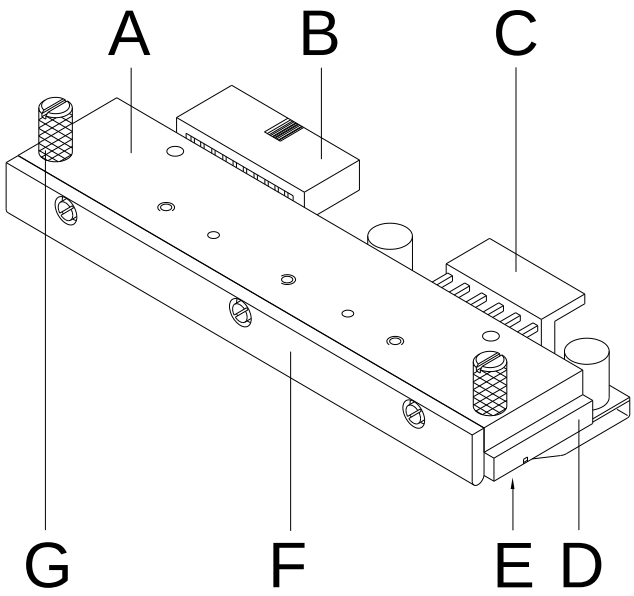
Risk of death via electric shock!

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

9.1 Printhead (General)

NOTICE!

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



A	Head plate
B	Plug connection signal
C	Plug connection tension
D	Printhead
E	Focal line
F	Guiding
G	Knurled screw

Figure 31

CAUTION!

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

⇒ Ground your body, e.g. by wearing a grounded wristband.

⇒ Do not touch the contacts on the plug connections (B, C).

⇒ Do not touch the printhead (D) with hard objects or your hands.

9.2 Printhead

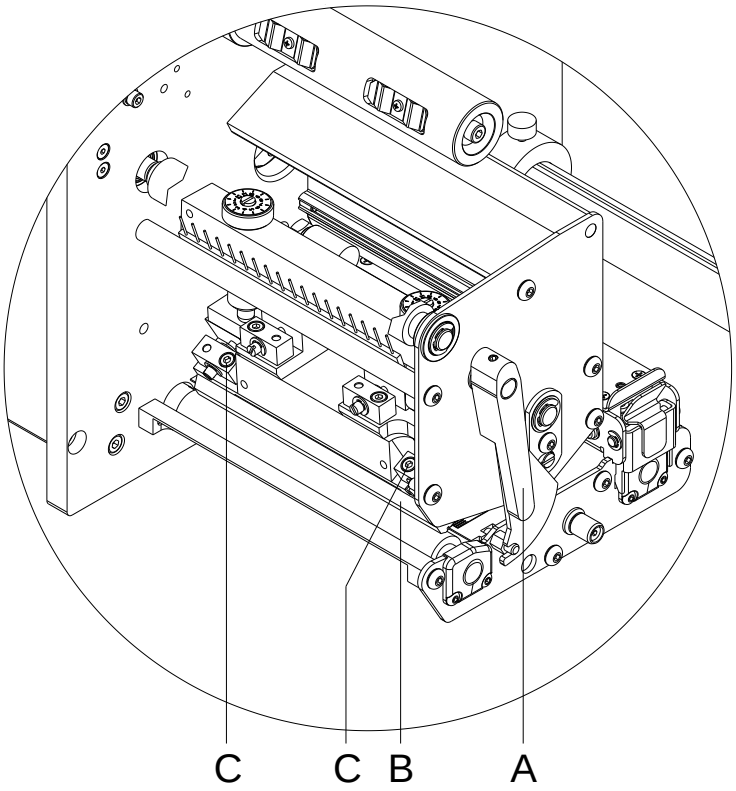


Figure 32

Remove the printhead

1. Remove labels and transfer ribbon from the printing system.
2. When the printhead is closed, loosen the hex (Allen) screws (C).
3. Turn the lever (A) counter clockwise to lift up the printhead (B).
4. If the printhead (B) is not disengaged on the pressure roller, continue loosen the hex (Allen) screws (C).
5. Remove the printhead carefully to the front until the plug connections are reached.
6. Remove the plug connections and then remove printhead (B).

Install the printhead

1. Attach the plug connections.
2. Position the printhead in the printhead mounting bracket in such a way that the pin is secured in the corresponding hole in the head plate.
3. Lightly keep the printhead mounting bracket on the pressure roller with one finger and check for correct positioning of the printhead.
4. Tighten again the screws (C).
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*.

9.3 Adjust the Print Position

On the Home menu screen, tap **Functions** > **Service Functions** > **Print Optimization**.

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

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.

9.4 Pressure Roller

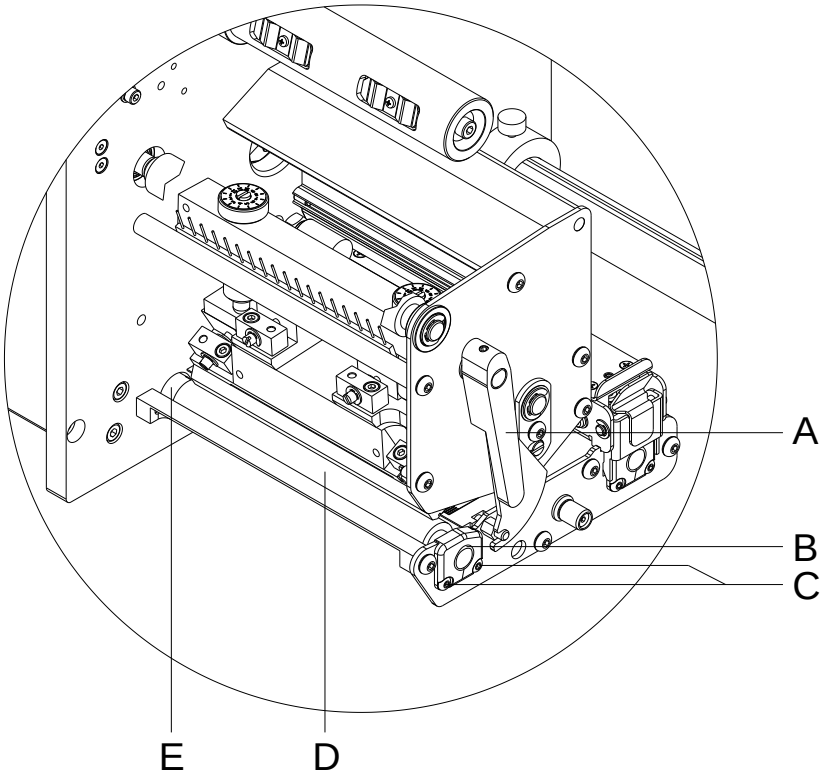


Figure 33

Remove the pressure roller

1. Remove labels and transfer ribbon from the printing system.
2. Turn the lever (A) counter clockwise to lift up the printhead.
3. Unscrew two screws (C) at the bearing cover (B) and then remove the bearing cover (B).
4. Remove the pressure roller (D) from the striker arm (E).

Install the pressure roller

1. Press the pressure roller (D) into the striker arm (E).
   Pay attention to the correct position of striker arm pins of the pressure roller (D).
2. Mount the bearing cover (B) with two screws (C) to the bottom side of sole plate.
3. At reassembly pay attention to a precise fitting of the pressure roller (D).
4. Remove the possible axial play of the pressure roller (D) by interlocking the striker arm (E) and the mounted pressure roller (D).

9.5 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 4.5, page 19).

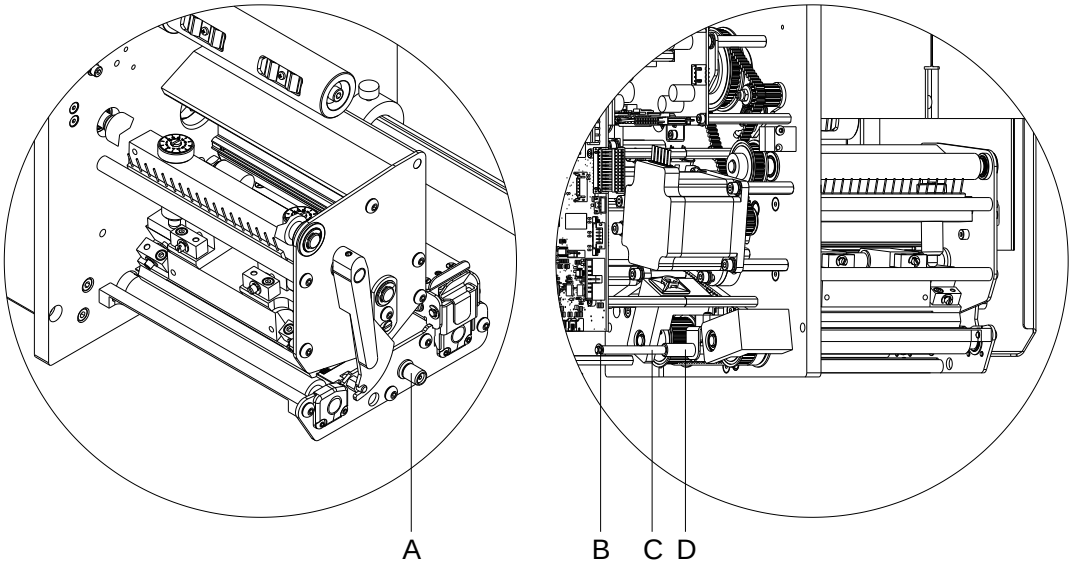


Figure 34

Remove the label photocell

1. Remove labels and transfer ribbon from the printing system.
2. Remove the cover of the printing system.
3. Disconnect all interface cables from the rear of the printing system.
4. Remove the protective disc (B).
5. Turn the knurled knop (A) counter clockwise until the photocell (D) can be removed from the adjusting axis (C).
6. Pull out the cable of the plug at the rear end of the label photocell (D).

Install the label photocell

1. Connect the cable with the label photocell (D).
2. Place the photocell (D) on the adjusting axis (C) and turn the knurled knob (A) in clockwise direction until the photocell arrives at the desired position.
3. Attach the protective disc (B).
4. Restore all interface connections.
5. Install the cover of printing system.
6. Adjust the label photocell.

NOTICE!

When reinstalling the photocell take care that the photocell runs centrically in the plate aperture. One-sided tilting can entail a worse signal level or label accumulation.

9.6 Distributor Board

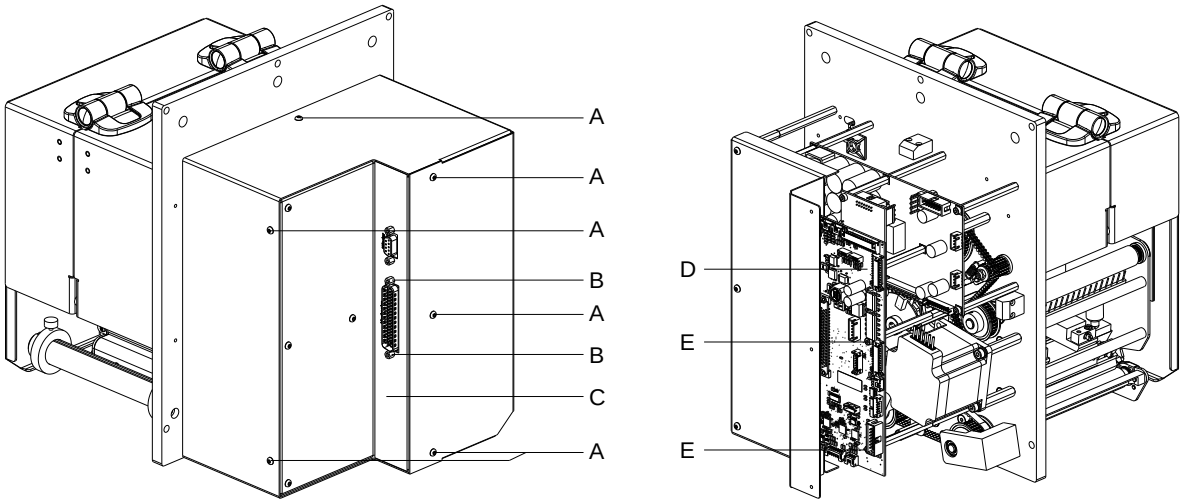


Figure 35

Remove the distributor board

1. Unplug the control unit from the electrical outlet.
2. Disconnect all interface cables from the rear of the printing system.
3. Unscrew the screws (A) and remove the cover of the printing system (C).
4. Disconnect all plug-in connectors from the distributor board (D).
5. Unscrew the hexagon bolts (B) and screws (E).
6. Carefully remove the distributor board (D).

Install the distributor board

1. Insert the new distributor board (D) into the printing system.
2. Fasten the new distributor board (D) with the hexagon bolts (B) and screws (E).
3. Insert all plug connectors on the new distributor board (D).
4. Restore all interface connextions at the rear of the printing system.
5. Install the cover of the printing system (C) with the screws (A).

9.7 Motor Additional Board

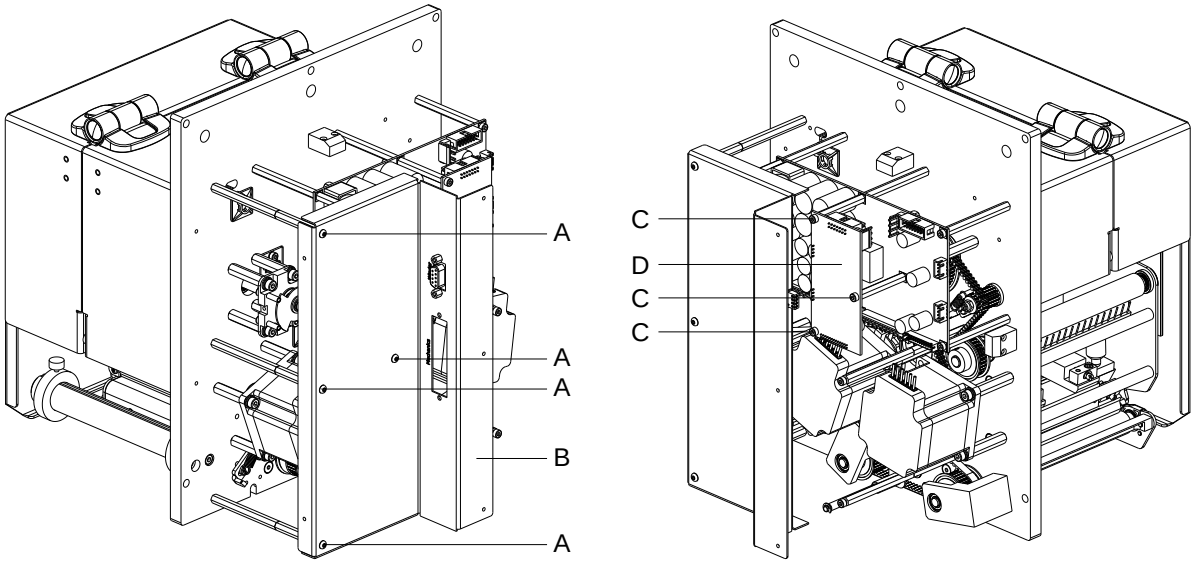


Figure 36

Remove the motor additional board

1. Unplug the control unit from the electrical outlet.
2. Disconnect all interface cables from the rear of the printing system.
3. Remove the cover of printing system and the distributor board (see chapter 9.6, page 58).
4. Unscrew the screws (A) and remove the connection plate (B).
5. Disconnect all interface cables at the motor additional board (D).
6. Unscrew the screws (C).
7. Carefully remove the motor additional board (D).

Install the motor additional board

1. Insert the new motor additional plate (D) into the printing system.
2. Fasten the new motor additional plate (D) with the screws (C).
3. Insert all plug connections on the new motor additional plate (D).
4. Install the connction plate (B) with the screws (A).
5. Install the distributor plate and the cover of printing system (see chapter 9.6, page 58).

9.8 Power Electronics

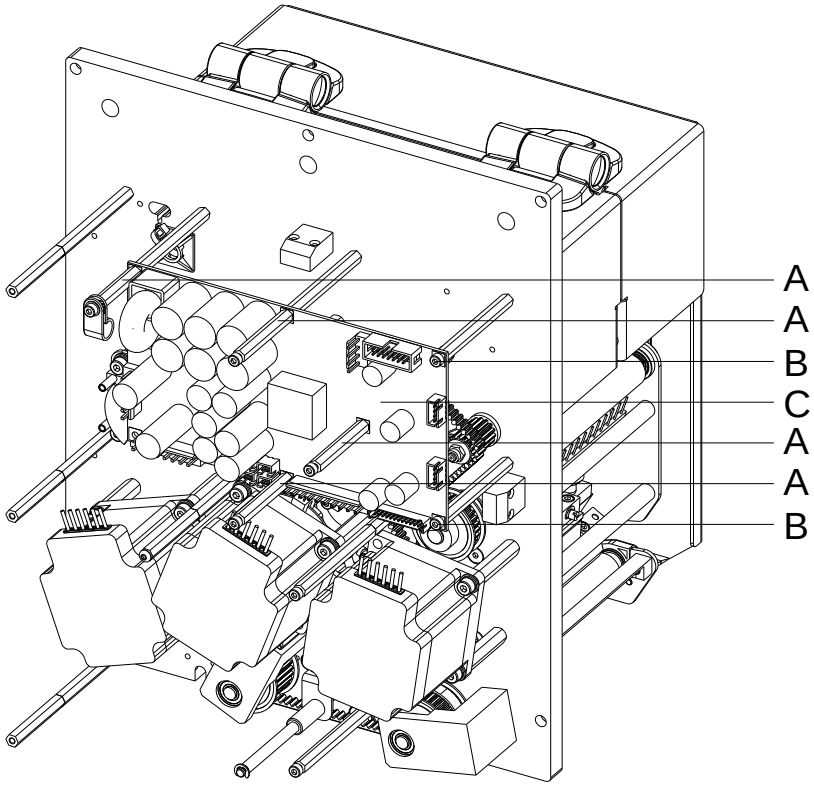


Figure 37

Remove the power electronics

1. Unplug the control unit from the electrical outlet.
2. Disconnect all interface cables from the rear of the printing system.
3. Remove the cover of printing system and the distributor board (see chapter 9.6, page 58).
4. Remove the motor additional plate (see chapter 9.7, page 59).
5. Disconnect all interface cables at the power electronics (C).
6. Unscrew the hexagon bolts (A) and screws (B).
7. Carefully remove the power electronics (C).

Install the power electronics

1. Insert the new power electronics (C) into the printing system.
2. Fasten the new power electronics (C) with the hexagon bolts (A) and screws (B).
3. Insert all interface cables on the new power electronics (C).
4. Install the motor additional plate (see chapter 9.7, page 59).
5. Install the distributor board and the cover of printing system (see chapter 9.6, page 58).

10 Adjustments, Settings and Alignments – Flat Type

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.

10.1 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. Adjust the position of printhead (see chapter 10.2, page 62).
2. Adjust the ribbon feed path (see chapter 10.6, page 66).
3. Adjust the ribbon rewinder/unwinder (see chapter 10.7, page 67).
4. Adjust the printhead photocell (see chapter 10.8, page 68).

10.2 Printhead Position

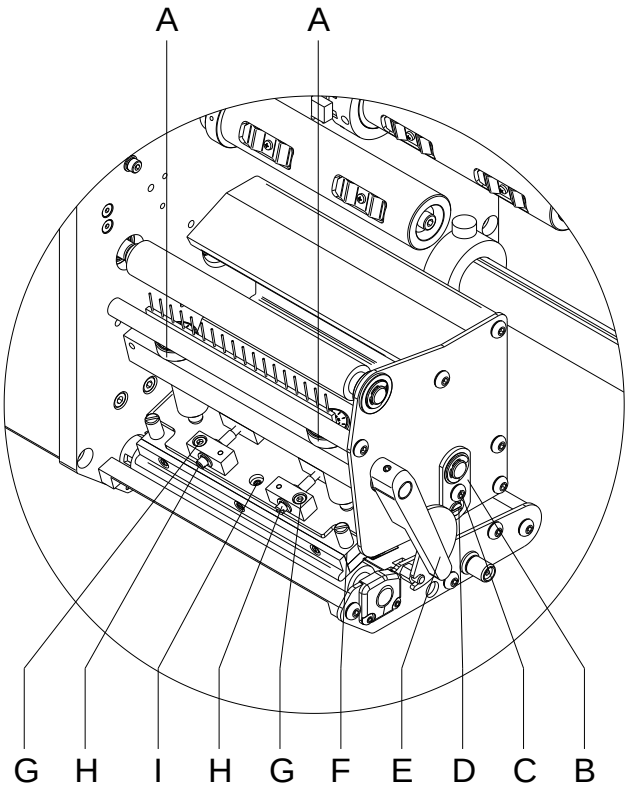


Figure 38

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 (G) is tight can lead to defects at the printhead assembly.

⇒ Always loosen the fixing screw (G) before adjusting the printhead.

NOTICE!

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

10.3 Parallelism

An important characteristic for a high quality print is the parallelism of the focal line of the thermal printhead to the pressure roll. Because of the fact that the position of focal line of the printhead depends on fluctuations caused by production, it is necessary to adjust the parallelism.

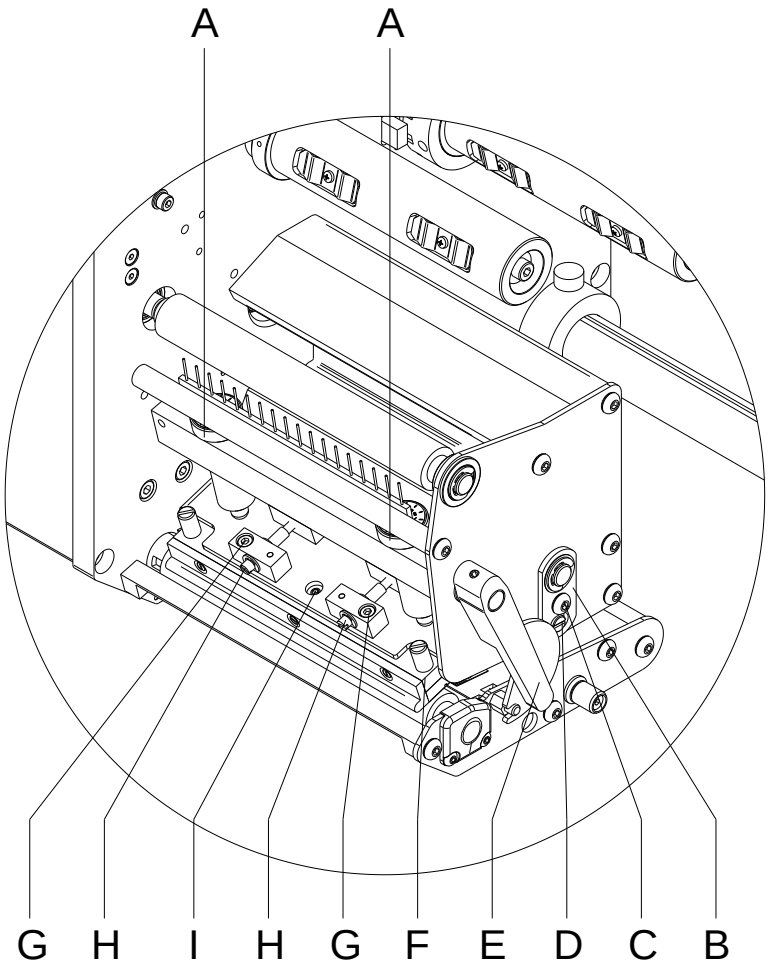


Figure 39

1. Loosen the screws (G) with a hexagon key by approx. ¼ rotations.
2. Adjust the parallelism with the adjusting screws (H).
   Clockwise = printhead moves backwards
   Counter clockwise = printhead moves forwards
3. Adjust the parallelism as long as the printing result comes up to your full expectation.
4. Tighten again the screws (G).
5. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

10.4 Pressure Balance Right/Left

After adjusting parallelism and no even strong pressure exists over the complete print width, by means of a plate (B) you can set the balance as follows:

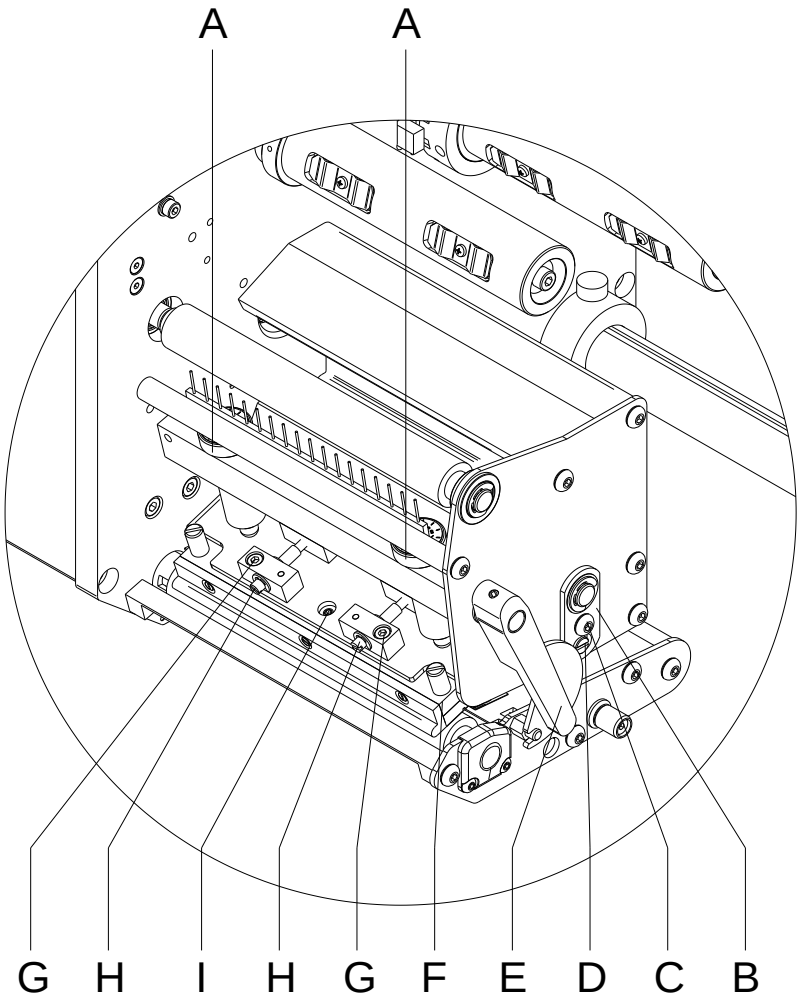


Figure 40

1. Loosen the screw (C) with a screwdriver by approx. ¼ rotations.
2. In order to achieve a pressure balance, turn the excentric bolt (D) as long as the printing result comes up to your full expectation.
3. Tighten again the screw (C).
4. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

10.5 Pressure

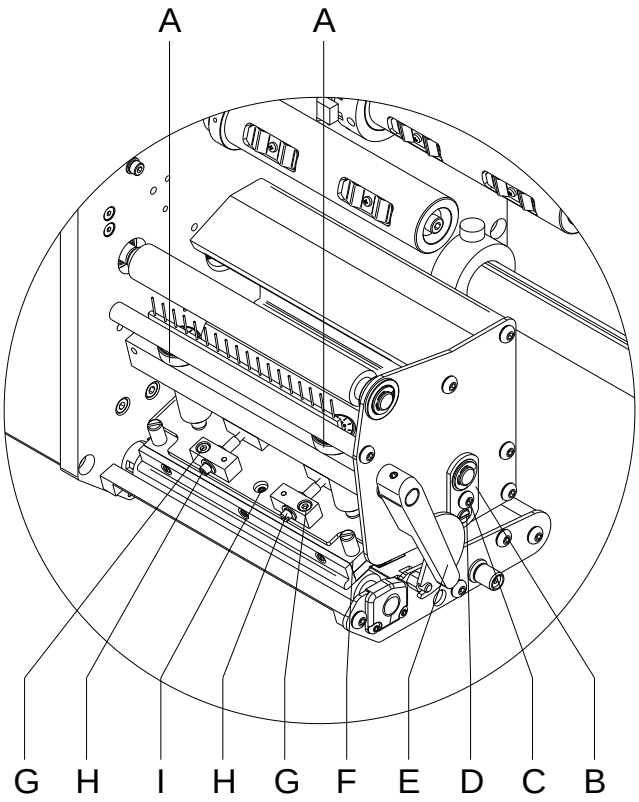


Figure 41

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.

NOTICE!

The selection of the smallest value can optimise the life cycle of printhead.

CAUTION!

Damage of printhead by unequal use!

⇒ Only change the factory settings in exceptional cases.

1. Turn the pressure screws (A) to change the pressure of printhead.
2. Turning the pressure screws (A) as far as they will go in clockwise direction results in a pressure increase of 10N in contrast to the factory setting.
3. Turning the pressure screws (A) from the limit stop counter clockwise to the corresponding scale value (see table) result in the factory settings.

Printhead	Scale value
SPE II 106, 108, 162	6
SPE II 107, 160	12

NOTICE!

It is important that the knurled button which is coated with protective lacquer is not removed from the pressure screw as otherwise the above mentioned settings are faulty.

10.6 Transfer Ribbon Feed Path

Adjust the transfer ribbon feed path by changing the head contact pressure. Increasing the head contact pressure with the screws (A or B) shifts the ribbon feed path in the corresponding direction. Possibly arising formation of wrinkles can be eliminated by bowing the printhead.

CAUTION!

The printhead assembly can be damaged when bowing the printhead.

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

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

⇒ Only turn the adjustment screw (I) as far as is absolutely necessary.

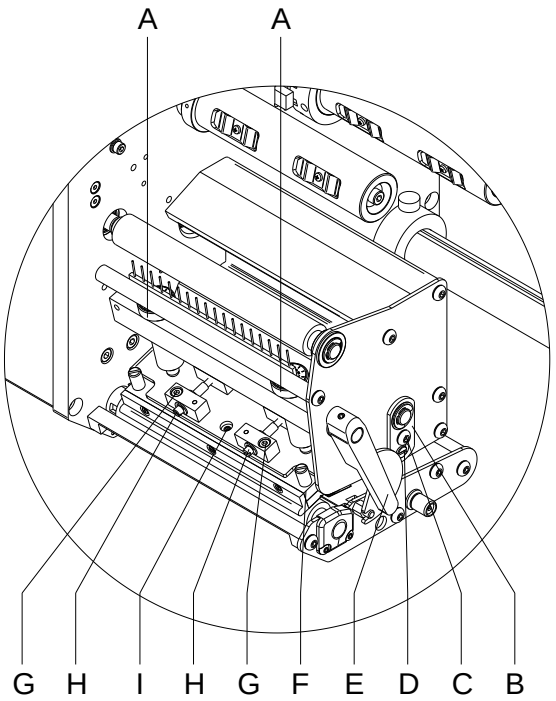


Figure 42

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 roller is from the disk of the rewinder.
2. If the transfer ribbon runs outwards or inwards, turn the corresponding screw (H) clockwise in small steps.
3. Wait until the ribbon feed path has stabilized after each step of the adjustment.
4. Check the transfer ribbon feed for wrinkles.
5. If the wrinkles cannot be remedied (e.g. wrinkles in the centre), turn the adjustment screw (I) clockwise with extreme care (see warnings) using a hexagonal wrench (2 mm) and observe the ribbon feed path. When the adjustment screw (I) is tightened, the printhead is bent downward slightly in the centre. A slight lightening at the edge areas of the print image could occur here.

10.7 Ribbon Rewinder/Unwinder

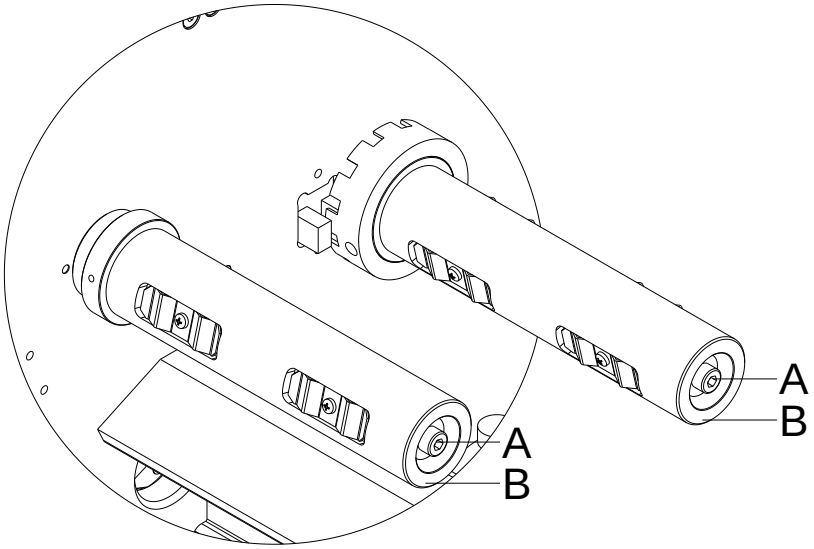


Figure 43

Due to the many different transfer ribbon variants regarding roller width, length and qualities it is necessary to provide the possibility to set transfer ribbon tension.

The transfer ribbon tension is to set in such way that no wrinkles in the ribbon appear but it is transported in the same way as the labels.

When using a too high ribbon tension this results usually in an excellent run of the transfer ribbon but this could lead to streaks onto the label or to a rip of ribbon particularly with narrow roles.

Ex works the role tension is set to a transfer ribbon 110 mm width and standard quality. As approximate values for the factory setting the following can be accepted:

Transfer ribbon unwinder:
Distance of the screw head (A) to the roller face (B) = 2 mm

Transfer ribbon rewinder:
Distance of the screw head (A) to the roller face (B) = 4 mm

Tighten the hex. head screw (A) = Increasing the transfer ribbon tension

Loosen the hex. head screw (A) = Reducing the transfer ribbon tension

10.8 Head Photocell

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

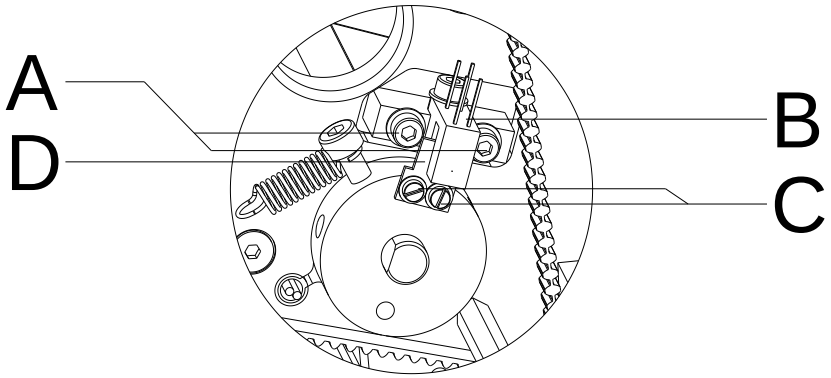


Figure 44

1. Unplug the control unit from the electrical outlet.
2. Remove the cover of printing system.
3. Lock the printhead, i.e. close it
4. Slightly loosen the fixing screws (A) of the photocell (B).
5. Shift the photocell (B) in the hole sideways in such way that the plate (D) extends slightly into the centre of photocell (into the fork).
6. Tighten the screws (A).
7. If this measure should not be sufficient, the plate (D) can be shifted by loosening the screws (C).
8. Install the cover of printing system
9. Control the function of the head photocell.
   (Service Functions > Print Optimization > Printhead Sensor).

11 Adjustments, Settings and Alignments – Corner Type

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.

11.1 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. Adjust the position of printhead (see chapter 11.2, page 70).
2. Adjust the ribbon rewinder/unwinder (see chapter 11.6 page 74).
3. Adjust the printhead photocell (see chapter 11.7, page 75).

11.2 Printhead Position

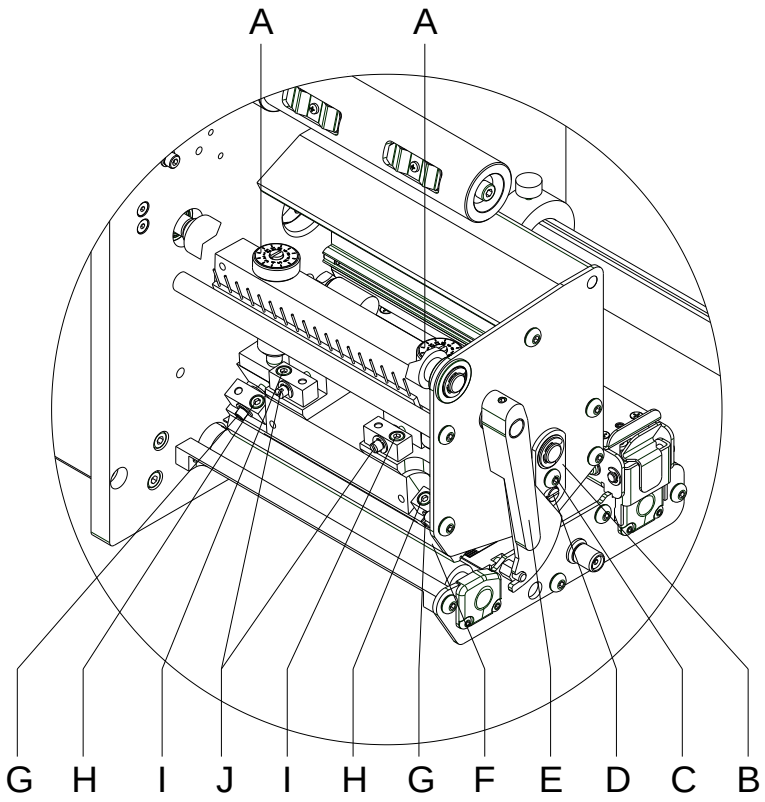


Figure 45

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 screws (H + I) is tight can lead to defects at the printhead assembly.

⇒ Always loosen the fixing screw (H or I) before adjusting the printhead.

NOTICE!

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

11.3 Parallelism

An important characteristic for a high quality print is the parallelism of the focal line of the thermal printhead to the pressure roll. Because of the fact that the position of focal line of the printhead depends on fluctuations caused by production, it is necessary to adjust the parallelism.

The form of the CornerType printhead needs the setting of parallelism in direction of the adjusting angle and in horizontal position. It needs a little bit of experience to know in which direction you have to adjust the printhead to receive a high quality printing.

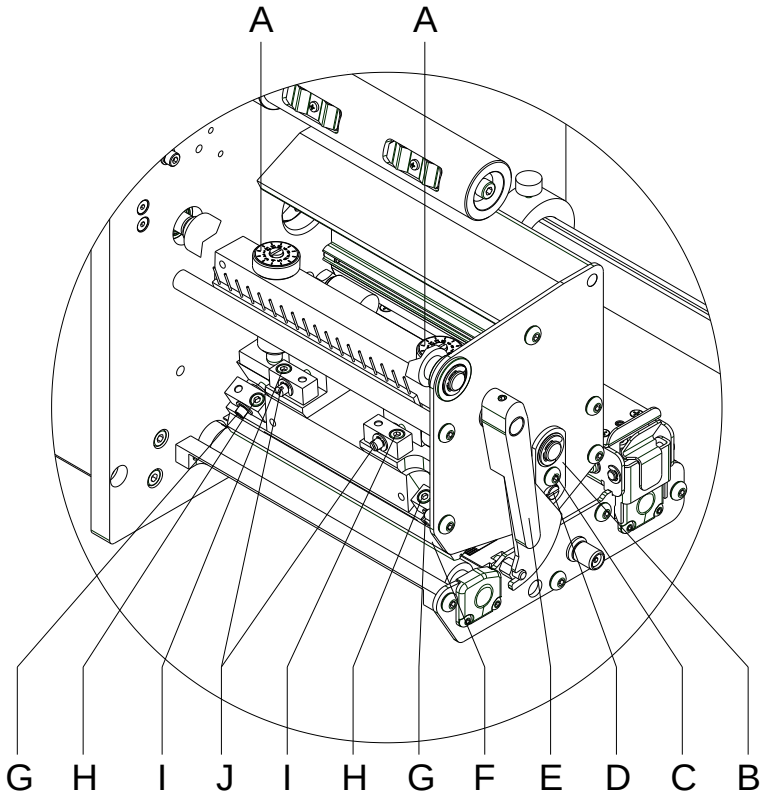


Figure 46

1. Loosen the screws (H or I) with a hexagon key by approx. ¼ rotations.
2. Adjust the parallelism with the adjusting screws (G or J).
   Clockwise = printhead moves backwards
   Counter clockwise = printhead moves forwards
3. Adjust the parallelism as long as the printing result comes up to your full expectation.
4. Tighten again the screws (H or I).
5. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

11.4 Pressure Balance Right/Left

After adjusting parallelism and no even strong pressure exists over the complete print width, by means of a plate (B) you can set the balance as follows:

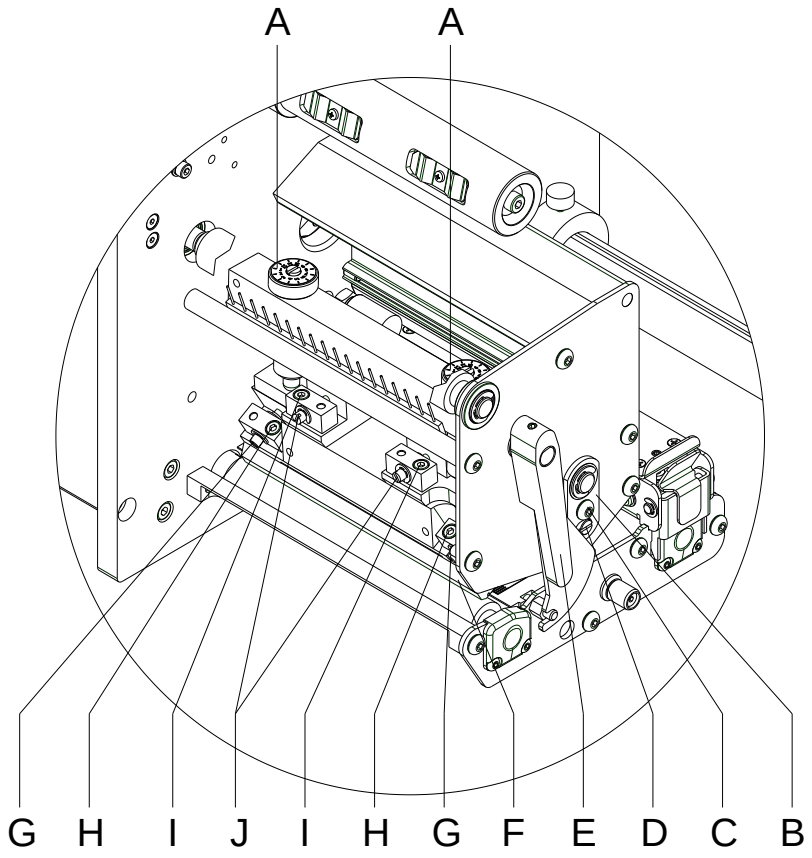


Figure 47

1. Loosen the screw (C) by approx. ¼ rotations.
2. In order to achieve a pressure balance, turn the excentric bolt (D) as long as the printing result comes up to your full expectation.
3. Tighten again the screw (C).
4. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

11.5 Pressure

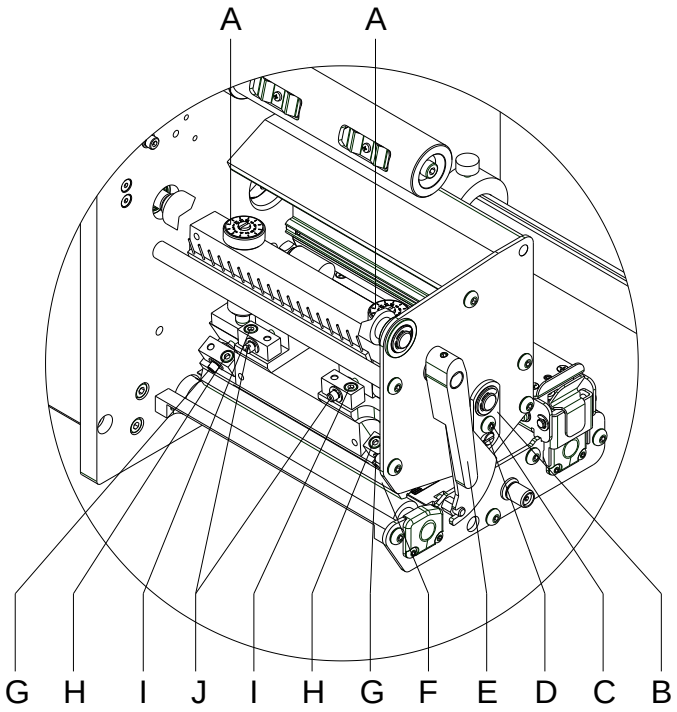


Figure 48

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.

NOTICE!

The selection of the smallest value can optimise the life cycle of printhead.

CAUTION!

Damage of printhead by unequal use!

⇒ Only change the factory settings in exceptional cases.

1. Turn the pressure screws (A) to change the pressure of printhead.
2. Turning the pressure screws (A) as far as they will go in clockwise direction results in a pressure increase of 10N in contrast to the factory setting.
3. Turning the pressure screws (A) exactly one rotation from the right stop position counter clockwise results in the factory settings.

NOTICE!

It is important that the knurled button which is coated with protective lacquer is not removed from the pressure screw as otherwise the above mentioned settings are faulty.

11.6 Ribbon Rewinder/Unwinder

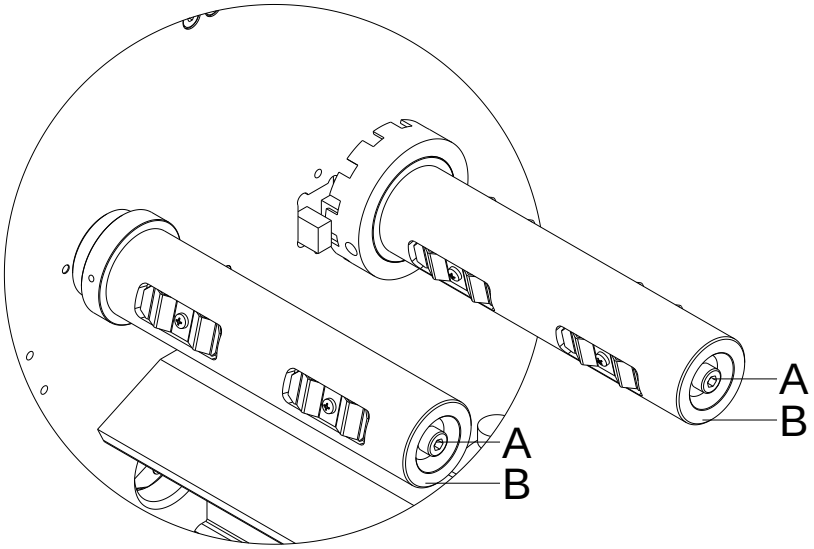


Figure 49

Due to the many different transfer ribbon variants regarding roller width, length, and qualities it is necessary to provide the possibility to set transfer ribbon tension.

The transfer ribbon tension is to set in such way that no wrinkles in the ribbon appear, but it is transported in the same way as the labels.

When using a too high ribbon tension this results usually in an excellent run of the transfer ribbon but this could lead to streaks onto the label or to a rip of ribbon particularly with narrow roles.

Ex works the role tension is set to a transfer ribbon 110 mm width and standard quality. As approximate values for the factory setting the following can be accepted:

Transfer ribbon unwinder:
Distance of the screw head (A) to the roller face (B) = 2 mm

Transfer ribbon rewinder:
Distance of the screw head (A) to the roller face (B) = 4 mm

Tighten the hex. head screw (A) = Increasing the transfer ribbon tension

Loosen the hex. head screw (A) = Reducing the transfer ribbon tension

11.7 Head Photocell

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

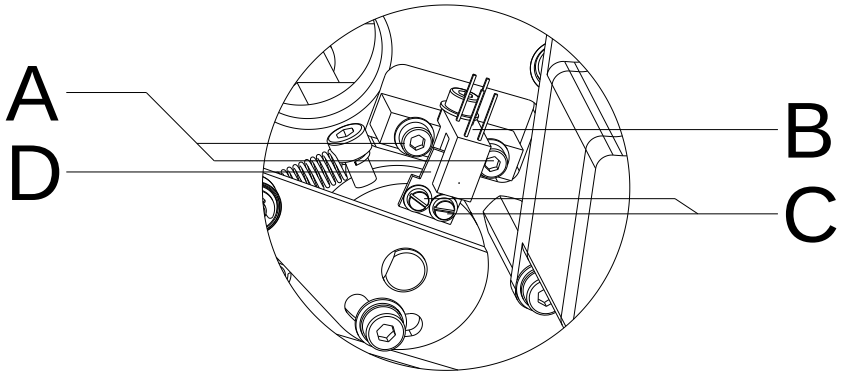


Figure 50

1. Unplug the control unit from the electrical outlet.
2. Remove the cover of printing system.
3. Lock the printhead, i.e. close it
4. Slightly loosen the fixing screws (A) of the photocell (B).
5. Shift the photocell (B) in the hole sideways in such way that the plate (D) extends slightly into the centre of photocell (into the fork).
6. Tighten the screws (A).
7. If this measure should not be sufficient, the plate (D) can be shifted by loosening the screws (C).
8. Install the cover of printing system
9. Control the function of the head photocell.
   (Service Functions > Print Optimization > Printhead Sensor).

11.8 Pressure Curve (Ribbon Save)

If the ribbon save function is activated and the printhead is not enough lifted up from the label material, then the pressure curve is to be adjusted anew. The pressure curve is onto the shaft of the ribbon save motor (A).

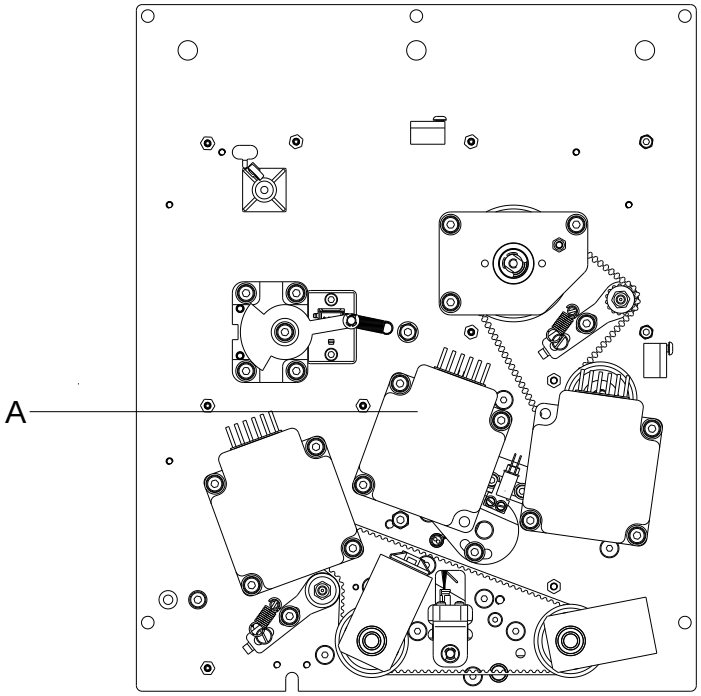


Figure 51

1. Unplug the control unit from the electrical outlet.
2. Disconnect all interface cables from the rear of the printing system.
3. Remove the cover of printing system and distributor board (see chapter 9.6, page 58).
4. Remove the motor additional plate (see chapter 9.7, page 59).
5. Remove the power electronics (see chapter 9.8, page 60).

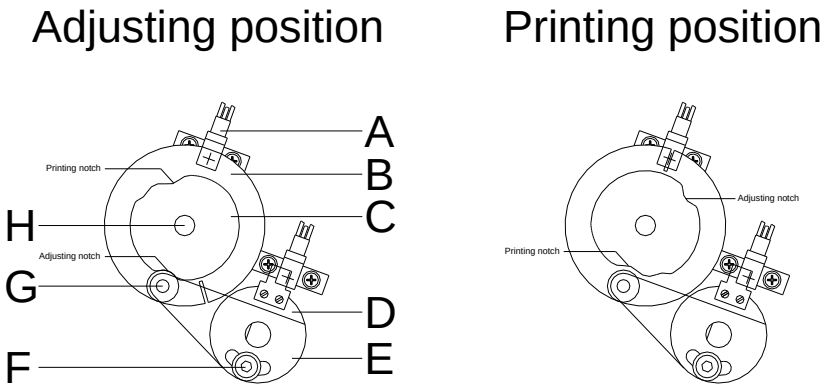


Figure 52

The sketch (see Figure 52) shows from behind the shaft of ribbon save motor (H) with pressure curve (C) and disc (B). The bearing ring (D) with the attached sole plate (E) is underneath.

6. Make sure that the printhead is closed.
7. Loosen the hex socket head screw (F) about one turn until the sole plate (E) with the attached ball bearing (G) is freely mobile.
8. Turn by hand the motor shaft with the pressure curve and disk in the adjusting position.
9. Press the sole plate (E) with the ball bearing (G) in the adjusting notch of the pressure curve. Take care of not to have too much play. Fasten the hex socket head screw (F).
10. Lift up the printhead.
11. Turn by hand the motor shaft with pressure curve and disc into the adjusting position.
12. Move down the printhead.
13. Turn by hand the motor shaft with the pressure curve and disk from the lift to the right until a slight resistance can be noticed. If the slot in the disk can be moved slightly to the right and to the left out of the photocell (A), then the pressure curve is adjusted correctly.
14. If the gap should not be in the range of the photocell, the following causes are possible:
    - The wrong notch on the pressure curve was used for the adjustment.
    - The pressure curve is twisted to the disc on the motor shaft. The slot of disc has to be placed exactly face to face with the printer position notch!
15. Install the power electronics (see chapter 9.6, page 58).
16. Install the motor additional plate (see chapter 9.7, page 59).
17. Install the distributor plate and the cover of printing system (see chapter 9.8, page 60).
18. Switch on the printing system.
19. Press the keys ▲ and ▼ to move the printhead down and up. If very thick label material is used it could occur that the printhead is not enough lifted up. In order to position the printhead correctly, repeat the adjusting steps again. However, keep the material during the adjustment between the printhead and the roller.

11.9 Supporting Bar (Ribbon Save)

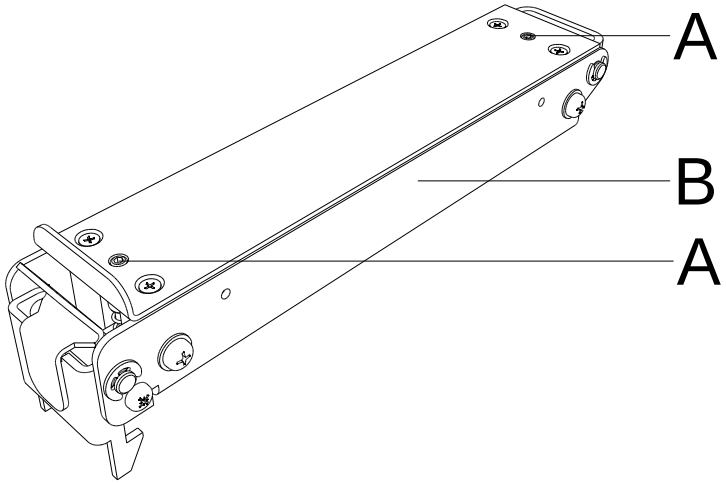


Figure 53

If the transfer ribbon save function is active and a paper jam occurs or if the print position onto the label is incorrect, this could be traced back to an inadequate adjustment of the supporting bar (B).

The supporting bar (B) in connection with the beneath positioned transport roller is responsible for the label feed (if printhead is lifted up). The pressure of the supporting bar should be the same as the value for the printhead. The factory setting corresponds to an average for standard labels. For very narrow, extremely smooth or thick labels a different setting is necessary.

Use the threaded pins (A) to change the pressure.

Pressure increase = screw threaded pins (A).

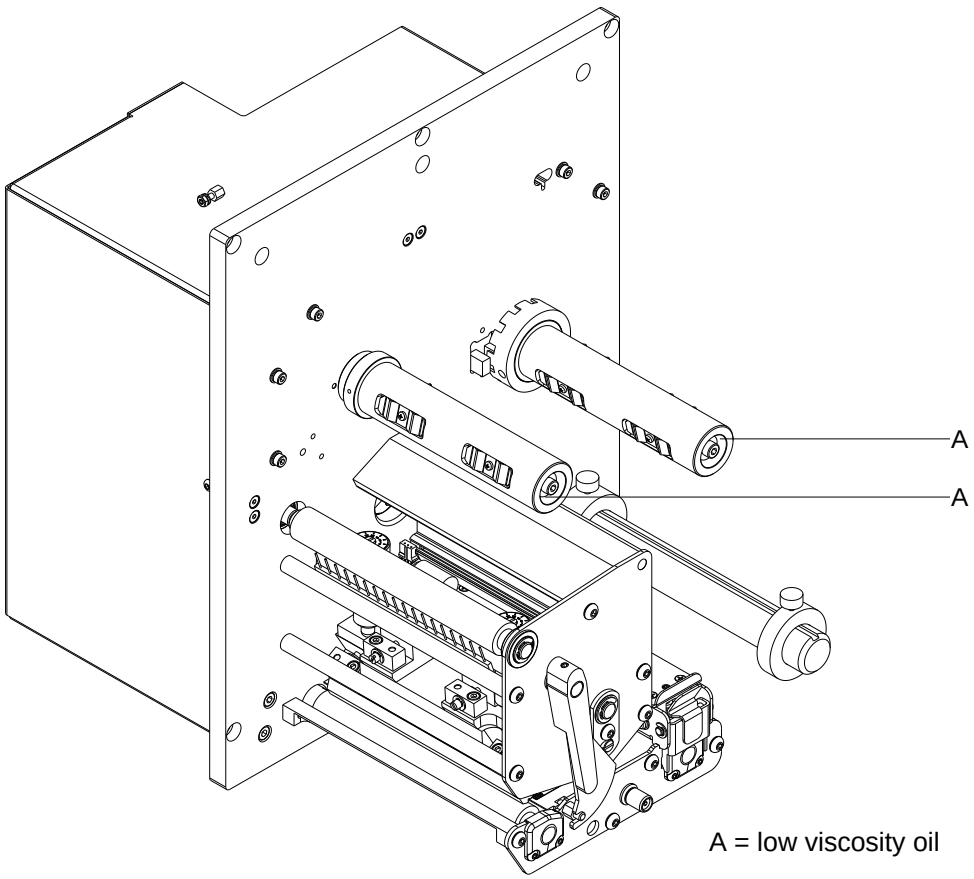
Pressure decrease = loosen threaded pins (A).

By means of test prints you can adjust the specific pressure you need for your application.

12 Oil and Lubricate

NOTICE!

Make sure when oiling and greasing that no lubricants deposit on photocells, electronic components, circuit boards, printhead and rolls.



A = low viscosity oil

B = grease

Figure 54

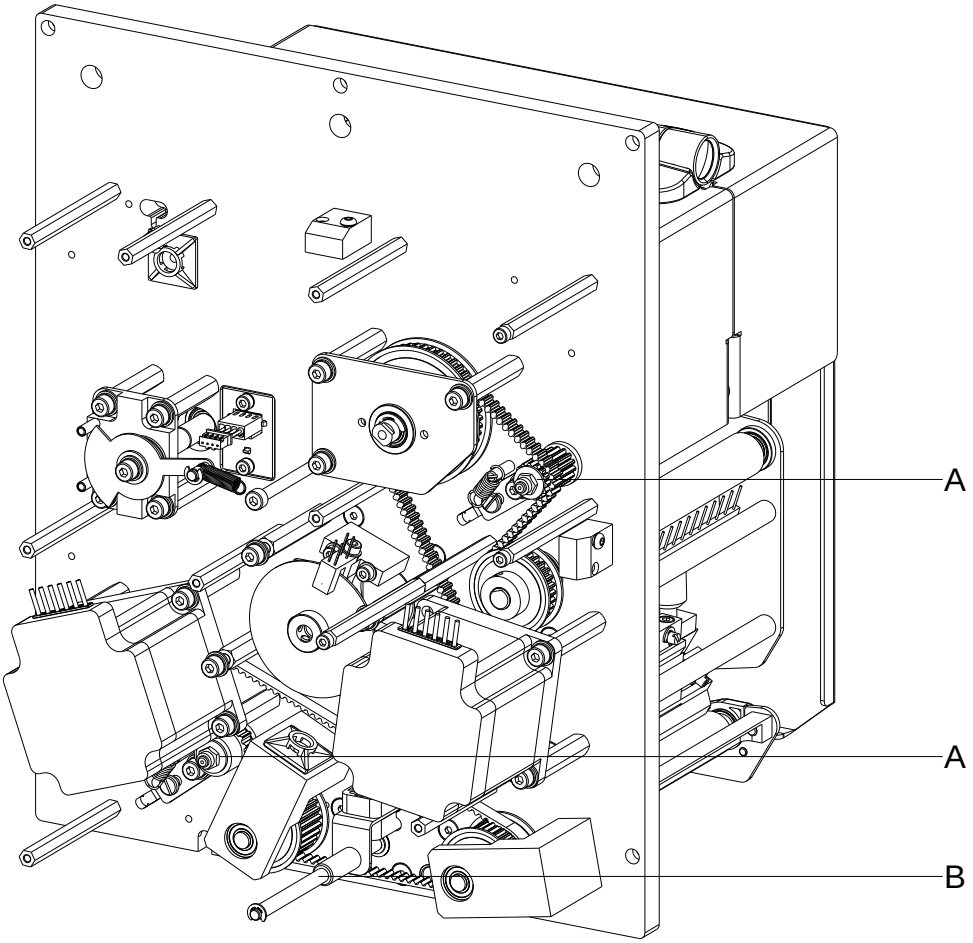


Figure 55

In case that dust or other dirt is deposit you have to clean the lubrication at first with alcohol.

Apply rather in regular intervals (once or twice a year) a bit of lubricant, as only rarely too much. Otherwise the surplus of lubricant could settle on neighbouring components and disturb the functions.

In case those components should have run it because of lack of lubricant, replace these as soon as possible so the functions of the components and the printer remain.

Install again all components which you have dismantled for the lubrication in the correct position.

Take care e.g. tensions of belt.

13 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 (front printhead). Defect at the transfer ribbon photocell (front photocell).	Change transfer ribbon. Check transfer ribbon photocell (service functions).
11 COM FRAMING	Stop bit error.	Check stop bits. Check baud rate. Check cable (printing system and PC).
12 COM PARITY	Parity error.	Check parity. Check baud rate. Check cable (printing system and PC).

Error message	Cause	Remedy
13 COM OVERRUN	Loss of data at serial interface (RS-232).	Check baud rate. Check cable (printing system and PC).
14 Field number	Received line number is invalid.	Check sent data. Check connection PC - printing system.
15 Length mask	Invalid length of received mask statement.	Check sent data. Check connection PC - printing system.
16 Unknown mask	Transferred mask statement is invalid.	Check sent data. Check connection PC - printing system.
17 Missing ETB	No end of data found.	Check sent data. Check connection PC - printing system.
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 - printing system.
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.

Error message	Cause	Remedy
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.
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.

Error message	Cause	Remedy
40 Length command	Invalid length of the received command statement.	Check data sent. Check connection PC - printing system.
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.
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.

Error message	Cause	Remedy
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 printing system 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/printing system. 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.	Replace printhead.
71 Invalid page	As page number either 0 or a number > 9 is selected.	Select a number between 1 and 9.

Error message	Cause	Remedy
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 printing system 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 printing systems' 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.

Error message	Cause	Remedy
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
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 (printing system – PC).
97 COM general	Serial interface error.	Check settings for serial data transmission as well as cable (printing system – PC).
98 No software printhead FPGA	No printhead-FPGA data available.	Please contact your responsible distributor.

Error message	Cause	Remedy
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.
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. Tad data do not match the Tag type in the printing system.	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.

Error message	Cause	Remedy
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 (rear printhead). Defect at the transfer ribbon photocell (rear 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.	Check label size and gap size. Check label photocell settings.

Error message	Cause	Remedy
123 Print asynchronous	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 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 printing system.
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 printing system type.	Use firmware that fits to the printing system type. Please contact your responsible distributor.
130 Language missing	Language file for the set 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.

Error message	Cause	Remedy
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)

14 Control Inputs and Control 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 printing 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 printing 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 circuit

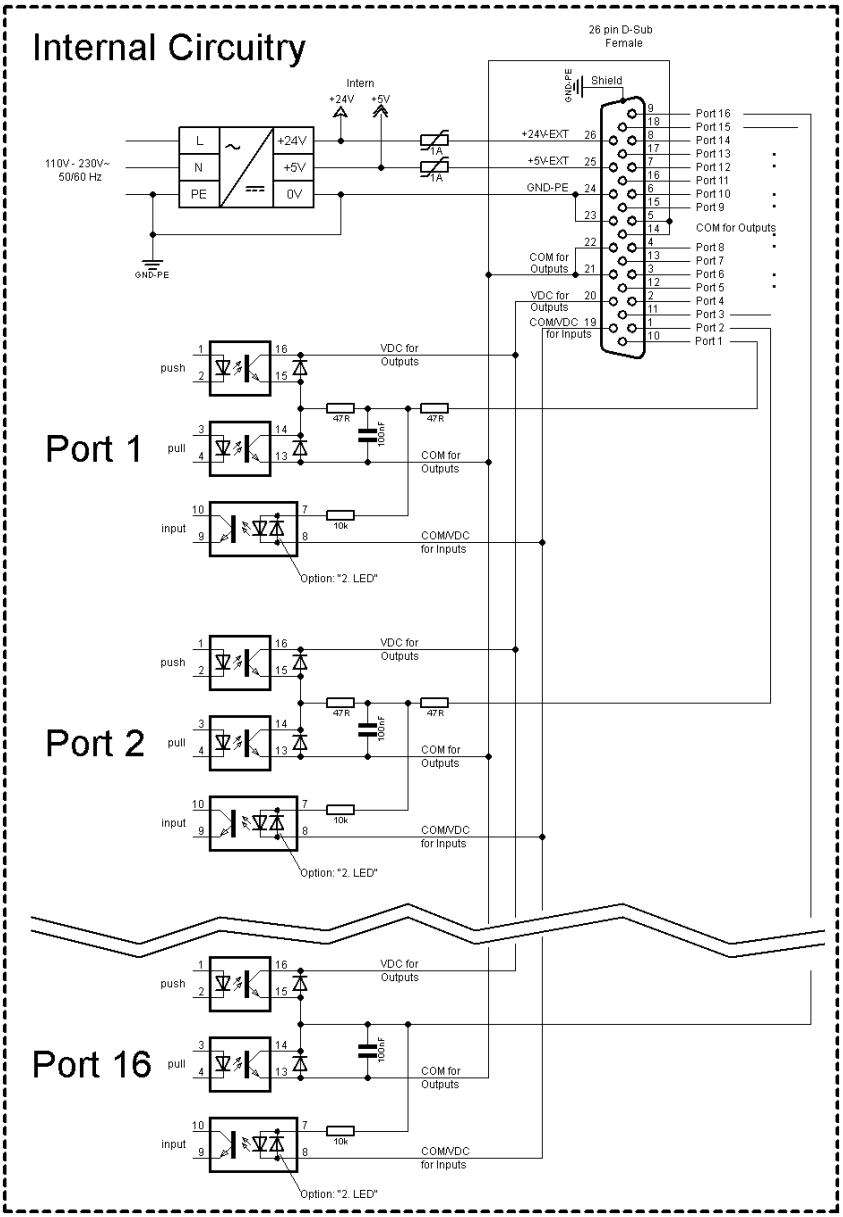


Figure 56

Configuration of D-Sub socket

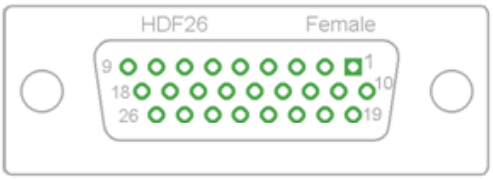


Figure 57

Cable identification

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 (Input)
Port 2	1	Reprint last printed label (Input)
Port 3	11	Counter Reset (Input)
Port 4	2	No assigned function
Port 5	12	Error reset (Input)
Port 6	3	Cancel all print jobs (Input)
Port 7	13	Label end sensor (Input)
Port 8	4	External release signal (Input)
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	No assigned function
Port 15	18	No assigned function
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 printing 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 printing system 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 printing system 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	No function
Port 12	7	Printing (Output)
Port 13	17	Ready (Output)
Port 14	8	No function
Port 15	18	No function
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 (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	No function
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	
Tension	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ)
Output	
Tension	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ || 47Ω)
Current max.	High +15 mA Low -15 mA
Port 16	
Input	
Tension	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
Output	
Tension	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
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.

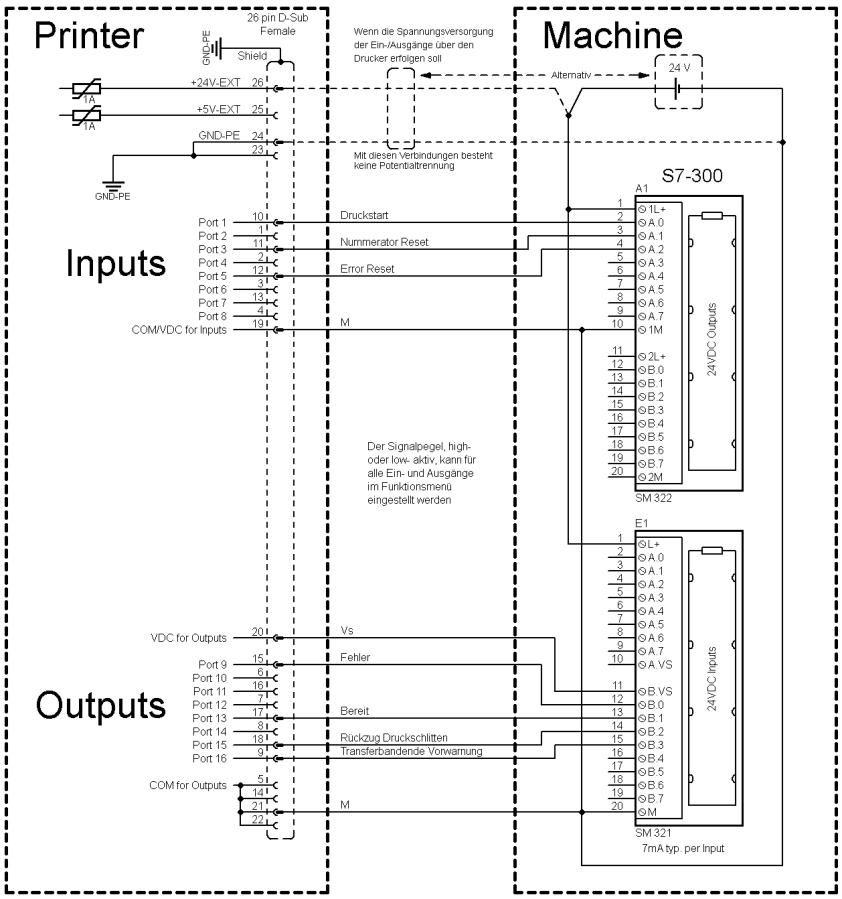


Figure 58

Example 2 Device connection to a operating panel.

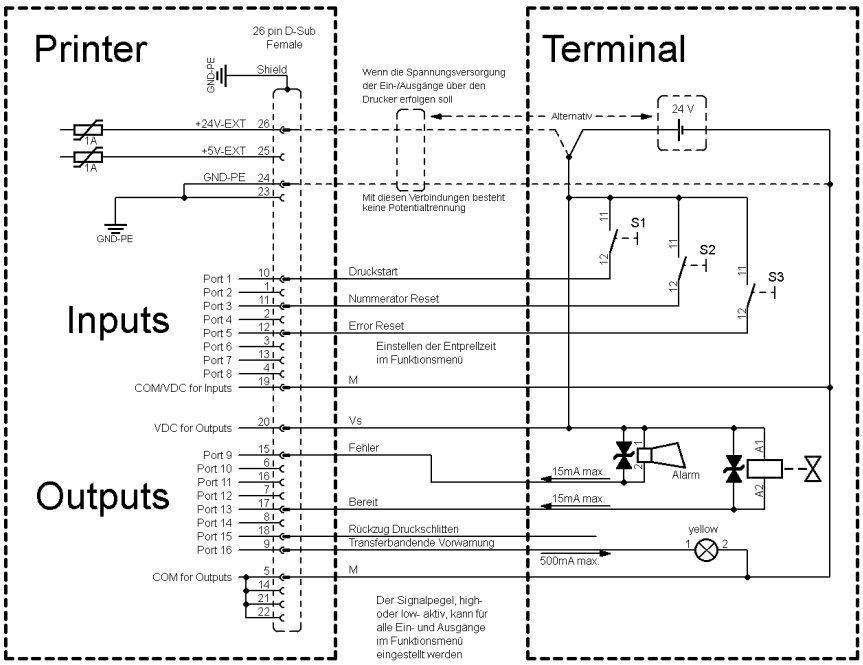


Figure 59

Example 3

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

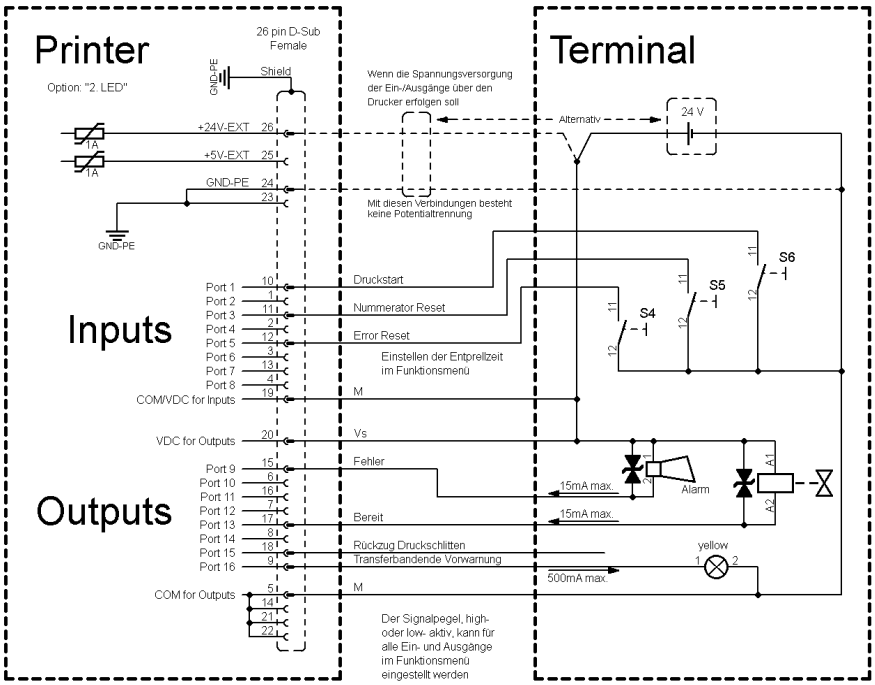


Figure 60

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.

15 Wiring Plans – Electronics

15.1 Panel Enclosure

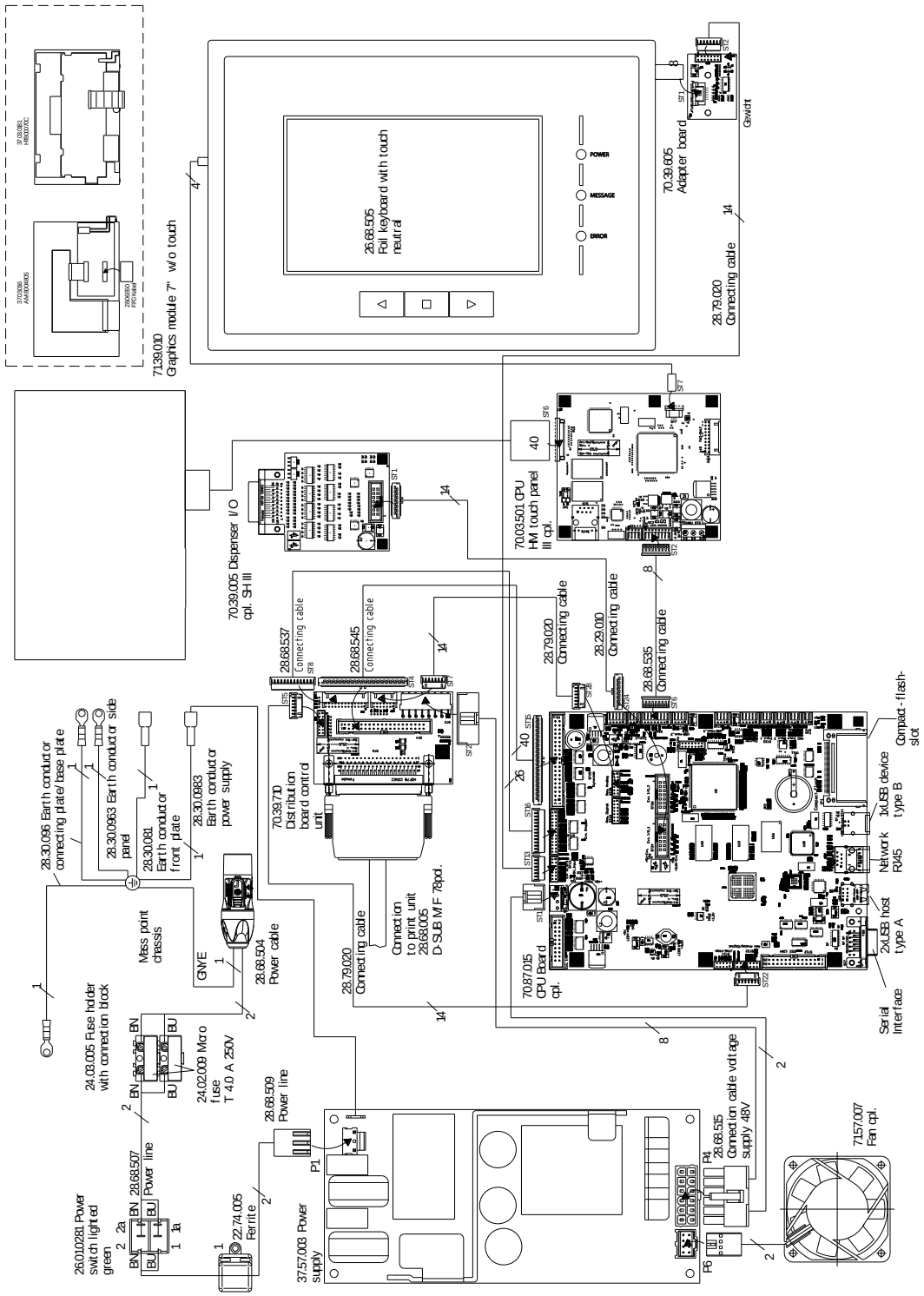


Figure 61

15.2 Desktop Enclosure

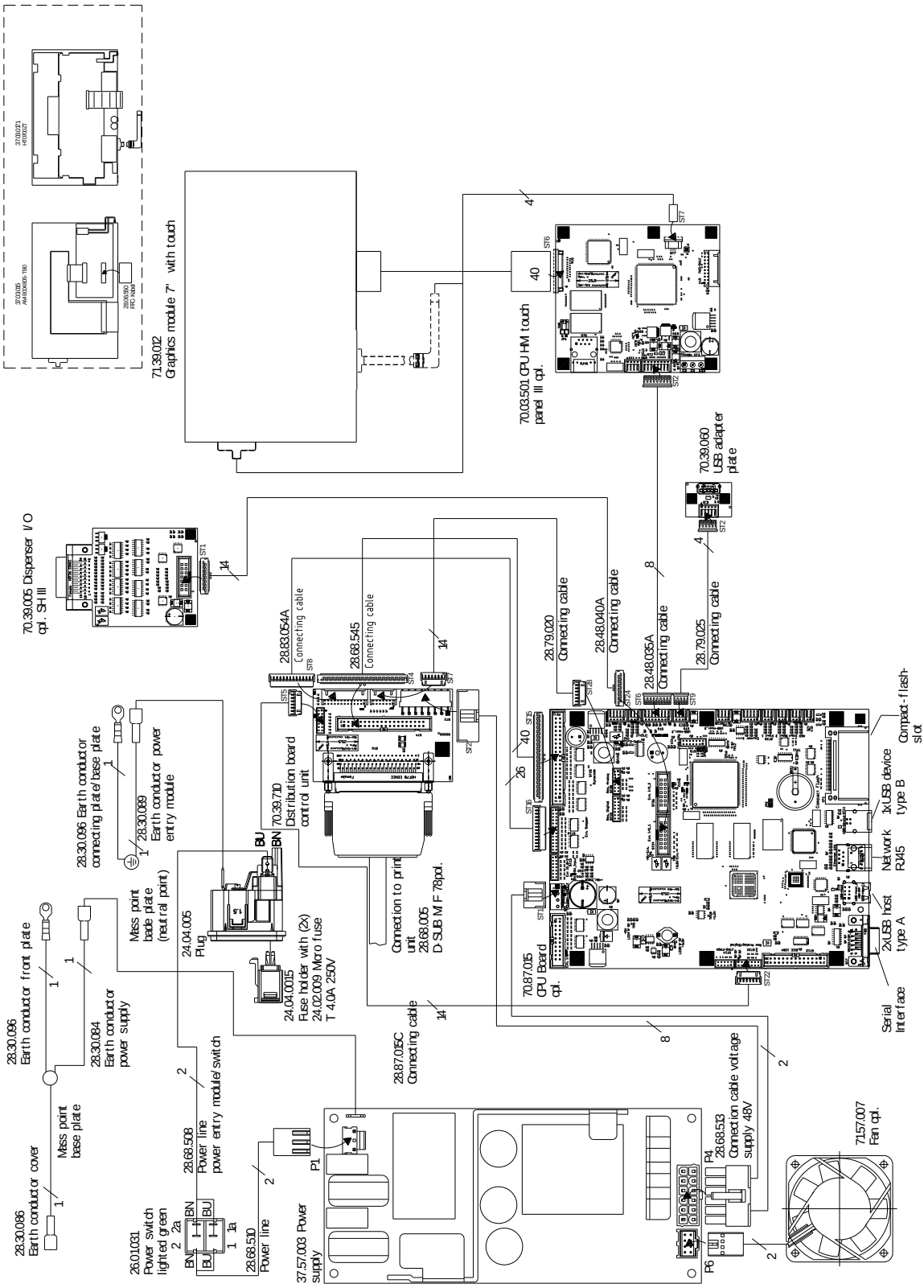
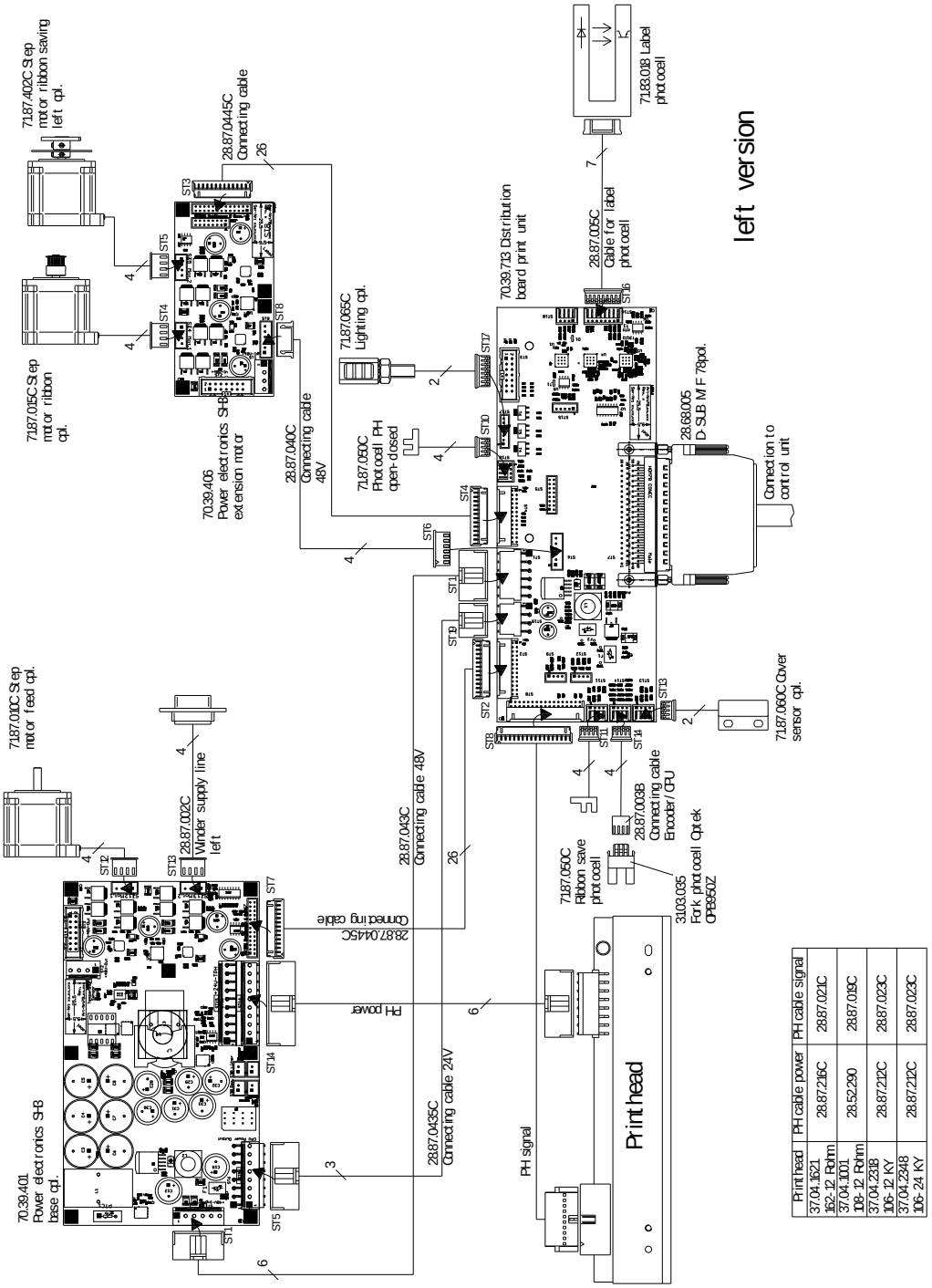


Figure 62

16 Wiring Plans – Mechanics

16.1 SPE II 106/12, 106/24, 108/12, 162/12

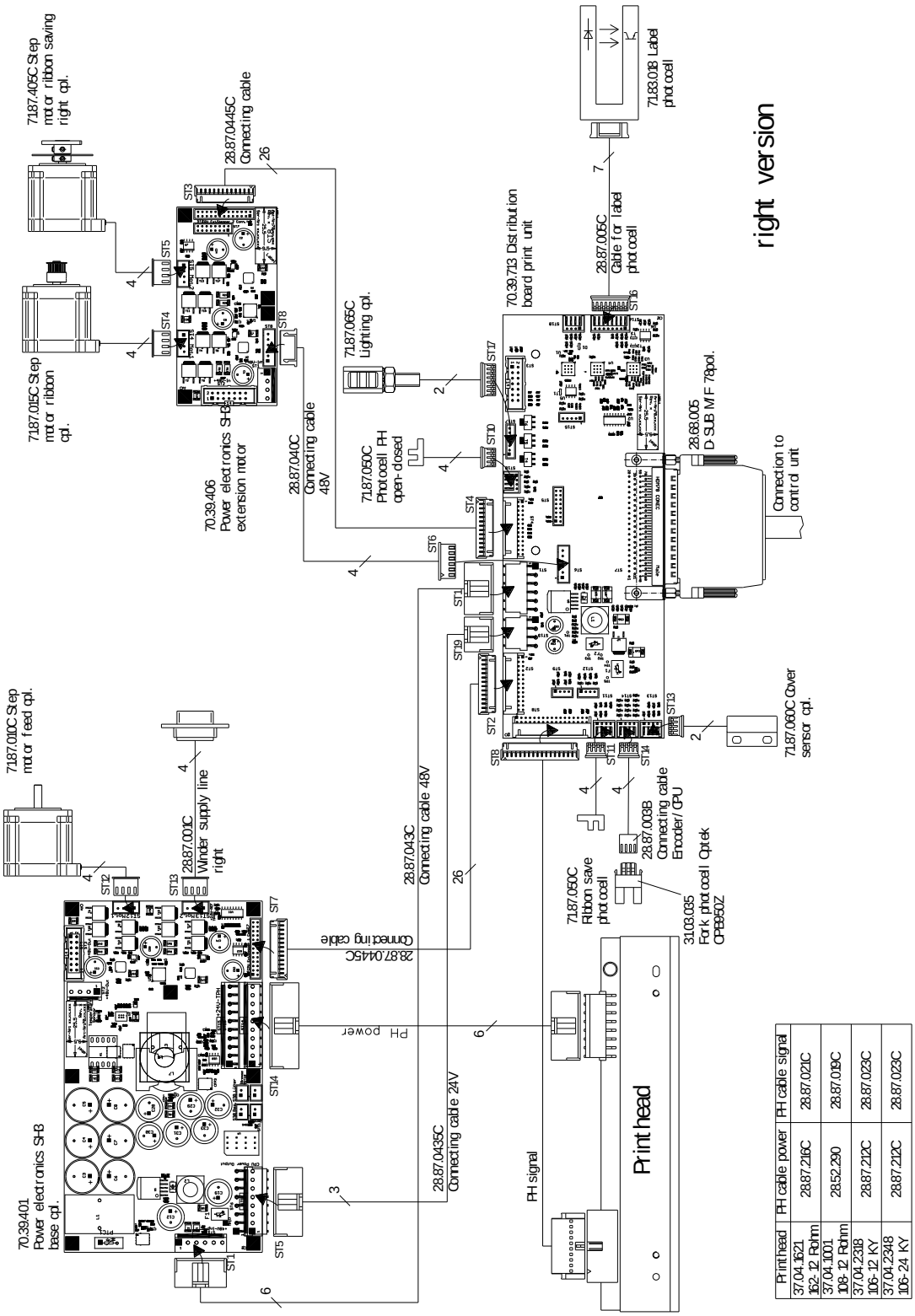
Left Version



Print head	PH cable power	PH cable signal
37.04.1621 162-12 Rohm	28.87.216C	28.87.021C
37.04.1001 108-12 Rohm	28.52.290	28.87.019C
37.04.2318 106-12 KY	28.87.212C	28.87.023C
37.04.2348 106-24 KY	28.87.212C	28.87.023C

Figure 63

Right version

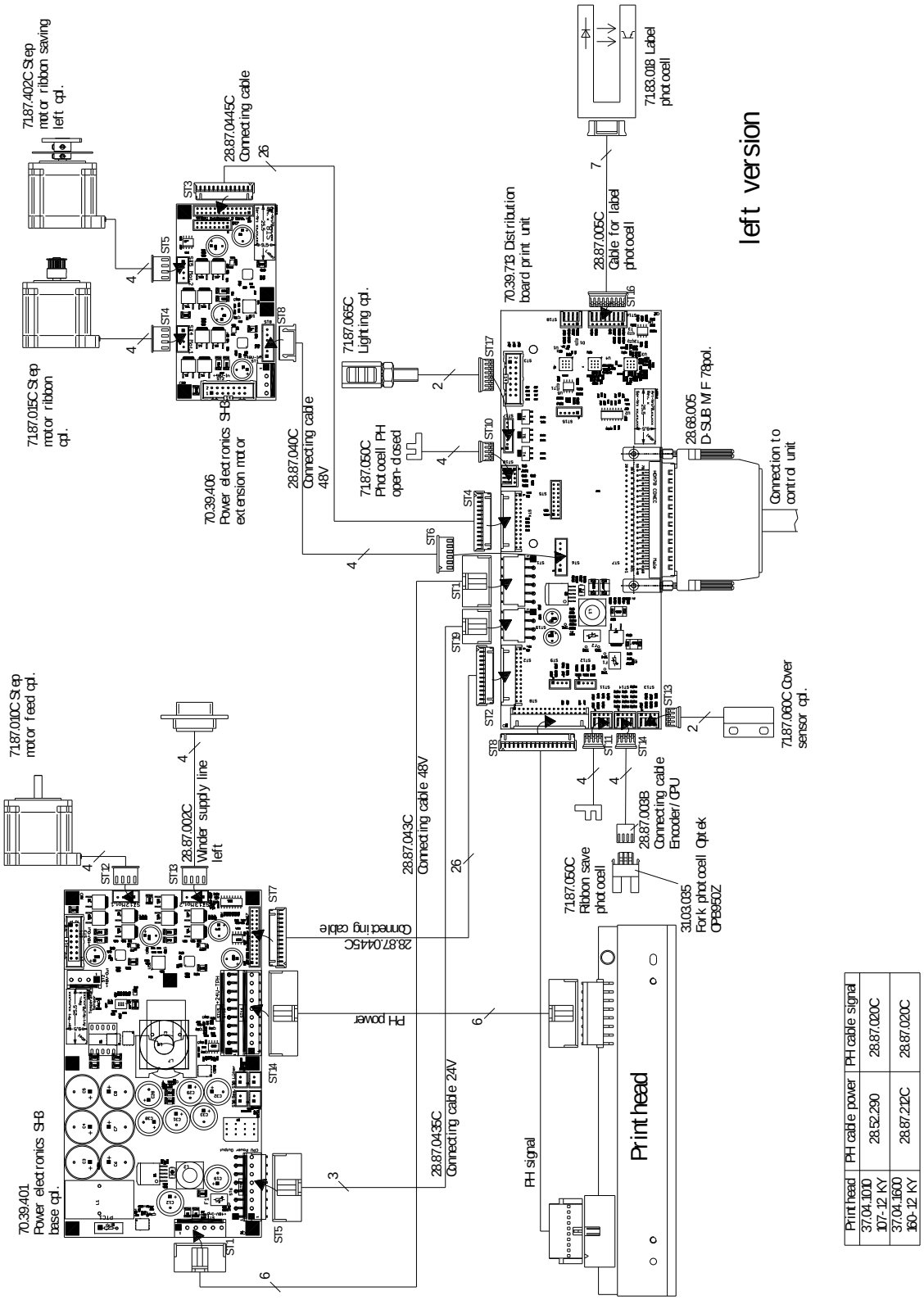


Printhead	PH cable power	PH cable signal
37.04.1621 162-12 Rohm	28.87.216C	28.87.021C
37.04.1001 108-12 Rohm	28.52.290	28.87.019C
37.04.2318 106-12 KY	28.87.212C	28.87.023C
37.04.2348 106-24 KY	28.87.212C	28.87.023C

Figure 64

16.2 SPE II 107/12, 160/12

Left version



Print head	PH cable power	PH cable signal
37.04.1000 107-12 KY	28.52.290	28.87.020C
37.04.1600 160-12 KY	28.87.212C	28.87.020C

Figure 65

Right version

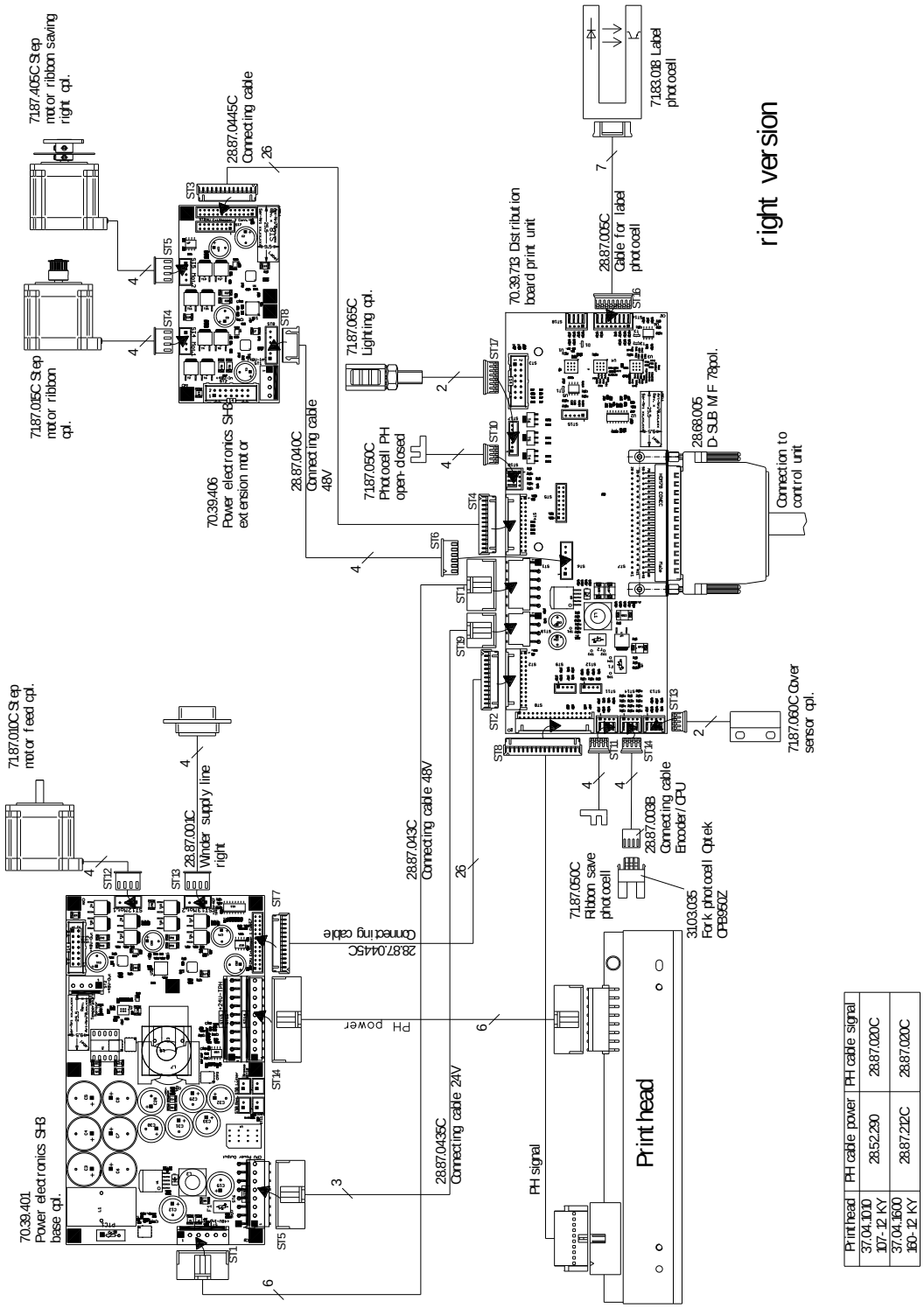


Figure 66

17 Layout Diagrams – Electronics

17.1 CPU

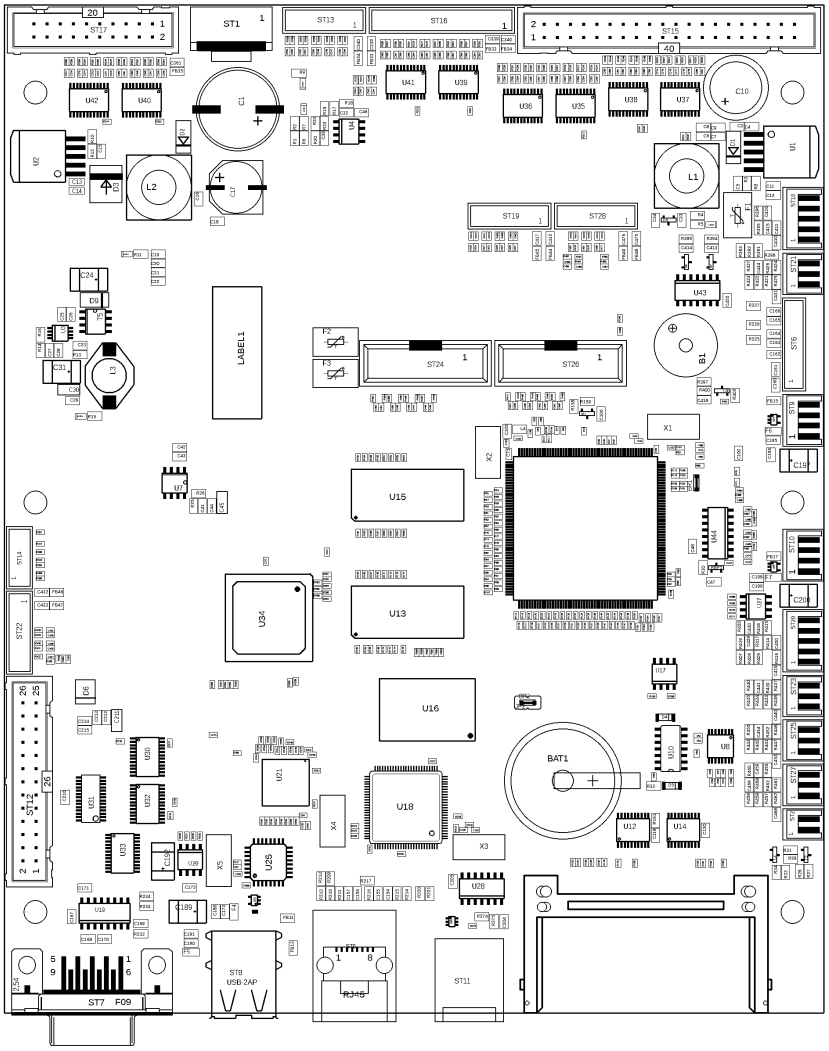


Figure 67

17.2 Input/Output Board

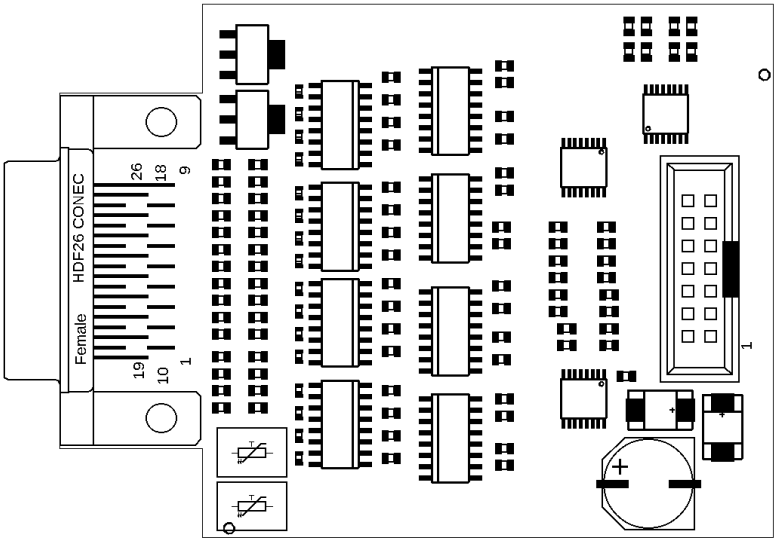


Figure 68

17.3 Distributor Board

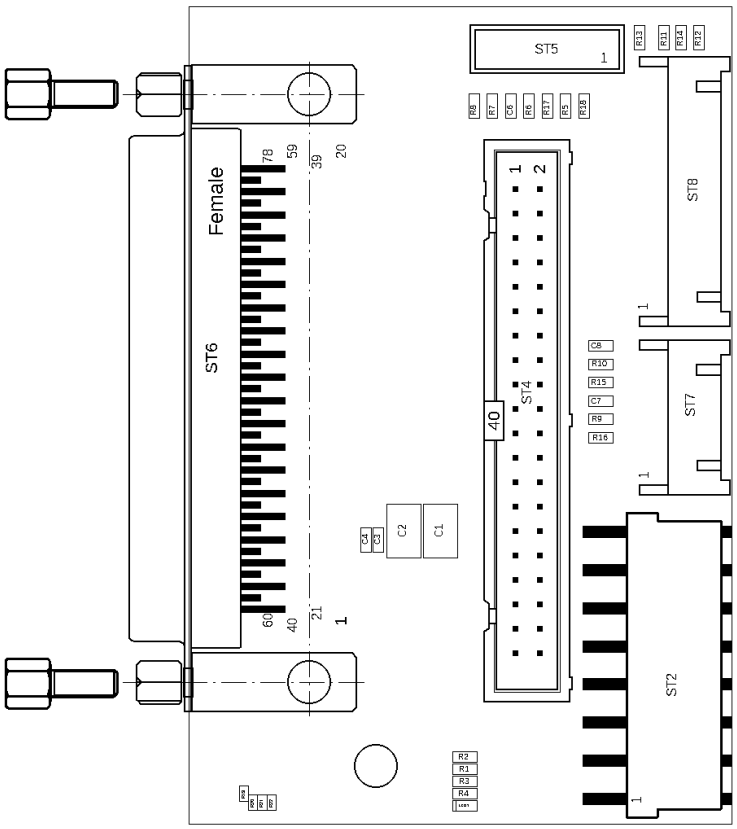


Figure 69

17.4 Power Electronics

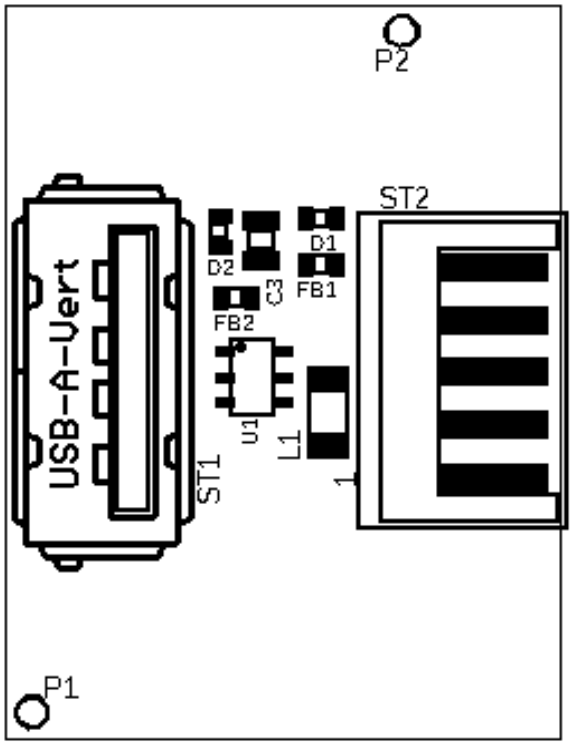


Figure 70

18 Layout Diagrams – Mechanics

18.1 Distributor Board

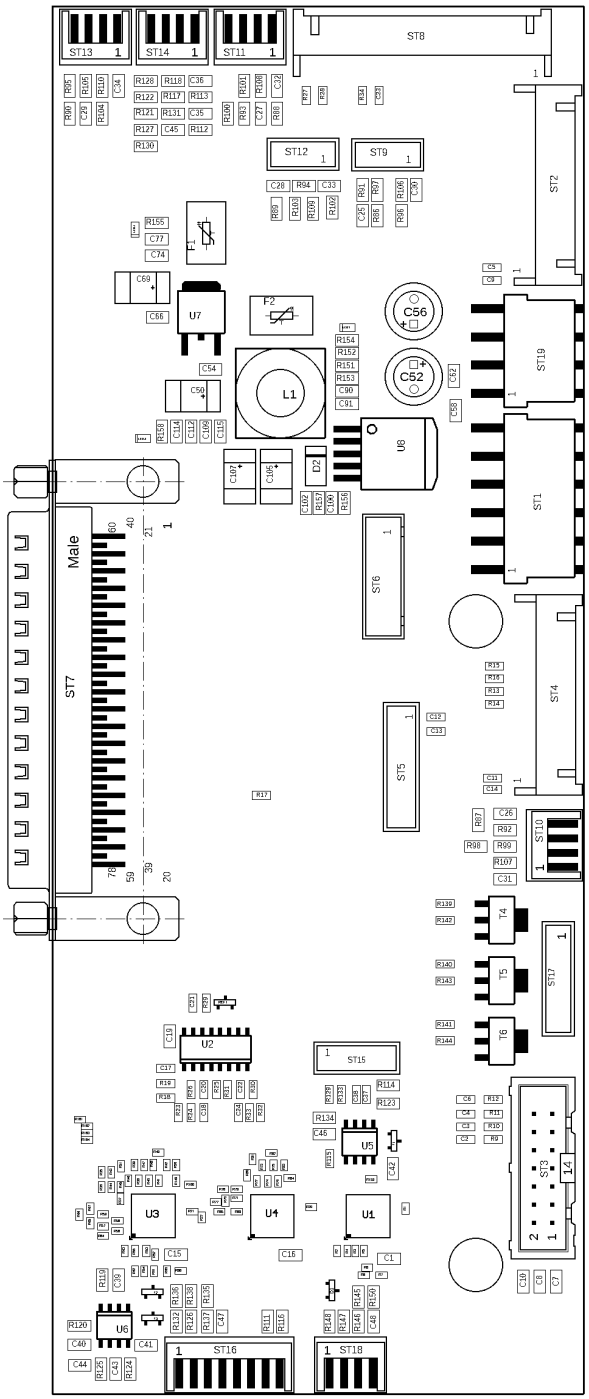


Figure 71

18.2 Power Electronics

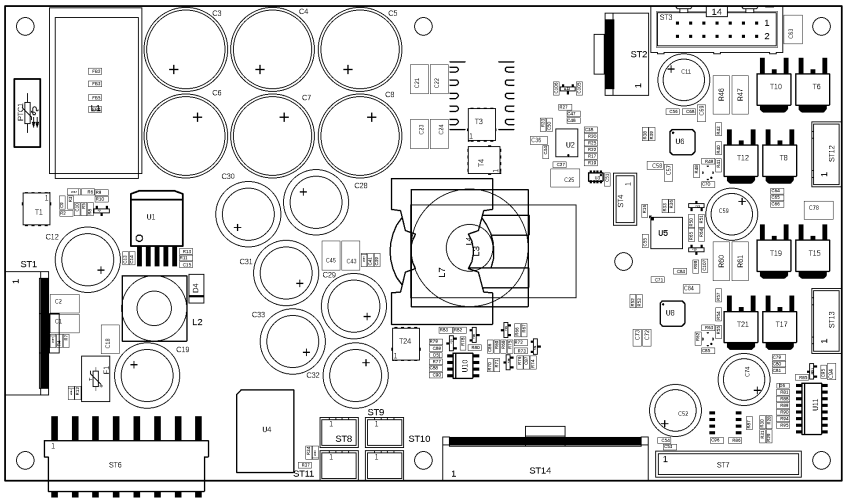
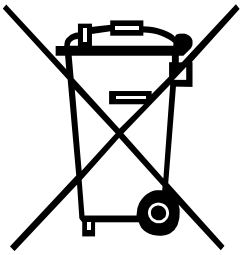


Figure 72

19 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.

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valentin
DRUCKSYSTEME

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