valentin DRUCKSYSTEME

DPM IV

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

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

Carl Valentin print modules comply with the following EU directives

- 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 (0)7720 9712-0
Fax +49 (0)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 direct print module.

Information about the operation of the direct print module can be taken from our operating manual.

If a problem arises that cannot be solved with help of this service instructions, 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.

⇒ Examine the self-locking effect of the dust cover and if necessary readjust at the clamp screw of the hinge.

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.

⇒ Operation without additional protective measures can lead to dangerous injuries.

⇒ 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 direct print module is designed for power supply systems of 110 V AC … 240 V AC. Connect the direct print module only to electrical outlets with a ground contact.

NOTICE!

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

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

Couple the direct print module to devices using extra low voltage only.

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

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

Do not operate the direct print module in explosive atmosphere and not in proximity of high voltage power lines.

Operate the direct print module 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 (e.g. print carriage).

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 direct print module can endanger operational safety.

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

DANGER!

Danger to life and limb from power supply!

⇒ Do not open the casing.

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 device from the electrical outlet before performing the following work:

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

⇒ Ensure that the device is de-energized.

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

Additional precautions to be heeded for devices with exposed energized parts

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

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

Tools

⇒ Do not use worn or damaged tools.

⇒ Use only tools and testing equipment that is suitable for the respective task.

What to do in case an accident occurs

⇒ Proceed in a very cautions and calm manner.

⇒ Avoid endangering yourself.

⇒ Switch the power off.

⇒ Request medical help (emergency physician).

⇒ Call for first aid if necessary.

3 Retrofit with Options

3.1 Brake

CAUTION!

Risk of injury due to short circuit.

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

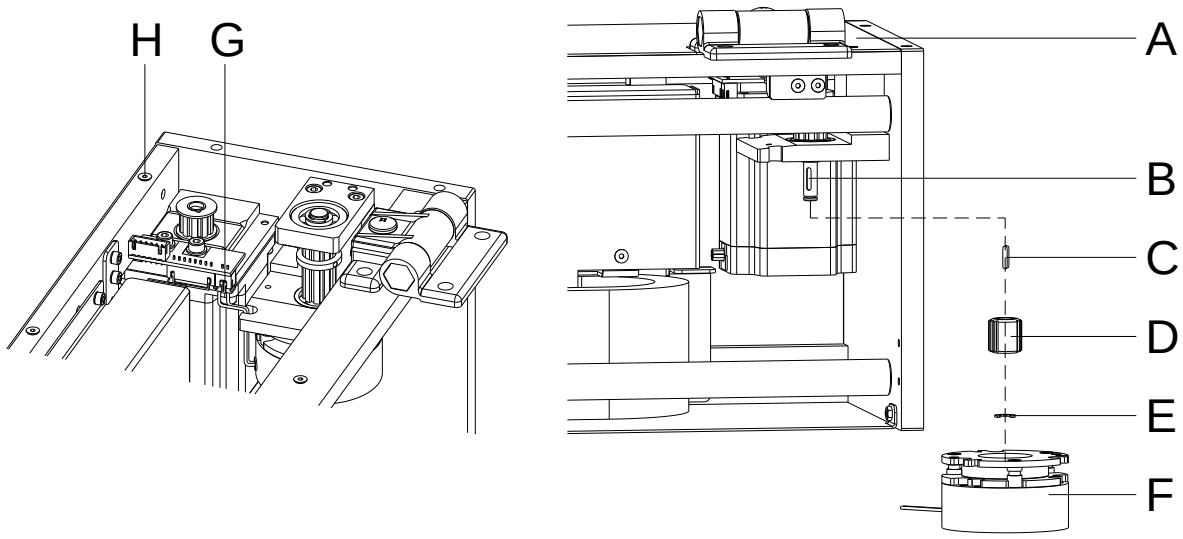


Figure 1

1. Unscrew the six countersunk screws (H) and remove the top cover (A).
2. Open the dust cover or remove it by unscrewing the four screws at the hinges.
3. Insert the feather key (C) into the corresponding slot (B) at the shaft.
4. Insert the hub (D) onto the shaft and fix it with the shaft protection (E).
5. Remove the transport safety (rubber) from the brake (F).
6. Push the brake (F) over the hub and fasten it with the integrated screws at the brake support, so that the cable outlet of the connecting line is at the front motor side.
7. Insert the connecting line into the bush bearing (G) of the distribution plate from underneath.
8. Close the dust cover and the top cover (A) and fasten it with the six countersunk screws (H).

3.2 Counter-Pressure Plate (Valentin)

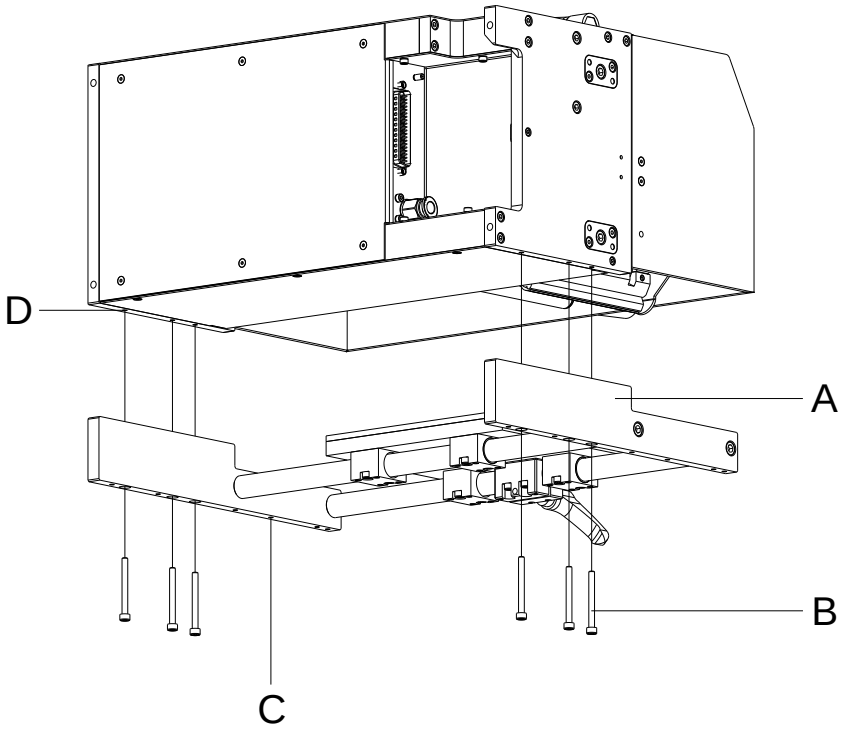


Figure 2

1. For the attachment of the optional Valentin counter-pressure plate (A), appropriate threaded holes are designated at the bottom of the print mechanics (D).
   The suitable screws (B) are included with delivery of this option.
2. The suitable distance between the printhead and the counter-pressure plate is already preset.
3. On the bottom face of the carrier of counter-pressure plate (A) are threaded holes M4 (C), which can be used for mounting the unit onto a plate or similar.

3.3 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 DPM IV.

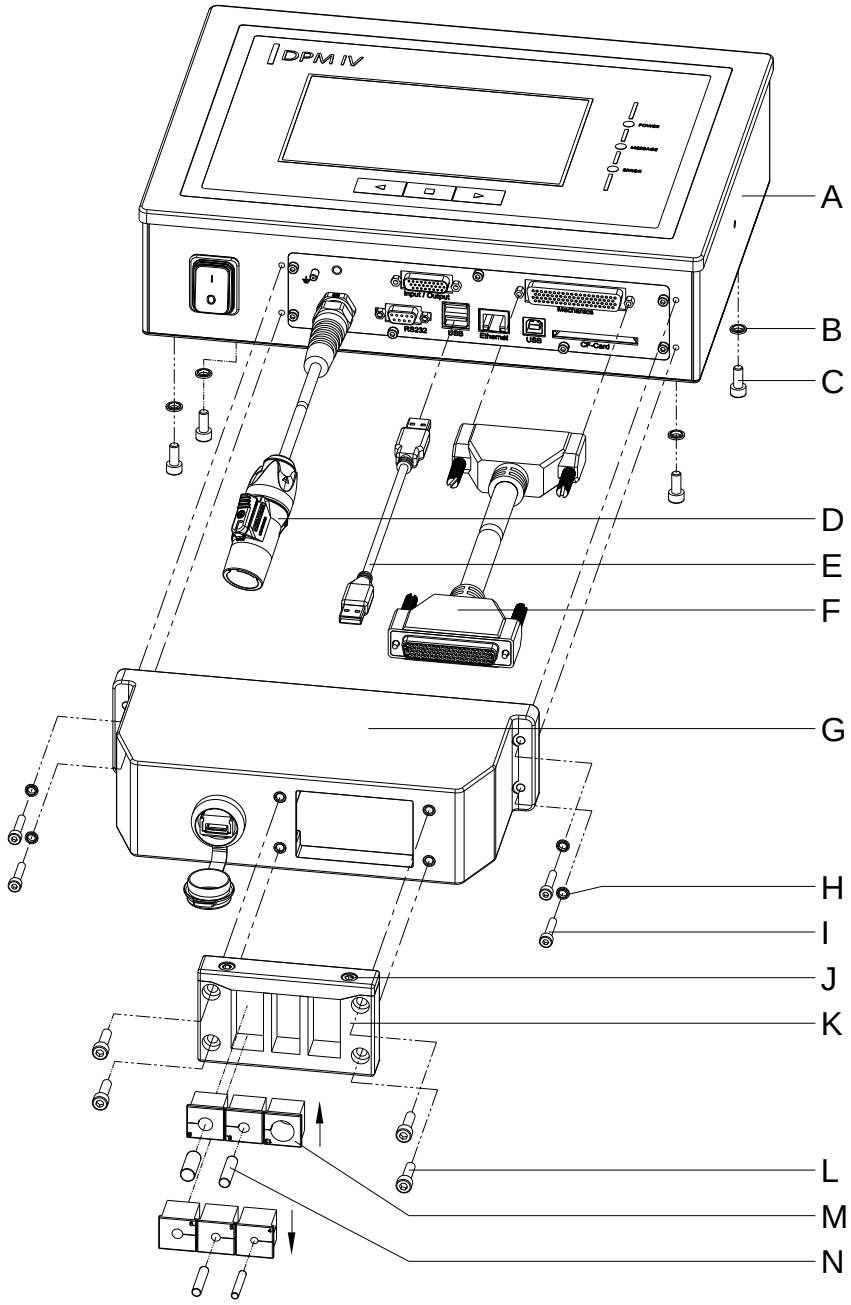


Figure 3

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 the 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 Figure 4).

    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.

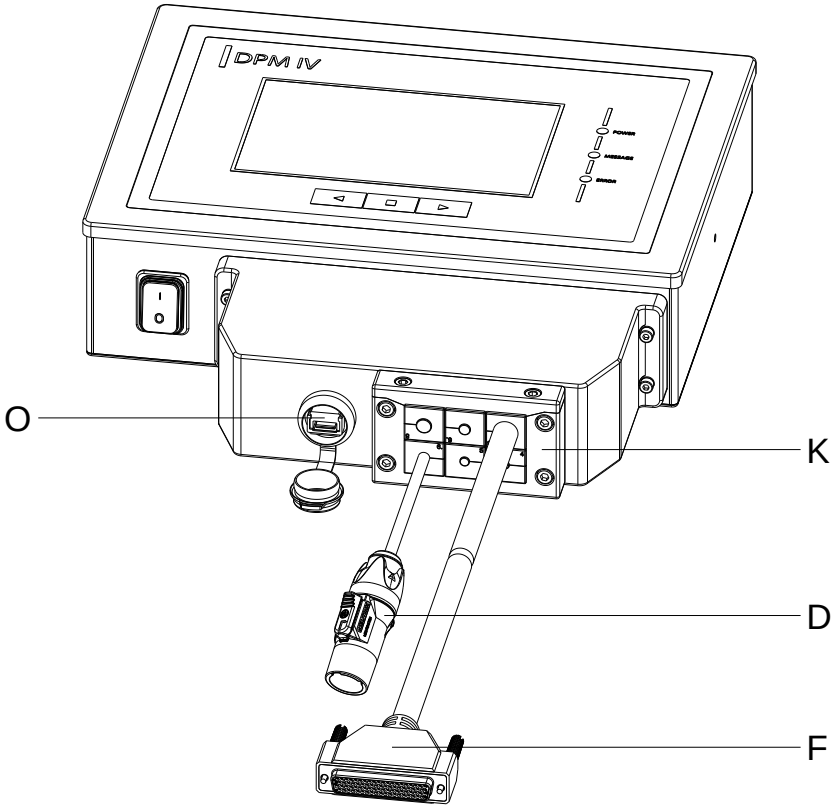


Figure 4

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).

4 Electronics – Panel Enclosure (Replace 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.

4.1 Primary Fuses

NOTICE!

The primary fuses are not accessible from the outside.

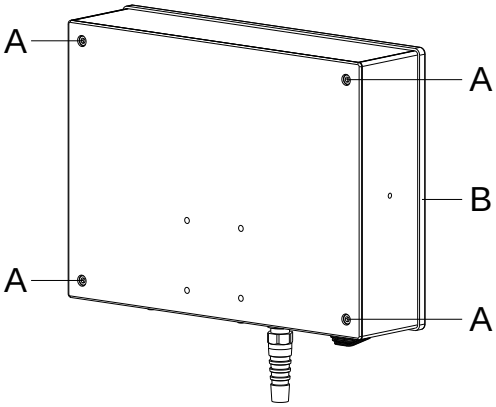


Figure 5

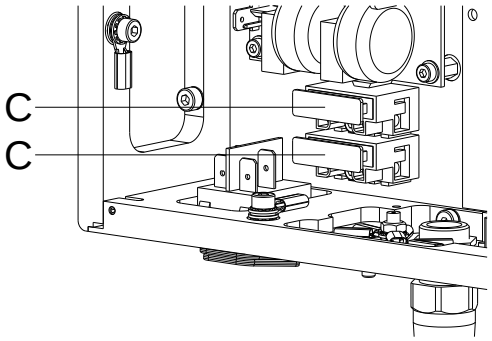


Figure 6

Removing the primary fuses

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (A).
3. Vertically remove the front plate (B). Disconnect disturbing connection cables from the connectors.
4. Pull 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 engages.
3. Reinstall the front plate (B). Plug the connection cables in.

4.2 Input/Output Board

NOTICE!

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

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.

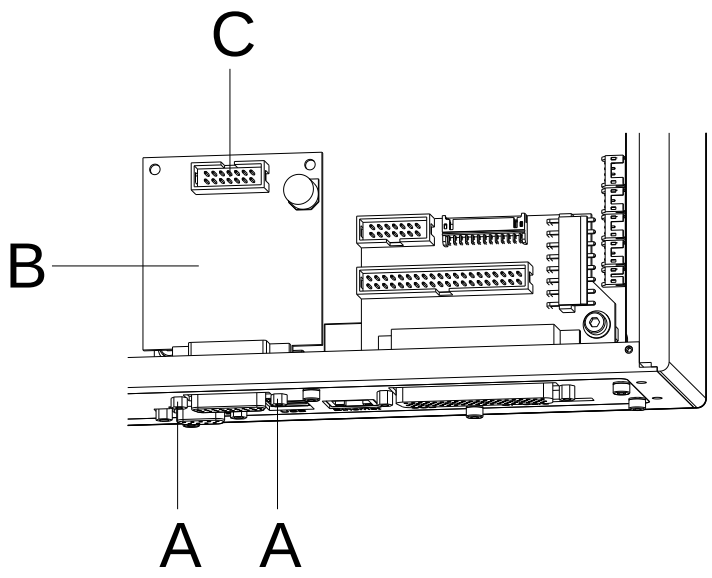


Figure 7

Removing the input/output board

1. Unplug the control unit from electrical outlet.
2. Unscrew the four screws on the rear and remove the front plate (see chapter 4.1, page 17).
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. Reinstall the front plate.
4. Connect the power supply cable.

4.3 Distributor Board

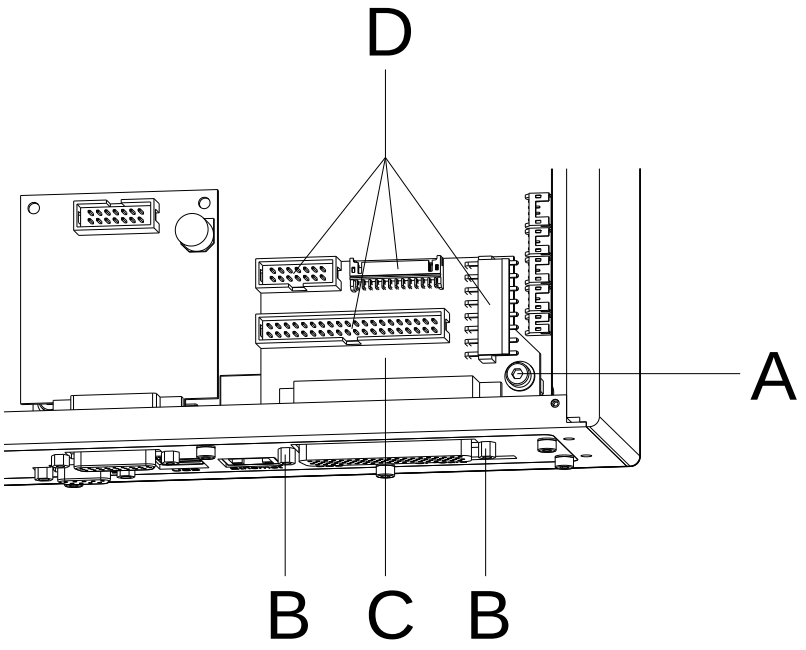


Figure 8

Removing the distributor board

1. Remove the control unit from the electrical outlet.
2. Unscrew the four screws on the rear and remove the front plate (see chapter 4.1, page 17).
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 the screw (A).
3. Connect all plug-in connectors (D) with the new distributor board (C).
4. Reinstall the front plate.
5. Connect the power supply cable.

4.4 CPU PCB

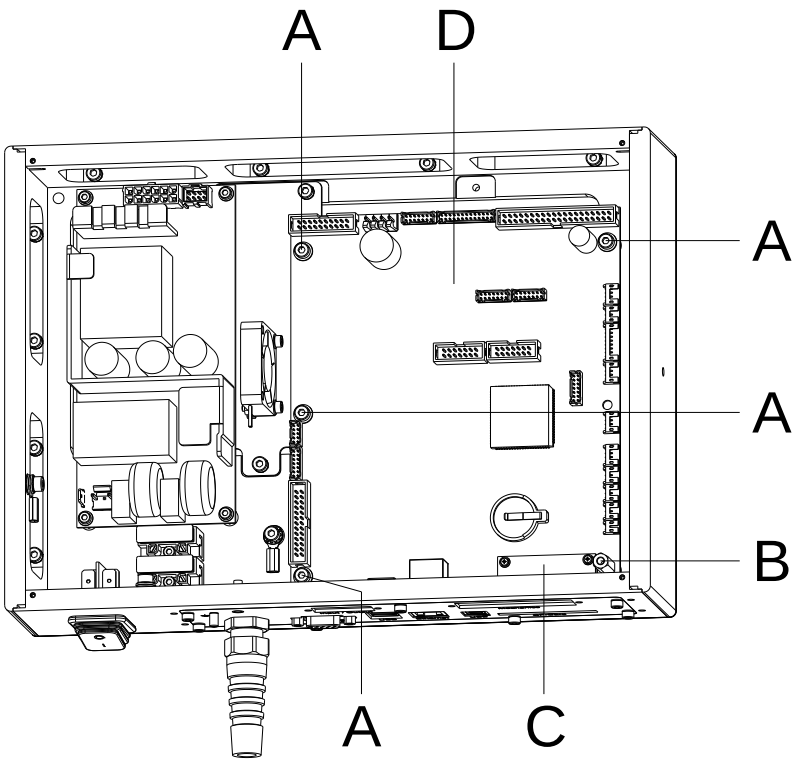


Figure 9

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 on the rear and remove the front plate (see chapter 4.1, page 17).
3. Remove the distributor plate (see chapter 4.3, page 19).
4. Remove the I/O board (see chapter 4.2, page 18).
5. Disconnect all plug-in connectors from the CPU PCB (D).
6. Unscrew the screw (A).
7. Remove the six hexagonal 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 PCB (D) with the screws (A) and the hexagonal bolts (B).
4. Connect all plug-in connectors to the PCB.
5. Reinstall the I/O board (see chapter 4.2, page 18).
6. Reinstall the distributor plate (see chapter 4.3, page 19).
7. Reinstall the front plate.
8. Restore all interface connections.
9. Connect 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.

4.5 Battery

DANGER!

Danger of explosion due to improper replacement of the battery!

⇒ Use non-conductive tools.

⇒ Pay attention to polarity.

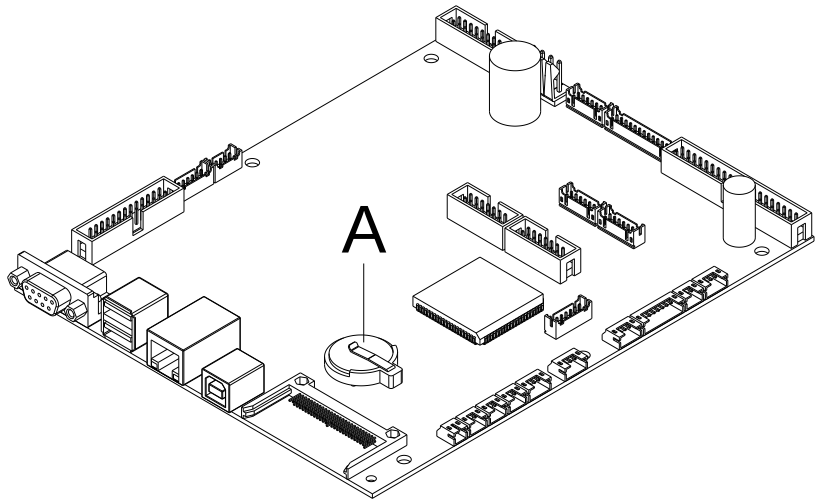


Figure 10

Removing the battery

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws on the rear and remove the front plate (see chapter 4.1, page 17).
3. Remove the distributor plate (see chapter 4.3, page 19).
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. Reinstall the distributor plate (see chapter 4.3, page 19).
3. Reinstall the front plate.
4. Connect the power supply cable.

4.6 Power Supply Unit

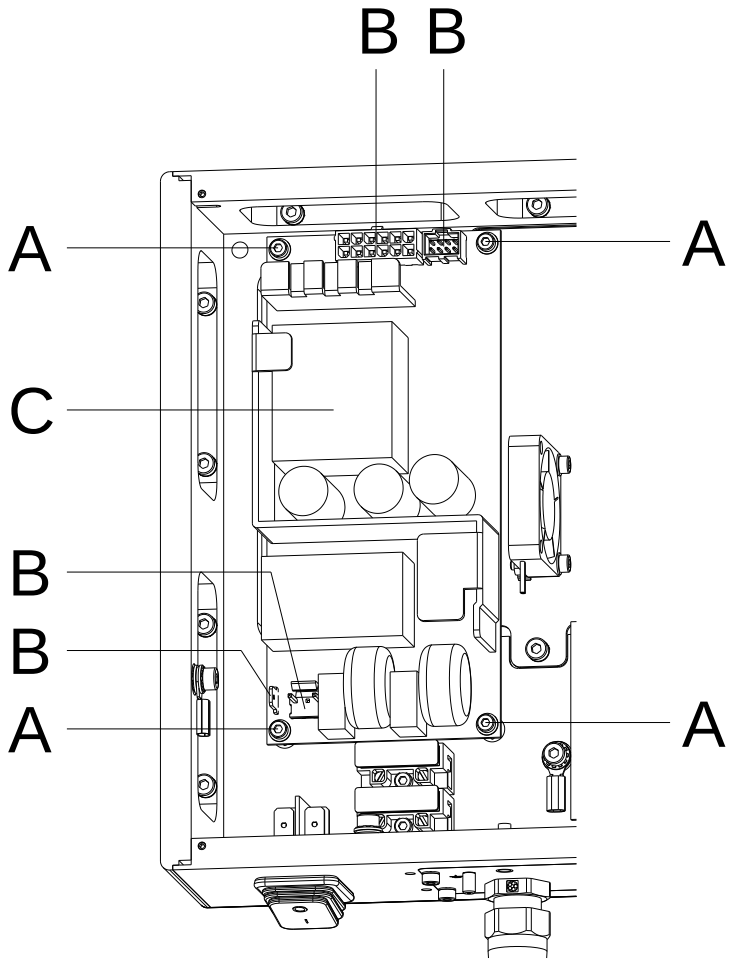


Figure 11

Removing the power supply unit

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws on the rear and remove the front panel (see chapter 4.1, page 17).
3. Remove the plug-in connectors (B) from the power supply unit (C).
4. Unscrew the retaining screws (A9) of the power supply unit. Hold the power supply unit while unscrewing the retaining screws.
5. Remove the power supply unit.

Installing the power supply unit

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. Reinstall the front plate.
4. Connect the power supply cable.

4.7 HMI Components

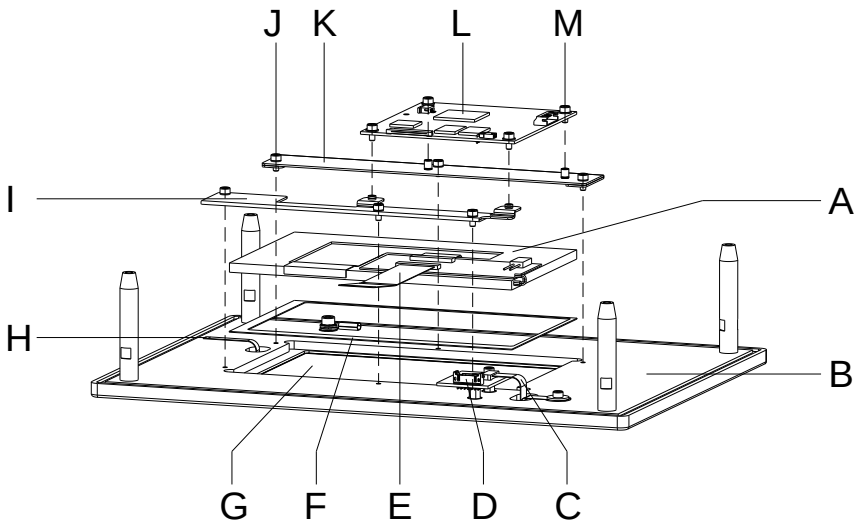


Figure 12

Removing HMI components

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws on the rear and remove the front plate (B) (see chapter 4.1, page 17). 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. Connect the power supply cable.

5 Electronics – Desktop Enclosure (Replace 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.

5.1 Primary Fuses

NOTICE!

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

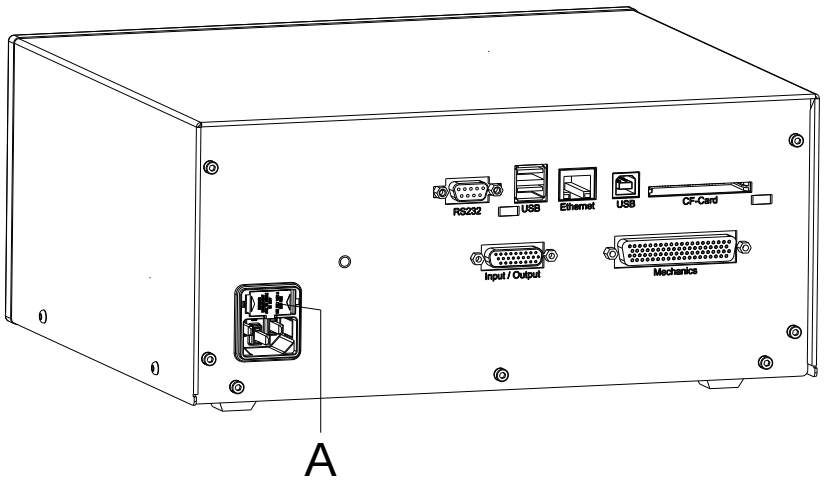


Figure 13

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. Restore the power supply.

5.2 Input/Output Board

NOTICE!

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

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.

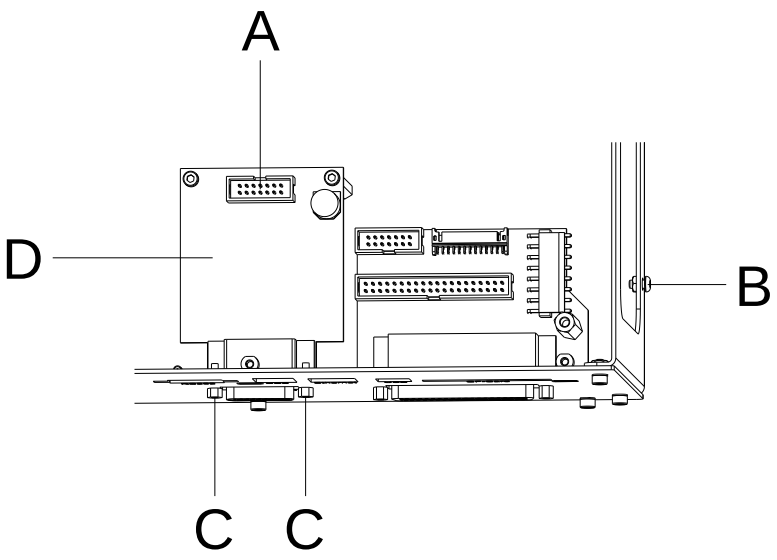


Figure 14

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 5.4, page 30).
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 PCB (see chapter 5.4, page 30).
4. Install the control unit cover.
5. Connect the power supply cable.

5.3 Distributor Board

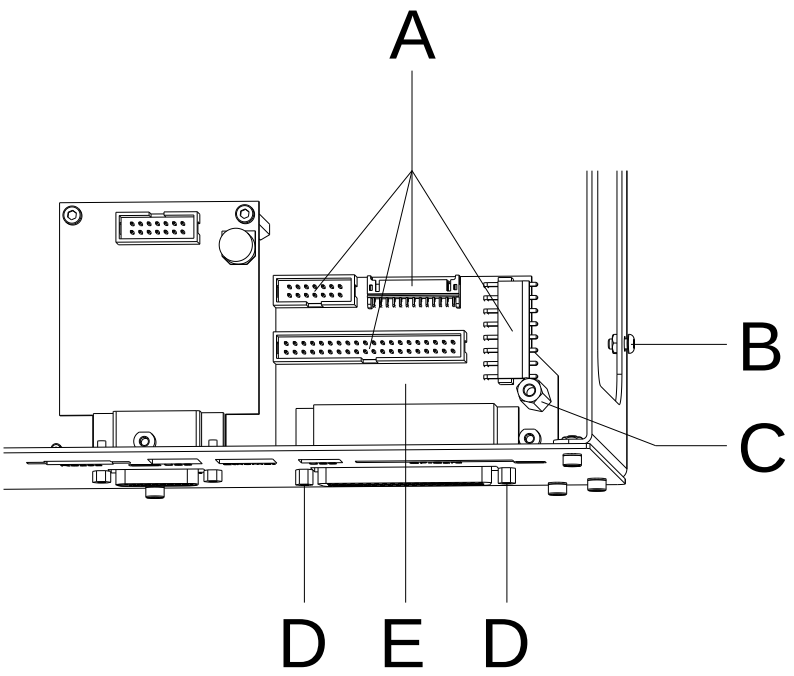


Figure 15

Removing the distributor board

1. Remove 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 5.4, page 30).
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 5.4, page 30).
6. Install the control unit cover.
7. Connect the power supply cable.

5.4 CPU PCB

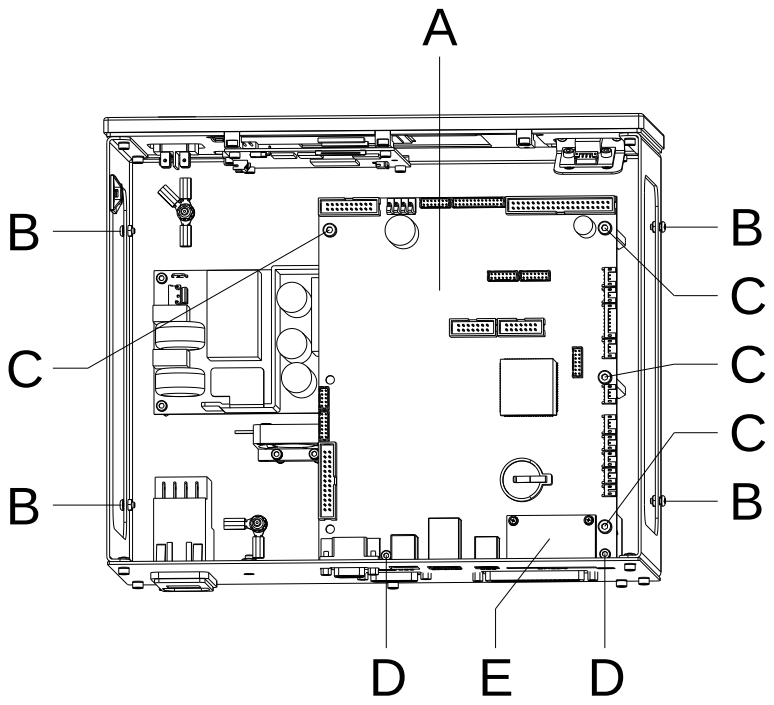


Figure 16

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. Connect 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.

5.5 Battery

DANGER!

Danger of explosion due to improper replacement of the battery!

⇒ Use non-conductive tools.

⇒ Pay attention to polarity.

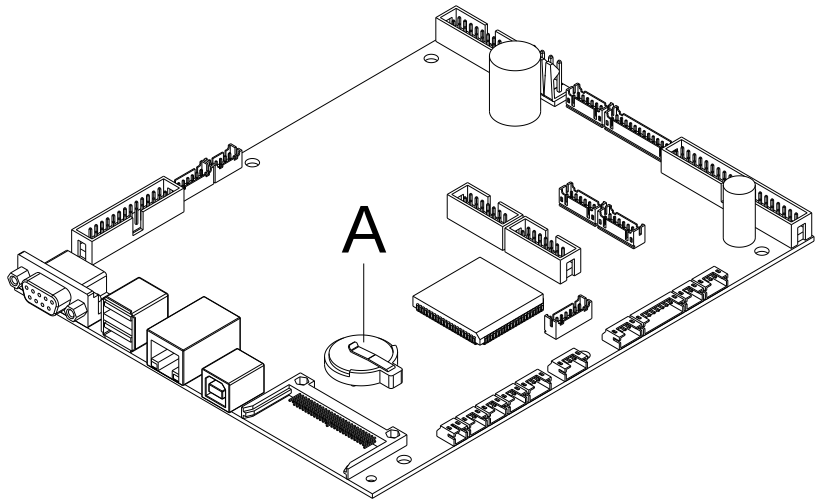


Figure 17

Removing the battery

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (B, Figure 16) 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. Connect the power supply cable.

5.6 Power Supply Unit

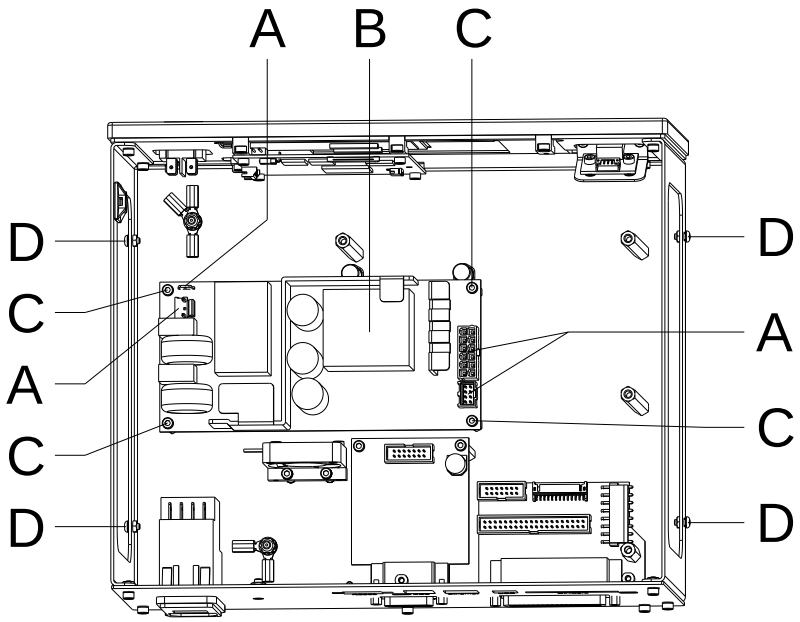


Figure 18

Removing the power supply unit

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 5.4, page 30).
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 unit

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 5.4, page 30).
4. Install the control unit cover.
5. Connect the power supply cable.

5.7 HMI Components

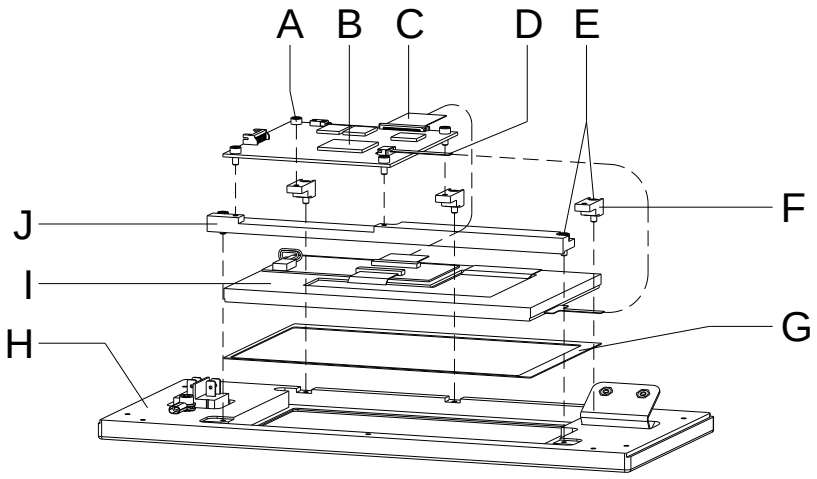


Figure 19

Removing HMI components

1. Unplug the control unit from the electrical outlet.
2. Unscrew the four screws (D, Figure 18) and remove the control unit cover.
3. Remove the CPU PCB (see chapter 5.4, page 30).
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 5.4, page 30).
8. Install the control unit cover.
9. Connect the power supply cable.

6 Mechanics (Replace Components)

6.1 Printhead

CAUTION!

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

⇒ Set up the direct print module on a grounded, conductive surface.

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

⇒ Do not touch the contacts on the plug connections.

⇒ Do not touch the printing line with hard objects or your hands.

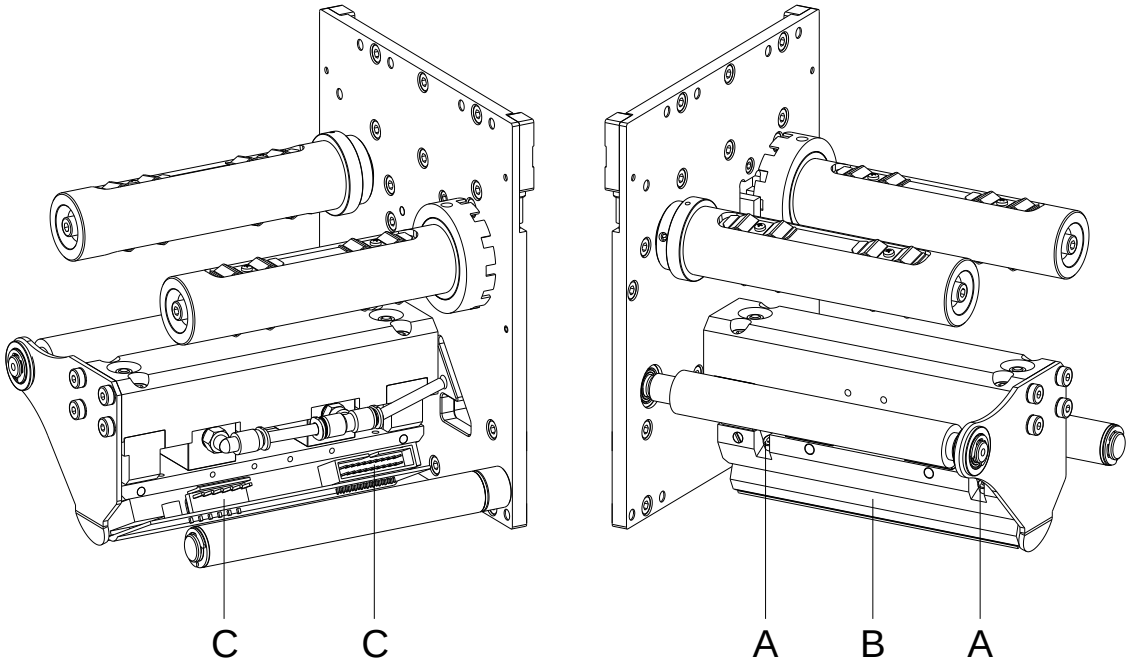


Figure 20

Removing the printhead

1. Open dust cover or remove it by unscrewing four screws at the hinges.
2. Remove the transfer ribbon.
3. Push the print carriage into an appropriate service position.
4. Remove the printhead cable (C).
5. Remove the screws (A) and the printhead (B).

Installing the printhead

1. Do not touch the contacts of the printhead.
2. Position the new printhead in the printhead support.
3. Tighten again the screws (A).
4. Connect the printhead cable (C).
5. Insert the transfer ribbon.
6. Enter the resistance value of the new printhead in the *Service Functions (heater resistance)*. The value is indicated on the type plate of printhead.
7. Start a test print to check the printhead position.

6.2 Transfer Ribbon Tension Adjustment

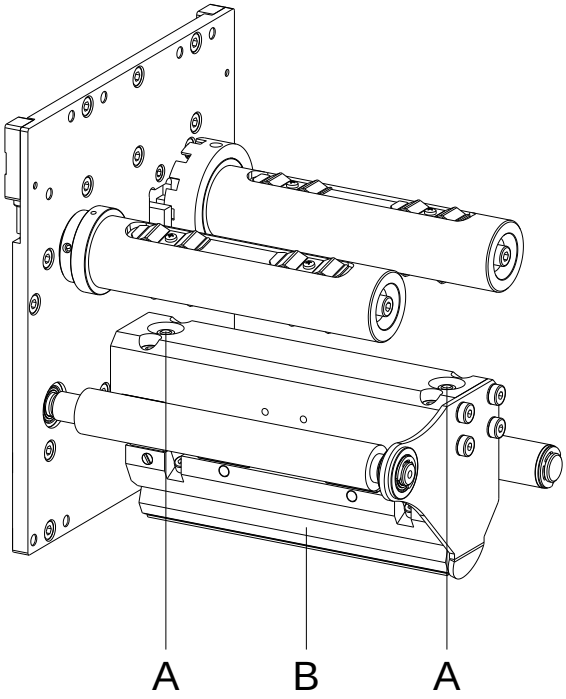


Figure 21

For a regular print quality it is necessary that the transfer ribbon is to tighten even over its width. Use the nuts (A) to regulate a different transfer ribbon tension by a sideways overturn of the printhead.

CAUTION!

Folding at transfer ribbon!

⇒ Only change the factory settings in exceptional cases.

1. By loosen a nut, the printhead moves down at the corresponding side.
   The transfer ribbon tension is increased.
2. By tightening a nut, the printhead moves up at the corresponding side.
   The transfer ribbon tension is reduced.

   NOTICE!

   A strong regulation has result to the pressure power of printhead.
3. Start a print order with approx. three layouts to check the correct unwrinkled ribbon run.

6.3 Angle Adjustment

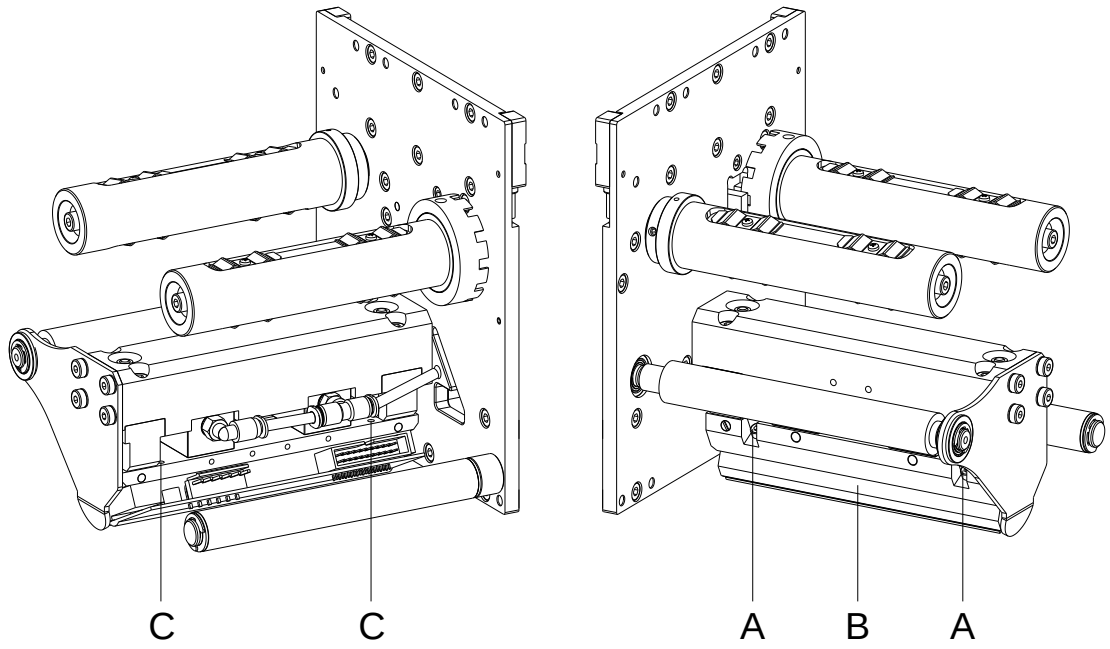


Figure 22

The installation angle of the printhead (B) is default 26° to the print surface. However, manufacturing tolerances of printhead and mechanics can require another angle.

CAUTION!

Damage of printhead by unequal use!

Higher wastage of ribbon by faster ripping.

⇒ Only change the factory settings in exceptional cases.

1. Loosen slightly two Allen head screws (A).
2. Move the threaded screws (C) to adjust the angle between printhead and printhead support.
   Tighten = decrease angle
   Loosen = increase angle
3. Both threaded screws (C) must be adjusted with the very same number of turns.
4. Tighten again the Allen head screws (A).
5. Start a print order with approx. three layouts to check the correct unwrinkled ribbon run.

6.4 Printhead Bracket

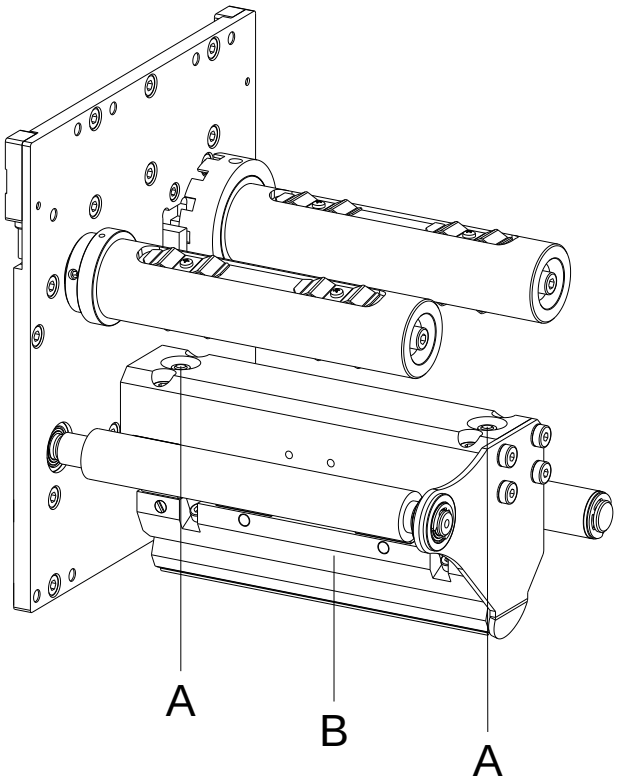


Figure 23

Removing the printhead bracket

1. Open the dust cover or remove it by unscrewing the four screws at the hinges.
2. Remove the transfer ribbon
3. Push the print carriage into an appropriate service position. If necessary, remove the counter-pressure plate.
4. Remove the printhead (see chapter 6.1, page 37)
5. Remove the two nuts (A).
6. Remove the discs and springs inside. Be sure to observe the proper sequence and position.
7. Pull out the printhead bracket (B) from the linear guidings and remove it downwards.

NOTICE!

If necessary, the printhead unit can be further dismantled. For replacing the linear bearing and the short-stroke cylinder, see the following pages.

Installing the printhead bracket

1. Carefully install the new printhead bracket (B) into the linear bearing.
2. Install the discs and the springs.
3. Tighten the two nuts (A).

NOTICE!

Tighten the nuts (A) the same on both sides, so that the printhead bracket (B) with the printhead is pulled through the springs against the short-stroke cylinder. More detailed information is available in chapter 6.2, page 39).

4. Install the printhead (see chapter 6.1, page 37).
5. Insert the transfer ribbon.
6. Close the dust cover or fasten it with four screws at the hinges.

6.5 Linear Bearing for Printhead Bracket

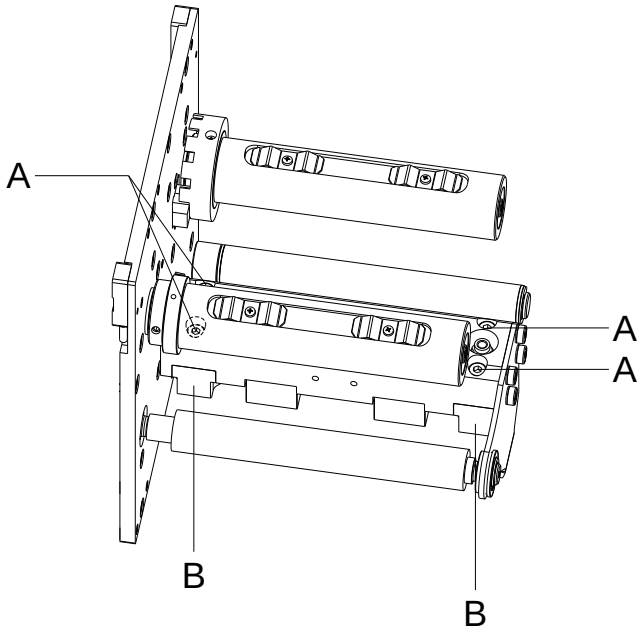


Figure 24

Removing the linear bearing

1. Remove the printhead bracket (see chapter 6.4, page 41).
2. Remove the four screws (A) and the linear bearing (B).

Installing the linear bearing

1. Install the new linear bearing and screw in the four screws (A).
2. Reinstall the printhead bracket (see chapter 6.4, page 41).

NOTICE!

First screw the screws (A) in lightly. Insert the printhead bracket into the linear bearing (B) and tighten the screws (A). Ensure a smooth linear movement. If necessary, in case of stiffness, turn a linear bearing by 180°.

6.6 Short-Stroke Cylinder

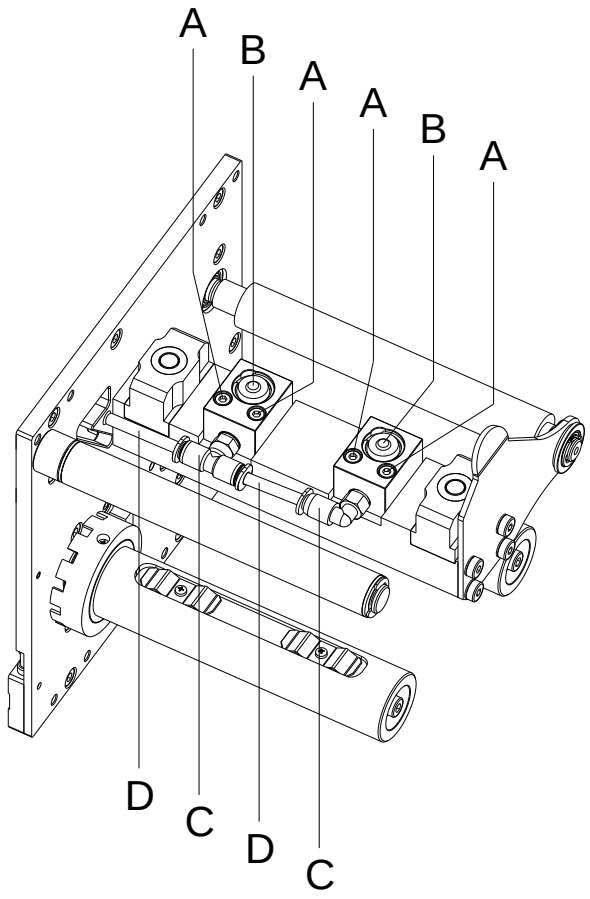


Figure 25

Removing short stroke cylinder

1. Remove the printhead bracket (see chapter 6.4, page 41).
2. Remove the screws (A).
3. Press the ring of the respective push-in fitting (C) and carefully remove this from the pneumatic tube (D).
4. Unscrew the push-in fittings (C) from the short stroke cylinders (B).

Installing the short-stroke cylinder

1. Tighten the push-in fittings (C) to the new short stroke cylinders (B).
2. Press the pneumatic tube into the push-in fittings and place the short stroke cylinder.
3. Tighten the screws (A).
4. Reinstall the printhead bracket (see chapter 6.4, page 41).

NOTICE!

Before the mounting of push-in fittings (C), examine the pneumatic tubes (D) for damage and replace them, if necessary.

6.7 Transfer Ribbon Roller

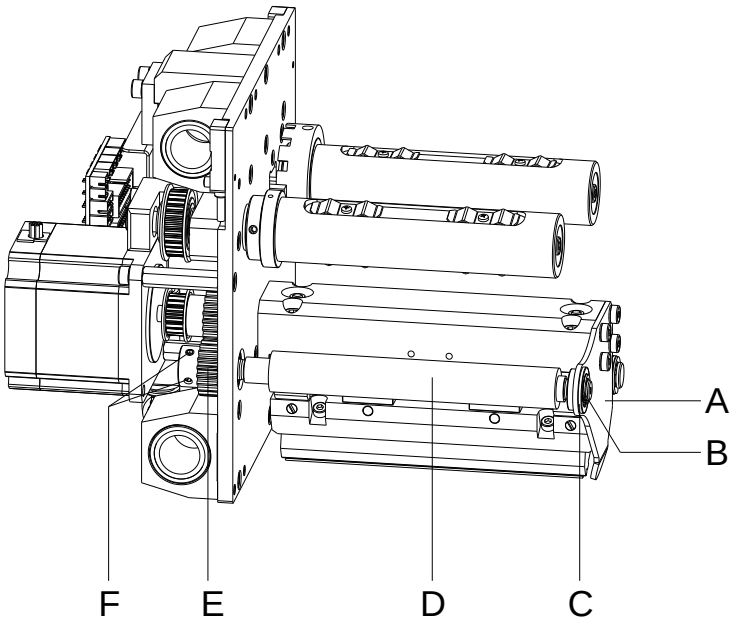


Figure 26

Removing the transfer ribbon roller

1. Open the dust cover or remove it by unscrewing the four screws at the hinges.
2. Remove the transfer ribbon.
3. Push the print carriage into an appropriate service position.
4. Loosen the both pins (F) of the gear (E) by approx. One or two turns.
5. Remove the lock washer (B) and the ball bearing (C).
6. Pull the transfer ribbon roller (D) outwards through the holes in the plate. Hold the gear (E) while this procedure.

Installing the transfer ribbon roller

1. Install a new transfer ribbon roller (D) and insert it in the gear (E).
2. Reinstall the bearing (C) and the lock washer (B).
3. Tighten the both pins (F) of the gear (E). One pin (F) must meet the milled surface of the roller axle.

   NOTICE!

   Take care that the roller has no axial backslash, otherwise wrinkling of the transfer ribbon can result.
4. Insert the transfer ribbon.
5. Close the dust cover or fasten it with the four screws at the hinges.

6.8 Toothed Belt 'Motor'

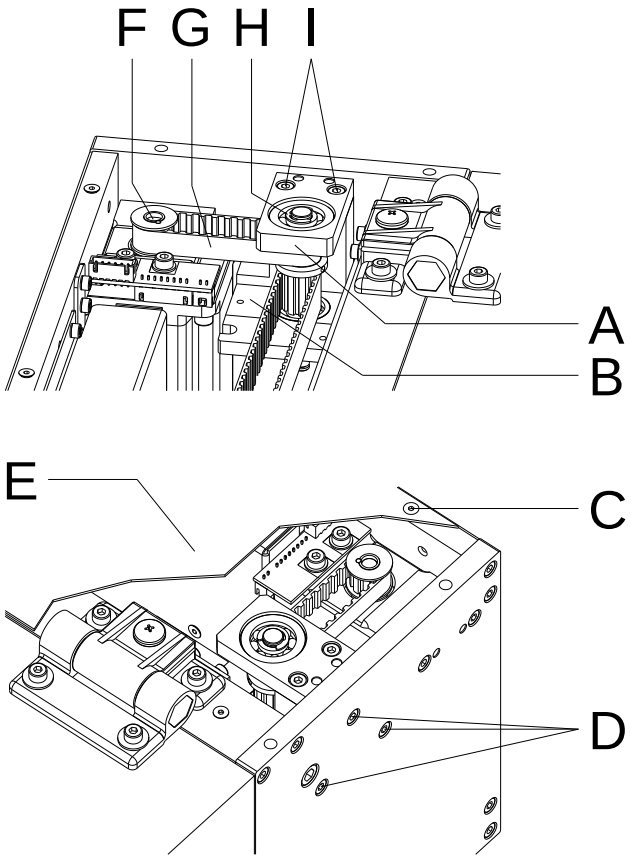


Figure 27

Remove the toothed belt

1. Unscrew the six countersunk screws (C) and remove the top cover (E).
2. Push the print carriage into an appropriate service position.
3. Remove the locking ring (H).
4. Unscrew the screws (I) and remove the counter bearing (A).
5. Loosen the screws (D) by a few turns.
6. Tip slightly the brake bracket (B) until the toothed belt (G) can be removed upwards. If necessary, loosen further the screws (D) or remove them completely

Installing the toothed belt

1. Place the new toothed belt (G) over the belt wheel (F) to push it over the second belt wheel.
2. Place the counter bearing (A) and tighten it with the screws (I).
3. Reinstall the locking ring (H).
4. Pull the brake bracket (B) forward and tighten the screws (D) at the same time, in order to ensure the belt tension.
5. Place the top cover (E) and tighten it with the six countersunk screws (C).

6.9 Linear Toothed Belt

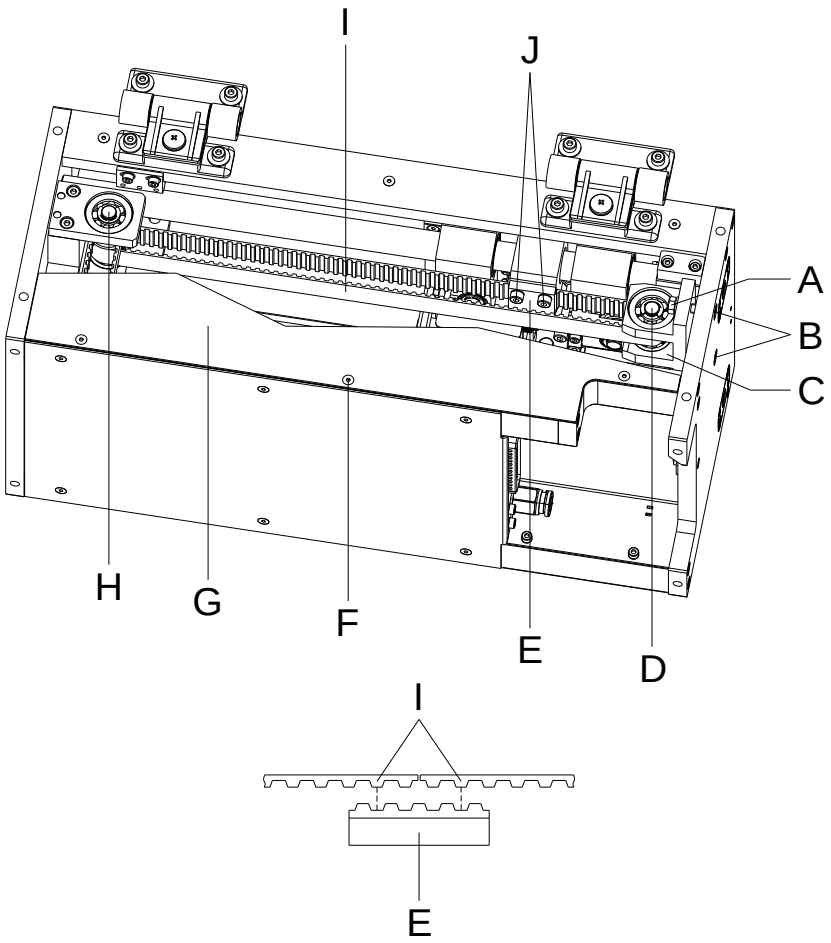


Figure 28

Removing the linear toothed belt

1. Unscrew the six countersunk screws (F) and remove the top cover (G).
2. Push the print carriage into an appropriate service position.
3. Remove the two lock nuts (A) and the below washer.
4. Unscrew the two screws (B) by a few turns. The belt tensioner (C) moves to the inside and loosens the toothed belt (I).
5. Unscrew the screws (J) and remove the clamping piece (E).
6. Pull the toothed belt (I) out of the toothed belt wheel (D, H).

Installing the linear toothed belt

1. Cut a new toothed belt (endless yard goods) to the correct length depending on the print length of the device (see the *Spare parts list* or length corresponding to the removed belt).

   NOTICE!

   The cut must be in rectangular position on both sides and in the middle of the tooth root.

2. Insert the toothed belt (I) into the toothed belt wheel (D, H).
3. Place the clamping piece (E) and tighten it with the screws (J).

   NOTICE!

   Ensure that the toothed belt (I) is placed correctly in the clamping part (E), according to the smaller figure.

4. Tighten the two screws (B) by a few turns.

   NOTICE!

   Ensure a parallel position of the belt tensioner (C) to the side panel. The belt must run centrically on the toothed belt wheel (D, H). When drifting on one side, loosen or fasten one of the screws (B) slightly.

   CAUTION!

   By closing the screws (B), the belt tension is produced.

   Stronger wear and premature termination of the bearing positions caused by a too high tension.

   ⇒ For the protection of the components, do not set the belt tension too high.

   ⇒ Safeguard the belt tension by fastening the lock nuts (A).

5. Tighten the two lock nuts (A) with the washers.
6. Place the top cover (G) and fasten it with six countersunk screws (F).

6.10 Print Carriage

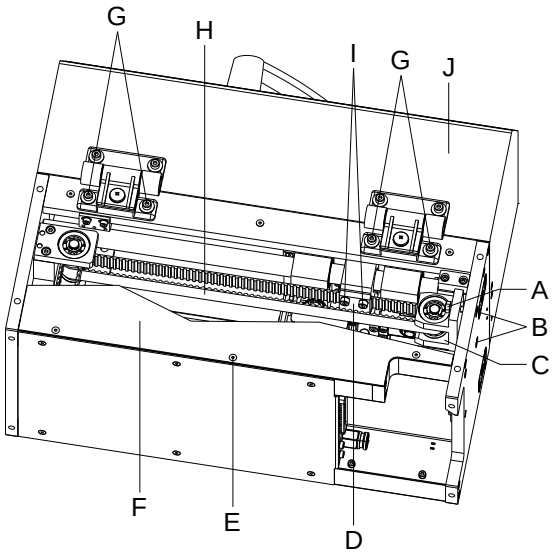


Figure 29

Removing print carriage

1. Unscrew the four screws (G) and remove the top cover (J).
2. Unscrew the six countersunk screws (E) and remove the top cover (F).
3. Push the print carriage into an appropriate service position.
4. Remove the transfer ribbon.
5. Unscrew the two lock nuts (A) and remove the washer below.
6. Loosen the two screws (B) by a few turns. The belt tensioner (C) moves to the inside and loosens the toothed belt (H).
7. Unscrew the screws (I) and remove the clamping piece (D).
8. Unscrew the screws (N).

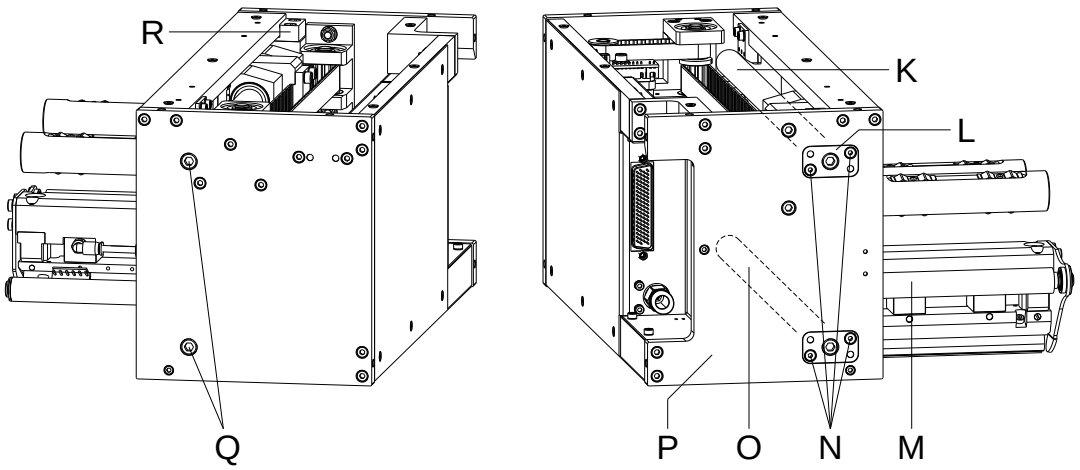


Figure 30

9. Unscrew the screws (Q).
10. Hold the print carriage (M) and pull the top guiding shaft (K) with the flange (L) out of the hole in the side panel (P) and remove them. Remove the slider (R) for the zero point control while this procedure.
11. Hold the print carriage (M) and pull the guiding shaft below (O) with the flange out of the hole in the side panel and remove them.
12. Swivel out the print carriage (M) of the print mechanics, as far as the energy chain allows the movement (depending on print length).
13. Perform all necessary servicing work.

NOTICE!

The print carriage can be disassembled further. For replacing further components, see the following chapters.

Installing print carriage

1. Place the print carriage (M) into the print mechanics.
2. Guide the guiding shaft below (O) with the flange through the hole in the side panel (P) and the linear guidings of print carriage. Hold the print carriage (M) while this procedure.

   NOTICE!

   Carefully insert the guiding shafts into the linear bearing in order to avoid damages to the sealing.
3. Guide the top guiding shaft (K) with the flange (L) through the hole in the side panel (P). Place the slider (R) for the zero control and push the guiding shaft (K) through the linear guidings of print carriage. Hold the print carriage (M) while this procedure.
4. Tighten the screws (Q).
5. Tighten the screws (N).

   NOTICE!

   Move the print carriage over the complete travel and ensure a smooth running. If necessary, adjust above the screw (Q) the respective guiding shaft.
6. Install the linear belt by placing the clamping piece (D) and tighten it with the screws (I).

   NOTICE!

   When installing the linear toothed belt, please ensure the notes and steps indicated in chapter 6.9, page 46.
7. Tighten the two screws (B).
8. Tighten the two lock nuts (A) with the washers.
9. Insert the transfer ribbon.
10. Place the top cover (F) and tighten it with the six countersunk screws (E).
11. Place the top cover (J) and fasten it with four screws (G).

6.11 Print Carriage PCB and Connecting Cable in the Energy Chain

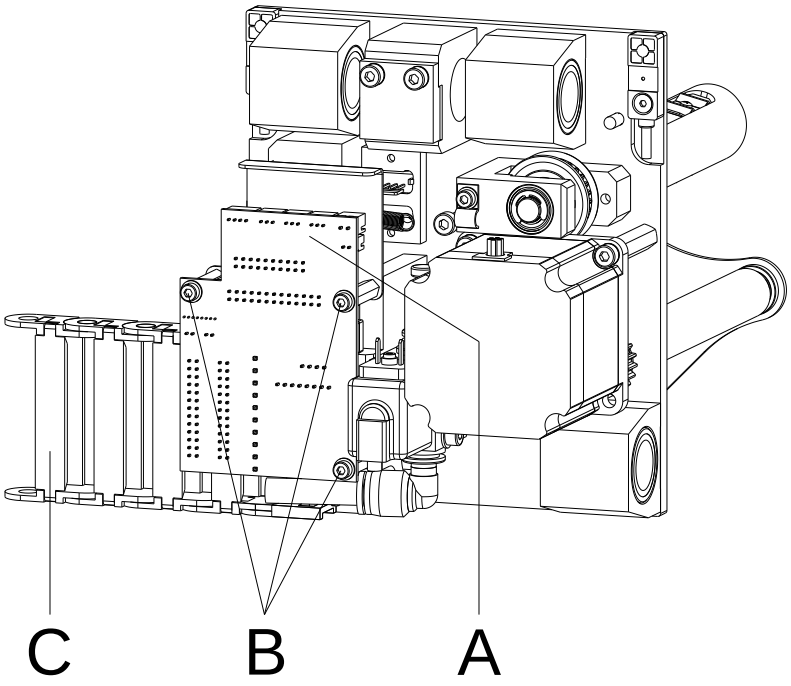


Figure 31

Replacing the print carriage PCB and the connecting cable in the energy chain

1. Remove the print carriage (see chapter 6.10, page 48).

   NOTICE!

   It is not necessary to remove the print carriage for printing systems from print length 240 mm. In this case, remove the print unit cover at the rear to work from the back of the device.

2. Unscrew the three screws (B) and lift the print carriage (A).
3. Remove all connectors from the print carriage PCB and replace the PCB if necessary.

   NOTICE!

   Open the energy chain on the inside. For this procedure, carefully clip on the opening crossbars (C) and open them.

4. Open the complete energy chain on the inside. Remove and replace the connecting cables between motor PCB and print carriage PCB.

Installing the print carriage PCB and the connecting cable in the energy chain

1. Insert new connecting cables in the energy chain between the motor PCB and the print carriage PCB.
2. Close the energy chain. For this procedure, close the opening crossbars (C, Figure 31).
3. Insert all connectors on the new print carriage PCB.
4. Place the print carriage PCB (A, Figure 31) and tighten it with the three screws (B, Figure 31).
5. Reinstall the print carriage (see chapter 6.10, page 48).

6.12 Valve

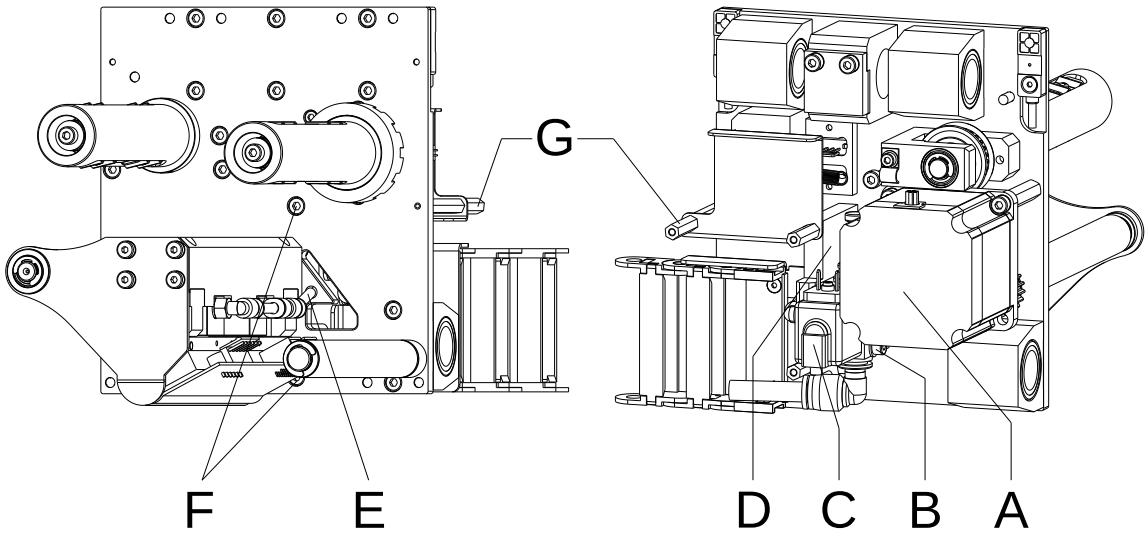


Figure 32

Removing the valve

1. Removing the print carriage (see chapter 6.10, page 48).

   NOTICE!

   It is not necessary to remove the print carriage for printing systems from print length 240 mm. In this case, remove the print unit cover at the rear to work from the back of the device.

2. Remove the print carriage PCB (see chapter 6.11, page 50).
3. Remove the printhead (see chapter 6.1, page 37).
4. Remove the screws (F).
5. Disconnect the pneumatic tube (E).
6. Remove the hexagonal bolts (G).
7. Remove the screw (B).
8. Pull the complete bracket for valve (D) with the components backwards until the valve (C) can be removed and replaced.

   NOTICE!

   Alternative to the steps 2 to 8, remove the drive motor (A) for the transfer ribbon to replace the valve. In this case, ensure that at reinstalling the belt tension and the toothing are set correctly.

Installing the valve

1. Place a new valve (C, Figure 32) and press forward the complete bracket for the valve (D, Figure 32) with components.
2. Tighten the screw (B, Figure 32).
3. Connect the pneumatic tube (E, Figure 32).
4. Tighten the screws (F, Figure 32).
5. Tighten the hexagonal bolts (G, Figure 32).
6. Reinstall the printhead (see chapter 6.1, ppage 37).
7. Reinstall the print carriage PCB (see chapter 6.11, page 50).
8. Reinstall the print carriage (see chapter 6.10, page 48).

6.13 Zero Sensor and End Position Sensor

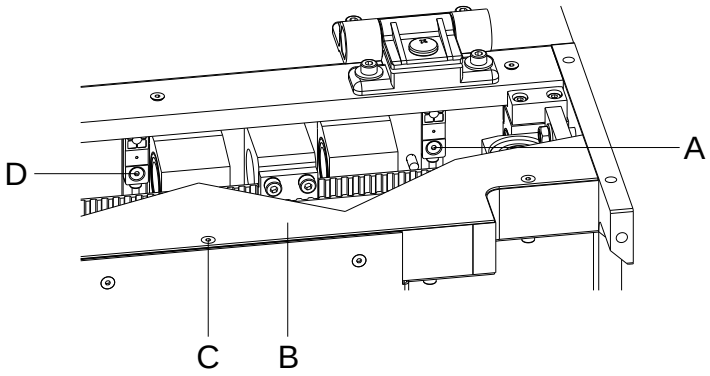


Figure 33

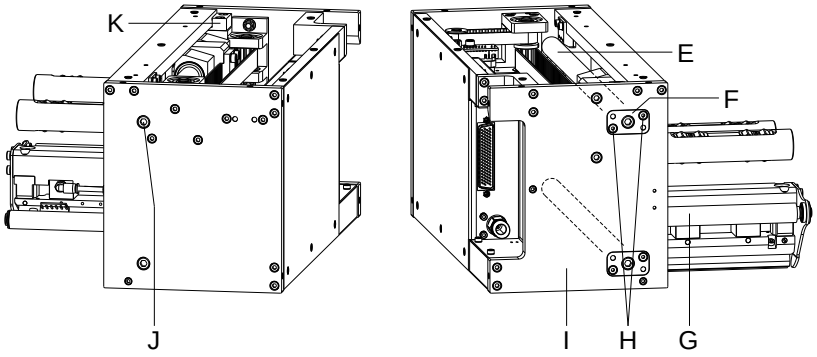


Figure 34

Removing the zero sensor and the end position sensor

1. Unscrew the six countersunk screws (C) and remove the top cover (B).
2. Push the print carriage into an appropriate service position.
3. Unscrew the screws (H).
4. Unscrew the screw (J).
5. Hold the print carriage (G), pull off and remove the upper guiding shaft (E) including the flange (F) from the hole in the side panel (I). Meanwhile, remove the slider (K) for the zero control.
6. Remove the screw (A) together with the zero sensor.
7. Remove the screw (D) together with the end position sensor.
8. Remove the respective plug-in connector of the connecting cable from the carriage board (see chapter 6.11, page 50).
9. Remove the cable tie and the cable clamp to remove the complete sensor.

Installing the zero sensor and the end position sensor

1. Place the new end position sensor and tighten it with the screw (D, Figure 33).
2. Place the new zero sensor and tighten it with the screw (A, Figure 33).
3. Insert the respective plug-in connector of the connection cable onto the carriage board.
4. Reinstall the cable tie and the cable clamp.
5. Guide the top guiding shaft (E, Figure 34) including the flange (F, Figure 34) through the hole in the side panel (I, Figure 34). Place the slider (K, Figure 34) for the zero control and push it through the linear guidings of the print carriage, hold the print carriage (G, Figure 34) while this procedure.

   NOTICE!

   Carefully insert the guiding shafts into the linear guiding in order to avoid damage to the sealing.
6. Tighten the screw (J, Figure 34).
7. Tighten the screws (H, Figure 34).

   NOTICE!

   Move the print carriage over the complete travel and ensure a smooth running. If necessary, adjust above the screw (J, Figure 34) the respective guiding shaft.
8. Place the top cover (B, Figure 33) and tighten it with six countersunk screws (C, Figure 33).

6.14 Transfer Ribbon Rewinder/Unwinder

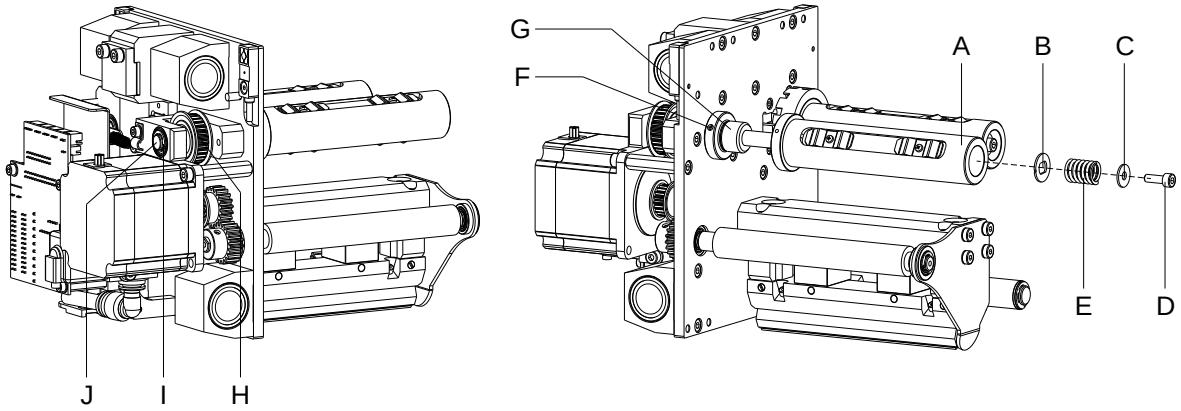


Figure 35

Removing the rewinder

1. Unscrew the six countersunk screws and remove the top cover.
2. Unscrew the six countersunk screws and remove the rear cover.
3. Open dust cover or remove it by unscrewing four screws at the hinges.
4. Remove the transfer ribbon.
5. Push the print carriage into an appropriate service position.
6. Unscrew the screw (D), remove washer (C), spring (E) and drive plate (B).
7. Remove the transfer ribbon roll (A).
8. Remove the pins (F) and the bearing bush (G) with the adjusting washer underneath.
9. Remove the three lock washers (I) from the shaft (J). In each case one lock washer is before the belt wheel (H) and one lock washer behind the belt wheel (H).
10. Pull the transfer ribbon shaft (J) outwards the bearing seat. Hold the belt wheel (H) while this procedure. If necessary, reduce the belt tension by loosening the motor-adjusting screws.

Installing the rewinder

1. Hold the belt wheel (H) and insert the transfer ribbon shaft (J) into the bearing.
2. Fit the three lock washers (I) onto the shaft (J). In each case one lock washer is before the belt wheel (H) and one lock washer behind the belt wheel (H).
3. Fit the bearing bush (G) with the adjusting washer underneath and fasten the pin (F). Take care that the transfer ribbon shaft (J) has no axial backslash.

NOTICE!

The pin (F) must meet the milled surface of the transfer ribbon shaft (J).

4. Install the transfer ribbon roller (A, Figure 35).
5. Place the drive plate (B, Figure 35), the spring (E, Figure 35) and the washer (C, Figure 35) and tighten it with the screw (D, Figure 35) (see *Notice* below).
6. Insert the transfer ribbon.
7. Close the dust cover or fasten it with the four screws at the hinges.
8. Place the rear cover and fasten it with the six countersunk screws.
9. Place the top cover and fasten it with the six countersunk screws.

Installing the rewinder/unwinder

The unwinder is removed and reinstalled in the same way as the rewinder.

For dismounting transfer ribbon shaft, remove the carriage board (see chapter 6.11, page 50) and the angle underneath. When unwinding, on the inner front of transfer ribbon shaft, the retraction plate is mounted in which hangs the return spring.

After removing the side screws, the replacing of the transfer ribbon photocell is possible.

NOTICE!

Given the many available types of transfer ribbon, varying in roller width, roller length and quality, it must be possible to adjust the transfer ribbon tension.

The transfer ribbon tension must be set such that no wrinkles or creases can form in the ribbon, but that it runs as slip-free as the film material.

Running the ribbon at too high tension may avoid wrinkles, but can also lead to streaks on the material or even cause the ribbon to snap, especially with narrow rolls.

The ribbon tension is factory set with the maximum width of transfer ribbon and of standard quality. As a guide, the following can assumed for this factory setting:

Transfer ribbon unwinder:
Screw the Allen head screw (D, Figure 35) in as far as it goes and then loosen it again by three full turns.

Transfer ribbon rewinder:
Screw the Allen head screw (D, Figure 35) in as far as it goes and then loosen it again by two full turns.

Tightening the Allen head screw (D, Figure 35) = increase ribbon tension.

Loosening the Allen head screw (D, Figure 35) = reduce the ribbon tension.

6.15 Encoder

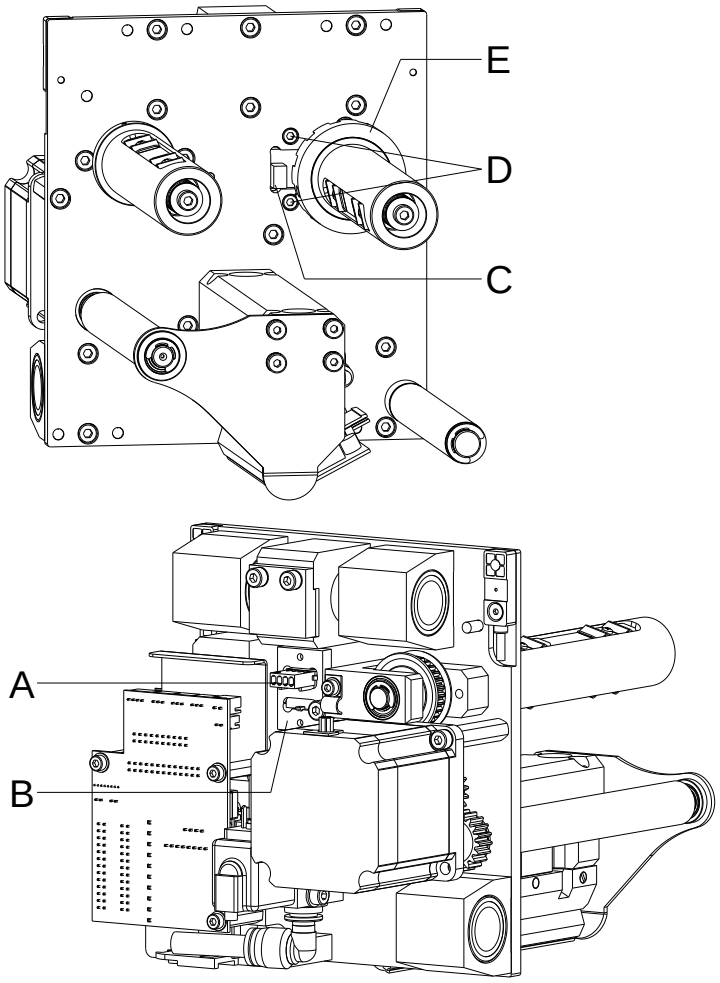


Figure 36

Removing the encoder

1. Unscrew the six countersunk screws and remove the top cover.
2. Unscrew the six countersunk screws and remove the rear cover.
3. Open dust cover or remove it by unscrewing four screws at the hinges.
4. Remove the transfer ribbon.
5. Push the print carriage into an appropriate service position.
6. Remove the connector (A) on the back from the encoder (C).
7. Unscrew the two screws (D).
8. Remove the encoder (C) with the bracket (B) from behind from the print carriage.
9. Clip out the encoder (C) of the bracket (B).

NOTICE!

The space is very cramped. If necessary, carefully use a long electronic needle-nose pliers.

Installing the encoder

1. Press the new encoder (C, Figure 36) in the bracket (B, Figure 36).
2. Place the encoder (C, Figure 36) with the bracket (B, Figure 36) from behind in the print carriage.

   NOTICE!

   Install the bracket (B, Figure 36) in such a way that the smaller (NOT the greater) fork of encoder (C, Figure 36) immerse in the roller (E, Figure 36) of the transfer ribbon unwinder.
3. Tighten the two screws (D, Figure 36).
4. Insert the connector (A, Figure 36) on the rear into the encoder (C, Figure 36).
5. Insert the transfer ribbon.
6. Close the dust cover or fasten it with the four screws at the hinges.
7. Fasten the rear cover with six countersunk screws.
8. Fasten the top cover with six countersunk screws.

6.16 Top Linear Bearing

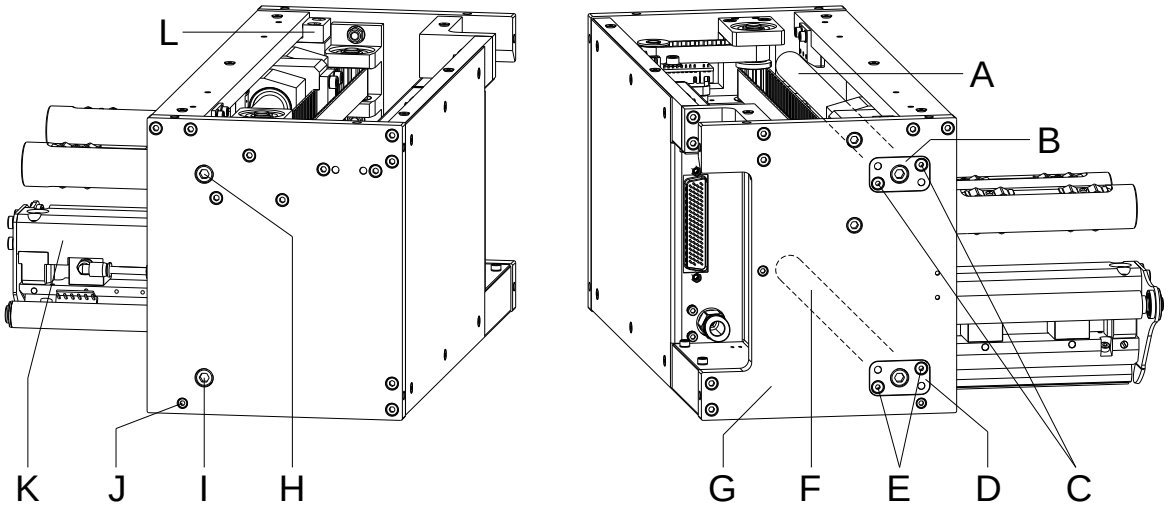


Figure 37

Removing the top linear bearing

1. Unscrew the six countersunk screws and remove the top cover.
2. Open dust cover or remove it by unscrewing four screws at the hinges.
3. Remove the transfer ribbon.
4. Push the print carriage into an appropriate service position.

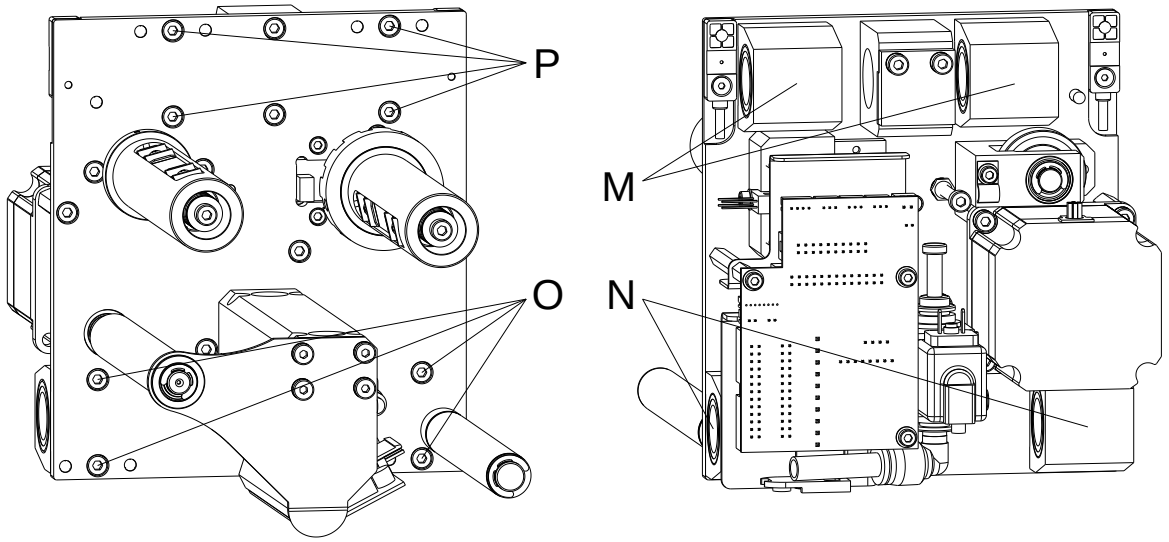


Figure 38

5. Unscrew the two screws (C, Figure 38).
6. Unscrew the screw (H, Figure 38).
7. Hold the print carriage (K, Figure 38) and pull the top guiding shaft (A, Figure 38) with the flange (B, Figure 38) from the hole in the side panel (G, Figure 38) and remove them. Remove the slider (L, Figure 38) for the zero control while this procedure.
8. Unscrew the screws (P, Figure 38).
9. Pull the linear bearing (M, Figure 38) from the fixing pins and remove it.

Installing the top linear bearing

1. Insert a new linear bearing (M, Figure 38) on the fixing pins.
2. Tighten the screws (P, Figure 38).
3. Guide the top guiding shaft (A, Figure 38) with the flange (B, Figure 38) through the holes in the side panel (G, Figure 38). Place the slider (L, Figure 38) for the zero control and push it through the linear guiding (M, Figure 38) of print carriage. Hold the print carriage (K, Figure 38) while this procedure.

   NOTICE!

   Carefully insert the guiding shaft into the linear bearing to avoid damage to the seals.
4. Tighten the screws (H, Figure 38).
5. Tighten the two screws (C, Figure 38).

   NOTICE!

   Move the print carriage over the complete travel and ensure a smooth running. If necessary, adjust above the screw (I, Figure 34) the respective guiding shaft.
6. Insert the transfer ribbon.
7. Close dust cover or fasten it with four screws at the hinges.
8. Tighten the top cover with the six countersunk screws.

6.17 Bottom Linear Bearing

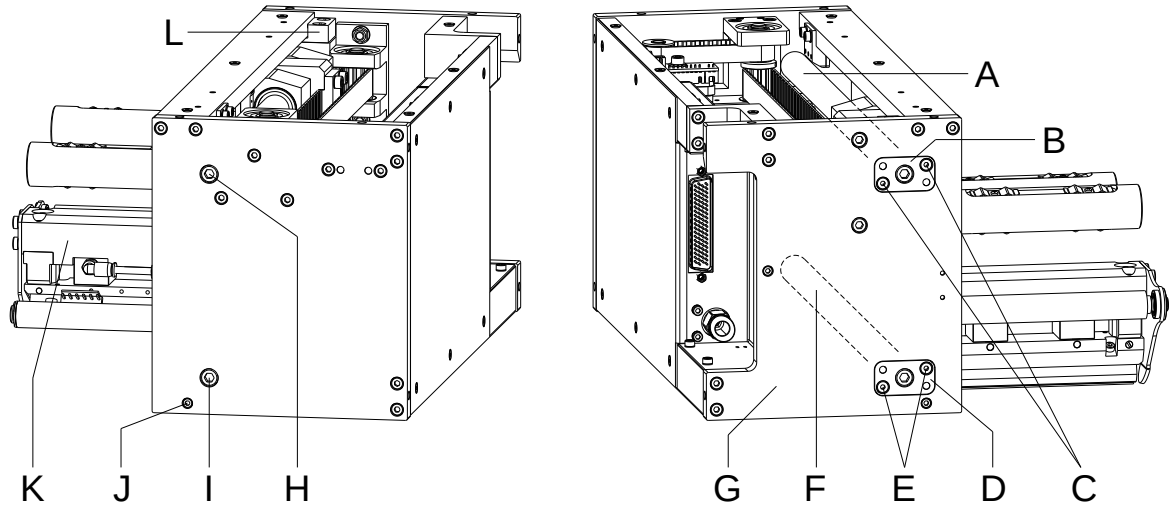


Figure 39

Removing the bottom linear bearing

1. Unscrew the three countersunk screws and the two cylinder screws (J).
2. Open dust cover or remove it by unscrewing four screws at the hinges.
3. Remove the transfer ribbon.
4. Push the print carriage into an appropriate service position.

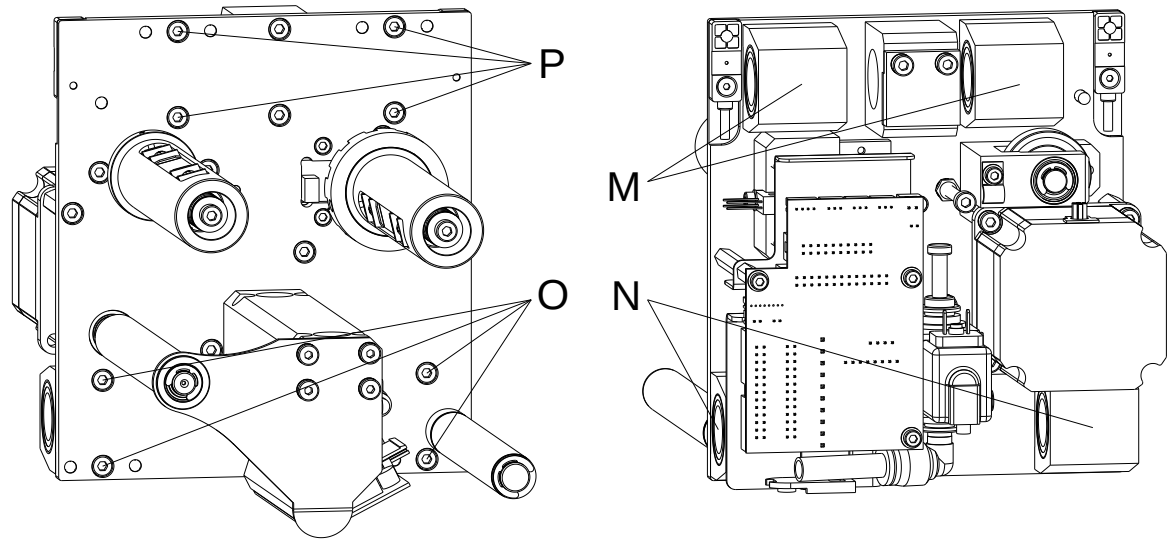


Figure 40

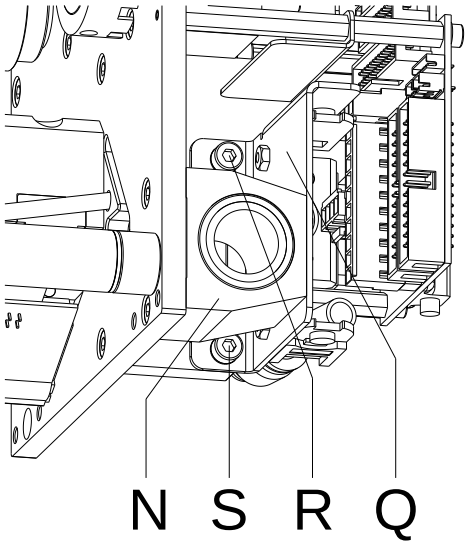


Figure 41

5. Unscrew the two screws (E, Figure 39).
6. Unscrew the screw (I, Figure 39).
7. Hold the print carriage (K, Figure 39) and pull the guiding shaft below (F, Figure 39) with the flange (D, Figure 39) from the hole in the side panel (G, Figure 39) and remove them.
8. Unscrew the screw (O, Figure 39).
9. Unscrew the screw (S).
10. Loosen the screw (R) by approx. half a turn.
11. Carefully swivel the angle for the chain (Q) backwards.
12. Pull the linear bearing (N) from the fixing pins and remove it.

Installing the bottom linear bearing

1. Insert a new linear bearing (N) on the fixing pins.
2. Carefully swivel the angle for the chain (Q) forward.
3. Tighten the screw (R).
4. Tighten the screw (S).
5. Tighten the screws (O, Figure 40).
6. Guide the guiding shaft below (F, Figure 39) with the flange (D, Figure 39) through the holes in the side panel (G, Figure 39). Push the guiding shaft through the linear bearing (N, Figure 39). Hold the print carriage (K, Figure 39) while this procedure.

   NOTICE!

   Carefully insert the guiding shaft into the linear bearing to avoid damage to the seals.
7. Tighten the screws (I, Figure 39).
8. Tighten the two screws (E, Figure 39).

   NOTICE!

   Move the print carriage over the complete travel and ensure a smooth running. If necessary, adjust above the screw (I, Figure 39) the respective guiding shaft.
9. Insert the transfer ribbon.
10. Close dust cover or fasten it with four screws at the hinges.
11. Fasten the bottom cover with three countersunk screws and two cylinder screws (J, Figure 39).

6.18 Cover Sensor

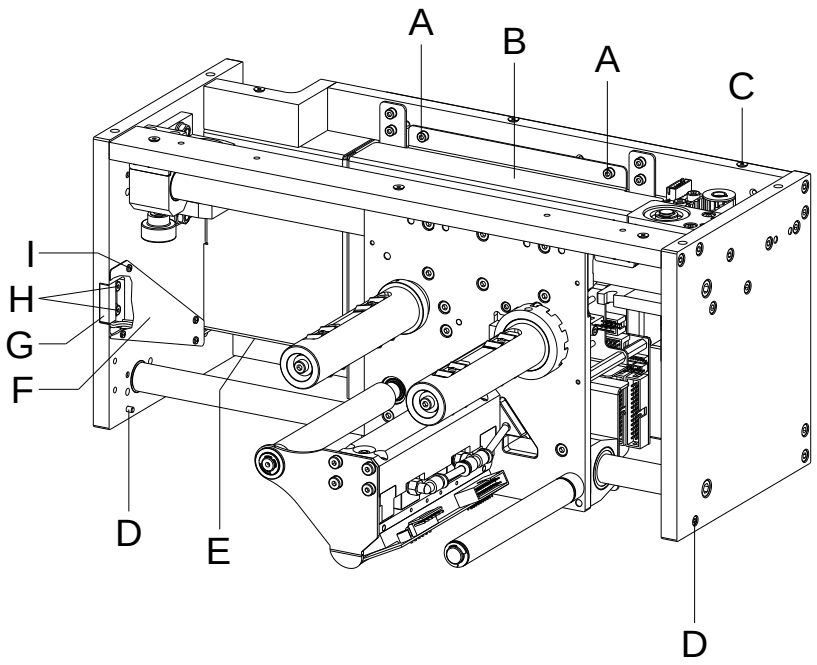


Figure 42

Removing the cover sensor

1. Unscrew the six countersunk screws (C) and remove the top cover.
2. Unscrew the three countersunk screws and the two cylinder screws (D) and remove the bottom cover.
3. Open dust cover or remove it by unscrewing four screws at the hinges.
4. Push the print carriage into an appropriate service position.
5. Unscrew the four screws (A) and remove the cover plate (B).
6. Unscrew the four screws (I) and remove the cover (F).
7. Unscrew the two screws (H).
8. Remove the cable tie on the bottom side of the connection plate (E).
9. Remove the cover sensor (G) and pull from the connector of the motor PCB.

Installing the cover sensor

1. Place the new cover sensor (G) and fasten the two screws (H). Insert the appropriate connector into the motor PCB.
2. Install the cable tie on the bottom side of the connection plate.
3. Tighten the cover (F) with the four screws (I).
4. Tighten the cover plate (B) with the four screws (A).
5. Close dust cover or fasten it with four screws at the hinges.
6. Fasten bottom cover with three countersunk screws and two cylinder screws (D).
7. Fasten top cover with six countersunk screws (C).

NOTICE!

Finally, check the switching of the cover switch. It is a Reed switch, i.e. the magnet at the dust cover releases the switch.

6.19 Motor PCB

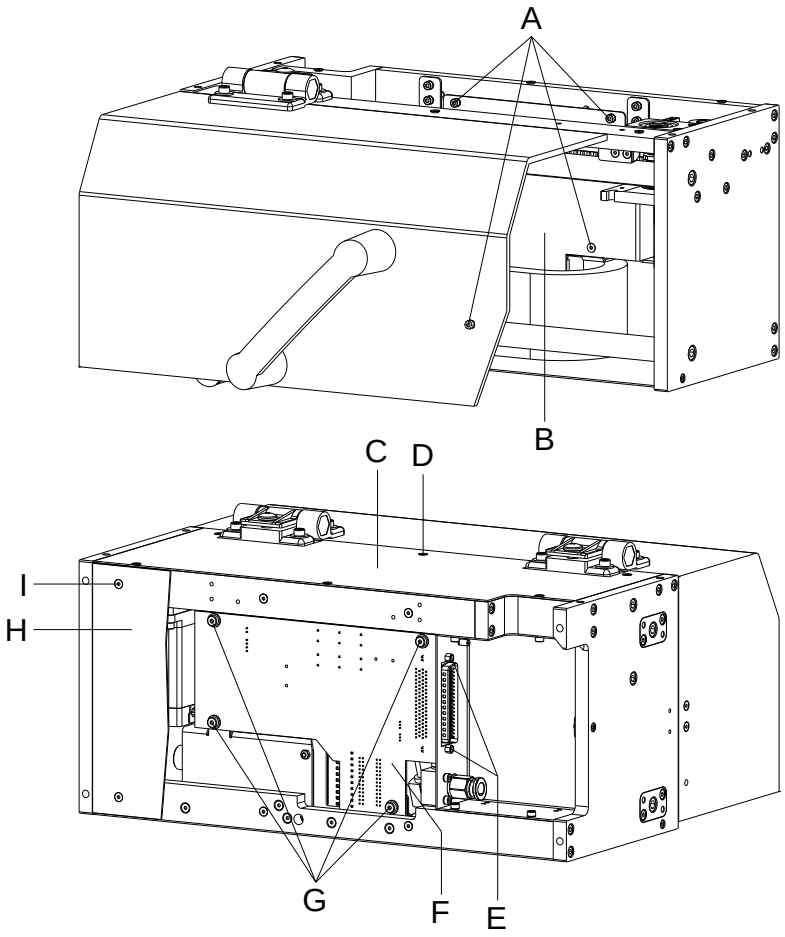


Figure 43

Removing the motor PCB

1. Unscrew the six countersunk screws (D) and remove the top cover (C).
2. Unscrew the six countersunk screws (I) and remove the rear cover (H).
3. Open dust cover or remove it by unscrewing four screws at the hinges.
4. Push the print carriage into an appropriate service position.
5. Unscrew the four screws (A) and remove the cover plate (B).
6. Remove all connectors from the motor PCB (F).
7. Unscrew the two hexagonal bolts (E).
8. Unscrew the four screws (G) and carefully remove the motor PCB (F).

Installing the motor PCB

1. Place the new motor PCB (F) and tighten it with the four screws (G).
2. Tighten the two hexagonal bolts (E).
3. Insert all connectors into the motor PCB (F).
4. Place the cover plate (B) and tighten it with the four screws (A).
5. Close dust cover or fasten it with four screws at the hinges.
6. Fasten rear cover (H) with six countersunk screws (I).
7. Fasten top cover (C) with six countersunk screws (D).

6.20 Pressure Sensor

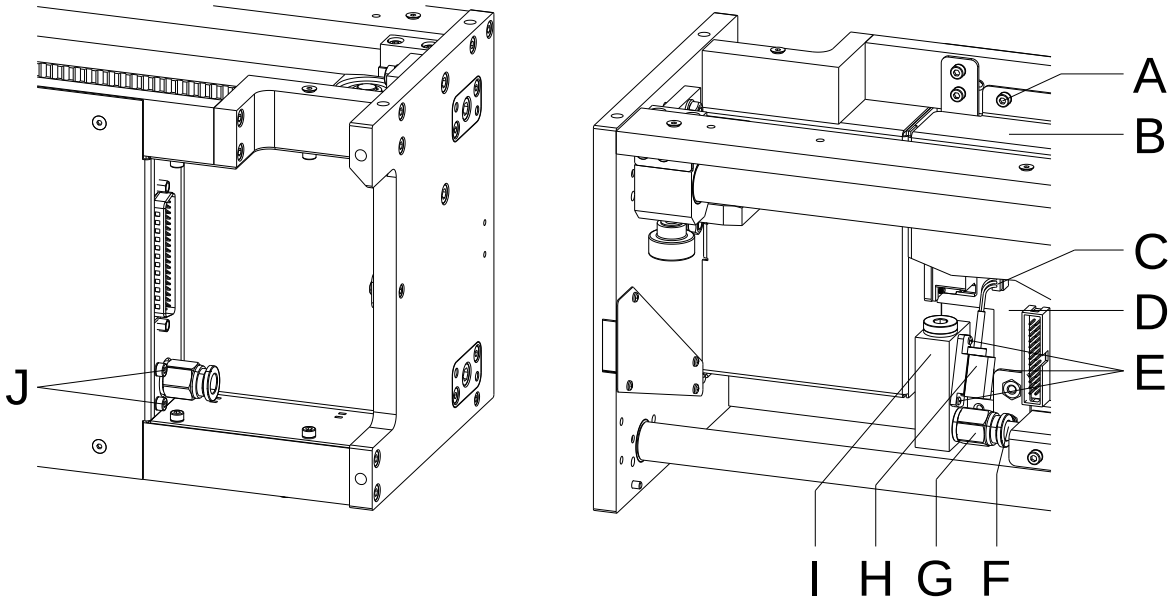


Figure 44

Removing the pressure sensor

1. Unscrew the six countersunk screws and remove the top cover.
2. Open the dust cover or remove it by unscrewing the four screws at the hinges.
3. Push the print carriage into an appropriate service position.
4. Unscrew the four screws (A) and remove the cover plate (B).
5. Unplug the plug-in connector (C) of pressure sensor (H) from the motor board (D).
6. Remove the pneumatic tube (F) from the push-in fitting (G). For easier operation, open some elements of the energy chain (see the notice in chapter 6.11, page 50).
7. Unscrew the two screws (J).
8. Completely remove the connector block (I) with the pressure sensor (H).
9. Unscrew the two screws (E) and remove the pressure sensor (H) from the connector block (I).

Installing the pressure sensor

1. Place the new pressure sensor (H) onto the connector block (I) and tighten it with the two screws (E).
2. Place the connector block (I) with the pressure sensor (H).
3. Tighten the two screws (J).
4. Press the pneumatic tube (F) onto the push-in fitting (G).
5. Plug the plug-in connector (C) of the pressure sensor (H) onto the motor board (D).
6. Tighten the cover plate (B) with the four screws (A).
7. Close the dust cover or fasten it with the four screws at the hinges.
8. Fasten the top cover with the six countersunk screws.

7 Cleaning

DANGER!

Risk of death by 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.

NOTICE!

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

7.1 General Information

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.

CAUTION!

Abrasive cleaning agents can damage the printing system!

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

1. Remove dust and paper fuzz in the printing area with a soft brush or vacuum cleaner.
2. Clean outer surfaces with an all-purpose cleaner.

7.2 Transfer Ribbon Roller

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

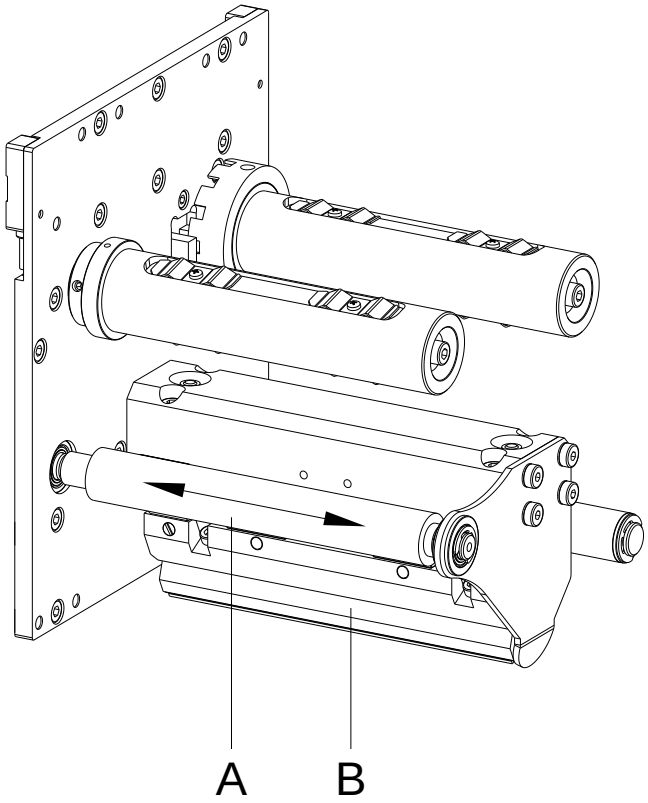


Figure 45

1. Open dust cover or remove it by unscrewing four screws at the hinges.
2. Remove the transfer ribbon.
3. Remove deposits with roller cleaner and a soft cloth.
4. If the roller (A) appears damaged, replace it.

7.3 Printhead

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

CAUTION!

Printhead can be damaged!

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

⇒ Do not touch protective glass layer of the printhead.

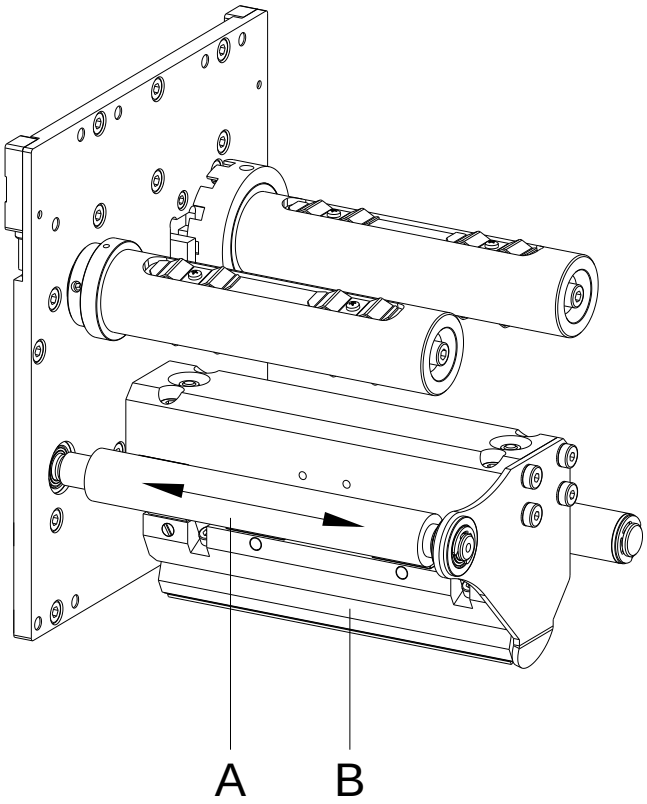


Figure 46

1. Open the dust cover or remove it by unscrewing the four screws at the hinges.
2. Remove the transfer ribbon.
3. Clean printhead surface (B) with special cleaning pen or a cotton swab dipped in pure alcohol.
4. Before using the printing system, let the printhead dry for about two to three minutes.

8 Error Correction

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

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

Error message	Cause	Remedy
30 Application Identifier	Selected application identifier is not available in GS1-128.	Check code data.
31 HIBC definition	Missing HIBC system sign. 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.
40 Length command	Invalid length of the received command statement.	Check data sent. Check connection PC - printer.
41 No drive	CF card not found / not correctly inserted.	Insert CF card correctly.
42 Drive error	Impossible to read CF card (faulty).	Check CF card, if necessary change it.
43 Unformatted	CF Card not formatted.	Format CF card.
44 Delete directory	Attempt to delete the actual directory.	Change directory.
45 Invalid path	Too long indication of path.	Indicate a shorter path.

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

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

Error message	Cause	Remedy
81 IGP error	Protocol error IGP.	Check sent data.
82 Time generation	Printing creation was still active at print start.	Reduce print speed. Use printers' output signal for synchronization. Use bitmap fonts to reduce generating time.
83 Transport protection	Both DPM position sensors (start/end) are active.	Displace zero point sensor Check sensors in service functions menu
84 No font data	Font and web data is missing.	Run a software update.
85 No layout ID	Layout ID definition is missing.	Define layout ID onto the label.
86 Layout ID	Scanned data does not correspond to defined ID.	Wrong label loaded from CF card.
87 RFID no label	RFID unit cannot recognize a label.	Displace RFID unit or use an offset.
88 RFID verify	Error while checking programmed data.	Faulty RFID label. Check RFID definitions
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.

Error message	Cause	Remedy
95 Scanner layout difference	Scanner data does not correspond to bar code data.	Check adjustment of scanner. Check scanner settings / connection.
96 COM break	Serial interface error.	Check settings for serial data transmission as well as cable (printer-PC).
97 COM general	Serial interface error.	Check settings for serial data transmission as well as cable (printer-PC).
98 No software printhead FPGA	No printhead-FPGA data available.	Please contact your responsible distributor.
99 Load software printhead FPGA	Error when programming printhead-FPGA.	Please contact your responsible distributor.
100 Upper position	Option applicator Sensor signal up is missing.	Check input signals / compressed-air supply.
101 Lower position	Option applicator Sensor signal down is missing.	Check input signals / compressed-air supply.
102 Vacuum plate empty	Option applicator Sensor does not recognize a label at vacuum plate.	Check input signals / compressed-air supply.
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. Please contact your distributor.
106 Invalid Tag type	Wrong Tag type. Tad data do not match the Tag type in the printer.	Adapt data or use the correct Tag type.
107 RFID inactive	RFID module is not activated. No RFID data can be processed.	Activate RFID module or remove RFID data from label data.
108 GS1-128 invalid	Transferred GS1-128 bar code is invalid.	Verify bar code data (see GS1-128 bar code specification).
109 EPC parameter	Error at EPC calculation.	Verify data (see EPC specification).

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

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

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

9 Control Inputs and Outputs

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

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

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

Printer internal circuit

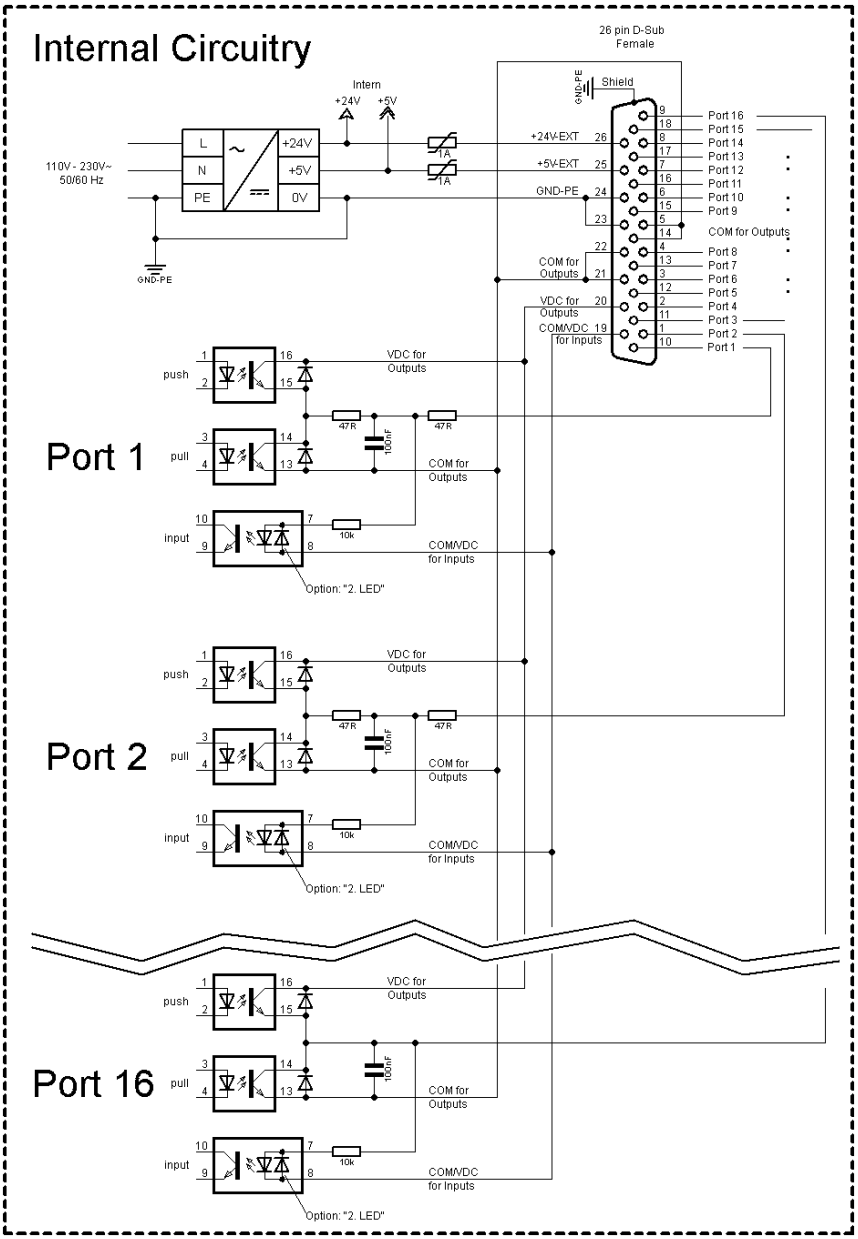


Figure 47

Configuration of D-Sub socket

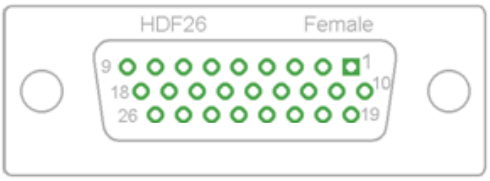


Figure 48

Cable identification

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

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

Port	**Pin**	**Description / Function**
1 (Input)	10	Print start
2 (Input)	1	Return printing carriage (operating mode Retracting 'external' only)
3 (Input)	11	Counter reset
4 (Input)	2	Release signal
5 (Input)	12	Error reset
6 (Input)	3	Delete all print orders
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	Print order active
11 (Output)	16	No function
12 (Output)	7	Printing
13 (Output)	17	Ready
14 (Output)	8	Transfer ribbon error
15 (Output)	18	Return printing carriage
16 (Output)	9	Transfer ribbon prior warning
COM/VDC for Inputs	19	Common reference potential of all control inputs. 'COM/VDC for Inputs' is usually connected with the (-) terminal of the control voltage and the control inputs are switched to active (+). By means of the option '2nd LED', 'COM/VDC for Inputs' can optionally be connected with the (+) terminal of the control voltage. Then, the control inputs are switched to active (-).
VDC for Outputs	20	Common supply connection of all control outputs. 'VDC for Outputs' must be connected with the (+) terminal of the control voltage. Never leave 'VDC for Outputs' open even if no output is used.
COM for Outputs	5,14 21,22	Common reference potential of all control outputs. 'COM for Outputs' must be connected with the (-) terminal of the control voltage. Never leave 'COM for Outputs' open even if no output is used.
GND-PE	23,24	'GND-PE' is the reference potential of the '+5 VDC EXT' and '+24 VDC EXT' voltages provided by the printer system. 'GND-PE' is printer internally connected with protective earth (PE).
+ 5 VDC EXT	25	5 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output.
+ 24 VDC EXT	26	24 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output.

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

Port	**Pin**	**Description / Function**
1 (Input)	10	Print start
2 (Input)	1	Error reset
3 (Input)*	11	Number of the file to load Bit 0 (Input)
4 (Input)*	2	Number of the file to load Bit 1 (Input)
5 (Input)*	12	Number of the file to load Bit 2 (Input)
6 (Input)*	3	Number of the file to load Bit 3 (Input)
7 (Input)*	13	Number of the file to load Bit 4 (Input)
8 (Input)*	4	Number of the file to load Bit 5 (Input)
9 (Output)	15	Error
10 (Output)	6	No function
11 (Output)	16	No function
12 (Output)	7	No function
13 (Output)	17	Ready
14 (Output)	8	No function
15 (Output)	18	Return printing carriage
16 (Output)	9	Transfer ribbon prior warning

* The files must be saved onto the CF card in the user directory).

The files must start with 1 or 2 digits (1_Etikett.prn, 02_Etikett.prn).

The files can be saved with a file extension.

In the printer status 'ready', 'waiting' or 'stop', a new file can be loaded. The printer order will be started after charging and an already existing printer order will be deleted.

The input signal 000000 does not charge a file and does not delete an already existing print order.

Port 1 to Port 16 = Assignment for I/O Profile *SP_Direct0*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	No function
3 (Input)	11	Counter reset
4 (Input)	2	No function
5 (Input)	12	Error reset
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	Active print order
11 (Output)	16	No function
12 (Output)	7	Printing
13 (Output)	17	Ready
14 (Output)	8	No function
15 (Output)	18	Return
16 (Output)	9	Transfer ribbon prior warning

Port 1 to Port 16 = Assignment for I/O Profile *Old_Direct0*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	Error reset
3 (Input)	11	Counter reset
4 (Input)	2	No function
5 (Input)	12	No function
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	Active print order
11 (Output)	16	Generation
12 (Output)	7	Printing
13 (Output)	17	Print-Ready
14 (Output)	8	Printhead up
15 (Output)	18	Return
16 (Output)	9	Transfer ribbon prior warning

Port 1 to Port 16 = Assignment for I/O Profile *Old_Direct1*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	Error reset
3 (Input)	11	Counter reset
4 (Input)	2	No function
5 (Input)	12	No function
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	Active print order
11 (Output)	16	Generation
12 (Output)	7	Printing or return
13 (Output)	17	Print-Ready
14 (Output)	8	Printhead up
15 (Output)	18	Return
16 (Output)	9	Transfer ribbon prior warning

Port 1 to Port 16 = Assignment for I/O Profile *Old_Direct2*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	Error reset
3 (Input)	11	Counter reset
4 (Input)	2	Release signal
5 (Input)	12	No function
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	Active print order
11 (Output)	16	Generation
12 (Output)	7	Printing or return
13 (Output)	17	Print-Ready
14 (Output)	8	Printhead up
15 (Output)	18	Return
16 (Output)	9	Transfer ribbon prior warning

Technical data

Plug Connector	
Type	D-Sub connector High Density 26-pin. / connector
Manufacturer	W+P-Products
Reference number	110-26-2-1-20
Output Voltages (connected with GND-PE)	
+ 24 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
+ 5 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
Port 1 - 15	
Input	
Voltage	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ)
Output	
Voltage	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ || 47Ω)
Current max.	High +15 mA Low -15 mA
Port 16	
Input	
Voltage	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
Output	
Voltage	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
Current max.	High +500 mA (Darlington BCP56-16) 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.

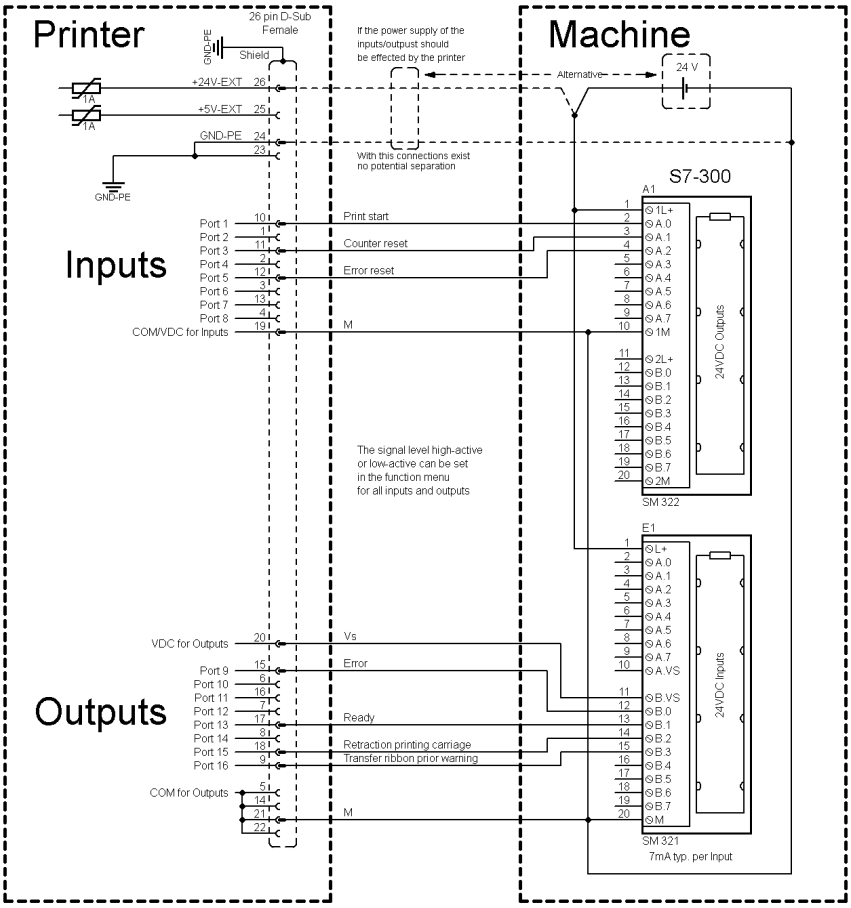


Figure 49

Example 2

Device connection to a operating panel.

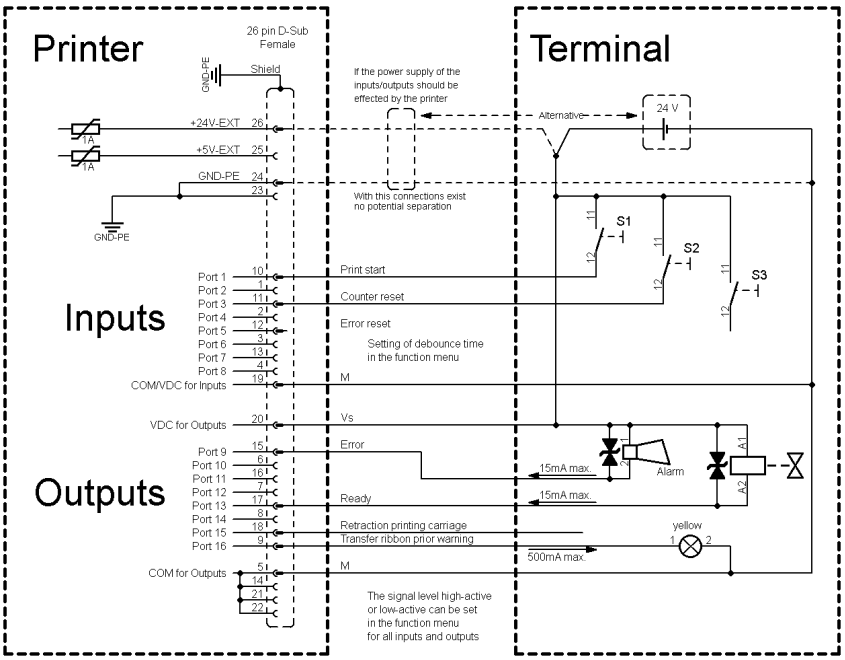


Figure 50

Example 3

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

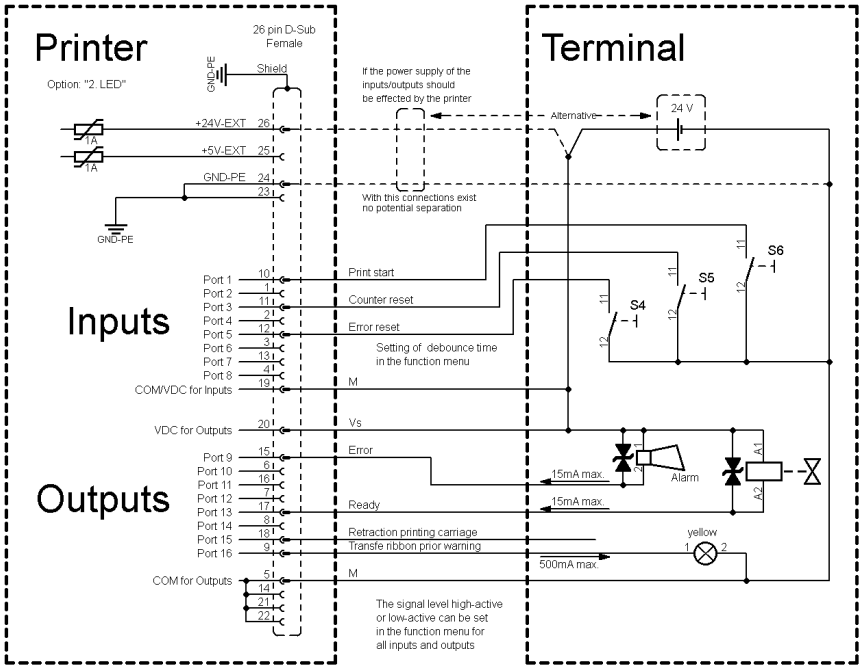


Figure 51

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

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

10 Wiring Plans

10.1 Control Unit (Panel Enclosure)

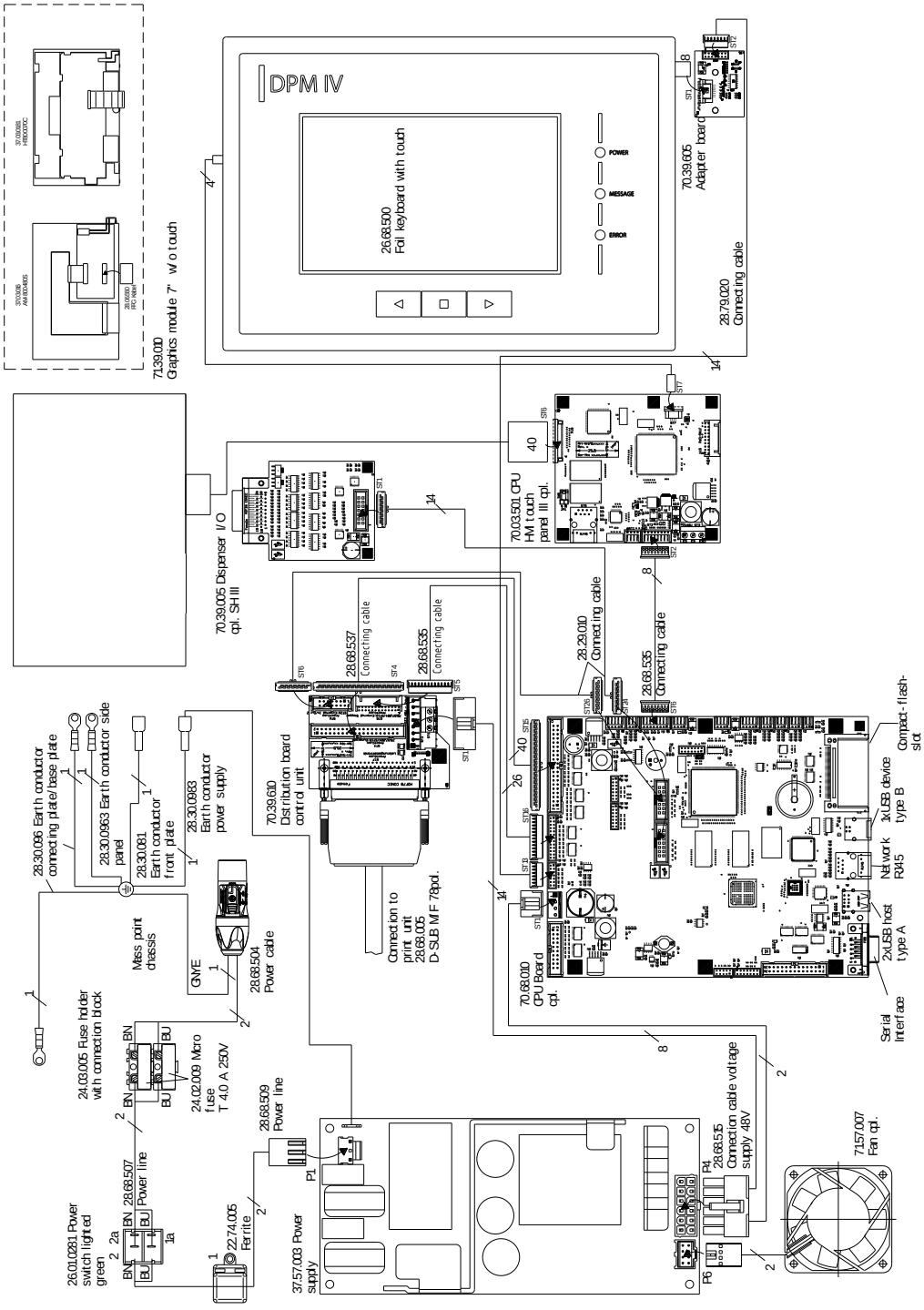


Figure 52

10.2 Control Unit (Desktop Enclosure)

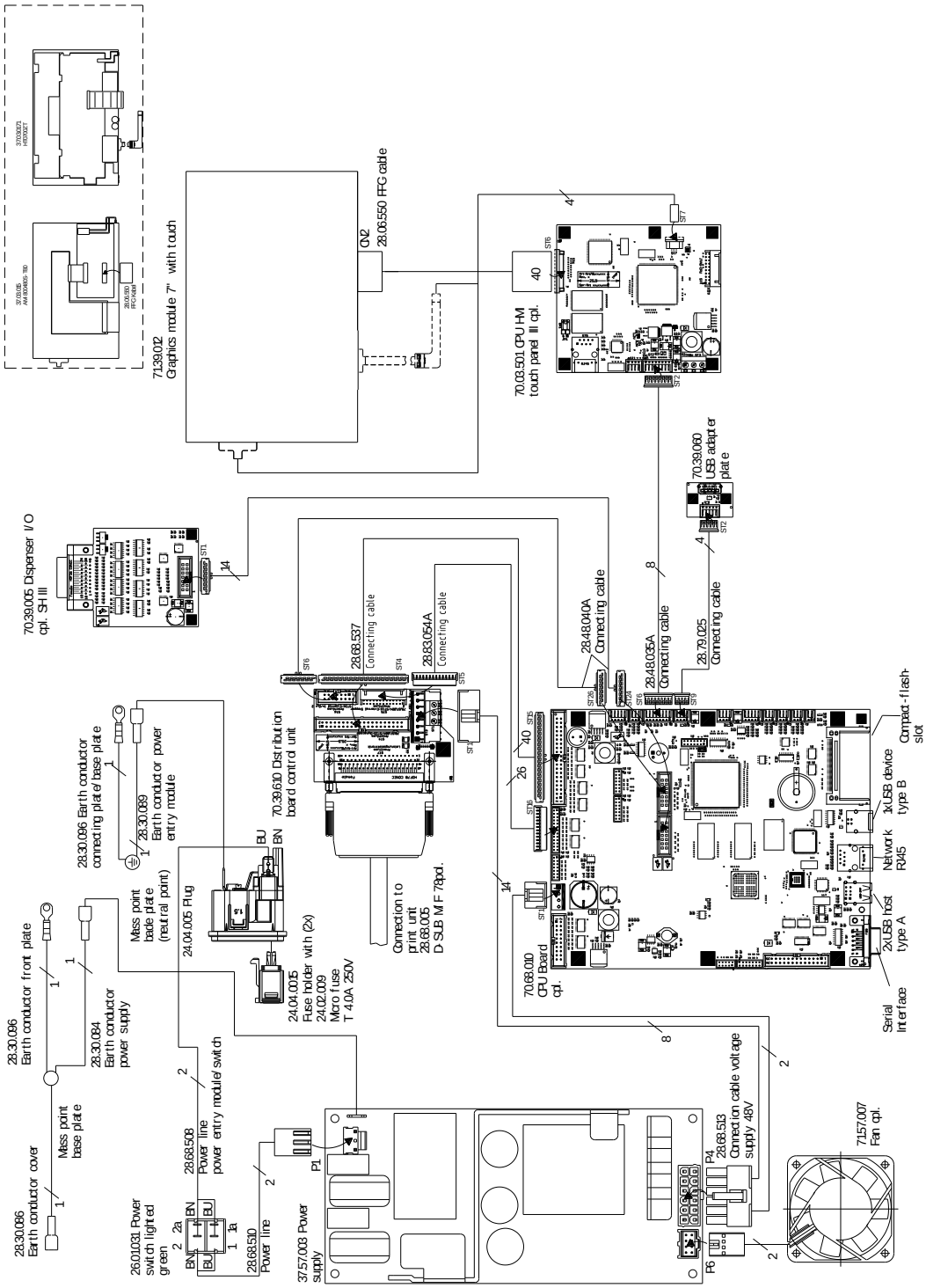


Figure 53

10.3 Print Mechanics (Left Version)

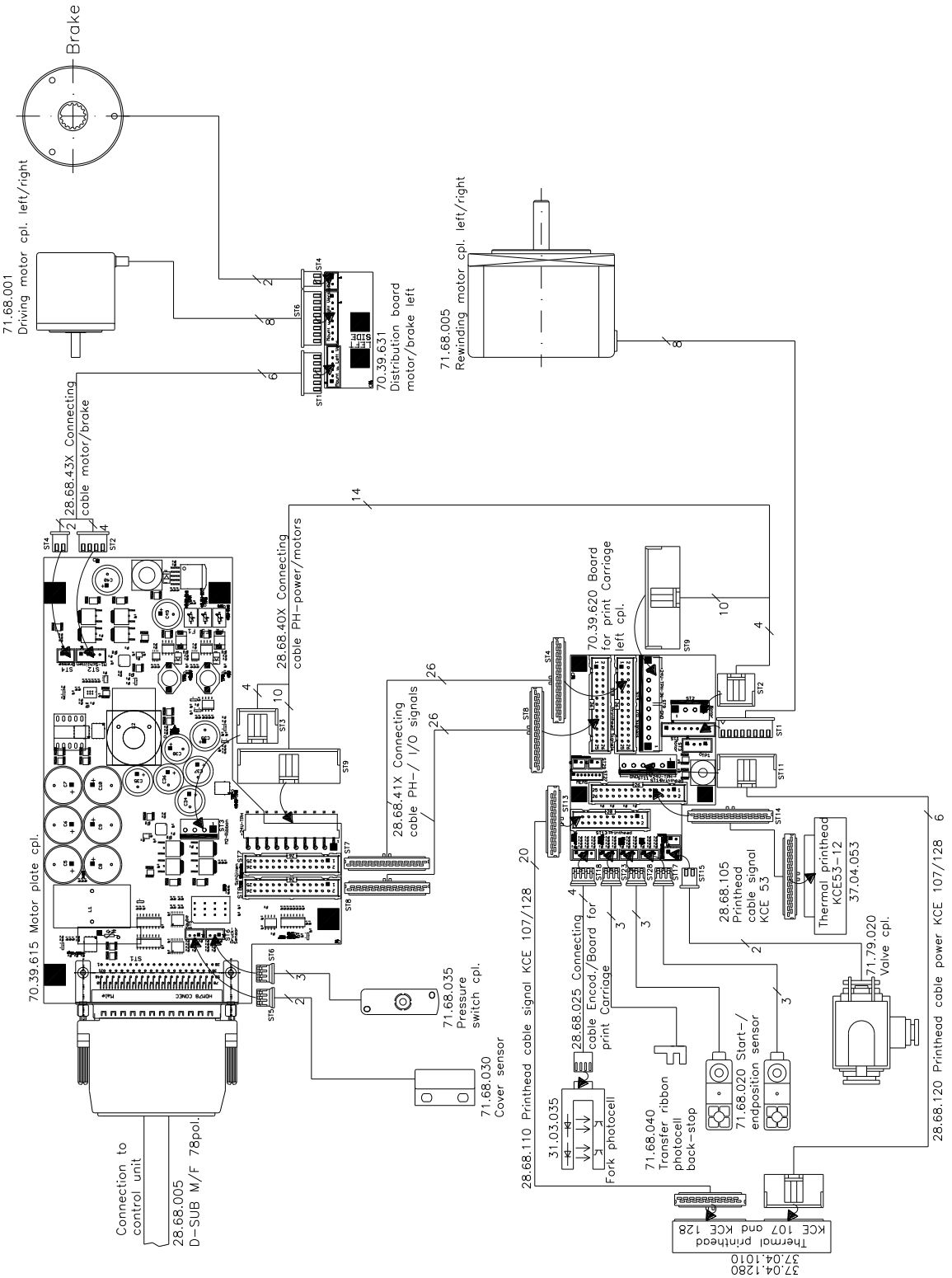


Figure 54

10.4 Print Mechanics (Right Version)

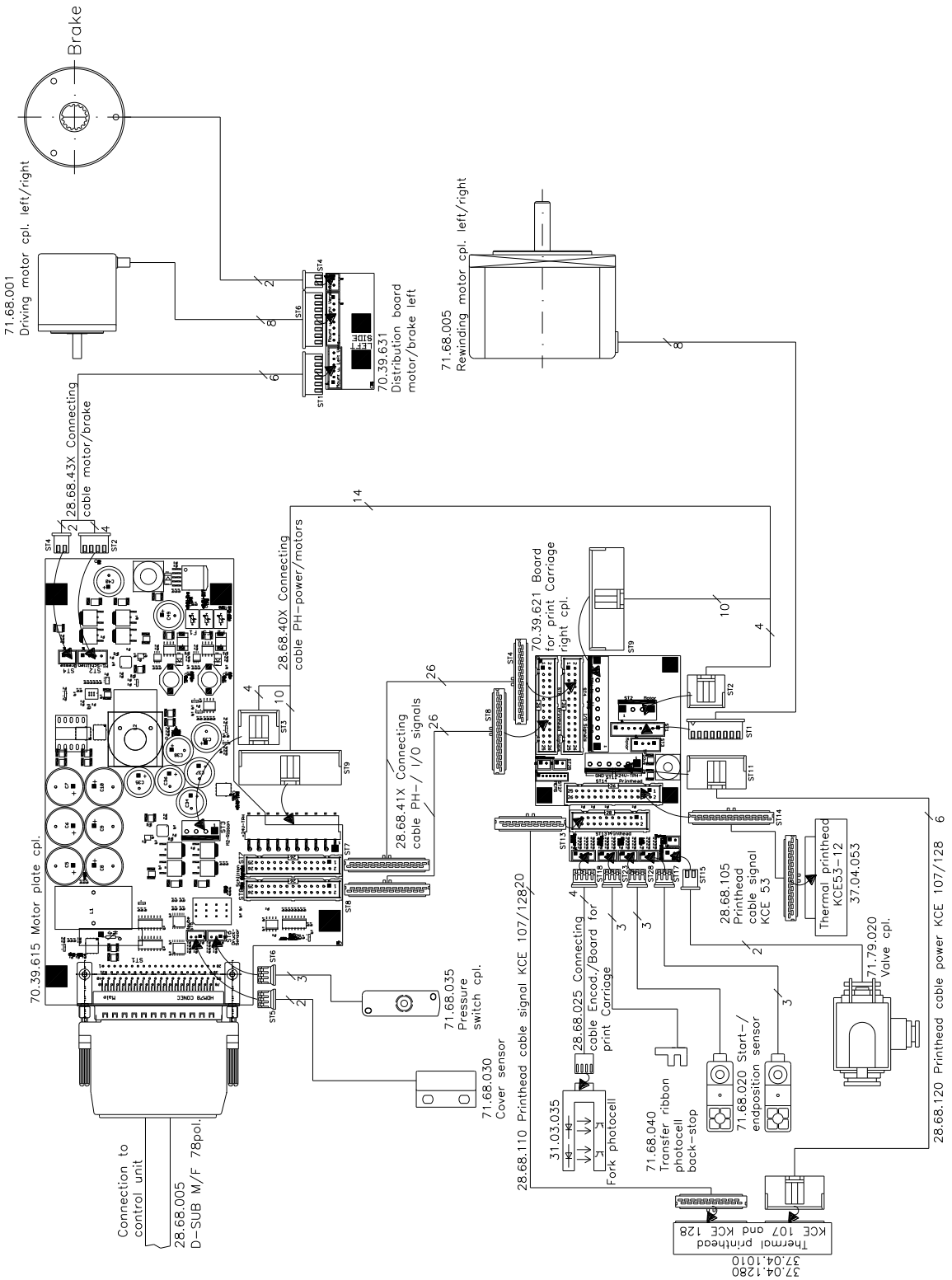


Figure 55

11 Layout Diagrams

11.1 CPU

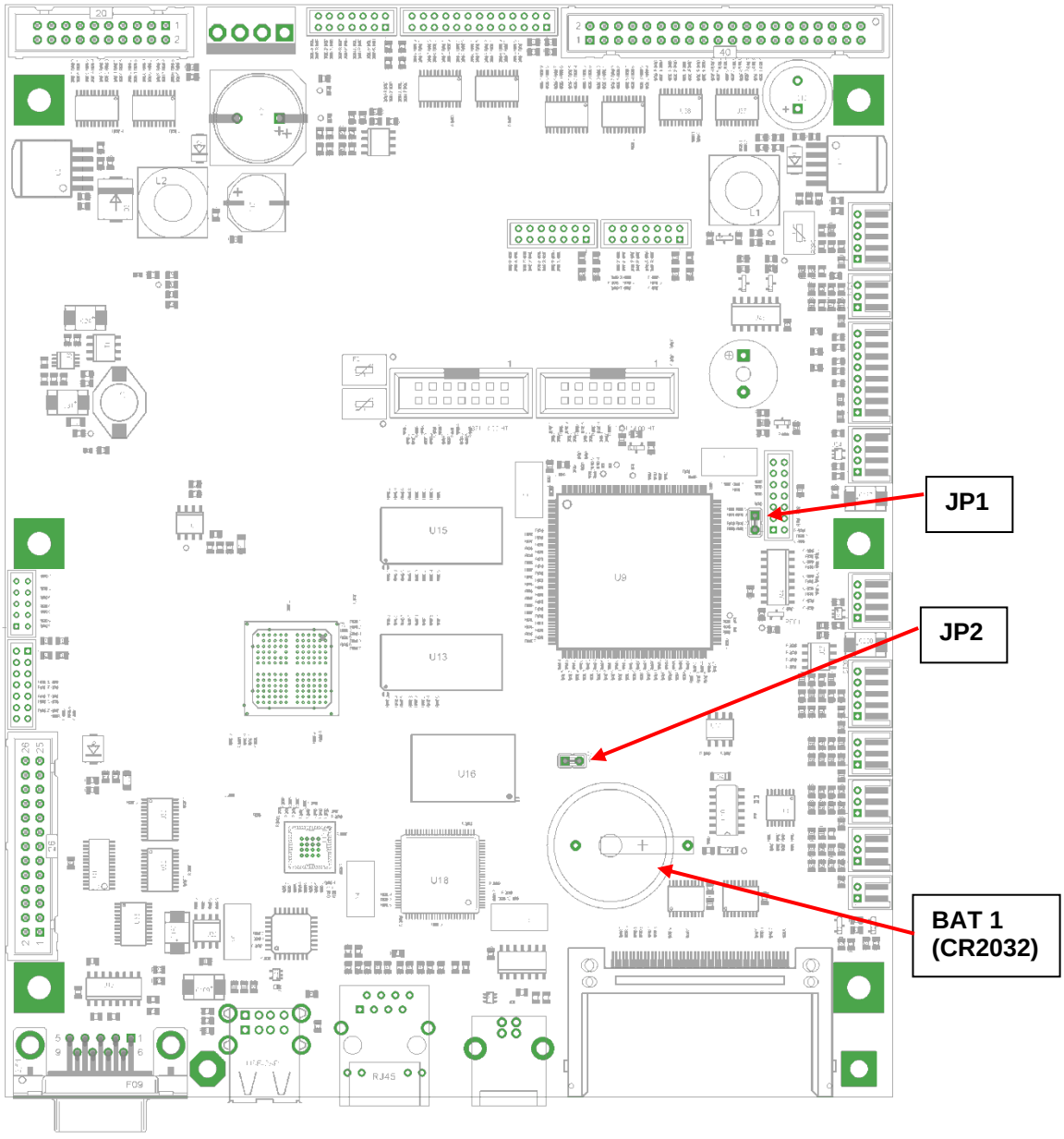


Figure 56

Jumper plan

	JP1	JP2
INIT programming	closed	closed
Boot/software programming	closed	open
Delivery	closed	open

11.2 Power Supply Unit

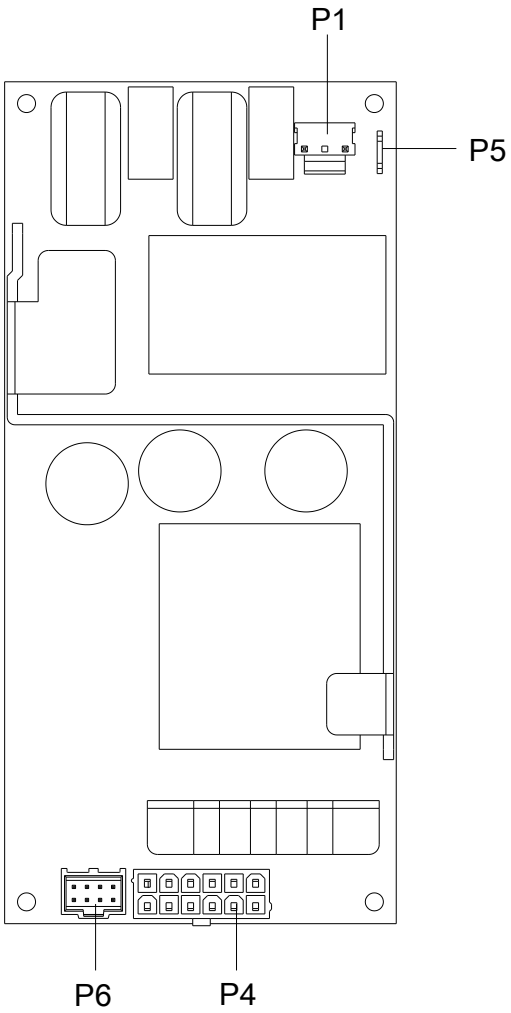


Figure 57

P1	100-240 VAC input
P4	48V output
P5	Protective conductor connection
P6	Fan

12 Pin Assignment of Control Unit

12.1 Panel Enclosure

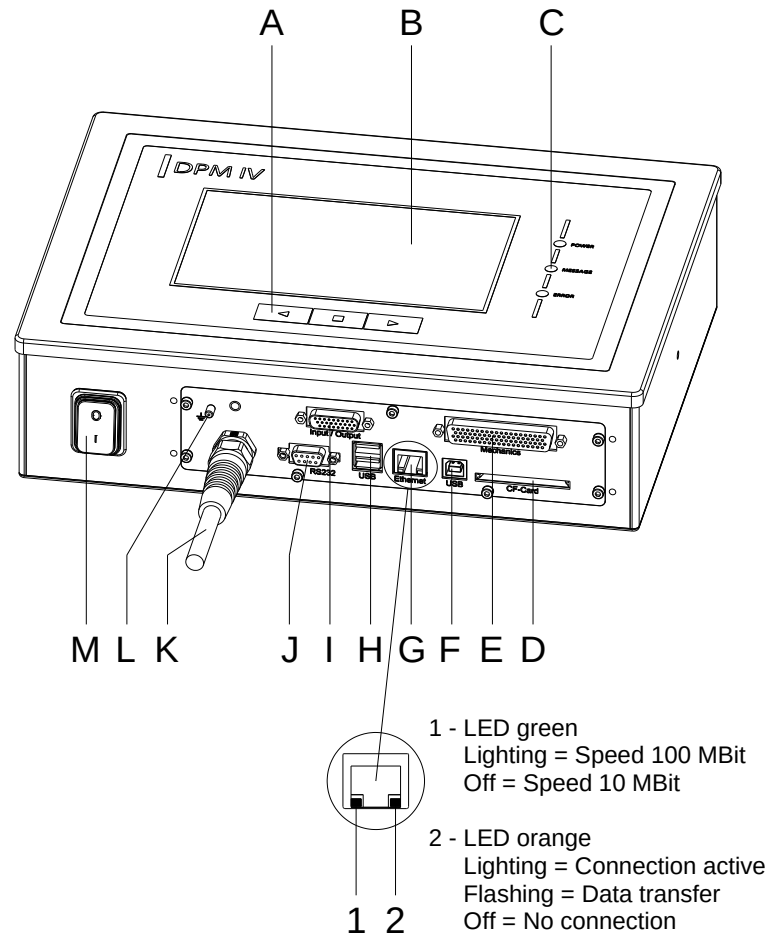


Figure 58

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

12.2 Desktop Enclosure

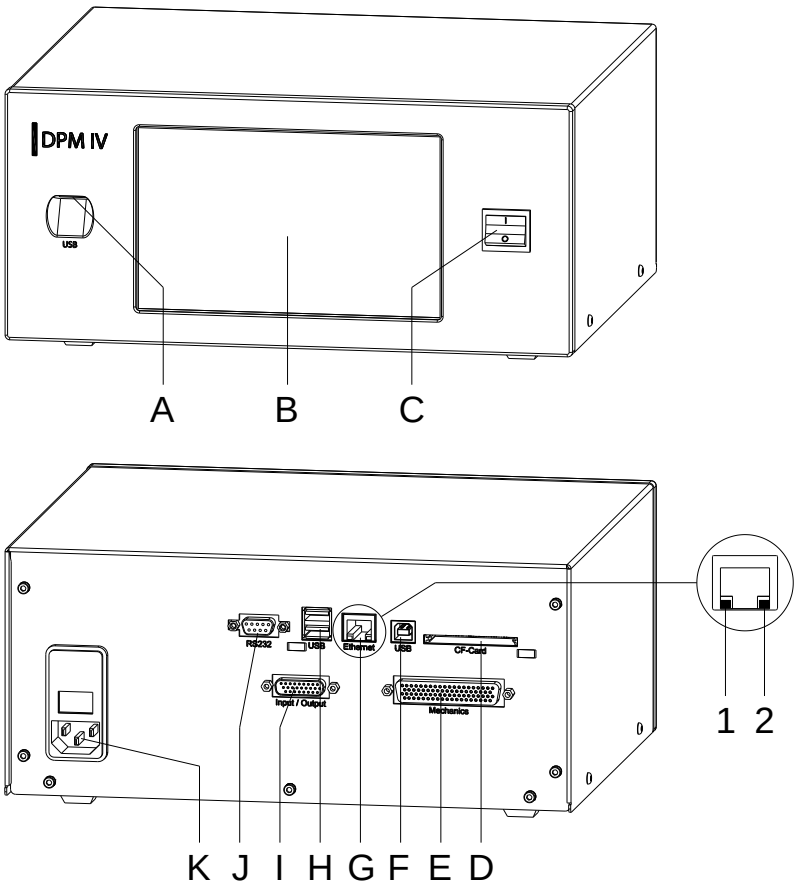
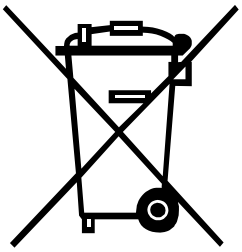


Figure 59

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

13 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 (0)7720 9712-0 . Fax +49 (0)7720 9712-9901
info@carl-valentin.de . www.carl-valentin.de